ESRF

Elettra Sincrotrone Trieste

SOLEIL SYNCHROTRON

ALBA

DESY

Forschungs-Neutronenquelle Heinz Maier-Leibnitz (FRM II)

MAX IV

SOLARIS NATIONAL SYNCHROTRON RADIATION CENTRE

ANKA

eli attosecond

eli beamlines

eli Nuclear Physics

SKA SQUARE KILOMETRE ARRAY

TANGO CONTROLS COLLABORATION IN 2015

Andy Götz (ESRF)

on behalf of

TANGO Collaboration

BUNJIL THE CREATOR

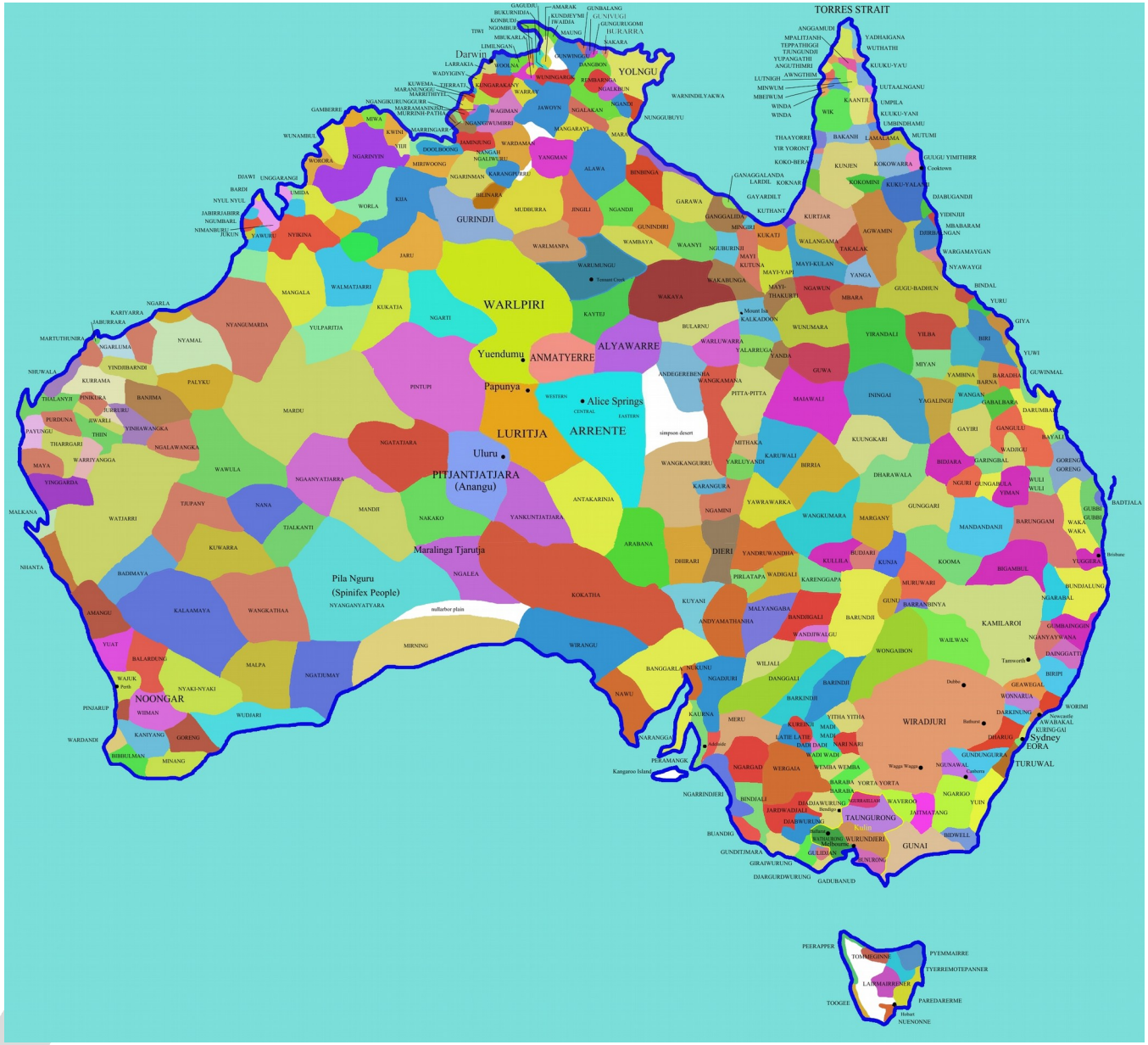
BUNJIL THE CREATOR

CHEERS

THANKYOU

NGOON-GODGIN !

CONTROL SYSTEMS COMMUNITIES ?

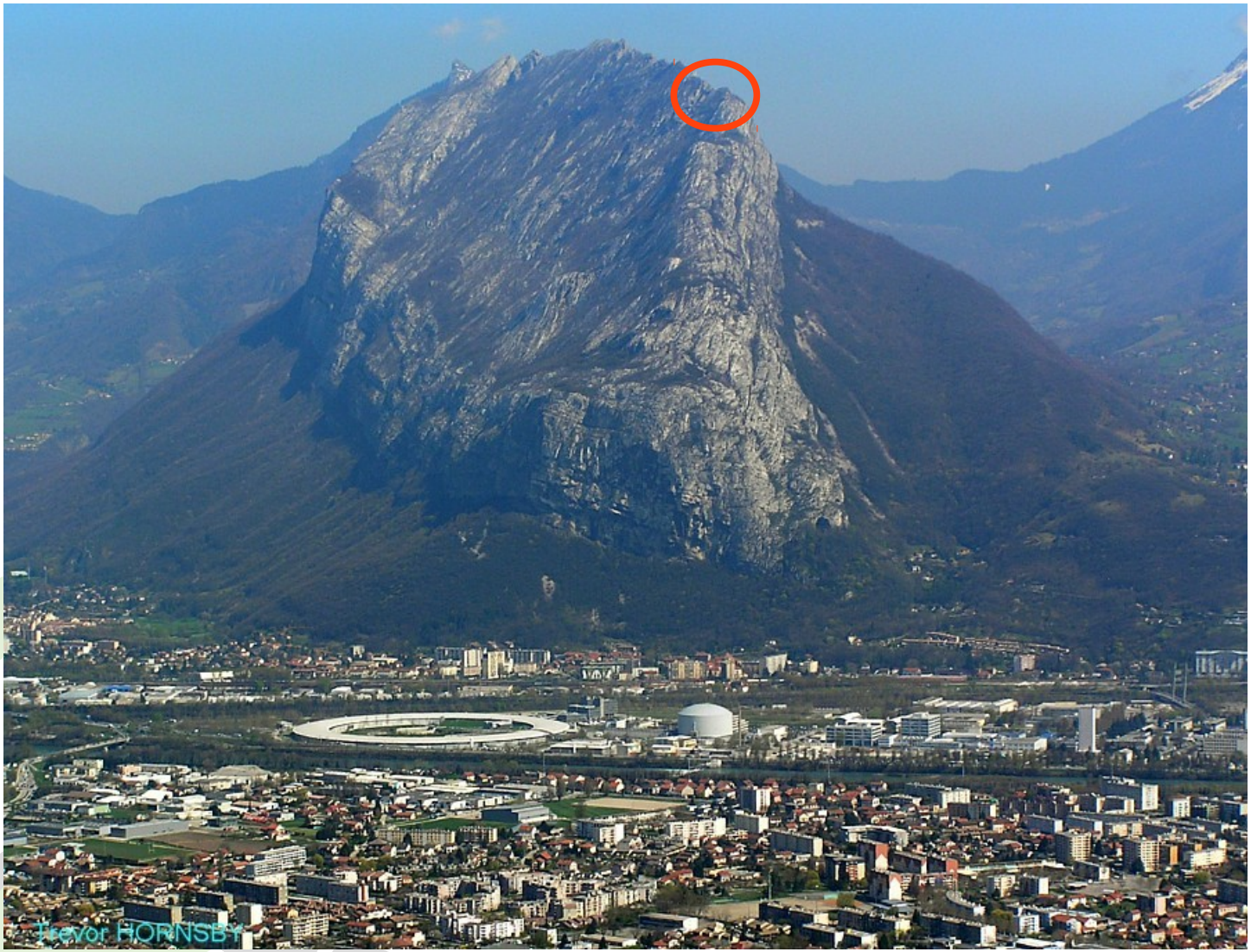


"*If you want to walk fast then walk alone, but if you want to walk far then walk together*"

African proverb

TANGO controls

ESRF GRENOBLE FRANCE



HOME SWEET HOME

THE TANGO APPROACH

CONTINUOUS IMPROVEMENT

TANGO CONTINUOUS IMPROVEMENT

- Keep the concept of a **distributed object** simple
- **Integrate new features** and **applications** into the **core**
- **Multiple languages** as **1st class** citizens (C++, Python + Java)
- **Documentation** + **Installation**

TANGO 9

ANOTHER

MAJOR

RELEASE !

TANGO 9 NEW FEATURES

- **Pipes** (*aka* Streams)
- **Dynamic commands**
- **Forwarded** attributes
- **Enum**erated attributes
- **Polling** thread optimisation
- New base class – **Device_5Impl** (API is backwards compatible)

The People

E.Taurel
P.Verdier
J-L.Pons
F.Poncet
(ESRF)

G.Abeille
(SOLEIL)

JAVA DEVICE SERVERS

- A new version of the Java implementations for device server **JTango** has been developed using annotations. It makes writing Java device servers MUCH easier!

- The following annotations are supported:

@Device: class
@Attribute: field
@Command: method
@State: field
@Init: method
@DeviceProperty

G.Abeille (SOLEIL)

P.Verdier (ESRF)

EZ JAVA CLIENTS

- A new API for Java clients has been developed called **ezTangORB**. It makes writing Java device clients MUCH easier!

- Example:

//ezTangORB

```
TangoProxy proxy =
 TangoProxies.newDeviceWrapper("tango://whatever:10000/sys/tg_test/1");
double result = proxy.<Double>readAttribute("double_scalar");
```

I.Khokhriakov
(HZG)

TANGO SITES WHICH LOVE PYTHON

- **ALBA** developed the first Python TANGO control system for controlling accelerator and beamlines
- Some sites that love Python :

LMJ
DESY
Max IV
ELI-ALPS
SKA SA
...

PYTHON HLAPI

"*It would also be nice if the tango programming interface would be more pythonic. The final goal is to make writing tango device servers as simple as possible*" [TEP1]

- A new pythonic **High Level API** (HLAPI) has been implemented and which supports co-routines (using gevents)

T.Coutinho (ESRF/ALBA)

```
import time
from PyTango.server import run
from PyTango.server import Device, DeviceMeta
from PyTango.server import attribute, command

class Clock(Device):
    __metaclass__ = DeviceMeta
    time = attribute()

    def read_time(self):
        return time.time()

    @command(din_type=str, dout_type=str)
    def strftime(self, format):
        return time.strftime(format)

if __name__ == "__main__":
    run((Clock,))
```

MY LOVE AFFAIR WITH A PYTHON

ARCHIVING

- A new event based archiving system (HDB++) has been implemented with :
  - **higher data rates**,
  - **us time resolution,**
  - **precise timing**
  - **multiple TANGO control systems**

  See talk **WED3O04**.

  L.Pivetta et. al. (ELETTRA+ESRF)

- The architecture allows multiple database backends to be plugged into the archiving system. So far MySQL and Cassandra are implemented.

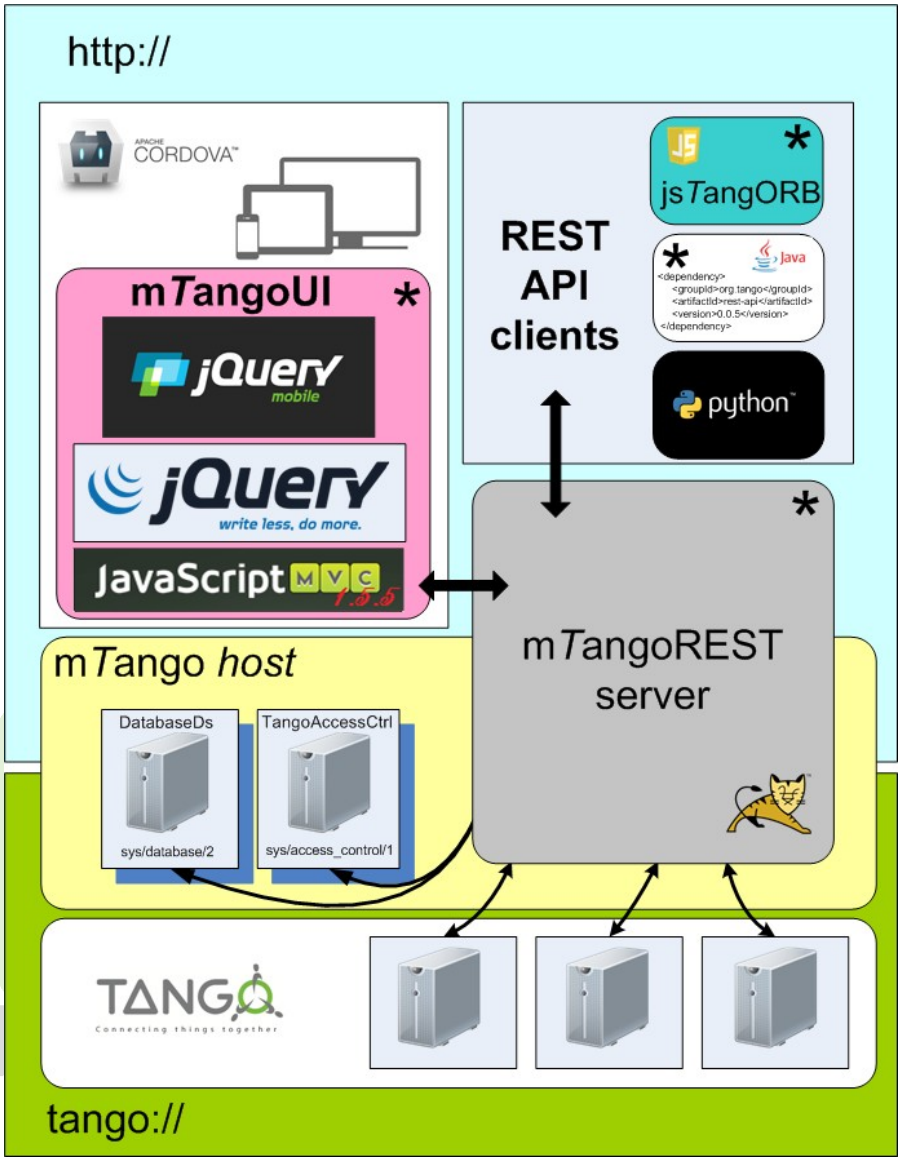
  See poster **WEM310**.

  R.Bourtembourg
  P.Verdier
  J-L.Pons
  (ESRF)

MTANGO - MOBILE TANGO

http://localhost:8080/mtango/rest/device/sys/tg_test/1

I.Khokhriakov (HZG)



- A RESTful http based API called mtango (m for mobile) has been developed for TANGO.
- Uses TANGO Access Control and tomcat for security
- Can be used from any client implementing http
- API implemented for JavaScript
- See website for API

WEBSITE REDESIGNED

http://www.tango-controls.org

J-MChaize (ESRF)

TANGO VIRTUAL MACHINE

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

A.Götz (ESRF)

NEW MEMBERS

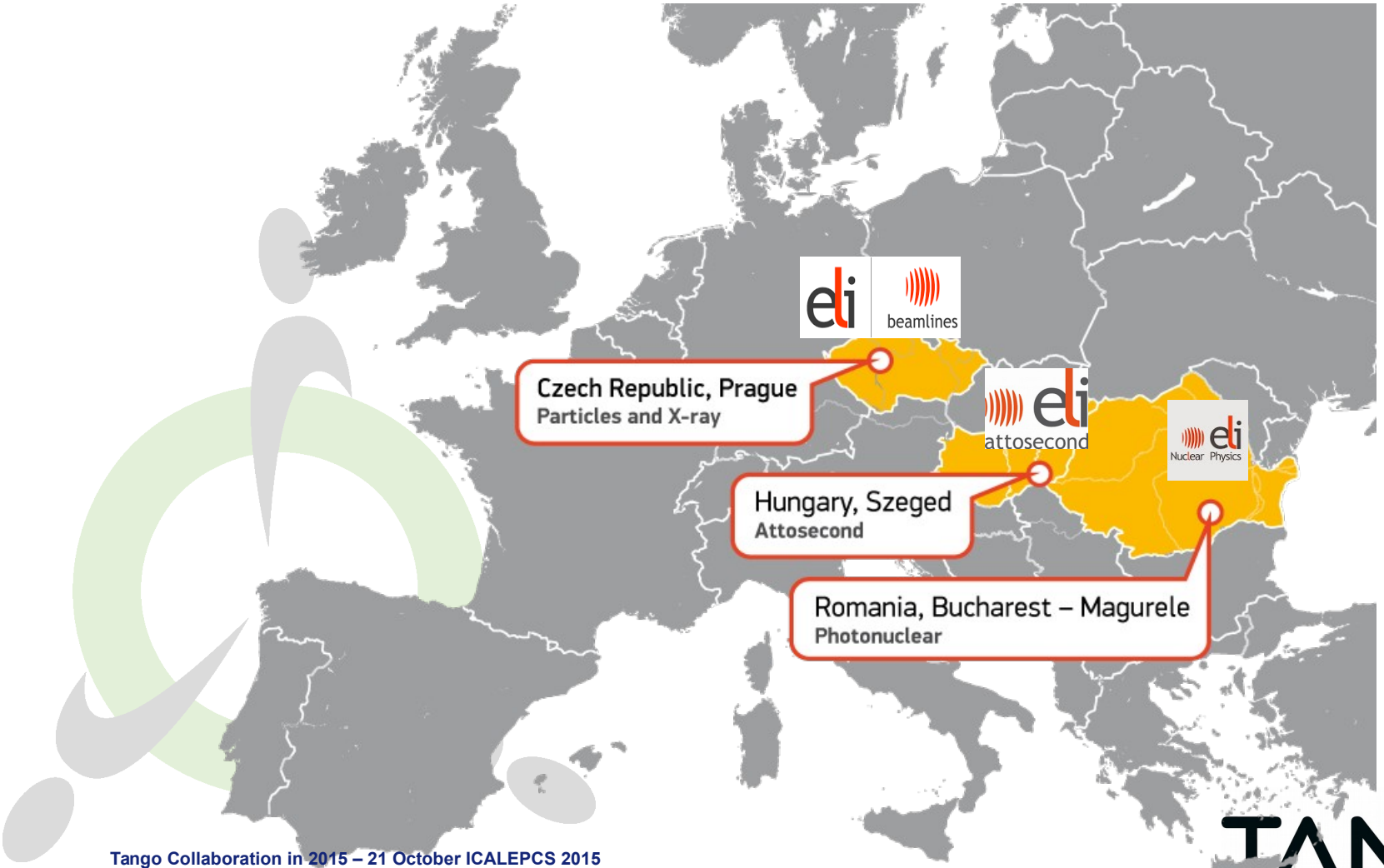
TANGO

COMMUNITY

IS GROWING!

LASERS ADOPT TANGO

- 3 **E**xtreme **L**ightsource **I**nfrastructures have chosen TANGO+EPICS



ASTRONOMERS ADOPTING TANGO

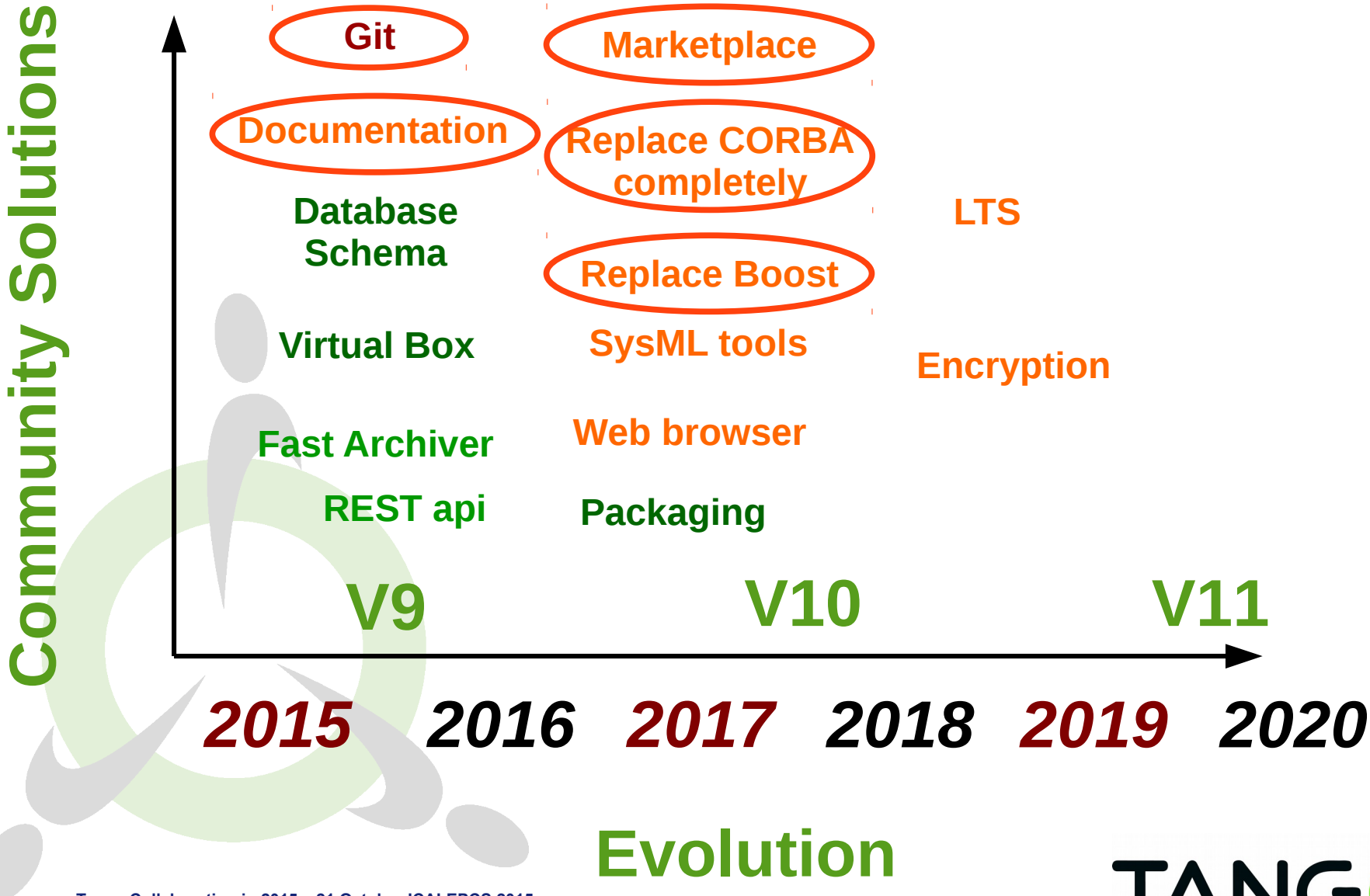
- INAF using TANGO for Binocular telescope archived data

- SKA has chosen TANGO as the common framework for the Telescope Manager

- EGO-VIRGO gravitational observatory using TANGO

- ERAS using TANGO on Raspberry Pi

THE TANGO ROADMAP



How to finance the roadmap ?

Sustaining Tango with a Collaboration Contract

COLLABORATION CONTRACT

- We have prepared a contract with partners who are willing to finance TANGO infrastructure developments. Contract is for 5 years.
- 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**!

OTHER PROJECTS

- Student training — *R.Ponsard (LGM)*
- Post mortem tools — *ELI-ALPS SKA-SA*
- Packaging with Docker — *SOLARIS*
- Many more e.g. device servers for White Rabbit, oscilloscope based on Zed board, web browser, etc. etc. — *Community*

CONCLUSION

TANGO IS CONSTANTLY IMPROVING

TANGO COMMUNITY IS GROWING

TANGO IS SUSTAINABLE