Tango Controls Collaboration 2019 - 2021

TAO of TANGO

探戈道

Andy Götz (ESRF) on behalf of the Tango Collaboration

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

Tao of Tango = 探戈道

Tao Te King 道 德 經

Lao Tzu 老子

Collaboration

- The **Tango Controls Collaboration** is made up of **11** partners who have signed the Tango Controls **collaboration contract**
- Members contribute **10 k€ per year** to the maintenance of Tango
- The first contract (**2015 – 2020**) has been **renewed** from **2021 - 2025**.
- The **Collaboration** is managed by **ESRF** and the **Steering Committee**

Support

- The **Tango Controls Collaboration** issued a **Call For Tender** to secure **long term commercial support** for the next **5 years**
- **Four companies** were chosen:
  - **S2 innovation**
  - **Observatory Sciences**
  - **Byte Physics**
  - **IK company**

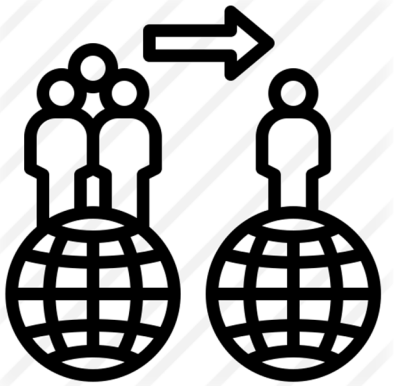
S2 INNOVATION

byte physics

IK Company

New

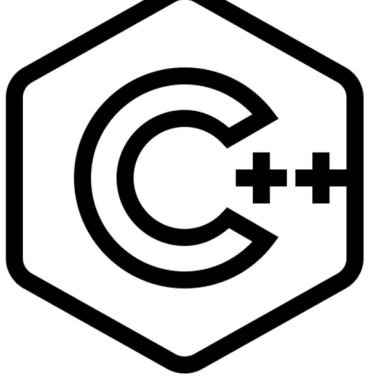
- **LOFAR 2.0** – see **MOAR03**
- **JINR 200 MeV LINAC** – see **MOPV018**
- **PEPC** laser – see **THPV007**
- **SKA**– see **MOAL03, TUBL02, TUBL04, TUBR02, FRAR01**
- **ESRF** Extremely Brilliant Source (**EBS**), **GMRT,** …
- 4th gen Storage Rings **Elettra 2.0**, **SOLEIL 2.0**, **CELLS 2.0**



Migration

SOURCEFORGE → GitHub → GitLab

- Moved from **SF** in **2000** → **GH** in **2016** → **GL** in **2021** thanks to **Carlos, Michal, Reynald, Thomas**, …
- The latest move was triggered by the change of policy concerning **Travis CI** support
- The SC decided to move to **GitLab** to be closer to internal development tools
- **GitLab** kindly accorded **Gold Status**
- New home https://gitlab.com/tango-controls (see **MOPV034**)



Kernel

- Kernel is maintained with excellent help from **Reynald Bourtembourg + s2 innovation + byte physics + kernel group members**
- **V9.3.4** - released - fully ABI + API compatible
- **V9.4** - next release - not binary compatible but API compatible
- **C++14 –** will be new minimum requirement
- **Refactoring + bug fixing**

python Kernel

- Most **popular** language in Tango community
- **V9.3.3** – released thanks to **Anton Joubert**
- **Conda** packages – easy install

Kernel

- Moved binaries from Bintray to **Maven Central**
- Quality + bug fixing thanks to **Gwen Abeille**
- **Java 8** and **11** support

Tools – Pogo

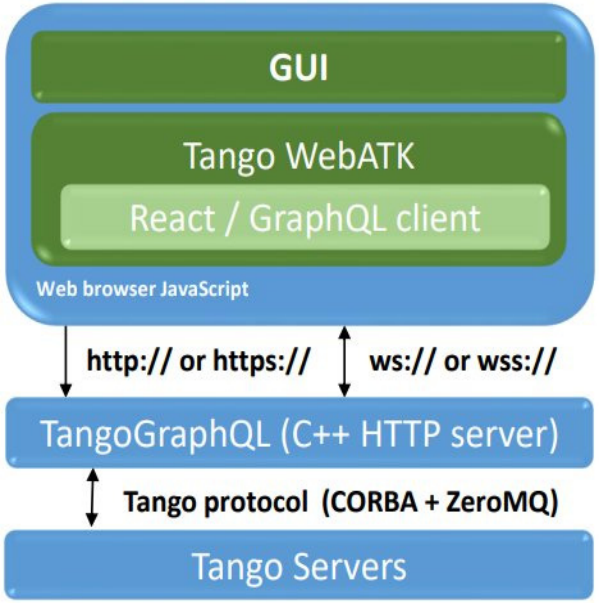
- Code generator tool to **generate device servers** in C++, Python + Java
- Improved support for **cmake**
- Moved to **GitLab CI** + containers
- New maintainer **Damien Lacoste**

Packaging

- **RPM** builds moved to **copr**
- **Conda** packages thanks to **Benjamin Bertrand**

Tools – Web

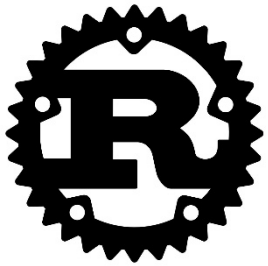
- Custom **web applications** continue to replace **Swing** and **Qt**
- Main platforms:
  - **Waltz** is **REST** based
  - **Taranta** is **GraphQL** based (see **FRAR01**)
  - **WebATK** web apps
- A **TangoGraphQL** standard **specification** is planned (see **MOPV025**)



MOPV025 poster

New language

- **Rust** – the new kid on the block
- **Tango client API** has been implemented in **Rust** for clients thanks to **Georg Brandl** + the **C Binding** by **Jens Meyer**
- **Rust** protects against memory leaks (cause of most programming bugs)
- **Next step** is to extend C binding to support enumerated types
- **Future** - support Rust for device servers?

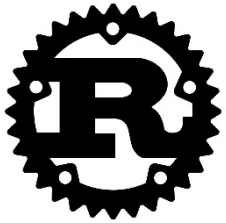


“Hello Device” example

```
use tango_client::*;

let mut dev = DeviceProxy::new("tango://localhost:10000/sys/tg_test/1")?;
let instr = CommandData::from_str("This is a Tango Device test client.");
let argout = dev.command_inout("DevString", instr)?;
println!("Command exec result: {}", argout.into_string()
```

Tango User Interface in Rust



- New generic Tango client by **Johan Venter**
- https://github.com/SKAJohanVenter/tango-controls-tui

Logging

- **Logging** is an essential part of **debugging**
- Multiple solutions have been implemented for **global logging**:
  - **Database** approach with **Elasticsearch** (MAXIV, SKA)
  - Message tagging for system logging (see talk **TUBL02**)
    - **transaction ID**
    - **Enter|Exit name**
    - **marker**

Future - V10

- The Tango concepts and features have been captured in the **Request For Comments** (see paper **TUBL03**)
- Next step is to review the RFCs in a **face-2-face** meeting
- **JTango** tested various protocols thanks to **Igor Khokhriakov**
- **2022** will see a new code base + protocol for a **simple device server**

Community

- **COVID-19** has prevented face-2-face meetings over the last 2 years
- **3 online meetings** were successfully organised
- **Nicolas Leclercq** has replaced **Jean-Michel Chaize** as event organizer
- **Kernel meetings** are held every **2 weeks**
- **Next community meeting** will (hopefully) be in **2022** in **St Petersburg**

Tao of Tango / 探戈道

第一章

…

恒無欲也，以觀其妙；
恒有欲也，以觀其徼。

…

Chapter 1

…

So, as ever hidden, we should look at its inner essence;
As always manifest, we should look at its outer aspects.

Tao of Tango
*"The **Device** is the **inner essence** of **Tango,** the **RFCs** capture the **Outer aspects** so they can be **re-implemented**"*

Conclusion

- The Tango **community** continues to **grow** and improve their **collective intelligence**
- The **Tango collaboration contract** has been renewed for **another 5 years** with support from commercial companies
- After **10 years** of talking about Tango V10 we will (finally) start implementing a **prototype**
- The **Tango RFCs** capture the core concepts and features of **Devices** → the **Tao of Tango** 探戈道

TANGO

Connecting things together

Acknowledgements

- Reynald Bourtembourg (ESRF)
- Damien Lacoste (ESRF)
- Nicolas Leclercq (ESRF)
- Sergi Rubio (ALBA)
- Carlos Pascual-Izarra (ALBA)
- Vincent Hardion (Max IV)
- Benjamin Bertrand (MAXIV)
- Lorenzo Pivetta (Elettra)
- Piotr Goryl (S2Innovation)
- Anton Joubert (SARAO)
- Johan Venter (SARAO)
- Michal Liszcz (S2Innovation)
- Gwenaelle Abeillé (SOLEIL)
- Thomas Braun (byte physics)
- Georg Brandl (FZJ)

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Thank you / 谢谢

May the 探戈道 be with you!

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