



# **S2 INNOVATION**

In the Community



Piotr Goryl on behalf of S2Innovation team, Tango Webinar, 18-11-2020, cyber-space



- ▶ The company has been founded in 2017 basing on experience with building of NCPS Solaris synchrotron (Krakow, PL) control system,
- ▶ From the beginning we are part of the Tango Community,
- ▶ In 2019, Cosylab d.d. invested in us,
- ▶ Main motivation of running the company is to join world of laboratories and industry

# Our vision



# Our expertise

- ▶ Control systems engineering:
  - ▶ For particle accelerators,
  - ▶ For large scale infrastructure,
  - ▶ For laboratories,
- ▶ Software development:
  - ▶ Python, C++, Java, .Net, HTML/JavaScript/CSS, Matlab,...
- ▶ Computation,
- ▶ Documentation,
- ▶ DevOps,
- ▶ Ask us what else we can do for you.





## Our Team

- ▶ Developers / engineers
  - ▶ 5 (almost) full time developers (**Kuba, Mateusz, Michal Liszcz, Michal Gandor, Wojtek**),
  - ▶ 2 “permanent” part-time, contractor developers (**Grzegorz, Krystian**),
- ▶ Management and administration
  - ▶ 2 company managers (**Piotr, Wojtek**),
  - ▶ Projects manager (**Lukasz**),
  - ▶ Management assistant (**Karolina**)

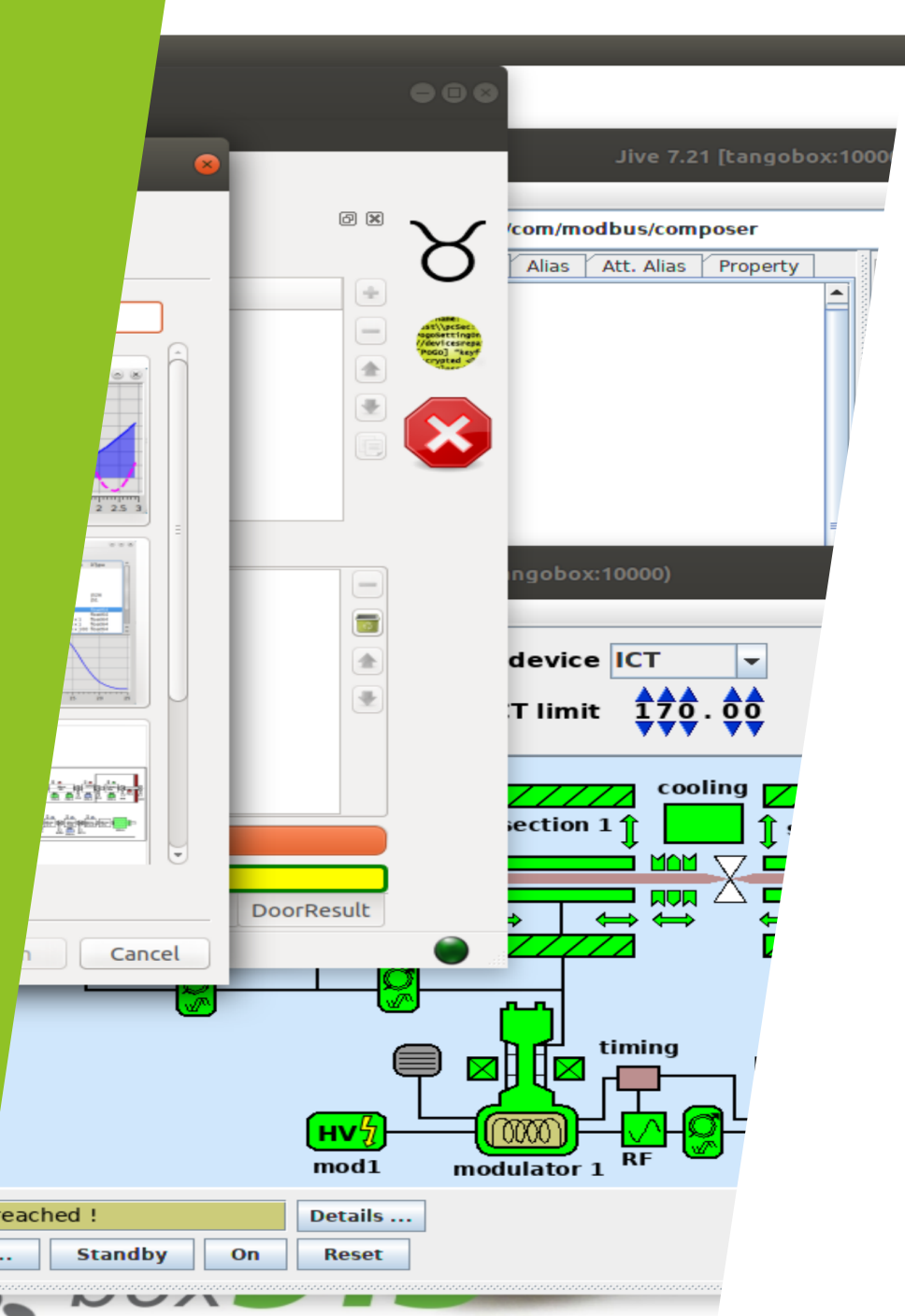
## What we are doing for the Tango Community

- ▶ **Tango 9lts support (cppTango) - Michal**
  - ▶ Bug solving, PR reviews, training
- ▶ **PyTango support - Mateusz, Wojtek, Grzegorz**
  - ▶ Tests on Windows, Solving Windows related issues
- ▶ **JTango support - Krystian**
  - ▶ Tests implementation, bug fixing, refactoring, documentation

## What we are doing for the Tango Community

- ▶ **Documentation** - Michal, Kasia, Kuba
  - ▶ Updates to screenshots, maintenance and PRs review, had written documentation for tools (ATKPanel, Log View),
- ▶ **Tango RFC** - Piotr, Michal
- ▶ **Device Classes Catalogue** - Kasia, Piotr
  - ▶ Catalogue as a python package, maintenance of weekly run of an import script





# Other Tango-related collaborations

## ► Community

- TangoBox VM,
- Docker containers,
- Benchmarking tools,
- **MAX-IV** – 3 developers working remotely within the team at Lund,
- **ESRF** - Plugin for XIMEA camera for Lima,
- Enabling Tango Controls at **ICFO** (Barcelona, Spain)
- **PREVAC** (Rogow, Poland) – various device servers
- Integration of a Timepix detector with Sardana at Laboratoire de Physique des Solides/**CNRS** (Paris, France)
- PANIC system deployment at **NCPS Solaris** (Krakow, Poland)





# IC@MS

## Integrated Cloud(enabled) @alarm Management System

- Web interface for PANIC,
- Notifications via SMS, emails, dashboard,
- Integration with Twilio

**IC@MS**  
Logged as: admin@gmail.com

Datasources: MQTT HTTP Modbus  
Composers: Composer  
Alarms

**+ Add alarm**

Name: pt\_over\_pr Description: Power plant efficiency  
Name: sys/alarm/pyalarm01  
 Change server  
Receivers: +4855555555 Severity: ALARM  
Formula: power/plant/pr/value < 0.9 \* power/plant/pt/value  
**Add alarm**

**Active alarms**

| Alarm               | Severity | State | Active since                  |
|---------------------|----------|-------|-------------------------------|
| smoke_1             | ERROR    | UNACK | Thu, 24 Sep 2020 13:17:01 GMT |
| t_90_thermocouple_2 | ALARM    | UNACK | Thu, 24 Sep 2020 13:17:30 GMT |
| t_90_thermocouple_3 | ALARM    | UNACK | Thu, 24 Sep 2020 13:17:33 GMT |
| t_60_thermocouple_3 | WARNING  | UNACK | Thu, 24 Sep 2020 13:17:25 GMT |
| t_60_thermocouple_2 | WARNING  | UNACK | Thu, 24 Sep 2020 13:17:23 GMT |

**IC@MS**  
Logged as: admin@gmail.com

Search

Severity: All State: All Active since: [input]

**Active alarms**

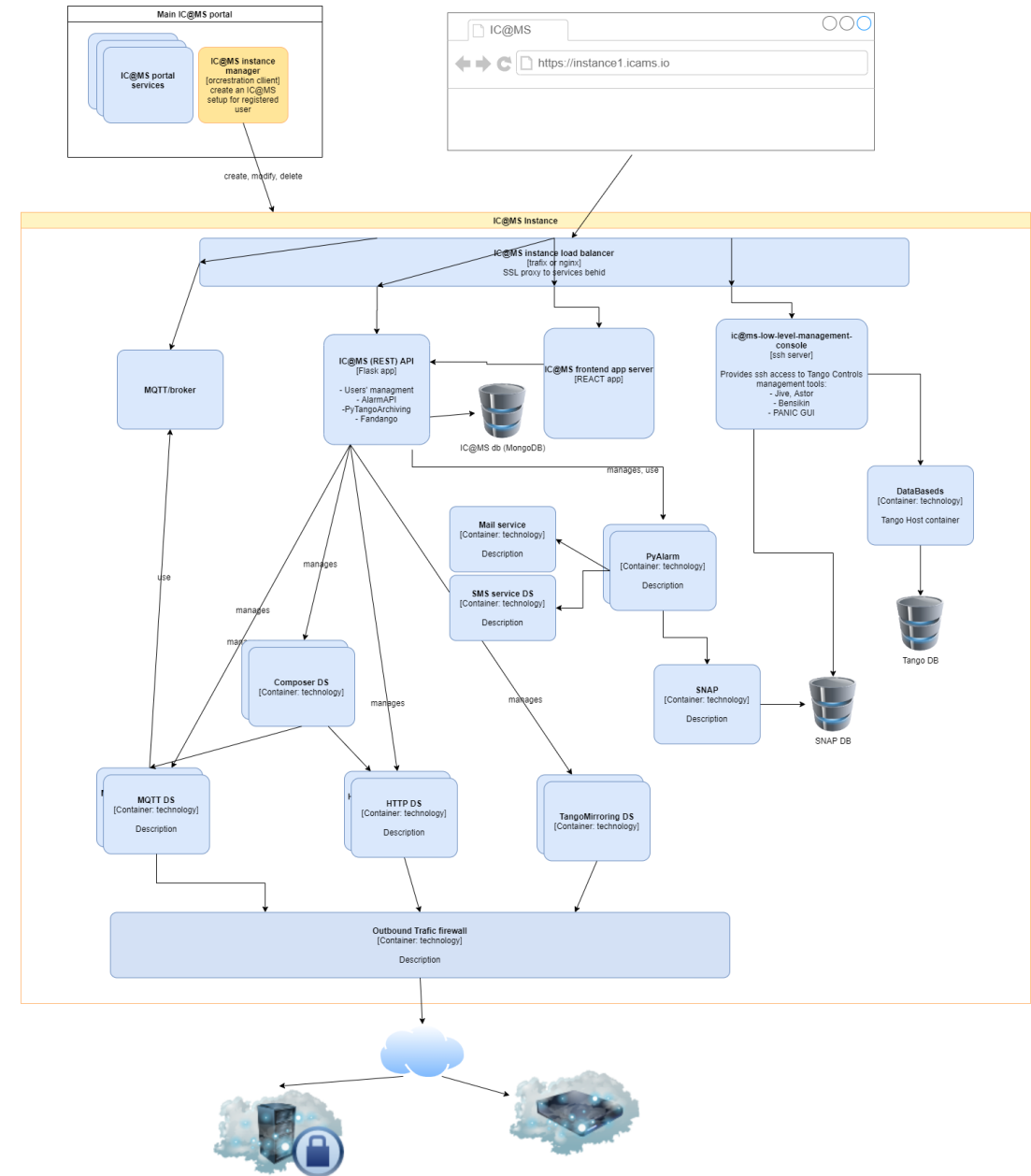
| Alarm               | Severity | State | Active since                  | Description                          |
|---------------------|----------|-------|-------------------------------|--------------------------------------|
| smoke_1             | ERROR    | UNACK | Thu, 24 Sep 2020 12:05:35 GMT | Smoke detected                       |
| t_90_thermocouple_2 | ALARM    | UNACK | Thu, 24 Sep 2020 12:06:04 GMT | Temperature over 90 @ thermocouple 2 |
| t_90_thermocouple_3 | ALARM    | UNACK | Thu, 24 Sep 2020 12:06:07 GMT | Temperature over 90 @ thermocouple 3 |
| t_60_thermocouple_3 | WARNING  | UNACK | Thu, 24 Sep 2020 12:05:59 GMT | Temperature over 60 @ thermocouple 3 |
| t_60_thermocouple_2 | WARNING  | UNACK | Thu, 24 Sep 2020 12:05:56 GMT | Temperature over 60 @ thermocouple 2 |
| t_60_thermocouple_1 | WARNING  | UNACK | Thu, 24 Sep 2020 12:05:53 GMT | Temperature over 60 @ thermocouple 1 |
| t_90_thermocouple_1 | ALARM    | UNACK | Thu, 24 Sep 2020 12:06:02 GMT | Temperature over 90 @ thermocouple 1 |

**Not active alarms**

| Alarm   | Severity | State | Active since                  | Description                |
|---------|----------|-------|-------------------------------|----------------------------|
| wind_1  | DEBUG    | NORM  | Thu, 24 Sep 2020 12:06:10 GMT | Wind speed over limit      |
| w_l_1   | INFO     | NORM  | Thu, 24 Sep 2020 12:06:10 GMT | Water level over limit     |
| tq_test | WARNING  | NORM  | Thu, 24 Sep 2020 12:06:10 GMT | TangoTest_alarms. Its hot. |

# IC@MS

- ▶ Based on Tango Controls / PANIC
- ▶ End-user centric
- ▶ Run on Docker swarm at Azure, could be deployed on any infrastructure (cloud/local, docker swarm/kubernetes)
- ▶ Byproducts:
  - ▶ MQTT and HTTP device servers,
  - ▶ Extended Composer device server



## Non-Tango projects

- ▶ Switchgear controller firmware development (embedded Debian + FreeRTOS + hardware integration) for JM-TRONIK (Warsaw, Poland),
- ▶ Configuration of EPICS based motion controllers (CINEL, Italy),
- ▶ DONES – a neutron source for testing materials for DEMO (continuation of ITER),
- ▶ Subcontracting to Cosylab,
- ▶ Learning other technologies
  - ▶ Mendix, Wise PaaS, MindSphere, ...



# S2Energy - a platform for energy management

We plan to use our domain knowledge to help accelerator laboratories increase energy efficiency





## Plans

- ▶ Continue increasing of our involvement in the Tango Controls Community,
- ▶ Enabling new labs with Tango Controls (we already made a Tango based offer for a laboratory at USA ;-) ),
- ▶ First production deployment of IC@MS,
- ▶ Two accelerators optimised their energy consumption with S2Energy,
- ▶ Extending the team - Tango Controls training,
- ▶ Get involved in DONES (related to ITER and Demo projects),



Thank You!



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