Tango Controls for Attosecond Optics laboratory at ICFO

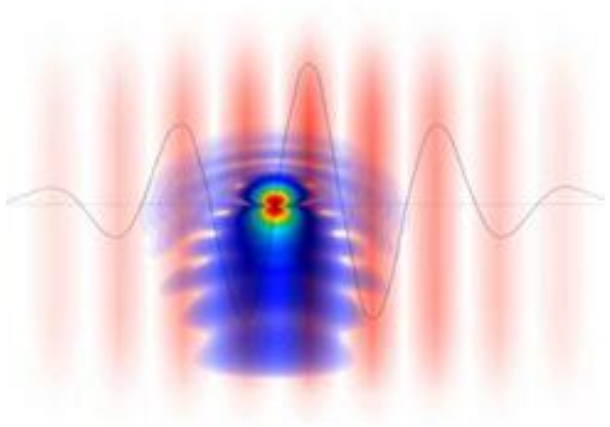
www.s2innovation.com

contact@s2innovation.com

Agenda

- What is ICFO
- System Architecture
- Our contribution
- Webjive
- Conclusions

ICFO – The Institute of Photonic Sciences



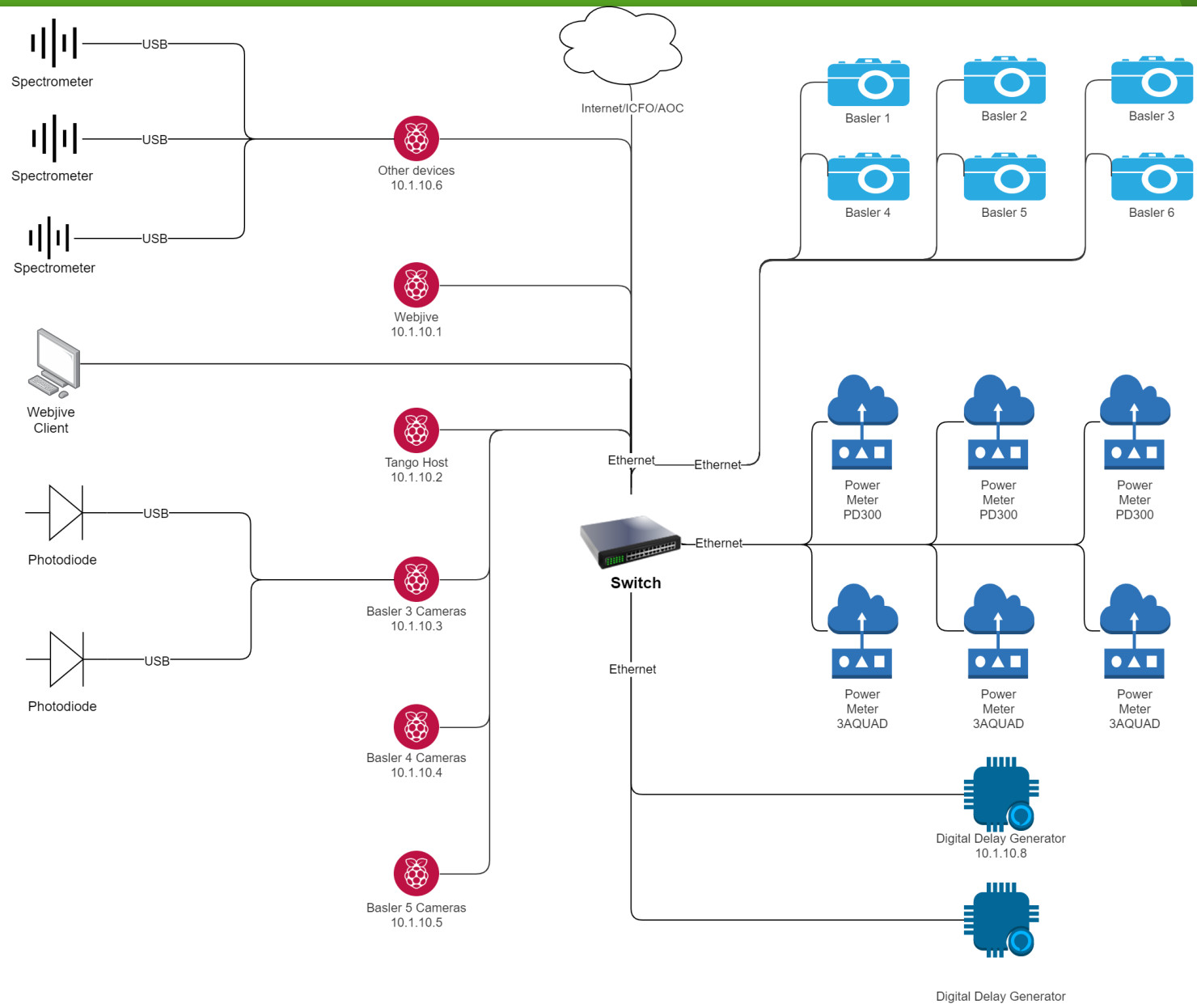
https://www.icfo.eu/

Is a young research institution aiming on research in the field of laser light. They *focus on current and future problems in Health, Energy, Information, Safety, Security and caring for the Environment*. They have around 24 research groups and we collaborated with *Attoscience And Ultrafast Optics*.

System architecture

The system is build on top of 6 Raspberry Pi devices. Other devices available in the system are as follows:

- 6 Basler cameras,
- 2 Delay Generators,
- 2 Photodiodes,
- 3 Spectrometers,
- 6 Power Meters (PD300 and 3AQUAD).


Spectrometer
USB
Spectrometer
USB
Spectrometer
USB
Internet/ICFO/AOC
Other devices
10.1.10.6
Webjive
10.1.10.1
Webjive
Client
Tango Host
10.1.10.2
Photodiode
USB
Photodiode
USB
Basler 3 Cameras
10.1.10.3
Basler 4 Cameras
10.1.10.4
Basler 5 Cameras
10.1.10.5
Ethernet
Ethernet
Switch
Ethernet
Ethernet
Basler 1
Basler 2
Basler 3
Basler 4
Basler 5
Basler 6
Power
Meter
PD300
Power
Meter
PD300
Power
Meter
PD300
Power
Meter
3AQUAD
Power
Meter
3AQUAD
Power
Meter
3AQUAD
Digital Delay Generator
10.1.10.8
Digital Delay Generator

Raspberry Pi’es distributed system

- **Tango host device:**
  - Jive
  - Astor
  - Tango Controls server
  - Bensikin
- **Webjive host:**
  - Nginx
  - NodeJS
  - Webjive backend and frontend application

Raspberry Pi’es distributed system

- **Basler 3 - camera 1-2:**
  - two Basler camera servers
  - photodiode server
  - Physically connected devices
    - Photodiode using USB
- **Basler 4 - camera 3-4:**
  - two Basler camera servers
- **Basler 5 - camera 5-6:**
  - two Basler camera servers

- **Other devices host:**
  - Physically connected devices:
    - 3x Spectrometr
  - 3x spectromer server
  - 2x delay generator server
  - 6x power meter server


Raspberry Pi 6/4GB
IP: 10.1.10.6
Other devices
Connected:
Ethernet
Raspberry Pi 5/4GB
IP: 10.1.10.5
Basler cameras
Connected:
Ethernet
Raspberry Pi 2/4GB
IP: 10.1.10.2
TangoHost
Connected:
Ethernet


Powermeter PD300
Powermeter 3AQUAD
Basler cameras
Photodiode
Digital delay generator

Webjive contribution and problems faced

- Power Meter widget – a scatter plot with historical points and one point representing the current power beam
- Attribute plot – change widget's background basing on alarm values provided in Jive
- Spectrum plot – show multiple values (background)

Devices | Dashboards | Edit | ICFO-new

Logged in as **user1**. Log

Activate channel a

true

Activate channel b

true

Activate channel c

true

Activate channel d

true

Pulse delay channel a

0.00 ns

Pulse delay channel b

2000.00 ns

Pulse delay channel c

4000.00 ns

Pulse delay channel d

6000.00 ns

Pulse width channel a

10.00

Pulse width channel b

10.00

Pulse width channel c

10.00

Pulse width channel d

10.00

Shots counter

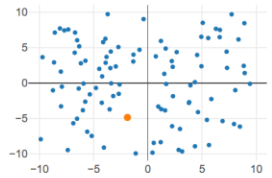
66.00

LaunchSnapShot:

Oscillator Power

2.16 W

7.50 mm

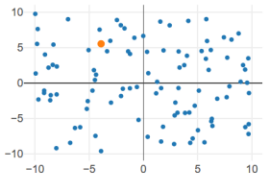


Save reference

Regen Power

-6.20 W

0.92 mm

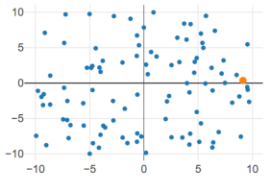


Save reference

Booster Power

9.82 W

6.52 mm

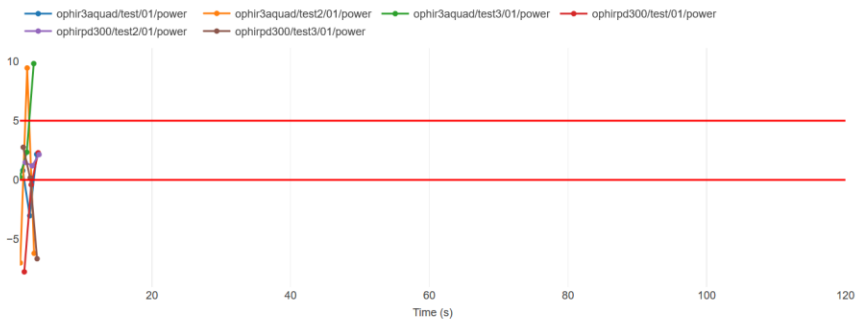


Save reference

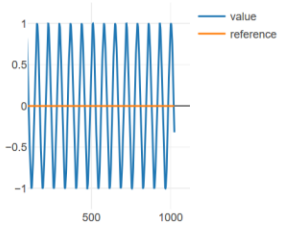
2.29 W

2.14 W

-6.66 W



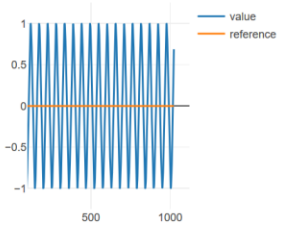
Dazzler



Save background

Save reference

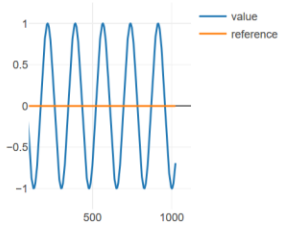
Regen



Save background

Save reference

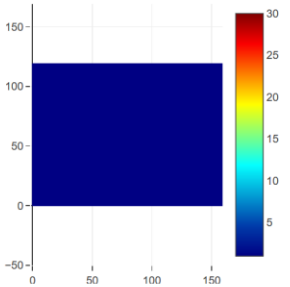
Booster



Save background

Save reference

Regen Crystal Image

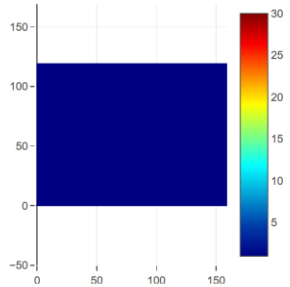


exposure_time: 0.00 us

save exposure time

us

Booster Crystal Image

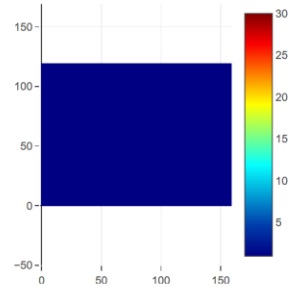


exposure_time: 0.00 us

save exposure time

us

Regen Input

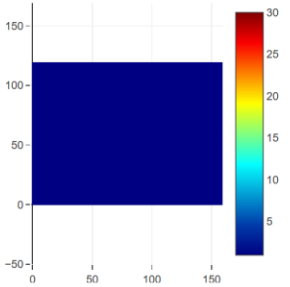


exposure_time: 0.00 us

save exposure time

us

Regen output

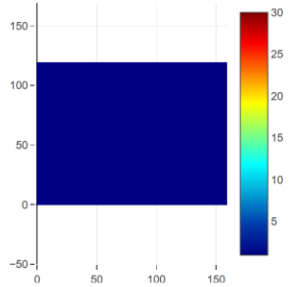


exposure_time: 0.00 us

save exposure time

us

Booster Output

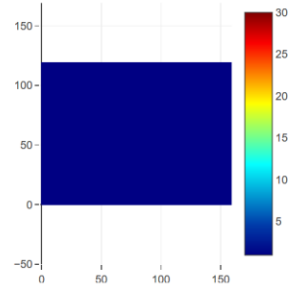


exposure_time: 0.00 us

save exposure time

us

Topas input

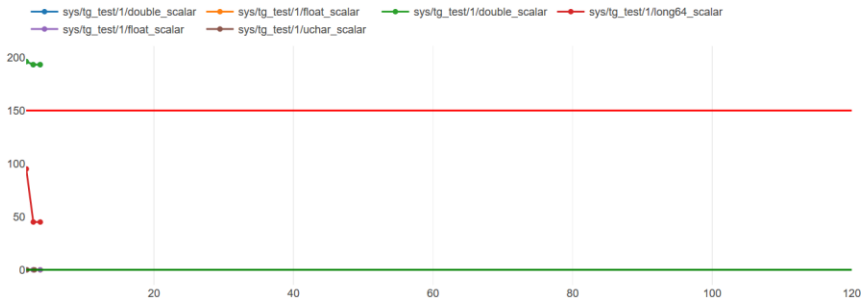


exposure_time: 0.00 us

save exposure time

us

Photodiods



Thanks