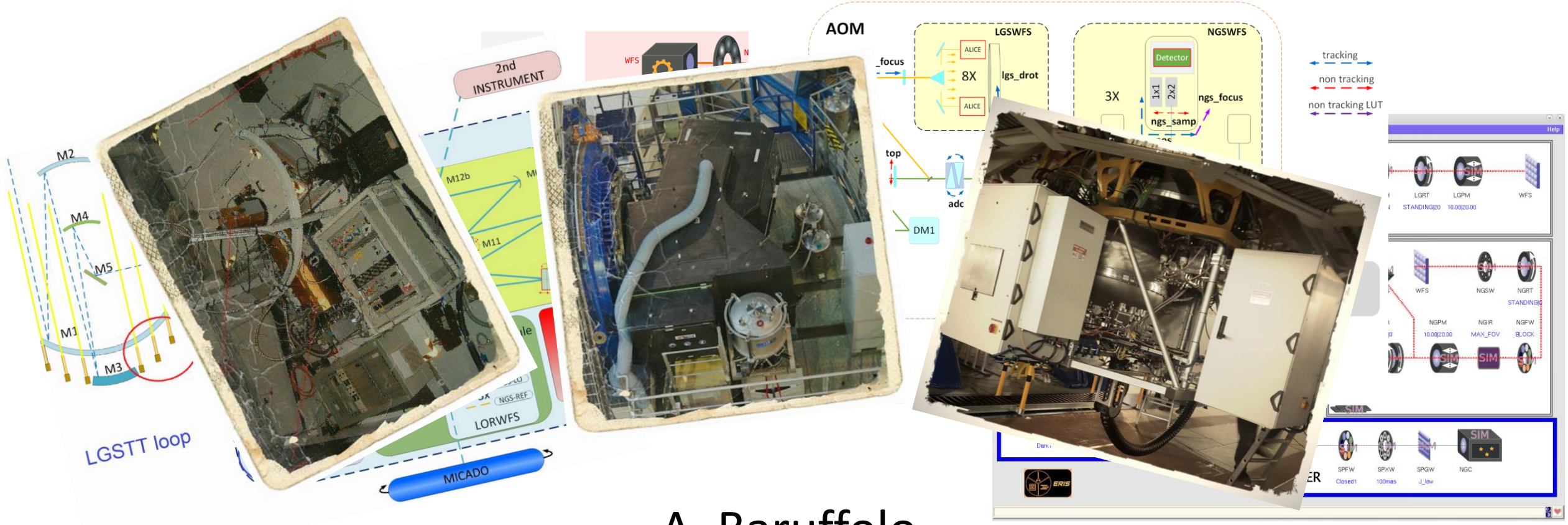
Instrument Control Software Activities at INAF-OAPd

TEchnologies for Telescopes and Instrument control Software



A. Baruffolo

on behalf of OAPd ICS team

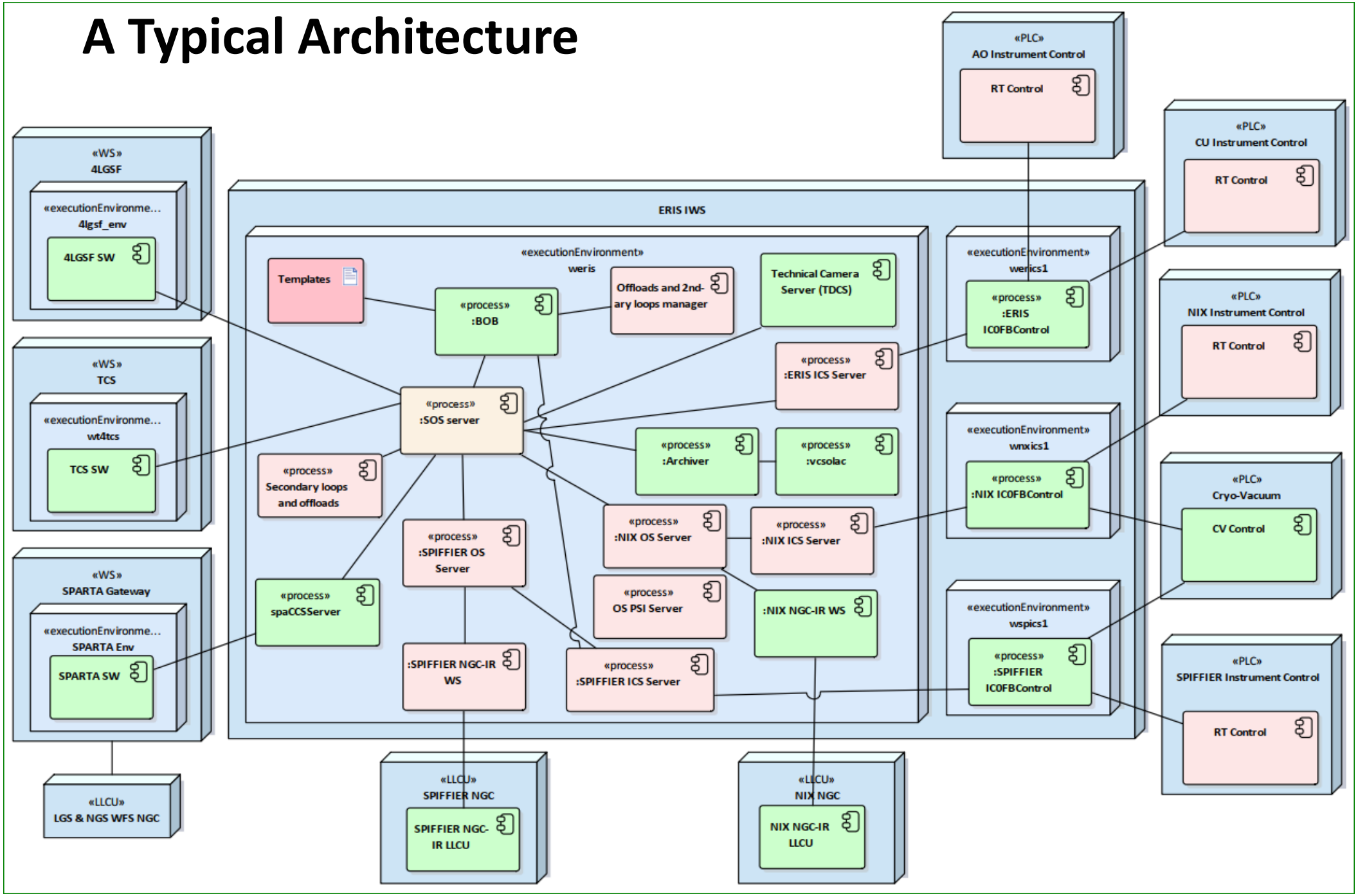
CSN5 Forum della Ricerca Sperimentale e Tecnologica in INAF – Bologna, 23 giugno 2022

“What”

TEchnologies for Telescopes and Instrument control Software

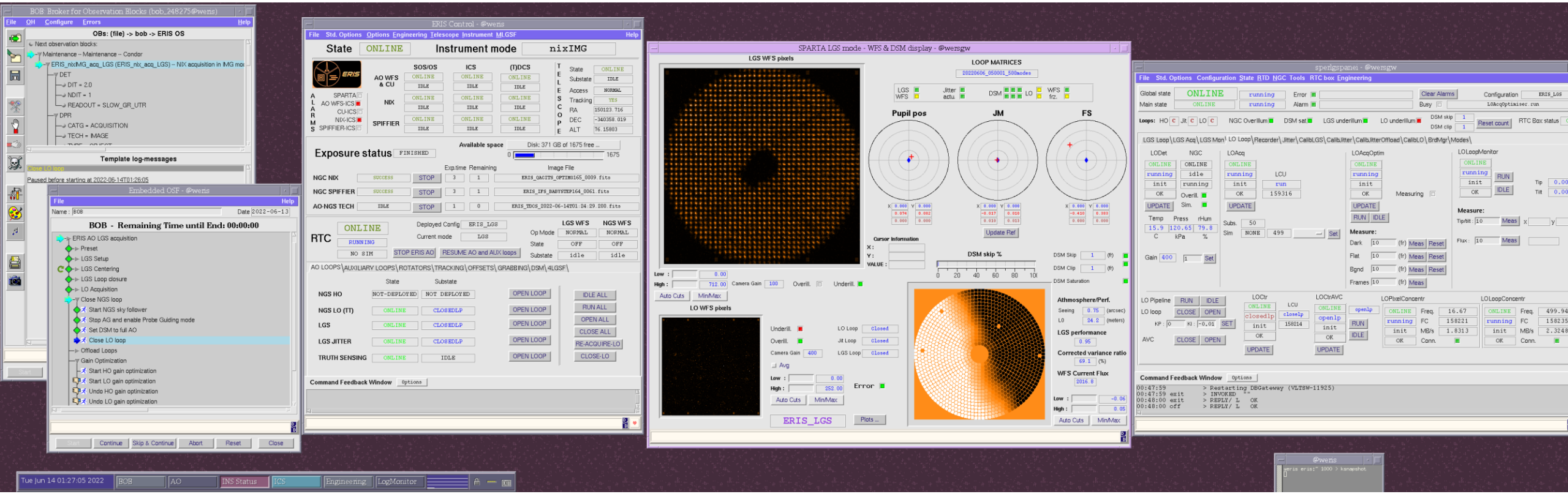
- Instrument Control SW (ICS or INS) for Optical/Infrared Instruments for ground-based Telescopes, with or without Adaptive Optics
- Full WP responsibility or contribution
- AdOpt@TNG, OmegaCAM, MAD, LBC, SPHERE, WEAVE, CRIRES+, ERIS, SHARK-NIR, SOXS, MAVIS, MedRes/SPHERE+, MORFEO (was: MAORY)
- Prevalence of Instruments for ESO Telescopes

A Typical Architecture



“What’s in”

- Device control (low level): FB/Beckhoff PLC, C/C++
- Function control (user view): mostly C/C++
- Coordination software: C++
- Procedures (Target Acquisition, Observation, Calibration, Maintenance): Tcl, Python
- On-line processing (NCPA, Strehl, object detection, …): C/C++, Python, Tcl
- Graphical User Interfaces: Tcl (+ VLTSW Tk), Python, C++
- Test SW: Tcl, shell, C/C++, Python


BOB Broker for Observation Blocks (bob_248275@wens)
OBs: (file) -> bob -> ERIS OS
Template log-messages
Embedded OSF - @wens
BOB - Remaining Time until End: 00:00:00
ERIS Control - @wens
State ONLINE
Instrument mode nixIMG
Exposure status FINISHED
RTC ONLINE
SPARTA LGS mode - WFS & DSM display - @wersgw
LGS WFS pixels
LOOP MATRICES
Pupil pos
JM
FS
LO WFS pixels
ERIS_LGS
sperlgspanel - @wersgw
Command Feedback Window
Tue Jun 14 01:27:05 2022
BOB
AO
INS Status
ICS
Engineering
LogMonitor
@wens

“How”

- For many (but not all) projects: formal, waterfall-like process
  - Requirements, Conceptual Design, Final Design, Construction, Sub- and System Integration, Testing, Verification
- Increasing emphasis on PA/QA (see A. Balestra talk tomorrow)
- Tools
  - Modeling: Cameo, Enterprise Architect
  - Build: auto-tools, Makefile, waf
  - Issue tracking: Jira, Trac, Redmine
  - Jenkins for automated testing
  - VMware VMs for development and testing
  - Remote access: NoMachine NX

Collaborations

TEchnologies for Telescopes and Instrument control Software

TEchnologies for Telescopes and Instrument control Software

LABORATORIO NAZIONALE ADONI OTTICA ADATTIVA

ESO, USM/MPE, IPAG, LAM, NUIG, Uni. Leuven, Uni. Liège, Obs. Paris Meudon, UK/ATC, LBTO, TNG, ING, …

The Team

TEchnologies for Telescopes and Instrument control Software

Daniela

Baru

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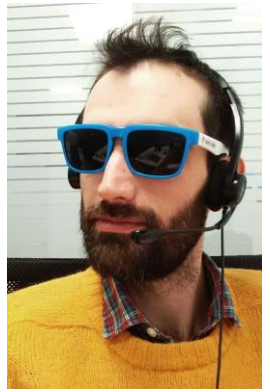
Andrea



Marco