FLUOR
Status and future plans

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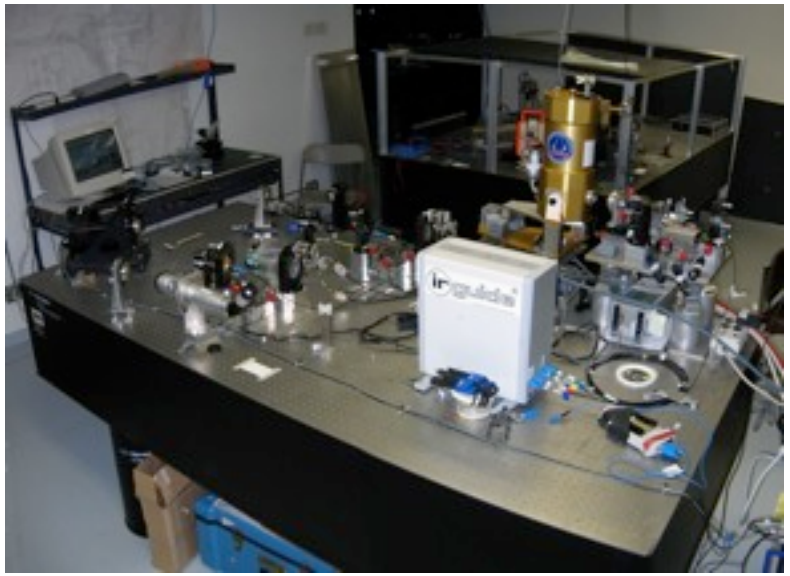
The CHARA-FLUOR niche



- The CHARA/FLUOR combination is unique in the world ***and will stay so for the next 10 years*** :
  - For the precision on visibility measurements (<1%)

    => observations with high dynamic range
  - For its usable baselines (330m vs. 200m maxi on VLTI with ATs)

    => sub-mas resolution in K band
  - For its location in the Northern hemisphere

    => complementarity with Paranal

Why an rejuvenation (jouvence)?

- Some FLUOR elements (most notably its control system) date back to 1996:
  - => Minimal integration into the CHARA environnement FLUOR (was set up as such in 2002 to accelerate scientific return)
  - => Maintenance increases in complexity and reduces productivity
  - => Little flexibility to follow CHARA's evolutions
- New CHARA fonctionalities accessible to FLUOR only after better integration:
  - => Simultaneous observations with two instruments (e.g., FLUOR & Vega)
  - => OPD stabilization
  - => Later: AO?
- Some FLUOR fonctionalities have been demonstrated on a prototype basis but need overhaul in order to be routinely available:
  - => Remote observing (from Meudon)
  - => Spectral dispersion
  - => *Later: multiple beams?*
- Future key science programs (debris disks survey, YSOs, MOLspheres) need those fonctionalities (and better throughput)

JOUFLU main action items

- **CONTROL**: overhaul control system
  - Client/server architecture under LINUX
  - Total interoperability with CHARA
- **OPD**: remote control of internal OPD and increase of OPD modulation range
  - Adjust internal OPD to another instrument
  - Enable scans longer than the coherence of a single specral canal in dispersed moe
  - Enable double Fourier interferometry
- **ALIU**: remote control of routine instrument alignments
  - FLUOR set up & troubleshooting with fewer laboratory interventions – and possibility of remote diagnosis
- **OUT**: overhaul detection scheme
  - Dedicated PICNIC-based camera
  - Data throughput improved (serial -> DIO), easier maintenance
  - Current CHARA camera can be reused for fringe tracking and/or IR tip-tilt?

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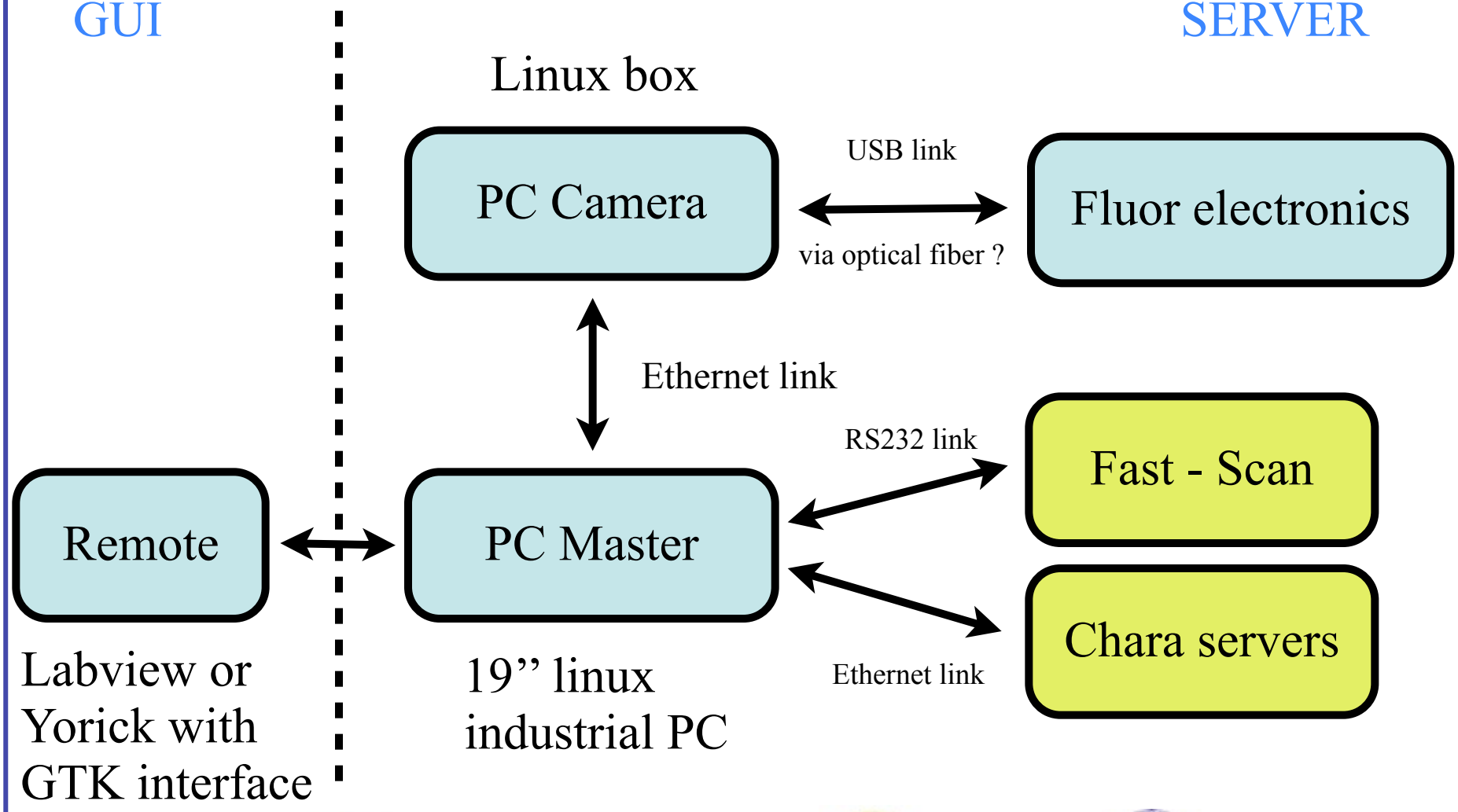
CONTROL


GUI
SERVER
Linux box
PC Camera
USB link
via optical fiber ?
Fluor electronics
Ethernet link
RS232 link
Fast - Scan
Remote
PC Master
Chara servers
Ethernet link
Labview or
Yorick with
GTK interface
19" linux
industrial PC

Linux box

- It's an Advantech ARK 5280
- Fanless computer
- Celeron 1.3GHz
- 512MB DDR
- Works on SUSE 9.3 (due to National Instruments drivers) but it can work under Fedora without NI card support

SW on Linux Box

- The linux box is a slave composent.
- It receives frames from the electronics (inside frames it kwows if it has to store or not)
- It receives orders from the «PC Master»
- The code is written in C++
- Acquisition frames can be store on the PC Camera or on an FTP server

PC Master

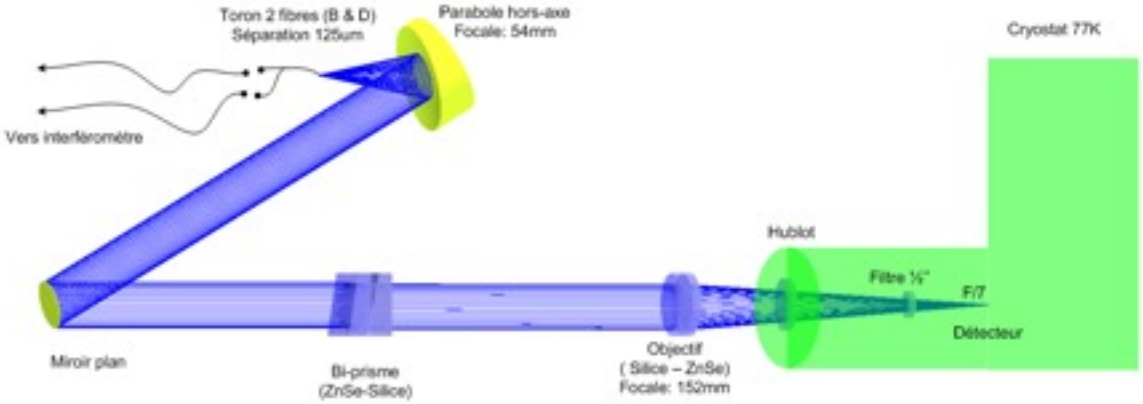
- 4U Rackmount Chassis
- Core2 duo 2.2GHz
- 2GB DDR2
- Works also on SUSE 9.3 (due to National Instruments drivers) but it can work under Fedora without NI card support

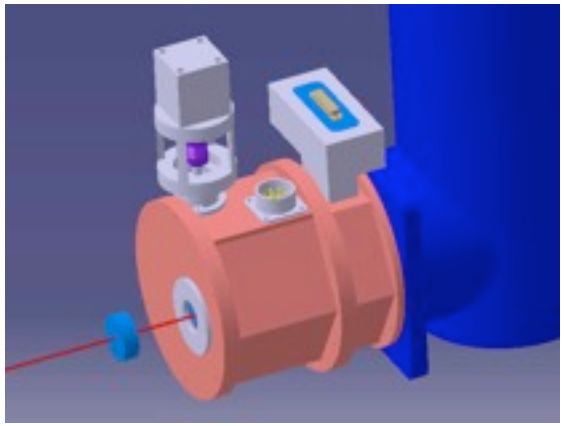
SW on PC Master

- PC Master is without GUI.
- The remote SW controls it over TCP protocol.
- It's the coordinator of the FLUOR bench :
  - get star information
  - modify delay line position
  - send orders to the PC Camera
  - store FITS data in a correct directories structure.

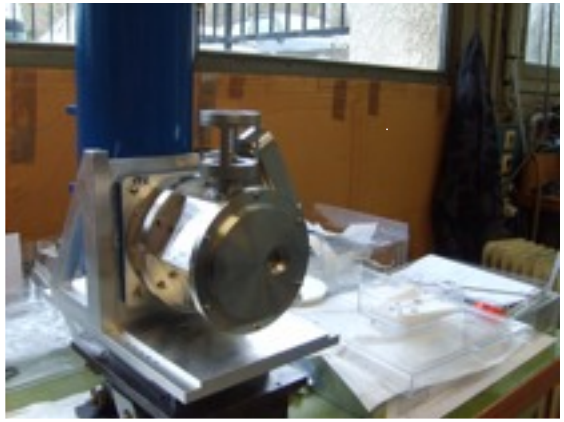
OUT

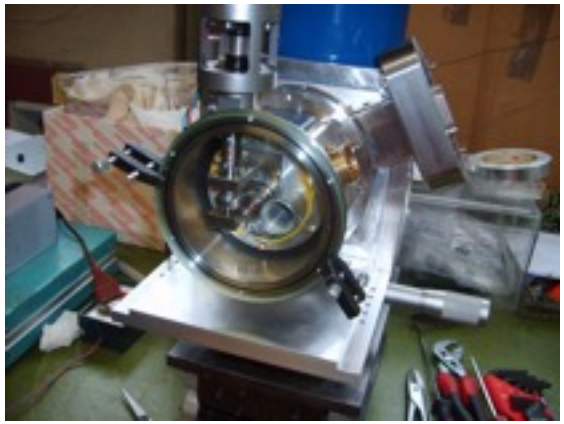
- Two clone IR cameras being built at LESIA around a PICNIC FPA:
  - CAPER (CAmera PERsée): engineering grade array, for the laboratory
  - CALI (CAmera du Lesia pour l'Interférométrie): science grade array, to be shared between FLUOR and Ohana





Current status





- CAPER cryostat under testing - prior treatment of the parts and integration
- Analog electronics tested OK - duplication next month
- Digital electronics - first version delivered this month
- Base control software tested OK

  => CAPER ready for tests around May

  => Duplication for CALI delivery in Autumn