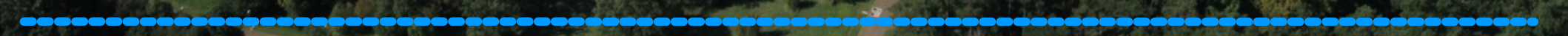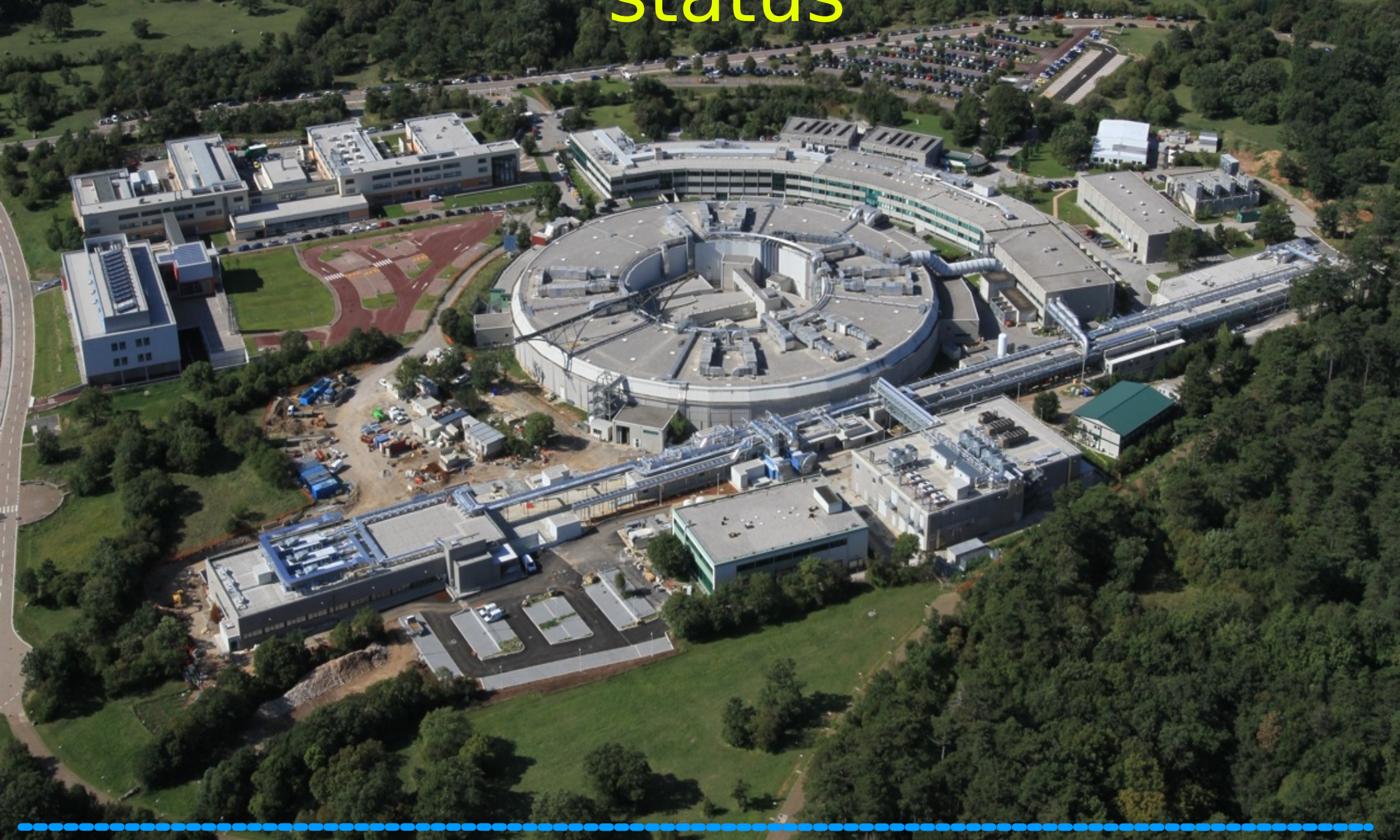# Elettra & FERMI@Elettra status

outline

- FERMI@elettra

  - Some 2013 achivements
  - Ongoing activities

- Elettra

  - Upgrades of some plants
  - Towards a full Tango "interface" for the control systems

FERMI@Elettra

Some 2013 achievements:

- Pump-probe experiments
  - Use seed laser as pump (IR), FEL as probe
    - Extremely low jitter of time of arrival < 25fs
    - User tuneable delay and intensity
  - system designed an built in record times
  - 150m in vacuum photon transport
  - new interlock for personnel safety
  - optics systems and diagnostics, vacuum,...
  - stabilization of laser trajectory
  - effectively used by beamlines last February

FERMI@Elettra

Some 2013 achievements:

- RUN #15: 11 weeks of operations – longest run

- Call for Proposal, external users

- Data acquisition, storage, visualisation done mostly with Tango

  - Data deluge is coming!

FERMI@Elettra

Some 2013 achievements:

- FEL2 operated in fresh bunch, two stage harmonic upshift configuration

  - First chain of undulators FEL light is used as

    seed for second chain on the same electron bunch, but sligthly delayed

- Operated down to 5 nm wavelength

  - Results in accordance with expectations

  - Electron beam still at 1.2 GeV

  - With full energy (1.5 GeV) 4nm design goal seems attainable

FERMI@Elettra

On-going activities:

- repetition rate: switched from 10 to 50Hz
  - Timing allows 10, 25 and 50 Hz operations
    - Final tests under way (data deluge!)

- Electron energy: aiming at 1.5 GeV
  - Refurbished modulators, more voltage
  - Activation of pulse compressors (CIDR/SLED)

FERMI@Elettra

On-going activities:

- Controls of FERMI : started next design phase focussed on improving realiabilty and tools for routine operations.

- New developments or upgrades of existing software use Tango 8.

- Full upgrade to Tango 8 is foreseen, but has yet to be planned (after listening about your experiences)

Elettra

- Upgrade to new PLC based interlock to be done in June:

    - Siemens S7

    - Tango based operator interface

- Refurbished superconduting wiggler for new x-ray diffraction beamline will be assembled and tested

Elettra

Incapsulation of old control system in Tango devices is under way:

- Use tools such as HDB, Alarms, Qtango panels for the "old" machine

- Integration or upgrades of equipment can be handled with less pain

- Use Matlab Middle Layer (MML) as new machine physics framework

Issues with Tango

Undertstand reconnection problems:

may depend on TCP/IP stack and configuration, we are investigating.

log4tango library:

liblog4tango.so.4.0.3 – Tango 7

liblog4tango.so.4.0.7 – Tango 8

should be binary compatible, but timestamps are wrong if a server uses the wrong library...