Computing report, ATLAS/Geneva

CHIPP - LHC computing and analysis workshop
CSCS, Manno, 25/8-26/8 2005

Frederik Orellana
University of Geneva/CERN

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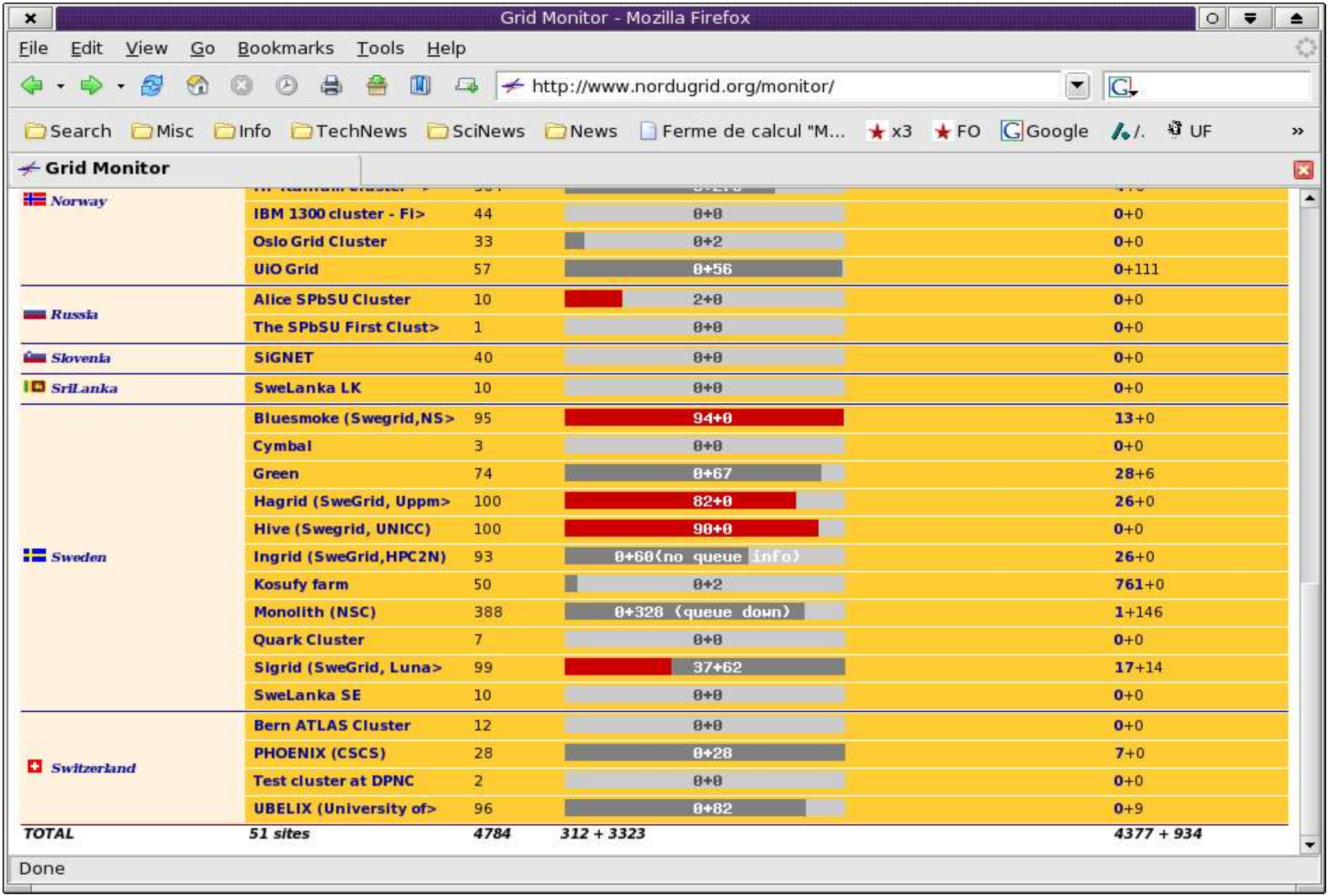
Middleware

- General considerations
  - Harness as many available CPU cycles as possible
  - Do it with as few human CPU cycles as possible
  - Work towards a homogeneous Swiss ATLAS infrastructure
  - Be ready for overloaded CERN infrastructure and unavailable data
  - Implement simple user administration and prioritisation system

Middleware

- NorduGrid
  - Deployable on small sites like ours (*one* server)
  - Easy installation/configuration
  - Available on a variety of Linux distros
  - Non-intrusive
  - → Geneva site part of country-wide infrastructure


Grid Monitor - Mozilla Firefox
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Grid Monitor
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UiO Grid 57 0+56 0+111
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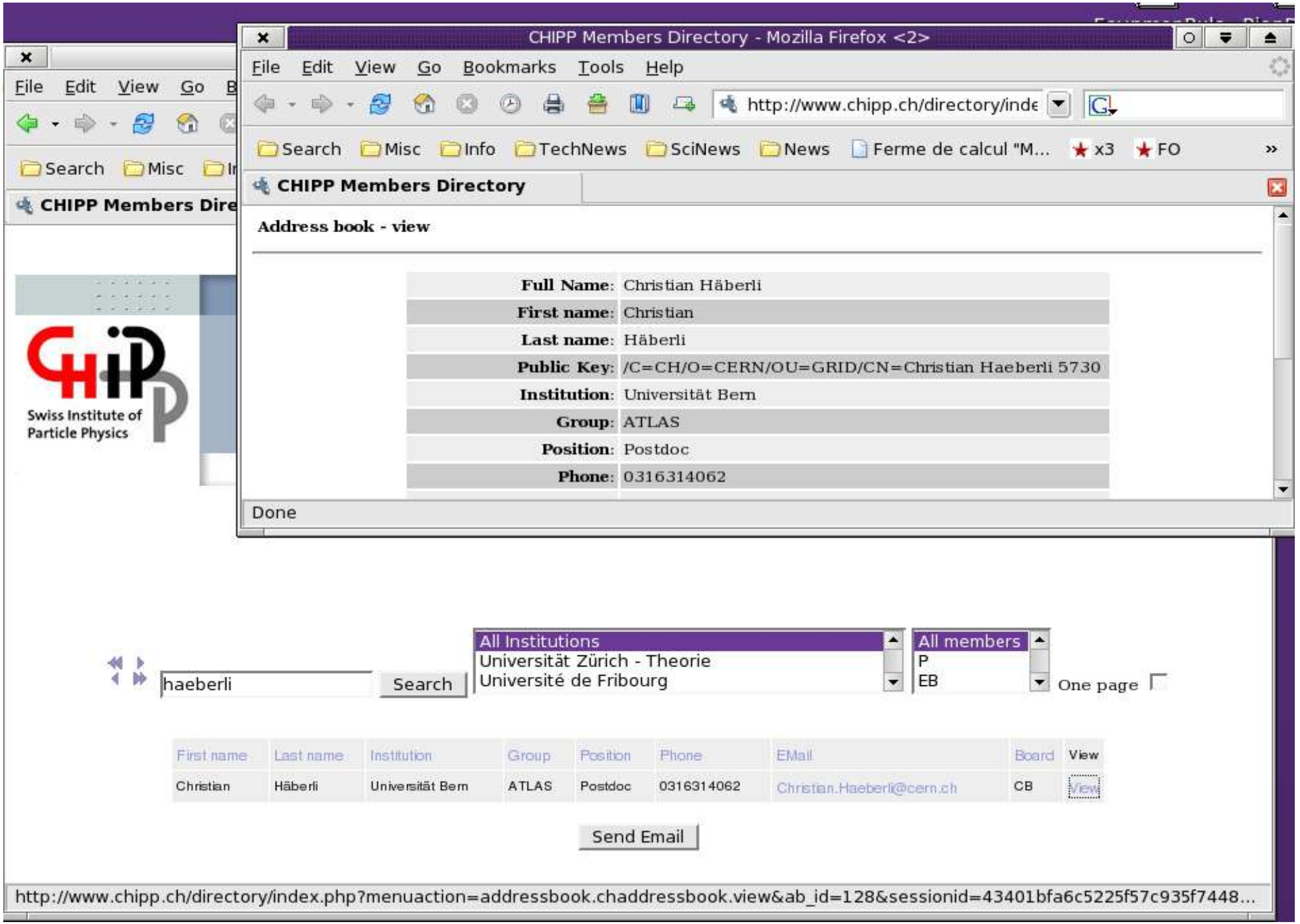
Sweden
Bluesmoke (Swegrid,NS> 95 94+0 13+0
Cymbal 3 0+0 0+0
Green 74 0+67 28+6
Hagrid (SweGrid, Uppm> 100 82+0 26+0
Hive (Swegrid, UNICC) 100 90+0 0+0
Ingrid (SweGrid,HPC2N) 93 0+60(no queue info) 26+0
Kosufy farm 50 0+2 761+0
Monolith (NSC) 388 0+328 (queue down) 1+146
Quark Cluster 7 0+0 0+0
Sigrid (SweGrid, Luna> 99 37+62 17+14
SweLanka SE 10 0+0 0+0
Switzerland
Bern ATLAS Cluster 12 0+0 0+0
PHOENIX (CSCS) 28 0+28 7+0
Test cluster at DPNC 2 0+0 0+0
UBELIX (University of> 96 0+82 0+9
TOTAL 51 sites 4784 312 + 3323 4377 + 934
Done

Middleware

- User administration
  - Country-wide directory of high energy physicists
  - Each institute maintains the user records via a web form
  - Making a user a member of the Swiss VO is simply done via this form


CHIPP Members Directory - Mozilla Firefox <2>
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Search Misc Info TechNews SciNews News Ferme de calcul "M... x3 FO
CHIPP Members Directory
Address book - view
Full Name: Christian Häberli
First name: Christian
Last name: Häberli
Public Key: /C=CH/O=CERN/OU=GRID/CN=Christian Haeberli 5730
Institution: Universität Bern
Group: ATLAS
Position: Postdoc
Phone: 0316314062
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Swiss Institute of Particle Physics
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Institution
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Häberli
Universität Bern
ATLAS
Postdoc
0316314062
Christian.Haeberli@cern.ch
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Middleware

- Batch system: PBS
  - Configured to give priority to Swiss VO members
  - Easily deployable with client setup script

Resources

- Old test cluster at the DPNC
  - Server: grid01.unige.ch, 300 GB storage via GRIDFTP
  - 3 attached worker nodes: scpc24, scpc27, scpc30. Desktop machines, grid jobs run at nice 19
- New cluster at the DINF
  - Server: grid00.unige.ch, 9.6 TB storage
  - 12 worker nodes, SUN Fire V20z, 2 x AMD Opteron, 2.4 MHz, 4 GB RAM

Resources

- New hardware has been tested with Scientific Linux, ATLAS SW and NorduGrid, all ran fine
- The system is expected ready in ~two weeks
- Presumably the system REMBO (UniGe/DINF) will be used for installation and maintenance
- Questions to sysadmins:
  - Cluster management systems?
  - Disk layout/partitioning?
  - Sharing of directories with experiment's software, NG session directories: NFS, NCP, SMB?

Operation

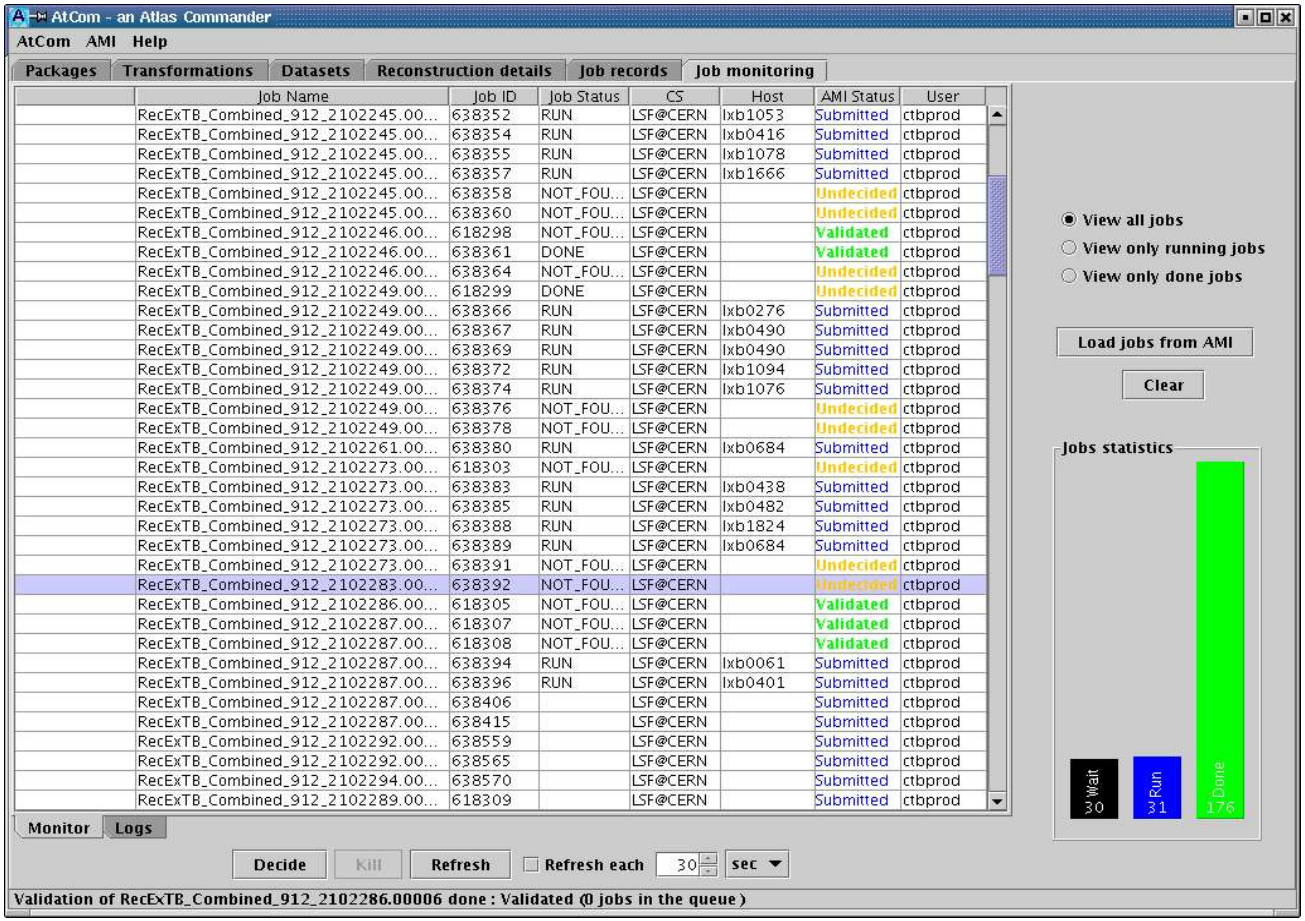
- Currently one 10% system administrator for the old test cluster
- Useful exercise: perfectly possible to run a grid site without dedicated manpower
- Main problem: update, debug and patch ATLAS software

Outlook

- More users
  - Set up more virtual organisations
- More manpower
  - FO: 10% → 100%
  - DINF cluster is hosted in computing centre
- More resources
  - Extend DINF cluster → 75 nodes
  - Deploy PBS clients on more Linux desktops wherever possible

Outlook

New functionality
GUI for submission and monitoring



Issues

- Preparing and submitting jobs still needs the assistance of an 'expert'
  - Main problems
    - difficulties in getting the data
    - ATHENA
- ATLAS: meta-data catalogue
- ATLAS: reliable file transfer service
- Tape/backup strategy
- Shared file system: NFS may not scale

Use case: Rome data reconstruction

- Job preparation and submission
  - Running on 2000 files necessitated some automation: script with submission loop and job babysitting
  - NorduGrid XRSL template with placeholders for input/output files, etc. parsed by script, resulting in 2000 XRSL files
  - File catalogue (RLS) could have been used, but we saw now reason

Use case: Rome data reconstruction

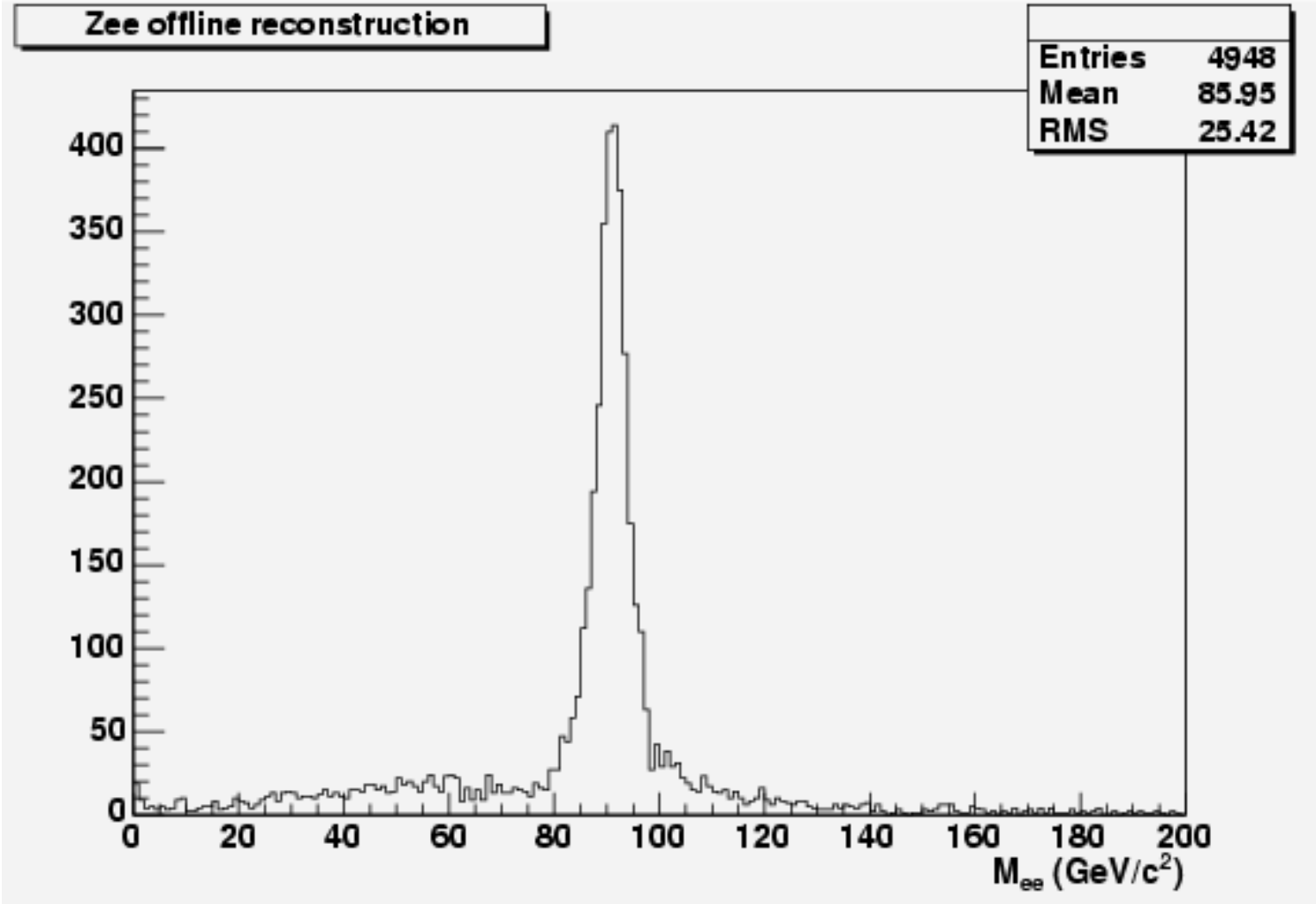
XRSL:

```
&(executable="ge-norduwrapper.sh")
(arguments="10.0.1" "_inputFile_" "Trigger_topOptions_rome_grid.py")
(stdout=atlasreco.out)
(stderr=atlasreco.err)
(inputFiles=(Trigger_topOptions_rome_grid.py "")(jobOfragment_TrigElectronHypo.py "")(jobOfragment_TrigSteerMonitor.py
    "")(HLTsequence.xml "")(HLTsignature.xml "")(_inputFile_ "_castorDir__inputFile_")(InstallArea.tar.gz ""))
(outputFiles=(_outputFile_ ""))
(gridtime="30 minutes")
(jobname="ATLAS dc2 Zee reconstruction, _inputFile_")
(gmlog=log)
(runTimeEnvironment=APPS/HEP/ATLAS-10.0.1)
(memory=1512)
(disk=1200)
```

Use case: Rome data reconstruction

- Babysitting script ran well, submitting and retrieving 100 jobs.
- Ready to start production as soon as data issues have been solved
- Should be easy to modify our scripts for other use cases, see the public CVS repository on https://savannah.cern.ch/projects/edginstall/

Use case: Rome data reconstruction



Conclusion

- Geneva is well integrated in the Swiss ATLAS computing infrastructure
- In the near future we will also start contributing significant resources to the common pool
- System administration wil be aligned with general university services
- ATLAS still has some issues to be fixed before massive user analysis on the grid is realistic: input data, Athena outside of CERN (afs, conddb)