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GANGA TUTORIAL

- Scope of tutorial
- Introduction to Ganga
- Software installation and environment setup
- Ganga startup
- Running simple jobs through Ganga GUI
- Using Ganga to run ATLAS software in batch jobs: full simulation, Athena reconstruction
- Ganga customisations for working with Atlfast

Scope of tutorial

- Main aims are:
  1) Provide introduction to Ganga: concepts and key features
  2) Show how to use Ganga to run ATLAS software in batch jobs

- Current version of Ganga is not the finished product, but hope to show that it is already at the point where it starts to be useful

- Apologise in advance for rough edges and features in need of improvement

- Welcome user feedback

Ganga basics

- Ganga is an acronym for Gaudi/Athena and Grid Alliance

- Short-term aims:
  - Deal with configuring and running Athena-based applications
  - Deal with submitting and monitoring jobs on distributed (Grid) and local batch system

- Longer-term aim:
  - Develop Athena services for use in Grid environment (enable querying of replica catalogues, enable publication of information for Grid monitoring, etc)

- Today's tutorial will not deal with Grid-related topics

Project information

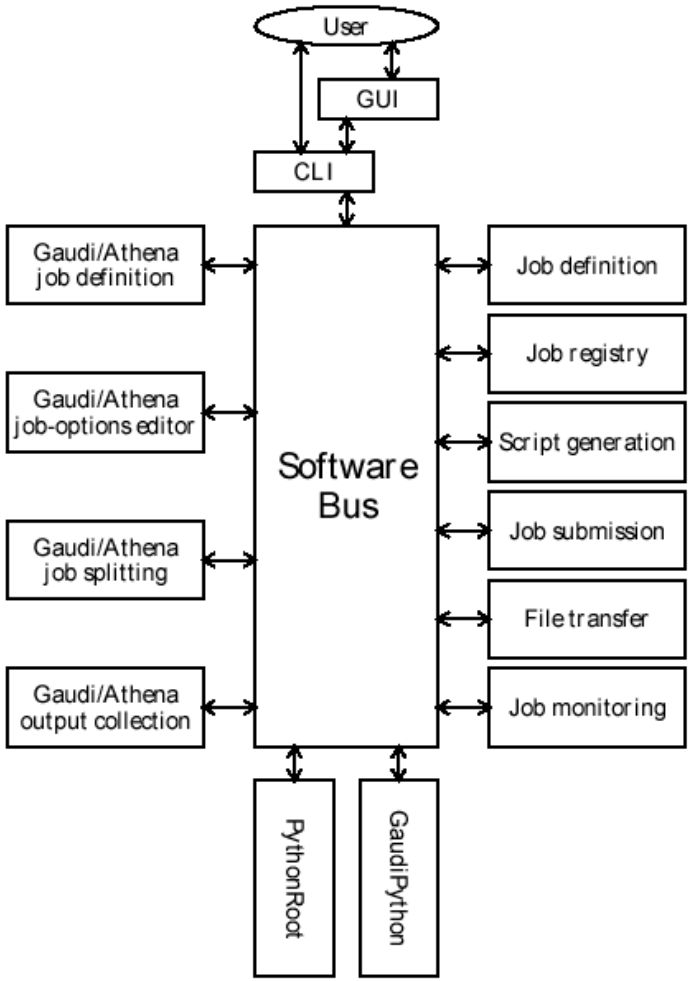
Ganga is being developed as an ATLAS/LHCb common project, with support in UK from GridPP

Current main contributors are:

- Developers: K.Harrison, W.Lavrijsen, A.Soroko, C.L.Tan
- Technical direction: P.Mato, C.E.Tull
- GridPP coordination: N.Brook, R.W.L.Jones

Ganga-related information regularly updated on web site:
http://ganga.web.cern.ch/ganga

Design



- User has access to functionality of GANGA components both through GUI, and through CLI, layered one over the other above a software bus
- Components used by GANGA can be divided into three categories:
  - Ganga components of general applicability (to right in diagram)
  - Ganga components providing specialized functionality (to left in diagram)
  - External components (at bottom in diagram)

Software installation

To be able to run Ganga, it is necessary to have the following:

- Python 2.2.1 or later (http://www.python.org)
- wxPython 2.3.3.1 (http://www.wxpython.org)

Latest version of Ganga can be obtained from Gaudi repository:

cvs -d pserver:cerncvs@lhcbcvs.cern.ch:/local/gaudicvs login
[password: CERNuser]
cvs -d pserver:cerncvs@lhcbcvs.cern.ch:/local/gaudicvs co Gang

Software is pre-installed at BNL

source /afs/usatlas.bnl.gov/Grid/ganga/BNL_tutorial/setup.(c)s
from login script (.tcshrc or similar)

Ganga in text mode

After sourcing setup script, Ganga can be started in text mode using:

ganga -t

Ganga classes can then be accessed directly, but this is painful, see example:

- ~/BNL_tutorial/Ganga_hostname.py

Higher-level command-line interface is being developed

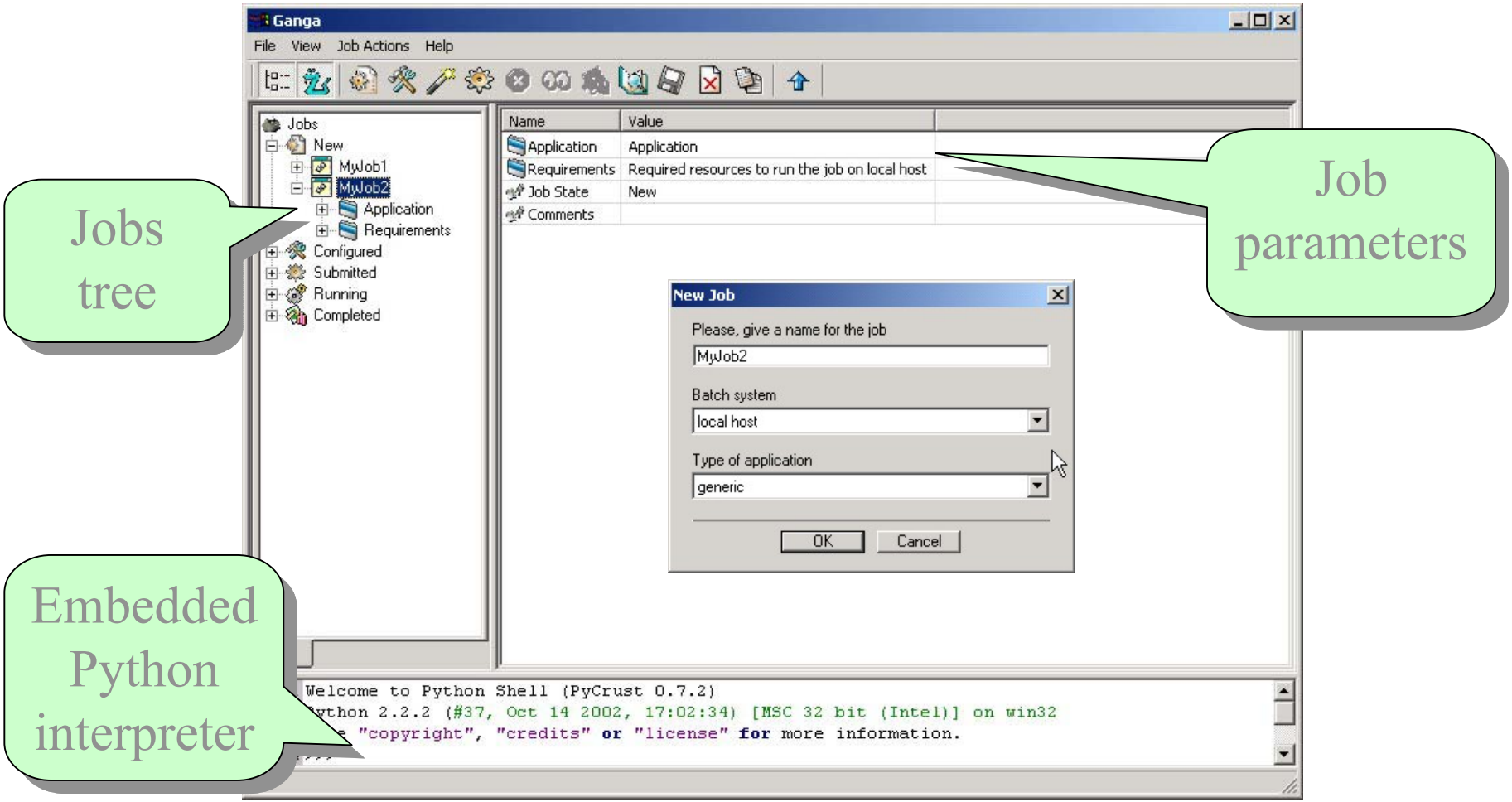
Ganga GUI

- After sourcing setup script, Ganga GUI is launched using:
  - ganga &

- GUI features:
  - Main panel (multi-purpose)
  - Job tree
  - Embedded python interpreter
  - Toolbar
  - Drop-down menus

- In hands-on session, explore possibilities for job creation, job monitoring, output examination, job copying

Ganga GUI


Ganga
File View Job Actions Help
Jobs
New
MyJob1
MyJob2
Application
Requirements
Configured
Submitted
Running
Completed
Name
Value
Application
Application
Requirements
Required resources to run the job on local host
Job State
New
Comments
New Job
Please, give a name for the job
MyJob2
Batch system
local host
Type of application
generic
OK
Cancel
Welcome to Python Shell (PyCrust 0.7.2)
ython 2.2.2 (#37, Oct 14 2002, 17:02:34) [MSC 32 bit (Intel)] on win32
"copyright", "credits" or "license" for more information.
Jobs tree
Job parameters
Embedded Python interpreter

Simulation: specifics

Executable:
~/BNL_tutorial/simul/simul.standard.v6.BNL

Output Files:
1) test.zebra
2) test.his

Parameters:
1) ~/BNL_tutorial/simul/demo.root
2) test.zebra
3) test.his

Reconstruction: specifics

Executable:
~/BNL_tutorial/recon/recon.gen.v7.wrap
Input Files:
1) ~/BNL_tutorial/recon/recon.gen.v7.ganga
2) ~/BNL_tutorial/recon/trigger.job
Output Files:
1) ntuple.hbook
2) histo.hbook
Parameters:
1) ~/BNL_tutorial/recon/demo.zebra
2) ntuple.hbook
3) trigger.job
4) 10

Atlfast job-options editor

Integral part of Ganga, but will function as standalone tool

- Command-line program with a GUI wrapper

GUI-assisted customisation of job-options files prevents certain errors (mis-spelt options/values, incorrect syntax)

User can define/manipulate sequences and lists

Editor is option-type aware

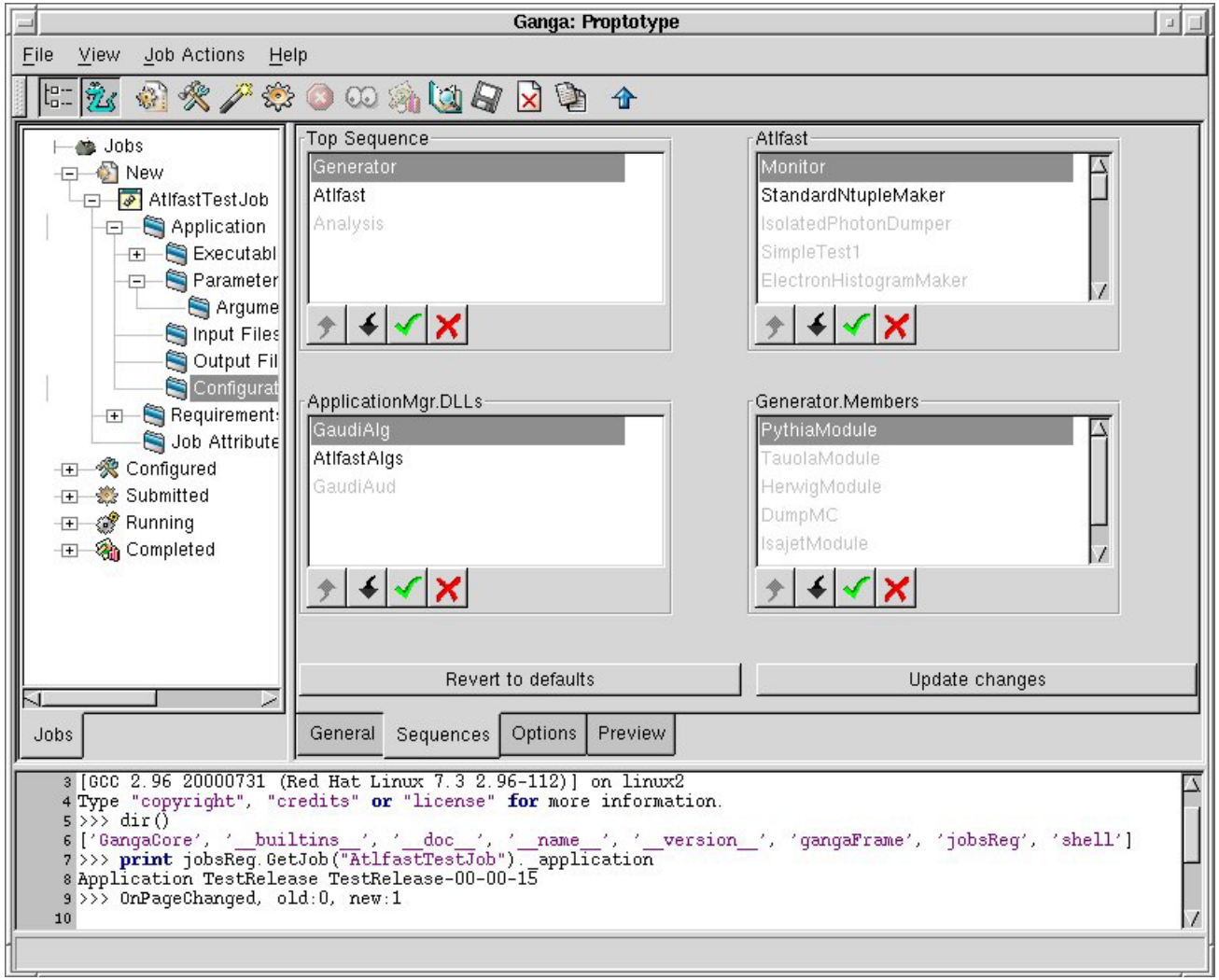
- Drop-down menus for discrete choices
- Arbitrary value entry for simple options
- Value append for list-type options

Favourite settings can be saved to file for subsequent reloading

User-guide available:

http://ganga.web.cern.ch/ganga/user/JOE/JOE-UserGuide.htm

Sequence editor



Options editor

Ganga: Proptotype

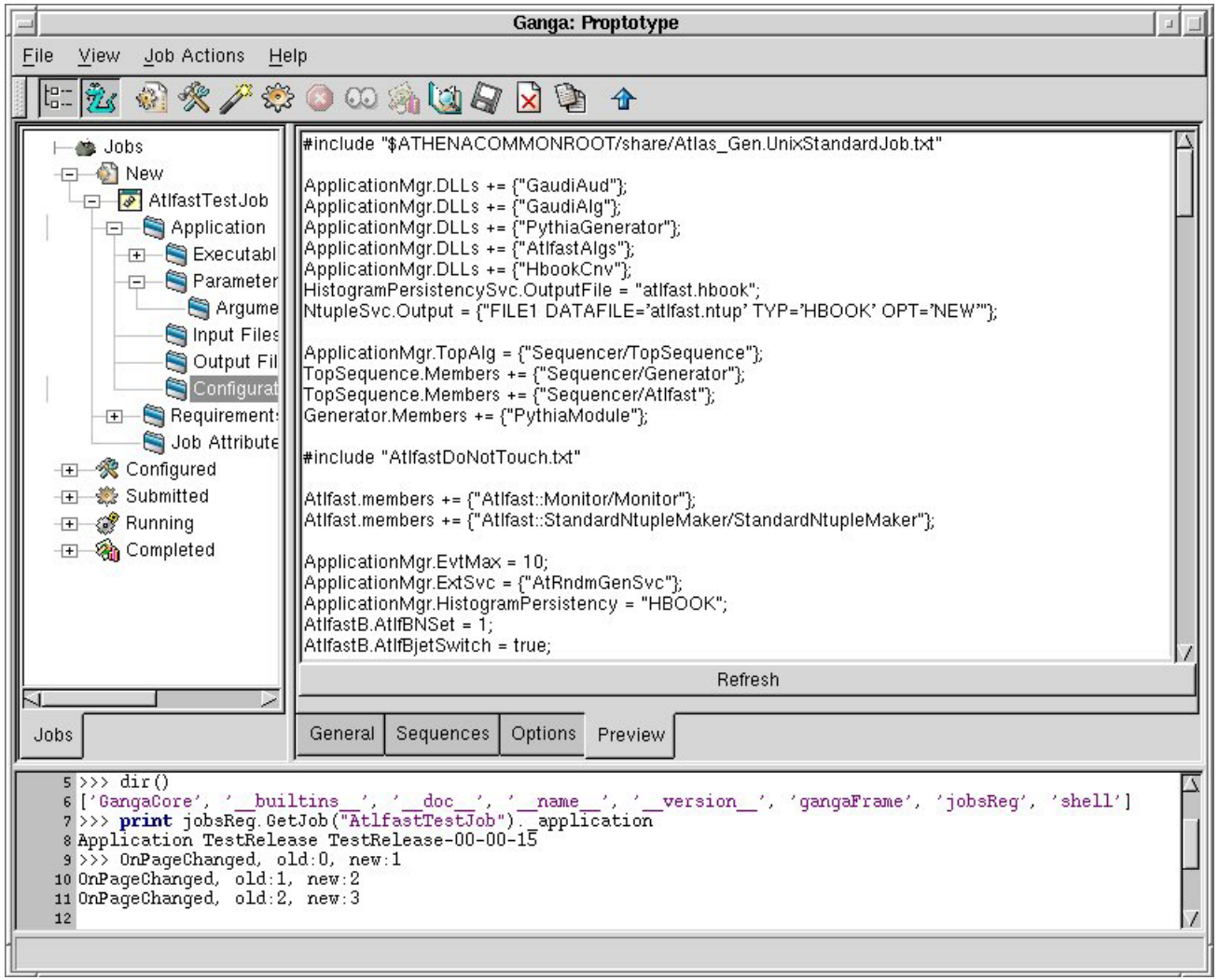
File View Job Actions Help

- Jobs
  - New
    - AtlfastTestJob
      - Application
        - Executabl
        - Parameter
          - Argume
        - Input Files
        - Output Fil
        - Configurat
        - Requirement:
        - Job Attribute
  - Configured
  - Submitted
  - Running
  - Completed

Jobs

	Option Name	Option Value
1	ApplicationMgr.EvtMax	10
2	ApplicationMgr.ExtSvc	['AtRndmGenSvc']
3	ApplicationMgr.HistogramPersistency	HBOOK
4	AtlfastB.AtlfBNSet	1
5	AtlfastB.AtlfBjetSwitch	true
6	AtlfastB.AtlfCalSwitch	true
7	AtlfastB.AtlfTauSwitch	true
8	AtlfastB.AtlfTauVetoSwitch	false
9	AtlfastB.AtlfTrigMuoSwitch	true
10	AtlfastB.CJetCorrFile	./AtlfastBcjet.dat
11	AtlfastB.InputLocation	/Event/AtlfastJets
12	AtlfastB.JetCorrFile	./AtlfastBjet.dat
13	AtlfastB.OutputLevel	2
14	AtlfastB.OutputLocation	/Event/AtlfastCalJets
15	AtlfastB.TauEff	0.05
16	AtlfastB.TauVetoOption	1

General Sequences Options Preview

```
Type "copyright", "credits" or "license" for more information.
>>> dir()
['GangaCore', '__builtins__', '__doc__', '__name__', '__version__', 'gangaFrame', 'jobsReg', 'shell']
>>> print jobsReg.GetJob("AtlfastTestJob")._application
Application TestRelease TestRelease-00-00-15
>>> OnPageChanged, old:0, new:1
OnPageChanged, old:1, new:2
```

Preview of job-options file