# FIFE Workshop: Job Submission Tools

## JOB SUBMISSION TOOLS (AKA JOBSUB TOOLS)

## DENNIS BOX

# Job Submission Tools

- # Product Name: jobsub_tools
  - A suite of tools to manage batch/grid submission

- # Why?
  - Make submission and data i/o easier for user
  - Define common interface for experiments
  - Integrate complex grid tools sensibly
  - Protect shared resources from overload

# Jobsub Tools

- No Really.  Why?
  - SAM, GlideinWMS, Condor, OSG client, and  others each put some burden on the user to learn and use properly.
  - While there is more than one 'right' way to use these tools, there  are many  more wrong ways to use them
  - some of these use patterns wreak havoc on infrastructure and other users.
  - Users typically write a script that uses jobsub to submit, at this point jobsub has become *an interface* .  When grid components change its no longer users problem
  - When scientists  move between experiments, the submission parts of their scripts won't need to change.

# Jobsub Tools

- Jobsub (options) executable (executable options)

- Commonly Used Options
  - Open, read, close, a SAM data set
  - Transfer data to (and back from) worker node using cpn, gridftp, or other ifdh method
  - Run job on local batch, fermigrid, or outside OSG site
  - Restrict no. of jobs running at one time
  - Use non-default grid credentials
  - Create and/or submit tarball

# Jobsub Tools

- DAG Generator
  - Uses jobsub to generate Directed Acyclic Graphs chaining jobs into workflows

- Monitoring

```
[dbox@gpsn01 ~]$ group_q minerva

-- Summary of gpsn01.fnal.gov : <131.225.67.70:51821> : gpsn01.fnal.gov
 OWNER          RUN    IDLE    HELD        OLDEST_JOB
hray             5      2       0          6/3 12:51 0+18:36:04 HRay_Timing_Closur
josta           12      0       0          6/1 05:59 1+02:25:36 MCMinosStage_00000
jwpark           0      3       0          6/1 11:33 0+10:11:02 MCAnaStage_0001321
rodriges         1      0       0          6/3 16:05 0+15:26:06 GiBUU_20130603_160

TOTALS          18      5       0
```

# Jobsub Tools

- Configuration Requirements, New Experiment "Z"
  Fermigrid Sci Srvr Supp.   REX/SCD Net. Storage
  - A "Z" group defined in VOMS database
  - "Z" unix group added to submit node
  - Service Desk workflow for adding new users to "Z" group
  - /Z/data and /Z/app areas allocated on bluearc
  - Entry point added to glideinWMS configuration on submit node
  - VOMS proxy and setup scripts modified to be aware of "Z" group
  - Create  a "Z" gridftp server for data transfer

# Jobsub Tools

- User Requests
  - Stability
    - Don't change the interface too quickly and break our scripts!
    - Components are constantly being upgraded, make it transparent
  - Reliability
    - Need to get job log files off NFS
    - Unfortunately this changes way users look at job log files
  - Feature requests have been tracked in redmine issue tracker
    - https://cdcvs.fnal.gov/redmine/projects/ifront/issues

# Jobsub Tools

- Future Plans
  - We are moving to a new submit machine and different architecture
  - Have to remove Bluearc dependency for reliability
  - True client/server architecture using kx509 authentication for improved security
  - Requirements (latest iteration)
    - https://cd-docdb.fnal.gov:440/cgi-bin/ShowDocument?docid=5115
  - Evaluating competing proposals for
    - Quota allocation
    - Proxy generation
    - Retrieving user log files

# Jobsub Tools

- Project Wiki
  - https://cdcvs.fnal.gov/redmine/projects/ifront/wiki
- User Documentation
  - Jobsub -h
  - https://cdcvs.fnal.gov/redmine/projects/ifront/wiki/UsingJobSub
- Roadmap/Issue Tracking
  - https://cdcvs.fnal.gov/redmine/projects/ifront/roadmap