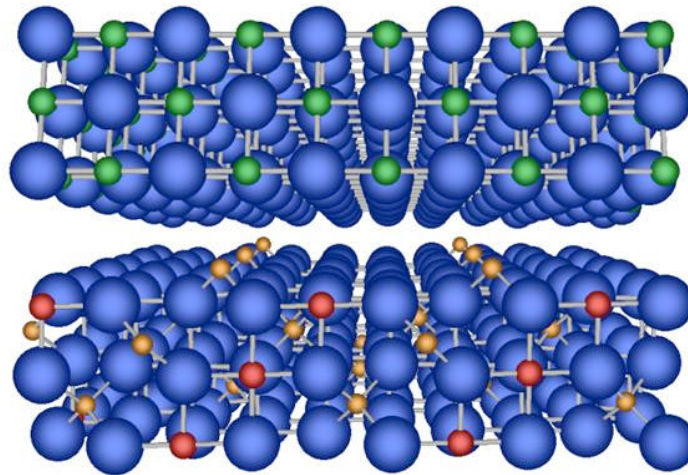
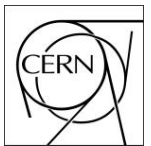
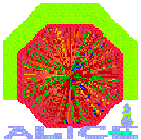


PROOF on the Grid



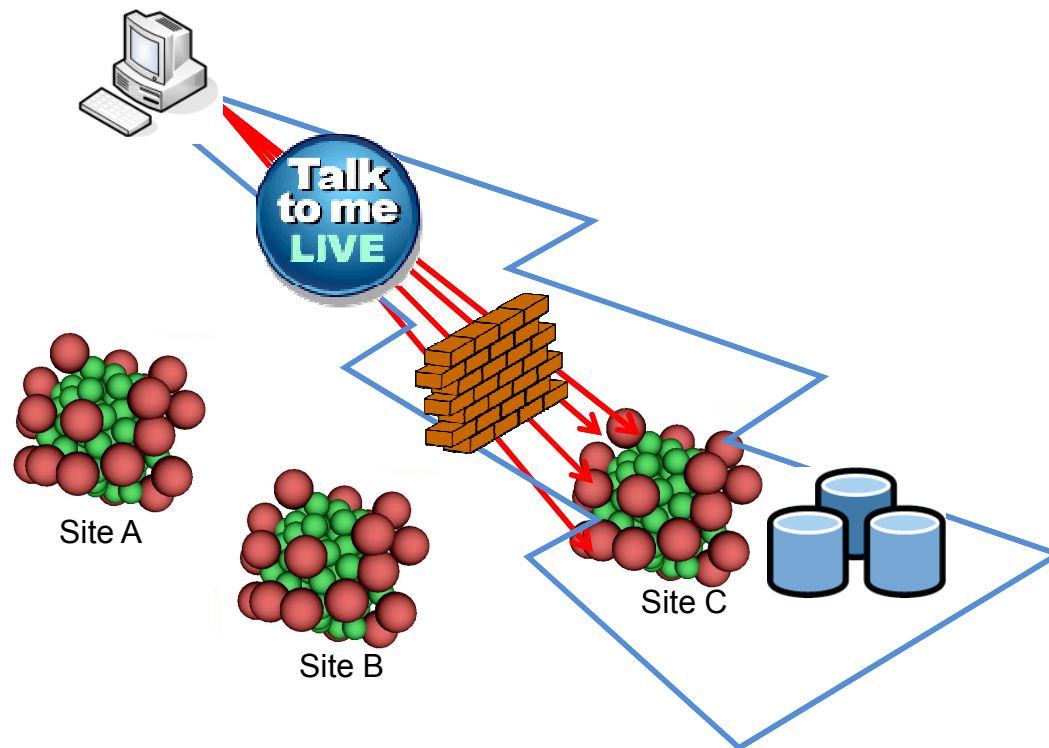
Marco MEONI

CERN - Offline Week - 25.06.2009

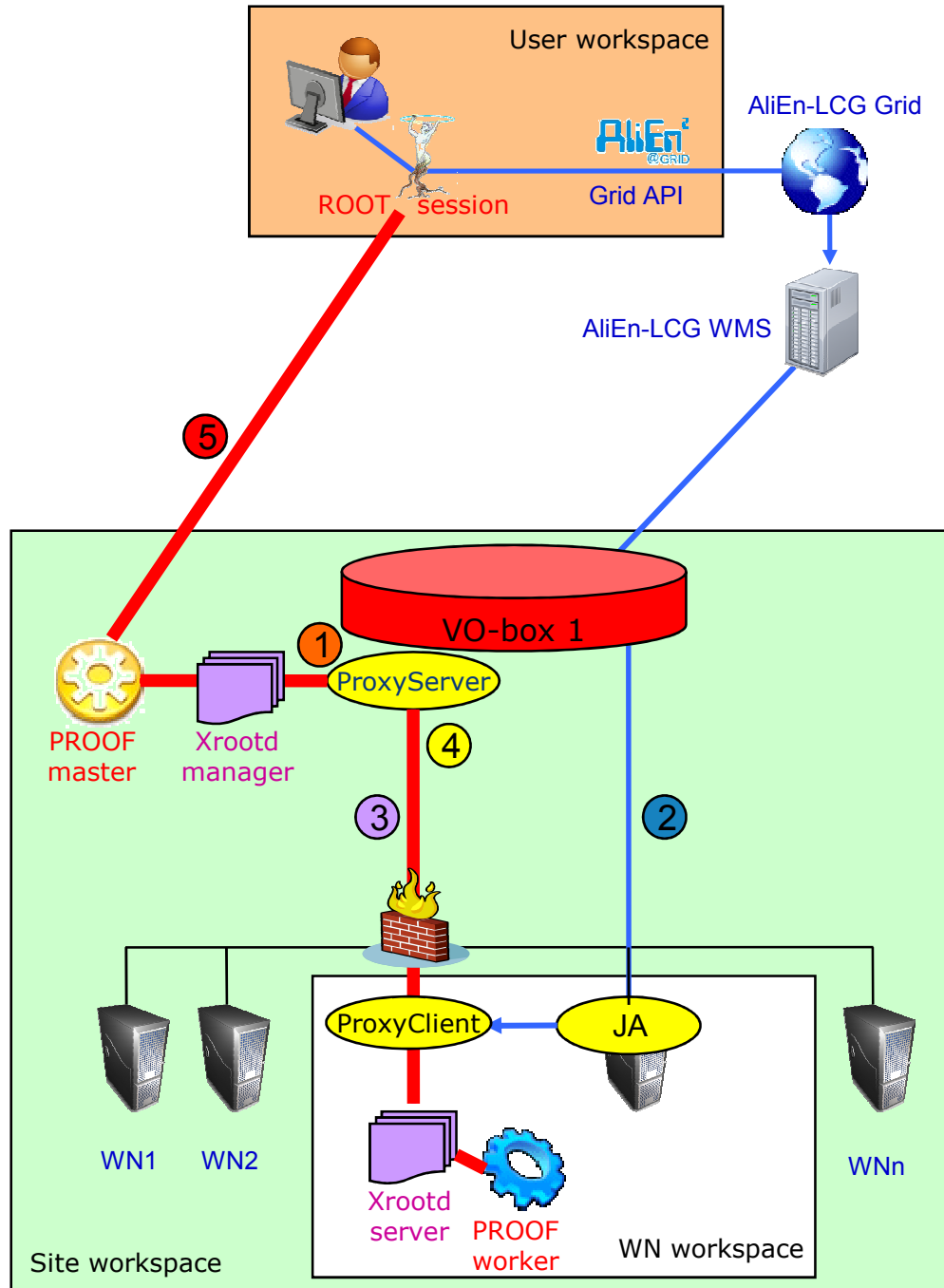


PROOF on the Grid

- This is an ongoing development
- A combination of PROOF and AliEn...
... to achieve **interactive** analysis on the Grid exploiting **data locality**



Prototype



- 1 A ProxyServer service starts Xrootd and PROOF
- 2 Job Agents are submitted to the Grid to start ProxyClients where user data is stored
- 3 A ProxyClient starts an Xrootd server and registers to the ProxyServer
- 4 A ProxyServer keeps the list of all the workers running at the WNs
- 5 A User PROOF session can start

Execution

VoBox

Grid

User box

```
[voalice06] ~> netstat -vatn | grep LIST
tcp 0 0 0.0.0.0:20000 0.0.0.0:* LISTEN
tcp 0 0 0.0.0.0:1093 0.0.0.0:* LISTEN
tcp 0 0 0.0.0.0:1094 0.0.0.0:* LISTEN
```

```
[voalice06] ~> less proof.conf
master voalice06.cern.ch
```

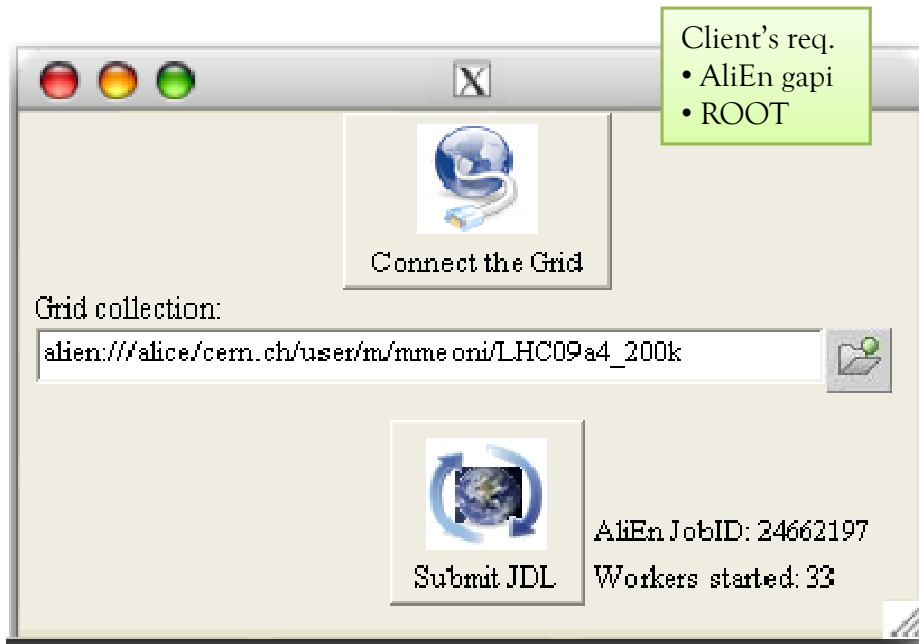
```
{ Executable=~"/bin/gLitePROOF.sh";
  Packages={"VO_ALICE@ROOT::v5-23-04",...};
  Jobtag = {"comment: Pilot job to start Proof Workers"};
  .....
  InputFile={"LF:~/proofAgent/xpd.cf",
             "LF:~/proofAgent/proofagent.cfg.xml"};
             9a4_200k,nodownload";
```

```
[aliendb06c.cern.ch:3307] ~/ > ps -s -id 24662197
mmeoni 24662197 RS ~/bin/proxyClient.sh
mmeoni -24662198 R 00:00:00 ~/bin/proxyClient.sh
mmeoni -24662199 R 00:00:00 ~/bin/proxyClient.sh
mmeoni -24662200 R 00:00:01 ~/bin/proxyClient.sh
mmeoni -24662201 R 00:00:01 ~/bin/proxyClient.sh
mmeoni -24662202 R 00:00:01 ~/bin/proxyClient.sh
mmeoni -24662203 R 00:00:00 ~/bin/proxyClient.sh
mmeoni -24662204 R 00:00:01 ~/bin/proxyClient.sh
```

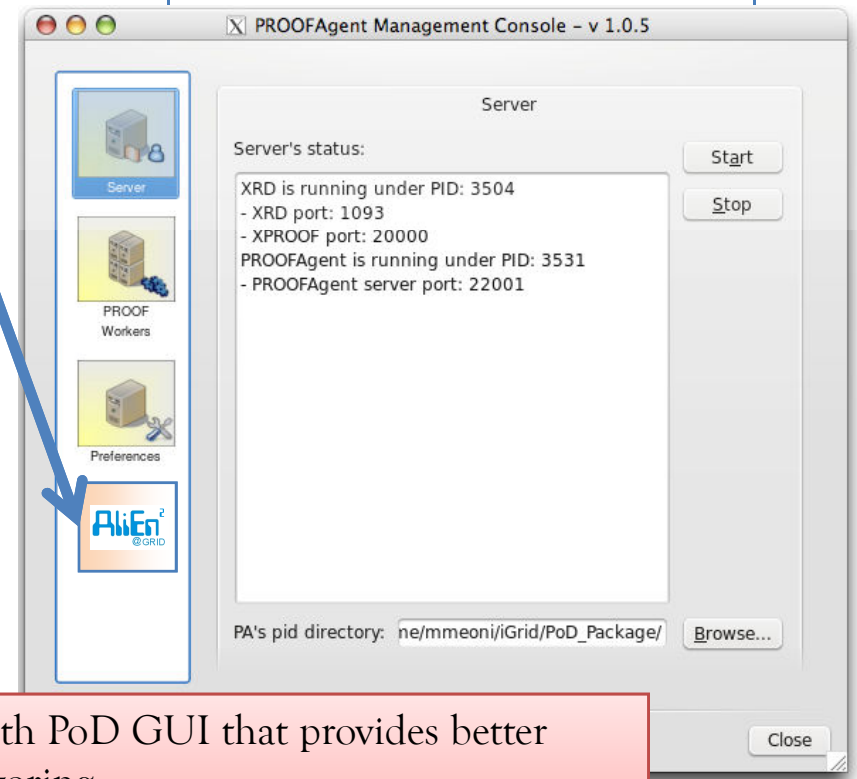
```
[voalice08] ~> less proof.conf
master voalice06.cern.ch
worker alicesgm@localhost port=20001 image1
worker alicesgm@localhost port=20002 image2
worker alicesgm@localhost port=20003 image3
worker alicesgm@localhost port=20004 image4
worker alicesgm@localhost port=20005 image5
worker alicesgm@localhost port=20006 image6
worker alicesgm@localhost port=20007 image7
worker alicesgm@localhost port=20008 image8
worker alicesgm@localhost port=20009 image9
...
```

```
root [0] TProof::Open("voalice06.cern.ch")
Starting master: opening connection ...
Starting master: OK
Opening connections to workers: OK (33 workers)
Setting up worker servers: OK (33 workers)
PROOF set to parallel mode (33 workers)
(class TProof*)0xaf6e0
root [1]
```

GUI

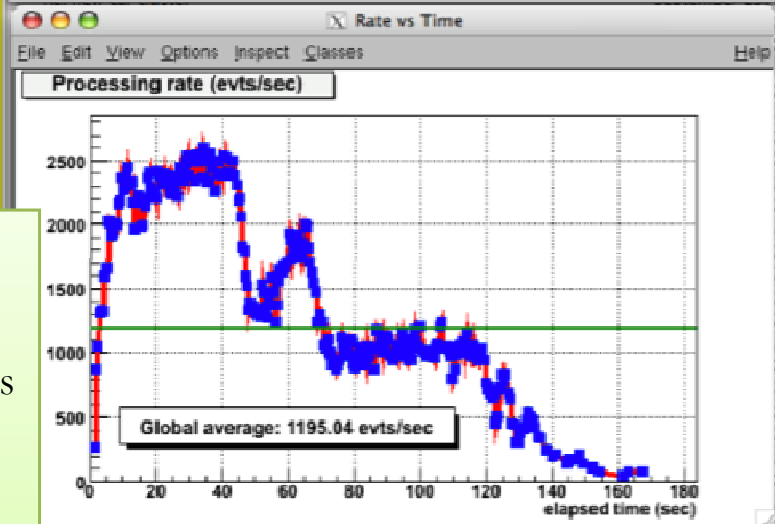
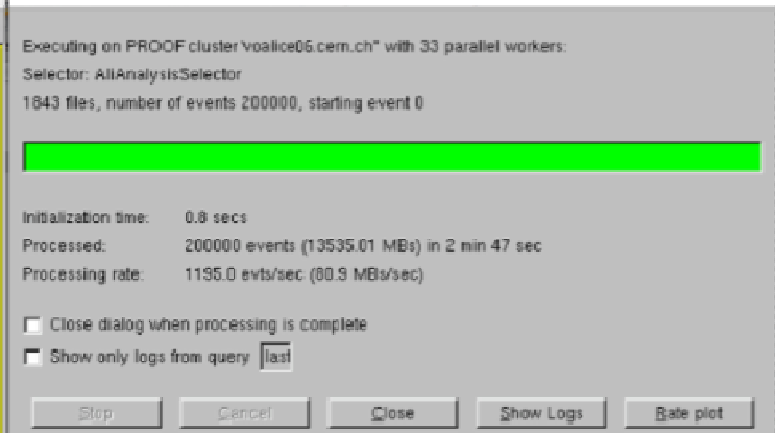
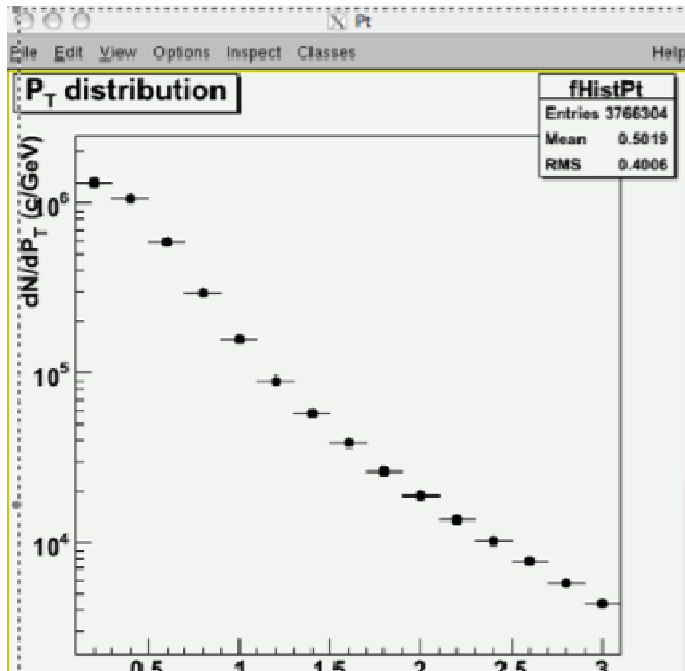


Number of workers can be limited copying the AliEn collection to another file



- Integration with PoD GUI that provides better workers monitoring
- The master cannot run on the user machine

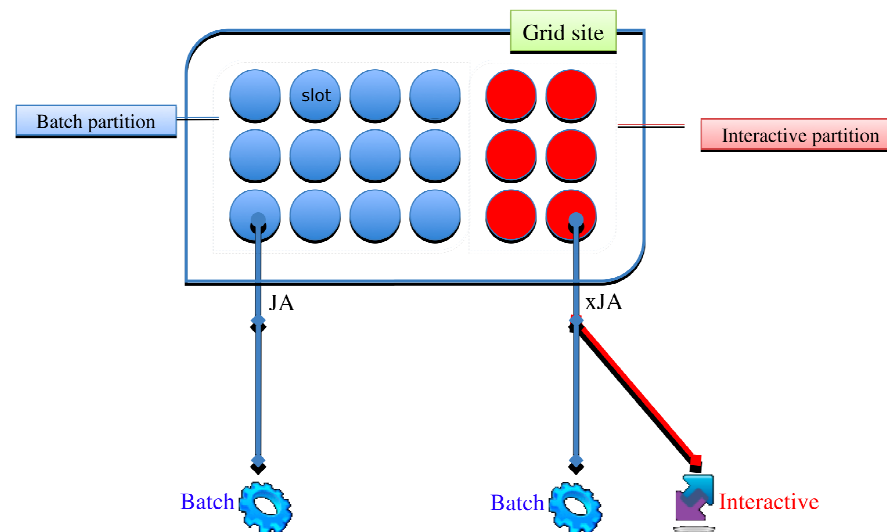
Tutorial Task @ GRID



- A dataset with CAF URLs is used
- Startup with high proc. rate (~200MBs)
- Tails due WNs completing work faster than others (different load on Grid machines)
- Expected even better performance reading from CASTOR pool (Grid access is needed from PROOF workers)

Interactivity

- Problem
 - JAs are available at the selected computing node only *after* the user's decision to start an interactive session
- Proposal
 - An extended Job Agent (xJA) is a JA with a dual capability when running on a remote node
 - xJAs are submitted at regular intervals to keep a predefined number always alive
 - xJAs run immediately PROOF workers but can still serve batch jobs without altering the number that a site can run concurrently



Overview

- ALICE is adapting PROOF to the Grid
 - A first prototype is under test at CERN
 - Many challenges
 - Connecting more Grid sites
 - Efficient software distribution
(AliEn packages of libraries better than par files or AF meta package from afs)
 - extended Job Agent implementation