"Input from HEP / ARDA Status"

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http://cern.ch/arda

gLite

egee
Enabling Grids for
E-science in Europe

LCG

www.eu-egee.org   cern.ch/lcg

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2nd ARDA workshop (1)

- Short term needs
  - Move to pre-production service as soon as possible
    - Testbed stability
    - Need more sites (>3) with one having >100/CPUs to attract users
    - Access to a significant fraction of the HEP experiments' data stores
  - Software package installation
    - Lazy installation (job triggered)
    - Triggered whole site installations
  - Documentation
  - API to services, so that experiments/ARDA can begin interfacing of experimental frameworks

2ⁿᵈ ARDA workshop (2)

- Architecture discussion (Draft: https://edms.cern.ch/document/476451/)
  - File Catalogue organization
    - LFN / GUID discussions
    - File system like view
  - WORM (write once, read many) is ok for now…
    - i.e. files cannot be updated
  - Metadata Catalogues
    - many initiatives inside the HEP community
    - no clear plan of convergence
    - Does the current implementation of gLite satisfy the needs of some customers? (File catalogue directories can be 'tagged' with a certain metadata schema)
  - Priority on developing the new service based infrastructure (backwards compatibility should not be a stringent requirement).

gLite Basic Functionality Tests (1)

Component	Description	State	Comments
File catalogue	Registering files	Ok	Unstable; Limitation on filename length affects CMS
File catalogue	Registering external links	Ok	
File catalogue	Stress test: registering 100,000 files in the same catalogue directory	Ok	Slowdown of registering time per file was noted (no quantitative results yet)
Metadata catalogue	Applying metadata tags to directories. Setting and retrieving values and searching for files.	Ok	
Metadata catalogue	Stress test: Applying a metadata tag to a directory containing 100,000 files	Catalogue corruption	
SE	CERN Castor via SRM	Ok	Only disk back-end available

gLite Basic Functionality Tests (2)

Component	Description	State	Comments
SE	CERN dCache via SRM	Not yet activated	
SE	External Site via SRM (Wisconsin)	Ok	Recently become available
CE	Simple jobs	Ok	
CE	Jobs with input file staging from catalogue SEs	Failed	Cannot test currently because of catalogue corruption
CE	Jobs with input file staging from local machine	Ok	
CE	Jobs using files from AFS via catalogue references	Ok	
CE	Jobs using files from CERN CASTOR via catalogue references	Failed	Direct CASTOR access still missing (critical)

Subgroup Goals & status: LHCb

- Goals
  - Interfacing **GANGA** graphical front end to EGEE middleware
    http://ganga.web.cern.ch/ganga/
  - Running **DaVinci** physics analysis jobs via EGEE
    http://lhcb-comp.web.cern.ch/lhcb-comp/Analysis/default.htm
  - LHCb Meta data catalogue performance measurements

- Status
  - One ARDA member in GANGA development team. Acts also as release manager. Work on command line interface. Condor plugin.
  - First gLite plugin for GANGA (job submission + status polling)
  - Simple DaVinci analyses have been run via Installation from AFS.
  - LHCb meta data catalogue: stress tests revealed some scaling issues. Ok for current level of usage, but not project wide usage. (WS on top of a DB)

Subgroup Goals & status: CMS

- Goals
  - Interface CMS analysis software with the gLite environment.
  - Concentrate on data management aspects.
    - Improve/rewrite **RefDB** ("Reference Database", CMS meta data Catalogue)
    - Study gLite meta data functionality/performance and how to migrate CMS data

- Status
  - Simple CMS analysis jobs using **ORCA** (http://cmsdoc.cern.ch/orca/) via installations from AFS (since SW package management is not yet available)
  - Tests on migration of CMS DC04 files in the catalogue using the current gLite meta data catalogue.
    - Some issues found: catalogue file name length,… (fixed by EGEE)

Subgroup Goals & status: ATLAS

- Goals

  - Implementation of an ATLAS data analysis system service based on the **DIAL** service model (high level services) and EGEE MW.
  http://www.usatlas.bnl.gov/~dladams/dial/

  - Work on production job submission interface **AtCom**
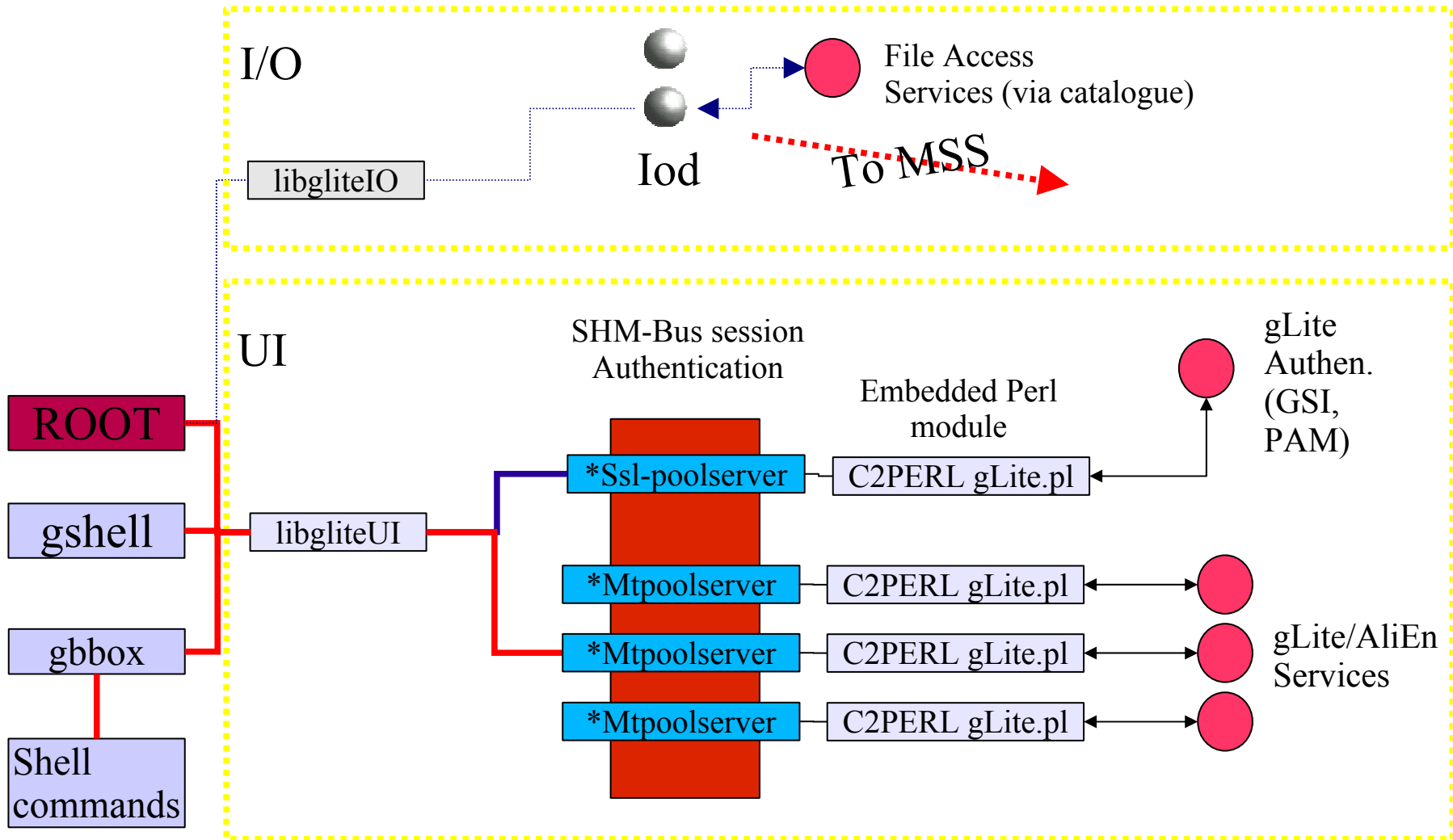 http://savannah.cern.ch/projects/atcom/

- Status

  - Dialogue on meta-data (and replica) catalogues initiated

  - Testing of **AMI** (Atlas meta data catalogue) done: some performance and scaling problems discovered (WS on top of a DB)

  - Running a simple DIAL (via AFS) example with gLite has been done. Using more complicated DIAL jobs is under investigation.

  - Atcom: integrated with the AMI web service

Subgroup Goals & status: ALICE

- Goals
  - Developing a new C++ API, which interacts efficiently with the present system (service based)
    - gLite plugin for the ROOT data analysis framework (http://root.cern.ch/).
  - Interactive Analysis: Building on the proof of concept done via ROOT/PROOF and AliEn in SC'03

- Status
  - API via grid access daemon deployed close to the core services. Nearly finished (q.v. next slide)
  - Subset of POSIX I/O currently being implemented.

ARDA-ALICE: Grid Access Library

I/O

File Access
Services (via catalogue)

libgliteIO

Iod

To MSS

SHM-Bus session
Authentication

Embedded Perl
module

gLite
Authen.
(GSI,
PAM)

UI

ROOT

gshell

libgliteUI

*Ssl-poolserver

C2PERL gLite.pl

gbbox

*Mtpoolserver

C2PERL gLite.pl

gLite/AliEn
Services

*Mtpoolserver

C2PERL gLite.pl

Shell
commands
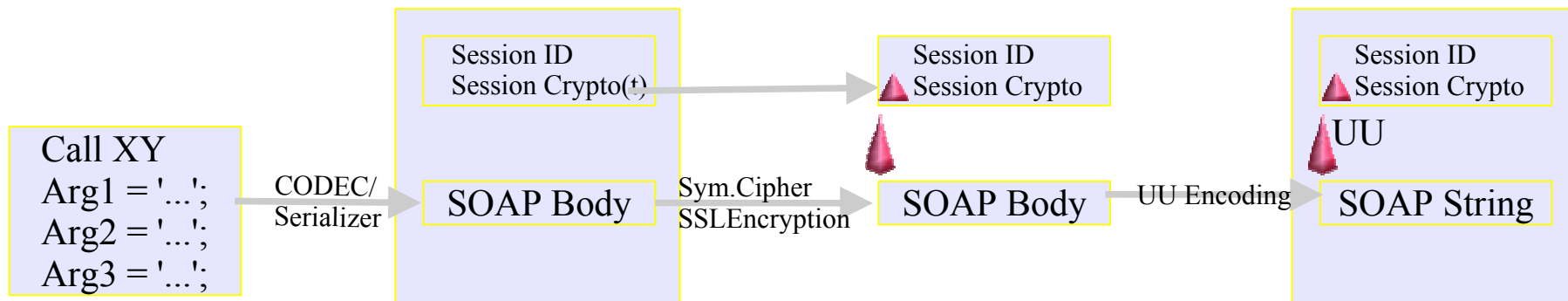
*Mtpoolserver

C2PERL gLite.pl

Slide modified from a presentation by A. Peters

*SOAP server for the moment, could be replaced with a plain TCP server

ARDA-ALICE: Grid Access Library

grid command encoding + encryption

Call XY
Arg1 = '...';
Arg2 = '...';
Arg3 = '...';

CODEC/
Serializer

Session ID
Session Crypto(†)

SOAP Body

Sym.Cipher
SSLEncryption

Session ID
Session Crypto

SOAP Body

UU Encoding

Session ID
Session Crypto

UU

SOAP String

Slide from a presentation by A. Peters

ROOT/PROOF

http://www.slac.stanford.edu/econf/C0303241/proc/papers/TULT003.PDF

- ## Loop over data is coordinated by PROOF
  - Allows efficient parallelization
  - Data is a collection of ROOT Trees.
  - User just specifies a 'Selector' describing which events to select and how to process them.

- ## A Selector script can be run
  - In batch
  - Interactive ROOT _____ 1 machine
  - Interactive ROOT + PROOF _____ cluster
  - Interactive or batch ROOT + PROOF + gLite _____ Grid

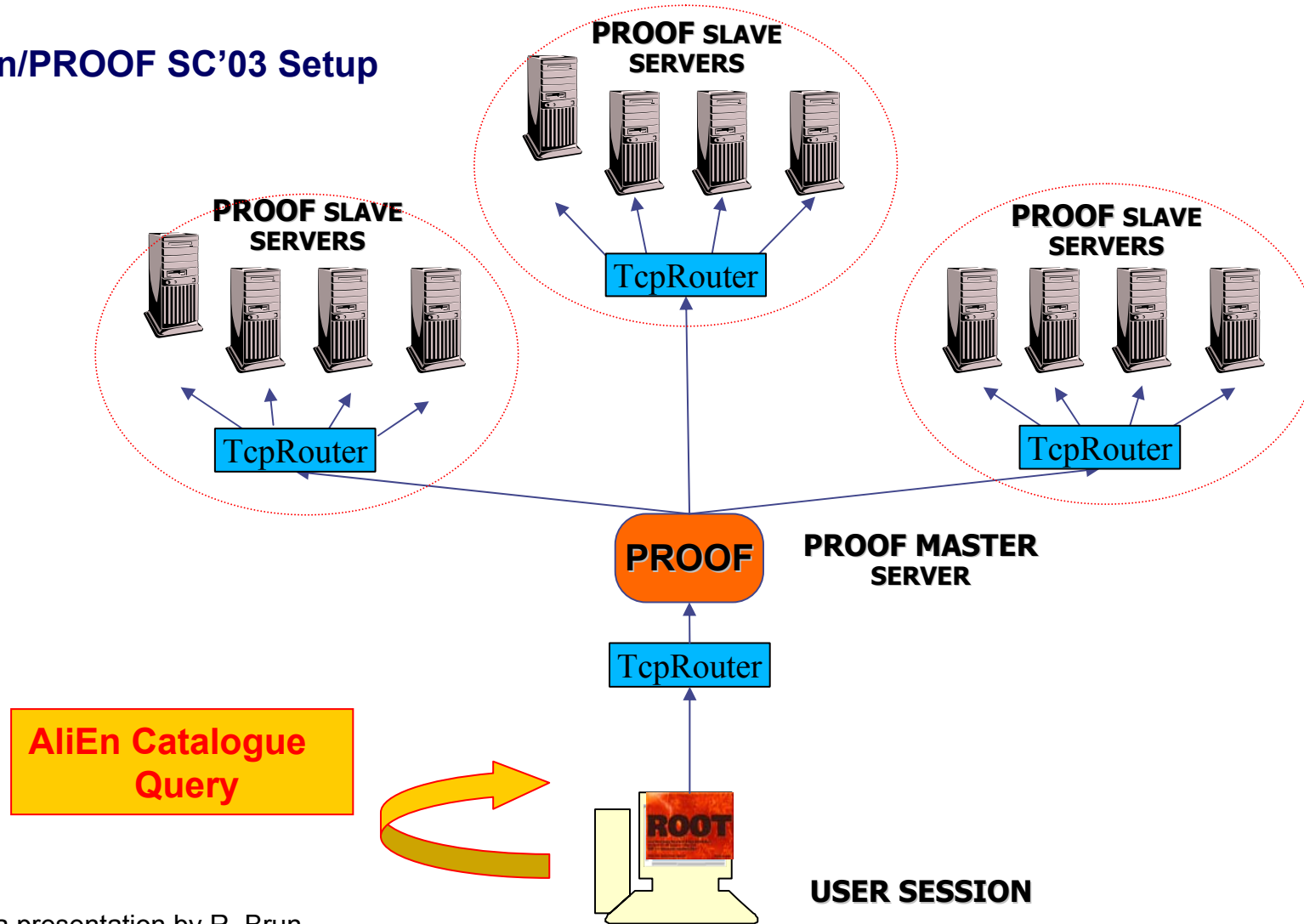 ➡ Test selector locally on small data set, then use via PROOF

- ## A Selector script can be
  - Interpreted   tree.Process("myselector.C")
  - Or compiled   tree.Process("myselector.C++")

Slide modified from a presentation by R. Brun

ALICE: AliEn/ROOT/PROOF

AliEn/PROOF SC'03 Setup

PROOF SLAVE SERVERS

PROOF SLAVE SERVERS

PROOF SLAVE SERVERS

TcpRouter

TcpRouter

TcpRouter

PROOF

PROOF MASTER SERVER

TcpRouter

AliEn Catalogue Query

ROOT

USER SESSION

Slide from a presentation by R. Brun

Conclusion

- All ARDA subgroups are now active in their dedicated experiment AREAS.

- Good information and know-how exchange between subgroups. Helps to detect common problems.

- Early availability of prototype testbed very much appreciated, even though this comes with some initial stability problems.

- Details can be found in the ARDA report for Q2/2004

➡ ARDA website: http://cern.ch/arda

➡ Mailing list for discussions: arda@cern.ch

ARDA team

- Massimo Lamanna
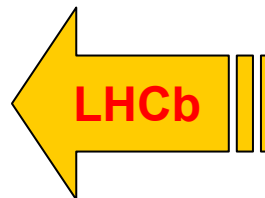- Birger Koblitz

- Derek Feichtinger
- Andreas Peters — **ALICE**

- Dietrich Liko
- Frederik Orellana — **ATLAS**

- Julia Andreeva
- Juha Herrala — **CMS**

- Andrew Maier
- Kuba Moscicki — **LHCb**

- Andrey Demichev
- Viktor Pose — **Russia**

- Wei-Long Ueng
- Tao-Sheng Chen — **Taiwan**

Experiment interfaces

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David Adams (ATLAS)
Lucia Silvestris (CMS)
Ulrik Egede (LHCb)