

SPI

Software Process & Infrastructure

Project Status

<http://spi.cern.ch>

LCG-SC2 Meeting - 16 April 2004

Alberto AIMAR

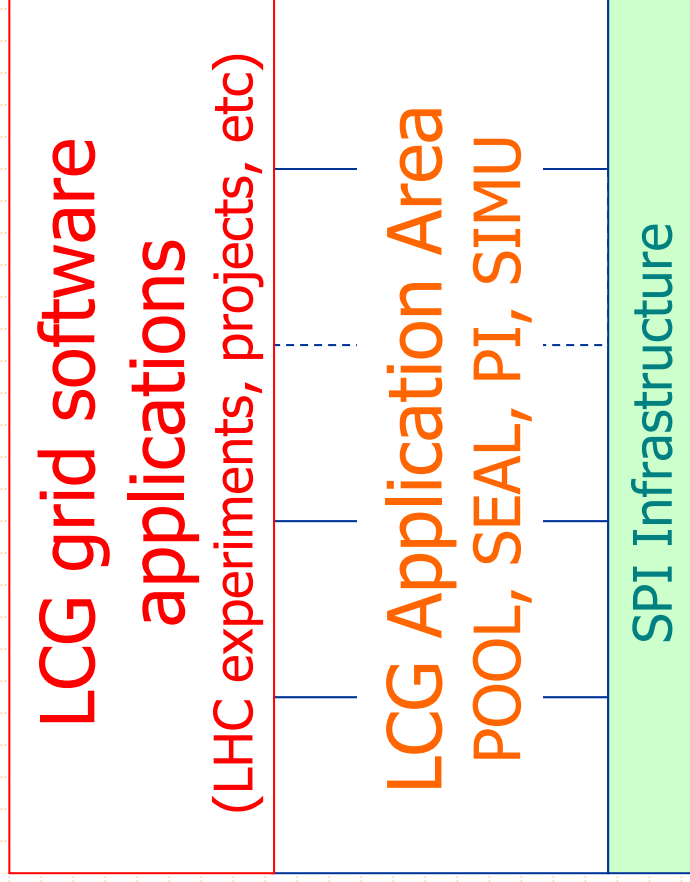
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Presentation Outline

- Project
- Services
- Resources
- Future
- (Milestones and plan 2004 H1)

Project Context of SPI

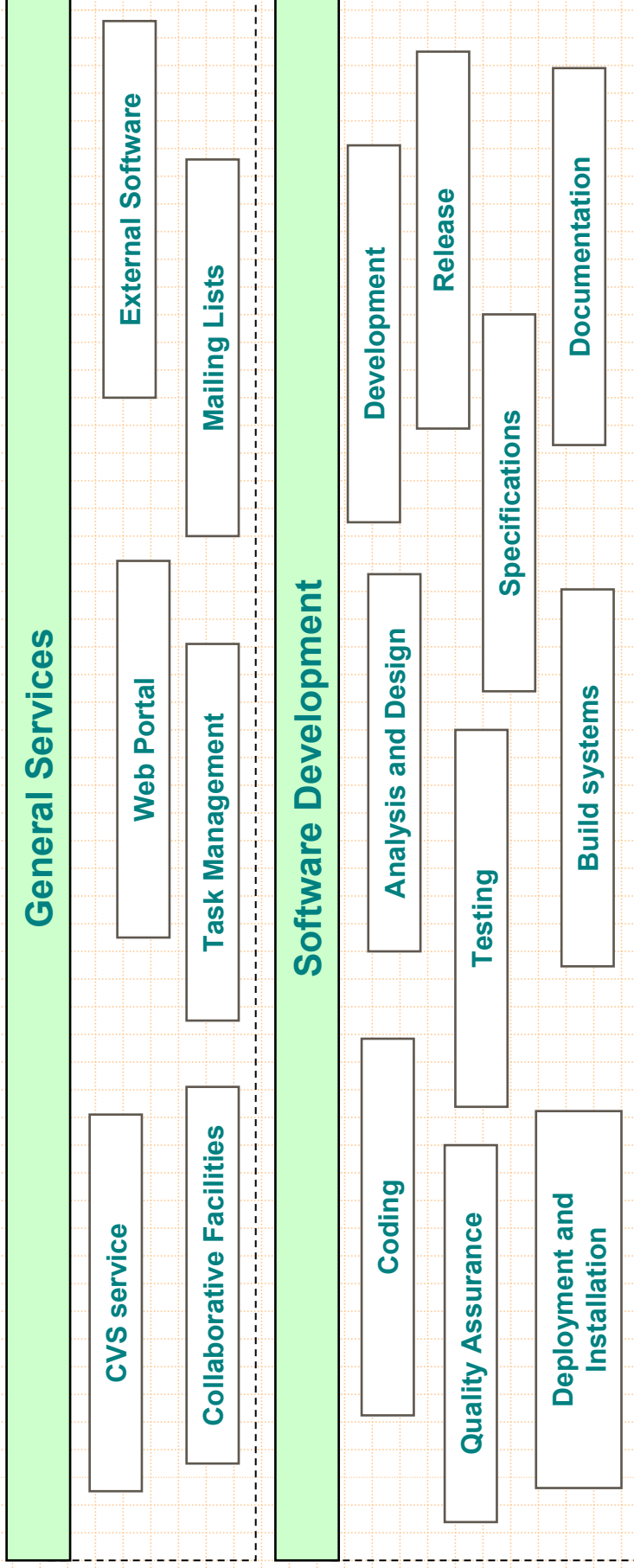


- “Software Management RTAG”
General recommendations

- **Adopt** the same set of tools, standards and procedures
- **Adopt** commonly used open-source or commercial software when easily available
- **Avoid** “do it yourself solutions”
- **Avoid** commercial software, if may give licensing problems

Common services and infrastructure
Tools, templates, training
General QA, tests, integration, release
Similar ways of working (process)

SPI Services Overview



Provide General Services needed by each project

- CVS repository, Web Site, Software Library
- Mailing Lists, Bug Reports, Task Management, Collaborative Facilities

Provide solutions specific to the Software Development phases

- Tools, Templates, Policies, Support, Documentations, Examples

SPI Services (April 2004)

- **External Software**
 - E.Poinsignon
- **Savannah Project Portal**
 - Y.Perrin
- **Testing Frameworks**
 - M.Gallas
- **Development of LCG policies, templates**
 - J.Moscicki, A.Aimar
- **QA checklists and reports**
 - J.Moscicki
- **Software Distribution**
 - E.Poinsignon, J.Moscicki
- **LCG Software Configuration**
 - E.Poinsignon
- **CVS server and AFS management for LCG App. Area**
 - A. Pfeiffer
- **Code Documentation (doxygen, lxr, viewcvs)**
 - L.Mancera
- **Automatic Nightly Build (Nicos)**
 - A.Undrus
- **Software Librarian, builds and releases (new, was Scram support)**
 - A. Pfeiffer
- **Documentation and LCG Workbook**
 - A.Aimar
- **EGEE resources**
 - Y.Patois

SPI Web Site - <http://spi.cern.ch>



LCG SPI - Home Page - Mozilla

http://spi.cern.ch

LCG SPI - Index Page - Mozilla

http://spi.cern.ch/indexpage.html

LHC Computing Grid > [LCG App Area](#) > [SPI Home](#)

SPI - Software Process & Infrastructure

Updated 10-Feb-2004 16:54

SPI Quick Links

- [SPI Home](#)
- [SPI Index Page](#)
- [SPI Workbook](#)

SPI Services Links

- [LCG Workbook](#)
- [Savannah Portal External Software Software Testing](#)
- [Software Download Quality Assurance](#)

LCG App Area

- [Home Page](#)
- [LCG Agenda](#)
- [PI Project](#)
- [POOL Project](#)
- [SEAL Project](#)

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[CVS Service](#)

[How to use the LCG CVS service](#)

[Project Portal](#)

[Projects Portal for LCG User registration](#)

[Software Library](#)

[LCG External Software service](#)

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[How to install 3rd party software](#)

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[Workbook for LCG developers](#)

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Software Development

[LCG Policies](#)

- [Policy and Tools Page](#)
- [Setting up environment](#)
- [CVS Directory Policy](#)
- [Build Directory Policy](#)
- [FAQ](#)

[Building](#)

[SCRAM configuration, build and release](#)

[NICOS automatic build system](#)

[Testing](#)

[Software Testing in LCG App Area](#)

[Coding conventions](#)

LCG App. Area Projects

Direct access to all projects

[Doxygen](#) | [LXR](#) | [ViewCVS](#)

[PI Project](#)

[Home page](#) | [CVS repository](#) | [Bug reports](#)

[POOL Project](#)

[Home page](#) | [Project Portal](#) | [CVS repository](#) | [Bug reports](#) | [Mailing Lists](#)

[SEAL Project](#)

[Home page](#) | [CVS repository](#) | [Bug reports](#)

[Simulation Project](#)

Waiting for fastcounter.beentral.com...

SPI External Software Service

- We install software needed by LCG projects.
- Open Source and Public Domain software (libraries and tools) like:
 - Compilers (icc, ecc)
 - HEP made packages
 - Scientific libraries (GSL)
 - General tools (python)
 - Test tools (cppunit, qmtest)
 - Database software (mysql, mysql++)
 - Documentation generators (lxr, doxygen)
 - XML parsers (XercesC)
- There are currently 50 different packages, plus others under evaluation. For more than 300 installations
- The LCG projects (SEAL, POOL, PI, Simulation and SPI) propose what to install in agreement with LHC needs
- The platforms, are decided by the Architect Forum
 - Linux RedHat 7.3 with the compilers
 - gcc 3.2 (*rh73_gcc32*)
 - icc 7.1 (*rh73_icc71*)
 - ecc 7.1 (*rh73_ecc71*)
 - Windows
 - Visual Studio .NET 7.1: (*win32_vc7*).
- Platforms always been reviewed
- **We also provide configuration for the LCG projects**
 - A unique AFS location
 - Standard structure package_name/version/platform/package_content

External Software - <http://spi.cern.ch/extsoft>



External Software Service - alphabetic (CERN LCG SPI) - Mozilla

<http://spi.cern.ch/extsoft/>

mysql++ (CERN LCG SPI) - Mozilla

<http://spi.cern.ch/extsoft/mysql%2B.html>

LCG Software	MySQL++
Download Area	A C++ binding to MySQL.
External Software	Description
Alphabetic order	MySQL Connector/C++ (or MySQL++) is an application programming interface for the C++ programming language. This adds a powerful level of abstraction on top of the standard C API that makes it possible to work with query result sets in a manner consistent with the standard C++ template libraries (STL).
Platforms table	Availability
Used in LCG Projects	<code>/afs/cern.ch/sw/lcg/external/mysql++/1.7.9/win32_bc6/ (to be tested)</code> <code>/afs/cern.ch/sw/lcg/external/mysql++/1.7.9_mysql.4.0.15/rh73_gcc32/</code> <code>/afs/cern.ch/sw/lcg/external/mysql++/1.7.9_mysql.4.0.13/rh73_gcc32/</code> <code>/afs/cern.ch/sw/lcg/external/mysql++/1.7.9/rh73_gcc32/ (with mysql 4.0.4-beta)</code> <code>/afs/cern.ch/sw/lcg/external/mysql++/1.7.9/rh61_gcc2952/</code> <code>/afs/cern.ch/sw/lcg/external/mysql++/1.7.1/win32_vc6/</code>
SPI Quick Links	Download
SPI Home	The versions this tool used by the public releases of the LCG software packages are downloadable in the distribution area . Look for the tar file named <code><tool>_<version>__LCG_<platform>.tar.gz</code> .
SPI Index	Documentation
Projects Portal	
LCG App. Area	
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LCG Agenda	
PI Project	
POOL Project	
Simulation Project	
SEAL Project	
SPI Project	
External Links	

A.Aimar

SPI Savannah Portal Service

- **Functionality:**
 - Bug tracking
 - Task management
 - Mailing lists, news, faqs
 - Access to CVS repository
 - Download area, etc
- **The Web portal for LCG software projects**
- **Customized from GNU (SourceForge as origin)**
- **Totally web based**
- **Single entry point to all projects**
- **Uniform access to project information**
- **Set up common web infrastructure for a project without coding**
- **What SPI changed**
 - installation from GNU, general bug fixing and improvements
 - integration with AFS authentication
 - Integration with standard services already available
- **What SPI does**
 - administration (project approval)
 - maintenance (submitted bugs)
 - development (support requests)
- **Status**
 - >80 hosted projects
 - >550 registered users

Savannah Service - <http://savannah.cern.ch>



The screenshot displays the Savannah website interface within a Mozilla browser. The browser's address bar shows the URL `https://savannah.cern.ch/bugs/?func=additem&group=spl`. The page content is organized into several sections:

- Navigation Menu:** Includes links for 'Home', 'Public Areas', 'Administration', 'This it to report bugs.', and 'For questions and to get support from SPI please post SPI SUPPORT REQUEST'.
- Public Areas:** Lists 'Main | Homepage | Files | Support | Mailing Lists | CVS | Bugs | Tasks | Patches | News' and a sub-menu 'Public Areas >> Submit a Bug | Browse Open Bugs | Browse My Bugs | Search a Bug | Reporting'.
- Administration:** Lists 'Main | Support | Mailing Lists | Bugs | Tasks | Patches'.
- Details Section:** Contains a form for bug submission with the following fields:
 - Category:** A dropdown menu.
 - Item Group:** A dropdown menu.
 - Platform Version:** A dropdown menu with the value 'RH 7.3 gcc 3.2 (rh73_gcc32)'.
 - Severity:** A dropdown menu with the value 'Fatal'.
 - Assigned to:** A dropdown menu with the value 'None'.
 - Summary:** A text input field.
 - Original Submission:** A text input field.



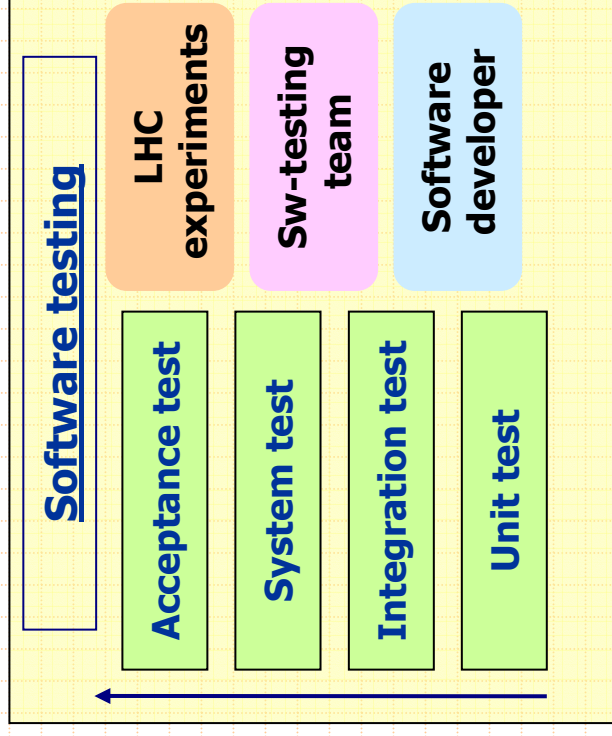
A.Aimar

SPI Testing Services

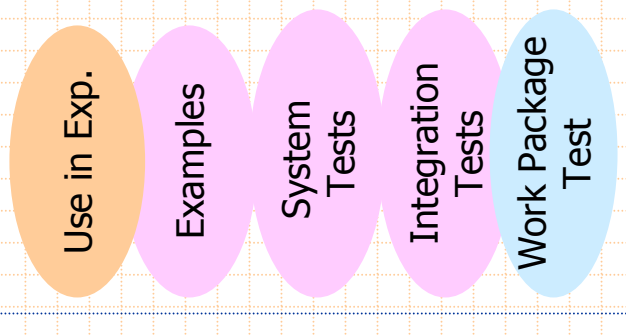
- Software testing should be an integral part of the software development in the LCG App Area
- The goal was to provide something that can be run automatically as often as needed (releases, development, etc)

SPI provides

- Test frameworks
 - CppUnit, Oval
 - Qmtest
- Test support
- Test policies
- Test doc
- Different platforms/compilers



Automated testing



Testing Support - <http://spi.cern.ch/testing>



HowTo for QMTTest TestFramework

What is QMTTest?

QMTTest (<http://www.codesourcery.com/qm/qmtest>) is an open-source, cross-platform software testing tool written in Python. QMTTest is a general purpose testing solution that allows an organization to implement a robust, easy-to-use testing program tailored to its needs. QMTTest works with most varieties of UNIX, including GNU/Linux, and with Microsoft Windows. See the [SPI](#) supported platforms at [SPI external software service](#).

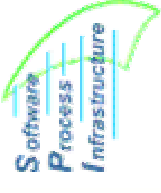
QMTTest uses a graphical interface for creating and running tests, runs tests in parallel, organizes tests hierarchically, supports execution of a single test or many at once and records dependencies between tests together with the results and expected results.

In LCG AppArea, QMTTest is used to run the tests created with CppUnit, PyUnit or Oval. This means that there are QMTTest functionalities which are not in use. The reason for this is to keep the process automatic as much as possible. Basically what is required to run QMTTest the first time in a given project, is to run the script "lcg-qmtest-config.py" which will create all the QMTTest needed stuff base on the "OvalFiles" which describe your tests (see below for further details).

[return to top of page](#)



Quality Assurance Service - <http://spi.cern.ch/qa>



- **The main goal of QA activity help LCG projects**
 - assess and improve the quality of the software
 - provide tools to collect useful metrics/statistics which help to assess quality;
 - generate reports;
 - verify if project setup is correct with LCG policies.
- **QA Tools and Focus**
 - Automatic reports
 - Development/integration of automatic tools
- **LCG Policies**
 - agreed and defined by AF
 - SPI supports them in the tools and procedures and only helps to work them out

Quality Assurance

Description

Goals

The main goal of QA activity is to **help LCG project procedures**. This means among others:

- verify if project setup is correct and compliant
- provide tools to collect useful software metric
- provide monitoring tools to see the evolution of

How it is done

- Clear rules and the checklist of assessed iter
- QA Reports are generated automatically by tr may easily track the project evolution.
- Everybody who is interested may see (and ge

Related Documents

- LCG QA Checklist
- LCG Application Area Policies

Reports

Automatically generated reports

- SEAL 1.1.0

SPI Quick Links

- SPI Home
- SPI Index Page
- SPI Workbook

SPI Services Links

- LCG Workbook
- Savannah Portal
- External Software
- Software Testing
- Software Download
- Quality Assurance

LCG App. Area

- Home Page
- LCG Agenda
- PI Project
- POOL Project
- SEAL Project
- Simulation Project
- SPI Project

External Links

Done



SPI Software Distribution Service



- **Simple solution to use**
 - local installations (external sites, laptops,...)
 - using simplest approach
 - python downloader + tar format
 - replicate the central AFS tree (in a optimized way)
 - package dependency from SCRAM
- **...until a complete, long-term solution available**
- **Looking into pacman as a suitable solution**
- **SPI will adopt what LCG Grid Deployment decides to provide**
- **Simple tool to install**
 - **successful for users:**
 - POOL @ Karlsruhe
 - BNL nightly builds, CMS
 - developers at home, etc
 - **very easy to use and reliable**
- **Different use-cases should have different solutions**
 - Our tool is adequate as a temporary solution for LCG Application Area Distribution but long-term solutions must be investigated:
 - pacman, LCFGng
 - **GRID WN installations should be supported differently**



Software Distribution - <http://spi.cern.ch/lcgsoft>



Download page for POOL_1_6_1 / rh73_gcc32

Automatic download

On the machine where you want to install the software run the following command:

```
./lcg-installation-manager.py --project=POOL_1_6_1 --arch=rh73_gcc32 --prefix=/opt/sw/lcg download
```

Python 2.2 or greater is required. Download the script here: [lcg-installation-manager.py](#) **Make sure you read Local Installation HOWTO**

Manual download

POOL_1_6_1_LCG_rh73_gcc32.tar.gz

Required packages:

name	version	download
SCRAM	V0_20_0	SCRAM_V0_20_0.tar.gz
uuid	1.32	uuid_1.32_LCG_rh73_gcc32.tar.gz
gccxml	0.4.2_patch1	gccxml_0.4.2_patch1_LCG_rh73_gcc32.tar.gz
Boost	1.30.2	Boost_1.30.2_LCG_rh73_gcc32.tar.gz
otl	4.0.67	otl_4.0.67_LCG_rh73_gcc32.tar.gz
unixodbc	2.2.6	unixodbc_2.2.6_LCG_rh73_gcc32.tar.gz
mysql++	1.7.9_mysql.4.0.13	mysql++_1.7.9_mysql.4.0.13_LCG_rh73_gcc32.tar.gz

SPI Resources in 2004



- Current resources are sufficient for 2004 H1 milestones
- *31 May 2004 Work plan for 2004 H2, including LCG and EGEE needs and resources*

Who	FTE %
E.Poinsignon	75
Y.Perrin	100
J.Moscicki	10
L.Mancera	20
M.Gallas	10
A.Undrus	20
A.Pfeiffer	70
A.Aimar	90
TOTAL	375
Y.Patois (*)	100
J.Benard (*)	100

(*) EGEE, starting in April-May 2004



Conclusions

- **The set of services is working and fully available**
 - Savannah Project Portal, Software Testing, External Software Service, Quality Assurance and Policies, Software Distribution, ...and many more
- **We have followed plans and strategy defined**
 - Work with the users, project, experiments
 - Help and ask for help
 - Develop as little as possible in order to have little maintenance
 - Provide simple, modular and independent solutions
 - Decisions are taken by the users via the Architects Forum (LHC experiments and LCG projects)
- **We have commitments to the users but also to provide a sustainable service**
 - Most people moved on to new projects, very few resources left in SPI
 - The services are used by LCG projects, and also outside
 - Unlike in the past, we match the environment and the way people work in HEP
- **New plan for 2004 H2 when the work of SPI with EGEE will come into full action**
 - Clarification on EGEE's needs and resources is well on the way

Backup Slides follow

Milestones for 2004 H1 (i)

- 31 Jan 2004
IT CVS service verified and validated by SPI
- 31 Jan 2004
More code standards checks added to the QA reports (via doxygen)
- 20 Feb 2004
Upgrade of the Savannah service and installation of the Gnu open source version
- 28 Feb 2004
QA reporting tools available publicly
- 28 Feb 2004
Delivery of configuration files also for the CMT build system

Done

Done

Done

Done

Milestones for 2004 H1 (ii)

- 15 Mar 2004
LCG software librarian in place
- 1 Apr 2004
Migration of all projects to IT CVS service
- 15 Apr 2004
Certification of external software for the new Linux platform
- 1 May 2004
Definition of the EGEE requirements
- 15 May 2004
RH 7.3 gcc 3.2.3 supported
- 15 May 2004
Documentation standards for workbook and user guides and documentation infrastructure in place

Done

Done

Milestones for 2004 H1 (iii)

- 31 May 2004
RH 7.3 icc 8 supported
- 15 Jun 2004
Convergence plan for the LCG software infrastructure
- 15 Jun 2004
Appwork evaluation
- 1 Jul 2004
Common build and release solution in LCG App Area
- 1 Jul 2004
Validation and test of the external tools needed by LCG projects
- 31 May 2004
Work plan for 2004 H2, including LCG and EGEE tasks

