SPI
Software Process & Infrastructure for LCG

External Software Service

LCG Application Area Internal Review
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Eric POINSIGNON

What is the External Software Service?

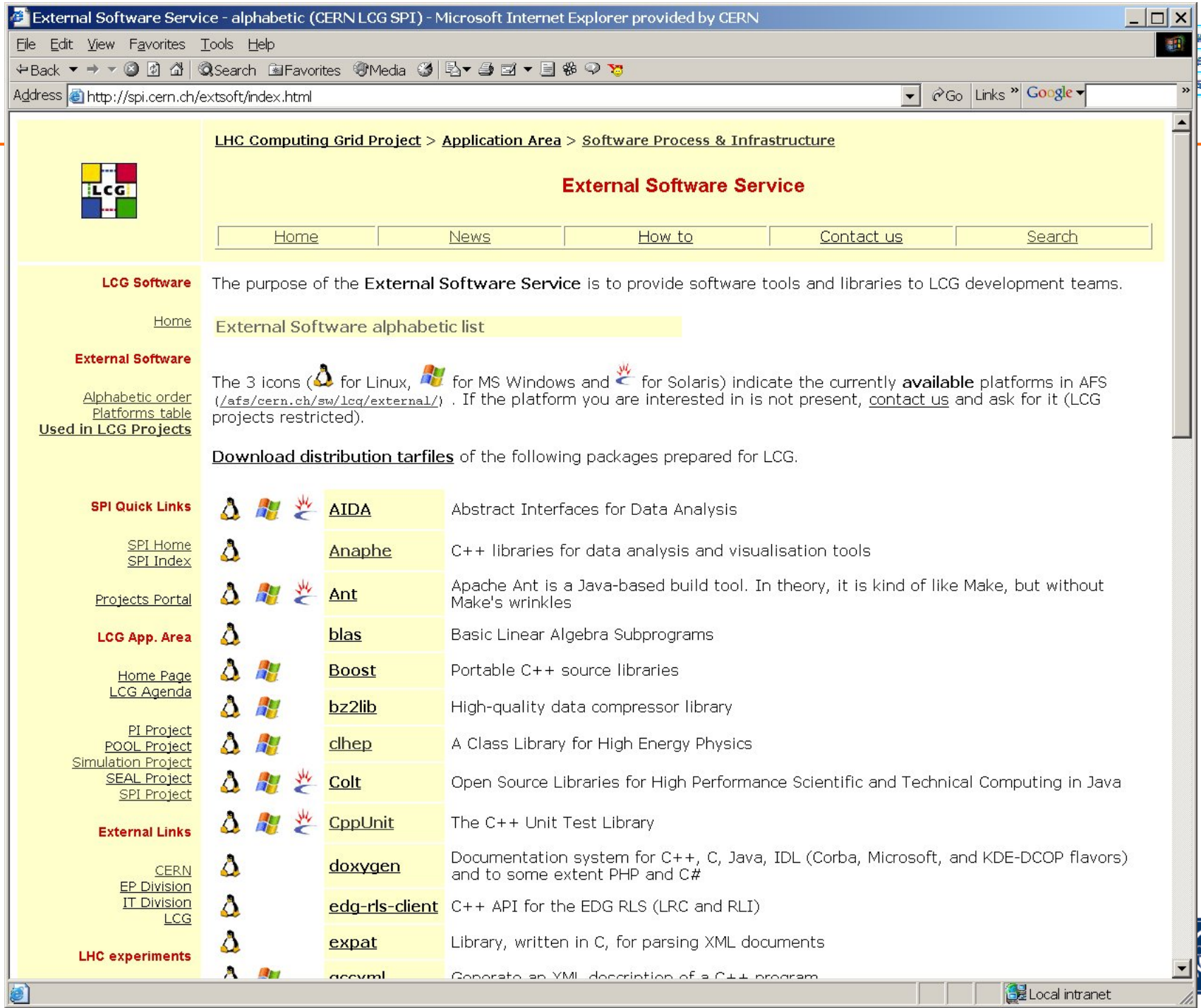
- We install software needed by LCG projects.
- We provide a set of **Open Source and Public Domain** software (libraries and tools) like:
  - Compilers (icc, ecc)
  - Scientific libraries (GSL)
  - CERN made packages (clhep, root)
  - General tools (python)
  - Test tools (cppunit, qmtest)
  - Database software (mysql, mysql++)
  - Documentation generators (lxr, doxygen)
  - XML parsers (XercesC)
- There are currently **45 different software**, plus others under evaluation.

How is External Software organized?

- The LCG projects (SEAL, POOL, PI, Simulation and SPI) propose **what to install and in which version**
- When there is agreement with the experiments
- Here is the list of the **available platforms** (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*).
- SPI **installs** the software, often lot of **help from users**
- 45 software packages on different platforms and several versions totalizing more than **300 different installations**.

How does External Software work?

- A unique **AFS location**:
  /afs/cern.ch/sw/lcg/external/
  (even for software already existing under AFS).
- Standard installation **structure**:
  software_name/version/platform/software_content
  i.e.: *Boost/1.30.2/rh73_gcc32/(lib, include, bin, …)*
- **Web information**: one page per software.
  Homepage: *http:/spi.cern.ch/extsoft/*
  The name of the person who helped installing the software is mentionned there.


External Software Service - alphabetic (CERN LCG SPI) - Microsoft Internet Explorer provided by CERN
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The purpose of the External Software Service is to provide software tools and libraries to LCG development teams.
External Software alphabetic list
The 3 icons (for Linux, for MS Windows and for Solaris) indicate the currently available platforms in AFS (/afs/cern.ch/sw/lcg/external/) . If the platform you are interested in is not present, contact us and ask for it (LCG projects restricted).
Download distribution tarfiles of the following packages prepared for LCG.
AIDA Abstract Interfaces for Data Analysis
Anaphe C++ libraries for data analysis and visualisation tools
Ant Apache Ant is a Java-based build tool. In theory, it is kind of like Make, but without Make's wrinkles
blas Basic Linear Algebra Subprograms
Boost Portable C++ source libraries
bz2lib High-quality data compressor library
clhep A Class Library for High Energy Physics
Colt Open Source Libraries for High Performance Scientific and Technical Computing in Java
CppUnit The C++ Unit Test Library
doxygen Documentation system for C++, C, Java, IDL (Corba, Microsoft, and KDE-DCOP flavors) and to some extent PHP and C#
edg-rls-client C++ API for the EDG RLS (LRC and RLI)
expat Library, written in C, for parsing XML documents
Local intranet

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Simulation Project
SEAL Project
SPI Project

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LCG

LHC experiments

ALICE
ATLAS
CMS
LHCb

Boost

Portable C++ source libraries.

Description

The emphasis is on libraries which work well with the C++ Standard Library. One goal is to establish "existing practice" and provide **reference implementations** so that the Boost libraries are suitable for **eventual standardization**. Some of the libraries have already been proposed for inclusion in the C++ Standards Committee's upcoming C++ Standard Library Technical Report.

Availability

```
/afs/cern.ch/sw/lcg/external/Boost/1.30.2/win32_vc7/
/afs/cern.ch/sw/lcg/external/Boost/1.30.2/rh73_ecc71/
/afs/cern.ch/sw/lcg/external/Boost/1.30.2/rh73_icc71/
/afs/cern.ch/sw/lcg/external/Boost/1.30.2/rh73_gcc32/
/afs/cern.ch/sw/lcg/external/Boost/1.30.0/win32_vc7/
/afs/cern.ch/sw/lcg/external/Boost/1.30.0/rh73_ecc71/
/afs/cern.ch/sw/lcg/external/Boost/1.30.0/rh73_icc71/
/afs/cern.ch/sw/lcg/external/Boost/1.30.0/rh73_gcc32/
/afs/cern.ch/sw/lcg/external/Boost/1.29.0/rh73_gcc32/
```

Documentation

- Provided documentation
  - AFS: http://cern.ch/service-spi/external/Boost/1.30.2/rh73_gcc32/index.htm
  - Provider: http://boost.org/libs/libraries.htm
  - Provider: http://www.boost.org/libs/python/pyste/
- Installation information
  - Unix: http://cern.ch/service-spi/external/Boost/1.30.0/rh73_icc71/_SPI/
  - Win: http://cern.ch/service-spi/external/Boost/1.30.2/win32_vc7/_SPI/

Links

http://boost.org/
http://lhcb-comp.web.cern.ch/lhcb-comp/Support/Boost/boost.htm

Contacts

Acknowledgement: Jacek Generowicz, Pere Mato

How does External Software work? (2)

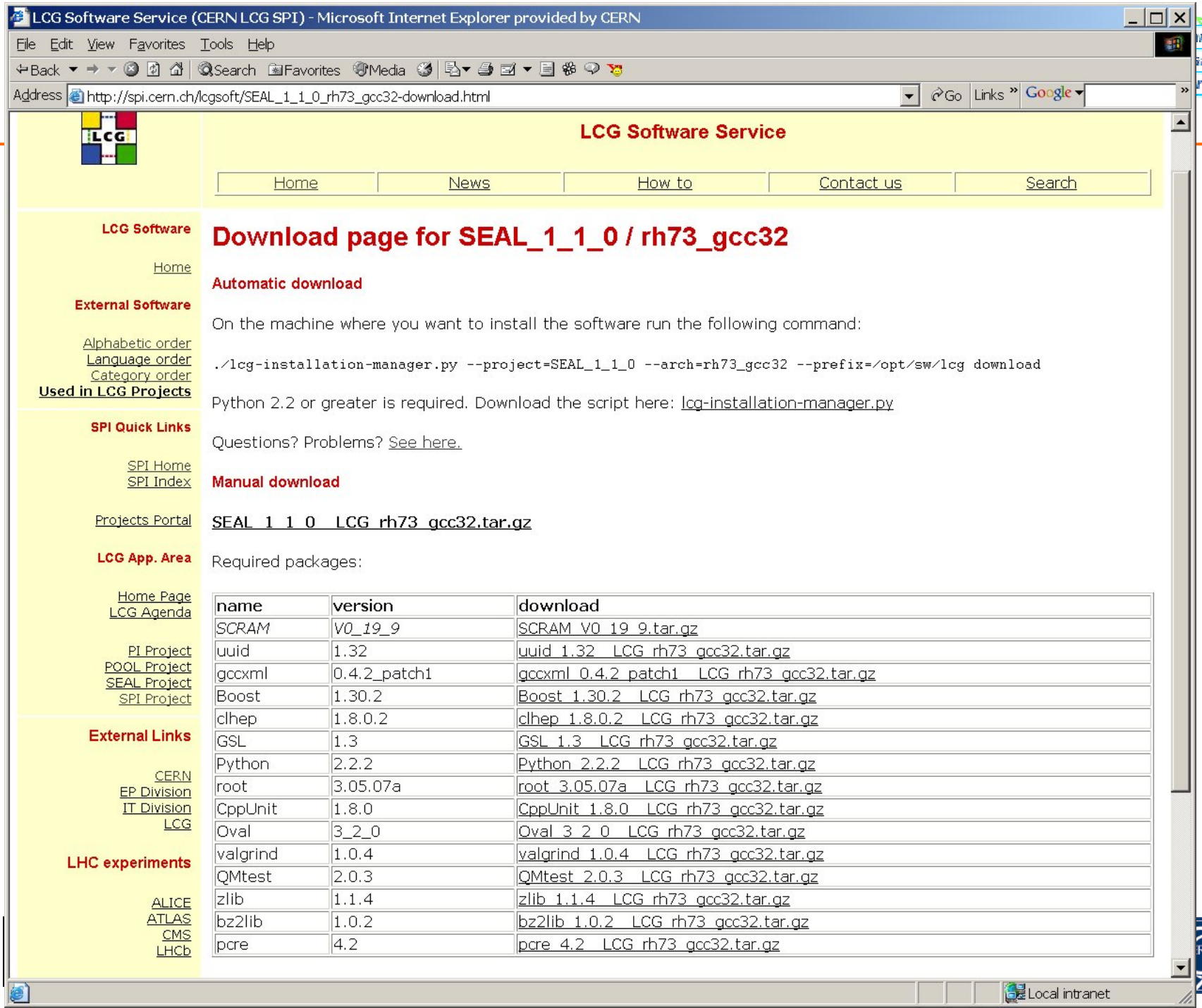
- Following a "How to", many software are installed by **users**
- Each **installation log** is stored under *_SPI* directories accessible from the web or AFS.
  i.e.: *Boost/1.30.2/rh73_gcc32/_SPI/install.txt and install_log.txt*
- All the software can be used with **configuration management** under the SCRAM ToolBox:
  - One description file per software containing library names, include files location and other variables.
  - the chosen versions.
  - the path to each package
  - A single tag (like *LCG_20*) to get the whole ToolBox configuration.

- A central solution reduces the work for all the users, avoids duplications and guarantees uniformity.

Who uses the External Software Service?

- LCG **Application Area** projects
- People in experiments and laboratories
- The installations are publicly available on AFS

- For developers that need local installation,
  - A **distribution** process has been developed to ease the copy of our software in different locations (see J. Moscicki presentation: **Software Distribution**)
  - It exploits the SCRAM toolbox to extract the needed packages. In terms of shortlist, version and platform.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Download page for SEAL_1_1_0 / rh73_gcc32
Automatic download
On the machine where you want to install the software run the following command:
./lcg-installation-manager.py --project=SEAL_1_1_0 --arch=rh73_gcc32 --prefix=/opt/sw/lcg download
Python 2.2 or greater is required. Download the script here: lcg-installation-manager.py
Questions? Problems? See here.
Manual download
SEAL_1_1_0__LCG_rh73_gcc32.tar.gz
Required packages:
name version download
SCRAM V0_19_9 SCRAM_V0_19_9.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
clhep 1.8.0.2 clhep_1.8.0.2__LCG_rh73_gcc32.tar.gz
GSL 1.3 GSL_1.3__LCG_rh73_gcc32.tar.gz
Python 2.2.2 Python_2.2.2__LCG_rh73_gcc32.tar.gz
root 3.05.07a root_3.05.07a__LCG_rh73_gcc32.tar.gz
CppUnit 1.8.0 CppUnit_1.8.0__LCG_rh73_gcc32.tar.gz
Oval 3_2_0 Oval_3_2_0__LCG_rh73_gcc32.tar.gz
valgrind 1.0.4 valgrind_1.0.4__LCG_rh73_gcc32.tar.gz
QMtest 2.0.3 QMtest_2.0.3__LCG_rh73_gcc32.tar.gz
zlib 1.1.4 zlib_1.1.4__LCG_rh73_gcc32.tar.gz
bz2lib 1.0.2 bz2lib_1.0.2__LCG_rh73_gcc32.tar.gz
pcre 4.2 pcre_4.2__LCG_rh73_gcc32.tar.gz
Local intranet

Conclusions and Future

- The service is **running and is stable**, it will support the LCG needs.
- More than 300 installations have been done spread on the different platforms rh73_gcc32, rh73_icc71, rh73_ecc71 and win32_vc7.

- Allow us some time from the decision of a new version, since some installations can be difficult and not documented for that package
  - Ex: mysql/icc, uuid/win, etc.

- Thank you, in particular to the people who helped in many installations