



SPI

Software Process & Infrastructure

For LCG Phase II

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Overview



- **Present status of Services**
- **Challenge and vision for Phase II**
- **Summary**



Present SPI Services (Summer 2005)



- Savannah Project Portal
- External Software
- Software Librarian, builds and releases
- Software Distribution
- Testing Frameworks
- QA Reports
- Development of LCG policies, templates
- Code Documentation (doxygen, lxr, viewcvs)
- Documentation and LCG Workbook



SPI Savannah Portal Service



- **Functionality:**
 - Bug tracking, Task management
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
- **Status**
 - >160 hosted projects
 - >1350 registered users
 - Users doubled in one year and many features added
- **Resources**
 - Yves Perrin
 - administration (project approval)
 - maintenance (submitted bugs)
 - development (support requests)
 - installation from GNU, general bug fixing and improvements
 - integration with AFS authentication
 - Integration with standard services already available
 - A Lot more



SPI External Software Service



- Install software needed by LCG projects.
- Open Source and Public Domain software (libraries and tools)
- Architects Forum decides what is installed
- We also provide configuration for the LCG projects
 - A unique AFS location
 - Standard structure
package_name/version/
platform/package_content
- We have automated many installations of the external software
- Resources
 - Eric Poinsignon (until end Nov 2005)
 - Since Nov 2002
 - Defined and implemented the system
 - User support
 - Installations and configurations
 - Yannick Patois (until end Dec 2005)
 - Since Mar 2004
 - Automated the system
 - Installations
 - Ian McLaren
 - Geant 4 testing and installations
 - CERNLIB support and installation



Support of Build and Releases of LCG



- **LCG Librarian**

- Started in Summer 2004
- Working to centralize all *build and release* tasks
- Task to *build the LCG software* for all supported platforms
- *Coordinate releases* and pre-releases with the projects
- *Maintain configuration* for the builds and for other build systems in
 - e.g. generate and keep up to date the CMT configuration

- **Developing simple tools to automate the build of the LCG software**

- **Librarians Integration group**

- *LIM meeting*: discuss/agrees the additional needs of the experiments in terms of build and installations of packages and versions.

- **Resources**

- Andreas Pfeiffer



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
- **We can generate distribution easily from our general configuration description (in XML)**
- **Looking into *pacman* as a suitable solution (on request from expts)**
- **Will be done by end of 2005**
- **Resources**
 - Yannick Patois (until end Dec 2005)
 - Implemented the system based on pacman
 - Defined the XML format
 - Implemented the solutions to generate pacman caches
 - Once this is automated will be part of the Post-build procedure
 - Development and improvement



SPI Testing Services



SPI provides

- Test frameworks
 - CppUnit, Oval
 - Qmtest
- Test support
- Test policies
- Test doc

- Different platforms/compilers

- 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)

Resources

- Johanne Benard (until end Mar 2006)
 - Installation of new versions and platforms
 - User support
 - Since Aug 2004 mostly QA



Quality Assurance Activities

QA Checklist on each Release

- Build the release
- Run automatic tests
- Statistics
 - Test Inventory
 - Documentation/Examples Inventory
 - Savannah Statistics
 - Code Inventory
 - Rule Checker , Logiscope
- LCG Policies
 - Configuration of a build system
 - CVS directory structure

Resources

- Johanne Benard (until end Mar 2006)
 - Defined the reports
 - Savannah statistics
 - Test coverage
 - Helped a lot LCG, EGEE, Experiments and projects (root, clhep, etc).
 - User support

QA Reports

- Automatic reports
 - Generated at every release
 - Published on the SPI web site
- Evaluation and usage of external tools continued



LCG Policies and Documentation



- **LCG Policies**

- CVS and Build Directory Policy
- Software Testing Policies
- Version Numbers, Tagging and Release Procedure
- Installation Directory Structure
- Platform string, binary names, debug flags and more

- **Code documentation activity continues**

- For every release and also for some external projects (root, clhep, etc)
- *Doxygen*
- *LXR*

- **LCG workbook**

- Created and added a few first sections

- **SPI Web**

- **Resources**

- Alberto Aimar (**until end 2005**)
 - Automatized/optimized generation of documentation
 - Doxygen
 - LXR
- Most of this activities have been automated this summer



Preparing SPI for Phase II



- **Change of SPI leadership**
- **The challenges for next phase**
 - Servicing LHC experiments more than AA projects
 - Opportunity to re-think the scope
 - Coping with reduction of manpower
 - Participation from people associated to projects
 - Optimization opportunities
 - Automation of procedures
 - Prioritization
- **Organization of the project**
 - Regular meetings
 - LIM meetings



SPI in LCG Phase II



- **Concentrate on providing services to the experiments**
 - Who see one source of “external” s/w products
- **Work guided and prioritized by Architects Forum**
 - Canalizing the requests from experiments (and projects)
- **Concentrate on the following areas:**
 - *Savannah service*
 - *Software services*
 - *Software development service*
 - *Web and Documentation*
- **Discussion with experiments will start to adjust scope**
 - What is needed, what can be improved



Coping with reduction of manpower



- **Participation from people in projects**
 - Build of releases (e.g. ROOT, Geant-4, POOL)
 - QA activities “re-insourced” back to projects
- **Participation from people in experiments**
 - “On-the-spot” help with requests from experiments
 - SPI provides a “frame” to do complex work
 - Guidelines, AFS space, web space for docs, ...
- **Optimization and automatization of procedures**
 - E.g.: web pages to run pre- and post- build procedures



Software Services



- **Installation of s/w (external and LCG AA projects)**
 - Update and maintain configuration information for the build systems
 - From the central configuration information (XML files)
 - LCG AA *release builds* done by projects (G4, ROOT, POOL)
 - Using existing tools to automatize installation
- **Software distribution service**
 - Download/install s/w in remote locations
 - Binary and from source distributions
 - Scripts need to be productized for use in experiments.
 - Plan to release for end 2005
- **New collaborators**
 - Bertrand Bellenot (25%)
 - ROOT installations on all platforms
 - Windows installations for external and LCG AA project s/w
 - Stefan Roiser (25%)
 - Linux installations for external s/w



Organization of the packages



- **Associate a responsible for each package**
 - Package or package/version or package/version/platform
 - SPI providing documentation and “framework”
 - Build and install scripts
- **Categorize packages by domains**
 - Database, graphics, ...
- **Distribute the work**
 - “Generic” packages done by SPI team
 - Packages specific to project/experiment done by the experts there



Software development services



- **Provide tools for testing, profiling, QA**
 - Installation of the tools
 - Provide minimal documentation on web
 - User support on best effort
- **Provide scripts adapted to LCG context**
 - But testing/QA *activity* is done in projects and experiments
- **Prepare for new issues**
 - May need new expertise
 - E.g. new collaborative tools
 - Savannah forum, HyperNews, ... ?
- **New collaborator**
 - Manuel Gallas (25%)
 - Has background on this from initial research on QA in SPI



Web and Documentation



- **Maintain and improve existing web pages**
 - Update internal and external documentation (wiki pages)
 - SPI and LCG Workbooks
- **Automatize content wherever possible**
 - Create more “active” web pages
 - E.g.: status of external tools, configuration info
 - New: pages to do pre- and post- build procedures
- **Update and clarify existing policies**
 - Review by AF ?
- **Update web pages for external packages**
 - Responsibles, status, ... for each package
- **New collaborator**
 - John Harvey (10%)
 - Workbook of LCG



Summary



- **SPI provides a large set of stable services that fully use the current resources**
 - Savannah, External Software, Testing Frameworks, Software Distribution, Build and Release, QA Activities
- **SPI work is guided by the Architects Forum**
 - AF represents the users and steers our priorities
- **In Phase II we have to concentrate more on the direct experiments' needs**
 - Services, tools, etc.
- **Resources will be reduced significantly in the next few months**
 - Will have to adapt our scope
- **Will discuss with the experiments and projects (LCG and EGEE)**

