

# THE LCG SAVANNAH SOFTWARE DEVELOPMENT PORTAL

Y. Perrin, D. Feichtinger<sup>#1</sup>, F. Orellana<sup>#2</sup>, CERN, Geneva, Switzerland, M. Roy, FSF France

## Abstract

A web portal has been developed, in the context of the LCG/SPI project, in order to coordinate workflow and manage information in large software projects. It is a development of the GNU Savannah package and offers a range of services to every hosted project: Bug / support / patch trackers, a simple task planning system, news threads, and a download area for software releases. Features and functionality can be fine-tuned on a per project basis and the system displays content and grants permissions according to the user's status (project member, other Savannah user, or visitor). A highly configurable notification system is able to channel tracker submissions to developers in charge of specific project modules.

The portal is based on the GNU Savannah package which is now developed as 'Savane' with the support of the Free Software Foundation France. It is a descendant of the well known SourceForge-2.0 software. The original trackers were contributed to the free software community by XEROX, which uses a similar system for their internal software development. Several features and extensions were introduced in a collaboration of LCG/SPI with the current main developer of Savannah to adapt the software for use at CERN and the results were given back to the free software. LCG Savannah currently provides services to more than 800 users in some 100 projects.

## INTRODUCTION

The LCG/SPI (Software Process Infrastructure) project [1] developed a web portal, called LCG Savannah [2], to coordinate workflow and manage information in large software projects (e.g. SEAL, POOL).

LCG Savannah is web based and therefore is accessible to the geographically distributed community of developers and users. It can host multiple projects and it provides a single entry point and a uniform access to project information, which is particularly convenient for people who deal with several projects either as developers or users. Although being totally independent, the hosted projects can refer to each other via dependencies for items such as bugs, tasks, etc. LCG Savannah is customizable according to both project needs and users needs and it automatically adapts its interface to the role and permissions of its users.

## ORGANIZATION AND FUNCTIONALITY

LCG Savannah is organized in projects which are grouped according to their type as entered at registration time. All projects of the same type inherit a number of common characteristics and default values with, of course, the possibility to define new types and to override the defaults for any given project.

LCG Savannah should be seen as a development front-end for every project it hosts. It provides, in a fully configurable and integrated way, the main functions required by any significant software development project. These include bug and support request tracking, task management, automatic notification of people concerned, access to CVS repository, download area, news and mailing lists. Although bug and support request tracking and task and patch management share a common powerful tracker engine, each of these services has been customized to provide the functionality it has been assigned. Furthermore by providing a clear separation between projects and a high degree of customization, LCG Savannah give every project the feeling they have their own tracker systems. However it is possible to create dependencies and links between trackers both within and across projects.

Projects cannot develop code on the LCG Savannah server. This is done on systems belonging to the projects. Although CVS repositories are generally hosted on project's machines, it is possible to use a CVS server based at CERN to host project repositories. In both cases, it is possible to have read access (viewCVS) to the repository if the project administrator has activated the corresponding feature and has provided the appropriate url when configuring the project.

LCG/SPI has added an AFS authentication PAM module to allow users to choose between logging with a password they gave to Savannah or with their AFS password if they have one.

Every project has a public menu and an administration menu to access the corresponding set of functions. Users are classified in several categories (e.g. savannah administrators, project administrators, project members, logged-in users and anonymous users) as a function of their registration and login status, their subscription to the project they are accessing and the role(s) the project administrator has given them. The content, menus and links of the pages they are presented with are automatically adapted to the rights of the category they belong to.

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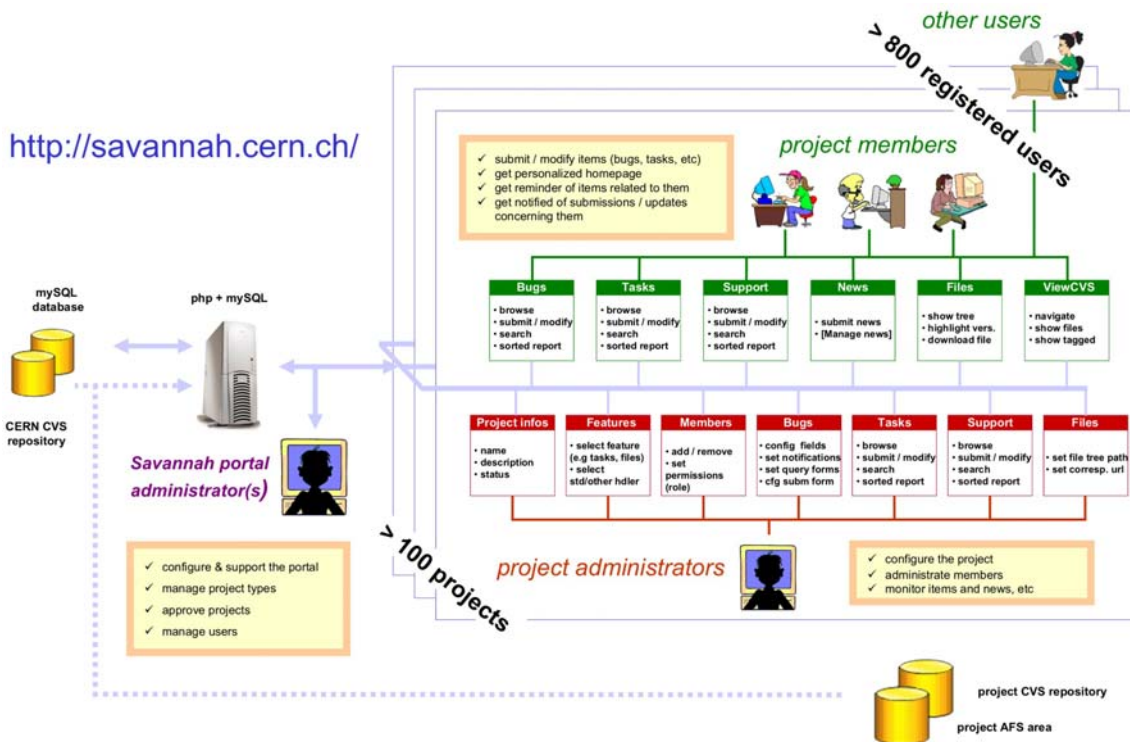


Figure 1: Organization and main functionality of LCG Savannah

Every project has a set of ‘public’ pages and a set of ‘administration’ pages (see Fig. 1). The project public pages are visible by all members of the project and most of them by non-logged in users. These pages present project public information (e.g. description of the project, list of bugs, news, etc) and the forms to submit new items (see Fig. 2) or modify existing ones (e.g. follow-up comment). They are accessible by means of a ‘public’ menu displayed at the top of every project page.

The administration pages are available to the project administrator(s) to configure which features (e.g. bug tracking, download area) are used by the project and for each of these, how they are used (e.g. fields, notification mailing lists, reports, etc) (see Fig. 3). The project administration also includes management of members and of their permissions. These pages can be accessed by an ‘Administration’ menu which appears at the top of all project pages but only to project members who have the administration permission.

Figure 2: Modification of a bug

| Category related lists | Email Address               | send on all updates                 |
|------------------------|-----------------------------|-------------------------------------|
| None                   | project-elfms@cern.ch       | <input type="checkbox"/>            |
| Quattro Core           | project-quattro@cern.ch     | <input checked="" type="checkbox"/> |
| Quattro NCM components | project-quattro@cern.ch     | <input checked="" type="checkbox"/> |
| Lemon Core             | project-elfms-lemon@cern.ch | <input checked="" type="checkbox"/> |
| Lemon sensors          | project-elfms-lemon@cern.ch | <input checked="" type="checkbox"/> |
| LEAF-SMS               | project-elfms@cern.ch       | <input checked="" type="checkbox"/> |
| LEAF-HMS               | project-elfms@cern.ch       | <input checked="" type="checkbox"/> |
| ELFms - CERN specific  | project-elfms@cern.ch       | <input checked="" type="checkbox"/> |

Figure 3: Email notification settings

In addition to project pages, LCG Savannah provides every registered user with a set of personalized pages (see Fig. 4) presenting a summary of all items related to this user (e.g. group membership, open bugs, bookmarks, preferences, etc). The personal homepage is the page that is presented immediately when the user logs into Savannah.

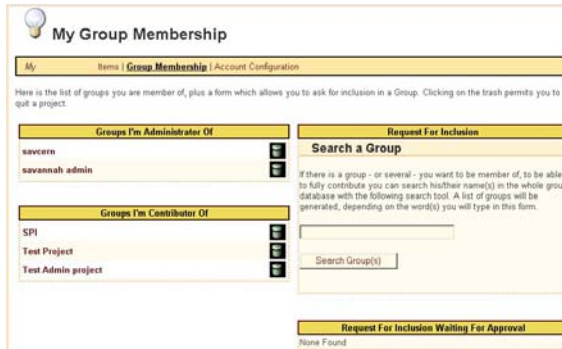


Figure 4: Group membership personal page

## IMPLEMENTATION

LCG Savannah pages are built dynamically by PHP code organized in 400 source files extracting the project configuration and data from a MySQL database including some 80 tables. The LCG Savannah server is a dual Pentium III, 1 GHz, 500 MB system running Apache, MySQL 3.23.58 and PHP 4.1.2 on a Linux Red Hat 7.3 platform. Daily backups are made. A couple of cronjobs are run at periodic intervals on this system and on an other one to check that the Savannah homepage is accessible. If necessary, they take appropriate actions to insure stable operations.

## STATUS

LCG Savannah is now well adopted with more than 100 projects (see Table 1 and Fig. 5) and more than 800 registered users (see Fig. 6) at time of writing.

| Type                 | Projects |
|----------------------|----------|
| ALICE                | 1        |
| ATLAS Offline        | 33       |
| CMS                  | 20       |
| LHCb                 | 9        |
| ARDA                 | 1        |
| EGEE                 | 10       |
| LCG Application Area | 10       |
| LCG Grid Deployment  | 5        |
| Other Grid Projects  | 2        |
| CERN IT              | 9        |

|                 |   |
|-----------------|---|
| SAVANNAH Portal | 5 |
| HEP Packages    | 4 |

Table 1: Types of hosted projects

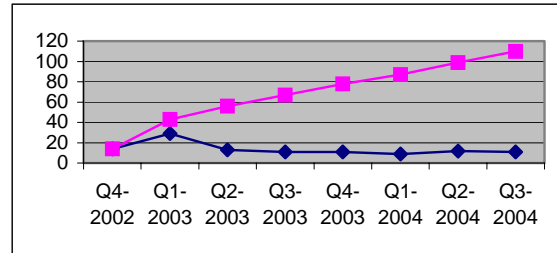


Figure 5: Project registration

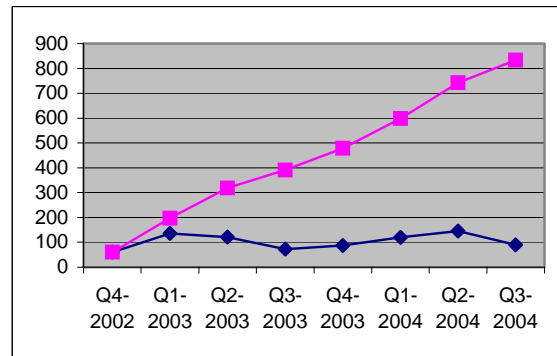


Figure 6: User registration

LCG tries to stay in phase with the open source version to benefit from bug fixes and improvements done there. Reported bugs are regularly fixed and requests for improvements are handled as a function of the number of projects requesting them. All efforts are made to integrate these modifications as configurable options so that they do not disturb existing projects and are acceptable, if not attractive, to both the LCG and the open source communities. This is achieved by keeping a close collaboration with FSF-France to regularly review progress and merge versions.

People interested in using Savannah should register to LCG Savannah [2] for LHC/LCG related project(s) or make their own installation from Savane [3] for other projects.

## PERSPECTIVES

A number of new features have recently been added to LCG Savannah and this should continue in the future. An enhanced control on the treatment of bugs or tasks has been implemented. It allows project administrators to specify which transitions from one state to an other are allowed and to associate actions

such as re-assignment of responsibilities and notifications to groups of people whenever an item goes from one state to an other. This feature is being tested and should be released soon.

## REFERENCES

- [1] <http://spi.cern.ch/>
- [2] <http://savannah.cern.ch/>
- [3] <https://gna.org/projects/savane/>