



**LibreSource
Enterprise**



LibreSource:
application cases, what we learned
and perspectives

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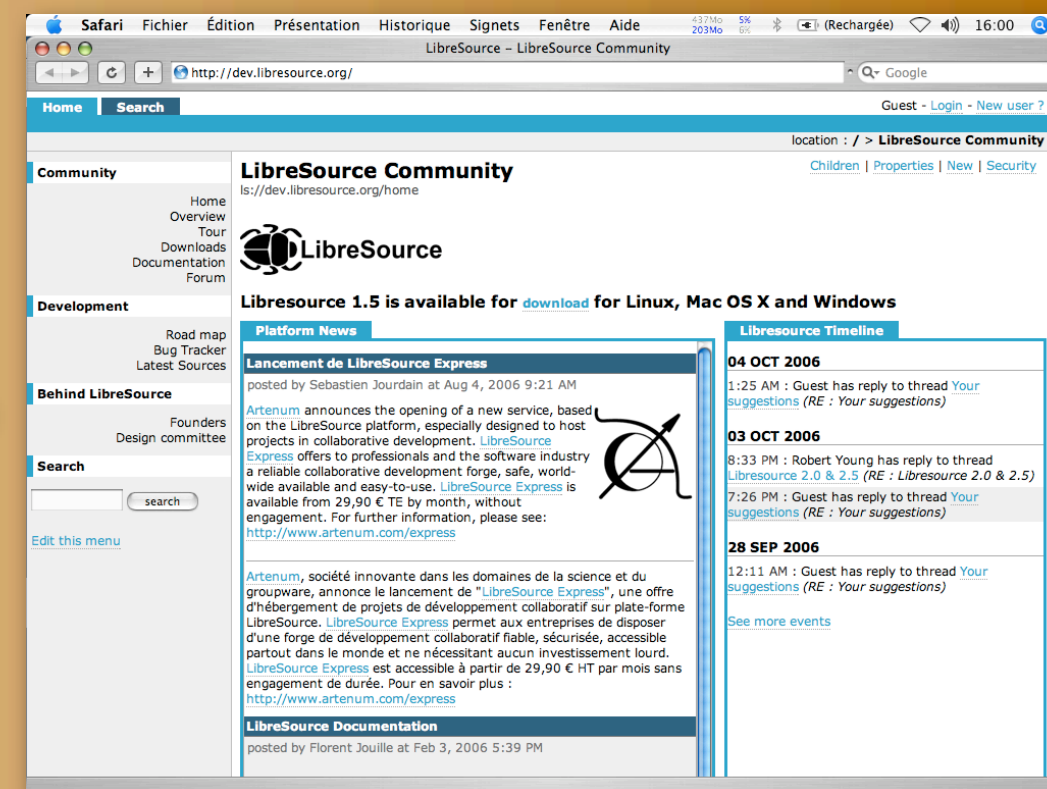
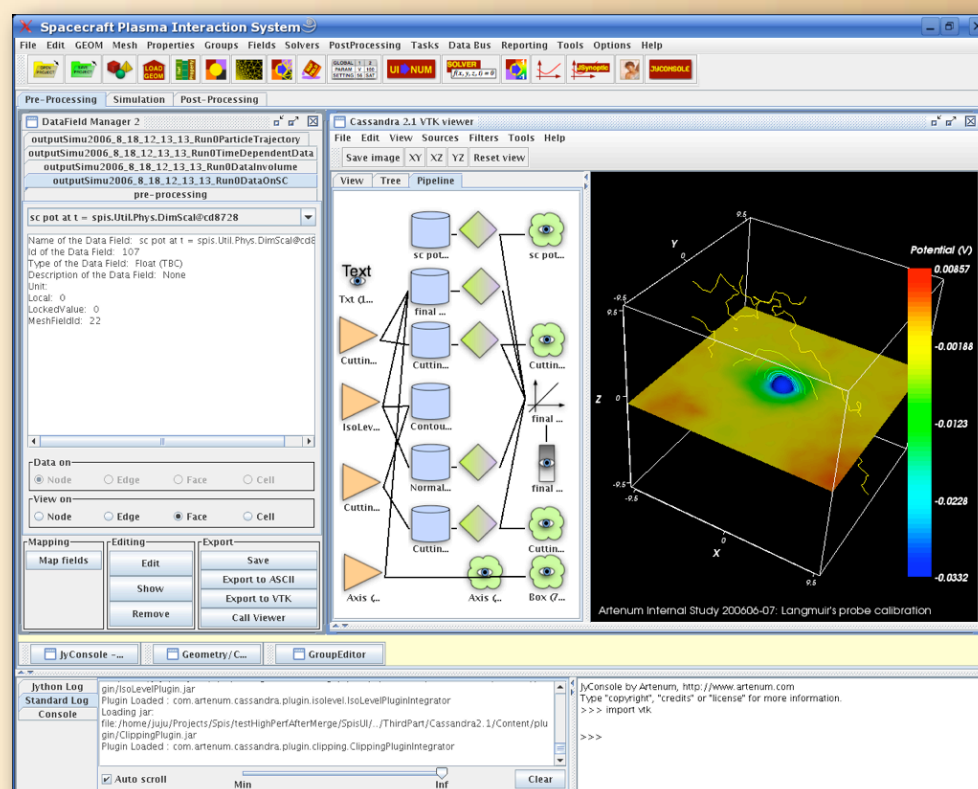
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Part I: libreSource overview

Part II: Application cases

Part III: What we learned and perspectives

- Independent small company, settled in Paris, France.
- R&D laboratory and software editor.
- Open Source culture.
- Two activities: Science and Groupware.



from forges to Software factories

- ▶ The conception process of software project is global today:
 - ▶ Increasing number of distributed projects,
 - ▶ Geographical team distribution, off-shore,
 - ▶ Challenge of heterogeneous communities,
 - ▶ Contributions tracking,
 - ▶ Integration/inter-operability with external tools
 - ▶ Integration of new development methods (agile, XP, ...).
- ▶ Weakness of existing platforms:
 - ▶ Dedicated tools to targeted purposes,
 - ▶ Heterogeneous tools with weak interoperability,
 - ▶ Weak modularity, difficulty to customized, maintained or upgrade,
 - ▶ Lack of security and access control,
 - ▶ Inexistent awareness.
- ▶ Respect of software development standards(ISO, ESA/ECSS/E40...).
- ▶ Respect of software Quality Assurance Project Plan (QA2P).

We have to develop of a new European platform able to answer to the issues of modern software projects.

Objectives of the libresource project



- ▶ Answer to the requirements collected from:
 - ▶ Software industry,
 - ▶ Research,
 - ▶ Open Source communities.
- ▶ Develop a new forge able to manage:
 - ▶ Software development
 - ▶ Groupware activity.
- ▶ Provide a single tool:
 - ▶ Easy to use,
 - ▶ With a consistent set of collaborative tools.
- ▶ Provide a modular, customisable, flexible and expendable solution.
- ▶ Enhance team bounds with a better awareness.
- ▶ Give benefits from up to date and robust technologies.
- ▶ Be part of the European Open Source dynamics (ObjectWeb, ESA, INRIA, ONERA, CERN, EU's Framework...)

LibreSource philosophy and Key features

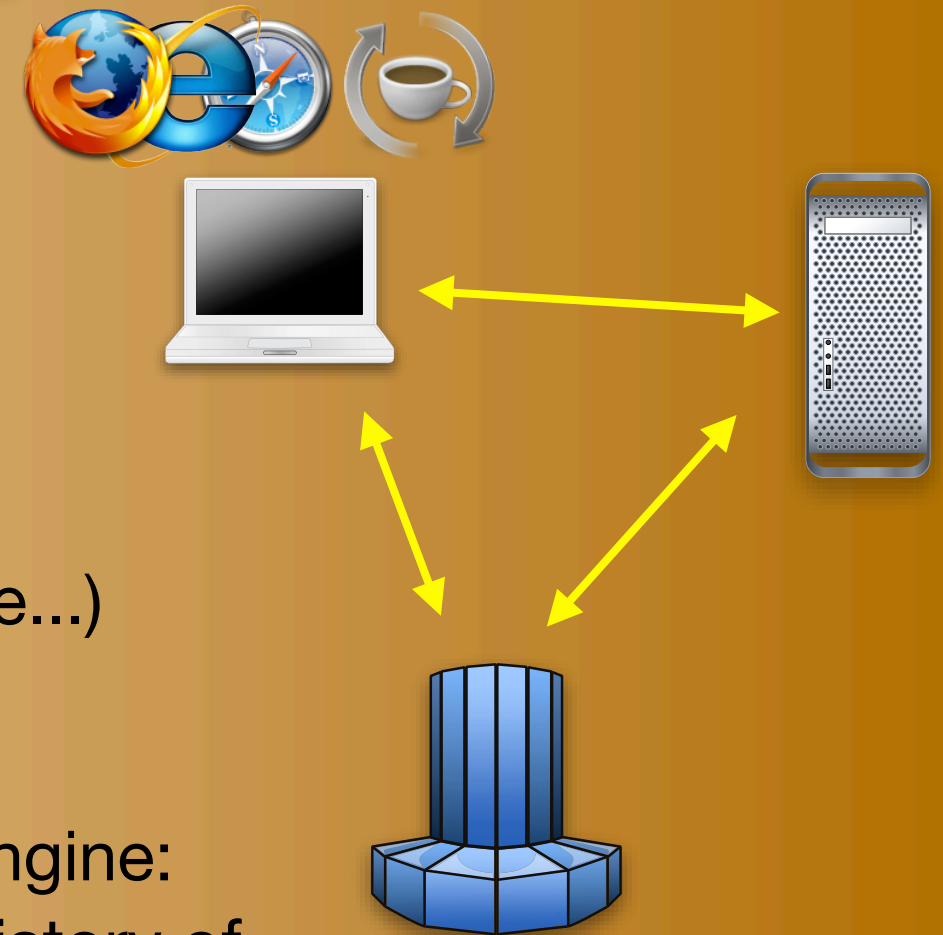
► Web server easily available by all users from everywhere in the office and in the world !

► Providing:

- Exchange tools (download areas...),
- Communication tools (wiki, mail, forum...),
- Quality control tools (Bugtrackers...),
- Archives and classification tools (Search engine...)
- Strong awareness (proactive notification...),
- Close integration of each components,
- And... the **Synchronizer**, an innovative SCM engine: easy to use, versatile and efficient to track the history of shared data (source codes)

► Based on an innovative approach:

- Java/J2EE
- Modular and homogenous design
- Modular Web Portal, easy to adapt
- A strong security and access control



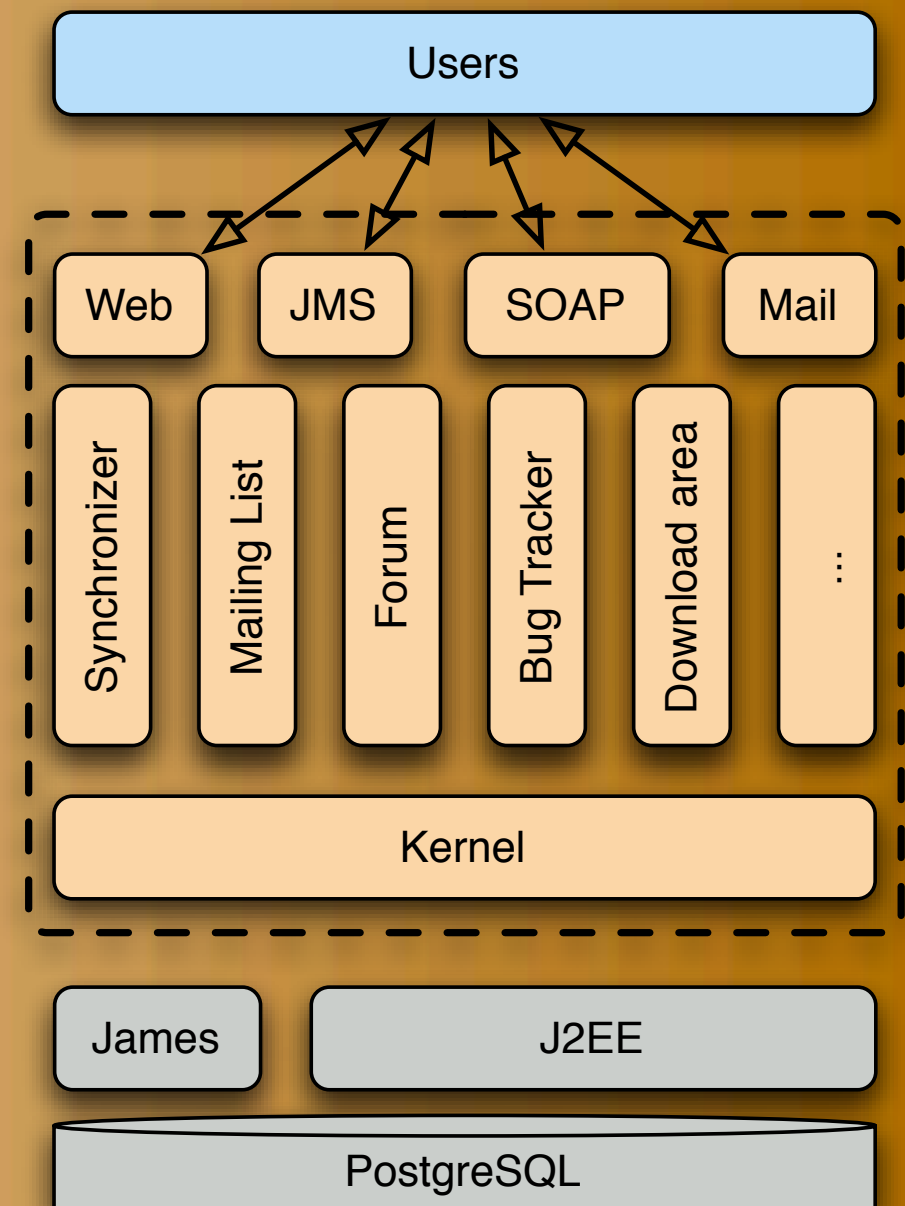
History and Partners

- ▶ 2001: initiated by Artenum in the frame of the RNTL 2001 (French national network for software technologies)
- ▶ 2002: initial development
 - ▶ Research partner: Ecoo team (INRIA/Loria)
 - ▶ Economic analysis: University Paris 7 - Denis Diderot
 - ▶ Private/Public co-funding
 - ▶ About 3 years of R&D
 - ▶ A successful research to industry transfer
- ▶ October 2004: Spine Virtual Laboratory start
 - ▶ Pilot project, first industrial application
- ▶ June 2005: LibreSource 1.0 release
- ▶ Several community deployments and uses
- ▶ February 2006: LibreSource 1.5 release

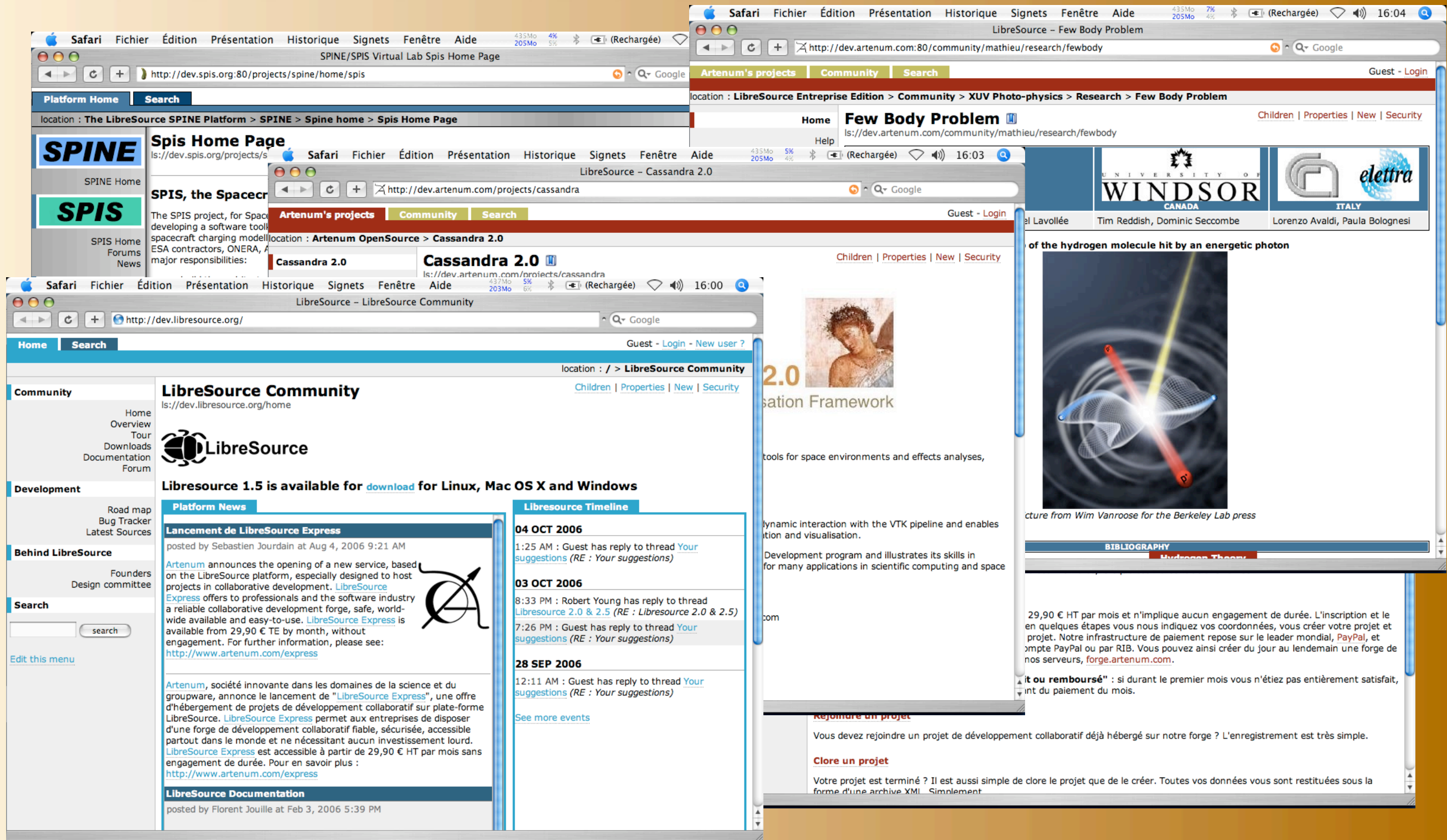


Modular design

- ▶ Web based interface
- ▶ Java Web Start based lightweight clients
- ▶ Services provided by modular plugins (resources)
- ▶ A versatile kernel managing:
 - ▶ Users (JAAS)
 - ▶ Inter-resources communication
 - ▶ Full text search engine (Lucene)
 - ▶ Notification service
 - ▶ Security and access control
 - ▶ Possible keystone of others applications (CMS)
- ▶ A full JAVA/J2EE application
- ▶ Industrial and open standards (EJB)
- ▶ High portability versus OS
- ▶ Based on open-source components (JOnAS, PostgreSQL...)



LibreSource : modular Web Portal



The image displays a collage of browser windows from the LibreSource web portal, illustrating its modular architecture. The windows show various components of the portal, including project pages, community forums, and documentation.

Windows shown:

- SPIS Home Page:** Displays information about the SPIS (Spacecraft Charging Software) project, including its purpose and major responsibilities.
- LibreSource - Few Body Problem:** Shows a page for the 'Few Body Problem' research project, featuring a navigation menu and a list of team members.
- LibreSource - Cassandra 2.0:** Displays the 'Cassandra 2.0' project page, including a description and a list of team members.
- LibreSource - LibreSource Community:** Shows the main community page, featuring a navigation menu, a list of projects, and a section for 'LibreSource 1.5 is available for download for Linux, Mac OS X and Windows'.
- LibreSource - Platform News:** Displays a news article about the 'Lancement de LibreSource Express'.
- LibreSource - Timeline:** Shows a timeline of events, including the release of LibreSource 2.0 and 2.5.
- LibreSource - Bibliography:** Displays a bibliography section, including a reference to a paper by Wim Vanroose for the Berkeley Lab press.

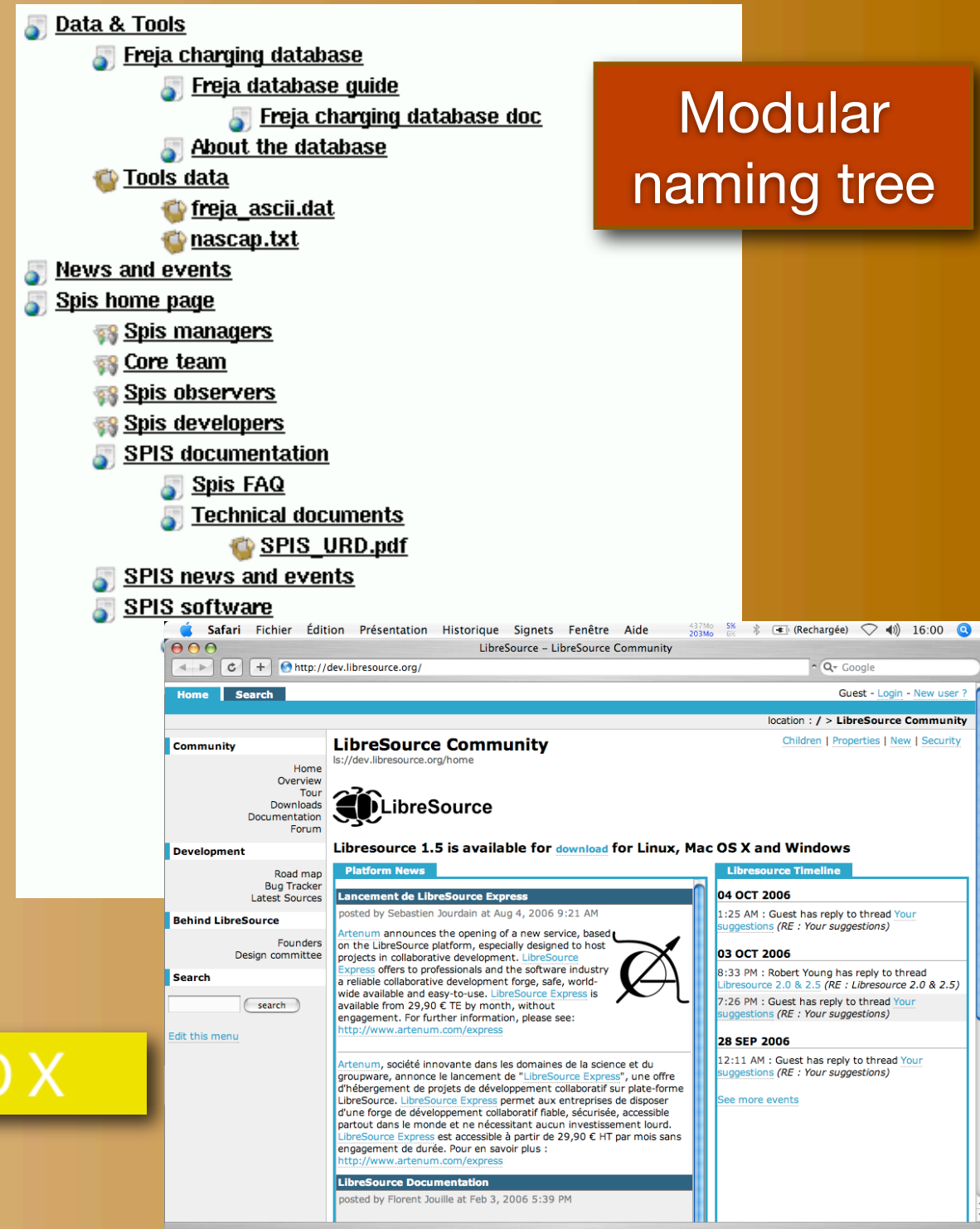
The LibreSource portal is designed to be modular, allowing users to navigate between different projects and community features. The interface includes a search bar, a navigation menu, and a list of projects. The 'LibreSource 1.5' announcement highlights its availability for Linux, Mac OS X, and Windows, emphasizing its collaborative development and open-source nature.

Modular Web Portal

- ▶ LibreSource is a modular web portal
- ▶ Available from intranet and extranet.
- ▶ Flexible hierarchical structure
- ▶ A modular approach based on resources:
 - ▶ Wiki Page
 - ▶ File
 - ▶ Download area
 - ▶ Forum
 - ▶ Timeline
 - ▶ Template
 - ▶ Group
 - ▶ Project
 - ▶ Synchronizer
 - ▶ Tracker
- ▶ Full online management, creation & edition
- ▶ Full Wiki based approach (versioned)
- ▶ Full XML based import/export capability



Modular
naming tree



SCM : LibreSource Synchronizer

- ▶ A software forge needs a SCM tool to preserve all the history of shared documents and to allow to collaborate efficiently on the same documents.
- ▶ An innovating software configuration management tool called **Synchronizer**.
- ▶ Yet another SCM tool ! Why ?
 - ▶ Pure JAVA tool, as portable as JAVA
 - ▶ Strong integration into LibreSource, reinforced awareness
 - ▶ Simplicity of use
 - ▶ 3 flavors for client applications:
 - ▶ Java Web Start applications
 - ▶ Eclipse plugin
 - ▶ Command line
 - ▶ Mathematical validation of the algorithm
 - ▶ Advanced uses for software factory

LAST TICKET : 3407
 BINARIES EXTENSIONS : pdf ps eps zip class gif jpg mp3 mpg png

List Workspace | History | Tags | Browse

WORKSPACE NAME	TICKET	LAST SYNCHRO	ACTIONS	USER(S)
jujuTest@LuciferWin	3403	Nov 9, 2006 3:23 PM	UPDATE - COMMIT	ls://dev.spis.org/users/juju
roussel4@lyre	3152	Oct 12, 2006 4:51 PM	UPDATE - COMMIT	ls://dev.spis.org/users/roussel
SebTest	0	Nov 3, 2006 10:42 AM	UPDATE - COMMIT	ls://dev.spis.org/users/seb
roussel@leo	0	(never)	UPDATE - COMMIT	ls://dev.spis.org/users/roussel
roussel4@lynx	0	(never)	UPDATE - COMMIT	ls://dev.spis.org/users/roussel
transfertToAlpha	3449	Oct 25, 2006 3:31 PM	UPDATE - COMMIT	ls://dev.spis.org/users/juju
hilgers@esa	3152	Oct 13, 2006 3:28 PM	UPDATE - COMMIT	ls://dev.spis.org/users/hilgers
NewDocDev@				
roussel4b@ly				

Commit on connection: C:\repertoirePartage\so6\1\s...

File View

Report

```

---
A Presentation.ppt
A logo.png
A DocumentDeTravail.doc
---
    
```

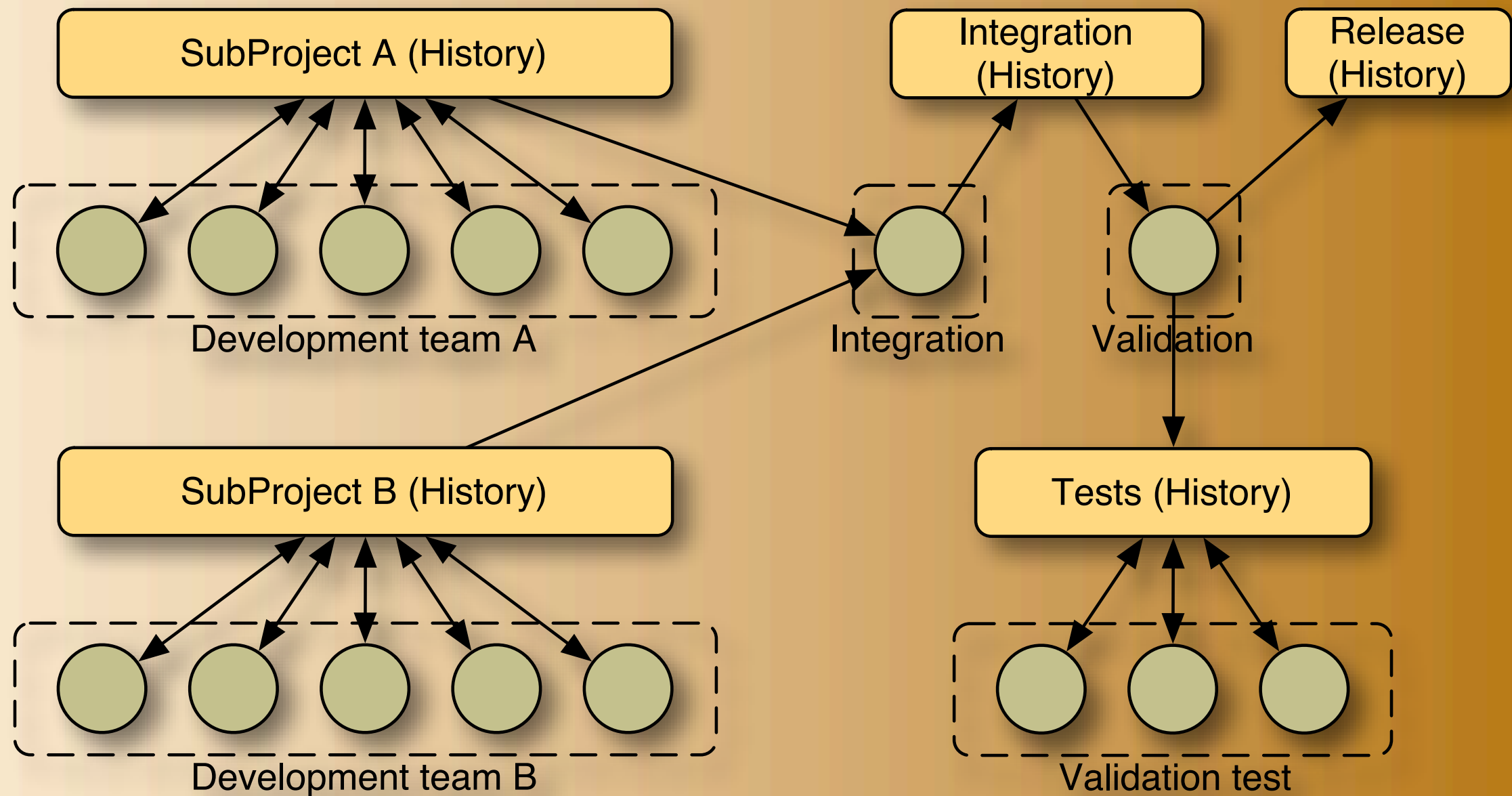
Cancel Previous Finished

Well, what's new from my CVS or my SVN ?

- ▶ Based on operational transformations approaches, issued from INRIA/Loria.
- ▶ mathematic proof of convergence of the merge algorithm.
- ▶ Based on the change set model, stored in XML files.
- ▶ Track the global history of a workspace.
- ▶ Atomic commit and update.
- ▶ Rename operation on files and directories history.
- ▶ Each workspace keep a local copy of the history.
- ▶ Can make diff, undo, and track uncommitted changes or revert offline.
- ▶ Allow to know the history for each line of text files, each entry of file systems, each node of XML documents.
- ▶ Do not allow partial commit or update.
- ▶ Most of the computing load is deported on the client side.
- ▶ Simple to use and deploy: Java Web Start, pass through firewalls.
- ▶ Simple contribution tracking and real awareness.
- ▶ In addition to tickets numbers, tags are beautifully supported.

**Modelling of the global developement/validation process
with distributed Dataflows**

Distributed dataflow for software factory

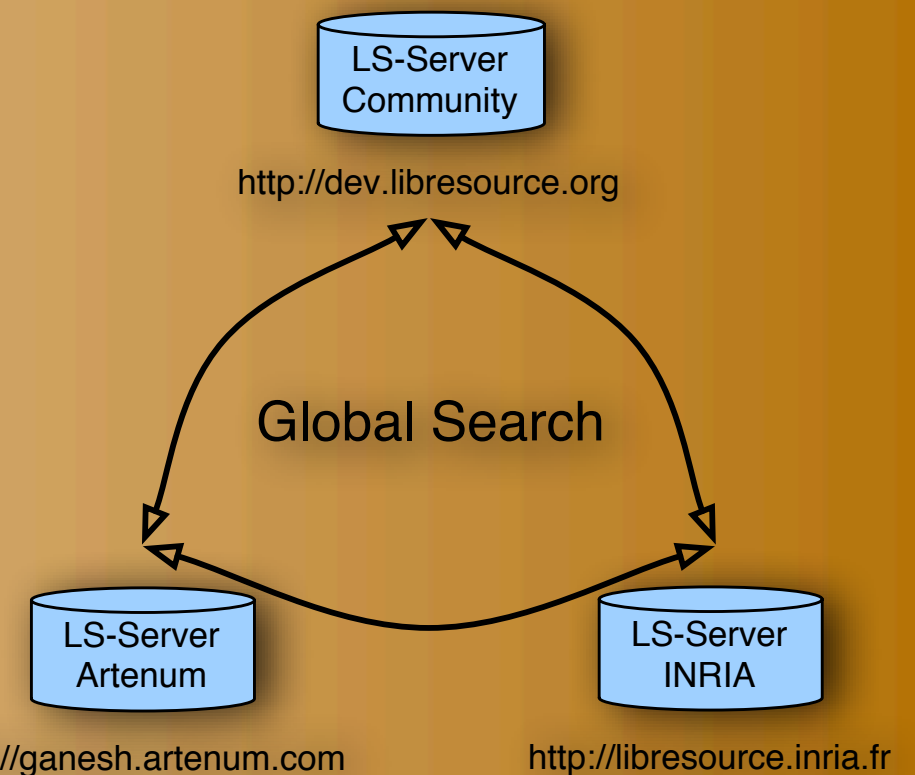


Decentralised model and groupware

► LibreSource platforms confederations

- Decentralised model
- Interconnection between several servers

► Consistent set of groupware tools:



A search engine

Search :

Search on this platform :

URI Pattern :

Resource Type :

7 result(s) found for "Transformation"

50% - [So6](#) (ls://dev.libresource.org/ls-dev/ls-cm/so6)
new set of [transformation](#) functions.

21% - [So6 CM Tool overview](#) (ls://dev.libresource.org/ls-dev/ls-cm/so6/overview)
others kind of data by writing a new set of [transformation](#)

21% - [So6 CM Tool overview](#) (ls://dev.libresource.org/ls-dev/ls-cm/so6/overview)
data by writing a new set of [transformation](#) functions

Full text
indexation



A notification

UserType1  [Voir l...](#)

ls://forge.artenum.com/users/userType1

Mon Profil | **Mes Favoris** | **Mes Filtres d'Événements** | **Mes...**

Nom du Filtre :

Type d'événements :

Uri :

Parâmetres :

Type de notification : ☒ E-mail ☐ Jabber



Forums

[Post new thread](#)

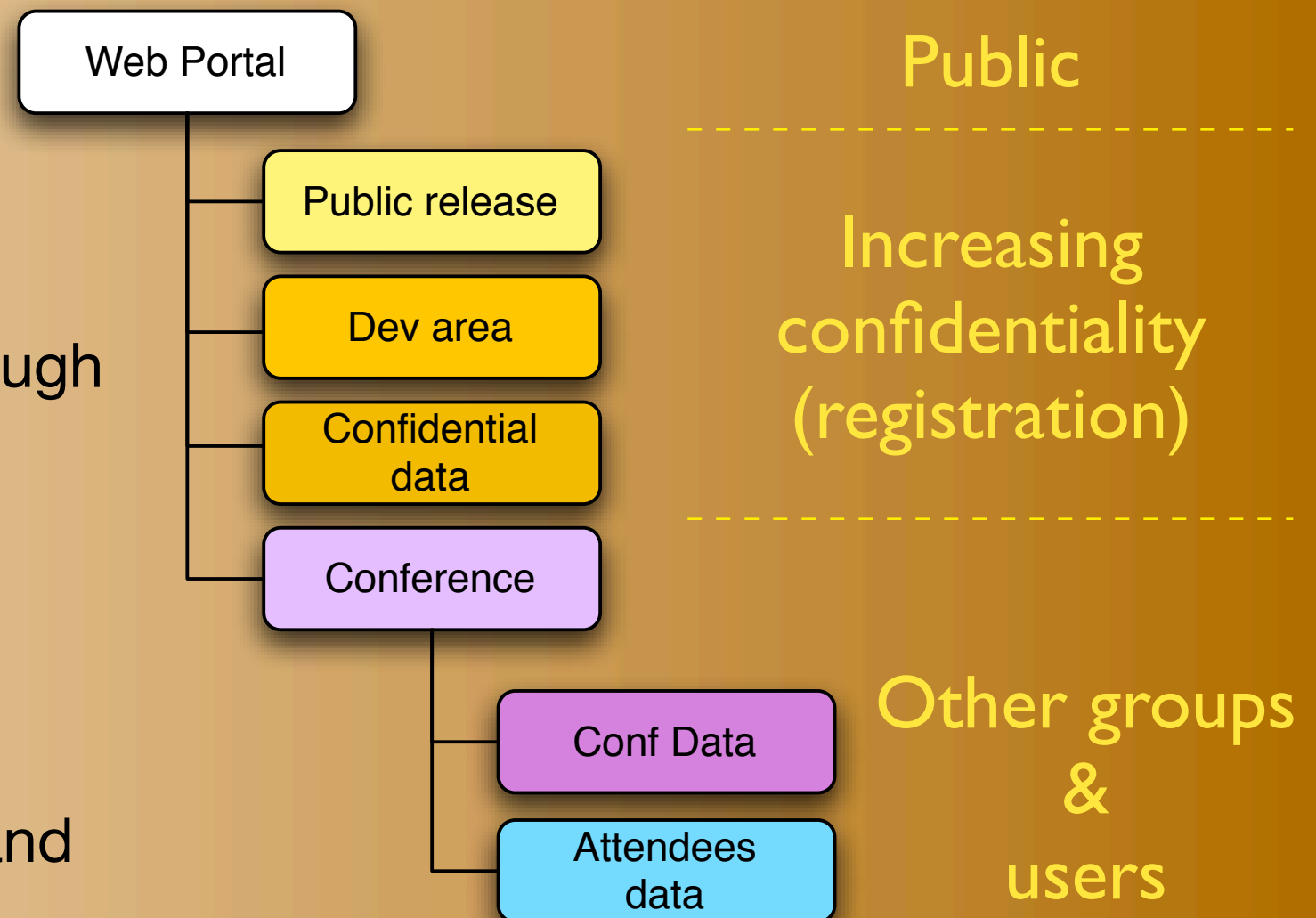
SUBJECT	MESSAGES	LAST POST
Libresource 2.0 & 2.5	4	last post by Sebastien Jourdain at Oct 18, 2006 3:06 PM
I cant reply to my own threads?	8	last post by Sebastien Jourdain at Oct 18, 2006 3:04 PM

Mailing list



LibreSource: users, access and security

- ▶ Central management of users:
 - ▶ internal LibreSource DB,
 - ▶ import from LDAP.
- ▶ A Role Based Access Control through an ACL
 - ▶ for each user
 - ▶ for each group
 - ▶ for each resource
- ▶ Possibility of public, semi-public and private parts.
- ▶ Great modularity and fine tunings on access control allows to make very versatile projects.

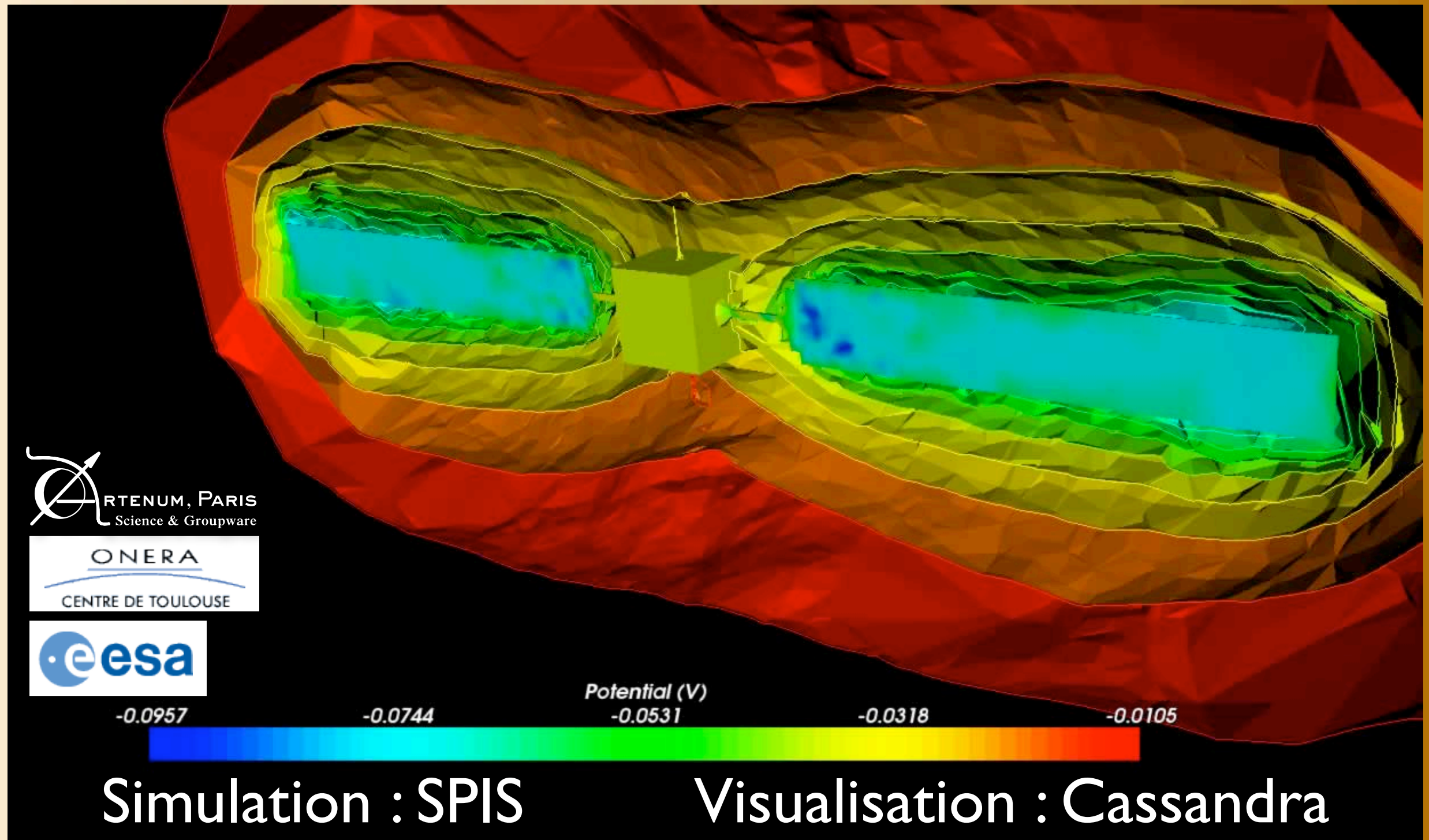


Part I: libreSource overview

Part II: Application cases

Part III: What we learned and perspectives

Smart I : spacecraft / plasma interaction study



SPINE Virtual lab

- ▶ Spacecraft charging community working on spacecraft / plasma interaction.
- ▶ International community: France, Netherlands, Sweden, Denmark, U.K., Germany, Austria, Spain, Portugal, Italy, Greece, Japan, China, Russia, U.S.A., Canada...
- ▶ Hybrid community:
 - ▶ Research,
 - ▶ Industry,
 - ▶ OpenSource.
- ▶ Core team: ESA, ONERA, IRF, Artenum...
- ▶ ~8Gb of data.
- ▶ ~150 registered users.
- ▶ In production since October 2004.

<http://www.spis.org>



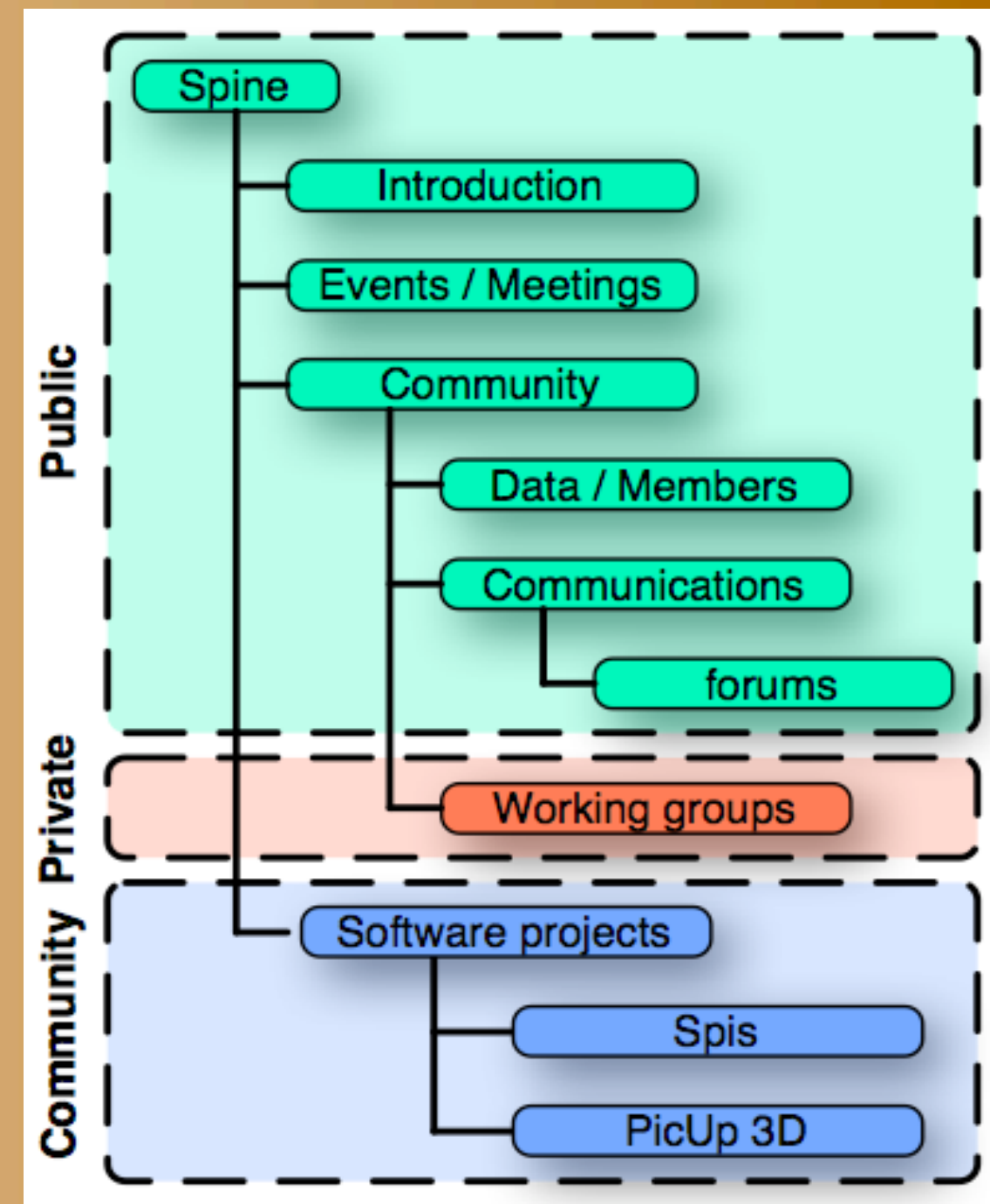
The screenshot shows the SPINE Virtual Lab homepage. The header includes navigation links: Platform Home, Search, and My Page. The main content area is titled "SPINE Homepage" and includes a sidebar with links to Home, Events, Community, Tools, and Contact. The main content area features a "SPINE in brief" section, an "Introduction" section, and a "The SPINE Community's Virtual Lab hosts:" section. The "Introduction" section describes the network's objective and the platform's aim. The "The SPINE Community's Virtual Lab hosts:" section lists various resources and tools available on the platform.



LibreSource Enterprise

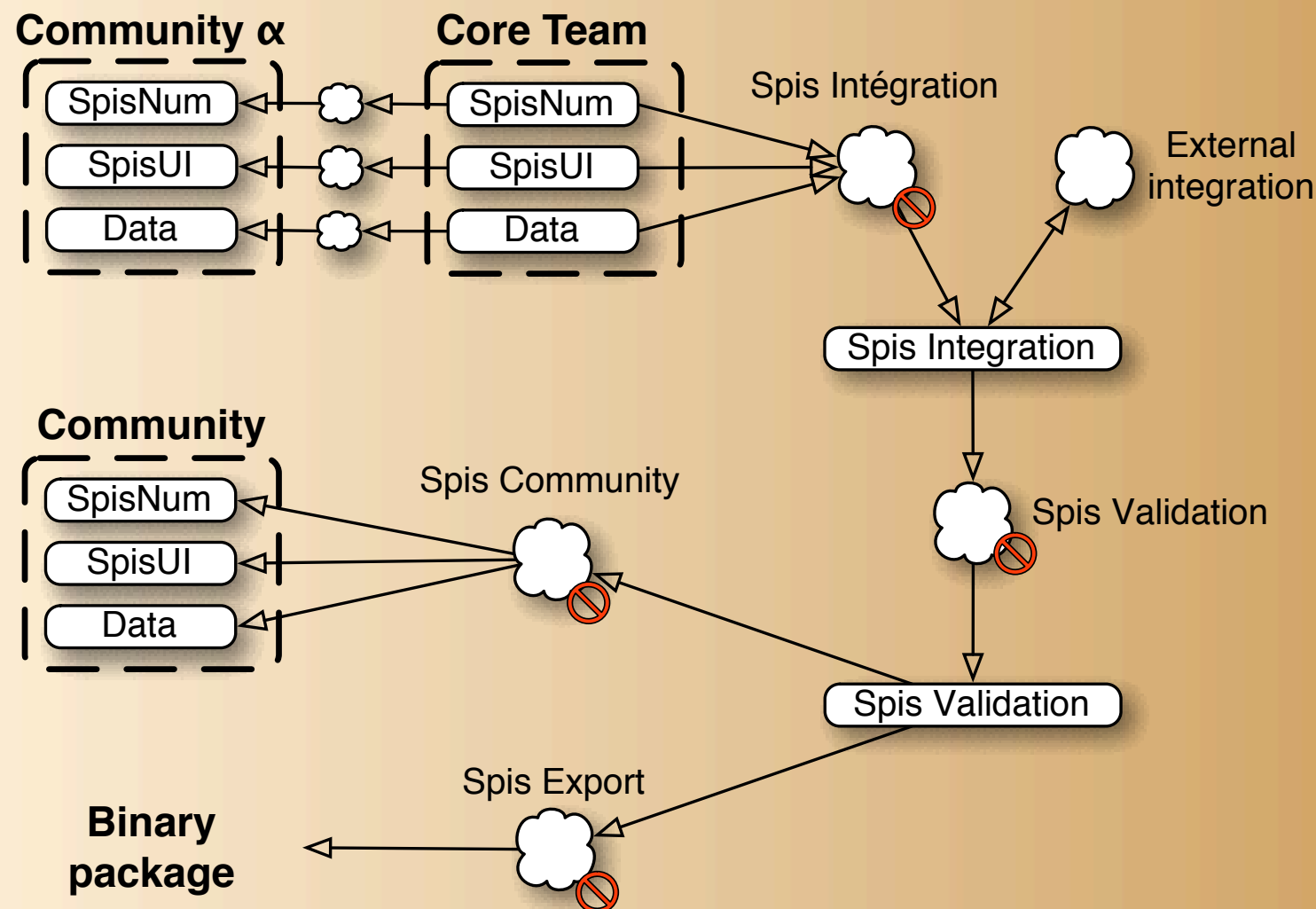
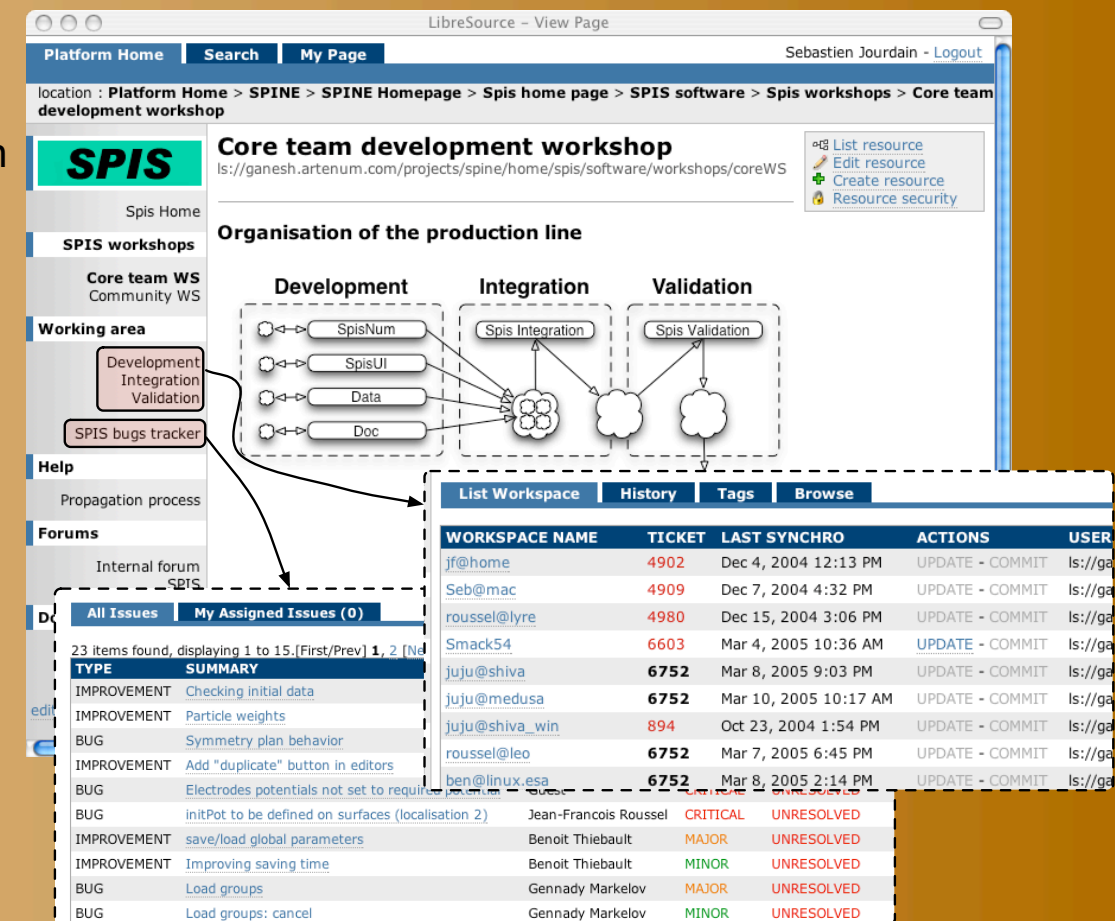
Needs and uses of SPINE

- ▶ Build a Web portal to:
 - ▶ Give and promote an identity to the community,
 - ▶ Support and promote the results and projects of the community,
 - ▶ Help to the community life (forums, events management, centralization of documents),
 - ▶ Data sharing (CAD, inputs, ...),
 - ▶ Public/private areas.
- ▶ Host and facilitate the development of software: SPIS, PicUp3D...
- ▶ Collaborative writing of scientific papers and technical documents.



SPIS: collaborative development under industrial constraints

- ▶ 160 000 lines of versioned codes
- ▶ More than 1400 files of code and 4Gb of data
- ▶ 8 main developers
- ▶ Controlled access to the various versions of the codes

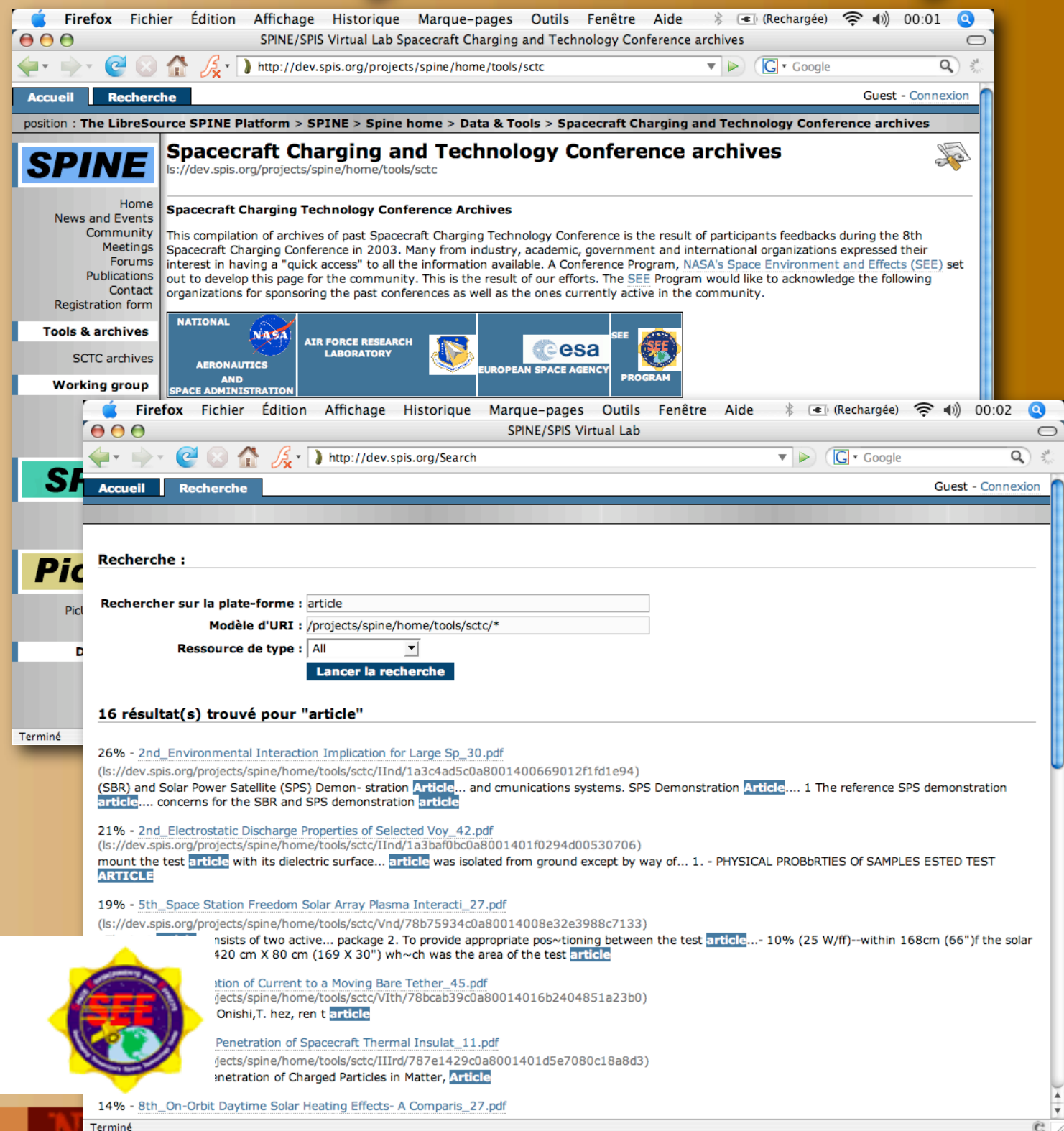



The screenshot shows the SPIS web interface. The top navigation bar includes links for **Platform Home**, **Search**, and **My Page**. The main content area is titled **Core team development workshop** and includes a section for **Organisation of the production line** with sub-sections for **Development**, **Integration**, and **Validation**. Below this, there is a **List Workspace** table with columns for **WORKSPACE NAME**, **TICKET**, **LAST SYNCHRO**, **ACTIONS**, and **USER**.

WORKSPACE NAME	TICKET	LAST SYNCHRO	ACTIONS	USER
jf@home	4902	Dec 4, 2004 12:13 PM	UPDATE - COMMIT	Is://ga
Seb@mac	4909	Dec 7, 2004 4:32 PM	UPDATE - COMMIT	Is://ga
roussel@lyre	4980	Dec 15, 2004 3:06 PM	UPDATE - COMMIT	Is://ga
Smack54	6603	Mar 4, 2005 10:36 AM	UPDATE - COMMIT	Is://ga
juju@shiva	6752	Mar 8, 2005 9:03 PM	UPDATE - COMMIT	Is://ga
juju@medusa	6752	Mar 10, 2005 10:17 AM	UPDATE - COMMIT	Is://ga
juju@shiva_win	894	Oct 23, 2004 1:54 PM	UPDATE - COMMIT	Is://ga
roussel@leo	6752	Mar 7, 2005 6:45 PM	UPDATE - COMMIT	Is://ga
ben@linux.esa	6752	Mar 8, 2005 2:14 PM	UPDATE - COMMIT	Is://ga
Jean-Francois Roussel	CRITICAL	UNRESOLVED		
Benoit Thiebault	MAJOR	UNRESOLVED		
Benoit Thiebault	MINOR	UNRESOLVED		
Gennady Markelov	MAJOR	UNRESOLVED		
Gennady Markelov	MINOR	UNRESOLVED		

Spacecraft Charging community's virtual library

- Centralization of all proceedings of the S/C-charging community (SCTC conference...)
- More than 650 papers (PDF)
- All SPINE meeting presentations (doc, ppt, LaTeX...)
- Search engine and full text indexation



The screenshot displays the SPINE/SPIS Virtual Lab website. The top navigation bar includes links for Accueil, Recherche, and Guest - Connexion. The main content area is titled "Spacecraft Charging and Technology Conference archives" and provides a brief overview of the archives. Below this, there are logos for NASA, Air Force Research Laboratory, ESA, and SEE. The search results section shows 16 results for the query "article". The results are listed with their titles, URLs, and brief descriptions. The logos for NASA, Air Force Research Laboratory, ESA, and SEE are displayed at the bottom of the page.

Recherche :

Rechercher sur la plate-forme :

Modèle d'URI :

Ressource de type :

Lancer la recherche

16 résultat(s) trouvé pour "article"

26% - [2nd_Environmental Interaction Implication for Large Sp_30.pdf](#)
([Is://dev.spis.org/projects/spine/home/tools/sctc/IInd/1a3c4ad5c0a8001400669012f1fd1e94](#))
(SBR) and Solar Power Satellite (SPS) Demonstration [Article](#)... 1 The reference SPS demonstration [article](#).... concerns for the SBR and SPS demonstration [article](#)

21% - [2nd_Electrostatic Discharge Properties of Selected Voy_42.pdf](#)
([Is://dev.spis.org/projects/spine/home/tools/sctc/IInd/1a3baf0bc0a8001401f0294d00530706](#))
mount the test [article](#) with its dielectric surface... [article](#) was isolated from ground except by way of... 1. - PHYSICAL PROBBRTIES OF SAMPLES ESTED TEST [ARTICLE](#)

19% - [5th_Space Station Freedom Solar Array Plasma Interacti_27.pdf](#)
([Is://dev.spis.org/projects/spine/home/tools/sctc/Vnd/78b75934c0a80014008e32e3988c7133](#))
nsists of two active... package 2. To provide appropriate pos~tioning between the test [article](#)... 10% (25 W/ff)--within 168cm (66")f the solar 420 cm X 80 cm (169 X 30") wh~ch was the area of the test [article](#)

14% - [8th_On-Orbit Daytime Solar Heating Effects- A Comparis_27.pdf](#)

Terminé



Spine / LibreSource : jury special price ObjectWeb

- ▶ ObjectWeb is an industry/research international consortium for the development of open-source distributed “MiddleWare” components.
- ▶ Award winner for the Jury's Special Prize have been designated by ObjectWeb community through online vote and announced during the ObjectWebCon'06 Awards Ceremony, February 2006.
- ▶ Jury's Special Prize: Libresource - usage of JOnAS by LibreSource in the frame of the use of LibreSource/JOnAS for the SPINE/SPIS project.

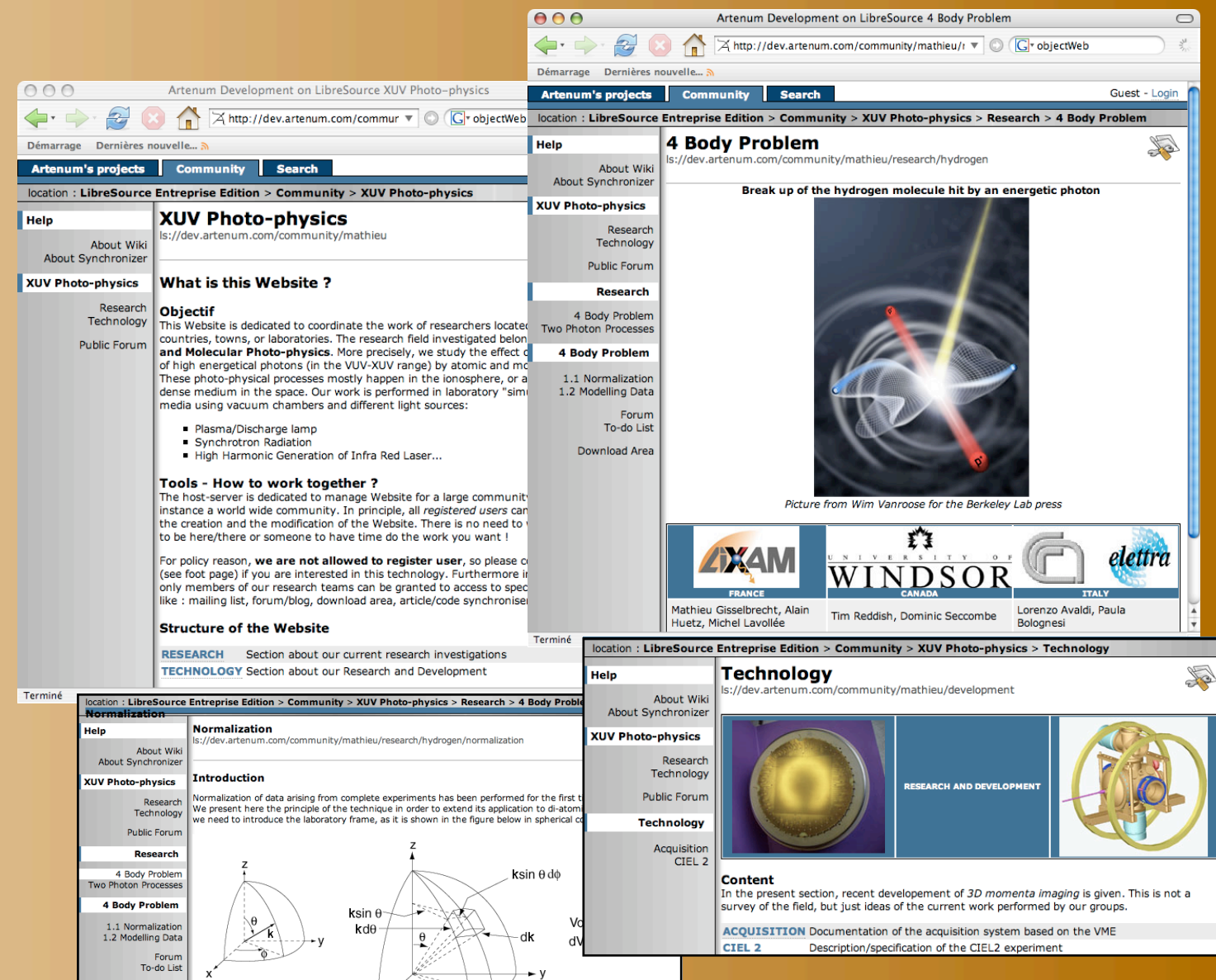


LibreSource
Enterprise



Other examples: X-UV photo-physics community

- ▶ A large scientific community:
LIXAM/CNRS (France),
University of Windsor (Canada),
Elletra Laboratory (Italy)
- ▶ Data sharing
- ▶ Support to experimental
equipment (acceleration rings,
high energy lasers)
- ▶ Co-writing of scientific and
technical documents
- ▶ Identification of the
community
- ▶ Software hosting and
development

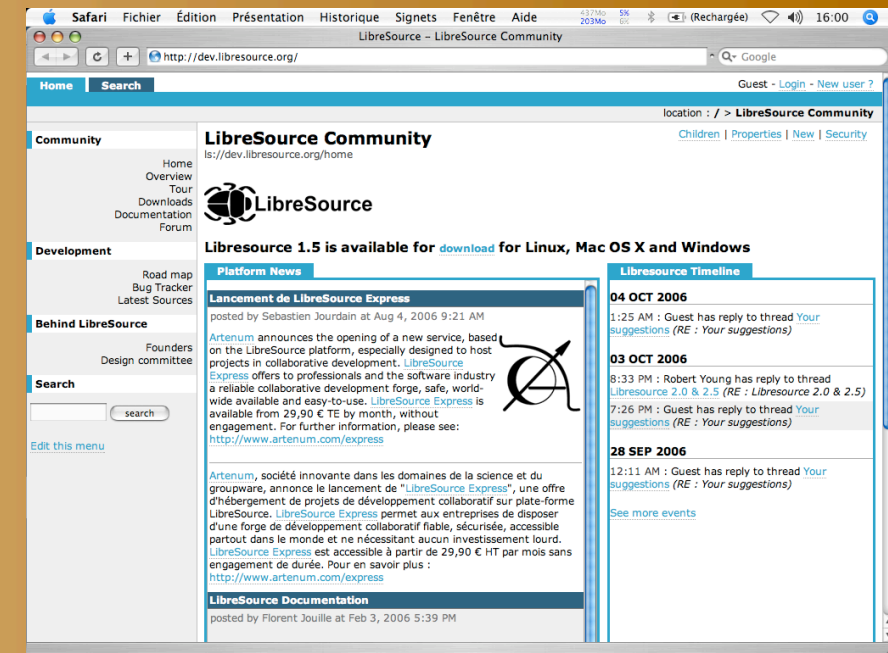


Appropriated by the community

Several feedbacks and contributions

Other deployments and applications

- ▶ The LibreSource community itself!
 - ▶ Source codes tracking, release and publication
 - ▶ Web portal
 - ▶ Forums and Community life
 - ▶ Feedbacks collection
- ▶ E-learning and software development:
 - ▶ University of Växjö, Sweden: courses support, software development process, quality control
 - ▶ ESSTIN engineering school, Nancy, France: courses support, groupware
 - ▶ EPITA: groupware, student project support
- ▶ Test servers:
 - ▶ CNES: cross testing against other close sources solutions
 - ▶ INRIA: cross testing against GForge based solutions
- ▶ Production servers:
 - ▶ French Minister of Equipment: software development, technical documentation
 - ▶ Laser X community (under deployment): groupware, conferences management, experimental equipment management



Part I: libreSource overview

Part II: Application cases

Part III: What we learned and perspectives

What we learned ?

- ▶ Needs of communities have changed:
 - ▶ Simplified and reinforce communications
 - ▶ Need of image (Web portal, communication)
 - ▶ Increasing need of groupware capabilities
 - ▶ Modern projects are larger, more complex
 - ▶ Heterogeneous communities and composite projects
 - ▶ Stronger need to keep track of contributions
 - ▶ Stronger need of awareness
 - ▶ New and more reactive development methods
 - ▶ Better bug-trackers and quality control tools
 - ▶ Modern SCM tools must able to
 - ▶ Manage the whole development/validation process (quality)
 - ▶ Take into account agile methods
 - ▶ Appropriation by the communities is a key issue !
 - ▶ Must be the simplest and easiest to use to be adopted !
 - ▶ Modular and open tool, easy to adapt and extend !
 - ▶ Final users not become prisoner of a limited set of actors !
 - ▶ Open to the world and other tools !
- Strong groupware capabilities
- Stronger forge capabilities
- Stronger SCM capabilities
- SIMPLE !**
- INTEROPERABLE !**

Results: Economical model viable for forges ?

- ▶ Why ? Because we need actors to support and maintain the open solutions !
- ▶ How ? An example, the economical model of LibreSource
 - ▶ Build up an ecosystem based on an Open Standard.
 - ▶ Hybrid economical model: services + products.
 - ▶ Two versions, three licenses :
 - ▶ LibreSource Community: The Open Standard available under QPL
 - ▶ LibreSource Enterprise: The tailored version for industrial uses
 - ▶ LibreSource + close source tailored extensions
 - ▶ Respect the Open Standard, not a fork !
 - ▶ Most extensions will reinforce the next Community release
 - ▶ Two licenses: LSE Users License, LSE Developer License
 - ▶ A large set of services:
 - ▶ Installation, hosting, migration,
 - ▶ Customization, extension, tailoring,
 - ▶ Teaching and expertise
- ▶ Possible and viable ? We hope so !

libreSource 2.0

New release available Monday November 20th, 2006

See <http://www.libresource.org>

LibreSource 2.0: new features

► Maturity enhancements everywhere

► *Integration of CAS:*



► A Single Sign On authentication, to:

► Simplify the integration into IT environments

► Simplify the integration external tools (e.g uPortal, BlueSocket, TikiWiki, Mule, Liferay, Moodle and others...)

► Simplify the life of the user in an heterogeneous context

► Provided in LibreSource ThirdPart, straightforward and simple installation

► *Extension of Synchroniser to XML*

► Open the future extensions to synchronisation of complex data structures

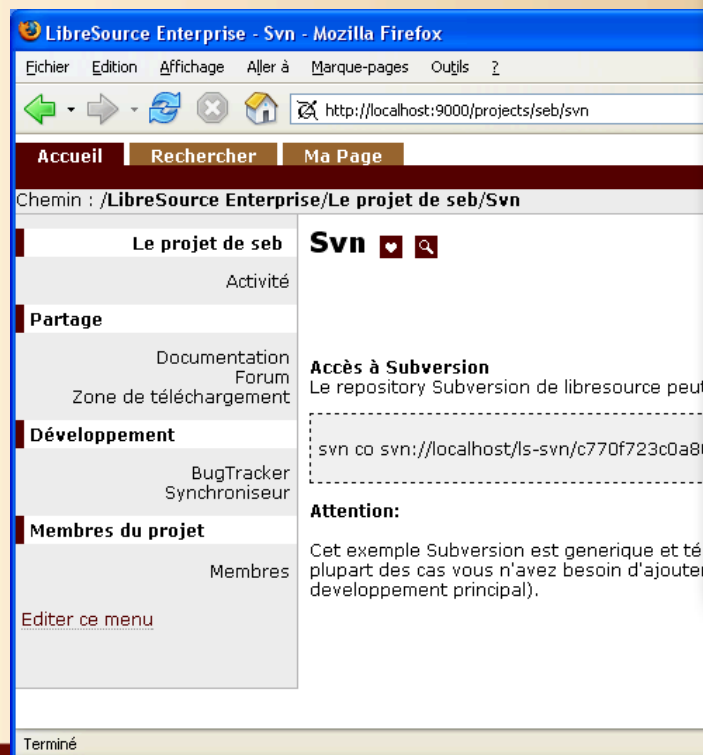
► *Introduction of an hyper tree based Dataflow Viewer*

► Visualisation of the development / validation process

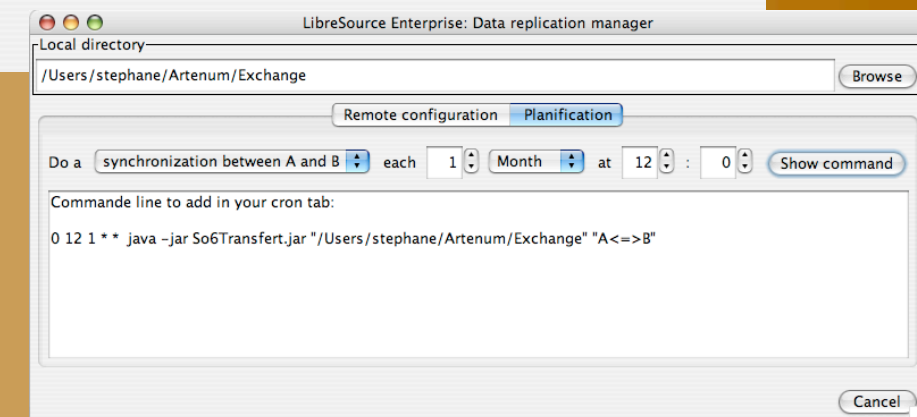
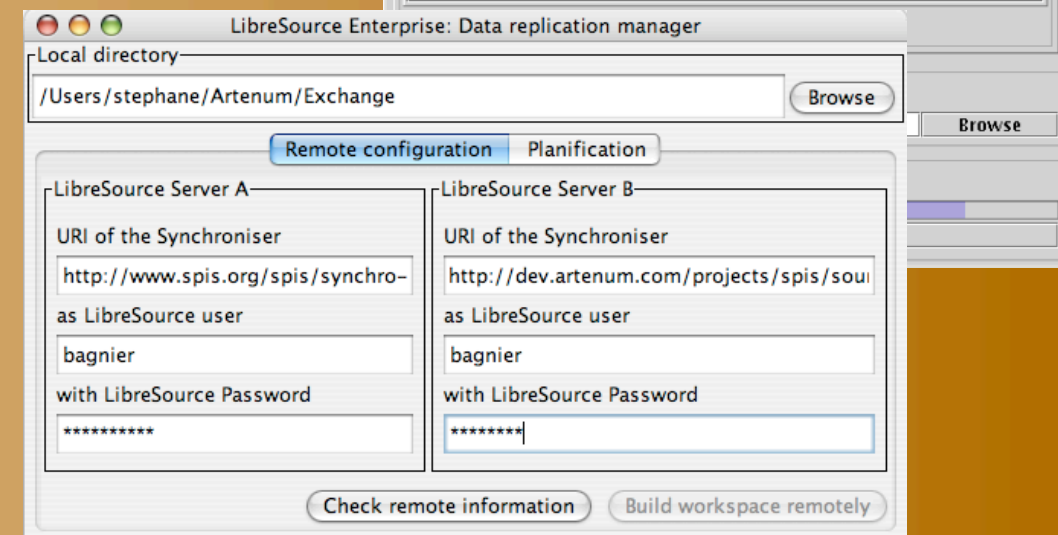
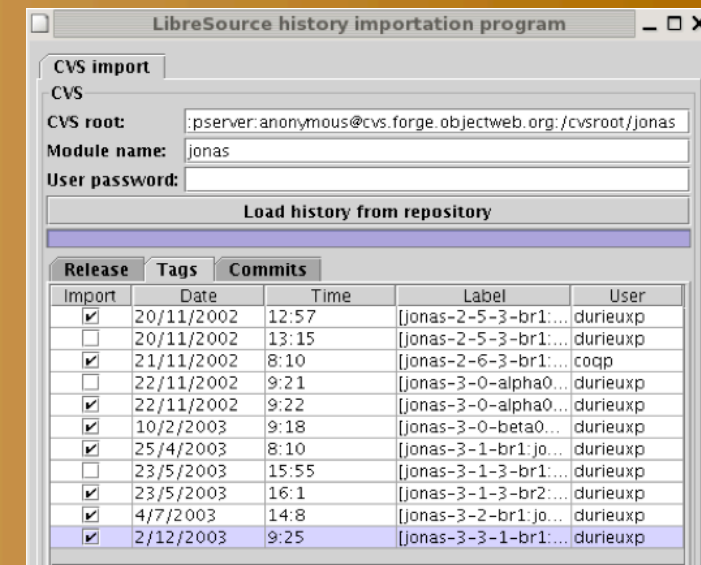
► Introduction of RSS feeds on public resources

Improvements in LibreSource Enterprise 2.0

- ▶ Integrates the evolutions of LibreSource Community
- ▶ Reinforced for Industrial Contexts
- ▶ *An open bridge toward other platforms:*
 - ▶ LibreSource Database Management tool
 - ▶ CVS to Synchronizer History Importer
 - ▶ Dataflow Editor
 - ▶ Multi-synchronizers Bridges
 - ▶ A new resource: **SubVersion Repository**

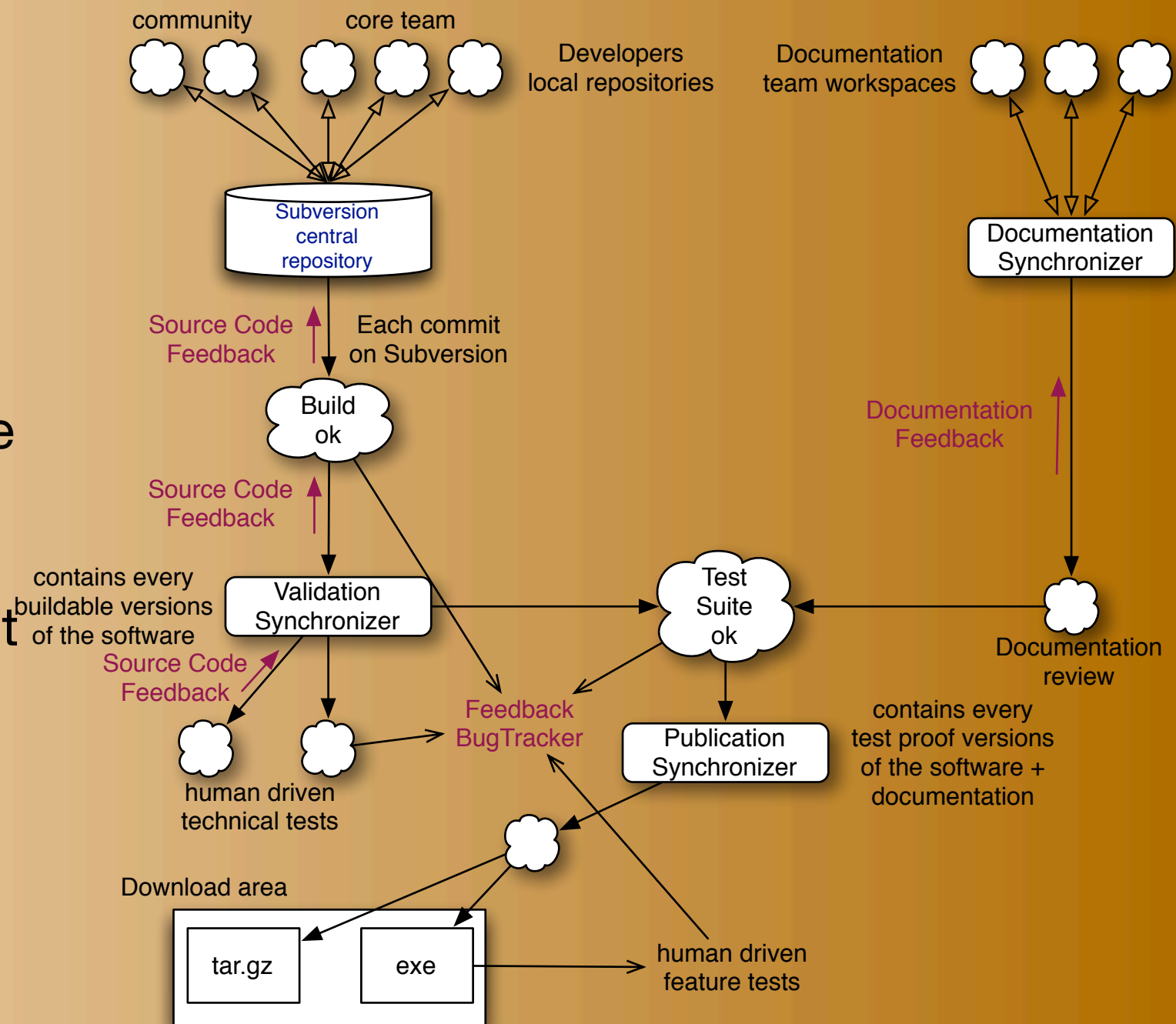


Version imprimable - Artenum LibreSource Enterprise - (640 ms)



SubVersion repository

- ▶ #1 client request for the forge activity.
- ▶ Included in the LibreSource way:
 - ▶ A SubVersion repository is integrated as a resource
 - ▶ It can be included at any place of the flexible hierarchical page structure
 - ▶ Creation, setting, management and deletion via the web interface
 - ▶ Same credential for SubVersion and LibreSource
- ▶ SubVersion + Synchronizer = A Combo



longe range perspectives for libreSource

- ▶ Probably used to host the RNTL SCOS project
 - ▶ Large platform dedicated to the interoperability of complex systems
 - ▶ Scientific computing, HPC
 - ▶ Initiated by Oxalya, includes more than 18 partners:
ARTENUM, BULL, CEA, CS, École Centrale de Paris, EDF R&D, ENS Cachan, GROOVIZ, IFP, INT, LIRIS-CNRS, MANDRIVA, OXALYA, INRIA / SCILAB, INRIA / EIFFEL, SETI...
- ▶ Part of the RNTL ScorWare project
 - ▶ Study case of interpretability with other platforms on a SOA/SCA approach (ExoPlatform, GForge, TRACS...)
 - ▶ Integrated development/publication tailored process
- ▶ Aperture to other industrial and academic partners
 - ▶ CMS tools
 - ▶ Specific features
- ▶ Aperture toward schools and universities
- ▶ European project ?



ScorWare

**An OpenSource
project !**

**Reinforce the
community life !**

Working together

- ▶ Perl proverb: “There is many ways to do it.”
 - ▶ There are many solutions for software forge, SCM, ...
 - ▶ Interoperability should be our common Graal !!
 - ▶ An increasing community life on forges is good for all !
 - ▶ **Please come on and play with us !**
- ▶ LibreSource is a up to date technical solution
 - ▶ LibreSource is modular and adaptable to your needs
 - ▶ LibreSource has proved that is a mature solution.
 - ▶ LibreSource is a already a community success.
- ▶ We want LibreSource to be a good citizen in a fair OpenSource ecosystem.
- ▶ The LibreSource technical design allows to create other collaborative applications based on the LibreSource kernel. This is an open system.
- ▶ LibreSource 2.0 already opened bridges toward over tools: CAS, CVS, Subversion...

A few elements of requirements for a future forge

- ▶ A Next Generation Forge (NGF) must be:
 - ▶ An Open Standard !
 - ▶ Simple to use and open to other cultures ! No used by Geeks only !
 - ▶ Modular, extendable, customizable
 - ▶ Open and interoperable: Maybe the future is into Federation of Forges !
- ▶ Groupware and intercommunication of services is a key issue.
- ▶ Better tracking capabilities to follow the whole dev/validation process
 - ▶ Strong integration of services, like in LS (Almost impossible with forges based on the first generation of versioning tools like CVS, Subversion..)
 - ▶ Awareness, Visibility, fusion, detailed tracking, quality control
- ▶ Link Dataflow/workflow in hybrid development context
- ▶ Structure of the chain is dependent on user's needs:
 - ▶ Production chains are tailored applications
- ▶ A modern forge cannot be only a cluster of heterogeneous services “glued by the facade” ! Need of a good integration of services.
- ▶ A central management of events / signals / data exchanges needed.

Conclusion: LibreSource, a possible corner stone for the Next Generation forges ?

- ▶ Collaborative/remote development with industrial constraints is still a challenge
 - ▶ Advanced versioning tools (Synchronizer ?)
 - ▶ Data/workflow capabilities to process the dev/validation process(Synchronizer ?)
- ▶ Need to merge groupware, management and development tools (like LibreSource ?)
- ▶ LibreSource fully functional and available for everyone, mature solution
- ▶ LibreSource allows to drive community based industrial processes
- ▶ LibreSource is already interoperable with some of the existing forges(e.g PicoForge) and versioning tools (e.g Subversion, Xwiki...)
- ▶ The most up-to-date technical and homogeneous solution
- ▶ LibreSource is modular, adaptable, extendable
- ▶ An OpenSource project with an open community
- ▶ An European solution
- ▶ Very quickly appropriated by the user communities (like SPINE)
- ▶ Becoming de facto an open standard with its open ecosystem ?
- ▶ LibreSource, base of the European Next Generation Forge ?
- ▶ **Please come and play with us !**