

# From research prototypes to industrial strength open source products

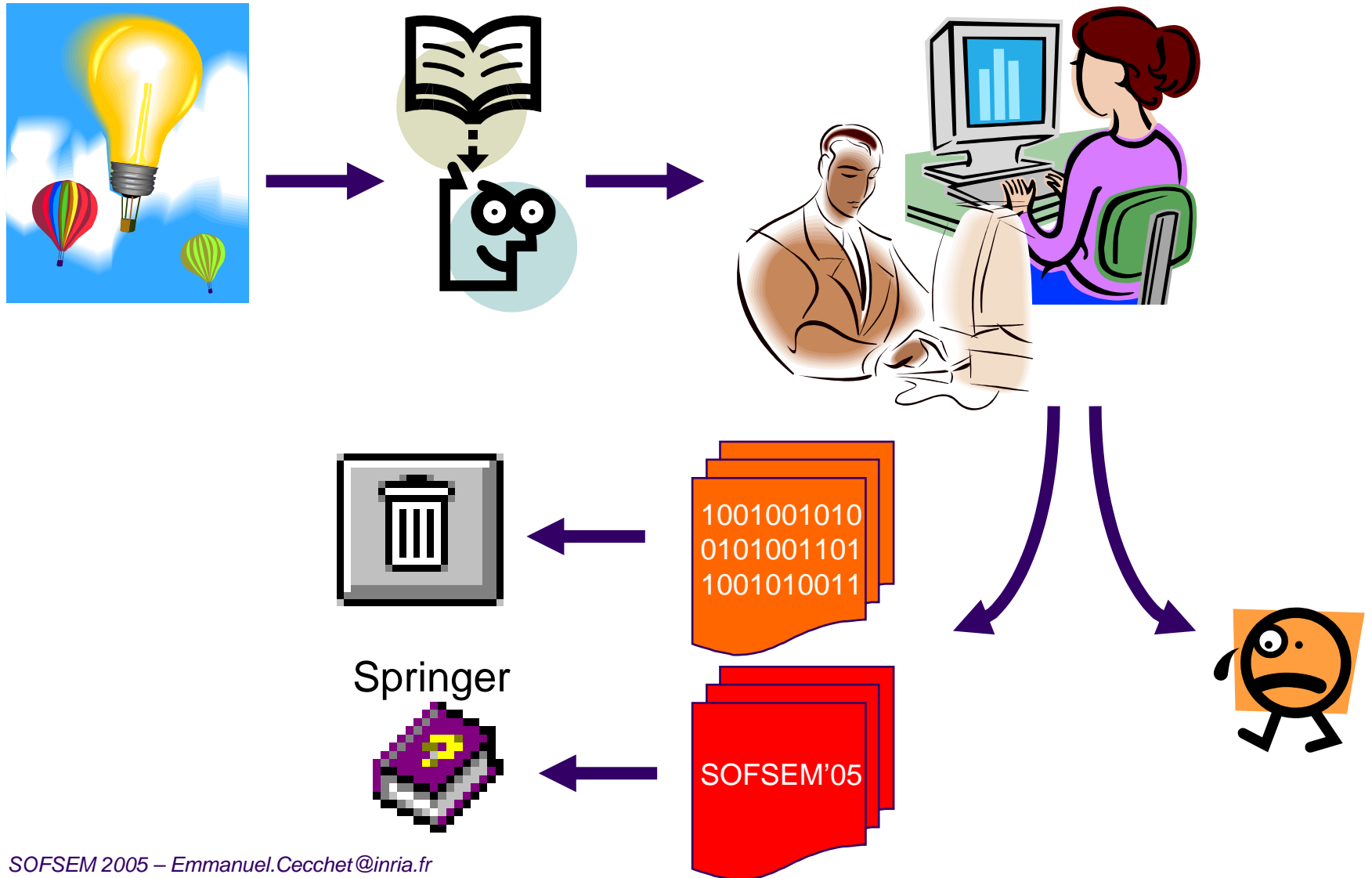
## The ObjectWeb experience

### **Emmanuel Cecchet**

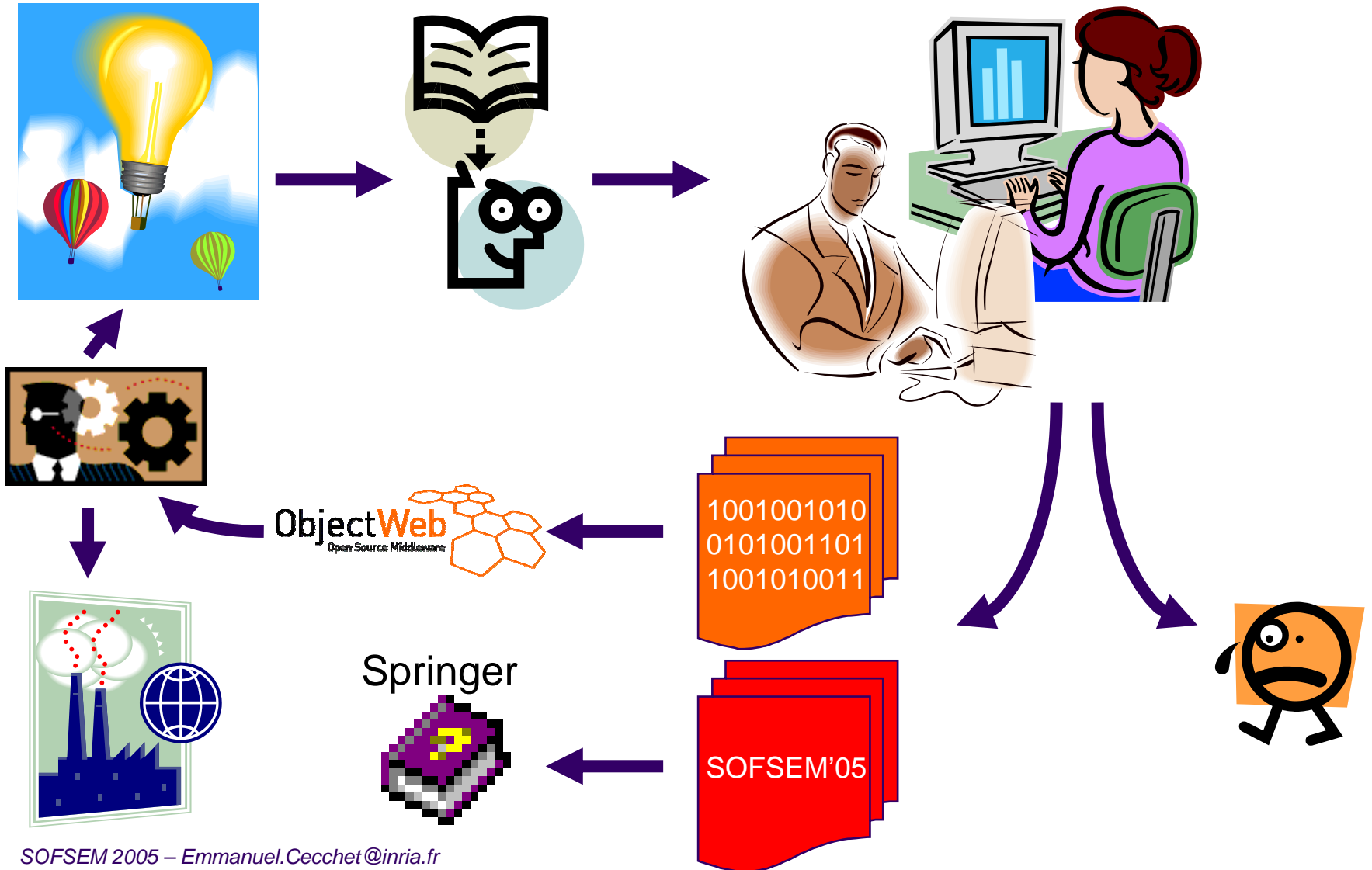
*Former Research Scientist – INRIA Rhône Alpes*  
*Principal Architect, Java technologies – Emic Networks*  
*Chief Architect - ObjectWeb Consortium*



# Classical research project lifecycle



# Research project lifecycle with open source



- **Open Source Software**
- **ObjectWeb Consortium**
- **Infrastructure**
- **Use cases**

## → **technology transfer through OSS**

- let the community get familiar with your technology
- reproduce results in various environments
- get feedback and contributions

## → **building a community**

- releasing software under an open source license
- good documentation
- education
- proactive with users/developers
- integrating contributions

## → releasing my code under open source will bring me contributions, feedback, fame, ...

- case of end-of-life products/prototypes that nobody wants to maintain anymore
- education/promotion is necessary and resource consuming
- community management

## → It is free

- infrastructure has a cost
- who pays for developments ?

## → Releasing under open source

- showing to the community how I code
- expose yourself to contributions and critics

## → Open source = prototype

- image of unstable software, not usable in production
- hard to obtain feedback and success stories

## → Building a community

- how to attract external contributions?
  - reactivity, user support
  - documentation, publication
  - visibility on the web, promotion
  - internationalization
- successful project
  - survive leaving of initial developers
  - critical mass of developers

## → GPL

- spirit: the whole world should be free
- viral nature
  - propagate to encapsulating software (link)
  - Linux libraries are not under GPL
- “business hostile” license
- dual license GPL/Commercial: MySQL

## → LGPL

- free exploitation in commercial or open source products
- modifications should be contributed back under LGPL
- ambiguities on interpretation of modifications

## → BSD

- no constraint: use it, modify it, redistribute it under open or closed source without telling anyone
- in practice, no less contributions than LGPL projects

## → ObjectWeb

- uses standard GPL, LGPL or BSD licenses
- each author remains holder of his/her copyright
- changing the license requires the agreement of all contributors

## → Apache

- each author agrees to give its copyright to a derivative work belonging to the ASF
- ASF legally responsible for the code and patent infringements

## → users

- experimentations
- references (web, publications, ...)
- success stories, production usage

## → mailing lists

- subscribers
- traffic

## → contributors

- feedback, bug reports, ...
- code, patch, ...
- mailing list support

## → downloads

- **Open Source Software**
- **ObjectWeb Consortium**
- **Infrastructure**
- **Use cases**

# If the questions are :

Does freedom matter for the future?

Is future a matter of freedom?

Is Future a short term issue?

Is there a future for legacy depending on  
proprietary standard?

How can a standard be proprietary and insure  
interoperability between applications?



# Then the answer is: Open Standards & Open Source

By 2003, the use of open source software will become a standard part of all organizations utilizing Java, with a high number already using the Apache Web server (60% of active sites) and a significant group using open

**Java or Microsoft ?** By 2003, the use of open source software will become a standard part of all organisations utilizing Java, with a high number using the Apache Web servers (60% of active sites) and a significant group using open source Java application servers (14%). [...] Microsoft users will have a slower uptake to open source, though many forms of example code are available

As the core layer of J2EE (Java 2 Enterprise Edition) becomes increasingly marginalized (e.g., availability of free servers or developer editions from traditional vendors), the line between open source (usually backed

**Open Standards & Open Source :** As the core layer of J2EE becomes increasingly marginalized, the line between open source and «commercial» Java vendors will blur. [...] By 2006/07, the cycle of movement between open source and standards will be common, and 80% of organizations developing with Java will make some use of open source products.

Java will make some use of open source products.

**Licenses:** When software is aquired legal review of contracts and licenses is part of the normal process. This is an expense that must also be incurred with open source. accepting specific types of sources can limit the recurring cost for each new package from a site.

source); each source will have specific published copyrights  
department should review all  
see ADS Delta 1101). In  
rolled locations invites a  
ample code is made up of  
ysis. Organizations must  
gned. When software is  
enses is part of the normal  
so be incurred with open  
source. However, accepting specific types of sources (e.g., all  
software distributed under the Apache license) can limit the recurring

*META Trend: Application server consolidation will continue through 2003, as breadth of functionality expands to include portals (2002), EAI (2002), content management (2002/03), analytic structures (2003), mobile technology (2003), data distribution (2004), and application-specific development frameworks (2004/05).*

## → What is an Open Source ?

- Not only an open code base or a free software license

- ***ObjectWeb 's Mission :***  
***To provide a self-sustaining open source***  
***alternative to proprietary middleware***

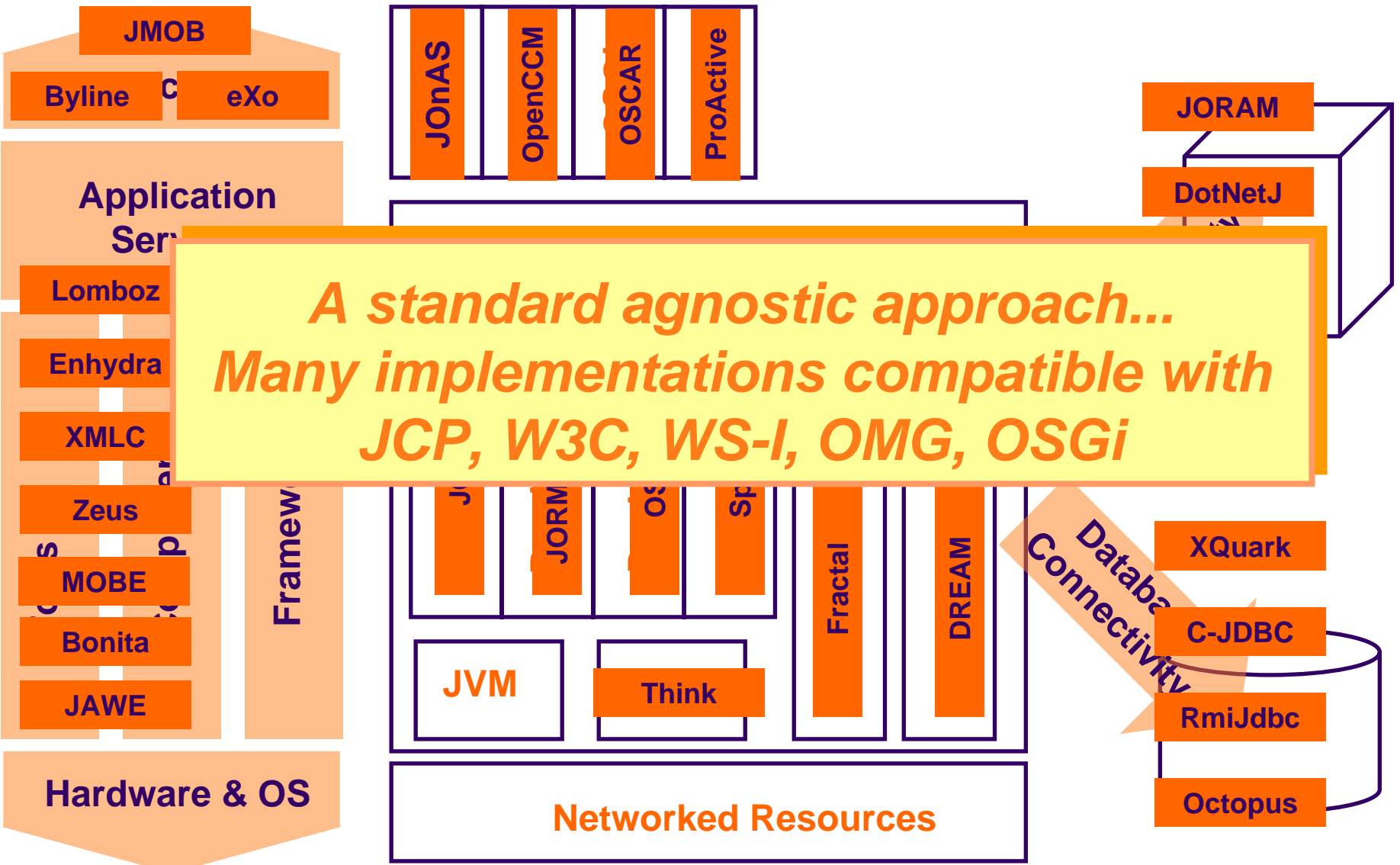
of users  
and  
f the

## → The corner stone: project sustainability

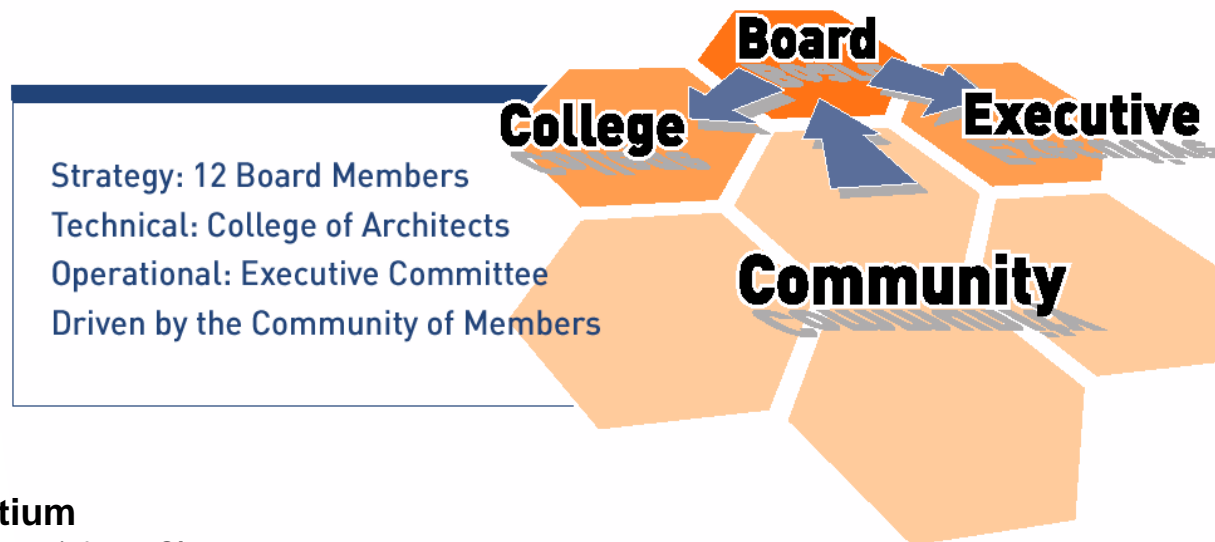
- Broad adoption of the code base is the only guaranty of application independence
- Platform & Network enables broad diffusion

## → A consortium to ensure this results

# Architectural vision



# The ObjectWeb Consortium



→ **International**

→ **Non-profit Consortium**

- hosted by INRIA (cf. W3C)

→ **Industry players :**

- **Large** (Bull, FT, Thalès, Dassault Aviation, etc.)
- **Small** (Librados, Scalagent, ExperLog, Open Wide, Kelua, etc.)
- **Academic** research labs (LIFL, Université Charles de Prague, etc.)
- **Individuals**

→ **To guarantee a sustainable Open Source alternative to proprietary middleware**

→ **Community of Expertise**

→ **Significant Growth**

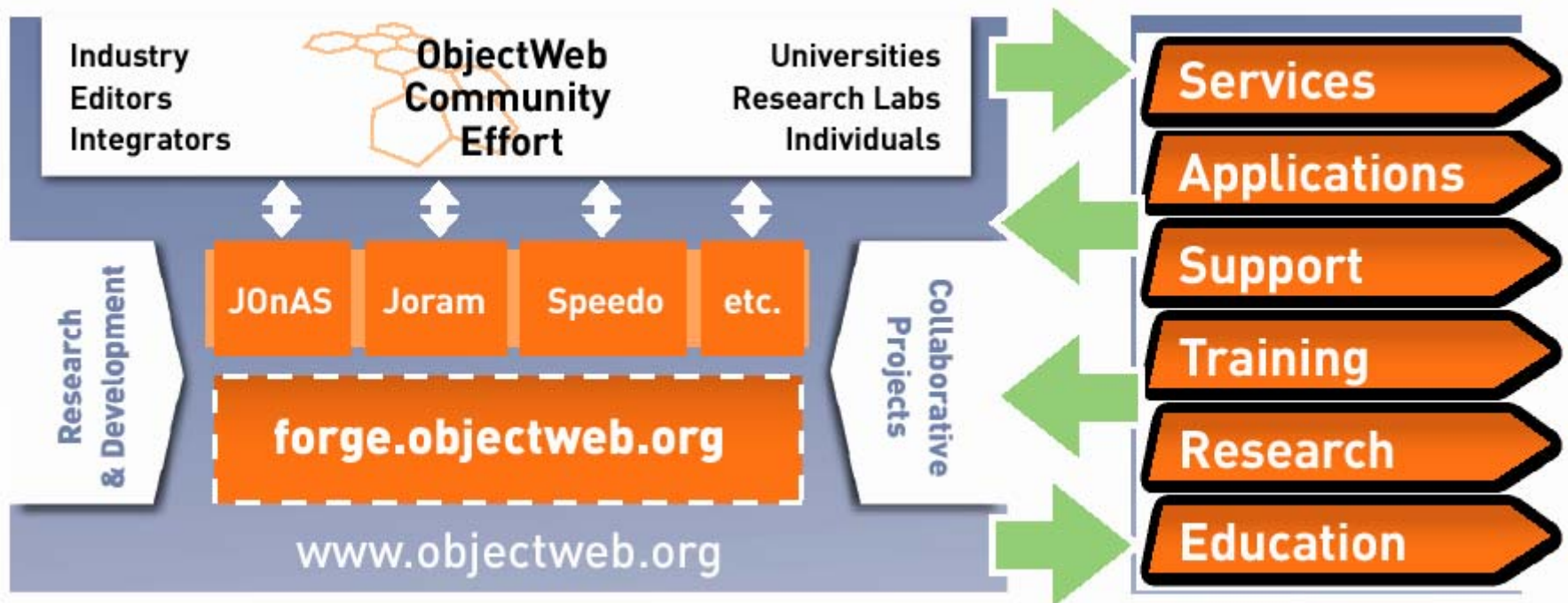
→ **Ecosystem i.e.**

- **Community** building code base (**Consortium**)
- **Suppliers** to integrate & support it (**Industry**)
- **Customers** to use it (**Market**)

→ **Interconnected with other Ecosystems & Communities**

- **Linux** (RedHat, SUSE, MandrakeSoft, etc.)
- **Apache** (Geronimo), **Eclipse**
- **JCP, OMG, EAI IC**

- Component reuse to foster a sustainable business development
- consortium neutrality ensures projects independence
- LGPL license for business usage



## Dec' 2003

### People

- 26 legal entity members
- 543 individual members
- 2 763 mailing lists users
- 874 accounts in the Forge  
165 committers

### Web Stats

- 71 projects in the Forge
- 1 500 000 hits on main Web  
50 000 visitors
- 876 000 hits on Forge  
19 000 visitors

## Dec' 2004

### People

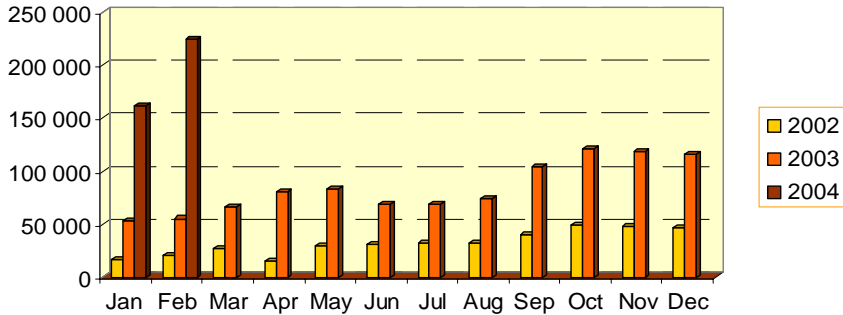
- 39 legal entity members  
(+17 pending)
- 1 335 individual members
- 7 485 mailing lists users
- 3 694 accounts in the Forge  
314 committers

### Web Stats

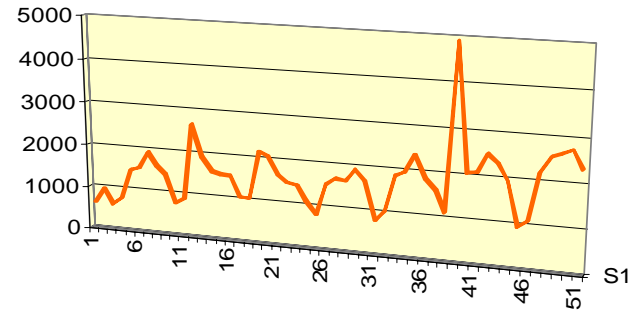
- 88 projects in the Forge
- 3 152 025 hits on main Web  
87 080 visitors
- 3 403 727 hits on Forge  
45 019 visitors

Data available on: <http://wiki.objectweb.org/Wiki.jsp?page=NewsLetters>

**ObjectWeb.org**  
Visits per Month



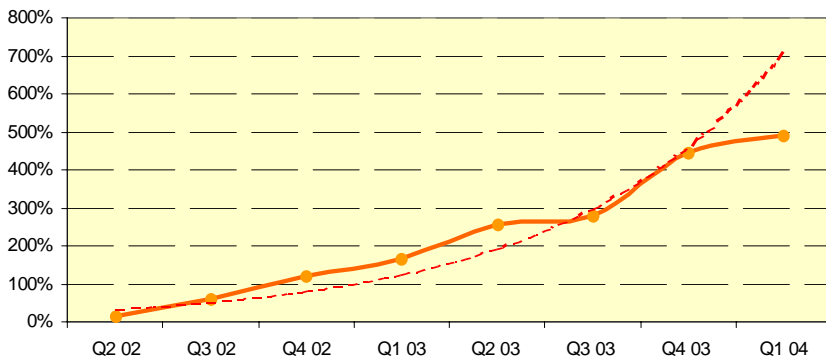
**ObjectWeb.org**  
Download Jan-Feb  
per day



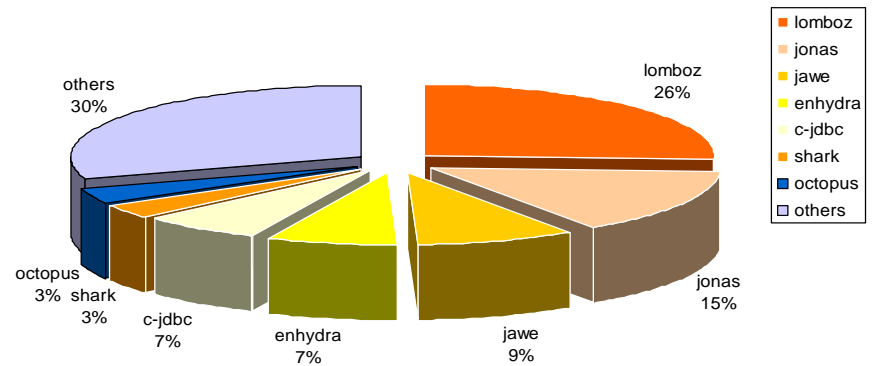
**Europe 54% North America 37% Asia 10%**

**40% more Download per Week**  
*200% Growth since Sept.*

**ObjectWeb.org**  
Growth from Q1 02 to Q1 04



**Forge.ObjectWeb.org**  
downloads



- **Open Source Software**
- **ObjectWeb Consortium**
- **Infrastructure**
- **Use cases**

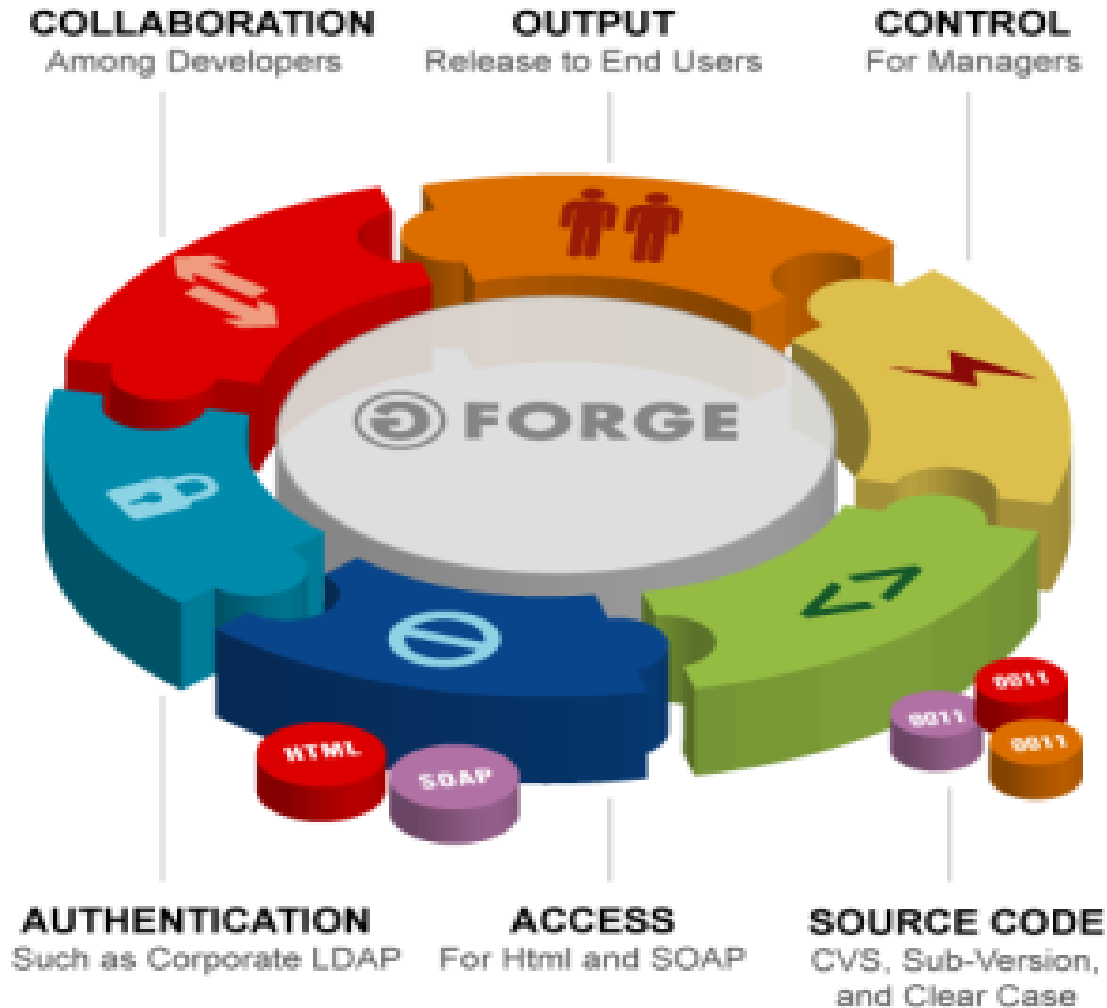
## → Servers

- **Main GForge server ([forge.objectweb.org](http://forge.objectweb.org))**
  - Dual-P4 Xeon 2.4GHz, 3Go RAM, 100Go SCSI RAID Disks
  - Integrated Wiki server (JSPWiki, Jakarta Tomcat)
- **Other server (same configuration)**
  - Host project Web sites (<project>.objectweb.org)
  - Sympa mailing list software manager replaces Mailman
- **2 mirror sites in France and the US (download only)**

## → Staff

- **One full-time engineer in charge of the ObjectWeb infrastructure**

# GForge collaborative tool



(c) 2004, GForge Group, L.L.C.

The screenshot shows a Mozilla browser window displaying the GForge project page for C-JDBC. The browser title is "ObjectWeb Forge: Project Info- C-JDBC - Mozilla" and the address bar shows "http://forge.objectweb.org/projects/c-jdbc/".

The GForge logo is at the top left, followed by navigation tabs: Home, My Page, Project Tree, Project Openings, Admin, and C-JDBC. Below these are sub-tabs: Summary, Admin, Tracker, Lists, Tasks, Surveys, News, CVS, and Files.

The main content area includes:

- Clustered JDBC gives your applications a transparent (no code modification) access to a cluster of databases even if your database engines are not cluster-aware.**
- Development Status:** 4 - Beta, 5 - Production/Stable
- Environment:** No Input/Output (Daemon)
- Intended Audience:** Developers, End Users/Desktop, System Administrators
- License:** GNU Lesser General Public License (LGPL)
- Operating System:** OS Independent
- Programming Language:** Java
- Topic:** Database, Clustering/Distributed Networks

Registered: 2002-11-26 10:08  
HELP WANTED: This project is looking for People to fill several different positions

**Latest File Releases**

Package	Version	Date	Notes / Monitor	Download
<b>Documentation</b>	1.0rc6	April 26, 2004	-	<a href="#">Download</a>
<b>C-JDBC binary distribution</b>	1.0rc6	April 26, 2004	-	<a href="#">Download</a>
<b>C-JDBC source distribution</b>	1.0rc6	April 26, 2004	-	<a href="#">Download</a>

[\[View All Project Files\]](#)

**Public Areas**

- [Project Home Page](#)
- Tracker**
  - **Bugs ( 1 open / 41 total )**  
Bug Tracking System
  - **Patches ( 0 open / 5 total )**  
Patch Tracking System
  - **Feature Requests ( 0 open / 3 total )**  
Feature Request Tracking System
- Mailing Lists ( 2 public mailing lists )**
- Task Manager**
  - Documentation
  - C-JDBC Console
  - Testing
  - C-JDBC Controller
  - C-JDBC Driver
- Surveys ( 0 surveys )**
- CVS Repository**

**Latest News**

- C-JDBC 1.0rc6 available**  
Emmanuel Cecchet - 2004-04-26 12:25  
(0 Comments) [\[Read More/Comment\]](#)
- New article on C-JDBC featuring use cases**  
Emmanuel Cecchet - 2004-04-14 10:13  
(0 Comments) [\[Read More/Comment\]](#)
- C-JDBC 1.0rc5 released**  
Emmanuel Cecchet - 2004-04-09 09:52  
(0 Comments) [\[Read More/Comment\]](#)
- C-JDBC at objectweb conference**  
Nicolas Modrzyk - 2003-11-25 09:33  
(0 Comments) [\[Read More/Comment\]](#)
- C-JDBC integrated with ExperSHOP and XAPool**  
Emmanuel Cecchet - 2003-06-05 14:52  
(0 Comments) [\[Read More/Comment\]](#)
- C-JDBC on freshmeat.net**  
Emmanuel Cecchet - 2003-05-22 09:20  
(0 Comments) [\[Read More/Comment\]](#)

[\[News archive\]](#)  
[\[Submit News\]](#)

➔ Brief project summary

➔ Classification

➔ Jobs

Home My Page Project Tree

Summary Admin Tracker Lists Tasks

Clustered JDBC gives your applications a transparent (no code modification) access to a cluster of databases even if your

- ◆ Development Status: [4 - Beta](#), [5 - Production/Stable](#)
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[\[View All Project Files\]](#)


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-  [Project Home Page](#)


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  - [Patches](#) ( **0 open / 5 total** )  
Patch Tracking System
  - [Feature Requests](#) ( **0 open / 3 total** )  
Feature Request Tracking System


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-  [Mailing Lists](#) ( **2 public mailing lists** )


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-  [Task Manager](#)
  - [Documentation](#)
  - [C-JDBC Console](#)
  - [Testing](#)
  - [C-JDBC Controller](#)
  - [C-JDBC Driver](#)

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-  [Surveys](#) ( **0 surveys** )

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-  [CVS Repository](#)

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*Emmanuel Cecchet - 2004-04-26 12:25*  
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[\[News archive\]](#)  
[\[Submit News\]](#)

ObjectWeb Forge: User Permissions List - Mozilla

http://forge.objectweb.org/project/admin/userperms.php?group\_id=42

Home My Page Project Tree Project Openings Admin C-JDBC

Summary Admin Tracker Lists Tasks Surveys News CVS Files

[Admin](#) | [User Permissions](#) | [Edit Public Info](#) | [Project History](#) | [Edit/Release Files](#) | [Post Jobs](#) | [Edit Jobs](#) | [Edit Multimedia Data](#)

Click developer's name below to edit permissions.

General	CVS	Tracker Manager	Task Manager	Forums	Doc. Manager
<a href="#">aledeniz (Alessandro Riolo)</a> Doc Writer	Commit	-	T	-	Editor
<a href="#">bernardofm (Bernardo Faria de Miranda)</a> Doc Writer	Commit	-	T	-	Editor
<a href="#">cecchet (Emmanuel Cecchet)</a> Project Manager, Rel.Tech.	Commit	A	A&T	Moderator	Editor
<a href="#">dssmith (Duncan Smith)</a> Developer	Commit	A	T	-	-
<a href="#">gbort (Guillaume Bort)</a> Developer	Commit	-	T	-	-
<a href="#">gokul_soundar (Gokul Soundararajan)</a> Developer	Commit	-	T	-	-
<a href="#">gward (Greg Ward)</a> Developer	Commit	-	T	-	-
<a href="#">jeffkole (Jeff Kolesky)</a> Developer	Commit	-	-	-	-
<a href="#">marc (Marc Wick)</a> Developer	Commit	A	T	-	-
<a href="#">marqueri (Julie Marquerite)</a> Developer, Rel.Tech.	Commit	A	A&T	-	-
<a href="#">modrzyk (Nicolas Modrzyk)</a> Developer, Rel.Tech.	Commit	A	A&T	Moderator	Editor
<a href="#">mpeltier (Mathieu Peltier)</a> Developer, Rel.Tech.	Commit	A	A&T	Moderator	Editor

# Bug tracking

ObjectWeb Forge: Modify: 300298 - Cache consistency on JDBCRecoveryLog tables - Mozilla

File Edit View Go Bookmarks Tools Window Help

Back Forward Reload Stop **OH** http://forge.objectweb.org/tracker/index.pl Search Print

Summary Admin **Tracker** Lists Tasks Surveys News CVS Files

Tracker: [Bugs](#)

[Submit New](#) | [Browse](#) | [Reporting](#) | [Admin](#)

**[ #300298 ] Cache consistency on JDBCRecoveryLog tables**

[Monitor \(?\)](#) [Build Task Relation](#)

**Submitted By:**  
Emmanuel Cecchet (cecchet)

**Date Submitted:**  
2004-05-03 12:04

**Data Type: (?)**  
Bugs

**Category: (?)**  
Controller (Admin)

**Group: (?)**  
None (Admin)

**Assigned To: (?)**  
Nobody (Admin)

**Priority: (?)**  
5 - Medium

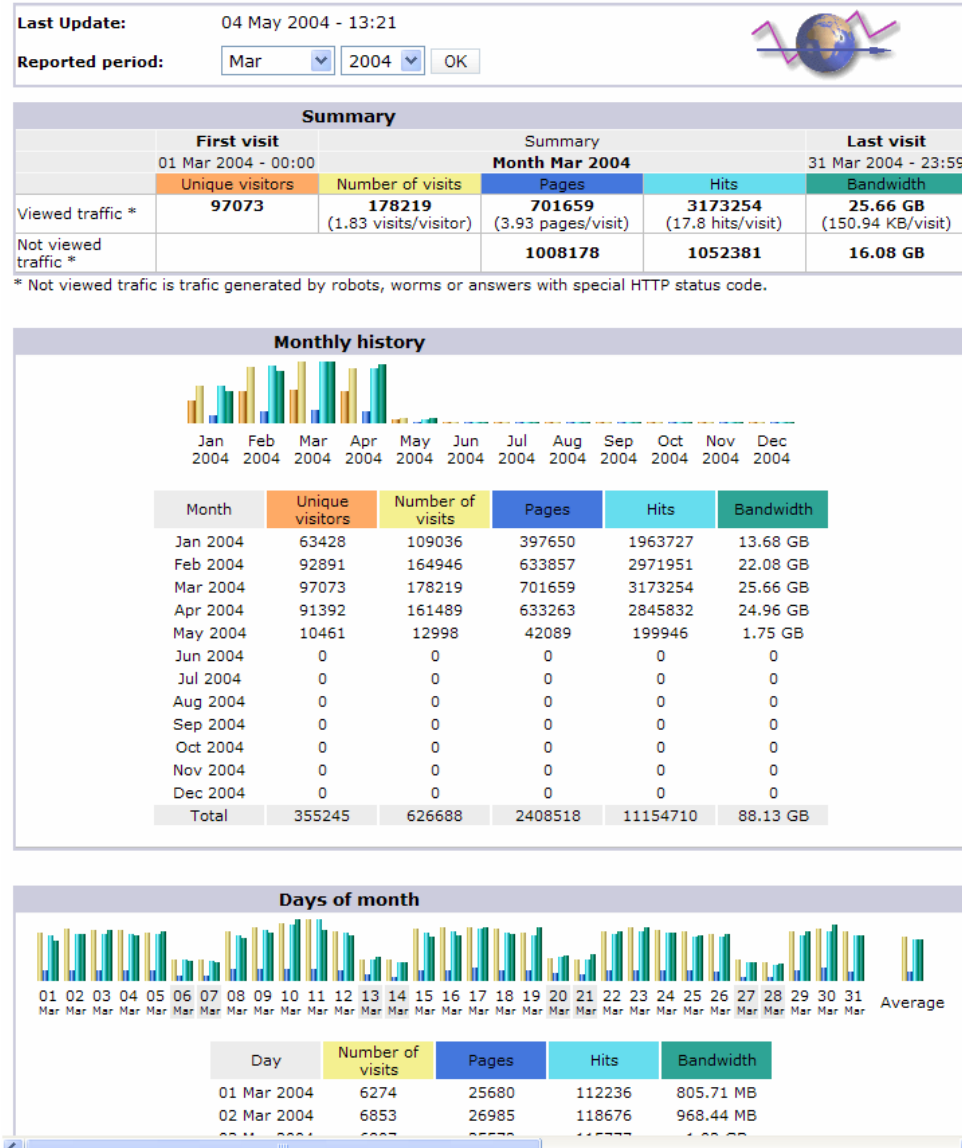
**State: (?)**  
Open

**Resolution: (?)**  
None

**Summary: (?)**  
Cache consistency on JDBCRecoveryLog tables

**Detailed description:**  
If a client access the JDBCRecoveryLog tables (checkpoints and logs), this queries might be cached by the ResultCache, however the recovery log never invalidates these entries.  
We should either refuse to execute queries on the recovery log tables from the client side or trap them properly to prevent result caching.  
Restricting the access to the log tables through the Recovery Log API is certainly safer.

- ➔ tracking visitors
- ➔ hits
- ➔ bandwidth
- ➔ when (month, day, hour)
- ➔ who (country, hosts, robots)
- ➔ accessed pages
- ➔ os/browser



- **Open Source Software**
- **ObjectWeb Consortium**
- **Infrastructure**
- **Use cases**

## → **Developed at Rice University in 2001**

- Paper at Oopsla 2002

## → **Migrated to ObjectWeb in 2002**

- Source code and all results available online
- Threads on Slashdot, TheServerSide, ...
- ~3.000 downloads

## → **More than 15 references in international conferences**

- 6 research groups have elaborated on RUBiS
- used by industrial partners for performance evaluation

➔ **Java middleware for database clustering**

➔ **Factors of success**

- JDBC standard
- no modification to existing applications or databases
- open source under LGPL

→ **single mailing list**

→ **reactivity on mailing list**

➤ no pending email

➤ no direct chat with the team but everything on the mailing list

➤ let the community speak !

→ **benefit from engineers/students evaluating the project**

→ **display feature requests and roadmap to attract contributions**

## → Documentation

- research article, technical reports, ...
- Up-to-date users guide but also white paper, design documentations, specifications, API documentation (eg: Javadoc, PhpDoc, Doxygen, ...)

## → Traceability

- HISTORY file to track all developments
- detailed CVS log
- list of libraries (name, version, description)

## → Coding

- Share coding style and conventions in CVS
- Only branch when needed
  - Releases maintenance branches

## → Testing

- Publish nightly regression test suite results

## → Packaging

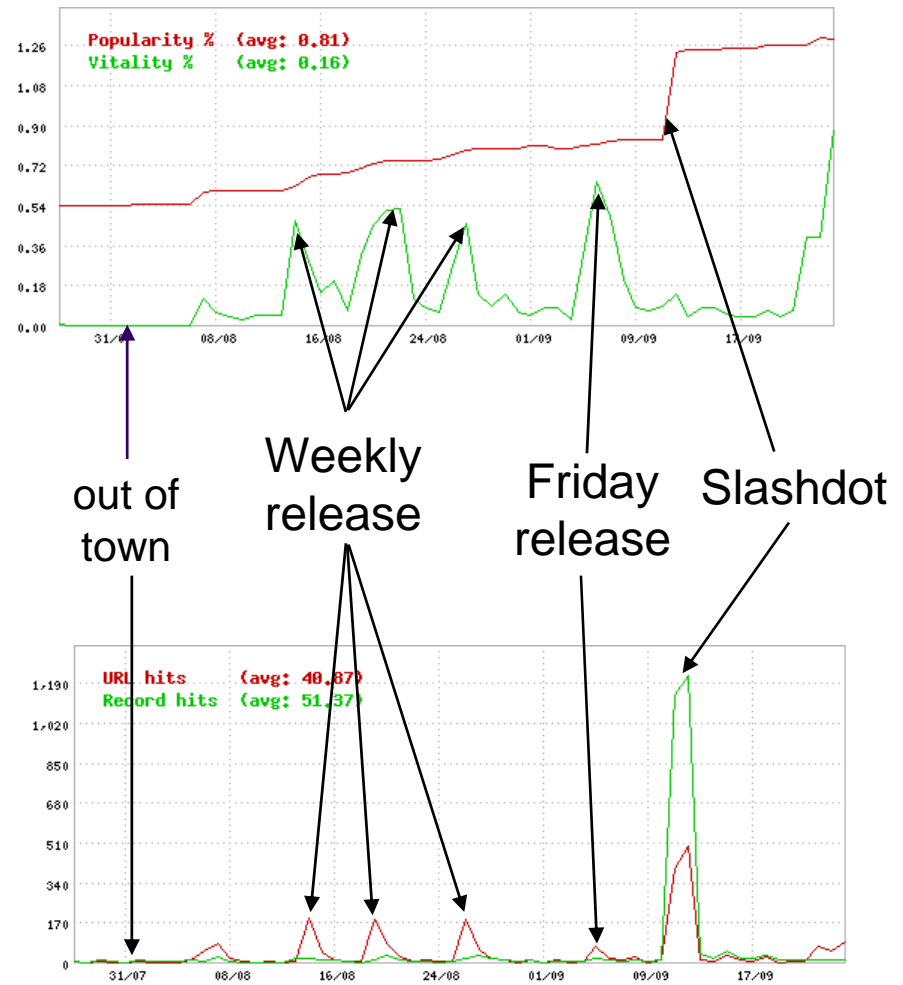
- compressed archive (.tgz, .zip)
- Linux Packages (.deb, .rpm, JPackage.org, ...)
- advanced GUI installers (IzPack, BitRock, InstallAnywhere, ...)

## → When to release the project?

- Warning, first impression is very important
- “Release Often, Release Early”: way to get feedback but be honest: “alpha”, “beta”, “stable”, “mature”, ...

- ➔ **Project should be mature enough but still require numerous improvements**
  - need bugs but not too many
- ➔ **Post ideas in task list**
- ➔ **Post job offers in the Forge**
- ➔ **Advertise through various communities**
  - Web: slashdot, TheServerSide, freshmeat, ...
  - Conferences: Oopsla, Middleware, LinuxWorld, ...
- ➔ **Web site with keywords for a good visibility in search engines**
- ➔ **Networking**

- ➔ Links to projects
- ➔ Monitor project activity
- ➔ Notification of new releases for subscribed projects
- ➔ Visibility increases at each release



## → Web site

- ~200.000 hits/month
- >29.000 downloads
- EU (18 countries) 36%, US 28%, Japan 12%, China 5%, Canada 4%, Australia 4%, India 3%, Brazil 2%, ...

## → Community

- 27 committers both industrial & academics
- c-jdbc@objectweb.org: >200 subscribers, 200-300 msgs/month
- translation in japanese, italian, chinese, turkish, french , german

## → RPM on JPackage.org

## → Professional support by Emic Networks

## → Infrastructure

- GForge and web site requires full-time admin

## → Community

- A project does not survive without users
- Provide reactive support
- Warning, VERY HARD to know who is using your software and to get (negative or positive) feedback
- Truly successful open source project should survive the leaving of its original authors
- Involve the community in all decisions

## → Releasing OSS

- Publishing source code does NOT attract contributions
- require significant (and often underestimated) efforts in terms of communication, documentation, code legibility, support, ...

## → Projects

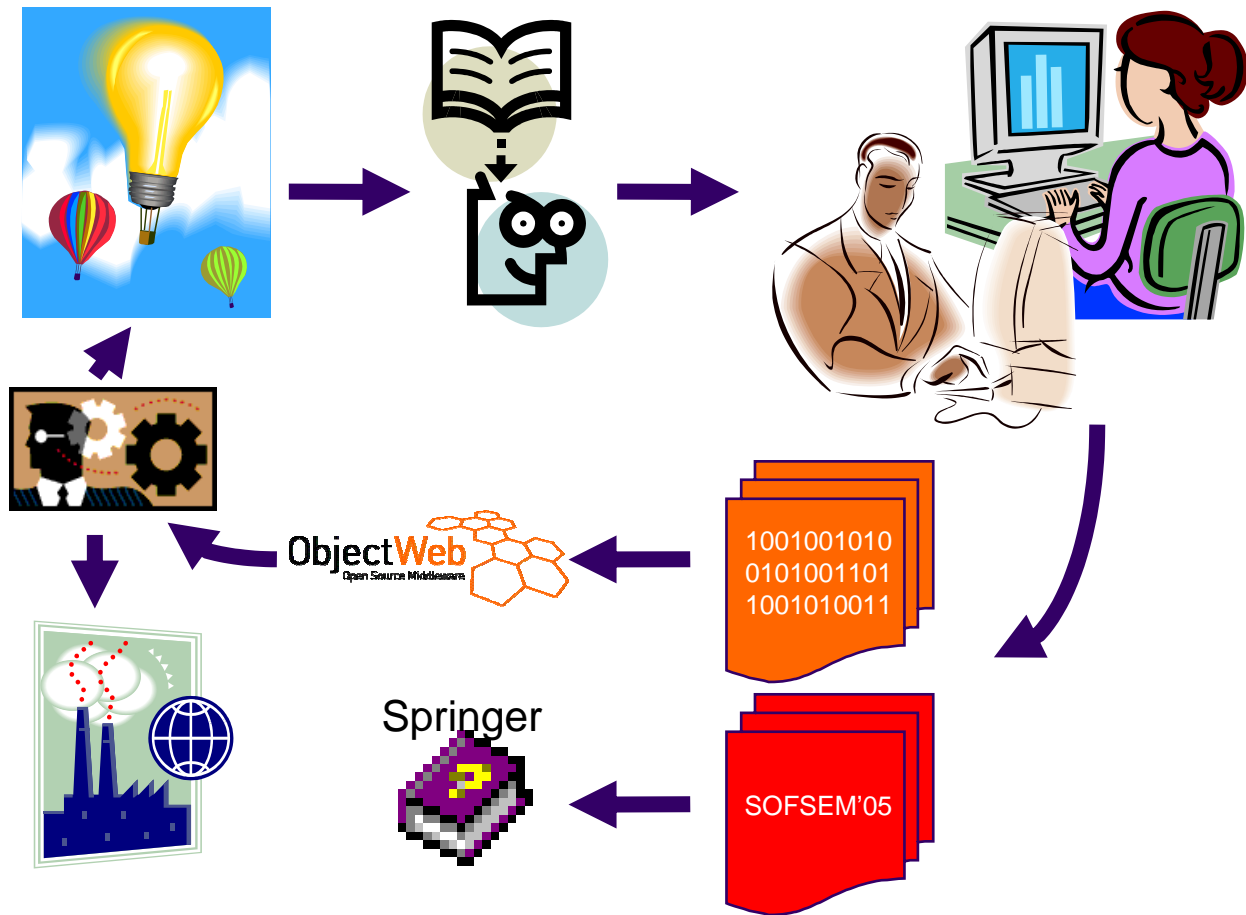
- often not used for what they were designed for
- users use default settings

## → Be open

- source, CVS, contributions, patches, ...

# Close the loop

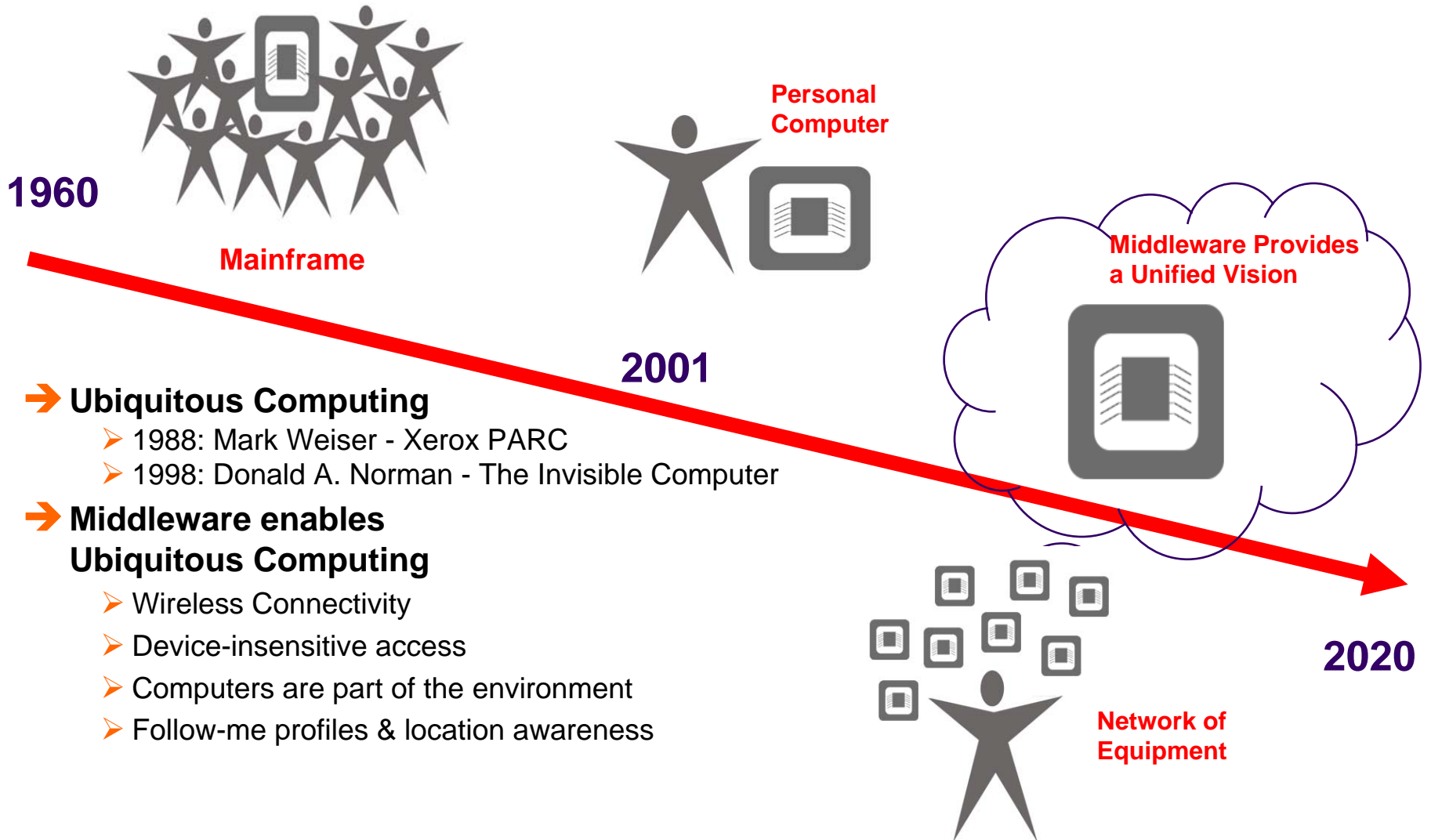
Visit <http://www.objectweb.org>



# Bonus slides



# Ubiquitous Computing



➔ **Ubiquitous Computing**

- 1988: Mark Weiser - Xerox PARC
- 1998: Donald A. Norman - The Invisible Computer

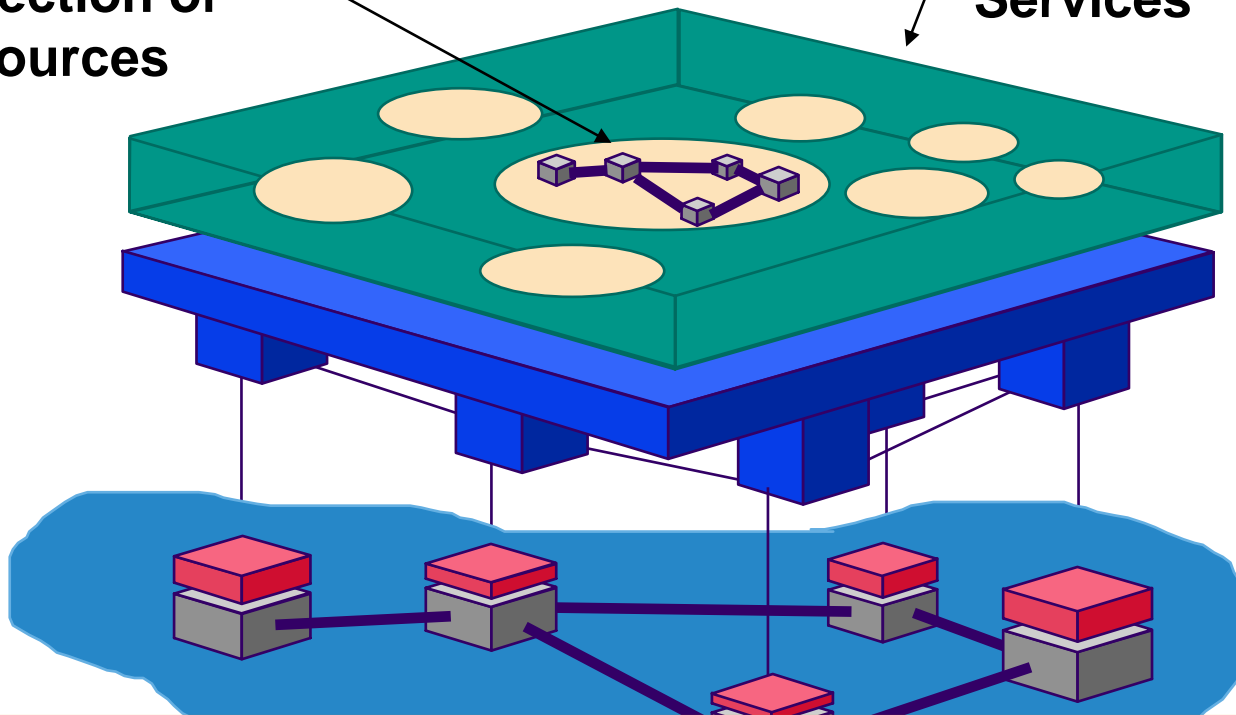
➔ **Middleware enables Ubiquitous Computing**

- Wireless Connectivity
- Device-insensitive access
- Computers are part of the environment
- Follow-me profiles & location awareness

# Middleware Platforms

**Computational  
Reflection of  
Resources**

**Control, Mgmt &  
Services**



**Examples : ORBs (Corba), Application Servers (J2EE, CCM, .NET), Service Platforms (OSGi, Web. Service Frameworks)**