Study into the use of Open Source Software in the Public Sector

Part 1

OSS Fact sheet

A report directed by

Patrice-Emmanuel Schmitz, Unisys Belgium

An IDA Study
Interchange of Data between Administrations

European Commission, DG Enterprise

June 2001

The IDA programme

IDA is a European Commission driven strategic initiative using advances in information and communications technology to support rapid electronic exchange of information between Member State administrations. The objective is to improve Community decision-making, facilitate operation of the internal market and accelerate policy implementation.

Its mission is to co-ordinate the establishment of trans-European telematic networks by:

Promoting implementation of sectored networks in priority areas
Developing network interoperability measures
Extending network benefits to EU industry and citizens
Co-operating with Member States authorities and Community services
Promoting convergence towards a common telematic interface.

Ida organised a one-day seminar in Brussels on 22 February 2001 to address the use of open source software in public administrations. The event brought together around 100 representatives of the Commission, national and local governments and the IT industry. It provided a platform for EU administrations to share experience, and permitted dialogue with the private sector on the benefits and pitfalls of OSS usage.

Ida also addressed a call for tender related to a “Study into the use of open source software in the public sector” (the present study)

The Study has three components:

> **Part 1 The OSS Fact sheet**. An assessment of availability and potential of OSS based solutions, by software category, and a selection of about 100 typical OSS solutions (out of several thousands of OSS “projects”)
>
> **Part 2. The report on OSS usage and experience made.** Based on the Fact sheet and a Questionnaire, as on visits in six European countries (France, Spain, Germany, Italy, Belgium, Sweden), the report will examine the use/non-use of OSS in their public sector.
>
> **Part 3. The report on market structure and issues related to public procurement**.
> How OSS may be used / distributed according their licenses, and how the legal and commercial aspects may impact public procurement objectives, transparency and non-discrimination.

Unisys Belgium obtained the contract and provided manpower, project management and support services for the study.

This report has been prepared under the sole responsibility of the contractor. It does not necessarily reflect the view of the Commission, nor does the Commission accept responsibility for the accuracy or completeness of information contained herein

Modification history

Date	Version	Author	Reason for modification
28.6.01	Draft	P-E Schmitz	The draft has been submitted

About the Author:

P-E Schmitz, Unisys project director, is master in law[1] and finance analyst, but also (occasional) program developer[2], with most of his career in IT services (databases, project management and consultancy).

Acknowledgements:

- To the Google search engine, the Internet and all people making it alive with their permanent contributions to the "great debate". Without them, such a study would simply not be possible.
- Gratitude also needs to be expressed to our correspondents at the national Administrations, and in particular to Juan Jesus Muñoz-Esteban of the MAP, Laurent Cabirol of the MTIC, Nicolas Pettiaux of the CIRB and Egon Troles of the KBSt.
- Finally, I am grateful to the IDA - DG Enterprise project officers Berhard Schnittger and Frederik Olsson-Hector for their constant support.

Warning:

The document includes links (URLs) to sites and pages located on the Internet.
This is because so many information - permanently updated – is there available to the public, that it would be a non-sense to import them verbatim in the present document (it would multiply by 100 the number of pages).
The reader of the present document has therefore to be connected to the net if he wants to consult these external pages.

[1] Lawyers are usually not beloved by OSS communities: they personify copyright and patent problems. However, they also care about anti-trust, privacy, and citizen's protection against IT misuses.

[2] Copying rewriting or assembling various pieces of code found everywhere, and polishing them until to obtain – sometimes - the new expected result.

The author of the present paper cannot guarantee that all the referred links will stay active and will respond to the information need as they were at the time of writing.

Table of Contents

Summary

What is a Open Source Software (OSS)?

It is a software with a license that is compliant with the Open Source Definition (OSD) as it may be found on the OSI - Open Source initiative site [3].

To resume, the nine criteria are:

1. Free Redistribution. Anyone can redistribute, for free or for a fee (e.g. when packaging, guarantee or maintenance services are added)
2. Availability of the source code. The program must include source code, and must allow distribution in source code as well as compiled form.
3. Derived works and modifications can be distributed under the same terms as the license of the original software.
4. The license may impose the integrity of the author's source code by requiring that derived works must be distributed as “patch” and carry a different name or version number from the original software.
5. No discrimination against persons or groups can be included into the license text.
6. No discrimination against fields of endeavour can be included into the license text (e.g. “Business, or Commerce”).
7. Distribution of License: The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties.
8. The license must not be specific to the inclusion of the software in a particular product or packaging: if it is part of a particular software distribution and if the software is extracted from that distribution and used or distributed within the terms of the program's license, all parties to whom the program is redistributed should have the same rights as those that are granted in conjunction with the original software distribution.
9. The license must not contaminate other software and cannot place restrictions on other software that is distributed along with the licensed software.

The OSS fact sheet is the first part of the Study into the use of Open Source Software in the public sector ordered by the DG enterprise into the IDA program. The fact sheet is not exhaustive. It gives an overview of the current situation (springs 2001) and an assessment of availability and potential use of OSS based solutions, by software category, and a selection of about 100 typical OSS solutions (out of several thousands of OSS “projects”).

The second part of the Study reports on the use of OSS in six European countries (Belgium, France, Spain, Germany, Italy, Sweden) and in the European Union administration.

[3] Bruce Perens wrote the first draft of this document as "The Debian Free Software Guidelines", and it is now a cornerstone of the OSI policy- see at http://www.opensource.org/docs/definition.html

The third part gives an overview of the OSS market structure, with opportunities and issues related to the use of OSS solutions.

Abbreviation table

AIPA	Autorità per l'Informatica nella Pubblica Amministrazione (Italy)
ASP	Application Service Provider (software providing centralised applications to web clients)
BMWi	Bundes Ministerium für Wirtschaft und Technologie (Germany)
BSD	Berkeley Sofware Distribution
DG	Directorate General (of the EU Commission)
EU	European Union
FSF	Free Software Foundation (of Richard Stallman)
FUD	Fear – Uncertainty – Doubt (an effect that makes IT managers and users hesitant at the time to take strategic decisions)
GNU	Gnu's Not Unix (general project of the FSF)
GPL	General Public License (of the FSF)
GVC	Government Value Creation
HTTP	Hyper Text Transfer Protocol (of IETF / W3C)
ICT	Information and Communication Technology
IDA	Interchange of Data between Administration (EU programme)
IETF	Internet Engineering Task Force (Standardisation group)
IP	Internet Protocol
IPSO	Information Society Project Office (EU Comm.)
KBSt	Koordinierungs- und Beratungsstelle (Germany)
LAN	Local Area Network
MAP	Ministerio de las Administraciones Publicas (Spain)
MTIC	Mission interministérielle de support aux Technologies de l'Information et Télécommunication (France)
MS	Microsoft
OS	Operating System (of a computer)
OSI	Open Source Initiative
OSS	Open source software (= Free Software; = Libre software)
PAGSI	Plan d'Action Gouvernemental pour la Société de l'Information (France)
PC	Personnel Computer
RAM	Random Access Memory (of a computer)
SQL	Structured Query Language
W3C	The World Wide Web Consortium (Standardisation group)
SMP	Symmetrical Multi Processors
TBO	Total Benefit of Ownership
TCO	Total Cost of Ownership
USB	Universal Serial Bus

Introduction to the OSS Study

Historic Milestones

Richard Stallman, a programmer at the MIT Artificial Intelligence Laboratory in the 1970s, was one of the first to recognise the tensile strength of what he called "free software," in which "free" refers to the freedom to change the source code, and not (sometimes) free in price. One of his major contribution was the GNU General Public License (GPL), which is essentially a copyright protection that gives everyone the rights to use, modify and redistribute the program's code *or any program derived from it*, but only if the Open Source distribution terms are unchanged. Thus, the code and the freedoms became legally inseparable. From 1984, the GNU project and the free Software Fondation (FSF) helped to program numerous solutions

The public has become more familiar with the free software concept with the success of Linux in the late 90's.
LINUX is a free Unix-like *kernel* written by Linus Torvalds in 1991. This kernel, thanks to a collection of components (mainly free programs released under the GPL license of the GNU project) constitutes now a complete *free system*. By extension and simplification, this system is often called LINUX (more exactly, it is GNU/Linux).
GNU/Linux is now distributed by a range of commercial "facilitators" (VA Linux, Red Hat, Suse, Mandrake, Caldera) that deliver support services and CD packages for a – low – packaging price.

Another major contribution came from Eric Raymond who explained in detail (in "The Cathedral and the Bazaar" – 1997) how and why a motley assemblage of thousands of hackers working for free on their own time ("the bazaar") could produce better software programs than the expensive professional talent amassed by giant software companies ("the cathedral"). Raymond's thoughts finally leaded IT giants (IBM, Intel Netscape, Sun etc.) to open new eyes in considering the OSS phenomenon and to provide some interesting applications to the Open Source community.

A last major step to fully compete with the proprietary commercial standard was the arrival of graphical mouse driven GUI desktop managers (KDE, GNOME) and adapted applications since 1998. That step was essential to obtain the user friendly graphical presentation in order to match the standard of proprietary solutions

The OSS success (with software like Gnu/Linux, Apache, Bind, Perl, etc.) is now becoming the most interesting "revolution" of the IT landscape since the first moments of the Internet.

The last European Council (March 2000) strongly promoted the European Commission ***e*****Europe** initiative to bring Europe online:

- Cheaper, faster, secure internet,
- Investing in people,

- Stimulate the use of Internet

A major development area for this is « Government on line: electronic access to public services »
Regarding the tools requested for it, the *e*Europe response is obvious: « Promote the use of **Open Source Software** (OSS) in the public sector and e-government best practices » (http://europa.eu.int/comm/information_society/eeurope/pdf/actionplan_en.pdf – p.23)

*e*Europe orientations are developed in the work (April 2000) of the Libre Software Working Group (http://eu.conecta.it/) with recommendations to actively promote projects (e.g. the localisation of free software) and various initiatives (http://www.ispo.cec.be/topics/eifs/free_software.html).

Following the report of the IST_AG (Information Society Technologies Advisory Group), OSS is now in the **major priorities** of the IST Working Program 2000 (see: http://www.cordis.lu/ist/istag.htm)

A new Religion War

Another spectacular **fact** concerning OSS is the dramatic division between "believers" and "cynics", pro and contra. Only persons keeping themselves ignorant from the debate seems to be neutral. At a time where "world economy" and "unique thinking" (in French "mondialisation" and "pensée unique") are driving the world, this is certainly not the case regarding Open Source.
A simple search on your favourite Internet search engine, with the terms "windows and Linux" for example, will introduce you in thousands of debates raging as to whether the one is more or less secure, cheaper, reliable, etc.
Most of the debate in symposiums, expos, newspapers and the Internet comes from a strong reaction of individuals and competitors against the dominant looking position of Microsoft in certain software domains. This reaction is reinforced by the litigations between the US government and the Redmond enterprise regarding suspicions of a monopolistic attitude, and by the impression that much better performance/quality/price ratings may be obtained with many OSS solutions
It goes without saying that most of the debaters are "blind" advocates of one of the parties, and it will be hard to find which opinion is based on true facts.
The objective of this study is to present facts, if possible on a neutral way.

Origin of the Study

The Study results of an invitation for tenders (ENTR/00/053) launched by the Commission of the European Communities – DG Enterprise ("the Commission"), under the scope of Article 5, Common tools and Techniques, of the IDA Interoperability decision.

For more information on IDA, please refer to http://www.ispo.cec.be/ida

Following the last European Council (Feira) Unisys has decided to reinforce its concrete practice experience in the OSS domains. Unisys Belgium responded to the tender and obtained the study and consultancy contract.
Unisys is implemented in most European countries and delivers consulting and services to governments with a world-wide network of 36.000 employees. The Unisys support and integrator experience (that is combining heterogeneous solutions, proprietary or not, and making them work together) is driving us to think that the open source movement may completely shape the software industry during the next years.

Objectives of the Study

The first objective of the study is to report facts, in the most neutral possible manner. It is not to become blind "advocate" of any new church or philosophy. As Eric S. Raymond wrote in his comments inside the "Halloween" document, "The real battle isn't NT vs. Linux, or Microsoft vs. Red Hat/Caldera/S.u.S.E. – it is closed source development versus open source.".
Within the IDA program, the OSS study has two major objectives:
A business and TCO control objective, which is to evaluate the conditions allowing minimising software acquisition, development and maintenance, as to improve solution interoperability and vendor independence;
A political objective, which is to make more people aware that the promotion of open source software in the public sector may, combined with Internet technologies, enable our governments to explore new ways of creating knowledge and getting European citizens involved in the decision-making process.

To achieve these objectives, the study will collect facts and directions related to the actual and potential use of open source software into the public sector, in order to feed discussions and decisions about whether, how and in which area OSS should be promoted.

The OSS Concept

Open Source Software (OSS) is characterised by full access to its source code and by the permission to use it (on any computer, in any situation), to modify it (improving it, fixing bugs, augmenting functionality) and to redistribute it (normally as OSS).

Throughout this paper, we will use the terms `open source' and sometimes `free software' to refer to the kind of software under study. As noted by Jesus M. Gonzalez-Barahona in his paper "Free Software / Open Source: Information Society Opportunities for Europe ?", the word `free' in `free software' is used as in `free speech', and not as in `free beer'. In Spanish and French, there is no ambiguity in the use of `libre' (as opposed to `gratis'), and therefore this kind of software is some times referred to as `libre software' (even when speaking in English). The term `open source software', is being proposed as a synonym for `free software' and `libre software' in many environments. It will be the preferred term through this paper, although probably both `libre software' or `free software' could be used wherever `open source' is used.

The fact that a software (program, solution or package) can be considered as “Open Source” has no relation with the fact that a user actually knows or owns the source code of it, or the fact that the user got it for free. It is entirely related to the legal framework: **the licence**, that is “the written and published conditions, subscribed by the user at purchase or installation time, or accepted by the simple fact of downloading the software, and organising the use of the software and the rights which its users have over it.
For instance, in most proprietary programs the licence withdraws the rights of copying, modification, lending, renting, use in several machines, etc. Proprietary licences usually specify that the proprietor of the program is the company, which makes or publishes it, which just sells restricted rights to use it.
In the OSS world, the licence under which a program is distributed is also the basis of everything. The conditions specified in OSS licences usually compromise between several contradictory goals:

- On one side the author wants to guarantee the most freedoms possible (redistribution, modification, use) to the users.
- On the opposite side, the author wants to impose strict conditions (citation of the author in derived works, avoiding that derived works may become proprietary).

The authors can choose to protect their software with different licences according to the degree with which they want to fulfil these goals, and the details that they want to ensure. It may also occur that the authors distribute their software with different licences depending on the usage (commercial/non-commercial), through different channels and prices. Therefore users, especially those who redistribute or modify the software, including copying it on a great number of machines, have to carefully study its licence.

Although each author could use a different specific licence for his programs, the fact is that almost all open source software use one of the common licences (GPL, LGPL, Artistic, BSD-like, MPL, etc.), sometimes with slight variations. To simplify things even more, some organizations have appeared recently, which define which characteristics a software licence should have to be qualified as an open source software licence. Amongst them, the two most widely known are the Debian Project, which defines the Debian Free Software Guidelines, and the Open Source Initiative (OSI),

OSS general fact sheet

Credibility, maturity

As introduction to the OSS list, we can already point out that OSS, once limited to “small budget environments” like education - universities, laboratories, to some parts of the public sector, is now gaining other sectors of industry and services.

Even the most traditional and security minded sectors, as banking, demonstrate OSS initiatives (as the Dresdner Bank back-end banking Java-based XML project, running on Apache and Linux).

The most often cited examples of OSS success include

- Linux, that runs now on some 20% of the world servers in volume[4]
- Apache, which runs over 60% of the world's web servers
- Perl, which is the engine behind most of the `live content' on the World Wide Web.
- BIND, the software that provides the DNS (domain name service) for the entire Internet.
- Sendmail, the most important and widely used email transport software on the Internet.

Some solutions, as DNS and sendmail have become `solution killers', not only because they are capable and robust, but also because no commercial competition has ever been successful at replacing them as the most widely used product on their respective categories.

Once limited to “small budget environments” like education - universities, some parts of the public sector, the OSS phenomenon is now gaining other sectors of industry and services.

The generalisation of open source and the success of the above-mentionned products have now greatly dissipated the “Fear – Uncertainty Doubt” (FUD) effect that was previously a common attitude.

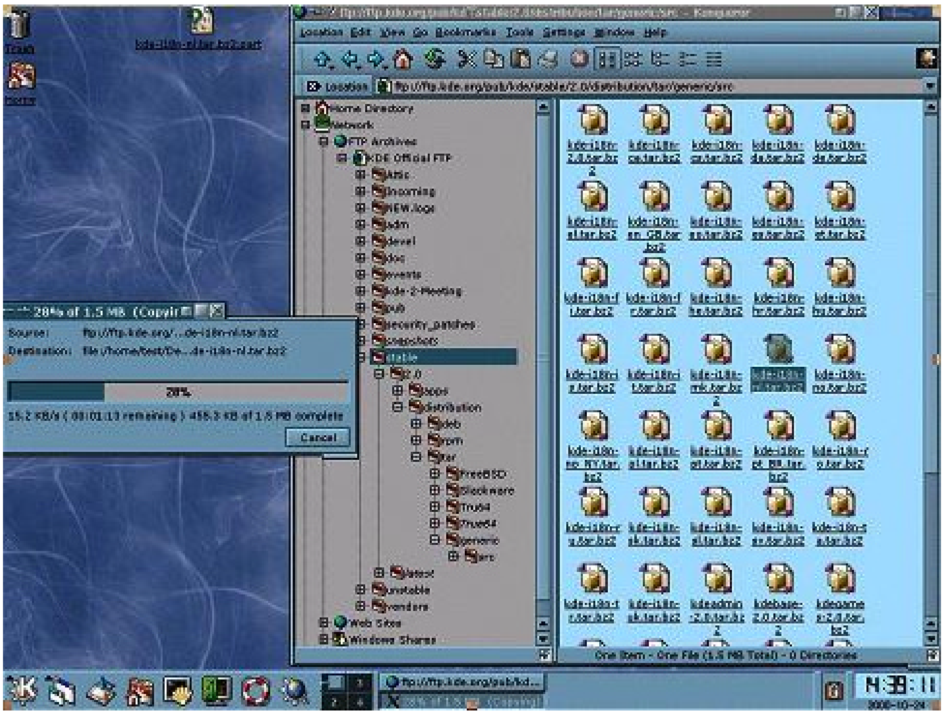
[4] As it will be developed in part 3, this percentage varies between 9% (Gartner) and 25% (IDC)

1. User friendliness in Desktop

The lack of graphical user interface was once one of the major disadvantages of open source Unix systems.
Since the Arrival of KDE (1.0 in July 1998, 2.0 in fall 2000) and Gnome (October 1999) the Linux users have now the full advantages of the generation of mouse driven graphical interfaces that become the standard since Xerox, then Apple with the Lisa and the Mac, then finally Microsoft with Windows opened the way.

Most of the Open Source solutions (the desktop itself, word processing, spreadsheets, presentation, projects etc) now benefits from the same friendly look and feel as their competitors. The user interfaces are versatile and their presentation may be adapted according the needs to obtain a very similar look as the commercial market leaders, in order to facilitate migration and to minimize education and training needs.

As some images tell more than long considerations, we provide here some desktop examples of two of the Linux most used Graphical User Interfaces: KDE and Gnome:

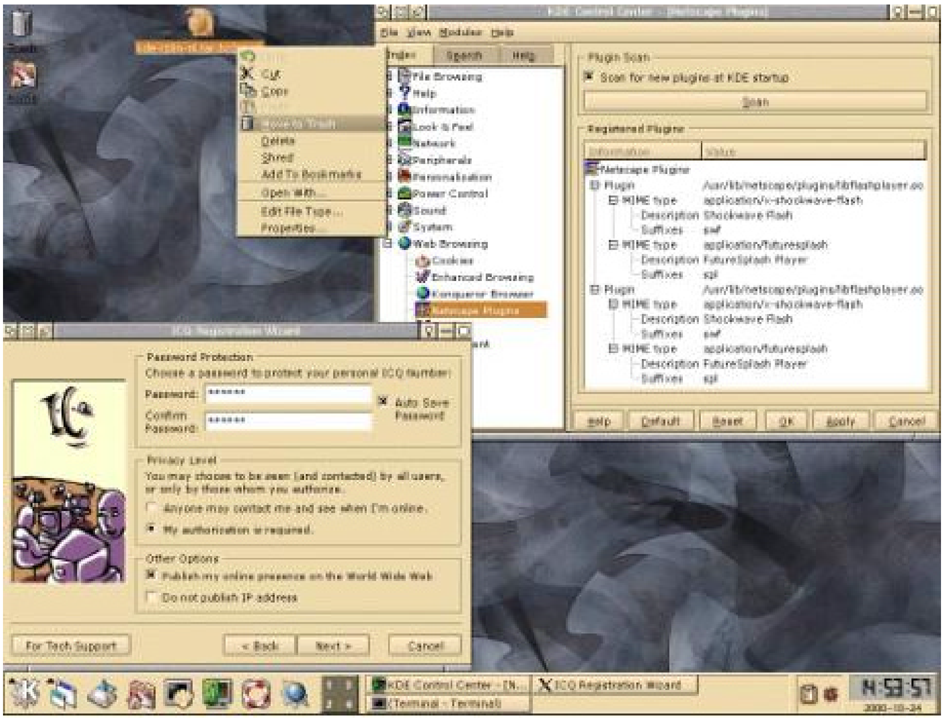


Source: ftp://ftp.kde.org/...de-i18n-nl.tar.bz2
Destination: file:/home/test/De...de-i18n-nl.tar.bz2
28%
15.2 KB/s (00:01:13 remaining) 455.3 KB of 1.5 MB complete

fig. 1 (kde 2.0 Desktop)

The fig 1 screenshot illustrates a KDE 2.0 final desktop.
The figure is just an example illustration, as the user can easily configure colours, widget and window decorations. This screenshot shows Konqueror in action, browsing the FTP archives and downloading one of the internationalisation packages of KDE.
At the moment of release there were 15 translations available for KDE, 20 more to come in the next release.

Figure 2 illustrates another combination of colours and styles showing the KDE Control Center, which allows the user to change many settings to his own likings. It is also an overview of some of the advanced possibilities of KDE, such as the support for all Netscape plug-ins within the Konqueror browser.
Many third party applications are already available for KDE2. A guide of these can be found at apps.kde.com.



Plugin Scan

☒ Scan for new plugins at KDE startup

Registered Plugins

Netscape Plugins
Plugin /usr/lib/netscape/plugins/libflashplayer.so
MIME type application/x-shockwave-flash
Description Shockwave Flash
Suffixes swf
MIME type application/futuresplash
Description FutureSplash Player
Suffixes spl

ICQ Registration Wizard

Password Protection

Choose a password to protect your personal ICQ number:

Password: ******

Confirm Password: ******

☒ Auto Save Password

Privacy Level

You may choose to be seen (and contacted) by all users, or only by those whom you authorize.

○ Anyone may contact me and see when I'm online.

● My authorization is required.

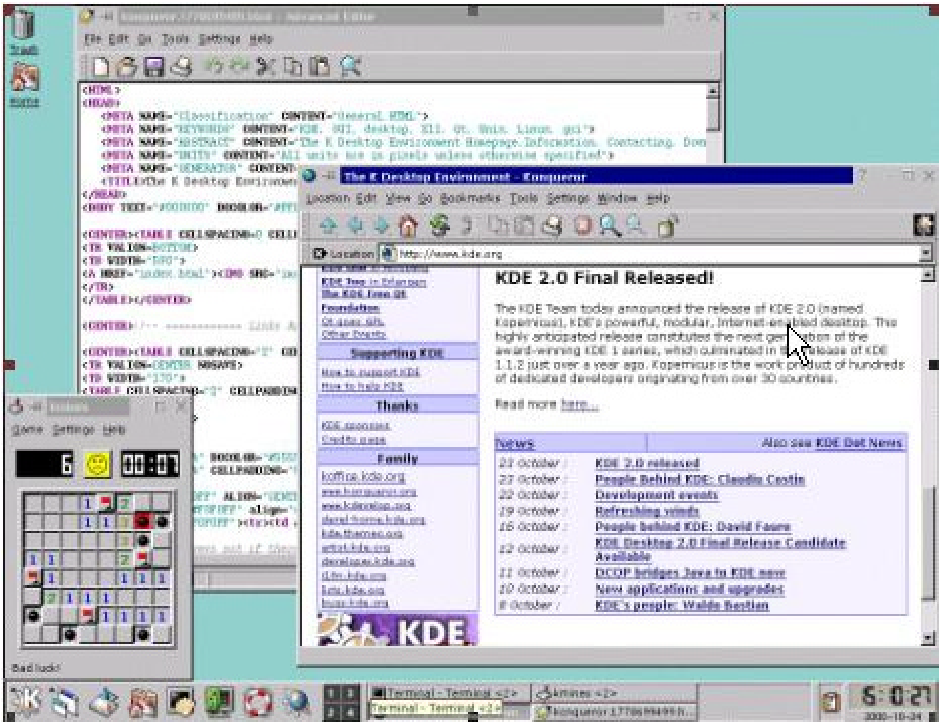
Other Options

☒ Publish my online presence on the World Wide Web

□ Do not publish IP address

fig. 2 – the KDE 2.0 control center (same role as the MS control panel)

The adoption of appropriate settings can make a KDE desktop so close as the "commercial standard" that it may look as a "MS Windows clone" for the non-specialist user. Figure 3 illustrates the KDE approach to offer a "Windows look and feel" for users who are new to UNIX or for users who just migrated from the proprietary environment and that are adapting to the open source environment. The goal of KDE has always been to deliver UNIX to the desktop, and adaptation to the user needs is one of the requirements to reach that goal.


Trash
Home
File Edit Go Tools Settings Help
The K Desktop Environment - Konqueror
Location Edit View Go Bookmarks Tools Settings Window Help
Location
Supporting KDE
Thanks
Family
KDE
Game Settings Help
Bad luck!
Terminal - Terminal <2>
kmines <2>
2000-10-24

http://www.kde.org

KDE 2.0 Final Released!

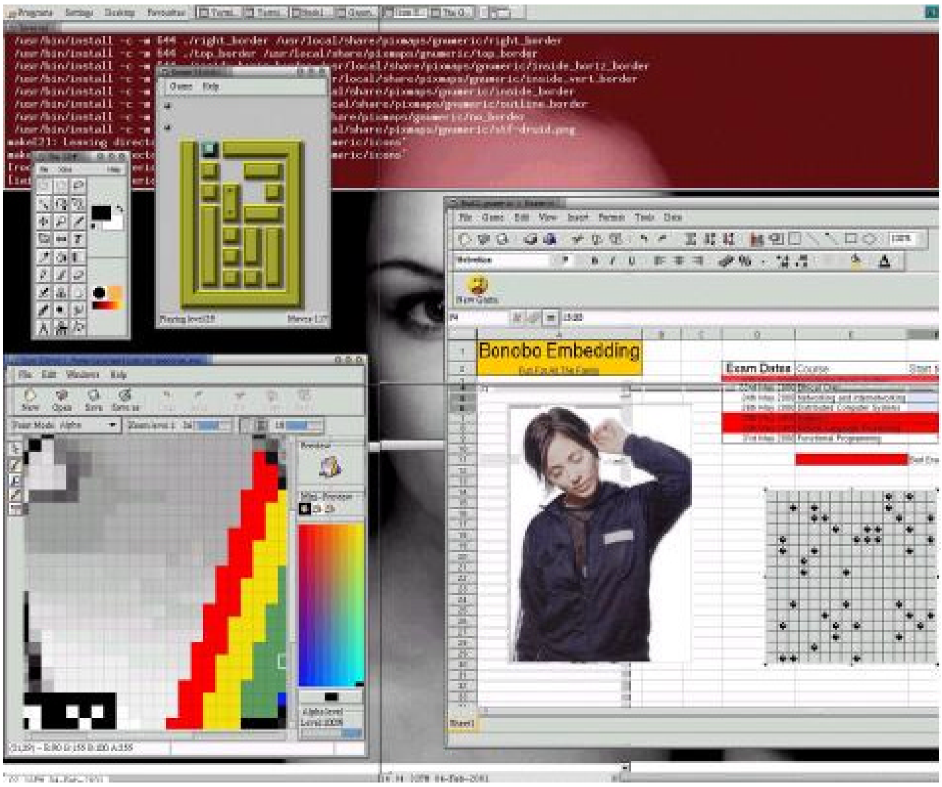
The KDE Team today announced the release of KDE 2.0 (named Kopernicus), KDE's powerful, modular, Internet-enabled desktop. This highly anticipated release constitutes the next generation of the award-winning KDE 1 series, which culminated in the release of KDE 1.1.2 just over a year ago. Kopernicus is the work product of hundreds of dedicated developers originating from over 30 countries.

Read more here...

News	Also see KDE Dot News
23 October /	KDE 2.0 released
23 October /	People Behind KDE: Claudio Costa
22 October /	Development events
19 October /	Refreshing winds
16 October /	People behind KDE: David Faure
12 October /	KDE Desktop 2.0 Final Release Candidate Available
11 October /	DCOP bridges Java to KDE now
10 October /	New applications and upgrades
8 October /	KDE's people: Waldo Bastian

Fig 3 example of a "Market standard" KDE 2.0 look and feel regarding the window manipulation

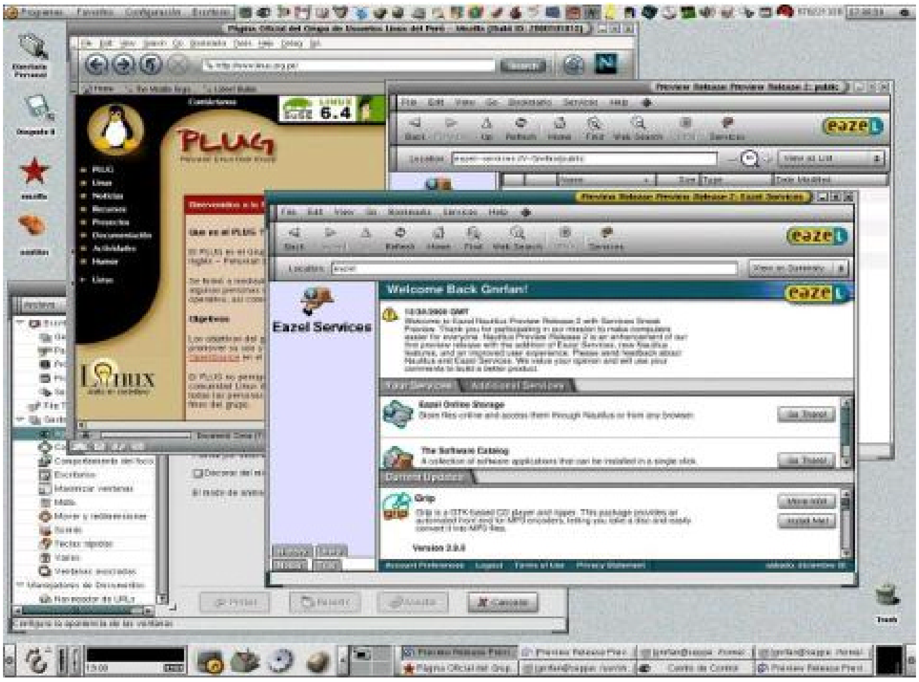
Quite similar to KDE, the GNOME graphical user interface was announced in 1997 (as a reaction to licensing problems related to KDE usage of components that were not open source at that time, but which are now) and was released in October 1999:
The result is that the Open Source community has now the choice between two graphical user interfaces (both free, although competitors) that are included in most BSD and GNU/Linux distribution CD and works on many Unix systems.



```
/usr/bin/install -c -m 644 ./right_border /usr/local/share/pixmaps/gnumeric/right_border
/usr/bin/install -c -m 644 ./top_border /usr/local/share/pixmaps/gnumeric/top_border
/usr/bin/install -c -m                    r/local/share/pixmaps/gnumeric/inside_horiz_border
/usr/bin/install -c -m                    r/local/share/pixmaps/gnumeric/inside_vert_border
/usr/bin/install -c -m                    al/share/pixmaps/gnumeric/inside_border
/usr/bin/install -c -m                    cal/share/pixmaps/gnumeric/outline_border
/usr/bin/install -c -m                    hare/pixmaps/gnumeric/no_border
/usr/bin/install -c -m                    al/share/pixmaps/gnumeric/stf-druid.png
make[2]: Leaving directo                  meric/icons'
make                 ecto                 meric/icons'
Trea                 eric
List                 eric
```

Fig 4 example of a GNOME 2.0 desktop with various open applications

Figure 4 shows the menu panel, a gnome-terminal session, the GIMP (image processing application) in the background with an open toolbox, the GNOME Klotski game, gnome-iconedit, and the Gnumeric spreadsheet with miscellaneous embedded Bonobo objects.
Figures 4b, and 4c are other illustration of the GNOME desktop with various Open Source applications running.



figures 4 b

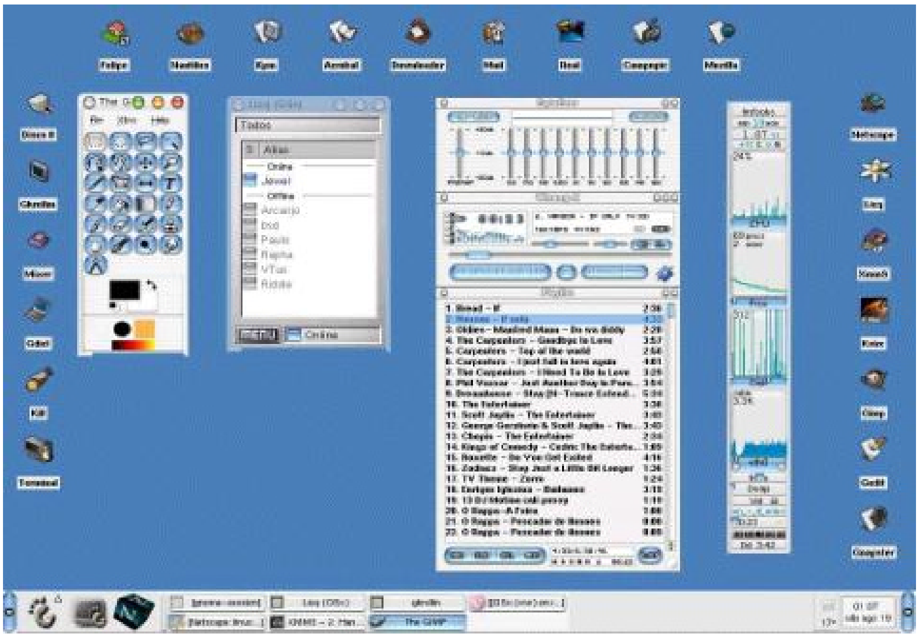


figure 4 c

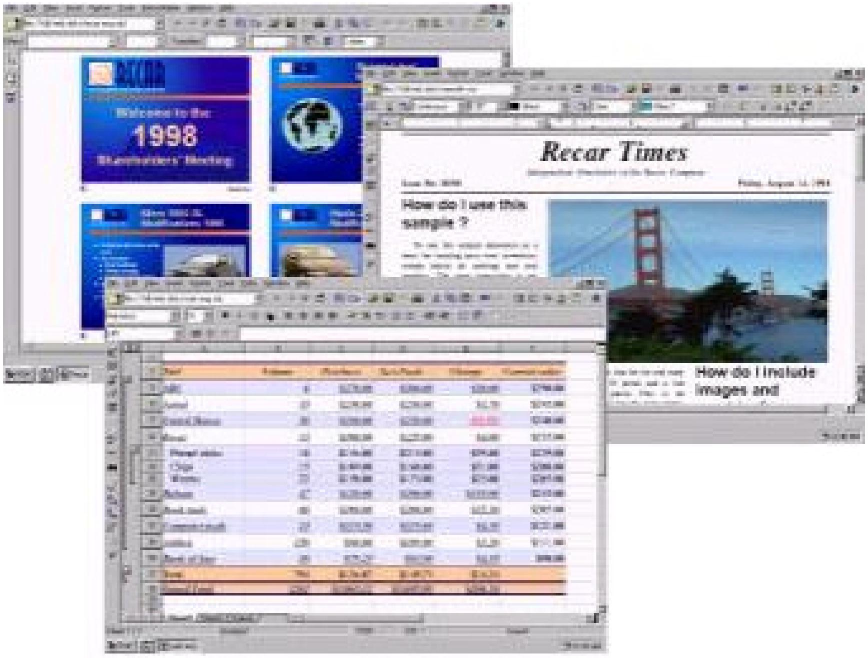
2. Maturity in Applications

In most domains, Open Source Softwares provide an almost unlimited choice of projects, and many of these projects have now become mature applications Without prejudice to the selection made in the present report, and to the OSS list (see hereafter) let's just highlight this maturity by giving some illustrated examples, regarding some of the most familiar office modules:

Office suites

Open Source software include several examples of office productivity suite, combining word processing, spreadsheet, graphic design, presentation, HTML editing, e-mail, news reader, scheduling, and database functions in a single environment.

In such suites, all applications work with each other: graphic image may be imported in spreadsheet, WP documents etc. Various document formats (including proprietary) may be imported or generated.



Welcome to the 1998 Shareholders' Meeting

Recar Times

How do I use this sample ?

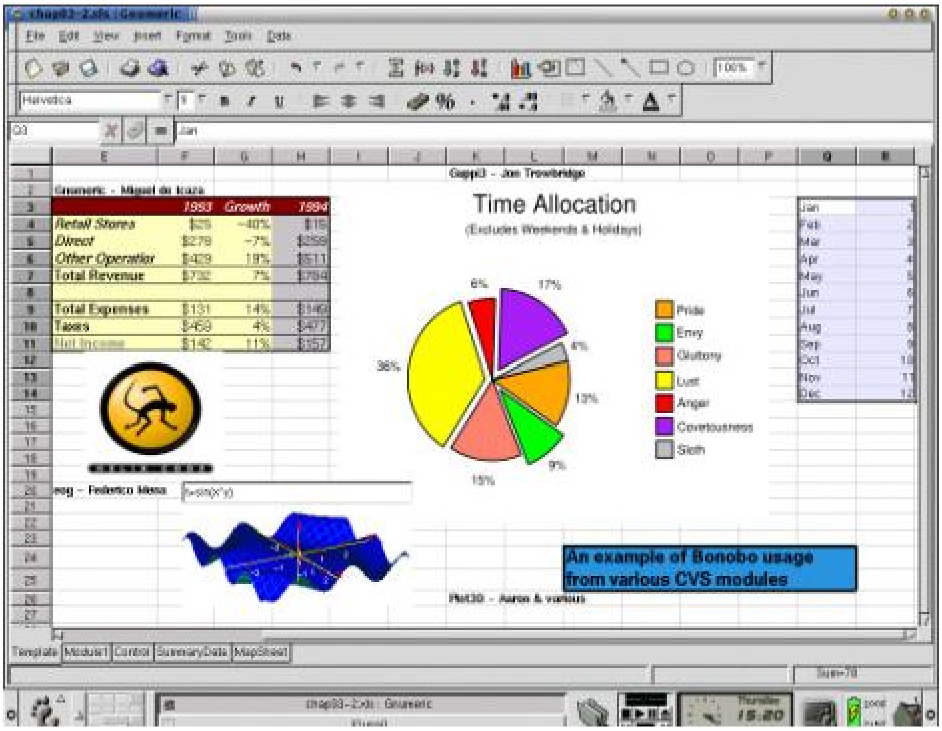
How do I include images and

fig 5

fig. 5 integration of presentation, word processing, spreadsheet (among other components) in an Office suite with a growing popularity (StarOffice)

Spreadsheets

The screenshot below is an illustration of a popular OSS spreadsheet: Gnumeric
The Gnumeric spreadsheet is part of the GNOME desktop environment: a project to create a free, user friendly OSS desktop environment, licensed under the terms of the GNU GPL license. Gnumeric can import existing Excel, 1-2-3, Applix, Sylk, XBase and Oleo files. The Gnumeric is intended to be a replacement for a commercial spreadsheet, and is developed with the GNU C compiler. The user interface is prototyped and designed using the Glade GUI designer.



Gnumeric - Miguel de Icaza

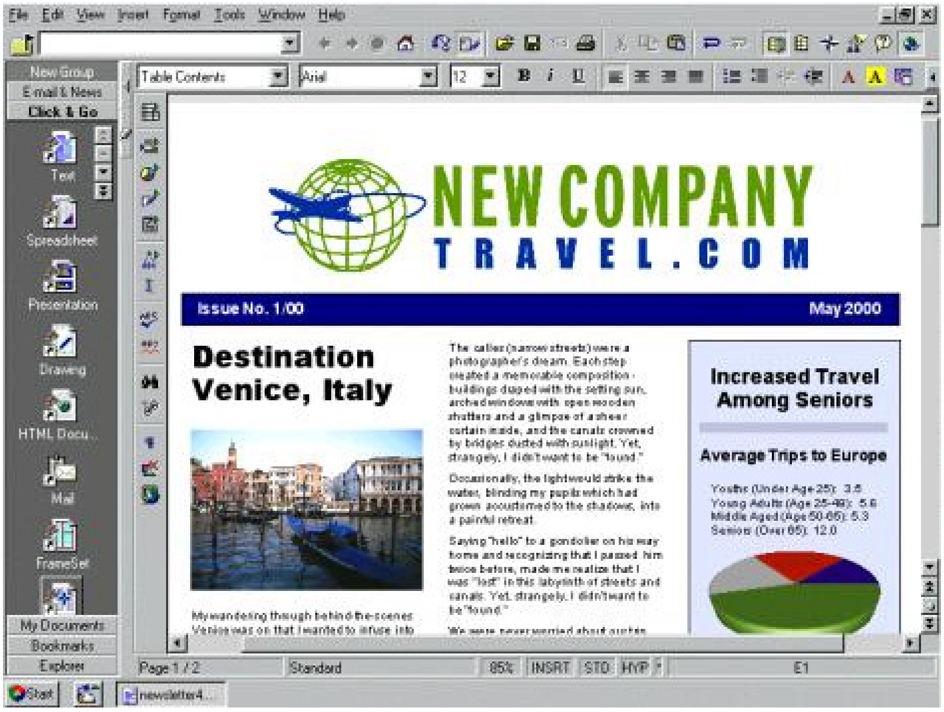
	1993	Growth	1994
Retail Stores	$25	-40%	$15
Direct	$279	-7%	$259
Other Operation	$429	19%	$511
Total Revenue	$732	7%	$784
Total Expenses	$131	14%	$149
Taxes	$459	4%	$477
Net Income	$142	11%	$157

Jan	1
Feb	2
Mar	3
Apr	4
May	5
Jun	6
Jul	7
Aug	8
Sep	9
Oct	10
Nov	11
Dec	12

fig. 6 The Gnumeric spreadsheet (a screenshot from the GNOME desktop)

A word processing example

StarOffice Writer: Word Processing And Beyond
StarOffice Writer software is a component of the StarOffice suite, able to accomplish the various WP tasks -- everything from formatting business letters and documentation to desktop publishing. The Stylist puts the power of style sheets in the hands of every user.
To begin with, powerful auto functions help to you focus on your ideas, not on the keyboard. AutoCorrect fixes typing and spelling mistakes as you work -- including words and phrases you have added to the dictionary. AutoComplete suggests common words and phrases to complete what you are typing. AutoFormat perfects the formatting as you write. And AutoPilot helps you create unique, sophisticated document templates, in addition to the many templates that come with the program.



Issue No. 1/00 May 2000

Destination Venice, Italy

My wandering through behind-the-scenes Venice was on that I wanted to infuse into

The calle (narrow streets) were a photographer's dream. Each step created a memorable composition - buildings draped with the setting sun, arched windows with open wooden shutters and a glimpse of a sheer curtain inside, and the canals crowned by bridges dusted with sunlight. Yet, strangely, I didn't want to be "found."

Occasionally, the light would strike the water, blinding my pupils which had grown accustomed to the shadows, into a painful retreat.

Saying "hello" to a gondolier on his way home and recognizing that I passed him twice before, made me realize that I was "lost" in this labyrinth of streets and canals. Yet, strangely, I didn't want to be "found."

We were never worried about out

Increased Travel Among Seniors

Average Trips to Europe

Youths (Under Age 25): 3.6
Young Adults (Age 25-49): 5.6
Middle Aged (Age 50-65): 5.3
Seniors (Over 65): 12.0

fig 7. the StarOffice OSS word processing software

A presentation example

StarOffice Impress

With this Web-ready presentation package, anyone can create visual communications that have a lasting impact. Using the predefined presentation layouts, you can focus on your message, instead of on the visual details or how your presentation looks -- the program takes care of all that for you.

Special effects and vector graphics tools enable you to produce stunning animations and sound effects. Graphics tools include flow chart-style shapes. Formatting options let you change the background of a single slide -- even to use multiple backgrounds in the same presentation. After your presentation is finished, you can customize it for multiple audiences and events.

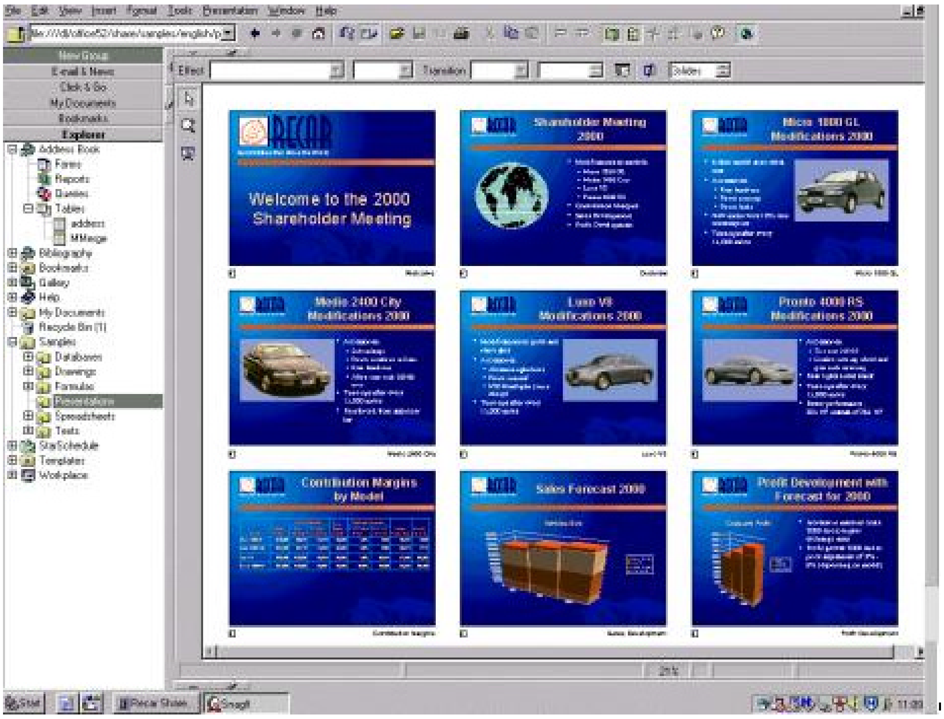


Fig 8. The Star Impress OSS presentation solution

Main OSS actors

The projects developers

At the origin, generally one individual or a very small group. After a first development (usually corresponding to specific needs) they start publishing it in specialised Internet forums as an OSS "Project". If enough persons are interested, a project web-site is created, a developer community is rapidly growing and – sometimes without ever meeting physically each other - assembles, develop, test the software at an amazing speed.
It is practically impossible to make an exact calculation of all the OSS developers. The number of published projects (from the simple published planning to the most mature solution) is calculated by Source Forge to 8.184 for the 10 most used license types. Our estimation is about 12.000 projects.
The number of developers involved in each project varies from some units to several hundreds. In the case of the FreeBSD project for example, thousands of developers worldwide funnel their work to a team of about 240 "committer" developers. Based on an average of 20, and according to the hypothesis that each developer works on two projects, the OSS developer community may be evaluated to at least 120.000 active persons, working without administrative overhead…

The projects developers are grouped in free support / groups (Noospheres) communicating through the Internet

The organisations

Developers are grouped in organisations that are helping developers to communicate and to find resources. Here are some of them:

Berkeley	Berkeley Soft Foundation	http://www.bsd.org/
FSF	Free Software Foundation	http://www.gnu.org
Mozilla		http://www.mozilla.org
OS	Open Source Organisation	http://www.opensource.org
SF	Source Forge	http://www.sourceforge.net

The licences

As we have seen already, the choice of a licence is an essential step to characterise the project. Too much projects already permit downloading but leave these "legal non-technical aspects" in the background and, inspecting the web sites, it is sometimes hard to find which license is applicable
In the following non-exhaustive license list, with URLs, the OSI column indicates if the Open Source Initiative considers that the licence really covers "Open Source Software":

License	Name	URL	OSI	Projects
Apache	Apache Software licence	http://www.apache.org/LICENSE	Y	
APSL	Apple Public Source License	http://www.opensource.apple.com/apsl/	N	
Artistic	The "Artistic License"	Http://Language.perl.com/misc/Artistic.html	Y	298
BSD	Berkeley Software Distribution	http://www.opensource.org/licenses/bsd-license.html	Y	478
CVW	MITRE Collaborative Virtual Workspace Licence	http://cvw.mitre.org/cvw/licenses/source/license.html	Y	
GPL	GNU General Public License	http://www.gnu.org	Y	6117
IBMPL	IBM Public Licence	http://www.research.ibm.com/jikes/license/license3.htm	Y	11
INTEL OSL	Intel Open Source License	http://www.opensource.org/licenses/intel-open-source-license.txt	Y	
IPL	Borland's Interbase Public License	http://www.borland.com/interbase/IPL.html	N	
ISC	ISC License	http://www.sendmail.com/partner/resources/development/milter_api/LICENSE.txt	N	
Jabber OSL	Jabber Open Source License	http://www.rosenlaw.com/html/JOSL-1.0.htm	Y	
LGPL	GNU Lesser General Public License	http://www.opensource.org/licenses/lgpl-license.html	Y	835
LPPL	LaTeXProject Public License	http://www.latex-project.org/lppl.html	N	
MIT	MIT License	http://www.opensource.org/licenses/mit-license.html	Y	110
MPL	Mozilla Public License	http://www.mozilla.org/MPL/MPL-1.0.html	Y	143
NPL	Netscape Public License	http://www.mozilla.org/MPL/NPL-1.1.txt	N	
Python	The Python Licence	http://www.handle.net/python_licenses/python1.6beta8-5-2000.html	Y	78
QPL	Qt Public Licence (Trolltech)	http://www.mozilla.org/MPL/MPL-1.0.html	Y	60
Ricoh	Ricoh Source Code Public Licence	http://www.risource.org/RPL/RPL-1.0A.shtml	Y	5
Sendmail	Sendmail license	http://www.sendmail.com/partner/resources/development/milter_api/LICENSE.txt	N	
SISSL	SUN Internet Standards Source License	http://www.openoffice.org/licenses/sissl_license.html	Y	
Vovida	Vovida Software License	http://www.vovida.org/license.html	Y	
X11	X11 license	http://www.x.org/terms.htm	N	
ZLIB	Zlib/Libpng licence	http://www.opensource.org/licenses/zlib-license.html	Y	45

The last column indicates – when known - the number of “projects” currently covered by the license (source: SourceForge Software Map – 3.01.2001). This illustrates the fact that some licences (GPL, LGPL, BSD, Artistic, MPL…) really concentrate on most of the OSS distribution.

To obtain more information on the different types of licenses, their permissive or restricted character, their risks according to the commentator, please refer to the site of OSS organisations like the Free Software Foundation (http://www.gnu.org/copyleft/licenses.html), or the Open Source Organization (http://www.opensource.org/licenses/)

Comments on the two most popular licenses (GPL/LGPL and BSD)

- **GPL and its variant LGPL.**
  With 85% of all the projects, the most popular OSS license by far. This is also the licence (created by Richard Stallman) under which the software of the GNU project is distributed. Many software that are not formally part of the GNU project are today under GPL (as the Linux kernel). The GPL was carefully designed to promote the production of more free software, and because of that it explicitly forbids some actions on the software that could lead to the integration of GPLed software in proprietary programs. The GPL is based on the international legislation on copyright, which ensures its enforceability. The main characteristics of the GPL are the following: it allows binary redistribution, but only if source code availability is also guaranteed; it allows source redistribution (and enforces it in case of binary distribution); it allows modification without restrictions (if the derived work is also covered by GPL); and complete integration with other software is only possible if that other software is also covered by GPL. This is not the case with LGPL (GNU Lesser General Public License), also used in the GNU project, which allows for integration with almost any kind of software, including proprietary software.

- **BSD (Berkeley Software Distribution)**. The second in popularity, with 478 projects (almost 6%), the BSD licence covers, among other software, the BSD (Berkeley Software Distribution) releases. It is the prototype of a ``permissive'' licence, which imposes almost no conditions on what a user can do with the software, including charging clients for binary distributions, with no obligation to include source code. In summary, re-distributors can do almost anything with the software, including using it for proprietary products. The authors only want their work to be recognized. In some sense, this restriction ensures a certain amount of ``free marketing'' (in the sense that it does not cost money). It is important to note that this kind of licence does not include any restriction oriented towards guaranteeing that derived works remain open source.

The facilitators / distributors

The emergence of successful companies acting as OSS distributor and making profit out of OSS services and integration has announced a new step in OSS adoption by service, industry and public administration, where permanency of service and good level of support are required.

Caldera	US	http://www.caldera.com/
Conectiva	BR	http://en.conectiva.com/
Corel	US	http://linux.corel.com/products/linux_os

		/
Debian	US	http://www.debian.org/
Mandrake	FR	http://www.linux-mandrake.com/
Red Hat	US	http://www.redhat.com/
SOT Finnish Software Engineering Ltd	SU	http://www.sot.com/eng/
SuSE	DE	http://www.suse.com/
Turbo Linux	US	http://www.turbolinux.de/
VA Linux	US	http://www.valinux.com/

The support of various commercial actors

For strategy or business reasons, a number of actors of the IT industry have announced during the last two years their support to the OSS movement.

Sun has contributed to it by giving StarOffice (previously purchased to Stardivision) under the GPL license, as an attempt to fight against MS/Office position, and is giving away the sources of Solaris as a mean to sell more hardware (but still keeps the proprietary model there).

IBM has embraced Linux and OSS to the extent it is a selling argument for a new generation of e-business platforms and CEO Lou Gerstner announced in December 2000 that IBM will spent $ 1 billion on Linux development. On hits s/390 mainframes, it says that “Linux is bringing more flexibility than ever before”. IBM chose the open-source Apache WebServer to support and bundle with its WebSphere suite. It has since released the Secure Mailer in open source and launched the AlphaWorks site to disseminate cutting-edge IBM technology in source.

Apple released the core layers of Mac OS X Server as an open source BSD operating system called Darwin. Apple was the first mainstream computer company to build its future around open source, and is partnering with the Apache Group, FreeBSD, NetBSD, and other open source developers to work on evolving the Mac OS X platform. Apple has expanded its involvement by open sourcing the QuickTime Streaming Server and the OpenPlay network gaming toolkit.

SGI has long funded open source contributors, made many hardware donations (including big servers), and sponsors various OSS initiatives as the Samba project

Netscape announced its intention to release its client software, including Netscape Communicator and Netscape Navigator, as open source.

Cygnus Solutions, Inc. provides Open Source-based software development tools, support, and custom engineering.

Cyclades Inc manufactures multiport-serial and networking cards, and its drivers for Linux, freeBSD, BSD/OS, and DOS are open-source.

Linux Mall acts as a a clearinghouse where Linux users and commercial software developers can find each other.

Riverace Corporation sells support for an open-source communication framework: Adaptive Communications Environment (ACE).

C2Net Software uses two popular open-source packages in its commercial product line, Apache and SSLeay.

Walnut Creek Software has built business around publishing open-source software.

Cobalt Microserver has announced support for the open-source model and released its Linux port for the MIPS chip to the net. (PC Magazine's Editors' Choice Award for workgroup servers).

Whistle Communications builds an all-in-one Internet Appliance called the InterJet; based on FreeBSD, Apache, Samba and NetATalk.

Corel Corporation (before Microsoft invested in it) produced an award-winning Linux distribution

ArsDigita distributes open-source toolkits for building online communities.

ActiveState provides professional tools for Perl developers, and introduced Perl 5 to the Win32 environment.

Sleepycat Software builds, distributes, and supports Berkeley DB, the open-source embedded database system.

Covalent Technologies develops commercial software enhancements for the Apache Web server platform and provides full commercial support packages for Apache
Other software companies like **Tripwire**, **SAP** etc. started to give a part of their production as OSS

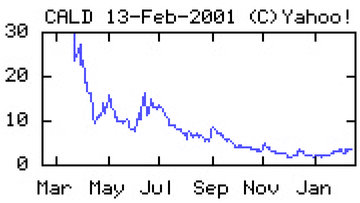
Investments and business with OSS

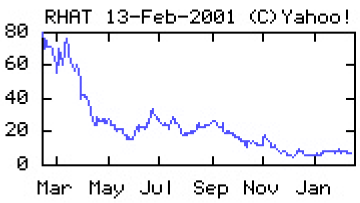
Dreams

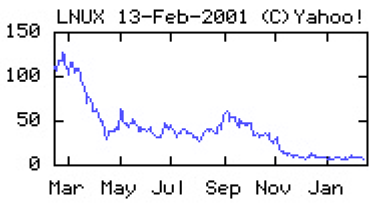
First reserved to few initiate circles, a growing believe that Open Source distribution may turn in highly profitable business was shared by more and more investors during the years 98-99 after IDC announced the results of their server-OS market research. Real hype started during 1999, when it became clear that the market was moving. With great optimism, everyone seems to consider that the old proprietary world was about to turn suddenly, and the term “revolution” was the most adapted to describe that.
The believe was reinforced by studies and facts, indicating fantastic growth rates: Market share for the Linux operating system surged by 212 percent in 1998 (from 6.8 to 17.2%), a growth rate that outpaced Windows NT, NetWare, Unix, and all others in the server market, and the number of copies of Linux shipped to customers more than tripled from 1997 to 1998. SuSE, the German Linux distributor increased earnings by over 350% for 1999.
Almost every days indeed, the press rapported big movements of major companies as Sun, IBM, Intel, in the direction of a new open world.
This pumped stocks of GNU/Linux companies sky-high, which resulted in even more (often unrealistic) sucess stories etc. until the Dot.com bubble finally burst during the spring 2000.

and Realities

After summer 2000, both expectations and stock prices of OSS vendors went down for more realistic levels. The three main vendors stock graphs (Caldera Systems, Red Hat and VA Linux) illustrate the whole “Linux Stock Index” evolution (going E.g. for VA Linux from a 130$ top to a flat 7$).







SuSE, the fourth major (and European) distributor has also announced serious layoffs (30 of the 45 people in its US office).
So far, so good will say the optimist: “the market just turned back to more realistic values…”. As a Mandrake manager noticed, “the problem is that the hype is starting again, but this time in the reverse direction: “there is no value in free software”, “OSS are dead” etc.”
In our “fact sheet”, the current market situation is, in any case, an evidence that, even if the number of users is still strongly growing, sharing the OSS business model between so many companies (when any new-comer have the right to copy other’s work) will be economically difficult. The OSS business model has still to demonstrate that companies investing in that field can expect a correct long-term return out of it.
This point will be analysed later in the study.

Other OSS myths / Dissipating some of the FUD effect

Many administrations and enterprise are reluctant to promote officially and actively OSS solutions such as FreeBSD, Linux, Apache, Perl or StarOffice. A part of this apprehension is due to the “Fear Uncertainty Doubt” (FUD) effect about the myths associated with the OSS concepts and actors. As we will develop in this Study, The OSS model presents some real issues (“problems” or “challenges”), but also a number of “myths” (false problems)

- **Myth 1: OSS is just a new gadget**. False. At the beginning of the computer industry, most of the delivered software (E.G. on IBM / Unisys mainframes) were OSS. The current OSS movement is a reaction against the ATT decision to commercialise Unix. The Internet infrastructure is a typical result of an Open Source approach.

- **Myth 2: OSS owns to nobody.** In terms of financial ownership, it may be true, but in term of leadership, control and intellectual property (we mean here copyright), it is false. Solutions are always controlled by individuals or small groups that check, and at the end integrate (consolidate) the multiple contributions from outside developers.

- **Myth 3: people cannot be motivated producing OSS, as it is for nothing.** No: OSS development offers to the most brilliant students and young developers a unique opportunity to obtain rapid glory and recognition from a highly growing and communicating community (thanks to the Internet) by entering in the core of their domain of choice, without any administration, hierarchy, obligations, contracts etc. Many of these OS developers now occupy leading positions in commercial or public organizations.

- **Myth 4: OSS is just for hackers and students, not for business.** Many business actors are now funding a part of their commercial strategy on OSS. In addition to the specialised distributors or “facilitators” (Red Hat, Caldera, Va Linux, SuSE, Mandrake etc.), many majors like IBM, Sun, Intel, Apple are now promoting (or supporting like Apache on IBM’s AS/400 – *i*-Series) OSS Solutions.

- **Myth 5: OSS is the new Eldorado and all software business incomes will soon provide from OSS.** This “positive” myth is at least as destructive and FUD producing as is opposite myth 4. This should be as illusive than to pretend that Linux will replace all existing operating systems. As the summer 2000 stock-exchange bubble crash illustrated it, the OSS business model will be slow to take off. The technical and philosophical OSS models are performing well, but the business model may be long to produce incomes from a community that has taken the habit to receive software for free.

- **Myth 6: OSS provides no support**. Because of the Internet, because the most popular OSS have user groups, developers forum, chat rooms, and because (as no contract, no obligation exists) the volunteers answering your question will do it just because they had once your problem and they know exactly the response, the level of support, the time to obtain it from the “good” person and in any case the lack of bureaucracy may finally produce outstanding results. As business corporate or governments are also looking for accountability, a new generation of commercial OSS support services, with permanent help-desks, becomes available for the most popular products.

- **Myth 7: There is no stability, because so many people can change the software.** It is indeed POSSIBLE for you to change the software, for YOUR OWN USE. But including your modification in a widely distributed version will be another story: a very limited expert group controls the official releases. Many interim or beta releases may be available, but you can always select and download only stable, well-tested versions.
- **Myth 8: Divisions or "forking" will split OSS projects in many un-compatible variants.** One of the main arguments of proprietary system like for example IBM OS/400 versus Unix is that there are many un-compatible proprietary versions of Unix. Can this happen E.g. with Linux v/s MS/Windows? No, mainly because of the GPL license and the freely available code: as soon as a significant user group will find that a new version seems more performing than another, and as soon as this group will explain the reason why on the Internet, the "mother" version developers can cut and paste the changes (or rally the new version). No one has an economical or competitive advantage to split code or to create un-compatible standards (as it may occur in the proprietary software industry)

3. OSS risks

- **Risk 1 Lack of accountability**. If you encounter problems, you will probably receive efficient (although unpredictable) support, from everywhere in the world, but no one will accept any liability for it. By default, no vendor is "contractually obliged" to give you some kind of warranty. If you need this kind of legal security, you have to conclude a maintenance or Service Level Agreement with a third-party company offering technical support.

- **Risk 2. Reduced set of supported hardware.** Printers, scanners, video cards and other hardware require drivers to be supported. It may take longer for OSS systems to obtain these drivers and support.

- **Risk 3. Reduced set of business applications.** The number of available commercial applications is still relatively small compared to those available for Windows and for the proprietary Unix.

- **Risk 4. Lack of guide-lines**. Without specialised consultants or system architects, it may be difficult for users and even IT managers to extract the optimal configuration from the multiple OSS projects (about 10.000), with very different levels of maturity, each of them claiming to be the best or promising smiling futures. Without reference to the famous "Windows-Linux" contest, we have to consider the longevity of systems like IBM OS/400 facing the Unix, partly because it offered a single proprietary road map for most of the needs.

- **Risk 5. No guarantee that development will happen.** Many projects born and die or fade out if it is not possible to get funding or enough programmers from any university or another organisation. This may also be a problem with proprietary software of course, and on the other hand, as soon as a project has gained enough popularity or critical mass, its development may be takeover by another team (as the Apache Web server that started as a patch for the NCSA web server when the NCSA team left for Netscape / now AOL)

- **Risk 6. Some limitations regarding high-end installations.** Apart from very specialised environments (IBM mainframes) OSS kernels were and are still currently limited regarding standard enterprise-class features like multiprocessor support and journaling. Linux for example, even if the new 2.4 kernel can handle 8-way Intel servers (instead of the 4 processor in version 2.2) it is still far from the processing power allowed with some Unix of with Windows 2000.

Possible reasons for OSS in the public sector

Motivations are ranging from philosophical and ethical reasons to pure practical issues (for a more detailed analysis, see the parts 2 and 3 of the present study).

- **Fact 1: the low cost** . The first perceived advantage of open source models is the fact that open source software is often made available gratis or at a low purchase cost. Acquisition costs, however, are just one component (generally about 20%) of the Total Cost of Ownership (TCO) and users have to consider carefully other costs as deployment, training, support and interoperability.

- **Fact 2: Independence**. The second perceived advantage is the political independence from any private vendor. That independence is especially important to implement large-scale e-government practices: government may hesitate to generalise electronic voting, or electronic exchange of administrative documents, if the need for common standards implies the “de facto” obligation to use proprietary tools (for forms, letters or spreadsheet exchanges for example). The government will always look for common, standard solutions that should possibly not be the exclusive property of a vendor.

- ***Fact 3: Security and privacy**. The availability of the source code and the right to modify* is also very important, not only because of a real intention to modify the software, but because there is then no “black box”: understanding of how the system works is a cornerstone of public sector requirements in terms of transparency. No software (OSS or other) will perhaps ever been 100% secure, but at least you will have no back door, no electronic spy that may be hidden somewhere in your software.

- **Fact 4. Adaptability**. The recent practice demonstrated that few applications survive unmodified a very long time and that the possibility for a programmer to isolate and fix bugs (as the Y2K bug) or to adapt the software to new issues (as the euro arrival, that even the best bug-free application had no possibility to foreseen 10 years ago) is an important security. Source code availability and right to modify make it much easier.

- **Fact 5. Quality**. Better software quality and higher reliability obtained in many cases. It is true that no one grants that a specific OSS development will ever been done, but once it is, it has usually been tested and commented by many “free-minded” developers and there is no “time pressure” as it was the case with vendors promising their release for a specific date and then providing bugged versions just to respect the planning engagement.

- **Fact 6 Respect to Standards**. Better respect to standards, because it is the interest of everybody to achieve the best inter-operability and because no proprietary standards are used to “protect” the vendor captive market. The permanent research for public common standards makes OSS more convenient for long-term interoperability. A threat against standardisation may come from software patents if they prevent developer from using common “commercial” standards

- ***Fact 7 Redistribution**. With wide user bases, the public sector will be sensitive to the right to redistribute the software "as is" (no "per seat, copy or user" fee), to distribute modifications and improvements and* to reuse other open source code, permits diffusion by large communities. With a GPL license for example, those redistribution rights cannot be revoked, and they are universal giving the maximum security in terms of duration.

- ***Fact 8 No legal restriction of use**. The right to use the software in any way* ensures tranquillity to a large population of developers, administrators and users. For example, if the use is not limited to "non-commercial", it gives even more security to the public sector, as the concept "commercial" may be subject to many interpretations as soon as the software is widely distributed or may compete with commercial products.

- **Fact 9 Perenniality**. The fact that the software have no "unique owner" is a warranty that no one will stop or "kill" the program, as it may arrive in the case of bankruptcy, company merging, company being purchased by another or sudden commercial strategy modification (the user will not be "forced to migrate" to a new – expensive - solution, just because the owner decides to stop the support and no one has the right to continue with the source code development).
  For the same reason, no proprietary vendor will constraint the user to migrate, just because an old hardware platform is not "supported anymore" forcing the user to purchase a "new version for the new platform" of the just slightly adapted old product.

- **Fact 10. Freedom.** The development results from demands from a community finding a "democratic majority" for a decision. But the "one way implementation" of a new development is never mandatory. The user may always install only stable, mature versions, and avoid installing the more un-stable development versions. The possibility for a minority to create or maintain a specific version exists (this is called "forking")

- **Fact 11. Facilitate new developments**. New projects or developments can start from the source without having to request any authorisation. This correspond to the new development techniques: creating solutions by assembling many existing objects without the risk to be stopped by a lot of legal restrictions and intellectual property constraints (this provide the patent regulation is not invoked)

The OSS solutions classification

The selection methodology

The purpose of the study is not to establish an exhaustive – and ephemeral – list of currently available solutions, but to characterise a range of available solutions per category and subcategory and access their potential of use.
"Potential of use" is understood to mean the maturity and technical stability of a particular product, its interoperability with other solutions, the stability of the development organisation, the availability of support services around that product (such as maintenance and training) and the possibility for feeding requirements into the development process.

A selection (in some 7.000 published "projects" claiming to be OSS) is obviously somewhat arbitrary.
Some government organisations orient their public sector users to a panel of about 15 products or solutions (see for example the MTIC "Bouquet du libre" in France).
We finally selected about 100 systems, products or solutions, based on the following criteria:

1. Brain storming inside our internal OSS group. Based on experience, a selection of the most used software
2. Systematic verification of software lists found at the main OSS supporting groups or organisations:
   (Free Software Foundation, Source Forge, Open Source Organisation, Berkeley Software Distribution etc.)
3. Verification of software included in the popular Linux Distributor's lists
   (VA Linux, Caldera, Suse, RedHat, Mandrake)
4. Check on sites reflecting the popularity (number of visits) and the maturity (user's votes, rating and comments) of the top ranked solutions (Mainly on LinuxApps.com and Linux.org)
5. Market studies, benchmarks and literature
6. Positive OSS lists promoted by Member State organisations (as "Le bouquet du Libre" of the MTIC in France)
7. The Unisys documentation center

The Classification

The classification is used to facilitate the finding of an appropriate solution: if a user look for a calculation sheet for example, he will look at “Office – Spreadsheet”.
A classification is always arbitrary and therefore many types of classification are possible. Rather than to establish a new one we use here the Linux Organisation classification (http://www.linux.org/apps/index.html).

Category	Sub-category
Administration	Monitoring Security Administration Hardware Log Analyzers Daemons Backup Anti-Spam User Management
Communication	Video Communication Other Conferencing Fax Phone SMS ICQ AOL Talk
Daemons	SMB/Filesharing Mail Proxy BBS System/X Chat
Development tools	Java Libraries HTML Editors Tools Languages
Graphics	3D Modelling Image Manipulation Image Viewing
GUI	AfterStep Applets Motif Screensavers Enlightenmnent Applets Amusements Gnome KDE Fonts Desktop Window Managers Window Maker Applets
Multimedia	Audio tools MP3 VRML CD Writing
Networking	DNS PPP / Slip Terminal WWW SMB Security / Admin IRC Firewalls Utilities Email Ethernet News FTP
Office	Database Financial CAE CAD Office suites / WP Spreadsheet
Scientific	Astronomy Math Education Medicine & Biology AI
System	Text Utilities Shells Emulators Editors Encryption Anti-Virus Printing OS File Managers Compression/Package

The classified selected software

All items of the Linux.org classification have not been used, because no OSS software was found under these items, regarding the normal requirements of the public sector (for example, Entertainment/ Arcade games has not been used).
The selected software are the following (by classification / alphabetical order):

CLASSIFICATION	OSS SOFTWARE
Administration-Administration	Linuxconf
	Webmin
Administration-Hardware	SANE
Administration-Log Analyzers	Xlogmaster
Administration-Monitoring	Diald
	GNU-AWACS
	MRTG
Administration-Security	AIDE
	Satan
Communication-Conferencing	Gnucomm
Communication-Fax	HylaFAX
Communication-Phone	Bayonne
Development tools-Java	Kaffe
Development tools-Languages	FreePascal
	GCC
	gforth
	GNU-Smalltalk
	Perl
	PHP
	Python
	SmallEiffel
Development tools-Libraries	C Library
	GTK+
	Mesa
	Open Motif
Development tools-Tools	Quanta+
	Bison
	CVS
	DDD
	Gdb
	Ghostscript
	Kdevelop
	omniORB
	RCS
Graphics-Image Manipulation	GIMP
	Sketch
Graphics-Image Viewing	Ghostview
GUI-Desktop	GNOME
	KDE
	X window system

Multimedia-CD Writing	X-CD-Roast
Networking-DNS	Bind
Networking-Email	Balsa
	Mailman
	Sendmail
Networking-Firewalls	Ipchains
Networking-FTP	GFTP
Networking-Utilities	OpenLDAP
	Samba
	Squid
	Teacup
	Wget
Networking-WWW	Apache
	Enhydra
	ht://Dig
	Interchange
	Lynx
	Mozilla
	Zope
Office-CAD	Alliance
	Electric
	gEDA
Office-Database	GRG
	Interbase
	MySQL
	PostgreSQL
Office-Office suites & WP	AbiWord
	Groff
	Koffice
	LaTeX
	LyX
	StarOffice
Office-Spreadsheet	Gnumeric
Scientific-Medicine & Biology	FreeMed
	FreePM
	GNUMed
Scientific-Education	CAPA
	Ggradebook
Scientific-Math	Gnuplot
System-Compression/Package	Amanda
	Gzip
	Tar
System-Editors	Emacs
System-Emulators	Dosemu
	Wine
System-Encryption	GnuPG
System-File Managers	mtools
	XFS
System-OS	BSD operating systems
	Linux

System-Shells	Bash
System-Text Utilities	A2ps
	Flex
	grep
	Ispell

The maturity

The maturity of the software has been classified from 1 to 4 as follow:

1 pre-version
2 usable
3 complete
4 very mature

This classification may be the most "subjective" and therefore, may be discussed. As the development evolution continues, this criteria should be permanently evaluated.