optaros

Open Source Catalogue 2007
U.S. Version 1.1

Over 260 products/projects described and rated

Realize the Benefits of Open Source

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Introduction

The benefits of open source are being understood more and more in enterprise IT. There is rarely an organization or an enterprise that doesn't use open source products and technologies today. IT managers who are asked about barriers and issues that would limit their use of open source typically mention support and license topics. However one of the most relevant problems they face is the lack of knowledge on open source solutions and their ability to fulfill enterprise needs. There are more than 140,000 open source projects in existence. It is not simple to keep an overview and to separate out the pearls.

The objective of Optaros' Open Source Catalogue 2007 is to give IT decision makers navigation support by listing the most relevant, useful and enterprise-ready open source platforms, components, frameworks and solutions in an easy-to-read overview.

Optaros' Open Source Catalogue 2007 lists some 260 "projects" in four software categories (operating systems and infrastructure, application development and infrastructure, infrastructure solutions and business applications). The selection and the rating system is based on the experience of Optaros' worldwide consulting and integration work force, substantial research and evaluations, as well as interaction with open source communities and companies. At the end of the day, the selection and evaluation will always be somewhat subjective, even when the analysis and the decisions were made as objectively as possible. However, we are convinced that it is the experience and the implementation knowledge of Optaros' consultants as well as the pragmatic approach in compiling the data that will make this catalogue a very useful tool when thinking about alternatives to existing technologies or starting a new implementation project and identifying suitable frameworks or solutions. The Open Source Catalogue is not intended to replace detailed evaluation or proof of concepts, but provide some help to conduct a first selection.

We appreciate feedback and controversial opinions. A communication channel for discussions has been established, based on the email address OSS-Catalogue@optaros.com that will collect all input. A next version of the Open Source Catalogue will include elaborated improvements. We are looking forward to a lively information and opinion exchange.

Bruno von Rotz, Zurich, 25th November 2006

Legal Disclaimer

The selection and evaluation of the individual technologies was performed as carefully as possible and on the basis of the experience and information available at the time of catalogue composition. Ratings and descriptions have been supported by talking to specialists and communities around the globe. Neither the presence, the content, nor the lack of specific entries give the right to claim for justification or any other legal justification to any party.

Open Source and Its Role in a New IT Ecosystem

Definition of Open Source

Open source stands for software components and solutions whose source code is available, can be used, changed and distributed to other users following commonly agreed-upon rules. These rules are defined in various license models - recommended reading in this context includes the Optaros whitepaper "Free and Open Source Licenses, Software Development, and Distribution." Thanks to the openness of the code, everybody can analyze the software and understand how the solution works. Developers can take this solution or components of it, change it or build other applications based on it. Well-known open source projects/products include Linux, the Apache web server, the database MySQL or the JBoss application server.

The term "open source" was defined in 1998, however free software and sharing source code is a longstanding concept, especially in research and university environments. Today we know about more than 140,000 open source projects. These projects, whose center is usually one specific solution or component, differ in their state of development and their maturity. Thanks to license model standardization, the use, change and distribution of open source software has become easier over time and follows legally sound principles. On the basis of open source projects, new companies have been created and shaped to make money based on the success of open source technologies. Most of these companies either distribute closed and open versions of specific software, offer support and maintenance services based on open source software or provide consulting, training and systems integration services around open source software.

The (r)evolutionary elements of open source are:

1. Low cost and infinitely scalable distribution of the software through the Internet
2. Collaborative development process across time zones and geographies, often by only loosely connected development teams
3. Transparent access to the source code, allowing other projects to use and change the code and by providing the basis for new services offerings such as support and maintenance independently of owning the intellectual property

Based on these three elements, open source is changing the way software is developed, acquired and used.

An Open Source Timeline

"Open source" is not really a new invention. As a matter of fact, computer programs were free and "open" in the fifties and were seen as a giveaway in combination with very expensive hardware. It was only in the sixties that people started to make a business out of software. They started to protect software assets and charge for the use of software programs. Driven by the disadvantages of these new models, Richard M.

Stallman gave free access to his developed editor Emacs. This was the start of the GNU Public License and later the Free Software Foundation. The early attempts to distribute software feely and openly suffered under the non-existing or very cumbersome communication channels as the Internet had not reached much momentum by then. Only in the nineties did it become possible to distribute software over the Internet and communities were started to discuss software problems and collaborate on development projects. The term "open source" was coined by Eric S. Raymond in 1998, at this time open source was mainly a research and geek topic. With pioneers such as Linus Torvalds – Linux started in 1989, release 1.0 was published in 1994 - MySQL, Apache, Netscape or Sun, open source reached more and more people and started to gather serious interest.

Pioneer Age

"Free" and Community Age

Adoption by (Enterprise) Developers

Commercial Open Source

Open Source Based Business Models

Adoption by the Enterprise

Open Source Enabled Business

| 1980 | 1990 | 2000 | 2010 |
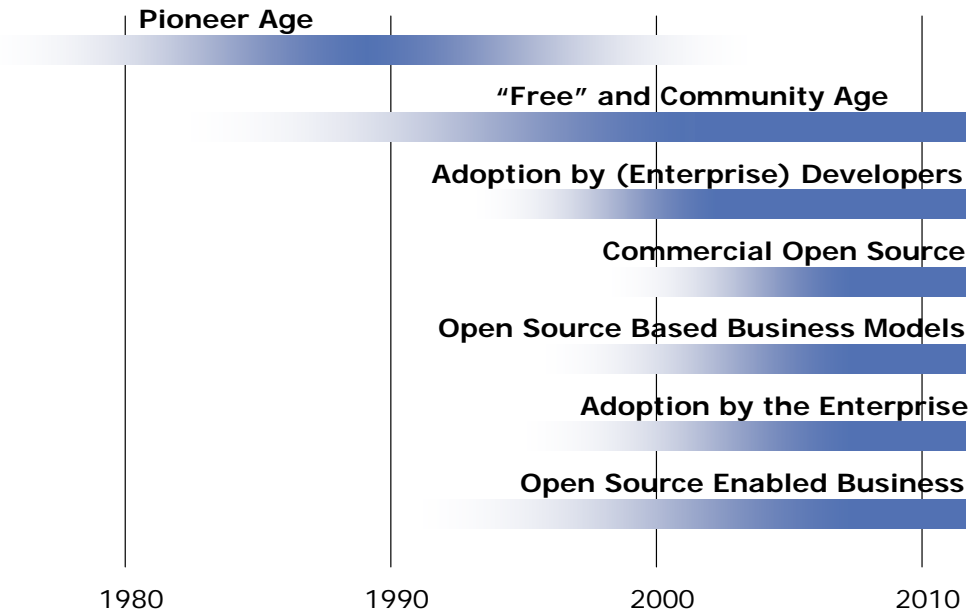
More and more software engineers and developers in corporations as well as on an individual basis started to use open source software and enjoyed their benefits. And it didn't take long until even solutions in large companies leveraged open source components and infrastructure. This created demand for support, maintenance and consulting services and gave birth to the commercial open source model. Only the availability of professional support and more traditional vendor liabilities allowed for a larger scale enterprise adoption of open source. However open source not only provided lower-cost IT solutions for existing and established companies it also enabled totally new business models, many of them known examples of the Web 2.0 movement. Without the existence of open source software, companies like Google, YouTube or MySpace just would not have been able to start and scale in a cost effective manner.

Open Source and Its Impact on the IT Industry

Open source has gained a strong momentum across the world. Basically every enterprise and organization is using open source in one way or another. According to a recent survey conducted by InformationWeek and Optaros in late 2005, 87% of all enterprises surveyed acknowledged their use of open source.

The characteristics and the force of the open source movement is impacting the IT industry:

♦ Open source software is **distributed** through the Internet and therefore is easy to consume.
   Distribution is easily **scalable** as no sales force needs to be involved and the cost for sales can

be kept very low. This puts massive price pressure on commercial vendors. Also, it allows new players to enter the market very quickly and with limited investments. Alfresco, for example, one of the premier open source document management solution proves, launched their first release in October, 2005 and only few months later has reached hundred thousands of users/buyers around the world. The cost of a global sales force is more and more difficult to amortize, accelerating the need for consolidation in the software world.

♦ Open source software is designed, developed and tested by virtual **communities**, applying innovative methodologies and modern approaches. This results in high quality and at the same time comparably low costs for the individual contributor. The fact that decisions in a community are not primarily driven by economics also allows for a broader support of commercially less interesting languages or functionalities.

♦ The **transparency** created by open source through the availability of the source code, but also the public access to bug tracking systems, development team discussions, requirement gathering and test approaches not only make it possible to evaluate software in a different way, but also allows for the separation of the development of software from the support, thus enabling competition on a previously monopolistic aspect of the software distribution model.

The difference between an open source and a commercial software organization's business model becomes clear when looking at the profit and loss of a traditional software company.
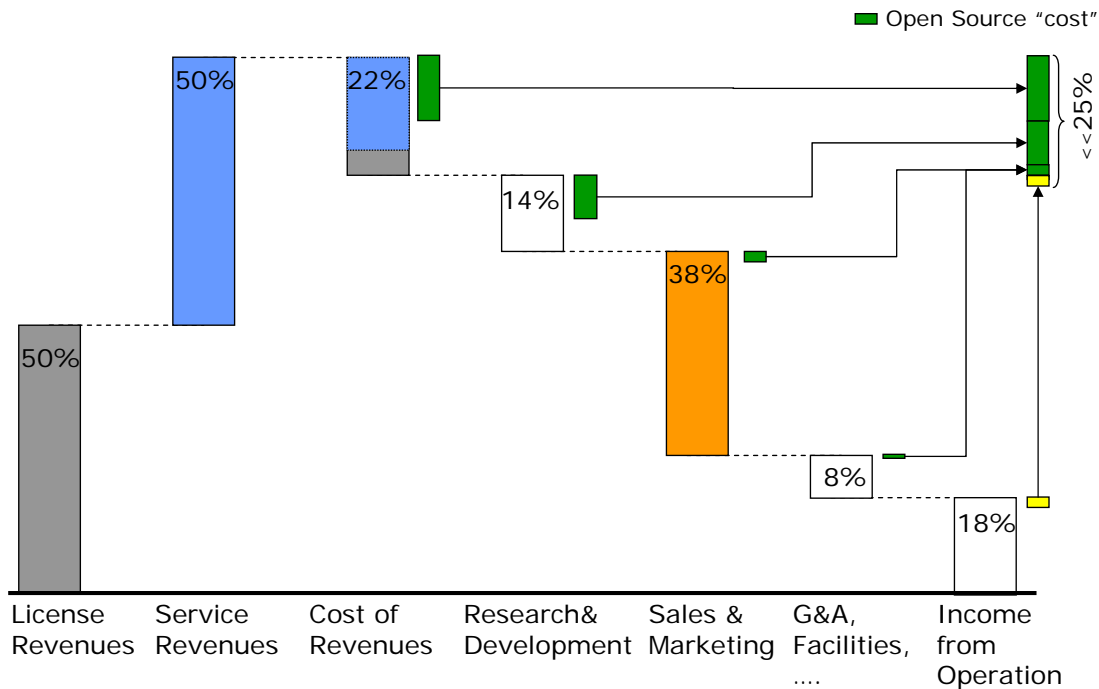
Open source companies tend to spend very little money on marketing and distribution and focus on the delivery of high quality software and services. It can be easily understood that the cost of software and tied services are only a fraction of what enterprises are used to paying in the traditional model.

Commercial software players are forced to react to the open source movement by lowering prices, acquiring open source companies, leveraging open source projects as part of their commercial products, bundling products with open source products and by offering commercial services for open source software.

As part of the boom in open source, many new companies are created and a lot of venture capital is invested into open source business models. And the question on how actually to make money with open source and free software is discussed hotly.

Four different business models dominate the open source centric business.

IP = Intellectual Property
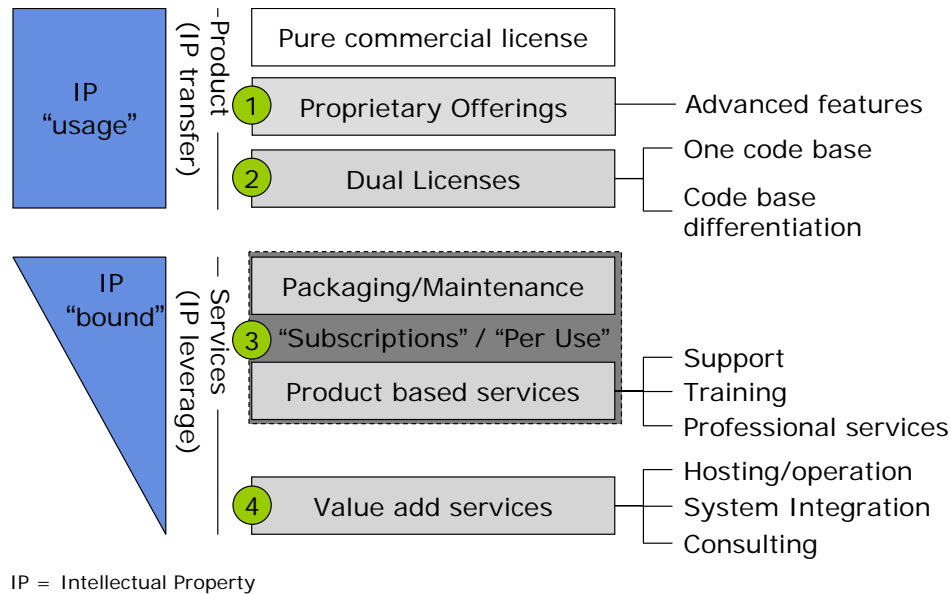
The first model is quite similar to the traditional software model. An open source version of the software is offered as an entry-level product in a larger product line. Advanced features that enterprises typically need (e.g. LDAP access, advanced scalability or robustness) are added to the open source version and then licensed under a proprietary license model. Well-known examples of this model include IBM's Websphere product line and SugarCRM.

A second model is often called the **"dual license"** model. The software is licensed both as open source as well as commercial software. The open source version typically uses a propagating license such as the GPL.

Companies (typically other software vendors) who do not want to release their software under the same term can purchase an alternate license with different terms. Well-known examples applying the dual license model include MySQL and Qt.

The third model is based on the **subscription** to services around open source software. The software as such is basically free and publicly available. The customer pays for packaging, release management, support, maintenance and professional services. In most cases these services are provided on the basis of an annual subscription. Known companies for this model are the professional Linux distributions, JBoss, Alfresco or stack companies such as SpikeSource or SourceLabs.

The fourth model is purely based on **value added services** around many different open source projects. These services are typically not tied to one specific product and charged based on the amount consumed. Services include consulting, integration, support, hosting, etc. Optaros or Linagora are companies in this space.

In reality these models often are combined and there is an ongoing evolution in the license and contract models involved.
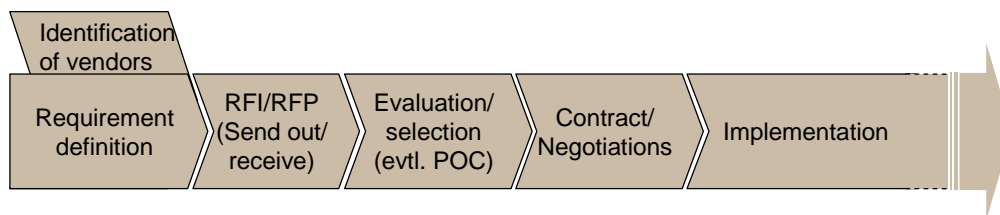
Open Source for the Enterprise

Open source is a reality in today's enterprises. Most companies have 50, 100 or more open source components and systems in production, partly as an ingredient of commercial products, hidden as a component or transparently as infrastructure. According to leading industry analysts, the vast majority of enterprises will use open source as part of their mission critical applications.

The wide portfolio of open source projects and products and the difficult-to-control dynamics on the usage of these new technologies do not make life of CIOs and IT organizations easy. The responsible people raise viable questions around the support of all of these technologies, around intellectual property rights and licensing models, and around liabilities and risks involved using open source. These potential risks and problems are more than compensated by the benefits open source software offers to enterprises. Low costs, high quality, an unprecedented flexibility in the acquisition and use of software as well as an increased independence from vendors make more and more IT decision makers favor open source software.

However, acquiring open source software is quite different from the processes to which purchasing departments are accustomed.

Purchasing of commercial software

Identification of vendors

| Requirement definition | RFI/RFP (Send out/ receive) | Evaluation/ selection (evtl. POC) | Contract/ Negotiations | Implementation |

Acquisition of Open Source software

If not successful

Identification of solutions/projects

| Requirement definition | Solution evaluation/ selection | Proof of Concept | Implementation |

Solution driven requirement adaptation
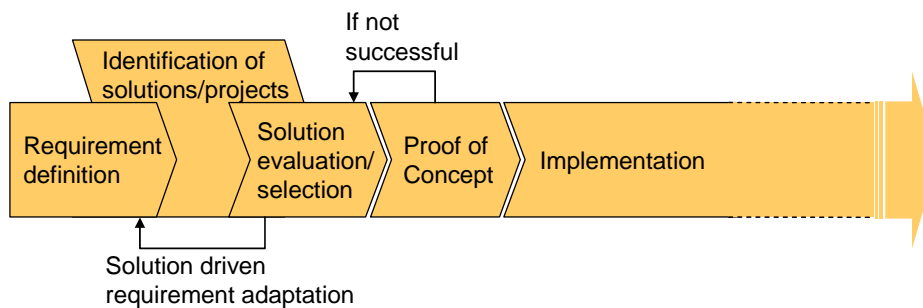
While the gathering of requirements is still a key task in the beginning, it is recommended to leave more freedom for multiple approaches to solve a problem with open source. In the commercial software world, there are vendors to continuously inform their customer base and to answer large RFIs (requests for information), RFPs (requests for proposal) or RFQs (requests for quotation), and there is often neither the capacity nor the local presence available with open source projects and companies to do so. The customer himself or herself is supposed to identify the right solutions – this open source catalogue is a tool for helping with this task – and then to verify and evaluate potential solutions in a proof of concept. While this sounds like extra effort, and it often is, the total process of identifying, evaluating and selecting open source software can often be done in a significantly shorter timeframe than in the commercial software world. Contract

negotiations are often not needed and proof of concept steps can be performed in a couple of days in many cases.

Background on Open Source Catalogue Methodology and Approach

There are more than one hundred thousand open source projects. Some of these are just concepts, others are enterprise-ready applications or platforms. They cover a wide range of needs and stem from various sources. Some might be used just as a source for inspiration, others can provide good components for development projects, and others can be put in enterprise production environments without hesitation.

It is not easy for IT to make a decision, to find the right mature and long term viable technologies in such a large and diverse "market place." This is why Optaros created this catalogue and selected the best suited products and projects for enterprises and their needs today. Only the products that match the **enterprise benchmark** in terms of functionality, community backing as well as maturity are listed.

Open source software is publicly stored, can be downloaded and analyzed in details, e.g. by conducting a code review, talking to communities, investigating bug databases and reviewing project structure and approach. However there is often little time for long evaluations and for scanning a large technology landscape. And even if there is time, it requires some level of experience and knowledge to identify the right and relevant products. With the Open Source Catalogue, Optaros consultants publish part of the knowledge that was generated during hundreds of projects and evaluations over the last few years. The objective was to **select key products/projects** in each of the relevant software categories and to describe selected products and **benchmark** them against what enterprises really need. For this, the technologies were evaluated against four criteria:

Functionality

The products' functionality is compared with what is usually needed. In most situations, this is driven by what commercial products have to offer.

✓✓✓✓	Excellent - the functionality requirement of a typical midsize or large enterprise are covered
✓✓✓	
✓✓	Fair - functionality might have some gaps against the average requirement baseline but is still usable in many contexts
✓	
-	Poor - functionality can't satisfy enterprise customers, substantial deficits
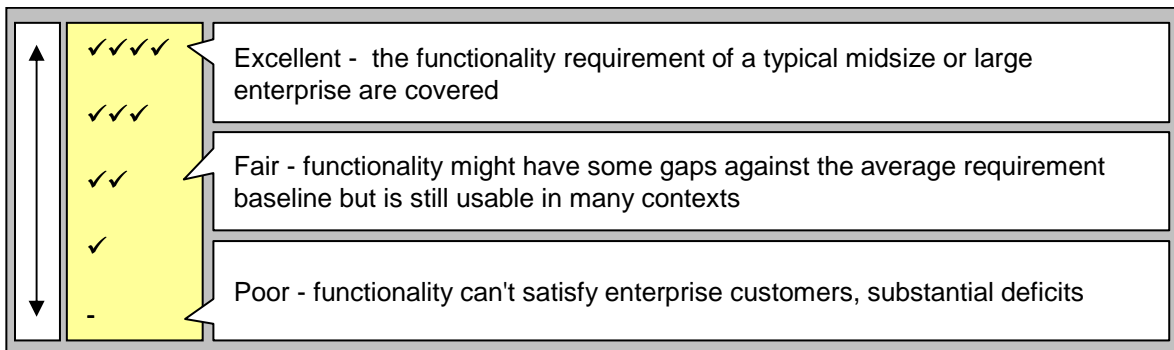
Community

For the long term success of an open source project, it is important that there is an active and well-supported community behind the project. In commercial open source products, this community is often (only) the software development unit of the company behind the product. The input and contributions of external people is less important and influential. This can be seen as a risk, especially when the companies are small or have only limited funds available.

✴✴✴✴	Excellent - vibrant, very active and large community, substantial number of active members
✴✴✴	
✴✴	Okay - some activity both in development as well as bug reporting and fixing
✴	
-	Poor - community not active at all or not existing really
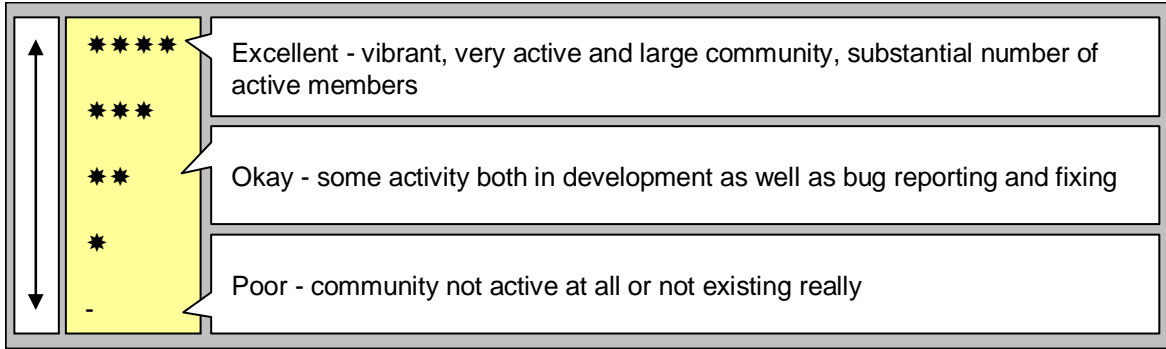
Maturity

To put a software product in production, it needs to be able to run in a stable and error-free way. Maturity therefore measures quality and robustness of a software product.

★★★★	Very mature - strong, high quality solution, stable and meeting advanced performance expectations
★★★	
★★	Okay - not fully matching all enterprise expectations especially for high volume loads and massive usage
★	
-	Poor - only usable for test and demonstration purposes
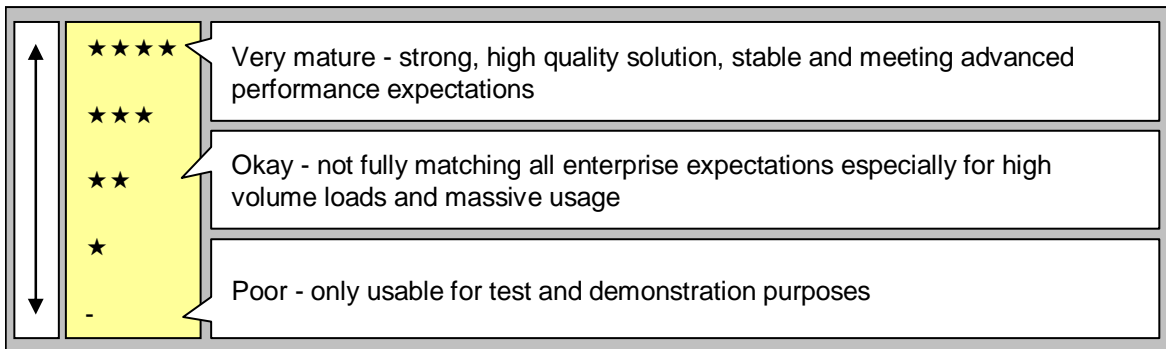
Trend

Open source projects and products develop fast and dynamically. It is important to understand whether the product improves because the project team has made progress, or whether there is no improvement or the quality and richness even decreases in comparison to the competition. With the "Trend" the expected future progress of the software product is indicated.

↗	Solution/component is progressing along most of the criteria and growing in importance over all
→	Solution/component is not progressing and retains its viability
↘	Solution/component is decreasing along the given criteria and against competitive approaches
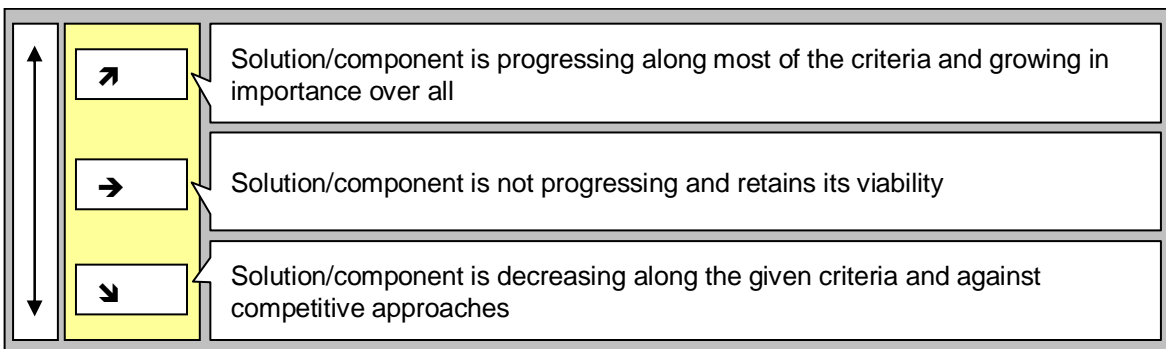
ER-Rating

On the basis of the above introduced indicators and additional experiences as well as further product characteristics (e.g. how easily a base technology be introduced can into the typical enterprise, how reactive the community is, how easily a product can be integrated in commonly-found enterprise IT environments, or how well does the product support open standards) the "Enterprise Readiness" indicator is consolidated.

"ER" therefore stands for "Enterprise Readiness" and describes how capable an open source product is to cope with the needs and requirements of midsize and large enterprises and organizations.

◆◆◆	Product/project is mature, fulfills the important requirements and is supported well, it's enterprise ready and conforms to typically found needs/requirements in enterprise production environments
◆◆	The right tool for the some situations, more investigations needed, not top league yet. Weaknesses can be driven by technology or lack of functionality or support. A proof of concept is strongly recommended.
◆	Not recommended (yet) to be used immediately in a broad and enterprise wide context, other than early proofs of concept or deployment in a controlled way (e.g. as component that is understood by the developer)

The Open Source Catalogue does not list products that do not at least meet the ◆-rating.

It's the bigger share of the 140,000 open source products and projects that do not measure up with this benchmark. However that does not mean that they can not be used in certain situations. And of course there are many more good and enterprise-ready products and platforms in the open source ecosystem than the 260 ones listed. This is a subjective selection with the objective to help IT decisions to navigate the space.

The individual ratings should be seen as an indication and not as absolute decision criteria. For many applications, an open source product with a smaller functionality scope might be the better choice than a more complex one that does more than what is needed. In other situations, a simpler tool may be easier to integrate than a comprehensive one using another technology.

Besides the above described criteria and indicators there are a number of additional important information covered for each software product. These are:

Version: Version number of the product that was the basis for evaluation

Description: Short summary of the purpose of the tool. In addition important technology characteristics are mentioned (e.g. base programming language, supported standards). The URL is the link to more information stored publicly.

License: License type used for the open source project. The most often-used license types are:

- GPL (GNU Public License)

- LGPL (Lesser GNU Public License)

- MPL (Mozilla Public License)

- BSD

- Apache License (2.0)

Some products are distributed under different license agreements, for example under a GPL and under a commercial license.

Support: Open source products are usually supported by the community involved in developing the product. This happens through forums, email lists and similar mechanisms. For enterprise usage "professional support" can be important, guaranteeing specific service levels, similar to commercial products.

In this version of the Open Source Catalogue, over 260 different platforms, products, frameworks, components and solutions are covered. To make search simpler, these software products were grouped in four software categories. The picture below shows the four software categories and some of the covered subcategories.
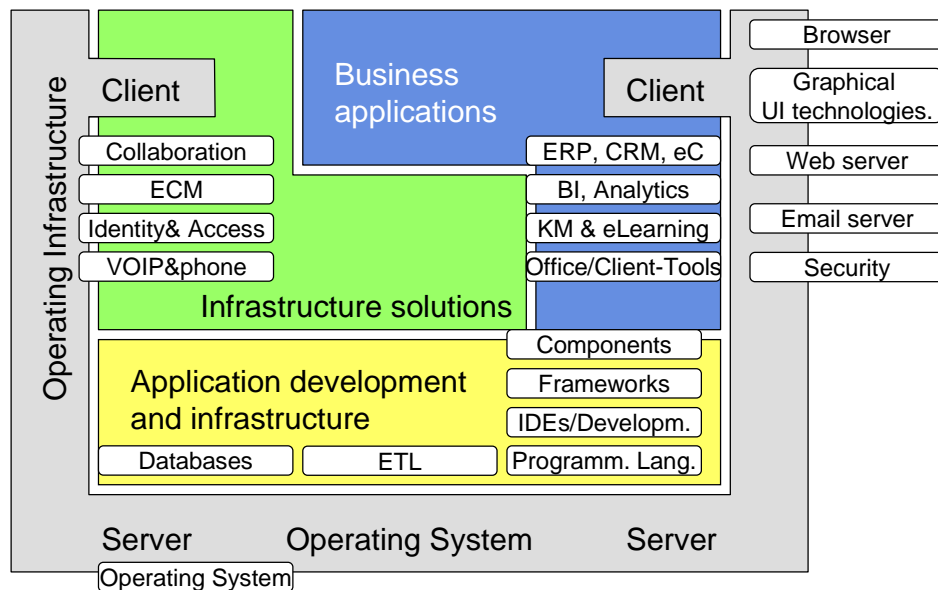
Approximately 20% of the over 260 software products fall into the "Operating System and Infrastructure" category, 48% into the "Application Development and Infrastructure" category, 20% are infrastructure solutions and another 17% business applications. This distribution is similar to what can be found when analyzing SourceForge, a community environment that is used by many open source projects (http://www.sourceforge.net). In SourceForge there are 9,000 (about 9%) projects of the category "Business Applications" listed, while approximately 50% of the projects are allocated to the category "Application Development and Infrastructure."

Contributions and Feedback

While Optaros took great care in consolidating this catalogue and applied multiple cycles of feedback and quality assurance, it is still possible that some information is presented in an incomplete or even inaccurate way. Also different people might have different opinions or different experiences. Optaros is open and ready to accept **feedback** and **additional input** for **improvements**. For this an email address is provided: OSS-Catalogue@optaros.com. Please use this email for sending us your feedback and ideas.

Operating Systems and Infrastructure

The software category "Operating Systems and Infrastructure" covers a range of subcategories:

- ♦ Operating systems (for servers as well as clients/desktops)
- ♦ Graphical user interfaces
- ♦ Communication infrastructure (groupware server, mail server, spam filter, email client)
- ♦ Security (firewalls, virus scanner, etc.)
- ♦ Web servers
- ♦ Systems management and operations
- ♦ Miscellanous (virtualization solutions, file & print, DNS, DHCP, etc.)

In this category there are many solutions that are ready to be used in smaller and larger enterprises. They are mature and in many cases even the standard in the industry. A few products are worth mentioning as they have successfully challenged or even replaced commercial products.

The **Linux operating system**, especially in the versions optimized for enterprise, such as RedHat Enterprise Linux and Novell SUSE Linux Enterprise, have achieved their breakthrough and are used in many enterprises. These so called "distributions" also contain a great range of additional tools that are covered separately in the catalogue (e.g. Gnome or KDE as graphical user interface).

The **Firefox browser** is the only serious competitor for Microsoft's Internet Explorer and is at least on the same level concerning usability and innovation. In many countries, Firefox has 50% or more of the market and it is improving. With the new versions (not yet covered in this catalogue) the race goes on.

The **Apache webserver** is one of the most widely used web servers, there is almost no real alternative anymore.

CUPS, Bind, DHCP and Samba have become almost irreplaceable in a Linux environment. They are proven and mature.

The **virtualization software XEN** has positioned itself as a low cost and innovative alternative to commercial products such as VMWare. With every release stability and applicability are increasing.

In the **Security** subcategory, there is a range of valuable tools such as ClamAV or OpenSSH. The listed products are just a minor selection as there are many useful technologies in this subcategory.

The 52 listed open source products are covering less than one percent of the known projects in this category. But with only these products, already a substantial part of the infrastructure of an enterprise can be successfully operated.

Operating Systems (Server & Client)

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Darwin	8.7	Operating System based on FreeBSD 5.0 and the Mach 3.0 microkernel, building the foundation of Mac OS X http://developer.apple.com/opensource/index.html	Apple Public Source License	Community	✓✓✓	✳✳	★★★★	◆	↗
Debian GNU/Linux	3.1	Widely used Linux distribution http://www.debian.org/	GPL	Community	✓✓✓✓	✳✳✳✳	★★★★	◆◆	→

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Fedora Core	5	Linux distribution (community version of RedHat Linux) http://fedora.redhat.com/	Fedora License	Community	✓✓✓✓	★★★★	★★★★	◆◆	↗
FreeBSD	6.1	Operating System derived from BSD, known to be especially secure http://www.freebsd.org/	FreeBSD license	Prof / Community	✓✓✓✓	★★★★	★★★★	◆◆	→
Gentoo Linux	2006.0	Linux distribution for the power user http://www.gentoo.org/	Various	Community	✓✓✓✓	★★★★	★★★★	◆◆	→
Mandriva	2006	Linux distribution http://www.mandriva.com/	Various	Prof / Community	✓✓✓	★★★	★★★	◆◆	→
NetBSD	4.0	Operating system derived from BSD http://www.netbsd.org/	BSD	Prof / Community	✓✓✓	★★★	★★★	◆◆	→
OpenBSD	3.9	Operating system similar to Unix, derived from 4.4 BSD http://www.openbsd.org/	BSD	Prof / Community	✓✓✓✓	★★★★	★★★★	◆◆	→
OpenSolaris	20060731	Open source version of Sun Solaris 10 http://www.opensolaris.org/	CDDL	Community	✓✓✓✓	★★	★★★★	◆◆	↗
openSUSE	10.1	Linux distribution (non commercial) http://www.opensuse.org/	Various	Prof / Community	✓✓✓✓	★★★★	★★★★	◆◆	↗
Red Hat Enterprise Linux	4	Commercial Linux distribution, server and desktop versions available. Home users can also use the Fedora core distribution http://www.redhat.com/rhel/	Commercial	Prof (RedHat)	✓✓✓✓	★★★★	★★★★	◆◆◆	↗
SUSE Linux Enterprise	10	Commercial Linux version based on OpenSUSE, server and desktop versions available http://www.novell.com/linux/	Commercial	Prof (Novell)	✓✓✓✓	★★★★	★★★★	◆◆◆	↗
Ubuntu Linux	6.0.6	Linux distribution with a strong focus on usability and simplicity http://www.ubuntu.com/	Various	Prof / Community	✓✓✓	★★★★	★★★	◆◆	↗

Graphical User Interfaces (Client)

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Gnome	2.14	Graphical desktop environment for Linux http://www.gnome.org/	GPL	Community	✓✓✓✓	★★★★	★★★★	◆◆◆	→
KDE	3.5.4	Graphical desktop environment for Linux http://www.kde.org/	GPL	Community	✓✓✓✓	★★★★	★★★★	◆◆◆	→

Communication Infrastructure

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
DSPAM	3.6.8	Email spam filter http://www.zdziarski.com/projects/dspam/index.shtml	GPL	Prof / Community	✓✓✓	★★	★★★	◆◆	↗
Evolution	2.6.2	Client side mail, calendar and address book application for the Gnome desktop environment http://www.gnome.org/projects/evolution/	GPL	Community	✓✓✓	★★★	★★★	◆◆	↗
Exim	4.62	Mail server, alternative to Sendmail http://www.exim.org/	GPL	Community	✓✓✓	★★★	★★★	◆	→

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Firefox	1.5	Web browser, alternative to MS Internet Explorer with a market share of 10% to 50% and higher (country dependent) http://www.mozilla.com/firefox/	MPL	Community	✓✓✓	★★★★	★★★★	◆◆◆	↗
Gaim	1.5.0	Multi protocol instant messaging client, supports AIM, ICQ, MASN Messenger, Yahoo!, IRC, Jabber and many other protocols http://gaim.sourceforge.net/	GPL	Community	✓✓	★★★	★★	◆◆	↗
HylaFAX	4.3.0	Fax server, provides fax send and receive functionality http://hylafax.sourceforge.net	Custom	Prof / Community	✓✓	✳	★★★	◆◆	↗
jabberd	2.0s11	Server implementation for the Jabber protocol, a free XML based messaging protocol. By using this server, everybody can build up his own Jabber network http://www.jabber.org/	GPL	Prof / Community	✓✓✓	✳✳	★★★	◆◆	↗
James (Apache)	2.2.0	SMTP and POP3 mail server and NNTP news server http://james.apache.org/	Apache 2.0	Community	✓✓✓	★★★★	★★★★	◆◆◆	↗
JBoss Mail Server	1.0M5	Java2EE POP3 and SMTP mail server http://labs.jboss.com/portal/jbossmail/	LGPL	Prof (JBoss) / Community	✓✓	✳✳	★★	◆	↗
Konqueror	3.5.2	Web browser and file manager for KDE. Konqueror's rendering engine is also used by Safari, the web browser for MacOS X http://www.konqueror.org/	GPL	Community	✓✓✓	★★★	★★★	◆◆	→
MailCleaner	2006,09	Email antispam and antivirus solution. The software is distributed in the form of a complete Linux distribution and acts as a SMTP gateway once installed. Complete configuration through a web interface possible http://www.mailcleaner.org	Various	Prof (Fastnet) / Community	✓✓✓		★★★	◆◆	→
Mailman	2.1.4	Software to manage email discussion lists and newsletters http://www.list.org/	GPL	Community	✓✓✓	★★★	★★★	◆	→
Majordomo	1.94.5	Perl based mailing list server http://www.greatcircle.com/majordomo/	Majordomo License Agreement	Community	✓✓✓	★★★	★★★	◆	→
Postfix	2.3.1	Mail server, alternative to Sendmail http://www.postfix.org/	IBM Public License	Community	✓✓✓	★★★★	★★★★	◆◆	→
Qmail	1.03	Highly resilient and widely accepted Unix mail server supporting SMTP and POP3 http://cr.yp.to/qmail.html	Custom	Community	✓✓✓	★★★	★★★★	◆◆◆	→
Sendmail	8.13.7	The original mail server implementation. Provides mail routing, aliasing, forwarding, etc. http://www.sendmail.org/	Sendmail License	Prof / Community	✓✓✓	★★★	★★★★	◆◆	→
SpamAssassin	3.1.5	Email spam filter http://spamassassin.apache.org/	Apache	Prof / Community	✓✓✓	★★★	★★★	◆◆	↗
Thunderbird	1.5	Email and news client, developed together with Firefox http://www.mozilla.com/thunderbird/	MPL	Community	✓✓✓	★★★★	★★★★	◆◆◆	↗

Security

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
ClamAV	0.88.4	Virus scanner for Unix Systems http://www.clamav.net/	GPL	Prof / Community	✓✓✓	★★★	★★★★	◆◆◆	↗
FreeRADIUS	1.1.3	Remote authentication dial-in-user-service. Allows centralized management of user access rights http://www.freeradius.org/	GPL	Prof / Community	✓✓✓✓	★★★	★★★★	◆◆◆	→
John the Ripper	1.7.2	Password cracker whose primary purpose is to detect weak Unix passwords. http://www.openwall.com/john/	GPL	Community	✓✓✓	★★★	★★★	◆◆◆	→
OpenSSH	4.3p2	Free implementation of the SSH 1 and SSH 2 protocols for Unix Systems. Allows secure communication through the Internet http://www.openssh.com	BSD	Community	✓✓✓	★★	★★★★	◆◆◆	→
PuTTY	0.58	Terminal emulator for Windows and Unix Systems, supports the SSH and Telnet protocols http://www.chiark.greenend.org.uk/~sgtatham/putty/	MIT	Community	✓✓✓✓	★★	★★★	◆◆◆	→
Shorewall	3.2.1	Firewall built directly into the Linux kernel http://www.shorewall.net	GPL	Community	✓✓✓✓	★★★	★★★★	◆◆	→
Smoothwall	2.0	Firewall, distributed in the form of a complete Linux distribution http://www.smoothwall.org	GPL	Prof / Community	✓✓✓	★★	★★★	◆◆	→

Web Servers

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Apache	2.2.3	HTTP web server, probably the world's most popular web server http://httpd.apache.org/	Apache License 2.0	Community	✓✓✓✓	★★★★	★★★★	◆◆◆	↗

Systems Management and Operations

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Hyperic HQ	2.7.3	Java-based IT management platform, provides web-based and consolidated monitoring and controlling of the whole enterprise IT stack http://www.hyperic.com/	GPL	Prof / Community	✓✓✓✓	★★★★	★★	◆◆	↗
Nagios	2.5	Monitoring platform written in C, designed to monitor hosts and services. Notifies contacts (via email, pager or other methods) when problems arise or are resolved http://www.nagios.org	GPL	Prof / Community	✓✓✓✓	★★★★	★★★★	◆◆◆	→
OCS Inventory (Open Computer and Software Inventor)	1.0	Inventory solution helping administrators to keep track of computer configurations and installed programs http://ocsinventory.sourceforge.net/	GPL	Community	✓✓✓	★★★	★★	◆	↗

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
OpenNMS	1.2.8	A Java/XML based distributed network & systems management platform. Main features are service polling, data collection, and event management http://www.opennms.org/	GPL	Community	✓✓✓	✹✹	★★	◆◆	↗
Webmin	1.290	Web-based Unix system administration tool http://www.webmin.com/	BSD	Community	✓✓✓	✹✹	★★★	◆◆	→

Miscellaneous

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
CUPS	1.2.3	Common Unix Printing System, allows Unix-based Operating Systems to act as a print server http://www.cups.org/	LGPL	Community	✓✓✓✓	✹✹✹	★★★	◆◆◆	↗
ISC BIND	9.3.2	Widely used DNS server implementation http://www.isc.org/sw/bind/	BSD	Prof (ISC) / Community	✓✓✓✓	✹✹✹	★★★★	◆◆◆	→
ISC DHCP	3.0.4	Widely used DHCP server implementation http://www.isc.org/sw/dhcp/	BSD	Prof (ISC) / Community	✓✓✓✓	✹✹✹	★★★★	◆◆◆	→
Samba	3.0.22	SMB server implementation, provides file and print services for Windows networks and can therefore replace a Windows server http://www.samba.org	GPL	Prof / Community	✓✓✓✓	✹✹✹	★★★	◆◆◆	→
Wine	0.9.20	Allows Windows applications to be run on Unix/Linux/FreeBSD, MacOS X or Solaris systems. Commercial version (CrossOver) available http://www.winehq.org	LGPL	Prof / Community	✓✓✓	✹✹✹	★★	◆	↗
Xen	3.0.2	Virtual machine monitor for x86 that supports simultaneous execution of multiple operating systems on a single computer http://www.xensource.com/	GPL	Prof / Community	✓✓✓	✹✹✹	★★★	◆◆◆	↗

Application Development and Infrastructure

The software category "Application Development and Infrastructure" covers the tools, frameworks and components needed for the implementation and operation of applications:

- ♦ Databases and file systems

- ♦ Application servers

- ♦ Portal servers

- ♦ Programming languages

- ♦ Frameworks

- ♦ Components for application development

- ♦ Development and test environments

- ♦ Business process and workflow management

- ♦ Web services

- ♦ Middleware and enterprise integration

- ♦ SOA (Service Oriented Architecture)

- ♦ Rules engines

- ♦ ETL, data management and transformation

- ♦ Search machines

This software category takes with 48% of the technologies listed and is not only the majority in this catalogue, but also represents a major share in the open source collections such as SourceForge and Freshmeat. In almost each of the subcategories there are products/projects that have become indispensable for individual application developers and also for professional software engineering organizations.

The **databases MySQL** and **PostgreSQL** (respectively **EnterpriseDB** as the professional derivate of it) have almost caught up with the benchmark of Oracle in terms of functionality and performance. In many situations they might even fit much better than the industry leader.

The **JBoss** application server and the servlet engine **Tomcat** are used in many enterprises even for business critical applications. Major commercial as well as open source based infrastructure and business application depend on these technologies as well.

Without the programming language **PHP** many web applications and environments are almost unthinkable, even large companies are using PHP at the front end these days. And more than 12% of all open source projects are using PHP to a smaller or larger extent.

Frameworks for application development such as **Hibernate** (abstraction layer between database and java application), **Spring** (Java application framework) or **Symfony** (web applications Framework for PHP 5) have accelerated the application development and are becoming de facto standards in many software engineering organizations.

In the subcategory "development and test environments" open source projects stand for innovation. **Eclipse** (development environment with plug-in concept) became sort of the standard, being contributed to open source by IBM (VisualAge) some time ago. The Eclipse project is one of the best examples of the success of the open source concepts and Eclipse is in the meantime used by many commercial software companies as the

basis for their own environments. Tools like **Ant, Maven, CruiseControl, CVS** or **Subversion** are not only widely used in open source projects to support and automate development and integration tasks (see also "continuous integration"), but can be found more and more also in the workbench of many application development departments of Fortune 500 companies.

The leaders in the area of Service Oriented Architecture (SOA), Business Process Management, Workflow, Web Services and Enterprise Integration are not yet elected. But projects such as **JBoss JBPM, Mule** or **Apache Axis** should in any case be investigated when looking into this area.

Lucene is the most famous open source full text search machine. It can be found in commercial products as well as in open source solutions such as Alfresco or Magnolia.

Besides these mentioned technologies, there is a great range of stable, mature and valuable platforms, components and tools. The following pages show a little selection, and also highlight the breadth of what is available.

Databases and File Systems

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Berkeley DB XML	2.2	XML database, provides efficient storage, query and retrieval of XML documents http://www.sleepycat.com/products/xml.shtml	Sleepycat Public License	Prof / Community	✓✓✓	✱✱	★★★	◆	↗
BerkeleyDB	4.4	Database engine that can be embedded into other software. Commercial license available, provided by the company Sleepycat (acquired by Oracle in 2005) http://www.sleepycat.com/products/bdb.html	Sleepycat Public License	Prof / Community	✓✓	✱	★★★★	◆◆◆	→
C-JDBC	2.0.2	Database cluster middleware, provides transparent access to a cluster of databases through JDBC http://c-jdbc.objectweb.org	LGPL	Community	✓✓✓✓	✱✱✱✱	★★★★	◆◆◆	↗
Cleversafe	4.2.2	Provides a dispersed store grid that allows data to be stored and transmitted privately and securely http://www.cleversafe.org/	GPL	Prof / Community	✓✓✓	✱✱	★★	◆◆	↗
db4o	5.2	Object-oriented database, allows object structures to be stored directly http://www.db4o.com	GPL	Prof / Community	✓✓✓✓	✱✱✱	★★★★	◆◆◆	↗
Derby	10.1	Java based relational database, formerly known under the name IBM Cloudspace http://db.apache.org/derby/	Apache	Community	✓✓✓✓	✱✱✱✱	★★★★	◆◆◆	↗
EnterpriseDB Advanced Server	8.1	Commercial relational database based on PostgreSQL. Provides extensive compatibility with Oracle http://www.enterprisedb.com	Commercial	Commercial	✓✓✓✓	✱✱✱✱	★★★★	◆◆◆	↗
Firebird	2.0 RC3	Relational database running on Linux, supporting many ANSI SQL-92 features http://www.firebirdsql.org/	MPL 1.0	Community	✓✓✓	✱✱	★★	◆	→
HSQLDB	1.8.0	Lightweight Java based relational database http://www.hsqldb.org	LGPL	Community	✓✓✓	✱✱✱✱	★★★★	◆◆◆	↗

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Ingres	9.0.4	Relational database, formerly one of the leading commercial RDBs. Open-sourced by CA http://www.ingres.com	GPL	Prof / Community	✓✓✓	✹✹	★★★★	◆◆	→
Lustre	1.4.6.4	Cluster filesystem, the architecture can handle tens of thousands of nodes providing petabytes of storage http://www.lustre.org/	GPL	Prof / Community	✓✓✓✓	✹✹	★★★	◆◆	↗
MaxDB	7.6	Relational database, initially developed by SAP. Now managed by MySQL and gradually being integrated into the MySQL product http://www.mysql.com	GPL	Prof / Community	✓✓✓		★★★		↘
MySQL	5.0.22	Widely used open source relational database http://www.mysql.com/	GPL	Prof / Community	✓✓✓✓	✹✹✹✹	★★★★	◆◆◆	↗
Oracle Linux Cluster Filesystem	1.2.3	Cluster file system, specifically designed to support Oracle RAC servers http://oss.oracle.com/projects/ocfs2/	GPL	Prof / Community	✓✓✓	✹	★★★	◆◆	→
PostgreSQL	8.1.4	Widely used relational database, commercial and enhanced version available from EnterpriseDB http://www.postgresql.org/	BSD	Prof / Community	✓✓✓✓	✹✹✹✹	★★★★	◆◆◆	↗

Application Server

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Geronimo (Apache)	1.1	J2EE application server, provides also the foundation for IBM Websphere AS Community Edition http://geronimo.apache.org/	Apache	Community	✓✓✓	✹✹	★★	◆	↗
GlassFish	1.0	J2EE 5 application server, based on Sun Java System Application Server (formerly commercial) http://glassfish.dev.java.net/	CDDL (OSI approved)	Prof / Community	✓✓✓✓	✹✹✹✹	★★★	◆◆	↗
JBoss AS	4.0.4	J2EE application server, provides full J2EE 1.4 and EJB 3.0 support. Widely adopted and beside BEA Weblogic and IBM Websphere one of the top 3 http://www.jboss.com/products/jbossas	LGPL	Prof / Community	✓✓✓✓	✹✹✹✹	★★★	◆◆◆	↗
Jetty	6	Lightweight Java servlet engine, can be integrated in embedded devices (e.g. routers) due to its small footprint http://jetty.mortbay.org	Apache 2.0	Prof / Community	✓✓✓	✹✹	★★★	◆◆	→
JOnAS	4.7.5	Java application server, project is supported by Bull, France Telecom and others http://jonas.objectweb.org/	LGPL	Prof / Community	✓✓✓	✹✹	★★★	◆◆	→
Resin	3.0.20	J2EE application server http://www.caucho.com/	GPL	Prof / Community	✓✓✓	✹✹	★★★	◆◆	→
Tomcat	5.5.x	Java Servlet engine and lightweight application server, widely used http://tomcat.apache.org	Apache License 2.0	Community	✓✓✓	✹✹✹	★★★	◆◆◆	↗

Portal Server

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
eXo Platform	1.0.2	Web Application, Portal, Content Management and Workflow platform. Supports standards such as JSR 168 (Java Portlet standard) and JSR 170 (Content Repository API) http://www.exoplatform.com	GPL	Prof / Community	✓✓✓	✹✹	★★★	◆	→
JBoss Portal	2.4	Portal framework, JSR-168 compliant http://www.jboss.com/products/jbossportal	LGPL	Prof / Community	✓✓	✹✹	★★★	◆◆	↗
Jetspeed 2	2.0	Portal framework, JSR-168 compliant http://portals.apache.org/jetspeed-2	Apache	Community	✓✓	✹✹	★★★	◆◆	↗
Liferay Portal	4.1.0	Enterprise portal, JSR-168 compliant http://www.liferay.com/	MIT License	Prof / Community	✓✓✓	✹✹✹	★★★	◆	→

Programming Languages

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Erlang	R11B	Concurrent functional programming language. Being used by Ericsson as a systems programming language for large concurrent fault-tolerant distributed systems http://www.erlang.org	OSI Approved	Community	✓✓✓	✹✹	★★★	◆◆	→
GNU gcc	4.1.1	Collection of compilers for C, C++ and other programming languages http://gcc.gnu.org/	GPL	Community	✓✓✓✓	✹✹✹✹	★★★★	◆◆◆	→
Groovy	1.0-JSR-0.6	Groovy is a dynamic programming language for the Java Virtual Machine (JVM) which combines many features of Python, Ruby and Smalltalk. Can be used as a scripting language for Java programs http://groovy.codehaus.org	Apache License 2.0	Community	✓✓	✹	★	◆	→
Jython	2.1	Jython is a Java implementation of the Python programming language. Python programs can be compiled to Java bytecode and run therefore on any Java Virtual Machine. In addition, Python programs have access to all Java libraries http://www.jython.org/	OSI Approved	Community	✓✓	✹✹	★★	◆	→
Perl	5.8.8	Platform independent script and programming language that allows even complex problems to be solved in a simple way. Perl is optimized for scanning arbitrary text. Regular expression matching and replacement is especially simple as it is directly integrated into the language http://www.perl.org/	Artistic License	Community	✓✓✓	✹✹✹	★★★	◆◆	↘

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
PHP	5.1.4	Script language especially suited for web development. PHP is simple to learn, can be directly embedded into HTML documents, provides excellent support for databases, XML and other web technologies. PHP programs will be executed on the server, the web browser therefore requires no special support http://www.php.net/	The PHP License	Community	✓✓✓	★★★★	★★★	◆◆◆	↗
Python	2.5	Interpreted programming language to support object-oriented, aspect-oriented and functional programming. Python has a very clear syntax and is easy to learn, provides many standard libraries and can be extended with modules written in other programming languages. The application server Zope proves Python's ability to support large environments http://www.python.org/	Python License	Community	✓✓✓✓	★★★	★★★★	◆◆	→
Rhino	1.6R4	JavaScript implementation in Java, typically embedded into Java applications to provide scripting to end users http://www.mozilla.org/rhino/	MPL 1.1	Community	✓✓✓✓	★★★	★★★	◆◆	↗
Ruby	1.8.4	Language tailored for quick and easy programming, similar in scope to Perl and Python. What sets Ruby apart is a clean and consistent language design where everything is an object http://ruby-lang.org/	GPL	Community	✓✓	★★★	★★	◆◆	↗

Frameworks

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
AspectJ	1.5.2a	Aspect-oriented extension to the Java programming language http://www.eclipse.org/aspectj/	CPL	Community	✓✓✓✓	★★★	★★★	◆◆	↗
Catalyst	5.7.3	Elegant Perl based web application framework, flexible yet extremely simple, similar to Ruby on Rails, Spring (Java), and Maypole, upon which it was originally based http://catalyst.perl.org	Artistic License / GPL	Community	✓✓✓	★★★★	★★★	◆◆	↗
Cocoon	2.1.9	Web-development framework with focus on XML and XSLT. http://cocoon.apache.org/	Apache License 2.0	Community	✓✓✓	★★★	★★★	◆	→
Django	0.95	High-level Python based web framework that encourages rapid development and clean, pragmatic design http://www.djangoproject.com	BSD	Community	✓✓✓	★★★	★★	◆	↗
Eclipse RCP	3.2	Rich client framework, platform to develop client applications. Eclipse RCP is the foundation of the Eclipse IDE http://www.eclipse.org/rcp/	Eclipse Public License	Community	✓✓✓	★★★★	★★★	◆◆	→

Product	Version	Description / URL	License	Support	Function- ality	Com- munity	Maturity	ER- Rating	Trend
Hibernate	3.2.0	Object relational mapping (ORM) framework, provides an object-oriented view on a relational database and creates an abstraction layer between the programming language and the database http://www.hibernate.org	LGPL	Prof (JBoss) / Community	✓✓✓✓	✳✳✳	★★★★	◆◆◆	↗
HiveMind	1.1.1	Application framework, uses the Inversion of Control pattern http://jakarta.apache.org/ hivemind/	Apache	Community	✓✓	✳✳✳	★★	◆	↗
Horde	3.1.2	Framework for object oriented PHP application development with an emphasis on groupware and PIM applications http://www.horde.org	LGPL	Prof / Community	✓✓✓	✳✳✳	★★★	◆◆	→
JBoss AOP	1.5.0	Aspect oriented extension to the Java programming language http://labs.jboss.com/jbossaop	LGPL	Community	✓✓✓✓	✳✳	★★★	◆◆	↗
JBoss SEAM	1.0.1	Application framework for rapid web application development, based on EJB3, JSF and JBPM http://www.jboss.com/products/ seam	LGPL	Prof / Community	✓✓✓	✳✳✳	★★	◆◆	↗
jPOS	1.5.0	ISO-8583-certified program library/framework that can be used to implement secure financial transaction systems http://www.jpos.org/	Apache	Prof / Community	✓✓	✳✳	★★★	◆◆	→
Knopflerfish	2.0.0	Open source implementation of the OSGi R3 framework specification http://www.knopflerfish.org/	BSD	Prof / Community	✓✓✓	✳✳	★★★	◆◆	→
Mono	1.1.13.8	Open source implementation of the Microsoft .NET architecture, allows to execute C# applications on Linux http://www.mono-project.com/	GPL, LGPL, MIT	Prof / Community	✓✓✓	✳✳✳✳	★★★	◆◆	↗
OpenACS	5.2.3	Open Architecture Community System, toolkit for building scalable community-oriented web applications http://www.openacs.org/	GPL	Prof / Community	✓✓	✳✳✳	★★★	◆◆	→
OpenLaszlo	3.3.3	Platform to build rich internet applications executable in all web browsers. Able to generate either Flash applications or DHTML (planned for end 2006) from XML. Can be integrated into a J2EE application http://www.openlaszlo.org	Common Public License	Prof / Community	✓✓✓	✳✳	★★	◆◆	↗
RIFE	1.5	Application framework for Java web applications, ideally suited for CRUD (create, read, update, delete) database centric applications http://www.rifers.org/	LGPL / CDDL	Community	✓✓✓	✳	★★	◆◆	→
Ruby on Rails	1.1	Web application framework for Ruby, allows very fast and iterative developments http://www.rubyonrails.org/	MIT License	Community	✓✓✓	✳✳✳	★★	◆◆	↗
Spring	2.0	Java/J2EE applications framework, uses the Inversion of Control pattern http://www.springframework.org/	Apache 2.0	Prof / Community	✓✓✓✓	✳✳✳	★★★★	◆◆◆	↗

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Struts	1.2.9	J2EE framework for the presentation layer. Based on the MVC 2 approach http://struts.apache.org/	Apache	Community	✓✓✓	★★★	★★★★	◆◆	↘
symfony	0.6.3	Web application framework for PHP5 projects. Aims to speed up the creation and maintenance of web applications, and to replace the repetitive coding tasks http://www.symfony-project.com	MIT License	Community	✓✓✓✓	★★★	★★★	◆◆◆	↗
Tapestry	4.0.2	Component based framework for Java web applications. The template engine is also used in other projects, e.g. Cocoon http://jakarta.apache.org/tapestry/	Apache License 2.0	Prof / Community	✓✓✓	★★★	★★★	◆◆	→
WebWork	2.2.4	J2EE web application framework. This project was reintegrated into the Apache Struts project in 2005 and will be developed further there http://www.opensymphony.com/webwork/	OpenSym-phony Software License 1.1	Community	✓✓✓	★★★★	★★★	◆◆◆	→
Zope	2.9.4	Application server and framework for CRM and web applications, written with Python http://www.zope.org/	Zope Public License (ZPL)	Prof / Community	✓✓✓✓	★★★★	★★★★	◆◆◆	→

Components for Application Development

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Acegi	1.0.1	Security solution for applications using the Spring framework. Provides user authentication, access control and other security related capabilities http://www.acegisecurity.org	Apache	Community	✓✓✓	★★★	★★★	◆◆	↗
Dojo	0.3.1	Extensive Javascript toolkit to build rich user interfaces. Includes widgets, AJAX support etc. It is used as a basis for numerable other projects. http://www.dojotoolkit.org	Academic Free License 2.1	Community	✓✓✓	★★	★★	◆◆◆	↗
FCKeditor	2.3.1	Web-based HTML and DHTML WYSIWYG editor. Can be integrated easily into web applications, for example by using a Taglib for Servlets and brings much of the powerful editing functionalities known from tools like MS Word to the browser http://www.fckeditor.net/	LGPL / CDL	Prof / Community	✓✓✓✓	★★★	★★★	◆◆	↗
OpenRico	2.0	JavaScript UI widget library, built on top of of the project "Prototype" http://www.openrico.org	Apache 2.0	Community	✓✓	★★	★★★	◆◆	→
Prototype	1.4.0	AJAX library used as foundation for numerous other projects such as Script.aculo.us and OpenRico http://prototype.conio.net	Academic style license	Community	✓✓	★★	★★★	◆◆	→
Quartz	1.5.2	CRON and timer based scheduler for Java http://www.opensymphony.com/quartz/	Apache License 2.0	Community	✓✓✓	★★★	★★	◆◆	↗

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Script.aculo.us	1.6.4	JavaScript library for building rich and engaging user interfaces, with animations, UI widgets and AJAX support. Heavily used together with Ruby on Rails. http://script.aculo.us	MIT	Community	✓✓✓	★★★	★★★	◆◆	↗
TinyMCE	2.0.6.1	Web-based WYSIWYG html editor implemented in JavaScript http://tinymce.moxiecode.com/	LGPL	Prof / Community	✓✓✓✓	★★	★★★	◆◆	↗
ZK	2.1.1	AJAX web framework that enables rich user interface for web applications with no JavaScript and little programming. At times the number one JavaScript project on SourceForge http://www.zkoss.org/	GPL / Commercial	Prof / Community	✓✓✓	★★★	★★	◆◆	↗

Development and Test Environments

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Anjuta	2.0.2	C and C++ IDE (integrated development environment) for Linux http://www.anjuta.org/	GPL	Community	✓✓	★★	★★★	◆	→
Ant	1.6.5	Automates compilation of Java programs. Good replacement for make http://ant.apache.org/	Apache License 2.0	Community	✓✓✓✓	★★★★	★★★★	◆◆◆	→
ArgoUML	0.20	UML (unified modeling language) CASE (computer aided software engineering) tool implemented in Java http://argouml.tigris.org/	BSD	Community	✓✓✓	★	★★★	◆	→
Bugzilla	2.23.2	Widely used software bug tracking system with a very comprehensive feature set including email notifications, powerful query interface http://www.bugzilla.org/	MPL 1.1	Community	✓✓	★★★★	★★	◆◆	↘
Cactus	1.7.2	Simple testing framework for server-side Java code (Servlets, EJBs, Taglibs, filters, etc.). Cactus is based on Junit http://jakarta.apache.org/cactus/	Apache 2.0	Community	✓✓✓	★★	★★★	◆◆	→
Cruise Control	2.5	Software to continuously compile and test software projects (continuous integration). Contains several plug-ins, source control tools, Ant, etc. and a web interface http://cruisecontrol.sourceforge.net/	BSD	Community	✓✓✓	★★	★★★	◆◆◆	↗
CVS	1.11.22	Version control system which allows releases to be kept with parallel updates from different authors http://www.nongnu.org/cvs/	GPL	Community	✓✓✓	★★★★	★★★★	◆◆◆	↘
Eclipse	3.2	Leading Java IDE (integrated development environment), but also a framework to build IDEs. The foundation was inherited from IBM VisualAge http://www.eclipse.org/	Eclipse Public License	Community	✓✓✓✓	★★★★	★★★★	◆◆◆	↗

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Emma	2.0.5312	Code coverage tool, analyzes what code parts are not covered by any tests http://emma.sourceforge.net/	CPL	Community	✓✓✓	✶✶	★★★	◆◆	→
GForge	4.5.11	Web-based collaborative development environment, based on SourceForge, but extensively rewritten and enhanced http://gforge.org/	GPL	Prof / Community	✓✓	✶✶	★★★	◆◆	→
GNU Make	3.81	Automates compilation of programs http://www.gnu.org/software/make/	GPL	Community	✓✓✓✓	✶✶✶	★★★★	◆◆◆	→
JMeter	2.2	Load and performance testing for Java programs. It was originally designed for testing web applications but has since expanded to other test functions. http://jakarta.apache.org/jmeter/	Apache License 2.0	Community	✓✓✓	✶✶	★★★	◆◆	→
JUnit	4.1	Java testing framework. Junits allows to build a test suite incrementally and measuring progress http://www.junit.org/	CPL	Community	✓✓✓✓	✶✶✶✶	★★★★	◆◆◆	→
KDevelop	3.3.4	Integrated development environment for Linux http://www.kdevelop.org/	GPL	Community	✓✓✓	✶✶	★★★	◆◆	→
Maven	2.0.4	Software management tool, based on the concept of a project object model (POM). Automates compilation of programs, also manages external program library references http://maven.apache.org/	Apache License	Community	✓✓✓	✶✶✶	★★★	◆◆	↗
NetBeans	5.0	Java IDE and platform for the development of IDEs and client programs. New features are implemented in the form of plug-in modules http://www.netbeans.org/	SUN Public License	Prof / Community	✓✓✓✓	✶✶	★★★★	◆◆	→
openMDX	1.12.1	Java software development platform on the basis of OMG Open Model Application (Model Driven Architecture) standards http://www.openmdx.org/	BSD	Prof / Community	✓✓✓	✶	★★	◆	→
Subversion	1.4.0	Version control system with the objective to be compelling replacement of CVS http://subversion.tigris.org/	Apache License/BSD-style	Prof / Community	✓✓✓	✶✶✶	★★★	◆◆◆	↗
TortoiseSVN	1.3.5	A Subversion client, implemented as a Windows shell extension. http://www.tortoisesvn.net/	GPL	Community	✓✓✓	✶✶	★★★	◆◆◆	↗
Trac	0.9.6	Simple but highly useful issue tracker and software project management environment, based on an integrated Wiki engine http://www.edgewall.com/trac/	BSD	Community	✓✓	✶✶✶	★★	◆◆	↗
Venkman	0.9.87	JavaScript debugger Firefox plug-in http://www.mozilla.org/projects/venkman	MPL 1.1	Community	✓✓✓	✶✶	★★	◆◆	↗
ViewVC	1.0.1	Web-based browser for CVS and Subversion repositories (formerly known as ViewCVS) http://www.viewvc.org/	BSD	Community	✓✓✓	✶	★★★	◆◆	→

Business Process and Workflow Management

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Enhydra Shark	2.0b2	Extendable workflow engine framework, implements the complete Workflow Management Coalition (WfMC) specification using the XML Process Definition Language (XPDL). The project also provides a graphical editor for business processes http://shark.objectweb.org/	LGPL	Prof / Community	✓✓✓	✹✹✹✹	★★	◆◆	↗
Intalio BPMN	4.0	Graphical BPMN designer as an Eclipse plugin with standard BPEL 2.0 code generation capabilities http://www.intalio.com/	Apache License 2.0	Community	✓✓✓	✹	★★★	◆	↗
JBoss jBPM	3.1.2	Flexible, extensible workflow management system. Business processes can be expressed in for developers and managers understandable languages (e.g. jBPM Process Definition Language or BPEL). A visual process designer as an Eclipse plugin is also available http://www.jboss.com/products/jbpm	LGPL	Prof (JBoss) / Community	✓✓✓	✹✹✹✹	★★★	◆◆	↗
ObjectWeb Bonita	2.0	Workflow engine based on the activity anticipation model, compliant to WfMC specifications http://bonita.objectweb.org/	LGPL	Community	✓✓✓	✹✹✹	★★	◆◆	→
OpenWFE	1.7.1	Widely used workflow engine and business process management suite http://www.openwfe.org	BSD	Prof / Community	✓✓	✹✹	★★★	◆◆	↗
PXE (Process eXecution Engine)	1.0	Java based runtime component for executing processes defined by the BPEL-4 specification, integrated in Intalio http://pxe.intalio.org/	CPL / MIT License	Prof (Intalio) / Community	✓✓✓	✹✹	★★★	◆	→

Web Services

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Apache Axis	1.4	Implementation of the SOAP ("Simple Object Access Protocol") submission to W3C http://ws.apache.org/axis/	Apache License 2.0	Community	✓✓✓✓	✹✹✹✹	★★★★	◆◆◆	→
Apache Axis2	1.0	Complete re-design and re-write of the widely used Apache Axis SOAP stack to build on the lessons learned from Apache Axis. Axis2 not only supports SOAP 1.1 and SOAP 1.2, but it also has integrated support for the widely popular REST style of web services http://ws.apache.org/axis2/	Apache License 2.0	Community	✓✓✓	✹✹✹✹	★	◆	↗
gSOAP	2.7.8	SOAP framework used in many commercial products including Adobe's Version Cue, IBM Tivoli Access Manager and many others http://gsoap2.sourceforge.net	GPL, MPL 1.1	Prof / Community	✓✓✓	✹✹	★★★★	◆◆	→

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
jUDDI	0.9rc4	Web Services Discovery implementation (UDDI = Universal Description, Discovery and Integration Service) http://ws.apache.org/juddi/	Apache License 2.0	Community	✓✓✓	✱✱✱✱	★★★	◆◆	→
Sandesha/2	1.0	Web Services Reliable Messaging implementation http://ws.apache.org/sandesha/	Apache License 2.0	Community	✓✓✓	✱✱✱✱	★★	◆◆	↗
Tuscany	M1	Service Component Architecture (SCA) and Service Data Object (SDA) implementation http://incubator.apache.org/tuscany/	Apache License 2.0	Community	✓✓✓	✱✱✱	★	◆	→
WSS4J	1.5.0	Web Services Security implementation http://ws.apache.org/wss4j/	Apache License 2.0	Community	✓✓✓	✱✱✱✱	★★★	◆◆	↗
XFire	1.2	SOAP framework http://xfire.codehaus.org/	Custom	Community	✓✓✓	✱✱✱	★★★	◆◆	→

Middleware/Enterprise Integration

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
ActiveMQ	4.0.2	Message Broker with full support for the Java Message Service (JMS 1.1) and J2EE 1.4 http://www.activemq.org/	Apache License 2.0	Prof / Community	✓✓✓	✱✱✱	★★★	◆	↗
JORAM	4.3.20	Java Message Service (JMS 1.1) implementation http://joram.objectweb.org/	LGPL	Prof / Community	✓✓✓	✱✱✱	★★	◆	→
OpenJMS	0.7.7a3	Java Message Service (JMS 1.1) implementation http://openjms.sourceforge.net/	Custom	Community	✓✓	✱	★	◆	→

SOA (Service Oriented Architecture)

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Celtix M2A	1.0	Enterprise Service Bus (ESB) messaging framework http://celtix.objectweb.org/	LGPL	Community	✓	✱	★	◆	↗
LogicBlaze FUSE	1.2	Full SOA (service oriented architecture) runtime stack, uses the ServiceMix ESB http://www.logicblaze.com/	Apache 2.0	Prof (LogicBlaze) / Community	✓✓✓✓	✱✱✱✱	★★★	◆◆	↗
Mule	1.3	Enterprise Service Bus (ESB) messaging framework http://mule.codehaus.org/	BSD	Prof / Community	✓✓✓	✱✱✱	★★★	◆◆◆	↗
Open ESB	1.0a	Enterprise Service Bus (ESB), implements the Java Business Integration specification (JBI, JSR-208) http://open-esb.dev.java.net/	CDDL	Community	✓✓✓	✱✱✱	★★★	◆	↗
OpenAdaptor	1.7.2	Enterprise Application Integration (EAI) software, supports JMS, LDAP, Mail, MQ Series and several databases https://www.openadaptor.org/	MIT	Prof / Community	✓✓	✱✱	★★	◆◆	→
ServiceMix	3.0	Enterprise Service Bus (ESB), implements the Java Business Integration specification (JBI, JSR-208) http://www.servicemix.org/	Apache	Prof / Community	✓✓	✱✱✱	★★	◆	↗

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Synapse	M2	Web Services Mediation framework, includes logging, service lookup, fault management and monitoring http://incubator.apache.org/synapse/	Apache	Community	✓	✳✳✳	★	◆	➚
WSO2 Tungsten	1.0	Application server and middleware stack for SOA-based applications. WSO2 is based on several Apache projects (Axis 2, Axiom, Neethi, Rampart, Sandesha) and provides support fort the full WS-* stack as well as the REST-approach for web services developments http://www.wso2.com/products/tungsten	Apache	Prof / Community	✓✓	✳✳	★★	◆	➚

Rules Engines

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Algernon-J	5.0.1	Rule engine implemented in Java; can be used for rule-based processing of knowledge bases http://algernon-j.sourceforge.net/	MPL 1.1	Community	✓✓	✳	★★	◆	➘
Euler	1.5.28	Backward chaining Reasoner, will tell the user whether a given set of facts and rules (described in N3) supports a given conclusion http://eulersharp.sourceforge.net/	W3C	Community	✓✓	✳✳	★★	◆	➔
Hammurapi Rules	2.5.0	Rule engine, implements the Java Rule Engine (JSR-94) API. Rules can be written directly in Java http://www.hammurapi.biz	LGPL	Prof / Community	✓✓	✳	★★	◆	➔
JBoss Rules (aka Drools)	3.0.3	Rule engine that uses the Rete-OO algorithm http://labs.jboss.com/portal/jbossrules/	LGPL	Prof / Community	✓✓	✳✳✳✳	★★★	◆◆	➚
Mandarax	3.4	Java class library for deduction rules. Easy integration of all kinds of data sources http://mandarax.sourceforge.net/	LGPL	Community	✓✓	✳✳	★★	◆	➔

ETL, Data Management/Transformation

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
CloverETL	1.9.0	Extract/Transform/Load (ETL) framework, implemented in Java http://cloveretl.berlios.de	LGPL	Prof / Community	✓✓	✳	★★	◆	➔
Enhydra Octopus	3.6.1	Extract/Transform/Load (ETL) tool implemented in Java, supporting the integration of heterogeneously structured data http://www.enhydra.org/tech/octopus	LGPL	Prof / Community	✓✓	✳	★	◆	➔
Jitterbit	1.0.2	Data integration engine with strong ETL (extract/transform/load) capabilities. http://www.jitterbit.com	JBL (based on GPL)	Prof / Community	✓✓✓	✳✳	★★★	◆◆	➚

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
K.E.T.T.L.E (Kettle ETTL Environment)	2.3.1	Meta-data driven Extraction, Transformation, Transportation & Loading tool; now part of the Pentaho project http://kettle.javaforge.com/	LGPL	Prof / Community	✓✓✓	✹✹	★★★	◆◆	↗
Kinetic ETL (KETL)	NA	Extract/Transform/Load (ETL) platform. Part of Bizgres Clickstream http://www.kineticnetworks.com/opensrc.html	LGPL	Prof	✓✓	✹✹	★★	◆	→

Search Machines

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Ferret	0.9.5-alpha	Text search engine implemented in Ruby; full port of the Apache Lucene Java project http://ferret.davebalmain.com/trac	MIT-style license	Community	✓✓✓	✹✹✹	★★	◆	↗
Lucene	2.0	High-performance text search engine implemented in Java, suitable for nearly any application that requires full-text search. The project "Nutch" implements a web search engine based on Lucene http://lucene.apache.org/java	Apache License 2.0	Community	✓✓✓	✹✹✹	★★	◆◆◆	↗
OpenFTS	0.39	Full text search engine, can be used to index and classify database data http://openfts.sourceforge.net/	GPL	Community	✓✓	✹✹	★★	◆	→

Infrastructure Solutions

When selecting the open source projects for this catalogue we consciously selected a significant number of directly applicable solutions. The software category "Infrastructure Solutions" covers solutions that normally do not benefit the end user but that can be leveraged by other solutions. This is specifically visible in the following subcategories:

- ♦ Collaboration/groupware/communication
- ♦ Enterprise Content Management (Document Management, Web Content Management)
- ♦ Identity & Access Management
- ♦ VOIP (Voice over IP) and Telephony

With forty solutions, this software category is overrepresented when comparing it with the overall open source spectrum of solutions. The fact, though, that so many mature and viable solutions can be found in this software category shows the importance already today and more tomorrow for future migrations and business solution enablement.

Open source projects are strong in the area of "Enterprise Content Management" (**ECM**), especially when looking at the numerous (Web) Content Management solutions. Products such as **eZpublish, Plone** or **Typo3** are used in many small and large organizations and have reached a high degree of maturity. For Document Management solutions, the portfolio of enterprise-ready technologies is smaller. **Alfresco** is more and more taking the lead and is an example of how with the usage of open source platforms and components, new solutions can be developed in a short time frame and with high quality. Wikis, collaboration-oriented Content Management solutions such as **MediaWiki**, that is used by Wikipedia), are an exclusive open source solution domain.

There are a number of interesting and innovative projects also in the other subcategories of Infrastructure Solutions. However many of these are still fairly young and have a lot of potential to mature and broaden. Depending on the needs and the system context solutions, **Zimbra** (groupware server and client with AJAX based front-end), **Open-Xchange** (another groupware server), **OpenLDAP** (user directory) or **Asterisk** (VoIP-PBX) may be exactly what is needed and can be the ideal candidate for efficient and effective infrastructure solutions.

Collaboration/Groupware/Communication

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
eGroupware	1.2	Groupware application, provides an IMAP mail server, calendar, content management, forums and more http://www.egroupware.org/	GPL	Prof / Community	✓✓✓	✹✹	★★★	◆	↗
Open-Xchange	0.8.2	Groupware, mail and calendar server; Open Source alternative to the Microsoft Exchange server http://www.open-xchange.org/	GPL	Prof / Community	✓✓✓	✹✹	★★★	◆◆	↗

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Zimbra	3.1	Groupware (mail, calendaring, file sharing) application, contains a Web-based AJAX client, support for Outlook, compatibility with existing LDAP directories, Web services integration and integrated anti-spam and anti-virus http://www.zimbra.com/	MPL 1.1	Prof / Community	✓✓✓	✳✳✳	★★	◆	↗

Enterprise Content Management (Document and Content Management)

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Alfresco	1.4	Standards compliant document management application (sort of a lightweight Documentum) evolving into a comprehensive ECM solution over the coming releases. The software is developed by former Documentum and Interwoven employees and based on a modern Java stack (Spring/Hibernate/Java Faces, etc.) http://www.alfresco.com	MPL	Prof / Community	✓✓✓	✳✳	★★★	◆◆◆	↗
Bricolage	1.10.2	Very flexible CMS focused on sites with continuously changing content (publishing, magazines, etc.). Implemented in Perl and PL/SQL http://www.bricolage.cc	BSD	Prof / Community	✓✓✓	✳✳	★★★★	◆◆	→
CPS (Nuxeo)	3.4.0	French Collaborative Portal Server (CPS), ECM platform for document and content management. Based on the Zope application server, but currently ported to Java http://www.cps-project.org/	GPL	Prof / Community	✓✓✓	✳✳	★★★	◆◆	→
DotNetNuke	4.3.3	CMS built on the Microsoft ASP.NET (VB.NET) platform http://www.dotnetnuke.com/	BSD	Community	✓✓✓	✳✳✳✳	★★★★	◆◆	↗
Drupal	4.7.2	Content Management System CMS) implemented in PHP http://drupal.org/	GPL	Community	✓✓✓	✳✳✳✳	★★★	◆◆	→
eZ publish	3.8	Widely used and functionally rich content, e-commerce and document management system implemented in PHP http://ez.no/	GPL/Commercial	Prof (eZ systems) / Community	✓✓✓✓	✳✳✳✳	★★★	◆◆◆	↗
Jahia	5.0	Java based integrated Enterprise Content & Portal Management software http://www.jahia.com	JCDDL/Commercial	Prof (Jahia) /Community	✓✓✓	✳✳	★★★	◆◆	↗
Joomla!	1.0.10	Content Management System implemented in PHP, originated as a fork (copy of the code) of Mambo. The functionality of the two is 90% equal http://www.joomla.org	GPL	Community	✓✓	✳✳✳	★★★	◆◆	↗

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Knowledge Tree	3.0.3	Document Management System including version control. Indexes Word, Excel, Text, HTML, PDF and other file formats. Commercial version also supports WebDAV. Implemented in PHP/JavaScript http://www.ktdms.com/	Know-ledgeTree Public License	Prof (Jam Warehouse) / Community	✓✓	★★	★★	◆	→
Lenya (Apache)	1.2.4	Java-based CMS, based on Apache Cocoon. The system comes with version control, site management, scheduling, search, WYSIWYG editors, and workflow http://lenya.apache.org/	Apache License 2.0	Prof (Wyona)/ Community	✓✓✓	★★★★	★★	◆◆	→
Magnolia	3.0	Modern and very user friendly CMS, implementing the Java Content Repository (JSR-170) standard. The enterprise version also provides document management. Written in Java and making use of AJAX http://www.magnolia.info	LGPL/Comme rcial	Prof (Magnolia) / Community	✓✓	★★	★★★	◆◆	↗
Mambo	4.6	Business-oriented CMS implemented in PHP and MySQL http://www.mamboserver.com	GPL	Prof / Community	✓✓	★★★	★★★	◆◆	→
MediaWiki	1.7.1	Web-based collaborative editing environment (Wiki), the software behind Wikipedia. Implemented in PHP http://www.mediawiki.org	GPL	Community	✓✓✓✓	★★★★	★★★★	◆◆◆	→
openCMS	6.2.2	CMS which stores all content in XML, implemented to 100% in Java http://www.opencms.org/	LGPL	Prof (Alkacon) / Community	✓✓✓	★★★	★★★	◆	→
Plone	2.5	Comprehensive content and document management solution based on the Python language and running on the Zope Applications Server http://plone.org	GPL	Prof / Community	✓✓✓	★★★★	★★★★	◆◆	→
PostNuke	0.762	Content Management System and website generation tool. Implemented in PHP, using MySQL http://www.postnuke.com	GPL	Prof / Community	✓✓	★★★	★	◆	↗
Roller	2.3	Multi-user capable Blogging software, implemented in Java http://www.rollerweblogger.org/	Apache	Community	✓✓	★	★★	◆	→
SPIP	1.9.0	CMS for online magazine websites and Internet publications (eZines). Implemented in PHP, uses MySQL http://www.spip.net/de	GPL	Community	✓✓✓	★★	★★★	◆	→
TWiki	4.0	Wiki software which also supports fine-grained content. Implemented in Perl http://www.twiki.org/	GPL	Prof / Community	✓✓✓	★★★	★★★	◆◆	→
Typo3	3.8.0	Widely used Content Management System (CMS) offering full flexibility and extendibility. Implemented in PHP http://typo3.org	GPL	Community	✓✓✓	★★★★	★★★	◆◆	→
WebGUI	7.0.7	Easy to use and deploy Web Content Management System (WCMS) http://www.plainblack.com/webgui	GPL	Community	✓✓	★★★	★★★	◆	→

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
WordPress	2.0.4	Blogging software, implemented in PHP http://www.wordpress.org	GPL	Community	✓✓✓	✹✹✹✹	★★★★	◆◆◆	↗
XOOPS	2.0.14	CMS for community portals, implemented in PHP http://www.xoops.org/	GPL	Community	✓✓	✹✹✹	★★	◆	↗
XWiki	0.9.840	Java based Wiki implementation adding many uncommon features. Influenced by TWiki and others http://www.xwiki.org	LGPL	Community	✓✓✓	✹✹✹	★★	◆	↗

Identity & Access Management

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Ganymede	1.0.12	Portable and customizable network directory management system, supports NIS, DNS, Netinfo and LDAP. A centralized database manages all information and updates the individual directories on changes automatically http://tools.arlut.utexas.edu/gash2	GPL	Community	✓✓		★★	◆	↘
JA-SIG CAS	3.0.5	Authentication software, provides Single Sign On (SSO) and Identity Federation capabilities http://www.ja-sig.org/products/cas/	BSD	Prof / Community	✓✓✓	✹✹	★★★	◆◆	→
JOSSO	1.4	Single Sign On (SSO) infrastructure based on J2EE. Provides a solution for centralized and platform neutral user authentication and authorization http://www.josso.org/	BSD	Community	✓	✹	★★	◆	→
OpenLDAP	2.3.27	Implementation of the Lightweight Directory Access Protocol (LDAP) and the needed infrastructure components and libraries http://www.openldap.org	OpenLDAP public license 2.8	Community	✓✓✓	✹✹✹	★★★	◆◆	↗
OpenSAML	1.1	Toolkit for implementing solutions using the SAML 1.1 and 1.0 specifications http://www.opensaml.org/	Apache License 2.0	Community	✓✓	✹	★	◆	→
openSSO	-	Single Sign On (SSO) solution; user's identity is verified in central identity module through x509 digital certificates https://opensso.dev.java.net/	GPL	Community	✓	✹	★	◆	→
Shibboleth	1.3	Middleware software, provides Web Single Sign On (SSO) across or within organizational boundaries http://shibboleth.internet2.edu/	Apache License 2.0	Community	✓✓	✹✹	★★	◆	→
SourceID	3.0/2.1/etc	WS-Federation implementation (SSO, Identity Federation), implemented in Java, Perl and PHP. Commercial server with support available (Ping Identity) http://www.sourceid.org/	Open Software License 2.1	Prof (Ping Identity) / Community	✓✓✓✓	✹✹✹	★★★	◆◆	↗

VoIP and Telephony

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Asterisk	1.2	PBX (Private Branch eXchange) and IVR platform with ACD functionality, acting as middleware between the Internet (IAX, SIP, MGCP, Skinny, H.323), telephony channels (like Zaptel, T1, PRI, E1, FXO, FXS, VoIP, VoFR, ISDN, modems, Internet Phone Jack, etc.), and applications (like voice-mail, conferencing, directories, MP3 players, intercoms, etc.) http://www.asterisk.org/	GPL	Prof / Community	✓✓✓✓	✳✳✳	★★★	◆◆	↗
SER	0.9.6	Session Initiation Protocol (SIP) server. Connects VoIP calls http://www.iptel.org/ser/	GPL	Community	✓✓✓	✳✳✳	★★★	◆◆	↗
sipX (PingTel)	3.4	Session Initiation Protocol (SIP) server. Connects VoIP calls http://www.sipfoundry.org/sipX/sipXuser/	LGPL	Prof / Community	✓✓✓	✳✳	★★	◆	→
Yate	1.0.0	Telephony engine, can for example be used as a VoIP server or client http://yate.null.ro/	GPL, MPL	Community	✓✓✓	✳✳	★★★	◆	↗

Business Applications

For understandable reasons, business applications are not the first and hottest topic for software developers to spend nights and spare time to contribute. Therefore the portfolio of mature and enterprise-ready open source business solutions is fairly narrow, less than 0.5% of all existing projects can be allocated to this software category. Many of the known open source business solutions are driven by companies with commercial interest, explaining the strong presence of dual license approaches and subscription models in this category. However this does not make the topic less interesting. The selected 44 applications represent the achieved status along four subcategories:

- ♦ CRM, ERP and eCommerce
- ♦ Analytics, Reporting and Datawarehousing
- ♦ Knowledge Management and eLearning
- ♦ Office and client side business solutions

When talking about open source business solutions, names such as **Compiere** (java based ERP and CRM) and **SugarCRM** (PHP based CRM) quickly pop up. Very frequently SugarCRM has, thanks to its intuitive user interface and the extendable and adaptable PHP technology, become an attractive alternative to SalesForce.com or is used in large companies in situations where the adaptation of large and complex enterprise CRM applications such as Siebel or SAP was just not effective.

Reporting tools such as **Birt** and **JasperReports** or the OLAP server **Mondrian** have proven to be cost effective alternatives to expensive proprietary standard technologies. The domain of the business intelligence suites competing with SAS, BusinessObjects and the like is still in development, nonetheless have solutions such as **Pentaho** shown that they can be the right piece of technology in specific contexts.

The eLearning application **Moodle** should be evaluated carefully when considering applications for this domain, an alternative that is more focused on collaborative learning is **Sakai**.

OpenOffice.org is mentioned today constantly together with Microsoft Office. With the current version 2.0, significant progress has been made in terms of compatibility and usability. Many companies these days are considering a switch, as the costs of licenses for office automation is a substantial part of the IT budget. Strong interconnections between business applications (such as SAP) with the office suites and the substantial costs for training and change management are critical barriers for a migration. Thanks to more and more accepted standards such as ODF or OpenXML, the switch hopefully becomes easier and less expensive over time. Also the more people and companies are adopting OpenOffice.org, the easier the switch is for others.

CRM, ERP and E-Commerce

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Centric CRM (aka Dark Horse CRM)	4.0	Web-based CRM implemented in Java. Provides contact and account management, helpdesk, records of customer communication and simple document management, but no CMS and mass mailing facilities http://www.centriccrm.com/	Custom (Centric Public License)	Prof (Centric) / Community	✓✓	✱✱	★★★	◆◆	↗

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Compiere	2.5.3	Comprehensive CRM, ERP and Supply Chain Management (SCM) solution implemented in Java http://www.compiere.com	MPL	Prof (Compiere) / Community	✓✓✓	★★★	★★★★	◆◆	→
CustomX		Customizable CRM for enterprises. Additional functionality can be added through plug-ins http://www.thinx.ch/topic1122.html	Perl Artistic License	Prof / Community	✓✓	✱	★★	◆	→
ERP5	1.0 RC10	CRM, ERP, MRP (Material Requirement Planning), finance and commerce system. Based on Zope and implemented in Python http://www.erp5.com/	GPL	Prof / Community	✓✓	✱	★★	◆	→
HelpCORE	1.3.1	An enterprise class help and service desk application covering features from incidents and asset management to automatic remote computer scanning. Implemented in PHP http://www.scoreteq.com/	GPL / Commercial	Prof (ScoreTeq) / Community	✓	✱	★	◆	→
jbilling	1.0.3	Java-based robust billing system. Recently open-sourced but in production since 2003 http://www.jbilling.com	Jbilling Public License	Prof (jbilling) / Community	✓✓✓✓	✱	★★★★	◆◆	→
OneOrZero	1.6.5	Web-based task management and helpdesk system, implemented in PHP http://www.oneorzero.com	GPL	Prof (OneOrZero) / Community	✓	✱	★	◆	→
Open for Business (Apache OFBiz)	3.0.0	Open Source platform for common enterprise processes. ERP, CRM, E-Commerce, SCM, MRP, CMMS/EAM, etc. Project recently hosted by Apache, implemented in Java and JavaScript http://incubator.apache.org/ofbiz/	Apache License 2.0	Prof / Community	✓✓✓	✱✱	★★★	◆	→
Openbravo	2.11	Fully functional web-based ERP solution implemented in Java http://www.openbravo.com/	OBPL (based on MPL 1.1)	Prof / Community	✓✓	★★★	★★	◆	↗
openCRX	1.9.1	CRM solution, based on the Model Driven Architecture (MDA) approach. Extensive technical and user documentation available. Implemented in Java and OpenMDX http://www.opencrx.org/	BSD	Prof (CRIXP) / Community	✓✓✓	✱	★★★	◆◆	↗
opentaps	0.9	CRM and ERP extensions for the OFBiz eCommerce Suite, implemented in Java http://www.opentaps.org	GPL / Commercial	Prof / Community	✓✓✓	✱✱	★★★	◆◆	→
OSCommerce	2.2	E-Commerce online shop causing limited setup and maintenance efforts. Implemented in PHP, uses Apache web server and MySQL http://www.oscommerce.com/	GPL	Community	✓✓✓	★★★	★★★	◆◆	→
OTRS	2.0.4	Open Ticket Request System, ticket and email management system for support people, sales, presales, IT helpdesk and other groups http://otrs.org/	GPL	Prof (OTRS) / Community	✓	✱✱	★	◆◆	↗

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
SQL-Ledger	2.6.19	Web based double entry accounting (ERP) system. Accounting data is stored in an SQL database server, for the display any text or GUI browser can be used. The entire system is linked through a chart of accounts. Implemented in Perl http://www.sql-ledger.org/	GPL	Prof / Community	✓✓✓	✱✱	★★★	◆◆	→
SugarCRM	4.5	Leading commercial open source CRM solution natively built on the LAMP technology stack. Powering some of the largest enterprises, SugarCRM's marketing automation, sales management, customer support, reporting, collaboration and mobile functionality delivers a human interaction framework that fits any company's needs. Over 800 companies rely on the commercial open source versions of Sugar Professional and Sugar Enterprise. Additionally, thousands of companies run Sugar Open Source making SugarCRM the most popular and successful commercial open source CRM solution in the world http://www.sugarcrm.com	MPL	Prof (SugarCRM) / Community	✓✓✓	✱✱✱	★★★	◆◆◆	↗
Tiny ERP	3.4.1	ERP system built with Python, connecting and improving business processes for sales, finance, supply chain and project management http://tinyerp.com/	GPL	Prof (Tiny ERP Partners) / Community	✓✓✓	✱✱✱	★★	◆	↗
webERP	3.0.4	ERP system with focus on finance and accounting. Implemented in PHP http://www.weberp.org	GPL 2	Prof / Community	✓✓✓	✱✱	★★★	◆	→

Analytics, Reporting and Data Warehousing

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
AWStats	6.5	Web statistics tool, generates advanced graphical web, streaming, ftp or mail server statistics http://awstats.sourceforge.net/	GPL	Community	✓✓✓	✱✱✱	★★	◆◆	→
BIRT	2.1	Java based Business Intelligence and Reporting Tool. Developed by Actuate http://www.eclipse.org/birt/	Eclipse	Prof (Actuate) / Community	✓✓✓	✱✱	★★★	◆◆	↗
Bizgres	0.9	Database and data warehouse server focused exclusively on supporting Business Intelligence applications. The commercial version is built to handle multi-terabyte volumes http://www.bizgres.org/	BSD	Prof (Greenplum) / Community	✓✓✓✓	✱✱	★★★★	◆◆	↗

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
JasperIntelli-gence	1.0.1	Business Intelligence platform including JasperReports and JasperServer; planned is the integration of Mondrian based Analysis and ETL to build a complete BI suite http://jasperforge.org/sf/projects/jasperintelligence	GPL	Prof (JasperSoft) / Community	✓✓	✱	★★	◆	→
JasperReports	1.2.5	Java based reporting library, well regarded project. Reports can be generated in a variety of formats, such as PDF, HTML, RTF and XML. http://jasperforge.org/sf/projects/jasperreports	LGPL	Prof (JasperSoft) / Community	✓✓✓	✱✱✱	★★★	◆◆	↗
JFreeReport	0.8.7	Java based reporting library, uses XML-based report definitions and is able to generate reports in several different formats. JFreeReport recently joined the Pentaho project http://www.jfree.org/jfreereport/	LGPL	Prof (Pentaho) / Community	✓✓✓	✱✱	★★	◆◆	↗
Mondrian	2.1	OLAP server implemented in Java. It enables the user to interactively analyze very large datasets stored in SQL databases without writing SQL http://mondrian.sourceforge.net/	LGPL or CPL	Prof (Pentaho) / Community	✓✓✓	✱✱✱	★★★	◆◆◆	↗
Pentaho	1.2	Complete Java-based Business Intelligence platform including reporting, analysis, data mining and workflow tools. Integrates a number of existing reporting and BI tools. The integration of Weka (Analytics) is planned http://www.pentaho.com	MPL 1.1	Prof (Pentaho) / Community	✓✓✓	✱✱✱	★★	◆◆	↗
Spago-BI	1.9	Business Intelligence platform assembling a number of existing modules in BI and based on Spago J2EE framework http://spagobi.objectweb.org/	LGPL	Community	✓✓✓	✱✱	★★	◆	→
Weka	3.4.8	Collection of machine learning algorithms for data mining tasks. The algorithms can either be applied directly to a dataset or called from your own Java code. Weka contains tools for data pre-processing, classification, regression, clustering, association rules, and visualization. WEKA recently joined the Pentaho project (Sep 2006). http://www.cs.waikato.ac.nz/ml/weka/	GPL	Prof (Pentaho) / Community	✓✓✓	✱✱	★★	◆	↗

Knowledge Management and eLearning

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Jena	2.4	Java framework for writing Semantic Web applications. Supports the Resource Description Framework (RDF), the Web Ontology Language (OWL) and the RDQ Query Language http://jena.sourceforge.net/	BSD	Community	✓✓	✹✹	★★	◆	↗
Moodle	1.6	Web-based course management system written in PHP. Allows to manage course participants, lectures and exercises. Plug-ins provide additional functionality such as forums, wikis, journals, surveys, workshops, chats, quizzes and much more http://www.moodle.org	GPL	Prof / Community	✓✓✓	✹✹✹✹	★★★★	◆◆◆	→
Protege	3.1.1	Java based platform for knowledge-based applications http://protege.stanford.edu/	MPL 1.1	Prof / Community	✓✓	✹✹	★★★	◆	↗
Sakai	2.2	Web based collaborative learning platform developed in Java, comparable to Moodle http://www.sakaiproject.org	Educational Community License (ECL)	Prof / Community	✓✓✓	✹✹✹	★★★★	◆◆	↗
Sesame	1.2.5	Architecture/platform for storage, inferencing and querying of RDF and RDF Schema. Supports the RQL, SeRQL and RDQL query languages http://www.openrdf.org/	LGPL	Prof / Community	✓✓	✹✹	★★	◆	↗
Xindice	1.0	Native XML database, implements XQuery and XUpdate http://xml.apache.org/xindice/	Apache License	Community	✓✓	✹✹	★	◆	→

Office and Client Applications

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Blender	2.42	Cross-platform 3D graphics creation suite http://www.blender.org/	GPL	Community	✓✓✓	✹✹✹✹	★★★	◆◆	→
DIA	0.95	Program to create diagrams of all kinds, for example UML class diagrams http://www.gnome.org/projects/dia/	GPL	Community	✓✓✓	✹✹✹	★★	◆	→
GanttProject	2.0.2	Project scheduling application written in Java, featuring scheduling, gantt charts, resource management, calendaring, import/export of MS Project, HTML, PDF, etc. http://ganttproject.sourceforge.net	GPL	Community	✓✓	✹✹	★★	◆◆	↗
GanttPV	0.6	Project scheduling software, based on Python http://www.pureviolet.net/ganttpv	GPL	Community	✓✓	✹	★	◆	↗

Product	Version	Description / URL	License	Support	Function-ality	Com-munity	Maturity	ER-Rating	Trend
Koffice	1.5.2	Integrated office suite, includes KWord, KSpread, KPresenter, KChart and more. As the suite is based on KDE libraries, the individual components can easily be integrated into other KDE applications http://www.koffice.org/	GPL	Community	✓✓	✱✱	★★	◆	↘
Open Workbench	1.1.4	Project scheduling and management tool, helps with the planning of tasks, their dependencies and required resources. Attention: Open Workbench is not completely open source http://www.openworkbench.org/	MPL 1.1	Prof / Community	✓✓✓	✱✱✱	★★★	◆◆	→
OpenOffice.org	2.0.3	Office suite, functionality comparable to Microsoft Office. Uses the standardized Open Document Format (ODF) and has a user interface similar to MS Office. The program is widely used and translated into numerous languages. Components of OpenOffice.org are used in many Open-Source projects to perform file transformation tasks. http://www.openoffice.org	LGPL	Prof / Community	✓✓✓	✱✱✱	★★★	◆◆◆	↗
Planner	0.14	Simple software for project planning, scheduling and tracking http://live.gnome.org/Planner	GPL	Community	✓✓	✱	★★	◆	→
Scribus	1.3.3.3	Desktop publishing software with the aim of producing a commercial grade output in PDF and Postscript. Works on Linux, MacOS X and Windows http://www.scribus.net/	GPL	Community	✓✓	✱✱✱	★★	◆	↗
The GIMP	2.2.12	Image manipulation program with strengths around heavy editing of images http://www.gimp.org/	GPL	Community	✓✓✓✓	✱✱✱✱	★★★	◆◆	→

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About Optaros

Optaros is an international consulting and systems integration firm that provides enterprises with online business solutions that leverage the next generation of internet technologies and approaches. Our solutions combine the power of online communities (commonly referred to as "Web 2.0"), rich user interfaces, and service oriented architectures to help our clients engage and interact with their customers.

Rather than offering a packaged or completely custom-built solution, Optaros offers a third alternative: assembling solutions using open source software and open standards. Our expertise in open source and our OptAM application assembly methodology helps us to achieve accelerated time to market, lower costs, and a closer fit to unique requirements.

Successful client relationships and project track record

Optaros is a trusted partner in delivering cost effective, open source solutions that reduce risk, accelerate time to market, and ensure system quality and scalability. Our clients rely on our deep technical skills and methods for successfully architecting and implementing complex, enterprise-class projects. The current client list includes: ABB, Biogen, CERN European Center for Nuclear Research, City of Zürich, Gtech, Helvetia-Patria / eCenter Solutions, ILO, Lincoln Electric System, Movielink, New York Times, RMG, Serono, State of Aargau, State of Geneva, Sunrise, Swiss Supreme Court and Swisscom, and many others.

Approach and Practices

- Optaros' Commitment to Open Source Software

  Since the company was founded, Optaros has been a recognized member of the open source ecosystem by helping organizations realize the benefits of open source software and contributing back to the community when appropriate.

- Creative Services and Rich User Interfaces

  Optaros has a team of creative experts who specialize in designing and developing interfaces that engage users, prompting longer visits and return visits.

- Service Oriented and Enterprise Architecture Practice

  Optaros can help you achieve a successful SOA through the development of a SOA blueprint, where we will help you identify the appropriate services and build a roadmap for implementation, define the appropriate organization process, and implement the SOA stack that is appropriate for you.

- Content Management Practice

  Optaros´ extensive experience in both open source and proprietary content management systems (CMS) can help your organization analyze its content management practices and choose the best open source CMS or collaboration solution for your needs. Open source CMS and/or components can be used to help you solve a variety of problems including web publishing, news sites, and collaborative workspaces.

Solutions

Optaros is applying its experience and knowledge in building business solutions. Combining our technology skills, strong methodologies and deep industry understanding, Optaros provides solutions in specific areas including:

- ♦ Media and publishing
- ♦ Direct consumer engagement
- ♦ E-commerce
- ♦ Online customer support
- ♦ Knowledge management and collaboration

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