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# Open Source

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## INTRODUCTION

**Open source** is a development method, offering accessibility to the source of a product. Some consider open source as possible design approaches, while some of them consider it a critical strategic element of their operations. The concept of open source came into reckoning with the increased use of internet, which provided access to communication paths, diverse production models, and interactive communities.

The open source model allows concurrent input of different agendas and differs from the more closed, centralized models of development. Open source is generally made available for public use in the form of OSS programs for the development of source codes of various software's.

### The Open Source Definition

Open source is a program in which the source code is available to the general public for use and/or modification from its original design free of cost.

Open source software are the ones whose licenses are not restrictive and it gives us the freedom to use the program for any purpose, modify it and distribute it for further use without having to pay for it.

### Propagation of the term

While the term applied originally only to the source code of software, it is now being applied to many other areas such as open source ecology so that any human can use them. However, it is often misapplied to other areas which have different and competing principles, which overlap only partially.

Opponents of the spread of the label "open source," argue that the requirements and restrictions ensure the continuation of the effort, and resist attempts to redefine the labels. They argue that most supporters of open source are actually supporters of much more equitable agreements and

support re-integration of derived works and that most contributors do not intend to release their work to others who can extend it, hide the extensions, patent those very extensions, and demand royalties or restrict the use of all other users—all while not violating the open source principles with respect to the initial code they acquired.

### Perens' principles

Under Perens' definition, open source describes a broad general type of software license that makes source code available to the general public with relaxed or non-existent copyright restrictions. It is an explicit “feature” of open source that it may put no restrictions on the use or distribution by any organization or user.

An Open Standard is more than just a specification. The principles behind the standard, and the practice of offering and operating the standard, are what make the standard Open.

### Principles

#### 1. Availability

Open Standards are available for all to read and implement.

#### 2. No Royalty

Open Standards are free for all to *implement*, with no royalty or fee. *Certification* of compliance by the standards organization may involve a fee.

#### 3. Maximize End-User Choice

Open Standards create a fair, competitive market for implementations of the standard. They do not lock the customer in to a particular vendor or group.

#### 4. No Discrimination

Open Standards and the organizations that administer them do not favor one implementer over another for any reason other than the technical standards compliance of a vendor's implementation. Certification organizations must provide a path for low and zero-cost implementations to be validated, but may also provide enhanced certification services.

#### 5. Extension or Subset

Implementations of Open Standards may be extended, or offered in subset form. However, certification organizations may decline to certify subset implementations, and may place requirements upon extensions.

### Non-software use

The principles of open source have been adapted for many other forms of user generated content and technology, including open source hardware.

Supporters of the open content movement advocate some restrictions of use, requirements to share changes, and attribution to other authors of the work.

This “culture” or ideology takes the view that the principles apply more generally to facilitate concurrent input of different agendas, approaches and priorities, in contrast with more centralized models of development such as those typically used in commercial companies.

### Widely-used open source products

Open source software (OSS) projects are built and maintained by network of volunteer programmers. Prime examples of open source products are the internet browser Mozilla Firefox, the internet address system Internet Protocol, and the Apache HTTP Server. Yet, one of the most successful programs is the Linux operating system, an open source Unix-like operating system.

### Open source software licenses

The Open Source Initiative (OSI) is a nonprofit organization that manages and promotes open source software. It determines whether or not a software license is in line with the OSI's Open Source Definition (OSD), which is based on 10 criteria.

In particular, to be approved by OSI, a license to software must require the free redistribution of that software, both the binary version and its complete source code. The license terms must also allow modifications and creation of derivative works that must be distributed under the same license terms as the original software.

According to these criteria, the OSI has approved 58 different license schemes so far. The most well known ones are the GNU General Public License (GPL) and the Lesser General Public License (LGPL), both of which are distributed by the Free Software Foundation (FSF).

The exposure to other components' licenses is an intrinsic factor around open source. Therefore it is necessary for developers to take into account the different license constraints at all phases of development. These constraints are summarized in Table 1.

Table 1: License constraints

Code based on:	Can be proprietary	Exposes IP to open source <sup>1</sup>	Becomes open source <sup>2</sup>	Contaminates larger works
Proprietary Code	Yes	No	No	No
“MPLed” Code	Yes	Yes	Modified files only	No
“LGPLed” Code	No	Yes	Yes	No
“GPLed” Code	No	Yes	Yes	Yes

**Table notes:**

1. IP added in such licensed code becomes open source
2. Code that includes such licensed code becomes open source

Now that clarifications have been given regarding constraints associated with GPL and LGPL, it is important to understand where these licenses can be found in a Linux based operating system.

**Pros and cons of open source software**

Software experts and researchers on open source software have identified several advantages and disadvantages. The main advantage for business is that open source is a good way for business to achieve greater penetration of the market. Companies that offer open source software are able to establish an industry standard and, thus, gain competitive advantage. It has also helped build developer loyalty as developers feel empowered and have a sense of ownership of the end product. Moreover less cost of marketing and logistical services are needed for OSS. It also helps companies to keep abreast of all technology developments. It is a good tool to promote a companies' image, including its commercial products. The OSS development approach has helped produce reliable, high quality software quickly and inexpensively. Besides, it offers the potential for a more flexible technology and quicker innovation. It is said to be more reliable since it typically has thousands of independent programmers testing and fixing bugs of the software. It is flexible because modular systems allow programmers to build custom interfaces, or add new abilities to it and it is innovative since open source programs are the product of collaboration among a large number of different programmers. The mix of divergent

perspectives, corporate objectives, and personal goals speeds up innovation. Moreover free software can be developed in accord with purely technical requirements. It does not require thinking about commercial pressure that often degrades the quality of the software. Commercial pressures make traditional software developers pay more attention to customers' requirements than to security requirements, since such features are somewhat invisible to the customer.

It is sometimes said that the open source development process may not be well defined and the stages in the development process, such as system testing and documentation may be ignored. However this is only true for small (mostly single programmer) projects. Larger, successful projects do define and enforce at least some rules as they need them to make the teamwork possible. In the most complex projects these rules may be as strict as reviewing even minor change by two independent developers.

## 6 Myths about Open Source

Well, we think it is time now to call the bluff on closed-source vendors, which have long argued that open source is a niche IT option, unable to support mission-critical applications, and that any update to the code is unregulated. It is time to tell the truth about today's open source software.

### A) "Open source is a niche IT sector"

Perhaps this was a fair comment when Linux and Apache were in their infancy, but now open source has established a firm foothold in the data centre, and this statement could not be further from the truth.

### B) "Open source cannot support mission-critical applications"

Many opponents to open source fuel the idea that open source is not reliable enough to run mission-critical applications, and that the quality of open-source products is poor. Yet open-source products are subjected to the same levels of performance, stress, functional, security and regression tests that closed source products are. In addition, an advantage of the open source development model is that it enables collaboration with the end-user very early in the development cycle, allowing bugs and design flaws to be identified early.

### C) "Open source companies do not own their intellectual property"

This is a misconception. The truth is that open source software is subject to the same copyright laws as closed-source software, but open source software suppliers choose to share their IP with others.

As a result, products are brought to market faster, open source software cannot be monopolized, no one organization can control the price for support and services for open source solutions, and the competition to provide support services at an attractive price-point makes it more cost-effective for customers.

### D) "Open source technology does not offer professional level support"

Today, open source providers offer professional support, and make it possible for the software to run mission-critical applications for major, global companies. Indeed, the business model for most open source software providers depends on customers buying support and services.

**E) “Open source is unregulated and anyone can contribute code”**

Some opponents of open source propagate the myth that anyone can access and change open-source code, which makes it unsecured and unreliable. However, the truth is that access to open source code is controlled, and any changes to the source must either address a problem, or enhance the product.

**F) “Open Source software is not secure”**

A common misunderstanding is that open source software is more vulnerable to exploitation than closed-source software, simply because code that is exposed is more likely to be hacked. Open source software is secure by design and uses standard software development methodologies and secures coding techniques. All source code changes are subjected to rigorous peer review before acceptance.

Because of this review, more proactive checking for vulnerabilities occurs, bringing to light any exploits in the code, and providing built-in security from the ground up.

**Summary**

The open-source market has evolved and grown in leaps and bounds. Open-source is a viable option for large enterprises and small businesses alike, and this realization poses a real threat to the bottom line of closed-source providers.

What the closed-source players lack is the recognition that the open source movement is a result of years of collaboration with the customer, involving them in every step of development, and delivering premier class support and services - a completely different business model to what they are accustomed to. So today, the open source providers like Ingres, who have over 30 years relational database heritage, are set to be the disruptive technology of the future.

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