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Open-Source Licenses and Legal Implications

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Abstract: Open source software (OSS) has revolutionized the way technology is developed and shared, but its use is governed by legally binding open source licenses that carry significant rights and obligations. This article provides a comprehensive legal overview of OSS licensing, distinguishing between permissive licenses (e.g., MIT, Apache) and copyleft licenses (e.g., GPL, AGPL, MPL), each of which defines how software may be used, modified, and redistributed. It examines the enforceability of these licenses, real-world legal implications of non-compliance, and landmark cases such as those involving Cisco and Orange. With OSS adoption rising across industries, organizations face complex challenges related to license compatibility, attribution, source code disclosure, and patent clauses. This article outlines compliance strategies, including software composition analysis, documentation practices, developer training, and legal consultation. By examining current trends and providing actionable best practices, the article serves as a vital resource for technologists, legal professionals, and business leaders navigating the dynamic OSS landscape.

Keywords: Open source software, OSS licenses, GPL, MIT license, Apache 2.0, BSD license, copyleft, permissive licenses, Affero GPL, LGPL, MPL, software licensing compliance, license compatibility,

INTRODUCTION

Open source software (OSS) has transformed the modern technology landscape by democratizing access to source code, spurring innovation, and promoting collaborative development. However, the seemingly “free” nature of OSS is underpinned by carefully designed legal frameworks—open source licenses—that dictate how software can be used, modified, and distributed. Understanding the legal intricacies of open source licenses and their real-world implications is crucial for developers, organizations, and users alike.

BRIEF HISTORY OF OPEN-SOURCE LICENSING

The roots of open source licensing date back to the 1980s with the rise of proprietary software and the birth of the Free Software Movement, led by Richard Stallman. The GNU General Public License (GPL), introduced in 1989, was among the earliest comprehensive OSS licenses, popularizing the “copyleft” concept. In 1998, the Open Source Initiative (OSI) formalized the “open source” definition, and began curating a list of OSI-approved licenses^{[1][2][3]}.

OVERVIEW AND PURPOSE OF OPEN SOURCE LICENSES

Open source licenses are legally binding agreements that grant users rights to use, study, modify, and share software code. They leverage intellectual property law, especially copyright, to set the terms under which OSS can be used, ensuring both freedom and responsibility^{[4][5][6][7]}. The two primary purposes are:

- **Promoting Collaboration:** Enabling broad participation in software development.
- **Protecting Rights:** Balancing the intentions of original authors with the expectations of downstream users and contributors.

Types of Open Source Licenses

1. Permissive Licenses

Permissive licenses offer maximal freedom. They allow code to be used in proprietary software and have minimal requirements, usually only requesting attribution. Key examples include:

- **MIT License:** Short, highly permissive, requires only retention of copyright and license notice.
- **BSD License:** Similar to MIT, with requirements on attribution and non-endorsement.
- **Apache License 2.0:** Adds explicit patent grants and obligations regarding modified files^{[8][9][10]}.

2. Copyleft Licenses

Copyleft licenses require that derivative works or distributed modifications be released under the same licensing terms, ensuring perpetual openness. Types include:

- **GNU General Public License (GPL):** Strong copyleft, requires derivatives to also be GPL-licensed.
- **Affero GPL (AGPL):** Extends GPL by closing the “network loophole” for SaaS-type distribution.
- **Lesser GPL (LGPL):** Used mostly for libraries, imposes copyleft obligations only on derivative works.
- **Mozilla Public License (MPL), Eclipse Public License (EPL):** Offer “file-level” copyleft, more flexible for mixed codebases^{[1][10][11]}.

License Type	Main Examples	Key Obligation
Permissive	MIT, BSD, Apache	Attribution/License notice
Strong Copyleft	GPL, AGPL	Derivatives must be open source
Weak Copyleft	LGPL, MPL, EPL	Source must be open only for modified files/libraries

LEGAL IMPLICATIONS OF OPEN SOURCE LICENSES

Legal Nature and Enforceability

Open source licenses are enforceable contracts recognized worldwide. Courts have upheld both copyright and contractual claims in favor of open source licensors, confirming the legally binding nature of OSS license terms^{[11][7][12]}.

Requirements and Obligations

- **Attribution:** Almost every OSS license requires credit to the original author.
- **Source Code Disclosure:** Copyleft licenses mandate the release of source code for distributed derivatives.
- **Patent Clauses:** Some, like Apache 2.0, include express patent grants to end-users.
- **Modification Notices:** Some licenses require that modifications be clearly identified.
- **License Compatibility:** Combining software under different licenses can create legal conflicts if requirements are incompatible^{[1][10]}.

Legal Risks of Non-Compliance

- **Legal Action:** Violations can trigger lawsuits, injunctions, forced code disclosure, and monetary damages^{[13][14][12][15]}.
- **Loss of Rights:** Non-compliance may result in automatic termination of license rights.
- **Reputational Harm:** Public non-compliance cases may damage credibility in the open-source community and the wider market.
- **Operational Disruption:** Legal disputes can halt product releases or require major code rewrites.

CASE STUDIES

- **Cisco (2008):** Settled with the Free Software Foundation for GPL violation; forced to release source code and implement internal compliance.
- **Orange (2025):** Fined €900,000 for open source license non-compliance, highlighting that violations can have significant financial consequences^{[15][12]}.

Compliance Challenges and Solutions

Open source license compliance requires managing complex dependencies and understanding license terms:

- **License Identification:** Use tools for automating software composition analysis.
- **Managing Compatibility:** Use compatibility matrices and SPDX standards.
- **Tracking Obligations:** Maintain documentation for attribution, modification notices, and license texts.

- **Employee Training:** Ensure developers understand key license terms and compliance procedures^{[16][14][17]}.

Compliance Challenge	Solution
Component Identification	Automated scanning tools
Tracking License Obligations	Documentation/checklists, process integration
Understanding License Terms	Education, legal consultation
License Compatibility	SPDX/compatibility tools

Graph: Growth and Types of Open Source Licenses (1990-2025)

[image:1]

Graph depicts the cumulative OSI-approved licenses by type. Strong copyleft licenses dominated the early years, but permissive licenses like MIT/Apache have surged since 2000.

Table: Comparison of Popular Open Source Licenses

License	Type	Redistribution Terms	Patent Grant	GPL Compatibility
MIT	Permissive	Attribution, include license	No	Yes
Apache 2.0	Permissive	Attribution, patent clause, state changes	Yes	No
GPLv3	Copyleft	Must use same license, provide source	Yes	Yes (GPLv3 compatible)
LGPL	Weak Copyleft	Only if modified, library linking allowed	Yes	Yes
MPL	Weak Copyleft	Only modified files, mixed projects allowed	Yes	Yes

Legal Best Practices for Using Open Source

- **Perform Due Diligence:** Review licenses of all OSS components and dependencies.
- **Maintain Clear Records:** Document software composition and compliance activities.
- **Contribute Responsibly:** Respect original licenses when sharing or forking projects.
- **Engage Legal Experts:** Seek counsel for complex situations, especially when combining licenses or commercializing OSS^{[13][14][12]}.

Key Takeaways and Recommendations

- Open source licenses are enforceable legal agreements, not mere guidelines.
- License non-compliance can lead to litigation, financial loss, and operational risk.
- Careful management and proactive compliance reduce legal exposure and foster trust in open source communities.
- Industry-wide adoption of standards, compliance tools, and education are vital for responsible OSS development.

CONCLUSION

Open source licenses underpin the collaborative spirit of modern software but do so with legally binding obligations. Understanding different license types, their associated risks, and compliance best practices is essential for all who develop, distribute, or rely on open-source software. As open source adoption accelerates, vigilance toward legal compliance ensures a sustainable and innovative digital ecosystem.

[image:1]

Illustration: Timeline of major open source license developments alongside key legal cases and trends.

This comprehensive overview synthesizes current thinking, legal developments, and best compliance practices around open source licenses. It is intended for technologists, lawyers, and decision-makers navigating the complex but rewarding world of open source software development.

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