

A Close Look at Open Source Program Offices: Structure, Roles and Responsibilities

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Open source initiatives provide companies with proven, successful models to collaborate with other companies, create new technologies, and support the development of new communities. Companies across many industries are creating Open Source Program Offices (OSPOs) and staffing them with highly skilled individuals to help them drive open source software leadership and gain a critical footprint in this external R&D ecosystem. In this paper, we take a close look at how enterprises structure their OSPOs and discuss their various open source responsibilities.



Disclaimer: This paper expresses the author's own views, and do not necessarily reflect those of his current or any of his previous employers.

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1. Introduction

The availability of enterprise grade open source software is changing the way organizations develop and deliver products. The combination of a transparent development community and access to public source code enables organizations to think differently about how they procure, implement, test, deploy, and maintain software. Open source software has created an ecosystem with a wealth of benefits for those involved. Companies across industries and domains are in a race to build up their open source operations under an Open Source Program Office (OSPO) to help them use and contribute to open source more efficiently and effectively.

Open source software allows shared development and lowers R&D cost by enabling companies to reap the benefit of billions of dollars of open source software, which they can harness to create better products and services. It also helps accelerate product development and enables a faster time to market by aligning business needs with the upstream open source projects. Companies do not get involved in open source projects because it is fun; they do it because it is a part of their business or product strategy. OSPO often manage and orchestrate that involvement.

The first step to establishing an OSPO is to realize that open source is key to mastering software engineering, given the reliance on open source software in almost every software product that exists today. Leading companies in a growing number of industries have established their position through software dominance, and open source is often a critical component of this dominance. The second step is an executive sponsor that will support the establishment and funding of an OSPO. The executive sponsor is an individual who can provide financial stability with a long-term commitment to improving and growing open source engineering in the organization. This person will also play a critical role in identifying a trusted open source leader who can create and grow the OSPO.

In the following sections, we explore two main themes: the first is the structure of an OSPO from an organizational perspective, and the second is the scope of responsibilities associated with an OSPO.

2. OSPO Structure

In this section, we explore some of the common OSPO structures. It is important to keep in mind that no two companies are the same. Therefore, there are no cookie-cutter style OSPO structures. Instead, many companies, including those with a long record of open source involvement, keep experimenting with different setups. Generally, their goal is to find the most suitable and efficient structure based upon their overall software strategy, open source aspirations, reliance on open source software in products, wanted position in open source, and other factors.

Example 1: OSPO within an R&D Center

One of the most common structures for an OSPO is to have it within an R&D organization. For instance, we use this model with the Open Source Group at Samsung Research America. In this example, the open source leader owns all open source engineering, strategy, and support functions, and reports directly to the President of R&D. The OSPO has a dedicated budget to cover headcount, travel, and sponsorship costs for events, membership dues for open source foundations, hardware and software expenses, and a variety of other expenses. This specific setup has worked very well for our team for more than 5 years now. Additionally, the VP of Open Source also reports to the EVP of Research, who is the executive and financial sponsor of the OSPO.

There are two main reasons to structure the OSPO under an R&D organization. The first is to isolate the group from product divisions, thereby preventing it from becoming an auxiliary development arm for those divisions. This setup allows the OSPO to maintain a certain level of independence, both financially and in terms of projects, so it can focus on open source technologies of the highest priority without favoritism to any product division. The second reason to structure an OSPO within R&D is to better support efforts that involve external parties, like other companies and universities, away from the daily product pressures.

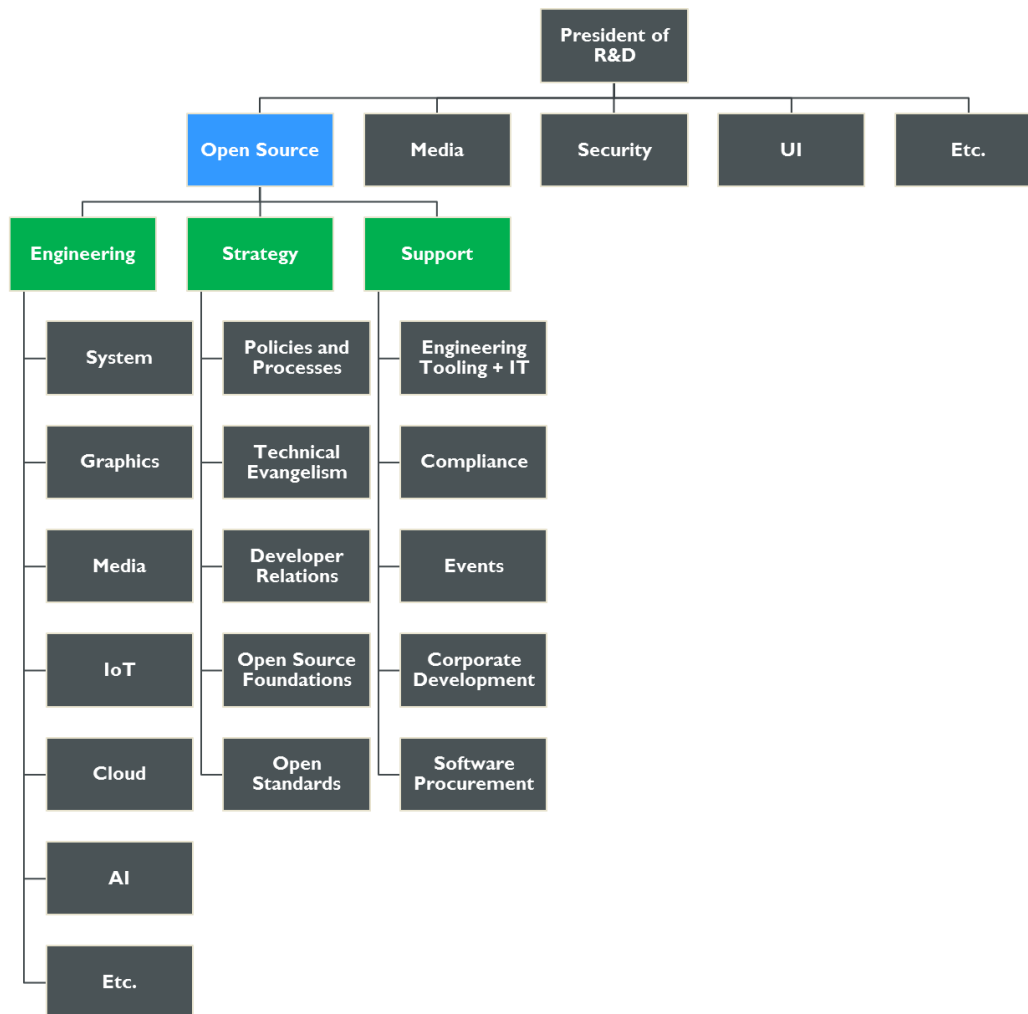


FIGURE 1: OSPO STRUCTURED WITHIN AN R&D ORGANIZATION

Example 2: Corporate-level OSPO with supporting division-level OSPOs

This model works best in large companies with multiple product divisions; it consists of a corporate-level OSPO, which coordinates the activity of multiple supporting OSPOs at the division-level. The corporate OSPO is responsible for setting company-wide policies and processes, deciding on strategy, working with open source foundations, driving major open source initiatives, and open source matters at the corporate level in general.

The supporting OSPOs are responsible for the executing open source strategy at the division-level, ensuring staff follow the corporate policies and processes, delivering training, and in many cases, responsible for upstream open source engineering. The corporate OSPO may not have any engineering resources with the exception of a Principle Engineer or a Senior Architect to provide technical expertise and leadership.

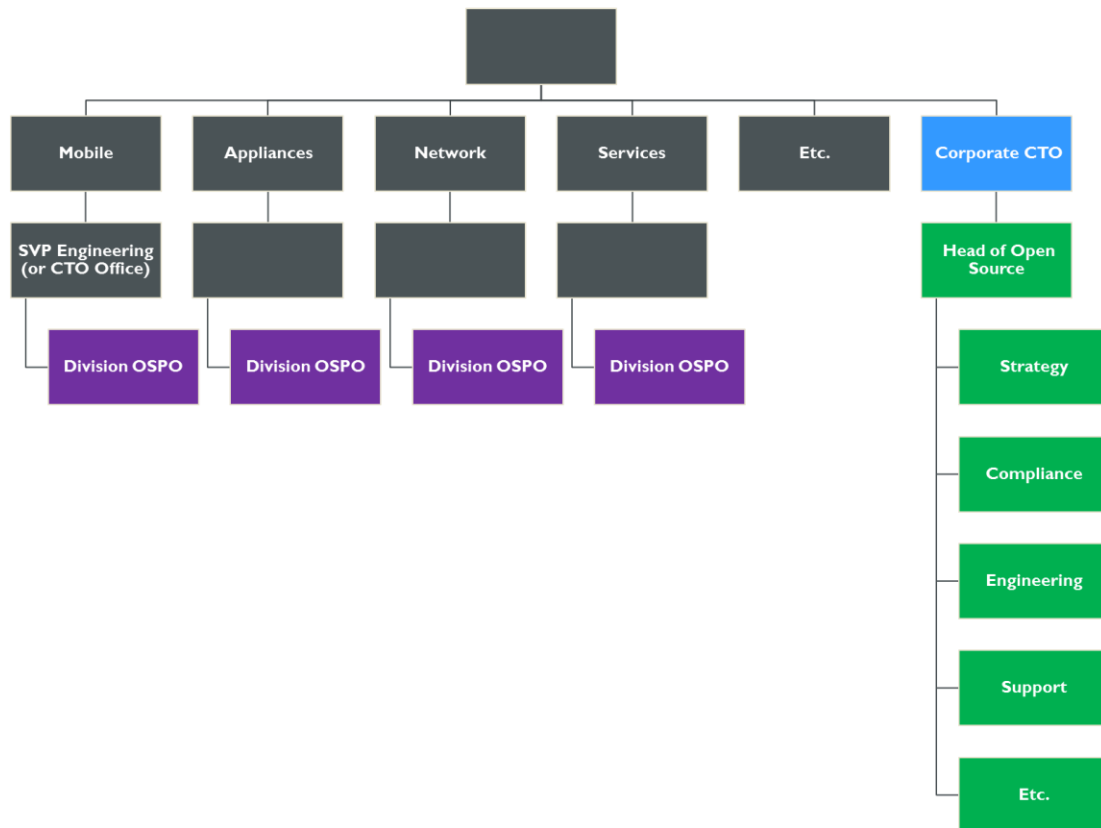


FIGURE 2: CORPORATE LEVEL OSPO WITH SUPPORTING DIVISION LEVEL OSPOs

Example 3: Virtual OSPO

The virtual OSPO is a common setup in which the company has a head of open source, typically within the engineering organization, without any dedicated staff. The head of open source works with a virtual OSPO staff that consist of individuals from different teams such as Legal, Engineering and Marketing, each of whom dedicate a certain percentage of their time to support open source activities.

A virtual OSPO does not typically have a dedicated budget; rather the budget for any open source spending would typically come from the Engineering organization or the CTO office.

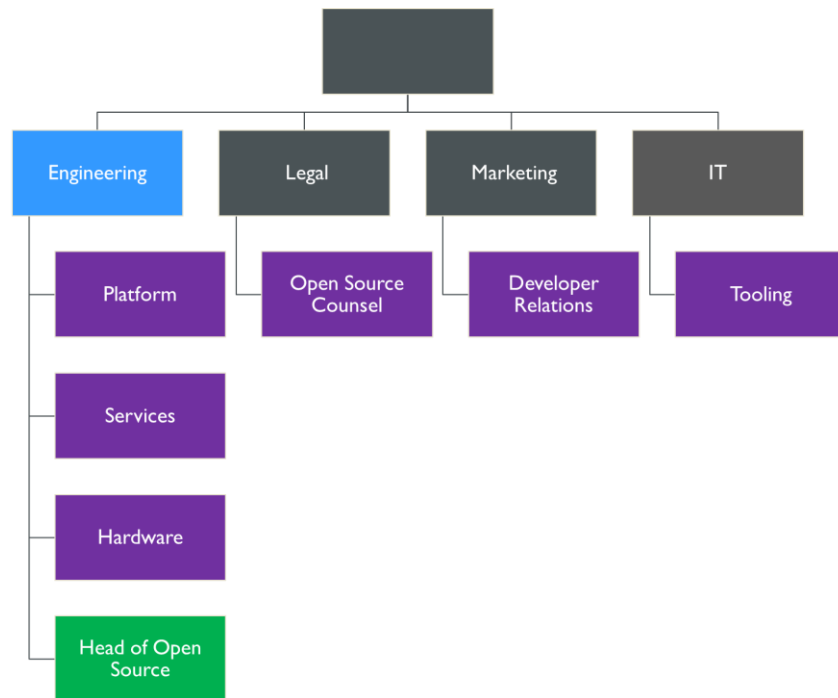


FIGURE 3: VIRTUAL OSPO WHERE ENGINEERING HEAD OF OPEN AND BORROWS RESOURCES FROM OTHER TEAMS

Example 4: No Official OSPO

The next example is an organization that does not have an official OSPO. This is typical in smaller companies and startups where different individuals fulfill the duties associated with an OSPO. This structure provides more flexibility for smaller organizations, but is difficult to scale as illustrated in Figure 4.

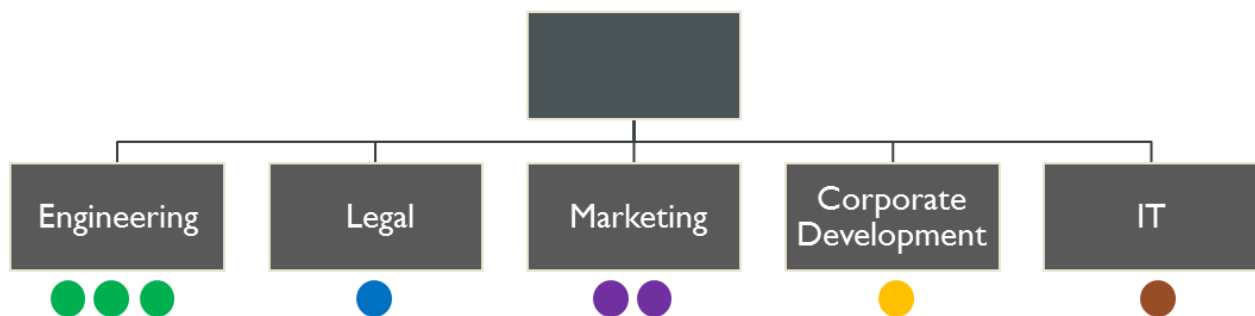


FIGURE 4: INDIVIDUALS (REPRESENTED BY COLORED CIRCLES) FULFILL THE DUTIES OF AN OSPO IN A SMALLER COMPANY

Example 5: OSPO as Part of the CTO Office or Engineering

In medium sized companies, it is common to house the OSPO either within the Engineering organization or under the CTO office. This OSPO structure typically has a dedicated budget managed by the executive sponsor (SVP of Engineering or the CTO). The OSPO may have its own budget, but all spending and any external commitments require the approval of the executive sponsor. The OSPO might have dedicated engineering resources that work on upstream projects depending on the company's needs. Figure 5 and Figure 6 illustrate these two scenarios.

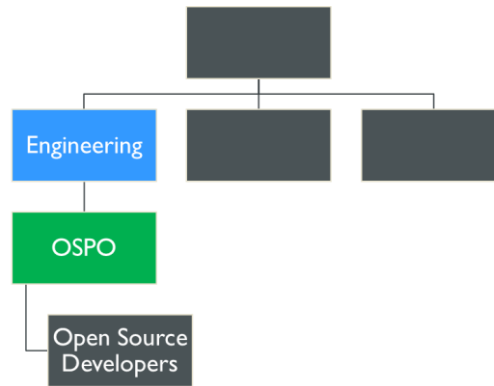


FIGURE 5: OSPO IS PART OF ENGINEERING, WITH DEDICATED OPEN SOURCE DEVELOPERS

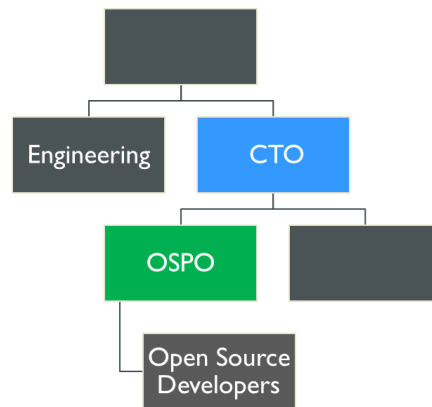


FIGURE 6: OSPO IS PART OF THE CTO OFFICE, WITH DEDICATED OPEN SOURCE DEVELOPERS

3. Staffing an OSPO

The staffing of an OSPO depends on many variables. However, several roles are required regardless of the specific structure of any given OSPO. These roles do not have to be distinct positions. In some cases, distinguished individuals with a very strong set of skills can fulfill more than one role.

Head of OSPO

The Head of the OSPO is sometimes called Director or Vice President of Open Source, depending upon the size of the organization and the open source team. The Head of Open Source is responsible for managing and executing company-wide open source strategy and business metrics to track the business and technical success of the program. Depending on the structure of the OSPO, the office leader can also be responsible for open source engineering resources, ensuring open source compliance, representing the company towards open source organizations, and participating in open standards efforts.

Software Architect

We believe it is mandatory for an OSPO to have a Senior Software Architect or a Principle Engineer to act as a high-level technical decision maker on topics related to open source software, from design choices to technical standards, such as platforms and coding standards.

Technical Evangelist

A technical evangelist is an individual with a strong technical background whose primary role is to evangelize the open source contributions and solutions developed by the open source group to the company's customers, prospects, and partners, and the open source community in general. They are responsible for building demonstrations at events, delivering technical presentations, creating documentation, and generally building support to a critical mass for a given technology.

Compliance Engineer

The compliance engineer supports the execution of the company's compliance policy and process, ensuring the company fulfills all license obligations for the open source software used in products and services. Some OSPOs have complete ownership of the open source compliance function; in these cases, the OSPO may need to host multiple compliance engineers.

Legal Counsel

It is rare for an OSPO to have a Legal Counsel among its staff. In most cases, having access to a legal counsel versed in open source licensing is sufficient for small and medium size companies.

4. OSPO Responsibilities

The OSPO assume different responsibilities that change over time. In the following sub-sections, we explore these responsibilities, and provide a bonus that is the author's favorite!

4.1 Develop and Execute Open Source Strategy

Figure 7 illustrates the four primary open source software strategies: consumption, participation, contribution and leadership. Each strategy requires you to be successful at the previous strategy, and how far your company goes up this ladder is entirely up to your own discretion.

These four strategies overlap as you transition from one position into another. Typically, the early stages are engineering-driven due to of engineers using open source components in product development. Initially, their participation in strategic projects may be limited to joining the conversation or making small contributions. With time, this usage can grow within the company and become part of the business strategy as it gains traction.

Some companies are able to achieve their goals simply as consumers and are content to stay at that level, while other companies have ambitions to attain certain leadership positions. There is a good chance you are already at one of these levels of the ladder, so it is important to identify both your current position in the ladder and your target position.

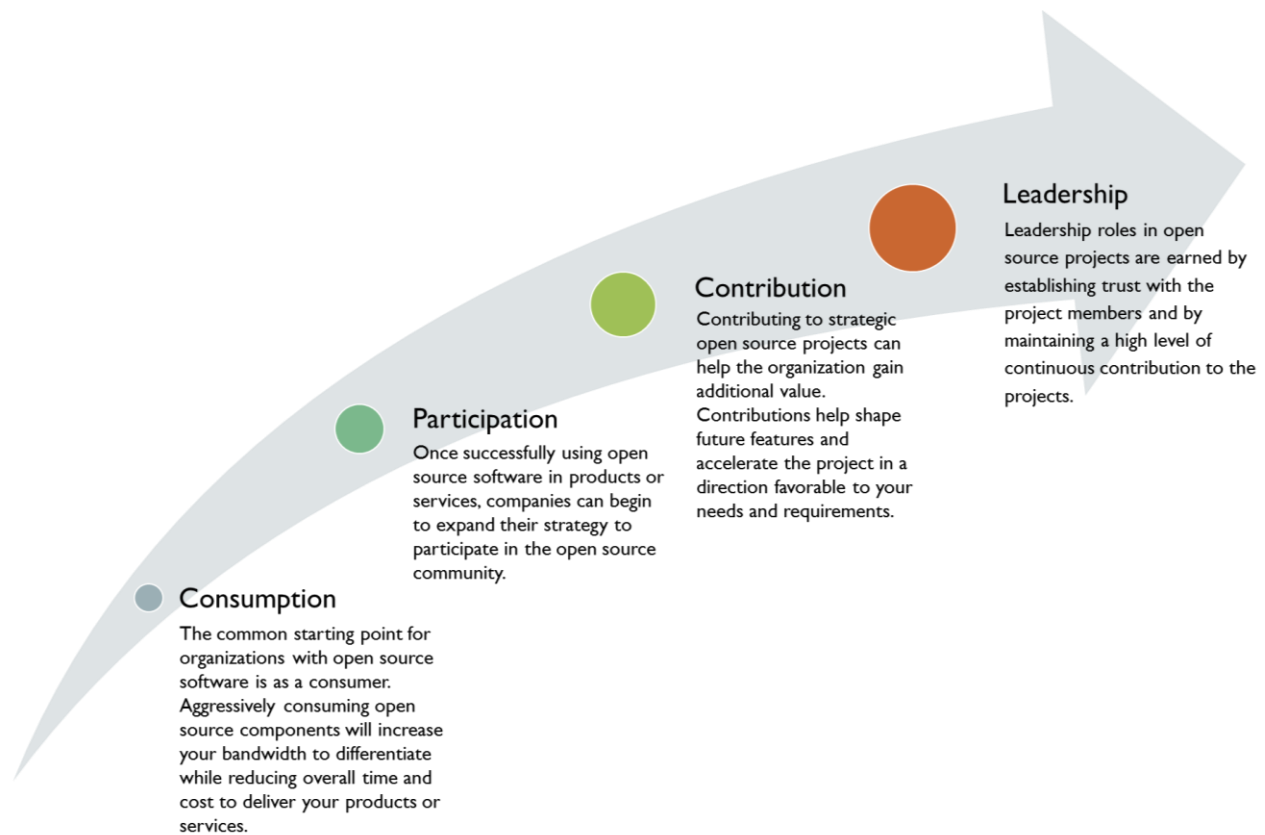


FIGURE 7: FOUR CORE STRATEGIES FOR ENTERPRISES — CONSUMER, PARTICIPANT, CONTRIBUTOR, AND LEADER

While there are numerous strategic objectives to choose from, some objectives are quite common among companies that use and develop open source software:

- Reduce development costs.
- Improve the quality and flexibility of products.
- Achieve a faster time to market for products.
- Increase engineering capacity through community engagement.
- Broaden and deepen developer community commitment to your open source efforts.

4.2 Oversee Open Source Compliance

Open source initiatives provide companies with a vehicle to accelerate innovation through collaboration with open source communities. However, there are important responsibilities that accompany this: all companies must ensure compliance to the obligations of open source licenses. Open source compliance is the process by which users, integrators, and software developers observe copyright notices and satisfy license obligations for their open source software components.

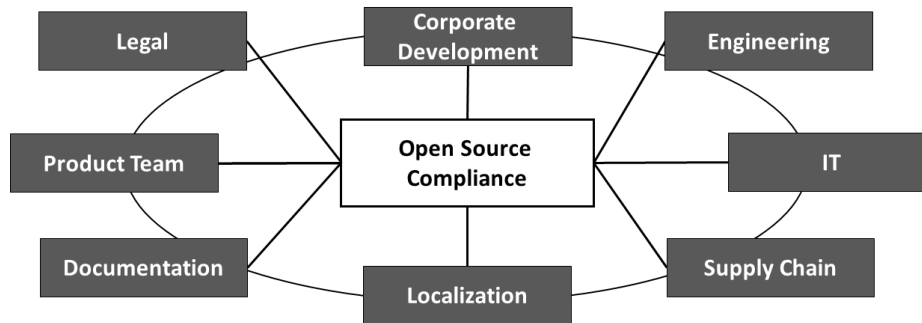


FIGURE 8: ENSURING OPEN SOURCE COMPLIANCE IS A CROSS FUNCTIONAL ACTIVITY

Open source compliance helps achieve four main objectives:

- Comply with open source licensing obligations.
- Facilitate effective use of open source in commercial products.
- Comply with third-party software supplier contractual obligations.
- Protect commercial product differentiation.

OSPOs are generally involved in open source compliance in two ways:

- They are responsible for implementing and running a complete end-to-open source compliance program, which includes policy, process, tools, automation, education, and the final fulfillment of obligations for open source software included in products, software, or services.
- Or,
- They are responsible for setting the company's general open source policies and the execution and enforcement of these policies are pushed into the various divisions across the company. For instance, ensuring open source compliance is a great example of this scenario where the OSPO focused on policies and processes, and dedicated teams on the product side are trusted to handle the actual implementation and execution of a compliance program.

The OSPO setup has a direct impact on the full scale of compliance responsibilities. Regardless of the specific role of an OSPO, it must have at least one individual who is very knowledgeable in open source licensing, compliance practices, and engineering.

The minimum set of individuals that represent the core compliance team include a legal representative, an engineering or product representative, and an open source compliance expert who is often a member of the OSPO. In the following table, we briefly present the primary roles of these individuals, who together form the core open source compliance team. For a very detailed discussion on the topic of open source compliance, please download the free e-book [“Open Source Compliance in the Enterprise”](#), published by The Linux Foundation. The e-book is a practical guide for organizations on how best to use open source code in products and services, and participate in open source communities, in a legal and responsible way.

Core Open Source Compliance Team	Primary Responsibilities
Legal representative This representation varies from a Legal counsel to a paralegal, depending on the task at hand.	<ul style="list-style-type: none"> • Review and approve usage and modification of, contributions to, and distribution of open source software. • Provide guidance on incoming and outgoing licenses of all software. • Contribute to creation of open source training. • Contribute to creation and improvement of compliance program. • Review and approve content of license compliance web portals. • Review and approve the list of obligations to fulfill for each software component included in a product.
Engineering and product team representative In some companies, there is no distinction between engineering and product teams.	<ul style="list-style-type: none"> • Follow compliance policies and processes. • Integrate compliance practices in the software development process. • Contribute to improving the compliance program. • Follow technical compliance guidelines. • Respond quickly to all compliance related questions. • Conduct design, architecture, and code reviews. • Prepare open source packages for distribution.
Compliance Expert Open source compliance officer is not necessary a dedicated resource. In most cases, the individual fulfills the role of Manager or Director of Open Source.	<ul style="list-style-type: none"> • Drive all compliance activities including the coordination and execution of source code scans and audits. • Coordinate distribution of open source packages as part of fulfillment of the open source license obligations. • Contribute to creating compliance training. • Contribute to improving the compliance program. • Contribute to the creation of new tools to facilitate the automation and discovery of open source software. • Sign-off on product release from an open source compliance perspective.

FIGURE 9: CORE COMPLIANCE TEAM - ROLES AND RESPONSIBILITIES

Collectively, these three roles (legal, engineering, compliance) are responsible for three main tasks:

- Ensuring mutual compliance with third-party software and open source software licenses.
- Facilitating effective usage of and contributions to open source software.
- Protecting proprietary intellectual property (and consequently product differentiation) by ensuring that open source license obligations do not propagate to proprietary or third party software.

4.3 Establish Open Source Policies and Processes

The policies and processes the OSPO needs to create depend on the company's current and target position in the strategy ladder. In the first stage (consumption), the OSPO needs to implement an open source infrastructure that can support the consumption and compliance aspects of open source software. Figure 10 illustrates the infrastructure that goes well beyond a simple policy to define the company's guidelines for using open source software. In fact, it extends to encompass a strategy that covers usage and compliance, incorporating compliance

checkpoints in the development process, establishing a team to supervise the proper usage of open source, providing necessary training, enabling tooling, and facilitating relationships with relevant open source organizations.

Strategy	Policy & Process	Development	Team	Education	Communication	Tools	Organizations
Compliance	Universal usage and compliance policy & process	Integrate compliance checkpoints in the development and QA process	Compliance teams (core and support)	Training on company policy	Internal messaging	Source code scanning	The Linux Foundation
Managing Inquiries	Distribution		Scoreboard and success metrics	Guidelines and best practices	External messaging	Linkage analysis	OpenChain
Legal (Risk tolerance)	Auditing	Integrate compliance tools with build systems		Training on open source licenses	Internal site (Educational)	Project management	SPDX
M&A, Corporate Development	Documentation			New employee orientation	External site (Obligation fulfillment)	Bill of Material	Open Compliance Program
Software Procurement	Notices			Checklist for product team		Automation for online forms and workflow	TODO Group
	Usage			Checklist for developers		IP evaluation tool	Software Freedom Law Center
	Obligation Fulfillment			Checklist for SW procurement		Inventory management	Open Source Initiative
	Company policy on open source licenses			Compliance mentorship			Free Software Foundation
	Company policy on mixing code			Professional formal training			Software Freedom Conservancy
				Invited speakers			
				Brown bag seminars			

FIGURE 10: NECESSARY INFRASTRUCTURE FOR OPEN SOURCE CONSUMPTION AND COMPLIANCE

4.4 Prioritize and Drive Open Source Upstream Development

One of the primary responsibilities of an OSPO is to improve the company's engagement with key open source projects used in products and services. The first step is to identify where the company relies on open source software by surveying all products and reviewing the software bill of materials. The next step is to prioritize the open source software that is already used and establish a contribution strategy. A focused approach like this allows the OSPO to show a return on investment across multiple products. In an enterprise setting where the OSPO and open source engineering is a cost center, the driving force should be to focus on open source projects that directly support product development.

Figure 11 illustrates additional elements the OSPO needs to implement to support open source contributions.

Contribution	Dedicated Group	Open Standards
Policy and process on community contributions	Establish open source group	Participate in relevant open standards
Guidelines and contribution training	Hire from open source projects	Consider open sourcing internal technology as reference implementation
Contribution Approval Team	Support open source foundations	
Increased participations in key open source projects	Host open source events	
	IT infra to support open source development	
	Establish/recognize open source career path	
	Support communities of projects you depend on	

FIGURE 11: NECESSARY INFRASTRUCTURE FOR OPEN SOURCE CONTRIBUTIONS

4.5 Work with Open Source Foundations

Open source foundations are a great resource to expand your impact within the open source ecosystem. The best place to start is with foundations that host initiatives relevant to your products or technical interests. Many companies find it worthwhile to get involved with well-known, established foundations such as the Linux Foundation, Mozilla Foundation, or Apache Foundation. If you are concerned primarily with the legal aspects, you can get involved with organizations such as the Software Freedom Law Center or the Open Invention Network. The primary goal is to identify opportunities within the ecosystem your company relies upon. The OSPO is the entity that drives these relationships based on the company's open source strategy and product priorities.

4.6 Track Performance Metrics

One of the more difficult tasks for an OSPO is to decide on key performance indicators or metrics that the office should track to incentivize engineers towards the desired behavior. The traditional metrics, often used in product organizations, do not apply in the context of open source development. Therefore, new metrics are required. Many OSPOs also use specialized tools to track their organization's contributions to open source projects, analyze the type of contributions from their company, identify contribution patterns, and provide recommendations to improve development impact.

4.7 Implement Innersource Practices

Innersource describes the process of taking the lessons learned from open source development methodology and applying them to internal projects. The goal is to incubate the same values in the enterprise as those that are common in the collaborative, open source development model.

A great method for OSPOs to expand the impact of open source is to foster internal collaboration using innersource practices. These internal collaborations present incredible visibility opportunities for the OSPO with other organizations or teams within the company. In addition, such interactions and collaborations position the staff of the OSPO as the internal experts on open source practices, opening new opportunities to collaborate with R&D and product teams.

4.8 Grow Open Source Talent Inside the Company

One of the core responsibilities of an OSPO is to grow the open source talent inside the company. To do so, OSPOs can run various programs that include workshops, training, mentoring and internal evangelizing. Education is an essential building block in an OSPO and it falls into two categories: technical training to expand open source technical knowledge, and compliance training to ensure that employees possess a good understanding of policies governing the use of open source software. The goal of providing this training is to raise awareness of open source policies and strategies to build a common understanding around the issues and facts of open source licensing, and the business and legal risks of incorporating open source software in products or software portfolios. Training also serves as a venue to publicize and promote compliance policies and processes within the organization, and to foster a culture of compliance.

OSPOs can also create mentoring programs where senior open source developers mentor junior developers, review their code commits, provide feedback on code before it is submitted to the upstream projects, and generally act as an advisor. The goal is to accelerate learning and support junior developers to become better and more influential in the open source projects.

4.9 Open Source Adviser

OSPOs act as advisors on all matters related to open source software, whether they are internal issues to the company or external issues relating to compliance, open source foundations, open standards, M&As and others. Because of the importance of this advisory role, senior OSPO staff also play a critical role in shaping their companies' software strategy, given how key is open source within that larger software ecosystem.

4.10 Manage Open Source IT Infrastructure

One of the OSPO's challenges is to ensure their organization provides an IT infrastructure that allows open source developers to communicate and work with the open source projects with minimal challenges. There are three primary domains of IT services that are common in open source development:

- Knowledge sharing: wikis, collaborative editing platforms, and public websites.
- Communication and problem solving: mailing lists, forums, and real-time chat.
- Code development and distribution: code repositories and bug tracking platforms.

Some or all of these tools will need to be available internally to properly support open source development. These open source practices typically require an IT infrastructure that is less restricted than a typical corporate environment. This situation might create a conflict with existing company-wide IT policies. If so, it is vital to resolve these conflicts and allow open source developers to use the tools that are familiar with them. It is worth noting that some OSPOs in large organizations even create and manage their own IT infrastructure independently from their corporate IT departments.

4.11 Eliminate Friction from Using or Contributing to Open Source

OSPOs face a number of challenges that we can group into four areas: culture, processes, tools and continuity. Figure 12 illustrates these various challenge areas. The general goal of an OSPO is to make it easy for their

company as a whole to use and contribute to open source software in support of their business goals. As such, facing and resolving these challenges and possibly others that are unique to your company will help you achieve that ultimate goal.

Culture	Processes	Tools	Continuity
Development model Collaboration Transparency Meritocracy Team formation Hiring practices Right success metrics	Governance Usage Compliance Contribution Approvals Operational model	IT infrastructure Development tools Metric tracking Knowledge sharing Code reuse	Projects Priorities Funding Executive support

FIGURE 12: CHALLENGES FACED BY OSPOs

4.12 Support Corporate Development Activities

OSPOs should be involved with open source due diligence (technical and compliance) as a part of corporate development. The two major scenarios are merger and acquisition transactions, and outsourced development.

Mergers and Acquisitions

If a company is considering a merger or is the target of an acquisition, the OSPO is a great source of expertise for open source technical and compliance due diligence. OSPOs can help their organization understand the open source code in use by the target company and its implications as part of the due diligence process.

Outsourced Development

The OSPO can also support corporate development when negotiating outsourced development of software, ensuring the proper compliance procedures are followed per the company's policies and processes.

4.13 Collaborate with Universities on Open Source Projects

Many universities are eager to work with companies that offer learning opportunities for their students, in addition to gaining real world development experience. Often, this relationship is also beneficial to the companies involved because it can be a great way to develop new talent in existing open source communities and to attract new development talent. This is particularly useful for projects that have a shortage of experienced developers, making them more difficult to hire from. You cannot hire all the smart people in the world, so you will need to find a way to tap into new knowledge and influence favorable outcomes in external projects, including academia.

4.14 Bonus: Say "No"

This is purely the author's favorite: saying "No." OSPOs act as a gating organization for all major contributions that leave the company, including new projects or contributing major proprietary code. Saying "No" is the responsibility of OSPO leaders when proposals to release open source projects or contribute significant bodies of code do not meet the proper requirements for success.

5. The TODO Group

The TODO Group is a collection of tech companies who collaborate on the policies, practices, and pragmatics of running an open source program office. Their collaboration is managed as a community project under the Linux

Foundation, and they are a resource to companies who are just starting to get their open source programs established. TODO group publishes guides for open source program offices, and its members frequently present at open source conferences on best practices. If you are looking to establish an OSPO in your company, or you lead an OSPO and looking to connect with peers at other organizations, please visit todogroup.org to learn more and reach out to info@todogroup.org to find out how to join.

6. Closing

OSPOs play a critical role in helping companies master open source software and drive companies into leadership positions in open technologies that are critical to their products. OSPOs can support their organizations in four key areas:

- Consumption - Establish internal infrastructure that enables proper open source practices and incorporates open source policies, processes, checklists, and training.
- Participation - Engage with the open source community on communication platforms and at events. Sponsor projects and organizations that are important to open source software you rely on for your products.
- Contribution - Hire or train developers that focus specifically on open source contributions and deploy the necessary tools to support internal open source engineering.
- Leadership - Increase engagement with open source communities, open standards bodies, and foundations. Launch new open source initiatives and increase your visibility in open source communities.

If you are a company that relies on open source software for your products or services and you do not have a formalized OSPO yet, please consider this paper as a call for action to do exactly that!

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Software Package Data eXchange® - Standardized format to communicate open source licenses.

<https://spdx.org/>

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<https://compliance.linuxfoundation.org/>

TODO Group – Companies collaborating on open source practices, tools and other ways to run successful open source projects and programs.

<http://todogroup.org/>

Linux Foundation Enterprise Guides

<https://www.linuxfoundation.org/resources/open-source-guides/>

Free e-book: Open Source Compliance in the Enterprise

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The author apologizes in advance for any typos or possible errors, and is grateful to receive corrections and suggestions for improvements via ibrahimatlinux.com/contact.html.

About the Author



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