THE LINUX FOUNDATION | Research

# ROI for Open Source Software Contribution

## Insight from the Open Source ROI Survey and Economic Model


Sam Boysel, *The Linux Foundation*
Adrienn Lawson, *The Linux Foundation*

**Forewords by**
Chris Aniszczyk, *CNCF, The Linux Foundation*
Masato Endo, *Toyota*
Hillarie Prestopine, *Intel*


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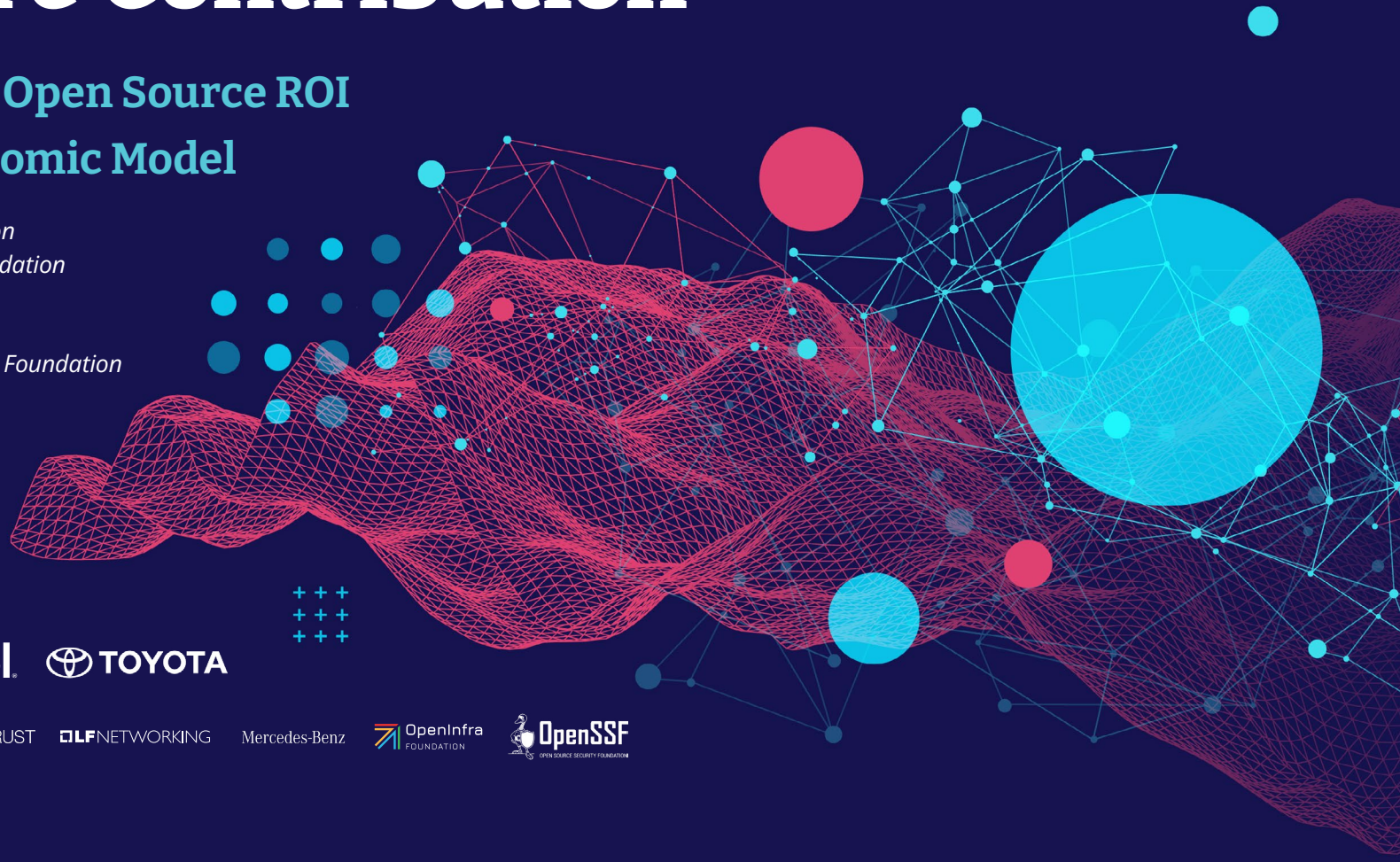

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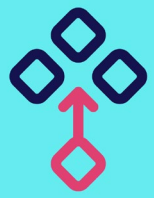
# ROI for Open Source Software Contribution

If OSS did not exist, organizations would most likely purchase proprietary alternatives (53%) or write the code themselves (51%), spending $3.5 million (USD) for required functionality.

Organizations are about as likely to make upstream contributions to projects (49%) as they are to maintain private forks (45%).



Nearly half (49%) of respondents develop workarounds internally for features or fixes not on OSS roadmaps, an activity that costs organizations an average of $670,000 annually.

Maintaining private forks costs organizations 5,160 labor hours ($258,000 USD) per release cycle on average. Costs scale with organization size.

Since first contributing, 66% of respondents report that upstream maintainers now respond more quickly to security issues and bug reports.

Contributors benefit from at least two months advance notice for important changes.

68% of respondents say OSS contribution makes hiring and retaining talent easier.

OSS contribution increases product development speeds by 10% on average.

Reported benefit-to-cost ratios from OSS contributions are 2-5x on average across engagement types.

Organizations enjoy benefits from foundation membership that are 5x greater than the investment. Key benefits are networking and marketing brand recognition.

2 out of 3 respondents report ROI has increased since they began contributing, with even more (70%) expecting continued increases in the future.

Economic model reveals $3.9 billion investment from top 100 contributors between 2018 and 2025 yields $23.2 billion in benefits (~6x ROI)

# Contents

# Forewords

I've had the privilege of working in open source over multiple decades in a variety of different organizations and have had success and challenges in convincing organizations that it is in their strategic benefit to not only consume open source but to strategically contribute. In today's world, open source is interwoven across all industries as a critical infrastructure layer that we all depend on and is the layer where most modern innovation is taking place. Especially in the context of AI and the recent rapid technological change, the distinction between an organization that merely consumes open source software and one that actively contributes marks the difference between an organization stagnating and innovating.

While easy free riding consumption offers short term savings, it inevitably incurs a maintenance tax over the long term. Organizations that rely on internal patches without upstreaming them create private forks leading to technical debt that hampers business innovation and growth. By contributing back, firms shift the burden of long term maintenance, ensuring their improvements are sustained by the ecosystem and freeing engineers to focus on business value.

Strategic contribution is also a primary driver of innovation and competitive advantage. Innovation is no longer a solo sport; by collaborating with peers and even competitors on open source projects, companies can subsidize their R&D with the added benefit of avoiding stagnation and vendor lock-in. Active stewardship in an open source community allows a company to steer roadmaps toward their own strategic goals and even build products faster. Ultimately, moving from passive consumption to active contribution transforms open source from a cost saving tool into a powerful engine for innovation, market leadership and institutional resilience.

I hope that the findings and economic model shared in this report help OSPO leaders and open source advocates in organizations show the business value of contributing to open source.

Cheers,

**Chris Aniszczyk,** *Cloud Native Computing Foundation and The Linux Foundation*

In the modern digital era, open source software (OSS) has transcended its origins as a collaborative experiment to become the bedrock of our global technological landscape. Today, nearly every major system—from cloud native infrastructures to the sophisticated software-defined vehicles (SDV) of the automotive industry—is built upon a foundation of open source. It is no longer an exaggeration to state that OSS is one of the most critical infrastructures supporting our society.

For any organization navigating this reality, there are two essential pillars of engagement: use and contribution. The "use" of OSS is now a standard industry practice. Organizations recognize the undeniable benefits of accessing high-quality, battle-tested software. To manage this reliance, many have already established robust frameworks for risk management, addressing license compliance and security vulnerabilities as part of their core operational excellence. In this phase, the value proposition is clear: efficiency and cost-avoidance.

However, the "contribution" pillar remains in a different stage of maturity. In my roles promoting open source initiatives within the global automotive industry and the Japanese ecosystem, I often observe a persistent misconception. The word "contribution" sometimes carries a connotation of an "extra-curricular activity"—something altruistic or philanthropic that sits outside the primary objectives of corporate profit and competitiveness.

As a leader of an OSPO and an evangelist for open source, I have always argued that upstream engagement is a strategic imperative. I have explained how contributing bug fixes and shaping the ecosystem's roadmap directly enhances an organization's agility and technical edge. Yet, the persistent challenge has been the lack of quantitative, numerical evidence to ground these arguments in the language of business. Providing a clear ROI to skeptical stakeholders has long been a source of difficulty for many of us in the field.

This report represents a landmark breakthrough in answering these fundamental questions. By providing rigorous data and a clear economic model, it transforms the concept of contribution from a "good deed" into a measurable strategic investment with a 2-5x return.

It is my sincere hope that the findings of this study will empower organizations across the globe to embrace contribution as a core business driver. By doing so, we can create a sustainable ecosystem where even more engineers are encouraged to actively participate in and truly enjoy the community activities that fuel the innovation of our future.

Best,

**Masato Endo,** *Toyota*

For decades, Intel has been deeply involved with open source software, and it has been rewarding to see how the conversation around open source contribution has evolved. What was once viewed as a community driven goodwill effort is now clearly recognized as a strategic business investment with meaningful impact.

That's why we were pleased to collaborate with The Linux Foundation on this research. It brings long needed clarity to something many of us have understood for years. Contributing to open source creates significant and compounding value. The findings echo our own experience. Open source contribution accelerates innovation, improves product quality, strengthens responsiveness, and enhances our ability to attract and retain top engineering talent.

When we contribute to projects such as the Linux kernel or emerging AI frameworks, we deepen our engagement with the technologies that drive our industry and ensure they evolve in ways that support the needs of our customers.

Open source is also most powerful when organizations across industries join forces. No single company can solve today's technology challenges alone. By building openly and collaboratively, we create solutions that are more robust, more secure, and more widely adopted. Intel's long standing partnerships within the open source ecosystem demonstrate how collective investment accelerates progress and drives standards that benefit the entire industry.

The research also validates a truth that is often overlooked. There is significant hidden cost in choosing not to contribute. Teams that maintain internal patches and private forks eventually accumulate technical debt that grows over time. In contrast, strategic upstream engagement distributes maintenance across the broader ecosystem and allows organizations to focus on higher value innovation.

Just as important, the study shows that the value of contribution increases with experience. As organizations build deeper relationships within project communities, contribution becomes more efficient and more impactful. This mirrors our own journey. Contribution is not a single action. It is an investment that becomes more valuable with sustained commitment.

For technology leaders evaluating their open source strategies, this research provides the clear business case that has long been missing. The message is simple. Contributing to open source is not only good citizenship. It is smart business. The organizations that understand this will be better positioned to shape the technologies that support their products, their industries, and the future.

**Hillarie Prestopine**
*Intel Vice President GPU and System Software Engineering*

# Executive summary

Organizations leveraging open source software (OSS) face a critical strategic question: should they merely consume OSS, or should they make contributions upstream? For years, the answer has been obscured by uncertainty about costs, benefits that are difficult to quantify, and a perception that contribution is primarily altruistic. In an effort to resolve these ambiguities, the Linux Foundation ran a survey in late 2025 to understand the investments, benefits, and ROI of contribution to open source software projects. The survey established clear, quantitative evidence that organizations benefit from these investments many times over: **contributing to open source delivers a 2-5x return on investment across all forms of engagement.**

The opportunity cost of not contributing is substantial. Nearly half of all organizations (45%) maintain private forks of OSS components – averaging 86 forks per organization and consuming over 5,000 labor hours per release cycle. These private forks represent technical debt that compounds over time, as organizations trade short-term expediency for long-term maintenance burdens. Meanwhile, misalignment between open source project roadmaps and specific downstream functionality requirements costs organizations an average of $670,000 annually in workarounds alone. It's worth noting that these cost burdens scale with the size of the organization: over half (54%) of large organizations report frequent production delays from roadmap misalignments. While it's true that some custom integration costs are inevitable, the data suggest that increased upstream engagement through contribution can significantly mitigate these hidden costs.

Open source contribution is a strategic investment organizations make in their own productivity. Organizations that contribute to open source projects report faster security responses, successful roadmap influence, and at least two months of advance notice for critical changes. These benefits translate into measurable competitive advantages: 10% faster product development on average, easier talent acquisition and retention, and the ability to shape the future of mission-critical infrastructure. Rather than reacting to upstream changes, contributors are active participants in determining the trajectory of the technologies their businesses depend on.

Returns to contribution vary by type, but all show positive ROI. Code contribution delivers a 3.6x benefit-to-cost ratio, community contribution 3.2x, and financial contribution 2.4x. Foundation membership stands out with a 4.8x ratio, matching the ROI of OSS usage itself while requiring far less internal development capacity than other forms of contribution. This makes foundation membership especially valuable, offering a high-efficiency complement to labor-intensive code contribution.

Perhaps most compelling, contribution ROI improves over time. Organizations report becoming more efficient at contributing as they gain experience, and the majority see their ROI increasing year over year with expectations for continued growth. This creates a virtuous cycle: experience creates expertise, expertise drives efficiency, and efficiency amplifies returns.

To complement the survey findings, we also explore the results of a newly developed quantitative model of contribution ROI. The model is based on economic theory and uses granular data on contribution behavior to infer ROI at the organization-project level. The model estimates that the top 100 contributing organizations cumulatively enjoy benefits worth $23.2 billion (USD) from $3.9 billion invested in key projects between 2018 and 2025.

The evidence is clear: OSS contribution is a strategic investment in organizational capacity, competitive positioning, and the digital infrastructure that modern businesses depend on. Organizations currently limiting themselves to consumption are forgoing significant value.

# Introduction

Open source software (OSS) has clearly been established as a successful development paradigm and source of innovative digital public goods. A user of OSS can estimate the value it provides by comparing the cost of the next best alternative: purchasing a proprietary solution or developing a solution in-house.

On the other hand, quantifying the return on investment from the perspective of a downstream user contributing back to the upstream project can be much more challenging. Contribution takes costly time and resources, and the benefits of contribution are often diffuse and difficult to quantify. This gives rise to important questions for downstream users of open source software: Why should our organization contribute to OSS at all? **What is the return on investment (ROI) from OSS contribution?**[1]

There are two core objectives of this study. First, we aim to identify important mechanisms and challenges that underpin ROI from OSS contribution. Second, our analysis leverages both survey responses and data on contribution patterns to establish a more credible and precise quantitative understanding of contribution ROI. Our analysis reveals tangible benefits of OSS contribution that can be appreciated by a wide range of stakeholders, providing crucial data points that make the rationale for OSS contribution more compelling. The study is organized as follows:

## Types of open source contribution:

For the purposes of this research, we classify open source contribution into three broad categories.

- **Code contribution** involves dedicating developer time and technical resources to project codebases, such as writing code, fixing bugs, and implementing features.
- **Community contributions** encompass investing staff time and expertise in non-technical activities that support project ecosystems, including documentation, user support, advocacy, and legal assistance.
- **Direct financial contributions** are monetary investments in open source, such as donations, foundation memberships, sponsorships, and funding for infrastructure or security audits

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[1]**Note on terminology:** Throughout this document, we use the terms benefit-to-cost Ratio (BCR) and return on investment (ROI) somewhat interchangeably. We justify this choice since the measures are perfectly correlated: BCR is defined as total value divided by total cost (BCR = value / cost), ROI is defined as profit divided by cost (ROI = (value - cost) / cost), and the relationship between them is ROI = BCR - 1.

# Open source contribution is an investment, not a charitable expense.

Too often, contribution is framed as altruism, prompting the question of why organizations should allocate scarce resources to software that is freely available. This framing is fundamentally flawed. Treating contribution solely as a cost overlooks its measurable returns, including lower maintenance and R&D expenses for critical digital infrastructure, stronger talent attraction and retention, and faster, more efficient product development. On top of this, our study will demonstrate that there is actually a cost of not contributing. The inefficiencies of "going it alone" and burdens of private fork maintenance can result in technical debt that must factor into the organization's contribution decision.

1. We first establish how organizations typically engage with OSS. Beyond simply understanding what projects organizations use and contribute to, we also explore alternative forms of engagement, such as maintaining private forks. Unpacking the reasons why organizations choose to maintain open components privately rather than contributing upstream sheds light on potential friction points that can limit the contribution ROI.

2. Second, we document the tangible benefits that organizations derive from contributing to open source software. Contribution clearly makes organizations more productive and efficient. We highlight the particularly strong ROI that organizations report from foundation membership and contribution.

3. We present evidence that the benefits of contribution can be many times greater than the costs. This holds across different forms of contribution. We also document a clear growth trajectory for contribution ROI over time.

4. Finally, we use a quantitative economic model of contribution ROI to expand on the findings of the survey. We estimate the aggregate contribution ROI for the top contributing organizations and conduct sensitivity analysis.

5. In light of the survey findings, we conclude with recommendations for organizations to maximize contribution ROI from their OSS engagements.

# Misalignment between upstream and downstream creates hidden costs

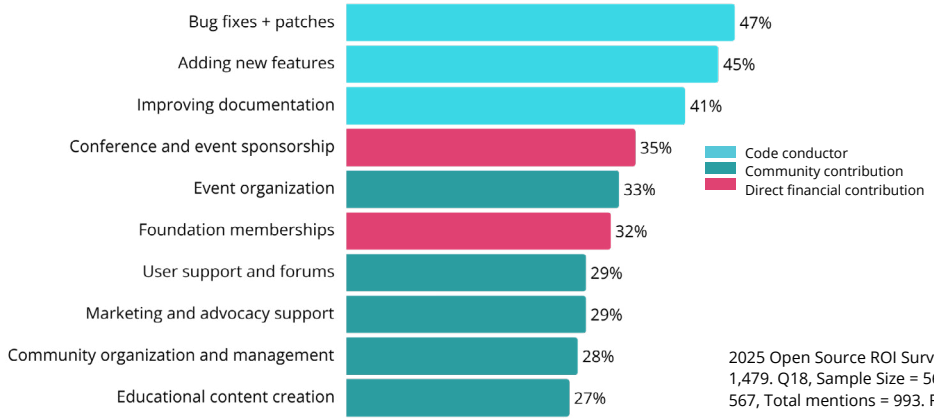
## Gaps between OSS use and contribution by organization suggest friction points

To ground our analysis of open source ROI, we first establish how organizations typically engage with OSS. In addition to identifying the types of projects organizations depend upon and support, we examine the nature of their contribution patterns and alternative engagement methods, such as maintaining private forks. Unpacking the reasons why organizations choose to maintain open components privately rather than contributing upstream sheds light on potential friction points that can limit contribution ROI.

OSS contribution comes in many forms. When they do contribute, organizations are most likely to make code contributions upstream (Figure 1). Organizations typically contribute by submitting bug fixes or patches (47%), developing new features (45%), or improving existing documentation (41%). But community and direct financial contribution are not far behind. Organizations engage in community contribution by providing support to open source events (33%), user support in forums (29%), project marketing or advocacy (29%), managing or organizing project communities (28%), and creating educational material (27%). The most common ways that organizations provide financial support to open source projects is by directly sponsoring open source events (35%) or joining open source foundations (32%). It becomes clear that in many cases these different contribution types complement one another. In other cases specific types of contribution are not applicable or possible (e.g. company policy, regulation, financial constraints, objective alignment). It's therefore important to consider all types of OSS contributions when exploring investment and value.

**FIGURE 1**

### MOST COMMON OPEN SOURCE CONTRIBUTION TYPES




2025 Open Source ROI Survey, Q17, Sample Size = 567, Total mentions = 1,479. Q18, Sample Size = 567, Total mentions = 1,300. Q19, Sample Size = 567, Total mentions = 993. Full data in Appendix Table A2.

The fact that many organizations continue to contribute to OSS suggests clear value - but roadblocks exist. A majority (72%) of organizations in our survey sample make contributions to open source, but not always as upstream code contributions (See Appendix Table A1). Focusing only on contributions made to project codebases misses out on non-trivial investment of resources in community contribution, including developing documentation, providing feedback or QA testing, participation in advisory boards or special interest groups (SIGs), translation or localization services, and providing legal or licensing support.

It is also worth noting that organizations are just as likely to maintain private forks of open source components as they are to contribute changes back to the upstream project (Figure 2). This roughly equal balance of open source engagement strategies suggests that objective misalignments or collaboration frictions can give rise to large gaps between use and contribution rates for core digital infrastructure (Figure 3). Our survey indicates that the largest gaps between use and contribution occur in the most critical open technology stacks: cloud infrastructure and containers, operating systems, databases, and programming languages. While contribution isn't mandatory for all users, it aligns upstream and downstream interests by transforming passive consumers into proactive advocates for their organization's needs.

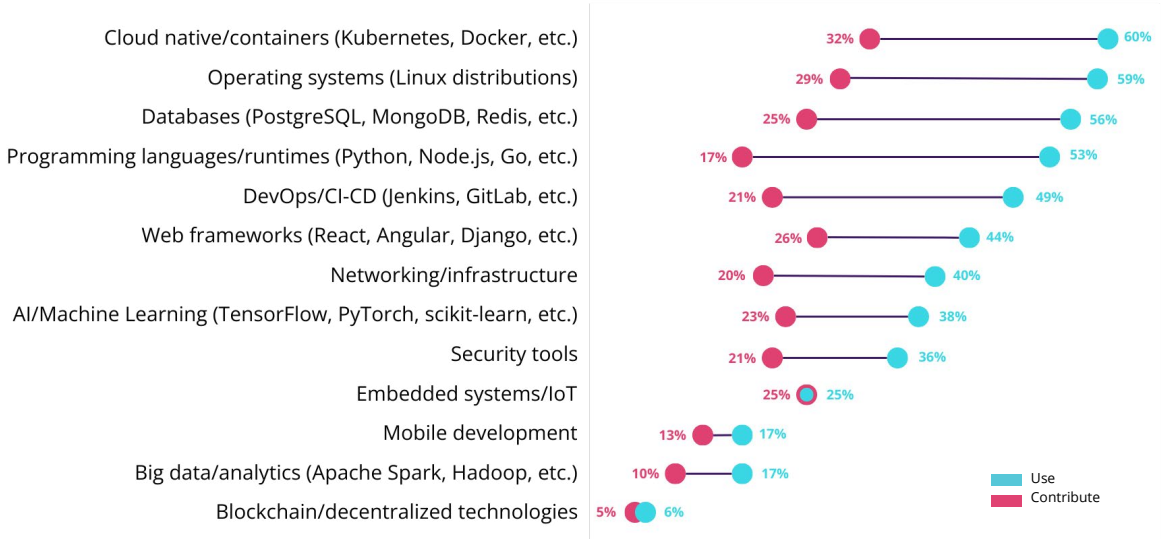
## FIGURE 2

## PRIMARY FORMS OF ENGAGEMENT WITH OPEN SOURCE SOFTWARE COMPONENTS


2025 Open Source ROI Survey, Q16, Sample Size = 567, Total mentions = 1,241. "Don't know or not sure" responses excluded. Full data in Appendix Table A3.

## FIGURE 3

## LARGE GAPS EXIST BETWEEN USE AND CONTRIBUTION RATES FOR CRITICAL OSS TECHNOLOGY STACKS




2025 Open Source ROI Survey, Q20, Sample Size = 567, Total mentions = 2,847. Q21, Sample Size = 472, Total mentions = 1,319. "Don't know or not sure" responses excluded. Full data in Appendix Table A4

**FROM THE EXPERTS**

**DR. WOLFGANG GEHRING**
FOSS Ambassador / OSPO Lead, Mercedes-Benz Tech Innovation

**DR. CHRISTIAN WEGE**
Free & Open Source Software Governance, Mercedes-Benz Group AG

# Mercedes-Benz

At Mercedes-Benz, we have made "Embrace FOSS" a strategic priority, evident in our FOSS Manifesto published in 2018. In daily business operations, however, effectively demonstrating the tangible value of these efforts, particularly for upstream contributions, remains significant to enhance our impact and recognition.
This is why we support this study which provides invaluable, actionable guidance and demonstrates a tangible ROI for Open Source Software contributions. This is crucial for sustainable engagement and maximizing our collective impact. We trust this research will empower companies to make smarter, more informed decisions - thereby driving innovation and collaboration across the entire ecosystem.

## Divergence between organization needs and project roadmaps are costly

Organizations frequently encounter situations where needed features or fixes are not on OSS project roadmaps. These misalignments create costly inefficiencies as organizations must either wait for upstream changes that may never come or develop internal workarounds to bridge the gap. Organizations benefit substantially when needed functionality coincides with project roadmaps - deduplicating effort, diffusing development costs, and crowdsourcing innovation. But these gains are understandably diminished when project and organization needs diverge.

In Figure 4, we summarize key survey insights surrounding the extent to which misalignment between upstream and downstream impact organizations that depend heavily on OSS. 36% of respondents report that missing features or fixes in open source components cause frequent production delays. This share increases to 54% when focusing on large (more than 5,000 employees) organizations. To account for these obstacles, 49% of organizations develop workarounds for functionality or fixes that are not on the upstream project's roadmap.

These workarounds cost the average organization $670,000 (USD) annually and scale with the size of the organization: $146,000 for smaller organizations, $566,000 for medium-sized organizations, and $1.06 million for large organizations (See Appendix Table A9). Given the scope and scale of the misalignment challenges between upstream projects and downstream users, a clear case can be made for organizations to allocate precious internal resources to become a contributing stakeholder in upstream projects.

FIGURE 4

## MISALIGNMENT BETWEEN UPSTREAM AND DOWNSTREAM CREATES COST BURDENS

**36%** of respondents report that missing features or fixes from OSS projects frequently cause production delays.

**54%** of large organizations find that missing features or fixes from OSS projects frequently cause production delays.

**49%** of respondents develop workarounds internally for features or fixes not on OSS roadmaps.

**$670K** spent each year by the average organization for workarounds for features or fixes not on OSS roadmaps.

2025 Open Source ROI Survey, Q35, Sample Size = 267. Q35 segmented by Q13, Sample Size = 267. Q37, Sample Size = 267, Total mentions = 551. Q38, Sample Size = 267. "Don't know or not sure" responses excluded. Full data in Appendix Tables A5, A6, A7, and A8.

# Private fork maintenance and the total cost of ownership:

Total cost of ownership (TCO) acknowledges that while the "sticker price" of open source software may be zero, adoption requires ongoing expenses of maintenance, customization, and integration. When organizations need modifications to an open source project, they face a critical strategic decision: contribute changes upstream to the project or maintain a private fork. While private forks offer immediate control and customization, they add a perpetual maintenance burden to open source TCO. Organizations must continuously reconcile their modifications with upstream changes, effectively maintaining their own divergent codebase in isolation. Contributing upstream, by contrast, distributes maintenance costs across the broader community, reducing long-term technical debt and freeing internal resources for the contributing organization. An upstream contribution strategy transforms what would be an ongoing private expense into a shared investment, helping to relieve TCO for the downstream user by redistributing maintenance responsibilities upstream.

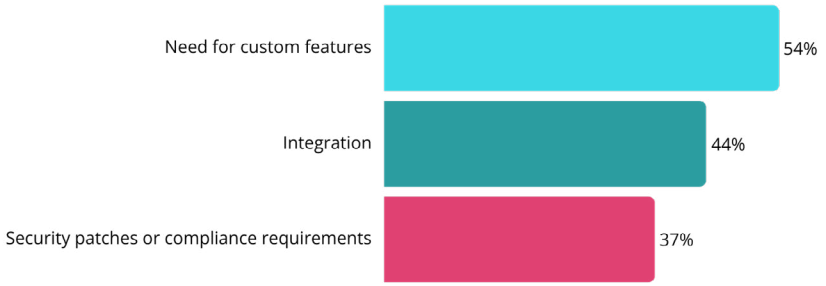
## Private forks as technical debt

Maintaining private forks is clearly a common strategy for organizations to bridge gaps between their needs and OSS project roadmaps. However, sustaining private forks over time creates significant maintenance burdens that evolve into technical debt. Our survey analysis generates several insights into the nature and scale of these hidden costs.

As shown in Figure 2, downstream users rely equally on two strategies: contributing upstream and maintaining private forks. In Figure 5, we summarize the key reasons cited by organizations for maintaining private forks: the need for custom features (54%), integration with internal operations (44%), and adding security patches or compliance requirements (37%). While many integration costs can simply be seen as a necessary cost incurred to use open source software, there are likely cases where the upstream projects would benefit from contributions in the form of new features or security patches.

FIGURE 5

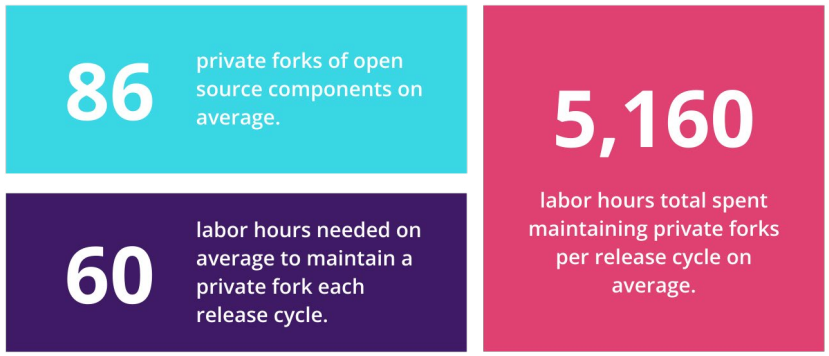
## PRIMARY REASONS FOR MAINTAINING PRIVATE FORKS




2025 Open Source ROI Survey, Q31, Sample Size = 238, Total Mentions = 276. "Don't know or not sure" responses excluded. Full data in Appendix Table A10.

FIGURE 6

## THE TRUE LABOR COSTS OF MAINTAINING PRIVATE FORKS




2025 Open Source ROI Survey, Q32, Sample Size = 238. Q36, Sample Size = 238. "Don't know or not sure" responses excluded. Full data in Appendix Tables A11 and A12.

A key insight from the survey is that maintaining private forks represents a form of technical debt. The scale of these maintenance burdens described by survey respondents is summarized in Figure 6. On average, an organization maintains 86 private forks of open source components. Each of these components requires 60 labor hours for maintenance and integration per release cycle. This implies that the average organization must dedicate 5,160 labor hours ($258,000 USD)[2] to maintaining private forks every release cycle.

The cost of maintaining private forks scales with the size of the organization. As much of this heterogeneity is masked by the pooled averages that include organizations of any size in Figure 6, we segment the labor costs of private fork maintenance by organization size in Table 1. While small organizations (1 to 249 employees) require only 147 labor hours to maintain private forks each release cycle, this figure balloons to 11,152 hours for large organizations (more than 5,000 employees).

TABLE 1

## SEGMENTATION OF PRIVATE FORK MAINTENANCE BY ORGANIZATION SIZE

| ORGANIZATION SIZE | NUMBER OF EMPLOYEES | AVERAGE NUMBER OF PRIVATE FORKS | AVERAGE NUMBER OF MAINTENANCE LABOR HOURS REQUIRED PER FORK EACH RELEASE CYCLE | TOTAL LABOR HOURS SPENT MAINTAINING PRIVATE FORKS EACH RELEASE CYCLE |
|---|---|---|---|---|
| Small | 1 to 249 | 7 | 21 | 147 |
| Medium | 250 to 4,999 | 89 | 56 | 4,984 |
| Large | More than 5,000 | 136 | 82 | 11,152 |

2025 Open Source ROI Survey, Q32 segmented by Q13, Sample Size = 238. Q36 segmented by Q13, Sample Size = 238. "Don't know or not sure" responses excluded. Full data in Appendix Tables A13 and A14.

A reality of the decentralized open source paradigm is that upstream project objectives will not always perfectly align with all downstream use cases. Therefore, some share of misalignment frictions and integration costs of OSS components may simply be unavoidable. However, sustaining private forks over time trades short-term expediency for long-term maintenance burdens. As a potential strategy to mitigate additional technical debt brought on by private forking, organizations should diffuse these burdens by making contributions upstream or developing public soft forks alongside peers with similar needs whenever possible.

[2] This cost is the product of (a) the average number of labor hours required to maintain private forks per release cycle from survey responses and (a) an hourly wage of $50 USD, consistent with the median global response by software developers in the Stack Overflow annual developer survey. Source: **https://survey.stackoverflow.co/2025/work#salary-comp-total**

FROM THE EXPERTS

**GABRIELE COLUMBRO**
Executive Director, FINOS

FINOS

*To maximize open source ROI, the financial services industry must accelerate its shift from widespread adoption to widespread contribution*

Financial services firms overwhelmingly agree that open source delivers business value and is valuable not just to the future of their own organizations but to the entire industry. Yet nearly half cite the lack of a clear ROI as a barrier to contributing upstream. As a result, many rely on adoption alone, maintaining private forks and internal workarounds that quietly accumulate cost, risk, and technical debt. When firms contribute, we see leaders shaping the direction of shared software and standards, strengthening talent pipelines, reducing technical debt, improving efficiency, and achieving higher ROI. In a regulated industry under mounting modernization and AI pressures, open source contribution is no longer optional, it is essential to sustainable innovation and long-term control of technology.

# Open source contribution delivers measurable value

Sustained contribution to open source projects demonstrates a clear value for organizations. But the specific nature of these benefits is often poorly understood. A primary motivation for this study was to uncover specific data points that illustrate how contribution rewards organizations. Survey respondents highlight a number of important and quantifiable benefits (Figure 7), making it clear that OSS contribution is a mutually beneficial relationship among upstream suppliers and downstream users.

Our survey finds that open source contribution significantly streamlines technical workflows, reduces collaboration frictions, and accelerates product cycles. 66% of respondents noted that upstream maintainers respond more quickly to security issues and bug reports once a contribution relationship is established. By engaging directly with the community, organizations see a 10% average increase in product development speeds overall.

FIGURE 7

## MEASURABLE VALUE DERIVED FROM OPEN SOURCE CONTRIBUTION

**10%** increased product development speeds as a result of OSS contribution.

**68%** of respondents say OSS contribution makes hiring and retaining talent easier.

**2+** months of advance notice for important changes due to contribution.

**66%** of respondents report that since they began contributing, upstream maintainers respond faster to security issues/bug reports.

2025 Open Source ROI Survey, Q43, Sample Size = 252. Q42, Sample Size = 252. Q41, Sample Size = 252. Q39, Sample Size 252. "Don't know or not sure" responses excluded. Full data in Appendix Tables A16, A17, A18, and A19.

Active participation grants companies a seat at the table, allowing them to shape the future of the software they rely on. A substantial 84% of contributors report successfully influencing project roadmaps more than half the time (Appendix Table A15). Contribution affords organizations a voice in steering project-level decisions and the opportunity to better align upstream development trajectories with internal prerogatives. This influence provides a critical competitive edge in forecasting, as contributors receive an average of at least two months of advance notice regarding important changes. Aligning upstream project goals with downstream needs is essential to maximizing the full potential of open source.

Beyond technical and strategic gains, OSS involvement serves as a powerful tool for an organization's human capital development. The importance of attracting capable and experienced talent cannot be overstated in the IT sector. 68% of respondents find that contributing to open source makes it easier to both hire and retain top-tier talent. By allowing developers to engage with the broader ecosystem, companies directly engage with high quality digital technology and create a more attractive work environment that prioritizes professional growth and industry-wide collaboration.

**FROM THE EXPERTS**

**ILDIKÓ VÁNCSA**
Director of Community,
OpenInfra Foundation

OpenInfra FOUNDATION

Every company relies on OSS, but the most successful ones treat involvement in upstream open source projects as strategic investment. They understand that in today's rapidly evolving technology landscape keeping all development and maintenance activities in-house results in higher maintenance costs and lower efficiency. I'm thrilled to see the data validate how, through sustained code, community, and financial contributions, organizations turn the fast innovation across the open source ecosystem into their competitive advantage.

At OpenInfra, developers, users and vendors form the three key pillars of our communities. Their diverse perspectives and expertise strengthen the evolution and sustainability of open source infrastructure technologies that power current and emerging applications.

# Evidence for strong ROI across the contribution spectrum

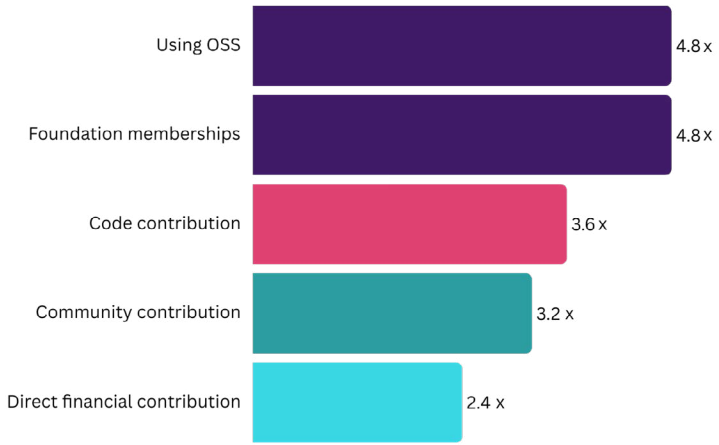
It's well established that simply using OSS gives organizations access to best-in-class digital infrastructure with benefits that far exceed costs. Consistent with this notion, survey respondents report an average 4.8x benefit-to-cost ratio from simply using open source (Figure 8). But by also contributing to OSS, organizations can capitalize on new sources of value to supercharge their open source ROI even further.

Encouragingly, our study establishes compelling evidence that each type of OSS contribution yields positive and significant returns for organizations. Reported benefit-to-cost ratios from OSS contributions are 2-5x on average across engagement types (Figure 8). This holds across the board for code (3.6x benefit-to-cost ratio), community (3.2x), financial (2.4x), and foundation contribution (4.8x). To put open source ROI into perspective, the average profit margin for publicly traded companies in the S&P 500 between 2020 and 2025 was approximately 12.2%[3], a level of profitability that corresponds to a 1.1x benefit-to-cost ratio. The level of quantifiable returns organizations receive demonstrates that contribution is not just a charitable endeavor - it is an investment in an organization's own capacity that yields impressive returns.

It's worth noting that an incorrect conclusion to draw from these side-by-side comparisons of open source ROI measures is that some contribution types are "superior" or "more valuable" than others. Understanding the relative magnitudes of different contribution activities can be helpful for context, but the comparison stops there. Organizations contribute for a variety of strategic reasons and select the optimal contribution approach that achieves those objectives. One form of contribution may suit an organization's needs better, while others may simply be impossible. In this sense, different open source contribution types should be viewed as complements rather than substitutes.

**FIGURE 8**

## REPORTED RATIOS OF BENEFITS TO COSTS FOR DIFFERENT FORMS OF OSS ENGAGEMENT




2025 Open Source ROI Survey, Q58, Sample Size = 165. Q59, Sample Size = 118. Q46, Sample Size = 160. "Don't know or not sure" responses excluded. Full data in Appendix Tables A20, A21, and A22.

[3] https://insight.factset.com/sp-500-reporting-highest-net-profit-margin-in-over-15-years

## Broad-spectrum contribution investment unlocks value

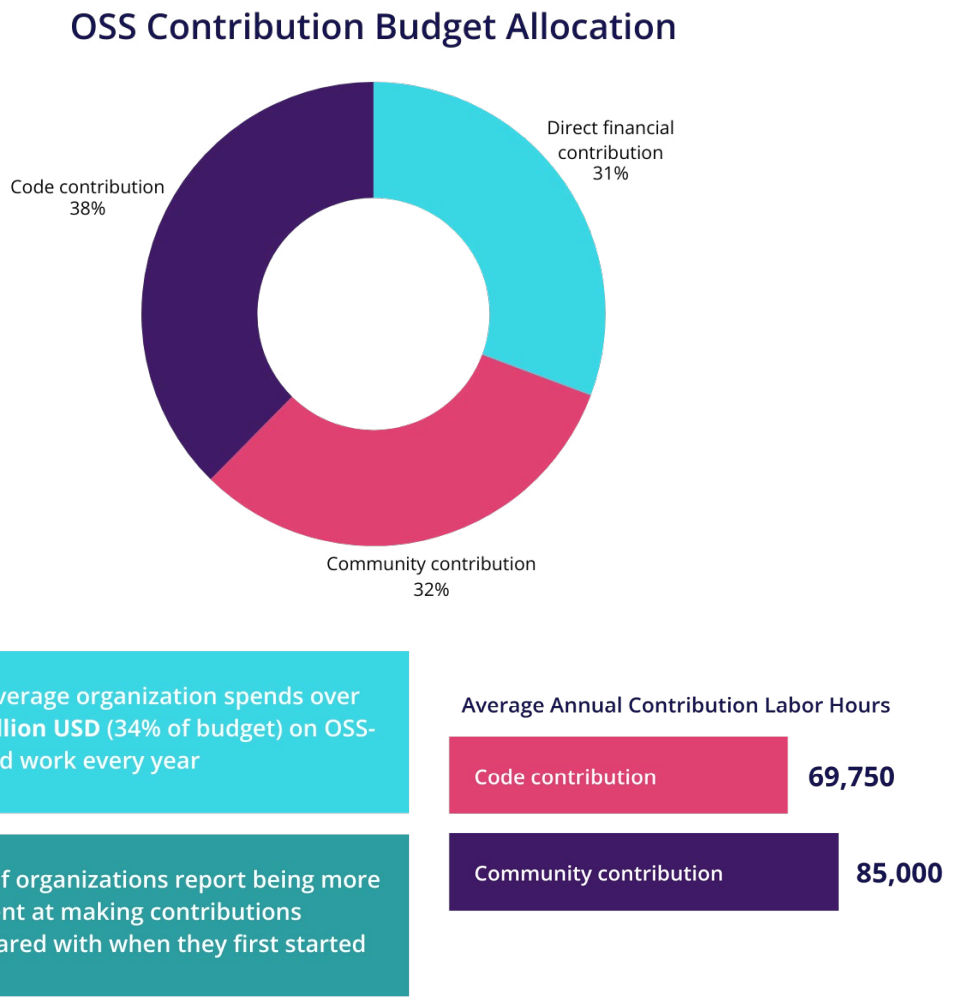
Without the shared innovation of open source, organizations are forced into a costly "build or buy" trap: approximately 53% of organizations would resort to purchasing expensive proprietary licenses, while 51% would be forced to divert internal engineering talent to develop the code from scratch (Appendix Table A23). For critical infrastructure, procurement and integration costs would be $3.5 million for the average organization if an OSS solution did not exist (Appendix Table A24). The high cost of proprietary alternatives helps place contribution investments into context and underscores why mature OSS solutions are such a significant strategic asset to organizations.

Organizations commit considerable resources to contribution. Figure 9 shows that 34% of the typical organization's annual software development budget goes towards open source ($9 million). The data show that organizations often favor broad-spectrum contribution to build a well-diversified portfolio with strong complementarities among different contribution types. Survey respondents report a roughly even distribution of contribution expenditures across code contribution (38% of total), community contribution (32%), and direct financial contribution (31%). Similarly, the average organization in the sample allocates 69,750 labor hours to code contribution and 85,000 labor hours to community contribution every year.

Given the non-trivial scale of this investment, efficiency gains and significant ROI make upstream contribution highly attractive compared with alternatives. 78% of survey respondents report becoming even more efficient at contributing over time, suggesting that experience brings about expertise. As organizations gain experience contributing back to OSS projects they consume, they become better able to capitalize on the benefits of contribution.

**FIGURE 9**

### AN ORGANIZATION'S INVESTMENT IN OPEN SOURCE - SUBSTANTIAL, DIVERSE, AND REWARDING



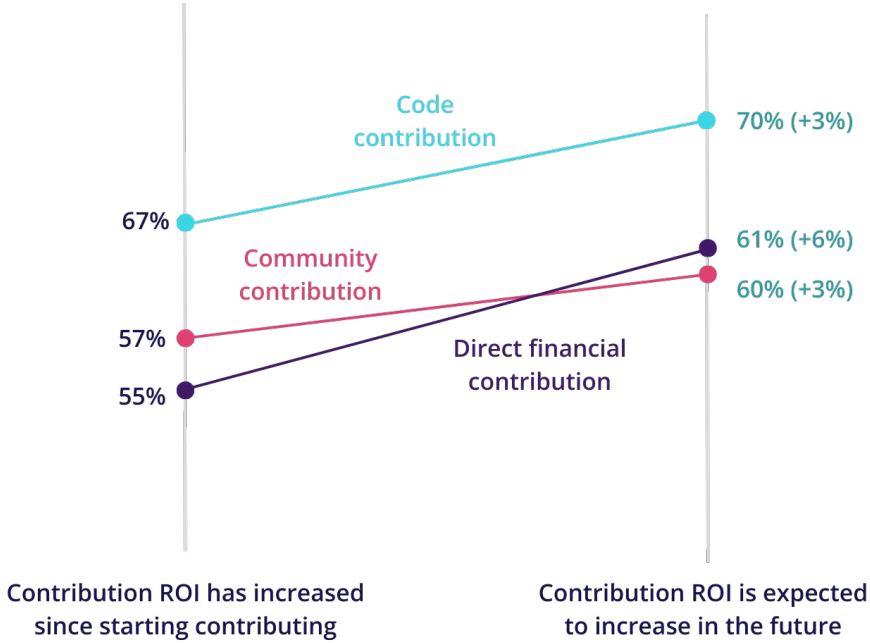

2025 Open Source ROI Survey, Q22 and Q23, Sample Size = 567. Q24, Sample Size = 472. Q24 and Q27, Sample Size = 462. "Don't know or not sure" responses excluded. Full data in Appendix Tables A25, A26, A27, A28, and A29.

## Proven and sustained growth trajectory for contribution ROI

Contribution ROI improves over time. As organizations gain experience contributing to OSS, they become more efficient and better able to capitalize on the benefits of contribution. This creates a synergistic feedback loop in which increased experience leads to higher ROI, which in turn incentivizes further contribution. The survey data reveals that two out of three respondents find that contribution ROI has increased since they began contributing (Figure 10). Furthermore, proven ROI may be just the tip of the contribution value iceberg: respondents expect ROI to continue to increase in the future. OSS contribution investment is not just a charitable endeavor - it is a strategic investment made to amplify an organization's capacity.

**FIGURE 10**

### INCREASES IN CONTRIBUTION ROI - PROVEN GAINS LEAD TO CONTINUED OPTIMISM




2025 Open Source ROI Survey, Q56, Sample Size = 377. Q57, Sample Size = 377. "Don't know or not sure" responses excluded. Full data in Appendix Tables A30 and A31.

**FROM THE EXPERTS**

**MARK WAITE**
Member of the Continuous Delivery Foundation Governing Board

CD.FOUNDATION

Organizations leveraging open source software have a lot to gain from contributing to open source projects and being active members of open source foundations. The survey results demonstrate this with concrete numbers, but experienced contributors already understand the broader truth: open source is fundamental to the future of technology. It delivers value across the ecosystem – empowering users, providers, and consumers alike – while improving security, accelerating innovation, and reducing costs.

## Diverse mechanisms drive contribution ROI

Maximizing ROI potential requires a look into drivers of OSS value as well as pain points. In Table 2, we summarize the most commonly cited mechanisms that generate costs and benefits from using and contributing to open source software. Respondents consistently find that using open source is cost-effective but carries some drawbacks in terms of addressing security vulnerabilities and abandonment risk. They also note that strained internal resources and long-term maintenance costs might discourage contribution. The survey also brings to light some underappreciated benefits of contribution that bring different sources of value to the userbase: higher quality code, improved security posture, and faster product development cycles. The costly or risky aspects of OSS consumption and contribution highlighted by respondents, such as poor documentation, security vulnerabilities, abandonment risk, and maintenance burdens, can be mitigated through collaborative development.

Survey respondents cite compliance and legal review as costs associated with both use and contribution. These costs include license review, software bill of materials (SBOM) management, intellectual property clearance and can prove a substantial part of operational overhead. Invoking an "economies of scale" argument for compliance, a case can be made that using and collaborating on mature OSS infrastructure with wide userbases can help alleviate some of these cost burdens. Established OSS projects are inclined to adopt industry-standard licenses, operate on transparent development cycles, and implement best practices such as SBOM reporting.

**TABLE 2**

### KEY MECHANISMS THAT DRIVE USE AND CONTRIBUTION ROI FOR OSS

| | USE | CONTRIBUTION |
|---|---|---|
| **Benefits** | • Reduced license cost<br>• Lower vendor lock-in<br>• Improved scalability | • Access to cutting edge technology or development techniques<br>• Higher quality code<br>• Improved security posture<br>• Faster product development cycles |
| **Costs** | • Poor documentation<br>• Security vulnerabilities<br>• Abandonment risk<br>• Compliance & legal review costs | • Engineering time allocation<br>• Long-term maintenance of contributions<br>• Compliance & legal review costs |

2025 Open Source ROI Survey, Q49, Sample Size = 474. Q47, Sample Size = 474. Q54, Sample Size = 384. Q51, Sample Size = 384. "Don't know or not sure" responses excluded. Full data in Appendix Tables A32, A33, A34, and A35.

**FROM THE EXPERTS**

**DANIELA BARBOSA**
Executive Director,
LF Decentralized Trust

LF DECENTRALIZED TRUST

The infrastructure for a digital-first economy must be built with resiliency, security, and the ability to evolve alongside markets. Open development and open governance are the only viable pathways for modernizing global systems across finance, identity, supply chain, and beyond.

At LF Decentralized Trust, our members and communities invest in collaborative development to ensure alignment, interoperability, and neutrality while accelerating innovation. Open governance has proven essential to ensuring these systems can endure and adapt for generations to come.

Participation in our projects delivers more than ROI. It gives organizations the opportunity to shape the digital trust infrastructure, now and into the future.

## Foundation contribution is exceptionally valuable

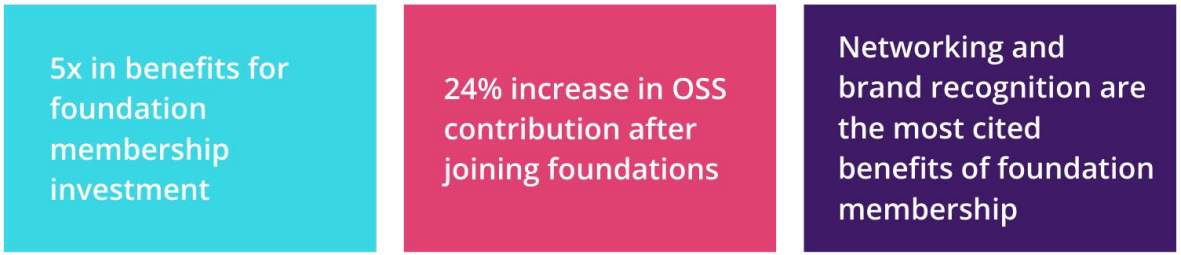
Organizations report that contributing to OSS foundations is especially beneficial. Organizations derive as much value from foundation membership (4.8x benefit-to-cost ratio) as they do from using OSS itself (4.8x). Foundation membership appears to unlock unique value through networking opportunities and brand recognition. Compared with more labor-intensive forms of contribution, foundation membership is a highly efficient way for organizations to engage with OSS without straining internal development resources.

Contributing to individual project communities is clearly beneficial yet may be somewhat limited in scope. By belonging to open source foundations, organizations expand their peer group across project boundaries, introducing them to a wealth of network effects created by the broader open source ecosystem. Organizations find that networking and brand recognition are key benefits of foundation membership (Figure 11). These sources of social and strategic value complement and magnify the technical edge gained from code contribution.

The individual benefits organizations realize from contributing in turn create prosocial multipliers. Our survey finds that foundation membership also increases overall OSS contribution rates by 24% on average (Figure 11). Foundations help provide guidance and encouragement on how members can best contribute to infrastructure critical to their operations, reducing the barriers to participation overall. Joining common and coordinated efforts to support open digital technology therefore ultimately creates spillover benefits for peer organizations. By "collaborating on the core and competing on the edge"[4] organizations create a larger pie.

**FIGURE 11**

### THE VALUE OF FOUNDATION MEMBERSHIP




2025 Open Source ROI Survey, Q46, Q45, Q44, Sample Size = 160. "Don't know or not sure" responses excluded. Full data in Appendix Table A22, A36, and A37.

[4]Nagle, Frank. **"Collaborate on the Core, Compete on the Edges."** Harvard Business School Module Note 724-453, February 2024.

# An economic model of open source contribution ROI

As a complement to the Open Source ROI Survey, we developed a quantitative model to estimate the return on investment (ROI) for organizations contributing to open source software (OSS) projects. The model places structure on the organization's contribution decisions using microeconomic principles and leverages data on past contribution behavior. For each organization-project pair, we can use the model to recover the value an organization receives from contributing to a project that is implied by its contribution intensity (relative frequency and scale) to that project.

The model and the survey are most powerful when used together. While the survey does an excellent job of gathering unique information and explaining mechanisms, it does not generalize well beyond the sample. On the other hand, the economic model can infer granular open source ROI estimates with new contribution data but remains quite agnostic on specific mechanisms.

Organizations measure open source ROI through various frameworks, each offering valuable perspectives on investment impact. The **CHAOSS Practitioner Guide**, for instance, defines ROI as Priority = Criticality × Health Risk. Other modeling efforts from LF Networking and FINOS place emphasis on the particular mechanisms that drive ROI, capturing important details that accurately reflect OSS use and contribution in each respective domain. Our quantitative model represents one approach within this landscape, designed to be used alongside these complementary frameworks rather than in isolation.

In the following subsections, we will introduce the intuition of the LFX Contribution ROI Model as well as some preliminary results. We urge the reader to interpret these findings with the understanding that the model is still undergoing refinement.

## Model elements

There are three primary components to the economic model:

1. **Converting contribution investments into monetary terms:** We collect data on code and community contribution activities, event sponsorship and attendance, membership fees, education and training, and other relevant expenditures.

2. **Modeling organizational contribution decisions:** We model how organizations decide whether to contribute to OSS, which projects to contribute to, and how much to contribute. The model is based on the revealed preference principle: organizations contribute to OSS projects when the expected benefits exceed the costs of contributing. This approach remains neutral on the specific nature of the benefits, avoiding potentially problematic assumptions about the mechanisms through which contributions generate value.

3. **Calibrating with survey data:** In a critical step, we calibrate the model using quantitative survey responses that characterize plausible ranges for ROI organizations report receiving from their OSS contributions.

## Estimates of open source ROI for top contributing organizations

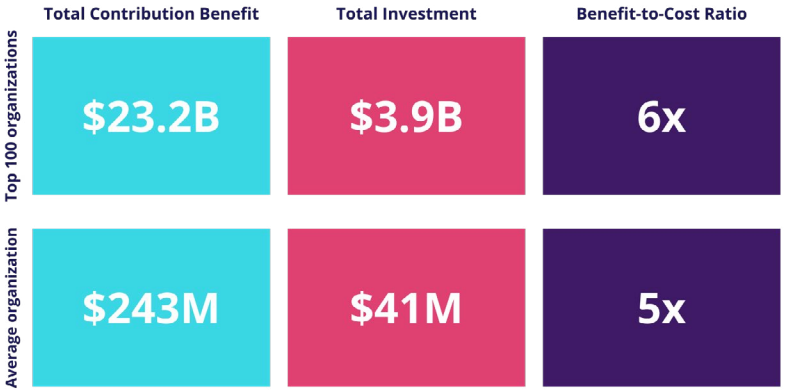
We applied the ROI model to the top 100 organizations by contribution volume across 385 OSS projects affiliated with the Linux Foundation over an 8-year period (2018-2025).

Figure 12 summarizes the key ROI estimates from applying real world data to the economic model of contribution ROI. The results reveal that these top contributors invested $3.9 billion (USD) over the sample period and collectively gained $23.2 billion in value, generating $19.3 billion in net profit. This implies an aggregate benefit-to-cost ratio of nearly 6x. At the individual organization level, the average top contributor invests approximately $41 million to realize $243 million in value, achieving a mean benefit-to-cost ratio of approximately 5x. These organization-level returns align closely with the upper range of contribution-type-specific ROIs reported in our survey, providing external validation of the model estimates.

We decompose aggregate contribution investment expenditures by type in Figure 13. Code contributions account for the largest share of costs at 83.9% ($3.28 billion), followed by community engagement at 7.3% ($287 million), foundation membership fees at 3.9% ($152 million), and project membership at 2.5% ($99 million). Event attendance and sponsorship together represent 2.3% of total expenditures. This distribution highlights that direct engineering effort comprises the predominant investment organizations make in OSS projects.

**FIGURE 12**

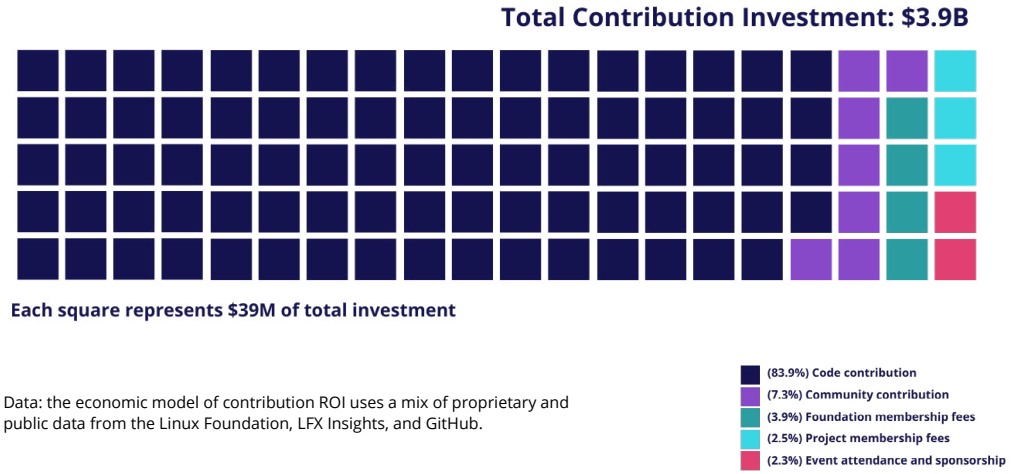
### AGGREGATE AND INDIVIDUAL CONTRIBUTION ROI FOR THE TOP CONTRIBUTING ORGANIZATIONS




Data: the economic model of contribution ROI uses a mix of proprietary and public data from the Linux Foundation, LFX Insights, and GitHub.

**FIGURE 13**

### BREAKDOWN OF AGGREGATE CONTRIBUTION INVESTMENT SPENDING FOR THE TOP 100 CONTRIBUTING ORGANIZATIONS




Data: the economic model of contribution ROI uses a mix of proprietary and public data from the Linux Foundation, LFX Insights, and GitHub.

## FROM THE EXPERTS

**STEVE FERNANDEZ** General Manager, Open Source Security Foundation (OpenSSF)

OpenSSF
OPEN SOURCE SECURITY FOUNDATION

Open source underpins nearly every modern system, but too often we still treat contribution as optional instead of essential. This research makes something very clear: organizations that only consume open source absorb hidden costs, through private forks, internal workarounds, slower security response, and growing technical debt. Organizations that contribute see the opposite effect.

The data reflects what many of us experience in practice. Contributors receive faster responses from maintainers on security issues and bug reports. They gain earlier visibility into changes that affect critical systems. They influence roadmaps rather than react to them. Those advantages translate into real operational outcomes: better predictability, stronger security posture, and faster delivery.

What matters most is that contribution does not have to look the same for every organization. Code, documentation, community leadership, funding, foundation participation, all of these forms of engagement help strengthen the ecosystem and reduce risk for the organizations that depend on it. If your organization works with open source, the question is no longer whether contribution creates value. The evidence is here. The real question is how intentionally you choose to participate.

## Sensitivity analysis

To assess the robustness of these findings, we conducted a sensitivity analysis by sequentially excluding the top-performing organizations (ranked by total profit). The results of this robustness check are contained in Table 3.

Approximately 45% ($10.4B) of aggregate contribution benefits can be attributed to the top 5 contributors and 60% ($13.8B) to the top 10. Similarly, the 5 largest contributors account for 37% ($1.5B) of total contribution investment while the top 10 make up 51% ($2B). The aggregate benefit-to-cost ratio falls from 5.9 to 4.9 when excluding the top 10 contributors. While the amount of contribution value that the top contributors enjoy is substantial in both magnitude and share, ROI remains exceptional (~5x) even for smaller scale organizations.

**TABLE 3**

### SENSITIVITY ANALYSIS FOR THE CONTRIBUTION ROI

| | BASELINE | EXCLUDING TOP 5 | EXCLUDING TOP 10 |
|---|---|---|---|
| Number of Organizations | 100 | 95 | 90 |
| Total Value (billons USD) | $23.20 | $12.80 | $9.40 |
| Total Cost (billons USD) | $3.90 | $2.50 | $1.90 |
| Total Profit (billons USD) | $19.30 | $10.30 | $7.50 |
| Total Profit (percentage of baseline) | 100% | 53.40% | 38.80% |
| Aggregate benefit-to-cost ratio | 5.9x | 5.2x | 4.9x |
| Change in benefit-to-cost ratio from baseline | - | -0.7x | -1.0x |

Data: the economic model of contribution ROI uses a mix of proprietary and public data from the Linux Foundation, LFX Insights, and GitHub. The sensitivity analysis uses the aggregation of the top 100 organizations by total open source ROI between 2018 and 2025 as a baseline (first column of Table 3). In the second column of Table 3, we remove the top 5 ranked organizations in terms of total ROI. In the third column of Table 3, we remove the top 10 ranked organizations in terms of total ROI.

**FROM THE EXPERTS**

**ARPIT JOSHIPURA**
General Manager, Networking and Orchestration, The Linux Foundation

LF NETWORKING

From a networking lens, this ROI survey captures a shift we've all watched unfold: our industry has moved from using open source to building the network with it. Operators, vendors, and integrators now collaborate upstream on cloud-native infrastructure, automation, security, and programmable data planes because it's the only way to keep pace with scale and complexity. LF Networking has seen this firsthand—members have used the ROI calculator behind this model for years to quantify impact and guide investment decisions. The research reinforces why collaboration matters: the real costs show up in forks, workarounds, and misaligned roadmaps, while upstream engagement reduces friction and speeds delivery.

# Recommendations

The study on open source ROI makes a strong case for contribution. Having established a rich set of valuable benefits organizations who contribute upstream can enjoy, we use the findings of this survey to offer several key recommendations for organizations to maximize the return to their participation in the open source ecosystem.

Organizations that use OSS but do not contribute need to consider the substantial additional value they might realize by contributing back. Open source contributors are strategically investing in their own capacity, effectively diffusing maintenance and R&D costs across a broader community, establishing a competitive edge in talent recruitment, and boosting internal productivity. Contribution can happen in a number of highly beneficial ways beyond code contributions, including community building, documentation, advocacy, and financial support. Different types of contribution complement one another, and establishing a balanced portfolio of contribution activities that align with an organization's strategic priorities can maximize open source ROI potential.

The opportunity cost of maintaining private forks is high. Organizations should evaluate whether contributing upstream or coordinating with peers offers greater value than isolated maintenance efforts. These contributions can start small: bug reporting is an excellent starting point with a low barrier to entry. As contribution investments scale, an organization can identify features, bug fixes, and security improvements that other downstream users may also need. Prioritizing these as upstream contributions distributes maintenance costs across the community. When direct code contributions are not feasible, consider sponsoring custom development upstream, coordinating with peer organizations to share maintenance responsibilities, or implementing a public patch set or soft fork for the upstream project.

Alternative forms of contribution such as foundation membership and direct financial contribution are especially valuable when organization and project needs diverge. Instead of allocating scarce development resources to upstream code contributions that may not be accepted, consider supporting the project through other means. Moreover, financial contribution and foundation membership generate benefits that code contribution alone cannot provide, such as governance influence, networking opportunities, and improved visibility within the community.

# Methodology

This study is based on a web survey conducted by Linux Foundation Research in November 2025. The survey was designed for organizations to characterize their contribution relationship with open source as well as quantify their understanding of the relative costs and benefits of contribution against alternatives. In this section, we present the study methodology and context regarding how we analyzed the data followed by the demographics of the respondents.

From a research perspective, it was important to eliminate any perception of sample bias and ensure high data quality. We sourced our usable sample from Linux Foundation subscribers, members, partner communities, and social media. We also included data from a third-party panel provider to create a better balance across the demographic factors. We addressed data quality through extensive prescreening, survey screening questions, and data quality checks to ensure that respondents had sufficient professional experience to answer questions accurately on behalf of the organization they worked for.

We collected survey data from industry-specific companies, IT vendors and service providers, and nonprofit, academic, and government organizations. Respondents spanned many vertical industries and companies of all sizes, and we collected data from several geographies.

The survey comprised 59 questions that addressed screening, respondent demographics, detailed data on investments (costs), benefits, and ROI across different organizational contexts. For information about access to the survey, its dataset, and survey frequencies, see the survey data access information below.

The target audience included respondents who met the following criteria:

- Must use or contribute to open source software
- Must be employed full or part time
- Must have some professional experience working in IT (Information Technology)
- Must have some experience working with open source software
- Must be able to provide an answer to the survey question regarding the approximate size of the organization's annual software development budget.

Survey development by Linux Foundation Research occurred between June 2025 and October 2025, and the survey was fielded in October and November 2025. After filtering and pre-processing, the size of the analytical sample is 567 responses. The margin of error for the awareness sample size is + / - 3.46% at a 90% confidence level and + / - 4.12% at a 95% confidence level.

# Survey demographics

Nearly half (47%) of respondents to the survey work in either a software development or systems operations role (Figure 14). They are overwhelmingly employed full-time (87%) by a cross-industry information technology firm (Figure 15) and evenly distributed between Europe, North America, and the Asia-Pacific region (Figure 16). They have an average of 12 years of experience with OSS and 14 years of experience in the IT industry in general (Figure 17). The average organization survey respondents work for has 2,850 employees and $482 million in annual revenue (Figure 18). Half (51%) of survey respondents are employed by organizations that derive their primary revenue stream from providing IT goods or services (Figure 19). These organizations span the open source maturity scale, but 60% at least encourage open source ecosystem participation (Figure 19).

**FIGURE 14**

## SELECTED DEMOGRAPHICS OF THE 2025 OPEN SOURCE ROI SURVEY

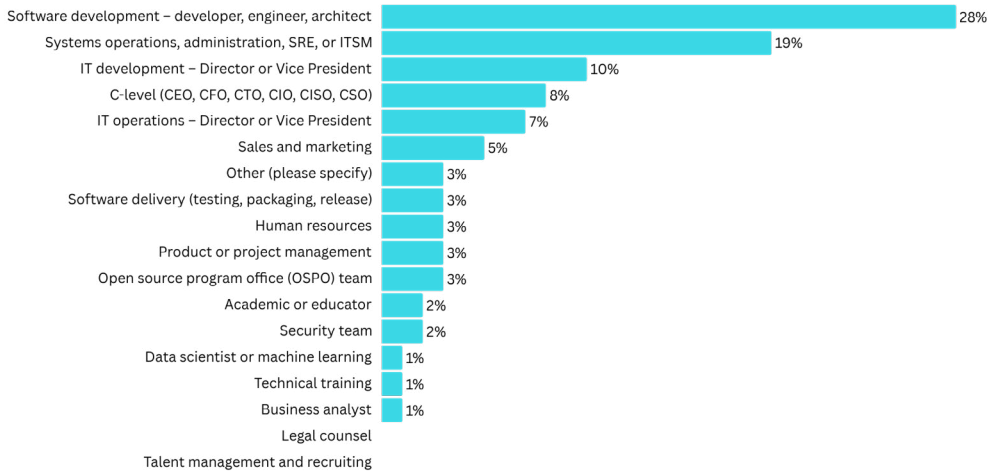



**FIGURE 15**

## SELECTED DEMOGRAPHICS OF THE 2025 OPEN SOURCE ROI SURVEY

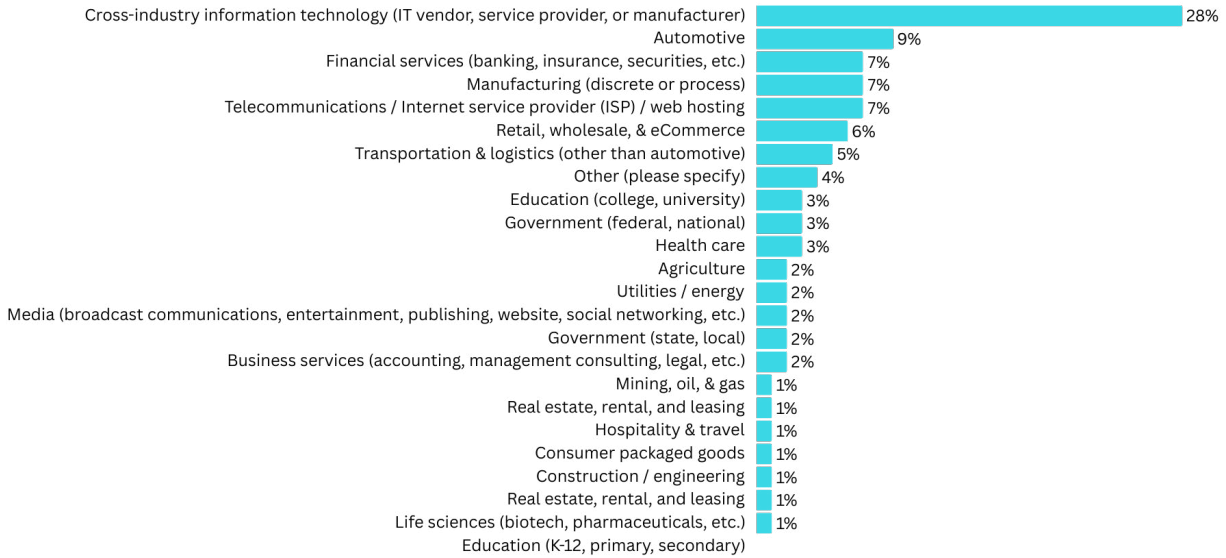
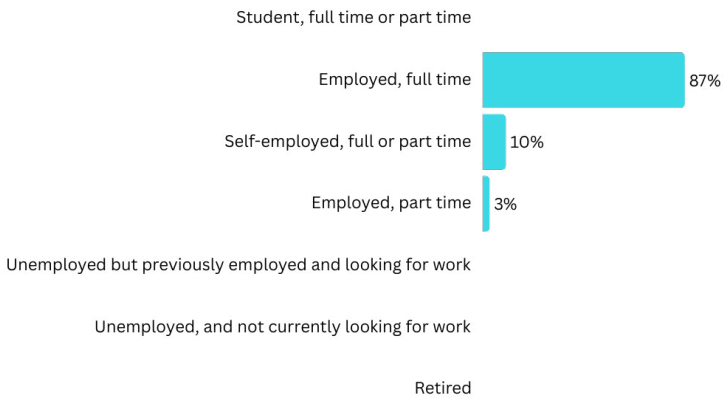


FIGURE 16

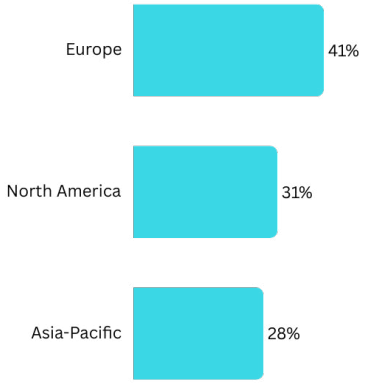
## SELECTED DEMOGRAPHICS OF THE 2025 OPEN SOURCE ROI SURVEY

**What is your current employment status? (select one)**




2025 Open Source ROI Survey, Q3, Sample Size = 567

**In what country or region does your organization have its headquarters? (select one)**

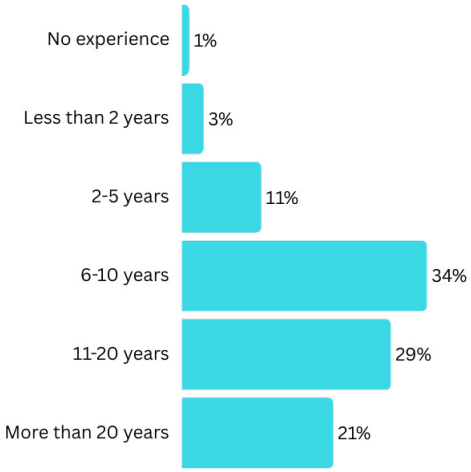



2025 Open Source ROI Survey, Q8, Sample Size = 534

FIGURE 17

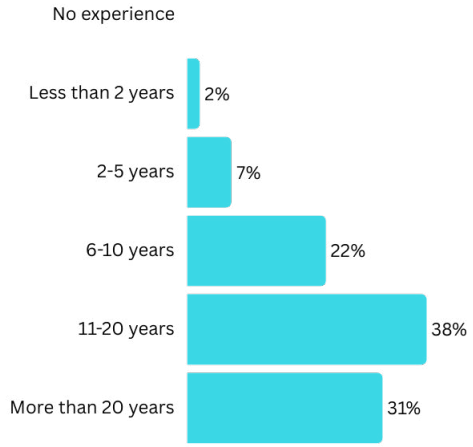
## SELECTED DEMOGRAPHICS OF THE 2025 OPEN SOURCE ROI SURVEY

**How many years of experience do you have working with open source software? (select one)**




2025 Open Source ROI Survey, Q5, Sample Size = 567

**How many years of professional experience in IT (Information Technology) do you have? (select one)**

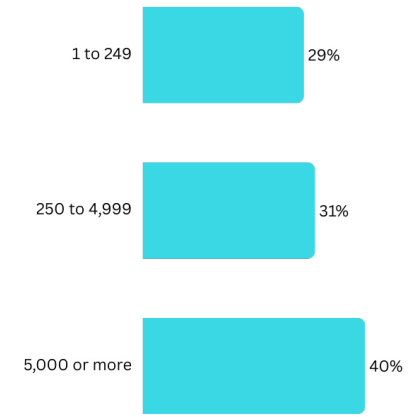



2025 Open Source ROI Survey, Q4, Sample Size = 567

FIGURE 18

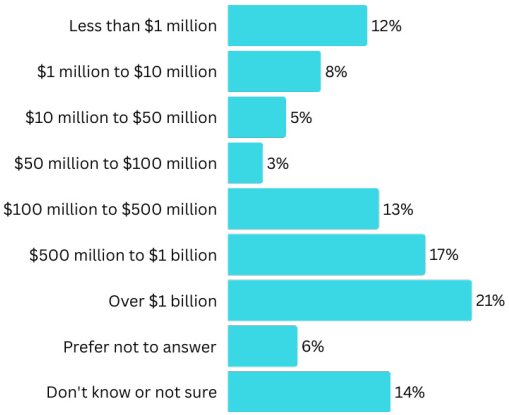
## SELECTED DEMOGRAPHICS OF THE 2025 OPEN SOURCE ROI SURVEY

**Please estimate how many total employees are in the company or entity you work for. (select one)**




2025 Open Source ROI Survey, Q13, Sample Size = 558

**What is the estimated yearly total revenue of your organization? (select one)**

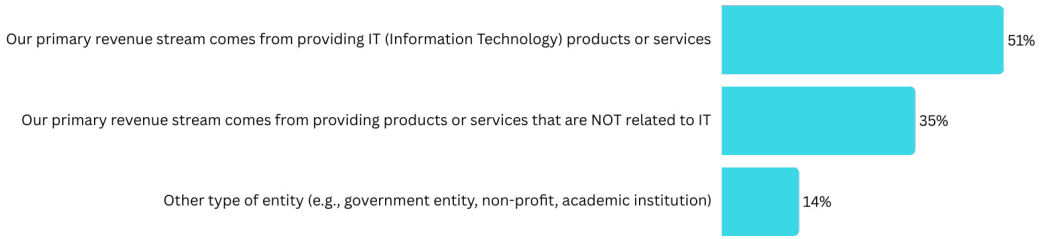



2025 Open Source ROI Survey, Q14, Sample Size = 567

FIGURE 19

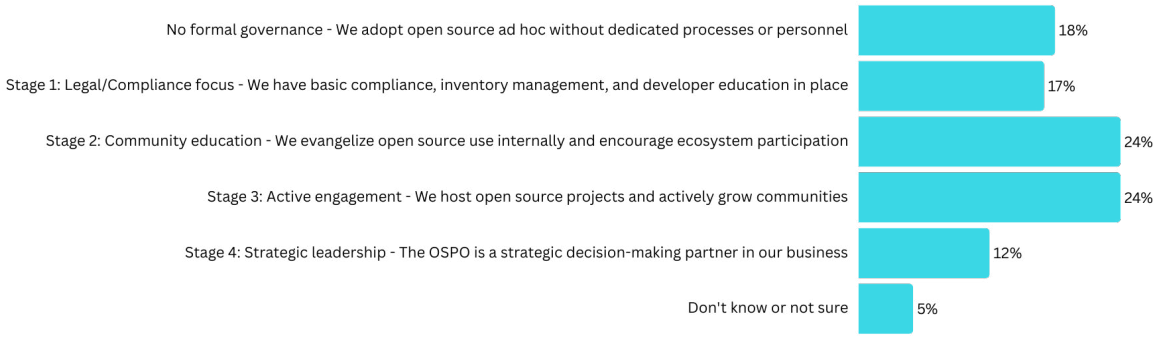
## SELECTED DEMOGRAPHICS OF THE 2025 OPEN SOURCE ROI SURVEY

**Which response best describes the company or entity you work for? (select one)**




2025 Open Source ROI Survey, Q9, Sample Size = 567

**How would you characterize your organization's open source governance maturity? (select one)**




2025 Open Source ROI Survey, Q15, Sample Size = 567

# Survey data access

Linux Foundation Research makes each of its empirical project datasets available on Data.World. Included in this dataset are the survey instrument, raw survey data, screening and filtering criteria, and frequency charts for each question in the survey. Linux Foundation Research datasets, including this project, are available at data.world/thelinuxfoundation. Access to Linux Foundation datasets is free but does require you to create a Data.World account.

# About the authors

**Sam Boysel** is a Data Scientist at the Linux Foundation. He has extensive empirical research experience across many topics in the open source ecosystem. His work leverages microeconomic theory to explore incentives, behaviors, and place value on open source dynamics. Before joining the Linux Foundation, Sam was a postdoctoral researcher with the Laboratory for Innovation Science at Harvard. He holds a B.A., M.S., and Ph.D. in Economics.

**Adrienn Lawson** is Director of Quantitative Research at the Linux Foundation, where she leads data-driven initiatives to understand open source ecosystems. With expertise in social data science from the University of Oxford and a background spanning academic and governmental research, she brings methodological rigor to analyzing distributed collaboration networks. At the Linux Foundation, Adrienn leads a team conducting cross-sectional research across industry verticals and geographic regions to provide comprehensive insights into open source dynamics. Her work encompasses empirical investigations into regulatory compliance, the implications of AI, and sustainable funding models. She produces evidence-based recommendations that inform strategic decision-making within the open source community.

# Acknowledgments

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We thank ISG for helping to distribute the survey.

# Appendix

| Table A1: Distribution of OSS contribution and use | |
|---|---|
| What aspects of OSS is the organization you work for involved with? (select one) | |
| We do not use or contribute to OSS | 0% |
| We use but do not contribute to OSS | 28% |
| We use AND contribute to OSS | 72% |
| Source: 2025 Open Source ROI Survey, Q1, Sample Size = 567 | |

| Table A2: Distribution of different OSS contribution types | | |
|---|---|---|
| What types of investments does your organization make to OSS projects? (select all that apply) | | |
| Code contribution | Source: 2025 Open Source ROI Survey, Q17, Sample Size = 567, Total mentions = 1,479 | |
| | Don't know or not sure | 6% |
| | We don't make code contributions | 16% |
| | Performance optimizations | 33% |
| | Security fixes and reviews | 35% |
| | Testing and quality assurance | 38% |
| | Documentation improvements | 41% |
| | New features and functionality | 45% |
| | Bug fixes and patches | 47% |
| Community contribution | Source: 2025 Open Source ROI Survey, Q18, Sample Size = 567, Total mentions = 1,300 | |
| | Don't know or not sure | 12% |

| | | |
|---|---|---|
| | Legal and licensing support | 13% |
| | Design and UX contributions | 17% |
| | We don’t make community contributions | 21% |
| | Translation and localization | 21% |
| | Educational content creation | 27% |
| | Community organizing and management | 28% |
| | Marketing and advocacy support | 29% |
| | User support and forums | 29% |
| | Event organization (meetups, conferences) | 33% |
| Direct financial contribution | Source: 2025 Open Source ROI Survey, Q19, Sample Size = 567, Total mentions = 993 | |
| | Don’t know or not sure | 13% |
| | Open source funds or grant programs | 17% |
| | We don’t make financial contributions | 24% |
| | Direct financial donations to OSS projects and/or maintainers | 27% |
| | Infrastructure and hosting support | 28% |
| | Foundation memberships (Linux Foundation, Apache, etc.) | 32% |
| | Conference sponsorships and events | 35% |

| Table A3: Distribution of OSS engagement practices | |
|---|---|
| In what ways does your organization typically engage with open source software? (select all that apply) | |
| Don't know or not sure | 3% |
| Participate in OSS project governance/decision-making | 26% |
| Engage external consultants to contribute upstream on our behalf | 28% |
| Fork OSS projects and maintain internal versions | 45% |
| Make upstream contributions to OSS projects | 49% |
| Use OSS components as-is without modification | 68% |
| Source: 2025 Open Source ROI Survey, Q16, Sample Size = 567, Total mentions = 1,241 | |

| Table A4: Gaps between use and contribution rates for different open source technology stacks | | |
|---|---|---|
| (Q20) Which open source technologies are critical to your organization's business? (select all that apply) | | |
| (Q21) Which open source technologies does your organization contribute to? (select all that apply) | | |
| | (Q20) Critical to organization's business (%) | (Q21) Contribute to (%) |
| Cloud native/containers (Kubernetes, Docker, etc.) | 60% | 32% |
| Operating systems (Linux distributions) | 59% | 29% |
| Databases (PostgreSQL, MongoDB, Redis, etc.) | 56% | 25% |
| Programming languages/runtimes (Python, Node.js, Go, etc.) | 53% | 17% |
| DevOps/CI-CD (Jenkins, GitLab, etc.) | 49% | 21% |
| Web frameworks (React, Angular, Django, etc.) | 44% | 26% |
| Networking/infrastructure | 40% | 20% |
| AI/Machine Learning (TensorFlow, PyTorch, scikit-learn, etc.) | 38% | 23% |
| Security tools | 36% | 21% |
| Embedded systems/IoT | 25% | 25% |
| Mobile development | 17% | 13% |

| | | |
|---|---|---|
| Big data/analytics (Apache Spark, Hadoop, etc.) | 17% | 10% |
| Blockchain/decentralized technologies | 6% | 5% |
| Source: 2025 Open Source ROI Survey, Q20, Sample Size = 567, Total mentions = 2,847 | | |
| Source: 2025 Open Source ROI Survey, Q21, Sample Size = 472, Total mentions = 1,319 | | |

**Table A5: Missing functionality upstream leads to downstream production delays**

| How often do missing features or delayed fixes from OSS projects cause delays in your product development? (select one) | |
|---|---|
| Don't know or not sure | 10% |
| Never | 7% |
| Rarely | 24% |
| Sometimes | 28% |
| Frequently | 18% |
| Very frequently | 13% |
| Source: 2025 Open Source ROI Survey, Q35, Sample Size = 267 | |

**Table A6: Missing functionality upstream leads to downstream production delays (segmented by organization size)**

| How often do missing features or delayed fixes from OSS projects cause delays in your product development? (select one) by Please estimate how many total employees are in the company or entity you work for. (select one) | | | |
|---|---|---|---|
| | 1 to 249 | 250 to 4,999 | 5,000 or more |
| Don't know or not sure | 13% | 9% | 7% |
| Never | 19% | 2% | 4% |
| Rarely | 31% | 36% | 9% |
| Sometimes | 35% | 20% | 29% |
| Frequently | 1% | 23% | 26% |
| Very frequently | 1% | 11% | 24% |
| Source: 2025 Open Source ROI Survey, Q35 segmented by Q13, Sample Size = 267 | | | |

| Table A7: Strategies organizations take when upstream projects lack needed features or fixes | |
|---|---|
| When you need features or fixes not in OSS roadmaps, what do you typically do? (select all that apply) | |
| Don't know or not sure | 6% |
| Other (please specify) | 1% |
| Hire consultants/contractors to contribute to the upstream project | 25% |
| Switch to different OSS or commercial tools | 28% |
| Accept the limitation | 30% |
| Fork the project and maintain patches | 30% |
| Wait for community to eventually add them | 38% |
| Develop workarounds internally | 49% |
| Source: 2025 Open Source ROI Survey, Q37, Sample Size = 267, Total mentions = 551 | |

| Table A8: Annual cost of workarounds for features not on OSS project roadmaps | |
|---|---|
| What's the annual cost impact of these workarounds/alternatives? Ballpark estimates are perfectly acceptable. (select one) | |
| Don't know or not sure | 34% |
| Less than $100,000 | 20% |
| $100,000 to $250,000 | 8% |
| $250,000 to $500,000 | 5% |
| $500,000 to $1 million | 17% |
| $1 million to $2 million | 13% |
| More than $2 million | 3% |
| Source: 2025 Open Source ROI Survey, Q38, Sample Size = 267 | |

| Table A9: Annual cost of workarounds when functionality needed by organizations is not on OSS project roadmaps segmented by organization size | | | |
|---|---|---|---|
| "Please estimate how many total employees are in the company or entity you work for?" by "What's the annual cost impact of these workarounds/alternatives?" | | | |
| Number of employees | 1 to 249 | 250 to 4,999 | 5,000 or more |
| Don't know or not sure | 44% | 30% | 26% |
| Less than $100,000 | 41% | 16% | 7% |

| Table A9: Annual cost of workarounds when functionality needed by organizations is not on OSS project roadmaps segmented by organization size | | | |
|---|---|---|---|
| $100,000 to $250,000 | 8% | 8% | 8% |
| $250,000 to $500,000 | 5% | 9% | 2% |
| $500,000 to $1 million | 1% | 29% | 18% |
| $1 million to $2 million | 0% | 8% | 29% |
| More than $2 million | 0% | 0% | 9% |
| Source: 2025 Open Source ROI Survey, Q38 by Q13, Sample Size = 267 | | | |

| Table A10: Primary reasons for maintaining private forks | |
|---|---|
| What are the primary reasons for your organization forking open source components? (select all that apply) | |
| Don't know or not sure | 2% |
| Other (please specify) | 3% |
| License compatibility issues | 18% |
| Performance optimizations | 25% |
| Quality/stability concerns with upstream | 28% |
| Faster release cycles than upstream project | 29% |
| Need for bug fixes | 32% |
| Abandoned or slow-moving upstream project | 34% |
| Security patches or compliance requirements | 37% |
| Integration with internal systems | 44% |
| Custom features needed for our use case | 54% |
| Source: 2025 Open Source ROI Survey, Q31, Sample Size = 238, Total Mentions = 276 | |

| Table A11: Number of private forks | |
|---|---|
| Approximately how many open source components does your company actively maintain as private forks? (select one) | |
| Don't know or not sure | 14% |
| None | 3% |
| 1 to 5 | 24% |

| | |
|---|---|
| 6 to 10 | 10% |
| 11 to 25 | 4% |
| 26 to 50 | 7% |
| 51 to 100 | 16% |
| 101 to 250 | 13% |
| 251 to 500 | 5% |
| More than 500 | 3% |
| Source: 2025 Open Source ROI Survey, Q32, Sample Size = 238 | |

**Table A12: Time spent maintaining private forks**

| On average, how many hours per release cycle do your developers spend maintaining one private fork? (select one) | |
|---|---|
| Don't know or not sure | 22% |
| Less than 5 hours | 16% |
| 5 to 15 hours | 9% |
| 16 to 40 hours | 8% |
| 41 to 80 hours | 18% |
| 81 to 120 hours | 21% |
| 120 to 160 hours | 5% |
| More than 160 hours | 1% |
| Source: 2025 Open Source ROI Survey, Q36, Sample Size = 238 | |

**Table A13: Number of private forks (segmented by organization size)**

| Approximately how many open source components does your company actively maintain as private forks? (select one) by Please estimate how many total employees are in the company or entity you work for. (select one) | | | |
|---|---|---|---|
| | 1 to 249 | 250 to 4,999 | 5,000 or more |
| Don't know or not sure | 8% | 11% | 19% |
| None | 5% | 3% | 2% |
| 1 to 5 | 54% | 24% | 8% |

| | | | |
|---|---|---|---|
| 6 to 10 | 25% | 6% | 4% |
| 11 to 25 | 3% | 7% | 3% |
| 26 to 50 | 3% | 6% | 10% |
| 51 to 100 | 2% | 24% | 20% |
| 101 to 250 | 0% | 13% | 22% |
| 251 to 500 | 0% | 6% | 9% |
| More than 500 | 0% | 3% | 4% |
| Source: 2025 Open Source ROI Survey, Q32 segmented by Q13, Sample Size = 238 | | | |

**Table A14: Time spent maintaining private forks (segmented by organization size)**

| On average, how many hours per release cycle do your developers spend maintaining one private fork? (select one) by Please estimate how many total employees are in the company or entity you work for. (select one) | | | |
|---|---|---|---|
| | 1 to 249 | 250 to 4,999 | 5,000 or more |
| Don't know or not sure | 15% | 24% | 26% |
| Less than 5 hours | 41% | 11% | 6% |
| 5 to 15 hours | 18% | 8% | 4% |
| 16 to 40 hours | 15% | 8% | 4% |
| 41 to 80 hours | 8% | 28% | 16% |
| 81 to 120 hours | 0% | 18% | 34% |
| 120 to 160 hours | 2% | 3% | 10% |
| More than 160 hours | 2% | 0% | 1% |
| Source: 2025 Open Source ROI Survey, Q36 segmented by Q13, Sample Size = 238 | | | |

**Table A15: Likelihood that contributions influence project roadmaps**

| How often do your contributions successfully influence OSS project roadmaps to include features you need? (select one) | |
|---|---|
| Don't know or not sure | 10% |
| We don't try to influence the roadmaps | 12% |
| Never successful | 1% |

| | |
|---|---|
| Rarely (small percentage) | 11% |
| Sometimes (about half) | 21% |
| Frequently (majority of requests) | 29% |
| Very frequently (most requests) | 15% |
| Source: 2025 Open Source ROI Survey, Q40, Sample Size = 252 | |

| **Table A16: Change in response times for bug reports since beginning contributing to a project** | |
|---|---|
| Do you find that OSS project maintainers are faster to respond to security issues/bugs reports raised by your organization since becoming a contributor? (select one) | |
| Don't know or not sure | 17% |
| Much slower | 1% |
| Somewhat slower | 3% |
| About the same | 23% |
| Somewhat faster | 33% |
| Much faster | 22% |
| Source: 2025 Open Source ROI Survey, Q39, Sample Size 252 | |

| **Table A17: Advance notice for major project changes as a contributor** | |
|---|---|
| How much advance notice do you typically get about important OSS project changes through your contributions? (select one) | |
| Don't know or not sure | 22% |
| No advance notice advantage | 15% |
| A few weeks advance notice | 11% |
| 1-3 months advance | 25% |
| 3-6 months advance notice | 25% |
| 6+ months advance notice | 3% |
| Source: 2025 Open Source ROI Survey, Q41, Sample Size = 252 | |

**Table A18: The impact contribution has on hiring and retaining talent**

| Has contributing to OSS made hiring and retention of developers easier for your organization? (select one) | |
|---|---|
| Don't know or not sure | 20% |
| Significantly easier | 19% |
| Slightly easier | 36% |
| No difference | 17% |
| Slightly more difficult | 5% |
| Significantly more difficult | 4% |
| Source: 2025 Open Source ROI Survey, Q42, Sample Size = 252 | |

| **Table A19: The impact contribution has on product development speeds** | |
|---|---|
| How has OSS contribution affected your product development speed? (select one) | |
| Don't know or not sure | 15% |
| Significantly faster (20%+ improvement) | 23% |
| Moderately faster (10-20% improvement) | 25% |
| Slightly faster (5-10% improvement) | 18% |
| No change | 10% |
| Slightly slower (5-10% decrease) | 6% |
| Moderately slower (10-20% decrease) | 2% |
| Significantly slower (20%+ decrease) | 0% |
| Source: 2025 Open Source ROI Survey, Q43, Sample Size = 252 | |

| **Table A20: Estimates for open source ROI multipliers for use** | | | | | | | |
|---|---|---|---|---|---|---|---|
| Please give us a sense of the multiple by which benefits exceed costs when using OSS | | | | | | | |
| | 0 to 1 | 1 to 2 | 2 to 3 | 3 to 4 | 4 to 5 | 5 to 10 | More than 10 |
| Use | 2% | 12% | 19% | 25% | 12% | 11% | 19% |
| Source: 2025 Open Source ROI Survey, Q58, Sample Size = 165 | | | | | | | |

| Table A21: Estimates for open source ROI multipliers for different types of contribution | | | | | | | |
|---|---|---|---|---|---|---|---|
| Please give us a sense of the multiple by which benefits exceed costs when making the following OSS contributions | | | | | | | |
| | 0 to 1 | 1 to 2 | 2 to 3 | 3 to 4 | 4 to 5 | 5 to 10 | More than 10 |
| Contribution - Code | 4% | 16% | 33% | 26% | 5% | 9% | 7% |
| Contribution - Community | 6% | 28% | 39% | 11% | 2% | 6% | 8% |
| Contribution - Direct financial | 8% | 39% | 39% | 3% | 3% | 3% | 3% |
| Source: 2025 Open Source ROI Survey, Q59, Sample Size = 128 (code contribution), 127 (community contribution), 118 (direct financial contribution) | | | | | | | |

| Table A22: ROI for foundation memberships | |
|---|---|
| How would you rate the overall benefits of your annual foundation membership fee? (select one) | |
| Don't know or not sure | 13% |
| No benefit (less than membership cost) | 4% |
| Low benefit (1-2x membership cost) | 18% |
| Medium benefit (2-5x membership cost) | 31% |
| High benefit (5-10x membership cost) | 28% |
| Very high benefit (10x+ membership cost) | 8% |
| Source: 2025 Open Source ROI Survey, Q46, Sample Size = 160 | |

| Table A23: Outside option if critical OSS did not exist | |
|---|---|
| If the OSS projects your organization depends on did not exist, what would your primary strategy be? (select all that apply) | |
| Don't know or not sure | 6% |
| Cancel development of the application | 2% |
| License the use of a SaaS solution | 35% |
| Outsource the development of that code to a consultant, SI, or other 3rd party | 36% |
| Write the code ourselves | 51% |
| Purchase a proprietary or commercial application | 53% |
| Source: 2025 Open Source ROI Survey, Q29, Sample Size = 544, Total mentions = 996 | |

| Table A24: Opportunity costs of critical OSS | |
|---|---|
| Based on the approach(es) you identified in the prior question, about how much would it have cost to create, integrate, test, and deploy this code into the software project codebase? (select one) | |
| Don't know or not sure | 29% |
| Under $100,000 | 11% |
| $100,000 to $249,999 | 6% |
| $250,000 to $499,999 | 5% |
| $500,000 to $999,999 | 7% |
| $1 million to $4.99 million | 22% |
| $5 million to $9.99 million | 14% |
| More than $10 million | 7% |
| Source: 2025 Open Source ROI Survey, Q30, Sample Size = 544 | |

| Table A25: Annual software development budget | |
|---|---|
| What is your organization's [division's/department's] approximate annual software development budget? (Please try to include all costs, e.g., personnel costs, development tools, infrastructure, and licensing, etc.). (select one) | |
| Don't know or not sure | 31% |
| Under $100,000 | 11% |
| $100,000 to $499,999 | 6% |
| $500,000 to $999,999 | 3% |
| $1 million to $4.99 million | 10% |
| $5 million to $9.99 million | 5% |
| $10 million to $24.99 million | 8% |
| $25 million to $49.99 million | 12% |
| $50 million to $99.99 million | 8% |
| More than $100 million | 6% |
| Source: 2025 Open Source ROI Survey, Q22, Sample Size = 567 | |

| Table A26: Share of annual software development budget allocated to open source | |
|---|---|
| What percent of your annual software development budget was attributed to using OSS (e.g., integration, customization, maintenance, support, training, compliance)? (select one) | |
| Don't know or not sure | 32% |
| 0% | 3% |
| 1% to 10% | 11% |
| 11% to 20% | 7% |
| 21% to 30% | 7% |
| 31% to 40% | 11% |
| 41% to 50% | 11% |
| 51% to 60% | 7% |
| More than 60% | 11% |
| Source: 2025 Open Source ROI Survey, Q23, Sample Size = 567 | |

| Table A27: Share of annual software development budget allocated to different types of OSS contribution | | | |
|---|---|---|---|
| What percent of your annual software development budget was attributed to the following types of OSS contribution? (select one response per row) | | | |
| | Code contribution | Community contribution | Direct financial contribution |
| 0% | 6% | 10% | 16% |
| 1-5% | 11% | 9% | 8% |
| 6-10% | 5% | 8% | 6% |
| 11-20% | 8% | 9% | 6% |
| 21-30% | 8% | 13% | 11% |
| 31%-40% | 14% | 13% | 14% |
| 41%-50% | 13% | 10% | 10% |
| More than 50% | 11% | 6% | 4% |
| Don't know or not sure | 23% | 24% | 25% |
| Source: 2025 Open Source ROI Survey, Q24, Sample Size = 472 | | | |

| Table A28: Labor investment in code and community contribution | | |
|---|---|---|
| Approximately how many hours per week do your employees spend on OSS contributions in total? (e.g., two software engineers working on OSS about 20% of their time would be 16 hours/week) (select one response per row) | | |
| | Code contribution hours | Community contribution hours |
| 0 | 5% | 8% |
| 1 to 5 | 13% | 13% |
| 6 to 10 | 6% | 5% |
| 11 to 20 | 4% | 5% |
| 21 to 40 | 3% | 3% |
| 41 to 80 | 8% | 6% |
| 81 to 200 | 8% | 6% |
| 201 to 500 | 8% | 11% |
| 501 to 1,000 | 13% | 7% |
| 1,001 to 5,000 | 7% | 9% |
| 5,001 to 20,000 | 2% | 4% |
| More than 20,000 | 3% | 3% |
| Don't know or not sure | 19% | 19% |
| Source: 2025 Open Source ROI Survey, Q24, Sample Size = 462 | | |

| Table A29: Changes to contribution efficiency over time | |
|---|---|
| How has the time/effort required to make contributions changed as your team gained experience into the open source projects your company relies on? (select one) | |
| Don't know or not sure | 16% |
| Much more efficient now than when we started | 29% |
| Somewhat more efficient now | 37% |
| About the same efficiency | 14% |
| Somewhat less efficient now | 3% |
| Much less efficient now | 2% |
| Source: 2025 Open Source ROI Survey, Q27, Sample Size = 462 | |

| Table A30: Change in open source ROI since first contribution | | | |
|---|---|---|---|
| Since your organization started making OSS contributions, how has the ROI on the following activities changed? (select one response per row) | | | |
| | Code contribution | Direct financial contribution | Community contribution |
| Decreased significantly | 1% | 2% | 1% |
| Decreased slightly | 3% | 3% | 3% |
| No change | 15% | 23% | 23% |
| Increased slightly | 47% | 34% | 26% |
| Increased significantly | 19% | 21% | 31% |
| Don't know or not sure | 15% | 18% | 16% |
| Source: 2025 Open Source ROI Survey, Q56, Sample Size = 377 | | | |

| Table A31: Expected changes in open source ROI in the future | | | |
|---|---|---|---|
| How do you expect your organization's ROI on the following OSS activities to change in the future? (select one response per row) | | | |
| | Code contribution | Direct financial contribution | Community contribution |
| Decrease significantly | 1% | 2% | 1% |
| Decrease slightly | 2% | 2% | 2% |
| No change | 13% | 20% | 23% |
| Increase slightly | 47% | 34% | 30% |
| Increase significantly | 23% | 26% | 31% |
| Don't know or not sure | 13% | 16% | 14% |
| Source: 2025 Open Source ROI Survey, Q57, Sample Size = 377 | | | |

| Table A32: Benefits of using OSS | | | | | | | |
|---|---|---|---|---|---|---|---|
| For each of the following benefits from using OSS, rate how much benefit was incurred. (select one response per row) | | | | | | | |
| | No benefit | Low benefit | Medium benefit | High benefit | Very high benefit | Not applicable | Don't know or not sure |
| Reduced license costs | 1% | 6% | 16% | 27% | 39% | 2% | 8% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Vendor independence / lock-in avoidance | 1% | 6% | 16% | 30% | 36% | 1% | 8% |
| Improved scalability at lower cost | 2% | 8% | 21% | 29% | 28% | 2% | 11% |
| Lower total cost of ownership | 2% | 8% | 20% | 31% | 27% | 1% | 10% |
| Faster time to deployment | 2% | 11% | 20% | 31% | 27% | 1% | 9% |
| Transparent security audits | 3% | 11% | 19% | 27% | 26% | 3% | 12% |
| Improved system uptime & reliability | 1% | 11% | 23% | 28% | 25% | 1% | 11% |
| Faster vulnerability response time | 3% | 12% | 20% | 27% | 25% | 1% | 12% |
| Access to skilled developer pool | 6% | 11% | 20% | 26% | 23% | 2% | 12% |
| Accelerated feature development | 3% | 9% | 23% | 29% | 23% | 2% | 10% |
| Ease of customization | 2% | 10% | 26% | 28% | 23% | 2% | 10% |
| Community support efficiency | 3% | 13% | 23% | 29% | 20% | 1% | 11% |
| Source: 2025 Open Source ROI Survey, Q49, Sample Size = 474 | | | | | | | |

**Table A33: Costs of using OSS**

For each of the following costs of using OSS, rate how much cost was incurred. (select one response per row)

| | No cost | Low cost | Medium cost | High cost | Very high cost | Not applicable | Don't know or not sure |
|---|---|---|---|---|---|---|---|
| Inconsistent documentation & knowledge gaps | 6% | 15% | 25% | 22% | 16% | 2% | 14% |
| Security hardening & monitoring | 6% | 17% | 25% | 20% | 16% | 2% | 13% |
| Forking & long-term maintenance burden | 8% | 14% | 24% | 17% | 15% | 5% | 18% |
| Abandonment risk | 9% | 15% | 20% | 22% | 15% | 3% | 17% |
| Opportunity cost of DIY vs. SaaS | 9% | 12% | 22% | 20% | 14% | 3% | 19% |
| Internal support & maintenance labor | 6% | 18% | 26% | 21% | 14% | 2% | 14% |
| Compliance & legal review costs | 8% | 22% | 19% | 21% | 14% | 2% | 15% |
| Training & onboarding costs | 8% | 19% | 27% | 17% | 13% | 3% | 14% |
| Lack of vendor support | 9% | 16% | 21% | 21% | 13% | 5% | 15% |
| Customization & configuration costs | 4% | 18% | 26% | 24% | 12% | 3% | 13% |
| Integration with existing systems | 6% | 17% | 27% | 23% | 10% | 2% | 13% |
| Dependency management overhead | 6% | 18% | 25% | 23% | 9% | 3% | 15% |

Source: 2025 Open Source ROI Survey, Q47, Sample Size = 474

**Table A34: Benefits of contributing to OSS**

For each of the following benefits from contributing to OSS, rate how much benefit was incurred. (select one response per row)

| | No benefit | Low benefit | Medium benefit | High benefit | Very high benefit | Not applicable | Don't know or not sure |
|---|---|---|---|---|---|---|---|
| Access to cutting-edge technology/new development techniques | 3% | 10% | 19% | 28% | 29% | 3% | 8% |
| Greater infrastructure resilience | 3% | 8% | 23% | 30% | 25% | 2% | 8% |
| Higher code quality | 2% | 9% | 19% | 34% | 25% | 3% | 8% |
| Faster product development cycles | 3% | 10% | 19% | 32% | 25% | 3% | 7% |
| Lower maintenance burden for internal tools | 2% | 8% | 21% | 34% | 24% | 3% | 8% |
| Reduced engineering costs | 3% | 8% | 23% | 32% | 24% | 3% | 8% |
| Improved software security posture | 3% | 9% | 19% | 34% | 23% | 3% | 8% |
| Increased brand recognition in tech community | 4% | 11% | 20% | 30% | 23% | 3% | 8% |
| Influence on technology direction | 3% | 10% | 22% | 33% | 22% | 3% | 7% |
| Improved hiring efficiency and developer retention | 5% | 13% | 22% | 25% | 21% | 5% | 10% |
| Faster developer skill growth | 3% | 10% | 27% | 31% | 18% | 4% | 7% |

Source: 2025 Open Source ROI Survey, Q54, Sample Size = 384

**Table A35: Costs of contributing to OSS**

For each of the following costs of contributing to OSS, rate how much cost was incurred. (select one response per row)

| | No cost | Low cost | Medium cost | High cost | Very high cost | Not applicable | Don't know or not sure |
|---|---|---|---|---|---|---|---|
| License compliance enforcement | 12% | 17% | 19% | 21% | 19% | 4% | 9% |
| Loss of competitive advantage / trade secrets | 17% | 13% | 20% | 17% | 19% | 5% | 10% |
| Long-term maintenance of contributed code | 4% | 19% | 26% | 20% | 18% | 4% | 9% |
| Engineering time allocation | 5% | 19% | 26% | 22% | 18% | 3% | 8% |
| Security disclosure management | 9% | 17% | 23% | 22% | 17% | 3% | 10% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Delayed development timelines due to open collaboration process | 9% | 15% | 26% | 21% | 17% | 3% | 8% |
| Intellectual property risk mitigation | 11% | 17% | 20% | 23% | 16% | 4% | 9% |
| Reputational risk management | 14% | 16% | 19% | 21% | 16% | 3% | 10% |
| Program management overhead | 10% | 18% | 24% | 19% | 16% | 4% | 9% |
| Context switching & productivity loss | 9% | 17% | 23% | 23% | 16% | 3% | 9% |
| Tooling & CI/CD costs for public contributions | 9% | 19% | 22% | 23% | 15% | 4% | 9% |
| Internal approval & compliance processes | 9% | 18% | 23% | 24% | 13% | 4% | 8% |
| Source: 2025 Open Source ROI Survey, Q51, Sample Size = 384 | | | | | | | |

**Table A36: Change in contribution levels after joining OSS foundations**

| How have your organization's open source contributions changed since joining foundations? (select one) | |
|---|---|
| Don't know or not sure | 13% |
| Significantly increased (75%+ increase) | 8% |
| Moderately increased (25-75% increase) | 23% |
| Slightly increased (up to 25% increase) | 24% |
| Stayed about the same (within 5%) | 25% |
| Slightly decreased (up to 25% decrease) | 4% |
| Moderately decreased (25-75% decrease) | 2% |
| Significantly decreased (75%+ decrease) | 1% |
| Source: 2025 Open Source ROI Survey, Q44, Sample Size = 160 | |

**Table A37: Benefits of foundation membership**

| What benefits has your organization gained from foundation memberships? (select one response per row) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | No benefit | Low benefit | Medium benefit | High benefit | Very high benefit | Not applicable | Don't know or not sure |
| Networking opportunities with other member companies | 4% | 7% | 20% | 31% | 30% | 1% | 8% |
| Brand visibility and recognition | 4% | 8% | 19% | 32% | 29% | 3% | 6% |
| Preferred consideration for partnerships | 8% | 11% | 15% | 26% | 25% | 3% | 12% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Improved talent recruitment and retention | 11% | 11% | 18% | 23% | 23% | 4% | 9% |
| Increased influence on project direction | 8% | 11% | 26% | 25% | 23% | 1% | 8% |
| Access to training and certification programs | 8% | 11% | 23% | 26% | 22% | 2% | 10% |
| Better access to maintainers and core contributors | 7% | 11% | 24% | 27% | 21% | 3% | 8% |
| Legal benefits (e.g., patent troll protection) | 9% | 10% | 23% | 22% | 21% | 5% | 11% |
| Earlier access to roadmaps and technical information | 8% | 10% | 21% | 30% | 18% | 2% | 11% |
| Source: 2025 Open Source ROI Survey, Q45, Sample Size = 160 | | | | | | | |

CLOUD NATIVE COMPUTING FOUNDATION

Cloud native computing empowers organizations to build and run scalable applications with an open source software stack in public, private, and hybrid clouds. The Cloud Native Computing Foundation (CNCF) hosts critical components of the global technology infrastructure, including Kubernetes, Prometheus, and Envoy. CNCF brings together the industry's top developers, end users, and vendors and runs the largest open source developer conferences in the world. Supported by nearly 800 members, including the world's largest cloud computing and software companies, as well as over 200 innovative startups, CNCF is part of the nonprofit Linux Foundation. For more information, please visit www.cncf.io.

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TOYOTA

Toyota Motor Corporation is a global mobility company engaged in the development, manufacture, and sale of motor vehicles. Through a wide range of mobility-related products and services, Toyota aims to expand freedom of movement and contribute to a sustainable society. Toyota actively supports open-source collaboration as a driver of long-term innovation. Since joining the Linux Foundation in 2011, Toyota has been an active contributor to initiatives such as Automotive Grade Linux (AGL) and the OpenChain Project, supporting the advancement of automotive software and promoting the appropriate and responsible use of open source software across the automotive industry and global supply chain

THE LINUX FOUNDATION | Research

**Founded in 2021, Linux Foundation Research explores the growing scale of open source collaboration, providing insight into emerging technology trends, best practices, and the global impact of open source projects. Through leveraging project databases and networks, and a commitment to best practices in quantitative and qualitative methodologies, Linux Foundation Research is creating the go-to library for open source insights for the benefit of organizations the world over.**

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