The Total Economic Impact™ Of The JFrog Platform
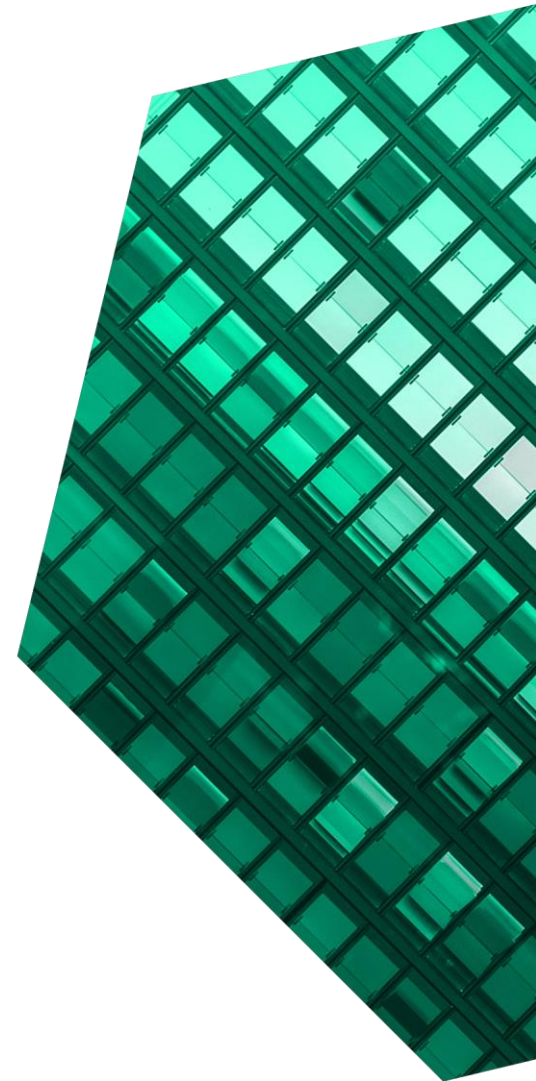
Cost Savings And Business Benefits Enabled By JFrog

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Executive Summary

> Modern DevOps has evolved from improving the hand-off between dev and ops to becoming a driver of business outcomes. As such, modern DevOps solutions must do more than automation — they must help software teams deliver software faster without sacrificing security. Using the JFrog Platform, software development and DevOps platform leaders have shrunk time to market, reduced wait times, and improved software supply chain security, enabling organizations to truly deliver more business value.

The JFrog Software Supply Chain Platform serves as a single system of record for automating the management of software updates at scale. It enables organizations to seamlessly build, secure, distribute, and deploy software with complete control over entire software releases, from code creation to device deployment.

Used globally by millions of developers, more than 7,000 customers, and 89 of the Fortune 100, the JFrog Platform manages and secures everything that touches the software development lifecycle, including application development and CI/CD pipeline. It also includes metadata like the binaries' sources, registries, repositories, code bases, open source projects, and most importantly, the vulnerabilities that may negatively impact application security.

JFrog Artifactory, JFrog Xray, JFrog Connect, JFrog Distribution, and JFrog Pipelines are the building blocks that comprise the JFrog Platform and act as the critical bridge between software development and deployment of that software. The platform paves the way for a modern DevSecOps paradigm — hosted on physical servers, virtual machines, containers, and microservices, and deployed across all platforms such as on-premises, private cloud, hybrid cloud, and public clouds for the highest scalability and availability.

JFrog commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying JFrog.[1] The purpose of this

KEY STATISTICS

Return on investment (ROI)
393%

Net present value (NPV)
$19.81M

study is to provide readers with a framework to evaluate the potential financial impact of JFrog on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed four representatives with experience using JFrog. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single composite organization.

Prior to using the JFrog Software Supply Chain Platform, these interviewees noted how their organizations struggled using siloed point solutions, incurred high costs associated with identifying and mitigating problems, and spent significant amounts of money deploying labor to conduct critical yet labor-intensive tasks like researching open source libraries and trying to keep up with developer support requests.

After the investment in the JFrog Software Supply Chain Platform, interviewees were able to address these challenges, focus their capabilities on growth activities like getting to market faster, and reallocate their DevOps, developer, cloud engineering, and senior security staff to activities that drove greater business value. Furthermore, JFrog enabled interviewees to facilitate automation and lay a foundation for more scalable workflows.

KEY FINDINGS

Quantified benefits. Three-year, risk-adjusted present value (PV) quantified benefits for the composite organization include:

- **Accelerated software delivery with reduced build wait times, worth $13.5 million over three years.** JFrog eliminates wait times for developer builds in the composite organization, giving back more productive time to developers at customer organizations. This adds particular value given the trend for excessive build times due to code composed from multiple open source projects.

- **Increased operational efficiency from automated vulnerability and compliance workflows on open source software, worth $6.7 million over three years.** JFrog provides automation that helps the composite organization streamline the process of exhaustively researching open source libraries, saving developers hours of research and ensuring that enterprise governance and best practices are followed.

- **Increased productivity with DevSecOps collaboration, worth $3.4 million over three years.** JFrog provides the capability to automate rules to all source code, a previously manual and labor-intensive process that is prone to error and extremely costly to scale. JFrog allows the composite organization to avoid hiring security staff to manually review source code, which is

valued at $3.4 million over three years. Interviewees also told Forrester that, with Artifactory, platform team support call volume reduced significantly from needing two full time customer support engineers down to one part-time support engineer, valued at $537,000 over three years.

- **Reduced number of cloud engineer effort required to manage infrastructure, worth $1.2 million over three years.** Using the JFrog SaaS product, the composite organization shifts the burden of managing a very large open source repository and database to the cloud, switches from capex to opex, and eliminates the need for extra cloud engineers or maintenance of expensive infrastructure.

Unquantified benefits. Benefits that provide value for the composite organization but are not quantified in this study include:

- **Improved time to market.** When organizations save time and eliminate waste from the value stream, they can shrink time to market and focus on delivering more value. JFrog helps the composite grow by allowing developers to deploy code in less time by avoiding significant time spent researching libraries and conducting open internet searches.

- **Increased level of trust and control.** JFrog reduces the composite organization's risk of security threats and increases compliance with license regulations to avoid risk of fines.

- **Improved developer experience.** JFrog empowers the composite organization's developers to work more autonomously and, as a result, provides an integrated, seamless experience. Developers have access to all the tools required to curate, develop, and deliver secure software.

- **Improved security posture.** JFrog increases the composite organizations feeling of assurance

from a security standpoint, no surprise given growing scrutiny on the vulnerability of open-source supply chains and the US government's call to action on SBOM governance.

Costs. Three-year, risk-adjusted PV costs for the composite organization include:

- **Annual license fees for JFrog, worth $4.9 million over three years.** JFrog charges the composite organization an annual software license fee of $1.7 million for Years 1 through 3.

- **Initial and ongoing implementation costs, worth $174,000 over three years.** JFrog charges the composite organization initial and ongoing fees of $50,000 annually for Years 0 through 3.

The representative interviews and financial analysis found that a composite organization experiences benefits of $24.85 million over three years versus costs of $5.04 million, adding up to a net present value (NPV) of $19.81 million and an ROI of 393%.

ROI
393%

BENEFITS PV
$24.82M

NPV
$19.78M
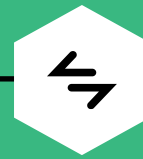
PAYBACK
<6 months

Benefits (Three-Year)

Accelerated software delivery with reduced build wait times — **$13.5M**

Increased operational efficiency from automated vulnerability and compliance workflows on open source software — **$6.7M**

Increased productivity with DevSecOps collaboration — **$3.4M**

Reduced cloud engineer effort required to manage infrastructure — **$1.2M**
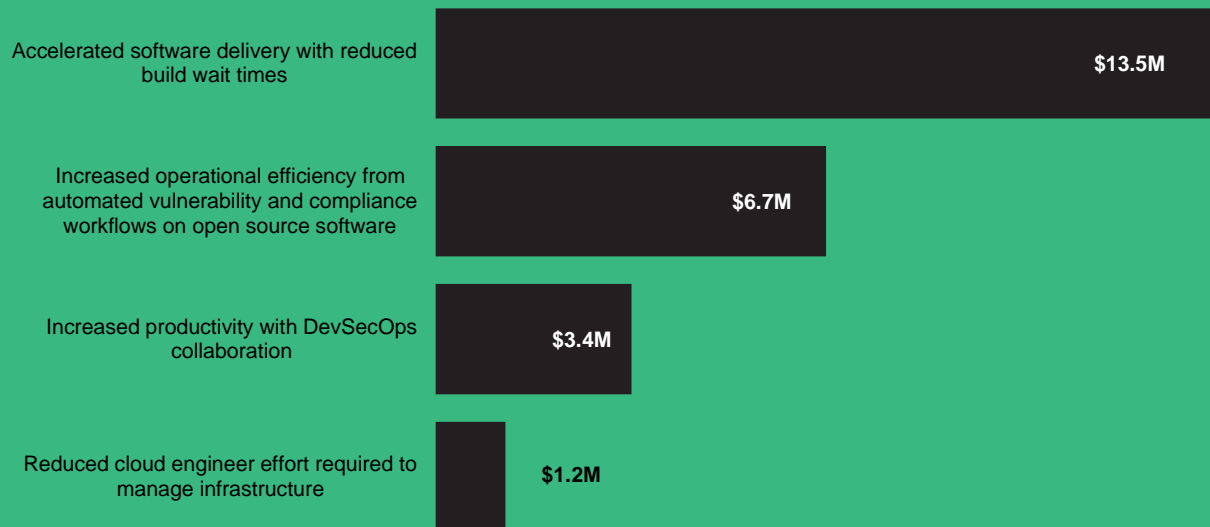
"From an organization that runs nearly 24/7 and needs high degrees of resiliency, [the JFrog Software Supply Chain Platform] hits all the marks for what enterprises require for this domain space."

— Head of ALM tools and platforms, financial services

TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in JFrog.

The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that JFrog can have on an organization.

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by JFrog and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.

Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the study to determine the appropriateness of an investment in JFrog.

JFrog reviewed and provided feedback to Forrester, but Forrester maintains editorial control over the study and its findings and does not accept changes to the study that contradict Forrester's findings or obscure the meaning of the study.

JFrog provided the customer names for the interviews but did not participate in the interviews.

DUE DILIGENCE
Interviewed JFrog stakeholders and Forrester analysts to gather data relative to JFrog.

INTERVIEWS
Interviewed four representatives at organizations using JFrog to obtain data with respect to costs, benefits, and risks.

COMPOSITE ORGANIZATION
Designed a composite organization based on characteristics of the interviewees' organizations.

FINANCIAL MODEL FRAMEWORK
Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewees.

CASE STUDY
Employed four fundamental elements of TEI in modeling the investment impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

The JFrog Customer Journey

Interviews			
Role	**Industry**	**Revenue**	**Size**
Director of DevOps and enterprise engineering enablement	Health insurance	$83 billion	67,100 employees
Software architect	Semiconductor computer software	$33 billion	21,000 employees
Head of ALM tools and platforms	Financial services	$24 billion	57,000 employees
VP DevOps, engineering manager	Financial services	$41 billion	238,000 employees

KEY CHALLENGES

The interviewees noted how their organizations struggled with common challenges, including:

- **Siloed point solutions.** Interviewees told Forrester that they struggled with point solutions that were isolated, with artifacts stored in local repositories. Furthermore, point solutions didn't work at the scale and scope that the organization needed, especially when teams worked across different continents.

- **High cost associated with identifying problems.** Interviewees described their difficulty isolating problems and troubleshooting them individually, leading to high costs to their organizations.

- **Ineffective research tasks and outcomes.** Forrester learned that developers were spending many hours manually researching open source packages, dependencies, and license information, a time-consuming practice that was duplicated across the organization.

- **Inefficient and error-prone repository management.** Interviewees told Forrester that they were using Maven to manage repositories, which was time consuming and error-prone and required significant ongoing maintenance.

- **Labor-intensive development processes.** Interviewees told Forrester that they suffered from labor-intensive development processes and the inability to put guardrails around their DevOps pipeline.

SOLUTION REQUIREMENTS/INVESTMENT OBJECTIVES

The interviewees' organizations searched for a solution that could:

- Improve developer and DevOps productivity.

- Provide one central library for all artifacts.

- Provide a system of record for DevOps processes for all artifact needs.

- Facilitate automation.

- Improve security posture.

- Offer scalability.

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an ROI analysis that illustrates the areas financially affected. The composite organization is representative of the four interviewees, and it is used to present the aggregate financial analysis in the next section. The

composite organization has the following characteristics:

Description of composite. The composite for this analysis is a global enterprise with revenues of $45 billion, with multiple business units and mission-critical applications. It has 100,000 employees and approximately 5,000 developers.

Key Assumptions

- **$45 billion in revenue**
- **100,000 employees**
- **5,000 developers**
- **Multiple business units**
- **Mission-critical applications**

> **"Having essentially a [disaster recovery] for all of the open source software that we're consuming and storing that out in Artifactory gives us a safety net over our software supply chain."**
>
> — Director of DevOps and enterprise engineering and enablement, health insurance

Analysis Of Benefits

Quantified benefit data as applied to the composite

	Total Benefits					
Ref.	**Benefit**	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Atr	Accelerated software delivery with reduced build wait times	$5,422,950	$5,422,950	$5,422,950	$16,268,851	$13,486,075
Btr	Increased operational efficiency from automated vulnerability and compliance workflows on open source software	$2,711,475	$2,711,475	$2,711,475	$8,134,426	$6,743,037
Ctr	Increased productivity with DevSecOps collaboration	$1,360,000	$1,360,000	$1,360,000	$4,080,000	$3,382,119
Dtr	Reduced cloud engineer effort required to manage infrastructure	$484,500	$484,500	$484,500	$1,453,500	$1,204,880
	Total benefits (risk-adjusted)	$9,978,926	$9,978,926	$9,978,926	$29,936,777	$24,816,111

ACCELERATED SOFTWARE DELIVERY WITH REDUCED BUILD WAIT TIMES

Evidence and data. Every time a developer commits code, a series of automation steps takes place to build it. But increasingly, as code is composed from multiple open source projects and libraries, build times are becoming excessive because the build system needs to fetch the latest version of each library, and that can take an extraordinary amount of time depending on where software packages are stored. This is especially true when teams are distributed across multiple continents.

With Artifactory, the lag time needed to download packages is eliminated, as the latest packages are always stored close to build systems, eliminating wait times and giving back more productive time to developers. The annual wait time avoided, which could be applied to more productive work as a result of JFrog, net of productivity recapture and attribution percentages, was 97,500 annual hours.

Modeling and assumptions. To calculate the value of this benefit, Forrester assumes the following for the composite organization:

- The number of weekly builds per developer is three.

- The time saved per build is 1 hour.

- The composite organization employs 5,000 developers.

- The average fully burdened hourly salary of developers is $70 per hour, or $140,000 per year.

> **"[JFrog] made binary management a lot easier. And now it's an integral part of the whole CI/CD solution for all of our development teams. Every product development team in [our company] uses Artifactory — and it's a mission-critical tool for all of the builds, [including] our SaaS solution."**
>
> *Software architect, semiconductor computer software*

Reduced build wait time and mean time to resolution, resulting in a time savings per developer of

156 hrs./yr.

- The volume of builds an organization manages.
- The availability of additional value-added tasks for developers.
- The average fully burdened annual salaries and hourly rates of developers involved in builds.
- The complexity of IT environments.

Results. To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $13.5 million.

Risks. The value of this benefit can vary across organizations due to differences in:

Accelerated Software Delivery With Reduced Build Wait Times					
Ref.	Metric	Source	Year 1	Year 2	Year 3
A1	Weekly builds per developer	Interviews	3	3	3
A2	Time saved per build (hours)	Interviews	1	1	1
A3	Average weekly wait time per developer that can be applied to more productive work (hours)	A1*A2	3	3	3
A4	Average annual wait time that can be applied to more productive work (hours)	A3*52	156	156	156
A5	Developers	Composite	5,000	5,000	5,000
A6	Developer productivity recapture rate	TEI standard	50%	50%	50%
A7	Recaptured developer productivity attributed to JFrog	Interviews	25%	25%	25%
A8	Annual wait time avoided that can be applied to more productive work	(A4*A5)*A6*A7	97,500	97,500	97,500
A9	Fully burdened hourly salary of developers	TEI standard	$70	$70	$70
At	Accelerated software delivery with reduced build wait times	A8*A9	$6,778,688	$6,778,688	$6,778,688
	Risk adjustment	↓20%			
Atr	Accelerated software delivery with reduced build wait times (risk-adjusted)		$5,422,950	$5,422,950	$5,422,950
	Three-year total: $16,268,851		**Three-year present value: $13,486,075**		

INCREASED OPERATIONAL EFFICIENCY FROM AUTOMATED VULNERABILITY AND COMPLIANCE WORKFLOWS ON OPEN SOURCE SOFTWARE

Evidence and data. Many organizations reap the rewards of using open source software to power their digital transformations. However, enterprise governance requires engineers to thoroughly research the open-source libraries they wish to leverage. Oftentimes, this can take hours as developers must not only research the functional value of the open source software for fit and purpose, but they must also:

- Evaluate the license type (to ensure it aligns with corporate standards).

- Research the health of the open source community supporting the open source project (to ensure it is managed by reputable committers and is maintained on a regular basis).

- Research any recent security issues with the open source project to make sure they have been remediated.

With JFrog Xray, this is all done automatically, saving developers hours of research and providing assurances that all enterprise governance and best practices are being followed. Based on the interviews, the annual avoided time that could be applied to more productive work as a result of JFrog, net of productivity recapture and attribution percentages, was 48,750 annual hours.

Automated vulnerability and compliance workflows reduced time spent on open source research tasks by

30%

Modeling and assumptions. To calculate the value of this benefit, Forrester assumes the following for the composite organization:

- Prior to JFrog, each developer spends 5 hours per week for open source research tasks.

- The percentage reduction in time for open source research tasks as a result of JFrog is 30%.

- The composite organization employs 5,000 developers.

- The average fully burdened hourly salary of developers is $70 per hour, or $140,000 per year.

> **"It'll help us grow because [the time] to deploy is [reduced], [and] your time to market is [reduced] because I'm not spending time researching every library from [the] open internet. It's a central version. That level of organizational ability within a tool is good to have."**
>
> *VP of DevOps, engineering manager, financial services*

Risks. The value of this benefit can vary across organizations due to differences in:

- The volume of open source research library tasks an organization manages.

- Time spent by developers in researching and analyzing open source library tasks.

- The average fully burdened annual salaries and hourly rates of developers involved in open source research library tasks.

- IT environment complexity.

Results. To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV of $6.7 million.

	Increased Operational Efficiency From Automated Vulnerability And Compliance Workflows On Open Source Software				
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
B1	Time per week spent by each developer on open source research tasks before JFrog (hours)	Composite	5	5	5
B2	Percentage reduction in time for open source research tasks as result of JFrog	Interviews	30%	30%	30%
B3	Time avoided per week by each developer (hours)	B1*B2	2	2	2
B4	Time avoided per year by each developer (hours)	B2*52	78	78	78
B5	Developers conducting research library tasks	Composite	5,000	5,000	5,000
B6	Developer productivity recapture rate	TEI standard	50%	50%	50%
B7	Recaptured developer productivity attributed to JFrog	Interviews	25%	25%	25%
B8	Annual hours avoided by developers	(B4*B5)*B6*B7	48,750	48,750	48,750
B9	Fully burdened hourly salary of developers	TEI standard	$70	$70	$70
Bt	Increased operational efficiency from automated vulnerability and compliance workflows on open source software	B8*B9	$3,389,344	$3,389,344	$3,389,344
	Risk adjustment	↓20%			
Btr	Increased operational efficiency from automated vulnerability and compliance workflows on open source software (risk-adjusted)		$2,711,475	$2,711,475	$2,711,475
	Three-year total: $8,134,426		**Three-year present value: $6,743,037**		

INCREASED PRODUCTIVITY WITH DEVSECOPS COLLABORATION

Evidence and data. To ensure that security standards are being followed, many organizations require a security expert to review code for vulnerabilities. But manually reviewing source code is labor-intensive, prone to error, and very expensive to scale. With JFrog, fewer security experts are needed because they encode software review rules directly into the JFrog platform; JFrog automatically applies those rules to all source code. This enables security reviews to happen at scale without hiring additional developers or IT staff.

Internal platform teams must maintain an internal customer support desk to address the needs of their primary end users: the developers creating products for their enterprise. Interviewees told Forrester that with Artifactory, platform team support call volume reduced significantly, from needing two full-time customer support engineers down to one part-time support engineer.

JFrog increased productivity and reduced time spent on support by

75%

Modeling and assumptions. To calculate the value of this benefit, Forrester assumes the following for the composite organization:

- The number of avoided security staff is eight.

- The fully burdened annual salary of security staff is $170,000.

- The number of DevOps FTEs for support calls prior to JFrog is two.

- The number of DevOps FTEs for support calls after JFrog is 0.5 FTE.

- The fully burdened annual salary of DevOps FTE is $160,000.

> **"JFrog definitely [provides] a good amount of coverage, especially with the latest-day integration, which gives us the assurance of additional security scrutiny and scanning before the artifact is even brought into our environment — that definitely helps."**
>
> *VP of DevOps, engineering manager, financial services*

Risks. The value of this benefit can vary across organizations due to differences in:

- The number of total security staff dedicated to or partially involved in manually reviewing source code for security issues.

- The average fully burdened annual salaries and hourly rates of security staff involved in manually reviewing source code for security issues.

- The availability of additional value-added tasks for DevOps staff.

- The average fully burdened annual salaries of DevOps staff required for support calls.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of $3.4 million.

Increased Productivity With DevSecOps Collaboration

Ref.	Metric	Source	Year 1	Year 2	Year 3
C1	Avoided security staff	Interviews	8	8	8
C2	Annual fully burdened salary of security staff	TEI standard	$170,000	$170,000	$170,000
C3	Savings due to avoidance of hiring security staff to manually review source code for security issues	C2*C1	$1,360,000	$1,360,000	$1,360,000
C4	DevOps FTEs for support calls prior to JFrog	Interviews	2	2	2
C5	DevOps FTEs for support calls after JFrog	Interviews	0.5	0.5	0.5
C6	Reduction in number of FTEs for support calls	C4-C5	1.5	1.5	1.5
C7	Fully burdened annual salary of DevOps FTE	TEI standard	$160,000	$160,000	$160,000
C8	Increased productivity as a result of fewer DevOps staff required for support calls	C6*C7	$240,000	$240,000	$240,000
Ct	Increased productivity with DevSecOps collaboration	C3+C8	$1,600,000	$1,600,000	$1,600,000
	Risk adjustment	↓15%			
Ctr	Increased productivity with DevSecOps collaboration (risk-adjusted)		$1,360,000	$1,360,000	$1,360,000
	Three-year total: $4,080,000		**Three-year present value: $3,382,119**		

**REDUCED CLOUD ENGINEER EFFORT
REQUIRED TO MANAGE INFRASTRUCTURE**

Evidence and data. Managing an open source repository is akin to managing a massive database at scale, it requires highly skilled IT engineers as well as sophisticated infrastructure that is resilient and performant. Using the JFrog SaaS product, customers were able to shift that burden to the cloud, switch from capex to opex, and eliminate the need for extra cloud engineers or maintenance of expensive infrastructure.

Modeling and assumptions. To calculate the value of this benefit, Forrester assumes the following for the composite organization:

- The number of cloud engineers required to manage infrastructure is reduced to three FTEs.

- The fully burdened annual salary of a cloud engineering FTE is $190,000.

Risks. The value of this benefit can vary across organizations due to differences in:

- The total number of cloud engineering staff required to manage infrastructure prior to JFrog.

- The average fully burdened annual salaries and hourly rates of cloud engineers involved in managing infrastructure.

- The complexity of IT environments.

Results. To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of $1.2 million.

Reduced Cloud Engineer Effort Required To Manage Infrastructure					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
D1	Cloud engineers required to manage infrastructure (FTEs)	Interviews	3	3	3
D2	Fully burdened annual salary of cloud engineer FTE	TEI standard	$190,000	$190,000	$190,000
Dt	Reduced cloud engineer effort required to manage infrastructure	D1*D2	$570,000	$570,000	$570,000
	Risk adjustment	↓15%			
Dtr	Reduced cloud engineer effort required to manage infrastructure (risk-adjusted)		$484,500	$484,500	$484,500
	Three-year total: $1,453,500		**Three-year present value: $1,204,880**		

UNQUANTIFIED BENEFITS

Additional benefits JFrog experienced but was unable to quantify include:

- **Improved time to market.** When organizations save time and eliminate waste from the value stream, they can shrink time to market and focus on delivering more value. To that point, Forrester asked interviewees: "Do you feel that you've been able to deliver services faster with JFrog, whether that be with new product to market or updates and releases?" One interviewee, the head of ALM tools and platforms at a financial services company, replied: "Yes, [JFrog] has scaled with us throughout the years. Some of our team's development practices are all great [in terms of] the amount of binaries that are pushing up there, especially in the prerelease area. [JFrog] has been able to scale with us as we've gone from data center monoliths waterfall all the way now into cloud agile teams practicing through CI/CD at a really high rate. It's been able to scale and meet the needs of the business."

  Another interviewee, the VP of DevOps and engineering manager at a financial services company, told Forrester: "JFrog will help us grow because when we are coming to deploy … time to market is less because we're not spending a lot of time researching every library that we have to get from the open internet. It's a central version … [that includes] all the approved security regulations. I understand which ones are quarantined [and] which ones are obsolete and cannot be used anymore. So when we have that level of organizational abilities within a tool, I think that's a good thing to have."

- **Increased level of trust and control.** The director of DevOps and enterprise engineering enablement at a health insurance company told Forrester that JFrog gives its organization a "certain sense of control that [they] otherwise wouldn't have."

- **Improved developer experience.** When developers can work more autonomously, they are usually happier. JFrog enables this by providing all the tools developers need to curate, develop, and deliver secure software. The Head of ALM tools and platforms in financial services told Forrester that each person within their team is able to "manage security within their development lifecycle, which is a huge benefit."

- **Strengthened security posture.** With growing scrutiny on the vulnerability of open source supply chains and the US government's call to action on software bill of materials (SBOM) governance, it is no surprise that interviewees told Forrester that JFrog gives their organizations an increased feeling of assurance from a security standpoint. The VP DevOps, engineering manager in financial services said, "JFrog gives me a sense of assurance that I'm not

> **"[JFrog] listens, which is a great asset, and their support is very good. They work with you very closely. So that's really useful. [It's] probably one of the reasons why we stayed with them all these years."**
>
> *Software architect, semiconductor computer software*

  downloading something from a mirror image from the other end of the world."

FLEXIBILITY

Customers have experienced increased agility due to JFrog's platform's built-in flexibility to:

- **Be included in JFrog's product roadmap.**
  During interviews, Forrester learned that
  customers felt JFrog listens with regard to future
  product roadmaps. According to the software
  architect at a semiconductor computer software
  company: "[JFrog] is a great asset, and their
  support is very good. They do work with you very
  closely. So that's really useful, and probably one
  of the reasons why we stayed with them all these
  years. And the other thing that we have with them
  is regular meetings. We get invited to their events
  and so forth, but we also have the QBR (quarterly
  meeting), where they give us a little bit of their
  roadmap of where they're going and then we can
  give them a list of things that are important to us
  and how we want to fit into their roadmap. So
  those are really beneficial, and that's what keeps
  the partnership strong."

- **Grow far more easily than from managing on
  their own.** Customers stated that JFrog improves
  the ability for them to grow compared with
  managing by themselves.

Flexibility would also be quantified when evaluated as
part of a specific project (described in more detail in
Appendix A).

> **"It's helping us maintain a more
> secure posture relatively [with]
> the open source software that
> we're consuming. So focusing in
> on those security aspects as
> well as the resiliency of the
> source code — that's the benefit
> to the business."**
>
> *Director of DevOps and enterprise
> engineering and enablement,
> health insurance*

Analysis Of Costs

■ Quantified cost data as applied to the composite

Total Costs

Ref.	Cost	Initial	Year 1	Year 2	Year 3	Total	Present Value
Ftr	Annual license fees for JFrog	$0	$1,955,000	$1,955,000	$1,955,000	$5,865,000	$4,861,796
Gtr	Initial and ongoing implementation costs	$50,000	$50,000	$50,000	$50,000	$200,000	$174,343
	Total costs (risk-adjusted)	$50,000	$2,005,000	$2,005,000	$2,005,000	$6,065,000	$5,036,139

ANNUAL LICENSE FEES FOR JFROG

Evidence and data. JFrog charged interviewees' organizations an annual software license fee of $1.7 million annually for Years 1 through 3. An important note: This study focuses on the top 1% of JFrog's customers, which are very large enterprises. Therefore, the annual license fee incorporated in this model is larger than JFrog's overall average license fee across its customer base.

Modeling and assumptions. This cost is valued using data provided by interviewed customers and JFrog.

Risks. The value of this cost can vary across organizations due to:

- Preferred pricing if the customer is a desirable tier-one client.

- Changes in license pricing as customer organizations grow and require additional functionality.

Results. To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year, risk-adjusted total PV (discounted at 10%) of $4.9 million.

Annual License Fees For JFrog

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
F1	Annual license fees for JFrog	Interviews	$0	$1,700,000	$1,700,000	$1,700,000
Ft	Annual license fees for JFrog	F1	$0	$1,700,000	$1,700,000	$1,700,000
	Risk adjustment	↑15%				
Ftr	Annual license fees for JFrog (risk-adjusted)		$0	$1,955,000	$1,955,000	$1,955,000
	Three-year total: $5,865,000			**Three-year present value: $4,861,796**		

INITIAL AND ONGOING IMPLEMENTATION COSTS

Evidence and data. JFrog charged interviewees' organizations $50,000 initially and on an annual basis through Year 3.

Modeling and assumptions. This cost is valued using data provided by JFrog.

Risks. The value of this cost can vary across organizations due to:

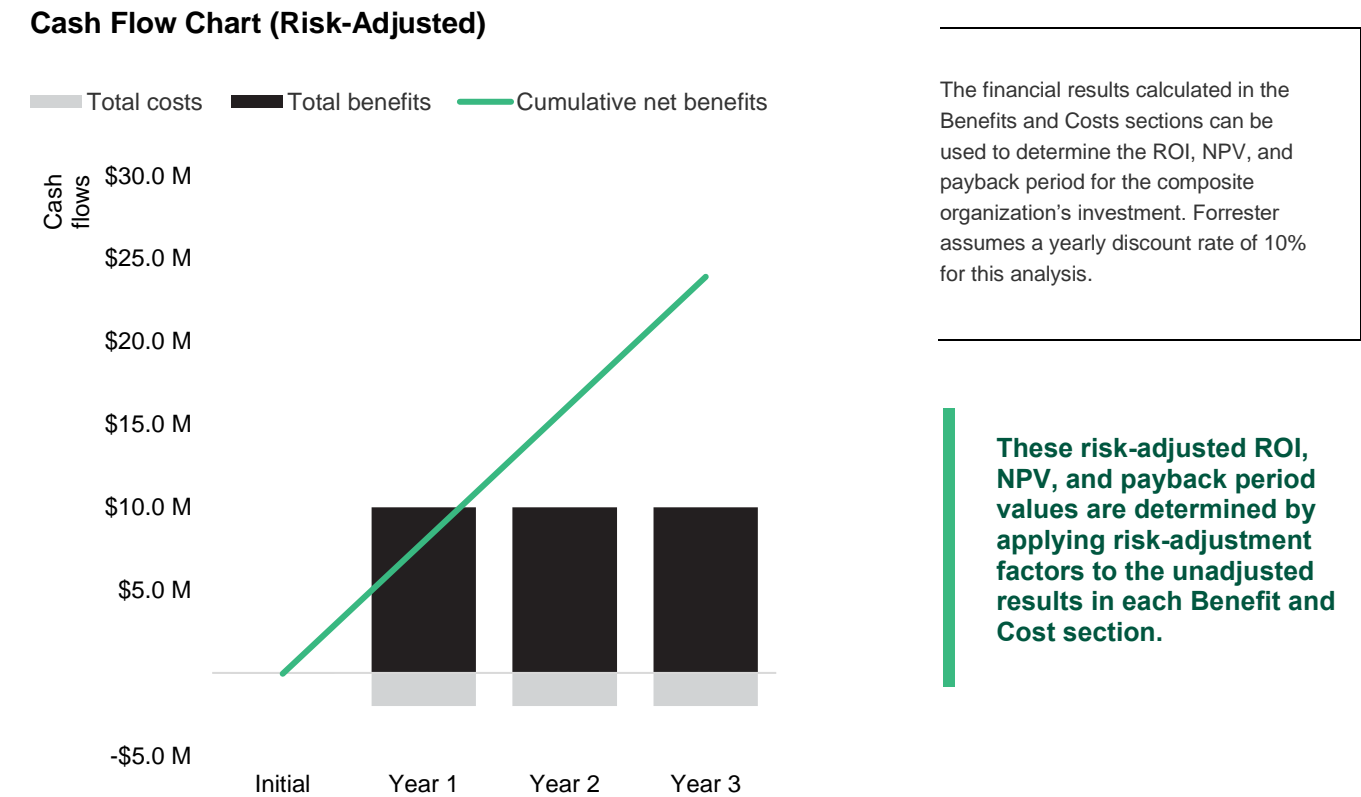- Preferred pricing if the customer is a desirable tier-one client.

- Changes in initial and ongoing implementation costs as customer organizations grow and require additional functionality.

Results. To account for these risks, Forrester typically adjusts costs upward by a certain percentage. In this case, because no additional risk was found necessary given the cost quote directly from JFrog, a 0% risk adjustment is used in the model, yielding a three-year, risk-adjusted total PV of $174,000.

Initial And Ongoing Implementation Costs						
Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
G1	Initial and ongoing implementation costs	Interviews	$50,000	$50,000	$50,000	$50,000
Gt	Initial and ongoing implementation costs	G1	$50,000	$50,000	$50,000	$50,000
	Risk adjustment	0%				
Gtr	Initial and ongoing implementation costs (risk-adjusted)		$50,000	$50,000	$50,000	$50,000
Three-year total: $200,000			**Three-year present value: $174,343**			

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)

The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment. Forrester assumes a yearly discount rate of 10% for this analysis.

These risk-adjusted ROI, NPV, and payback period values are determined by applying risk-adjustment factors to the unadjusted results in each Benefit and Cost section.

Cash Flow Analysis (Risk-Adjusted Estimates)						
	Initial	**Year 1**	**Year 2**	**Year 3**	**Total**	**Present Value**
Total costs	($50,000)	($2,005,000)	($2,005,000)	($2,005,000)	($6,065,000)	($5,036,139)
Total benefits	$0	$9,978,926	$9,978,926	$9,978,926	$29,936,777	$24,816,111
Net benefits	($50,000)	$7,973,926	$7,973,926	$7,973,926	$23,871,777	$19,779,972
ROI						393%
Payback period (months)						<6

Appendix A: Total Economic Impact

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

TOTAL ECONOMIC IMPACT APPROACH

Benefits represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.

Costs consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.

Flexibility represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

Risks measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.

PRESENT VALUE (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.

NET PRESENT VALUE (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made unless other projects have higher NPVs.

RETURN ON INVESTMENT (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.

DISCOUNT RATE

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.

PAYBACK PERIOD

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

Appendix B: Endnotes

[1] Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.