

A Forrester Total Economic Impact™
Study Commissioned By Google
January 2019

The Total Economic Impact™ Of Google G Suite

Business Benefits And Cost Savings
Enabled By G Suite, A Cloud Native
Platform For Work

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Project Directors:

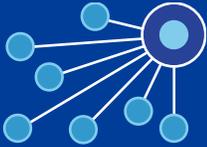
Steve Odell
Nick Ferrif

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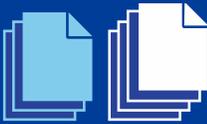
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Key Benefits



Increased bottom-line profit from G Suite transformation:

\$12.9 million



Increased end user and IT productivity:

\$23.6 million



Improved security savings:

\$7.6 million

Executive Summary

Google commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying G Suite. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of G Suite on their organizations.

Google G Suite offers a set of work applications that help organizations transform their businesses. To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed eight enterprise customers with years of experience using G Suite.

Prior to using G Suite, the interviewed organizations used a mix of on-premises and cloud collaboration tools. Organizations used cloud applications for specific point solutions like chat and videoconferencing, while hosting core productivity applications like email and document sharing on-premises. These organizations reported that their previous solutions did not allow them to address a number of strategic initiatives — namely, the need to modernize the way the organization works and keeping the organization secure from cybersecurity threats.

Interviewed organizations decided to deploy G Suite to modernize their businesses and meet the emerging challenges in their markets. Once implemented, G Suite drove transformations across the organizations, promoted cultures of collaboration, and empowered employees to rethink the way they work. Additionally, moving to G Suite sent a message to each organization's workforce that leadership was focused on supporting employees by providing next-generation collaboration tools.

Interviewed organizations also deployed G Suite because of Google's approach to security. Customers mentioned that G Suite includes security tools designed to empower IT administrators and protects employees from spam, malware, and phishing attacks. Additionally, customers recognized the benefits of leveraging Google's global infrastructure and scale which provides a highly secure environment that shields organizations from cybersecurity threats.

Forrester developed a composite organization based on data gathered from the customer interviews to reflect the total economic impact that G Suite could have on an organization. The composite organization is representative of the organizations that Forrester interviewed and is used to present the aggregate financial analysis in this study. All values are reported in risk-adjusted three-year present value (PV) unless otherwise indicated.

Key Financial Findings

Quantified benefits. The following benefits reflect the financial analysis associated with the composite organization.



ROI
331%



Benefits PV
\$55.7 million



NPV
\$42.8 million



Payback
< 12 months

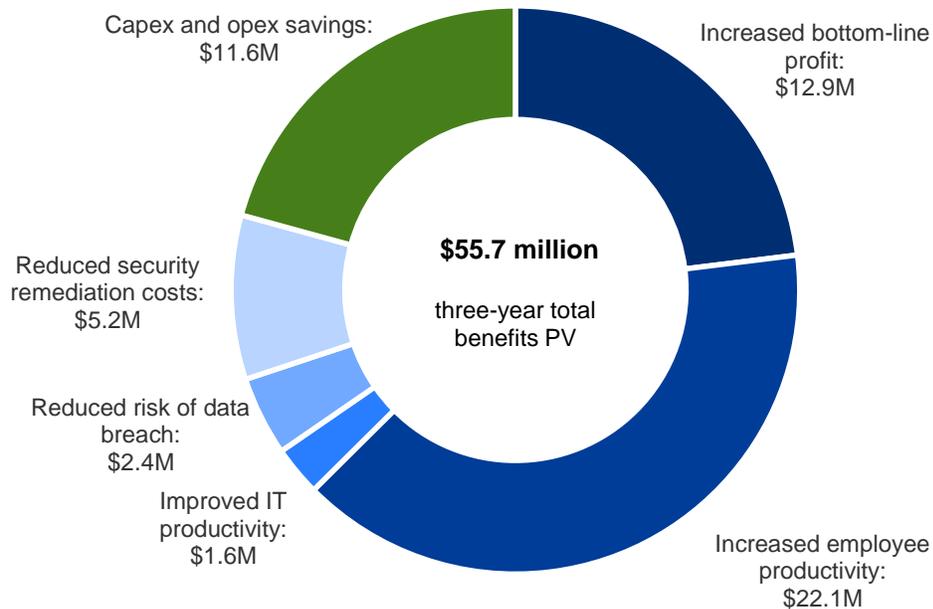
- › **Top-line revenue growth leading to \$12.9 million in additional bottom-line profit through G Suite transformation.** Interviewed organizations noted that the migration to G Suite transformed the way their employees worked. G Suite enabled better collaboration across teams, gave workers better access to data to inform decision making, and sparked a cultural change toward embracing innovation. Organizations reported upticks in internal, employee-led initiatives that accelerated the business and ultimately had a positive impact to their bottom lines.
- › **Increased employee efficiency and productivity totaling \$22.1 million.** Interviewed organizations described efficiency gains related to G Suite's robust set of collaboration tools and features. Employees were able to collaborate more effectively with real-time editing in Docs, Slides, Sheets, and other tools, contributing feedback from anywhere on any device. The ease of collaboration also led to a reduction in the number and length of meetings, allowing employees to stay focused on active work. Additionally, in G Suite, all software and security updates are processed automatically so workers no longer experienced lengthy and inconvenient disruptions to keep devices and hardware up to date.
- › **IT productivity and efficiency gains totaling \$1.6 million.** Interviewed organizations described tactical benefits related to IT productivity and efficiency. IT operators realized efficiency gains because update and patching activities were automatically pushed to all devices, no longer requiring IT to implement or monitor patches and updates. Users' familiarity with G Suite from using the suite in their personal lives, coupled with the intuitive design of the tools, led to a decrease in on-demand IT and help desk tickets, freeing up additional time for IT to focus on value-adding initiatives.
- › **Reduced security incident remediation costs from email malware and exploits totaling \$5.2 million.** Interviewed organizations noted that Gmail's built-in spam, malware, and phishing filter was more effective than their legacy third-party email filters. This significantly reduced the total number of malicious emails received by employee inboxes, which reduced the number of malware infections requiring remediation.
- › **Reduced risk and cost of a data breach totaling \$2.4 million.** Interviewed organizations noted that moving to G Suite allowed them to have an integrated full security stack for their collaboration tools. Having multiple third-party security vendors with their legacy solutions made it more difficult to manage and hampered visibility into their security environments. Moving to G Suite ultimately improved their security posture and thus reduced the likelihood of a data breach.
- › **Reduced Capex and opex totaling \$11.6 million in bottom-line savings.** Organizations noted that they have reduced capital and operating expenses as a result of the G Suite investment. Savings came from several areas, such as reduced total number of servers and hardware units, reduced cost in maintaining servers and hardware, reduced corporate travel, and reduced legacy IT software license costs.

Costs. The following costs reflect the financial analysis associated with the composite organization.

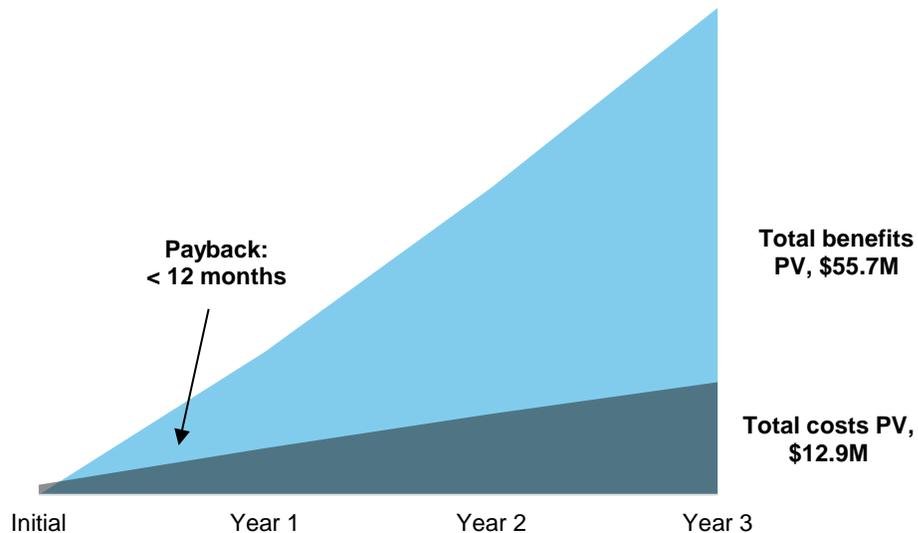
- › **Subscription costs totaling \$9.4 million.** Interviewed organizations noted subscription costs, both for G Suite and for a single sign-on (SSO) solution to allow ease of access to their cloud tools for employees.
- › **Implementation and ongoing support costs totaling \$3.5 million.** Interviewed organizations described internal implementation costs, training, ongoing support, and professional services.

Forrester's interviews with eight existing G Suite customers, and the subsequent financial analysis, found that a composite organization experienced benefits of \$55.7 million over three years, and costs of \$12.9 million. This results in a net present value (NPV) of \$42.8 million and an ROI of 331%.

Three-year Benefit Summary



Three-year Financial Summary



The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

TEI Framework And Methodology

From the information provided in the interviews, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing G Suite.

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 G Suite can have on an organization:



DUE DILIGENCE

Interviewed Google stakeholders and Forrester analysts to gather data relative to G Suite.



CUSTOMER INTERVIEWS

Interviewed eight organizations using G Suite to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of the interviewed 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 interviewed organizations.



CASE STUDY

Employed four fundamental elements of TEI in modeling G Suite's impact: benefits, costs, flexibility, and risks. Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves to provide a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by Google 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 report to determine the appropriateness of an investment in Google G Suite.

Google 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.

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

The G Suite Customer Journey

BEFORE AND AFTER THE G SUITE INVESTMENT

Interviewed Organizations

For this study, Forrester conducted eight interviews with G Suite customers. Interviewed customers include the following:

INDUSTRY	REGION	INTERVIEWEE	NUMBER OF USERS
Airline	Global	Head of vendor management	50,000 G Suite users
Automotive services	North America	Senior vice president (SVP) of technology	4,000 G Suite users
Consumer packaged goods (CPG)	Global	IT director	37,000 G Suite users
Electronics manufacturing	Global	IT director	16,600 G Suite users
Financial services	LATAM, North America	Chief of digital transformation	19,000 G Suite users
Financial services	North America	SVP of technology	5,500 G Suite users
Government	North America	Chief information security officer (CISO)	36,000 G Suite users
IT professional services	Global	Head of strategy, TechOps	6,000 G Suite users

Key Challenges Before G Suite

Before the investment in G Suite, interviewees described a number of strategic initiatives they wanted to address:

- › **The need to reinvent the way they worked.** Organizations felt pressure internally and externally to modernize their businesses. Internally, organizations wanted to provide employees with advanced business and collaboration tools while maximizing security. Meanwhile, pressure to remain competitive in their markets, as well as expectations from prospective employees, drove organizations to reconsider their legacy tools. An SVP of technology in financial services told Forrester: “We truly had to reimagine how we do work. Our industry is being disrupted, and if we continue to do things the way we always have . . . we *may* survive, but we won’t be as competitive as we need to be in this changing landscape.”
- › **Empowering their employees with technology.** Organizations realized that without the right tools, it was difficult for employees to meet or exceed the ever-increasing demands of their customers. A chief of digital transformation in the financial services industry said: “We were launching all these digital products for our customers and realized we needed to do the same with our employees. We wanted to give our people the technology they needed to be successful.”

“We were really looking for a next-generation messaging and collaboration platform that’s seamless across all these tools.”

IT director, electronics manufacturing industry



- › **Improving their overall security stack.** Security leaders realize that the threats to their organizations are constantly evolving, making it increasingly difficult to keep all of their assets secure. In light of this landscape, the organizations were looking for security-focused vendors and partners to bolster the overall security of their organizations and mitigate as much risk as possible. Organizations also noted challenges in managing and integrating several disparate third-party security solutions to provide overall secure environments.

Why G Suite?

Interviewed organizations chose G Suite to address their challenges for several reasons:

- › **G Suite represents a bold transformation and sends a message to employees.** By partnering with Google, organizations signaled to their employees, and to the market, that they are taking strides to innovate and modernize their businesses. An IT director in the CPG industry told Forrester: “Google’s name is synonymous with innovation. It sends a message to our employees that we’re serious about changing the way we do business.”
- › **G Suite is a cloud-native solution.** Organizations cited some of the advantages of a cloud-native solution in their decisions to move to G Suite. These included not adding additional on-premises infrastructure and to remove some where possible; the increased security from storing data in the cloud, rather than housing all data in the same place; and the ability for employees to access company data, applications, and other resources from anywhere on any device. An IT director in the electronics manufacturing industry said, “Cloud is the future, and G Suite is the most comprehensive suite of collaborative cloud tools.”
- › **G Suite has built-in security.** Organizations recognized the increased need and pressure to secure company data, as well as the data of their customers and partners. G Suite’s built-in security features (such as advanced anti-phishing, security center, mobile management, etc.) give admins simpler, more streamlined ways to manage users, control devices, ensure compliance, and keep data secure. All of these features are included with G Suite at no additional cost, allowing organizations to sunset redundant third-party services. An SVP of technology in the automotive services industry stated: “G Suite is built from the ground up around security. That’s something we really like about Google.”

“We’ve improved productivity for our IT team. They use that extra time to work on tools that improve productivity for our organization. Our productivity improvements are compounding.”

IT director, CPG industry



“We needed to fundamentally change in order to survive. A lightbulb went off with G Suite being that lightning rod for our team members to start to see — we’re serious about transforming as an organization, and this is how we’ll survive in the financial services space going forward.”

SVP of technology, financial services industry



Key Results With G Suite

The interviews revealed that the investment in G Suite addressed the challenges interviewees were facing and provided additional benefits:

- › **Increased revenue leading to additional bottom-line profit due to G Suite.** Organizations credited G Suite with fundamentally changing the way their employees work. This manifested into cultural shifts toward innovation resulting in employees feeling empowered to rethink established processes and improve the business. A chief of digital transformation in the financial services industry told Forrester: “Migrating to G Suite has enabled hundreds of initiatives in our organization. One of these initiatives has directly contributed to us achieving record sales year over year, and this is before even taking into consideration the productivity improvements we see from the collaboration tools.”
- › **Improvements in end user and IT productivity.** Through G Suite’s robust set of collaboration tools and features, employees across organizations were able to collaborate better, streamline workflows, and perform work how, when, and where they were most productive. Additionally, familiarity with Google products resulted in a decrease in on-demand IT and help desk tickets. An SVP of technology in the automotive services industry said: “The impact on productivity and collaboration has been very good. People are realizing they can share information and collaborate across our 150 locations and with external parties with ease. It’s something seemingly so basic, but bringing people together has been very beneficial.”
- › **Improved security with better protection against attacks.** Consolidating data onto the Google Cloud significantly reduced the number of endpoints that needed protection and allowed greater control over permissions and access by leveraging G Suite’s admin tools; this reduces the overall attack surface. An SVP of technology in the automotive services industry stated: “We have much better visibility and control over our collaboration tools. We can see who has access to what documents, control how long they have access to it, who has the rights to share with which people, not share it, etc. We just didn’t have any of those capabilities before.”
- › **Capex and opex savings.** Organizations noted that they have reduced capital and operating expenses as a result of the G Suite investment. Savings came from several areas, such as reduced number of servers and hardware maintenance, reduced corporate travel, and reduced legacy IT software license costs.

“Google’s name is synonymous with innovation. It sends a message to our employees that we’re serious about changing the way we do business.”

IT director, CPG industry



“And again, I can’t reiterate enough, the biggest benefit we found is I was paying \$300K for an email spam filter before, but the Google spam filter is better. It’s so good that now I’m just using the Google spam solution, while at the same reducing the number of malicious emails reaching employees.”

CISO, government



“The impact on productivity and collaboration has been very good. People are realizing they can share information and collaborate across our 150 locations and with external parties with ease. It’s something seemingly so basic, but bringing people together has been very beneficial.”

SVP of technology, financial services industry



Composite Organization

Based on the interviews, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected. The composite organization is representative of the eight companies that Forrester interviewed and is used to present the aggregate financial analysis in the next section. The composite organization that Forrester synthesized from the customer interviews has the following characteristics:

Description of composite. The composite organization is a global conglomerate that operates in the North America, EMEA, LATAM, and APAC regions. It has 20,000 employees and annual revenues of \$3 billion. Employee headcount and annual revenue grow at a 3% rate year over year (YOY).

Deployment characteristics. The composite organization deploys G Suite over a period of seven months. Employees at the composite organization have access to and utilize: Gmail, Calendar, Drive, Hangouts Meet, Hangouts Chat, Docs, Sheets, Forms, Slides, Keep, Google+, Sites, App Maker, Jamboard, and Cloud Search. Adoption rate represents the percentage of employees actively using the G Suite collaboration tools as opposed to the legacy solution. The adoption rate for Year 1 is 75%, which increases to 90% and 100% in years 2 and 3, respectively. Previously, the composite organization had used a mix of on-premises and cloud solutions. The composite used cloud apps for specific point solutions like chat and videoconferencing; however, it hosted core productivity applications like email and document sharing on-premises.

The composite organization decided to invest in a 3rd party single sign on (SSO) to manage access to G Suite and their other business applications which is reflected in their overall subscription costs. Google also offers an SSO solution included in the G Suite license.



Key assumptions

- 20,000 employees
- \$3 billion annual revenue
- 3% growth YOY
- North America, EMEA, LATAM, APAC

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	Additional bottom-line profit driven by G Suite	\$4,338,000	\$5,302,440	\$6,034,399	\$15,674,839	\$12,859,552
Btr	Increased employee efficiency	\$5,834,400	\$9,018,245	\$12,388,808	\$27,241,454	\$22,064,990
Ctr	IT efficiency gains	\$636,840	\$636,840	\$636,840	\$1,910,520	\$1,583,727
Dtr	Reduced security remediation costs from email malware and exploits	\$2,040,000	\$2,101,200	\$2,164,236	\$6,305,436	\$5,217,097
Etr	Reduced risk of data breach	\$961,875	\$961,875	\$961,875	\$2,885,625	\$2,392,041
Ftr	CapEx and OpEx savings	\$4,162,500	\$4,735,980	\$5,169,816	\$14,068,296	\$11,582,283
Total benefits (risk-adjusted)		\$17,973,615	\$22,756,580	\$27,355,974	\$68,086,170	\$55,699,690

Benefit 1: Revenue Growth Leading To Increased Bottom-Line Profit Driven By G Suite

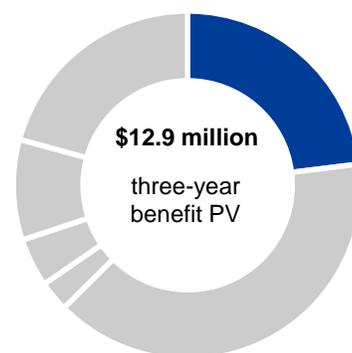
Interviewed organizations noted that G Suite catalyzed an organizational shift toward embracing innovation and changed the way employees did their work. Employees across business units and markets could access and share data more easily, improving the agility and flexibility of the organizations. G Suite's intuitive collaboration tools made teams faster and more efficient by enabling employees to improve business processes and break down silos. These improvements in the way the organizations worked contributed to the growth in top-line revenue.

Additionally, after deploying G Suite, specific initiatives within the sales organizations emerged to optimize business processes and reduce back-office work. These initiatives led to increased sales productivity and better customer experience, which ultimately led to higher sales.

- G Suite Initiative 1: Improvement in sales productivity.** Sales teams were able to work together more effectively, share insights, break down information silos, and reduce communication lapses imposed by geographical boundaries. Sales reps were able to decrease time spent creating and recreating documents and increase the time spent with customers, resulting in an increase in sales.
- G Suite Initiative 2: Improved customer experience.** Sales teams had access to historic customer data, insights, and product and marketing documentation, elevating the quality of the customer relationships. Sales reps could have more relevant and focused discussions and quickly and effectively address questions from customers in real time, improving the quality of each customer interaction.

Based on the customer interviews, Forrester estimates for the composite organization:

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to have a PV of \$55.7 million.



23% of total benefits

- › Total expected revenue in Year 1 with the legacy solution is \$3 billion, with a 3% sales growth YOY.
- › G Suite drove additional revenue growth of 1.5% YOY.
- › The adoption rate of G Suite is 75% in Year 1, 90% in Year 2, and 100% in Year 3.
- › Profit margin is 15%.

This benefit can vary due to uncertainty related to:

- › Growth in sales with the G Suite transformation, and the attribution percentage to G Suite.
- › Adoption rate.
- › Profit margin.

To account for these risks, Forrester adjusted this benefit downward by 20%, yielding an annual benefit ranging from \$4.3 million to \$6.0 million, with a three-year risk-adjusted total PV of nearly \$12.9 million.



Top-line revenue increases by \$107 million, leading to \$16 million in bottom-line profits over three years.

Benefit 1: Additional Bottom-Line Profit Driven By G Suite: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Annual top-line revenue, legacy	3% YOY growth	\$3,000,000,000	\$3,090,000,000	\$3,182,700,000
A2	G Suite adoption rate	Composite organization	75%	90%	100%
A3	Additional growth in revenue due to G Suite	Composite organization	1.5%	1.5%	1.5%
A4	Additional revenue, G Suite	A1*A2*A3	\$33,750,000	\$41,715,000	\$47,740,500
A5	Sales initiative 1: G Suite-improved sales productivity	Composite organization	\$2,000,000	\$2,060,000	\$2,121,800
A6	Sales initiative 2: G Suite-improved customer experience	Composite organization	\$400,000	\$412,000	\$424,360
A7	Incremental revenue from G Suite initiatives	A5+A6	\$2,400,000	\$2,472,000	\$2,546,160
A8	Total additional top-line revenue from G Suite	A4+A7	\$36,150,000	\$44,187,000	\$50,286,660
A9	Profit margin	Composite organization	15%	15%	15%
At	Additional bottom-line profit driven by G Suite	A8*A9	\$5,422,500	\$6,628,050	\$7,542,999
	Risk adjustment	↓20%			
Atr	Additional bottom-line profit driven by G Suite (risk-adjusted)		\$4,338,000	\$5,302,440	\$6,034,399

Benefit 2: Increased Employee Efficiency And Productivity

Interviewed organizations also described the following benefits related to end user productivity:

- › Seamless real-time editing in Docs, Sheets, and Slides allowed employees to collaborate more effectively. Cloud Search and Google+ made discovering and accessing relevant information easier.
- › Having a consistent, seamless, collaborative experience across devices allowed employees to continue to be actively engaged in projects even when they were traveling or working remotely.
- › Tools designed for collaboration like Hangouts Chat and Team Drives allowed teams to shorten meeting durations and focus on active work, sometimes even eliminating entire meetings that were no longer necessary due to a more active, collaborative environment.
- › Intelligent features in Calendar, like find a time or automatic room booker, made the remaining meetings easier to schedule and removed the friction to join.
- › The cloud-native nature of G Suite meant that updates and patches were automatically pushed to all devices, eliminating the downtime associated with update and patching activity experienced with the legacy solutions. Additionally, the collaboration tools themselves had higher availability because there was no scheduled downtime or maintenance activities.

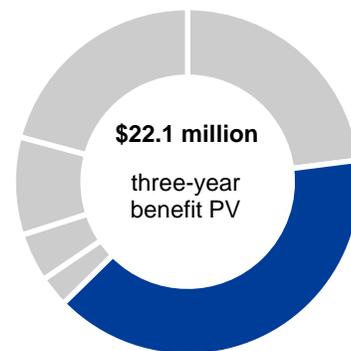
Based on the customer interviews, Forrester estimates for the composite organization:

- › Twenty thousand employees in Year 1, which grows 3% YOY. Fifty percent of employees are in highly collaborative roles.
- › The adoption rate of G Suite is 75% in Year 1, 90% in Year 2, and 100% in Year 3.
- › Employees see productivity improvements due to real-time collaboration, mobility, accessibility, reduced number and duration of meetings, improved uptime for collaboration tools, and reduced downtime from software updates. Productivity gains increase YOY as employees become more familiar with G Suite and become more proficient with its tools.
- › Hourly fully burdened salaries are \$35 and \$20 for highly collaborative and less collaborative employees, respectively.
- › Employees allocate 20% of the time saved to value-added tasks.

This benefit can vary due to uncertainty related to:

- › Number of employees and their roles.
- › Adoption rate.
- › Improvements in productivity.
- › The amount of value-added productivity that organizations can capture with time savings.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding an annual benefit ranging from \$5.8 million to \$12.4 million, with a three-year risk-adjusted total PV of nearly \$22.1 million.



End user productivity (tactical):
40% of total benefits



5,009,106 total hours saved over three years



1,001,821 hours of increased productivity over three years

Impact risk is the risk that the business or technology needs of the organization may not be met by the investment, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for benefit estimates.

Benefit 2: Increased Employee Efficiency And Productivity: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Total employees	Composite organization	20,000	20,600	21,218
B2	Percent highly collaborative workers	Composite organization	50%	50%	50%
B3	Percent less collaborative workers	Composite organization	50%	50%	50%
B4	Adoption rate	A2	75%	90%	100%
B5	Real-time collaboration, mobility, and accessibility — highly collaborative workers (weekly hours)	Composite organization	1.25	1.50	1.75
B6	Real-time collaboration, mobility, and accessibility — less collaborative workers (weekly hours)	Composite organization	0.31	0.38	0.44
B7	Reduced number and duration of meetings — highly collaborative workers (weekly hours)	Composite organization	0.75	1.00	1.25
B8	Reduced number and duration of meetings — less collaborative workers (weekly hours)	Composite organization	0.19	0.25	0.31
B9	Improved availability and reduced downtime from updates — highly collaborative workers (weekly hours)	Composite organization	0.20	0.25	0.30
B10	Improved availability and reduced downtime from updates — less collaborative workers (weekly hours)	Composite organization	0.05	0.06	0.08
B11	Total weekly savings — highly collaborative workers (hours)	B5+B7+B9	2.20	2.75	3.30
B12	Total weekly savings — less collaborative workers (hours)	B6+B8+B10	0.55	0.69	0.83
B13	Average highly collaborative worker fully burdened salary (hourly)	Composite organization	\$35	\$35	\$35
B14	Average less collaborative worker fully burdened salary (hourly)	Composite organization	\$20	\$20	\$20
B15	Total hours saved with G Suite	Composite organization	1,072,500	1,658,218	2,278,389
B16	Productivity capture	Forrester assumption	20%	20%	20%
B17	Total annual increased productive hours	$B1*B4*(B11*B2+B12*B3)*52*B16$	214,500	331,644	455,678
Bt	Increased employee efficiency and productivity	$B1*B4*(B2*B11*B13+B3*B12*B14)*52*B16$	\$6,864,000	\$10,609,700	\$14,575,069
	Risk adjustment	↓15%			
Btr	Increased employee efficiency (risk-adjusted)		\$5,834,400	\$9,018,245	\$12,388,808

Benefit 3: IT Productivity And Efficiency Gains

Interviewed organizations also described the following benefits related to IT productivity:

- › Reduction in the number of on-demand IT support and help desk tickets related to email, file share, videoconferencing, patching, and upgrading due to G Suite's intuitive design and ease of use, as well as business users' prior familiarity with the tools from their personal lives.
- › Eliminated patching and update activities related to email and collaboration tools. In G Suite, all software updates and security patches roll out simultaneously to all users. IT no longer needed to execute updates manually or monitor users for quick download/update of desktop software.
- › Significantly reduced the time and resources required to manage legacy infrastructure including activities related to creating and provisioning accounts and managing access.

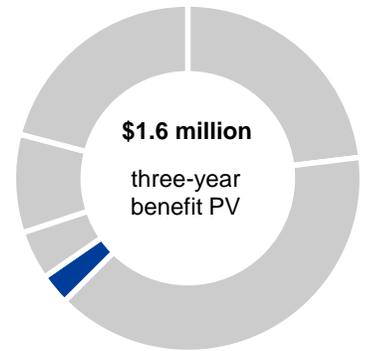
Based on the customer interviews, Forrester estimates for the composite organization:

- › Help desk tickets related to email, file share, laptop refresh, and other collaboration functions required 26,000 hours to resolve annually with the legacy solutions in place.
- › G Suite reduces the number of those help desk tickets by 20%.
- › On average, there were 7,000 hours required annually for update and patching activities with the legacy solutions, which included update and testing efforts associated with periodic major updates. With G Suite, these activities disappear.
- › Fully burdened hourly salary for IT administrators is \$58.

This benefit can vary due to uncertainty related to:

- › Required support for help desk tickets and associated reduction.
- › Required effort for update and patching activities.
- › Fully burdened salary.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding an annual benefit of \$636,840, with a three-year risk-adjusted total PV of nearly \$1.6 million.



IT productivity and efficiency gains: **3%** of total benefits



Help desk tickets reduced **20%**

Benefit 3: IT Productivity And Efficiency Gains: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
C1	Number of hours per year on help desk tickets related to email, file share, laptop refresh, and other collaboration functions	Composite organization	26,000	26,000	26,000
C2	Decrease in required support time	Composite organization	20%	20%	20%
C3	Number of hours on update and patching activities – legacy solution	Composite organization	7,000	7,000	7,000
C4	IT administrator fully burdened salary (hourly)	Composite organization	\$58	\$58	\$58
Ct	IT productivity and efficiency gains	$(C1 * C2 + C3) * C4$	\$707,600	\$707,600	\$707,600
	Risk adjustment	↓10%			
Ctr	IT productivity and efficiency gains (risk-adjusted)		\$636,840	\$636,840	\$636,840

Benefit 4: Reduced Security Incident Remediation Costs From Email Malware And Exploits

Interviewed organizations noted that G Suite’s built-in spam, malware, and phishing filter was more effective than their legacy third-party email spam filters. This reduced the total number of malicious emails received by employee inboxes, which reduced the number of malware infections requiring remediation.

The CISO at a government organization noted: “And again, I can’t reiterate enough, the biggest benefit we found is I was paying \$300K for an email spam filter before, but the Google spam filter is better. It’s so good that now I’m just using the Google spam solution, while at the same reducing the number of malicious emails reaching employees.”

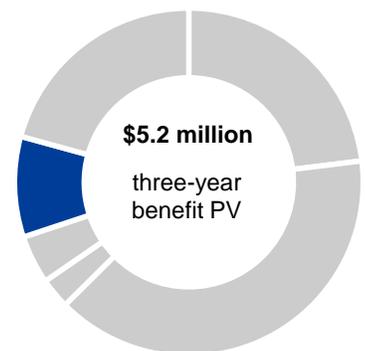
In addition to detecting and removing malicious emails, G Suite uses machine learning technology to proactively detect threats ahead of time, makes recommendations to IT on how to keep their environments safe, and proactively helps IT workers identify, triage, and remediate incidents.

Based on the customer interviews, Forrester estimates for the composite organization:

- › The legacy solution filtered 500,000 spam, malware, and/or phishing emails, representing 90% of total spam, malware, and phishing emails received by the organization.
- › The built-in filter for Gmail catches an additional 10%, representing 99.9% of the total spam, malware, and phishing emails received by the organization.
- › The open and click-through rate for spam is 10%.
- › Of those spam emails opened and clicked on, the malware infection rate requiring remediation is 10%.
- › The cost to remediate malware resulting from email spam is \$400 per incident, which includes lost IT and end user productivity.

This benefit can vary due to uncertainty related to:

- › Number of spam emails filtered.



Reduced security remediation costs: 9% of total benefits



Gmail filters 99.9% of spam, malware, and phishing emails.

- › Malware infection rate of spam emails requiring remediation.
- › Cost to remediate malware.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding an annual benefit of over \$2 million, with a three-year risk-adjusted total PV of over \$5.2 million.

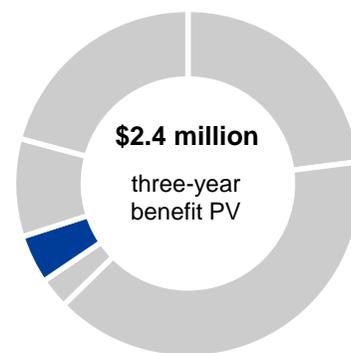
Benefit 4: Reduced Security Remediation Costs From Email Malware And Exploits: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
D1	Total spam, malware, and phishing emails filtered per month, legacy (90% of malicious emails filtered)	Composite organization	500,000	515,000	530,450
D2	Additional spam, malware, and phishing emails filtered with Gmail (99.9% of malicious emails filtered total)	Composite organization	10%	10%	10%
D3	Total additional spam, malware, and phishing emails filtered per month, Gmail	$D1 * D2$	50,000	51,500	53,045
D4	Spam, malware, and phishing click-through rate	Composite organization	10%	10%	10%
D5	Percent of spam, malware, and phishing click-throughs requiring remediation	Composite organization	10%	10%	10%
D6	Total additional malware/data incidents requiring remediation – legacy solution (monthly)	$D3 * D4 * D5$	500	515	530.45
D7	Remediation costs per instance	Composite organization	\$400	\$400	\$400
Dt	Reduced security remediation costs from email malware and exploits	$D6 * 12 * D7$	\$2,400,000	\$2,472,000	\$2,546,160
	Risk adjustment	↓15%			
Dtr	Reduced security remediation costs from email malware and exploits (risk-adjusted)		\$2,040,000	\$2,101,200	\$2,164,236

Benefit 5: Reduced Risk Of Data Breach

Moving to G Suite allowed interviewed organizations to have an integrated full security stack for their collaboration tools. Having multiple third-party security vendors with their legacy solutions made it more difficult to manage and reduced visibility into their security environments. Moving to G Suite ultimately improved their security posture and thus reduced the likelihood of a data breach.

Organizations understood that Google owns one of the most robust computing infrastructures in the world, including one of the safest environments for protecting sensitive data. By moving personally identifiable information (PII) from other cloud collaboration tools over to Drive and leveraging G Suite’s admin tools, organizations had better control over PII data, reducing security exposure. In addition to improving the security of sensitive data, better search functionality in the Admin Console resulted in reduced remediation time for security issues, which ultimately increased security. Organizations noted that G Suite was built from the ground up around security, and this was evident in their deployments.



Reduced expected data breach costs:
4% of total benefits

Based on the customer interviews, Forrester estimates for the composite organization:

- › A 'large data breach' is defined as an incident involving 100,000 compromised records or more.
- › The average cost of a customer record data breach is \$150 per record.
- › The likelihood of a customer record data breach was 15% for the legacy IT environment, annually. Fifty percent of this risk is attributable to the legacy email and collaboration environment, and 50% is attributable to the rest of the IT environment.
- › G Suite improves the security of the email and collaboration environment by 95% (the actual improvement may be higher depending on an organization's specific IT environment). This improvement is due to:
 - Organizations having better control over sensitive data.
 - G Suite updates happening automatically in the cloud. As data breaches tend to occur in unpatched systems, this removes a significant data breach vulnerability.

This benefit can vary due to uncertainty related to:

- › Number of customer records at risk for a data breach.
- › Cost per customer record lost during a data breach incident.
- › Likelihood of a data breach incident.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding an annual benefit of \$961,875, with a three-year risk-adjusted total PV of \$2.4 million.

“Investigations are easier with the Google tools. They offer a lot more flexibility, and finding the information that we need is faster.”

CISO, government



Benefit 5: Reduced Risk Of Data Breach: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
E1	Number of records at risk for large data breach	Composite organization	100,000	100,000	100,000
E2	Cost per record	Composite organization	\$150	\$150	\$150
E3	Cost per data breach	Composite organization	\$15,000,000	\$15,000,000	\$15,000,000
E4	Likelihood of a data breach (50% attributed to legacy email and collaboration suite, 50% attributed to rest of IT environment)	Composite organization	15%	15%	15%
E5	Expected value of data breach, legacy	E3*E4	\$2,250,000	\$2,250,000	\$2,250,000
E6	Reduction in risk of data breach through email and collaboration suite with G Suite	Composite organization	95%	95%	95%
Et	Reduced risk of data breach	(E5*50%)*E6	\$1,068,750	\$1,068,750	\$1,068,750
	Risk adjustment	↓10%			
Etr	Reduced risk of data breach (risk-adjusted)		\$961,875	\$961,875	\$961,875

Benefit 6: Capex And Opex Savings

Organizations noted that they have reduced capital and operating expenses as a result of the G Suite investment, saving in areas such as:

- › Retired servers and data centers.
- › Reduced costs and labor associated with server hardware and maintenance.
- › Reduced corporate travel.
- › Reduced legacy IT software license costs from sunsetting third-party tools and software:
 - Mobile device management (MDM).
 - Spam filter.
 - Identity and access management.
 - Content management platforms.
 - Workstream collaboration solutions.
 - Meeting solutions.

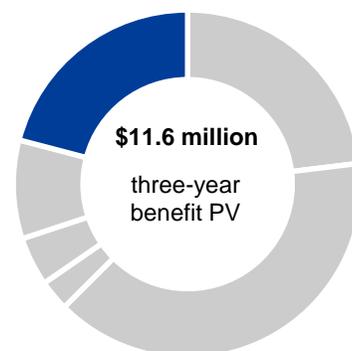
Based on the customer interviews, Forrester estimates for the composite organization:

- › A 20% reduction of the 2,000 servers needed for collaboration tools.
- › An annual amortized capital and maintenance cost of \$2,000 per server.
- › A reduction of corporate travel totaling \$1,125,000 annually.
- › A reduction of legacy software licenses of \$2.7 million in Year 1, which increases in years 2 and 3 as more legacy solutions are sunset.

This benefit can vary due to uncertainty related to:

- › Total reduction and cost of servers.
- › Reduction of corporate travel.
- › Reduction of legacy software licenses.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding an annual benefit ranging from \$4.2 million to \$5.2 million, with a three-year risk-adjusted total PV of nearly \$11.6 million.



Capex and opex savings:
21% of total benefits

Benefit 6: Capex And Opex Savings Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
F1	Number of servers	Composite organization	2,000	2,000	2,000
F2	Reduction in servers	Composite organization	20%	20%	20%
F3	Amortized annual cost per server	Composite organization	\$2,000	\$2,000	\$2,000
F4	Reduction in corporate travel	Composite organization	\$1,125,000	\$1,125,000	\$1,125,000
F5	Avoided legacy software licenses: MDM, spam, malware and phishing filter, content management, identity and access management, etc.	Composite organization	\$2,700,000	\$3,337,200	\$3,819,240
Ft	Capex and opex savings	F1*F2*F3+F4+F5	\$4,625,000	\$5,262,200	\$5,744,240
	Risk adjustment	↓10%			
Ftr	Capex and opex savings (risk-adjusted)		\$4,162,500	\$4,735,980	\$5,169,816

Unquantified Benefits

While there were strong and quantifiable benefits the interviewed organizations observed by using G Suite, the organizations experienced significant qualitative benefits as well. These could potentially be quantified in a financial analysis if given the appropriate data and metrics.

- › **Ability to attract and retain top talent.** Organizations reported that moving to G Suite made their employees happier. Employees felt that the move to G Suite signaled that their organizations cared about their experiences at work and were striving to provide the best tools available. Prospective employees would also ask what collaboration toolset was available and were sometimes dissuaded by the legacy solutions. An SVP of technology in the financial services industry told Forrester: “Being an organization that uses G Suite, it’s a signal to potential employees. It’s certainly easier to attract talent.”
- › **Reduced recruiting and onboarding costs.** The ability to attract and retain top talent reduces recruiting and onboarding costs in and of itself; however, organizations also reported that the onboarding process for new employees was simpler and faster with G Suite. New employees typically have experience with Google products in their personal lives, and the intuitive design of the tools resulted in shorter onboarding and ramp-up periods.
- › **Reduced costs associated with mergers and acquisitions (M&A).** Integrating acquired organizations or being integrated after an acquisition is often a long and painstaking process. Interviewed organizations reported that with G Suite, the process was much faster and relatively painless when compared to integrations with their legacy solutions. Integration is necessary to start leveraging the true value of most mergers and acquisitions, and being on G Suite sped this process up, reducing the ultimate cost and accelerating the time-to-value. An SVP of technology in the automotive services industry said: “With G Suite, it’s easier onboarding the organizations we acquire. In addition to getting those organizations onto our platform, we able to significantly reduce their software licenses costs almost immediately.”

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
Gtr	Subscription costs	\$0	\$3,675,000	\$3,785,250	\$3,898,808	\$11,359,058	\$9,398,447
Htr	Implementation and ongoing support	\$1,156,960	\$949,704	\$949,704	\$949,704	\$4,006,072	\$3,518,733
	Total costs (risk-adjusted)	\$1,156,960	\$4,624,704	\$4,734,954	\$4,848,512	\$15,365,130	\$12,917,180

Cost 1: Subscription Costs

Interviewed organizations noted subscription costs, both for G Suite and for an SSO solution to allow ease of access to their cloud tools for employees.

Based on the customer interviews, Forrester estimates for the composite organization:

- › An annual subscription cost of \$120 per user for G Suite.
- › The composite organization decided to use a 3rd party SSO to manage access to their business applications. An SSO solution is included in the G Suite license.
- › An annual subscription cost of \$55 per user for an SSO solution.

This cost can vary due to uncertainty related to subscription costs and negotiated rates.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding an annual cost ranging from \$3.7 million to \$3.9 million, with a three-year risk-adjusted total PV of \$9.4 million.

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to have a PV of over \$12.9 million.

Implementation risk is the risk that a proposed investment may deviate from the original or expected requirements, resulting in higher costs than anticipated. The greater the uncertainty, the wider the potential range of outcomes for cost estimates.

Cost 1: Subscription Costs: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
G1	Number of users	B1		20,000	20,600	21,218
G2	Annual G Suite price per user	Composite organization		\$120	\$120	\$120
G3	SSO for cloud functions/applications annual price per user	Composite organization		\$55	\$55	\$55
Gt	Subscription costs	$G1*(G2+G3)$	\$0	\$3,500,000	\$3,605,000	\$3,713,150
	Risk adjustment	↑5%				
Gtr	Subscription costs (risk-adjusted)		\$0	\$3,675,000	\$3,785,250	\$3,898,808

Cost 2: Implementation And Ongoing Support

Interviewed organizations described the following costs related to implementation and ongoing support:

- › Full-time staff required for planning and implementation activities.
- › Professional services required for implementation and ongoing support.
- › Required training for employees migrating from the legacy solutions to G Suite.
- › A team required for ongoing change management, support, and G Suite initiatives.

Based on the customer interviews, Forrester estimates for the composite organization:

- › Five IT full-time equivalents (FTEs) for seven months for planning and implementation activities.
- › Professional services for implementation of \$200,000, and ongoing support of \$60,000 annually.
- › Twenty thousand employees needing 1 hour of training during the migration to G Suite, with a blended fully burdened hourly salary of \$28.
- › An IT team of four FTEs for ongoing change management, support, and G Suite initiatives and three FTEs for business-unit-level G Suite initiatives.

This cost can vary due to uncertainty related to:

- › Length and effort of implementation.
- › Required training.
- › Ongoing support.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding an initial cost of \$1.2 million, and an annual cost of \$949,704, with a three-year risk-adjusted total PV of over \$3.5 million.



Seven months
Total implementation
and deployment time

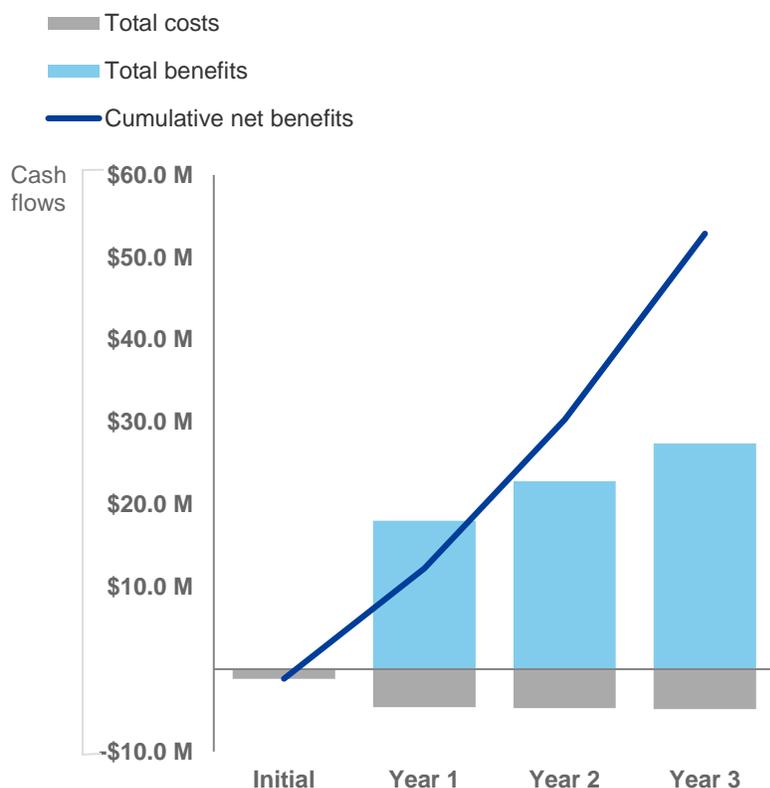
Cost 2: Implementation And Ongoing Support: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
H1	Number of internal FTEs for implementation	Composite organization	5			
H2	Fully burdened IT salary	C4*2080	\$120,640	\$120,640	\$120,640	\$120,640
H3	Length of implementation (months)	Composite organization	7			
H4	Professional services	Composite organization	\$200,000	\$60,000	\$60,000	\$60,000
H5	Number of employees moving from the legacy solution to G Suite	Composite organization	20,000			
H6	Hourly fully burdened salary (company average)	Composite organization	\$28	\$28	\$28	\$28
H7	Training time per employee (hours)	Composite organization	1			
H8	Number of internal FTEs for ongoing change management, support, and G Suite initiatives	Composite organization		4	4	4
H9	Number of internal FTEs for business unit level G Suite initiatives	Composite organization		3	3	3
Ht	Implementation and ongoing support	$(H1*H2*H3/12+H4)+(H5*H6*H7)+(H8*H2)+(H9*H2)$	\$1,101,867	\$904,480	\$904,480	\$904,480
	Risk adjustment	↑5%				
Htr	Implementation and ongoing support (risk-adjusted)		\$1,156,960	\$949,704	\$949,704	\$949,704

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 Table (Risk-Adjusted)

	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	(\$1,156,960)	(\$4,624,704)	(\$4,734,954)	(\$4,848,512)	(\$15,365,130)	(\$12,917,180)
Total benefits	\$0	\$17,973,615	\$22,756,580	\$27,355,974	\$68,086,170	\$55,699,690
Net benefits	(\$1,156,960)	\$13,348,911	\$18,021,626	\$22,507,463	\$52,721,040	\$42,782,510
ROI						331%
Payback period						< 12 months

G Suite: Overview

The following information is provided by Google. Forrester has not validated any claims and does not endorse Google or its offerings.

G Suite is a set of secure, intelligent, cloud-native applications that help businesses work faster, smarter, and more collaboratively than ever before.

G Suite includes:

Gmail is a secure, smart, cloud-based email solution that helps you collaborate and prioritize and connects to all your business apps so you can achieve more, faster. By applying machine learning across 1.5-billion-plus users, Gmail blocks spam and phishing messages from showing up in inboxes with over 99.9% accuracy.

Google Drive is a cloud-based, intelligent content management platform that enhances how people store, share, and find files. Drive has over 1 billion active users and over 1 trillion files stored across consumers and enterprise users. Drive gives organizations all of the enterprise-grade security and admin features they need to keep both individual and teamwork flowing smoothly.

Google Docs is a collaborative word-processing tool that powers productive teams. Teams use Docs to create, edit, and work together in real time. Docs works anywhere, anytime (even offline). Plus, every change is saved automatically, so work is never lost.

Google Sheets makes your data pop with colorful charts and graphs. Built-in formulas, pivot tables, and conditional formatting options save time and simplify common spreadsheet tasks. Everyone can work together in the same spreadsheet at the same time.

Access, create, and edit your spreadsheets wherever you go — from your phone, tablet, or computer — even when there's no connection.

Google Slides makes your ideas shine with a variety of presentation themes, hundreds of fonts, embedded video, animations, and more. Access, create, and edit your presentations wherever you go — from your phone, tablet, or computer — even when there's no connection.

With Google Slides, everyone can work together in the same presentation at the same time.

Google Forms makes it possible to create custom web forms for surveys and questionnaires as easily as writing a document. Google Forms can be shared in email, embedded in a website, or shared through social channels. Form responses are gathered in a spreadsheet instantly as they're submitted and can be analyzed directly in Google Sheets.

Google Sites lets employees create and share project websites and intranet pages without any programming skills or technical support. Google Sites keeps everyone on the same page — literally — by making it easy to centralize and to organize team documents, calendars, videos, and more. With just a couple of clicks, sites can be optimized for viewing on smartphones and tablets.

Google Keep is a note-keeping app that helps employees keep ideas, lists, etc. organized. Keep is easy to use and automatically synced across devices so that you can access all your ideas from anywhere. This ensures that employees are better organized and can focus on the right work.

App Maker helps build apps that fill gaps, like accelerating business workflows or scaling internal operations, with G Suite's low-code development environment. App Maker is included with G Suite Business and Enterprise editions as well as with G Suite for Education.

Google Calendar allows employees to manage their schedules, create project calendars, schedule time with colleagues, and add shared resources like conference rooms. Spend less time planning and more time doing with shareable calendars that integrate seamlessly with Gmail, Drive, Contacts, Sites, and Hangout Meet and Chat so you always know what's next.

Cloud Search brings the best of Google Search to enterprises. Whether integrated with G Suite or third-party applications, Cloud Search helps your employees quickly, easily, and securely find information across the business.

Google+ is a collaboration platform that allows for conversation across an organization. Knowledge today is often stuck in silos across a large organization. But with Google+, you can ensure content is reaching the right audiences through tagging and content routing. This allows broad cross-org conversation that can break down

silos vertically and horizontally and ensure the best ideas are being shared.

Hangouts Chat is an intelligent and secure communications tool, built for teams. From direct messages to team chat rooms, Hangouts Chat provides an integrated platform that makes team communication easy and efficient.

Hangouts Meet enables video meetings for your business. Meet takes the headaches out of joining a video call at work. Just set up a meeting and share a link. No worrying about whether teammates, clients, or customers have the right accounts or plug-ins. With a fast, lightweight interface and smart participant management, multiperson video calls are a breeze.

Hangouts Meet hardware is a cost-effective way to bring high-quality video meetings to your business. The hardware kit consists of four components: a touchscreen controller, speaker-mic, camera, and Chromebox.

Jamboard is Google's collaborative digital whiteboard built for the cloud. It lets teams work together on one canvas via multiple Jamboards or the phone and tablet apps. Plus, your work is saved, so it's easy to return to later or share out with others.

Google Voice gives you a phone number that isn't tied to a phone, so you can better connect with colleagues, customers, and partners, regardless of your location or device. Currently in Beta.

G Suite Vault is a retention, archiving, and eDiscovery tool for G Suite. G Suite Vault allows IT admins to manage business-critical information and to prepare for the unexpected events, such as a lawsuit or employee departure. G Suite Vault can reduce time and costs associated with responding to legal discovery requests, audits, or internal investigations.

G Suite Admin Console provides IT admins with one centralized management console where they can maintain full visibility and control over their G Suite environment, including simpler, more streamlined ways to manage users, control devices, ensure compliance, and keep data secure.

Hundreds of third-party applications available from the G Suite Marketplace extend G Suite with capabilities such as CRM, project management, accounting and finance, and sales and marketing tools that work seamlessly with G Suite, including the ease of single sign-on (SSO) access.

Security Center - The security center for G Suite provides a single, comprehensive view into the security posture of your G Suite deployment. It brings together security analytics, best practice recommendations and integrated remediation that empower you to protect your organization's data, devices and users.

Alert Center - The alert center for G Suite is a new way for admins to view essential notifications, alerts, and actions across G Suite. Insights around these potential alerts can help administrators assess their organization's exposure to security issues. Integrated remediation with the security center offers a streamlined way to resolve these issues.

Mobile Device Management - G Suite's fully integrated mobile device management (MDM) offers continuous system monitoring and alerts you to suspicious device activity. Administrators can enforce mobile policies, encrypt data on devices, lock lost or stolen mobile devices, and remotely wipe devices.

Data Regions - Many organizations leverage the power of our distributed data centers to maximize critical benefits, such as minimal latency and robust geo-redundancy. However, for organizations with stringent control requirements, data regions for G Suite lets you choose where certain covered data should be stored at rest—globally distributed, US, or Europe.

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.