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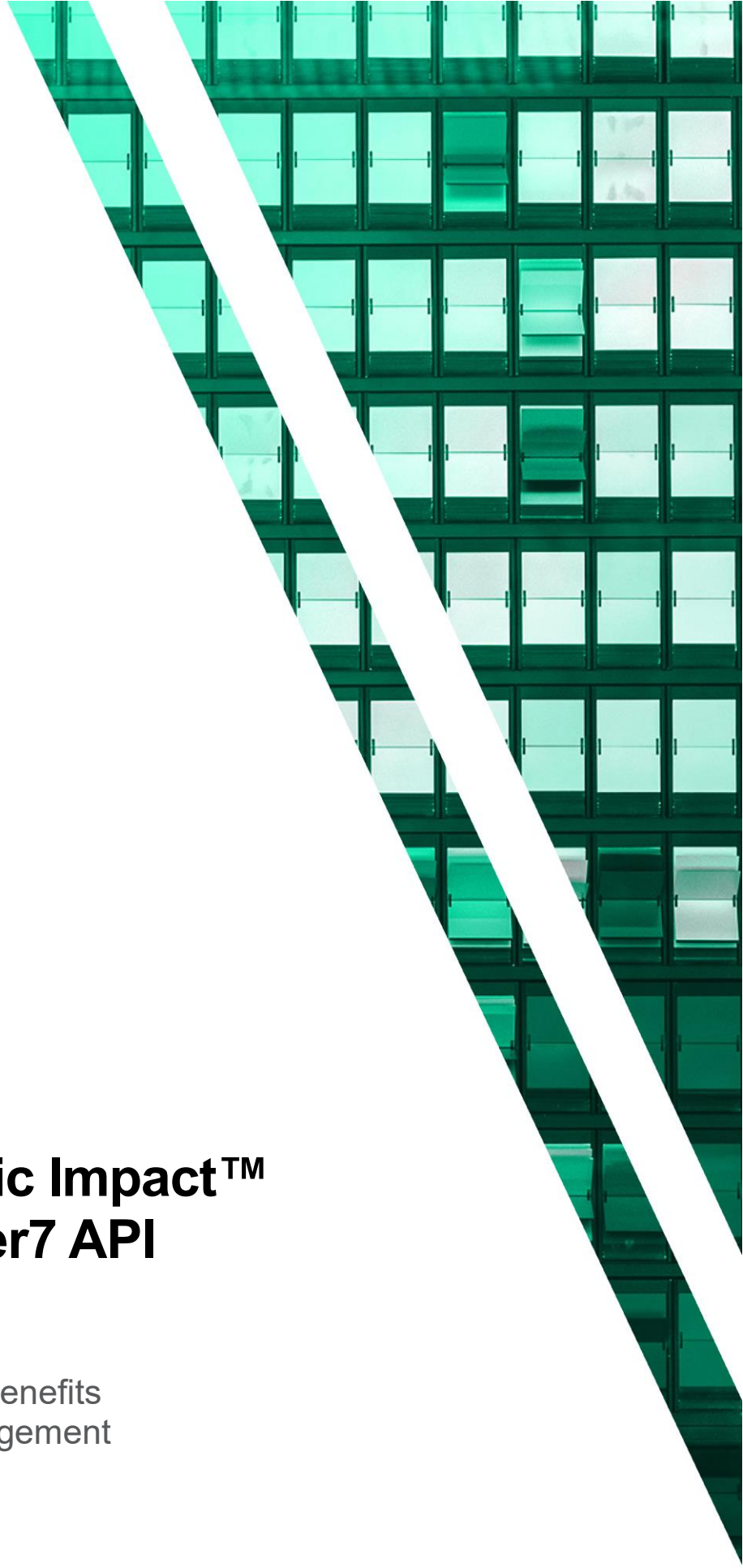

The Total Economic Impact™ Of Broadcom Layer7 API Management

Cost Savings And Business Benefits Enabled By Layer7 API Management

JANUARY 2022

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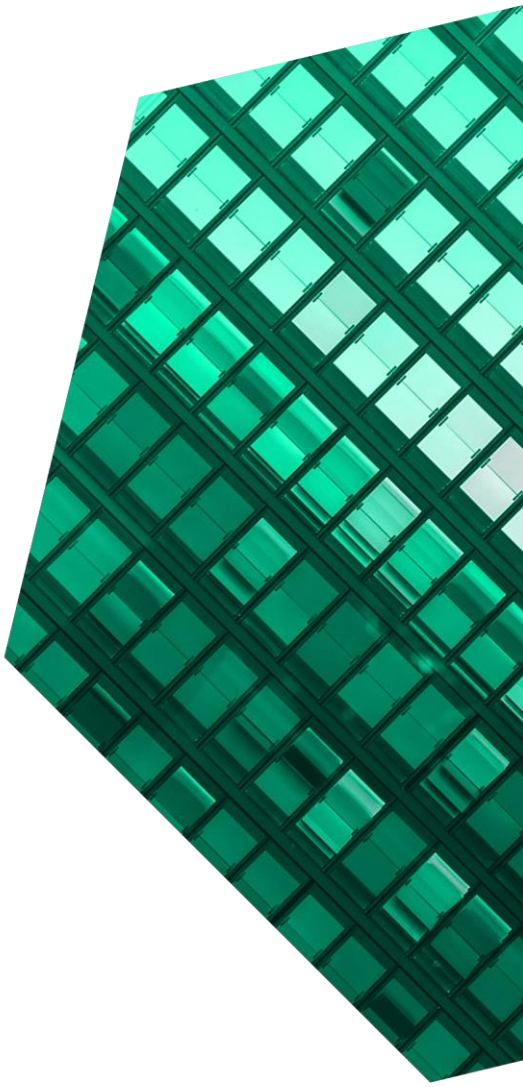
Consulting Team: Jonathan Whaling
Nick Mayberry



ABOUT FORRESTER CONSULTING

Forrester Consulting provides independent and objective research-based consulting to help leaders succeed in their organizations. For more information, visit forrester.com/consulting.

Executive Summary

Broadcom's Layer7 API Management is a comprehensive solution for large, multinational organizations to manage API environments efficiently and securely for internal applications and external partners. As organizations grow their digital initiatives across more platforms, lower costs and faster time-to-market become key differentiators. Layer7 API Management generates efficiency savings through automated policy management, lower hardware costs, and faster development times for new initiatives.

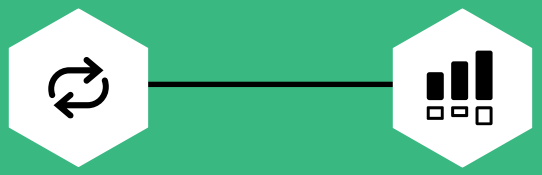
Broadcom Layer7 API Management is a single comprehensive solution that allows large organizations to deploy and manage internal and external API initiatives in an efficient manner. It is platform agnostic and can reduce infrastructure requirements. It includes a full suite of development and monitoring solutions to enable central operations teams to effectively manage API security and growth.

Broadcom commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying Layer7 API Management.[1] The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Layer7 on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed five decision-makers with experience using Layer7. For the purposes of this study, Forrester aggregated the interviewees' experiences and combined the results into a single composite organization.

Prior to using Layer7, the interviewees noted how their organizations lacked an environment that would enable rapid deployment of APIs for the coming age of digital transformation. Internally, some organizations were moving to a centralized IT structure, which created an opportunity to centrally manage API development and deployment. Yet existing solutions, implemented via on-premises hardware appliances, were expensive to maintain and inflexible. These limitations and trends led the composite organization to evaluate new solutions on the market.

KEY STATISTICS



Return on investment (ROI)
286%

Net present value (NPV)
$4.41M

After the investment in Layer7, the interviewees realized large efficiency gains in deploying and maintaining APIs. On-premises hardware was phased out in favor of virtual appliances. The resulting new environment positioned the composite organization for rapid growth in digital initiatives with accelerated revenue and enhanced security.

KEY FINDINGS

Quantified benefits. Risk-adjusted present value (PV) quantified benefits include:

- **Reduced time to deploy API policies by more than 90%.** The ability to automatically deploy new APIs via Layer7 API Management enabled interviewed decision-makers to reduce policy development time by more than 90% — from three working days to 30 minutes. Over a three-year period with hundreds of policies being

created, this time savings amounted to more than $3.3 million for the composite organization.

- **Improved time-to-market for new revenue initiatives by 95%.** The ability to create and reuse APIs for new initiatives enabled interviewees to reduce the time to develop and deploy new web services from two months to three working days. For the composite organization deploying five new initiatives each year, this provided more than $1.5 million in additional revenue over three years.
- **Eliminated the need for API management hardware appliances and software.** Interviewed decision-makers decommissioned hardware appliances and software related to API management by transitioning to Layer7 API Management in a virtual environment. Savings equated to more than $434,000 over a three-year period for the composite organization.
- **Reduced the risk of security breaches from API attacks.** Interviewees stated that Layer7 API Management met their organizations' and the industry's standards for data security, including all Open Web Application Security Project (OWASP) threats. This provided more than $490,000 in benefits for the composite organization over a three-year period.
- **Reduced time to update application security by 50%.** The customers' regular task of updating application security protocols was completed by centralized operations teams instead of dispersed applications teams, saving time and staff costs. This efficiency saved the composite organization more than $71,000 over three years.
- **Improved efficiency in debugging application integrations by saving 30 or more minutes per occurrence.** Centralized operations teams at interviewed decision-makers performed daily tasks of debugging API calls, using automated logging in Layer7 API Management to resolve problems in minutes. This efficiency saved the composite organization somewhat less than $71,000 over three years.

> **"I don't see any risks with Layer7. Our gateways have been rock solid."**
> *IT director, consulting services*

Unquantified benefits. Benefits that are not quantified for this study include:

- **Provided fully reliable, scalable gateways.** Interviewees stated that Layer7 API Management maintained its reliability even as gateways were added, and transaction growth increased substantially. In all cases, transactions had increased significantly over five or more years, with no gateway downtime.
- **Maintained high performance for critical applications.** Interviewed decision-makers reported low latency times for high-volume mobile and call center applications. These times were in the hundreds of milliseconds or less.
- **Provided flexibility to integrate with multiple platforms and applications, either on-premises or in various cloud environments.** All interviewed decision-makers cited flexibility as a key benefit of Layer7 API Management. Its ability to integrate with various applications and development environments and capability to migrate to cloud-agnostic environments in the future are key benefits for growth.

> **"We have in the past about 100,000 executions per day. Nowadays, we are having more than 50 million executions per day with no loss in reliability."**
>
> — IT director, telecommunications

Costs. Risk-adjusted PV costs include:

- **Licensing and maintenance costs of slightly more than $967,000 over three years.** For the composite organization, these costs included license fees for 20 gateways, plus 20% annual maintenance fees. Hardware costs for virtual machines are also included, along with implementation fees.
- **Internal implementation and operations costs of less than $576,000 over three years.** These costs represented an average of three full-time equivalents (FTEs) (at 50%) to support the implementation and four internal staff members (at 50%) for ongoing management of the software.

The decision-maker interviews and financial analysis found that a composite organization experiences benefits of nearly $5.96 million over three years versus costs of $1.54 million, adding up to a net present value (NPV) of $4.41 million and an ROI of 286%.

The composite organization realized an NPV of $4.4 million over three years on an investment of $1.5 million.

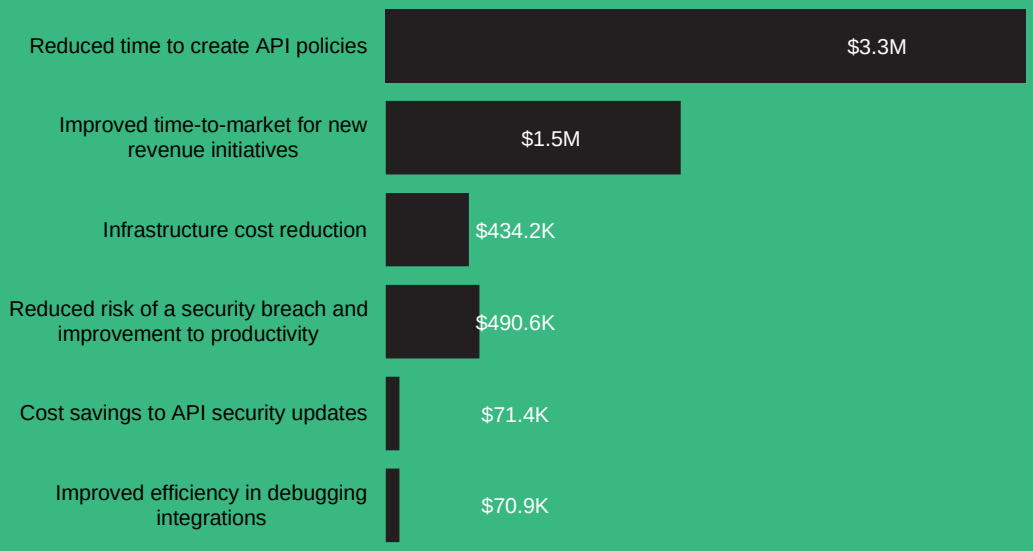
ROI
286%

BENEFITS PV
$5.96M

NPV
$4.41M

PAYBACK
<6 months

Benefits (Three-Year)



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 Layer7. 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 Layer7 can have on an organization.

Forrester Consulting's Q4 2020 Cost Of A Security Breach survey was fielded to 351 cybersecurity leaders at global enterprises from organizations spanning a range of industries in the US, the UK, Canada, Germany, and Australia to evaluate their experience with cybersecurity threats and the ramifications that are a result of which within their organizations. Survey participants included managers, directors, VPs, and C-level executives involved with cybersecurity on decision making, operations, and reporting levels. To qualify, respondents had to come from companies with 500 or more employees.

For QA purposes, we qualified respondents on their responses to specific screeners that related to their involvement with cybersecurity operations as well as basic questions about their firm's location of operations, industry, and number of employees. Respondents opted into the survey from a research panel of Dynata, which fielded the survey on behalf of Forrester.

DISCLOSURES

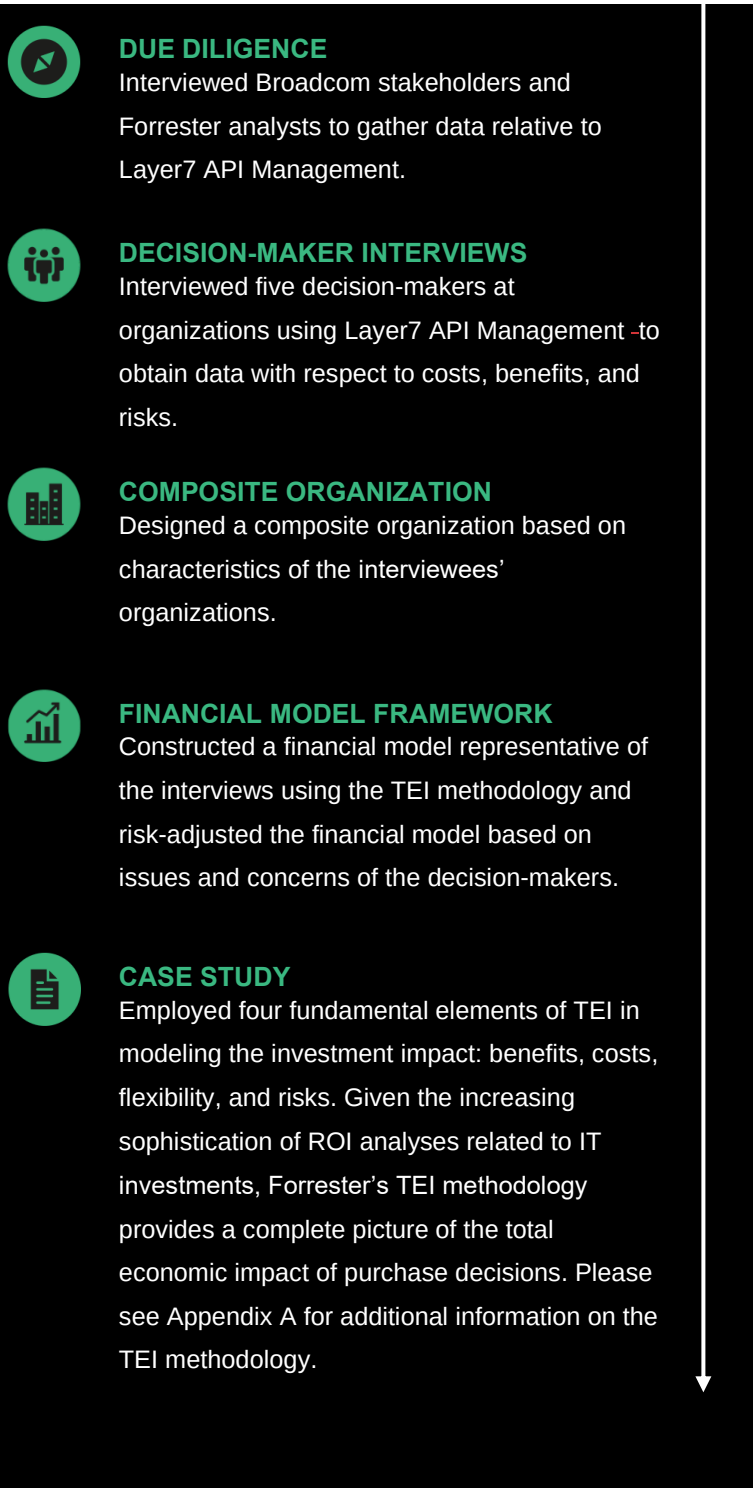
Readers should be aware of the following:

This study is commissioned by Broadcom 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 Layer7 API Management.

Broadcom 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.

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



The Broadcom Layer7 API Management Customer Journey

Drivers leading to the Layer7 API Management investment

Interviewed Decision-Makers

Interviewee	Industry	Region	Production Gateways
IT director	Telecommunications	Europe	25
Domain architect	Telecommunications	Europe	58
Senior manager, standard platforms	Insurance	Europe	10
Global web services platform manager	Pharmaceutical	Global	10
IT director	Consulting	Global	10

KEY CHALLENGES

Prior to implementing Layer7 API Management, some interviewees used other API management solutions. These solutions ran on physical appliances on-premises. Other organizations had no solutions in place. All organizations were seeking more flexible and secure solutions to position themselves for rapid growth in web services.

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

- **Lack of a secure environment to create and deploy APIs for expansion of web services to global partners**. All interviewees planned to increase their use of web services for surfacing data to internal divisions and external partners. Decision-makers realized this future expansion required a highly secure environment, which was lacking.
- **Lack of centralized operations monitoring.** Interviewees' organizations with decentralized IT operations and an abundance of internal applications struggled with integrations, training, and monitoring of their broad environments. To consolidate systems, internal web services became important for internal offices to access a single corporate application.
- **Maintenance costs and inflexibility of hardware appliances.** Organizations running API management on their own hardware appliances struggled with configuration and maintenance, which required a substantial time investment in training. Additionally, these appliances were expensive to run and maintain.

"We decided that all inbound or outbound application integrations with our SaaS providers would go through the gateways. We wanted an operational view of the integrations. That was the impetus. Before, there was no one really managing APIs."
IT director, consulting services

SOLUTION REQUIREMENTS

The interviewees' organizations searched for a solution that could:

- **Create a new environment that enables rapid API deployment in a secure manner.** This would reduce time-to-market for new digital applications.
- **Roll out a common global API management system managed by a central operations team.** This solution should also enable routing of all application traffic through gateways to enable a single operational viewpoint.
- **Implement a virtual platform.** Virtual appliances would allow for faster and more economical growth, so that the API management solution could handle rapid increases in web services, APIs, and corresponding web traffic.

"We wanted to be preventive and prepared for digital transformation. We also had a need to secure outbound information to other countries."
Global web services platform manager, pharmaceutical

"Global IT is relatively a new construct at our organization. Before, we had 160 CRM, HCM, engagement management, and financial management systems. So we underwent our own digital transformation and went from 160 systems down to on."
IT director, consulting services

After an RFP and business case process that evaluated multiple vendors, the interviewees' organizations chose Layer7 and began deployment:

- In some cases, Layer7 was chosen over existing solutions.
- Most organizations chose to run Layer7 in a virtual environment.
- All organizations used partners to various degrees for implementation of Layer7.
- Length of implementation varied from six to 12 months, depending on the number of web services proxies needing migration from previous API management tools.

COMPOSITE ORGANIZATION

Based on the interviews, Forrester constructed a TEI framework, a composite company, and a ROI analysis that illustrates the areas financially affected. The composite organization is representative of the five decision-makers that Forrester interviewed and is used to present the aggregate financial analysis in the next section. The composite organization has the following characteristics:

Description of composite. This global, multibillion-dollar organization sells telecommunications and content services to businesses and consumers. The organization has a strong brand, global operations, a large customer base of about 200 million customers, and a strong online and offline presence. It employs more than 100,000 staff and generates $32 billion in annual revenue.

Deployment characteristics. The organization has global operations supporting hundreds of applications with 20 gateways across 60 countries. It adds four to five gateways per year to handle new application deployments and increases in digital traffic. The gateways are deployed in a virtual environment to enable more cost-efficient growth. The organization has been moving rapidly to deploy more web services over the past several years.

Key assumptions

- **$32 billion in revenue**
- **100,000 employees**
- **Operating in 60 countries**
- **20 gateways**
- **15 million daily API transactions**

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	Reduced time to create API policies	$989,820	$1,370,520	$1,751,220	$4,111,560	$3,348,215
Btr	Improved time-to-market for new revenue initiatives	$620,160	$620,160	$620,160	$1,860,480	$1,542,246
Ctr	Infrastructure cost reduction	$145,800	$153,900	$232,200	$531,900	$434,191
Dtr	Reduced risk of a security breach and improvement to productivity	$197,268	$197,268	$197,268	$591,803	$490,576
Etr	Cost savings to API security updates	$28,728	$28,728	$28,728	$86,184	$71,442
Ftr	Improved efficiency in debugging integrations	$28,500	$28,500	$28,500	$85,500	$70,875
	Total benefits (risk-adjusted)	$2,010,276	$2,399,076	$2,858,076	$7,267,427	$5,957,545

REDUCED TIME TO CREATE API POLICIES

Evidence and data. Interviewees cited efficiency improvements in creating APIs and policies. Prior to implementing Layer7 API Management, they experienced long and costly timelines to construct new APIs and related policies. These ranged from two to three days for simple proxies to between eight and 10 days for complex ones.

After full implementation of Layer7 and its API Developer Portal, interviewees' organizations were able to automatically publish policies in "hours or minutes" according to most customers. Many of these were deployed automatically via the portal. As one interviewee stated, "You can go into the portal and create a policy template around the API in an hour or less. So, we have a lot of people who are self-publishing policies, and we don't even get involved."

"It's a huge difference because in the beginning there was no automation and there were no standard policies ... where we are now with the API self-service portal, we have increased efficiency by 80%."
Domain architect, telecommunications

"We have the new Layer7 Portal Version 5.0. It enables lots of good features so that we can create a single API catalog where the customers can go and consume APIs."
Global web services platform manager, pharmaceutical

Modeling and assumptions. For the composite organization, Forrester estimates:

- The organization creates 65 new API policies per month or a total of 780 in Year 1. This figure is assumed to grow by 25 per month or 300 policies per year.
- Given the broad range of elapsed time for policy creation in the interviews (two to 10 days), an estimate of three working days is assumed prior to Layer7 and 30 minutes post-Layer7.
- The fully burdened rate for developers is $120,000 per year or $60 per hour.

Risks. The improved efficiencies for API policy creation will vary depending on:

- The number of APIs created each month.
- The complexity of APIs.
- The fully burdened rate for developers.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of more than $3.3 million.

Reduced Time To Create API Policies

Ref.	Metric	Source	Year 1	Year 2	Year 3
A1	Number of policies created annually	Interviews; 65 monthly	780	1,080	1,380
A2	Hours to create an API policy before Layer7	Interviews	24	24	24
A3	Hours to create an API policy after Layer7	Interviews	0.5	0.5	0.5
A4	Average fully burdened hourly rate for developers	Composite	$60	$60	$60
At	Reduced time to create API policies	A1*(A2-A3)*A4	$1,099,800	$1,522,800	$1,945,800
	Risk adjustment	↓10%			
Atr	Reduced time to create API policies (risk-adjusted)		$989,820	$1,370,520	$1,751,220
	Three-year total: $4,111,560			**Three-year present value: $3,348,215**	

IMPROVED TIME-TO-MARKET FOR NEW REVENUE INITIATIVES

Evidence and data. The interviewed decision-makers were all experiencing a rapid increase in web services as a part of new digital transformation projects. Telecom firms looked to deliver more access to services via mobile devices.

Prior to Layer7 API Management, the interviewed decision-makers spent approximately two months (on average) performing the service integration work for cloud or mobile apps. Often this required custom development to expose a web service with strict partner rules. After Layer7, that work was performed in only three days, a 95% improvement. This was due to the templated approach with API creation in Layer7.

Modeling and assumptions. For the composite organization, Forrester estimates:

- It rolls out five new revenue initiatives requiring APIs each year. Each initiative brings in $20,000 in revenue daily (equivalent to 5% of total corporate revenue).
- From the interviews, average development times are 60 days before and three days after Layer7 API Management.
- Telecom companies realize a 13.6% operating profit margin, on average.

> **"In the past, it took months to expose a new service to foreign rules. With Layer7, we have standardized everything and can now get new APIs deployed even in the same day. So, we have redefined the time-to-market."**
> *IT director, telecommunication*

Risks. The improved revenue for API-related projects will vary depending on:

- The number of new revenue initiatives each year and time-to-market for each one.
- The number and type of APIs required (new vs. reused).
- The daily revenue realized from each initiative.

Results. To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV of more than $1.5 million.

Improved Time-To-Market For New Revenue Initiatives					
Ref.	**Metric**	**Source**	**Year 1**	**Year 2**	**Year 3**
B1	Average number of new API initiatives per year	Composite	5	5	5
B2	Average daily revenue per API initiative	Composite	$20,000	$20,000	$20,000
B3	Prior days to complete an API initiative	Interviews	60	60	60
B4	New days to complete an API initiative	Interviews	3	3	3
B5	Operating profit margin	Composite	13.6%	13.6%	13.6%
Bt	Improved time-to-market for new revenue initiatives	B1*B2*(B3-B4)*B5	$775,200	$775,200	$775,200
	Risk adjustment	↓20%			
Btr	Improved time-to-market for new revenue initiatives (risk-adjusted)		$620,160	$620,160	$620,160
	Three-year total: $1,860,480			**Three-year present value: $1,542,246**	

INFRASTRUCTURE COST REDUCTION

Evidence and data. Interviewees often shared that their organizations were looking to reduce investments in hardware for on-premises deployments of existing API management solutions. Beyond replacement cost every few years, these hardware appliances were inflexible for programming and led to higher annual maintenance costs. Some interviewed decision-makers saved more than half a million dollars in hardware investments and software expenses after implementing Layer7 API Management.

Interviewees reported an elimination of eight hardware appliances over three years, with an average replacement cost of $30,000 each. Decommissioned API management software savings were $93,000 per year. These savings are reflected in the composite, which has deployed Layer7 in a virtual environment.

Modeling and assumptions. For purposes of the model, Forrester considers all infrastructure eliminated with previous solutions as a benefit and estimates new infrastructure costs for Layer7 API Management. Other assumptions for the composite follow:

- Elimination of hardware devices is assumed to occur gradually over the three-year period.
- Average cost per server (from the interviewees) is $30,000 per appliance.
- Average annual cost of software is $93,000.
- Associated hardware maintenance fees (also eliminated) are 15%.

> **"In terms of maintenance, licensing, and hardware, we saved about 40% moving from the original technology we were using to Broadcom Layer7."**
> *IT director, telecommunications*

Risks. The improved revenue for API-related projects will vary depending on:

- The number and replacement costs of eliminated appliances, which may vary by organization.
- Decommissioned software, which assumes a prior API management solution.

Results. To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of more than $430,000.

"The Layer7 API Gateway is built around security. We have about 55 assertions, which are standard in one API. The developers can use these standard building blocks as more or less a skeleton of our security requirements."
Senior manager standard platforms, insurance

Infrastructure Cost Reduction

Ref.	Metric	Source	Year 1	Year 2	Year 3
C1	Total number of servers for API management	Interviews	2	2	4
C2	Cost per server	Interviews	$30,000	$30,000	$30,000
C3	Associated cumulative maintenance fees over three years	Composite	$9,000	$18,000	$45,000
C4	Total cost of decommissioned API management software	Interviews	$93,000	$93,000	$93,000
Ct	Infrastructure cost reduction	C1*C2+C3+C4	$162,000	$171,000	$258,000
	Risk adjustment	↓10%			
Ctr	Infrastructure cost reduction (risk-adjusted)		$145,800	$153,900	$232,200
	Three-year total: $531,900			**Three-year present value: $434,191**	

REDUCED RISK OF A SECURITY BREACH AND IMPROVEMENT TO PRODUCTIVITY

Evidence and data. As the interviewed decision-makers moved to expose more of their internal data to outside parties via API-based web services, the security of these APIs became a primary concern.

Before implementing Layer7 API Management, the interviewed decision-makers were concerned that their existing API management tools did not meet security certifications, such as Common Criteria and OWASP top 10 threats. Others stated its widespread use among US government agencies (including the Department of Defense) as validation of its industry-leading security.

According to the interviewees, none of their organizations suffered a security breach via their APIs after deploying Layer7, with more than five years of use. With Layer7, interviewees' IT operations teams organizations enforced standard security models for application integrations throughout their environments.

Modeling and assumptions. Modeling data is drawn from the Forrester Cost Of A Cybersecurity Breach Survey, which is based on surveyed telecom organizations of similar size.[2] For the composite organization, Forrester estimates:

- The average number of annual breaches for telecom companies is 2.1.
- This number of breaches is reduced by factors of 50% for improvement due to Layer7 security and another 20% for portion of breaches coming through APIs.
- The average cost of a breach for the composite organization is $657,000.
- Average down time due to a breach is 4 hours, with 8,500 employees affected (8% of workforce).
- The average fully burdened rate for these employees is $70,000 or $35 per hour.

Risks. The enhanced security benefit will vary depending on:

- Number of annual breaches.
- Downtime and employees affected by each breach.
- The fully burdened rate for employees.

Results. To account for these risks, Forrester adjusted this benefit downward by 25%, yielding a three-year, risk-adjusted total PV of more than $490,000.

Reduced Risk Of A Security Breach And Improvement To Productivity

Ref.	Metric	Source	Year 1	Year 2	Year 3
D1	Average annual number of material breaches	Forrester data, industry	2.1	2.1	2.1
D2	Average total internal and external costs of a material breach	Forrester data, enterprise	$657,494	$657,494	$657,494
D3	Percentage of network attacks due to API gateways	Assumption	20%	20%	20%
D4	Percentage risk improvement from Broadcom Layer7	Assumption	50%	50%	50%
D5	Subtotal — reduced risk of a security breach	D1*D2*D3*D4	$138,074	$138,074	$138,074
D6	Prior downtime hours per breach per employee annually	Forrester data, enterprise	4	4	4
D7	Number of employees affected	Forrester data, enterprise	8,500	8,500	8,500
D8	Average fully burdened hourly rate per employee	TEI standard	$35	$35	$35
D9	Productivity recapture rate	TEI standard	50%	50%	50%
D10	Subtotal — improved productivity from reduced downtime	D1*D3*D4*D6*D7*D8*D9	$124,950	$124,950	$124,950
Dt	Reduced risk of a security breach and improvement to productivity	D5+D10	$263,024	$263,024	$263,024
	Risk adjustment	↓25%			
Dtr	Reduced risk of a security breach and improvement to productivity (risk-adjusted)		$197,268	$197,268	$197,268
	Three-year total: $591,803			**Three-year present value: $490,576**	

COST SAVINGS TO API SECURITY UPDATES

Evidence and data. The interviewees also noted that Layer7 enabled their firms to reduce the time to update API security policies. Prior to implementation, these firms were using their application teams to refresh API security credentials for new identity policies. Each update took these teams 80 hours to complete across two or more FTEs. After deploying Layer7, security updates were handled by the central operations team and consumed only 40 hours of effort for each occurrence, typically with fewer FTEs.

"When the security guys decide to change from one IDP to another, we were able to fully insulate the applications teams from the change, we switched to the new IDP, and the app teams didn't have to do a thing."
IT director, consulting services

Modeling and assumptions. For the composite organization, Forrester estimates:

- An average of 12 new/updated application identity policies are performed each year.
- The fully burdened rate for developers, who formerly performed this task, is $120,000 per year or $60 per hour.
- The fully burdened rate for systems engineers who currently perform this task is $114,000 per year or $57 per hour.

Risks. The efficiency gains due to API security updates will vary depending on:

- The number of updates performed each year.
- The actual fully burdened rates for developers and systems engineers.

Results. To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV of more than $70,000.

Cost Savings To API Security Updates

Ref.	Metric	Source	Year 1	Year 2	Year 3
E1	Average annual number of API security updates	Interviews	12	12	12
E2	Prior hours to complete each security update	Interviews	80	80	80
E3	Average hourly rate per application team member	Composite	$60	$60	$60
E4	New hours to complete each security update	Interviews; E2-40	40	40	40
E5	Average hourly rate per systems engineer	Composite	$57	$57	$57
Et	Cost savings to API security updates	(E1*E2*E3)-(E1*E4*E5)	$30,240	$30,240	$30,240
	Risk adjustment	↓5%			
Etr	Cost savings to API security updates (risk-adjusted)		$28,728	$28,728	$28,728
	Three-year total: $86,184			**Three-year present value: $71,442**	

IMPROVED EFFICIENCY IN DEBUGGING INTEGRATIONS

Evidence and data. Prior to Layer7, application developer teams needed to debug API calls that were working improperly. With Layer7 implemented, this task shifted to a central operations team that had greater visibility of API traffic logs. One customer estimated a time savings of 30 minutes per incident, from 60 minutes to 30 minutes. This was sized to an average of four incidents per day for the composite organization.

Modeling and assumptions. For the composite organization, Forrester estimates that the fully burdened rate for developers is $120,000 per year or $60 per hour.

Risks. The improved revenue for API-related projects will vary depending on:

- The number of APIs in production and corresponding problem incidents that occur each day.
- The actual fully burdened rates for developers.

Results. To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV of more than $70,000.

Improved Efficiency In Debugging Integrations

Ref.	Metric	Source	Year 1	Year 2	Year 3
F1	Number of incidents per day	Interviews	4	4	4
F2	Hourly rate per person	Composite	$60	$60	$60
F3	Number of hours saved	Interviews	0.5	0.5	0.5
Ft	Improved efficiency in debugging integrations	F1*F2*F3*250	$30,000	$30,000	$30,000
	Risk adjustment	↓5%			
Ftr	Improved efficiency in debugging integrations (risk-adjusted)		$28,500	$28,500	$28,500
	Three-year total: $85,500			**Three-year present value: $70,875**	

UNQUANTIFIED BENEFITS

Additional benefits that customers experienced but were not able to quantify include:

- **Scalability.** For all interviewees, Layer7 has enabled significant transaction growth, from hundreds of thousands to millions or tens of millions, over several years. This growth has required that addition of several gateways each year and has occurred with no reported reliability issues.

"With our agent desktop application, each call costs about seven to eight euros, so the shorter your call time with the customer, the more money you save. If we can save a couple of seconds per call, that can translate to millions of euros on a yearly basis. With Layer7, we have minimal latency, which can save us millions."
Domain architect, telecommunications

- **Performance.** Larger customers reported very high transaction volumes with excellent response times. This was extremely important to organizations surfacing transactions to mobile devices and call centers because fast response times were critical for user experience. One customer using Layer7 to route call center transactions reported an average latency of six milliseconds on a daily volume of four million transactions. This low latency translates to shorter call times and lower average call costs across hundreds of millions of calls per year.

Another organization reported an average of 100 millisecond average response time for all its 50 million daily transaction loads.

"Our API gateway availability is nearly 100%, and because of this we are running in high availability and the gateway farm is continually growing."
IT director, telecommunications

- **Staff productivity.** As the interviewed decision-makers realized improved efficiencies from API development and deployment, along with security updates and API debugging, operations teams have been able to manage significant growth in APIs and integrations with little to no increase in staff size.

"We are managing over 1,800 production APIs in our team, with the same number of staff that managed about 100 services with our previous solution."
IT director, telecommunications

FLEXIBILITY

The value of flexibility is unique to each customer. There are multiple scenarios in which a customer might implement Layer7 API Management and later realize additional uses and business opportunities, including:

- **Supporting a variety of integrations and authentication mechanisms.** Interviewees noted that their organizations wanted to integrate some legacy applications with APIs. Layer7 API Management enabled them to do so with its multiplatform support. The interviews noted little to no challenges connecting these legacy apps to APIs with Layer7. For example, the global web services manager from a pharmaceutical company noted, “Layer7 enabled connections with a variety of legacy applications using SOAP APIs, as well as our newer PaaS cloud solution.”
- **Offering deployment on cloud-agnostic virtual platforms.** Utilizing containers, Layer7's capability can be deployed on multiple cloud platforms. This frees it from restrictions of hardware appliances and provides organizations great flexibility to leverage multiple cloud platforms using the same solution. Organizations were able to code more complex APIs that interface to many different platforms.
- **Portfolio license agreements (PLA).** Some decision-makers indicated interest in Broadcom’s new licensing agreement. The PLA would allow their organizations to realize economies from a broader range of products including agile management, portfolio management, testing, and monitoring products. It would also provide predictable annual fees (with caps) and the ability to try new products with lower risk.

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

“The strategy now is that we use API management via a cloud-agnostic solution, and for us, Layer7 is the cloud-agnostic solution we were looking for. So whether it’s on-prem, where we use it now, whatever the cloud we want to use the same solution there for not cloud-native workloads.”
Senior manager, standard platforms, 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**
Gtr	Licensing fees for API gateways	$348,000	$300,000	$210,000	$230,000	$1,088,000	$967,083
Htr	Implementation and ongoing management costs	$91,350	$194,880	$194,880	$194,880	$675,990	$575,988
	Total costs (risk-adjusted)	$439,350	$494,880	$404,880	$424,880	$1,763,990	$1,543,071

LICENSING FEES FOR API GATEWAYS

Evidence and data. Broadcom licenses its Layer7 API Management solution by the gateway, which can be deployed on premises, via containers, or using open virtual appliances. They offer a "unified SKU" that covers multiple components, including API Gateway, Mobile API Gateway, API Developer Portal, and API Monitoring.

It also charges a 20% maintenance fee starting in Year 2 for each gateway. The maintenance fee includes operational assistance and technical support on the phone or online 24x7x365.

Customers almost always employ Broadcom partners for the implementations.

Modeling and assumptions. For the composite, Forrester assumed Layer7 API Management was deployed across 20 production gateways in Year 0, with four additional gateways each year, beginning in Year 2. The initial implementation took six months, so initial license fees are split between Year 0 and Year 1. Additional assumptions are:

- Layer7 licensing fees are $25,000 per gateway.
- The composite organization incurs a 20% annual maintenance fee, applied as a percentage of its prior year software licensing fees. For an organization, annual maintenance fees may vary slightly from year to year.
- The virtual servers are provided by VMware at a cost of $10,000 each.
- Partner implementation fees are $48,000.

Risks. Implementation and licensing fees may vary by partner and deal size.

Results. As Broadcom priced the composite organization directly with Forrester, licensing costs have not been adjusted for risk, yielding a three-year total PV of somewhat less than $970,000.

Licensing Fees For API Gateways

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
G1	Number of gateways	Composite	20	20	24	28
G2	Broadcom development licensing fees	Broadcom	$250,000			
G3	Broadcom production licensing fees	Broadcom		$250,000	$100,000	$100,000
G4	Broadcom maintenance fees	Broadcom; 20% (cumulative prior years' investment)	$0	$50,000	$100,000	$120,000
G5	Number of VMs needed	Broadcom	5	0	1	1
G6	Cost per VM	Broadcom	$10,000	$10,000	$10,000	$10,000
G7	Implementation partner fees	Broadcom	$48,000	$0	$0	$0
Gt	Licensing fees for API gateways	G2+G3+G4+(G5*G6) +G7	$348,000	$300,000	$210,000	$230,000
	Risk adjustment	0%				
Gtr	Licensing fees for API gateways (risk-adjusted)		$348,000	$300,000	$210,000	$230,000
	Three-year total: $1,088,000			**Three-year present value: $967,083**		

IMPLEMENTATION AND ONGOING MANAGEMENT COSTS

Evidence and data. Customers incurred about three person-months of internal staff time to complete the implementation of Layer7 API Management, which typically occurred over a six-to-12-month timeframe. This internal implementation time was in addition to the partner implementation described above. Most interviewees reported a learning curve lasting a full year to adapt to Layer7 API Management.

Modeling and assumptions. For the composite organization, Forrester estimates:

- Three FTEs are dedicated to the implementation at 50% over a six-month period. Their fully burdened rate is $116,000 per year.
- Four FTEs are dedicated to managing the Layer7 API Management platform at 40% on an ongoing basis. Their fully burdened rate is also $116,000 per year.

Risks. Internal costs for implementation and management will vary depending on:

- The extent and variety of APIs in place prior to implementation of Layer7.
- Existence of a prior API management solution the organization is migrating away from.
- How involvement of a partner for implementation will impact internal staff learning.
- Fully burdened staff costs.

Results. To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV of slightly less than $576,000.

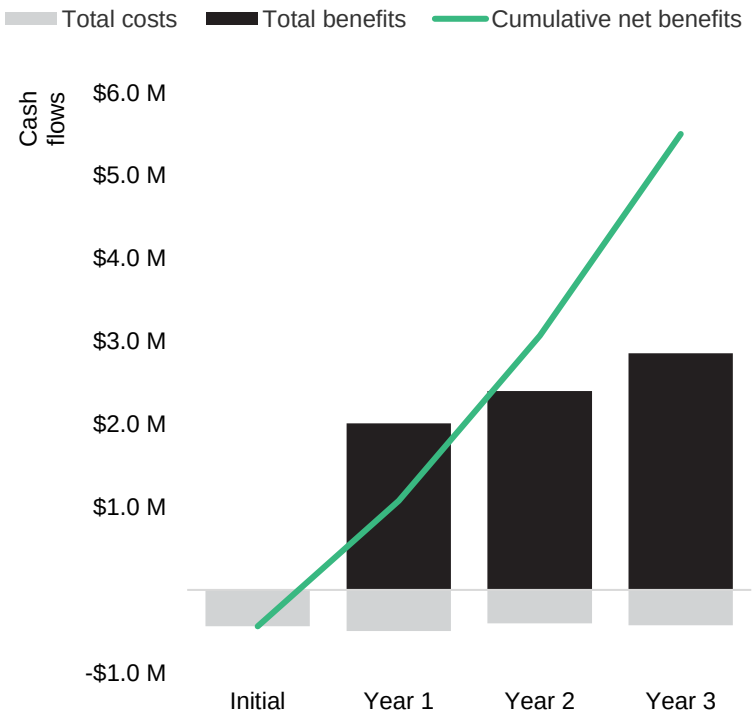
Implementation And Ongoing Management Costs

Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
H1	Months needed to implement	Interviews	6			
H2	Number of FTEs working on implementation	Interviews	3			
H3	Percentage of time spent on implementation	Interviews	50%			
H4	Fully burdened annual rate per FTE working on implementation	Composite	$116,000			
H5	Number of FTEs managing solution	Interviews		4	4	4
H6	Time spent on ongoing management	Interviews		40%	40%	40%
H7	Fully burdened annual rate per FTE managing solution	Composite		$116,000	$116,000	$116,000
Ht	Implementation and ongoing management costs	H2*H3*H4/2+H5*H6*H7	$87,000	$185,600	$185,600	$185,600
	Risk adjustment	↑5%				
Htr	Implementation and ongoing management costs (risk-adjusted)		$91,350	$194,880	$194,880	$194,880
	Three-year total: $675,990			**Three-year present value: $575,988**		

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	($439,350)	($494,880)	($404,880)	($424,880)	($1,763,990)	($1,543,071)
Total benefits	$0	$2,010,276	$2,399,076	$2,858,076	$7,267,427	$5,957,545
Net benefits	($439,350)	$1,515,396	$1,994,196	$2,433,196	$5,503,437	$4,414,474
ROI						286%
Payback						<6 months

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: Supplemental Material

Related Forrester Research

"The Forrester Wave™: API Management Solutions, Q3 2020," Forrester Research, Inc., August 4, 2020

Appendix C: 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.

[2] Source: Forrester Consulting Cost Of A Cybersecurity Breach Survey, Q4 2020.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