A Forrester Total Economic Impact™ Study

Commissioned By

CA

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The Total Economic Impact™ Of CA Unified Infrastructure Management

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Executive Summary

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

CA UIM can help companies improve IT service quality and delivery. With CA UIM, the interviewed companies were able to:

- **Proactively plan and manage infrastructure performance.**
- **Improve root-cause analysis.**
- **Reduce time and resources spent in infrastructure monitoring.**

To better understand the benefits, costs, and risks associated with a CA UIM implementation, Forrester interviewed four customers with multiple years of experience using CA UIM. Three of the customers used CA UIM to monitor infrastructure that enabled services for both internal users and external customers. The fourth used it to monitor infrastructure that served internal users only.

Prior to deploying CA UIM, the interviewed customers used a variety of unintegrated, complex monitoring tools from other vendors. They experienced a variety of challenges with these tools, including difficulty in performing rapid root-cause analysis, too many false-positive alarms, function shortcomings and stability issues, and an inability to enable effective infrastructure utilization. When seeking a new monitoring solution, they wanted an integrated solution where monitoring could be done through a single pane of glass, minimize monitoring operations expenses, and support DevOps and multitenant deployments.

CA UIM REDUCES MONITORING TIME, EXPENSES AND ENABLES IMPROVED SERVICE QUALITY

Our interviews with four existing customers and subsequent financial analysis found that a composite organization based on these interviewed companies experienced the risk-adjusted ROI, benefits, and costs shown in Figure 1.[1] See Appendix A for a description of the composite organization.

The composite organization analysis experiences three-year risk adjusted benefits of $6.1 million and costs of $1.7 million, adding up to a net present value (NPV) of $4.4 million.

With CA UIM, the interviewed companies were able to improve root-cause analysis and subsequent remediation times, proactively plan and manage infrastructure capacity, and improve overall service quality, delivery, and management.

FIGURE 1
Financial Summary Showing Three-Year Risk-Adjusted Results

Source: Forrester Research, Inc.

› **Benefits.** The composite organization experienced the following risk-adjusted benefits that represent those experienced by the interviewed companies:

- **Labor savings for configuring and deploying probes of $606,955.** This stems from using CA UIM to develop reusable preconfigured probes for different device types as opposed to manually configuring the probes, which was required by legacy monitoring tools.
- **Labor savings for administering monitoring tools of $1.1 million.** We found that the amount of labor needed to monitor and maintain CA UIM was five full-time equivalents (FTEs) fewer than that required by the legacy monitoring tools.
- **Labor savings for managing service desk tickets of $3.6 million.** This savings arises from CA UIM generating 45% fewer alarms that require triage, and the amount of labor and time needed to resolve the alarms was lower.
- **Labor savings associated with report generation of $362,043.** CA UIM's dashboards and reporting tools allowed companies to generate templated reports and make report generation self-service, thereby reducing the burden needed to generate reports manually.
- **Labor savings associated with streamlined software release management of $212,518.** This savings stems from the reduced time and fewer engineers needed to stop and restart monitoring tools when a device is taken offline for software updates.
- **Software maintenance fees avoided for retired tools of $259,876.** This savings is a result of decommissioning legacy monitoring tools.

› **Costs.** The composite organization experienced the following three-year risk-adjusted costs:

- **Software license and maintenance expense of $795,770.** This is the perpetual license cost and maintenance fees for monitoring 1,000 devices.
- **Infrastructure needed to support UIM deployment of $111,943.** This is the acquisition and maintenance expense for the servers, storage, operating system (OS), and database licenses needed to run CA UIM in a fault-redundant environment.
- **Professional services of $40,000.** This accounts for consulting services provided by CA during the initial design and implementation phase of CA UIM.
- **Internal labor for planning and implementation of $121,917.** This represents the internal labor that was used for planning and deploying CA UIM.
- **Internal labor for maintenance and management of $620,159.** This represents the labor needed for daily management and maintenance of CA UIM.
- **Software development expense for probes of $11,083.** This is the cost to develop five custom probes for use cases that are not included in CA UIM's standard probes.

Disclosures

The reader should be aware of the following:

- The study is commissioned by CA 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 CA UIM.
- CA 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.
- CA provided the customer names for the interviews but did not participate in the interviews.

TEI Framework And Methodology

INTRODUCTION

From the information provided in the interviews, Forrester has constructed a Total Economic Impact (TEI) framework for those organizations considering implementing CA UIM. The objective of the framework is to identify the cost, benefit, flexibility, and risk factors that affect the investment decision, to help organizations understand how to take advantage of specific benefits, reduce costs, and improve the overall business goals of winning, serving, and retaining customers.

APPROACH AND METHODOLOGY

Forrester took a multistep approach to evaluate the impact that CA UIM can have on an organization (see Figure 2). Specifically, we:

- Interviewed CA marketing, sales, and/or consulting personnel, along with Forrester analysts, to gather data relative to UIM and the marketplace for UIM.
- Interviewed four organizations currently using CA UIM to obtain data with respect to costs, benefits, and risks.
- Designed a composite organization based on characteristics of the interviewed organizations (see Appendix A).
- Constructed a financial model representative of the interviews using the TEI methodology. The financial model is populated with the cost and benefit data obtained from the interviews as applied to the composite organization.
- Risk-adjusted the financial model based on issues and concerns the interviewed organizations highlighted in interviews. Risk adjustment is a key part of the TEI methodology. While interviewed organizations provided cost and benefit estimates, some categories included a broad range of responses or had a number of outside forces that might have affected the results. For that reason, some cost and benefit totals have been risk-adjusted and are detailed in each relevant section.

Forrester employed four fundamental elements of TEI in modeling CA UIM's service: 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 B for additional information on the TEI methodology.

FIGURE 2

TEI Approach

Source: Forrester Research, Inc.

Analysis

INTERVIEW HIGHLIGHTS

Interviewed Organization

A total of four interviews were conducted for this study, involving representatives from the following companies:

- A provider of back-office services to the healthcare industry. This company uses CA UIM to manage 8,000 servers, 50 storage arrays, and over 100 network devices. The company has been using CA UIM for two years. The company hosts the applications and underlying infrastructure for many of its customers.
- A global financial services firm. This company uses CA UIM to manage 38,000 physical and virtual servers in its investment banking division. The company has been using CA UIM for five years.
- A satellite TV provider. This company used CA UIM to manage 240 servers, nine storage arrays, and 150 network devices in its digital advertising insights division. The company has been using CA UIM for over six years.
- A global financial services provider to the prepaid card industry. The company uses CA UIM to monitor 900 servers, 25 network devices, 40 physical storage devices, and 90 virtual storage devices. The company has been using CA UIM for five years.

The companies had widely differing approaches to using CA UIM in their data centers. One company had a team dedicated to engineering monitoring solutions, which were then handed off to the teams that did the actual monitoring. Usually the companies used a variety of resources within the same team for configuring and deploying systems monitoring tools. Their tasks included generating preconfigured templates for the monitoring probes and integrating CA UIM with service delivery tools.

> *"Our users were identifying issues before we were, which is just not acceptable in [a] modern application stack."*
>
> ~ Manager, system administration and engineering, healthcare services provider

Challenges

The interviewed organizations faced a variety of challenges with their IT infrastructure monitoring tools that caused them to re-evaluate their overall monitoring strategy and the tools that they used for device and application monitoring. These challenges included:

- **End users identifying issues before the IT monitoring teams.** Despite their strong commitment to using monitoring tools, two companies found that their tools did not provide the analytics or alarms that would alert them to potential problems before they occurred. Too often they became aware of a problem after the fact, when an end user made a call to the help desk. They found that their existing monitoring tools sometimes failed to detect that system parameters such as CPU usage or disc capacity were out of limit, or that that a service had actually stopped working. The service management and delivery teams then had to remediate the problem after the fact, often resulting in end user or customer downtime and frustration.
- **Too many false-positive alarms that overwhelmed the IT monitoring teams.** The volume of alarms generated by the existing monitoring tools made it difficult for the service management teams to easily identify which alarms were real and required action. This led to alarms being missed and slow resolution times, and it resulted in end user frustration or

downtime. The companies wanted monitoring tools that, when configured appropriately, would generate alarms that actually required action.

- **Lack of integration between existing monitoring tools that made is difficult to perform root-cause analysis.** Using unintegrated, complex monitoring tools that generated false-positive or conflicting alarms made it difficult to pinpoint which piece of equipment was causing the problem and to perform rapid root-cause analysis. Not being able to view the alarms through a single pane of glass further exacerbated the problem. Problem resolution would usually require the participation of multiple support teams (e.g., server, network, and applications) to resolve a problem. Inevitably, finger-pointing between the different support teams and equipment vendors would ensue. The companies wanted an integrated solution that would allow them to easily and quickly identify the infrastructure or application element that was at fault.
- **Functional and stability challenges with existing monitoring tools.** Some companies found that their existing monitoring tools lacked the functionality to monitor the parameters that were important to them. This hindered overall service delivery. Stability issues with tools further compounded the problem. The companies wanted tools that had the functional breadth and configurability to monitor the parameters that they cared about.
- **Potential technical and financial burdens imposed by upgrading existing monitoring tools**. One organization found that the version upgrade required by its existing tool vendor was not backwardly compatible with its existing version. Upgrading would have broken all the technical integrations it had built, and the financial burden to recreate them would have been too high. This opened the door to allow the company to consider solutions from alternate vendors.

Solution Requirements And Product Selection Criteria

When envisioning the outcomes from their next systems monitoring tools, the companies wanted to:

- **Achieve faster problem resolution times and improve root-cause analysis.** This requirement was central to improving and maintaining service delivery standards. The companies wanted proactive alerting regarding potential failures, and they didn't want to have end users be the first to report service outages.

> *"We chose CA because of its multitenancy. It's one of its key features, because we are presenting information directly to our end customers."*
>
> ~ Manager, system administration and engineering, healthcare services provider

- **Consolidate the number of monitoring tools being used.** Through consolidation, they hoped to achieve tighter tool integration, reduce the maintenance overhead of supporting multiple tools, and simplify systems monitoring.
- **Optimize infrastructure performance and support.** The interviewed companies wanted their infrastructure monitoring tools to provide input into their service delivery tools and also capacity planning if necessary. To this end, the systems monitoring tools would have to integrate with any other tools that were used to perform applications delivery and service management. This capability is important for proactively ensuring that the underlying infrastructure performs optimally for critical applications and is not the source of slow response time.

When considering their next monitoring tools, the companies want a system and vendor that would:

- **Offer a single pane for glass for systems monitoring.** The companies wished to move away from disintegrated systems that required multiple monitoring windows to a system that integrated all activity into a single window.
- **Minimize systems monitoring operational expense.** The companies wanted tools that had a small hardware footprint and required less staff to operate in comparison with their existing systems.

- **Support multitenant deployments.** This was essential for the service providers that operated unique instances for their customers. Their customers had security and data privacy requirements that could be satisfied by multitenancy. Multitenancy would allow them to present reports to each of their clients in a secure manner.
- **Have a strong services and support team.** Some of the companies did not wish to climb the learning curve for the new infrastructure monitoring tools alone. They wanted the support from a vendor that had participated in many customer deployments. In the words of one interviewee: "If all you're doing is looking at me as a number at the end of quarter, this relationship will not last. I'm looking for a business partner who wants to understand what challenges I have and bring the right tools or the right features to my table to help me resolve my challenges. If it's just monitoring tools, you're going to lose me."

"We've gained visibility into the true behavior of both our applications and IT infrastructure in real environments . . . as opposed to what our architects had designed or forecasted the behavior would be."

~ Senior director, technology services and operations, financial services company

Solution

The interviewed companies selected CA UIM primarily for server monitoring, and in some cases for network and storage monitoring. The companies also used additional monitoring tools from other vendors for a variety of needs and use cases. Generally, CA UIM was initially deployed within a limited scope. As the companies' comfort with CA UIM grew, they expanded their deployments to cover more devices and monitor more parameters. Some companies wrote their own custom monitoring probes and leveraged CA UIM's application program interface (API) to integrate CA UIM with other tools and applications. Initial deployment took between six and eight months, with continued development as their understanding and usage of the tool expanded.

Results

We learned that by leveraging the capabilities of CA UIM, the interviewed companies experienced the following qualitative benefits:

- **Leverage data generated by UIM to improve service quality, delivery, and management.** In one instance, the data generated by CA UIM was used to highlight application and infrastructure performance and perform root-cause analysis behind poor application performance. Over a period of time, the company was able to remove the barriers that existed between the infrastructure monitoring and application design teams. This allowed the teams to work cooperatively to design systems that were more reliable and ended in a better experience for their customers.
- **Use CA UIM's APIs to enable process automation and customer self-service.** Using CA UIM's APIs to build

"I've gone from getting 20,000 alerts a week to where I might get probably 400 or 500 alerts that are really actionable during the week."

~ Senior director, technology services and operations, financial services provider

integrations with various IT management and service delivery tools, it allowed some companies to automate certain processes like trouble ticket generation and alerting. It also allowed them to build self-service portals so that customers could generate their own reports from UIM's data.

- **Proactively plan and manage infrastructure performance and capacity.** By setting up the correct alarm thresholds around parameters like CPU and network utilization or disc space usage, the companies were able to provision the appropriate hardware resources before application performance suffered and end users experienced service degradation.
- **Improve root-cause analysis and mean time to repair (MTTR).** Because network operations center (NOC) administrators and engineers could view monitoring data from multiple probes through a single pane of glass, they could perform root-cause analysis more easily and achieve faster resolution times. One of the interviewed customers stored performance metrics in a database and could correlate the "live" performance data against the performance metrics in the database. According to the interviewee, "Getting to the cause takes minutes, [and the time to get] the right vendor on the line has been reduced." Having a faster mean time to repair results in better user experience and staff productivity.

> *"We've seen a reduction in escalated incidents . . . close to 40% to 50%."*
>
> ~ Manager, system administration and engineering, healthcare services provider

- **Improve application performance and design by using CA UIM to monitor the resulting impact on infrastructure utilization before releasing it to production.** According to one interviewee: "We began to get invited to the table to look at design and to build test environments. . . . [We'd] apply CA UIM behind the scenes to check what the forecasted behavior was going to be for a certain application before it was even proposed for production. We ended up with more streamlined design, improved QA, and better quality."
- **Improved service availability and service quality.** All the interviewed companies recognized that CA UIM was essential to the overall improvements in service availability and service quality that they experienced. This was both for their customers and internal users. These improvements manifested via reduced downtime or better application performance. They were unable to describe how much CA UIM contributed to these improvements, because CA UIM was part of a much larger service delivery mechanism. Forrester encourages readers to evaluate the cost of downtime or service loss specific to their situation, in order to understand how improved service availability may have an impact on their organizations.

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 that Forrester synthesized from the interviewed companies is a firm that provides services to customers in the financial industry. For many of its customers, it hosts the infrastructure that powers services that are critical to their businesses. Therefore, ensuring reliable service delivery is paramount.

Prior to deploying CA UIM, the organization used a number of tools from different vendors to monitor its servers, network, and storage gear. The tools were labor intensive to configure and there was no integration between them. The lack of integration made it difficult to perform root-cause analysis. The organization also found that its customers or internal users sometimes acted as the alarm point. The organization understood that it needed to improve the overall functionality and reliability of its systems monitoring tools. It wanted an integrated solution that would allow it to do reliable monitoring and rapid root-cause analysis, enable capacity planning, and integrate with other tools if needed. It chose CA UIM as its next monitoring tool and purchased a total of 5,000 server probes and 250 network probes. See Appendix A for a full description of the composite organization.

BENEFITS

The composite organization experienced the following quantified benefits:

- Labor savings for configuring and deploying probes.
- Labor savings for administering monitoring tools.
- Labor savings for managing service desk tickets.
- Labor savings associated with report generation.
- Labor savings associated with streamlined software release management.
- Software maintenance fees avoided for retired tools.

Definition Of A Probe

CA UIM probes provide the intelligence to manage specific components on a managed device. For example, one common probe, the CDM probe, is responsible for monitoring CPU, disk, and memory utilization on target hosts. Probes can be deployed across an entire network via a drag-and-drop interface, or programmatically in an automated fashion. CA UIM offers toolkits (SDKs) that allow customers to develop custom probes for managing homegrown applications

Labor Savings For Configuring And Deploying Probes

We learned from the interviewed companies that in comparison to their point, complex, or legacy monitoring tools, the time needed to configure a monitoring probe with CA UIM decreased from days to hours. This benefit was realized by using standardized, preconfigured probes for different device types like application servers, database servers, or network switches. The interviewed companies either used the standard probe configurations that come with UIM or invested in developing their own custom configurations. They also relied on automated tools to push the probes out to the servers.

To evaluate this benefit, we assume that the benefits begin to accrue in Year 1, after the initial CA UIM deployment is complete and the composite organization has sufficient experience configuring and deploying probes. The following assumptions are made:

- A thousand probes are deployed during the initial implementation, and 25% are reconfigured or require maintenance each year.
- It took 20 hours to configure and deploy a probe prior to UIM, and it took 1 hour with UIM.

Assuming a UIM engineer fully loaded hourly rate of $57, the total three-year labor savings are $813,552 (see Table 1).

We risk-adjusted the benefit downward by 10% to account for variations in salary rates and the time needed to configure and deploy a probe for legacy monitoring tools. This yields the total three-year risk-adjusted labor savings of $732,197.

TABLE 1
Labor Savings For Configuring, Deploying, And Maintaining Monitoring Probes

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total
A1	Number of new probes deployed		1,000				
A2	Number of probes redeployed annually	25%*A1		250	250	250	
A3	Number of hours needed to configure and deploy a probe before UIM			20	20	20	
A4	Number of hours needed to configure and deploy a probe after UIM			1	1	1	
A5	Average UIM engineer fully loaded hourly rate	$95,000*1.25/2,080		$57.09	$57.09	$57.09	
A6	Percentage savings attributable to UIM			100%	100%	100%	
At	Labor savings for configuring, deploying, and maintaining probes	A2*(A3-A4)*A5*A6	$0	$271,184	$271,184	$271,184	$813,552
	Risk adjustment	↓ 10%					
Atr	**Labor savings for configuring, deploying, and maintaining probes (risk-adjusted)**		**$0**	**$244,066**	**$244,066**	**$244,066**	**$732,197**

Source: Forrester Research, Inc.

Labor Savings For Administering Monitoring Tools

For all the interviewed companies, having a single integrated tool was a primary benefit of CA UIM and a key reason for selecting CA UIM. For those companies that replaced multiple legacy monitoring tools with CA UIM, the amount of labor needed to administer their monitoring tools was reduced. In particular, one company reduced its tool administration labor effort from 10 FTEs to 2.5 FTEs. Another company went from eight FTEs to four FTEs.

To evaluate this benefit, we assume the composite organization needed six FTEs to administer its legacy monitoring tools and two FTEs to administer CA UIM. Assuming a CA UIM engineer fully loaded salary of $118,750, the total three-year labor savings are $1.18 million (see Table 2).

We risk-adjusted the benefit downward by 5% to account for variations in salary rates and the potential number of FTEs saved. This yields the total three-year risk-adjusted labor savings of $1.12 million.

TABLE 2
Labor Savings For Administering Monitoring Tools

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total	Present Value
B1	Number of FTEs administering monitoring tools before UIM			6				
B2	Number of FTEs administering monitoring tools after UIM			2				
B3	Average UIM engineer fully loaded annual salary	$95,000*1.25		$118,750				
B4	Percentage savings attributable to UIM			100%				
Bt	Labor savings for administering monitoring tools	(B1-B2)*B3*B4	$0	$475,000	$475,000	$475,000	$1,425,000	$1,181,255
	Risk adjustment	🡻 5%						
Btr	**Labor savings for administering monitoring tools (risk-adjusted)**		**$0**	**$451,250**	**$451,250**	**$451,250**	**$1,353,750**	**$1,122,192**

Source: Forrester Research, Inc.

Labor Saving For Managing Service Desk Tickets

After deploying CA UIM and configuring alarm thresholds appropriately, the interviewed companies observed a reduction in the number of alarms that required attention or generated a service desk ticket. According to one interviewee, “I’ve gone from getting 20,000 alerts a week to where I might get probably 400 or 500 alerts that are really actionable.” Two companies reported a 40% to 50% reduction in the number of alarms that required

escalation. They attributed this to CA UIM generating fewer false-positive alarms and setting alarm thresholds such that action could be taken proactively.

Because of CA UIM's integrated nature, the interviewed companies were able to perform root-cause analysis faster and resolve issues faster. Prior to CA UIM, the interviewed companies may have needed engineers from the server, network, and application teams to determine the root cause of alarm. After CA UIM, this was reduced to a single engineer. A related benefit was the elimination of finger-pointing between the various operational teams and associated vendors.

To evaluate this benefit, we assume that:

- The number of alarms or incidents that require triage is reduced by 45%.
- The number of engineers needed to resolve the incident is decreased from three to one.
- The time required to resolve an incident is reduced from 3 hours to 1 hour.

This yields a three-year labor savings of $4.8 million (see Table 3).

We risk-adjusted this downward by 10% to account for variability in the percentage reduction in the number of incidents that require triage. This yields a three-year risk-adjusted labor savings of $4.3 million.

TABLE 3
Labor Saving For Managing Service Desk Tickets

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total
C1	Number of escalated incidents requiring triage before UIM	80/week * 52		4,160			
C2	Percentage reduction in incidents requiring triage	45%		45%			
C3	Number of FTEs required to service trouble ticket before UIM	4		4			
C4	Average time needed to resolve ticket before UIM (hours)	4		4			
C5	Number of FTEs required to service trouble ticket after UIM	1		1			
C6	Average time needed to resolve an incident (hours)	1		1			
C7	Average UIM engineer fully loaded hourly rate	$95,000*1.25/2,080		$57.09			
Ct	Labor saving for managing service desk tickets	C1*C2*((C3*C4)-(C5*C6))*C7	$0	$1,603,125	$1,603,125	$1,603,125	$4,809,375
	Risk adjustment	↓ 10%					

Ctr	**Labor saving for managing service desk tickets (risk-adjusted)**	**$0**	**$1,442,813**	**$1,442,813**	**$1,442,813**	**$4,328,438**

Source: Forrester Research, Inc.

Labor Savings Associated With Report Generation

We learned that prior to CA UIM, the interviewed companies needed to create performance reports for their internal users or external customers on an as-needed basis. The reports were usually not standardized, resulting in a lot of custom report writing. Report generation was particularly difficult in situations where the monitoring tools were not integrated, because the data would need to be extracted from multiple sources. After deploying CA UIM, the interviewed customers were able to make report generation completely self-service. This was done by creating self-service interfaces or dashboards or by automatically generating operational reports. The task was simplified because all the necessary data came from a single repository. Data from CA UIM usually was stored in a back-end database allowing for historical reporting.

To evaluate this benefit, we assume the composite organization would need to generate 500 reports manually each year (approximately 10 reports per week), and it takes up to six to generate a report. After CA UIM, the time needed to generate reports dropped to zero. This yields a three-year labor savings of $513,822.

We risk-adjusted this downward by 15% to account for variability in the number of reports that needed to be generated prior to using UIM. This yields a three-year risk-adjusted labor savings of $436,749 (see Table 4).

TABLE 4
Labor Savings Associated With Report Generation

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total
D1	Number of reports created annually			500			
D2	Average time needed to create reports before UIM (hours)			6			
D3	Average UIM engineer fully loaded hourly rate	$95,000*1.25/2,080		$57.09			
Dt	IT labor savings associated with report generation	D1*D2*D3	$0	$171,274	$171,274	$171,274	$513,822
	Risk adjustment	↓ 15%					
Dtr	**IT labor savings associated with report generation (risk-adjusted)**		**$0**	**$145,583**	**$145,583**	**$145,583**	**$436,749**

Source: Forrester Research, Inc.

Labor Saving Associated With Streamlined Software Release Management

The interviewed companies needed to regularly update software on their servers for multiple reasons, including OS patch updates, application maintenance updates, and new application releases. Before updating the software, all monitoring tools would need to be stopped and the server shut down so it could be taken offline. Prior to CA UIM, the interviewed companies would need up to three engineers and 30 minutes to bring a server down. According to one company, "[With CA UIM], we can shut down the monitoring with a click of a mouse, take it offline, and then also execute a script to reboot the servers." The shutdown sequence was executed by a NOC technician with no engineers involved.

For the composite organization, we assume that 600 software updates are applied to its servers annually. Prior to CA UIM, it takes three engineers 60 minutes to execute a shutdown and reboot. Using CA UIM and scripts, it takes a single NOC technician 20 minutes to execute a shutdown and reboot. We note that an NOC technician's hourly rate (E7) is lower than an engineer (E4). This yields a three-year labor savings of $284,856 (see Table 5).

We risk-adjusted this downward by 10% to account for variability in the number of software updates that needed to be applied annually and for variances in salaries. This yields a three-year risk-adjusted labor savings of $256,370.

TABLE 5
Labor Saving Associated With Streamlined Software Release Management

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total
E1	Numbers of software updates and releases (annually)			600			
E2	Number of engineers needed to bring a system up and down before UIM			3			
E3	Time needed to bring systems up and down before UIM (minutes)			60			
E4	Engineer hourly rate	$95,000*1.25/2,080		$57.09			
E5	Time needed to bring systems up and down after UIM (minutes)			20			
E6	Number of NOC technicians needed to bring a system up and down before UIM			1			
E7	NOC technician hourly rate	$65,000*1.25/2,080		$39.06			
Et	Labor saving associated with streamlined software release management	E1*((E2*E3/60*E4)-(E5/60*E6*E7))	$0	$94,952	$94,952	$94,952	$284,856
	Risk adjustment	↓ 10%					
Etr	**Labor saving associated with streamlined software release management (risk-adjusted)**		**$0**	**$85,457**	**$85,457**	**$85,457**	**$256,370**

Source: Forrester Research, Inc.

Software Maintenance Fees Avoided For Retired Tools

The interviewed companies used monitoring tools from other vendors prior to deploying CA UIM. In two cases, these were large, complex tool sets. After the companies deployed CA UIM, these tools were decommissioned, and the companies stopped paying software maintenance fees to the monitoring tool vendors.

For the composite organization, we assume that the software maintenance fees for legacy monitoring tools are $110,000 annually. This yields a three-year savings of $330,000.

We risk-adjusted this downward by 5% to account for variability in the maintenance fees that a company may pay. This yields a three-year risk-adjusted savings of $313,500 (see Table 6)

TABLE 6
Software Maintenance Fees Avoided For Retired Tools

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total
F1	Annual software maintenance fees for retired tools			110,000	110,000	110,000	
Ft	Software maintenance fees avoided for retired tools	F1	$0	$110,000	$110,000	$110,000	$330,000
	Risk adjustment	↓ 5%					
Ftr	**Software maintenance fees avoided for retired tools (risk-adjusted)**		**$0**	**$104,500**	**$104,500**	**$104,500**	**$313,500**

Source: Forrester Research, Inc.

Total Benefits

Table 7 shows the total of all benefits across the six areas listed above, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of more than $6.1 million.

TABLE 7
Total Benefits (Risk-Adjusted)

Ref.	Benefit Category	Year 1	Year 2	Year 3	Total	Present Value
Atr	Labor savings for configuring and deploying probes	$244,066	$244,066	$244,066	$732,197	$606,955
Btr	Labor savings for administering monitoring tools	$451,250	$451,250	$451,250	$1,353,750	$1,122,192
Ctr	Labor saving for managing service desk tickets	$1,442,813	$1,442,813	$1,442,813	$4,328,438	$3,588,061
Dtr	IT labor savings associated with report generation	$145,583	$145,583	$145,583	$436,749	$362,043
Etr	Labor saving associated with streamlined software release management	$85,457	$85,457	$85,457	$256,370	$212,518
Ftr	Software maintenance fees avoided for retired tools	$104,500	$104,500	$104,500	$313,500	$259,876
	Total benefits (risk-adjusted)	**$2,473,668**	**$2,473,668**	**$2,473,668**	**$7,421,003**	**$6,151,645**

Source: Forrester Research, Inc.

COSTS

The composite organization experienced a number of costs associated with the UIM solution:

- Software license and maintenance expense.
- Infrastructure needed to support UIM deployment.
- Professional services.
- Internal labor for planning and implementation.
- Internal labor for maintenance and management.
- Software development expense for probes.

These represent the mix of internal and external costs experienced by the composite organization for initial planning, implementation, and ongoing maintenance associated with the solution.

Software License And Maintenance Expense

For the composite organization, we assume it purchases 1,000 probes to monitor a mix of servers, networks, and storage devices. The software maintenance expense is assumed to be 20% of the software acquisition expense. The total software license and maintenance expense is $843,885 (see Table 8).

All pricing for the probes was supplied to Forrester by CA. Forrester encourages readers to consultant with CA to determine the pricing that is applicable to their situation.

No risk adjustment was applied because actual pricing data that was supplied by CA was used.

TABLE 8
Software License And Maintenance Expense

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total
G1	UIM license acquisition and maintenance expense		$562,590	$93,765	$93,765	$93,765	$$843,885
Gt	Software license and maintenance expense		$562,590	$93,765	$93,765	$93,765	$843,885
	Risk adjustment	0%					
Gtr	**Software license and maintenance expense (risk-adjusted)**		**$562,590**	**$93,765**	**$93,765**	**$93,765**	**$843,885**

Source: Forrester Research, Inc.

Infrastructure Needed To Support CA UIM Deployment

All the interviewed companies required servers, storage, OS and database licenses in order to run CA UIM. CA UIM was always deployed on fault-redundant or backup infrastructure. Virtual servers were often used, as were

databases from different vendors.

For the composite organization, we assume that it purchases servers, OS and databases licenses needed to deploy CA UIM on redundant infrastructure. The total three-year infrastructure acquisition and maintenance expense is $112,000 (see Table 9).

We risk-adjusted this upward by 5% to account for variability in infrastructure costs pay. This yields a three-year risk-adjusted expense of $117,600. We recognize that users may experience lower infrastructure acquisition and maintenance expense if virtual servers are used, and if the organization already owns OS and database licenses.

TABLE 9
Infrastructure Needed To Support UIM Deployment

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total
H1	Total infrastructure costs		$70,000				
H2	Annual infrastructure maintenance fee	15%	$10,500	$10,500	$10,500	$10,500	
Ht	Infrastructure needed to support UIM deployment	H1+H2	$80,500	$10,500	$10,500	$10,500	$112,000
	Risk adjustment	↑ 5%					
Htr	**Infrastructure needed to support UIM deployment (risk-adjusted)**		**$84,525**	**$11,025**	**$11,025**	**$11,025**	**$117,600**

Source: Forrester Research, Inc.

Professional Services

The interviewed companies used professional services from CA to assist with the initial UIM planning and deployment. The services rendered by CA included system architecture, design, and configuration. Some of the companies had additional services hours bundled into their contracts, and these hours were used to improved overall service delivery reliability and fine tuning.

For the composite organization, we assume that it uses two weeks of professional services from CA during the initial deployment phase. The total three-year professional services expense is $40,000 (see Table 10).

TABLE 10
Professional Services

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total
I1	Number of hours		160				
I2	Hourly rate	$250/hour	$250				
It	Professional services	I1*I2	$40,000	$0	$0	$0	$40,000
	Risk adjustment	0%					
Itr	**Professional services (risk-adjusted)**		**$40,000**	**$0**	**$0**	**$0**	**$40,000**

Source: Forrester Research, Inc.

Internal Labor For Planning And Implementation

All the interviewed companies devoted internal resources for their CA UIM deployment planning and implementation. The number of resources varied from two to four FTEs, working for six to eight months. We found that it was unusual to have dedicated full-time resources devoted to planning and implementation. Instead, we found that the resources usually spent from 20% to 40% of their time on UIM.

For the composite organization, we assume that four FTEs spend 40% of their time over a seven-month period working on the CA UIM planning and deployment. This yields a total three-year infrastructure planning and implementation expense of $110,833 (see Table 11).

We risk-adjusted this upward by 10% to account for variability in the number of FTEs needed, their time spent on planning and implementation, and salary variations. This yields a three-year risk-adjusted expense of $121,917.

TABLE 11
Internal Labor For Planning And Implementation

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total
J1	Number of FTEs needed for UIM initial planning and deployment		4				
J2	Percentage time spent working on CA UIM planning and deployment		40%				
J3	Average UIM engineer fully loaded annual salary	$95,000*1.25	118,750				
J4	Months needed to complete initial deployment		7				
Jt	Internal labor for planning and implementation	J1*J2*J3*J4/12	$110,833	$0	$0	$0	$110,833
	Risk adjustment	↑ 10%					
Jtr	**Internal labor for planning and implementation (risk-adjusted)**		**$121,917**	**$0**	**$0**	**$0**	**$121,917**

Source: Forrester Research, Inc.

Internal Labor For Maintenance And Management

All the internal companies had internal resources for daily maintenance and management of CA UIM. The number of resources needed varied widely, depending on size and scope of the UIM deployment, geographic reach, the need for 24x7 support, and service-level agreements (SLAs). Usually, multiple resources were used for CA UIM maintenance and management, consuming 20% to 40% of their time. One company was able to lower its support expense by using offshore labor.

For the composite organization, we assume that the two FTEs are needed for CA UIM maintenance and management. This yields a total three-year maintenance and management expense of $712,500 (see Table 12).

We risk-adjusted this upward by 5% to account for variability in the number of FTEs needed and salary variations. This yields a three-year risk-adjusted expense of $748,125.

TABLE 12
Internal Labor For Maintenance And Management

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total
K1	Number of FTEs needed for ongoing UIM maintenance			2			
K2	Average UIM engineer fully loaded annual salary	$95,000*1.25		$118,750			
Kt	Internal labor for maintenance and management	K1*K2		$237,500	$237,500	$237,500	$712,500
	Risk adjustment	↑ 5%					
Ktr	**Internal labor for maintenance and management (risk-adjusted)**			**$249,375**	**$249,375**	**$249,375**	**$748,125**

Source: Forrester Research, Inc.

Software Development Expense For Probes

Some of the interviewed companies leveraged CA UIM's API to develop probes that were customized to their needs. The number of probes developed depended on the specific piece of equipment or application that required monitoring. The amount of time needed to develop a probe varied from three to five days.

For the composite organization, we assume that it develops five probes, each requiring 20 developer hours. This yields a custom probe development expense of $11,058 (see Table 13).

We risk-adjusted this upward by 5% to account for variability in the amount of time needed to develop probe and salary variations. This yields a three-year risk-adjusted expense of $11,611.

TABLE 13
Software Development Expense For Probes

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total
L1	Number of probes developed		5	5			
L2	Number of hours needed to develop a probe		20	20			
L3	Software developer hourly rate	$115,000/2,080	$55.29	$55.29			
Lt	Software development expense for probes	L1*L2*L3	$5,529	$5,529	$0	$0	$11,058
	Risk adjustment	↑ 5%					
Ltr	**Software development expense for probes (risk-adjusted)**		**$5,805**	**$5,805**	**$0**	**$0**	**$11,611**

Source: Forrester Research, Inc.

Total Costs

Table 14 shows the total of all costs as well as associated present values, discounted at 10%. Over three years, the composite organization expects total costs to total a net present value of a little more than $1.7 million.

TABLE 14
Total Costs (Risk-Adjusted)

Ref.	Cost Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Gtr	Software license and maintenance expense	$562,590	$93,765	$93,765	$93,765	$843,885	$795,770
Htr	Infrastructure needed to support UIM deployment	$84,525	$11,025	$11,025	$11,025	$117,600	$111,943
Itr	Professional services	$40,000	$0	$0	$0	$40,000	$40,000
Jtr	Internal labor for planning and implementation	$121,917	$0	$0	$0	$121,917	$121,917
Ktr	Internal labor for maintenance and management	$0	$249,375	$249,375	$249,375	$748,125	$620,159
Ltr	Software development expense for probes	$5,805	$5,805	$0	$0	$11,611	$11,083
	Total costs (risk-adjusted)	**$814,837**	**$359,970**	**$354,165**	**$354,165**	**$1,883,137**	**$1,700,870**

Source: Forrester Research, Inc.

FLEXIBILITY

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for some future additional investment. This provides an organization with the "right" or the ability to engage in future initiatives but not the obligation to do so. There are multiple scenarios in which a customer might choose to implement UIM and later realize additional uses and business opportunities. Flexibility would also be quantified when evaluated as part of a specific project, described in more detail in Appendix B.

The interviewed companies were planning to extend their use of UIM by integrating it more tightly with other external systems, introducing more application monitoring or improving event correlation.

RISKS

Forrester defines two types of risk associated with this analysis: "implementation risk" and "impact risk." Implementation risk is the risk that a proposed investment in UIM may deviate from the original or expected requirements, resulting in higher costs than anticipated. Impact risk refers to the risk that the business or technology needs of the organization may not be met by the investment in UIM, resulting in lower overall total benefits. The greater the uncertainty, the wider the potential range of outcomes for cost and benefit estimates.

TABLE 15
Benefit And Cost Risk Adjustments

Benefits	Adjustment
Labor savings for configuring and deploying probes	↓ 10%
Labor savings for administering monitoring tools	↓ 5%
Labor saving for managing service desk tickets	↓ 10%
IT labor savings associated with report generation	↓ 15%
Labor saving associated with streamlined software release management	↓ 10%
Software maintenance fees avoided for retired tools	↓ 5%

Costs	Adjustment
Software license and maintenance expense	↑ 0%
Infrastructure needed to support UIM deployment	↑ 5%
Professional services	↑ 0%
Internal labor for planning and implementation	↑ 10%
Internal labor for maintenance and management	↑ 5%
Software development expense for probes	↑ 5%

Source: Forrester Research, Inc.

Quantitatively capturing implementation risk and impact risk by directly adjusting the financial estimates results provides more meaningful and accurate estimates and a more accurate projection of the ROI. In general, risks affect costs by raising the original estimates, and they affect benefits by reducing the original estimates. The risk-adjusted numbers should be taken as "realistic" expectations since they represent the expected values considering risk.

The following risks that affect benefits are identified as part of the analysis:

- Salary variations for engineers.
- Reduction in the number of incidents that require triage after deploying UIM.
- Number of performance reports that needed to be generated prior to using UIM.
- Number of software updates that are applied.
- Software maintenance fees for retired tools.

The following risks that affect costs are identified as part of this analysis:

- Salary variations for engineers, NOC technicians, and software developers.
- Variations in infrastructure acquisition expense that is needed to run UIM.
- Number of FTEs and time needed for planning and implementation.
- Number of FTEs and time needed for daily maintenance and management.
- Time needed to develop customer software probes.

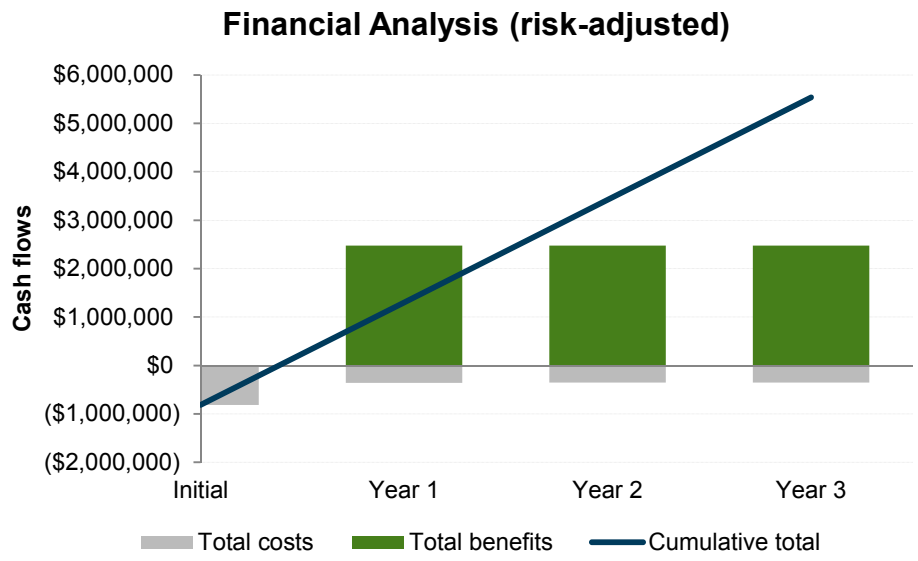
Table 15 shows the values used to adjust for risk and uncertainty in the cost and benefit estimates for the composite organization. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Financial Summary

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 in CA UIM.

Table 16 below shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values from Table 15 in the Risks section to the unadjusted results in each relevant cost and benefit section.

FIGURE 3
Cash Flow Chart (Risk-Adjusted)



Source: Forrester Research, Inc.

TABLE 16
Cash Flow (Risk-Adjusted)

Summary	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	($814,837)	($359,970)	($354,165)	($354,165)	($1,883,137)	($1,700,870)
Total benefits	$0	$2,473,668	$2,473,668	$2,473,668	$7,421,003	$6,151,645
Total	**($814,837)**	**$2,113,697**	**$2,119,503**	**$2,119,503**	**$5,537,866**	**$4,450,775**
ROI						**262%**
Payback period (months)						**4.6**

Source: Forrester Research, Inc.

CA UIM: Overview

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

CA Unified Infrastructure Management enables users to proactively manage the performance of physical and virtual servers, applications, networks, storage devices, databases, end user services, and cloud and big data environments — all through a single view and architecture. With this visibility, users can not only speed mean time to resolution, but start more proactively managing service levels and preempting issues before they have any impact on the end user experience.

The solution also helps users optimize operational efficiency by eliminating the complexity, cost, and hassle of having to use and integrate multiple disparate point monitoring tools. By streamlining monitoring administration, CA UIM helps teams better respond to expanding and evolving demands, support more Agile development approaches, and get new applications to market faster.

Key features include:

- Unified views and dashboards. Deliver unified, out-of-the-box dashboards and custom views that deliver visibility into all the IT systems, networks, and services that matter to the organization.
- Predictive analytics. Help proactively identify issues before users' experience suffers.
- Unique bus-based architecture. Enable scalability and foster extensibility and application simplicity.
- Multitenancy support. Efficiently scale and personalize service offerings for internal or external customers.

Appendix A: Composite Organization Description

For this TEI study, Forrester has created a composite organization to illustrate the quantifiable benefits and costs of deploying and using UIM. The composite company is based on characteristics of the interviewed customers.

The composite organization is a firm that provides managed services to customers in the financial services industry. The organization's IT department provides services to both its customers and internal users. For many of its customers, it hosts the infrastructure that powers services that are critical to their businesses. Therefore, ensuring reliable service delivery is paramount. The company operates approximately 900 servers (a mix of physical and virtual) and is growing as a result of business growth.

Prior to deploying CA UIM, the organization used a number of tools from different vendors to monitor its server, network, and storage gear. The tools were labor intensive to configure and there was no integration between them. The lack of integration made it difficult to perform root-cause analysis. Some of the tools had functional and stability issues, which resulted in missed or false-positive alarms, and they were not able to monitor system parameters that were important. Most troublingly, the organization found that its customers or internal users sometimes acted as the alarm point. Alarms were typically reported as a "degradation of service" or "outage," with little insight into what caused the service degradation.

The organization understood that it needed to improve the overall functionality and reliability of its systems monitoring tools in order to improve service delivery. It understood that highly functional, integrated systems monitoring tools could serve as the foundation for an effective service delivery and management system. The organization decided that it needed an integrated monitoring solution that would allow it to do reliable monitoring and rapid root-cause analysis, enable capacity planning, and integrate with other tools if needed.

FRAMEWORK ASSUMPTIONS

Table 17 provides the model assumptions that Forrester used in this analysis.

The discount rate used in the PV and NPV calculations is 10%, and the time horizon used for the financial modeling is three years. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult with their respective company's finance department to determine the most appropriate discount rate to use within their own organizations.

TABLE 17
Model Assumptions

Ref.	Metric	Calculation	Value
	Hours per week		40
	Hours per year (M-F, 9-5)		2,080
	UIM engineer annual salary		$95,000

Source: Forrester Research, Inc.

Appendix B: Total Economic Impact™ Overview

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. TEI assists technology vendors in winning, serving, and retaining customers.

The TEI methodology consists of four components to evaluate investment value: benefits, costs, flexibility, and risks.

BENEFITS

Benefits represent the value delivered to the user organization — IT and/or business units — by the proposed product or project. Often, product or project justification exercises focus just on IT cost and cost reduction, leaving little room to analyze the effect of the technology on the entire organization. The TEI methodology and the resulting financial model place 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. Calculation of benefit estimates involves a clear dialogue with the user organization to understand the specific value that is created. In addition, Forrester also requires that there be a clear line of accountability established between the measurement and justification of benefit estimates after the project has been completed. This ensures that benefit estimates tie back directly to the bottom line.

COSTS

Costs represent the investment necessary to capture the value, or benefits, of the proposed project. IT or the business units may incur costs in the form of fully burdened labor, subcontractors, or materials. Costs consider all the investments and expenses necessary to deliver the proposed value. In addition, the cost category within TEI captures any incremental costs over the existing environment for ongoing costs associated with the solution. All costs must be tied to the benefits that are created.

FLEXIBILITY

Within the TEI methodology, direct benefits represent one part of the investment value. While direct benefits can typically be the primary way to justify a project, Forrester believes that organizations should be able to measure the strategic value of an investment. Flexibility represents the value that can be obtained for some future additional investment building on top of the initial investment already made. For instance, an investment in an enterprisewide upgrade of an office productivity suite can potentially increase standardization (to increase efficiency) and reduce licensing costs. However, an embedded collaboration feature may translate to greater worker productivity if activated. The collaboration can only be used with additional investment in training at some future point. However, having the ability to capture that benefit has a PV that can be estimated. The flexibility component of TEI captures that value.

RISKS

Risks measure the uncertainty of benefit and cost estimates contained within the investment. Uncertainty is measured in two ways: 1) the likelihood that the cost and benefit estimates will meet the original projections and 2) the likelihood that the estimates will be measured and tracked over time. TEI risk factors are based on a probability density function known as "triangular distribution" to the values entered. At a minimum, three values are calculated to estimate the risk factor around each cost and benefit.

Appendix C: Glossary

Discount rate: The interest rate used in cash flow analysis to take into account the time value of money. Companies set their own discount rate based on their business and investment environment. Forrester assumes a yearly discount rate of 10% for this analysis. Organizations typically use discount rates between 8% and 16% based on their current environment. Readers are urged to consult their respective organizations to determine the most appropriate discount rate to use in their own environment.

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.

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.

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.

Return on investment (ROI): A measure of a project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits minus costs) by costs.

A NOTE ON CASH FLOW TABLES

The following is a note on the cash flow tables used in this study (see the example table below). The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1. Those costs are not discounted. All other cash flows in years 1 through 3 are discounted using the discount rate (shown in the Framework Assumptions section) at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations are not calculated until 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.

TABLE [EXAMPLE]
Example Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3

Source: Forrester Research, Inc.

Appendix D: Endnotes

[1] Forrester risk-adjusts the summary financial metrics to take into account the potential uncertainty of the cost and benefit estimates. For more information, see the section on Risks.