A Forrester Total Economic Impact™
Study Commissioned By CA
March 2018

The Total Economic Impact™ Of CA Unified Infrastructure Management

Cost Savings And Business Benefits Enabled By CA UIM

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ABOUT FORRESTER CONSULTING

Forrester Consulting provides independent and objective research-based consulting to help leaders succeed in their organizations. Ranging in scope from a short strategy session to custom projects, Forrester's Consulting services connect you directly with research analysts who apply expert insight to your specific business challenges. For more information, visit forrester.com/consulting.

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Benefits

Total Return On Investment with CA UIM:
321%

Percentage reduction in incidents requiring triage:
50%

Total administration labor savings associated with CA UIM:
67%

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.

To better understand the benefits, costs, and risks associated with a CA UIM implementation, Forrester interviewed eight customers with multiple years of experience using CA UIM.

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. Additionally, there were issues with application performance and availability. When seeking a new monitoring solution, they wanted an integrated solution where monitoring could be done through a single pane of glass for cloud and on-premise infrastructure, minimize monitoring operations expenses, and support DevOps and multitenant deployments.

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. Note that while CA UIM is now available as a comprehensive Software-as-a-Solution (SaaS) option, all interviewed customers for this study implemented the on-premise CA UIM solution.

Unless otherwise noted, all financial figures are given in three-year present value (PV) terms.

Key Findings

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

- **Labor savings for configuring and deploying monitoring probes of $622,927.** This stems from using CA UIM to develop reusable preconfigured monitoring probes for different device types as opposed to manually configuring the monitoring probes, which was required by legacy monitoring tools.
- **Four FTEs of labor savings for administering monitoring tools, totaling $1.1 million.** We found that the amount of labor needed to monitor and maintain CA UIM was four full-time equivalents (FTEs) fewer than that required by the legacy monitoring tools, a reduction of 67%.
- **50% reduction in service desk tickets, resulting in a labor savings of $4.0 million.** This savings arises from CA UIM generating 50% fewer alarms that require triage, and the amount of labor and time needed to resolve the alarms was lower.

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ROI
321%

Benefits PV
$7.2 million

NPV
$5.5 million

Payback
< 6 months

- **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.
- **89% reduction in software release effort due to streamlined software release management, resulting in a labor savings 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.
- **Increased annual revenue by $1.8 million due to reduced downtime.** CA UIM provides the ability to more quicker diagnose and pinpoint issues, and in general enables a more proactive as opposed to reactive approach to resolving issues. The resulting reduction in downtime results in an increase in revenue and income.
- **Software maintenance fees avoided for retired tools of $259,876.** This savings is a result of decommissioning legacy monitoring tools.

An additional benefit associated with CA UIM, which was not quantified for this study, includes improved resource utilization and capacity planning across cloud and on-premise environments.

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

- **Software license and maintenance expense of $795,770.** This is the perpetual license cost and maintenance fees for 5,000 system or cloud monitoring probes and 250 network monitoring probes.
- **Infrastructure needed to support CA 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. Note that this cost is significantly reduced or eliminated with the cloud or SaaS solution.
- **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 $249,375 annually.** 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.

Forrester's interviews with eight existing customers and subsequent financial analysis found that an organization based on these interviewed organizations experienced benefits of $7.2 million over three years versus costs of $1.7 million, adding up to a **net present value (NPV) of $5.5 million and an ROI of 321%**.

TEI Framework And Methodology

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

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 CA UIM can have on an organization:

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

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

CUSTOMER INTERVIEWS
Interviewed eight organizations using CA UIM to obtain data with respect to costs, benefits, and risks.

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

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

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

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by 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.

The CA UIM Customer Journey

BEFORE AND AFTER THE CA UIM INVESTMENT

Interviewed Organizations

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

INDUSTRY	INTERVIEWEE	CA UIM ENVIRONMENT
Healthcare services provider	Manager, system administration and engineering	8,000 servers mixed between on-premise and public cloud, 50 storage arrays, 100+ network devices.
Financial services	ITSM engineer	38,000 physical and virtual servers.
Media	Manager, data center and infrastructure delivery	240 servers, nine storage arrays, 150 network devices.
Financial services	Senior director, technology services and operations	900 servers, 25 network devices, 40 physical storage devices, 90 virtual storage devices.
Manufacturing	Manager, monitoring	4,000+ devices spanning servers and network devices.
Managed services provider	Senior systems engineer	Ranging from clients with five devices to clients with thousands of devices.
Education	Monitoring engineer	5,000 devices
Retail	Senior systems engineer	3,500+ servers and host devices, with 30,000+ matrices running in CA UIM.

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.

Key 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 disk capacity were out of limit, or 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.

> "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*

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- **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 it 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.

"Our previous solution was very hardware-focused. We needed that monitoring, but was also needed better visualization, we needed advanced monitoring and the ability to record against SLA metrics. CA UIM is much more robust, able to take data from events, alerts, logs, almost all sources."

Manager, monitoring, manufacturing

Solution Requirements

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.
- **Consolidate the number of monitoring tools being used.** Through consolidation, they hoped to achieve tighter tool integration, reduce the management and maintenance overhead of supporting multiple tools, and simplify hybrid infrastructure monitoring.

- **Optimize infrastructure utilization and operational integration.** 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 infrastructure 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.
- **Support new technologies.** Existing monitoring tools were not able to support modern infrastructures such as cloud.
- **Have a single pane for glass for hybrid infrastructure monitoring.** The companies wished to move away from disintegrated processes that required multiple monitoring tool to a solution that integrated all activity into a single window.
- **Minimize infrastructure 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 managed service providers (MSPs) 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."

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.

"What UIM provides is a collaboration between infrastructure team and the application team and the database team. These teams are now able look at the data at the same time and collaborate on the resolution, as opposed to blaming other departments for the issue."

Senior systems engineer, retail

"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

Key Results

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

- **Improve root cause analysis and mean time to repair (MTTR).** Because network operations center (NOC) administrators and engineers could view monitoring data from multiple monitoring 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 MTTR results in better user experience and staff productivity.

  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 an 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.

> "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*

- **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. 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.

> "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*

- **Leverage data generated by CA UIM to continuously 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 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 CA 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 disk space usage, the companies were able to provision the appropriate hardware resources before application performance suffered and end users experienced service degradation. This has a related benefit of significantly reducing the number of service desk tickets, with multiple companies reporting a 40% to 50% (or higher) reduction in the number of alarms that required escalation due to the reduction of false-positive alarms and the ability to set alarm thresholds such that action could be taken proactively.
- **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."

"We've seen a reduction in escalated incidents . . . close to 40% to 50%."

Manager, system administration and engineering, healthcare services provider

Managed Service Providers

Specific key benefits are realized for managed service providers using CA UIM. The interviewed MSP noted that providing services using CA UIM as the platform of choice allowed them to claim a higher profit margin *and* reduce the overall cost of the MSP package compared to their competitors. This is due to a favorable cost structure associated with CA UIM. Additionally, the time-to-live with CA UIM is very quick, as new clients are spun up with good data within 48-72h. The interviewed MSP noted that their engineers like CA UIM and the job it does.

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, cloud services, 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 infrastructure 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 system or cloud monitoring probes and 250 network monitoring probes.

Key assumptions

5,000 system or cloud monitoring probes

250 network monitoring probes

Definition Of A Monitoring Probe

CA UIM monitoring probes provide the intelligence to manage specific components on a managed device. For example, one common monitoring probe, the CDM monitoring probe, is responsible for monitoring CPU, disk, and memory utilization on target hosts. Monitoring 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 monitoring probes for managing homegrown application infrastructures.

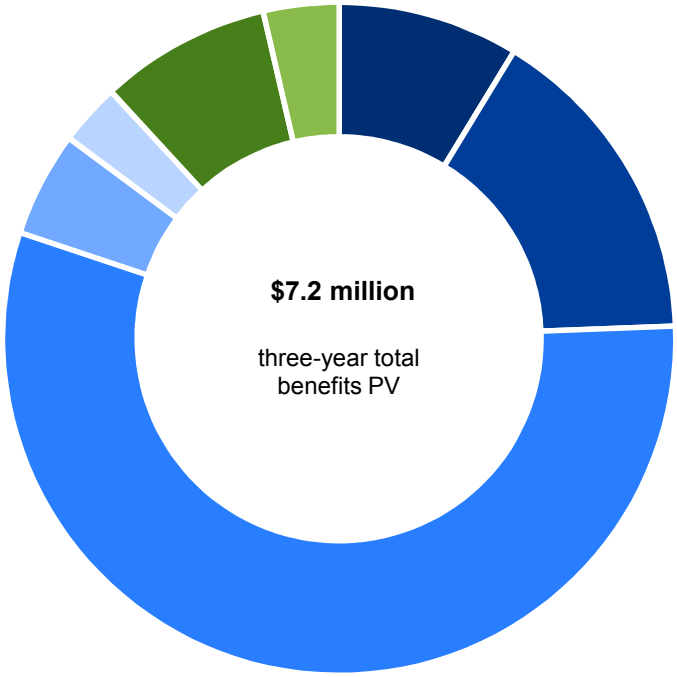
Financial Analysis

QUANTIFIED BENEFIT AND COST DATA AS APPLIED TO THE COMPOSITE

Total Benefits

REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	Labor savings for configuring and deploying monitoring probes	$250,488	$250,488	$250,488	$751,465	$622,927
Btr	Labor savings for administering monitoring tools	$451,250	$451,250	$451,250	$1,353,750	$1,122,192
Ctr	Labor savings for managing service desk tickets	$1,603,125	$1,603,125	$1,603,125	$4,809,375	$3,986,735
Dtr	Labor savings associated with report generation	$145,583	$145,583	$145,583	$436,749	$362,043
Etr	Labor savings associated with streamlined software release management	$85,457	$85,457	$85,457	$256,370	$212,518
Ftr	Improved income due to reduced downtime	$236,520	$236,520	$236,520	$709,560	$588,190
Gtr	Software maintenance fees avoided for retired tools	$104,500	$104,500	$104,500	$313,500	$259,876
	Total benefits (risk-adjusted)	**$2,876,923**	**$2,876,923**	**$2,876,923**	**$8,630,769**	**$7,154,481**

The table above shows the total of all benefits across the areas listed below, as well as present values discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to have a PV of nearly $7.2 million.



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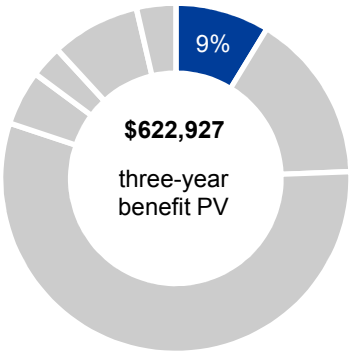
Benefit 1: Labor Savings For Configuring And Deploying Monitoring Probes

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 monitoring probes for different device types like application servers, database servers, or network switches. The interviewed companies either used the standard monitoring probe configurations that come with CA UIM or invested in developing their own custom configurations. They also relied on automated tools to push the monitoring 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 monitoring probes. The following assumptions are made:

- A thousand monitoring 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 monitoring probe prior to CA UIM, and it takes 30 minutes with CA UIM.
- Average fully loaded annual salary for a CA UIM engineer is $118,750.

We risk-adjusted the benefit downward by 10% to account for variations in salary rates and the time needed to configure and deploy a monitoring probe for legacy monitoring tools. This yields an annual risk-adjusted benefit of $250,488, and a total three-year labor savings of $622,927.



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

Benefit 1: Labor Savings For Configuring And Deploying Monitoring Probes Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Number of monitoring probes redeployed annually	1000*25%	250	250	250
A2	Number of hours needed to configure and deploy a monitoring probe before CA UIM		20	20	20
A3	Number of hours needed to configure and deploy a monitoring probe after CA UIM		0.5	0.5	0.5
A4	Average CA UIM engineer fully loaded hourly rate	$118,750/2080	$57.09	$57.09	$57.09
A5	Percentage savings attributable to CA UIM		100%	100%	100%
At	Labor savings for configuring and deploying monitoring probes	A1*(A2-A3) *A4*A5	$278,320	$278,320	$278,320
	Risk adjustment	↓10%			
Atr	**Labor savings for configuring and deploying monitoring probes (risk-adjusted)**		**$250,488**	**$250,488**	**$250,488**

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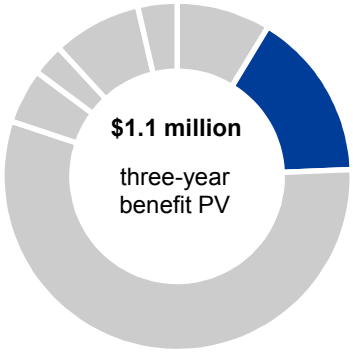
Benefit 2: Labor Savings For Administering Monitoring Tools

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.

We risk-adjusted the benefit downward by 5% to account for variations in salary rates and the potential number of FTEs saved. This yields an annual risk-adjusted benefit of $451,250, and a total three-year labor savings of $1.1 million.



Administering Monitoring Tools: **16%** of total benefits

Benefit 2: Labor Savings For Administering Monitoring Tools Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Number of FTEs administering monitoring tools before CA UIM		6	6	6
B2	Number of FTEs administering monitoring tools after CA UIM		2	2	2
B3	Average CA UIM engineer fully loaded annual salary		$118,750	$118,750	$118,750
B4	Percentage of savings attributable to CA UIM		100%	100%	100%
Bt	Labor savings for administering monitoring tools	(B1-B2)*B3*B4	$475,000	$475,000	$475,000
	Risk adjustment	↓5%			
Btr	**Labor savings for administering monitoring tools (risk-adjusted)**		**$451,250**	**$451,250**	**$451,250**

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Benefit 3: Labor Savings For Managing Service Desk Tickets

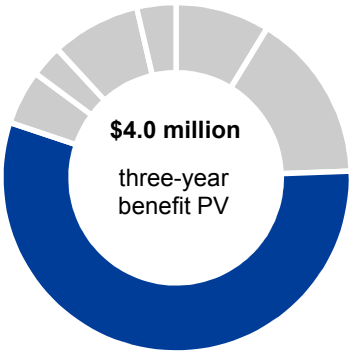
After deploying CA UIM and configuring alarm thresholds appropriately, the interviewed companies observed a reduction in the number of alarms that required attention or generated a service desk ticket. According to one interviewee, "I've gone from getting 20,000 alerts a week to where I might get probably 400 or 500 alerts that are really actionable." Multiple companies reported a 40% to 50% (or higher) 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 an 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 requiring triage is reduced by 50%.
- The number of engineers needed to resolve the incident is decreased from four to one.
- The time required to resolve an incident is reduced from four hours to one hour.

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 an annual risk-adjusted benefit of $1.6 million, and a total three-year labor savings of $4.0 million.



Managing service desk tickets: **56%** of total benefits

Benefit 3: Labor Savings For Managing Service Desk Tickets Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
C1	Number of escalated incidents per year requiring triage before CA UIM	80/week * 52	4,160	4,160	4,160
C2	Percentage reduction in incidents requiring triage		50%	50%	50%
C3	Number of FTEs required to service trouble ticket before CA UIM		4	4	4
C4	Average time needed to resolve ticket before CA UIM	(Hours)	4	4	4
C5	Number of FTEs required to service trouble ticket after CA UIM		1	1	1
C6	Average time needed to resolve an incident	(Hours)	1	1	1
C7	Average CA UIM engineer fully loaded hourly rate	A4	$57.09	$57.09	$57.09
Ct	Labor savings for managing service desk tickets	C1*C2*((C3*C4)-(C5*C6))*C7	$1,781,250	$1,781,250	$1,781,250
	Risk adjustment	↓10%			
Ctr	**Labor savings for managing service desk tickets (risk-adjusted)**		**$1,603,125**	**$1,603,125**	**$1,603,125**

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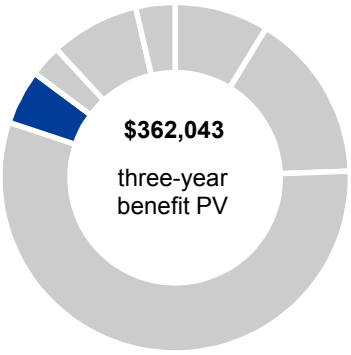
Benefit 4: Labor Savings Associated With Report Generation

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 hours to generate a report. After CA UIM, the time needed to generate reports dropped to zero.

We risk-adjusted this benefit downward by 15% to account for variability in the number of reports that needed to be generated prior to using CA UIM. This yields an annual risk-adjusted benefit of $145,583, and a total three-year labor savings of $362,043.



Report generation:
5% of total benefits

Benefit 4: Labor Savings Associated With Report Generation Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
D1	Number of reports created annually		500	500	500
D2	Average time needed to create reports before CA UIM (hours)		6	6	6
D3	Average CA UIM engineer fully loaded hourly rate	A4	$57.09	$57.09	$57.09
Dt	IT labor savings: report generation	D1*D2*D3	$171,274	$171,274	$171,274
	Risk adjustment	↓15%			
Dtr	**IT labor savings: report generation (risk-adjusted)**		**$145,583**	**$145,583**	**$145,583**

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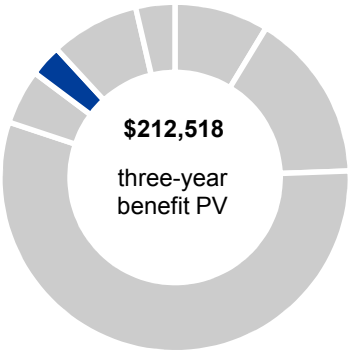
Benefit 5: Labor Savings Associated With Streamlined Software Release Management

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 a NOC technician's hourly rate is lower than an engineer's.

We risk-adjusted this benefit 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 an annual risk-adjusted benefit of $85,457, and a total three-year labor savings of $212,518.



Streamlined software release management: **3%** of total benefits

Benefit 5: Labor Savings Associated With Streamlined Software Release Management Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
E1	Numbers of software updates and releases (annually)		600	600	600
E2	Number of engineers needed to bring a system up and down before CA UIM		3	3	3
E3	Time needed to bring systems up and down before CA UIM (minutes)		60	60	60
E4	Engineer hourly rate	A4	$57.09	$57.09	$57.09
E5	Time needed to bring systems up and down after CA UIM (minutes)		20	20	20
E6	Number of NOC technicians needed to bring a system up and down after CA UIM		1	1	1
E7	NOC technician hourly rate	$81,250/2080	$39.06	$39.06	$39.06
Et	Labor savings associated with streamlined software release management	E1*((E2*E3/60 *E4) – (E5/60 *E6*E7))	$94,952	$94,952	$94,952
	Risk adjustment	↓10%			
Etr	**Labor saving associated with streamlined software release management (risk-adjusted)**		**$85,457**	**$85,457**	**$85,457**

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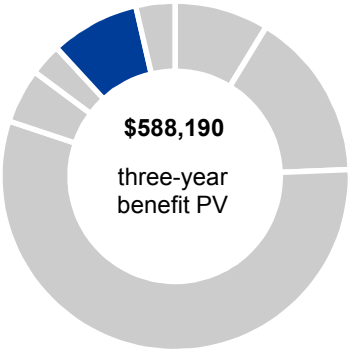
Benefit 6: Improved Income Due To Reduced Downtime

Interviewed organizations noted that they experienced reduced downtime (increased uptime) since CA UIM provides the ability to more quicker diagnose and pinpoint issues, and in general enables a more proactive as opposed to reactive approach to resolving issues.

To evaluate this benefit, we assume that:

- Uptime increases from 99.8% to 99.9%.
- Every hour of downtime results in a loss of $200,000 in revenue.
- The composite organization has an income margin of 15%.

We risk-adjusted this downward by 10% to account for variability in the uptime improvement, hourly revenue rate, and income margin. This yields an annual risk-adjusted benefit of $236,520, and a total three-year income improvement of $588,190.



Improved income due to reduced downtime: **8%** of total benefits

Benefit 6: Improved Income Due To Reduced Downtime Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
F1	Uptime percentage before CA UIM		99.8%	99.8%	99.8%
F2	Uptime percentage after CA UIM		99.9%	99.9%	99.9%
F3	Increased hours of uptime per year	(F2-F1) *24h*365d	8.76	8.76	8.76
F4	Revenue per hour		$200,000	$200,000	$200,000
F5	Total revenue	F3*F4	$1,752,000	$1,752,000	$1,752,000
F6	Income margin		15%	15%	15%
Ft	Improved income due to reduced downtime	F5*F6	$262,800	$262,800	$262,800
	Risk adjustment	↓10%			
Ftr	**Improved income due to reduced downtime (risk-adjusted)**		**$236,520**	**$236,520**	**$236,520**

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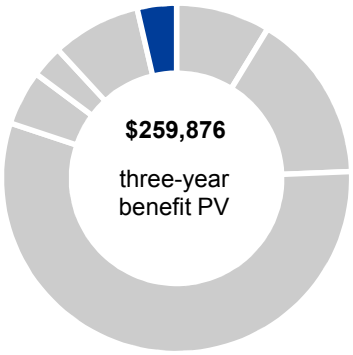
Benefit 7: Software Maintenance Fees Avoided For Retired Tools

The interviewed companies used monitoring tools from other vendors prior to deploying CA UIM. In some 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.

We risk-adjusted this benefit downward by 5% to account for variability in the maintenance fees that a company may pay. This yields an annual risk-adjusted benefit of $104,500 and a three-year savings of $259,876.



Avoided software fees:
3% of total benefits

Benefit 7: Software Maintenance Fees Avoided For Retired Tools Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
G1	Annual software maintenance fees for retired tools		$110,000	$110,000	$110,000
Gt	Software maintenance fees avoided for retired tools	G1	$110,000	$110,000	$110,000
	Risk adjustment	↓5%			
Gtr	**Software maintenance fees avoided for retired tools (risk-adjusted)**		**$104,500**	**$104,500**	**$104,500**

Flexibility

The value of flexibility is clearly unique to each customer, and the measure of its value varies from organization to organization.

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

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

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for a 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.

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Total Costs

REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Htr	Software license and maintenance expense	$562,590	$93,765	$93,765	$93,765	$843,885	$795,770
Itr	Infrastructure needed to support CA UIM deployment	$84,525	$11,025	$11,025	$11,025	$117,600	$111,943
Jtr	Professional services	$40,000	$0	$0	$0	$40,000	$40,000
Ktr	Internal labor for planning and implementation	$121,917	$0	$0	$0	$121,917	$121,917
Ltr	Internal labor for maintenance and management	$0	$249,375	$249,375	$249,375	$748,125	$620,159
Mtr	Software development expense for maintenance monitoring 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**	**$1,700,872**

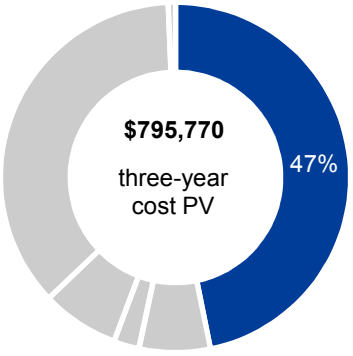
Cost 1: Software License And Maintenance Expense

For the composite organization, we assume it purchases 5,000 system or cloud monitoring probes and 250 network monitoring probes. The software maintenance expense is assumed to be 20% of the software acquisition expense. The total three-year software license and maintenance expense is $795,770.

All pricing for the monitoring probes was supplied to Forrester by CA. Forrester encourages readers to consult 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.

The table above shows the total of all costs across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to have a PV of $1.7 million.



Cost 1: Software License And Maintenance Expense Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
H1	CA UIM license acquisition and maintenance expense		$562,590	$93,765	$93,765	$93,765
Ht	Software license and maintenance expense	H1	$562,590	$93,765	$93,765	$93,765
	Risk adjustment	0%				
Htr	Software license and maintenance expense (risk-adjusted)		$562,590	$93,765	$93,765	$93,765

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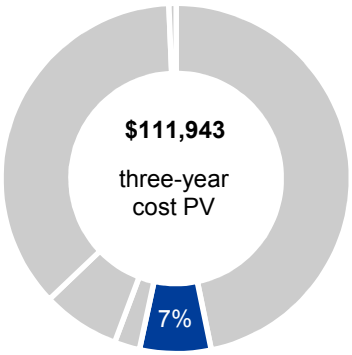
Cost 2: Infrastructure Needed To Support CA UIM Deployment

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.

We risk-adjusted this expense upward by 5% to account for variability in infrastructure costs pay. This yields a three-year risk-adjusted expense of $111,943. 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.

Note that these costs are for the on-premise CA UIM solution. If deciding to move forward with the cloud-based or SaaS solution, these costs would be significantly reduced or even eliminated.



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

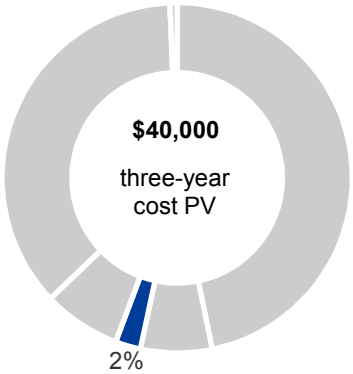
Cost 2: Infrastructure Needed To Support CA UIM Deployment Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
I1	Total infrastructure costs		$70,000			
I2	Annual infrastructure maintenance fee	15%	$10,500	$10,500	$10,500	$10,500
It	Infrastructure needed to support CA UIM deployment	I1+I2	$80,500	$10,500	$10,500	$10,500
	Risk adjustment	↑5%				
Itr	**Infrastructure needed to support CA UIM deployment (risk-adjusted)**		**$84,525**	**$11,025**	**$11,025**	**$11,025**

Cost 3: 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, which results in a total expense of $40,000.



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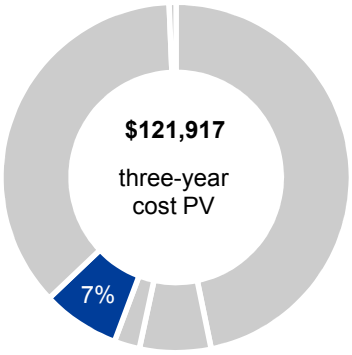
Cost 3: Professional Services Calculation Table						
REF.	**METRIC**	**CALC.**	**INITIAL**	**YEAR 1**	**YEAR 2**	**YEAR 3**
J1	Number of hours		160			
J2	Hourly rate	$250 / hour	$250			
Jt	Professional services	J1*J2	$40,000	$0	$0	$0
	Risk adjustment	0%				
Jtr	**Professional services (risk-adjusted)**		**$40,000**	**$0**	**$0**	**$0**

Cost 4: 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 CA UIM.

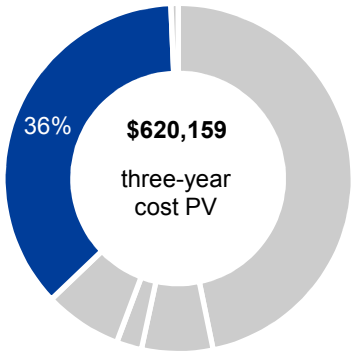
For the composite organization, we assume that four FTEs spend 40% of their time over a seven-month period working on the CA UIM planning and deployment.

We risk-adjusted this expense 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 total risk-adjusted expense of $121,917.



Cost 4: Internal Labor For Planning And Implementation Calculation Table						
REF.	**METRIC**	**CALC.**	**INITIAL**	**YEAR 1**	**YEAR 2**	**YEAR 3**
K1	Number of FTEs needed for CA UIM initial planning and deployment		4			
K2	Percentage time spent working on CA UIM planning and deployment		40%			
K3	Average CA UIM engineer fully loaded annual salary	B3	$118,750			
K4	Months needed to complete initial deployment		7			
Kt	Internal labor for planning and implementation	K1*K2*K3 *K4/12	$110,833	$0	$0	$0
	Risk adjustment	↑10%				
Ktr	**Internal labor for planning and implementation (risk-adjusted)**		**$121,917**	**$0**	**$0**	**$0**

Cost 5: Internal Labor For Maintenance And Management



The interviewed 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 CA 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.

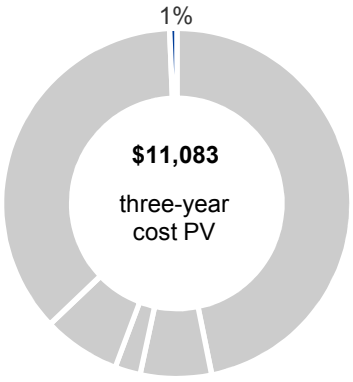
For the composite organization, we assume that the two FTEs are needed for CA UIM maintenance and management.

We risk-adjusted this expense upward by 5% to account for variability in the number of FTEs needed and salary. This yields a three-year risk-adjusted expense of $620,159.

Cost 5: Internal Labor For Maintenance And Management Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
L1	Number of FTEs needed for ongoing CA UIM maintenance			2	2	2
L2	Average CA UIM engineer fully loaded annual salary	B3		$118,750	$118,750	$118,750
Lt	Internal labor for maintenance and management	L1*L2		$237,500	$237,500	$237,500
	Risk adjustment	↑5%				
Ltr	**Internal labor for maintenance and management (risk-adjusted)**		**$0**	**$249,375**	**$249,375**	**$249,375**

Cost 6: Software Development Expense For Monitoring Probes



Some of the interviewed companies leveraged CA UIM's API to develop monitoring probes that were customized to their needs. The number of monitoring probes developed depended on the specific piece of equipment or application that required monitoring. The amount of time needed to develop a monitoring probe varied from three to five days. Note, however, that CA UIM has many monitoring probes available "out-of-the-box," and not all customers decide to develop custom monitoring probes.

For the composite organization, we assume that it develops five custom monitoring probes, each requiring 20 developer hours.

We risk-adjusted this expense upward by 5% to account for variability in the amount of time needed to develop monitoring probe and salary. This yields a three-year risk-adjusted expense of $11,083.

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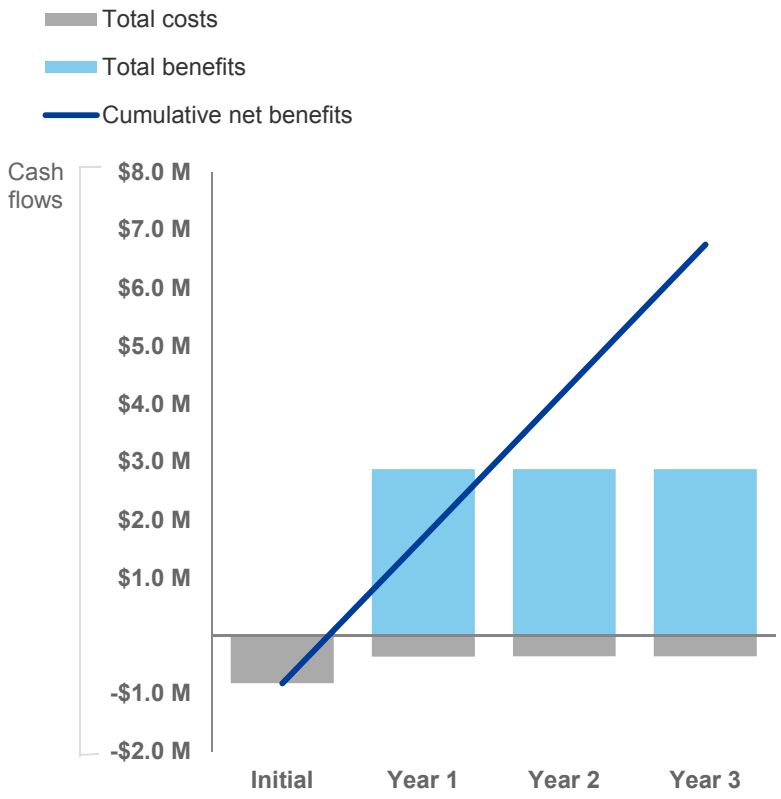
Cost 6: Software Development Expense For Monitoring Probes Calculation Table						
REF.	**METRIC**	**CALC.**	**INITIAL**	**YEAR 1**	**YEAR 2**	**YEAR 3**
M1	Number of maintenance monitoring probes developed		5	5		
M2	Number of hours needed to develop a monitoring probe		20	20		
M3	Software developer hourly rate	$115,000/2080	$55.29	$55.29		
Mt	Software development expense for maintenance monitoring probes	M1*M2*M3	$5,529	$5,529	$0	$0
	Risk adjustment	↑5%				
Mtr	**Software development expense for maintenance monitoring probes (risk-adjusted)**		**$5,805**	**$5,805**	**$0**	**$0**

Financial Summary

CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

Cash Flow Chart (Risk-Adjusted)



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

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

Cash Flow Table (Risk-Adjusted)

	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Total costs	($814,837)	($359,970)	($354,165)	($354,165)	($1,883,137)	($1,700,872)
Total benefits	$0	$2,876,923	$2,876,923	$2,876,923	$8,630,769	$7,154,481
Net benefits	($814,837)	$2,516,953	$2,522,758	$2,522,758	$6,747,632	$5,453,609
ROI						321%
Payback period						< 6 months

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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: 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.