A Forrester Total Economic Impact™
Study Commissioned By SAS
June 2017

The Total Economic Impact™ Of SAS Grid Manager

Workload Balancing, Cost Efficiencies, And Improved Resilience Enabled By SAS Grid Manager

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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 And Costs

Workload balancing cost efficiency
$5,438,768

Improved performance and resilience
$770,818

Total investment PV
$3,728,297

"In the first year, we saved $1 million on the new grid solution versus continuing business as usual."

VP of Business Intelligence Applications, US financial services company

Executive Summary

SAS® Grid Manager provides a managed and shared grid computing environment that offers workload balancing, high availability, and improved performance. SAS commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying SAS Grid Manager. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of SAS Grid Manager on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed one customer with experience using SAS Grid Manager. The interviewed customer is a financial services organization with over 1,900 automated teller machines (ATMs) and 1,500 banking offices across 15 states in the US.

Prior to adopting SAS Grid Manager, the customer operated its SAS environments in a fragmented state for eight groups with minimal centralized management and consolidation of licensing and infrastructure. With the introduction of a ninth group that required SAS applications, the company's enterprise data services (EDS) team developed a business case focused on centralizing management to more efficiently manage the company's SAS licenses, reduce renewal costs, and provide scalability for future groups and users. In addition to the cost efficiency of SAS Grid computing, the customer experienced an improvement in processing speed and a reduction in processing failures.

Key Findings

Quantified benefits. The customer experienced the following three-year risk-adjusted quantified benefits:

- **Workload balancing cost efficiency ($5,438,768).** This benefit focuses on the value of centralizing and consolidating management of SAS environments with SAS Grid Manager. With this consolidation, the customer was able to have a more accurate count of current and future licensing needs for all groups. SAS Grid computing also reduced the amount of infrastructure and related maintenance effort needed while introducing scalability and offering the same type of cost-effective infrastructure benefit to the organization's future needs.
- **Improved performance and resilience ($770,818).** SAS Grid Manager enabled the customer to process certain reports faster. Some use cases and workloads could also be divided and run in parallel to provide quicker results. More importantly, critical workloads are prioritized, incidents due to scheduling errors are reduced, and any processes that are stopped will automatically restart from a checkpoint. Manual restarts from the beginning of a workload were no longer an issue.

Unquantified benefits. The customer also foresees the following benefits, which are not quantified for this study:

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ROI
67%

Benefits PV
$6.2 million

NPV
$2.5 million

Payback
19.9 months

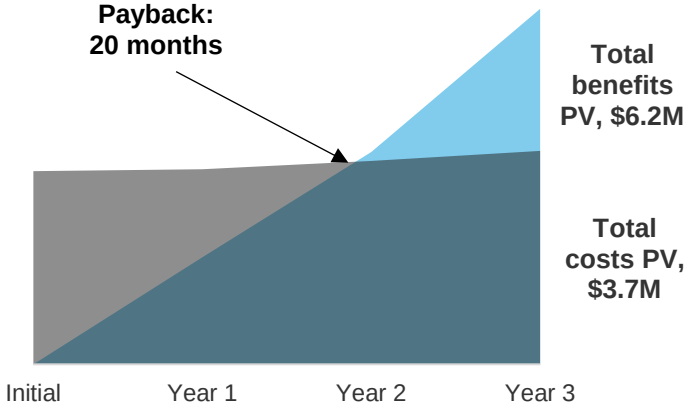
- **Regulatory compliance.** The customer runs several workloads related to regulatory compliance. If these workloads were ever to fail or be delayed, there is the potential cost of noncompliance or late compliance. Typically, compliance-related benefits are associated with avoidance of fines, penalties, lawsuits, and incremental professional services and audit fees. Depending on the type of business and noncompliance issues that could arise, these benefits can also extend to avoiding potential brand value degradation and reputation loss associated with not meeting regulatory timelines.
- **Value of analytics.** Analytics-related solutions typically have a benefit based on how the analytics are applied. This study quantifies the productivity value of faster, more resilient processing, but the downstream impact also includes higher throughput from analytical model creation into operations. This leads to incremental sales due to higher relevance; more current decision making, resulting in greater organizational agility; and faster analytical iterations, for improved staff productivity. The magnitude of such downstream effects is highly dependent on the type of report or use case and the preparedness of organizations to reap the business benefits of such improvements. While these benefits are relevant and experienced by the customer, they are several degrees removed from the core benefits of SAS Grid Manager and, as such, are not explicitly addressed in this study.

Costs. The customer experienced the following three-year risk-adjusted costs:

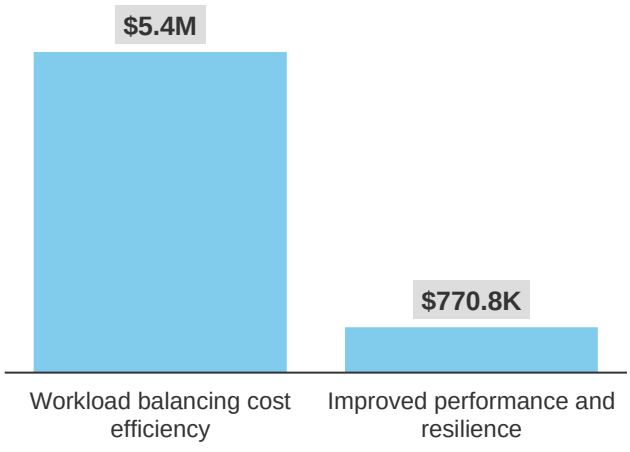
- **SAS Grid solution cost ($2,714,735).** This cost focuses on the initial licensing, professional services, and training fees, along with the annual renewal fees.
- **Infrastructure and maintenance ($868,661).** This cost centers on the infrastructure investment for SAS Grid Manager and the per-user cost of maintenance each year.
- **Internal labor and implementation ($144,900).** This cost describes the initial internal labor involved in implementation.

Forrester's interview with an existing customer and subsequent financial analysis found that the interviewed organization, the customer, experienced benefits of $6,209,586 over three years versus costs of $3,728,297, adding up to a net present value (NPV) of $2,481,289 and an ROI of 67%.

Financial Summary



Benefits (Three-Year)



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TEI Framework And Methodology

From the information provided in the interview with the customer, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering consolidating their SAS assets with SAS Grid Manager.

The objective of this framework is to identify the cost, benefit, flexibility, and risk factors that affect such an investment decision. Forrester took a multistep approach to evaluate the impact that SAS Grid Manager 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 SAS stakeholders and Forrester analysts to gather data relative to SAS Grid Manager, including value proposition and positioning, competitive space, and buyer profiles.

CUSTOMER INTERVIEW
Interviewed one organization, the customer, using SAS Grid Manager to obtain real-world data with respect to costs, benefits, and risks.

FINANCIAL MODEL FRAMEWORK
Constructed a financial model representative of the customer interview using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewed organization. Risk adjustments take into account any items that could potentially reduce the value or benefits or increase the value of costs to a more conservative lens to investment justification.

CASE STUDY
Employed four fundamental elements of TEI in modeling SAS Grid Manager's financial 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 SAS 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 SAS Grid Manager.

SAS 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.

SAS provided the customer name for the interview but did not participate in the interview.

The SAS Grid Customer Journey

BEFORE AND AFTER THE SAS GRID MANAGER INVESTMENT

Interviewed Organization

For this study, Forrester interviewed the customer, which has the following characteristics:

- Over 1,900 ATMs and 1,500 bank offices across 15 states.
- Twenty-two thousand total staff with 28 on the EDS business intelligence (BI) team. The BI team is further divided into four SAS admins, two SAS Grid Manager administrators, and two SAS programmers.
- Over 300 users spread across nine groups who use some form of SAS application.

"We were in a fragmented state, and it took one year to convince business units to give up servers for consolidation. We then built a business case focused on license pricing and renewal cost advantage over three years, which provided scaling."

VP of business intelligence applications, US financial services company

Key Challenges

The customer experienced the following challenges *prior* to deploying SAS Grid Manager:

- **The organization was losing enterprise control of the total cost of ownership (TCO) of SAS environments.** While the EDS team represented six of the nine user groups when discussing licensing with SAS, all six groups had their own servers to support their unique analytical workloads and without the capability to share processing environments and prioritize workloads. Furthermore, EDS did not have a single point of contact at SAS for engagement, negotiation, and administration of these different environments. Without a centralized group, the organization did not have visibility into the exact infrastructure and maintenance cost of its different SAS environments outside of the six core business units.
- **Losing enterprise control not only posed as a threat of higher costs for the current state, but also decreased the flexibility and scalability of the future state.** As a new model development group was formed and requested SAS licenses, the EDS team faced challenges in meeting this need, as there were no available licenses open to assign to this group. As a result, new licenses and additional infrastructure were procured. With the expectation of analytical growth, based on incremental increases in the use of analytics across the organization, the current scenario was recognized as a scalability challenge.
- **Lack of automation, prioritization, and high-availability capabilities created inefficiencies and delays in reporting.** The organization had to resolve common tactical issues, like workloads that stopped processing due to incorrect job scheduling. Some SAS jobs would stop when users leveraged the native job scheduler associated with their operating system (OS), and the machine would restart during off-peak hours due to OS updates. There were no automated job restarts or checkpoints to manually restart from, and job failure put them in catchup mode too often.

"We experienced a 50% performance improvement in all periods, months, and quarters, and daily and ad hoc. We also picked up the capability to prioritize critical work, especially work related to audit, regulatory, and compliance."

VP of business intelligence applications, US financial services company

The SAS Solution And Technology Selection Goals

The customer searched for a solution that would:

- Provide grid computing processing that centralizes and consolidates efforts.
- Enable flexibility and scalability for future growth.
- Reduce job incident failure due to job scheduling errors and unplanned downtime.

Key Benefits And Interview Highlights

The customer experienced the following benefits *after* deploying SAS Grid Manager:

- **Centralized and consolidated license and infrastructure management provides visibility and enables greater cost efficiencies.** The customer was able to transform from a fragmented state with 9 user groups and 10 to 12 servers to a single point of contact for license negotiation and infrastructure management, resulting in almost $1 million in license savings and $1 million in infrastructure management savings. Not every organization has a legacy state that is fragmented with silos that each procure services, manage infrastructure, and negotiate with vendors on their own. SAS Grid computing also does not automatically transform that fragmentation into a centralized and consolidated unit. Organizations still need to work toward that business shift internally, and translate the visibility that SAS Grid Computing provides into actual cost efficiencies such as consolidating infrastructure and maintenance.
- **While performance improvement is the goal, reducing user errors is likely the most immediate return.** The customer highlighted a 50% performance improvement in processing associated with monthly, quarterly, daily, and ad hoc reporting. Before deploying SAS Grid Manager, incidents such as the use of an incorrect job scheduler, workloads stopping due to system restarts during system updates, and storage failure all played a role in stopping scheduled jobs and decreasing productivity. The customer estimated a 72-hour loss in productivity for each incident, which happened twice per month for each user group. While performance improvements are the ultimate goal, sometimes a reduction in errors is recognized as being sufficient justification for a business case.
- **The value of analytics solutions is dependent on the use case for analytics.** For the customer, SAS is used for banking regulation compliance. Without compliance, the organization can face costs related to fines, penalties, lawsuits, incremental professional services, and audit fees, not to mention potential brand reputation losses. The value of analytics for compliance becomes a cost avoidance strategy to avoid those fines and penalties. Organizations also use analytics to improve hiring, increase consumer engagement, improve customer experience, gain incremental sales, and proactively quantify potential risks. Readers may want to keep these use cases and the value of these scenarios in mind while building a business case for SAS Grid Manager.

> **"Some users had an [OS] scheduler issue. Their machines would reboot during off-peak hours and jobs stop, and they wouldn't know till Monday."**
>
> *VP of business intelligence applications, US financial services company*

Financial Analysis

QUANTIFIED BENEFIT AND COST DATA

Total Benefits

REF.	BENEFIT	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Atr	Workload balancing cost efficiency	$1,900,000	$1,900,000	$2,850,000	$6,650,000	$5,438,768
Btr	Improved performance and resilience	$160,056	$320,112	$480,168	$960,336	$770,818
	Total benefits (risk-adjusted)	**$2,060,056**	**$2,220,112**	**$3,330,168**	**$7,610,336**	**$6,209,586**

Workload Balancing Cost Efficiency

The customer centralized and consolidated its SAS licensing and infrastructure management. All nine user groups that are served by the EDS team now have a single point of contact with SAS. This has resulted in an estimated $1 million in license cost savings and $1 million in infrastructure cost savings. Infrastructure cost savings include the decommissioning of legacy hardware, the time and effort to maintain and upgrade both hardware and software, and general infrastructure costs.

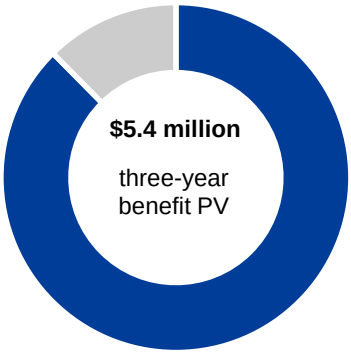
With user growth and licensing demand in mind, the model accounts for the 60 users in Year 1, 200 users in Year 2, and 300 users in Year 3. Benefit values remain consistent in years 1 and 2 to account for extra capacity that was available but unused in Year 1. Benefit values rise proportionately with new users in Year 3 to account for new capacity, as all available licensing has been assigned.

Potential risks that may result in a lower benefit value include:

- The inability to centralize and consolidate licensing and infrastructure management.
- Low user count or adoption.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year risk-adjusted total PV of $5,438,768.

The table above shows the total of all benefits across the areas listed below, as well as present values (PVs) discounted at 10%. Over three years, the interviewed organization expects risk-adjusted total benefits to be a PV of more than $6.2 million.



Workload balancing cost efficiency: **88%** of total benefits

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.

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Workload Balancing Cost Efficiency					
REF.	**METRIC**	**CALC.**	**YEAR 1**	**YEAR 2**	**YEAR 3**
A1	License savings and avoidance	Years 1 and 2: customer estimated Year 3: $A1_{py}*(A3_{cy}/A3_{py})$	$1,000,000	$1,000,000	$1,500,000
A2	Infrastructure savings and avoidance	Years 1 and 2: customer estimated Year 3: $A2_{py}*(A3_{cy}/A3_{py})$	$1,000,000	$1,000,000	$1,500,000
A3	SAS Grid users	Customer estimated	60	200	300
At	Workload balancing cost efficiency	A1+A2	$2,000,000	$2,000,000	$3,000,000
	Risk adjustment	↓5%			
Atr	**Workload balancing cost efficiency (risk-adjusted)**		**$1,900,000**	**$1,900,000**	**$2,850,000**

Improved Performance And Resilience

The customer highlighted a 50% improvement in performance. Furthermore, the TEI methodology captures the productivity gained from reducing incidents where processes were historically stopped due to user error, job scheduling error, or storage failure.

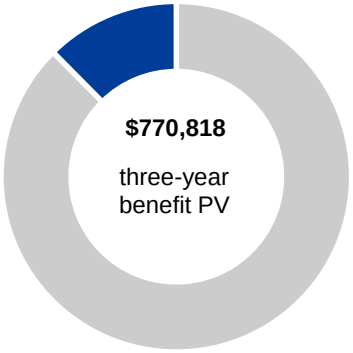
The customer noted that prior to adoption of SAS Grid Manager, 72 hours were lost per incident and incidents occurred twice per month. Although logically, all user groups experience these incidents, the benefit value only counts for groups that are using SAS Grid Manager. Accounting for an adoption rate of three user groups per year, the productivity gained is 5,184 hours in Year 1; 10,368 hours in Year 2; and 15,552 hours in Year 3.

Finally, the methodology adjusts the total productivity by 50%, in order to account for the inability to convert 100% of time saved to only productive work, as well as the difference between time lost due to delayed reporting and manual rework.

Potential risks and items that may result in a lower benefit value include:

- The legacy state of incident volume and severity.
- Low user adoption.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year risk-adjusted total PV of $770,818.



Improved performance and resilience: **12%** of total benefits

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Improved Performance And Resilience					
REF.	**METRIC**	**CALC.**	**YEAR 1**	**YEAR 2**	**YEAR 3**
B1	Hours lost per incident	Customer estimated	72	72	72
B2	Incidents per month	Customer estimated	2	2	2
B3	Affected groups	Customer estimated	3	6	9
B4	Total hours lost	B1*B2*B3*12	5,184	10,368	15,552
B5	Cost per hour	Assumption	$65	$65	$65
B6	Productivity conversion	Assumption	50%	50%	50%
Bt	Improved performance and resilience	B4*B5*B6	$168,480	$336,960	$505,440
	Risk adjustment	↓5%			
Btr	**Improved performance and resilience (risk-adjusted)**		**$160,056**	**$320,112**	**$480,168**

Unquantified Benefits

Readers should note that additional benefits may be realized in the form of:

- **Cost avoidance estimates.** For regulatory compliance, estimate the potential fines, penalties, lawsuits, and professional services fees that might result from noncompliance or delayed compliance. Adjust the estimate based on the likelihood in achieving an estimated cost avoidance.
- **Analytics value.** For valuation of analytics, define the specific use cases for analytics in your organization. Estimate whether a quicker or more accurate result may lead to faster, more relevant decision making. Then estimate further by extrapolating the downstream effect of such improved decisions and whether it may result in an internal efficiency gain or incremental revenue gain. Adjust the estimate based on SAS Grid's attribution to the benefit.

Flexibility

The value of flexibility is clearly unique to each organization, and its magnitude varies from one part of the organization to another. There are multiple scenarios in which an organization might choose to implement SAS Grid Manager and later realize additional uses and business opportunities, including:

- Improved ability to scale users, data volume, and types (structured and unstructured) to address broader capabilities of big data.
- Growth of predictive analytics adoption and other more advanced analytics to solve more complex questions.
- Incremental growth of the SAS Grid with no impact on end users.

Flexibility could also be quantified when evaluated as part of a specific project (as described 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.

Total Costs

REF.	COST	INITIAL	YEAR 1	YEAR 2	YEAR 3	TOTAL	PRESENT VALUE
Ctr	SAS Grid Manager solution cost	$2,625,000	$0	$56,875	$56,875	$2,738,750	$2,714,735
Dtr	Infrastructure and maintenance	$603,750	$35,700	$119,000	$178,500	$936,950	$868,661
Etr	Internal labor and implementation	$144,900	$0	$0	$0	$144,900	$144,900
	Total costs (risk-adjusted)	**$3,373,650**	**$35,700**	**$175,875**	**$235,375**	**$3,820,600**	**$3,728,297**

SAS Grid Manager Solution Cost

The solution cost for SAS Grid Manager is dependent on the number and types of licenses and the size of deployment. The customer noted an initial investment of $2.5 million, which included licensing of multiple SAS products, SAS professional services, and SAS training. Thereafter, a $650,000 renewal fee was negotiated for three years. As SAS Grid Manager is one of 12 different core SAS technologies that the customer has deployed, the cost is proportionately accounted for in this model. The 12 technologies include:

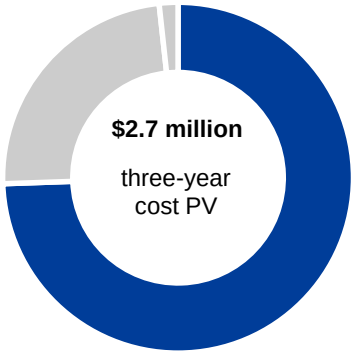
- SAS Grid Manager.
- Base SAS.
- SAS Enterprise Guide®.
- EPS.
- SAS Enterprise BI server.
- SAS/ACCESS® Interface to SQL Server.
- SAS/ACCESS Interface to Oracle.
- SAS/ACCESS Interface to PC Files.
- SAS/ACCESS Interface to ODBC.
- SAS/ACCESS Interface to Hadoop.
- SAS Enterprise Miner™.
- SAS Enterprise Model Manager.

Potential risks and items that may result in a higher cost value include:

- The number of licenses.
- The type of licensing.
- Number of deployed SAS applications.
- The demand for services and training.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of $2,714,735.

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 interviewed organization expects risk-adjusted total costs to be a PV of more than $3.7 million.



SAS Grid Manager solution cost: **73%** of total costs

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.

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SAS Grid Manager Solution Cost						
REF.	**METRIC**	**CALC.**	**INITIAL**	**YEAR 1**	**YEAR 2**	**YEAR 3**
C1	Licensing, professional services, and training	Customer estimated	$2,500,000	-	-	-
C2	Annual renewal cost	Customer estimated	-	-	$650,000	$650,000
C3	SAS Grid proportion	Assumption	-	8.3%	8.3%	8.3%
Ct	SAS Grid Manager solution cost	C1+(C2*C3)	$2,500,000	-	$54,167	$54,167
	Risk adjustment	↑5%				
Ctr	**SAS Grid Manager solution cost (risk-adjusted)**		**$2,625,000**	**$0**	**$56,875**	**$56,875**

Infrastructure And Maintenance

The customer incurred an initial infrastructure investment of $575,000 associated with the commodity hardware purchase that replaced the decommissioned servers used in the legacy, fragmented state that existed prior to SAS Grid Manager. The resultant infrastructure has between 20 and 50 cores for both test and production environments and is deemed as a small to medium-size deployment by SAS.

In addition to this initial infrastructure investment, the customer noted an internal IT chargeback per user of $4,000 for basic users and $18,000 for advanced users. The methodology takes into account an 80/20 rule of basic to advanced analytics users and applies the proportionate cost for SAS Grid Manager as one of the total 12 core SAS technologies in use at the bank.

Potential risks and items that may result in a higher cost value include:

- Size of deployment.
- Proportion of basic to advanced users.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of $869,661.

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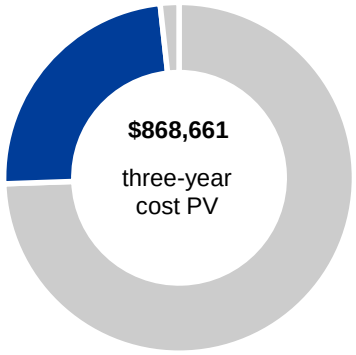

Infrastructure and maintenance: **23%** of total costs

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Infrastructure And Maintenance						
REF.	**METRIC**	**CALC.**	**INITIAL**	**YEAR 1**	**YEAR 2**	**YEAR 3**
D1	Infrastructure cost	Customer estimated	$575,000			
D2	SAS Grid users	A3		60	200	300
D3	Basic users	Assumption		80%	80%	80%
D4	Advanced users	Assumption		20%	20%	20%
D5	Basic user cost	Customer estimated		$4,000	$4,000	$4,000
D6	Advanced user cost	Customer estimated		$18,000	$18,000	$18,000
D7	Total user cost	(D2*D3*D5)+(D2*D4*D6)		$408,000	$1,360,000	$2,040,000
D8	SAS Grid proportion	C3		8.3%	8.3%	8.3%
Dt	Infrastructure and maintenance	D1+(D7*D8)	$575,000	$34,000	$113,333	$170,000
	Risk adjustment	↑5%				
Dtr	**Infrastructure and maintenance (risk-adjusted)**		**$603,750**	**$35,700**	**$119,000**	**$178,500**

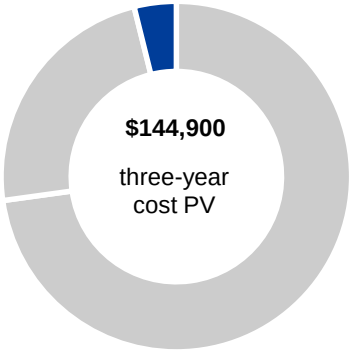
Internal Labor And Implementation

SAS Professional Services® assisted with the initial implementation. The methodology assumes two internal resources from the EDS team to be materially involved in such a deployment. Each resource is assumed to spend 100% of their time over a six-month period dedicated to the initial implementation. Two additional resources specializing in Unix and storage were also dedicated at 15% for the six-month period. Work over the six-month period included engaging SAS, planning, building, testing, deploying, and having general oversight over each phase as internal staff collaborated with SAS Professional Services.

Potential risks and items that may result in a higher cost value include:

- An extended timeline.
- Reduced reliance on professional services and increased reliance on internal expertise.

To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year risk-adjusted total PV of $144,900.



Internal labor and implementation: **4%** of total costs

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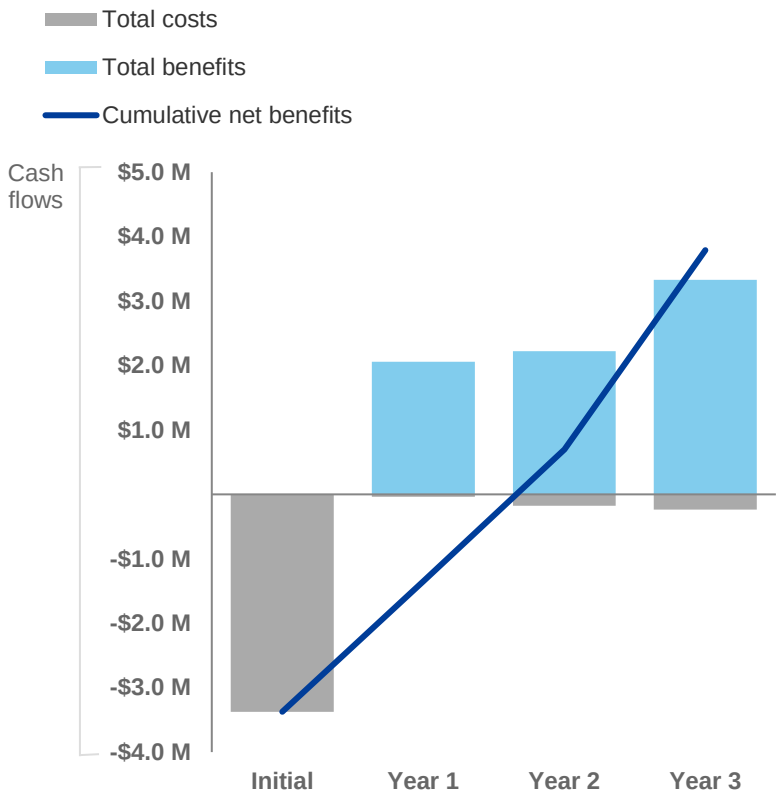
Internal Labor And Implementation						
REF.	**METRIC**	**CALC.**	**INITIAL**	**YEAR 1**	**YEAR 2**	**YEAR 3**
E1	Average resource salary	Assumption	$120,000			
E2	Primary resources	Assumption	2			
E3	Primary resource time commitment	Assumption	100%			
E4	Support resources	Assumption	2			
E5	Support resource time commitment	Assumption	15%			
E6	Deployment months	Customer estimated	6			
Et	Internal labor and implementation	((E1*E2*E3)+(E1*E4*E5))*(E6/12)	$138,000	$0	$0	$0
	Risk adjustment	↑5%				
Etr	**Internal labor and implementation (risk-adjusted)**		**$144,900**	**$0**	**$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 interviewed 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	($3,373,650)	($35,700)	($175,875)	($235,375)	($3,820,600)	($3,728,297)
Total benefits	$0	$2,060,056	$2,220,112	$3,330,168	$7,610,336	$6,209,586
Net benefits	($3,373,650)	$2,024,356	$2,044,237	$3,094,793	$3,789,736	$2,481,289
ROI						67%
Payback period						19.9 months

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SAS Grid Manager: Overview

The following information is provided by SAS. As this study is focused on the TEI of SAS Grid Manager and not the technical offering and specifications, this study can only affirm to the high-level functions that the interview customer highlighted. The more detailed description below is provided for readers' reference. Forrester has not validated and does not endorse SAS or its offerings.

What Is SAS Grid Manager?

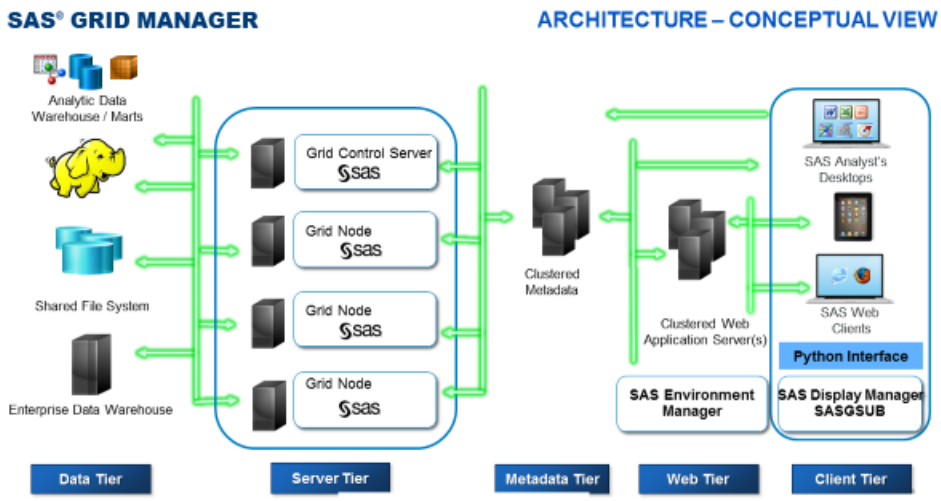
SAS Grid Manager uses a patented technology to deliver enterprise-class capabilities that enable many SAS solutions to automatically use a centrally managed grid computing infrastructure to provide workload balancing, high availability, and parallel processing for business analytics jobs and processes.

Why Is SAS Grid Manager Important?

SAS Grid Manager makes it easy to accommodate compute-intensive applications and a growing number of users cost effectively across your hardware resources, while ensuring high availability for your business analytics applications. With SAS Grid Manager, you can create a managed, shared environment for efficiently processing large volumes of SAS programs and data.

For Whom Is SAS Grid Manager Designed?

It is designed for CIOs, IT managers, data center managers, and grid computing architects seeking to manage SAS programs in a shared environment. It also can be used by statisticians, business analysts, and application developers to reduce processing times — and achieve faster results — for data integration, reporting, and analytic jobs.



Source: SAS

For more information, please visit www.sas.com/grid.

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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.