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# The Total Economic Impact™ Of Migrating SAP ECC To AWS

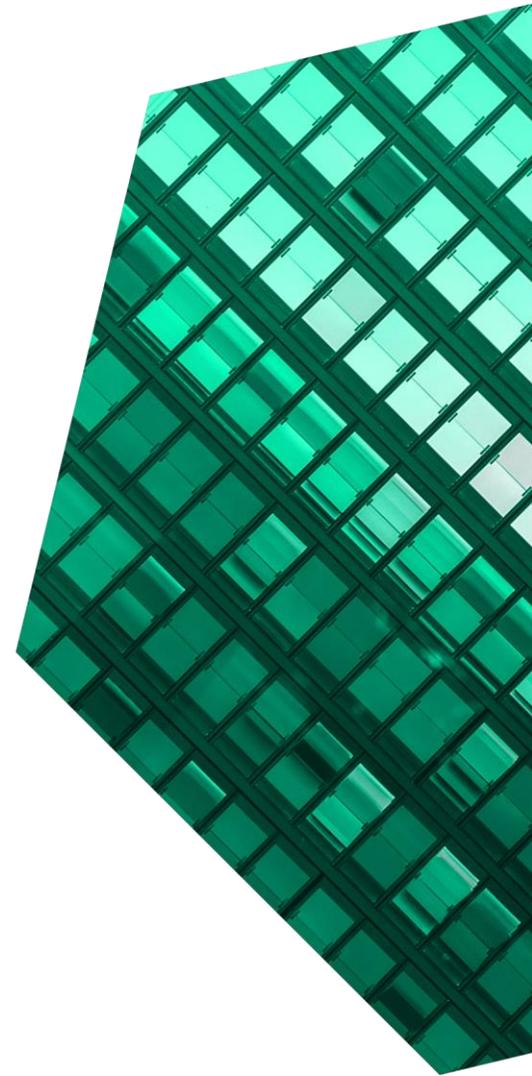
Cost Savings And Business Benefits  
Enabled By AWS And Intel

MAY 2021

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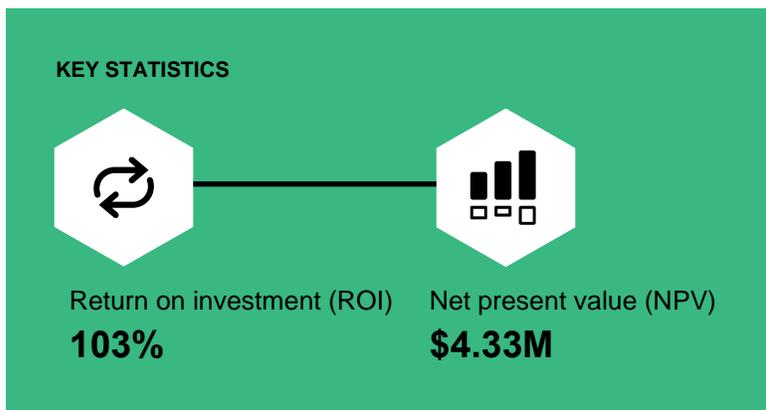
## Executive Summary

Organizations can typically justify migrating their SAP ECC workloads to Amazon EC2 instances with capex vs. opex comparisons, but the value goes well beyond that. SAP demand typically fluctuates significantly, which supports running SAP on AWS by paying for resources consumed vs. an on-premises infrastructure sized for peak demand. Organizations see labor savings for administrators, DevOps teams, and end users. Consistent and fast performance leads to more sales and higher customer retention. Finally, organizations can also benefit from AWS capabilities, and they are well-positioned to upgrade to S/4HANA.

Amazon and Intel commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study to examine the potential return on investment (ROI) enterprises may realize by migrating their SAP ERP central component (SAP ECC) workloads to [Amazon Elastic Compute Cloud \(EC2\) instances powered by Intel® Xeon® processors](#).<sup>1</sup> The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of migrating their organizations' on-premises SAP ECC workloads to Amazon Web Services (AWS).

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed four decision-makers from organizations with experience running SAP ECC on AWS after migrating from on-premises infrastructures. The organizations vary in size with revenues ranging from \$250 million to more than \$2.5 billion. For the purposes of this study, Forrester aggregated the experiences of the interviewees' organizations and combined the results into a single composite organization.

Prior to migrating their SAP ECC workloads to AWS, the interviewees' organizations had financial and strategic reasons to move their SAP workloads to the cloud. Financial reasons included a combination of resource demand variations that led to on-premises infrastructures for SAP that were significantly underutilized during much of the year, while peaks frequently caused performance issues that affected



both internal and external users. This led to labor costs, lost sales, and risks with customer retention. Corporate strategies included moving to the cloud and deprecating data centers while IT organization strategies included supporting expansion without increasing on-premises infrastructure and a strategy to move to S/4HANA.

By migrating their SAP ECC workloads to AWS, the organizations saw expected opex improvements and much more. They were able to utilize AWS and Intel capabilities and offerings while innovating more easily, which reduced administrative and DevOps labor costs. Both internal and external end users saw performance improvements that led to labor productivities, improved sales, and customer-retention improvement. Each of the organizations is planning its transition to S/4HANA.

**KEY FINDINGS**

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

- **Avoided cost of hardware and maintenance, saving \$4.7 million over three years.** All four organizations were able to fully migrate all production and nonproduction SAP ECC workloads to Intel-powered AWS EC2 instances. They were able to complete this transition either as part of data-center deprecation projects or by reusing their on-premises resources (e.g., server, storage, network, etc.) for other IT projects. With this transition, hardware and hardware maintenance costs were eliminated.

**“We have major demand peaks and troughs — monthly and annually. One annual peak requires both application and database servers to be triple to quadruple the size of any other time. AWS has lowered our costs for this, but it also eliminates the risk that we will have performance issues during peak periods.”**

*Senior manager of IT infrastructure, utility*

- **Labor savings from SAP-related reallocations, saving \$1.8 million over three years.** The interviewees’ organizations saw a decrease in costs for SAP administration and DevOps. The composite organization is able to eliminate or reallocate between 25% and 50% of consultants, contractors, or employees. Those who are reallocated are often able to focus on more innovative projects because of efficiencies provided by hosting SAP ECC on AWS.

- **Avoided \$1.2 million in data center costs over three years.** By fully moving SAP ECC workloads to AWS, the composite organization is able eliminate the use of data center space that cost \$60,000 per month.
- **Labor productivities increased from 20% to 500% performance improvements, saving \$839,313 over three years.** Running SAP ECC on Amazon EC2 instances based on Intel Xeon processors improved the performance of SAP-related processes both during peak-demand periods and on a regular basis. This led to benefits for SAP end users. Although it’s difficult to quantify this benefit, the organizations saw direct savings for users who constantly interact with SAP as part of their role. There were also labor savings from improving processes that have SAP-related dependencies.

**“We have been able to automate our backup and recovery processes to the point that we have gone from 3.5 FTEs to 0.5 FTEs in this area alone.”**

*Technology director, media*

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

- **Reduction in lost sales.** A consumer goods company had performance issues running SAP on-premises — especially during high-demand peak hours or seasons. This led to decreased customer satisfaction and ultimately affected both direct sales activity and customer retention. The IT director and enterprise architect noted that sales are worth well more than \$10,000 per minute during these peak demand periods.

**“Finance, marketing, and sales have been able to take advantage of faster response times that lead to more analysis [that is] done soon enough to take action. Users have benefited from the breadth, depth, and timing of the current analyses they perform within SAP on AWS.”**

*Technology director, media*

- **Better decision-making due to faster response times.** Interviewees noted that having the ability to analyze data more quickly and retrieve results in near-real time can help leaders make fact-based decisions.
- **Increased customer and employee satisfaction.** Internal and external users saw noticeable improvements in their response times, leading to positive feedback and positive results.
- **Having AWS as a partner.** Interviewees said they found AWS to be helpful during every stage of the migration process, from planning through cutover. AWS representatives provided insights, best practices, and advice along the way. AWS also provides ongoing insights into running SAP in the cloud.
- **Capitalizing on the relationship between AWS, Intel, and SAP.** Interviewees said they could tell that AWS, Intel, and SAP teams collaborate well together. This means that AWS and Intel have optimized (and continue to optimize) configurations and capabilities for SAP workloads.

**Costs.** Risk-adjusted present value (PV) costs include:

- **Migration costs of \$770,000 over three years.** Migration activities included using a blend of hardware, software, migration tools, and labor to

complete planning, setup, migration, and validation activities.

- **Ongoing AWS services cost \$3,419,421 over three years.** AWS services replaced the organizations' data center footprints, labor, hardware, and software associated with SAP. Net costs were reduced compared to the pre-AWS environment, while ongoing costs remained flat despite annual growth in demand due to a combination of customer-implemented processing improvements and AWS configuration changes that lowered costs.

**“One of the other big benefits of SAP on AWS overall is the high availability. If I have something on-prem, I need it to be highly available. And then I need to have a duplicate system somewhere. I'd need to have a disaster recovery system as well. So, one of the benefits of AWS is [that it] provides all those mechanisms right there.”**

*Senior manager of infrastructure, luxury retail*

The interviews and financial analysis found that a composite organization experiences benefits of \$8.5 million over three years versus costs of \$4.2 million, adding up to a net present value (NPV) of \$4.3 million and an ROI of 103%.



ROI  
**103%**



BENEFITS PV  
**\$8.52M**

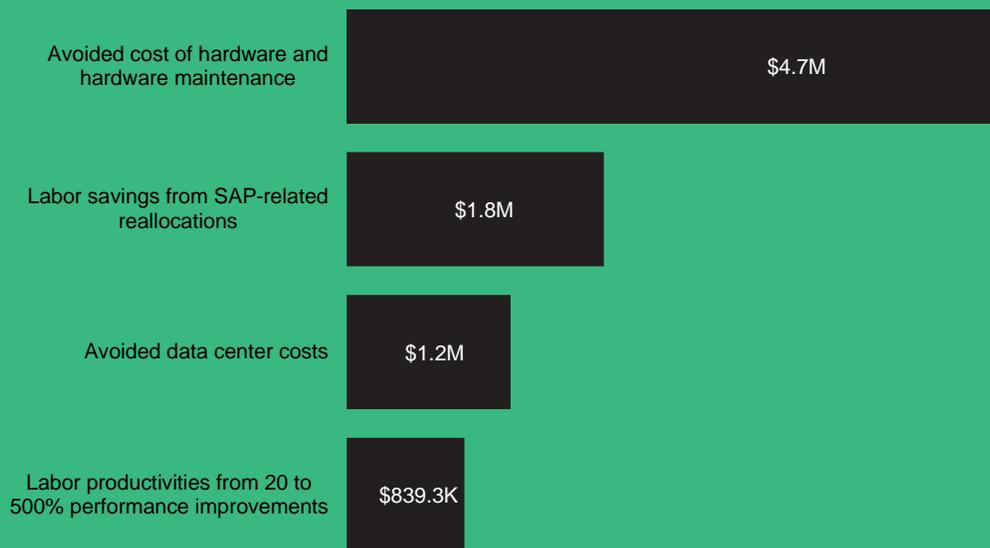


NPV  
**\$4.33M**



PAYBACK  
**14 months**

### Benefits (Three-Year)



## TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in SAP ECC on AWS.

The objective of the framework is to identify the cost, benefits, flexibility, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that running SAP ECC on AWS can have on an organization.

### DISCLOSURES

Readers should be aware of the following:

This study is commissioned by Amazon and delivered by Forrester Consulting. It is not meant to be used as a competitive analysis.

Forrester makes no assumptions as to the potential ROI that other organizations will receive. Forrester strongly advises that readers use their own estimates within the framework provided in the study to determine the appropriateness of an investment in SAP on AWS.

Amazon 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.

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



### DUE DILIGENCE

Interviewed Amazon stakeholders and Forrester analysts to gather data relative to running SAP ECC on AWS.



### CUSTOMER INTERVIEWS

Interviewed four decision-makers at organizations using SAP ECC on AWS 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 the investment impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

# The Amazon SAP On AWS Customer Journey

■ Drivers leading to the SAP on AWS investment

Interviewed Organizations			
Industry	Region	Interviewee	Revenue
Utility	Europe	Senior manager of IT infrastructure	\$500 million
Media	United States	Technology director	\$250 million
Consumer goods	Global	IT director and enterprise architect	\$2.5 billion
Luxury retail	Global	Senior manager of infrastructure	\$1.0 billion

## KEY CHALLENGES

The interviewees' organizations had a combination of challenges directly associated with their SAP implementations and others associated with either corporate or IT directives and strategies. Related to SAP, they knew that SAP is moving to a cloud-first operating model, meaning that improvements are happening in the cloud first and, possibly, only in the cloud. The decision-makers also recognized that their organizations' highly fluctuating resource utilization with SAP ECC in on-premises environments would be better served from both a performance and cost perspective in the cloud. Their organizations'

**“AWS enabled our flexibility and growth. As we added new markets we needed to resize our SAP instances. In a physical solution that would have meant new hardware with a large price tag, plus the time the procurement process takes. With AWS it was as simple as changing the instance parameter and we were up and running in less than an hour.”**

*Senior manager of infrastructure, luxury retail*

capabilities to nimbly grow in existing and new markets while sizing SAP instances appropriately on-premises was a continuing challenge. Finally, both corporate and IT directives are heading toward transitioning to the cloud.

The interviewees' organizations struggled with common challenges, including:

- **Major gaps in SAP versions and a goal to use an in-memory database for SAP.** Each of the interviewees' organizations has a long-term strategy to move to S/4HANA. This provides higher-availability, in-memory capabilities for data within SAP versus ECC instances. S/4HANA's ability to provide better service for customer-centric applications and to utilize live data to plan, execute, and generate reports and analytics offers continued improved performance. Two of the interviewees said their organizations' decision-makers considered these attributes to be essential in their continued ERP modernization, and they actively planned or executed a move to S/4HANA following their organization's ECC migration. A continued move to S/4HANA from ECC provided a path for additional performance improvements without increasing costs significantly as a furtherance of their ERP modernization strategies. Having their



SAP instances already in AWS also helped simplify that continued modernization.

- **Strategy to transition workloads to the cloud.**  
Two of the interviewees' organizations had corporate strategies to deprecate their data centers and transition to the cloud. The other two organizations had IT strategies to migrate workloads that would benefit the most in the cloud, such as SAP, where demand varies significantly over time.

**“We looked at the cost of running the environment on-prem, and it was very difficult to determine the sizing necessary. The hardware that was proposed was very expensive, and the other issue was that hardware had to be certified to run the SAP modules.”**

*Senior manager of infrastructure, luxury retail*

- **Inability to meet peak demand with large periods with a major excess in resources.**  
Two interviewees said their organizations saw performance issues that affected both internal and external users. The consumer goods company lost sales and potentially lost customers because of slow response times and lockouts caused by poor performance during high-demand periods.



## COMPOSITE ORGANIZATION

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

**Description of composite.** The composite organization is a global organization with \$750 million in annual revenue and 5,000 employees. There are three instances of SAP ECC running in three separate regional data centers. SAP performance demands vary significantly throughout the year, both on a monthly and seasonal basis. Decision-makers would like to upgrade to S/4HANA, but the organization is not even able to keep up with current SAP ECC upgrades at this point.

**Deployment characteristics.** The composite organization has three on-premises SAP ECC instances supporting 2,000 global SAP users.

### Key assumptions

- **\$750 million revenue**
- **5,000 employees**
- **2,000 SAP users**
- **Global organization**
- **Industry-agnostic organization**

# Analysis Of Benefits

■ Quantified benefit data as applied to the composite

Total Benefits						
Ref.	Benefit	Year 1	Year 2	Year 3	Total	Present Value
Atr	Avoided cost of hardware and hardware maintenance	\$618,750	\$2,561,625	\$2,651,282	\$5,831,657	\$4,671,493
Btr	Labor savings from SAP-related reallocations	\$738,000	\$738,000	\$738,000	\$2,214,000	\$1,835,297
Ctr	Avoided data center costs	\$162,000	\$648,000	\$648,000	\$1,458,000	\$1,169,662
Dtr	Labor productivities from 20% to 500% performance improvements	\$337,500	\$337,500	\$337,500	\$1,012,500	\$839,313
	Total benefits (risk-adjusted)	\$1,856,250	\$4,285,125	\$4,374,782	\$10,516,157	\$8,515,765

## AVOIDED COST OF HARDWARE AND HARDWARE MAINTENANCE

**Evidence and data.** A major driver for moving SAP ECC from an on-premises infrastructure to AWS Intel-powered instance was the cost reduction when providing resources in server, storage, and network for peak demand estimates on a year-round basis. The interviewees' organizations saw the following improvements:

- By shifting to a cloud infrastructure, the organizations were able to pay for resources based on actual utilization — not on an estimated peak.
- The organizations had to size their SAP infrastructure resources for estimated peak usage. Some of the organizations over-procured on-premises resources significantly, while one (the consumer goods company) under-procured on-premises resources to the point that it lost sales due to performance issues.

**Modeling and assumptions.** Forrester assumes the following about the avoided infrastructure costs in the projected three-year model:

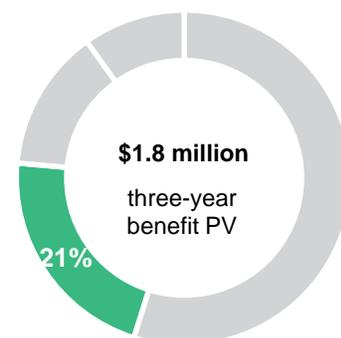
- The composite organization previously spent \$2.5 million per year on hardware infrastructure with a net cost growth of 3.5% per year.
- Maintenance is 10% of the infrastructure cost.
- With a nine-month overall implementation period, depreciation or reuse of the hardware occurs after implementation is completed.

**Risks.** Organizations will have varying hardware and hardware maintenance costs based on:

- Varying demand peaks that lead to capacity differences.
- Varying risks taken in demand forecasting.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$4,671,493.

Avoided cost of hardware and hardware maintenance



### Avoided Cost Of Hardware And Hardware Maintenance

Ref.	Metric	Source	Year 1	Year 2	Year 3
A1	Cost of hardware	Year 1: Composite; Years 2 and 3: $A1_{PV} * 3.5\%$ growth	\$2,500,000	\$2,587,500	\$2,678,063
A2	Cost reduction (percentage)	Assumption	25%	100%	100%
A3	Avoided cost of hardware	$A1 * A2$	\$625,000	\$2,587,500	\$2,678,063
A4	Avoided cost of hardware maintenance	$A3 * 10\%$	\$62,500	\$258,750	\$267,806
At	Avoided cost of hardware and hardware maintenance	$A3 + A4$	\$687,500	\$2,846,250	\$2,945,869
	Risk adjustment	↓10%			
Atr	Avoided cost of hardware and hardware maintenance (risk-adjusted)		\$618,750	\$2,561,625	\$2,651,282
<b>Three-year total: \$5,831,657</b>			<b>Three-year present value: \$4,671,493</b>		

### LABOR SAVINGS FROM SAP-RELATED REALLOCATIONS

**Evidence and data.** The interviewees’ organizations saw labor savings related to SAP administration and DevOps that exceeded their expectations. This was due to a combination of environmental improvements, including automation, activities related to demand fluctuations, and the benefits of keeping SAP more current.

- Some of the organizations were able to reduce consultant, contract, and employee staffing by almost 50% for both SAP administration and DevOps from a business-as-usual perspective.
- Each of the organizations reduced SAP administrative and DevOps staff to some degree.

**Modeling and assumptions.** Forrester assumes the following about the labor savings in the projected three-year model:

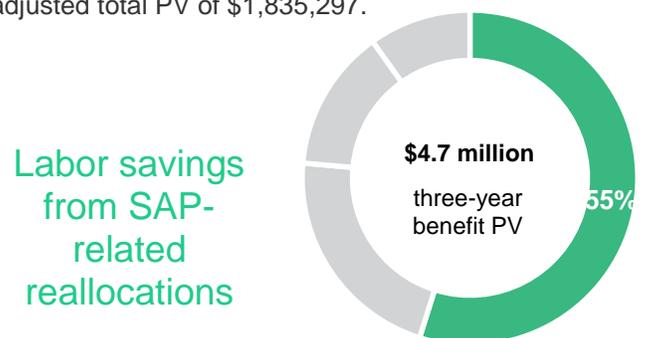
- The composite organization starts with an SAP administrative staff of 10 FTEs and a DevOps staff of 12 FTEs.

- Productivities resulting from moving SAP to AWS allows the composite organization to have a baseline staff of seven FTEs for both SAP administration and DevOps.

**Risks.** Organizations will have varying SAP-related staffing and productivities based on:

- The skill level of the staff and the complexity of the implementation (for original staffing).
- The skill level of the staff, the complexity of the implementations, and the ability to benefit from AWS features (for productivities).

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$1,835,297.



### Labor Savings From SAP-Related Reallocations

Ref.	Metric	Source	Year 1	Year 2	Year 3
B1	IT administrative staff reallocated	Composite	5	5	5
B2	IT administrative staff labor cost	Composite	\$92,000	\$92,000	\$92,000
B3	Labor savings from IT administrative staff reallocations	B1*B2	\$460,000	\$460,000	\$460,000
B4	DevOps staff reallocated	Composite	3	3	3
B5	DevOps staff labor cost	Assumption	\$120,000	\$120,000	\$120,000
B6	Labor savings from DevOps staff reallocations	B4*B5	\$360,000	\$360,000	\$360,000
Bt	Labor savings from SAP-related reallocations	B3+B6	\$820,000	\$820,000	\$820,000
	Risk adjustment	↓10%			
Btr	Labor savings from SAP-related reallocations (risk-adjusted)		\$738,000	\$738,000	\$738,000
<b>Three-year total: \$2,214,000</b>			<b>Three-year present value: \$1,835,297</b>		

### AVOIDED DATA CENTER COSTS

**Evidence and data.** Each of the interviewees’ organizations were in a good position to deprecate data centers, reduce data-center-space rent, or delay or prevent data-center expansions.

- Two of the four organizations depreciated the data centers that hosted SAP.
- Another organization that is growing rapidly would have required a data-center expansion if SAP remained on-premises.

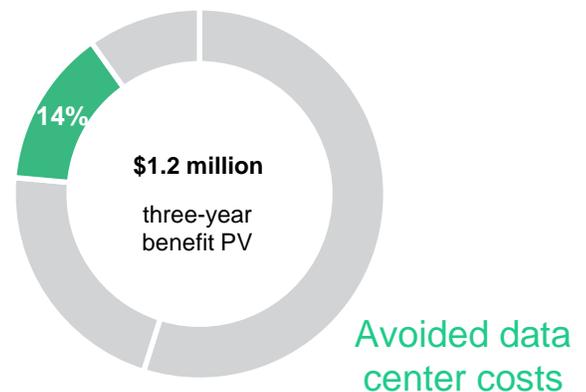
**Modeling and assumptions.** Forrester assumes the following about the avoided data center costs in the projected three-year model:

- The cost of the data center associated with SAP was \$60,000 per month.
- The data-center space associated with the SAP implementation is repurposed in parallel with the migration of SAP to AWS so the cost burden on the composite organization is covered by other uses after the implementation is complete.

**Risks.** Organizations will have varying degrees of cost savings related to the SAP migration based on:

- License timing for rented space.
- The ability to sell or repurpose the data center if an organization owns its own data-center space or being able to shift workloads to the data center.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$1,169,662.



Avoided Data Center Costs					
Ref.	Metric	Source	Year 1	Year 2	Year 3
C1	Data center costs per month with SAP	Composite	\$60,000	\$60,000	\$60,000
C2	Time using data center (months)	Composite	3	12	12
Ct	Avoided data center costs	C1*C2	\$180,000	\$720,000	\$720,000
	Risk adjustment	↓10%			
Ctr	Avoided data center costs (risk-adjusted)		\$162,000	\$648,000	\$648,000
Three-year total: \$1,458,000			Three-year present value: \$1,169,662		

### LABOR PRODUCTIVITIES FROM 20% TO 500% PERFORMANCE IMPROVEMENTS

**Evidence and data.** The organization’s 2,000 users saw varying degrees of reduced response times due to performance improvements that frequently led to labor productivities for end users.

- Many frequent users (typically hourly workers) performed interactive activities, and they consistently saw improvements in response time to requests.
- Some users had activities that were delayed by reports or processes that historically took hours to complete. But with SAP on AWS, the time was reduced to minutes. This provided savings in time-to-completion and labor due to reduced multitasking.

**Modeling and assumptions.** It’s difficult to estimate such labor savings, so Forrester used very conservative estimates.

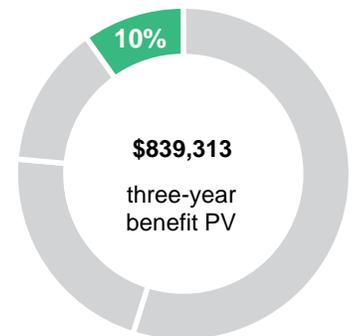
- The average time savings per user per week is 6 minutes.
- The 2,000 users vary considerably in roles from data input to senior management with more line workers than managers. The average burdened labor cost per user is assumed to be \$75,000 per year.

**Risks.** Organizations will have varying degrees of labor cost savings related to the productivities provided by SAP in AWS due to factors like:

- The extent of the performance improvement compared to the organization’s on-premises SAP implementation.
- The distribution of users and associated time savings.
- The ability to capture these time savings as labor cost savings.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$839,313.

Labor productivities from 20% to 500% performance improvement



### Labor Productivities From 20% To 500% Performance Improvements

Ref.	Metric	Source	Year 1	Year 2	Year 3
D1	SAP users count (FTE)	Composite	2,000	2,000	2,000
D2	Time savings per user (percentage)	Composite	0.25%	0.25%	0.25%
D3	Avoided FTE	D1*D2	5	5	5
D4	Average labor cost	Assumption	\$75,000	\$75,000	\$75,000
Dt	Labor productivities from 20% to 500% performance improvements	D3*D4	\$375,000	\$375,000	\$375,000
	Risk adjustment	↓10%			
Dtr	Labor productivities from 20% to 500% performance improvements (risk-adjusted)		\$337,500	\$337,500	\$337,500
<b>Three-year total: \$1,012,500</b>			<b>Three-year present value: \$839,313</b>		

### UNQUANTIFIED BENEFITS

The interviewees said their organizations experienced additional benefits that they were not able to quantify, including:

- **Reduction in lost sales.** Before migrating SAP ECC to AWS, the consumer goods company had performance issues that affected customer interactions during unexpected high-demand periods. The company was not able to provide input on lost sales due to delays, nor future lost sales due to customer-satisfaction issues resulting from the poor response time.
- **Better decision-making due to faster response times.** Interviewees noted that better response times improved reporting and analysis, which led to better and more timely analysis.
- **Increased customer and employee satisfaction.** Internal and external users saw noticeable improvements in their response times, leading to positive feedback and positive results.
- **Having AWS as a partner.** Interviewees said they found AWS to be helpful during every stage of the migration process, from planning through

**“During high-demand periods, certain recurring orders could take hours to generate when SAP was on-premises. The same orders are generated in 30 to 45 minutes in AWS.”**

*IT director and enterprise architect, consumer goods*

cutover. The consumer goods company’s IT director and enterprise architect said: “AWS is our number one partner. [AWS has] been wonderful both in support and in helping us through the SAP migration.”

- **Capitalizing on the relationship between AWS, Intel, and SAP.** Interviewees said they could tell that AWS, Intel, and SAP teams collaborate well together. This means that AWS and Intel have optimized (and continue to optimize) configurations and capabilities for SAP.

## FLEXIBILITY

The value of flexibility is unique to each organization. There are multiple scenarios in which an organization might implement SAP ECC on AWS and later realize additional uses and business opportunities, including:

- **Making the move to S/4HANA easier.** The interviewees said their organizations intend to upgrade to S/4HANA in the future. Lifting and shifting existing SAP instances to AWS now will simplify the S/4HANA upgrade process later.
- **Utilizing AWS capabilities.** Interviewees said they have been investigating other AWS offerings, from data lakes and machine learning to backup and recovery to security offerings. Moving SAP to AWS has provided their organizations with numerous opportunities for improvements that weren't available on-premises.
- **Improving the ability to innovate.** Some of the interviewees said their organizations have been able to take advantage of the ease to spin up and down, instances to test out adjustments that ultimately lead to cost reductions, performance improvements, and improvements in capabilities.
- **Adjusting for the future.** The COVID-19 pandemic presented the significance of planning for the unpredictable. SAP is a mission-critical application, and running SAP on AWS ensures that the interviewees' organizations can optimally adjust to future disruptions and opportunities in a timely fashion.

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

**“Their partnership on supporting the transition to HANA makes us more confident in the success of this next phase for us.”**

*IT director and enterprise architect,  
consumer goods*

# Analysis Of Costs

■ Quantified cost data as applied to the composite.

Total Costs							
Ref.	Cost	Initial	Year 1	Year 2	Year 3	Total	Present Value
Etr	Migration costs	\$770,000	\$0	\$0	\$0	\$770,000	\$770,000
Ftr	Ongoing AWS service cost	\$0	\$1,375,000	\$1,375,000	\$1,375,000	\$4,125,000	\$3,419,421
	Total costs (risk-adjusted)	\$770,000	\$1,375,000	\$1,375,000	\$1,375,000	\$4,895,000	\$4,189,421

## MIGRATION COSTS

**Evidence and data.** The interviewees said their organizations' migration activities had associated costs, including:

- Hardware, software, and tools like AWS Direct Connect supporting the migration.
- Internal and external labor resources for planning, preparation, migration, and validation.

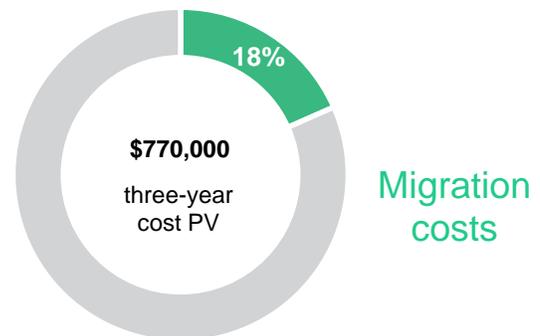
**Modeling and assumptions.** The composite organization has an overall migration cost of \$770,000.

**Risks.** Organizations will have varying migration costs depending on factors including the following:

- Hardware and software requirements will vary with project time requirements and available tools for migrations. Note that migration tools are continually improving over time.

- The availability and skills of internal resources will affect the need for contractors and consultants.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of \$770,000.



Migration Costs						
Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
E1	Cost of tools/hardware/software for migration activities	Composite	\$150,000	\$0	\$0	\$0
E2	Cost of internal/external labor for migration activities	Composite	\$550,000	\$0	\$0	\$0
Et	Migration costs	E1+E2	\$700,000	\$0	\$0	\$0
	Risk adjustment	↑10%	□			
Etr	Migration costs (risk-adjusted)		\$770,000	\$0	\$0	\$0
<b>Three-year total: \$770,000</b>			<b>Three-year present value: \$770,000</b>			

### ONGOING AWS SERVICE COST

**Evidence and data.** Interviewees said their organization’s AWS costs were steady during the years after implementation, despite growth in resource usage.

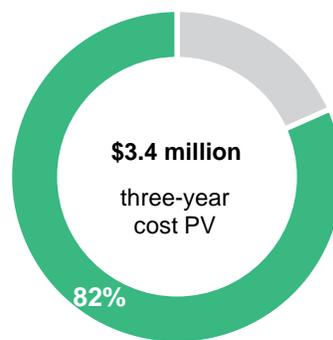
- Interviewees said their organizations were able to make improvements in SAP and in their AWS configurations that reduced costs while improving performance. They were also able to do scenario testing more easily because of AWS.
- Interviewees said AWS frequently offers more appropriate and robust Intel-powered configurations at a lower cost than their original configurations.

**Modeling and assumptions.** The composite organization has an AWS cost of \$1.25 million per year, with increases in resource utilization offset by customer configuration improvements and cost savings within AWS offerings.

**Risks.** Organizations will have varying AWS costs over time depending on the following factors:

- The organization’s ability to adjust its resource use and decision-makers’ willingness to test utilization scenarios.
- The ability to match new AWS configurations with the organization’s resource needs.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year, risk-adjusted total PV of \$3,419,421.



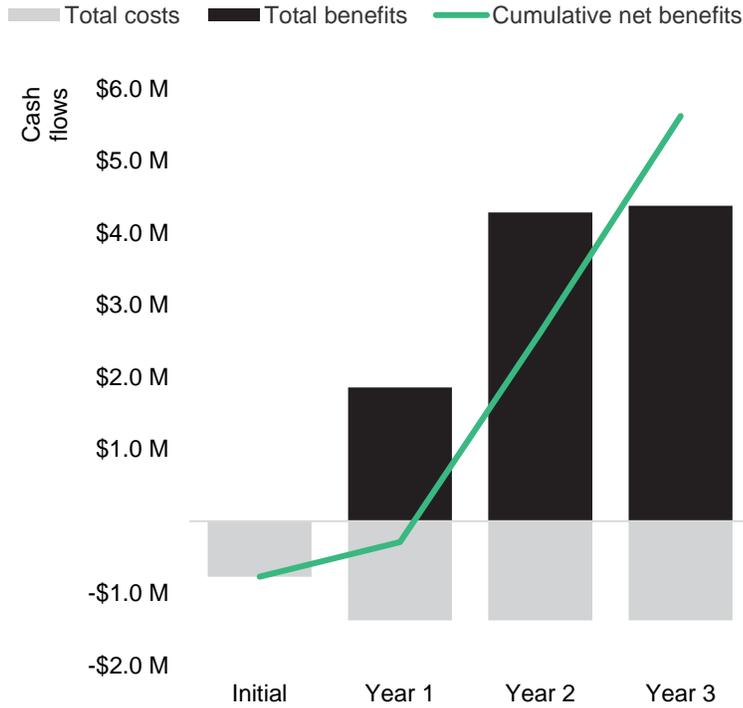
Ongoing AWS service cost

<b>Ongoing AWS Service Cost</b>						
<b>Ref.</b>	<b>Metric</b>	<b>Calculation</b>	<b>Initial</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
Ft	Ongoing AWS service cost	Composite	\$0	\$1,250,000	\$1,250,000	\$1,250,000
	Risk adjustment	↑10%	□			
Ftr	Ongoing AWS service cost (risk-adjusted)		\$0	\$1,375,000	\$1,375,000	\$1,375,000
<b>Three-year total: \$4,125,000</b>			<b>Three-year present value: \$3,419,421</b>			

# Financial Summary

## CONSOLIDATED THREE-YEAR RISK-ADJUSTED METRICS

### Cash Flow Chart (Risk-Adjusted)



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

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

### Cash Flow Analysis (Risk-Adjusted Estimates)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Total costs	(\$770,000)	(\$1,375,000)	(\$1,375,000)	(\$1,375,000)	(\$4,895,000)	(\$4,189,421)
Total benefits	\$0	\$1,856,250	\$4,285,125	\$4,374,782	\$10,516,157	\$8,515,765
Net benefits	(\$770,000)	\$481,250	\$2,910,125	\$2,999,782	\$5,621,157	\$4,326,344
ROI						103%
Payback period (months)						14.0 months

# Appendix A: Total Economic Impact

Total Economic Impact is a methodology developed by Forrester Research that enhances a company's technology decision-making processes and assists vendors in communicating the value proposition of their products and services to clients. The TEI methodology helps companies demonstrate, justify, and realize the tangible value of IT initiatives to both senior management and other key business stakeholders.

## TOTAL ECONOMIC IMPACT APPROACH

**Benefits** represent the value delivered to the business by the product. The TEI methodology places equal weight on the measure of benefits and the measure of costs, allowing for a full examination of the effect of the technology on the entire organization.

**Costs** consider all expenses necessary to deliver the proposed value, or benefits, of the product. The cost category within TEI captures incremental costs over the existing environment for ongoing costs associated with the solution.

**Flexibility** represents the strategic value that can be obtained for some future additional investment building on top of the initial investment already made. Having the ability to capture that benefit has a PV that can be estimated.

**Risks** measure the uncertainty of benefit and cost estimates given: 1) the likelihood that estimates will meet original projections and 2) the likelihood that estimates will be tracked over time. TEI risk factors are based on "triangular distribution."

The initial investment column contains costs incurred at "time 0" or at the beginning of Year 1 that are not discounted. All other cash flows are discounted using the discount rate at the end of the year. PV calculations are calculated for each total cost and benefit estimate. NPV calculations in the summary tables are the sum of the initial investment and the discounted cash flows in each year. Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.



## PRESENT VALUE (PV)

The present or current value of (discounted) cost and benefit estimates given at an interest rate (the discount rate). The PV of costs and benefits feed into the total NPV of cash flows.



## NET PRESENT VALUE (NPV)

The present or current value of (discounted) future net cash flows given an interest rate (the discount rate). A positive project NPV normally indicates that the investment should be made, unless other projects have higher NPVs.



## RETURN ON INVESTMENT (ROI)

A project's expected return in percentage terms. ROI is calculated by dividing net benefits (benefits less costs) by costs.



## DISCOUNT RATE

The interest rate used in cash flow analysis to take into account the time value of money. Organizations typically use discount rates between 8% and 16%.



## PAYBACK PERIOD

The breakeven point for an investment. This is the point in time at which net benefits (benefits minus costs) equal initial investment or cost.

## Appendix A: Endnotes

<sup>1</sup> 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.

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