

A Forrester Total Economic Impact™ Study
Commissioned By Dell Technologies
November 2018

The Total Economic Impact™ Of Dell Technologies Application Portfolio Optimization

Financial Benefits Of Evaluating A
Company's Application Portfolio To
Migrate, Modernize, Consolidate, Or
Retire Enterprise Applications

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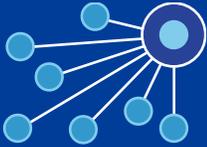
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Executive Summary

Benefits And Costs



Net profit from increased revenue:

\$859,160



Businesses that reported an increase in revenue:

73%



Reduced present value cost over three years:

\$2,448,827



Average reduced time-to-market:

20%

Organizations are looking for ways to drive out cost, better manage their application portfolio, and enable the business through digital and IT transformation. Dell Technologies helps fast-track this transformation through a systematic evaluation of the application portfolio, with a goal of optimizing the placement and architecture of applications in order to reduce costs and improve manageability. This can be done by migrating applications to lower cost or more efficient operating platforms, modernizing, them or retiring them.

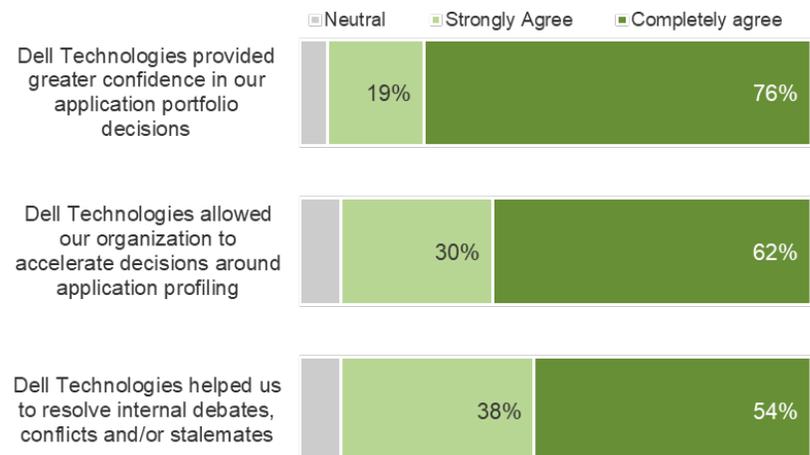
Dell Technologies commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study and examine the potential return on investment (ROI) enterprises may realize by deploying its Application Portfolio Optimization (APO) services. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of these services on their organizations.

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed and surveyed several customers with experience using Dell Technologies' APO services. Dell Technologies works with IT organizations to inventory current applications, determined the required business functionality, assess current- and future-technology requirements, and outline a nondisruptive path for change.

Prior to working with the Dell Technologies consulting team, IT executives managed a portfolio of applications under constant pressure from the business to support digital transformation and the wide array of ways in which businesses are evolving. Taking the time to both understand the current portfolio and its challenges (especially technical debt) and map a journey to the future state was a daunting challenge hanging over executives' heads.

After completing the APO project with Dell Technologies, customers were able to immediately tackle the most impactful changes. Some applications were retired entirely while others were consolidated, migrated, or modernized. The organizations freed up resources and were able to reallocate those resources to projects that accelerated other strategic objectives. Perhaps the biggest value indicated by customers was that Dell Technologies' work gave them confidence to act (see chart below).

"On a scale of 1 to 5, please rate how much you agree with each of the following statements:"



Key Findings

Quantified benefits. The following risk-adjusted present value (PV) quantified benefits are representative of those experienced by the organizations interviewed and surveyed:



ROI
195%



Benefits PV
\$7.2 million



NPV
\$4.8 million



Payback
12 months

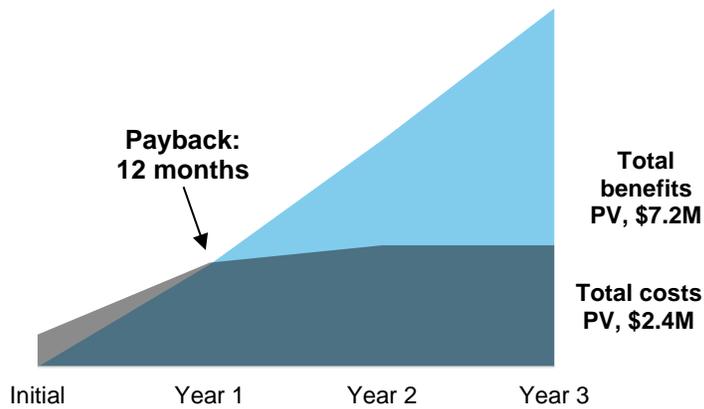
- › **Avoided cost of conducting assessment internally at \$1.7M.** Without engaging Dell Technologies, the organization would have needed to conduct a similar assessment of its own, but without the tools automation and experience of the APO team. Executives estimated that the project would require more than 24 developer years of effort.
- › **Reduced cost of maintaining retired applications of \$2.2M.** Survey respondents said that they saved 378 hours of effort per year maintaining each of 100 applications that they retired over three years. Some applications were low-hanging fruit that provided immediate cost savings, but others required investment and development effort to replace or update the functionality.
- › **Increased revenue from improved customer-facing applications of \$818K.** The organization was able to make changes to customer-facing applications that improved the customer experience or supported other objectives requested by business units. Overall, survey respondents indicated that revenue increased by an average of 8.9% after their Dell Technologies engagement.
- › **Accelerated revenue by shortening time-to-market of \$41K.** In addition to the increase in revenue for some business units, other product lines were able to accelerate revenue by reducing the time required for the organization to launch new products of 20%.
- › **Net profit from accelerated revenue by shortening time-to-market worth \$2.4 million.** The APO engagement also looked at the organization's development process and was able to unwind complex applications and focus the investment of time by developers. A key measurable attribute was lower error-injection rates and complications to one application by modifications made to another application.

Costs. The organizations experienced the following risk-adjusted PV costs:

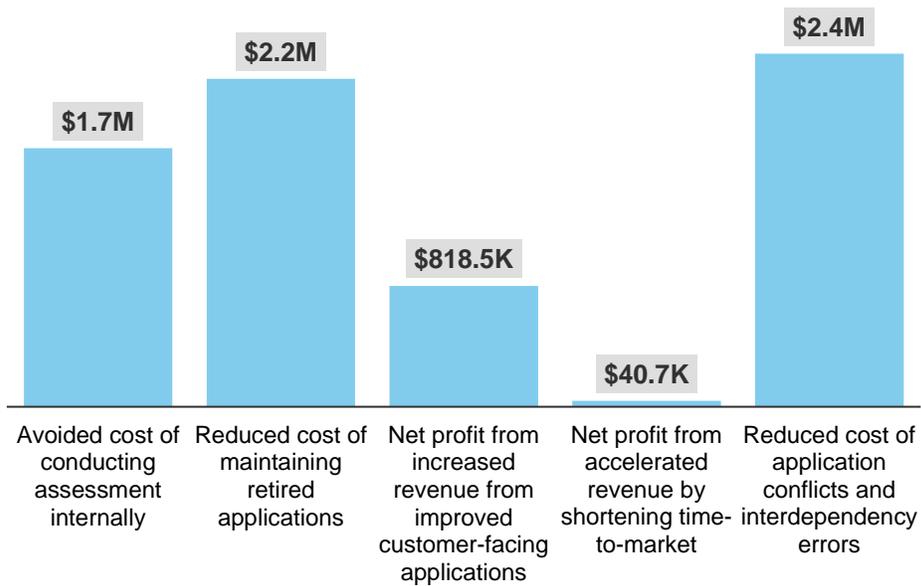
- › **Fees paid to Dell Technologies of \$600K.** Survey respondents indicated that they paid an average amount of about \$600,000 for their engagement with Dell Technologies. The typical assessment projects lasted about four weeks. It was followed by a series of sprints to rationalize project work that ranged from six to eight weeks.
- › **Investment of time by IT organization staff worth \$56K.** The organization had ten employees that spent 25% of their time over three months working with Dell Technologies on the project.
- › **Development effort required to implement changes and realize quantified benefits of \$1.8M.** Realizing benefits such as increased revenue, from retiring some applications, required additional developer time after the initial engagement with Dell Technologies was complete.

Forrester's interviews with an existing customer, survey of 37 customers, and subsequent financial analysis found that an organization based on these customers experienced benefits of \$7.2 million over three years versus costs of \$2.4 million, adding up to a net present value (NPV) of \$4.8 million and an ROI of 195%.

Financial Summary



Benefits (Three-Year)



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

TEI Framework And Methodology

From the information provided in the interviews and survey, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering using Dell Technologies APO.

The objective of the framework is to identify the cost, benefit, and risk factors that affect the investment decision. Forrester took a multistep approach to evaluate the impact that Dell Technologies APO services can have on an organization:



DUE DILIGENCE

Interviewed Dell Technologies stakeholders and Forrester analysts to gather data relative to APO.



CUSTOMER INTERVIEWS AND SURVEY

Interviewed one organization and surveyed 37 organizations with experience using APO to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

Designed a composite organization based on characteristics of the interviewed and surveyed organizations.



FINANCIAL MODEL FRAMEWORK

Constructed a financial model representative of the interviews and survey 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 Dell Technologies APO's impact: benefits, costs, 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 Dell Technologies 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 Dell Technologies Application Profiling.

Dell Technologies 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.

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

The Application Portfolio Optimization Customer Journey

BEFORE AND AFTER THE APO INVESTMENT

Interviewed Organization

For this study, Forrester interviewed one APO customer. The interviewed customer had the following characteristics:

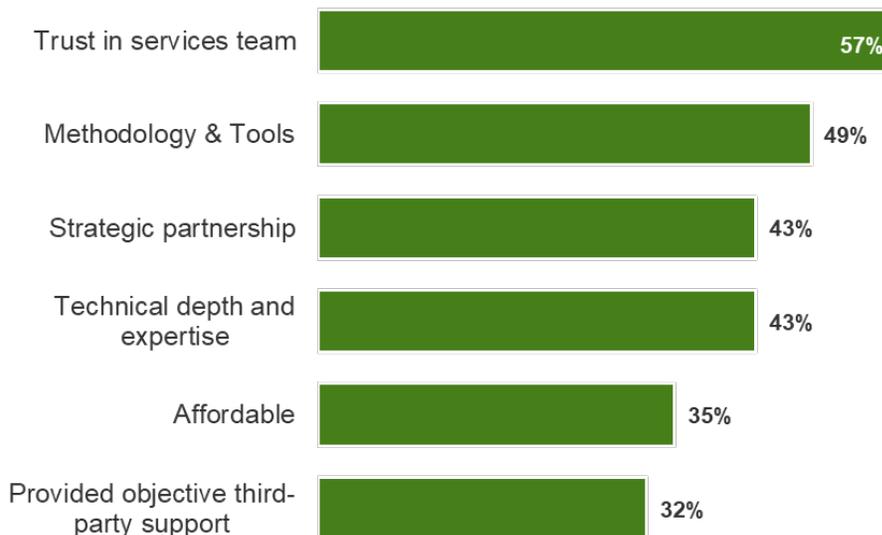
- > Portfolio of 266 applications.
- > Team of about 500 developers.
- > Assessed applications for:
 - Data use.
 - Functionality requirements.
 - Technology stack (e.g., cloud readiness).
 - Databased technology.
 - Microservices.
 - Web services.

Surveyed Organizations

The study surveyed 37 organizations in the United States, Canada, the United Kingdom, and India, and included a mix of companies ranging from smaller companies with as few as 500 employees to major enterprises with more than 20,000 employees.

Companies chose Dell Technologies' APO service as their partner for the following reasons:

"Why did you decide to work with Dell Technologies for your application optimization project?"

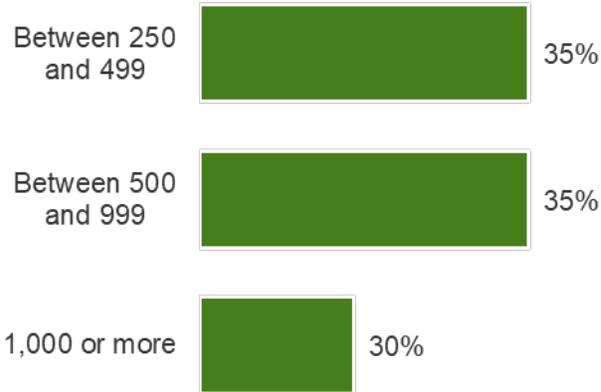


Base: 37 Dell Technologies Application Profiling Services users

Source: A commissioned study conducted by Forrester Consulting on behalf of Dell Technologies, September 2018

Dell Technologies customers indicated that their application portfolios included the following number of applications in the chart below. Organizations did not assess all applications as some were immediately identified for being retired. On average, companies reported that 115 applications were included in their assessment, despite the overall application inventory being much higher (see following chart).

“Approximately, how many unique departmental or enterprise applications does your organization manage?”



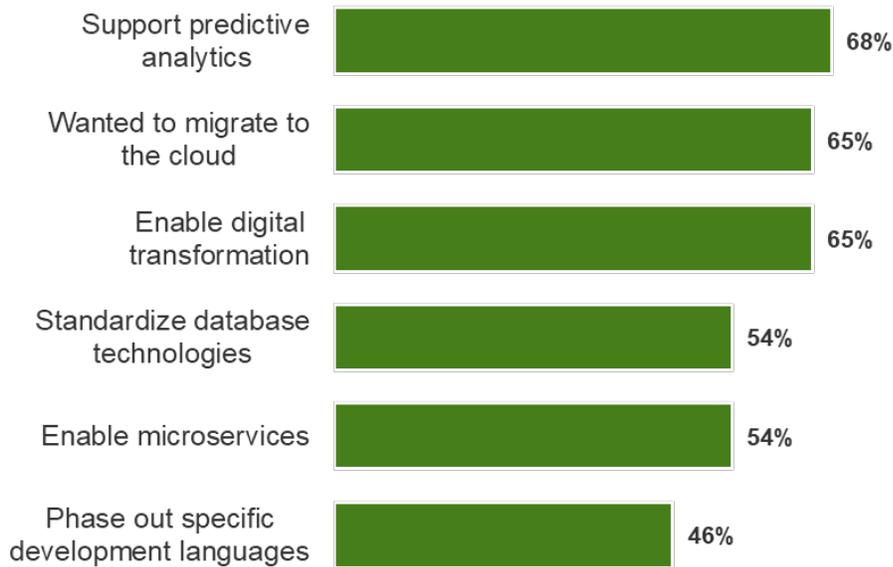
“Using your best estimate, prior to your investment with Dell Technologies application profiling services, what percent of your total application portfolio make up the following categories?”

Type	Average
Customer facing	28%
Partner facing	23%
Internal-only: departmental	25%
Internal-only: enterprise wide	25%

Base: 37 Dell Technologies Application Portfolio Optimization users
 Source: A commissioned study conducted by Forrester Consulting on behalf of Dell Technologies, September 2018

When the customers decided to engage the Dell Technologies team, they faced the following technical challenges or objectives in the chart below. Each of these topics related to customer interactions and fluctuating business needs, but the topics required modifications to the functionality or technology itself (e.g., hosting and programming languages). Several executives said that they had resources in-house who were technically capable of doing a similar assessment, but that the individuals were unable to dedicate the necessary time, lacked assessment experience, and did not have access to automation tools that would enable Dell Technologies APO to be a faster and more cost-effective alternative.

“What goals or objectives were the catalysts for your investment in the application portfolio optimization project?”



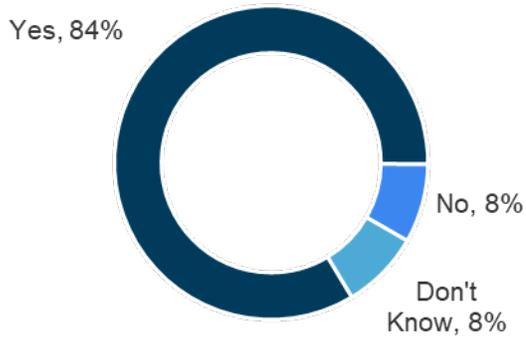
Base: 37 Dell Technologies Application Portfolio Optimization users

Source: A commissioned study conducted by Forrester Consulting on behalf of Dell Technologies, September 2018

Key Results

Dell Technologies APO customers strongly agreed in their expectation that the results of their project would provide a positive return on

“Do you anticipate that the benefits created by your engagement of Dell Technologies services to support your application portfolio optimization project will be greater than the costs (i.e., a positive return on your investment/positive ROI)?”

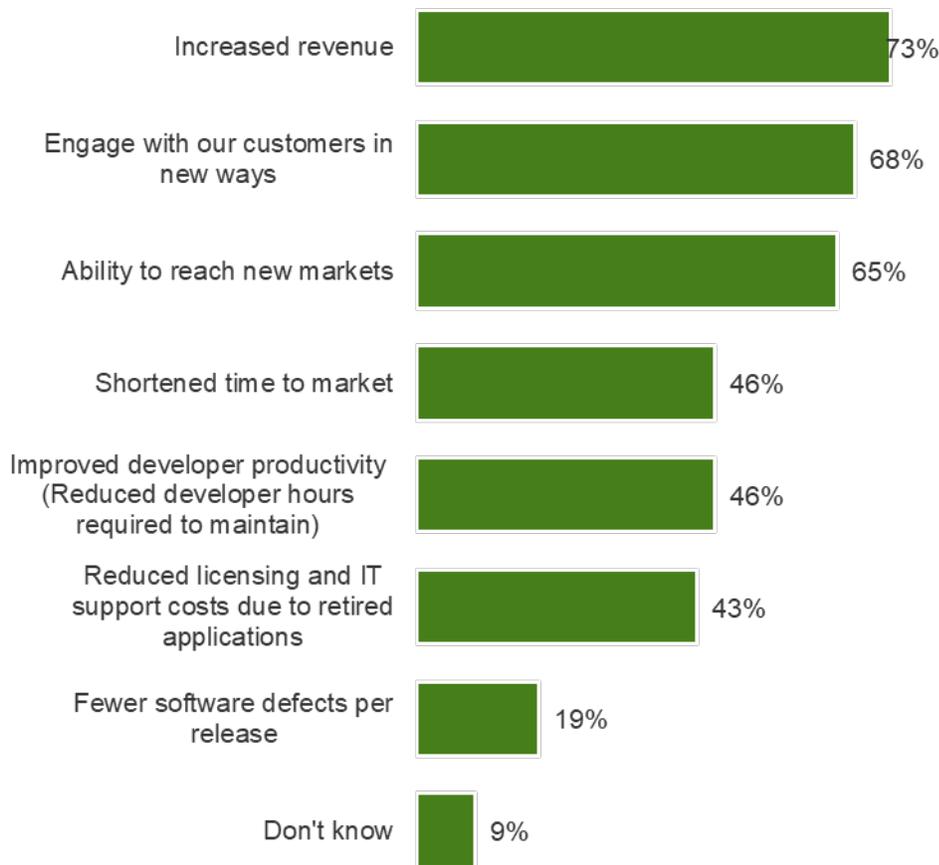


Base: 37 Dell Technologies Application Portfolio Optimization users
Source: A commissioned study conducted by Forrester Consulting on behalf of Dell Technologies, September 2018

investment.

The organizations told Forrester that they achieved the following benefits, several of which are outlined and quantified in the remainder of this study. One interesting note about the chart below is that organizations more commonly reported benefits to their business units and business operations than to the IT operations and cost of enabling technology. This speaks volumes to the criticality of aggressively developing strategies to transform the underlying technology that impacts how businesses interact and engage with their customers.

“Which of the following benefits has your organization experienced/do you expect to experience due to the engagement with Dell Technologies services to support your application portfolio optimization project?”



Base: 37 Dell Technologies Application Profiling Services users

Source: A commissioned study conducted by Forrester Consulting on behalf of Dell Technologies, September 2018

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 conducting assessment internally	\$1,924,542	\$0	\$0	\$1,924,542	\$1,749,583
Btr	Reduced cost of maintaining retired applications	\$344,250	\$1,040,400	\$1,392,300	\$2,776,950	\$2,218,845
Ctr	Net profit from increased revenue from improved customer-facing applications	\$0	\$453,900	\$590,070	\$1,043,970	\$818,452
Dtr	Net profit from accelerated revenue by shortening time-to-market	\$0	\$19,584	\$32,640	\$52,224	\$40,708
Etr	Reduced cost of application conflicts and interdependency errors	\$0	\$1,514,700	\$1,514,700	\$3,029,400	\$2,389,835

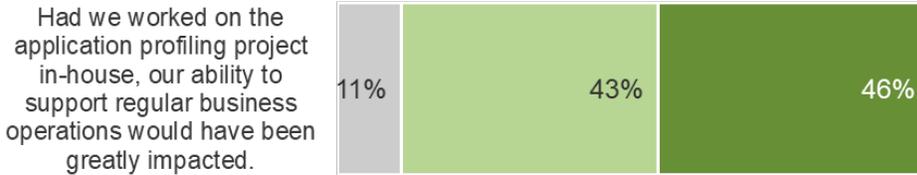
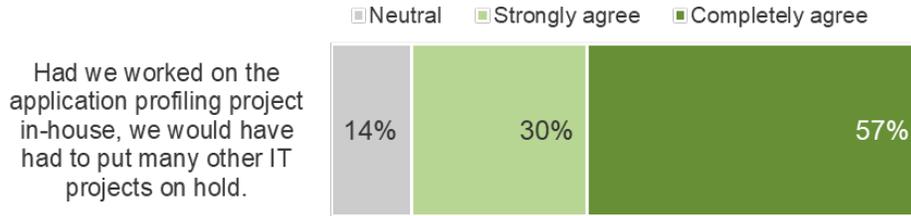
Avoided Cost Of Conducting Assessment Internally

Organizations faced a need to assess current applications, reconcile functionality, retire applications, and enable modern capabilities such as cloud infrastructure and business-facing capabilities of a digital transformation. Executives faced the decision of finding a way to accomplish this task and chose to engage with Dell Technologies' application profiling practice.

In lieu of this engagement, the organizations could have conducted a similar assessment in-house. Most executives indicated that they had their team with the needed expertise and insight, but they lacked the time and automated tools developed and used by Dell Technologies.

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 composite organization expects risk-adjusted total benefits to be a PV of over \$7.2 million.

“On a scale of 1 to 5, please rate how much you agree with each of the following statements:”



Base: 37 Dell Technologies Application Portfolio Optimization users
 Source: A commissioned study conducted by Forrester Consulting on behalf of Dell Technologies, September 2018

For an organization with a development team of about 500 employees, 110 IT professionals would have been required to get involved over the course of the project. The 13-month project would require an estimated 20% of those employee’s time. With an average salary of \$85,000, the total cost would exceed \$2 million.

While the exact time and investment would differ for every company, survey responses were consistent. As such, Forrester risk-adjusted this benefit downward by 5%, yielding a three-year risk-adjusted total PV of just over \$1.9 million.

Avoided Cost Of Conducting Assessment Internally: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
A1	Number of employees involved		110		
A2	Percentage of time required		20%		
A3	Length of internal project (months)		13		
A4	Average burdened salary		\$85,000		
At	Avoided cost of conducting assessment internally	$A1 \cdot A2 \cdot (A3/12) \cdot A4$	\$2,025,833		
	Risk adjustment	↓5%			
Atr	Avoided cost of conducting assessment internally (risk-adjusted)		\$1,924,542		

Reduced Cost Of Maintaining Retired Applications

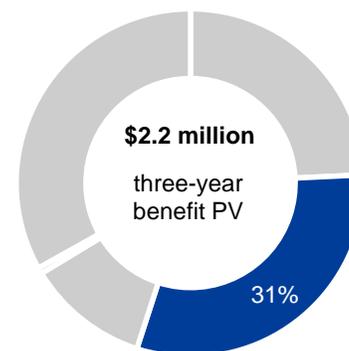
One rapid benefit to an APO engagement is retiring obsolete or unused applications. Some applications can be retired with minimal work, but other applications require greater investment over a longer period of time.

For the purposes of the financial model, Forrester assumes:

- › Twenty-five applications were retired in Year 1.
- › Fifty more applications were retired in Year 2.
- › Twenty-five applications required much more investment and were retired in Year 3.

Survey responses indicated that the average number of hours for avoided maintenance work, for each retired application, was 378 hours. Using this value, Forrester calculated the reduced FTEs — it's important to note that while the average avoided effort was 378 hours, Forrester believes that many organizations enjoy far more substantial savings from retiring major enterprise or departmental applications. The stated savings is based on recovered development hours only and that there is significant additional ROI likely by eliminating license fees, decommissioned infrastructure, and reduced data center footprint.

The level of benefit for each company will vary based on their existing inventory and previous work to retire aging applications. To account for this variation, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of over \$2.2 million.



Reduced cost of maintaining retired applications: **31%** of total benefits

Reduced Cost Of Maintaining Retired Applications: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
B1	Number of applications retired		25	50	25
B2	Cumulative applications retired	B1+B2 _{PY}	25	75	100
B3	Average developer hours avoided for each retired application		378	378	378
B4	Total developer hours avoided maintaining retired applications		9,450	28,350	37,800
B3	Number of developer FTEs avoided	B4/2,080 hours	4.5	13.6	18.2
B4	Average burdened salary		\$85,000	\$85,000	\$85,000
Bt	Reduced cost of maintaining retired applications	B3*B4	\$382,500	\$1,156,000	\$1,547,000
	Risk adjustment	↓10%			
Btr	Reduced cost of maintaining retired applications (risk-adjusted)		\$344,250	\$1,040,400	\$1,392,300

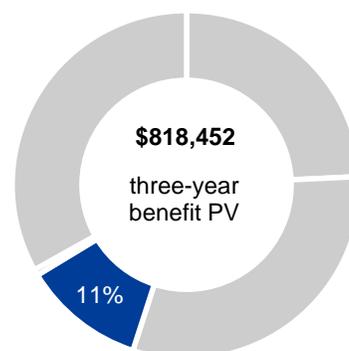
Increased Revenue From Improved Customer-Facing Applications

Survey respondents indicated that the results of their Dell Technologies APO engagement allowed their company to increase revenue by 8.9%.

This benefit came from improved delivery of customer-facing applications, which reduced cart abandonment for online purchasing, improved customer service, and reduced fraudulent and malicious activity. In other words, the engagement identified key aspects of the digital transformation that the customer needed to achieve.

For the financial model, Forrester isolated a business unit that began with \$50 million in revenue in Year 2 and grew to \$65 million in Year 3. The improvement of 8.9% at a profit margin of more than \$500,000 each year. Note that the revenue uplift occurred after the organization had one year to implement changes and improve the functionality before it increased revenue.

Since the increase in revenue will vary between companies, resulting in significantly higher or lower impacts to revenue (and subsequent net profit), Forrester risk-adjusted this benefit downward by 15%, yielding a three-year risk-adjusted total PV of \$818,452.



Increased revenue from improved customer-facing applications: **11%** of total benefits

Increased Revenue From Improved Customer-Facing Applications: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
C1	Revenue before increase from new functionality in customer-facing applications			\$50,000,000	\$65,000,000
C2	Percentage increase in revenue			8.9%	8.9%
C3	Average profit margin			12%	12%
Ct	Net profit from increased revenue from improved customer-facing applications	$C1 * C2 * C3$		\$534,000	\$694,200
	Risk adjustment	↓15%			
Ctr	Net profit from increased revenue from improved customer-facing applications (risk-adjusted)			\$453,900	\$590,070

Accelerated Revenue By Shortening Time-To-Market

In addition to increased revenue, organizations also reported a shortened time-to-market for new products and offerings, which resulted in accelerated revenue of 20%. Similar to other benefits, the organization realized this benefit only after making improvements and modifications during the first year. The impacted revenue was:

- > Twelve million (\$12M) dollars in Year 2.
- > Twenty million (\$20M) dollars in Year 3.

Using a profit margin of 12% and a time value for money of 8%, and risk-adjusting this benefit downward by 15%, the resulting three-year risk-adjusted total PV was \$40,708.

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.

Accelerated Revenue By Shortening Time-To-Market: Calculation Table

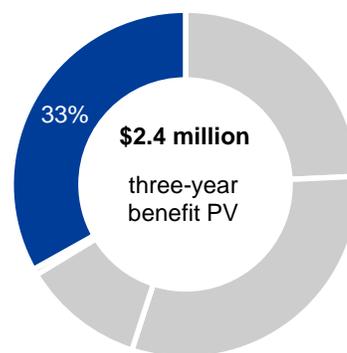
REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
D1	Revenue that was accelerated			\$12,000,000	\$20,000,000
D2	Accelerated time-to-market for new offerings			20%	20%
D3	Average profit margin			12%	12%
D4	Time value of money			8%	8%
Dt	Net profit from accelerated revenue by shortening time-to-market	$D1 \cdot D2 \cdot D3 \cdot D4$		\$23,040	\$38,400
	Risk adjustment	↓15%			
Dtr	Net profit from accelerated revenue by shortening time-to-market (risk-adjusted)			\$19,584	\$32,640

Reduced Cost Of Application Conflicts And Interdependency Errors

As a result of the engagement with Dell Technologies, organizations reported a reduced level of defects and lower error-injection rates. Improvements came from better development methodologies and avoided conflicts and interdependencies (i.e., integration) between applications. The changes and subsequent financial impact of the Dell Technologies engagement took a year to manifest as the organization implemented changes, trained employees, redefined business requirements, retired applications, and improved existing code.

The number of developers working on application maintenance average 110 FTEs. Survey respondents told Forrester that that change increased the productivity of developers doing the same work by 18%. Using an average burdened salary of \$85,000, the savings in Year 2 and Year 3 of the financial model total almost \$1.7 million per year.

This benefit will vary between companies and readers must assess their current methodologies and integrate challenges. The account for this risk, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of almost \$2.4 million.



Reduced cost of defects and errors inserted into code: **33%** of total benefits

Reduced Cost Of Application Conflicts And Interdependency Errors: Calculation Table

REF.	METRIC	CALC.	YEAR 1	YEAR 2	YEAR 3
E1	Number of developers involved with maintenance			110	110
E2	Percentage improvement in developer productivity			18%	18%
E3	Average burdened salary			\$85,000	\$85,000
Et	Reduced cost of application conflicts and interdependency errors	$E1 \cdot E2 \cdot E3$		\$1,683,000	\$1,683,000
	Risk adjustment	↓10%			
Etr	Reduced cost of application conflicts and interdependency errors (risk-adjusted)			\$1,514,700	\$1,514,700

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
Ftr	Fees paid to Dell Technologies	\$600,000	\$0	\$0	\$0	\$600,000	\$600,000
Gtr	Investment of time by IT organization staff	\$56,100	\$0	\$0	\$0	\$56,100	\$56,100
Htr	Development effort required to implement changes and realize quantified benefits	\$0	\$1,589,500	\$420,750	\$0	\$2,010,250	\$1,792,727
	Total costs (risk-adjusted)	\$656,100	\$1,589,500	\$420,750	\$0	\$2,666,350	\$2,448,827

Fees Paid To Dell Technologies

Organizations engaged with the Dell Technologies Application Profiling team to evaluate their inventory of applications, including alignment with business needs, digital transformation, application functionality, data use, and technology requirements such as cloud readiness and modern programming languages.

The average engagement lasted a total of three months. One executive described his engagement as:

- > Four weeks creating an inventory and assessing application functional interdependencies.
- > Six to eight weeks rationalizing work through a series of sprints to modify applications and build proofs of concept for some of the complex integration plans.

On average, the total cost of the Application Profiling engagements was \$600,000. Forrester did not risk-adjust this cost, resulting in a three-year risk-adjusted total PV of \$600,000.

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 be a PV of more than \$2.4 million.

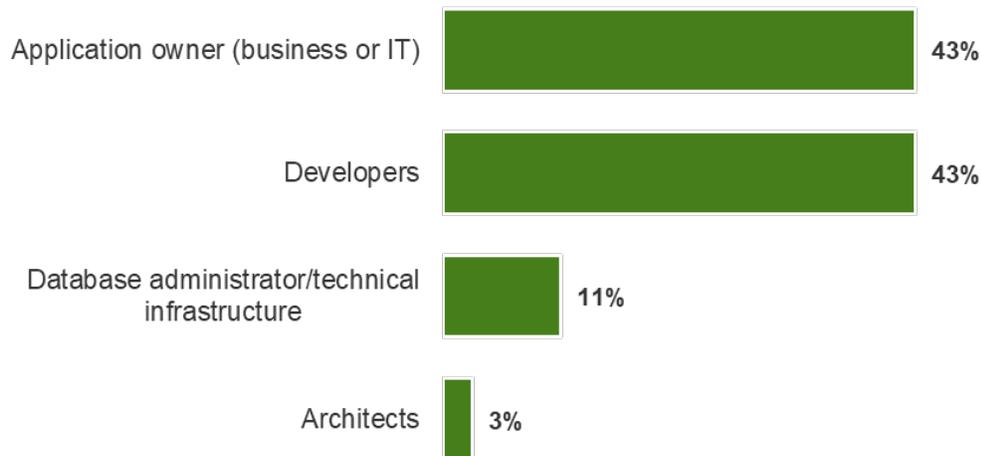
Fees Paid To Dell Technologies: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
F1	Cost of Application Profiling project		\$600,000			
Ft	Fees paid to Dell Technologies	=F1	\$600,000			
	Risk adjustment	↑0%				
Ftr	Fees paid to Dell Technologies (risk-adjusted)		\$600,000			

Investment Of Time By IT Organization Staff

In addition to the work performed by Dell Technologies, the organization required some of its staff to provide key information and support the evaluation. Survey respondents indicated that they needed involvement from application managers, developers, database admins, infrastructure managers, and architects.

“What roles were involved in the project?”



Base: 37 Dell Technologies Application Profiling Services users
 Source: A commissioned study conducted by Forrester Consulting on behalf of Dell Technologies, September 2018

In total, organizations reported that, on average 10 employees spent 25% of their time supporting the engagement with Dell Technologies, which is equivalent to 0.6 FTEs at an annual burdened salary of \$85,000. The exact level of effort will vary for every organization. To account for this risk, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of \$56,100.

Investment Of Time By IT Organization Staff: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
G1	Employees involved in project		10			
G2	Percentage of time		25%			
G3	Length of project (months)		3			
G4	FTEs involved in project (rounded)	$G1 * G2 * (G3 / 12)$	0.6			
G5	Average burdened salary		\$85,000			
Gt	Investment of time by IT organization staff	$G4 * G5$	\$51,000			
	Risk adjustment	↑10%				
Gtr	Investment of time by IT organization staff (risk-adjusted)		\$56,100			

Development Effort Required To Implement Changes And Realize Quantified Benefits

The APO engagement with Dell Technologies was the first step in a transformation that required additional effort. To realize the benefits of supporting new business processes, supporting digital transformation, migrating infrastructure, and retiring applications took an additional 18-month investment. Specifically:

- > Seventeen developers worked on the migration projects for a full year after the initial engagement with Dell Technologies.
- > Nine of those developers continued for another six months in the second year after the engagement.

At an average cost, the additional investment in effort cost more than \$2 million. Because the level of investment will be unique to each customer, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of \$1.8 million.

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.

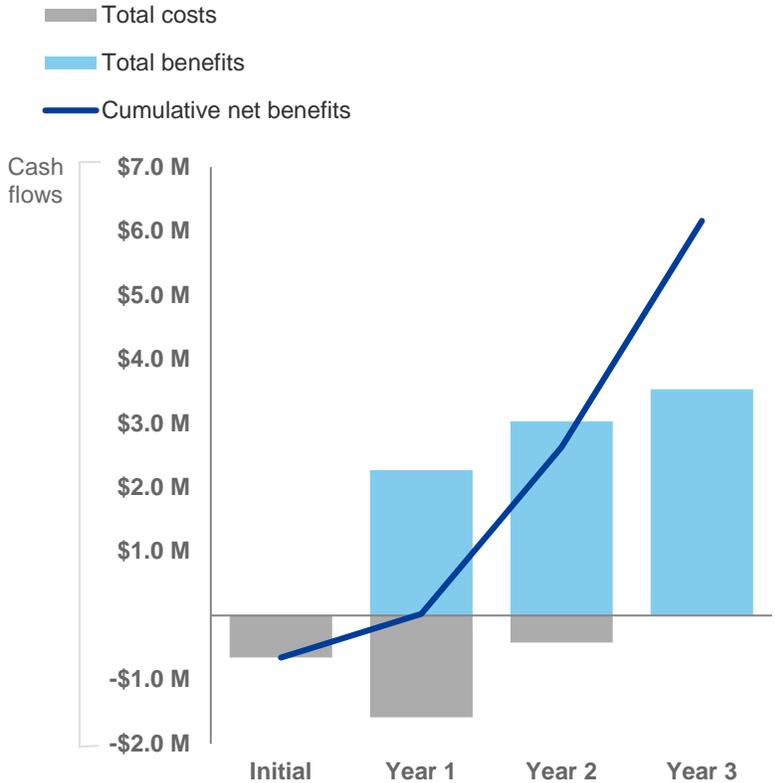
Development Effort Required To Implement Changes And Realize Quantified Benefits: Calculation Table

REF.	METRIC	CALC.	INITIAL	YEAR 1	YEAR 2	YEAR 3
H1	Development effort dedicated to changes identified in project (rounded)	$E1*15\%$		17	9	
H2	Average duration of changes (months)			12	6	
H3	Average burdened salary			\$85,000	\$85,000	
Ht	Development effort required to implement changes and realize quantified benefits	$H1*H2/12*H3$		\$1,445,000	\$382,500	
	Risk adjustment	$\uparrow 10\%$				
Htr	Development effort required to implement changes and realize quantified benefits (risk-adjusted)			\$1,589,500	\$420,750	

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	(\$656,100)	(\$1,589,500)	(\$420,750)	\$0	(\$2,666,350)	(\$2,448,827)
Total benefits	\$0	\$2,268,792	\$3,028,584	\$3,529,710	\$8,827,086	\$7,217,423
Net benefits	(\$656,100)	\$679,292	\$2,607,834	\$3,529,710	\$6,160,736	\$4,768,596
ROI						195%
Payback period						12 months

Dell Technologies Application Portfolio Optimization Services: Overview

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

Dell Technologies uses a proven, field-tested methodology and a decade of experience to systematically optimize organizations' application portfolios. Intertwined with their experience in converged infrastructure, cloud platforms, operations, application development, end user experience, cyber security, and business resiliency, this approach helps clients mitigate risks and save costs when embarking on transformation initiatives.

Application Portfolio Optimization services encompass numerous capabilities including application profiling, cloud and platform suitability, dependency analysis, migration, modernization, and retirement, all designed to accelerate digital and IT transformation initiatives. Dell Technologies assesses:

- › **Application Profiling and Platform Suitability.** Application Profiling provides the foundation for making critical decisions. Dell Technologies inventories and prioritizes applications based on business value. Applications are mapped against business activities to identify redundancies and develop an investment strategy for each application. They are then assessed for cloud and infrastructure fit (SaaS, PaaS, CaaS, and IaaS), which includes a platform suitability index for each.
- › **Application Dependency.** An Application Dependency Analysis is used to determine application interdependencies. This allows for confidently building application bundles for migration that avoid application rollback.
- › **Application Migration.** Dell Technologies has efficient, low-cost migration factory services that help customers move from one environment to another quickly and efficiently using highly repeatable, automated, well-tested methodologies.
- › **Application Modernization.** Application Modernization backlogs are built based on size, complexity, cost, and value to the organization. Cloud-ready applications are replatformed first to demonstrate success quickly.
- › **Application Retirement.** Application Archiving and Retirement enables organizations to reduce the cost, risk and complexity of maintaining unused or little used applications that are retained simply because of the data they contain. Dell Technologies' proven retirement methodology eliminates costly legacy applications while still retaining the data and ensuring compliance with regulatory and legal mandates for retention and e-discovery.

Dell Technologies' Application Portfolio Optimization services can include a financial business case that helps an organization understand the anticipated TCO, taking the cost of transformation into account to provide the necessary justification for action.

While application portfolio optimization projects may initially seem daunting, an experienced partner can help mitigate risks and accelerate transformation initiatives. Dell Technologies' exceptional track record helps organizations accelerate success by leveraging:

- › A proven, field-tested methodology and framework
- › Extensive experience in cloud and platform suitability
- › A cost-effective migration factory approach
- › A client-specific modernization strategy

To learn more visit <https://www.dellemc.com/en-us/services/professional-services/cloud2.htm>.

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.