A Forrester Total Economic Impact™ Study
Commissioned By Pegasystems

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The Total Economic Impact™ Of Pega Customer Service

Cost Savings And Business Benefits Enabled By Pega Customer Service

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Executive Summary

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

To better understand the benefits, costs, and risks associated with this investment, Forrester surveyed several customers with experience using Pega Customer Service. The Pega Customer Service application provides a contact center desktop, case management for customer service, mobile field service, self-service, and industry-specific processes and data models. With Pega, customer service representatives (CSRs) can engage customers in their channel of choice. During customer interactions, Pega intelligently suggests the next best action to take based on customer context, providing a personalized service experience.

Pega Customer Service can help organizations improve call center productivity, generate incremental revenue, and increase customer satisfaction.

The estimated costs and benefits for a composite organization with five contact centers, over 1,000 CSRs, and over 30 million calls per year, based on a survey of 17 customers, are:

- **Total upfront costs: $3 million.**
- **Annual costs: $800,000 to $1 million per year.**
- **Total cost savings and benefits: $29 million.**
- **Conversion rate improvement: 15%.**
- **Average order value improvement: 11%.**
- **Customer churn rate reduction: 24%.**

Customer service is pivotal to the customer experience and ultimately to an organization's bottom line. In the age of the customer, good customer service is a competitive differentiator that can improve customer acquisition and customer loyalty, and bad customer service can result in cost inefficiencies and customer churn. Organizations need a customer service solution that can meet customer needs and expectations while also delivering efficiencies to operations.

Prior to using Pega Customer Service, the surveyed organizations had a collection of siloed, inflexible customer service tools that created a lot of manual work, provided inconsistent customer experiences across customer service channels, and provided large volumes of data to CSRs without enough guidance on how to arrive at the optimal call outcome. These challenges made it difficult for these organizations to cost-effectively and consistently deliver a high-quality customer experience that meets customer needs and positively influences the customer relationship. The organizations wanted a tool that could provide more guidance to achieve better call outcomes, improve the customer experience and brand loyalty, and deliver process efficiencies. With Pega Customer Service, these organizations can bring information from all channels into a unified desktop with a 360-degree view of the customer, providing next-best-action guidance during customer interactions based on customer context. CSRs can be trained faster and use the guidance from the application to achieve the best call outcomes, and they no longer need to switch between legacy applications or complete manual tasks, increasing productivity. Business owners can quickly update the Pega application with new business requirements, such as new products, policies, and procedures, without relying heavily on IT, increasing business agility and competitiveness. The high-level result is improved customer satisfaction and incremental revenue from better call outcomes and improved loyalty.

PEGA CUSTOMER SERVICE IMPROVES CONTACT CENTER COST-EFFECTIVENESS, GENERATES INCREMENTAL REVENUE, AND IMPROVES CUSTOMER SATISFACTION

Our survey of 17 existing customers and subsequent financial analysis found that a composite organization based on these surveyed organizations experienced the risk-adjusted ROI and benefits shown in Figure 1.

The composite organization analysis points to benefits of $29.4 million over three years versus costs of $5.1 million, adding up to a net present value (NPV) of $24,297,011.

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

ROI: 473%	**NPV: $24,297,011**	**Payback: six months**	**Average handle time: ▼ 12%**

Source: Forrester Research, Inc.

Disclosures

The reader should be aware of the following:

- The study is commissioned by Pegasystems 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 Pega Customer Service.
- Pegasystems 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.

TEI Framework And Methodology

INTRODUCTION

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

APPROACH AND METHODOLOGY

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

- Interviewed Pega marketing, sales, and consulting personnel, along with Forrester analysts, to gather data relative to Pega Customer Service and the marketplace for Pega Customer Service.
- Surveyed 17 organizations currently using Pega Customer Service to obtain data with respect to costs, benefits, and risks.
- Designed a composite organization based on characteristics of the surveyed organizations.
- Constructed a financial model representative of the survey data using the TEI methodology. The financial model is populated with the cost and benefit data obtained from the survey as applied to the composite organization.
- Risk-adjusted the financial model based on variability highlighted in the survey responses and common risk factors identified through Forrester Research. Risk adjustment is a key part of the TEI methodology. While surveyed organizations provided cost and benefit estimates, some categories included a broad range of responses or had a number of outside forces that might have affected the results. For that reason, some cost and benefit totals have been risk-adjusted and are detailed in each relevant section.

Forrester employed four fundamental elements of TEI in modeling Pega Customer Service's impact: benefits, costs, flexibility, and risks.

Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves to provide a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

FIGURE 2
TEI Approach

Source: Forrester Research, Inc.

Analysis

COMPOSITE ORGANIZATION

For this study, Forrester conducted a survey of representatives from the following companies, which are Pegasystems customers based in the US:

- The organizations ranged from 1,000 to 20,000 employees or more, with annual revenue from $500 million to over $5 billion.
- Survey respondents were key decision-makers about customer service technology solutions at their organizations.
- The organizations had significant variability in the total number of CSRs, with some having only one to 100 CSRs and some having 7,000 to 10,000 total CSRs. The organizations also had a wide range of contact centers, from one up to seven or more, and a wide range of total calls to the contact centers each year, from less than 1 million per year up to 45 million to 60 million per year.

Based on the survey, Forrester constructed a TEI framework, a composite company, and an associated ROI analysis that illustrates the areas financially affected. The composite organization that Forrester synthesized from these results represents an organization with the following characteristics:

- The organization has 22,500 employees.
- It has $4.5 billion in annual revenue.
- It has five contact centers, with 1,000 total CSRs that use Pega Customer Service and over 22,000,000 calls per year routed through Pega Customer Service, with an occupancy rate of 80%.
- The organization has been using Pega Customer Service for three years, with 76% of total contact center calls handled by the Pega application.

SURVEY HIGHLIGHTS

Situation

The surveyed organizations indicated a number of key priorities with the Pega Customer Service investment, including:

- **Creating process efficiencies with a new solution.** The surveyed organizations had multiple legacy applications that CSRs used during interactions with customers. These tools were not integrated, creating a lot of manual work in pulling and entering information in several systems. The organizations wanted to eliminate this manual work and provide a single interface to integrate with these systems, automate tasks, and allow for easier onboarding for new CSRs.
- **Providing more guidance to customer service representatives to improve call outcomes.** The legacy applications that the CSRs used provided large volumes of data but did not offer guidance on how to best engage with a customer based on a specific situation. CSRs would provide generic, inflexible customer service using these tools, and they struggled to adapt to different customer contexts or have consistent interactions across channels. The organizations wanted to deliver a more differentiated customer experience based on unique customer needs.
- **Improving customer experience and brand loyalty.** Ultimately, the organizations wanted to improve key contact center KPIs around customer satisfaction, including incremental conversions, higher order values or lifetime values, and higher retention and loyalty. Efficiently providing a differentiated customer experience with omnichannel capabilities could help these organizations meet those goals.

Results

The survey revealed that:

› **The surveyed organizations were able to improve CSR productivity and overall cost of service.** By integrating legacy applications into a unified desktop with real-time guidance on how to manage customer interactions, the organizations were able to drive improvements in average call handle time and reduce the number of CSRs needed to handle the same call volume. Additionally, some of the legacy applications were eliminated, creating a direct cost savings. With more streamlined processes and an easy-to-use interface, the organizations were able to reduce training time needed for new CSRs, increasing their speed to productivity, and improve overall CSR satisfaction.

› **The surveyed organizations were able to improve service operations and key service KPIs.** With next-best-action guidance to help CSRs offer a more differentiated service to customers, the organization noticed changes to key operational KPIs. The conversion rate from a call to sale increased, and the average order value increased for calls handled by Pega Customer Service. Additionally, Pega Customer Service provides reports so business owners can analyze contact center performance. Pega Customer Service also allows business owners to implement process and service changes without coding needed from IT. Business users can quickly add new products or procedures to respond to changing market needs, further boosting conversions and revenue per customer.

› **The surveyed organizations realized benefits tied to improved customer satisfaction.** By providing a superior customer service, the organizations were able to influence key customer satisfaction metrics. They noticed decreased customer churn, improving repeat business and customer loyalty. Particularly for organizations that have a customer subscription model, improving customer retention is crucial for future competitiveness.

BENEFITS

The composite organization experienced a number of quantified benefits in this case study:

Improved Customer Service Representative Productivity

Pega Customer Service provides a single, unified interface for CSRs to navigate customer interactions. It integrates legacy tools into an easy-to-use application that automates many steps during customer interactions, anticipates customer needs, and provides guidance to CSRs on the next best action to take. By reducing the amount of time spent toggling between different applications and providing CSR guidance during interactions, the composite organization is able to drive CSR productivity.

The composite organization's total call volume ranges from 28.8 million in Year 1 to 30 million in Year 3, an average of 2% year-over-year growth. The organization estimates that 68% of its total call volume is routed through Pega Customer Service in Year 1, increasing to 76% in Year 3. Prior to using Pega Customer Service, the composite organization's average call handle time was 300 seconds. In Year 1, as CSRs are ramping and learning to use Pega, the organization is able to reduce call handle time by 7%. In years 2 and 3, the organization is able to increase this to a 12% improvement. The organization is able to reclaim 90% of these time savings by balancing increasing the number of calls per CSR and preventing increased burnout. By increasing the number of calls per CSR, the organization saves 10 CSRs in Year 1, increasing to 20 CSRs in Year 2.

Surveyed organizations provided a range of call handle time improvements and CSR reductions. Call handle time improvements can be difficult to attribute to a single solution, since there are a variety of outside forces that might also affect this. Additionally, the ability to reduce handle times will depend on the level of adoption and speed of adoption of Pega in the contact centers. To compensate, this benefit was risk-adjusted and reduced by 5%. The risk-adjusted total benefit resulting from improved CSR productivity over the three years was $9,152,838. See the section on Risks for more detail.

TABLE 1
Improved Customer Service Representative Productivity

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
A1	Total customer service call volume	Survey	28,812,000	29,400,000	30,000,000
A2	Calls routed through Pega	Survey	68%	72%	76%
A3	Pega routed calls per year	A1*A2	19,592,160	21,168,000	22,800,000
A4	Average call handle time, pre-Pega (seconds)	Survey	300	300	300
A5	Improvement in average call handle time with Pega	Survey	7%	12%	12%
A6	Average call handle time, with Pega (seconds)	A4*(1-A5)	279	264	264
A7	Productivity reclaimed	Forrester assumption	90%	90%	90%
A8	Productivity savings due to Pega Customer Service (total hours per year)	((((A4-A6)*A3)/60)/60)*A7	102,859	190,512	205,200
A9	Reduction in customer service representatives	Survey	10	20	20
A10	Average customer service representative fully loaded compensation	Forrester assumption	$40,000	$40,800	$41,616
At	Improved customer service representative productivity	(A8*(A10/2,080))+(A9*A10)	$2,378,055	$4,552,966	$4,937,898
	Risk adjustment	↓5%			
Atr	**Improved customer service representative productivity (risk-adjusted)**		**$2,259,152**	**$4,325,318**	**$4,691,004**

Source: Forrester Research, Inc.

Reduced Customer Service Representative Training

Because Pega Customer Service integrates legacy applications into a unified desktop with an easy-to-use interface, the organization is able to reduce the amount of training needed for new CSRs. With Pega Customer Service, the organization reduces training time by ten days. This training improvement benefits new CSRs hired to replace turnover and also new hires needed to manage call volume growth. The first level of this benefit is shown in Table 2: the cost savings that result from having a CSR productive 10 days earlier. Some organizations may also factor in the revenue delivered per CSR per day and include that in the benefit calculation as well.

Surveyed organizations provided a range of training reductions due to Pega Customer Service, since this will be dependent on the complexity of the organization's prior application environment and the amount of integration built into Pega. To compensate, this benefit was risk-adjusted and reduced by 5%. The risk-adjusted total benefit resulting from reduced CSR training over the three years was $1,497,354. See the section on Risks for more detail.

TABLE 2
Reduced Customer Service Representative Training

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
B1	CSRs that use Pega	Survey	960	980	1,000
B2	Incremental hires for growth	B1 vs. prior year		20	20
B3	Turnover rate	Forrester assumption	40%	40%	40%
B4	Incremental hires due to turnover	B1*B3	384	392	400
B5	Average reduction in training time with Pega (number of days)	Survey	10	10	10
B6	Average customer service representative fully loaded compensation	Forrester assumption	$40,000	$40,800	$41,616
Bt	Reduced customer service representative training	(B2+B4)*B5*(B6/260)	$591,015	$645,895	$672,258
	Risk adjustment	↓5%			
Btr	**Reduced customer service representative training (risk-adjusted)**		**$561,465**	**$613,601**	**$638,646**

Source: Forrester Research, Inc.

Incremental Conversions And Improved Average Order Value

An additional benefit of providing a unified desktop, intelligent next-best-action guidance, and improved agility to introduce business changes to the application is the improvement in the conversion rate and average order value. Prior to using Pega Customer Service, the organization's average conversion rate in the contact center was 7%. By Year 3, the organization is able to drive a 15% improvement in the conversion rate with Pega Customer Service, yielding almost 240,000 incremental conversions. Additionally, by Year 3, the organization is able to drive an 11% improvement in average order value. With a gross margin of 20%, the combined effect of incremental conversions and incremental order value is over $4 million in incremental gross profit in Year 1 and over $11 million in incremental gross profit by Year 3.

Surveyed organizations provided a range in conversion rate improvements and average order value improvements, since there are a variety of outside forces that might also affect this. Conversion rate and order value improvements can be difficult to attribute to particular technology investments. To compensate, this benefit was risk-adjusted and reduced by 15%. The risk-adjusted total benefit resulting from incremental gross profit over the three years was $18,595,153. See the section on Risks for more detail.

TABLE 3

Incremental Conversions And Improved Average Order Value

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
C1	Customer calls handled per year with Pega Customer Service	Survey	19,592,160	21,168,000	22,800,000
C2	Conversion rate before Pega	Survey	7%	7%	7%
C3	Conversion rate improvement due to Pega	Survey	5%	10%	15%
C4	Conversion rate with Pega	Survey	7.4%	7.7%	8.1%
C5	Incremental conversions due to Pega	(C1*C4)-(C1*C2)	68,573	148,176	239,400
C6	Average order value before Pega	Forrester assumption	$150	$150	$150
C7	Average order value improvement with Pega	Survey	7%	9%	11%
C8	Average order value with Pega	C6*(1+C7)	$161	$164	$167
C9	Increase in order value due to Pega	C8-C6	$11	$14	$17
C10	Gross margin	Forrester assumption	20%	20%	20%
Ct	Incremental conversions and improved average order value	((C5*C8)+(C1*C2*C9))*C10	$5,081,227	$8,846,107	$13,238,820
	Risk adjustment	↓15%			
Ctr	**Incremental conversions and improved average order value (risk-adjusted)**		**$4,319,043**	**$7,519,191**	**$11,252,997**

Source: Forrester Research, Inc.

Prior Tool Cost Savings

Some of the surveyed organizations were able to replace legacy applications with Pega Customer Service, in addition to integrating applications with Pega. The average cost savings from eliminating legacy applications is $75,000 per year. Some organizations may use Pega Customer Service to absorb additional functionality over time, further eliminating prior tools and generating additional cost savings. The total benefit resulting from eliminating prior tools over the three years was $186,514.

TABLE 4
Prior Tool Cost Savings

Ref.	Metric	Calculation	Year 1	Year 2	Year 3
Dt	Prior tool cost savings	Survey	$75,000	$75,000	$75,000

Source: Forrester Research, Inc.

Qualitative Benefits

The Pega Customer Service solution was able to eliminate many customer service issues that had an impact on the overall customer experience. As CSRs become more comfortable using the Pega Customer Service application, including the next-best-action guidance and the omnichannel functionality, the organization is able to improve customer satisfaction and increase the number of customers who make repeat purchases. Averages from survey respondents indicate that prior to using Pega Customer Service, the organizations had an average 10.5% churn rate, and after deploying Pega Customer Service, the average churn rate decreased to 8%, a 24% reduction.

An important additional benefit is the agility that Pega Customer Service provides in adapting to new market trends or opportunities quickly. Compared with prior tools, which required significant IT time to implement changes, Pega makes implementing changes easy enough for a business user to do. With Pega, the organization can quickly implement changing business requirements, such as new products, channels, policies, and procedures, into the Customer Service application with minimal support from IT. One surveyed organization noted that it went from four to six releases per year to 11 to 15 releases per year. Another organization noted that it was able to reduce the amount of IT time spent on supporting customer service solutions with the Pega implementation.

Total Benefits

Table 5 shows the total of all benefits across the four areas listed above, as well as present values (PVs) discounted at 10%. Over three years, the composite organization expects risk-adjusted total benefits to be a PV of more than $29 million.

TABLE 5
Total Benefits (Risk-Adjusted)

Ref.	Benefit Category	Year 1	Year 2	Year 3	Total	Present Value
Atr	Improved customer service representative productivity	$2,259,152	$4,325,318	$4,691,004	$11,275,473	$9,152,838
Btr	Reduced customer service representative training	$561,465	$613,601	$638,646	$1,813,711	$1,497,354
Ctr	Incremental conversions and improved average order value	$4,319,043	$7,519,191	$11,252,997	$23,091,231	$18,595,153
Dtr	Prior tool cost savings	$75,000	$75,000	$75,000	$225,000	$186,514
	Total benefits (risk-adjusted)	**$7,214,659**	**$12,533,110**	**$16,657,646**	**$36,405,415**	**$29,431,859**

Source: Forrester Research, Inc.

COSTS

The composite organization experienced a number of costs associated with Pega Customer Service. These represent the mix of internal and external costs for implementation and ongoing maintenance associated with the solution.

Pega Customer Service License Costs

The organization implemented Pega Customer Service on-premises, purchasing software licenses for its CSRs using Pega in the contact centers. The license costs are based on the number of CSRs using Pega Customer Service and are an approximation based on the features of the composite organization.

Software costs vary from organization to organization, considering different licensing agreements, what other products may be licensed from the same vendor, and other discounts. To compensate, this cost was risk-adjusted up by 5%. The risk-adjusted cost of software over the three years was $2,971,532. See the section on Risks for more detail.

TABLE 6
Pega Customer Service License Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
Et	Pega license costs		$1,890,000	$378,000	$378,000	$378,000
	Risk adjustment	↑5%				
Etr	**Pega license costs (risk-adjusted)**		**$1,984,500**	**$396,900**	**$396,900**	**$396,900**

Source: Forrester Research, Inc.

Implementation And Ongoing Management Costs

The organization deployed Pega Customer Service over six months, represented in the “Initial” period in Table 7. During the implementation, the organization defined business processes, integrated Pega with legacy applications, built and tested the Pega application, and put it in production. The implementation of Pega requires additional hardware and software, and the organization used professional resources to help with the implementation and ongoing management. Following implementation, three IT full-time equivalents (FTEs) and two business owners manage Pega on an ongoing basis — on average, 750 hours per year for the IT FTEs and 525 hours per year for the business owners. The IT FTEs help build interfaces to systems, maintaining hardware needed to support Pega Customer Service, and implementing business changes. The business owners are responsible for defining key changes and building those changes into the Pega application.

Implementation costs are more variable from organization to organization, considering the number of systems on the back end and system interface as well as the breadth of functionality required. Some organizations outsource implementation and ongoing management efforts, and some manage these steps with in-house resources, creating cost variability. To compensate, this cost was risk-adjusted up by 5%. The risk-adjusted cost of implementation and management over the three years was $1,691,277. See the section on Risks for more detail.

TABLE 7

Implementation And Ongoing Management Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
F1	Additional hardware/software	Survey	$200,000	$20,000	$20,000	$20,000
F2	Professional services costs	Survey	$650,000	$100,000	$100,000	$100,000
F3	IT FTEs managing Pega CS	Survey	5	3	3	3
F4	Average time spent per year per IT FTE (hours)	Survey	225	750	750	750
F5	Business FTEs managing Pega CS	Survey	2	2	2	2
F6	Average time spent per year per business FTE (hours)	Survey	150	525	525	525
F7	Average hourly fully loaded compensation	Forrester assumption	$48	$48	$48	$48
Ft	Implementation and ongoing management costs	F1+F2+(F3*F4*F7)+(F5*F6*F7)	$918,400	$278,400	$278,400	$278,400
	Risk adjustment	↑5%				
Ftr	**Implementation and ongoing management costs (risk-adjusted)**		**$964,320**	**$292,320**	**$292,320**	**$292,320**

Source: Forrester Research, Inc.

Training Costs

The organization has two training efforts associated with the Pega Customer Service investment. Initially, the organization provided a weeklong training session to the IT FTEs and business owners who would be implementing and managing the Pega application. Quickly following deployment, the organization held a two-day training session for CSRs to get them up to speed on the Pega Customer Service tool. Each year, the organization trains new hires as a result of turnover and incremental year-to-year growth.

Training costs are dependent on the time required to train different users and the number of users trained, and costs can vary based on whether trainings are done in-house or provided by a vendor or partner. To compensate, this cost was risk-adjusted up by 5%. The risk-adjusted cost of training over the three years was $472,040. See the section on Risks for more detail.

TABLE 8
Training Costs

Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3
G1	Business/system architects	Survey	7			
G2	Architect training hours	Forrester assumption	40			
G3	Architect average fully loaded hourly compensation	Forrester assumption	$48			
G4	CSRs needing training	Survey		816	412	420
G5	Training time per CSR (hours)	Forrester assumption		16	16	16
G6	CSR average fully loaded hourly compensation	Forrester assumption		$19	$20	$20
Gt	Training costs	(G1*G2*G3)+(G4*G5*G6)	$13,440	$251,182	$129,179	$134,452
	Risk adjustment	↑5%				
Gtr	**Training costs (risk-adjusted)**		**$14,112**	**$263,741**	**$135,638**	**$141,174**

Source: Forrester Research, Inc.

Total Costs

Table 9 shows the total of all costs as well as associated present values (PVs), discounted at 10%. Over three years, the composite organization expects risk-adjusted total costs to be a PV of slightly over $5.1 million.

TABLE 9
Total Costs (Risk-Adjusted)

Ref.	Cost Category	Initial	Year 1	Year 2	Year 3	Total	Present Value
Etr	Pega Customer Service license costs	$1,984,500	$396,900	$396,900	$396,900	$3,175,200	$2,971,532
Ftr	Implementation and ongoing management costs	$964,320	$292,320	$292,320	$292,320	$1,841,280	$1,691,277
Gtr	Training costs	$14,112	$263,741	$135,638	$141,174	$554,665	$472,040
	Total costs (risk-adjusted)	**$2,962,932**	**$952,961**	**$824,858**	**$830,394**	**$5,571,145**	**$5,134,848**

Source: Forrester Research, Inc.

RISKS

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

TABLE 10
Benefit And Cost Risk Adjustments

Benefits	Adjustment
Improved customer service representative productivity	↓ 5%
Reduced customer service representative training	↓ 5%
Incremental conversions and improved average order value	↓ 15%
Costs	**Adjustment**
Pega Customer Service license costs	↑ 5%
Implementation and ongoing management costs	↑ 5%
Training costs	↑ 5%

Source: Forrester Research, Inc.

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

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

› Surveyed organizations provided a range of call handle time improvements, CSR reductions, conversion rate improvements, average order value improvements, and churn improvements. Risk factors are larger where ranges provided by survey respondents are wider.

› Certain metrics, such as conversion rate improvements, average order value improvements, and customer churn improvements, can be difficult to measure accurately and difficult to attribute to a single technology investment. Risk factors are larger for metrics that are less easily tied to specific applications.

› The ability to achieve productivity and operational benefits will depend on the level of adoption and speed of adoption of Pega in the contact centers. The Pega application necessitates a different approach to customer interaction than the prior applications, and many CSRs may initially be uncomfortable relying on the guidance provided by the tool. Additionally, the improvements to operational metrics will depend on the changes to the application provided by business owners.

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

- Software costs vary from organization to organization, considering different licensing agreements, what other products may be licensed from the same vendor, and other discounts. The license costs included in the study are an approximation based on the implementation size for the composite organization.

- Implementation costs are more variable from organization to organization, considering the number of systems on the back end and system interface as well as the breadth of functionality required. Some organizations outsource implementation and ongoing management efforts, and some manage these steps with in-house resources, creating cost variability. The in-house resource time spent managing Pega in IT and in business units can vary from organization to organization based on the velocity of change required by the business and the ability for IT and the business to work collaboratively to implement changes.

- Training costs are dependent on the time required to train different users and the number of users trained, and costs can vary based on whether trainings are done in-house or provided by a vendor or partner.

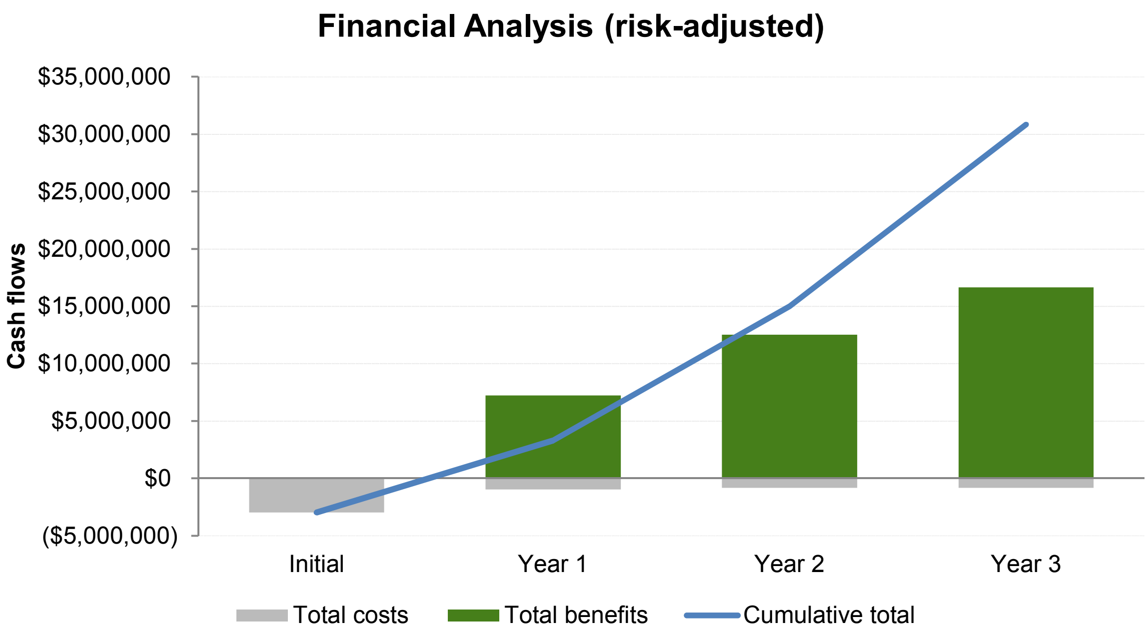
Table 10 shows the values used to adjust for risk and uncertainty in the cost and benefit estimates for the composite organization. Readers are urged to apply their own risk ranges based on their own degree of confidence in the cost and benefit estimates.

Financial Summary

The financial results calculated in the Benefits and Costs sections can be used to determine the ROI, NPV, and payback period for the composite organization's investment in Pega Customer Service.

Table 11 below shows the risk-adjusted ROI, NPV, and payback period values. These values are determined by applying the risk-adjustment values from Table 10 in the Risks section to the unadjusted results in each relevant cost and benefit section.

FIGURE 3
Cash Flow Chart (Risk-Adjusted)



Source: Forrester Research, Inc.

TABLE 11
Cash Flow (Risk-Adjusted)

	Initial	Year 1	Year 2	Year 3	Total	Present Value
Costs	($2,962,932)	($952,961)	($824,858)	($830,394)	($5,571,145)	($5,134,848)
Benefits	$0	$7,214,659	$12,533,110	$16,657,646	$36,405,415	$29,431,859
Net benefits	**($2,962,932)**	**$6,261,699**	**$11,708,252**	**$15,827,252**	**$30,834,270**	**$24,297,011**
ROI						**473%**
Payback period						**5.7 months**

Source: Forrester Research, Inc.

Pega Customer Service: Overview

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

Pega Customer Service is an enterprise customer service application that is part of Pega's CRM suite. It consists of a contact center desktop and case management for customer service and can also include chat and social engagement capabilities, knowledge management, mobile field service, self-service through web and mobile mashups, industry-specific processes and data models, and the ability to co-browse between customers and customer service representatives.

Pega's application provides a single, unified, familiar interface for customer service employees. It anticipates customer needs and automates or intelligently guides each step of customer interactions across any channel, to rapidly and continuously evolve your customer service experience. Use Pega Customer Service to:

- **Increase customer satisfaction.** Reduce customer effort by meeting the expectations of customers in a single, consistent conversation across the entire customer journey.
- **Make employees more productive.** Bring information from all interaction channels into a unified desktop application so employees can work faster. Automate service tasks or assign them to employees while providing step-by-step guidance.
- **Rapidly deploy and continuously adapt.** Make it easier and faster to translate changing business requirements, such as new products, channels, devices, policies, and procedures, into an always up-to-date customer service application.

Pega offers industry-specific versions of Pega Customer Service for financial services, insurance, healthcare, communications and media, life sciences, and manufacturing and high technology.

Source: Pegasystems

Appendix A: Total Economic Impact™ Overview

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

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

BENEFITS

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

COSTS

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

FLEXIBILITY

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

RISKS

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

FRAMEWORK ASSUMPTIONS

Table 12 provides the model assumptions that Forrester used in this analysis.

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

TABLE 12
Model Assumptions

Ref.	Metric	Calculation	Value
X1	Hours per week		40
X2	Weeks per year		52
X3	Hours per year (M-F, 9-5)		2,080
X4	Days per year (5*52)		260
X5	IT/business architect fully loaded compensation		$100,000
X6	IT/business architect fully loaded hourly compensation	(X5/X3)	$48
X7	CSR fully loaded compensation		$40,000
X8	CSR fully loaded hourly compensation	(X7/X3)	$19

Source: Forrester Research, Inc.

Appendix B: Glossary

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

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

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

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

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

A NOTE ON CASH FLOW TABLES

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

Sums and present value calculations of the Total Benefits, Total Costs, and Cash Flow tables may not exactly add up, as some rounding may occur.

TABLE [EXAMPLE]
Example Table

Ref.	Metric	Calculation	Year 1	Year 2	Year 3

Source: Forrester Research, Inc.

Appendix C: Supplemental Material

Related Forrester Research

“The Forrester Wave™: Customer Service Solutions For Enterprise Organizations, Q4 2015,” Forrester Research, Inc., December 16, 2016

“Implement Effective Customer Service Metrics,” Forrester Research, Inc., April 11, 2016

“Choose The Right Customer Service Solution For Your Business,” Forrester Research, Inc., August 4, 2016