A Forrester Total Economic Impact™
Study Commissioned By Pegasystems
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The Total Economic Impact™ Of Pegasystems' Hybrid RPA Approach

Cost Savings And Business Benefits Enabled By Pega Attended RPA And Unattended RPA

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ABOUT FORRESTER CONSULTING

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

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Key Benefits

Front- and middle-office worker productivity savings
$12.9 million

Avoided cost of rework due to errors
$10.9 million

Back-office personnel capacity savings
$11.1 million

Executive Summary

Robotic process automation (RPA) delivers efficiencies to organizations through automation, historically with the usage of unattended RPA robots, defined by Forrester as "automation that replaces a complete human function in a lights-out, batch-oriented manner." However, "attended RPA" (also known as robotic desktop automation or RDA) is back in the spotlight. Attended RPA differs from the more traditional unattended approach by interacting in unison with workers on the desktop to automate and optimize time-laden tasks and processes across myriad applications.[1]

Forrester's research notes that RPA bots working in attended mode primarily impact the front and middle office. These bots interact with larger groups of users across the enterprise and noninvasively automate many time-consuming, tedious, and costly processes and tasks. Along with eliminating most errors, this results in a highly efficient and more engaged workforce. Unattended RPA bots, by contrast, automate processes across smaller groups, with simpler rules and without any human interaction.[2]

By enabling a hybrid approach using both attended and unattended RPA, Pega provides an agile approach that helps its customers automate a much broader array of tasks within workflows across the entire organization.

Pega commissioned Forrester Consulting to conduct a Total Economic Impact™ (TEI) study to examine the potential return on investment (ROI) enterprises may realize by deploying Pega RPA. The purpose of this study is to provide readers with a framework to evaluate the potential financial impact of Pega's hybrid RPA approach on their organizations. To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed several customers with several years of experience using Pega's hybrid RPA approach.

Prior to working with Pega RPA, some of these customers automated key business processes with strictly unattended RPA approaches. This yielded limited success and low ROI due to the significant upfront work required to train the bots. Once deployed, automations often lacked resilience and shelf life, as they changed or were deprioritized before organizations could realize a significant return on the investment.

By working with Pega, customers are able to automate the most repeated and resilient tasks within key business processes. This allows them to focus on automating the highest-value tasks using attended RPA while tackling those processes ripe for unattended RPA. Ultimately, this increases the shelf life and ROI of each automation and recoups personnel capacity to the business to enable growth.

Key Findings

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

- **Increase in user productivity resulting in $12.9 million in benefits.** Users with Pega's attended RPA solution are more productive in their day-to-day responsibilities as repetitive tasks within processes are automated, reducing the length of the processes as a whole. On aggregate, users can do more with the time they have in each day.

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ROI
186%

Benefits PV
$34.9 million

NPV
$22.7 million

Payback
<12 months

- **Fewer instances of rework due to errors, saving $10.9 million.** Automation has a significant impact on user productivity, as it results in fewer instances of error and rework within these automated tasks and processes.
- **Avoided hires from automation of back-office processes, saving $11.1 million.** Certain tasks and processes, especially those in the back office, can be completely automated as they are often mature and static. By leveraging unattended RPA for these tasks and processes, organizations can suspend hiring for the back office and reallocate personnel to other value-adding tasks within the organization.

Unquantified benefits. The interviewed organizations experienced the following benefits, which are not quantified for this study:

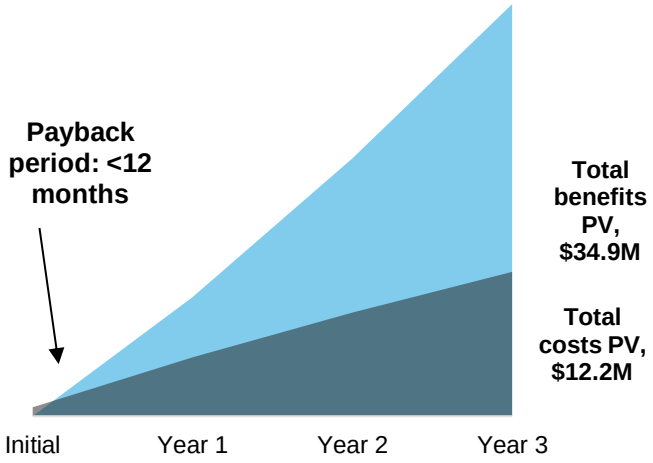
- **Improved employee experience.** By automating mundane tasks, interviewees collectively described an employee experience where users spend more time on true knowledge work and learning new skills. On aggregate, interviewees are optimistic this may drive increased employee retention rates and reduce attrition.
- **Improved customer experience.** In certain customer-facing, error-prone processes, a reduction of errors from automation leads to an inherent reduction of customer frustration.
- **Reduced training costs**. By guiding users through automated processes with attended RPA, Pega makes tasks more intuitive, and inherently improves error rates. This reduces the burden on the organization to train users.
- **Automation of revenue-affecting processes.** Multiple interviewees discussed the impact of automation on revenue-impacting workstreams.

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

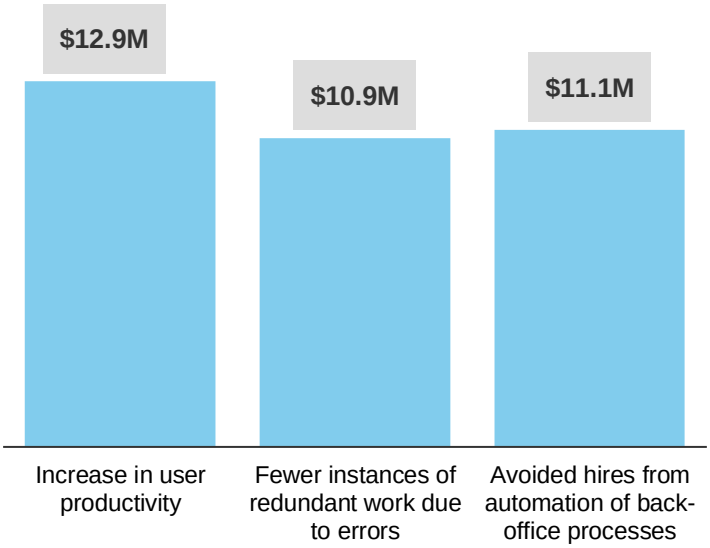
- **License fees paid to Pega of $3.6 million over three years.** The interviewed organizations paid license fees to Pega based on the total quantity of attended and unattended RPA bots deployed. The scope of an organization's total Pega deployment is also a factor in the license fee total.
- **Internal implementation and ongoing management of $5.7 million over three years.** Interviewees detailed involved implementation processes for initial automations for both attended and unattended RPA. They described involvement from both the IT and business sides of the organization.
- **Ongoing user training, learning, and development of $199,364 over three years.** To effectively onboard users to the attended RPA tool, organizations detailed a training process for each user.
- **Third-party implementation and ongoing support of $2.7 million over three years.** Each of the interviewed organizations discussed collaboration with a third-party vendor for initial and ongoing assistance with their Pega attended and unattended RPA automations.

Forrester's interviews with five existing customers and subsequent financial analysis found that an organization based on these interviewed organizations experiences benefits of $34.9 million over three years versus costs of $12.2 million, adding up to a net present value (NPV) of $22.7 million and an ROI of 186%.

Financial Summary



Benefits (Three-Year)



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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, Forrester has constructed a Total Economic Impact™ (TEI) framework for those organizations considering implementing Pegasystems' hybrid RPA approach.

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

DUE DILIGENCE
Interviewed Pega stakeholders and Forrester analysts to gather data relative to RPA.

CUSTOMER INTERVIEWS
Interviewed five organizations using a hybrid unattended and attended RPA approach 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 Pega RPA's impact: benefits, costs, flexibility, and risks. Given the increasing sophistication that enterprises have regarding ROI analyses related to IT investments, Forrester's TEI methodology serves to provide a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

DISCLOSURES

Readers should be aware of the following:

This study is commissioned by 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 hybrid RPA.

Pega 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.

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

The Pega RPA Customer Journey

BEFORE AND AFTER THE PEGA RPA INVESTMENT

Interviewed Organizations

For this study, Forrester conducted five interviews with Pega RPA customers. Interviewed customers include the following:

INDUSTRY	REGION	INTERVIEWEE
Banking	Australia	Head of delivery
Banking	Australia	Head of robotics and automation
Financial services	Europe	Digital process automation CoE leader
Financial services	North America	AVP, intelligent business automation technologies
Financial services	North America	Sr. director, automation and technology

Key Challenges

Interviewees shared several challenges before implementing Pega hybrid RPA:

- **Personnel capacity was limited.** Time-intensive processes across multiple roles reduced productivity. Each of the interviewed organizations discussed capacity as a drain on user productivity and a limit on future growth.
- **Previous attempts at automation produced a low ROI.** Before investing in Pega RPA, interviewees were dissatisfied with previous attempts at robotic process automation given the lack of resilience and longevity for each automation.
- **Rework within certain error-prone workflows was common.** Frequent, repetitive processes such as data entry or processing in the middle office were prone to user error and rework. This represented a significant impediment to overall productivity.

"Our records are much cleaner due to our automation efforts. Our compliance team is very happy."

AVP, intelligent business automation technologies

Key Results

The interviews revealed that key results from the investment include:

- **Additional capacity through improved user productivity.** Organizations reported time savings and improvements as a result of their Pega RPA investments. The platform eliminated capacity constraints with one interviewee citing an average 15% end-to-end time savings in the front office and a nearly 40% time savings on processes within the middle office.

"When it comes to our middle-office transactional-type processes, which are especially prone to error, we are seeing a reduction in error as well as an increase in quality."

Digital process automation CoE leader

- **Less frequent rework.** Putting guardrails on certain tasks and processes with Pega attended RPA and fully automating some processes via Pega unattended RPA reduced error rates and rework rates among users by up to 15%.
- **Improved performance.** By improving the ability to execute on certain tasks and processes via automation at the user level, personnel can deliver a more consistent experience to their internal and external customers. One interviewee noted that while improving the error rate directly affects employee rework rates, it also enhances the company's customer experience.
- **More resilient automations.** By investing in Pega's hybrid RPA, interviewees describe a higher ROI per automation since less-costly-to-deploy attended RPA automations stay in production for longer periods of time compared to fully unattended efforts. Unattended RPA efforts can be applied to static back-office tasks and processes.

> "We've essentially created 10 FTEs' worth of capacity [on just one task alone]. Yet at the same time, the total volume of work our users are doing has increased between 4% and 10% each year. We've been able to manage this increase without hiring extra people to do the work."
>
> *Digital process automation CoE leader*

Composite Organization

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

Description of composite. The composite organization is a global, $15-billion financial services organization that provides support to customers across all functions through a centralized contact center of front-office workers. These workers also manage certain processes within the middle office while a separate team addresses back-office tasks.

Deployment characteristics. The composite organization leverages Pega's hybrid RPA approach, using both attended RPA bots and unattended RPA bots. The organization uses 2,000 attended bots across 2,000 users in the front and middle offices. One hundred unattended RPA bots from Pega are trained starting in Year 1 of the analysis to completely automate back-office tasks and workflows. The organization estimates its yearly volume of contact center (front office) at 2 hours per user per day (3 million distinct front-office processes) and its yearly volume of middle-office work at 1 hour per user per day (1 million distinct middle-office processes).

Key assumptions

-2,000 attended RPA-enabled users managing front- and middle-office processes

-100 unattended RPA bots for back-office processes

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	Increase in user productivity	$3,942,400	$5,253,600	$6,564,800	$15,760,800	$12,858,050
Btr	Fewer instances of redundant work due to errors	$4,365,900	$4,365,900	$4,365,900	$13,097,700	$10,857,347
Ctr	Avoided hires from automation of back-office processes	$2,760,000	$4,600,000	$6,440,000	$13,800,000	$11,149,211
	Total benefits (risk-adjusted)	$11,068,300	$14,219,500	$17,370,700	$42,658,500	$34,864,608

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 nearly $34.9 million.

Increase In User Productivity

Every interviewed organization that spoke with Forrester described a variety of processes and subtasks that its front- or middle-office information workers frequently carried out as a significant portion of their day-to-day responsibilities.

Some of the front-office tasks described by interviewees include:

- Daily desktop and application startup.
- Customer support tasks in the contact center, such as user verification.
- Data aggregation.

Some of the middle-office tasks described by interviewees include:

- Data entry tasks.
- Data aggregation and interpretation tasks.

By investing in Pega's hybrid RPA approach, notably attended RPA for these front- and middle-office users, every interviewee described a decrease in the amount of time the automated processes take end to end after automating the suitable subtasks within these processes. The magnitude of impact on each process varied across the interviewed organizations. In general, productivity savings increased in magnitude moving from the front office to the back office. The number of processes improved by task automation by Pega also varied among interviewees, with a range of 20 affected tasks to over 50 affected tasks among the more mature deployments.

- One of the financial services organization interviewees described to Forrester a savings of around 30% of the automation of affected users' total working time: "We track ROI in terms of liberated user capacity, which is usually about 30% of a user's total hours from that perspective."
- Another interviewee estimated a decrease in the average call-handling time in the contact center by 40 seconds. The interviewee added: "That is effectively over nearly a million calls we get per week. Once you quantify that, the benefit on our organization is quite evident."

Pega's attended RPA yields productivity increases for users of nearly **40%** in the front and middle offices.

- Yet another interviewee noted: “Our average call-handling time has decreased between 80 to 100 seconds as a result of our attended Pega RPA bots. For us, this means we’ve essentially created 10 FTEs’ worth of capacity [on just one task alone]. Yet at the same time, the total volume of work our users are doing has increased between 4% and 10% each year. We’ve been able to manage this increase without hiring extra people to do the work.”

For the financial model, Forrester assumes:

- Pega attended RPA-enabled users manage a volume of 3 million front-office processes across 2,000 users per year. This equates to 495 hours per user per year, or about 2 hours per day, spent on front-office activities.
- A front-office process takes an average of 20 minutes per user.
- Users manage a volume of 1 million distinct middle-office processes across the team per year. This equates to 250 hours per user per year, or 1 hour per day, spent on middle-office activities.
- A middle-office process takes an average of 30 minutes per user.
- While the magnitude of impact on each process varied across each of the interviewed organizations, front-office processes at the composite experience a 10% process efficiency increase in Year 1, 15% in Year 2, and 20% by Year 3. These assumptions are based on average interviewee depictions of their efficiency increases.
- There is a 25% process efficiency increase for the middle office in Year 1, a 35% increase in Year 2, and a 40% increase by Year 3. These assumptions are based on average interviewee depictions of their efficiency increases.
- The rounded average hourly rate for a user is $22.

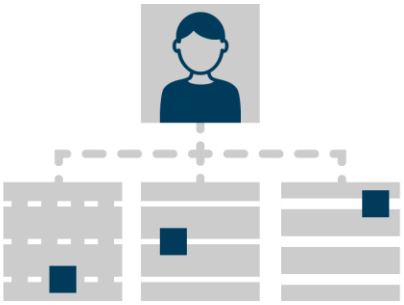
This benefit will vary based on:

- The capacity and skill of the enabled users.
- The total number of attended RPA-enabled users.
- The total volume of work for each user, as it relates to the total time spent on each process per year.

To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year risk-adjusted total PV of $12,858,050.

“Pega attended RPA has turned our users into super-users. It’s automated tasks within end-to-end processes. It’s been highly successful. Having a consistent team of developers churning out new automations every few months has a profound impact. It has allowed us to create a material amount of capacity.”

Head of robotics and automation



Efficiencies in the front and middle offices deliver nearly **280 FTEs’ worth of capacity** to the organization per year.

Increase In User Productivity: Calculation Table					
REF.	METRIC	CALCULATION	YEAR 1	YEAR 2	YEAR 3
A1	Total attended RPA-enabled users		2,000	2,000	2,000
A2	User average hourly rate (rounded)	$46,000/2,080 hours	$22	$22	$22
A3	Yearly volume of contact center processes (front office)		3,000,000	3,000,000	3,000,000
A4	Average front-office process length	20 minutes	0.33	0.33	0.33
A5	Hours spent per user per year on front-office tasks	(A3/A1)*A4	495	495	495
A6	Front-office process efficiency increase due to automation		10%	15%	20%
A7	**Total user productivity savings for front-office processes**	A1*A2*A5*A6	$2,178,000	$3,267,000	$4,356,000
A8	Yearly volume of mid-office processes		1,000,000	1,000,000	1,000,000
A9	Average mid-office process length	30 minutes	0.50	0.50	0.50
A10	Hours spent per user per year on mid-office tasks	(A8/A1)*A9	250	250	250
A11	Mid-office process efficiency increase due to automation		25%	30%	35%
A12	**Total user productivity savings for mid-office processes**	A1*A2*A10*A11	$2,750,000	$3,300,000	$3,850,000
At	Increase in user productivity	A7+A12	$4,928,000	$6,567,000	$8,206,000
	Risk adjustment	↓20%			
Atr	Increase in user productivity (risk-adjusted)		$3,942,400	$5,253,600	$6,564,800

Fewer Instances Of Redundant Work Due To Errors

Before implementing automation into the workflows of front- and middle-office users, certain tasks involving manual data entry or processing were prone to error and subsequent rework, which represented another productivity impediment to users. Interviewees also noted additional downstream effects of errors, such as negative customer experience.

- One of the financial services interviewees described to Forrester: "Our bereavement service, prone to error while processing, is already quite time-intensive. In the case of an error, a complaint, and the eventual rework, it was costing our staff even more time on top of that. Not to mention the negative member experience it was causing."

After deploying Pega bots, interviewees described decreased rates of error and the associated rework through automation of these error-prone rules-based tasks. This liberates additional personnel capacity, which may have been needed in the form of additional hires to enable growth.

- One of the bank interviewees noted an increase in the accuracy rates for a process that involves both data entry and data interpretation on the part of the users: "Our accuracy rates improved from around 75% to upwards of 98% for our third-party chip verification process using our Pega bots."
- Another financial services interviewee told Forrester, "When it comes to our middle-office transactional-type processes, which are especially

Average error rate reduction of **15%** with Pega attended RPA-enabled users

prone to error, we are seeing a reduction in errors as well as an increase in quality." The same interviewee also discussed the qualitative impact of fewer errors on the experience of their customers, noted under the Unquantified Benefits section.

- Yet another interviewee echoed the same sentiment as others: "We've used our Pega bots to add consistency to our rules-based processing tasks while nearly eliminating user error altogether."

> "We've used our Pega bots to add consistency to our rules-based processing tasks while nearly eliminating user error altogether."
>
> *Digital process automation CoE leader*

For the financial model, Forrester assumes:

- All 2,000 users spend 3 hours per day on processes containing error-prone tasks.
- The error rate and rework rate on these processes before automation with Pega Robotics was 20%.
- After implementing Pega automations, this error rate drops to 5% per process.
- The average hourly rate for each user is $22.

This benefit will vary based on:

- The complexity and error rate of each automated process and related subtasks.
- The capacity and skill of the enabled users.
- The total volume of required work on error-prone processes per user.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year risk-adjusted total PV of $10,857,347.

> 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.

Fewer Instances Of Redundant Work Due To Errors: Calculation Table

REF.	METRIC	CALCULATION	YEAR 1	YEAR 2	YEAR 3
B1	Total attended RPA-enabled users	A1	2,000	2,000	2,000
B2	Working hours spent on error-prone processes per user per year	3 hours per day	735	735	735
B3	Error rate before Pega RPA		20%	20%	20%
B4	Error rate after Pega RPA		5%	5%	5%
B5	Error reduction from Pega RPA	B3-B4	15%	15%	15%
B6	User average hourly rate (rounded)	A2	$22	$22	$22
Bt	Fewer instances of redundant work due to errors	B1*B2*B5*B6	$4,851,000	$4,851,000	$4,851,000
	Risk adjustment	↓10%			
Btr	Fewer instances of redundant work due to errors (risk-adjusted)		$4,365,900	$4,365,900	$4,365,900

Avoided Hires From Automation Of Back-Office Processes

Interviewees cited back-office processes as the most suitable for complete automation with Pega's unattended RPA due to the highly decision-based subtasks within these processes. By fully automating processes in the back office, organizations noted an increase in personnel capacity without the need to hire additional headcount.

- The EMEA-based financial services interviewee detailed the experience using Pega's unattended RPA bots to automate a rules-based decision to switching customers from paper statements to electronic statements. With Pega bots, the processes took three months with an estimated 97% accuracy rate. The interviewee estimated that a manual effort would have consumed multiple FTEs for over a full year.
- One interviewee estimated a savings of nearly $400,000 for every unattended Pega RPA bot in production

For the financial model, Forrester assumes:

- The composite organization can avoid hiring 0.75 FTEs, 1.25 FTEs, and 1.75 FTEs in Years 1, 2 and 3, respectively. This escalation is due to the required bot training and refinement as part of the learning curve.
- The average annual salary for an FTE avoided in the back office is $46,000.

This benefit will vary based on:

- The scope and quantity of the back-office tasks designated for automation.
- The skill and capacity of the personnel "training" the bots or setting up the automations.

To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year risk-adjusted total PV of $11,149,211.

175 avoided back office hires across the organization by Year 3 from unattended automation

Avoided Hires From Automation Of Back-Office Processes: Calculation Table

REF.	METRIC	CALCULATION	YEAR 1	YEAR 2	YEAR 3
C1	Number of unattended bots in production		100	100	100
C2	Avoided hires per bot		0.75	1.25	1.75
C3	Avoided FTE hires	C1*C2	75	125	175
C4	Average annual FTE salary		$46,000	$46,000	$46,000
Ct	Avoided hires from automation of back-office processes	C3*C4	$3,450,000	$5,750,000	$8,050,000
	Risk adjustment	↓20%			
Ctr	Avoided hires from automation of back-office processes (risk-adjusted)		$2,760,000	$4,600,000	$6,440,000

Unquantified Benefits

Improved employee experience. By automating some of the more mundane tasks within processes with Pega attended RPA, interviewees collectively described an employee experience where users are spending more time on true knowledge work and learning skills for future responsibilities. On aggregate, interviewees are optimistic this may drive increased employee retention rates and reduced attrition in the future.

Interviewees noted an increase in their employee experience due to RPA technology enablement.

- One of the interviewed organizations, which tracks employee experience via a yearly survey, described an uplift in employee responses regarding technology enablement: “We have absolutely no doubt that we deliver a better employee experience now as a result of our Pega RPA technology. Our employee satisfaction scores improved by over 30% when it comes to their satisfaction with job-enabling technology.”
- Another interviewee noted: “Our Pega desktop automation tool has unlocked other benefits beyond efficiency and cost reduction after deployment. Our focus was also on improving our employee experience and reducing the amount of manual, repetitive, nonvalue-add tasks our staff would need to manage. We have been successful with this. It has also demonstrated to our bankers that they can embrace this technology, rather [than] see it as purely a cost reduction opportunity.”

Improved customer experience. In certain customer-facing, error-prone processes, a reduction of errors from automation leads to an inherent reduction of customer frustration from errors.

- One interviewee added: “If we make a mistake and a customer is impacted, often they will then relate to a complaint and then we have the complaint to deal with, as probably then some confrontation as well. So, for us, it goes beyond just reworking the error.”

Reduced training costs. By guiding users through automated processes with attended RPA, Pega RPA makes tasks more intuitive, inherently improves error rates while reducing the burden on the organization to train users.

Automation of revenue-affecting processes. Multiple interviewees discussed the impact of automation on revenue-impacting workstreams.

- One organization described its Pega automation capabilities to rapidly follow up on leads, driving a potential increase in revenue: “We have automated the process where we assign leads coming into a centralized lead mailbox. We now automatically take that information and extract it into our CRM preassigned to our advisers. We have found that the sooner you reach a client after they have requested for a particular product for which you have the lead, the chances are better that you are going to convert it. Faster action as a result of automation gets more revenue to the door.”
- Another interviewee noted: “We can actually use our Pega automation capabilities to preapprove a client for credit, I’ll say a credit card as an example. Historically to actually give that credit, you actually have to go and update the back-end systems, and we don’t necessarily have enough human capacity to do that. We deploy our Pega bots to do that work. That ties directly to a revenue increase because we are then making more money from more customers.”
- One of the other banking interviewees described another use case for its collections staff: “Our collections department users Pega RPA to better determine which accounts are heading into delinquency so we can call these accounts and try to get the money back. In the first year after putting a bot on it, we were able to recoup four times the money than we did in the previous year.”

“We can actually use our Pega automation capabilities to preapprove a client for credit. . . . Historically to actually give that credit, you actually have to go and update the back-end systems, and we don’t necessarily have enough human capacity to do that. We deploy our Pega bots to do that work. That ties directly to a revenue increase because we are then making more money from more customers.”

Sr. director, automation and technology

Flexibility

The value of flexibility is clearly unique to each customer, and the measure of its value varies from organization to organization. There are multiple scenarios in which a customer might choose to implement Pega RPA and later realize additional uses and business opportunities, including:

- **Future use cases for both attended and unattended RPA.** Interviewees expressed optimism for future automation use cases for both their attended and unattended Pega bots. One interviewee told Forrester: “We as an organization have an ambition to enable more processes to be delivered digitally. Having RPA automation is a key factor in enabling that, because often we can enable AI in combination with robots to deliver the human elements.”
- **An upskilled workforce.** With automation of certain tasks within processes, affected users spend less time on repetitive, mundane work and more time on true knowledge work. Interviewees noted that their employees spend reclaimed time learning additional skills for current and future roles within their organizations. In the long run, this may deliver additional skills and personnel to the organization for future roles that would otherwise needed to have been outside hires.

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

Flexibility, as defined by TEI, represents an investment in additional capacity or capability that could be turned into business benefit for a future additional investment. This provides an organization with the "right" or the ability to engage in future initiatives but not the obligation to do so.

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
Dtr	License fees paid to Pega	$0	$1,452,000	$1,452,000	$1,452,000	$4,356,000	$3,610,909
Etr	Internal implementation and ongoing management	$632,500	$2,024,000	$2,024,000	$2,024,000	$6,704,500	$5,665,888
Ftr	Ongoing user training, learning, and development	$145,200	$21,780	$21,780	$21,780	$210,540	$199,364
Gtr	Third-party implementation and ongoing support	$0	$1,100,000	$1,100,000	$1,100,000	$3,300,000	$2,735,537
	Total costs (risk-adjusted)	$777,700	$4,597,780	$4,597,780	$4,597,780	$14,571,040	$12,211,698

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 $12.2 million.

License Fees Paid To Pega

Each of the interviewed organizations paid a license fee to Pega for its usage of the attended RPA and unattended RPA robots. The total license fee was dependent on:

- The total number of contracted bots (both attended and unattended).
- The other Pega products that the organization currently has deployed, as bundling is available.

For the financial model, Pega estimated the cost and provided it to Forrester for usage in the TEI report. Please contact Pega for specific questions regarding pricing.

This cost will vary based on:

- The total number of attended and unattended bots.
- Other Pega solutions an organization currently has deployed.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of $3,610,909.

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.

License Fees Paid To Pega: Calculation Table

REF.	METRIC	CALCULATION	INITIAL	YEAR 1	YEAR 2	YEAR 3
D1	Estimate for attended RPA per year			$900,000	$900,000	$900,000
D2	Estimate for unattended RPA per year			$420,000	$420,000	$420,000
Dt	License fees paid to Pega	D1+D2		$1,320,000	$1,320,000	$1,320,000
	Risk adjustment	↑10%				
Dtr	License fees paid to Pega (risk-adjusted)		$0	$1,452,000	$1,452,000	$1,452,000

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Internal Implementation And Ongoing Management

Interviewees described their initial implementation experiences with Pega's hybrid RPA approach. Every interviewed organization required involvement from both the IT and business sides of the company to identify and execute their automations.

- Most interviewees took an average of six months to implement their Pega bots and set up their initial automations.
- Much of the initial work done could be reused for future automations. As interviewees moved up the learning curve with their Pega bots, setting up new automations became faster and cheaper (in personnel requirement).
- More time was required to "train" the unattended RPA bots on their designated tasks and processes than for the attended RPA bots, which are user guided.

After deployment, most interviewees noted that some FTEs were dedicated to working with the business to identify and set up new automations.

- One interviewee told Forrester that the organization identified potential automations by looking for the most repetitive, rules-based work that a significant share of the employee base did on a yearly basis.
- Most of the interviewed companies required some personnel dedicated to maintaining the automations that had already been created.
- As organizations move up the maturity curve and fewer automations are readily available for implementation, Pega notes that organizations may recoup ongoing personnel hours associated with ongoing development, increasing the ROI of their automations. For this model, Forrester conservatively includes these personnel hours as a cost for all years of the analysis.

For the financial model, Forrester assumes:

- The composite organization dedicates 10 FTEs across IT and the business for six months to identify and set up the organization's initial automations.
- After deployment, four FTEs manage the deployed attended RPA automations.
- Twelve FTEs across IT and the business work to train and manage the organization's unattended bots.
- The average annual salary for the IT or business personnel working on automation at the composite organization is $110,000.

This cost will vary based on:

- The capacity and skill of the IT and business personnel working to identify and set up an organization's automations.
- The scope and complexity of the automations that are or have yet to be set up.
- The number of bots and automations under management by an organization.

To account for these risks, Forrester adjusted this cost upward by 15%, yielding a three-year risk-adjusted total PV of $5,665,888.

Six months
Average initial deployment time

Internal Implementation And Ongoing Management: Calculation Table						
REF.	METRIC	CALCULATION	INITIAL	YEAR 1	YEAR 2	YEAR 3
E1	Initial implementation effort	10 FTEs ($110,000 each) for 6 months	$550,000			
E2	Team managing hybrid RPA deployment (attended)	4 FTEs*$110,000		$440,000	$440,000	$440,000
E3	Team managing hybrid RPA deployment (unattended)	12 FTEs*$110,000		$1,320,000	$1,320,000	$1,320,000
Et	Internal implementation and ongoing management	E1+E2+E3	$550,000	$1,760,000	$1,760,000	$1,760,000
	Risk adjustment	↑15%				
Etr	Internal implementation and ongoing management (risk-adjusted)		$632,500	$2,024,000	$2,024,000	$2,024,000

Ongoing User Training, Learning, And Development

The interviewed companies detailed a relatively modest training requirement for their attended RPA-enabled users once deployed because of the intuitive nature of the tool.

For the financial model, Forrester assumes:

- All 2,000 users will undergo 3 hours of training each on the organization's initial attended RPA automations.
- An additional 300 users per year will undergo the same 3 hours of training. This is to account for additional training requirements, as well as natural attrition.
- The average hourly rate for an automation-enabled user is $22.

This cost will vary based on:

- The capacity, skill, and prior experience of an organization's automation-enabled workforce.
- The capacity and skill of an organization's learning and development staff tasked with orchestrating training for the organization's users.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of $199,364.

Ongoing User Training, Learning, And Development: Calculation Table						
REF.	METRIC	CALCULATION	INITIAL	YEAR 1	YEAR 2	YEAR 3
F1	Total attended RPA-enabled users trained		2,000	300	300	300
F2	Hours of training per user		3	3	3	3
F3	User average hourly rate		$22	$22	$22	$22
Ft	Ongoing user training, learning, and development	F1*F2*F3	$132,000	$19,800	$19,800	$19,800
	Risk adjustment	↑10%				
Ftr	Ongoing user training, learning, and development (risk-adjusted)		$145,200	$21,780	$21,780	$21,780

Third-Party Implementation And Ongoing Support

Every interviewee who spoke with Forrester said their organization has paid or is paying a third-party organization for support with their automation efforts. Interviewees cited initial implementation, initial automation identification and setup, and/or ongoing automation setup and management as areas where support from a third-party is or has been required.

For the financial model, Forrester assumes:

- The composite organization pays $1 million per year for the entire three-year analysis for assistance with automation identification, setup, and management.

This cost will vary based on:

- The capacity and skill of the personnel working on automation as it would affect their requirements for support from a third-party.
- The size of an organization as it would influence the required level of support from a third-party partner.

To account for these risks, Forrester adjusted this cost upward by 10%, yielding a three-year risk-adjusted total PV of $2,735,537.

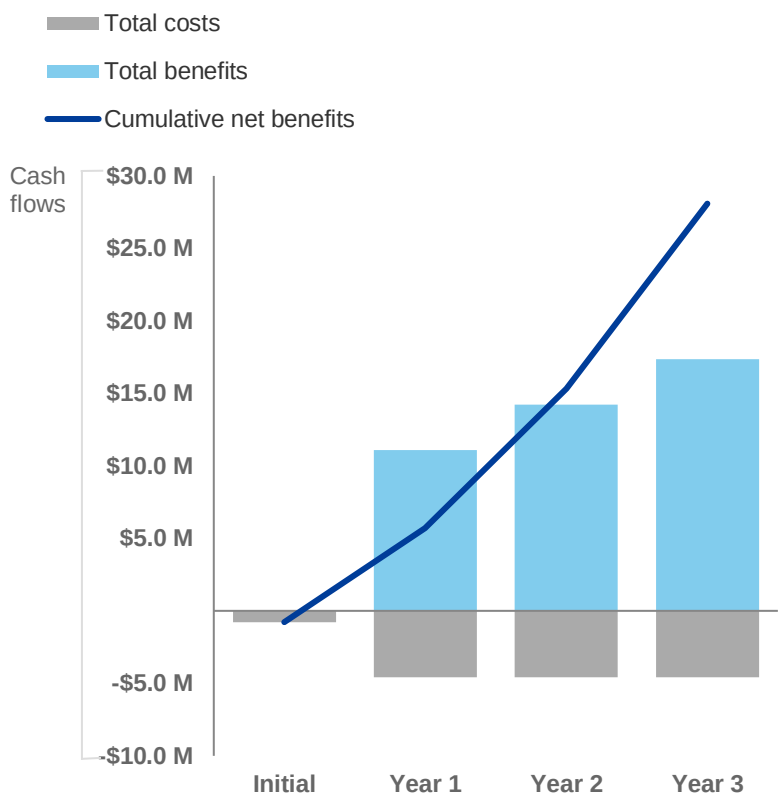
Third-Party Implementation And Ongoing Support: Calculation Table

REF.	METRIC	CALCULATION	INITIAL	YEAR 1	YEAR 2	YEAR 3
G1	Fees paid to third party			$1,000,000	$1,000,000	$1,000,000
Gt	Third-party implementation and ongoing support	G1		$1,000,000	$1,000,000	$1,000,000
	Risk adjustment	↑10%				
Gtr	Third-party implementation and ongoing support (risk-adjusted)		$0	$1,100,000	$1,100,000	$1,100,000

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	($777,700)	($4,597,780)	($4,597,780)	($4,597,780)	($14,571,040)	($12,211,698)
Total benefits	$0	$11,068,300	$14,219,500	$17,370,700	$42,658,500	$34,864,608
Net benefits	($777,700)	$6,470,520	$9,621,720	$12,772,920	$28,087,460	$22,652,910
ROI						186%
Payback period (months)						<12 months

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Pega RPA: Overview

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

Pega's RPA solution, part of Pega Infinity™, is a hybrid solution comprised of attended and unattended RPA, supported by the capabilities of Pega's low-code Intelligent Automation platform.

- **Attended RPA.** Also known as robotic desktop automation (RDA), attended RPA is installed directly on the user's desktop and helps people work more efficiently by simplifying and automating business processes and transactions. Functioning in tandem with desktop users, these "robot-in-the-loop" bots run on workstations in production environments such as contact centers and the middle and back office to automate key tasks and workflows. By automating these manual work processes, companies can reallocate employees to perform higher-value work. Doing so drives down the cost to serve, increases work throughput, creates greater operational efficiency, and ultimately enhances customer and employee experience. Pega Attended RPA includes these easily configured automation accelerators:
    - **Assisted Sign-On:** Enables desktop workers to automatically log in to core applications with a single click.
    - **Start My Day:** Allows workers to specify the order in which they want applications to launch after login, placing applications in the optimal position on the screen to keep them organized and optimized for readiness at all times.
    - **Customer 360 View:** Retrieves contextually relevant customer data from disparate applications in a centralized, easy-to-consume format so desktop agents have the data they need to service a transaction at a glance.
    - **Auto-Notes:** Tracks work activities and generates notes automatically to accelerate post-call wrap-up.
    - **Shortcuts:** Prebuilt task shortcuts can launch mission-critical processes and business activities.
- **Unattended RPA.** Pega's unattended RPA automates rules-based, repetitive work that can be performed without human intervention, such as adjudicating claims, onboarding customers or employees, reconciling financials, or updating customer information in systems of record. Integrated unattended RPA with Pega's Case Management and attended RPA can create the ideal human-in-the loop digital and human collaborative workforce.
- **Pega Robot Studio.** Pega's visual drag-and-drop RPA development environment for building robust automations.
- **Pega Robot Manager.** Built with the ability to be fully integrated with Pega Infinity, Pega Robot Manager is a centralized control and orchestration engine for visualizing and managing RPA workflows. Robot Manager includes detailed automation health and performance reporting, as well as the ability to stop, start, and schedule robotic automations.

Pega's attended and unattended RPA offerings are both based on a patented object-level UI integration technique that increases the speed and accuracy of robotic automations compared to alternative approaches. Pega RPA is fully baked into the Pega low-code platform for Intelligent Automation, a single unified toolkit for digital transformation that includes application development, multichannel experience capabilities, BPM and dynamic case management, seamless third-party integrations, and Workforce Intelligence, a robotic desktop analytics solution that uses AI to analyze processes on the desktop and then provide insights on where to optimize people, process, and technology.

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 B: Endnotes

[1] "Attended-Mode RPA: The Differences You Need To Know," Forrester Research, Inc., July 29, 2019.

[2] "Attended-Mode RPA: The Differences You Need To Know," Forrester Research, Inc., July 29, 2019.