

FORRESTER®

The Total Economic Impact™ Of Pega Cloud

Cost Savings And Business Benefits
Enabled By Pega Cloud

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Executive Summary

According to Forrester research, digital mavericks are turning to cloud solutions to achieve revenue growth and business model innovation. Increasingly, cloud is the means with which they pursue digital transformation both quickly and while maintaining their customer-obsessed strategies.¹ The same rule applies to business processes powered by Pega applications. To empower employees and to enable business transformation, organizations are operating in Pega Cloud.

[Pega Cloud](#) offers a way to operate business-critical applications in the cloud and accelerate business transformation while mitigating the resource burden and the level of risk often associated with the transition to the cloud.

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

The benefits examined in this study are specific to Pega Cloud tools and services that enable a successful cloud transition and operation. Forrester covered the added value of operating Pega applications and/or the Pega Platform in previous TEI studies about Pega Low Code, Pega Robotic Process Automation, Pega Customer Decision Hub, and Pega Customer Service (study references available in [Appendix B](#)).

This study is focused on the collective benefits, costs, and risks associated with migrating to and building natively in Pega Cloud. It does not examine the potential benefits, costs, and risks associated with other deployment strategies (either on-premises or other cloud varieties) in situations where public or private cloud or as-a-service deployments were not viable due to issues with data residency, security, privacy, legality, or latency.

KEY STATISTICS*



Return on investment (ROI)
47%



Net present value (NPV)
\$2.2M

To better understand the benefits, costs, and risks associated with this investment, Forrester interviewed decision-makers from four organizations with experience using Pega Cloud. For the purposes of this study, Forrester aggregated the experiences of the interviewees' organizations and combined the results into a single [composite organization](#).

Prior to using Pega Cloud, the interviewees' organizations operated their Pega applications in on-premises data centers. As is typical with on-premises software deployments, ongoing maintenance required the organizations to dedicate more time and resources to operating, updating, and patching the software. The associated resource and cost limitations ultimately inhibited business acceleration efforts.

Decision-makers chose to deploy Pega Cloud for targeted Pega applications because they saw it as a viable option to follow larger organizational strategies

aimed at taking advantage of the flexible operating model afforded by cloud deployments.

After the investment in Pega Cloud, the organizations benefited from proactive maintenance as well as patches and software releases with zero or near-zero downtime. This greatly reduced disruption to business-critical applications and allowed the organizations to stay on their current software with lower ongoing costs.

Key results from the investment include cost savings associated with migrating to the cloud, such as from decommissioning aspects of and reducing reliance on legacy architecture. Additionally, Pega Cloud resources supplemented internal resources with cloud knowledge and best-practice support during the migration effort and operationally in the cloud. Therefore, the organizations avoided hiring additional cloud resources and decision-makers learned to operate efficiently with smaller, more agile teams.

Pega automated or managed the majority of the administrative tasks in the cloud, thereby freeing up internal resources to focus on Pega development projects that fueled innovation efforts. Between operating in a cloud environment with the latest and greatest tools and freeing up internal resources to focus on these initiatives to implement business changes, the organizations were able to accelerate business transformation.

KEY FINDINGS

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

- **Resource cost avoidance from avoiding hiring or dedicating 4.5 FTE to operating Pega applications and the Pega Platform on Pega Cloud.** Pega lent the organizations skilled expertise, best-practice support, and modern tooling that assisted in the migration, development, and maintenance of applications in Pega Cloud. Therefore, internal resources focused on existing initiatives and responsibilities
- **Expedited incremental Pega development projects in the cloud by one month.** The organizations completed Pega development projects with modern tools and automations that promoted development efficiencies and cultivated a more agile approach to development. Having fewer technical obstacles and less resource dependencies expedited development project timelines by an average of one month. For the composite organization, development cost savings total \$2 million over three years.
- **Improved efficiencies for DevOps resources by an average of 35%.** Pega Cloud environments enabled administrative processes such as seamless upgrades and faster security patching. DevOps teams benefited from less time spent on maintenance activities by focusing efforts on business transformation initiatives. The resulting resource efficiencies saves the

while the organizations avoided additional headcount. For the composite organization, the associated cost savings are worth \$1.7 million over three years.

“Going with Pega Cloud seemed to be the easiest or quickest path to getting our environment set up and running. We were able to ramp up these environments and scale them quickly with the resource knowledge that Pega brought to the table. Additionally, operating our Pega Cloud environment became one less activity that we had to plan for and track because Pega was responsible for scanning and monitoring those environments.”

*IT collaboration and automation head,
automotive*

composite organization \$511,000 over three years.

- **Cost savings from reducing legacy hardware, software, associated maintenance, and data center spend.** The organizations reduced spend on legacy infrastructure as they migrated more Pega applications to Pega Cloud environments. The composite organization reduces 50% of its legacy environment by migrating to Pega Cloud and subsequently decommissioning and consolidating applications, leading to \$2.7 million of savings over three years.

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

- **Business benefits.** The organizations targeted Pega business-critical and customer-facing applications for operation in Pega Cloud. As such, they experienced many business benefits specific to the application use cases. These benefits included: improved fraud protection, increased revenue from better upsell/cross-sell abilities, and enhanced system performance.
- **Security benefits.** The Pega Cloud environment offered security tools, such as alerts and monitoring that improved security efforts and reduced the organizations' overall volume of security incidents. Additionally, Pega Cloud automatically covered many compliance certifications each year. As such, internal teams avoided having to spend time obtaining those certifications themselves. In some cases, compliance certifications required hard costs for audit processes and remediation efforts that the organizations avoided with Pega Cloud.

Costs. Risk-adjusted PV costs include:

- **Annual fees for Pega services and additional cloud environments.** Pega annual licensing fees included the costs of three standard Pega Cloud environments as well as those associated with Pega applications running in the cloud.

Provisioning for extra cloud environments outside of those included in the annual licensing agreement led to additional annual fees. The composite organization pays annual fees to Pega totaling \$977,000 over three years.

- **Costs associated with implementation and ongoing application maintenance.** Pega provided professional services assistance for the organizations' migration efforts associated with the Pega Cloud environment. The associated fees were calculated based on migration project details, and they were paid in Year 1. The organizations also dedicated internal resources to implementation and ongoing maintenance of the Pega applications running in the cloud environment. For the composite organization, costs associated with implementation and ongoing maintenance of the Pega Cloud environment total \$3.7 million over three years.

The interviews and financial analysis found that a composite organization experiences benefits of \$6.9 million over three years versus costs of \$4.7 million, adding up to a net present value (NPV) of \$2.2 million and an ROI of 47%.



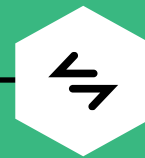
ROI
47%



BENEFITS PV
\$6.9M

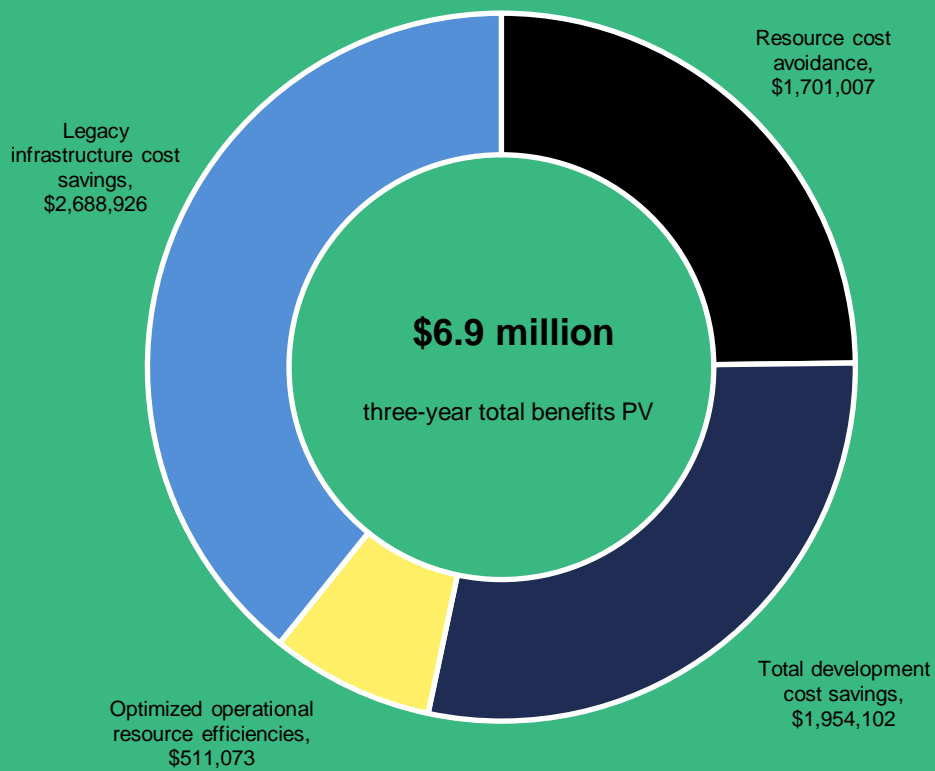


NPV
\$2.2M



PAYBACK
**<24
Months**

Benefits (three-year)



TEI FRAMEWORK AND METHODOLOGY

From the information provided in the interviews, Forrester constructed a Total Economic Impact™ framework for those organizations considering an investment in Pega Cloud.

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 Cloud can have on an organization.

DISCLOSURES

Readers should be aware of the following:

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

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

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.



DUE DILIGENCE

Interviewed Pega stakeholders and Forrester analysts to gather data relative to Pega Cloud.



CUSTOMER INTERVIEWS

Interviewed four decision-makers at organizations using Pega Cloud to obtain data with respect to costs, benefits, and risks.



COMPOSITE ORGANIZATION

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



FINANCIAL MODEL FRAMEWORK

Constructed a financial model representative of the interviews using the TEI methodology and risk-adjusted the financial model based on issues and concerns of the interviewed organizations.



CASE STUDY

Employed four fundamental elements of TEI in modeling the investment impact: benefits, costs, flexibility, and risks. Given the increasing sophistication of ROI analyses related to IT investments, Forrester's TEI methodology provides a complete picture of the total economic impact of purchase decisions. Please see Appendix A for additional information on the TEI methodology.

The Pega Cloud Customer Journey

Drivers leading to the Pega Cloud investment

Interviewed Organizations			
Industry	Region	Interviewee	Project details
Financial services	Headquartered in Europe	Engineering team lead	Migrate 12 business applications to the cloud; Build 3 cloud native applications
Marketing	Headquartered in North America	Executive VP	Migrate 16 critical applications to the cloud; Build 1 cloud native application
Financial services	Headquartered in North America	VP of engineering	Build 1 cloud native application and custom software on Pega Infinity
Automotive	Headquartered in Europe	IT collaboration and automation head	Build multiple cloud native applications on Pega Infinity

KEY CHALLENGES

The interviewees' organizations previously had legacy on-premises environments that required significant client time and resources to operate. Therefore, cost and resource limitations often got in the way of business transformation efforts. As such, the organizations struggled with common challenges, including:

- **Higher costs and vintage technology.** On-premises environments required the organizations to purchase application infrastructures and dedicate resources to maintain and operate them. Resource and cost restrictions led to extended timelines or delayed starts for projects aimed at maintaining application modernity. As such, the organizations' install bases were often on multiple versions of Pega software.
- **Limited resource availability.** Decision-makers wanted to migrate their organizations to the cloud, but resource availability and cloud knowledge were both scarce. They were concerned that the transition to the cloud would derail internal resources from their existing technology projects and responsibilities. An IT

collaboration and automation head at an automotive organization said: "Our biggest challenge was the lack of cloud knowledge. There was already a strategy in place to move to the cloud that was actively being pursued by our organization, and we were in the process of standing up internal cloud environments that are hosted by the big players. But we were already at capacity in terms of the initiatives that were being focused on at the time."

- **Impeded business transformation.** Faced with on-premises infrastructures and limited resources to tackle cloud transformation projects, decision-makers found that progress on their organizations' business goals stalled. They were dedicating money and time to environments that were not delivering the latest capabilities to their development teams and could not support their innovation efforts. A VP of engineering at a financial services organization said, "Instead of investing our money to upgrade to another version of on-premises Pega, why don't we further invest and remain evergreen on Pega Cloud and transform our business with the latest capabilities, such as no code and low code?"

“My primary mission was to modernize a suite of about 152 financial services applications that were considered legacy. Of those, 80 were considered critical systems, such as those required to make a payment. Of those 80, 50 were driven by technology that were very legacy. Of those 50, 16 were considered high complexity and included custom-built solutions that would make it very difficult for me if those people left or if that technology failed. Those 16 applications became the target for our Pega Cloud migration.”

Executive VP, marketing

INVESTMENT OBJECTIVES

The interviewees' organizations searched for a solution that could:

- Facilitate the transition to the cloud and cloud-native development.
- Supplement cloud skills and expertise to ensure project success.
- Enable internal teams to focus on higher-value work.

COMPOSITE ORGANIZATION

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

Description of composite. The global, multibillion-dollar organization is industry agnostic. It has 35,000 employees and a strong customer focus.

Deployment characteristics. Decision-makers aim to migrate 25% of the organization's on-premises Pega applications to the Pega Cloud. As part of this process, they also consolidate and decommission applications in the organization's on-premises environment. In a parallel track, the organization continues to develop migrated applications in the cloud, and it builds new native applications.

Decision-makers target the organization's most sophisticated business applications that require continual business changes for migration. As such, it takes longer to migrate the initial applications. However, the process is easily and quickly replicated in subsequent years until the full 25% is migrated by the end of Year 2. At that point, decision-makers focus their efforts on decommissioning and consolidating the applications left in the legacy environment to multiply the associated cost savings.

Key assumptions

- **\$10B in revenue**
- **35,000 employees**
- **Migrates 25% of legacy environment (14 apps) to Pega Cloud**
- **Builds and develops natively in Pega Cloud**

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	Resource cost avoidance	\$684,000	\$684,000	\$684,000	\$2,052,000	\$1,701,007
Btr	Total development cost savings	\$351,000	\$702,000	\$1,404,000	\$2,457,000	\$1,954,102
Ctr	Optimized operational resource efficiencies	\$91,800	\$183,600	\$367,200	\$642,600	\$511,073
Dtr	Legacy infrastructure cost savings	\$576,000	\$1,020,000	\$1,760,000	\$3,356,000	\$2,688,926
	Total benefits (risk-adjusted)	\$1,702,800	\$2,589,600	\$4,215,200	\$8,507,600	\$6,855,108

RESOURCE COST AVOIDANCE

Evidence and data. When decision-makers from the interviewees' organizations initially scoped their Pega Cloud migration projects and considered the downstream impacts to operational loads in the cloud, they faced a dilemma: Should they embark on this journey with internal teams and take on everything from setting up the cloud architecture to developing and maintaining the cloud environment themselves or should they supplement with Pega resources and expertise?

Decision-makers were hesitant to go it alone given the availability and level of Pega Cloud skills (such as those for observability, engineering, security engineering, and cloud engineering) present among existing resources. Instead of redirecting valuable dedicated resources or hiring resources to existing teams, the interviewees' organizations chose to leverage skilled Pega resources and expertise from Pega Professional Services and/or vendors in the Pega ecosystem to support the migration effort. Additionally, Pega provided tools and support for ongoing operations through Pega Cloud licensing to further mitigate resource requirements.

- The IT collaboration and automation head at the automotive organization described the decision-making process they faced at the beginning of their organization's Pega Cloud journey. They said: "Do we increase our team size to bring this [Pega Cloud] initiative on? Or do we do we look at other options, like utilizing Pega resources and expertise? In this case, we ended up going with the second option, both for costs and in terms of maintaining resource head count. In going this route, we were able to keep the existing cloud team at the same size because we did not go down a path of trying to expand the initiatives that were already going down internally within the organization. For example: At a minimum, just to get our noncorporate cloud going, we needed two to three dedicated resources. I would have easily seen the number of dedicated resources required double or triple if we had tried to [set up our Pega Cloud environment] on our own."
- The Pega applications targeted for migration efforts were often large, sophisticated, and business-critical in nature. As such, they required constant development to keep up with business change requests and to maintain the level of performance that end users expected. An

engineering team lead at a financial services organization explained how DevOps team sizes were mitigated for business-critical applications once migrated to the cloud. They said: “The applications targeted for the Pega Cloud previously required a large volume of change and analysis in our legacy environment. Now, in the Pega Cloud, implementing changes and performing analysis is a lot easier, so you do not need the same number of developers. And, once you shrink the number of developers, you also shrink the number of testers required. Historically, if we would have two or three full-time employees on development of these applications. [By moving to Pega Cloud,] we have reduced that by 1.5 FTE.”

- Pega offered operational coverage for applications in its cloud environment that allowed organizations to avoid providing that coverage with internal resources. A VP of engineering at another financial services organization said: “[My organization] would have had to dedicate three FTE additional to [operational] Pega application coverage in the cloud if it weren’t for Pega. The avoided FTE would have provided 24/7 coverage across our various geographical locations.”

Modeling and assumptions. To calculate resource cost avoidance, Forrester assumes the following:

- The composite organization avoids hiring or dedicating three additional cloud architects to its Pega Cloud initiative that targets the migration of 14 business-critical Pega applications from a legacy on-premises environment.
- The migration to Pega Cloud is a multiyear effort. Therefore, the cost avoidance on cloud architect resources is recognized in each year of the three-year investment period.
- Given the anticipated size and scope of the overall Pega cloud environment (including migrated applications and cloud-native

applications), the organization avoids 1.5 additional and ongoing DevOps resources.

- The average cost of the various cloud resources avoided with the Pega Cloud investment is \$160,000.

Risks. Resource cost avoidance may vary depending on the following:

- The size and scope of the Pega Cloud migration and ongoing operations for the Pega Cloud environment (because the more applications targeted for migration and expected to operate in Pega Cloud, the more resources organizations avoid in the migration process and ongoing development and operations efforts).
- The average resource costs, which will vary depending on type, level, and geographical location.

To account for these risks, Forrester adjusted this benefit downward by 5%, yielding a three-year, risk-adjusted total PV of \$1.7 million.

Resource Cost Avoidance					
Ref.	Metric	Source	Year 1	Year 2	Year 3
A1	Cloud architects avoided during migration/cloud build (FTE)	Interviews	3	3	3
A2	Ongoing DevOps resources avoided (FTE)	Interviews	1.5	1.5	1.5
A3	Average cost per resource (blended rate)	Assumption	\$160,000	\$160,000	\$160,000
At	Resource cost avoidance	(A1+A2)*A3	\$720,000	\$720,000	\$720,000
	Risk adjustment	↓5%			
Atr	Resource cost avoidance (risk-adjusted)		\$684,000	\$684,000	\$684,000
Three-year total: \$2,052,000			Three-year present value: \$1,701,007		

TOTAL DEVELOPMENT COST SAVINGS

Evidence and data. Forrester considers the Pega Cloud solution to be a low-code development platform. These solutions are easily built and modified through declarative interfaces that let business users quickly change them in line with evolving business needs. They also accelerate development cycles for professional developers. Some of this efficiency is due to the fact that these solutions provide an easy-to-customize, “clicks-not-code” approach to development, which democratizes development and innovation.²

The interviewees’ organizations sought to run their Pega applications on Pega Cloud and to take advantage of this modern development environment instead of legacy on-premises environments to better enable development efforts that support the business. For the Pega Cloud migration and operation, they targeted critical applications that also required high volumes of updates and changes to meet evolving business needs. By moving to Pega Cloud and its modern and low-code development tools, the interviewees’ organizations experienced greater development efficiencies because they are now perpetually on the latest version of Pega

applications, and they have access to the most modern development features and functionalities. Eventually, improved development efforts fostered a more agile development culture at the organizations that continues to positively impact development cycle efficiencies and drive business innovations.

- The engineering team lead at a financial services organization explained how moving to the cloud allowed for better and faster implementation of their organization’s business changes. They stated: “Once you have an application on Pega Cloud for a business area, it’s a lot easier to add functionality into those products or applications. With Pega Cloud, you can very quickly add functionality to the existing applications and provision the business for it just as quickly.”
- Many of the interviewees said the latest functionality available to their organizations included low-code development tools. These tools continued to promote a more inclusive development culture and brought together developers and business stakeholders. Development efficiencies improved as resource dependencies waned while features like drag-and-drop technology increased output.

- The engineering team lead at the financial services organization said: “[Since moving to Pega Cloud], we are working with smaller, more agile teams that are making better use of the technology that Pega offers — like the drag-and-drop technology [that is inherent to low-code development tools].”
- Forrester’s “The Total Economic Impact™ Of Pega Platform For Low Code,” published in 2020, found there to be a 598% ROI over three years with a payback period of less than three months for interviewees’ organizations.³
- Interviewees said moving to Pega Cloud promoted agile development cultures. The engineering team lead at a financial services organization described how this impacted relationships between technology and the business. They said: “We’re breaking down barriers. We’re reducing silos. It forces people from technology and from across business areas to talk to each other and to determine where business processes are similar and where they are different with the ultimate goal of creating simpler, more cost-effective solutions.”
- The IT collaboration and automation head at the automotive organization said the new agile culture at their organization created a sense of ownership that helped to drive changes forward without obstacles. Resources had more transferrable skills, and they were more flexible during the development cycles. The executive said: “We get a lot less of employees throwing things over the fence from one team to another. [Pega Cloud] has driven the ownership of end-to-end delivery of solutions by encouraging [subject-matter experts] to stay connected to the conversation the entire way. It doesn’t matter if they coded the application or if they are part of maintaining and managing the infrastructure. If there are complex queries that show up that impact performance, whoever is on hand can assist in the analysis effort.”
- Ultimately, the biggest impact was to the business. With development efficiencies, the organizations met more business requirements. An executive VP at a marketing organization described how Pega Cloud helped deliver on business changes that impacted business outcomes. They said: “We sealed the deal with Pega Cloud in the end of December, and by April 1, we had started delivering our first set of automated campaigns to our clients. Then we set the goal of [having] a new release every six weeks, and we have delivered on that.”
- Forrester covered similar business benefits in “The Total Economic Impact™ Of Pega Customer Decision Hub,” which revealed a 489% ROI over three-years.⁴ This value included \$107 million per year in avoided profit loss from better customer retention and incremental revenue of \$677 million over three years.

Modeling and assumptions. To calculate the total development cost savings, Forrester assumes the following:

- The composite organization completes six development projects in Pega Cloud during Year 1. The volume of completed projects doubles each year as the organization migrates more applications to Pega Cloud and builds natively within it. Additionally, as the organization adopts a more agile methodology and citizen developers use low-code tools to partake in development cycles, the bandwidth for development projects expands.
- The composite organization improves project delivery timelines by an average of one month due to automations available in Pega Cloud, flexible resources with transferrable skills, low-code functionality, and an overall more agile approach to development.

- Small, agile development teams consist of five FTE per project. Development team resources average \$160,000 annually.

Risks. Total development cost savings may vary depending on the following:

- The size and scope of the Pega Cloud environment for both migrated and cloud-native applications (because the more applications in Pega Cloud, the more opportunity for development work).

- The appetite for the new features and functionalities that are available in Pega Cloud and the resource bandwidth for development efforts.
- The average size of development teams and their associated annual average salaries.

To account for these risks, Forrester adjusted this benefit downward by 10%, yielding a three-year, risk-adjusted total PV of \$2 million.

Total Development Cost Savings					
Ref.	Metric	Source	Year 1	Year 2	Year 3
B1	Cloud projects conducted per year	Assumption	6	12	24
B2	Average time saved with Pega Cloud per project (months)	Interviews	1	1	1
B3	Dedicated resources per project (FTE)	Assumption	5	5	5
B4	Monthly development cost per resource	Assumption	\$13,000	\$13,000	\$13,000
B5	Development cost per month	B3*B4	\$65,000	\$65,000	\$65,000
Bt	Total development cost savings	B1*B2*B5	\$390,000	\$780,000	\$1,560,000
	Risk adjustment	↓10%			
Btr	Total development cost savings (risk-adjusted)		\$351,000	\$702,000	\$1,404,000
Three-year total: \$2,457,000			Three-year present value: \$1,954,102		

OPTIMIZED OPERATIONAL RESOURCE EFFICIENCIES

Evidence and data. Interviewees said their organizations experienced high levels of operational maintenance in their legacy on-premises environments. They lacked the modern automation and monitoring tools present in today’s cloud environments. Additionally, maintenance processes (such as those around upgrade cycles and security patches) were extended, which made it difficult to stay current and secure.

With Pega Cloud, the interviewees’ organizations improved operational efficiencies by offering modern monitoring and automation tools that greatly expedited critical-upgrade and patching processes as well as general maintenance efforts. According to Forrester, cloud solutions that include everyone on the same version allow organizations to run modern functionality and to get automatic access to the latest and greatest capabilities through regular and seamless updates.⁵ For the interviewees’ organizations, this allowed operational resources to

focus on supporting business transformation efforts instead of the mundane administrative processes of the past, and all of the latest tools were available on the latest versions in Pega Cloud.

- The engineering team lead at a financial services organization said their organization experienced time savings by having more automated and seamless upgrade cycles with Pega Cloud. Not only did the organization condense its upgrade cycles, but the updates were applied automatically and didn't require time from internal resources.

“An upgrade that would have taken six months [in our legacy environment] took 4 hours [with Pega Cloud]. Last week, we were on [Pega application version] 8.4.1, and we have moved to version 8.5.2. We did that upgrade overnight in 3 to 4 hours without any intervention from our internal resources.”

Engineering team lead, financial services

- The VP of engineering at a financial services firm explained how the reduced administrative maintenance effort allowed resources at their organization to focus on more value-add business transformation efforts. They said: “Because every vendor in the cloud has a different process and a different build, it can add a lot of additional overhead on our team. We decided that our bread and butter is not building software [that helps maintain and operate cloud applications]. Instead, it is offering financial products to our customers. So, we wanted our technology teams to focus on building those products that we wanted to offer to the end customers rather than supporting vendor-related software. We were building out a new business at the same time as we were building this software in the cloud with Pega, and we wanted to focus our internal resources on the business transformation track [while Pega could take over the administration of the Pega Cloud environment].”

Modeling and assumptions. To calculate optimized operational resource efficiencies, Forrester assumes the following:

- The VP of engineering at a financial services organization said the improved upgrade cycle provided benefits. They said: “We had our first upgrade last week, and it was a really smooth process. We upgraded our solution and the infrastructure without any issues.” Fewer issues led operational teams to spend less time solving problems and remediating.
 - The IT collaboration and automation head at the automotive organization described the benefits their organization experienced around security patching activities. They said: “The security-type fixes, hot fixes, and patches are seamless with Pega Cloud. In some instances, we do not even
- The composite organization has 15 FTE responsible for the maintenance and administration of Pega applications.
 - With Pega automating many previously burdensome processes (such as upgrade cycles), the impacted resources experience a 15% efficiency gain in Year 1. This efficiency impact ramps each year as the Pega Cloud environment grows in terms of the volume of applications. Additionally, resources become more fluent with administrative tools available in Pega Cloud and more comfortable reducing their participation in maintenance activities.

- The composite organization redistributes 30% of the time savings for operational resources to value-add and customer-facing work.
- Annual salaries for the impacted resources average \$160,000.

Risks. Optimized operational resource efficiencies may vary depending on the following:

- The size of the team responsible for Pega Cloud administration and maintenance.

- The size and scope of the Pega Cloud environment (including migrated applications and those built natively in the cloud).
- Salaries will vary depending on resource type, level, and region.

To account for these risks, Forrester adjusted this benefit downward by 15%, yielding a three-year, risk-adjusted total PV of \$511,000.

Optimized Operational Resource Efficiencies

Ref.	Metric	Source	Year 1	Year 2	Year 3
C1	Number of FTE affected	Interviews	15	15	15
C2	Efficiency gain with Pega (percentage)	Interviews	15%	30%	60%
C3	Average annual salary per FTE (blended rate)	Assumption	\$160,000	\$160,000	\$160,000
C4	Productivity capture (percentage)	Assumption	30%	30%	30%
Ct	Optimized operational resource efficiencies	C1*C2*C3*C4	\$108,000	\$216,000	\$432,000
	Risk adjustment	↓15%			
Ctr	Optimized operational resource efficiencies (risk-adjusted)		\$91,800	\$183,600	\$367,200
Three-year total: \$642,600			Three-year present value: \$511,073		

LEGACY INFRASTRUCTURE COST SAVINGS

Evidence and data. Interviewees said reducing the cost of infrastructure was a major driver for their organizations’ cloud transformations with Pega Cloud. By moving Pega applications from legacy on-premises environments to the Pega Cloud, the organizations reduced capital expenditure for infrastructure they previously had to pay to support those applications.

While the reduced maintenance effort led to operational efficiencies for resources, it also translated into hard cost savings associated with avoided upgrades and maintenance.

Additionally, interviewees said their organizations’ legacy infrastructures relied on data-center space they either owned or rented from third parties. After migrating their targeted applications to Pega Cloud, the organizations reduced their needs for data-center capacity.

- The engineering team lead at a financial services organization explained the cost savings their organization experienced around legacy infrastructure. They said: “We save on MIPS (multidirectional impact protection systems), storage, and decommissioning the data [in our legacy environment].”

- The executive VP at the marketing organization said that after their company migrates its targeted applications from its legacy environment to Pega Cloud, there will be additional cost savings associated with decommissioning and consolidating the remaining applications.

Modeling and assumptions. To calculate legacy infrastructure cost savings, Forrester assumes the following:

- The composite organization rents data-center capacity for its Pega environment from a third party for \$100,000 per month, totaling \$1.2 million per year.
- The composite organization previously spent \$2.5 million per year for its legacy hardware infrastructure on a five-year upgrade cycle.
- The composite organization previously spent \$350,000 annually to maintain and refresh on-premises hardware.
- The composite organization targets 25% of its legacy Pega environment for the transition to the cloud, which is achieved in Year 2. After that, the

focus shifts to decommissioning and consolidating the remaining applications in the legacy environment.

Risks. Legacy infrastructure cost savings may vary depending on the following:

- Spend on hardware, software, maintenance, and physical data center space (which will vary widely depending on the size, age, and type of equipment included in the legacy environment and any specifics from third-party vendor contracts).
- The scope of the applications targeted for migration.

To account for these risks, Forrester adjusted this benefit downward by 20%, yielding a three-year, risk-adjusted total PV of \$2.7 million.

Legacy Infrastructure Cost Savings					
Ref.	Metric	Source	Year 1	Year 2	Year 3
D1	Annual data center costs	Assumption	\$1,200,000	\$1,200,000	\$1,200,000
D2	Annual cost of on-premises hardware and software	Assumption	\$2,500,000	\$2,500,000	\$2,500,000
D3	Reduction in legacy infrastructure required	Interviews	10%	25%	50%
D4	Avoided hardware maintenance costs	Assumption	\$350,000	\$350,000	\$350,000
Dt	Legacy infrastructure cost savings	$((D1+D2)*D3)+D4$	\$720,000	\$1,275,000	\$2,200,000
	Risk adjustment	↓20%			
Dtr	Legacy infrastructure cost savings (risk-adjusted)		\$576,000	\$1,020,000	\$1,760,000
Three-year total: \$3,356,000			Three-year present value: \$2,688,926		

UNQUANTIFIED BENEFITS

Additional benefits that interviewees said their organizations experienced but were not able to quantify include:

- **Business benefits.** The applications in the Pega Cloud supported critical business processes for the interviewees' organizations. Therefore, both application end users and the customers they support benefited from improved performance and continuous development efforts in the following ways:

- **Improved fraud protection.** A financial services organization operated applications that supported fraud processing in Pega Cloud. The engineering team lead said the organization saw efficiencies in its fraud-detection process that not only positively impacted customer experience (CX), but they also translated to cost savings or revenue retention for the organization.

They said: "One of the fraud processes we have tested [in the new Pega Cloud environment] used to take 55 seconds, and now it takes 12 seconds. This has led to a huge reduction in the dispute time and overall fraud transformation journey." This benefit is specific to the Pega Customer Service product.

- **Increased revenue from upsell/cross-sell abilities.** A marketing organization utilized Pega's Customer Decision Hub in the Pega Cloud to support its marketing campaigns. Since investing in Pega Cloud, the marketing campaigns have led to higher customer engagement rates. Therefore, sales teams now have more opportunities to upsell and cross-sell. The organization's executive VP said: "The open rates we have seen are in the 40%

range for email campaigns, which is double what the industry gets. We know there's revenue and value associated with these campaigns, but we haven't tracked it yet."

- **Enhanced system performance.** In the past, limitations from legacy infrastructures led to lagging versioning and extended upgrade cycles that negatively impacted system performance. Operating in Pega Cloud meant that the interviewees' organizations were always on the latest versions of their Pega applications. As such, end users and customers benefited from the business continuity afforded by less system downtime.
- **Security benefits.** Working with Pega to transition to and develop in the cloud mitigated security concerns for the interviewees' organizations. This led to benefits such as:
 - **Fewer security incidents.** As the organizations migrated and stood up new applications in Pega Cloud, they experienced fewer security incidents than they did with their legacy environments.
 - **Peace of mind from facilitated compliance efforts.** For the interviewees' organizations, Pega Cloud alleviated some compliance concerns by staying on top of required annual certifications and proactively identifying and addressing future vulnerabilities. The VP of engineering at a financial services organization indicated how these benefits led to more peace of mind for decision-makers. The executive said: "So, the good thing was that Pega was certified for PCI (payment card industry), so that was one tick mark. When we do our annual PCI compliance test, we just reach out to

Pega for its latest certification. [Pega] has been on top of its game with PCI-related certifications. I also frequently see whenever Pega identifies a vulnerability, as it does frequent maintenance checks.”

\$ Tens of thousands of dollars of savings

Leveraging certifications (like those for PCI) through Pega Cloud can potentially save an organization the associated hard costs for vendor involvement and remediation efforts.

interviewees’ organizations initially focused on standing up their more complex applications in the Pega Cloud. However, decision-makers felt as if they could complete many smaller and less complex projects in Pega Cloud simultaneously. The organizations could complete these projects quickly and deliver business value faster to internally sell the Pega Cloud investment. The IT collaboration and automation head at the automotive organization said: “We want to focus on smaller and less complex initiatives that can be stood up a lot more quickly. We think this will go a long way to internally market the Pega cloud environment and to prove the value add.”

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

FLEXIBILITY

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

- **Doubling down on citizen development efforts.** Organizations that operate in Pega Cloud have access to the latest and greatest development tools, such as low-code tools. The interviewees said they feel like their organizations had only scratched the surface of what they could do with these development tools. The IT collaboration and automation head at the automotive organization said: “We are looking forward to focusing on things like citizen development that we just recently opened up. We want to enable more end users who have that technical map to start using the low-code tools.”
- **Continuing to internally evangelize the business value of the Pega investment.** The

Analysis Of Costs

■ Quantified cost data as applied to the composite

Total Costs							
Ref.	Cost	Initial	Year 1	Year 2	Year 3	Total	Present Value
Etr	Pega annual fees	\$0	\$393,000	\$393,000	\$393,000	\$1,179,000	\$977,333
Ftr	Implementation and ongoing application maintenance	\$0	\$1,732,500	\$1,344,000	\$1,344,000	\$4,420,500	\$3,695,511
	Total costs (risk-adjusted)	\$0	\$2,125,500	\$1,737,000	\$1,737,000	\$5,599,500	\$4,672,844

PEGA ANNUAL FEES

Evidence and data. The interviewees’ organizations paid annual fees to Pega Cloud. These included service fees based on the type of application and use case along with associated usage rates. The annual fees also included provisioning for three cloud environments that spanned testing and production. Any environments added beyond those included in the annual licensing fees required the organizations to pay additional fees to Pega each year.

Modeling and assumptions. To calculate the cost of Pega’s annual fees, Forrester assumes the following:

- The composite organization runs Pegas Customer Service application utilizing Pega’s Enterprise Edition. Ten percent of the organization uses the Customer Service application, and that requires 3,500 licenses. Forrester included the cloud environment costs required to support this license base.
- The annual fees the composite organization pays to Pega for the Pega Cloud environment include the following:
 - One production environment.
 - One large sandbox for staging.
 - One standard sandbox for development.
 - 5TB of production storage.

- 500 GB of additional storage for production attachments.
- Pega Agile Studio for software development project management.
- Pega Deployment Manager for the DevOps pipeline.
- Pega Predictive Diagnostic Cloud for application monitoring and management.
- Zero-downtime patching.

- The composite organization’s decision-makers choose to pay additional fees to include two additional standard sandbox environments.

Risks. Pega annual fees may vary depending on the following:

- Licensing fees for the required Pega Cloud environment (which may vary depending on the Pega applications running in the cloud and the use case and user volumes of the applications.)
- What is included in the annual licensing fees in terms of environments, storage, services, and products.

To account for these risks, Forrester adjusted this cost upward by 0%, yielding a three-year, risk-adjusted total PV of \$977,000.

Pega Annual Fees						
Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
E1	Annual service price	Assumption	\$0	\$321,000	\$321,000	\$321,000
E2	Additional environment costs	Assumption	\$0	\$72,000	\$72,000	\$72,000
Et	Pega annual fees	E1+E2	\$0	\$393,000	\$393,000	\$393,000
	Risk adjustment	0%				
Etr	Pega annual fees (risk-adjusted)		\$0	\$393,000	\$393,000	\$393,000
Three-year total: \$1,179,000			Three-year present value: \$977,333			

IMPLEMENTATION AND ONGOING APPLICATION MAINTENANCE

Evidence and data. The interviewees’ organizations paid implementation fees that included fees for professional services to support migration. These could be paid either directly to Pega or to vendor partners in the ecosystem. In either case, Pega’s skilled resources assisted in the application migration project, and the organization paid them in Year 1.

The interviewees’ organizations also needed to dedicate internal resources to both the implementation effort and the ongoing support of applications now running in Pega Cloud. Internal resources dedicated to implementation assisted in building out the Pega Cloud environment and migrating applications from legacy environments. The organizations dedicated additional internal resources to the ongoing maintenance of applications operating in Pega Cloud, whether they were part of the migration project or they were built natively in the cloud.

Modeling and assumptions. To calculate implementation and ongoing maintenance costs, Forrester assumes the following:

- The composite organization engages with professional services directly through Pega to assist with application migration and to build out the Pega Cloud environment. As such, the organization pays these professional services fees to Pega in Year 1.
- Applications targeted for migration are running on Pega Infinity in Pega Cloud and they are largely cloud-compliant, they require few to no updates to connectors, and they involve standard data migration efforts with minimal customization.
- The composite organization also dedicates seven internal resources to the implementation effort in Year 1. During Years 2 and 3, the organization reduces the dedicated resources for implementation efforts to five as it becomes easier to replicate application migration for subsequent applications.
- The composite organization dedicates three additional resources to the ongoing maintenance efforts of the applications running in the Pega Cloud environment.

- The annual salary for internal resources dedicated to implementation and ongoing application maintenance averages \$160,000.

Risks. Implementation and ongoing maintenance costs may vary depending on the following:

- Organizations can engage professional services directly through Pega or through a third-party vendor in the Pega ecosystem. If professional services are engaged, the associated fees will vary depending on the applications targeted for migration, the version of Pega running in the cloud, and the size and scope of the data-migration effort in terms of the level of customizations and updates required.
- The number of FTE dedicated to implementation and ongoing maintenance depends on the size and scope of the total Pega Cloud environment as well as the application-migration project.
- Internal resource annual salaries vary across resource types, levels, and regions.

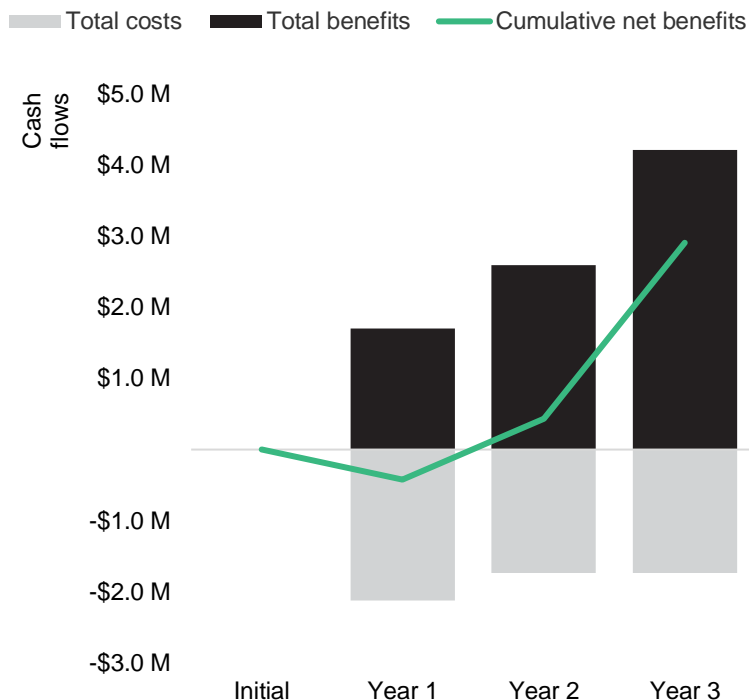
To account for these risks, Forrester adjusted this cost upward by 5%, yielding a three-year, risk-adjusted total PV of \$3.7 million.

Implementation And Ongoing Application Maintenance						
Ref.	Metric	Source	Initial	Year 1	Year 2	Year 3
F1	Pega Cloud implementation project fees	Assumption	\$0	\$50,000	\$0	\$0
F2	Internal resources dedicated to implementation	Interviews	0	7	5	5
F3	Internal resources dedicated to ongoing maintenance	Interviews	0	3	3	3
F4	Average annual salary for internal resources	Assumption	\$0	\$160,000	\$160,000	\$160,000
Ft	Implementation and ongoing application maintenance	$F1 + ((F2 + F3) * F4)$	\$0	\$1,650,000	\$1,280,000	\$1,280,000
	Risk adjustment	↑5%				
Ftr	Implementation and ongoing application maintenance (risk-adjusted)		\$0	\$1,732,500	\$1,344,000	\$1,344,000
Three-year total: \$4,420,500			Three-year present value: \$3,695,511			

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	\$0	(\$2,125,500)	(\$1,737,000)	(\$1,737,000)	(\$5,599,500)	(\$4,672,844)
Total benefits	\$0	\$1,702,800	\$2,589,600	\$4,215,200	\$8,507,600	\$6,855,108
Net benefits	\$0	(\$422,700)	\$852,600	\$2,478,200	\$2,908,100	\$2,182,264
ROI						47%
Payback						<24 months

Appendix A: Total Economic Impact

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

TOTAL ECONOMIC IMPACT APPROACH

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

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

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

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

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



PRESENT VALUE (PV)

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



NET PRESENT VALUE (NPV)

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



RETURN ON INVESTMENT (ROI)

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



DISCOUNT RATE

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



PAYBACK PERIOD

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

Appendix B: Supplemental Material

Related Forrester Research

“The Total Economic Impact™ Of Pega Platform For Low Code,” a commissioned study conducted by Forrester Consulting on behalf of Pega, March 2020.

“The Total Economic Impact™ Of Pega Customer Decision Hub,” a commissioned study conducted by Forrester Consulting on behalf of Pegasystems, February 2020.

“The Total Economic Impact™ Of Pegasystems’ Hybrid RPA Approach,” a commissioned study conducted by Forrester Consulting on behalf of Pegasystems, February 2020

“The Total Economic Impact™ Of Pega Customer Service,” a commissioned study conducted by Forrester Consulting on behalf of Pega, June 2020

Appendix C: Endnotes

¹ Source: “Understanding The Cloud Service Provider Landscape,” Forrester Research, Inc., December 23, 2020.

² Ibid.

³ Source: “The Total Economic Impact™ Of Pega Platform For Low Code,” a commissioned study conducted by Forrester Consulting on behalf of Pega, March 2020.

⁴ Source: “The Total Economic Impact™ Of Pega Customer Decision Hub,” a commissioned study conducted by Forrester Consulting on behalf of Pegasystems, February 2020.

⁵ Source: “Understanding The Cloud Service Provider Landscape,” Forrester Research, Inc., December 23, 2020.

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