

devon

LEGACY TO LEADING EDGE:  
**Best Practices for  
software modernization  
and AI Integration**



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# Introduction

Legacy enterprise applications are often seen as problematic and subjected to large-scale rip-and-replace or rewrite efforts. When this modernization of complex, aging applications happens, it focuses on the oldest technology and platforms rather than the most valuable capabilities, often leaving many organizations with scaling challenges and restricting the best value of their applications modernization.

Looking back at the evolution of IT and software engineering over the past two decades, one thing is evident: "Change is constant." There is paradigm-shifting innovation in computing hardware, cloud, technologies, and software development methodology and processes. This evolution has allowed IT to keep up with ever-changing business demands. However, it has not been easy or cost-effective. Even today, most IT budgets are consumed by maintaining legacy applications and staying relevant with patches and upgrades. The modernization costs have too often depleted IT budgets before business benefits are even unlocked, let alone realized.

Another key reason a leader cannot overlook legacy applications is the takeaways from the impact of the COVID-19 pandemic. Cybercrime, non-digital service assets/offerings, and on-premises applications that are not accessible are just a few examples of how the landscape of grave threats to business has grown in complexity and range. Therefore, it is imperative to prepare for the survival of business continuity and build business resilience to be better prepared for the next hurricane, whenever it may come.

In the AI era and enterprise application modernization, technology leaders are increasingly turning to AI tools and generative AI techniques to simplify the process and unleash the full potential of legacy systems. According to Gartner, by 2025, 80% of legacy applications will be considered unsuitable for modernization due to their inability to support evolving business needs and technological advancements. Traditional approaches, such as rip-and-replace methods, often prove ineffective and expensive, resulting in extended modernization timelines and suboptimal outcomes.

AI tools provide a practical approach to application modernization by using machine learning algorithms and predictive analytics. By analyzing data, these tools help technology leaders identify key functionalities within legacy applications and prioritize modernization efforts. This focused approach can streamline the modernization process and ensure that resources are allocated efficiently to improve ROI.

This white paper covers why continuous modernization is one fundamental approach that allows you to innovate continuously, stay ahead of the competition, unlock the rich digital jackpot underneath your legacy systems, and emerge stronger from crises like COVID-19. It aims to suggest an AI-enabled approach that can modernize legacy applications in a way that yields swift value (ROI) at a relatively lower cost and in a controlled manner.



# What is a legacy application?

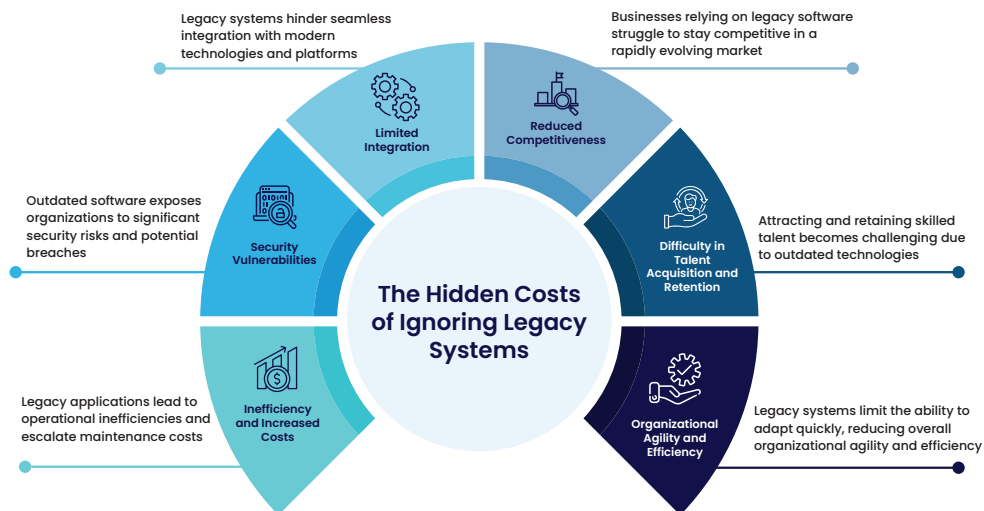
A legacy application refers to a software system that, despite being outdated or built on older technologies, remains in use within an organization due to its essential role in daily operations. These systems were often developed years, or even decades, ago using programming languages, platforms, and architectural patterns that were cutting-edge at the time. However, as technology has advanced, these systems have not been updated to keep pace with modern developments.

A key characteristic of legacy applications is their dependence on outdated technology stacks. This may include older programming languages or early versions of those languages, as well as obsolete databases, operating systems, and hardware platforms. The technologies that underpin these systems are frequently no longer supported by vendors, which complicates the process of finding skilled professionals capable of maintaining or upgrading the applications.



# Adverse impact of not tackling legacy applications

Lack of timely attention to legacy or unclear strategy gradually gives rise to building workarounds or wrappers on top of legacy systems. This leads to an increase in complexity and dependencies even further, putting the product or company in a far worse position than where you started. It leads to:



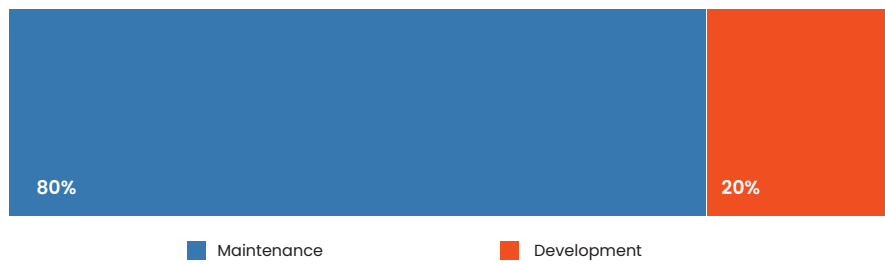
## Inefficiency and Increased Costs

According to a report by Gao, the Air Force is expecting a significant rise in annual costs, projected to increase from \$21.8 million in 2018 to \$35 million by 2020. To address this, the service took a proactive step last autumn by awarding a contract to migrate its system to a cloud environment and gradually transition from COBOL, an outdated language, to a more modern one. This strategic move is estimated to yield substantial savings of approximately \$34 million annually.[1]

In 2019, 80 percent of the US Federal government's IT budget was allocated to Operations and Maintenance. This expenditure primarily concerned maintaining aging legacy systems, which posed efficiency challenges and raised concerns regarding cybersecurity and mission risks. To put this allocation into perspective, only 20 percent of the IT budget was earmarked for Development, Modernization, and Enhancement initiatives. This disparity underscores the urgent need for a shift toward modernization efforts to ensure government IT systems' efficiency, security, and effectiveness.

Legacy systems often lack the efficiency and automation features found in modern applications. It was leading to operational challenges and higher costs for organizations. These outdated systems were typically designed when technology was less advanced and business processes were less complex. As a result, they may struggle to keep up with the demands of today's fast-paced and interconnected business environment.

% of Govt IT Funding: GAO Report



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By 2027, 25% of CIOs will have compensation linked to their sustainable technology impact.[7]

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## Security Vulnerabilities

The legacy system may have security vulnerabilities that make it susceptible to cyberattacks. As technology evolves, new threats emerge, and older systems may not have the necessary updates or patches to defend against these threats. This can lead to data breaches, compromising the institution's institution's and clients' sensitive financial information.

For example, according to the GAO report, legacy systems across various government agencies are more susceptible to security risks. The age of these systems and outdated hardware exacerbates the vulnerability to security breaches.

For instance, according to the agency's assessment, the Department of Education's System 2, with a staggering age of 46 and 3 years old hardware, faces high-security risks. Similarly, the Department of Health and Human Services System 3, with an age of 50 and unknown hardware age, is categorized as having a high-security risk.

Moreover, the Department of Homeland Security's Security System 4, despite being relatively newer at 8-11 years old, still falls under the high-security risk category. This highlights that even newer legacy systems are not immune to security threats.[1]



## Limited Integration

One prominent example of integration issues with legacy systems occurred with the United States Internal Revenue Service (IRS) and its implementation of the Affordable Care Act (ACA) in 2013.

The ACA mandated the creation of healthcare exchanges where individuals could purchase insurance plans. The IRS needed to integrate its legacy systems with the newly established healthcare exchanges to facilitate this. However, due to the complex and outdated nature of IRS systems, integration has proved to be a significant challenge.<sup>[2][3]</sup>

The outdated system may struggle to integrate with newer technologies or third-party applications. This can hinder the institution's ability to adopt innovative solutions or comply with evolving regulatory requirements. For instance, if new compliance standards exist for reporting financial or medical data, the legacy system may not easily adapt to meet these standards.

## Reduced Competitiveness

In the fast-paced financial industry, organizations must adapt quickly to changing market conditions and customer expectations. A legacy system may limit the institution's ability to implement new features, respond to market trends, or launch innovative products. Competitors with modernized systems may outpace the organization regarding agility and customer satisfaction.

For an example Wells Fargo has faced significant competitive disadvantages due to its reliance on outdated core banking systems. These legacy systems have limited the bank's ability to implement new digital features and respond to market demands efficiently. In 2019, Wells Fargo experienced major outages that disrupted online banking and ATM services, highlighting the operational risks associated with its legacy infrastructure.<sup>[4]</sup>

## Difficulty in Talent Acquisition and Retention

Organizations grappling with outdated systems often encounter problems attracting and retaining skilled IT professionals. In today's competitive job market, tech-savvy talent gravitates towards companies that offer opportunities to work with cutting-edge technologies. The State of **Software Happiness Report 2019** from G2 underscores this sentiment, revealing that over half of workers have experienced dissatisfaction due to missing or mismatched software.[5]

Furthermore, many respondents have considered seeking new job opportunities or have left their current positions due to software-related issues. The report highlights the importance of providing employees with better software tools, as most desire improved software experiences. Similarly, **Adobe Workfront's State of Work 2021** report corroborates these findings, showing that some workers are inclined to leave their jobs if they encounter technological barriers that hinder their ability to perform effectively. The increasing trend of candidates applying for positions based on the reputation of a company's technology underscores the pivotal role that modern technology plays in talent acquisition and retention strategies.[6]



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By 2026, 80% of software engineering organizations will establish platform teams as internal providers of reusable services, components and tools for application delivery[7]

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## Organizational agility and efficiency

Legacy systems often impede organizational agility and efficiency in several critical ways. Firstly, they have an undesirable impact on the organization's working methods, hindering the development, processes, and practices necessary for adapting to changing market demands. Additionally, rigid cooperation between different software teams exacerbates these challenges, leading to disjointed efforts and inefficiencies in project delivery.

Moreover, legacy systems pose a significant obstacle to ongoing agile, DevOps, AI or digital transformation initiatives. The existing teams working on legacy applications often struggle to derive the benefits of these transformations, as new methods may be ill-suited or irrelevant to their outdated technology stack. This results in increasingly siloed organizational structures, with gray areas in ownership and accountability of applications, particularly at interfacing touchpoints.

Furthermore, frequent frustration between business and IT teams arises, with each blaming the other for failures, slow speed, and a lack of agility. This breakdown in communication and collaboration further diminishes operational efficiency and productivity, exacerbated by traditional, error-prone manual methods for testing and releases.

Compounding these challenges is the acute shortage of talent pool availability on legacy technology, making it difficult to recruit and retain skilled professionals. The core engineering team working on legacy applications often faces demotivation and a lack of growth opportunities, increasing the risk of talent and knowledge retention. These factors collectively impede organizational agility and efficiency, hampering the ability to innovate, compete, and adapt in today's fast-paced business environment.

A customer starts seeing through it all at some point with undesirable impacts on contracts, revenue, and positioning of your organization and solutions in the market.

For an example, DevOn conducted a comprehensive technical due diligence assessment for a client. This evaluation revealed that the client was utilizing a legacy application with concentrated logic, tailored to serve multiple customers. To meet varying customer requirements, the client maintained different versions of the software. However, the rigidity of the system prevented the integration of customer-specific workflows, resulting in significant maintenance challenges and impeding rapid development.

This case exemplifies how legacy software can directly hinder organizational agility and efficiency, highlighting the critical need for modern, adaptable systems to support dynamic business needs.

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The cost of the technical debt in US was \$1.52 trillion in 2022[8]

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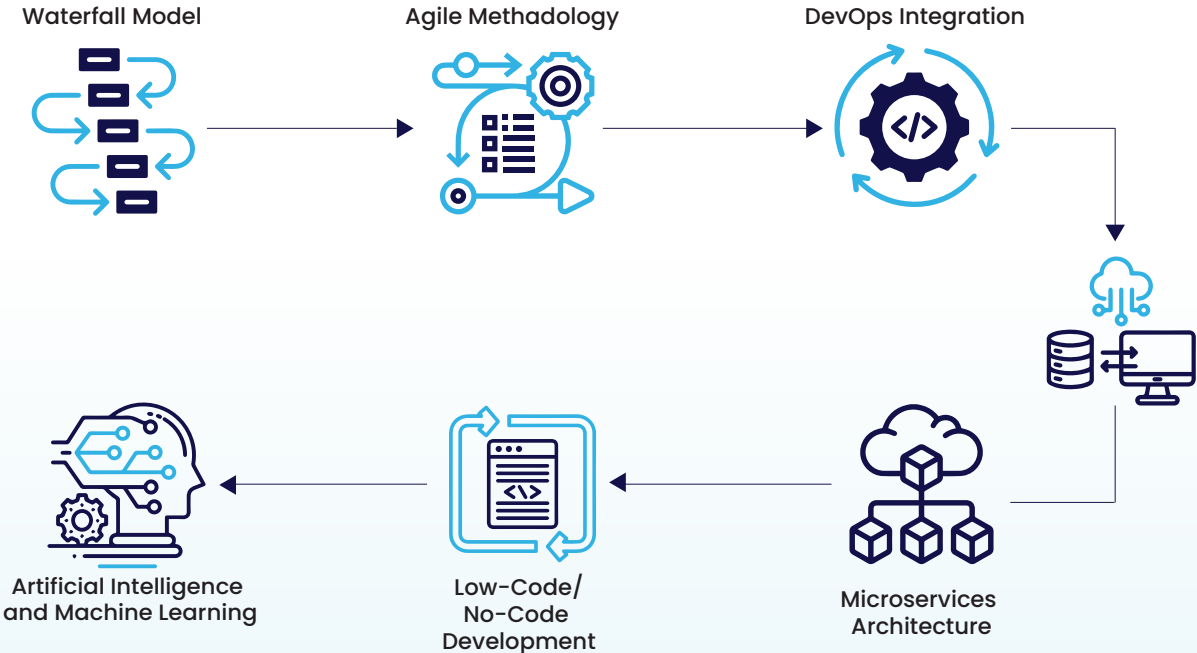
# Evolution of software development

The concept of legacy applications embodies software systems that were once successful and crucial to an organization's operations but now act as significant obstacles to its digital evolution. This shift is driven by rapid advancements in business dynamics, technological landscapes, and evolving consumer behaviours. As software development methodologies have progressed from traditional waterfall approaches to Agile, DevOps, and now AI-DevOps, the architecture of applications has similarly evolved.

Our journey from monolithic structures to service-oriented architectures, and eventually microservices, has been complemented by innovations in deployment and packaging. We've embraced virtual servers, containers, and AI-managed containers, ushering in a new era of scalability, agility, and interoperability.

Moreover, our transition from private data centres to cloud-based infrastructure has revolutionized our approach, enabling swift adaptation to changing market demands. These advancements, coupled with a shift in mindset from resistance to change to a culture of instant feedback and adaptive learning, have propelled us towards organizational agility, efficiency, and resilience.

In this evolving landscape, AI integration has been instrumental. From natural language interfaces to AI-driven testing, organizations now have the tools to streamline processes, enhance quality, and ensure self-healing capabilities. The journey from legacy applications to AI-DevOps signifies not only technological evolution but also a fundamental transformation in our organizational agility and resilience in the face of constant change.



# Why take a Continuous Application Modernization approach?

Digital business transformation is an ongoing journey rather than a one-time event. It involves continually exploring new business models and harnessing the latest technological advancements. In response to rapidly changing customer behaviors and market trends, CXOs worldwide are increasing their IT budgets. The COVID-19 pandemic has further emphasized the need for digital resilience, prompting organizations to focus on survival rather than expansion.

However, amidst these challenges lies an opportunity for new businesses to thrive in a digital-first world post-COVID. In 2021, digitalization will redefine various sectors, with IT playing a central role in driving innovation and adaptation.

To meet the demands of this dynamic landscape, IT departments must demonstrate agility and speed. Application organizations are expected to be digitally responsive, delivering continuous innovation as the new standard. Adopting an iterative and Continuous Application Modernization approach is crucial in this context.

## Why Continuous Application Modernization?

<b>More focussed on business outcomes over technology outcomes</b>	<b>Risk, cost &amp; time</b> of replacing/rebuilding existing application can highly overshadow the potential benefits	Legacy applications usually consists of <b>core data and domain logic</b> which is very <b>risky to migrate or rebuild</b>
<b>Quicker ROI can be achieved by</b> leveraging existing system capabilities as a platform	<b>Availability of domain experts</b> could be a major challenge for rebuilding old legacy applications	<b>Business/Trends change quickly</b> and return on investment (ROI) of rebuilding/replacing applications could be years away

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By 2025, technical debt will continue to compound on top of existing technical debt consuming more than 40% of the current IT budget.[9]

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This approach enables organizations to achieve faster ROI by leveraging existing system capabilities through APIs and helps overcome the stigma of legacy modernization being complex and risky. Organizations can tap into untapped assets within their legacy systems by continuously modernizing applications, laying the groundwork for future innovation, and maintaining a competitive edge.

AI is handy for speeding up modernization efforts. It can dig into old systems, find spots to fix up, and take care of some of the grunt work, which saves time and resources. Plus, with AI in the mix, updated apps can run smoother, be more secure, and handle growth better, keeping up with how things change in the digital world.

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83% of IT executives feel that modernization is central to their organization's strategy, but only 27% say their organizations have modernized the requisite workflows (including applications, data and underlying systems)[10]

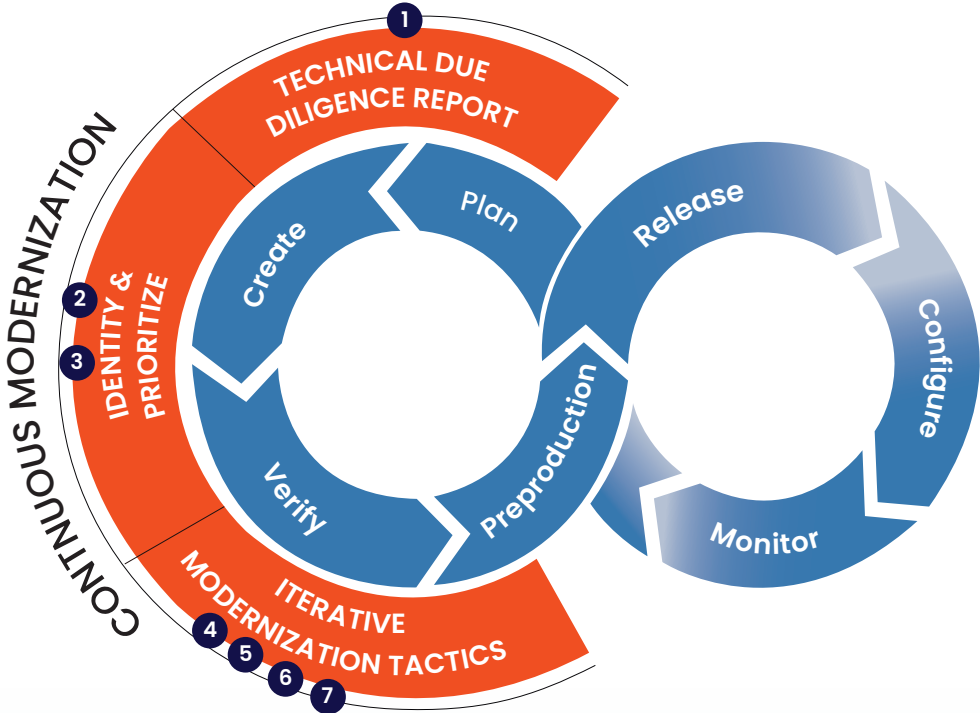
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# How to approach Continuous Application Modernization

Continuous Application Modernization (CAM) is a gradual, iterative, and persistent approach that focuses on providing digital business support and rejuvenating legacy and value in a timely and cost-controlled manner.

A successful digital transformation to continuously innovate requires continuous delivery, which requires continuous modernization. They are all strongly interconnected, and leaders cannot overlook them.



### Technical Due Diligence Report

- 1 Tactic 1 - Carry out technical due diligence of the legacy application

### Identify & Prioritize

- 2 Tactic 2 - Identify the fiction points, leave alone & purge
- 3 Tactic 3 - Prioritize on business value and ROI

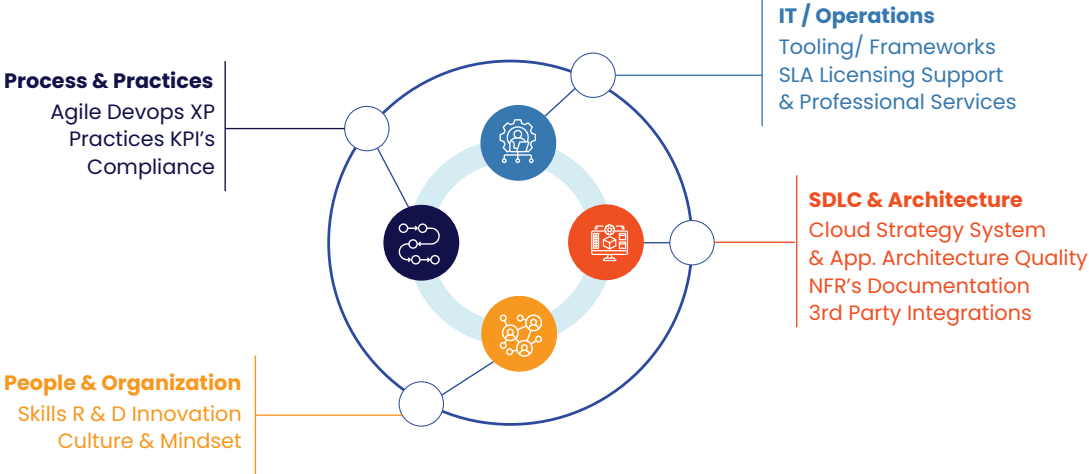
### Iterative Modernization Tactics

- 4 Tactic 4 - Make an early move to the cloud
- 5 Tactic 5 - Modernize towards a digital platform
- 6 Tactic 6 - Make the right choices to re-(architect, factor, write)
- 7 Tactic 7 - Working towards cloud-native applications

Continuous application modernization steps suggested below are subjective to the context and objectives of the legacy application. Each tactic and the execution sequence differ in purpose, impact, value, cost, risk, and effort.

### Carry out technical due diligence

Technical due diligence is a comprehensive evaluation of the legacy application. Before taking further steps and deciding on an approach to modernizing the application, this technical due diligence is crucial in making an informed, fact-driven decision. Below is an outline of topics to consider when developing a customized approach that suits your application and aligns with organizational strategy.



**Key driver to succeed – Organizational capability to drive technical due diligence.**

Modernization opportunities can be effectively identified using AI across various advanced approaches. Infrastructure Assessment leverages tools like Opsani and Datadog to analyze existing systems for bottlenecks and scalability issues. Codebase Analysis reviews code for vulnerabilities and quality using platforms such as DeepCode and CodeClimate. Technology Stack Evaluation provides recommendations on modern technologies, employing tools like Codota and SourceLevel. Data Analysis profiles and extracts insights from data with the help of platforms like DataRobot and RapidMiner. User Experience (UX) Evaluation enhances UX by analyzing user interactions and feedback through tools such as Lyssna and Hotjar. Security and Compliance Analysis identifies and mitigates security vulnerabilities using platforms like Snyk and Veracode. Finally, cost-benefit analysis is supported by predictive analytics that assess the financial impact of modernization, typically integrated within broader analytics platforms.

## Identify the friction points, leave alone & purge:

Broadly classify the findings from your due diligence into three categories:

- 1 Friction points**  
List out the serious legacy application issues or challenges.
- 2 Leave alone group**  
The legacy application areas that are not challenging for now.  
Here, the whole point is to align business and IT with those needing attention and those not.  
Pick your battles wisely.
- 3 Purge list**  
This category includes all legacy application codebases that can be discarded as they add no value or are unused. These are merely distractions that create chaos and will kill team productivity at a later stage. Critically looking at what can be retired is extremely important.

An additional step after identifying the friction points is to elaborate on each issue and develop

- a) what the problem is and
- b) what the expected outcome is.

The first two tactics of the Continuous Application Modernization approach are a one-time activity, laying the groundwork for the next iterative steps.

**Key driver to succeed – Common understanding & alignment between IT and business stakeholders on the friction points.**

AI-powered analysis tools are crucial for identifying and addressing issues in legacy applications. By leveraging machine learning algorithms for code analysis, performance monitoring, and user experience assessment, these tools offer a comprehensive method for detecting and prioritizing issues based on business impact. Natural Language Processing (NLP) enhances the interpretability of results by summarizing and categorizing friction points. Tools like DeepCode, Datadog, ThoughtSpot streamline decision-making and user experience improvements. AI also helps identify stable, low-risk areas within legacy applications that don't require immediate attention, optimizing resource allocation through tools like CodeScene and Grafana. Moreover, AI-driven tools like SonarQube and Synk aid in managing codebases by identifying and recommending the removal of redundant or unused code. AI facilitates communication between IT and business stakeholders through intuitive visualizations and reports, fostering collaboration. Detailed, AI-generated reports on identified issues provide clear explanations and recommended solutions, aligning stakeholders and promoting efficient issue resolution.

## Prioritize business value and ROI

The next tactic is prioritizing the key friction points according to business value and ROI. You can use many Agile methods to develop a focused, prioritized backlog to start the modernization. Your continuous iteration journey begins here. The number of iterations depends on the number of software teams involved and the volume of your backlog. It is recommended that an extensive program chooses a suitable scaled Agile framework like SAFe, LeSS, Spotify, etc.

**Key driver to succeed – High organizational maturity with Agile ways of working, lean organizational structure, and autonomous self-organized T-shaped professionals.**

Machine learning algorithms are crucial for evaluating the business value of addressing friction points in legacy applications. By analyzing historical data, user feedback, and business metrics, these algorithms can predict the impact on key performance indicators (KPIs) and help prioritize issues to align with organizational goals. Tools like RapidMiner and DataRobot, along with custom solutions, support this process by forecasting the return on investment (ROI) for resolving issues. This involves considering development effort, business impact, and long-term benefits, leading to a prioritized backlog that maximizes value. Project management platforms like ClickUp and Business Intelligence tools like Power BI further enhance this phase by providing comprehensive insights and visualizations. In Agile environments, these algorithms dynamically adjust backlog priorities based on real-time data, supporting efficient iteration planning and execution. For scaled Agile frameworks like SAFe, they offer insights into cross-team dependencies, resource allocation, and progress, aiding coordination and adaptation. Predictive analytics also estimate iteration requirements for modernization tasks, improving both planning and execution. Continuous monitoring of ongoing iterations allows for adaptive planning that addresses challenges and opportunities, ensuring high-value tasks remain prioritized. Collaboration is enhanced by advanced tools, which use Natural Language Processing and AI-based dashboards to provide real-time visibility into progress and priorities, fostering better team communication and coordination.

## Make an early move to the cloud

Moving to the cloud is inevitable. Use lift and shift techniques and re-host your legacy applications in the cloud. This step does not involve changing application code or architecture; you are merely changing the deployment infrastructure. The first key deliverable of this step is the immediate reduction of infrastructure CapEx cost. This reduction comes from associated maintenance costs involving IT operations personnel and optimal infrastructure usage on the cloud, with plenty of readymade services offered by major cloud providers. Now, your application is ready for further modernization.

Once you're in the cloud, the application can be re-platformed iteratively. The re-platforming exercise is restructuring the non-functional areas of the application. Here are some examples of efforts to consider:

- ▶ Moving to PaaS (Platform as a Service)
- ▶ Switch from an on-premises database to cloud-managed database services
- ▶ Moving to cost-effective storage (for images, files, and other BLOB objects)
- ▶ Adopting DevOps techniques like Continuous Integration (CI), Continuous Deployment (CD), and auto-scaling infrastructure
- ▶ Moving to more comprehensive & integrated authentication and authorization services with better integration and enhanced security, Etc.

Most services are "pay per usage or number of transactions" in the cloud. Leaders get increased visibility on what is needed and what isn't. Replatforming gradually gives better control over cost and aids in improving elasticity and scaling challenges.

**Key driver to succeed – Clear vision of organizational cloud strategy and availability of required expertise.**

Transitioning legacy applications to cloud environments can be significantly enhanced through the lift-and-shift process. Machine learning algorithms play a key role in analyzing application dependencies, performance bottlenecks, and resource utilization to assess cloud compatibility, thereby optimizing the migration process. Platforms like AWS Migration Hub, Azure Migrate, and Google Cloud's Migrate for Compute Engine provide valuable insights into dependencies and resource use, while tools like Cast AI offer real-time cost analysis, identifying and eliminating redundant resources to reduce expenses. During re-platforming, these algorithms suggest suitable PaaS offerings, cloud-managed database services, and cost-effective storage solutions, and they also support DevOps automation.

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By 2027, more than 50% of enterprises will use industry cloud platforms to accelerate their business initiatives, up from less than 15% in 2023[7]

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## Modernize towards a digital platform

Now that you have dissected the giant legacy problem into smaller chunks (Tactic 3) and moved the application to the cloud (Tactic 4). The next step would be to choose an appropriate modernization approach. You first need to understand how each modernization option can fix the problem. It could improve the quality of the application code, upgrade the technology architecture for elasticity, scale, or any other NFRs, improve or enhance functional characteristics of the application, or just allow you to add new features.

This tactic's recommendation helps organizations improve and create business value streams by delivering applications over new channels such as mobile and IoT. Using a service layer pattern or API layer is a significant first step. APIs can make the existing application available without changing much in the legacy codebase. The application language and runtime also remain the same.

This kind of service layer does not usually have any new functionality. It is an API adaptor that exposes the legacy application's existing functionality to the consuming application(s). This approach benefits IT as it is less complicated and has relatively low risks. It helps businesses become more agile to engage both new markets and existing customers. This digital Platform, which has a service layer, also allows organizations to create new revenue streams by potentially monetizing these APIs. Both business and IT benefit from this reduced-cost approach.

**Key driver to succeed – Knowing the richness of legacy applications is important as you can quickly use some of them via APIs.**

## Make the right choices to re- (architect, refactor, rewrite)

Making the right choice when it comes to re-architecting, refactoring, or rewriting is vital.

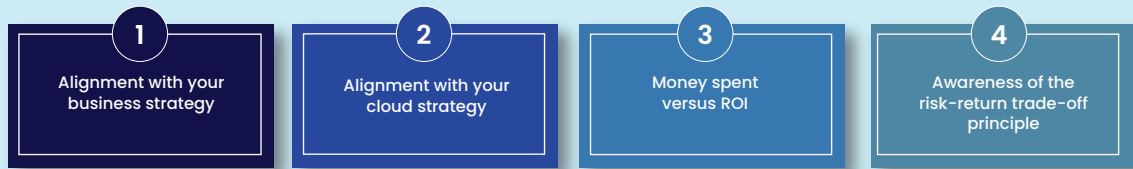
Re-architect – essentially changing the application code so you can move to a new application architecture and exploit its new and better capabilities. Re-architecting can include both code and technology changes.

Refactor – optimizing existing code without changing its external behavior. The key deliverables are declining technical debt and better code quality. This sub-step requires you to have experienced engineers who can gradually make application code more readable and cohesive for further development.

Rewrite (features) – re-coding the application from scratch while maintaining the original scope and specifications. This approach eventually leads to retiring the old legacy application. Due to the high costs and longer delivery timeline, it is the least desirable among the options we have listed so far.

Rewrite (technical) – some application parts might be necessary and inevitable for exceptional cases. Obsolete or no longer supported language, Platform, or runtime can be a business and security threat if not rewritten using the available suitable and compatible alternatives. In these cases, you typically do an “as is” rewrite.

Remember always to make a choice based on the following four key factors:



After all, continuous application modernization aims to offer maximum impact and value with a control on cost.

**Key driver to succeed – Decision-making skills, measuring and tackling architecture and technical debt, maturity of Extreme programming (XP) & DevOps practices.**

During the rearchitecting phase, existing application code is analyzed to suggest optimal changes for transitioning to a new architecture. Machine learning models identify patterns, dependencies, and areas for improvement, recommending specific code changes and technology upgrades. Tools like SonarQube and CAST Highlight assist in code analysis, revealing code quality and architectural issues. During refactoring, AI automates code analysis, suggesting improvements to enhance readability, maintainability, and performance by identifying code smells, anti-patterns, and high technical debt areas, with tools like ReSharper and CodeRush aiding this process. In the rewrite phase, AI automates code generation, analyzing specifications to recommend structure and logic for rewritten features and suggesting alternatives for outdated components, with tools like Kite and Sourcery assisting.

## Working towards cloud-native applications

There is a desire to move towards cloud-native applications to rapidly adapt to new mobility demands and perpetual consumer and market trends. Cloud-native development refers to application development based on containers, microservices, auto-scaling infrastructure achieved by IaC (Infrastructure as Code), dynamic orchestration, FaaS Key driver to succeed – Advanced knowledge & competency in teams of what the cloud offers. (Functions as a Service), serverless computing and APIs, continuous integration and delivery (CI/CD), and fully leveraging cloud features and capabilities. There has been path-breaking innovation in Containers, Kubernetes, and microservices architecture space in

**Key driver to succeed – Advanced knowledge & competency in teams of what the cloud offers.**

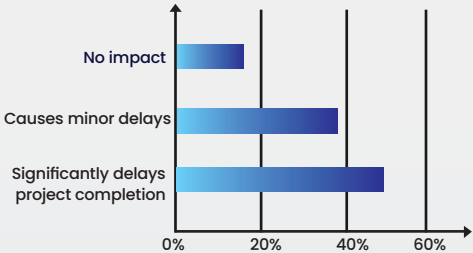


# Examining Legacy Application Impact: Insights from a 17-Team Survey

We conducted a survey involving 17 project teams worldwide to understand how legacy applications affect project outcomes. Each team, engaged in various projects across different industries, shared their experiences dealing with legacy systems. Our goal was to uncover the specific ways legacy applications impact project timelines, budgets, security, and competitiveness and compare our hypothesis. This survey provides valuable insights into the challenges posed by legacy applications and the strategies teams employ to address them effectively.

**Survey Result:** Half of the surveyed project teams, approximately 50%, are currently involved in either partially or fully working on legacy applications on legacy applications.

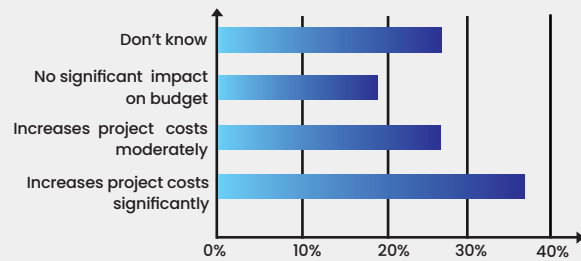
How do legacy applications/modules impact project timelines compared to having newly modernized applications/modules



There are many factors that can delay project delivery, one of which is the use of legacy systems. Based on our extensive experience, we hypothesized that delays in task completion are directly related to the use of legacy systems. This hypothesis has been substantiated by our survey results. Among the teams working with legacy applications, 50% reported that these systems cause significant delays in project completion, while the remaining respondents also noted experiencing minor delays.

Among the teams grappling with legacy applications, a notable 37.5% acknowledge that these systems are responsible for a substantial upsurge in project costs. This finding resonates with our previous hypothesis regarding the impact of legacy systems on project budgets, as outlined in the preceding section.

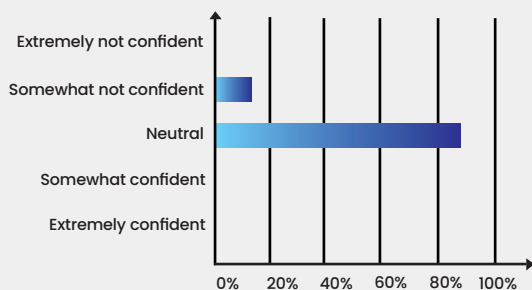
How do legacy applications/modules affect project budgets compared to having newly modernized applications/modules?



It's evident that the repercussions of utilizing legacy applications extend beyond mere project delays; they have a tangible financial impact as well. These systems not only impede progress but also inflate expenditure, posing significant challenges to efficient project management.

This reaffirms the hypothesis posited earlier – that the use of legacy systems directly correlates with delays and financial burdens in project execution. As such, it underscores the pressing need for organizations to address legacy application issues proactively, seeking modernization strategies to mitigate these challenges and optimize project outcomes.

How confident are you in the security measures implemented for legacy applications/modules ?

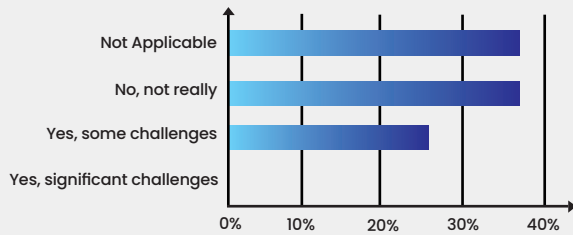


As explored in the preceding section addressing the challenges posed by legacy applications, security emerges as a paramount concern. This encompasses vulnerabilities within third-party packages, potential security breaches in custom-developed software, and other associated risks. Drawing from real-world examples, our anticipation was that respondents would exhibit a low confidence level in the security aspects of legacy systems, and our survey findings align with this expectation.

Notably, none of the surveyed teams reported feeling either somewhat or fully confident in the security of their legacy systems. This stark reality underscores the pervasive apprehension surrounding security within legacy environments. An overwhelming majority, comprising 87.50% of participants, expressed a neutral standpoint regarding their confidence level. This neutrality may stem from an awareness of the inherent vulnerabilities associated with legacy systems, prompting a cautious stance among respondents.

These findings underscore the critical imperative for organizations to prioritize security enhancements within their legacy systems. Neglecting this aspect not only exposes enterprises to heightened security risks but also undermines stakeholder trust and jeopardizes organizational resilience in an increasingly digitized landscape.

Are there any compliance challenges associated with securing legacy applications in your organization?



Inquiring about compliance challenges linked to securing legacy applications within their organizations, our survey yielded insightful responses reflective of prevailing concerns. Notably, a quarter of respondents (25.00%) acknowledged grappling with compliance hurdles in this domain. This finding underscores the intricate interplay between legacy systems and regulatory compliance, highlighting potential gaps that organizations must address to ensure adherence to pertinent standards and regulations.

It's noteworthy that a significant portion of respondents (37.5%) deemed the question of compliance challenges as not applicable to their context. This could suggest either a perception that compliance issues are adequately addressed within their current framework or a lack of awareness regarding the specific regulatory requirements pertinent to legacy applications.

Similarly, an equal percentage of participants (37.5%) responded negatively, indicating that they perceive no significant compliance challenges associated with securing legacy applications. While this response might reflect a degree of confidence in existing compliance measures, it's essential to approach such assertions with caution, considering the inherent security vulnerabilities inherent in legacy environments.

Importantly, the absence of respondents flagging "Yes, significant challenges" signals a potential gap in recognizing the magnitude of compliance risks entwined with legacy systems. This underscores the need for organizations to conduct comprehensive assessments of their compliance posture concerning legacy applications, ensuring alignment with evolving regulatory landscapes and industry best practices.

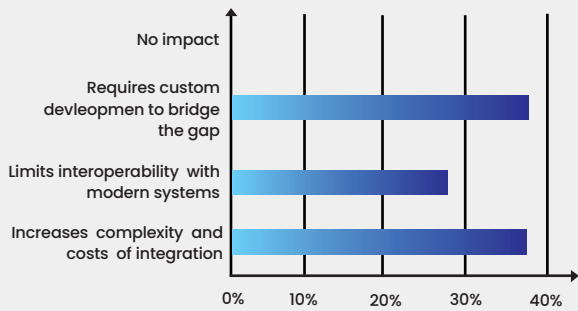
In sum, while a subset of respondents acknowledges compliance challenges associated with securing legacy applications, a notable proportion remains either indifferent or overlooks the significance of this aspect. This highlights the imperative for organizations to adopt a proactive stance towards addressing compliance concerns within their legacy environments, safeguarding against regulatory pitfalls and fortifying their security posture in the process.

“

All surveyed teams unanimously believe that modernizing legacy applications/modules would significantly enhance security.

”

**How does the presence of legacy applications/modules impact the integration of new systems or technologies into existing infrastructure?**



Examining the ramifications of legacy applications/modules on the integration of new systems or technologies within existing infrastructure unveils significant insights into the operational dynamics of organizations. The survey responses shed light on various challenges encountered in this domain, explaining the multifaceted impact of legacy systems on technological evolution and integration efforts.

A notable proportion of respondents (37.50%) highlighted the increased complexity and costs associated with integrating new systems or technologies in the presence of legacy applications/modules. This finding underscores the formidable barriers posed by legacy environments, which often necessitate extensive customization and resource allocation to navigate integration complexities effectively.

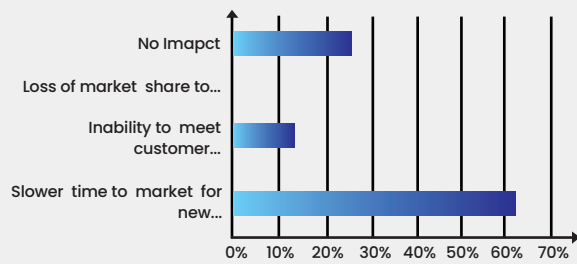
Moreover, a quarter of respondents (25%) identified limitations in interoperability with modern systems as a prominent challenge arising from the presence of legacy applications/modules. This underscores the compatibility constraints inherent in legacy environments, which impede seamless integration with contemporary technologies, thereby hindering organizational agility and innovation.

Similarly, an equivalent percentage of participants (37.50%) emphasized the need for custom development to bridge the gap between legacy systems and new technologies. This underscores the bespoke solutions often required to reconcile the divergent architectures and functionalities of legacy and modern systems, further exacerbating integration complexities and resource overheads.

Remarkably, none of the respondents reported perceiving no impact of legacy applications/modules on integration efforts. This absence of a neutral stance underscores the pervasive influence exerted by legacy systems on the integration landscape, reaffirming the significance of addressing legacy-related challenges proactively.

In essence, the survey findings underscore the intricate interplay between legacy systems and the integration of new technologies, highlighting the imperative for organizations to devise holistic strategies to mitigate integration complexities, enhance interoperability, and streamline transition efforts. Embracing modernization initiatives and leveraging interoperability frameworks can empower organizations to navigate the integration landscape adeptly, fostering agility, innovation, and resilience in an evolving technological ecosystem.

How do legacy applications/modules impact the competitiveness of an organization in the market compared to modernized applications/modules?



Examining the influence of legacy applications/modules on an organization's competitiveness in the market compared to modernized counterparts offers valuable insights into the operational landscape. Survey responses delineate the tangible impacts of legacy systems on competitive dynamics:

**Slower Time to Market:** A significant majority (62.50%) identified a slower time to market for new products or services because of legacy applications/modules. This suggests that outdated systems impede the organization's ability to swiftly introduce innovations, thereby compromising its competitive edge.

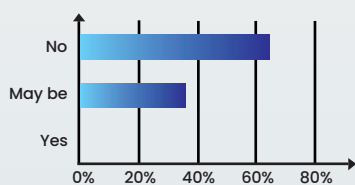
**Inability to Meet Customer Demands for Innovation:** A smaller fraction (12.50%) cited the challenge of failing to meet customer demands for innovation due to legacy systems. This highlights the disconnect between customer expectations for cutting-edge solutions and the limitations imposed by outdated technologies.

**No Impact:** Interestingly, a quarter of respondents (25%) reported perceiving no direct impact of legacy applications/modules on competitiveness. While this viewpoint may reflect certain mitigating factors within their specific contexts, it's essential to recognize the broader implications of legacy systems on competitive agility and market responsiveness.

Notably, no respondents indicated experiencing a loss of market share to competitors with more modern systems. While this absence may signify a degree of resilience or niche positioning within the market, it's crucial to remain vigilant of the evolving competitive landscape shaped by technological advancements.

In essence, these findings underscore the critical imperative for organizations to address legacy-related challenges proactively, fostering agility, innovation, and responsiveness to maintain a competitive edge in dynamic markets. Embracing modernization initiatives and leveraging technology as a strategic enabler can empower organizations to navigate competitive pressures adeptly, driving sustained growth and relevance in an increasingly digitized marketplace.

Has anyone left from your current project due to the legacy system?



Exploring the impact of legacy systems on project personnel dynamics provides valuable insights into the broader implications of outdated technologies within organizational contexts.

Survey responses illuminate the following perspectives:

Encouragingly, the majority (62.50%) reported no instances of project personnel departing due to legacy system-related challenges. This suggests a degree of stability and resilience within the project team despite the presence of legacy systems. However, it's essential to delve deeper into the underlying factors contributing to this outcome to identify potential mitigating measures and best practices.

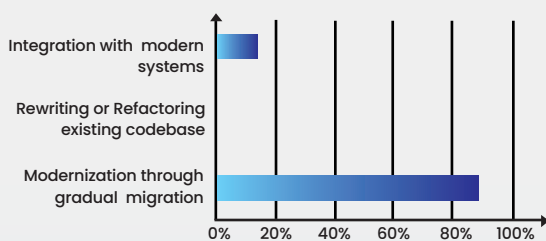
However, it's worth noting that working on legacy systems can sometimes create frustration due to various factors. For instance, the lack of support available for outdated systems can lead to roadblocks and inefficiencies in project execution. Additionally, the incompatibility of legacy systems with new tools and technologies can further exacerbate these challenges, hindering the team's ability to leverage cutting-edge solutions and methodologies.

Conversely, a notable subset (37.50%) indicated a possibility of project personnel departures linked to legacy system frustrations. While this proportion remains relatively modest, it underscores the latent risks associated with legacy technology environments, including employee dissatisfaction, reduced morale, and talent retention challenges. Such concerns warrant proactive intervention to address underlying grievances and alleviate potential attrition pressures.

Furthermore, the continuous engagement with legacy applications without opportunities for skills enhancement or exposure to modern technologies might hinder individual career progression. This can lead to disillusionment among team members who seek opportunities for professional growth and advancement within their roles.

Reflecting on these findings, it's evident that the impact of legacy systems extends beyond operational and technical areas to encompass human capital considerations.

**What strategies or approaches do you believe are effective in tackling legacy applications within a project?**



Examining strategies for addressing legacy applications within projects offers insights into effective approaches for navigating technological transitions. Survey responses highlight the following perspectives:

An overwhelming majority (87.50%) advocate for modernization through gradual migration as an effective strategy. This approach entails systematically transitioning from legacy systems to contemporary solutions over time, minimizing disruption while incrementally enhancing system capabilities.

Interestingly, none of the respondents endorsed rewriting or refactoring the existing codebase as a preferred strategy. While this approach may offer the promise of addressing underlying technical debt and streamlining system architecture, it often entails substantial time, resources, and inherent risks.

A smaller fraction (12.50%) advocate for integrating legacy systems with modern counterparts as a viable strategy. This approach aims to leverage interoperability frameworks and integration technologies to bridge the gap between old and new systems, enabling seamless data exchange and functionality sharing.

Reflecting on these findings, it's evident that modernization through gradual migration emerges as the preferred strategy for tackling legacy applications within projects. This approach aligns with industry best practices and underscores the importance of pragmatism, risk management, and iterative improvement in navigating complex technological transitions. By adopting a strategic blend of modernization initiatives, organizations can effectively address legacy-related challenges, foster innovation, and position themselves for sustained success in an ever-evolving digital landscape.



A significant majority (62.50%) underscore the critical importance of addressing legacy applications in project planning and execution. This sentiment aligns with the recognition of legacy systems as potential impediments to project success, necessitating proactive strategies to mitigate risks, enhance operational efficiency, and foster innovation.

Additionally, 25% acknowledge the importance of addressing legacy applications, albeit to a lesser extent than the majority. While they recognize the relevance of legacy modernization efforts, their stance suggests a nuanced perspective that may reflect varying degrees of urgency or resource allocation towards legacy remediation initiatives.

Moreover, a minority (12.50%) adopt a neutral stance on the importance of addressing legacy applications in project planning and execution. This position may stem from a lack of awareness regarding the implications of legacy systems on project outcomes or uncertainties surrounding the feasibility and impact of modernization efforts.

Reflecting on these findings, we anticipated that after facing these challenges, most participants would emphasize the importance of addressing legacy applications in project planning and execution. The survey results validate this expectation, indicating a widespread recognition of the critical role of legacy modernization in ensuring project success, organizational resilience, and competitive advantage.

We also requested insights into the integration of AI within Application Modernization endeavours. Participants were asked if they currently employ AI in their Application Modernization efforts and whether they perceive AI as a catalyst for accelerating this process. Additionally, we inquired about the technical hurdles encountered when dealing with legacy applications in projects and invited participants to share their perspectives on the ramifications of neglecting these applications on project success. Finally, respondents were asked to outline strategies or approaches they find effective in addressing legacy applications within their projects. These questions aimed to glean valuable insights into the role of AI and the challenges associated with legacy systems in modernization initiatives.

**The survey responses** reflect a diverse range of perspectives regarding the role of AI in accelerating application modernization. While some respondents are sceptical about the substantial impact of AI on the speed of modernization, others recognize its potential to significantly expedite the process. Interestingly, there is a common theme emphasizing the importance of considering the specific application and the complexity of modernization required when evaluating the potential of AI. This underscores the nuanced nature of AI's impact, suggesting that its effectiveness in speeding up application modernization may vary depending on various factors. Overall, the survey highlights the importance of further exploration and careful consideration of AI's role in application modernization efforts, tailored to the unique needs and circumstances of each organization and project.

The survey responses regarding technical challenges encountered when dealing with legacy applications highlight several recurring issues. These include data integrity issues arising from master data maintenance within legacy systems, as well as difficulties integrating them with modern tools due to outdated technology stacks and dependencies on obsolete third-party libraries. Additionally, respondents emphasized challenges such as inadequate documentation, complex dependency management, and security vulnerabilities inherent in legacy systems. Language barriers were also noted, with legacy applications being language-specific and posing usability challenges for non-native speakers. Other obstacles include long build times, lack of documentation, and limited support available online. Furthermore, the transition process to modernize legacy applications, such as migrating to newer frameworks like .Net standard, is fraught with difficulties, including compatibility issues and a dearth of comprehensive documentation. Overall, the responses underscore the multifaceted nature of technical challenges associated with legacy application modernization, highlighting the need for careful planning and strategic approaches to overcome these hurdles effectively.



The survey responses regarding the impact of neglecting legacy applications on project success emphasize several key points. Compatibility issues between subsystems often lead to complex functionality and increased error rates. Neglecting legacy applications can result in various detrimental effects, including heightened technical debt, diminished agility, elevated maintenance costs, and decreased innovation. Additionally, legacy applications are challenging to maintain, potentially prolonging the implementation or modification of features and exacerbating technical debt. Furthermore, failing to address legacy applications promptly may lead to losing market share to competitors due to the inability to scale and deploy quickly to production. Overall, the responses underscore the imperative for organizations to prioritize the modernization of legacy applications to ensure project success and future readiness.

Survey respondents provided a range of effective strategies and approaches for tackling legacy applications within a project with their experience. These include:

- ▶ Utilizing intermediate services for communication between legacy and modern frameworks to facilitate integration.
- ▶ Gradually migrating legacy modules into modern frameworks to minimize disruption.
- ▶ Prioritizing refactoring and updating to the latest stable versions.
- ▶ Implementing containerization and incremental modernization techniques.
- ▶ Employing incremental modernization, modularization, and automated testing.
- ▶ Improving documentation, adopting CI/CD practices, and managing dependencies.
- ▶ Fostering cross-functional collaboration, investing in training, and conducting risk assessments.
- ▶ Engaging in early stakeholder engagement and developing a comprehensive migration strategy.
- ▶ Developing new features exclusively in newer technologies to ease the migration burden.
- ▶ Conducting thorough system analysis to identify pain points and relevant technologies.
- ▶ Decoupling the system where necessary and moving applications incrementally.
- ▶ Ensuring the implementation of unit testing and end-to-end testing from the outset of refactoring.

The survey conducted on the impact of legacy applications within project environments provided valuable insights into the challenges and strategies associated with managing legacy systems. Across various dimensions, including project timelines, budgets, security, competitiveness, and integration with new technologies, respondents highlighted significant hurdles posed by legacy applications. Notably, issues such as delays in project completion, increased costs, security vulnerabilities, and limited interoperability with modern systems emerged as prominent concerns.

However, amidst these challenges, respondents also identified effective strategies for tackling legacy applications. These strategies encompassed a range of approaches, including gradual migration, refactoring, documentation improvement, automated testing, and cross-functional collaboration. By prioritizing these strategies, organizations can mitigate the negative impact of legacy applications and pave the way for successful project outcomes.

Moreover, the survey underscored the critical importance of addressing legacy applications in project planning and execution. Neglecting legacy systems can lead to increased technical debt, reduced agility, higher maintenance costs, and diminished innovation. Therefore, organizations must prioritize the modernization of legacy applications to ensure future readiness and competitiveness in the market.

In conclusion, the survey findings emphasize the multifaceted nature of managing legacy applications within project environments. By understanding the challenges and implementing effective strategies, organizations can navigate the complexities of legacy systems and unlock opportunities for enhanced project success and long-term sustainability.





# Thoughts from industry Leaders

In our pursuit of valuable insights into modernization strategies, we've tapped into the wealth of experience possessed by industry luminaries who have successfully navigated complex modernization initiatives throughout their distinguished careers. Their expertise promises to provide invaluable perspectives and actionable strategies to address the challenges of legacy applications and propel organizations towards digital excellence.

**Abhijeet Sangwan "AJ"**  
Co-founder of Peakzi



Based on your experience, what are the critical components of a successful application modernization strategy?

## **AI-First Attitude**

In our pursuit of valuable insights into modernization strategies, we've tapped into the wealth of experience possessed by industry luminaries who have successfully navigated complex modernization initiatives throughout their distinguished careers. Their expertise promises to provide invaluable perspectives and actionable strategies to address the challenges of legacy applications and propel organizations towards digital excellence.

## **Automation**

Automating repetitive and low-value tasks is essential. This shift not only increases efficiency but also enhances overall productivity and innovation by freeing up human resources to focus on more strategic and high-value activities.

## Quality

AI provides a novel approach to measuring software quality, allowing for a more subjective evaluation based on user experience. Leveraging AI, we can shift our focus from merely technical performance (like whether a button clicks or a page renders) to how the customer feels and understands the product. This user-centric approach ensures higher satisfaction and better alignment with customer needs.

## Development

AI tools, such as GitHub Copilot, have revolutionized the development process by significantly saving time and effort. For instance, up to 75% of unit test writing can now be automated, drastically reducing the time developers spend on routine tasks. Additionally, AI can optimize existing code, improve performance, and assist with knowledge transfer, making development more efficient and less error-prone.

## Design

In the realm of design, AI tools are immensely helpful for tasks such as writing copy. This not only speeds up the development process but also improves the overall quality of the product. AI-generated content can be fine-tuned to meet high standards, ensuring that the end product is both polished and effective.



What key challenges do organizations encounter during the modernization process, and how can these be effectively addressed?

One of the primary challenges organizations face during the modernization process is a limited imagination. Many people fail to recognize the transformative potential of modern technologies, particularly AI. This can lead to underutilization of these powerful tools and a reluctance to deviate from traditional methods.

Leaders must take the time to educate and immerse themselves in the technology, understanding its potential and applications. They should champion the adoption of modern technologies and articulate their transformative potential.



Are there any specific best practices or methodologies that you recommend following to ensure a smooth and successful modernization journey?

## Encourage Play and Tolerate Failure

Foster a culture where experimentation is encouraged and failure is seen as a learning opportunity. This helps teams innovate and find the best solutions without fear of repercussions.

## Remain Objective

Focus on measurable results. Use data and metrics to track progress, prove the value of new technologies, and make informed decisions.

## Pick High Impact Problems First

Prioritize initiatives that will have the most significant positive impact on the organization. This ensures resources are used effectively and demonstrates the value of modernization early on.

## Have Fun

Cultivate an environment where learning and exploring new technologies is enjoyable. Treat failures as tuition in the journey of mastering new tech. This positive attitude helps teams stay motivated and engaged.



What factors do you consider when estimating the cost of continuous application modernization for your organization?

### Objective:

**Margins/Profit Improvements:** Evaluate the potential cost benefits, such as increased efficiency, reduced operational costs, and higher productivity, which contribute to improved profit margins.

### Subjective:

#### Quality of Life for the Team:

**Increase in Fun:** Determine if the modernization process will make work more enjoyable by introducing new, exciting technologies and methodologies.

**Reduction in Stress:** Evaluate whether modernization will simplify workflows, reduce repetitive tasks, and decrease overall stress levels for the team.



Can you provide insights into the typical expenses associated with modernizing legacy applications, including infrastructure, technology adoption, and workforce training?

The largest expense in modernizing legacy applications is acquiring the right talent. You need individuals who are passionate about technology, open-minded, and willing to take risks. These professionals are crucial for driving innovation and ensuring successful modernization.



## How do you balance the upfront investment in modernization with the expected long-term benefits and ROI?

My experience is in building bootstrapped startups, where I've always focused on creating lean organizations that produce excellent products with solid margins. While I don't have direct experience with legacy applications, the principles of balancing investments and benefits can still apply.

### Lean Investment Approach:

**Prioritize High-Impact Areas:** Focus on modernization efforts that promise the highest immediate impact on efficiency and productivity.

**Incremental Investments:** Make incremental investments rather than large upfront expenditures. This allows you to adapt and pivot based on initial results and feedback.

**Cost-Efficiency:** Use cost-effective tools and resources to minimize expenses while maximizing output.

### Long-Term Benefits and ROI:

**Measure and Track:** Continuously measure and track the performance improvements and cost savings resulting from modernization efforts.

**Sustainable Growth:** Ensure that each investment contributes to sustainable growth and improved profit margins over time.

**Employee Engagement:** Invest in technologies and processes that enhance the quality of life for the team, making work more enjoyable and reducing stress, which can lead to higher productivity and innovation.



## What significant changes do you predict AI will bring to application modernization?

A common mistake is thinking solely about how to become more productive using AI tools. However, in a few years, customers and stakeholders will expect this increased productivity as the new standard. Organizations need to anticipate and meet these rising expectations.

Consider the expectation of navigation before and after smartphones. Before smartphones, people relied on physical maps or printed directions, and getting lost was a common and accepted inconvenience. Today, getting lost is no longer an excuse in the age of smartphones with real-time GPS and turn-by-turn directions.

In the future, not using AI will sound equally silly. Actually, it is already starting to sound silly.



## Amit Potnis

Group CIO of Times Network



Based on your experience, what are the critical components of a successful application modernization strategy?

Comprehensive Assessment, Knowledge of Technology Stack, Cloud Strategy, Automation (leveraging AI), Containerization, Security, Devops Framework, Change Management, Optimization, Proactive Monitoring and Analysis, CI.



What key challenges do organizations encounter during the modernization process, and how can these be effectively addressed?

Move away from Legacy Systems (Mindset Change) - Phased Migration can address this. Skills and Capabilities - In Built Capability development practices to grow/enhance skills/capabilities. Partner Lock in period. Organizational Silos - Foster cross-functional teams, promote collaboration and knowledge-sharing, and align goals to break down silos and promote synergy.



Are there any specific best practices or methodologies that you recommend following to ensure a smooth and successful modernization journey?

Assessment, Planning, Incremental Modernization, Devops Practices, Cloud Adoption, Automation, Proactive monitoring and Optimization, Change Management and Training.



What factors do you consider when estimating the cost of continuous application modernization for your organization?

Modernization Strategy and Roadmap, Tech stack and Tools, Infra Costs, Development Costs, Operations costs, Risk Management, ROI.



Can you provide insights into the typical expenses associated with modernizing legacy applications, including infrastructure, technology adoption, and workforce training.

Costs related to infra support such as Upgrade, Migration, Tools. S/w licenses, Development tools, Partner costs, Training costs.



How do you balance the upfront investment in modernization with the expected long-term benefits and ROI?

Cost Benefit Analysis helps quantify the upfront investment required for modernization vis a vis the long term benefits, tangible as well as non tangible. ROI provides the ROI of modernization initiatives by comparing the projected benefits over time against the initial investment. Risk Assessment: Identify and assess risks associated with modernization efforts, including technical, organizational and market risks. Develop risk mitigation strategies to minimize exposure and safeguard ROI. Incremental Value Delivery: Delivering incremental value at each stage of the modernization journey to showcase measurable benefits to stakeholders. Seek continuous feedback to address/course correct. Long term perspective.



What significant changes do you predict AI will bring to application modernization?

Automation across Code refactoring, App Assessment, Testing, Optimization, User Experience, and automated coding!

# How can leaders support Continuous Application Modernization?

Leaders should look to transform these legacy applications into platforms for digital business. Ripping and replacing or rewriting from scratch is often too costly, risky, and time-consuming. It can harm the business or cost too much for the outcome it delivers.

Organizational leaders responsible for a strategy to build next-generation digital assets and platforms to leverage true potential and quick ROI should:

- ▶ Remember to stay focused on the business outcomes rather than the technology outcomes. A business outcome is a crisp, defined, tangible value or change in business impact or performance supported by measurable artifacts.
- ▶ Think critically about the cost and time of replacing/rebuilding existing applications, as this can significantly overshadow potential benefits.
- ▶ Create a prioritized list of bottlenecks or impediments for the business and address them iteratively rather than tackle legacy applications as one big problem.
- ▶ Engage your specialists early on, as they often raise the flag to management about the risks of rewriting/ rebuilding the application. It potentially stimulates and re-energizes this group of specialists as they see a window of opportunity to gradually and iteratively learn and contribute to such modernization. Remember, their vast and valuable experience will mean they will be critical in driving the modernization efforts based on business outcomes rather than performing a technology-centric migration.

“

For many organizations, legacy systems are seen as holding back the business initiatives and business processes that rely on them. When a tipping point is reached, application leaders must look to application modernization to help remove the obstacles – Stefan Van Der Zijden, VP Analyst, Gartner.

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# Conclusion

To successfully navigate the evolving landscape of technology, organizational leaders must foster a culture of continuous modernization. This entails proactive management of technical debt, strategic evolution of engineering practices, and ongoing enhancement of engineers' technical proficiency. By consistently modernizing their application portfolio and IT ecosystem, teams can avoid falling behind and becoming vulnerable to obsolescence. The modernization approach should align closely with the overall application strategy, serving to drive innovation and address and prevent technical debt by establishing development guidelines and oversight mechanisms.

AI plays a pivotal role in streamlining the modernization process in this endeavor, making it faster and more cost-effective. AI-driven tools and algorithms analyze legacy codebases, identify patterns, dependencies, and areas for improvement, and recommend optimal modernization strategies. By automating tasks such as code analysis, refactoring, and testing, AI accelerates the modernization cycle, reducing the time and effort required for manual intervention. Moreover, AI helps optimize resource allocation and infrastructure management, ensuring efficient utilization of resources and minimizing costs.

Business leaders must recognize the imperative of ongoing application management, maintenance, and modernization, viewing legacy applications as valuable assets requiring iterative and proactive attention. This commitment demands dedication of time, effort, and resources but ultimately ensures organizational agility and competitiveness in a rapidly changing digital landscape.

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# Bibliography

- [1] Information Technology: Agencies Need to Develop and Implement Modernization Plans for Critical Legacy Systems," 2021. Accessed: Jun. 19, 2024. [Online]. Available: <https://www.gao.gov/products/gao-21-524t>
- [2] Derek B. Johnson, "IRS legacy system problems could be worse than advertised." Accessed: Jun. 19, 2024. [Online]. Available: <https://www.nextgov.com/modernization/2020/08/irs-legacy-system-problems-could-be-worse-than-advertised/258023/>
- [3] Adam Mazmanian, "IRS not capturing the true cost of its legacy IT footprint, watchdog says." Accessed: Jun. 19, 2024. [Online]. Available: <https://www.nextgov.com/modernization/2023/02/irs-not-capturing-true-cost-its-legacy-it-footprint-watchdog-says/382690/>
- [4] "Wells' Growth Reportedly Hampered By Old Systems, Tech Failures." Accessed: Jun. 19, 2024. [Online]. Available: <https://www.pymnts.com/bank-regulation/2020/wells-growth-hampered-by-outdated-systems-tech-failures/>
- [5] Lauren Decker, "State of Software Happiness Report 2019," 2019. Accessed: Jun. 19, 2024. [Online]. Available: <https://learn.g2.com/state-of-software-happiness-report-2019>
- [6] "The 2021 State of Work – How Covid-19 changed digital work." Accessed: Jun. 19, 2024. [Online]. Available: <https://business.adobe.com/resources/reports/state-of-work.html>
- [7] Top Strategic Technology Trends 2024," Gartner. Accessed: Jun. 19, 2024. [Online]. Available: [https://emt.gartnerweb.com/ngw/globalassets/en/publications/documents/2024-gartner-top-strategic-technology-trends-ebook.pdf?\\_gl=1\\*1s7l71d\\*\\_ga\\*ODMyNzA4ODElLjE3MDc3Njc0MDQ\\*\\_ga\\_RIW5CE5FEV\\*MTcwNzc5NDMyNy4yLjEuMTcwNzc5NDM3MS4xNi4wLjA](https://emt.gartnerweb.com/ngw/globalassets/en/publications/documents/2024-gartner-top-strategic-technology-trends-ebook.pdf?_gl=1*1s7l71d*_ga*ODMyNzA4ODElLjE3MDc3Njc0MDQ*_ga_RIW5CE5FEV*MTcwNzc5NDMyNy4yLjEuMTcwNzc5NDM3MS4xNi4wLjA).
- [8] Herb Krasner, " THE COST OF POOR SOFTWARE QUALITY IN THE US: A 2022 REPORT." Accessed: Jun. 19, 2024. [Online]. Available: <https://www.it-cisq.org/the-cost-of-poor-quality-software-in-the-us-a-2022-report/>
- [9] "Gartner." Accessed: Jun. 19, 2024. [Online]. Available: <https://www.gartner.com/en>
- [10] "Modernizing applications on hybrid cloud." Accessed: Jun. 19, 2024. [Online]. Available: <https://www.ibm.com/thought-leadership/institute-business-value/report/application-modernization-hybrid-cloud>



## About DevOn

DevOn is a technology company focused on helping organisations achieve high performing remote software delivery teams. We offer innovative solutions designed to enhance team efficiency and effectiveness, regardless of location.

Our experienced, professional teams use cutting-edge technology to provide seamless collaboration. Organisations that incorporate DevOn teams for remote software delivery see improved performance and reach goals faster.

### Our seven key principles serve as the foundation for building successful remote teams:

- Effective communication
- Strong leadership
- Clear expectations
- Regular feedback
- Continuous improvement
- Recognition and reward
- Results-focused culture

DevOn is proud of our industry awards, and they reflect the high regard of DevOn shared by clients, employees, and analysts.

## Awards & Recognition



### 4 Times Great Place to Work Certified

Certification based on **Trust Index 94%** – a comprehensive employee survey and culture audit



### Top 10 inspiring Workplaces 2023

Ranked No.4



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## CONTACT US

Speak with one of our experts

Our insights can help you take advantage of change. If you're looking for fresh ideas to address your challenges, please feel free to reach out to us for a quick brainstorm.

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