# Ready. Set. Start your legacy application modernization journey

A comprehensive guide to strategy and setting expectations

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## What is legacy application modernization?

In the digitally centric business landscape, organizations are grappling with how to manage their increasingly complex and rapidly expanding tech stacks. This is a future-proofing priority, but it's complicated to execute. We get it — it's easy to remain attached to the familiar tried, and true tools.

The problem is monolithic architecture and systems can be fraught with integration issues, limited scalability, data redundancies, and security risks. Sometimes it's glaringly obvious exactly how legacy systems (with their poor adaptability and the amount of maintenance they require) can hold businesses back from achieving new levels of growth and efficiency. It's the times when it is not so straightforward and far more insidious that can be the stuff of nightmares for an organization's IT teams.

Legacy application modernization is the process organizations embark on to replace outdated technology and infrastructure with up-to-date solutions. This can include updating or fixing broken code, adding new features to existing applications, replatforming, and/or migrating to a newer hosting platform altogether, plus everything in between.

From a digital strategy perspective, this isn't just about clearing out the cobwebs and migrating from one platform to another. In the lightning-fast business world, this is how organizations address operational risks, bring down continuously increasing maintenance costs, and eliminate barriers as they plan and posture for future growth. Modernizing legacy systems can lead to a 30% to 50% decrease in application maintenance requirements and running costs.[1]

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## Recognizing when it's time to modernize

An unfortunate truth for all IT managers and decisionmakers is that software has a shelf life. And much like the takeout left to camp in the back of someone's refrigerator, legacy software has some tell-tale signs when it's past its prime. But technology being dated isn't the only reason to modernize. When the technology you're using costs more to maintain than it would cost to upgrade to a new solution, you know there are problems that must be addressed. In an average IT budget, up to 80% of resources are spent keeping legacy systems running.[2] You should also consider this a necessity in the face of organizational growth and maintaining business resiliency.

This posits the next logical question: **How do you know when it's time to modernize your legacy applications?**

Here are the most glaring signals.

### Your technology is old and breaking

Simplicity aside, holding onto technology that's old and breaking is a little like refusing to get rid of your first car. It definitely doesn't work like it used to, and maybe you've become desensitized to certain issues because you've had to work around them for so long. Maybe you need a completely new one, or maybe it's a matter of finding the right mechanic to make all the vital updates.

To use a business example: If enterprise customer relationship management (CRM) is one of the oldest pieces of software in a tech stack, and there are integration issues with getting data

from the CRM into other systems, the solution is not manually transferring data. The solution is application modernization. To continue to defer the inevitable will only result in continued, inefficient performance and exasperated teams. This hinders productivity and creates a downstream effect with security vulnerabilities because outdated applications are especially vulnerable to increasingly sophisticated security threats.
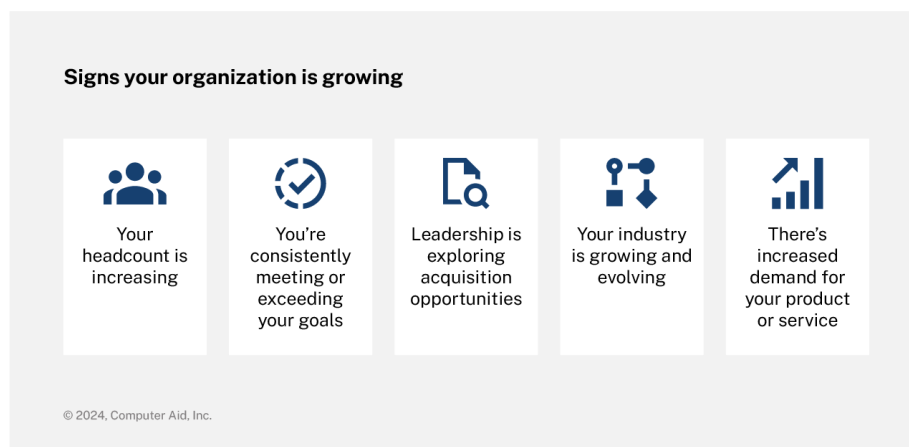
Similarly, when development teams are spending a disproportionate amount of time patching code and making repairs rather than focusing on innovation and new projects, it's a rather unmistakable indicator of the need for digital transformation. While there can be larger upfront costs when investing in new technology, this might allow you to save money in the long run; and reallocate budget previously dedicated to maintaining (and fixing) legacy applications. In fact, successfully modernizing your application systems can minimize the overall cost of business operations by nearly 15%.[3]

Acknowledging your technology is dated can also trigger a second-tier issue of retiring institutional knowledge. As populations of employees familiar with the workings of these systems phase out, the technical understanding for how to work with and maintain legacy applications tends to be lost. Underprepared organizations then struggle to attract new talent to take over system management because knowledge bases are now mismatched. Modernizing your tech stack and adopting newer technology can help to bring in talent that will be interested in developing their career at your organization.

## Legacy application modernization to prepare for organizational growth

Economic and consumer growth has been stronger in recent years than previously expected, largely driven by an expanding labor market and increase in consumer spending. As such, organizations of all sizes are moving with this flow of progress and preparing their technologies and teams to grow alongside each other.

Five of the most notable signs that your organization is expanding or on the cusp of growth include:



**Signs your organization is growing**

| Your headcount is increasing | You're consistently meeting or exceeding your goals | Leadership is exploring acquisition opportunities | Your industry is growing and evolving | There's increased demand for your product or service |

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*A visual representation of the 5 signs your organization is growing. [Left to right] Sign 1 features an icon of three people under which reads: Your headcount is increasing. Sign 2 features a circle with a check mark in the middle which reads: You're consistently meeting or exceeding your goals. Sign 3 features a sheet of paper with a magnifying glass hovering over it which reads: Leadership is exploring acquisition opportunities. Sign 4 features a square connected path with only three complete sides which reads: Your industry is growing and evolving. Sign 5 features a vertical bar graph with an arrow pointing up and to the right which reads: There's increased demand for your product or service.*

- Your headcount is increasing

- You're consistently meeting or exceeding your goals

- Leadership is exploring acquisition opportunities

- Your industry is growing and evolving

- There's increased demand for your product or service

Growth often equals a reevaluation of any number of business processes and practices, not the least of which are legacy IT systems and solutions. With increased consumer spending comes rising expectations, so customer experience (CX) is a continued priority alongside growth opportunities. Organizations of all sizes need to move faster and more nimbly to provide a seamless, personalized customer experience that sets them apart from competition and boosts brand loyalty. One simple truth about business, growth requires scalability. Your technology needs to grow and adapt alongside your organization, and legacy infrastructure can seriously limit your ability to scale. Nearly 90% of businesses that fail to properly scale and rely too heavily on legacy systems fail to capture the full potential of their technologies.[4]

As you explore growth opportunities, legacy application modernization will be a key component of your strategy. Modernizing legacy systems and applications unlocks the potential for future innovation and speed, helping you achieve your goals more quickly and expand in a way that doesn't disrupt internal workflows or customer interaction.

With these considerations in mind, you'll be better prepared to adapt in a sustainable, strategic way. And with a modern suite of applications, you can scale at a pace that makes sense for your organization.

## Building organizational resiliency

While preparing for and sustaining growth is important, your organization must also be prepared to withstand changes in the market, economy, and consumer environment. Being flexible and adapting quickly allows you to easily pivot in response to any changes with minimal disruption to employee workflows or user experience (UX). In an age of increased competition and rising expectations, this will be critical, as the customer often feels the impact of growth and change and will base future spending decisions on these experiences. A recent study noted that 49% of customers who left a brand to which they'd been loyal in the past 12 months say it's due to poor CX.[5] Keeping both employee and customer experience top of mind when responding to change will aid in talent retention, brand loyalty, and the overall longevity of your business.

**"...49% of customers who left a brand...say it's due to poor CX."**

Times of change often expose flaws in processes, gaps in resources, or technologies that aren't equipped for your current state. Making sure your technology is functioning properly and not putting undue strain on your teams will help everyone work smarter, improve your resiliency, and reduce the likelihood of unintentional technical debt, which is the leading obstacle blocking innovation for 70% of organizations.[6] The accumulation of technical debt can be a major hindrance to modernization, as the teams tasked with addressing technical debt won't have time to focus their efforts on modernization initiatives. Additionally, technical debt has considerable implications on productivity, meaning those responsible for managing technical debt will work at a slower pace than others. This reactionary work can hamstring your organization, forcing you to move slower and preventing you from efficiently modernizing. Keeping technical debt in mind and being cognizant of other incidents that can impact your time and resources is key.

Modernizing your legacy applications and removing any redundancies can help make this a reality for your business — a modern, integrated application environment means faster workflows, greater oversight of your tools, and a more resilient organization.

# Making the case for a modernization investment

Gaining organizational buy-in to modernize your legacy applications is a crucial step to ensure the successful transformation of outdated systems into agile, efficient, and competitive tools. Considering the key investments for modernization — time, resources, and capital — persuading your stakeholders of the benefits of this process is vital. When stakeholders understand the benefits of updating legacy applications, including up to 43% growth in revenue,[7] organizational strategic objectives align with modernization initiatives.

## Enterprise-wide benefits of legacy application modernization

Modernizing your legacy applications offers far-reaching benefits, many of which will help you gain buy-in from stakeholders. For example, application modernization is paramount for enhancing cybersecurity as up to 45% of cyberattacks occur due to outdated software.[8] Often only designed for offline security, outdated applications are especially vulnerable to cybersecurity threats amid cloud migration. Updating your legacy systems will enhance security measures and compliance with industry standards. As organizations shift towards Zero-Trust Network Access (ZTNA) policies, an identity verification system must be used to gain access to data, and legacy systems must be updated to meet these requirements.

Modernized application systems can better integrate emerging technologies while protecting secure information. The process also leads to enhanced UX, boosting your customer loyalty. Systems based on outdated technologies can be incompatible with new standards, limiting opportunities for aligning with industry standards and adapting accordingly. Updating legacy applications can improve developer productivity by 40%, allowing more time to focus on other organizational initiatives.[9]
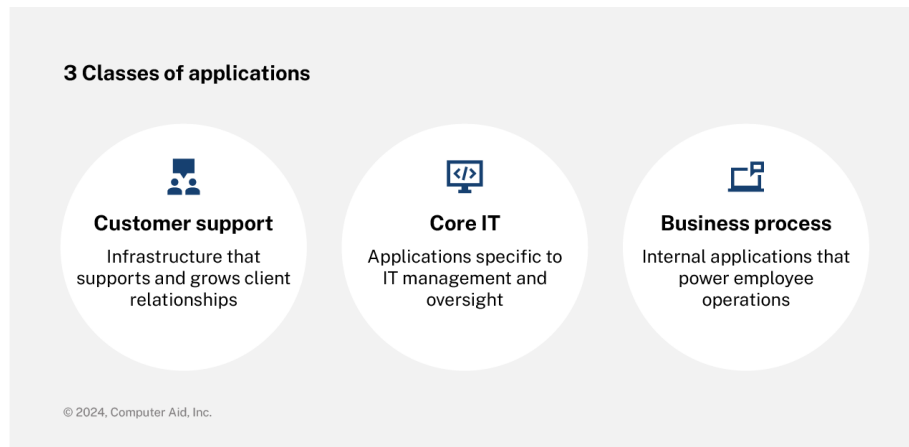
Updating legacy systems can also reduce your total cost of ownership (TCO). Though modernization can incur higher upfront costs, maintaining and updating modern applications decreases your infrastructure spending by up to 35% year-over-year.[10] Plus, utilizing a microservice approach, modernized systems easily update or upgrade software without affecting the entire system — resulting in fewer application failures. With a cloud-native architecture, updated systems cost less than traditional software. Pay-as-you-go cloud service models allow you to prioritize spending on necessities instead of unused resources.

# Legacy application modernization strategies

Once you've identified a need for legacy modernization and gained buy-in from key stakeholders, it can be difficult to know where to get started. There are several technical considerations to keep in mind, but you also need to consider the impact of the project on your existing people and processes. This can seem daunting, but with the right roadmap in place, it can be done.

## The prioritization imperative

During the early stages of your journey, it will be critical to prioritize what needs to be modernized — and when. To help guide your understanding of your application environment, consider categorizing applications by function. Core IT applications are specific to IT teams and are often the most technical in both function and oversight. Business process applications support your employees and streamline internal processes. And customer support applications cover the infrastructure that supports existing relationships and helps to grow your business by acquiring new clients. In many cases, applications are customized to meet the individual needs of the business, but they typically fall under one of these categories.

**3 Classes of applications**

**Customer support**
Infrastructure that supports and grows client relationships

**Core IT**
Applications specific to IT management and oversight

**Business process**
Internal applications that power employee operations

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*3 circles arranged horizontally, outlining the 3 classes of applications. Circle 1 – Customer support: Infrastructure that supports and grows client relationships. Circle 2 – Core IT: Applications specific to IT management and oversight. Circle 3 – Business process: Internal applications that power employee operations.*

The order in which you modernize your applications will depend on the individual needs of your business and the current state of your existing technology. You'll also want to consider user feedback and data from both your employees and your customers to further guide your decisions. However, as customer expectations rise with a growing consumer market, taking stock of your support applications is usually a good place to start. Because these applications are the most public facing, they are also most likely to impact your business's bottom line. Consider these evolving expectations as you look to personalize the customer experience, make data-driven updates, and provide a robust support infrastructure to users who may have questions or are experiencing technical difficulties.

As cybersecurity grows in importance and organizations face an increasingly sophisticated threat landscape, core IT applications are a close second for modernization. Modernizing helps to ensure organizational compliance and keeps your data and users protected against bad actors.

Business process applications are usually a little further down the list for modernization, despite employees feeling the impact of outdated legacy systems on their day-to-day work. This is why it's important to consider your applications in categories; it allows you to develop a strategy that includes all categories of applications and take a more holistic approach to your organization's modernization efforts. At CAI, we call this approach to your people, processes, and tools strategic enterprise modernization.

## Technical considerations

Once you've categorized your applications and prioritized their modernization order, you'll have to look more closely at the applications themselves to determine what needs to change and your most logical next steps. Business applications can be modernized in several ways, depending on the goals of your organization, the existing technology stack, and the resources available. Here are some common approaches to legacy application modernization:

### Rehosting

Rehosting involves moving an application to a new environment without changing its code, features, or functions. This usually involves moving from an on-premises server to a cloud-based environment.

### Refactoring

Refactoring modifies the application's code to improve its performance, sustainability, or scalability without altering its external behavior. This often involves optimizing the code for the cloud.

### Replatforming

Certain applications may require migration to a new hosting platform, a process known as replatforming. A key feature of replatforming as it relates to application modernization is that it preserves the core functionality of the application and does not require a complete replacement, reducing the amount of risk and disruption associated with the changes.

### Rearchitecting

In some cases, your applications will require significant changes to their code, effectively shifting them to a new architecture.

### Rebuilding

Rebuilding involves rewriting the application from scratch – for example, using a new programming language or adopting new frameworks and technologies. Rebuilding an application still preserves its role, scope, and specifications.

### Implementing security upgrades

As cybersecurity remains top of mind, some applications will simply require the implementation of more modern security features to meet rising compliance standards and security expectations.

### Enhancing features

In some cases, modernization may be as straightforward as implementing new features. Feature upgrades enhance the application and can include new integrations to increase functionality and relevance. These changes will positively impact the user interface (UI), making for smoother interactions with the applications themselves. Ensuring these features align with business goals and objectives will help keep your applications relevant in the market.

Each of these approaches can help make business applications more efficient, scalable, and better aligned with current technology standards. Your strategy will depend on the specific needs of your business.

## Interoperability and integration

While you modernize your applications, keep interoperability and integration top of mind. Individual applications are only as good as the purpose they serve in your overall environment, and they can't function to their full potential in a silo. Integrating business applications can streamline processes, improve data consistency, and provide a more unified view of your operations. As you continue your modernization journey, consider the following strategies to integrate your applications in a way that makes sense for your organization:

### Application programming interfaces (APIs)

APIs connect disparate systems and allow them to communicate with each other. They are one of the most widely used integration technologies.

### Middleware

Middleware acts as a bridge between different applications. It can handle data translation, communication, and connectivity.

### Data integration tools

Implementing data integration platforms that support extract, transform, load (ETL) processes can help merge data from disparate sources and provide a more unified view.

### [Robotic process automation (RPA)](#)

Leveraging RPA allows bots to automate manual tasks that involve different applications, such as data entry or form submissions.

### Custom integrations

In some cases, you'll need to develop custom scripts or programs to link your applications. While more flexible, this is a more resource-intensive option.

Each integration method comes with its own set of advantages and challenges, and the choice will depend on the specific needs, existing infrastructure, and strategic goals of your business. It's also common for businesses to employ a combination of these methods to achieve a comprehensive integration strategy.

Integration and interoperability considerations underscore the need for flexibility. Successful modernization efforts will give you more options to respond to changing business needs, helping you remain nimble and therefore more resilient. You'll adapt to changes in the business landscape and your individual needs faster and with fewer disruptions. And you'll be more prepared to pivot where needed and implement continuous improvement measures.

## Implementation considerations for legacy application modernization

### Evaluate your processes

In many cases, modernizing your application environment will require a reevaluation of your existing processes. If you've modernized your technologies, there's a good chance that your processes will need to follow suit. You may be able to eliminate redundancies and time-consuming manual work, freeing up your employees to focus on higher-value tasks and further optimizations. Establishing a consistent feedback loop can help; user feedback can guide your process decisions and help you understand what ongoing improvements are necessary.

### Leverage AI to modernize your applications

Expansion and availability of artificial intelligence (AI) has caused major disruption to the technology space, and businesses of all sizes are realizing the benefits. Working AI into your modernization strategy can not only streamline your processes, but it can also add value by enhancing performance, security, and user experience.

Here are key use cases for AI in legacy application modernization:

**"Working AI into your modernization strategy can not only streamline your processes, but it can also add value by enhancing performance, security, and user experience."**

- **Migration planning:** AI can assist in planning your modernization projects, estimating the effort required, and optimizing your migration path.

- **Code analysis and refactoring:** AI can analyze legacy code, identifying patterns and dependencies. It can suggest or, in some cases, automate refactoring to prepare for a modern platform.

- **Automated testing:** AI can generate test cases for legacy applications, predicting where bugs will likely occur. It can also automate regression testing to ensure that any new changes won't disrupt existing functionality.

- **Legacy integrations:** If a legacy application cannot be fully replaced or modernized, AI can help you create interfaces that allow legacy and modern applications to effectively communicate.

- **Predictive maintenance:** AI can predict system failures, allowing for proactive maintenance and reduced downtime.

- **Performance optimization and security enhancements:** AI can monitor application performance, adjusting resources or suggestion optimization to reduce operating costs. AI-powered security tools can analyze your applications for vulnerabilities, monitor for threats in real time, and suggest security reinforcements.

## Hybrid IT: A middle ground when resources are limited

Even the most resourced of organizations aren't always equipped or prepared to modernize all their technologies, all at once. It's a process and a long-term commitment dictated by specific business goals and priorities. In some cases, this means operating with a suite of both modern and legacy technologies — also known as hybrid IT. Building a comprehensive hybrid IT strategy allows your organization to continue your most business-critical functions with minimal disruption, while still modernizing and planning for the future. As with most business practices, finding the balance between your legacy technologies and modernization projects will be critical to your future state.

## Identify the people who will execute your modernization strategy

After evaluating your processes, it's time to consider if you have the internal staff to accomplish your modernization goals. Because legacy application modernization will touch multiple areas of the business, it's important to know where you have a gap in resources. Many organizations find that they are inundated with day-to-day business operations, leaving little room for big picture projects like modernization. In these instances, a trusted IT services partner can step in to provide resources when planning for and executing legacy application modernization.

Often, it is a combination of internal teams and external experts who make an impact on modernization efforts. For these busy organizations, leveraging neurodiverse talent could also be a solution. Modernization requires executive support and vision to lead the right talent on this multi-faceted journey, and in an era characterized by digital everything and rapid market fluctuations, creative problem-solving and fresh perspectives are a rare find. Neurodivergent individuals can possess skills in pattern recognition, memory, and analytical thinking. With the right approach, a team of neurodiverse talent could be the secret to executing your modernization strategy.

> **"With the right approach, a team of neurodiverse talent could be the secret to executing your modernization strategy."**

## Preserve day-to-day operations and service levels during high-value modernization projects

In times when enterprise IT is not only tasked with innovating and modernizing, but also with maintaining current service levels and customer experiences, balancing the two can be difficult. Bandwidth constraints and talent shortages only exacerbate the issue, straining IT organizations

even further. You can look to application maintenance best practices to reduce incidents and ensure your processes continue to run smoothly during higher-value projects.

Working alongside a trusted partner is an option that can help take some of the strain off the internal teams tasked with day-to-day maintenance. Partner organizations can provide support for application maintenance, development, and more, freeing up your resources for higher-value activities and innovation. As with any transformation initiative, where you'll need the most support will depend on the goals and objectives of your business.

## Legacy application modernization and CAI

The importance of legacy application modernization cannot be understated. Replacing outdated technology and infrastructure with up-to-date solutions better allows organizations to keep up with a rapidly evolving business landscape, improve overall security, and meet increasing customer demands. CAI's holistic approach is tailored to meet organizations where they are. Whether you require a partner that fully leads modernization efforts or aids in keeping the lights on while internal teams spearhead innovation, CAI has helped hundreds of businesses, organizations, and agencies in both commercial and public sector spaces navigate the digital transformation and modernization journey.

CAI Application Development and Maintenance services help to accelerate your digital journey, optimize costs, and reduce technical debt. We go beyond the plan, build, and run of application basics to redefine the way you create and manage your digital landscape. Specifically, the CAI approach is client-centric and helps organizations and businesses leverage hyperautomation and technical debt management to achieve meaningful results, enhanced outcomes, and reduced costs.

Application Modernization at CAI focuses on the abilities to scale more easily, manage costs effectively, and maintain security for legacy applications. With modernization services organizations and businesses can lower their total cost of ownership for legacy applications through improved visibility on expenses and technical debt. They can also bolster agility and speed, sustainably scale when it comes to growth, and improve security in the face of current threats.

CAI Application Rationalization services help you to prepare for you legacy application modernization journey. By providing a comprehensive inventory and value validation for your tech stack, CAI can help define an action plan and walk your organization or business through the 5 R's of application rationalization: Retain, retire, rehost, replatform, and refactor/reimagine.

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CAI is a global services firm with over 9,000 associates worldwide and a yearly revenue of $1.3 billion+. We have over 40 years of excellence in uniting talent and technology to power the possible for our clients, colleagues, and communities. As a privately held company, we have the freedom and focus to do what's right — whatever it takes.

Our tailor-made solutions create lasting results across the public and commercial sectors, and we are trailblazers in bringing neurodiversity to the enterprise.

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