

A hand is shown pointing at a tablet screen. The background is a vibrant red with a subtle, repeating geometric pattern. The overall image has a dark, semi-transparent overlay.

Rethinking application ecosystems for the AI era: A strategic guide for leaders

Unlock Your Inside Edge™

kyndryl®

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Executive summary

Today's volatile and highly competitive business environment doesn't reward complacency — it exposes it. And while there are no guarantees in an era defined by change, there is one constant: applications.

Applications remain the go-to platforms that people rely on to navigate digital spaces. They're also the portals through which people see, evaluate and engage with the real world.

Every day opens and closes with an app, from humble alarm clocks and email clients to up-to-the-minute trading platforms, supply chain management tools and high-powered manufacturing-inspection software.

Since apps define the human experience of an enterprise, they're an obvious playground for investment and innovation.

Leaders driving durable growth know that integrated, composable application ecosystems are crucial for success. Rising to this challenge is as much about unlocking edge data, for example, or integrating AI, as it is about managing change for internal teams and across customer relationships.

In our work driving holistic transformation with some of the world's leading businesses, we've identified four strategies that help teams develop future-ready apps in a real-time economy:

- 1.** Drive innovation and growth with AI-native applications, especially now, as agentic AI is pushing the boundaries of what's possible.
- 2.** Take a continuous, pragmatic approach to modernization. Increased complexity demands clarity and alignment with business goals.
- 3.** Prepare for organizational change — and lead with purpose. Progress ultimately starts and ends with people. And people depend on leaders.
- 4.** Collaborate with partners across your ecosystem. Being a fast adopter of proven technologies is often more effective than starting from scratch.



As AI becomes more closely connected to UI and rising expectations inspire new in-app experiences, composable, cloud-native architectures will be the best foundation for resiliency and relevance. Leaders who'll succeed in creating the future understand that continuous transformation isn't the only thing — it's everything.

An experience ecosystem on the edge of underperformance

Applications define the human experience of an enterprise – and delight or disappointment reverberates across the bottom line.

Digital experiences with slow load times, bad design or ineffective personalization are contributing to a customer cart abandonment rate of 70.19% in the U.S. and EU, representing potentially billions in unearned (but possibly recoverable) revenue.¹

Additional research shows that more than half of customers (58%) have picked one brand over another based on a better UX, and 51% have stopped buying from a company because its website or app was too hard to use.²

Inside the enterprise, 6 in 10 employees feel overwhelmed by the number of applications and digital tools they're asked to use. Nearly two-thirds of workers have even considered quitting because of application sprawl.³

Inefficient application ecosystems also have cost and innovation implications. Organizations that rely on outdated application portfolios typically incur higher operating expenses and take longer to get new products and services to market.

But the converse is also true. When companies prioritize composable application architectures and AI-native ecosystems, they achieve faster innovation cycles and greater productivity gains.

These insights reveal an essential truth: Leaders who challenge old ways of thinking and embrace application transformation as a business imperative, rather than a technical exercise, will deliver bold experiences that set them apart from competitors. In a world where every human interaction with your brand could be its last, the stakes couldn't be higher.

This paper is designed as an application transformation roadmap. It will explore emerging trends and opportunities and share practical suggestions that business and IT applications leaders can pursue to thrive in this new environment.

2 truths and 1 mindset shift impacting the evolution of application ecosystems

Intelligent, **future-ready applications** — AI-infused software that uses learned adaptation to respond autonomously to people and machines — have the potential to rewrite the rules about how companies engage with everyone along the value chain. Yet for leaders, the speed and degree of success will be measured in part by how well they navigate two truths and one critical mindset shift.

Truth 1: Modernization is at the core of business outcomes that matter

Business and technology leaders face a perfect storm driven by pressure to move fast and adopt new capabilities such as advanced AI and cloud, while managing risks across hybrid environments. However, when business and IT strategy don't align, and legacy systems are blended with modern platforms, complexity swells and sustained progress is harder to achieve.

Strategic modernization provides a steady force in this sea of change.

By working across teams to define a clear future state and align investments to enterprise priorities, organizations can ensure technology supports the business. This process

includes using composable architectures that can be assembled and reused as needs evolve.

With this foundation, applications become business and economic drivers. Leaders can direct spending to the most critical capabilities, integrate services more effectively and reinvest savings in innovation and growth.

As proof, [Kyndryl's 2025 Readiness Report](#) found that 87% of companies that transformed IT last year saw improved efficiency. Respondents pointed to increased innovation and enhanced employee or customer experiences as additional benefits of application estate modernization.

Transformation also serves as a financial lever.

Organizations that participated in Kyndryl's [2025 State of Mainframe Modernization Survey](#) reported ROI ranging from 288% for modernizing applications on the mainframe to 362% for companies that moved workloads to other platforms. Over the next three years, survey respondents anticipate that applying generative AI to modernized environments will help save billions of U.S. dollars in operational costs and generate billions more in revenue.



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Truth 2: AI will simplify, speed and close skills gaps in application development

Refactor, replace, replatform or retire — that was the old applications decision tree for leaders. Today, the path forward is far more nuanced.

Application portfolios have grown larger and more diverse to support a wider range of business needs and processes, including:

- Customer Relationship Management (CRM)
- Enterprise Resource Planning (ERP)
- Supply Chain Management (SCM)
- Human Capital Management (HCM)
- Collaboration

That's on top of the dozens — and sometimes hundreds — of custom-developed applications a single enterprise may rely on to drive core business functions.

AI and **generative AI** have also raised the bar for applications, challenging assumptions of what's possible with technology and redirecting budgets at every step along the way. Gartner® predicts that by 2029, more than 50% of user interactions linked to enterprise business processes will leverage large language models (LLMs) to bypass the user interface layer in traditional enterprise applications, up from less than 5% in 2025.⁴

Agentic AI holds even greater promise for application innovation. While the technology is still in its infancy, 78% of Mainframe Modernization Survey participants already use agentic AI to develop, test and manage business applications. Developers are also using agentic AI across the entire application life cycle, from documentation, assessment and design to development, integration and security.

Eventually, agentic AI's ability to capture decades of institutional knowledge and processes and make it all instantly accessible to IT teams should help address **skills gaps**, reduce complexity and, ultimately, redefine how business gets done.

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The mindset shift: Continuous transformation isn't the only thing – it's everything

Every leader wants to build for the future, but the future no longer caters to three-, four- or five-year plans. Strategic, ongoing transformation is far more efficient and effective than large, infrequent overhauls for creating adaptive application ecosystems to support future-ready enterprises. Consider how continuous transformation is helping:

- **Increase business agility** in banking by modernizing and migrating business-critical applications to the cloud
- **Reduce cost and risk** in infrastructure construction by centralizing enterprise resource planning and analysis and transforming without disruptions
- **Accelerate innovation and value creation** in the public sector by continuously introducing new capabilities that improve customer experience and drive revenue growth

Kyndryl experienced the power of continuous transformation firsthand when we entered into a two-year transition service agreement (TSA) with our former parent company in 2021. The TSA gave us just two years – a tight timeline by any standard – to consolidate or eliminate more than 80% of our applications portfolio. Using a **strategic and business-aligned approach**, we reduced our estate from more than 1,800 applications to fewer than 360, laying the foundation for a fit-for-purpose technology framework that enables a **culture of continuous reinvention**.

The payoff for organizations that pivot to a continuous transformation and modernization mindset is significant. Kyndryl Readiness Report respondents reported a 22-point uplift in IT readiness from last year and a 15-point ROI boost on AI investments. This disparity underscores the value of a dynamic, adaptable culture and an agile technology environment.

For business and IT applications teams and executive leadership alike, the takeaway is clear: Transformation that drives progress and sustains competitive advantage is a continuous journey fueled by ongoing refinement and stakeholder investment at every level of an organization.

The evolution of an application ecosystem: Kyndryl's transformation.



>1,800
applications



<360
applications

Turning challenges into business opportunities

Running a business and maintaining a future-ready applications estate can be daunting, but challenges serve as invitations to reimagine, adapt and grow. Business and IT applications leaders who assume the role of **change agent** can convert obstacles into opportunities that accelerate growth.

Moving from complexity to clarity

When technology environments become siloed and systems don't talk to each other, the impacts ripple across an organization.

Business and IT applications leaders spend time troubleshooting instead of innovating, making it harder to launch new products and services. Customers experience delays or inconsistencies, and sales teams often miss or respond to market changes too slowly.



Often, leaders don't realize how application sprawl negatively affects business operations and customer relationships. These knowledge gaps can lead to prioritization paralysis and a patchwork approach to application transformation.

With a comprehensive roadmap and the expertise to modernize while maintaining normal operations, application transformation can be an instrument for structured and continuous growth.

Modern platforms and reusable data services lay the groundwork for smarter operations, while AI-driven automation accelerates processes. Strategic partnerships enhance internal capabilities, ensuring that transformation efforts deliver a lasting impact. Platform thinking and skills building create a culture that embraces change and innovation.

By focusing on strategy building and long-term value rather than product selection and short-term rewards, organizations can maximize returns on investment without disrupting business continuity.

Customer spotlight

Arizona Motor Vehicle Division (AZMVD)

The AZMVD wanted to transform its customer experience and modernize operations. With millions of annual transactions and growing demand for digital services, the agency needed a solution to reduce wait times, improve service delivery and enable secure, scalable digital interactions for residents.

Our solution

Together, the AZMVD and Kyndryl designed and implemented a cloud-based interactive platform to streamline customer engagement. Using Microsoft Azure and advanced automation, Kyndryl modernized the agency's entire system from the ground up, including completely re-architecting their backend and frontend processes, rebuilding applications, and cleansing and migrating data. These enhancements enabled self-service options for customers, reducing reliance on in-person visits and manual processes.

Key outcomes

- Enabled digital self-service for millions of residents
- Reduced in-office wait times from 15 minutes to 2 minutes
- Accelerated online transaction speeds to 2 seconds
- Delivered a secure, scalable cloud platform for future growth
- Increased operational efficiency through automation and real-time data integration
- Enhanced customer satisfaction with faster, more convenient service options

Driving progress by managing change

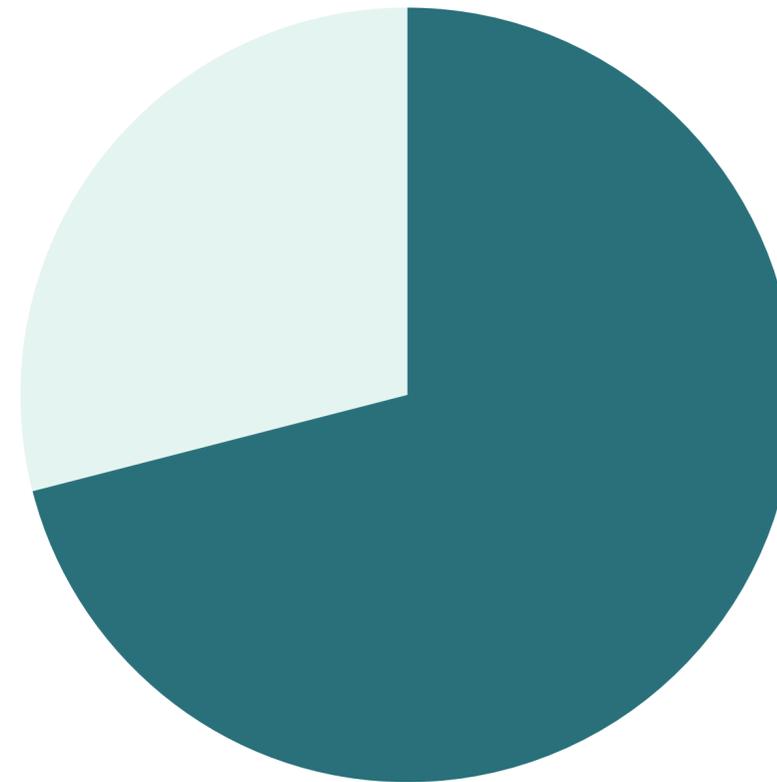
Technology doesn't transform organizations — people do. If companies underinvest in the human aspect of change management, modernization projects will stall, underperform or fail altogether.

Despite its potential, AI can exacerbate cultural challenges and increase the soft costs of transformation. [Kyndryl's People Readiness Report 2025](#) found that 45% of CEOs think most employees are resistant or even openly hostile to AI. Our research also shows that 71% of leaders say their workforces are *not* ready to use AI extensively in the workplace.



45%

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Regardless of obstacles, leaders across industries are reimagining workflows and processes with intelligent applications to improve experiences for employees and customers. The technology is helping drive:

- **New levels of agility in hospitality** with personalized, multimodal training modules that are automatically translated into employees' native languages, speeding onboarding and closing skills gaps
- **Faster response times in shipping and logistics** by giving employees the power to bypass IT and query complex systems on their own, in natural language, to answer customer questions in minutes versus hours
- **Proactive governance in the public sector** with agent-driven workflows that embed ethics and automation, enabling real-time decisions and accelerating policy execution
- **Innovation in higher education** with AI assistants that create tailored resource roadmaps for graduate students, expediting acclimation, academic success and, ultimately, job placement

Looking forward, emerging AI-native applications and application ecosystems will reshape both the workplace and marketplace even more profoundly as agentic AI matures.



AI-native applications defined

AI-native applications embed AI at their core rather than layering the technology onto existing structures and workflows. Secure by design and governed by policy for safety and compliance, these intelligent applications can learn, adapt and act in real time, laying the foundation for AI-native enterprises.

Enhancing resilience through holistic transformation

Application security poses a significant risk for digital-first organizations.

A recent report found that 92% of companies surveyed across North America, Europe and Asia-Pacific had experienced at least one security breach in the previous 12 months due to vulnerabilities in applications that their software teams developed.⁵ A separate study revealed that 75% of companies had reported a SaaS security incident in the prior 12 months, a 33% jump from 2024.⁶



Intelligent applications, on the other hand, can provide a first layer of defense, stopping many threats at the edge before they reach critical systems. **AI- and machine learning-infused systems** also monitor and detect anomalies (for example, unusual logins or access patterns) in IT environments and automate compliance and policy enforcement.

The impact is real. Businesses at the forefront of technology and application transformation are 12% more prepared for cyberattacks than organizations at earlier modernization stages.⁷ These companies are also better equipped to manage ever-changing policies and regulations.

Of course, cybercrime isn't the only threat to modern businesses. Tech debt, natural disasters, regulatory noncompliance and production-related disruptions can all expose organizations to potential financial, reputational and operational risks.

Application transformation — combined with **zero trust** and a holistic approach to **governance and compliance** and **incident and disaster recovery** — can help organizations fortify cyber defenses, future-proof operations and strengthen enterprise-wide **resiliency** while maintaining reliability.

Customer spotlight

Arab National Bank (ANB)

ANB, one of the largest financial institutions in the Middle East, needed to modernize its IT infrastructure and applications to support rapid digital transformation. The bank wanted to enhance customer experiences, improve operational efficiency and maintain compliance with evolving regulatory requirements — all while sustaining the highest standards of security and reliability.

Our solution

Kyndryl partnered with ANB to design and implement a robust hybrid cloud strategy. This included migrating critical workloads to a secure, scalable cloud environment and modernizing legacy systems to enable faster innovation. Kyndryl provided end-to-end services, from architecture planning to execution, ensuring minimal disruption to ANB's operations during the transformation.

Key outcomes

- Reduced manual intervention needed for disaster recovery by 90%
- Accelerated switchover and recovery for mission-critical applications by 80%
- Enhanced system resilience and security to meet stringent compliance standards
- Improved scalability to support future growth and digital services
- Enabled faster deployment of new customer-facing applications

4 strategic recommendations for success

Future-proofing the application ecosystem that powers your business isn't solely about technology upgrades — it's about preparing your organization for what's next. These four strategies can help balance the technical and tactical aspects of modernization, all while smoothing the process and keeping people at the center of all you do.

01

Drive innovation and growth with AI-native applications

Since 2022, businesses across various industries have been riding the generative AI wave to inspire new ideas and ways of working. Use cases range from designing business models to fighting financial crime⁸ and even delivering higher ROI in FinOps.⁹

Agentic AI is pushing the boundaries of what's possible even further. Intelligent agents woven into composable architectures and deployed with the right **agentic AI framework** can reason, adapt and act, handling many tasks with minimal human oversight, in real time.

In time, agentic AI will transform how organizations build, manage and modernize their application ecosystems, making adoption a natural progression for any organization on the journey to becoming **AI-native**.



Strategic actions for leaders

- Use ready-to-deploy agentic workflows and industry agents to develop AI-native apps that deliver intuitive, personalized experiences for users
- Establish **governance and guardrails** and human-in-the-loop processes to manage AI usage, control costs, minimize risks and build trust
- Prioritize **data readiness**, focusing on data sources and lineage to enhance the accuracy and performance of analytics and AI

02

Take a continuous, pragmatic approach to modernization

Continuous modernization is a mindset and operating approach that aligns business strategy with transformation goals. Cross-functional teams continually collaborate, completing one project before moving to the next and applying lessons learned from earlier stages to future phases.

Platform engineering can streamline the software development life cycle even more, especially if you use various technologies and services or have multiple development and deployment environments. This approach is ideal for development teams trying to increase standardization and productivity or enhance security and compliance.

From start to finish, application transformation requires thoughtful orchestration of disparate systems and technologies to enhance performance and productivity and complement rather than complicate software development.



Strategic actions for leaders

- Adopt a modular, **composable application** framework to remediate technical debt and yield incremental value
- Integrate legacy systems with intelligent applications and cloud-native architectures using proven blueprints and industry standards
- Craft a clear roadmap that aligns strategic goals with technical requirements and can evolve with your business

03

Prepare for organizational change – and lead with purpose

Regardless of how compelling the business imperative and exponential the technical drivers, successful outcomes depend on people. People depend on leaders.

Before you begin mapping your transformation, ask: What problem are we trying to solve? How will we measure success? Are we prepared to undertake this type of change?

After answering these questions, you can work with business and IT teams to create an enablement program that builds awareness, gains buy-in and paves the way for a smoother journey than if you focus on technology alone.



Strategic actions for leaders

- Create a clearly defined, human-centric **change-management** plan that includes structured paths for adoption, governance and improvement
- Apply a product-led growth strategy, treating employees as internal customers to fully understand workers' needs and build capabilities that they embrace
- Design transformation and reskilling programs that define roles for employees and agents, outlining skill requirements and introducing hybrid models to integrate **digital colleagues**

04

Collaborate with partners across your ecosystem

Most organizations lack the in-house skills to modernize their entire application estates. That means you'll likely face technical challenges you're not fully equipped to handle, whether your application transformation is cloud-first or part of the broader AI-driven repatriation trend.¹⁰

You don't have to go it alone. Your vendors have extensive expertise with their respective technologies, so treat them like capability partners.

Trusted ecosystem providers can speed time to market and help your transformation team adapt to changing needs. So, instead of trying to invent or design too much yourself, be a fast adopter of proven technologies.



Strategic actions for leaders

- Forge partnerships with hyperscalers and other technology providers to co-create solutions, reference architectures and accelerators tailored to your business
- Use industry-specific blueprints, design thinking and rapid prototyping to move projects from pilot to production quickly and seamlessly
- Work with executive leaders to build and promote an AI-native operating model anchored in secure-by-design principles, cloud-smart platforms and full-stack observability

How Kyndryl helps

Kyndryl runs and reimagines the mission-critical technology systems that drive advantages for the world's leading businesses. With decades of experience in business-critical technology systems, Kyndryl brings a hybrid architecture strategy to integrate old and new technologies, and proven frameworks and accelerators to pragmatically plan and implement the transformation.

Here are a few ways we're helping businesses modernize their application ecosystems, all while mitigating business risks and ensuring application security:

Accelerating AI-native transformations

Our [AI Agentic Framework](#) helps guide organizations along the path to being truly AI-native. We help build intelligent applications with generative AI and agentic AI capabilities, integrating data across systems and establishing responsible AI guardrails to power personalized, intuitive interactions that drive business value.

Architect for agility and innovation

We apply an enterprise architecture mindset using proven frameworks, accelerators, change strategies and co-creation to drive outcomes and value. Mapping insights from [Kyndryl Bridge](#) intelligence, we assess modernization readiness and help design modular, scalable applications that align business and IT, integrate AI and operate seamlessly in cloud-native environments.

Delivering best-in-class experience design

Our design-led transformation practice, [Kyndryl Vital](#), helps enterprises embed experience into the core of their technology. Grounded in human-centered design, we translate brand intent into how your infrastructure behaves so that every interaction, decision and AI response reflects purpose, not just process. With [Kyndryl Vital](#), experience becomes your most scalable competitive advantage.

Leading organizational change management (OCM)

We align our planning and governance model with customers' business goals and implement roadmaps for reskilling and workplace transformation. This approach balances traditional KPIs with positive sentiment and user adoption, helping to ensure that application transformation both delivers technical upgrades and represents comprehensive change across people and processes.

The modern applications leader is a strategic enabler

The true power of applications transformation isn't found in the technology itself but in its ability to connect people, processes and possibilities in new and profound ways.

Organizations that understand this principle and treat intelligent applications as strategic enablers will open new pathways for growth and resilience. They'll address challenges and seize opportunities confidently. They'll build trust and drive innovation across the enterprise.

Simply put, companies that embrace composable, cloud-native architectures and AI-infused intelligence will do more than keep pace — they'll lead. Applications transformation will be at the forefront of this evolution, serving as the conduit for continuous transformation that produces exponentially better business outcomes.



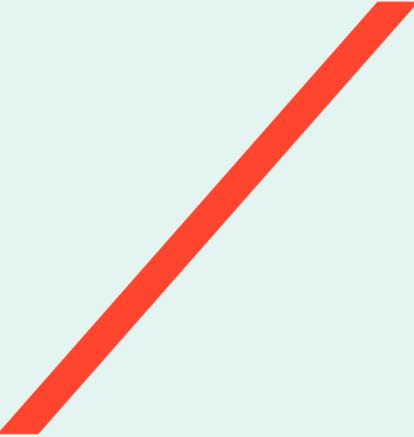


Let's explore what it means to rethink your application ecosystem, align with business goals and reduce risk. To discover where to start and how to move forward with confidence as partners in your transformation, [connect with us here](#).

And for additional insights on how modern business applications are evolving, read the [Forrester report](#) now.

Take our [modernization assessment](#).

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Citations

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⁷ [Navigating cyber risk and regulation: A focus on cyber regulation readiness from the Kyndryl Readiness Report](#), Kyndryl, 2025

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¹⁰ [In an uncertain world, enterprises are repatriating their data](#), Kyndryl, June 2025