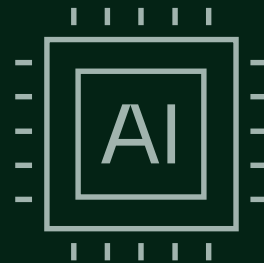


Mainframe modernization in financial services with Agentic AI

Financial Services



Business challenge and opportunity

In banking and financial services, the mainframe remains critical to core operations. In fact, 58% of organizations increased their use of the mainframe in the past year.¹ For many, the mainframe still acts as a reliable, secure, high-performance platform for running mission-critical workloads.

However, limited and slow progress in modernizing mission-critical systems can constrain agility and access to innovative technologies, putting financial-services organizations on the back foot in a rapidly shifting market. Complex, high-maintenance systems diminish employee productivity and escalate operational costs. Whether on the mainframe or other platforms, many legacy systems are poorly documented, and institutional knowledge about them is shrinking as the original designers and maintainers retire from the workforce. At the same time — with around a quarter of hardware and operating systems used by financial services organizations at or near end-of-service life—the risk of unplanned downtime impacting customer experience looms large.²

By adopting Agentic AI, organizations can continuously modernize at scale, enabling enterprise innovation without sacrificing performance, reliability, or security.

Technical challenges

Augmented by AI agents, both mainframe specialists and broader IT teams can rapidly identify modernization opportunities, and where appropriate, autonomously execute change, creating significant efficiency gains. However, there are technical challenges to overcome:

- **Complexity and a lack of documentation** make it hard to scale legacy modernization programs, so progress can be slow.
- **Loss of institutional knowledge** as specialists retire impedes decision-making around the future direction for platforms.
- **Changes to business-critical applications** entail significant potential risk around platforms that support parts of the business that historically have zero appetite for risk.
- **Sensitive, high-value business data** such as personal customer information and financial status must be protected at all times.
- **Strict industry regulations** compel financial services firms to maintain rigorous oversight of AI agents.
- **Difficulty accessing and training skilled talent** can make transformation costly and slow, raising the risk that critical knowledge will be lost before the process is complete.



Our solution

To accelerate mainframe modernization initiatives, Kyndryl applies its **Agentic AI Framework** to help financial services companies:

- **Analyze mainframe telemetry and performance metadata** to create a complete picture of the as-is landscape
- **Rapidly discover interdependencies** and generate an Application Component Dependency Map, to reduce the perceived high risk of modernization causing instability
- **Co-create and customize AI agents** to fit the exact requirements of each unique environment, enabling modernization at scale and high speed without requiring armies of experts
- **Multiply the mainframe workforce** with machine-human and machine-machine workflows that prevent budget overruns, accelerate transformation, and maximize value
- **Protect critical business data** while opening it up to AI and analytics during modernization initiatives through our security-rich, zero-trust infrastructure
- **Streamline code modernization** by delivering actionable, visualized insights, speeding the overhaul of legacy environments while enabling robust new development paradigms and architectures
- **Extract and analyze business rules** embodied in legacy code, facilitating further transformation for competitive advantage



Benefits you could achieve

Extract more value from mainframe environments while driving transformation. With Agentic AI powering your continuous modernization approach, you can:

- **Achieve significant ROI rapidly:** Organizations achieve average ROI of 288% when modernizing on the mainframe, 297% when integrating the mainframe with cloud resources, and 362% for retiring the mainframe.³
- **Cut time-to-value for transformation:** Modernize at high speed and scale to accelerate value and reduce risk while making it easier to develop new market capabilities.
- **Reduce risk and enhance security:** Replace insecure legacy code and standardize security practices across the application portfolio.
- **Prioritize initiatives offering the best potential outcomes:** Receive AI recommendations based on validated insights, making it easier to maintain systems more proactively, provide faster incident resolution, improve security and resilience, and identify workloads best suited for transformation.
- **Boost innovation:** Deploy modern technologies to integrate smoothly with partner ecosystems to enable faster innovation that helps you stay ahead of the competition.

Why Kyndryl?

With decades of mission-critical operations experience, we bring deep expertise in designing, building, and managing AI across complex IT estates.

The **Kyndryl Agentic AI Framework** enables businesses to move beyond isolated pilots to integrated, intelligent systems. It combines secure, scalable agent orchestration with real-time observability and governance, powered by **Kyndryl Bridge**.

Through **Kyndryl Consult**, we align AI strategy with business outcomes. **Kyndryl Vital** provides proven user-centered design and rapid prototyping. And our trusted **delivery experts** ensure frictionless integration and help with reskilling and upskilling to build the foundation for success at scale.

We apply a forward engineering approach — using insights from existing systems to design and deploy future-ready AI agents and architectures that are adaptive, resilient, and scalable. Our method is grounded in open ecosystems, data sovereignty, and transparent decision-making.

And with one of the broadest **alliance ecosystems** in the industry—across cloud, data, and AI—we bring the right partners and technologies together to design fit for purpose solutions and orchestrate AI at scale without disrupting the business.

With Kyndryl, AI becomes a core capability—not just a tool—driving productivity, innovation, and growth.



Accelerate your journey to AI-native

Our AI Benchmark Assessment provides a maturity snapshot and personalized roadmap for accelerating the value of AI in your organization.

[Take the assessment](#) →

What's your enterprise vision for AI?
Let's co-create it together.

[Talk to an expert](#) →

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^{1,2,3} [State of Mainframe Modernization Survey Report](#), Kyndryl, 2025