

An AI transformation toolkit: **Best practices** for the AI-enabled era of banking

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Design. Engineering. AI.

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In recent months, more cynicism has emerged around the AI narrative, with investors and companies questioning the technology's transformative potential and growth prospects. But make no mistake: from what we see on the ground, AI adoption in financial services is only accelerating. What's more, it's already delivering meaningful results, whether in terms of cost savings, customer experience or the capacity to innovate. The potential gains, and the amount of money on the table, make it all the more crucial that banks get their AI approaches right.

Throughout the Americas, banks don't need any convincing to go all in; in fact, the bets are only getting bigger and bigger. Leading institutions like JPMorgan, Bank of America (BoFA), RBC and Itaú Unibanco are investing billions in AI to enhance operations and realize efficiencies. JPMorgan claims these investments are already paying for themselves. At BoFA, AI agents have streamlined some software tasks by 90%. Small wonder that having an ambitious AI strategy is now virtually an industry requirement.

However, the path to full deployment can prove difficult. Multiple factors may threaten the success of AI implementations. New research from Thoughtworks shows that a lack of skilled talent (25%) and poor data quality or availability (24%) are among the most common reasons AI projects fall short. Unrealistic expectations also play a role, as organizations overpromise on capabilities in the race to implement AI faster than their peers.

In practice, these challenges are rarely isolated. Skills shortages, data limitations and delivery bottlenecks are often symptoms of a deeper structural issue: technology foundations that were never designed to support rapid change. When core systems are opaque, tightly coupled and difficult to evolve, even well-

funded AI programs struggle to move beyond pilots or deliver consistent value.

For the modern bank CIO, the question is no longer whether to adopt AI, but how to prevent initiatives from stalling before they deliver impact. The answer lies not in the new technology, but in addressing the legacy foundations that constrain it.

Breaking down the business case

Core banking systems are complex, and too often modernization projects are characterized by long delays and punishing costs. That may lead some institutions to ask: why bother? The simple answer is that developing AI readiness has to be a priority because of the very real competitive pressures banks already face.

More and more, traditional banks aren't just compared to their peers, but to nimble fintech upstarts, which are being embraced by consumers that demand better bank integration with their preferred applications. Heavily user-optimized apps such as Spotify and Uber have heightened expectations for digitally delivered services that are always-on, seamless and highly personalized.

Customer demands and the emergence of new business opportunities also mean banks have to bring new products and services to market faster. Initiatives like the expansion of RBC's partnership with DoorDash, or U.S. Bank's alliance with Submittable, demonstrate how rather than trying to do it all themselves, banks are looking to embed themselves in wider ecosystems to extend the range of services and conveniences they offer. But that requires systems and open APIs that make sharing information and collaboration easy.

In essence, the industry is moving beyond “Customer 360,” where data enables a unified and holistic view of the customer, to “Customer 720,” a richer, more granular perspective enabled by AI-driven insights and interactions. In Customer 720, products and services are carefully calibrated to individual needs and preferences, and delivered based on key moments in customers’ lives.

Picture, for example, automatically presenting a comprehensive home insurance solution just after a retail customer purchases a new house; or, for a corporate customer, offering a range of pre-approved credit lines to assist with expenses just as they expand to a new market. Experiences like these position banks as empathetic and trusted advisors, rather than transactional corporate entities.

Addressing the legacy challenge

At the same time, we have to acknowledge that modernization can be tough and time-consuming. The typical bank is less a unified entity than “15 squirrels under a trench coat” — an amalgamation of different businesses masquerading as one. Adding to the complexity, many of these businesses have different risk profiles and consequently varying levels of tolerance for tech-driven change. Compliance may not be able to tackle modernization at the same speed as credit decisioning, for example.

In many institutions, business lines also operate in silos and may not be set up to share or standardize their processes or data resources. Certain functions, like enterprise analytics, have to be highly centralized and tightly governed to address strict regulatory requirements around customer data.

These structural realities can make it difficult to build a coherent view of the customer. In some cases, they prevent the cloud

modernization programs that are an essential initial step in AI readiness from extending throughout the organization, leaving them to drag on for years. The impenetrability of legacy systems — which still soak up the majority of banks' tech budgets — and aging codebases represent another barrier to developing data and AI capabilities.

Thankfully, these are areas where AI itself can be leveraged for powerful impact. At Thoughtworks, we've developed AI-enabled tools and approaches tailored specifically to address major pain points in the modernization process.

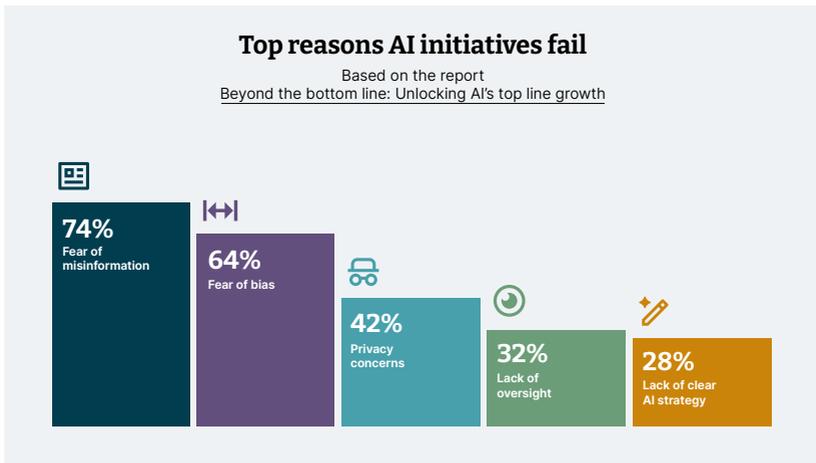
Central to this is AI/works™, our agentic development platform built to continuously modernize core systems and accelerate the delivery of industrial-grade products and platforms in the AI era. Instead of treating modernization as a one-time program, it enables organizations to create adaptable technology foundations that evolve in step with changing business needs.

AI/works™ supports deep code comprehension. It ingests decades of mainframe code and translates it into intelligible knowledge graphs that map how applications, data and processes interact. These maps provide a complete, bird's-eye view of enterprise systems, allowing specs to be forward-engineered into a cloud-native environment with unprecedented speed.

The result is a vast reduction in the cost and risk of mainframe modernization. By focusing on system behavior rather than just code, the modernization program can prioritize what matters most. Mainframe applications are deciphered and rewritten in high-quality, maintainable code, positioning the business for future change.

Developing AI-ready data

Along with modernized systems, a strong data foundation plays a decisive role in AI success. But this isn't always straightforward to achieve; as our research has shown, data quality, accuracy and security present some of the biggest challenges to AI adoption.



At heart, the issue banks face is one of data governance. Without a solid governance structure that clarifies where data originated and how it can be used, and safeguards its quality and integrity, there are no viable ways to test out proofs of concept and build enterprise-wide AI applications — at least without enormous risks. At best, a lack of governance confines AI to self-contained pockets of innovation.

Governance can't just be expressed in a series of policies. It needs to be built into a platform that provides visibility into data lineage — the full lifecycle of data, where it comes from and how it changes — and access to quality metadata that gives AI systems the context they need to understand the data used in decision-making.

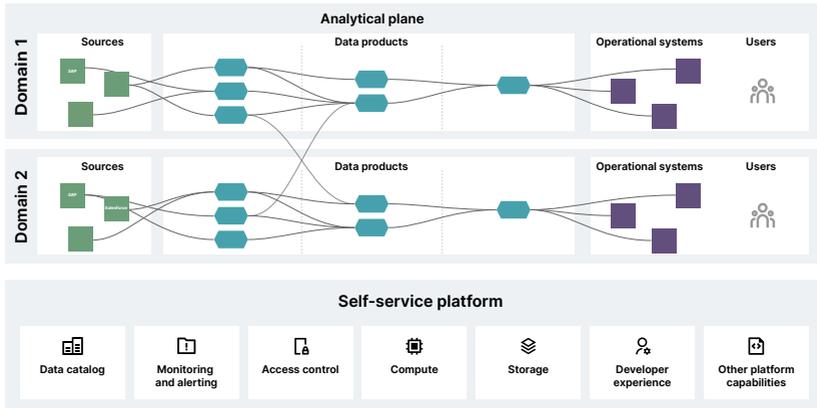
Effective platforms make data readily available to teams for product building, while maintaining a layer of permissions and decisioning that can be adjusted to fit the situation and institutional policies. This helps ensure data flows only where intended, and that control and compliance are maintained throughout the development process.

Data governance is particularly important in financial services, where there are strict regulations around the use of customer information and lapses come at a heavy price. As we've seen in areas like credit decisioning, any lack of transparency or removal of "human-in-the-loop" oversight in application development and deployment can also have severe ethical and reputational consequences.

To mitigate such risks and streamline data access, leading organizations have adopted the principle of "data as a product" to deliver data. This principle is a core element of the data mesh approach, through which Thoughtworks has helped banks like Denmark's Saxo integrate data from sources across the organization under the equivalent of a single pane of glass.

Through a mesh, data can be made available to different user groups, each with a degree of autonomy and the ability to work with data fit for its needs. This structure enables decentralization and distributes resources, so teams aren't starting from scratch or "boiling the ocean" when they consume data for AI use, while also ensuring compliance and security guardrails remain in place.

The structure of a data mesh



Secure and ethical data use is only poised to become more important in an environment where hacking, fraud and “deepfake” phishing attempts powered by or targeting AI systems are on the rise. In a [recent Gartner survey](#), 62% of organizations reported experiencing a deepfake attack involving social engineering or exploiting automated processes over the previous 12 months.

These risks are being compounded by banks working with more third-party software vendors and external partners as they look to extend their digital and AI capabilities. [Third-party providers are emerging as additional threat vectors](#) and are, in some cases, easier for bad actors to target. All this underlines the mission-critical nature of adopting a proactive data governance posture.

From AI enablement to AI empowerment

The final major drag on banks’ AI ambitions is a lack of understanding and engagement. Along with modernized systems

and robust data platforms, effective application of AI requires changes to teams and ways of working.

Some team members may understandably perceive these changes as a threat. But the real opportunity with AI has much less to do with reducing headcount than using technology to make the talent you already have more efficient. Once a baseline has been established, AI can be embedded throughout the organization and processes to reduce waste and friction.

Software engineering is at the heart of this change, with the practice that we call AI-first software delivery (AIFSD). AIFSD is based on platforms underpinned by quality data with complementary application, model and experience layers that teams can use to quickly and easily develop new products and services that meet evolving customer demands.

AIFSD: Key benefits

Accelerated delivery cycles Transform ideas into production in hours, not weeks. AI-powered workflows ensure consistent, measurable value across the entire lifecycle.	Enhanced innovation focus Free your talent from manual toil. Allow engineers to focus on creative problem-solving and strategic impact, supported by AI tools.	Optimized developer experience Cut through complexity. Unified, self-service platforms allow teams to onboard faster and collaborate effectively in a friction-free environment.	Increased efficiency gains Eliminate waste with data-driven insights. Deployment automation and operationalized AI ensure seamless operations and sustained organizational agility.
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AI can act as a powerful accelerant in multiple key phases of the product development lifecycle. Early on, AI agents can conduct market analysis and model customer responses to improve decisions on whether a product is the right one to build, or will

meet a potential market's needs. As development progresses, AI assistants can be deployed to enhance continuous integration and continuous deployment (CI/CD) practices, and remove duplication.

AI is also capable of functioning as a peer programmer that contributes to code reviews and testing. By leveraging AI to augment human engineering talent, banks can develop, test and release innovative products and services at the pace and with the stability and quality required by new customer and competitive realities.

As AIFSD evolves as a practice, Thoughtworks is committed to advising institutions on making AI literacy part of the everyday workstream. That involves training not only engineering and development teams, but also business leaders in financial services in effective prompt engineering and the use of AI as a copilot. Our work has demonstrated that the greatest gains from AI are realized when it's embraced organization-wide, as an adjunct to human expertise, experience and judgment.

As AI frees people up from time-consuming or repetitive tasks like translating code, capacity for and focus on higher-value work rises, enhancing the bank's ability to develop a vision, strategize and execute. These benefits are why we see AI moving from a groundbreaking technology that provokes both excitement and apprehension to a strategic asset that's part of business as usual for banks in the Americas.

Ready to make AI work at enterprise scale? [Contact us](#) to learn how we can help your organization turn AI ambition into durable business results.

Authors



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John Spens is a seasoned technology executive with over 30 years of experience in data modernization, agile transformation and strategic consulting. As the VP of Data Modernization at Thoughtworks, he drives the organization's data strategy and oversees the delivery of complex AI and data engineering solutions.

Since joining Thoughtworks in 2003, John has been a pivotal leader, launching the North American data analytics practice in 2012 and growing it into a core capability. Previously, he served as Managing Director for Thoughtworks' Data and AI service lines in North America and held leadership roles at firms including Deloitte & Touche and Hyperion Software.

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Nathan Hilt is a strategic financial services leader with over 25 years of experience at the intersection of banking and technology. He brings deep expertise in product vision, business strategy and rapid implementation, helping organizations navigate the transition to emerging technologies like AI, real-time payments and digital assets.

As Banking Vertical Leader at Thoughtworks, Nathan leads the firm's efforts to modernize and transform financial institutions. He focuses on delivering

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Prior to his current role, Nathan spent over a decade in the industry driving initiatives across IT, marketing and product.

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Shehbaz Badesha is a business and data strategist with over 20 years of experience helping financial services and insurance organizations use data and AI to drive growth. His work centers on digital transformation and building AI capabilities that scale, moving organizations from isolated initiatives to data-driven ways of operating.

As Data Strategist for North America at Thoughtworks, Shehbaz works with clients to modernize data platforms and apply AI to deliver measurable business results. Prior to his current role, he led more than 60 engagements across the financial services sector, including work with Tier 1 banks to translate AI investment into tangible, enterprise-wide value.



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Wigor Correia is a multifaceted technology leader with over 26 years of experience driving innovation and strategic projects for major national and multinational organizations. He has spent the last two decades specializing in IT

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As the Director of Data & AI for Latin America at Thoughtworks, Wigor drives the region's data strategy and oversees the delivery of advanced AI solutions. He is an active voice in the technology community, frequently speaking at conferences and universities to share insights on the evolving landscape of data and AI.

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He is responsible for shaping Thoughtworks' BFSI technology strategy in the region and strengthening its market presence through cloud and technology partnerships, industry conferences and active participation in organizations such as the Securities Industry and Financial Markets Association, the American Bankers Association and the Fintech Open Source Foundation.

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Thoughtworks is a global technology consultancy that delivers extraordinary impact by blending design, engineering and AI expertise. We bring together experimentation and a focus on real-world impact. Teams work closely with clients to shape AI that actually ships and performs. The result is dependable, human-centered solutions shaped by craft and curiosity rather than hype, showing what responsible and effective AI looks like in practice.

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