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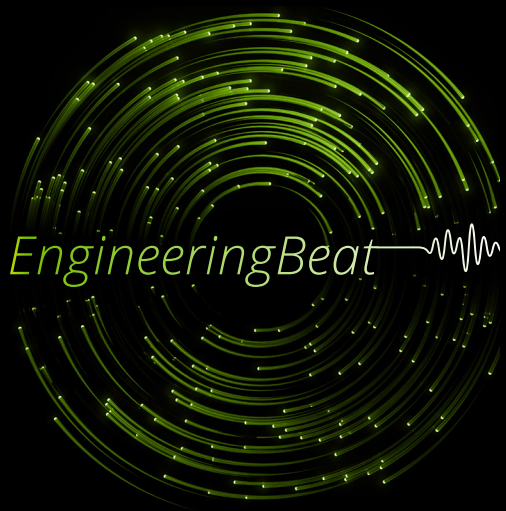
EngineeringBeat: Navigating mainframe modernization complexity

Overcoming digital transformation challenges in banking and capital markets



Universal and regional banks in the United States still rely heavily on core banking systems running on mainframes. However, banks are increasingly under pressure to modernize these monolithic, tightly coupled, batch-oriented, and complex systems. Escalating maintenance and licensing costs and increased operational risks from an aging workforce are key drivers. Lengthy and expensive development cycles for regulatory changes, evolving industry standards like ISO 20022, and changing customer expectations such as real-time banking, only add to the need. Mounting technical debt and the concern of potential outages are further compelling banks to modernize.

Digital transformation in banking has been a long, challenging road. Traditionally, banks have delayed mainframe modernization due to high failure risks, cost overruns, and the inability to define a sound business case or secure funding—which has led to increasing architectural complexities while leaving legacy systems largely untouched. Here are five key mainframe modernization strategies to help navigate the challenges.

1 Simplify complexity and build a sound business case

For many banks, mainframe modernization is maddeningly complex. The legacy core banking systems that form the backbone of their operations are tightly integrated throughout the enterprise. These systems have been heavily customized through the decades with scant and outdated documentation, creating technical debt—which adds significant costs and delays to modernization efforts—and making it problematic to map existing functionality to new platforms.

To help reduce complexity and root out technical debt, it is essential to start with a thorough assessment of the mainframe environment—one that comprehensively documents existing systems, dependencies, and workflows. Artificial intelligence (AI)-enabled, automated tools can aid in the process, and they can help tease requirements, business rules, user stories, and test cases from complex, monolithic legacy codebases.

Mainframe modernization is not simply a technical initiative. Instead, it is crucial to combine a bottom-up technical analysis, with a top-down understanding of business drivers and priorities. The analysis efforts should focus on understanding the strategic business potential of applications and their associated technical debt to arrive at a disposition decision for each application—that is, retire, replace, rearchitect, rewrite, or refactor. The outcome should be a realistic, executable mainframe modernization strategy, roadmap, and business case.

Modernization is not one size fits all. Modernization efforts can be broad, or line-of-business focused to achieve specific business objectives—or somewhere in between. Indeed, it's essential for banks to define a journey that is unique to their needs and goals. For example, some banks might like to approach modernization with a combination of replace, rewrite, and refactor initiatives, while others may want to refactor their COBOL code to Java to rapidly move off the mainframe and then look at rearchitecting or rewriting other applications in subsequent phases.

For example, say a bank wants to implement a new rule-based pricing engine. More likely than not, it would require switching off existing pricing logic, substituting it with integration to and from the external pricing engine, implementing a mechanism to synchronize data across the two systems, and more. Attempting this process without an understanding of the logic embedded in the current core, and the couplings between this logic and other modules, could lead to increased risk to timelines, costs, and quality, and make the project overly dependent on just a few individuals with the specific knowledge to implement it.

2 Prioritize and communicate to secure funding

Securing the appropriate budget is a significant challenge for mainframe modernization projects. Banks face tight budgets because of a disproportionate share of budget utilization, which are needed for costs associated with regulatory compliance activities, hardware and software, and ongoing maintenance of legacy environments. Further, since modernization can require substantial upfront investment in hardware, software, and talent—coupled with potential costs from downtime or failures during the transition—leadership can be hesitant to move forward.

To secure funding, IT and business leadership can collaborate in prioritizing banking modernization efforts for applications likely to have the greatest potential revenue impact, highest return on investment, or cost savings—such as digital wealth experience, wholesale client onboarding, fraud detection and management, or omnichannel servicing. Also, choosing flexible pricing models, such as pay-as-you-go, can reduce modernization costs or at least spread them over time.

It is also crucial to secure champions in the C-suite who can communicate the long-term value of modernization and steer the program during tough times. Key opportunities to build a sound business case for modernization include self-funding by optimizing maintenance and reinvesting generated savings, developing a roadmap that delivers quick wins, and emphasizing the creation of business value rather than mere technology replacement.

> Collaborate to prioritize high-impact applications and work with providers to obtain flexible pricing models to secure funding and manage costs effectively.

3 Assess and monitor to safeguard security and compliance

Core banking systems store large volumes of sensitive customer and transaction data, which makes both cybersecurity and regulatory compliance critical concerns. If not done correctly, modernization efforts can heighten the risk of data breaches and cyberattacks and increase compliance issues—which could lead to diminished customer trust, reputational damage, and steep costs from penalties and litigation.

Therefore, it's vital to help ensure any mainframe modernization strategy includes security measures like robust encryption and continuous monitoring, as well as frequent security assessments to help identify vulnerabilities and toughen data protection processes. Further, to help ensure regulatory compliance, it's critical that any compliance applications continue to produce identical outputs after the transformation. Automated comparison tools can help with this effort.

4 Leverage AI-enabled tools to avoid disruptions

As we mentioned before, core banking systems and applications that reside on the mainframe are deeply integrated into most banks' operations. Modernizing the mainframe without disrupting these integrations can be tricky and, if not handled with care, can lead to damaging operational disruptions.

To help mitigate the risk of disruption, it's necessary to move with caution. Taking a phased, incremental approach helps, as does identifying proof-of-concept projects that can demonstrate value quickly. AI-enabled tools help by automating code analysis, optimizing workflows, and spotting potential migration issues before they become problems that cause disruptions.

Leveraging the power of Gen AI

One example of how our teams are using Gen AI to help organizations optimize their technology is through our proprietary IndustryAdvantage tool, TruNorth. TruNorth can provide a global view of all of your technical ecosystem by aggregating business, organizational, infrastructure, application, and financial data in a central repository, which can increase operational efficiencies. You can identify modernization opportunities and better understand the potential transformation scope based on your business needs.

TruNorth can pull in data from mainframe systems, distributed systems, configuration management database, service management software, and cloud providers. To fill in any gaps between these sources, TruNorth also provides the ability to survey subject-matter experts. You can then analyze your portfolio to develop and compare modernization scenarios, plan, and execute.

Learn more about Deloitte's TruNorth.

5 Focus on talent to ensure knowledge transfer

As mainframe-fluent talent ages and retires, enormous institutional-systems knowledge becomes scarce. Couple that with both internal and market-based shortages of talent skilled in bank-specific digital technologies like cloud and AI, and it creates a talent gap that can increase costs and slow modernization efforts significantly.

Investments in training programs to upskill the existing workforce in modern technologies are table stakes and require a blend of technology and banking product knowledge. Banks should also consider enhancing their recruitment strategies to attract tech-savvy talent through implementing formal programs that rotate and develop the workforce across banking businesses and functions.

It is also critical to ensure knowledge transfer between workers who carry deep mainframe knowledge and new talent. While banks employ these talent strategies, AI has also increasingly played a role in transformations, helping expedite fluency in banking-specific dynamics and solutions that can help to ease the transition process.

Address talent gaps by investing in training programs, enhancing recruitment strategies, and ensuring knowledge transfer between experienced and new talent.

Mainframe modernization in action

Here is a look at how one global bank successfully overcame modernization challenges:

The bank faced legacy technology hurdles to drive growth and provide superior experiences to its high-net-worth clients. It was also having difficulty in addressing talent risk and institutional knowledge. To overcome these challenges, the bank needed to drastically modernize its technology, including maintaining and moving off the mainframe, which would afford significant autonomy, innovation (FinOps, GenAI, etc.), speed to market, and enablement of its strategic business priorities.

To assess potential modernization benefits, the bank performed a detailed analysis of current spend on its mainframe, then benchmarked those costs to potential modernization costs. The analysis showed that a business value-based approach to mainframe modernization could lead to reducing mainframe talent dependency by approximately 75% and decrease time to market by about 40% overall via improved developer productivity with modern engineering practices by 2028.

The modernization payoff

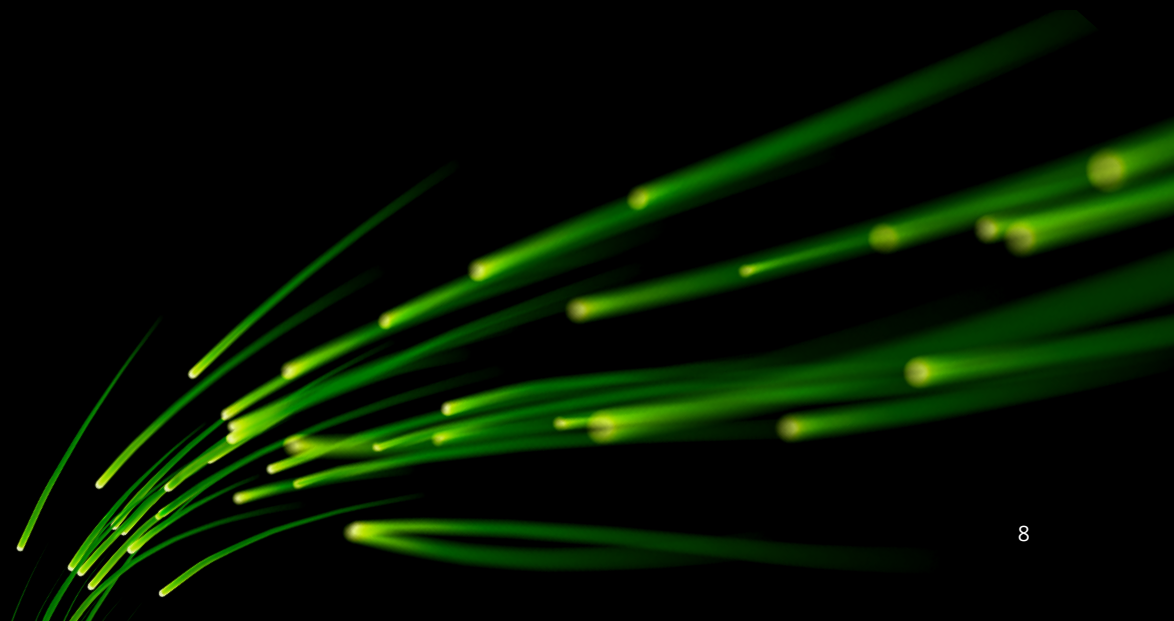
Competition is fiercer than it's ever been, and banks need an industry advantage to help them to successfully and quickly innovate to achieve market share that fuels growth. Modernization can be that boost. Banks that successfully modernize to a more technologically advanced environment can anticipate gaining substantial short- and long-term benefits. Mainframe modernization can enable banks to:

- **Innovate faster:** With modern tools and technologies, banks can get new products and services to market to respond more quickly to changing markets.
- **Improve their customer experience:** With modern interfaces and technologies like banking as-a-service and mobile computing, banks can deliver seamless digital experiences.
- **Optimize costs:** Via hardware and software streamlining in a cloud-based environment, banks can potentially reduce IT expenses.
- **Enhance security and compliance:** Modern security protocols and automated monitoring and processes enable improved cybersecurity, data protection, and compliance.
- **Attract top talent:** Because they leverage newer platforms, tools, and technologies, banks that modernize can attract a wider pool of talent, which is crucial for staying competitive.

Take the leap

Modernization initiatives may face steep challenges, but those challenges are not insurmountable. The right strategy, coupled with the right technology, can smooth the path. Reducing complexity and ensuring knowledge transfer from the mainframe workforce are crucial to ease the transition and avoid disruptions. Budget issues will always be there, but constant communication and a sound business case that emphasizes both the business and technical value of modernization can make the program successful. Focusing on bolstering security and compliance will also help reduce long-term risks. Leveraging next-gen technologies like AI/machine learning can help automate processes and unravel codebase complexities. But you must take the leap. Modernization is not an if; it is a when. The when is now.

To learn more about how your organization can unlock the potential of legacy systems to fuel innovation, read our full report.



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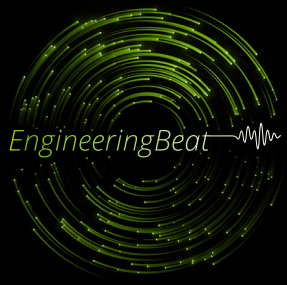

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Want to know the latest in mainframe modernization, cloud, or engineering? We're on the beat, covering sector-specific trends and hands-on strategies to help you stay up-to-the-minute. Spend just a few moments—a beat—and gain actionable insights to move your business forward.

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