

Mainframe modernization in financial services:



A data-first approach that is making a difference



As technologies such as cloud-based orchestration and AI proliferate and the rapid pace of change accelerates in the digital economy, financial services organizations in Canada are recognizing the need to modernize their complex mainframe legacy systems that they have long relied upon. Each modernization journey poses a unique challenge, and a spectrum of approaches exists to meet every organization's specific requirement and risk tolerance. A new and proven data-first approach – unique in today's marketplace – emphasizes decoupling data from the mainframe, enabling real-time data access for analytics, reporting and regulatory oversight before modernizing the application. By starting with data, organizations can reduce costs, enhance agility and deliver a range of critical business benefits. Modernizing the mainframe is no longer a question of if, but how—and the spectrum of proven approaches makes the journey achievable.

The race is on to enhance efficiency, manage rising costs and transform customer service in the fast-evolving digital economy. However, in today's hypercompetitive and increasingly complex environment, financial services organizations face a significant roadblock: aging legacy systems that hinder innovation, inflate costs and slow time-to-market. As per CGI's 2025 Voice of our Clients survey, 48% of banking executives say legacy systems remain a major challenge to successfully implementing their digitization strategy¹.

1: Source: 2025 CGI Voice of Our Clients; The 2025 CGI Voice of Our Clients shares insights of how macro and industry trends affect business and IT priorities and investment plans for more than 1,800 business and technology executives.

Mainframes have been the backbone of business-critical operations for decades — thanks to their reliability, massive processing power and scalability. But today's hyper-agile digital ecosystem exposes their limitations: **high operational costs, talent shortages, integration hurdles and a lack of built-in flexibility, all of which stall digital transformation.**

Many organizations find themselves trapped in maintenance mode, leaving little time or resources for innovation — let alone something as disruptive as a full-scale modernization of core systems and applications. Still, forward-looking banks and insurers are recognizing the inevitable need to move beyond the costs and technical constraints of mainframes and are accelerating their digital-transformation journey — optimizing critical applications and workloads that reside on these increasingly dated systems.

Mainframe modernization is the process of evolving and **optimizing the critical applications and workloads** that reside on mainframe systems to enhance agility, integration, and efficiency.



The case for mainframe modernization

Mainframe modernization is not about replacing hardware but ensuring that mission-critical applications can seamlessly integrate with modern technologies, leverage cloud and AI capabilities, and maintain operations with minimal disruption.

Why Mainframe Modernization is Critical

- Aging Workforce Risk
- High Costs
- Integration Limitations
- Innovation Gaps

Primary Drivers for Modernization

- Cost Efficiency
- Improved Data Management and Advanced Analytics
- Enhanced Customer Experience
- Regulatory Compliance
- Scalability & Performance
- Addressing Technical Debt
- Business Agility – interoperability with cloud-based tools and applications

Modernization focuses on revitalizing applications — enabling organizations to adapt to evolving market conditions with greater efficiency, flexibility and scalability.

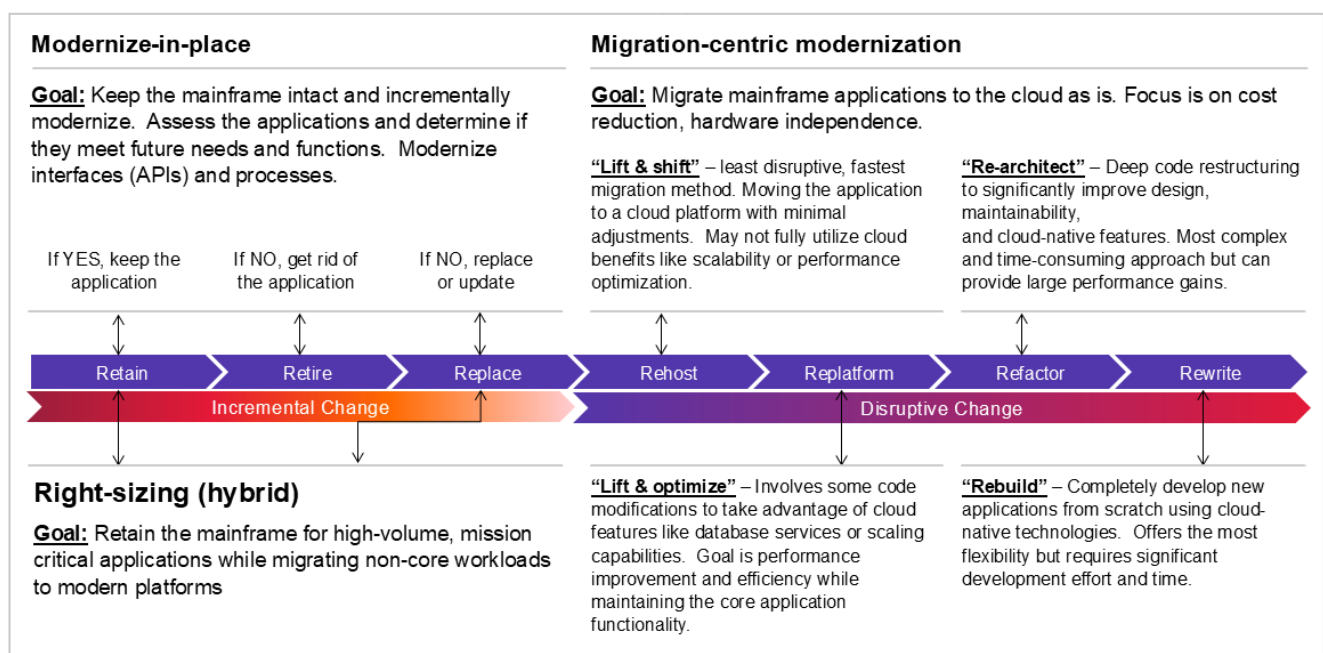
The ultimate goal is to ensure **business continuity** — minimizing risk and safeguarding business operations at every step while fostering innovation, optimizing costs and enabling seamless integration with emerging digital ecosystems.

To succeed, organizations need new skills and tools that enable a structured transition from monolithic mainframes to **more agile, flexible, cost-effective platforms**—while preserving the stability of mission-critical applications.

Tailored modernization: Exploring the full spectrum of mainframe modernization strategies

The need to modernize the complex mainframe systems that financial services organizations have long relied on is clear. However, there's no one-size-fits-all path to transforming aging mainframes and making them future ready. Each modernization journey will be unique and, while a spectrum of approaches exists, each presents its own risks and complex challenges. Business objectives in today's hypercompetitive environment must be comprehensively assessed to determine the correct modernization strategy for each financial organization.

The mainframe modernization spectrum



A data-first approach to modernization transforms efficiency and resilience

The continued relevance of mainframes depends on modernization—and a data-first strategy is emerging as a differentiator in today's crowded marketplace of solutions. This approach preserves the stability and security mainframes are known for, while enabling these powerful systems to evolve and meet the demands of the digital economy.

The data-first approach to mainframe modernization focuses on migrating and replicating data from mainframe systems to cloud environments before modernizing applications or interfaces. Decoupling data from legacy constraints enables businesses to unlock real-time analytics, enhance accessibility and modernize at your organization's own pace without disrupting core operations.

CGI's data-first approach to mainframe modernization focuses on decoupling data from the mainframe so that modern, cloud-native data analytics and reporting tools can more easily access and interact with the data – prior to modernizing any applications.



Defining the data-first approach

1

Migration of data

- Use cloud-native technologies to perform a full database migration from the mainframe to the cloud.
- Implement Change Data Capture (CDC) tools to ensure real-time synchronization between the mainframe and the cloud.
- Allow data to be accessed in parallel by both legacy mainframe systems and cloud-based applications.

2

Enabling advanced analytics and business intelligence

- Leverage tools like PowerBI, Tableau and Snowflake for analytics.
- Provide new data access methods through APIs and modernized applications.

3

Modernization without core disruption

- Decouple data from mainframe dependencies to enable gradual modernization of systems, interfaces, and business processes.

Data-first - drivers



Business demand

Organizations need faster, easier access to data for real-time decision-making, but legacy systems often limit innovation and responsiveness.



Modernization roadblocks

Direct modernization of mainframe applications is complex and risky without a data-first strategy.



Cloud-ready ecosystem

Cloud offers better scalability, performance, and analytics capabilities compared to on-prem mainframe systems.

Why data-first matters



Minimizes risk by ensuring data is available in the cloud before transitioning applications



Enables **immediate business value** with advanced analytics and BI tools



Supports hybrid modernization by maintaining real-time synchronization between the mainframe and cloud



Lays the foundation for future innovation with flexible, scalable data architecture

Benefits at a glance



Improved data access: A data-first strategy delivers advanced toolsets for faster and more-centralized access to data. Real-time reporting, advanced analytics and automation using AI / ML are no longer limited by mainframe systems.



Seamless modernization: Modern graphical interfaces such as GUI dashboards can be implemented while using the same core data. Prototyping tools and AI can streamline the transition, offering intuitive interfaces.



Reduced risk: By migrating data-first, businesses can perform modernization incrementally, ensuring business continuity and no costly interruptions to core operations or customer service.



Agility, scalability and cost efficiency: Migrating to the cloud reduces the operational costs of maintaining legacy mainframe environments. Business agility, speed to market and scalability are enhanced through reliance on flexible systems.

Keeping regulatory requirements in focus

Legacy mainframes pose significant compliance and data-accessibility constraints, making it difficult to meet the finance sector's evolving regulatory demands. Siloed data, batch processing and rigid structures hinder real-time reporting, fraud monitoring and seamless regulatory data sharing. As open banking, real-time payments and AML requirements expand globally, banks face increasing pressure to modernize or risk operational inefficiencies and compliance gaps.

The data-first approach enables the critical advantage of real-time data access for analytics, reporting and regulatory oversight. This strategy streamlines audits, enhances fraud detection and improves interoperability with modern digital banking and payment ecosystems. Businesses reduce reliance on outdated infrastructure while ensuring compliance agility and improved business intelligence.



CGI's mainframe modernization framework

Modernizing mainframes requires a tailored, strategic approach that aligns with each organization's unique business objectives, technical landscape, and operational realities. CGI's mainframe modernization framework is purpose-built to guide this journey, combining deep domain expertise with practical tools to deliver measurable business outcomes.

CGI's mainframe modernization framework is specifically tailored to drive client business outcomes via a fact-based, flexible approach. To advise on a modernization roadmap, CGI engages all stakeholders to holistically understand the client's intended business outcomes and their alignment with the current mainframe ecosystem – viewed through three lenses: **business, technology and operations**.

CGI works collaboratively with clients, overlaying findings and recommendations with industry best practices and market trends to provide a strong foundation for decision-making.

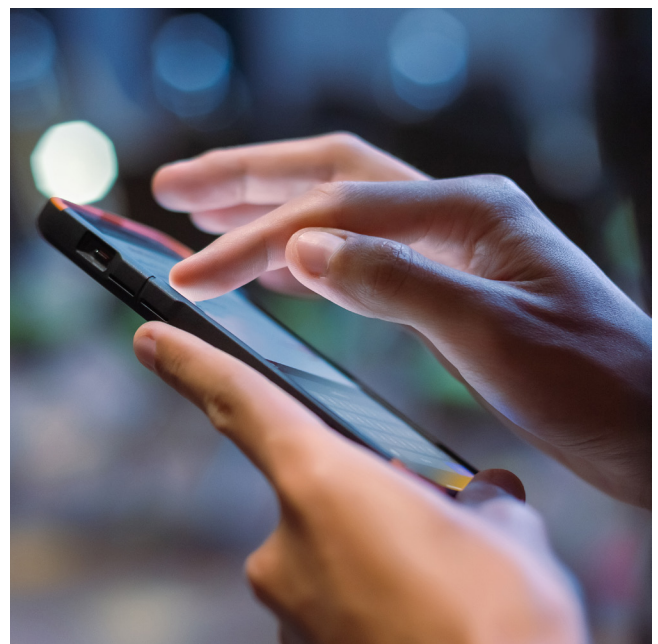
CGI uses a holistic framework to assess the current state of the mainframes and the resident applications from a business, technology and operational lens.

When then work collaboratively to facilitate modernization decisions—which can utilize one technique or a series of techniques to deliver value in phases.

CGI's approach delivers and detailed, documented, view of the mainframe environment, a process for determining the transformation strategy and recommendations on tools and accelerators and end-to-end program support.

- ✓ Clear guardrails with a proven mainframe assessment methodology
- ✓ Best-in-industry accelerators and integrated tools, including products from CAST and CGI
- ✓ Actionable insight into viable mainframe modernization options supported by empirical metrics
- ✓ End-to-end support for your mainframe modernization journey

CGI has helped clients reduce infrastructure and application maintenance platform costs from 50-70% and to redeploy 30-50% of resources towards innovation projects.



Is your mainframe future ready in today's world of change?

Mainframe modernization is no longer optional—it's a strategic necessity for financial services organizations aiming to stay competitive, agile, and innovative in a rapidly changing digital landscape.

By taking a data-first approach, businesses can unlock value early, minimize risk, and modernize at their own pace—without disrupting critical operations. Modernizing the mainframe means managing complexity—a challenge CGI addresses with a proven track record of transforming legacy environments at scale. With deep expertise in mainframe modernization, CGI has partnered with leading organizations across banking, insurance, healthcare, manufacturing, retail, government and energy sectors—helping them reduce risk, unlock data-driven value, and modernize with confidence.

CGI's proven framework and tools help organizations navigate this complex journey ensuring that modernization efforts align with business priorities and deliver meaningful outcomes.

Now is the time to act. Partner with CGI to assess your current environment and chart a modernization roadmap that transforms your mainframe from a constraint into a catalyst for future growth.



Case study: Major Canadian insurer reduces annual platform operating costs by 90%

A leading Canadian insurer relied on a legacy mainframe operating system that presented functional limitations, scalability challenges and rising operational costs. The outdated infrastructure lacked the flexibility needed to adapt to modern technological advancements, restricting the company's ability to innovate. Recognizing CGI's proven expertise in modernization, the insurer partnered with CGI to transition its core applications to a more scalable and cost-effective platform while ensuring business continuity.

A seamless modernization approach

CGI's deep expertise in IT modernization effectively guided the insurer through a low-risk transformation. A dedicated team of specialists from Canada, Portugal

and India collaborated to implement a 'lift-and-shift' approach using automation tools from CGI's Global Competency Centre for IT modernization, ensuring a smooth migration.

Operating costs fall by 90%

The modernization initiative delivered exceptional business value – reducing annual platform operating costs by 90%. Improved system performance and scalability streamlined business operations, boosting efficiency and accelerating service delivery. CGI's phased migration approach ensured business continuity, minimizing disruption to end-users. Optimized system functionality enhanced service quality, while removal of legacy system dependencies accelerated time-to-market for new business initiatives.

Experts:



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Insights you can act on

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We are insights-driven and outcomes-focused to help accelerate returns on your investments. Across hundreds of locations worldwide, we provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

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