synpulse8

Breaking Free from Legacy

Modernising Core Systems for a Digital Age

powered by PULSE8

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Executive summary

The accelerated rise of fintechs and insurtechs has intensified pressure on the banking, financial services, and insurance (BFSI) sector to modernise core systems to meet the demands of today's digital landscape. Many legacy systems, still reliant on decades-old monolithic architectures, are now burdened by technical debt, high maintenance costs, and a shrinking pool of skilled talent. While these systems have been historically reliable, their inflexibility hinders institutions' ability to innovate, comply with evolving regulations, and compete effectively in the digital age.

This whitepaper explores the strategic, operational, and technological imperatives for modernising core platforms across financial services. It delves into the challenges posed by legacy systems, including high maintenance costs, limited scalability, and the talent shortage for outdated languages like COBOL. By examining the evolving landscape, the paper highlights the necessity for financial institutions to adopt cloud-native, API-driven, and composable architectures to achieve a seamless, scalable, and customer-centric operating model.

Key modernisation strategies discussed include flexible approaches such as API-first integration, phased implementation, and selective component replacement. Financial institutions can employ solutions like PULSE8 to support these strategies, allowing them to mitigate risks, lower costs, and enhance operational efficiencies while creating a sustainable foundation for future growth. Additionally, the paper underscores the role of AI-ready infrastructure in enabling real-time decision-making, personalisation, and advanced data analytics—capabilities that will define the next generation of financial services.

Modernisation is not simply a technology upgrade; it's a strategic pathway to resilience, growth, and innovation. Financial institutions that embrace this transformation will be well-positioned to thrive in an increasingly digital, data-driven world.

Introduction

The financial services industry is at a critical juncture, driven by the need to modernise legacy systems originally designed for branch-based financial transactions, focused on managing accounts and branch operations.

These legacy systems, often built on IBM mainframes using **co**mmon **b**usiness-**o**riented **l**anguage (COBOL) and **c**ustomer **i**nformation **c**ontrol **s**ystem (CICS) applications — popular in the 1960s and 1970s — struggle to meet today's banking and insurance demands. As a result, financial institutions (FIs), particularly in banking and insurance, find it challenging to integrate into customers' daily lives and adopt new technologies like cloud computing, DevOps, open standards, containerisation, orchestration, and microservices.

In 2020, **44 of the top 50** global banks and all the 10 insurers were still using mainframes.

Globally, approximately **90-95%** of business transactions, including credit card payments and retail purchases, are processed through mainframes, handling billions of transactions reliably and securely.[1]

[1] 2022 Mainframe Modernization Business Barometer Report (OneAdvanced, 2022).

While mainframes have reliably and securely processed billions of transactions worldwide for over six decades, their complexity presents significant challenges and risks to modernisation efforts. Maintaining these mainframes is costly, and many FIs are under pressure to reduce capital expenses while staying competitive. The challenge lies in assessing and understanding the technology's role in the broader transformation process. Upgrading these systems is complex and can slow the delivery of digital solutions.

A comprehensive approach to modernisation is essential, emphasising strategic planning, cost management, and investment in key technology trends, such as artificial intelligence (AI), machine learning (ML), autonomous process automation, edge computing, virtual and augmented reality, blockchain, and the Internet of Things (IoT). These technological advancements are reshaping how FIs interact with customers, deliver services, and operate (see Figure 1).

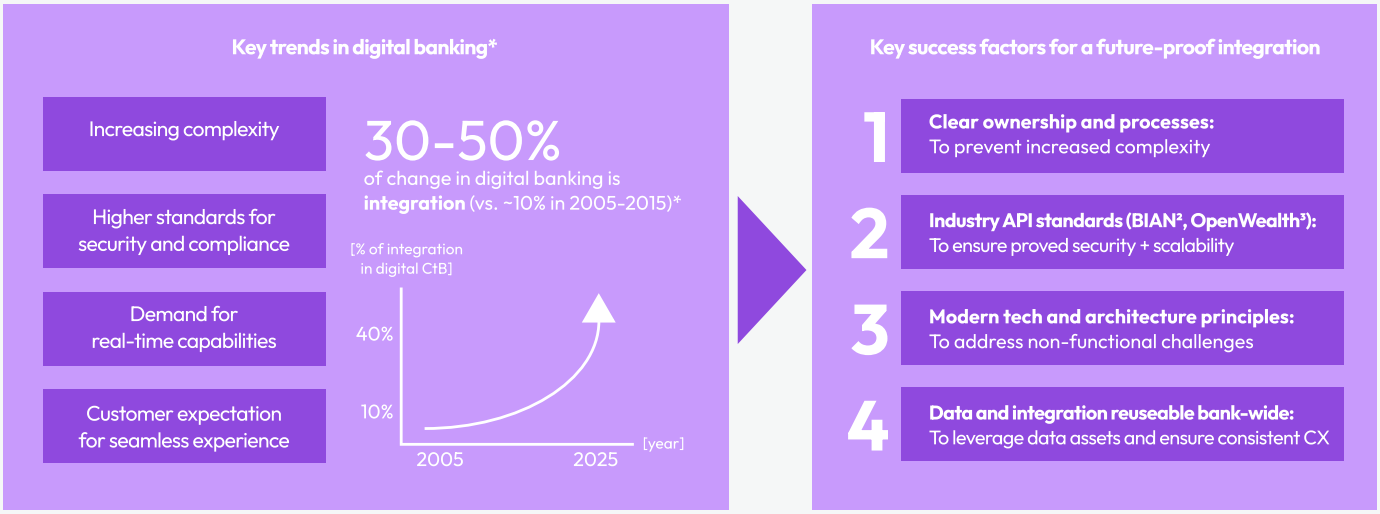


Figure 1: Key trends and success factors[4]

Modernisation involves upgrading applications, transforming business models, and ensuring that new technologies align with future business needs. Evaluating the complexity and return on investment (ROI) of these upgrades is crucial, with strategies like encapsulation, rehosting, re-platforming, refactoring, rebuilding, or replacing legacy systems.

[2]Your BIAN Journey: A guide to adoption (Banking Industry Architecture Network).
[3]The API Standard and Community for the Wealth Management Industry (OpenWealth).
[4]Synpulse and external sources.

Understanding the challenges of legacy systems

Legacy architecture in financial services: A complex web

Legacy architecture in finance refers to the outdated and complex technology stacks that have accumulated over time. These stacks often consist of multiple layers of different technologies and suppliers, making them difficult to manage, maintain, and modernise. This complexity results in **significant operational costs, hinders innovation,** and creates operational risk in the back office.

At the heart of many legacy architectures are **monolithic core systems,** defined by Gartner as back-end systems that process daily financial transactions and update accounts and other financial records.[5] Historically, these systems offered advantages due to their tightly integrated code structures. Monolithic core systems are efficient at processing high transaction volumes, providing stable and secure performance, and minimising computational overhead. This efficiency has enabled FIs to handle core functions reliably for decades, fulfilling traditional financial services' needs.

However, as customer expectations and digital demands evolve, the limitations of monolithic core systems have become more apparent. These systems are now constrained by their rigid structures, limited scalability, and high maintenance requirements. They struggle to keep up with evolving market demands, rapid technological advances, and the shift toward customer-centric digital services, ultimately creating a bottleneck for innovation and operational agility.

Despite these challenges, many institutions continue to rely on legacy systems due to high replacement costs, perceived risk of migration, and the complexity of modernisation. These longstanding systems, however, increasingly limit FIs' ability to remain competitive in a digital-first landscape.

[5] Core Banking System (Gartner).

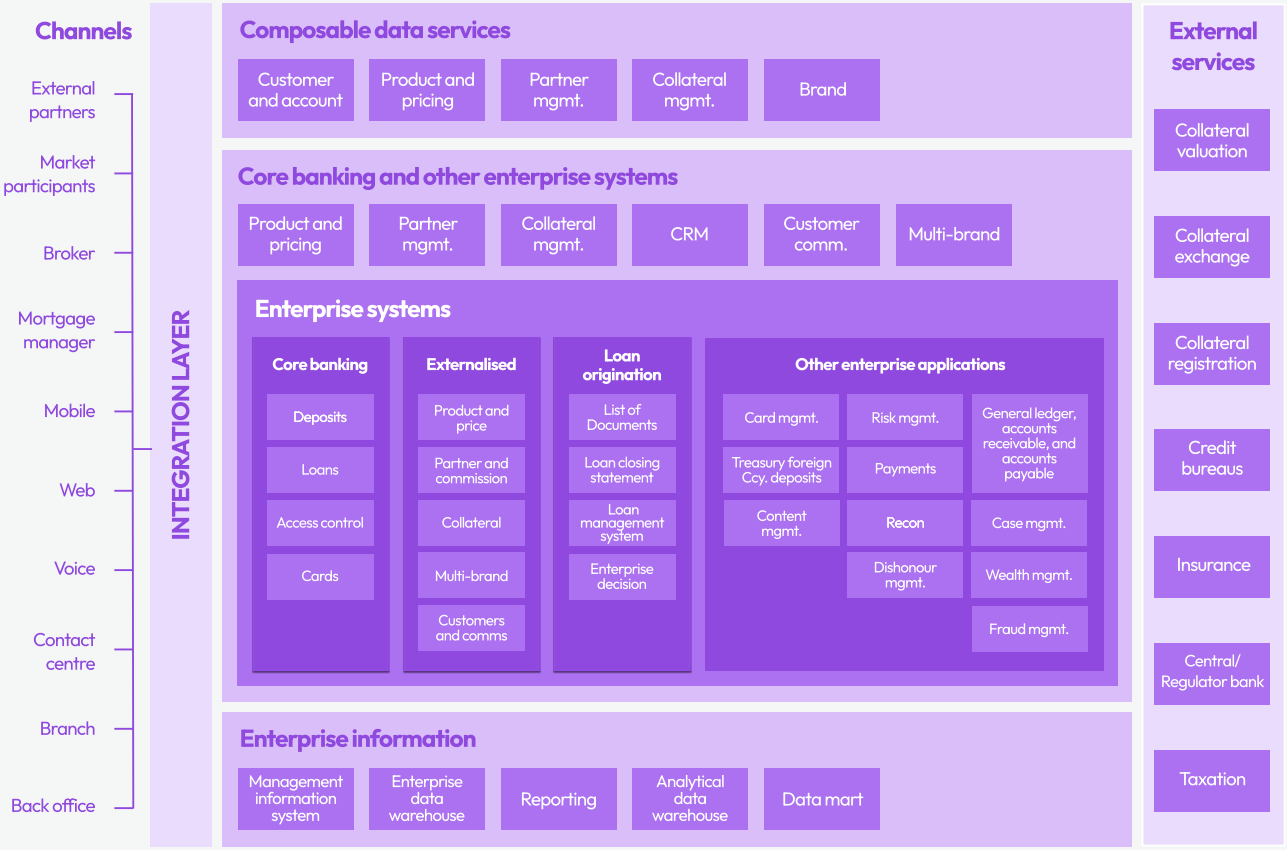


Figure 2: Core legacy banking system

The high cost of maintaining legacy systems

The financial burden of maintaining legacy systems is substantial, driven by ongoing operational costs, inefficiencies, and resource-intensive maintenance. These systems require regular patches and updates to address vulnerabilities, and the shrinking talent pool skilled in legacy languages, such as COBOL, adds to the rising maintenance expenses.

Modernisation efforts are costly and complex. Full replacement, often requiring significant downtime, is a high-investment undertaking. Even phased approaches like parallel runs demand extensive resources and can disrupt day-to-day operations. The need for coordination across various third-party service providers and the integration of new and old systems further complicates the process, increasing both costs and risks.

Additionally, legacy systems lack the flexibility of modern architectures, leading to operational inefficiencies. New features and services often require time-consuming workarounds, and launching new products takes significantly longer than with agile, modern systems. This reduced speed-to-market can place traditional institutions in the BFSI landscape at a competitive disadvantage compared to more agile, digital-native entrants.

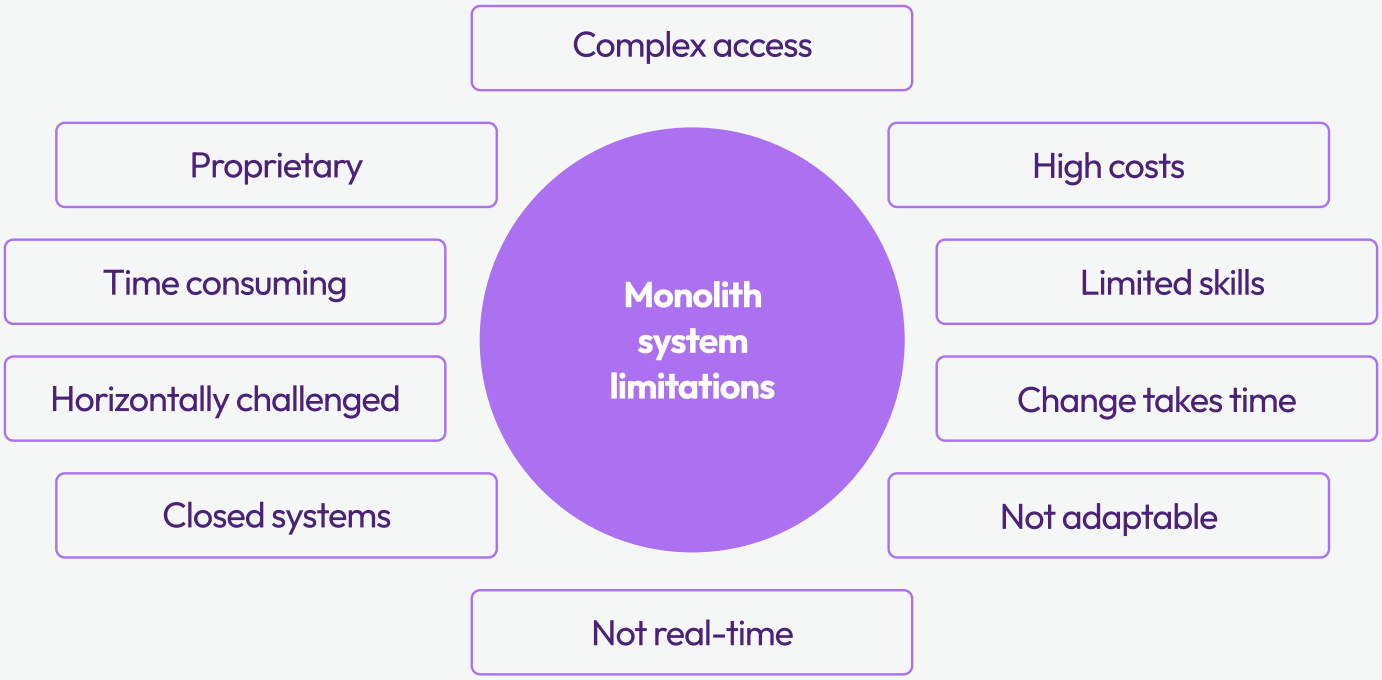


Figure 3: Monolith system limitations

Security, compliance, and cultural barriers

Legacy systems present unique challenges around security and regulatory compliance, which are critical in the tightly regulated financial industry. Outdated architectures are more vulnerable to cyber threats, and maintaining compliance with evolving regulations is often difficult without the adaptability of modern frameworks. Transitioning to cloud or hybrid infrastructures adds further complexity, as financial institutions must navigate stringent regulatory approvals to ensure data security and compliance.

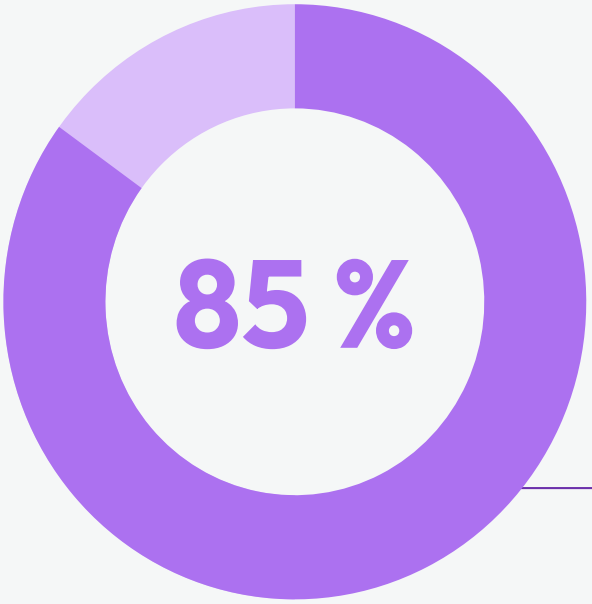
Cultural barriers also play a role in hindering transformation. Many institutions are deeply rooted in traditional practices and structures, making the shift to agile, modern architectures a significant organisational challenge. Aligning legacy systems with newer digital approaches requires not only technological changes but also a cultural shift toward innovation and adaptability across teams.

The case for modernising core platforms

The evolving financial services landscape

As the financial services landscape transforms, the modernisation of core systems has become essential. Legacy platforms, though reliable in their time, now present limitations in scalability, agility, and the ability to meet rising customer expectations for seamless, digital-first experiences. With rapid advances in digital technology, outdated systems hinder the flexibility that FIs need to stay competitive.

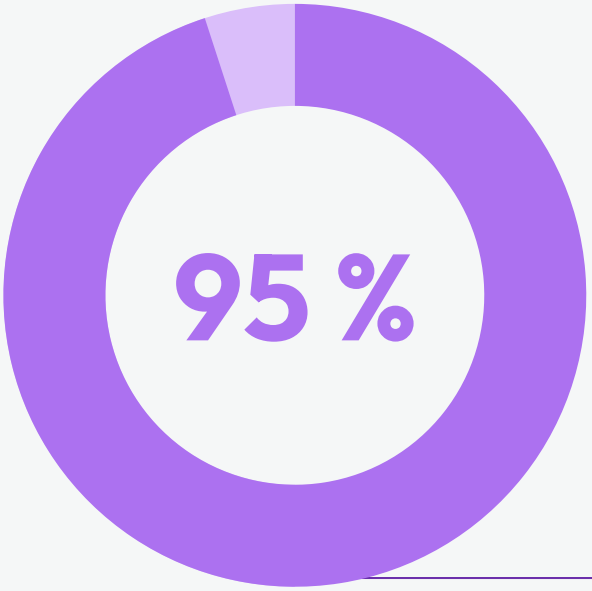
Over the past decade, fintech companies have accelerated this shift by introducing agile, customer-focused services and subscription-based models like Software-as-a-Service (SaaS). These models enable fintechs to operate with lower costs and greater agility than traditional financial institutions, setting new standards for personalised and efficient financial services.



85% of customers said they would recommend a fintech they use to a family member or friend.[6]

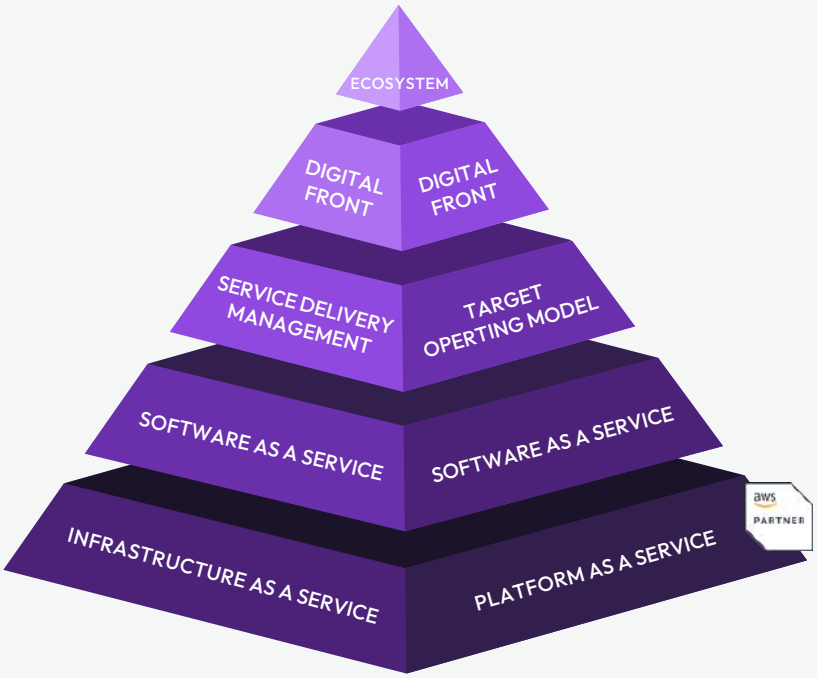
[6] World Retail Banking Report 2022) (Capgemini, 2022).

Unlike legacy systems, modern platforms offer centralised, reusable data services that integrate seamlessly across various functions and channels. By adopting cloud-native architectures and API-based ecosystems, BFSI companies can streamline integrations, efficiently manage software updates, and improve security and performance. This approach enables institutions to respond quickly to changing market demands, support regulatory compliance, and enhance operational efficiency. To stay competitive with digital-native entities like Nubank and Monzo, FIs need platforms that offer the flexibility to rapidly integrate emerging services and deliver real-time, personalised customer experiences.



95% of banking executives said legacy systems and outdated core banking modules inhibit efforts to optimise data and customer-centric growth strategies.[7]

[7] World Retail Banking Report 2022) (Capgemini, 2022).



1 Ecosystem orchestration	• Ease of integration and flexible connection to third parties
2 Digital front	• Customer onboarding • Consultant workbench • Customer lifecycle management • Web and mobile banking
3 Service delivery management	• Application management services • Governance and reporting-SLA/SLOs • IT operations
Target operating model	• Business process mapping and optimisation • Operating procedures
4 Software as a Service management	• Customer engagement • Investments • Basic banking • Supporting the core business
5 Infrastructure as a Service	**Infrastructure management** • Monitoring infrastructure • Networking infrastructure • Security infrastructure • Core application
Platform as a Service aws PARTNER	**Application management** • Implementation • Technical updates • Enhancements **Application support** • Problem • Incident • Security • Monitoring • Service desk

Figure 4: Comprehensive Banking Ecosystem

Strategic drivers for legacy system modernisation

To overcome the challenges posed by legacy systems, the BFSI industry is embracing modernisation to unlock new opportunities across three key areas:

1. **Enhancing business agility and customer experience:** Modernising core systems allows FIs to expand digital channels, enabling faster and more personalised interactions. Integrating modern applications outside of the mainframe and optimising release cycles improve time-to-market, meeting customer demand for real-time, data-driven experiences.
2. **Reducing operational costs and addressing skill gaps:** Transitioning from costly mainframes to cloud or server-based platforms offers significant savings in infrastructure and maintenance costs. Modern environments also address the scarcity of legacy system skills by allowing developers to work within up-to-date frameworks and tools, enhancing operational efficiency.
3. **Meeting regulatory and security standards:** With regulatory requirements constantly evolving, modern systems make it easier for FIs to ensure compliance through built-in security and reporting features. By leveraging analytics and AI, institutions can better manage risk and offer a more robust, secure customer experience that meets stringent industry standards.

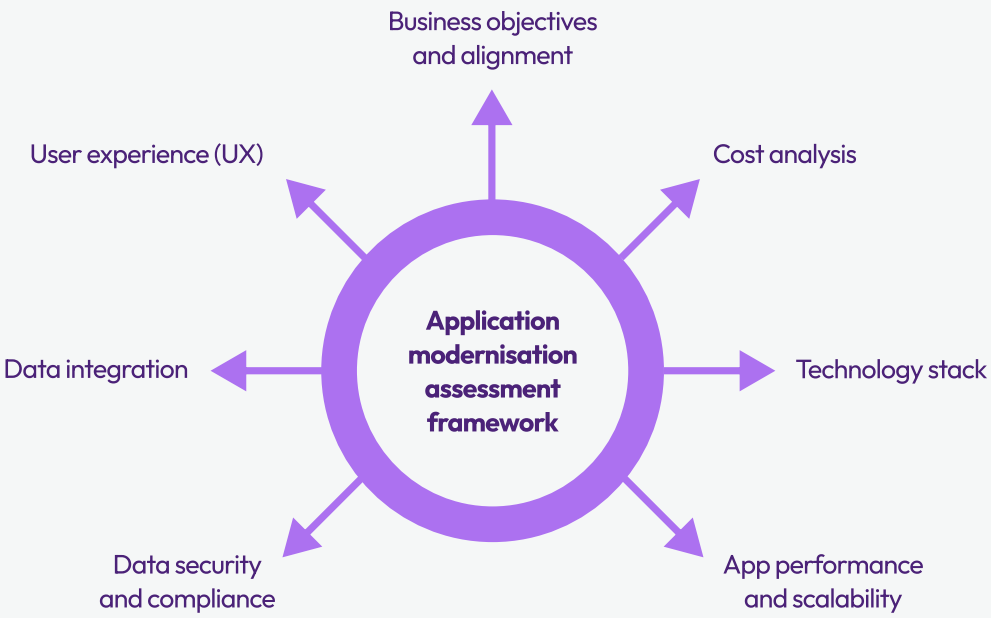


Figure 5: Application modernisation assessment framework

Outcomes of modernising legacy systems

By embracing modernisation, FIs, particularly in banking and insurance, can overcome legacy constraints and position themselves for sustained growth and innovation. Key outcomes of this transformation include:

- **Improved customer experience:** Support for real-time payments, mobile services, and faster feature deployment aligns with today's customer expectations for seamless digital interactions.
- **Operational efficiency and reduced costs:** Modern, streamlined systems reduce maintenance needs and operational overhead.
- **Competitive positioning:** Enhanced agility and scalability allow FIs to stay competitive, adapt to market shifts, and adopt emerging business models like Banking-as-a-Service (BaaS).
- **Data-driven insights:** Increased data accessibility powers advanced analytics, real-time insights, and AI-driven decision-making.
- **Regulatory compliance and security:** Cloud-based infrastructures provide robust security features, ensuring compliance and protecting customer data.

Transforming core platforms

The modernisation of core platforms is a complex process that requires a strategic and comprehensive approach. This involves adopting modern architectures, leveraging cloud-native solutions, and integrating new technologies to create modular, scalable, and efficient systems that can meet the demands of the digital age.

Adopting composable and cloud-native architectures

Transforming core platforms hinges on adopting a **composable architecture** combined with **cloud-native solutions.** A composable architecture enables modular and flexible technology components that can be reused across the enterprise, supporting rapid innovation and adaptation to changing market needs. FIs should invest in a combination of **in-house development** and **off-the-shelf products** to ensure these components remain adaptable and scalable.

Cloud-native solutions, such as those provided by Amazon Web Services (AWS), Google Cloud Platform (GCP), Tencent Cloud, and Huawei, play a critical role in this transformation.

By decoupling capabilities, FIs can reduce time to market, foster customer-focused innovation, and integrate functionalities more efficiently. Public cloud services offer scalability, computing power, and compliance capabilities essential for supporting a composable architecture. A key advantage of this modern stack is the decoupling of front-end customer interactions from back-end processing systems, enabling seamless customer service delivery while maintaining robust processing capabilities. Transitioning to cloud services also simplifies maintenance and accelerates updates.

Why cloud-based core systems matter

While cloud-native solutions provide the building blocks for flexible and scalable infrastructures, **cloud-based systems** offer a more comprehensive approach to modernising banking and insurance operations. They offer numerous advantages, including flexibility, reduced implementation time, and cost efficiency. They enable BFSI companies to scale computing resources as needed, avoiding large upfront investments and enabling rapid deployment of new products and services to meet market demands.

Key benefits include:

- **Lower operating costs:** With a pay-as-you-go model, FIs can reduce reliance on on-premises hardware, decreasing capital expenditures and operational costs.
- **Scalability and flexibility:** Cloud-based systems easily handle variable workloads, integrate with various service providers, and adapt to changing business needs and market conditions.
- **Enhanced security and compliance:** They come with robust security measures and adherence to standards like PCI DSS and GDPR, ensuring compliance and safeguarding customer data.
- **Simplified maintenance:** Cloud-native infrastructure simplifies maintenance and updates, reducing operational overhead.
- **Enhanced insights**: Data integration across products and services provides valuable tools and insights into customer behaviour and market trends, driving more informed decision-making and strategic planning.
- **Faster innovation:** Cloud-based systems enable rapid integration of new technologies and deployment of new services, enhancing customer experiences with real-time, personalised services across multiple channels.

Institutions in the BFSI industry must approach the adoption of cloud-based systems with a strategic mindset, ensuring that they are designed to complement existing legacy systems where necessary and leverage cloud-native solutions effectively. By doing so, they can build a robust and future-ready digital platform that balances innovation with security, compliance, and operational efficiency.

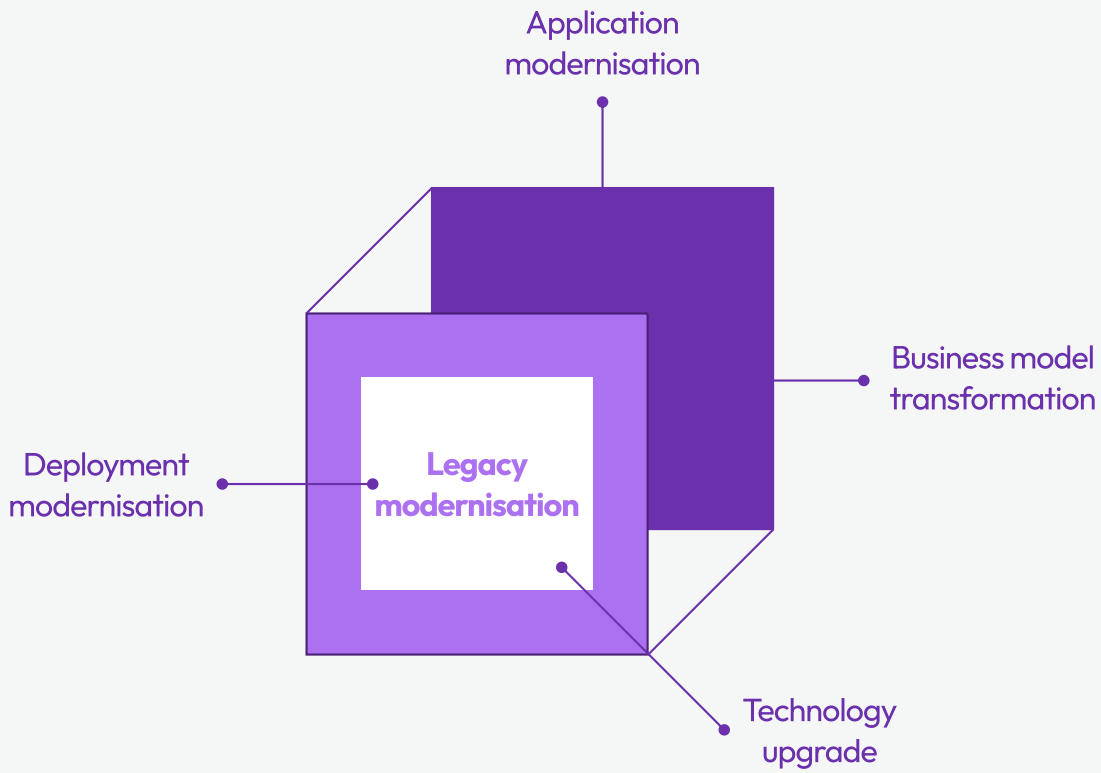


Figure 6: Legacy modernisation area

Core elements of modern technology stacks

Modern financial services technology stacks must be built on a strong foundation of cloud-native and composable architectures. Some of the key elements of these modern technology stacks include:

- **Service domains:** These are segmented into various business domains and areas aligned with FIs' organisational structures.
- **Distribution capabilities:** Separation of sales and service functions from processing enables integration with fintechs and other partners.
- **Data mesh:** Emphasises real-time data availability and reduces duplication by making data consumable at its source.
- **Container platforms:** Utilise automation, microservices, and APIs to support agile development as well as continuous integration and continuous deployment (CI/CD).

These features enable rapid innovation while maintaining robust data management and analytics capabilities.

Other essential components of modern technology stacks involve:

- **Core systems:** Providing fundamental functionalities for FIs.
- **Advanced analytics and AI:** Enhancing decision-making and customer experience.
- **APIs and microservices:** Facilitating integration with third-party services and enabling a flexible, scalable architecture.
- **Cloud infrastructure:** Ensuring scalability and efficiency to handle dynamic demands and large data volumes.
- **Low-code platforms:** Enabling easier integration and faster deployment of new services.
- **Digital channels:** Offering a unified experience across online and mobile platforms.
- **Kubernetes and containerised environments:** Supporting efficient deployment.
- **Hybrid cloud infrastructures:** Combining on-premise and cloud solutions.
- **Interconnected ecosystems:** Enabling seamless data flow and integration with partners and customers.

This architecture supports a **frictionless digital customer experience.** Open APIs allow for quick integration with fintech solutions, and an API-driven, microservices-based architecture provides flexibility and scalability, enabling BFSI companies to address specific issues without overhauling their entire core systems.

Key considerations for platform transformation

Achieving agility and operational efficiency is crucial for BFSI companies to compete with fast-paced challengers like fintech companies and e-commerce firms. Key considerations in platform modernisation include:

- **Business requirements-driven modernisation:** Expanding end-user UI choices, integrating non-mainframe applications, improving release cycles, and leveraging data insights for analytics.
- **Maintenance, cost, or skill-driven modernisation:** Optimising workload execution, implementing DevOps practices, migrating to cloud platforms, and updating or changing platform components to reduce operational costs and address skill constraints. Analysing infrastructure, labour, cybersecurity, and compliance costs is essential for prioritising critical upgrades. Modernisation efforts should focus on reducing operational costs, improving efficiency, and maximising ROI.

- **Data management and security:** Efficient data handling and robust security measures are critical. Modern applications are designed to handle data more effectively, reduce silos, and ensure compliance with security regulations. Enhanced security features help protect against cyber threats, making this area a top priority.

- **Scalability and flexibility:** Ensuring systems can scale and adapt to changing business needs. This involves re-platforming legacy applications onto modern cloud platforms, adopting microservices architectures, and utilising containerisation to enhance scalability and flexibility.

A **phased approach** to modernisation is recommended. Small and medium-sized FIs should replace their core systems in one go, embracing open APIs and digital ecosystems. On the other hand, large FIs should focus on **composable architectures,** potentially starting with a "bank within a bank" model to introduce digital services gradually.

Integrating digital transformation into modernisation

Digital transformation complements modernisation by focusing on enhancing customer experiences and operational efficiency. To integrate digital transformation effectively, institutions in the BFSI sector should follow these steps:

1. **Discovery and assessment phase:** Understand the current state of digital capabilities, including technical debt and dependencies. It sets the foundation for a structured and informed modernisation plan.

2. **Understanding modernisation patterns:** Implement various modernisation patterns, such as UI modernisation, integration layers, data analysis, coexistence and hybrid cloud, and workload improvement.

3. **Adopting the right tools and practices:** Utilise tools and practices like DevOps toolchains for mainframe environments, migration tools for seamless transition, and cloud platforms for cost-effective, scalable solutions.

4. **Continuous learning and adaptation:** Stay updated with the latest trends and technologies through resources like DevOps for enterprise.

5. **Collaborating across teams and roles:** Foster collaboration between IT and business teams to align modernisation efforts with business-driven requirements with maintenance-driven initiatives, ensuring a cohesive and integrated approach.

By following these steps, FIs can effectively navigate the complexities of legacy systems, leverage new technologies, and achieve their strategic objectives.

Accelerating digital transformation efforts

To further accelerate digital transformation, FIs should consider the following steps:

1. **Define a clear digital transformation strategy:** Align it with business goals and priorities.
2. **Secure commitment from top management:** Ensure consistent support and resource allocation.
3. **Prioritise customer-centric initiatives:** Focus on enhancing customer experience and satisfaction.
4. **Adopt a mindset of continuous improvement:** Keep pace with technological advancements and competitive pressures.
5. **Utilise data for hyper-personalised services:** Leverage analytics to predict and meet evolving customer needs.
6. **Focus on cost reduction through digitalisation:** Streamline operations and reduce overheads.
7. **Ensure new systems meet regulatory requirements:** This is critical for compliance and trust.
8. **Leverage advanced analytics and AI:** To offer relevant financial solutions and enhance customer satisfaction and loyalty.

These steps represent just one aspect of a broader strategic approach to modernisation and digital transformation. As the landscape continues to evolve, FIs must remain agile, balancing innovation with risk management.

Approaches to modernising core platforms

Modernisation is not just a choice but a strategic imperative for enhancing efficiency, agility, and customer experience in the digital age. This involves a variety of strategies and methods, each designed to address specific challenges and opportunities within the FIs' digital transformation journeys.

Phases for effective modernisation

The modernisation of banking and insurance platforms is a multi-step journey that requires careful planning and execution. To guide this journey, it is crucial to understand both the foundational preparation phases and the broader execution framework.

Foundational phases

Before embarking on a modernisation journey, FIs must establish a foundational understanding of their current infrastructure and align their goals with their business strategies. This process involves three key phases:

1. **Assessment and discovery:** This initial phase comprehensively evaluates the existing applications, infrastructure, and processes. The goal is to identify capabilities, limitations, and dependencies while gathering detailed information about the application's interrelationships with other systems. Understanding the current state is crucial for setting a baseline for modernisation efforts.

2. **Business alignment:** Ensuring the transformation aligns with strategic business objectives is essential. This involves identifying gaps in current functionalities and customer experience and determining how modernisation can meet stakeholder needs and enhance user satisfaction.

3. **Customer experience enhancement:** A critical focus during modernisation is improving user interfaces and customer experiences. This includes adopting responsive designs, intuitive navigation, and effective data collection practices for continuous improvement, creating a user-centric platform that meets modern expectations.

Execution framework: Assess, modernise, manage

After laying the groundwork with foundational preparation, FIs can move forward with a structured approach to modernisation, broken down into three key phases:

4. **Assess:** In this phase, FIs undertake application rationalisation, comprehensive assessments, and the development of a modernisation roadmap and business case. The focus is on understanding the current state and creating a strategic plan for transformation.
5. **Modernise:** This phase focuses on executing the modernisation program, which involves managing application modernisation projects, implementing change management processes, and ensuring optimal transaction management. Agile frameworks and industry best practices are critical during this stage to ensure adaptability and flexibility.
6. **Manage:** The final phase involves maintaining and optimising the modernised environment. This includes IT governance, application management, and hosting. Utilising reference architectures and bespoke optimisation strategies is crucial for ensuring long-term stability and efficiency.

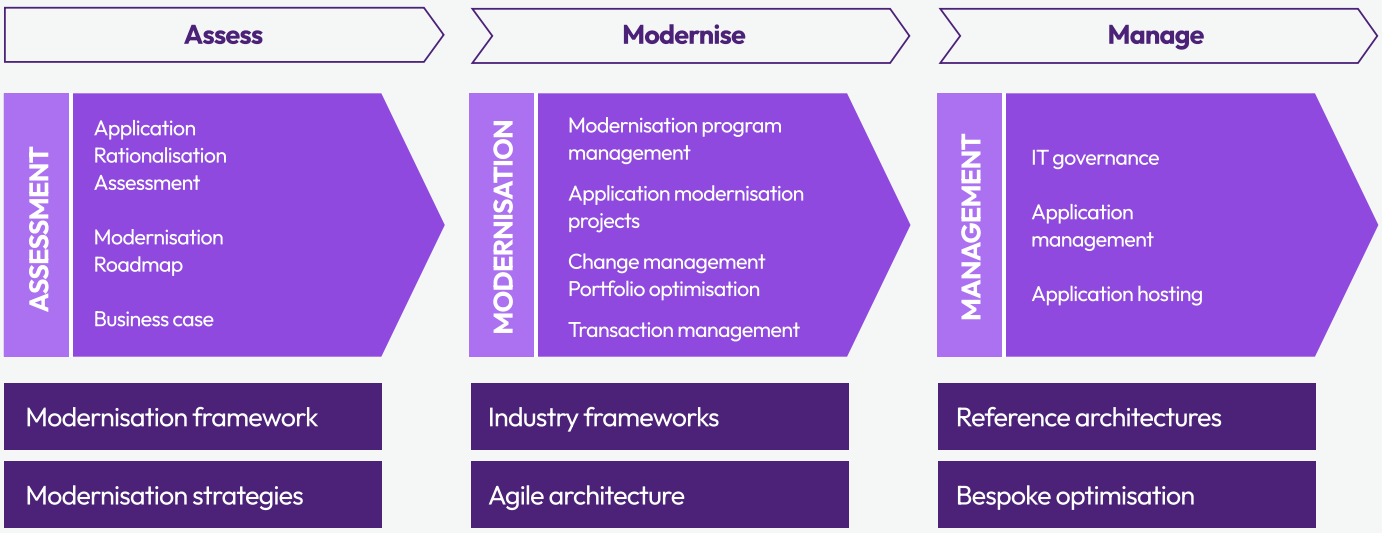


Figure 7: Approaches to modernisation

Core modernisation strategies

There are various strategies for modernisation that FIs can adopt depending on their specific needs, risk tolerance, and available resources. A thorough assessment of the entire ecosystem and understanding the customer impact is essential for a successful digital transformation. The choice of strategy often involves balancing the need for innovation with the necessity of maintaining stable operations.

On a high level, there are three primary strategies, each with distinct levels of risk, investment, and transformation potential. These approaches provide structured pathways to transition from traditional systems to flexible, digital-ready architectures.

Replacement (Big bang migration)

This method involves a **complete overhaul of legacy systems, replacing them with a new core system in a single, large-scale deployment.** While this approach modernises the core thoroughly, it presents a significant risk due to the need for a well-coordinated switchover, extensive testing, and potential high costs. The Big Bang migration is best suited for institutions ready to invest heavily upfront and manage the risks associated with a single-point transition.

Parallel run

The parallel run strategy maintains both legacy and new systems in operation simultaneously, allowing for phased migration of services to the modern system. This approach reduces the risk of operational disruption, as the legacy system continues to function until the new core is fully validated. However, this dual-operation method requires substantial resources to maintain synchronisation and incurs additional operational costs.

Externalisation of key functions

Externalisation of key functions offers a unique approach by enabling incremental modernisation without the need for a full core replacement. Instead of transforming the entire core system, financial institutions can selectively externalise specific functions — loan pricing, payments, customer engagement, or data analytics — using modern, decoupled API-based architectures. This incremental approach addresses the high-risk and high-cost challenges of Big Bang and parallel migrations by allowing faster time to market, with new functionalities to be added gradually, ensuring seamless integration with existing systems.

Benefits of externalisation

Externalisation supports agility by allowing FIs to adopt new technologies progressively, enhancing scalability and flexibility. By decoupling specific functions, this approach provides a lower-risk pathway to modernisation, allowing for rapid response to customer demands and regulatory requirements without overhauling the core.

Real-world application
Although externalisation is relatively new compared to traditional methods, it has proven successful in practice, offering an adaptable framework for financial institutions that need to modernise incrementally. This method also allows FIs to maintain operational continuity while scaling new capabilities as the market demands.

Alternative modernisation approach: AI code conversion

Some firms are exploring AI-driven code conversion as a potential solution for modernising legacy systems, attempting to translate older languages, such as COBOL, into more modern languages like Java. Although this approach has generated interest, it has seen limited success in practice. AI code conversion often struggles to accurately translate complex legacy code, particularly in mission-critical environments, which can lead to performance issues, incomplete migrations, and high maintenance demands.

More importantly, the need to check the accuracy of the code generated requires a deep understanding of the original system requirements, which is often not long available. For institutions in the BFSI sector considering modernisation, this option remains largely experimental and carries significant risk, as it has yet to demonstrate consistent and reliable outcomes.

Leveraging APIs for modernisation

APIs are pivotal in modernising core platforms, bridging legacy systems with modern digital components to drive seamless integration. By enhancing interoperability and flexibility, APIs accelerate digital transformation, allowing FIs to incrementally adopt new technologies and adapt quickly to evolving market demands. One article notes that an API-first strategy not only provides scalability but also reduces the risks and costs associated with full-scale migrations, enabling FIs to meet customer needs and regulatory requirements without major disruptions.[8]

With APIs, legacy systems can efficiently connect with newer, cloud-based or modular platforms, allowing FIs to integrate functionalities and third-party services without overhauling existing infrastructure. This flexibility supports an agile development approach, making it possible to deploy new services faster and at lower costs than traditional system upgrades. APIs also provide added layers of security and compliance, enabling FIs to address regulatory and cybersecurity needs without requiring a full system replacement.

While APIs offer substantial benefits, integration with core systems, especially legacy mainframes like z/OS, requires careful planning. Mainframes are critical for processing large transaction volumes reliably, yet they present challenges in terms of maintenance, flexibility, and scalability. Leveraging an API-first approach can help banks and insurers overcome these limitations by modernising selectively and sustainably, ensuring a balance between legacy strengths and the demands of a digital-first landscape.

[8] How banks can use seven levers to modernize their core systems (McKinsey & Company, 21 January 2021).

Z13 mainframes can handle about **2.5 billion transactions per day,** which is a staggering amount of throughput and data.

A typical database server can process 26 million daily, far **short of the billions of transactions a mainframe can support.**[9]

This is why many FIs are cautious about completely transitioning away from mainframes to cloud-based systems. While cloud infrastructure provides scalability, flexibility, and cost efficiency, it currently faces challenges in matching the transaction processing power and reliability of traditional mainframes.

APIs, therefore, serve as a critical intermediary, enabling FIs to retain the robust processing capabilities of legacy mainframes while simultaneously embracing modern, agile development frameworks. This hybrid approach allows banks and insurers to leverage the best of both worlds, integrating new functionalities and adapting to market changes without sacrificing the strengths of their existing systems.

Minimum viable approach to modernisation

For FIs new to the technology or without deep expertise, a minimum viable approach to modernisation can be considered. This approach emphasises incremental progress with lower risk, helping FIs address complexities like ROI, migration risk, and operational continuity. Building on the core strategies introduced earlier, here are practical steps to drive transformation effectively:

1. **Pilot and validate with low-risk initiatives:** Start with small-scale pilots on non-critical functions to test new technologies like APIs or containerisation. This allows FIs to demonstrate ROI in a controlled setting, providing proof of concept without committing extensive resources.
2. **Prioritise quick wins for immediate value:** Identify modernisation initiatives that deliver fast, measurable improvements. For example, externalising specific functions (e.g., payments or data management) can yield immediate benefits without a full core overhaul, proving value and generating support for further investments.

[9]Mainframe vs. Server: What Makes Mainframes Different? (Precisely, 16 May 2022).

3. **Develop a phased migration roadmap:** Whether pursuing a full replacement or a parallel run, establish a phased roadmap that prioritises the transition of core functions gradually. This approach minimises disruption, enabling FIs to validate each phase before proceeding.
4. **Leverage APIs for flexibility and interoperability:** Use APIs to decouple legacy systems from modern components, allowing integration with new technologies without a full system migration. This enables FIs to adopt modern architecture incrementally, reducing migration risks and achieving better ROI.
5. **Select tools for scalability and ease of integration:** Choose tools and platforms that support both legacy and modern environments. Technologies like containerisation, microservices, and hybrid cloud can facilitate modular upgrades, ensuring that modernised components integrate seamlessly with existing systems.
6. **Monitor ROI and adjust accordingly:** Throughout the modernisation process, track ROI and make adjustments based on performance and impact. By continuously measuring results, FIs can prioritise high-value initiatives and recalibrate efforts to ensure maximum returns.

By following these practical steps, FIs can address the challenges of core modernisation effectively, optimising ROI and minimising migration risks. This phased, low-risk approach enables gradual but sustainable transformation, setting a strong foundation for ongoing digital evolution.

Operational structures for strategy implementation

To implement these strategies effectively, FIs should aim to decouple teams and run autonomous structures, emphasising effective change delivery mechanisms. These approaches should be supported by robust integration and interaction platforms to ensure interoperability across the organisation's IT landscape.

Banks and insurers alike must balance **buy-versus-build decisions,** incorporating open standards like the Banking Industry Architecture Network (BIAN) to break down their business and IT landscape into independent yet interlinked units.

The figure below illustrates key aspects of this transition and highlights the standard steps involved in modernising legacy systems.

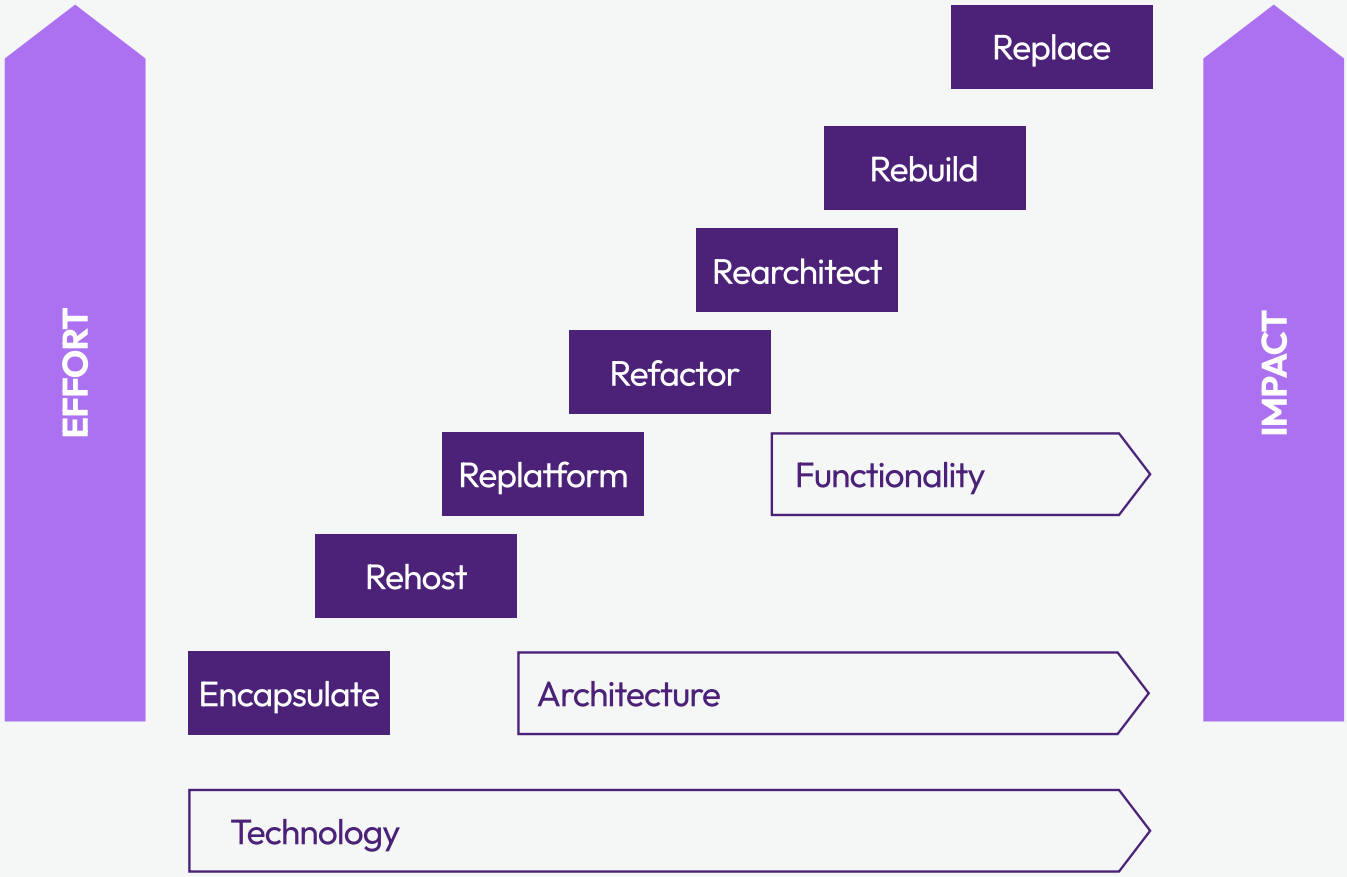


Figure 8: Upgrading legacy systems

Example use case: Framework for modernising legacy systems

This example outlines a comprehensive framework for modernising legacy systems within financial institutions, offering a general roadmap and strategic approaches. It demonstrates how banks, insurers, and financial services firms can transition from outdated technology stacks to agile, modern infrastructures effectively.

Understanding the complexities of modernisation is crucial when embarking on digital transformation. Financial services firms must balance immediate challenges in maintaining legacy systems with the need for long-term competitiveness. By following best practices and recognising the key drivers of modernisation, institutions can minimise risks and facilitate a seamless transition from traditional to modern technology environments.

A successful transformation integrates an experience layer, an API-driven services layer, and a core transaction processing layer. This approach improves customer experiences and enhances integration capabilities with external fintechs and marketplace partners, meeting evolving demands in a dynamic landscape.

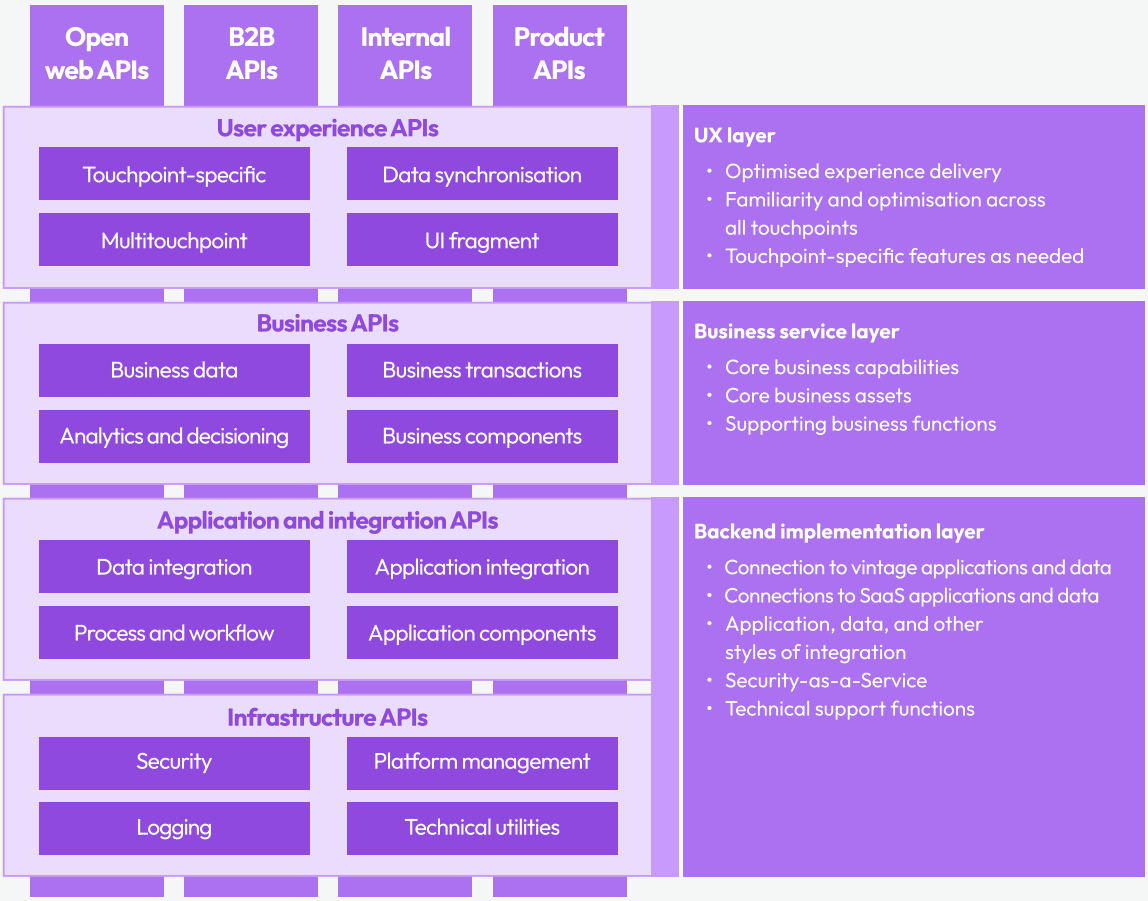


Figure 9: Weaving together the various API layers

However, managing these diverse layers effectively requires a strategic orchestration approach. An **orchestration platform** can serve as the backbone for this adaptability, allowing banks and insurers to manage both legacy and modern systems cohesively. By coordinating the flow of data and processes across various technology stacks, such a platform ensures a smooth transition from an old technology stack to a more modern, agile, and customer-centric technology stack.

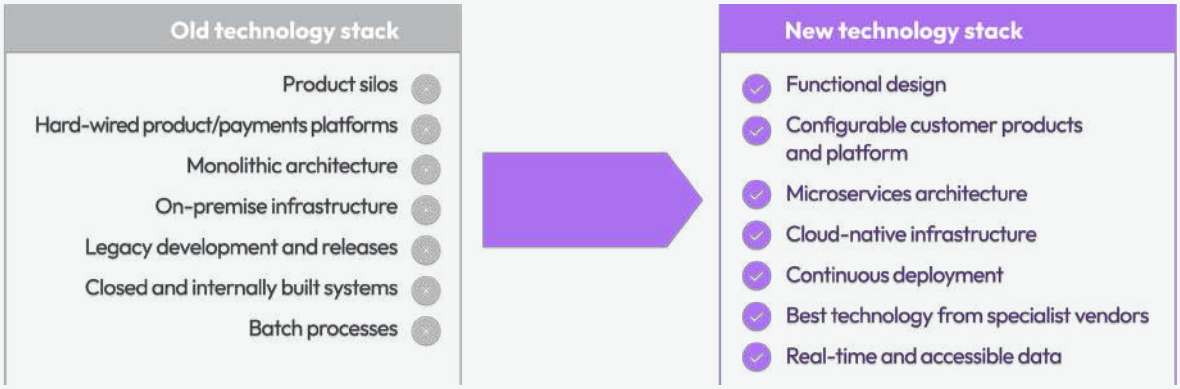


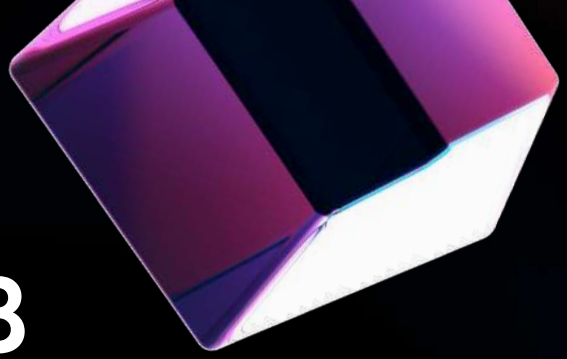
Figure 10: Old to new technology stack

Outlook for AI-driven transformation

As FIs look ahead, building an AI-ready infrastructure is increasingly essential to stay competitive and responsive. With advancements in digital technology and customer expectations shifting towards personalised, real-time experiences, the future of financial services will be shaped by AI's transformative impact across core systems. Key areas where AI is expected to redefine the BFSI landscape include:

1. **Enhanced decision-making with predictive analytics:** AI-driven insights enable proactive decision-making, helping institutions respond dynamically to customer needs and market trends. By analysing vast data sets, FIs can anticipate behaviours and preferences with greater precision.
2. **Real-time personalisation:** AI empowers FIs to move beyond standardised offerings, delivering real-time, personalised interactions across channels. This capability aligns closely with modern customer expectations for tailored products and seamless experiences.
3. **Automated risk management:** AI introduces greater accuracy and speed to risk management, allowing institutions to detect and address threats in real time. By automating these processes, FIs can enhance their security posture and regulatory compliance more effectively.
4. **Scalable and adaptive infrastructure:** AI-ready systems offer FIs the scalability to handle rising transaction volumes and the adaptability to integrate future technologies. This flexibility supports a dynamic infrastructure that can evolve with changing market needs without costly overhauls.

These AI-driven advancements highlight the importance of moving towards a modern, agile, and adaptable infrastructure. For institutions in the BFSI industry aiming to stay ahead, selecting a solution that supports this AI-ready transformation is crucial.



PULSE8
A comprehensive solution for modernisation

PULSE8 is an advanced, event-driven microservices architecture tailored specifically for the financial services sector, offering a strategic pathway to modernisation without requiring a full core replacement. More than a data orchestration platform, PULSE8 provides a robust and flexible foundation that enables financial institutions to evolve incrementally while managing risk and operational continuity at a lower cost.

With **modular building blocks** ranging from core infrastructure to functional applications like Wealth Cockpit, PULSE8 equips institutions with a suite of scalable resources, including front-end component libraries, document management services, and integration-ready APIs. This flexible framework supports a phased approach, allowing financial institutions to integrate new capabilities, enhance legacy systems, and maintain alignment with evolving business goals.

Built to handle both real-time and sequential data processing, PULSE8 leverages advanced AI and ML capabilities to provide deep insights, improved decision-making, and effective risk management. This adaptability enables financial institutions to adopt modernisation strategies such as API-first integration, selective component replacement, and gradual deployment – all aligning with the low-risk, high-value modernisation approaches discussed in this whitepaper.

PULSE8 not only facilitates compliance and security but also empowers financial institutions to accelerate time-to-market, enhance customer experiences, and drive operational efficiencies. By supporting composable, cloud-native architectures, PULSE8 positions financial institutions to meet both current and future demands with agility, making it a vital partner in navigating the digital transformation journey.

Conclusion

For financial institutions striving to stay competitive and relevant in the digital era, modernising legacy systems is no longer an option but a strategic necessity. The rapid evolution in digital technologies, customer expectations, and regulatory requirements calls for a shift from rigid, legacy architectures to agile, scalable, and secure platforms. Embracing modular, API-driven, and cloud-native architectures enables financial institutions to drive operational efficiencies, lower costs, and enhance customer experiences – all while maintaining compliance and resilience.

This whitepaper has outlined key strategies, challenges, and solutions, providing a roadmap for institutions ready to embark on a transformative journey. By prioritising modernisation approaches that allow incremental progress and minimising risk, banks and insurers can adapt more smoothly to the digital era. Leveraging selective replacement, externalisation, and composable architectures empowers institutions to modernise gradually, ensuring operational continuity and maximising ROI.

Looking forward, the role of AI in financial services transformation will only grow. AI-ready infrastructure enables institutions to deliver real-time personalisation, automate risk management, and optimise decision-making processes. As financial institutions prepare for this future, integrating AI capabilities within modern platforms will be critical to achieving a truly customer-centric, data-driven, and adaptable ecosystem.

Ultimately, the path to modernisation is not a one-size-fits-all approach but a strategic imperative. Institutions that embrace this journey with foresight, flexibility, and the right partnerships will not only enhance their operational foundations but also unlock new avenues for growth, innovation, and resilience in an increasingly digital world. By adopting the outlined strategies, financial institutions can position themselves as leaders in the future of financial services.

About Synpulse

Synpulse is a global professional services company and a valued partner of leading players in the financial services and related industries. We optimise the proximity to our clients and deep domain expertise to create sustainable value using technology as a business driver.

Leveraging our strong network of over 100 ecosystem partners, we accompany our clients throughout their transformation journey – from strategy and development to implementation and management.

With our tech powerhouse, Synpulse8, we collaborate with our clients to co-create digital experiences with innovative technologies and proprietary methods. Synpulse is powered by the passion and commitment of its more than 1,200 employees, who come from over 30 countries.

Why Synpulse8

Today, technology is the bedrock of all financial institutions. It facilitates analytics for personalisation and establishes trust with digital consumers who require financial services at any time and from any location. We are at the forefront of the industry and have a comprehensive array of services to assist, including:

Migration and modernisation
Achieve a competitive advantage and a quicker time-to-market by implementing secure, data-driven solutions that revolutionise your organisation.

Event storming (ES)
Untangle complex processes through ES, a shared vision, accelerated innovation through collaboration, and innovative visualisation from obscurity to clarity.

DevOps-as-a-Service
Boost security, streamline development and operations, and accelerate delivery. Everything is managed for you with DevOps-as-a-Service.

Domain-driven design (DDD)
Achieve clear communication with efficient development. DDD helps build it right by reducing rework and enhancing maintainability.

Data analytics foundations
Unlock data insights faster. Build your analytics muscle with expert guidance and tools. Empower decisions and drive results.

Data literacy workshop
Rapidly manage, secure, and access data. Simplify data management while safeguarding your information to assure compliance without requiring IT expertise.

API lifecycle and governance
Unlock business value faster with a seamless API journey by safely designing, securing, and managing APIs with scale and innovation.

Data-as-a-Product
All data is a concrete, valuable asset to an enterprise. It is a real, measurable resource. We apply standard asset management practices to data.

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