



Modernizing Mainframe-Core Insurance Platforms: A Practical Guide for Insurance IT Leaders



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Overview

Insurance CIOs, CTOs, and CDOs are facing one of the most complex technology inflection points in decades. Policyholders, brokers, partners, and regulators now expect seamless, real-time interactions across every stage of the insurance lifecycle – from quoting and underwriting to claims and billing. At the same time, AI, analytics, and digital-first competitors are raising the bar for speed, accuracy, and operational efficiency.

Yet for most insurers, the core systems that run the business still sit on mainframes designed for durability, not today's digital demands. These environments have become surrounded by layers of point integrations, ETL pipelines, and patch-and-pray workarounds that slow change and increase operational risk. At the same time, insurers face rising fraud, tightening regulations, and an accelerating skill cliff as legacy experts retire.

These realities make modernization not only a strategy priority but a matter of long-term resilience. But insurers cannot simply “rip and replace” these platforms without jeopardizing the business or regulations. Modernization must happen in a way that preserves what works – while unlocking what the organization needs next.

That's why this guide focuses on a pragmatic roadmap for that journey. You can keep the mainframe as the durable system of record while modernizing how it integrates, exposes data, participates in hybrid architecture, and supports digital and analytics initiatives. Modernization is no longer about moving off the mainframe. It's about unlocking what the mainframe can do next. This guide shows insurers can evolve their core platforms safely, incrementally, and with measurable business impact.



Introduction: The modernization mandate in insurance

The pressure for insurers to modernize does not stem from a single source. It is the result of converging forces reshaping how insurance products are built, distributed, priced, and serviced. These forces are pushing insurance carriers to evolve their core platforms faster than ever before, while still maintaining the stability, security, and operational continuity the business depends on.

Rising digital expectations across the insurance ecosystem

Brokers, partners, agents, and policyholders expect seamless, real-time digital experiences. Commercial clients want to update policies instantly. Brokers need to quote, bind, and service accounts without latency. Partners expect clean APIs that integrate pricing, risk data, and claims insight into their workflows. Yet, when your core data remains trapped in overnight batch processes or siloed legacy systems, meeting these expectations becomes incredibly difficult. You need systems that communicate instantly and securely across modern digital channels without compromising reliability.



The pressure to unlock AI, analytics, and trusted data

Advanced analytics and artificial intelligence are transforming risk assessment, fraud detection, claims processing, and customer servicing. But these capabilities depend on clean, accessible, real-time data, all of which is difficult when it is trapped inside legacy systems. Data scientists and actuaries spend more time collecting and cleaning data than analyzing it. Modernization unlocks this data, building the foundation for AI-driven capabilities that will deliver greater value tomorrow.

Regulatory tightening and cyber risks

Insurers face a constantly evolving web of compliance regulations and cybersecurity threats. Regulations related to privacy, operational resilience, model governance, and data lineage continue to expand globally. As governments introduce stricter data privacy laws and operational resilience standards, your systems must provide clear, immediate audit trails. At the same time, high-profile data breaches make robust security non-negotiable. Protecting sensitive commercial insurance data against modern cyber threats requires a modernization strategy that actively enhances your security posture rather than exposing new vulnerabilities.

Severe talent shortages and cost pressures

Finding professionals who understand legacy languages like COBOL is getting harder every year as experienced specialists retire. Meanwhile, new engineering talent prefers to work with modern cloud stacks and development environments. This skills cliff creates a significant operational risk.

At the same time, maintaining isolated legacy systems often drives operational costs and slows down innovation, making it harder to fund new digital initiatives. Modernization helps insurers shift to an operating model where new talent can participate effectively without requiring decades of specialized knowledge.



Why modernizing the core is uniquely challenging for insurers

While the forces driving modernization are clear, the path forward is rarely simple. Mainframes still run the business, and they are exceptionally good at it. They process massive volumes of claims, manage complex billing cycles, and execute core policy administration with unmatched reliability.

However, engineers did not design these legacy systems for a real-time, cloud-first environment. Over the years, organizations have surrounded their core mainframes with layers of tactical quick fixes, point-to-point integrations, and complex data extraction processes. This creates a brittle architecture where making a small change to a digital front-end requires extensive, risky modifications to the core logic.

Your modernization journey is too important to be disrupted by these bottlenecks. IT leaders often feel trapped between the immense risk of breaking a mission-critical system and the business risk of moving too slowly to remain competitive.

A realistic path forward: Evolve, don't replace

Faced with these challenges, many consultants immediately suggest a complete rip-and-replace strategy. They propose migrating everything to the cloud at once. While this sounds appealing in theory, it rarely survives scrutiny in large, regulated commercial insurance firms. Ripping out a system that handles your most critical underwriting and claims processes introduces unacceptable levels of operational risk, organizational shock, and financial cost.

There is a better way. A modernization strategy that evolves the core, rather than replacing it, offers insurers a safer, more responsible path forward.

Modernize in place means:

- 01 **Keep the mainframe as the durable, stable system of record.**
- 02 **Modernizing how you access, integrate, and govern the data it contains**
- 03 **Use APIs, hybrid cloud connectivity, and governed data pipelines to unlock new capabilities.**
- 04 **Reduce dependency on legacy skill sets and technical debt.**
- 05 **Enable digital transformation without disrupting daily operations.**

While your current platform has limits, there are multiple options for modernization. Let us help you explore the fastest wins first. Through empathy, strategic planning, and a deep understanding of your unique environment, you can successfully transform your mainframe-core platforms for the future.



The reality facing mainframe-core insurers today

Insurance carriers rely on mainframes because they work. Core policy admin, claims processing, billing, and benefits engines depend on these platforms to deliver the scale, reliability, and regulatory consistency the industry demands. These systems successfully run the business, processing massive volumes of data with incredible stability.

However, as the demand for digital innovation accelerates, the reality of operating within a traditional mainframe environment has become increasingly complex. These systems were designed for stability, not today's real-time, API-driven, cloud-connected operating model. Insurers now face the challenge of preserving the dependability of the core while supporting new digital experiences, analytics, and partner integration that require flexibility their legacy architectures weren't built on.

IT leaders in the insurance sector are caught between two competing mandates. You must maintain the flawless operation of foundational systems while simultaneously delivering the agile, real-time capabilities the modern market demands. To chart a successful modernization journey, we must first acknowledge the reality of the environment you operate in today.

The typical insurance environment: deep expertise required, increasingly hard to sustain

Most insurers operate decades-old COBOL and PL/I systems surrounded by layers of complexity. These systems are the undisputed systems of record. They handle the most critical functions of the business, including policy administration, claims processing, complex billing cycles, and benefits management. They do this exceptionally well, offering a level of high-volume transaction processing that is hard to replicate.

However, the challenge lies in how these core systems connect to the rest of the enterprise. Because engineers did not design legacy mainframes for a real-time, cloud-first world, organizations have spent years building workarounds. Today, the central mainframe is rarely a standalone entity. Instead, it sits at the center of a tangled web of integrations.

Surrounding the core are heavy layers of extract, transform, and load (ETL) processes. You will also find countless point-to-point integrations and tactical quick fixes that previous teams implemented to meet immediate business needs. Over time, these well-intentioned patches accumulate into significant technical debt. The result is a brittle architecture where a single change to a front-end application can risk breaking the underlying core logic.



Common pain patterns slowing down innovation

This complex architectural reality creates a set of common pain points that insurers experience across the board. These challenges are not simply IT problems; they are business bottlenecks that directly impact customer satisfaction, operational efficiency, and competitive advantage.

01

Digital initiatives cannot move fast enough

Brokers, partners, and policyholders expect seamless digital experiences. When the business wants to launch a new digital product or open a new partner channel, IT is often forced to say no or not yet. The tight coupling of legacy systems means that simple digital requests require extensive, high-risk coding changes. Testing these changes across layers of undocumented point-to-point integrations takes months. As a result, digital transformation initiatives stall, and competitors gain ground.

02

Critical data remains trapped in batch jobs

Data is the lifeblood of the modern insurance enterprise. Advanced analytics, artificial intelligence, and dynamic risk assessment all require clean, real-time data. Unfortunately, in a traditional mainframe environment, critical policy and claims data is often locked behind overnight batch processing jobs. Data scientists and actuaries spend more time waiting for data extracts and manually cleaning information than they do generating insights. When data is trapped, your organization cannot leverage the AI-driven capabilities that will unlock greater value tomorrow.

03

Audit and compliance work is painful and manual

The insurance industry faces strict regulatory oversight. As privacy laws and cybersecurity standards tighten, regulators demand clear, immediate audit trails. In an environment dominated by shadow IT, disparate point solutions, and complex integrations, proving compliance is a massive challenge. Security teams spend countless hours manually pulling logs and tracing data lineage across hybrid environments. This manual compliance work drains resources and increases the risk of costly audit findings.

04

The skills cliff threatens operational stability

Perhaps the most pressing risk facing mainframe-core insurers is the rapid depletion of institutional knowledge. The experts who built and maintained these COBOL and PL/I systems over the last 30 years are retiring. Finding new professionals who understand these legacy languages is incredibly difficult, as modern engineering talent naturally gravitates toward cloud stacks and modern development environments. This skills cliff leaves organizations heavily reliant on a shrinking pool of talent, creating single points of failure that threaten operational stability.



Voices from insurance leaders

To truly understand these challenges, it helps to look at the professionals navigating them every day. While every organization is unique, the struggles are remarkably similar. Here is a look at three common profiles of IT leaders working to bridge the gap between legacy reliability and modern agility.

The global P&C CIO

This leader oversees the technology strategy for a massive property and casualty insurer with operations across North America and Western Europe. The business wants to launch dynamic, usage-based commercial insurance products to capture a new market segment.

However, the CIO knows that the core policy administration and billing systems are deeply entangled. Every time the team tries to expose a new capability to the digital front end, they uncover undocumented dependencies. The CIO wants to modernize, but a rip-and-replace strategy is entirely off the table due to the unacceptable level of operational risk. They need a way to safely expose core functions via APIs without breaking the systems that currently process millions of dollars in daily premiums.

“We can’t rip out our core, the risk is too high. But we need API-ready capabilities and modern data access yesterday.”

The regional health-benefits CDO

The Chief Data Officer at a regional health insurer is tasked with revolutionizing the claims processing workflow. The goal is to implement AI-driven fraud detection and automated claims triage to reduce operational costs and improve provider satisfaction.

The CDO has hired a brilliant team of data scientists, but they are incredibly frustrated. The data they need to build their predictive models is isolated in the mainframe and only accessible via slow, brittle ETL processes that run overnight. By the time the data reaches the analytics environment, it is already outdated. The CDO is looking for a way to establish secure, real-time data pipelines from the mainframe to the cloud, empowering the analytics team to do their best work.

“Our AI roadmap is stuck because claims and policy data arrive 24 hours late. We can’t innovate off batch files.”

The CISO at a composite insurer

This Chief Information Security Officer manages risk for an insurer that handles both life and commercial lines. With high-profile data breaches dominating the headlines, the board has made cybersecurity their top priority.

The CISO loses sleep over the sheer number of tactical quick fixes and point-to-point integrations surrounding the mainframe. As the business pushes to open up partner connectivity for new distribution channels, the attack surface expands. Furthermore, auditing access controls across both the legacy environment and new cloud applications is a tedious, manual nightmare. The CISO needs a modernization strategy that actively enhances the security posture, seamlessly integrating mainframe access logs into the enterprise security information and event management (SIEM) systems.

“Every new integration expands our attack surface. I need modernization to improve security, not weaken it.”



Acknowledging the reality to build a better future

These IT leaders represent the reality of the modern insurance enterprise. The challenges of brittle integrations, trapped data, compliance burdens, and talent shortages are significant, but they are not insurmountable. By acknowledging the constraints of the current environment, you can begin to plot a strategic, risk-aware path forward.

We know that your modernization journey is too important to be disrupted by these bottlenecks. Let us help you navigate this reality. In the next section, we will explore the different options available for evolving your core platforms, helping you make the best strategic choice for your organization's future.



Your modernization options & the real trade-offs for insurers

For insurers, modernization is inevitable – but the approach you choose has direct consequences on operational continuity, regulatory exposure, and long-term competitiveness. Claims, underwriting, billing, and policy administration all depend on systems that cannot fail, which means the industry must balance innovation with stability. Modernization isn't just a technology decision – it's a risk management decision.

When evaluating how to handle legacy systems, consultants and vendors typically present three main approaches. Each option carries different levels of business risk, cost, and feasibility.

Let's explore these three strategies to help you navigate your modernization journey with clarity and confidence.



Option one: The rip-and-replace strategy

High risk, high cost,
low feasibility

The first option is often the most dramatic. A rip-and-replace strategy involves completely decommissioning your existing COBOL or PL/I mainframe systems and migrating all core logic, data, and processes to an entirely new, cloud-native platform.

This approach often fails because it introduces an unacceptable level of operational risk. Migrating critical policy administration and claims systems all at once creates a massive window for data loss, system downtime, and regulatory compliance breaches. Furthermore, these projects notoriously run over budget and take years to complete. During this transitional period, your business operations stall, preventing you from launching new digital insurance products or responding to market changes.

When it is typically proposed

Consulting firms frequently propose this strategy when an organization faces a severe skills shortage or when executive leadership demands a rapid shift to the cloud. It appeals to the desire for a clean slate, promising an end-state where legacy code no longer exists.

Why some consider it

In theory, replacing the core offers a fresh start. A fully modern, cloud-native architecture can simplify integration, eliminate reliance on legacy programming languages, and theoretically provide infinite scalability.

Why insurers reject it

In practice, ripping and replacing a foundational system rarely survives scrutiny in large, regulated insurance firms. Your mainframe systems encapsulate decades of complex business logic, underwriting rules, and compliance frameworks. Rebuilding this logic from scratch is a monumental task.



Option two: The freeze the core approach

Safe today,
expensive tomorrow

The second option takes the exact opposite approach. Rather than replacing the mainframe, IT leadership decides to freeze the core system entirely. The organization stops making internal changes to the legacy system and instead builds all new digital capabilities, data analytics tools, and APIs in surrounding systems.

This approach quickly leads to massive technical debt. Shadow IT proliferates as business units bypass the frozen core to get things done. You also face heightened cybersecurity risks because these complex workarounds increase your attack surface. Ultimately, freezing the core traps your valuable data, making it impossible to leverage real-time analytics for precise risk assessment.

When it is typically proposed

Organizations often choose this path when they feel paralyzed by the risk of the rip-and-replace strategy but still face urgent demands from the business to deliver modern user experiences. It is a defensive strategy designed to protect the system of record from disruption.

Why some insurers choose it

The primary strength of freezing the core is short-term operational stability. By walling off the mainframe, you eliminate the immediate risk of breaking mission-critical claims or billing processes through accidental coding errors.

Why it becomes unsustainable

A national railway company we worked with added an integration server around its core system. This allowed them to connect the application with modern tools, automate processes, and enable programmers to work in Python rather than the original programming language.



Option three: Modernize in place

The low risk, high-value path for insurers

Modernizing in place is the approach most insurers now adopt because it preserves the durable system of record while modernizing how you access, integrate, and govern it. This allows you to deliver new digital, data, and security capabilities without rewriting the core business logic that runs the enterprise.

Modernizing in place also allows you to deliver continuous, incremental value. By establishing secure API layers and governed data pipelines, you can connect your mainframe to modern cloud applications seamlessly. This approach empowers your data scientists to access real-time analytics for fraud detection and risk assessment without waiting for overnight batch jobs.

Furthermore, this strategy actively enhances your cybersecurity and regulatory compliance. You can integrate mainframe access logs directly into your enterprise security tools, providing clear audit trails. Because changes are phased and observable, you minimize the risk of operational downtime.

When it is typically proposed

We propose modernizing in place when IT leaders need a pragmatic, risk-aware path forward. It is the ideal strategy for insurers who want to unlock the value of their legacy systems, streamline claims processing, and meet modern digital expectations without jeopardizing daily operations.

Why this works for insurers

- Core stability is maintained, no disruption to claims, billing, or policy admin.
- Real-time data and AI become possible through governed pipelines.
- Digital products can evolve rapidly through modern APIs.
- Security posture improves by integrating mainframe events into IAM/SEM.
- Dependence on legacy skills decreases as teams work through modern interfaces.

What to manage

The main trade-off of this approach is that it requires a cultural shift. Your teams must learn to treat the mainframe not as a siloed legacy burden, but as an active participant in a hybrid cloud architecture. It requires disciplined governance to ensure that API integrations remain clean and standardized over time.





A decision checklist for insurance CIO, CTOs, CDOs & CISOs

Choosing the right path requires an honest assessment of your current environment. Use this decision checklist to evaluate your options and align your technology strategy with your business goals.

Regulatory exposure: How would a massive system migration impact your ability to meet current compliance demands? If your organization faces strict regulatory oversight, modernizing in place offers the safest way to maintain continuous, auditable operations while you upgrade your capabilities.

Appetite for operational risk: Can your underwriting and claims departments survive extended system downtime or data migration errors? If the answer is no, you should avoid the rip-and-replace strategy. Look for phased approaches that keep your foundational systems running securely.

Talent reality: Do you have the internal skills to manage a massive migration, or are you facing a severe skills cliff? Modernizing in place allows you to abstract mainframe complexity through modern APIs, making it easier for new engineers to interact with the system without needing to learn legacy code.

Competitive gap vs. peers: Are competitors outpacing you by launching dynamic digital products? If you freeze your core, you will likely fall further behind. You need a strategy that rapidly unlocks your trapped data to fuel innovation today.

If any of these resonate, modernize-in-place is almost always the safest, lowest-risk, highest ROI path. Your modernization journey is too important to be disrupted by unnecessary risks or stagnant technical debt. Let us help you unlock the full potential of your systems. By evaluating these trade-offs honestly, you can choose a path that builds a secure, agile foundation for the future.



Five modernization principles for insurance leaders

Modernizing mainframe core insurance platforms requires a balanced approach that preserves operational stability while unlocking capabilities insurers need for the future, AI, real-time analytics, secure digital experiences, and efficient operations. These five principles provide a practical, risk-aware framework for evolving your core systems safely and with business impact.

01 Bring AI directly to critical workflows

As insurers accelerate digitization across claims, underwriting, and billing, AI must be deployed directly into the critical systems that run the business – not only at the edges of the architecture. To truly improve reliability and speed, AI needs to be able to identify processing bottlenecks, surface error patterns, and trace incidents down to the root cause, whether that's a specific job, transaction or line of code.

When AI is embedded directly into these critical workflows, insurers can maintain system stability during peak events, reduce investigation timelines, and resolve issues before they disrupt policyholder or broker experiences.

Business outcomes

- Faster incident detection and resolution across claims and policy systems.
- Reduced operational downtime during high-volume events.
- Improved productivity for adjusters, underwriters, and IT operations teams.
- More stable, predictable service delivery across the insurance lifecycle.

02 Build an AI-ready foundation of trusted, unified data

Insurance relies on consistent, high-quality data for underwriting, pricing, fraud detection, reserving, and compliance. Yet many insurers struggle with fragmented data across legacy systems, slow batch pipelines, and manual reconciliation. To unlock AI and real-time analytics, organizations need unified, governed, highly trusted data that can flow seamlessly across mainframe, distributed, and cloud environments.

Creating this foundation ensures that underwriting models, fraud engines, LLM copilots, and reporting tools operate on accurate, complete, and current information.

Business outcomes

- Faster, more consistent underwriting decisions.
- More accurate fraud detection and risk scoring.
- Timely, auditable regulatory reporting.
- A strong data foundation for analytics, automation, and AI initiatives.



03 Evolve core systems through hybrid cloud modernization

Core insurance platforms cannot simply be replaced; they must evolve. A hybrid modernization approach enables insurers to refactor and optimize legacy applications incrementally, integrate them with distributed and cloud environments, and adopt modern engineering practices without disrupting business-critical operations.

This strategy allows insurers to preserve decades of business logic while unlocking new flexibility through APIs, microservices, and cloud-native workflows.

Business outcomes

- Lower infrastructure and operational costs.
- Faster delivery of new digital products and servicing experiences.
- Zero or near-zero downtime during modernization efforts.
- Greater agility to integrate with cloud platforms, partners, and ecosystems.

04 Strengthen cyber resilience with zero trust host access

As cyber threats intensify and regulatory scrutiny increases, insurers must enforce strong authentication, identity governance, and auditability across every system, including mainframe and host-based environments that were not originally designed for modern security expectations.

Applying Zero-Trust principles to core systems ensures that sensitive policy, claims and financial data is protected by consistent controls, reducing exposure to credential-based attacks and simplifying compliance.

Business outcomes

- Strong MFA and identity governance across critical systems.
- Reduced risk of unauthorized access and credential compromise.
- Lower audit and compliance burden through unified controls.
- Increased security resilience as digital integration expands.

05 Optimize costs and reduce vendor sprawl through modernization-in-place

Insurers face rising operational costs, tightening budgets, and growing tools and vendor sprawl. Modernization-in-place enables organizations to streamline processes, simplify toolchains, and enhance developer and operational productivity without the disruption or financial risk of replacing core systems.

By modernizing existing claims, underwriting, and servicing workflows with automation, improved interfaces, and API-driven integration, insurers achieve sustainable cost efficiencies while preserving system stability.

Business outcomes

- Lower licensing, infrastructure, and operational costs.
- Simplified systems management and reduced technical debt.
- Higher productivity for developers, adjusters, and underwriters.
- Reduced reliance on niche legacy skillsets and outdated tooling.

Together, these 5 principles give insurers a practical, low-risk path to evolve their core systems while delivering the speed, stability, and data intelligence the business now demands. With the right partner, carriers can put these principles into action in a way that strengthens resilience today and accelerates transformation for tomorrow.

Partnering with Rocket Software: Modernize your core safely & with confidence

Modernizing mainframe-core insurance systems is a high-stakes journey, one that demands both deep mainframe expertise and modern engineering capabilities. Rocket Software brings both. We help insurers evolve their core platforms safely, without introducing operational risk to the systems that run underwriting, billing, and claims. With decades of experience in regulated, mainframe-reliant enterprises, we know how to modernize the core while protecting the stability your business depends on.

Our approach is designed to help insurers
put the 5 modernization principles into practice:

- 1 Modernize-in-place – not rip and replace.** Keep your system of record stable while modernizing around and into it.
- 2 Protect operational continuity.** Use phased, observable, reversible change to avoid disruption to claims and policy administration.
- 3 Unlock data for AI and analytics.** Establish governed, real-time data pipeline from the mainframe to your cloud and analytics platforms.
- 4 Strengthen security and compliance.** Integrate the mainframe with enterprise IAM, SIEM, and modern control frameworks to reduce audit burden and improve cyber resilience.
- 5 Bridge the skills gap.** Provide tools, automation, and modern interfaces that allow new talent to work productively with mainframe assets without deep legacy expertise.

Whether you're ready to streamline claims, unlock valuable data, or enhance your security posture, Rocket Software stands ready to help you succeed at every stage of your modernization journey.

Let's unlock your
organization's next era
of growth together.

[Learn more](#)



About Rocket Software

Rocket Software is the global technology leader in modernization and partner of choice that empowers the world's leading businesses on their modernization journeys, spanning core systems to the cloud. Trusted by over 12,500 customers and 750 partners, and with more than 3,000 global employees, Rocket Software enables customers to maximize their data, applications, and infrastructure to deliver critical services that power our modern world. Rocket Software is a privately held U.S. corporation headquartered in the Boston area with centers of excellence strategically located around the world. Rocket Software is portfolio company of Bain Capital Private Equity.



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