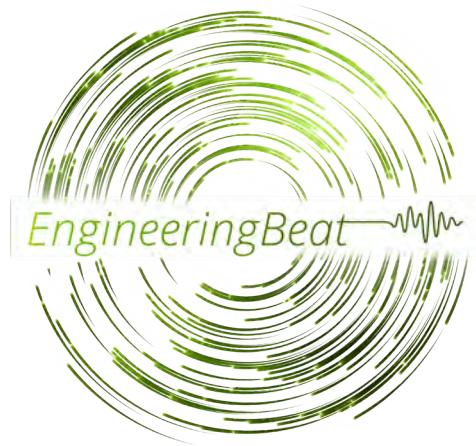# Deloitte.

EngineeringBeat: Fast-tracking mainframe modernization

Key modernization insights for the health care industry

In the past three decades, the health care industry—and with it, the patient experience—has undergone a seismic shift, and the pace of that change is accelerating. It's also compelling organizations along the care spectrum to address critical, heart-of-the-business challenges to serve their patients and members effectively. For example, over that 30-year span:

Per person health care expenditure has increased from $350 to $13,500.[1]

Total US health care spending has risen from $74 billion to $4.3 trillion.[2]

Global life expectancy has grown from 64 to 73.4 years, leading to a higher prevalence of chronic conditions like diabetes, cardiovascular disease, and Alzheimer's disease. This shift has prioritized more complex long-term care, chronic illness management, and preventive care.[3]

Use of electronic health records (EHRs) has surged from approximately 9% to 96%.[4]

Despite this transformation, however, the mainframe technology that serves as the backbone of industry information systems remains largely unchanged. Case in point, an industry that now processes billions of electronic transactions per year often operates with legacy systems designed for paper transactions at much lower volumes. It's clear that these monolithic, tightly coupled, batch-oriented, and complex systems increase cost pressures while negatively affecting provider and patient experiences.
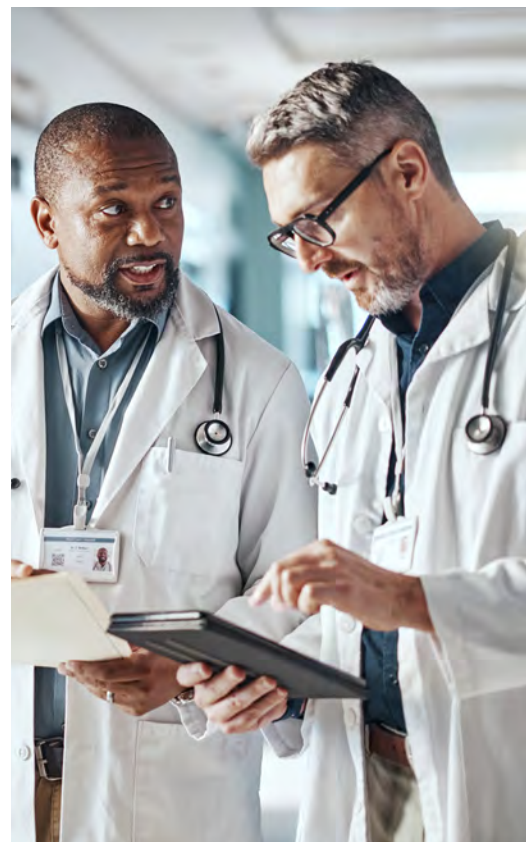
Overcoming heart-of-the-business challenges

To keep up in such a rapidly changing market and tackle critical, heart-of-the-business challenges that affect just about every aspect of the health care continuum, organizations must develop sound modernization strategies for their core legacy systems.

1 Rising costs create margin pressures. Reduce them with creative funding approaches to modernize.

Regulatory requirements, competitive pressures, and changing consumer expectations are creating sizable margin pressures for health plans and providers. Administrative costs are a significant source of these pressures. Conservatively calculated, annual spending on administrative costs is twice the amount spent on cardiovascular disease care and three times that for cancer care.[5]

A key driver of rising administrative costs is the operation and maintenance of legacy systems built for a health care ecosystem that existed more than 30 years ago. Further, regulatory changes, new product offerings, and changing business needs require complex IT projects to adapt and enhance those legacy systems to meet current needs, which can be especially challenging.

Health care modernization can enable organizations to operate on more advanced platforms, more cost-effectively. However, to reduce the initial financial burden of modernization efforts, organizations need to create innovative funding strategies. For example, businesses can invert the traditional cost equation by monetizing their core platforms. Rather than modernizing simply to maintain operations, they can build modular systems that will help generate new revenue streams post-modernization, such as leveraging the new application programming interfaces (APIs) to connect to artificial intelligence (AI) platforms to generate additional savings. Additionally, to further optimize costs, reduce capital expenditures, create new market opportunities, and strengthen existing alliances, it's essential to fully leverage cloud ecosystem partnerships.

> Administrative costs represent approximately 15% to 30% of overall health care expenditures

2 Quality care is fundamental. Achieve it with better data integration.

Consumer expectations have shifted toward a seamless care experience supported by digital engagement tools like patient portals that rely on real-time data integration and use of emerging technologies like AI and machine learning (ML). However, it's difficult to implement these modern tools on legacy mainframe architectures.

For instance, 90% of hospitals offer patient portals, but only about 40% of patients consistently use them due to issues with interoperability, user experience, and integration caused by disparate, inflexible systems.[6] Likewise, with legacy architectures, answering seemingly simple patient inquiries, such as the cost of knee replacement surgery, requires the difficult task of connecting data across claims, eligibility, finance, and provider systems—which can lead to slow, inconsistent, and sometimes incorrect responses.

In contrast, mainframe modernization enables health care organizations to effectively aggregate data and enhance the care experience. For instance, leading organizations are implementing cloud-based repositories to centralize information. They are coupling those with API-driven integration to provide a seamless connection of legacy systems with modern applications and to enable more consistent, timely responses to patient questions.

3 Growth is paramount. Enable it with cloud capabilities and APIs.

Many health care organizations are setting aggressive growth targets—often via mergers and acquisitions (M&A) and divestitures—that are driven by factors like rising costs, the push for integrated care, and the need to scale for competitiveness. For example, in the US health care sector, the current 12-month trailing average of health care M&A deal value has roughly doubled since 2020.[7] Divestitures have also become strategic tools for organizations that want to sharpen their focus on core business areas, improve profitability, or exit underperforming segments.

However, because of their rigid, tightly coupled architectures, mainframe systems can limit the ability to quickly integrate or separate operations. Alternatively, modernized platforms—with their modular architectures and plug-and-play APIs that integrate key system components with external applications—can enable faster, more effective integration or divestiture of businesses. For instance, if a large health plan acquires another health plan, a modernized claims system could allow the organization to connect in a more plug-and-play manner, allowing them to perform business operations (e.g., claims processing) in much less time.

Mainframe modernization in action

A large national health plan undertook an initiative to modernize its health claims system across all lines of business. The supporting infrastructure was up to 40 years old and could no longer handle the transaction volumes and new product benefits entering the market. However, previous investments to modernize the core administrative platform had experienced limited success because of complexity and scaling issues.

Deloitte supported the company's initiative from conceptualization, to transformation, to operation. Together, they executed a strategy to integrate claims across the health system, adopt a digital-first approach to claims adjudication, and provide a more seamless experience for patients and providers.

The project delivered a modernized claims system that now supports billions of transactions in production, reduces production downtime, and significantly decreases pended claim inventory. The company achieved its key modernization goals, which included improved flexibility and scalability with a 20% reduction in IT and business operating costs, and technical reengineering of the system using APIs to future-proof the platform.

The modernization payoff for health care organizations

Better data accessibility and interoperability: Cloud environments can enhance data sharing across systems and departments, which is essential for coordinated care. Modernized systems use standardized data formats and APIs that streamline integration with other providers, labs, and pharmacies. This can lead to more accurate diagnoses, fewer errors, and better patient outcomes.

Enhanced patient experience: Modernization allows enterprises to connect disparate legacy systems to create the seamless user experience consumers expect. Modern APIs and architectures enable member, provider, claims, and financial systems to link together to provide a holistic view of their patients' health care journey.

Scalable growth through cloud-based architecture: In contrast to on-premises solutions that require hardware investments, cloud-based architectures and pay-per-use models allow improved scalability, which better supports enterprise growth initiatives.

Improved performance: By decoupling from the mainframe, modernization can enhance system performance, flexibility, and speed to market, and it can significantly reduce administrative expenses through decreased maintenance costs and improved upgrade procedures.

Increased agility and innovation: Modern platforms increase agility when responding to market changes. Cloud-based systems support rapid application deployment and easier integration of AI/ML for better diagnostics, personalized care, and efficiency.

Modernize to compete today and build for the future

While health care modernization is imperative to address today's core business challenges, it's also critical to prepare for the future of health care. As the human and financial returns from promoting health and wellness begin to outweigh those from a reactive focus on disease treatment, the spending focus is shifting. For example, currently, approximately 80% of health care spending is focused on sick care for 20% of patients. However, the future of health care envisions a redefined ecosystem in which sick care becomes secondary, and well-being is prioritized, with about 60% of total health care spending dedicated to wellness by 2040.[8]

A similar shift should be applied to the technology serving the health care industry to evolve how it collectively influences patient care. Therefore, enterprises should free themselves from the constraints of legacy mainframes, reactive fixes, and disjointed solutions. By embracing mainframe modernization, health care organizations can address immediate challenges and, crucially, position themselves to thrive in a future where wellness and preventive care are paramount. Modern, flexible systems will enable them to adapt quickly to industry changes, meet consumer expectations, and leverage new technologies to improve patient outcomes.

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

EngineeringBeat

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

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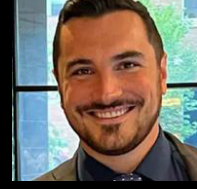Deloitte Consulting LLP

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Endnotes

1. Matthew McGough et al., "How has U.S. spending on healthcare changed over time?," Peterson-KFF Health System Tracker, December 15, 2023.
2. Ibid.
3. Macrotrends, "U.S. life expectancy 1950–2024," accessed October 2024.
4. Office of the National Coordinator for Health Information Technology, "National trends in hospital and physician adoption of electronic health records," Health IT Quick Stat #61, accessed October 2024.
5. Health Affairs Research Brief, "The role of administrative waste in excess US health spending," October 6, 2022.
6. Sara Heath, "Patient portal adoption tops 90%, but strong patient use is needed," TechTarget, July 31, 2018.
7. Nick Hut, "Experts forecast a busy year for healthcare M&A even with changes to regulatory oversight," Healthcare Financial Management Association (HFMA), January 4, 2024.
8. Es Nash, "The 80/20 rule": Is it still true? And what can it tell us about population health in 2018 and beyond?, Deloitte, 2018.

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