



How to Modernize Your Tech Platforms with AI Without Disrupting the Customer Experience

A Guide for Software Vendors and Tech Companies

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Introduction

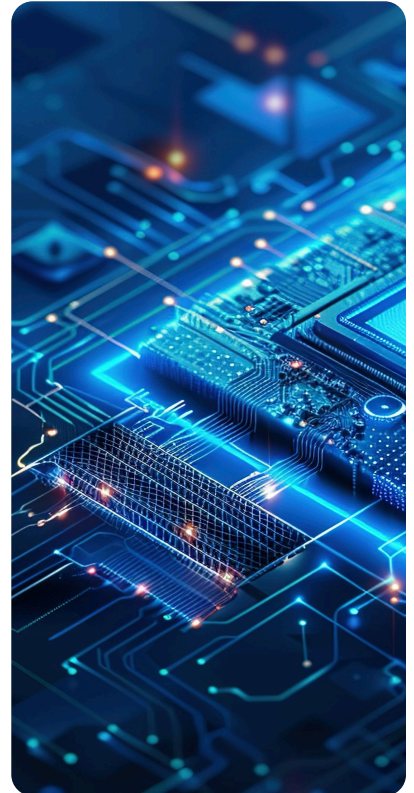
The technology industry that drove digital transformation for others now faces its own profound shift. Software vendors and technology-first companies that pioneered automation and digital innovation have discovered that their foundations—applications, codebases, and architectures—are at odds with AI's demands. For hitech industry leaders, this creates a unique challenge: How do you revolutionize your own platforms while maintaining the services your customers depend on?

This article examines unique challenges tech companies face in modernizing their products and systems, explores how AI-powered tools are transforming traditional approaches, and presents a practical roadmap for implementation. Drawing from real-world implementations and industry research, we detail cost-effective transformation strategies, security considerations, and engineering foundations necessary for successful product modernization. Lastly, we look ahead to how AI will reshape software development in the coming years to help technology companies make forward-thinking decisions.

The Modernization Imperative for Tech Organizations

The shift from AI as a tool to an essential business driver creates a unique challenge: software vendors and technology providers now face the ironic position of having their own legacy applications, dated code bases, and aging infrastructure restrict their AI ambitions...the very transformation they're helping other industries achieve.

The pressure for tech organizations to act comes from many directions: Their customers expect AI capabilities integrated into existing products, while stakeholders demand accelerated growth and innovation. The cost of maintaining legacy systems escalates as technical debt and accumulates across product lines. The complexity compounds as tech companies grow through mergers and acquisitions, requiring the integration of different technology stacks and architectures.



Understanding the Legacy Challenge

Technology companies face unique modernization hurdles as creators and users of legacy systems. The challenges are amplified because the legacy code isn't just internal; it's often embedded in products customers depend on. While AI-powered modernization tools promise to dramatically reduce these challenges, first, we must understand the full scope of what needs to be transformed.

Perhaps the most consequential challenge facing technology companies is the strategic trade-off between innovation and maintenance. As financial pressures mount, organizations tend to favor "keeping the lights on"—maintaining existing systems and customer commitments—over investing in innovation that would secure market leadership. This short-term financial decision often sacrifices long-term success, creating a downward spiral where companies fall further behind as they allocate more resources to maintaining increasingly outdated technology. AI-driven modernization offers a potential escape from this dilemma by reducing the resources needed for maintenance while accelerating innovation capabilities.

This innovation paralysis manifests in technical and organizational dimensions:

Technical Hurdles

Technical challenges that affect the entire product ecosystem include:

- Legacy codebases powering customer-facing products and services
- Monolithic applications that can't scale to meet modern SaaS delivery demands
- Complex integrations supporting multiple versions of customer implementations
- Product interfaces that don't support modern AI capabilities
- Data architectures that limit internal AI adoption and customer AI enablement

Organizational Hurdles

For technology providers, modernization efforts must balance their own transformation with their customers' dependencies. Challenges include:

- Product-level SLAs requiring support for multiple legacy versions
- Risk of disrupting customers' mission-critical technology infrastructure
- Change management across internal teams and customer organizations
- Knowledge retention of proprietary systems and customer implementations
- Cultural resistance to changing successful product architectures

The AI-first Modernization Revolution

The emergence of AI-powered modernization tools is changing how tech companies can approach their legacy transformation.

"AI-driven approaches can reduce modernization costs by **30–60%** compared to traditional methods."

Rodrigo Vargas,
Global VP of Artificial Intelligence Practice, *Encora*

According to EY, recent implementations validate these projections: SAS to PySpark conversions achieving 85% accuracy with 50% efficiency gains, PostgreSQL to Google BigQuery migrations with 90% conversion accuracy, and PL/SQL to Spark SQL transformations yielding 35% efficiency improvements (Sussex et al., 2024)¹. For technology providers, these efficiency gains mean they can modernize their product offerings without disrupting customer operations.

AI-first Modernization Tools

Modern AI development platforms and tools are reshaping how technology companies approach legacy modernization. These tools are more than code converters. They're accelerators that enable software providers to modernize their products while maintaining service continuity. Where traditional modernization efforts might take months or years of careful customer migration planning, AI-powered tools are achieving results in weeks while preserving critical functionality.

While code translation and migration tools are still emerging, some are already making their way into accelerating legacy application migrations. Take, for example, IBM watsonx Code Assistant; while the base version accelerates developer productivity, the Code Assistant for Z version accelerates the mainframe application lifecycle and streamlines modernization with its COBOL to Java transformation and validation capabilities.

More general-purpose, AI-based assistants, such as GitHub Copilot and Cursor, continue to revolutionize how developers approach code modernization tasks. Beyond code generation, they integrate context awareness, intelligent assistance, and interactive interfaces, and add additional capabilities to extend, test, and validate new code easily.

Finally, niche tools such as DeepCode stand out as AI-driven code optimization and refactoring tools that identify inefficiencies and suggest optimizations. This cloud-based AI code analysis tool automatically scans project codebases to identify potential bugs and vulnerabilities, making it valuable for maintaining code quality during migration processes.

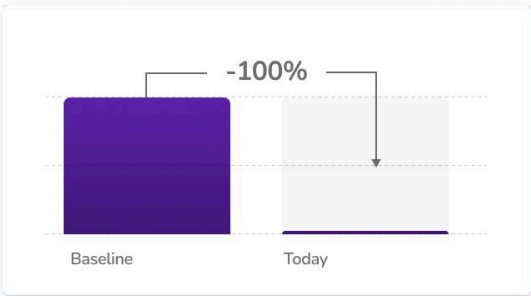
Case in Point:

AI-powered Code Documentation

The Challenge A global standards organization needed to modernize their legacy client application into a web-based platform with subscription capabilities. Given the size of the codebase, analyzing the entire legacy application manually would have been effort intensive.	The Solution Encora deployed its AI-powered Code Analyzer Accelerator to automatically generate comprehensive documentation of the legacy codebase. It addressed critical security and data privacy concerns by processing proprietary code securely. It provided UML diagrams, high-level code documentation of system components, and detailed code-level documentation.	The Results • Eliminated time-intensive manual documentation process • Enabled engineers to quickly understand complex code through AI-assisted Q&A • Provided architectural insights that informed the modernization strategy • Provided architectural insights that informed the modernization strategy
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100% Elimination of Manual Documentation Time

This Encora case study demonstrates how AI-powered tools can transform traditionally labor-intensive modernization tasks into efficient, automated processes.





Security-first Modernization

In the rush to innovate, security is often placed on the back burner. Nearly 70% of organizations admit to prioritizing innovation over security, creating significant risks (IBM Institute for Business Value, 2024)². For technology companies, security vulnerabilities are especially critical as they can affect not only their own operations but their entire customer base. Effective legacy modernization requires a dual approach to security: foundational design-level protections combined with specialized measures for AI systems.

Design-level Security for Tech Products

These core security steps protect legacy and modernized components throughout the transformation, ensuring technology providers can maintain security across their product portfolio:

- Implement zero-trust architecture principles across product lines
- Establish identity-based access control for internal systems and customer implementations
- Deploy micro-segmentation of applications to isolate customer environments
- Ensure encryption of data in transit and at rest for all product deployments

AI-specific Security Measures

As technology companies integrate AI capabilities into their products and modernization processes, they face new security challenges unique to intelligent systems. Modern security frameworks for tech providers need to:

- Deploy AI-powered threat detection systems that protect internal and customer-facing environments
- Implement continuous security validation across product versions
- Monitor for model drift and security implications in AI-enabled products
- Establish AI governance frameworks that address the development and deployment of security

Cost-effective Transformation Strategies

Traditional IT services and consulting models for modernization have meant deploying large teams to modernize the very systems they built, creating complex, labor-intensive programs that stretch for years. However, AI-driven modernization is revealing the limitations of this model: what was presented as innovation has often been simply throwing more human resources at the problem. As AI tools become more sophisticated, they're eliminating the need for large consulting teams, reducing timeline and cost while delivering more consistent results.

Code conversion, testing, documentation, and routine maintenance—traditionally outsourced to IT service providers—are increasingly handled by AI. This transformation means technology companies can modernize their products with smaller, more strategic internal teams focused on architecture and innovation rather than relying on sizeable external service teams for repetitive tasks. The result isn't just cost savings but a shift from labor-intensive to intelligence-driven product modernization.



AI-driven legacy modernization can appear financially daunting at first, especially when considering the scale of their product portfolios and customer implementations. Many technology leaders hesitate to embrace AI-powered modernization, believing the investment and risk to their existing customer base to be too high. However, the "think big, start small, iterate often" approach has proven to be a practical framework for managing costs while maintaining momentum. By breaking down modernization into three key areas—initial technology decisions, team composition, and AI-powered cost optimization—technology organizations are transforming their legacy products to be achievable and economically viable.

Build vs. Buy Decisions for Product Modernization

One of the first and most critical cost decisions technology companies face is whether to build custom AI modernization solutions or leverage existing tools. This choice impacts initial investment and the ability to maintain and enhance the product portfolio.

Key considerations include:

- Evaluating API-first approaches that enable gradual product modernization
- Assessing AI tool subscription costs against internal development investments
- Factoring in data migration costs for existing customer implementations
- Considering how choices will affect product roadmap and customer upgrades

Team Structure & Costs

The human element of modernization requires careful consideration, as team composition decisions directly impact transformation costs and long-term economics. Technology companies need a strategic approach that balances immediate modernization needs with future cost optimization.



A critical consideration is whether to build internal capabilities or partner with AI and modernization experts. While developing in-house expertise is valuable in the long term, the cost and time required to acquire these specialized skills may offset the immediate benefits of modernization. Strategic partnerships with modernization experts can accelerate the transformation while the organization gradually builds its internal capabilities. This balanced approach should include:

- Structuring cost-effective transition teams that pair experienced product developers with AI specialists
- Creating focused teams for customer migration, reducing the risk of costly disruptions
- Building internal centers of excellence to decrease dependency on expensive external consultants
- Developing in-house AI modernization capabilities to control long-term operational costs

Cost Management through AI-powered Product Development

While AI tools require investment, they offer powerful ways for technology companies to control modernization costs while maintaining product quality. Our experience with successful product modernization shows significant benefits through AI-powered approaches:

- Automated code conversion reduces product development effort
- AI-powered testing ensures consistent customer experiences
- Intelligent documentation maintains product knowledge
- Predictive maintenance prevents customer-facing issues
- AI-driven development planning optimizes resources

A Practical Modernization Roadmap

Based on [Microsoft's research](#) across more than 1,300 organizations, successful AI transformation typically progresses through four distinct stages (Etlinger, 2024)³. For technology companies, these stages must account for internal systems and customer-facing products:

Phase 1: Exploration

- Assess legacy product portfolio and infrastructure
- Identify high-impact modernization opportunities across product lines
- Evaluate security vulnerabilities in customer implementations
- Begin AI literacy initiatives across development teams
- Conduct cost-benefit analysis, including customer impact

Phase 2: Planning

- Develop a modernization strategy aligned with a product roadmap
- Create security and compliance frameworks for AI-enabled products
- Define success metrics for internal systems and customer outcomes
- Select pilot projects with minimal customer disruption
- Establish governance structures for product modernization

Phase 3: Implementation

- Execute pilot modernization projects on non-critical product components
- Implement AI-driven development practices in product teams
- Establish monitoring for system and customer impact
- Begin scaling successful patterns across the product portfolio
- Deploy enhanced security measures across modernized components

Phase 4: Optimization (Ongoing)

- Scale successful modernization patterns across product lines
- Continuously improve AI capabilities in modernized products
- Optimize resource utilization across development teams
- Adapt emerging technologies into product architecture
- Monitor and enhance security across customer implementations

Digital Engineering Foundations for AI Integration

For technology companies, legacy modernization requires a comprehensive engineering approach that addresses product architecture, development practices, and operational readiness simultaneously.

API-led Architecture

A flexible, scalable architecture forms the backbone of successful product modernization. By implementing standardized interfaces, technology companies can enable seamless integration capabilities across their product portfolio and customer implementations.

This approach supports multi-speed product evolution, allowing different components to modernize at different rates while maintaining compatibility. Most importantly, an API-led architecture facilitates future AI integration, ensuring modernized products remain adaptable to emerging technologies and changing customer needs.

AI-driven Development

Modern development practices leverage AI to transform traditional software product development. Automated code analysis and conversion tools streamline the modernization of legacy products, while AI-powered testing and validation ensure quality at scale across customer implementations. Continuous integration and deployment pipelines, enhanced by predictive maintenance capabilities, enable rapid, reliable product updates. By automating routine development tasks, product teams can focus on strategic initiatives that drive customer value.

Future-ready Operations

For technology providers, operational excellence in the presence of AI means moving from reactive maintenance to predictive and autonomous operations across the product portfolio. AI agents handle routine maintenance tasks, while automated monitoring and optimization ensure peak performance for customer implementations. Predictive resource management prevents bottlenecks before they affect customers, and self-healing systems reduce downtime. Throughout these operations, continuous security validation ensures that modernized products remain protected against evolving threats.

To develop an effective product modernization strategy today, technology companies need to envision their product architecture as it will exist a decade from now. Soon, software development will look radically different: thousands of AI agents will autonomously handle the full spectrum of product development tasks, from code creation to testing to maintenance. Product development teams won't be writing most of the code; instead, they'll be orchestrating AI systems, defining product strategy, and focusing on innovation.

Technology companies that modernize with this future in mind will build products ready for AI integration at every level rather than creating tomorrow's legacy challenges.

Conclusion

Transforming legacy technology is a technical challenge and a strategic imperative that will define competitive advantage in the coming decade. As we've explored, successful modernization requires technology companies to

- Leverage AI-powered tools to dramatically reduce product modernization costs and timelines
- Replace traditional labor-intensive approaches with intelligence-driven product development
- Implement comprehensive security measures that protect products and customer implementations
- Build flexible, API-led architectures that support continuous innovation
- Adopt a practical, phased approach to product transformation
- Prepare for a future where AI agents handle routine product development tasks

Technology companies that successfully navigate this transition **will emerge with greater business agility, reduced operational costs, an enhanced security posture, improved customer experiences, and accelerated innovation capabilities.**

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Authors



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Rodrigo Vargas leads AI initiatives across 20 countries for Fortune 500 enterprises and digital native companies. With 20+ years in digital engineering, he specializes in developing enterprise-ready AI solutions that balance innovation with data security and governance. At Encora, he establishes frameworks for evaluating and implementing AI use cases that deliver measurable outcomes within 90-180 days. Working at the intersection of strategy and execution, he envisions a future where human-machine interactions are revolutionized by AI while maintaining a strong commitment to privacy, security, and societal well-being. He frequently speaks on AI's impact on software development, workplace transformation, and emerging tech convergence. When not guiding organizations through AI adoption, he recharges through trail running in mountain landscapes.

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Siddharth Sharma leads sales for Hitech and ISV Business, focusing on expanding Encora’s business across North America. Having spent more than two decades helping customers take advantage of and deploy digital transformation initiatives, Siddharth has a keen understanding of how technology companies are re-orienting themselves today and how systems of engagement and systems of record are converging towards systems of intelligence in the future. ‘A passionate consultative techno-commercial change agent’ is how Siddharth describes himself. An avid reader and a runner, he is training towards his next challenge of completing a half-marathon in 2025.

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With robust nearshore, offshore, and global capabilities, we help industry leaders and digital natives capture value through technology, human-centric design, and agile delivery.

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