INSURANCE INDUSTRY

How Agentic AI Can Power Core Insurance IT Modernization

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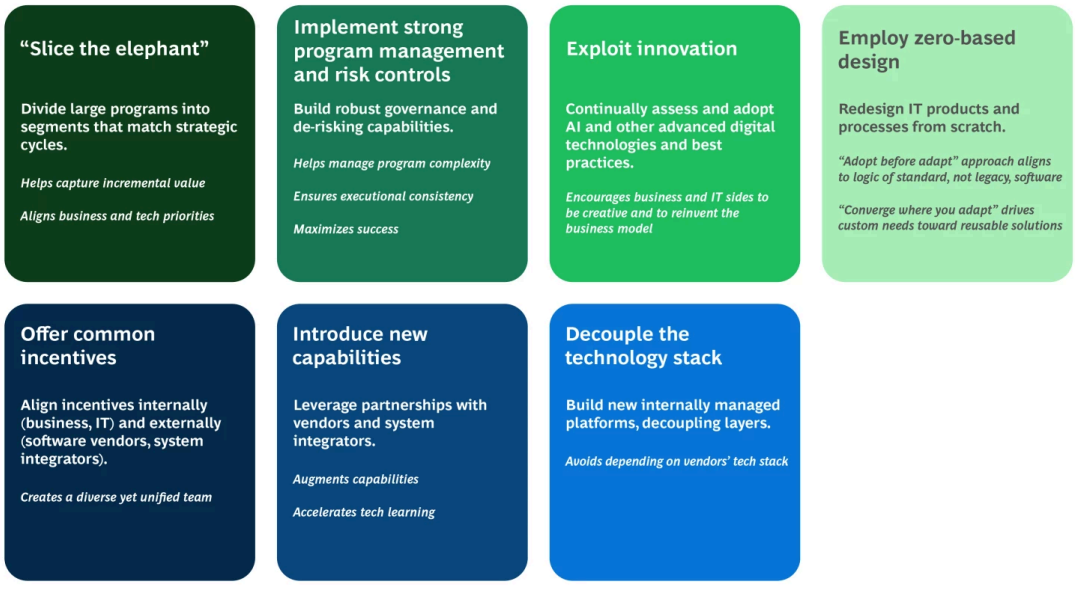
For insurers, core system modernization is no longer about cost. It has become an existential act, the difference between remaining competitive in a digital-first market and sliding into potential irrelevance. In an industry where 74% of transformations fail—and where competitors are scaling fast as AI advances at breakneck speed—the choice is clear: modernize now or lose ground.

In a previous article, we mapped three strategic paths to modernizing core IT, identifying several pivotal best practices. (See Exhibit 1.)

EXHIBIT 1

Seven Pivotal Best Practices for Modernization Success



Source: BCG analysis.

In this article, we focus on the execution stage of modernization—traditionally every insurer's nightmare. Specifically, we examine two make-or-break best practices: exploiting innovation by deploying agentic AI through every phase and employing zero-based design. We also look at the critical role of people and process in a modernization effort.

Agentic AI's ability to accelerate and simplify onerous modernization processes is remarkable. But a successful modernization effort also requires resetting the conceptual design approach by using zero-based methods to adopt the new software's features. When combined, these practices have a profound impact. They can deliver a program that is financially more feasible, much shorter in duration, and considerably less risky.

Applying Agentic AI Across the Modernization Journey

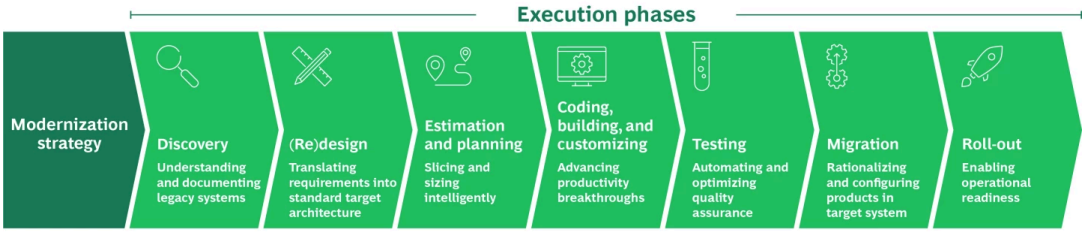
As the industry that has taken the lead in early AI adoption, insurers understand the potential of using agentic AI for upgrading and improving core tech. Agentic AI is not merely a tool to achieve incremental improvement; it is a transformation engine that can accelerate and simplify every phase of a large IT program, including those focused on core modernization.

The real opportunity for insurers lies in applying AI across the modernization journey—not just for decision making but in technology, processes, and operations. This is particularly true for agentic AI, which can impact every phase from legacy discovery and design to testing, roll-out, and migration. It streamlines the modernization activities that have traditionally required substantial time, cost, and expert effort.

A typical core modernization program unfolds in eight phases. (See Exhibit 2.) The Strategy phase defines the scope and priorities for modernization, setting the foundation for the subsequent executional phases, where agentic AI and generative AI (GenAI) play a more direct and tangible role.

EXHIBIT 2

The Core Modernization Value Chain



Source: BCG analysis.

Across the executional phases, the business value and maturity of agentic AI and GenAI differ. The value reflects a number of criteria: How critical is the step being powered by AI? How significant is the productivity improvement it delivers? How fully does it solve a problem? How scalable is the solution? The more dimensions AI affects, the greater its value. These dimensions translate directly into program outcomes like speed of delivery, quality of execution, and scalability across markets.

Maturity refers to agentic AI and GenAI's current capabilities, scalability, and commercialization in insurance IT modernization. It's worth noting that while some use cases are already being scaled, others are still in the experimental stages—although with AI, the trajectory from experimentation to commercial availability is surprisingly rapid.

Exhibit 3 provides a snapshot of the current value and maturity of agentic AI and GenAI tools by phase. Let's look at each phase in detail.

— Discovery

Understanding and documenting the legacy systems

AI agents can analyze legacy applications (such as those based on COBOL), automatically extracting business rules, generating documentation, and creating process maps (including data-flow maps, visual flow diagrams, and nontechnical materials that explain how processes connect system-wide). This capability accelerates one of the toughest, most time-consuming steps in modernization: understanding how legacy systems actually work. AI agents reduce the reliance on subject matter experts whose time is at a premium—and whose numbers are rapidly decreasing due to retirement.

Value: High | **Maturity:** Medium

Although the early examples of business adoption show Discovery to be potentially among the most productive areas for agentic AI, usage is not yet widespread.

— (Re)design

Translating requirements into the standard architecture of the adopted software

In the design phase, agentic AI helps analyze requirements and map them to the architecture of the newly adopted software, thereby accelerating alignment between business needs and the standard software model. Agentic AI can also help analyze interviews with business and IT specialists (those with deep knowledge of the legacy systems and business rules). It then clusters requirements and simulates target-state options, clarifying the rationale in business logic and design choices. And while it doesn't eliminate the need for strong human architectural oversight, agentic AI accelerates design iteration and consistency checks, helping to facilitate consensus on early-stage decisions regarding architecture and data structures.

Value: Medium | **Maturity:** Medium

Agentic AI is beginning to support IT design and architecture activities. But before it can become scalable, companies will need to get better at translating AI-generated insights into their existing architecture governance—that is, the rules and standards that ensure new system designs conform to the company's overall IT strategy.

— Estimation and Planning

"Slicing and planning" intelligently

By analyzing documentation, legacy code complexity, dependencies, and historical project delivery data, agentic AI can help estimate effort, define scope, and prioritize the backlog, linking each workstream to business value and risk. It can also simulate alternative delivery scenarios to determine the scope, resourcing, and optimal sequencing of initiatives. Doing so enables more

transparent, value-based planning and fosters smarter decision making about where to focus resources.

Value: High | **Maturity:** Low
Use of agentic AI and GenAI in this phase is still emerging. We are conducting (and seeing) more experimentation with improving agentic AI's ability to connect strategic planning, estimation, and execution.

— Coding, Building, and Customizing

Advancing productivity breakthroughs

Agentic AI copilots are now embedded throughout the software delivery lifecycle. They facilitate code generation, configuration, and integration activities in both platform-based and customized modernization programs. These AI-powered assistants can refactor and re-engineer legacy applications and automate code development and documentation. Most of the immediate productivity gains accrue to the software vendors and system integrators in the form of faster development and reduced rework. However, insurers can also capture part of these gains when they develop solutions in-house. They also gain indirectly, benefiting from lower project costs, faster delivery, and a higher quality implementation. (See "Revolutionizing Software Development and Code Translation.")

These benefits apply equally to greenfield modernization efforts. Agentic AI can accelerate the configuration and extension of market platforms, helping insurers adopt off-the-shelf solutions for their functionality and adapting them only where necessary to fit specific business and data models.

Value: High | **Maturity:** High
This is the most mature domain for both agentic AI and GenAI, although the market for such tools is still evolving. Adoption and experimentation are already happening at scale, and competition among existing solutions and vendors is intense.

- *Revolutionizing Software Development and Code Translation*

  Consider the key elements of a project we supported for a large European

multi-line insurer. The work involved translating code for business processes from a legacy system to Python and rearchitecting a monolithic application into a serverless design.

Using GenAI, the insurer achieved 40% to 50% greater productivity strictly from the development phase (the equivalent of 20% to 25% in the overall software development lifecycle). The shift from manual to GenAI-supported code translation alone improved quality significantly, by 20% to 30% as measured with SonarQube-quality KPIs (for example, code smells).

— Testing

Automating and optimizing quality assurance

Agentic AI and GenAI are reshaping the testing function well beyond the capabilities of traditional automation tools. AI can define the optimal testing strategy, determine the number and type of test cases needed, and generate and execute the tests based on the partially automated extraction of business functionality and rules from the legacy system. GenAI can then synthesize the test data and even manage and cluster defects for faster remediation.

Value: High | **Maturity:** Medium

While individual tasks, such as automated test-case generation, are already mature, full end-to-end orchestration across the testing lifecycle is still evolving.

— Migration

Rationalizing and configuring products in the target system

In this phase—one of the most complex—insurers must not only transfer data, but also rationalize and configure products and tariffs in the target platform. This entails translating legacy rules and pricing logic into modular, configurable

components. GenAI can already accelerate this process by extracting business rules and supporting product mapping.

Value: High | **Maturity:** Low
Currently, migration is the area with the fewest mature AI solutions, but one that ultimately promises to deliver the greatest value to IT modernization through increased scalability and repeatability. Full automation of complex product configuration and cross-system validation is still only emerging, yet development efforts are on the fast track and intensive.

— Roll-out

Enabling operational readiness

In this final phase, agentic AI and GenAI support product documentation, generating user guides, runbooks, and procedural and training materials. This helps reduce experts' workloads and ease the transition to operations. Throughout the transition, GenAI copilots can assist IT and operations during hypercare to help them troubleshoot and answer user requests.

Value: Medium | **Maturity:** Medium
Most use cases, such as automated generation of documentation and training materials, are already proven, while more advanced applications like AI-assisted hypercare are emerging.

Adopt and Converge Through Zero-Based Design

Zero-based design focuses on simplifying requirements and redesigning. It means rethinking processes without being constrained to legacy setups. The idea is to align processes to the logic of the new standard software rather than modifying it, and customizing only where doing so truly adds value. This is how a company eliminates the legacy complexity that traditional adaptation only perpetuates.

Our discussion centers around three concepts. “Adopt” refers to adopting standard software; “adapt” focuses on customizing where necessary; and “converge” refers to the common core elements of the software design, those that apply to all company units in multi-entity or multi-country programs.

In our version of zero-based design, “adoption and convergence by design,” a company deliberately challenges the existing design to align as closely as possible with the logic and best practices of the target software. By adopting standard solutions, insurers can maximize convergence—the reuse of components to minimize complexity, reduce duplicative efforts, and accelerate issue resolution.

The concept is particularly relevant in multi-country core modernization programs, where one core platform must fit the needs of different business entities. Then at a local level, adaptation can take place where necessary. In multi-country programs, it is important that any necessary adaptation occur within a design framework common to the whole enterprise (convergence) rather than market by market. Adoption and convergence by design reinforces consistency rather than fragmentation.

Companies should start from the big picture: devising a multi-layered technical architecture to manage the different types of business requirements. They should identify and allocate to the proper cluster local elements (for example, regulations, channels) and common (convergence) elements, such as the core products, core policy management processes, and data models, as well as integrations with the company’s other enterprise platforms (for example, CRM, analytics, other AI engines).

Where adaptation is necessary, insurers should justify every deviation according to a strict “comply-or-explain” approach. In this way, they maintain convergence while respecting local considerations in areas critical to market differentiation and business impact.

The “People Factor” Is the Key to Successful IT Modernization

AI technology and zero-based methods are critical tools for core IT modernization, but the impact of people and process management, as in any transformation, is massive. While many insurance

executives understand this, they nonetheless struggle with managing these aspects of modernization.

Indeed, leading insurers already know the 10-20-70 rule: that 10% of a program's efforts should focus on algorithms, 20% on technology and data, and the remaining 70% on people and processes.

Lack of clarity about roles and responsibilities, inattention to culture issues, and weak change management are the sorts of issues that have often derailed complex transformations. Similarly, many companies give short shrift to process management. One of the biggest culprits in an insurance modernization program is out-of-control demand management. Without strict prioritization based on business impact, the flood of requirements quickly leads to chaos, undermining the entire modernization effort.

In fact, all such challenges are magnified in existing modernization programs, which typically span many countries. Each market, product line, or function tends to pursue modernization on its own and considers itself unique, often insisting on preserving legacy business processes and products that have evolved over decades. The result is inconsistent architectures, duplication, and fragmented governance.

Whether re-engineering the existing system or rolling out brand new standard software, zero-based design guides both the IT solution architecture and the organizational mechanisms—notably, governance and the people-related aspects of transformation.

Despite the formidable—and transformative—capabilities of AI technologies, nearly three-quarters of all legacy modernization efforts still fail. With an implementation as complex as core modernization, it is easy for companies to become preoccupied with the technology and lose sight of the broader organizational aspects. This largely explains why siloed decision making, unclear accountabilities, and traditional waterfall delivery models still prevail.

Good governance enables convergence. The goal is not control, but to promote alignment and reuse—and thus speed—across entities through a federated model, based on joint prioritization, central design, and local adoption.

Thus, the central team delineates central versus local activities, establishes standards and KPIs, funds and prioritizes the common backlog, and ensures reuse across markets. It also defines the productivity and impact framework with which to measure and monitor improvements that agentic AI and GenAI will produce across the modernization phases. Local entities are empowered to move quickly due to their ability to reuse the shared components. This approach also allows insurers to gain control over demand management. (See "Reining in Demand Management.")

Part of what makes a modernization effort so complex is the sheer number of interrelationships and dependencies. As the entity with full visibility across the program, the central team is naturally positioned to govern people and processes. This team not only coordinates between internal and

external stakeholders—tech partners, software providers, and system integrators—but it also defines the operating model, capacity plan, and technical best practices needed to scale delivery.

— Reining in Demand Management

Upgrading user interfaces. Reconfiguring policies. Overhauling how data are stored. Establishing how agents can interact with platforms. People want it all, designed to their preferences. Having the means to prioritize requirements is crucial.

Applying our governance model, we guided a multinational insurer in setting up a process for relieving the demand backlog in its multi-lines of business modernization program. This effort involved:

- **Creating a task force** to support demand to enforce adoption, convergence, and reusability.
- **Instituting a demand process** that defined processes and decision making frameworks, including approval committees.
- **Providing support tools and sessions** to analyze business functional requirements for customizations. By prioritizing and reducing the scope of initial releases, we were able to reduce the requirements backlog, focusing only on those necessary for roll-out and rapid scaling.
- **Simplifying the solution design** of the priority requirements. We streamlined what would have been an effort involving thousands of person-hours by using common technical and functional solutions that matched approved requirements.

Following this structured approach, the client (and others we have worked with) have been able to prioritize up to 50% to 60% of demand requirements. This approach also helped optimize implementation effort for the remaining requirements by 30% to 35%.

Putting the Pieces Together for Competitive Advantage

Core IT modernization isn't just complex and time-consuming: it can cost between 2% and 4% of non-life GWP in capex. For insurers about to embark on agentic AI-based modernization, the effort will be significant. But the return can be transformational. By our estimations, insurers can achieve a reduction of up to 0.5% and 1% of GWP of traditional capex expenditure. And tapping into the speed of advancements in agentic AI and GenAI can rapidly confer a competitive edge that can be difficult to beat.

The key to success lies in combining the power of agentic AI with adoption and convergence by design. By also addressing the distinct national and local design and governance needs, this approach maximizes efficiency, flexibility, and speed of execution for large cross-country modernization programs.

Now is the time for CEOs, COOs, and CIOs to take decisive action. Insurers that follow this two-pronged approach will lead the next wave of core modernization. In a digital-first, increasingly disruptive market, this is every insurer's best policy for securing continued competitive advantage.

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