WHITEPAPER

Composable agentic AI: Reinventing healthcare with transparent intelligence

The modern healthcare ecosystem is hampered by systemic challenges: fragmented data silos, a lack of real-time interoperability, and legacy systems that operate in slow, batch-oriented cycles. This operational friction creates compliance gaps, hinders the adoption of agile practices, and ultimately compromises the quality of care. To overcome these deep-rooted issues, a new architectural approach is needed - one that moves beyond incremental fixes.

Composable, event-driven Agentic AI frameworks offer a path forward. By deploying modular, context-aware agents with explicit roles and traceable actions, this approach creates a dynamic intelligence layer that can orchestrate workflows across existing silos. Anchored in rigorous governance, these architectures promise more responsive, accountable, and resilient operations. Infosys Helix exemplifies this vision through its AI- first, open-API platform and an "innovate-to-zero" focus that systematically eliminates fallouts and latency. Preliminary estimates indicate that Infosys Helix can unlock productivity gains of 60–70% in core administrative areas by enabling adaptive, real-time AI workflows. Grasping these design principles is the key to building an AI infrastructure that can finally evolve at the speed of healthcare's demands.

Infosys Helix

Overcoming healthcare's architectural friction

Despite significant investments in digital tools, healthcare organizations remain burdened by foundational challenges. Core systems are often siloed, impeding data flow and compromising data integrity. A lack of true interoperability means that critical information remains trapped, and many operations are still conducted in inefficient, batch-processing modes. This rigid infrastructure severely limits the agility required to adapt to a dynamic regulatory landscape and evolving care models.[1]

Operational friction slows down workflows and undermines the effectiveness of automation initiatives. When AI models are deployed within these fragmented environments, they inherit their limitations, lacking the cross- functional context needed to drive true transformation. They become point solutions that deliver only incremental gains and fail to address systemic bottlenecks.

As a result, many AI initiatives struggle to scale. Less than 30% of organizations, for instance, have fully adopted AI due to workflow disruptions. Compliance challenges are equally acute: 83% of medical imaging devices lack essential security patches, heightening risks of data breaches under standards like HIPAA. This environment reveals a critical juncture: to unlock the true potential of AI, healthcare must first address its architectural shortcomings with a more flexible, transparent, and inherently interoperable approach.[2]

From automation to collaboration with composable agentic AI

Agentic AI signifies a paradigm shift from traditional monolithic AI to modular, autonomous agents that are goal-driven and context-aware. A typical interaction begins when a user triggers a request, which is interpreted by the Infosys Helix AI Assistant (e.g., AskHelix) using NLP. From there, the Agentic AI Layer, powered by a multi-agent system named YODA (Your Own Decisioning Agent), takes over to perform autonomous reasoning and workflow orchestration. This layer connects with Infosys Helix modules and external systems via APIs, learns from outcomes through a continuous feedback loop, and adapts future actions.

This is all made possible by Infosys Helix AIaaS (AI-as-a-Service), a library of real-time Agentic AI models that are trained and deployed for each customer, enabling dynamic, context-aware automation.

This modular design empowers healthcare organizations to rapidly compose tailored AI workflows, enhancing agility and innovation across clinical and operational domains.

- Agents execute explicit roles grounded in business policies, ensuring compliance and ethical alignment.

- A role-centric framework delivers transparency, auditability, and human oversight essential for high-stakes healthcare.
- Agents flexibly address diverse tasks like prior authorization, claims adjudication, and care coordination.
- The architecture supports continuous learning and dynamic adaptation to evolving regulatory and operational demands.
- This enables healthcare organizations to respond rapidly without major reengineering, fostering resilient and patient-focused workflows.

What sets Infosys Helix apart is that it is a true AI-first platform. Unlike systems where AI capabilities are bolted on as an afterthought, Infosys Helix was engineered from the ground up with a native Agentic AI layer. This foundational design means the building blocks for event-driven orchestration, multi-agent collaboration, and adaptive governance are already in place. This distinction enables a deeper, more seamless integration of AI into core workflows, allowing for faster deployment and more significant transformation out of the box.

Modular agents to plug healthcare silos: A market gap analysis

Healthcare workflows are increasingly strained by systemic inefficiencies that span clinical, operational, and regulatory domains, often amplified by outdated infrastructure. In clinical settings, data silos and interoperability issues delay critical insights, contributing to clinician burnout; over 50% of physicians report high stress from administrative tasks, according to a 2025 NC State survey. Operationally, manual processes and staffing shortages lead to inefficiencies; for example, the US faces a projected shortfall of up to 200,000 nurses by 2030, which will further lead to workflow bottlenecks. Regulatory challenges compound these issues, with evolving mandates like expanded FHIR standards and AI transparency requirements creating compliance hurdles; only 35% of organizations feel prepared for new data privacy regulations in 2025. [3]

These gaps highlight a critical need for composable AI agents that can be retrained on customer-specific data, ensuring relevance and precision in dynamic environments. Such agents must integrate securely with tenant models through robust access controls to maintain data sovereignty and compliance, addressing privacy risks where 70% of healthcare breaches stem from integration vulnerabilities. [4]

Composable AI agents are also a vital solution for handling soaring data volumes, workforce constraints, and stringent regulations; they're capable of retraining on proprietary datasets to deliver contextually accurate insights while upholding ethical standards. By facilitating secure, tenant-specific integrations, these agents not only mitigate regulatory risks but also pave the way for interoperable ecosystems that prioritize patient outcomes and operational resilience.

Building agile healthcare systems with composable agentic AI

Infosys Helix embodies a layered, API-first architectural design that prioritizes composability, interoperability, and scalability. At its foundation lies a robust data layer that unifies disparate sources through a sophisticated data fabric, incorporating NLP processing and external feeds to ensure seamless data ingestion and management. Above this, the core layer drives intelligent decision-making with a rules engine, embedded AI, and automation capabilities, enabling event-driven responses to dynamic healthcare scenarios. The experience layer delivers role-based, intuitive interfaces across dashboards, portals, and self-service tools, facilitating personalized user journeys. This is achieved through a focus on domain-specific intelligence, where agents are trained on healthcare industry taxonomies and ontologies to ensure they understand clinical and operational context. The design also prioritizes human-AI collaboration, providing clear explainability for agent decisions and defined escalation paths to human operators for complex exceptions.

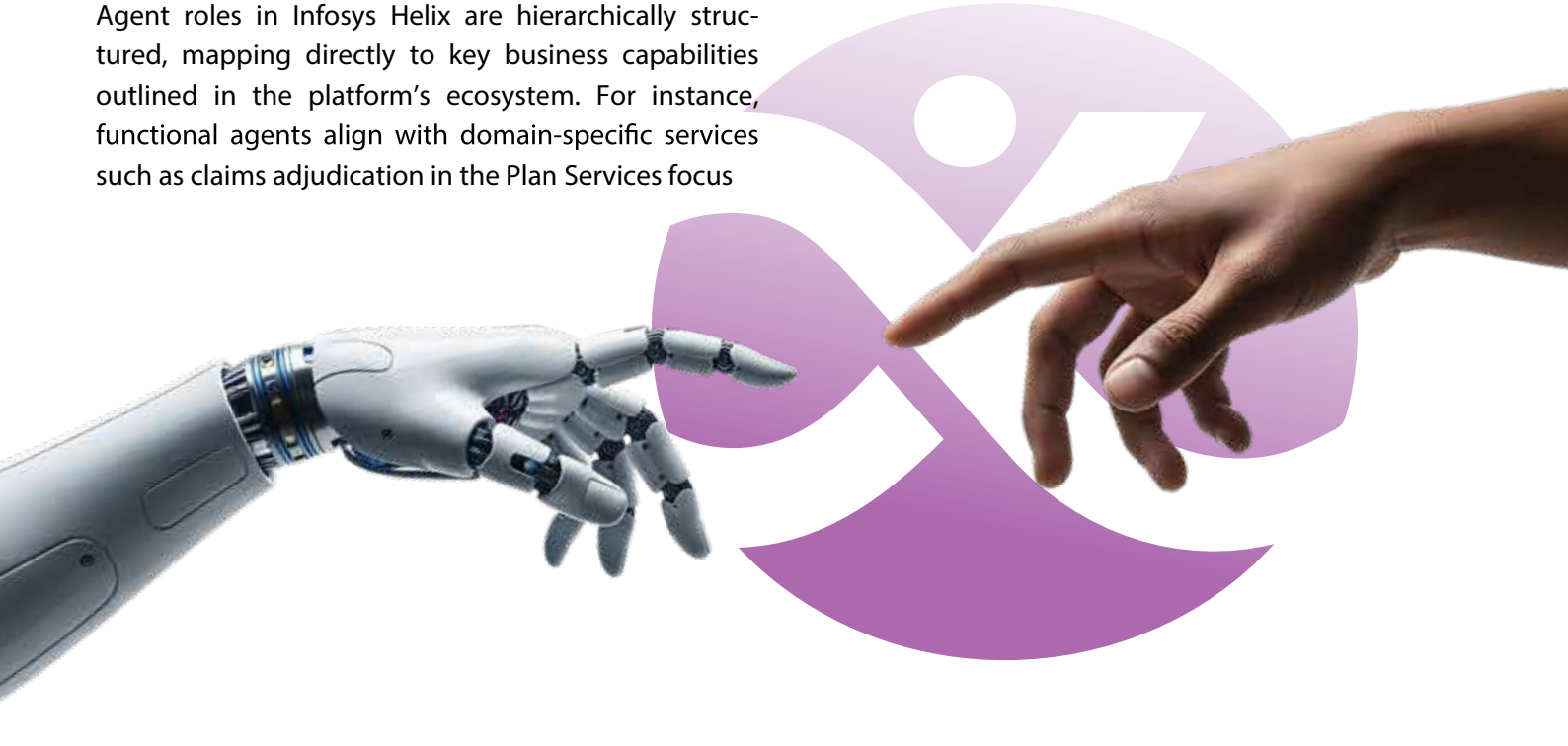
Central to this architecture is an enterprise event bus that orchestrates real- time interactions, allowing components to communicate efficiently without tight coupling. This event-driven framework supports composability, where agents can be dynamically assembled and reconfigured to adapt to evolving
needs, all while maintaining cloud-native scalability for handling massive data volumes and concurrent operations.

Agent roles in Infosys Helix are hierarchically structured, mapping directly to key business capabilities outlined in the platform's ecosystem. For instance, functional agents align with domain-specific services such as claims adjudication in the Plan Services focus area or provider credentialing in the Provider domain, ensuring explicit role definitions that promote transparency and accountability. Master-worker clusters orchestrate complex workflows, like coordinating whole-person care orchestration, where a master agent oversees worker agents handling subtasks across medical, behavioral, and social care.

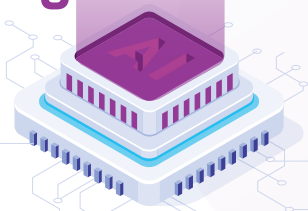
Training paths for these agents are multifaceted to enhance adaptability:

- Customer-specific reinforcement learning allows agents to be fine- tuned on proprietary datasets, improving accuracy in tasks like risk scoring or prior authorization.
- Plug-in tenant models enable the secure integration of organization-specific AI models, supporting customized functionalities while adhering to compliance standards such as HIPAA and HITRUST.
- Cross-tenant orchestration facilitates collaborative workflows, allowing agents to operate across organizational boundaries with defined access controls and audit trails.

This principled design not only fosters agility but also embeds governance from the ground up, ensuring secure, compliant, and innovative AI deployment in healthcare. The following diagram illustrates the architecture of an individual AI agent, detailing the distinct layers that work in concert to deliver autonomous, intelligent, and safe operations.



Agentic AI



User Interaction Layer

- Channels
- Input Types
- Oputt Types
- Output Types

Orchestration Layer

- Intent Recognition
- IRouting Engine
- Context Manager

Security & Compliancee Layer

- Identity & Access Management (IAM)
- Audit Logging
- Data Governance

Core AI Engine

- NLP/NLU Module
- Reasoning & Planning
- Knowledge Graph
- LLM Integration

Learning & Feedback Loop

- User Feedback Collector
- Model Retraining Pipeline
- Drift Detection

SaaS Integration Layer

- API Gateway
- Connectors
- Data Normalization

Data & Analytics Layer

- Real-Time Data Stream
- Analytics Engine
- Visualization Tools

Monitoring & Ops Layer

- Agent Health Dashboard
- Alerting System
- A/B Testing Framework

As shown, the architecture is composed of several key layers:

- Interaction and Orchestration Layers manage the intake of user requests and route them appropriately.
- The Core AI Engine performs the central reasoning and planning, leveraging NLP and knowledge graphs.
- This core is supported by a Learning & Feedback Loop for continuous improvement and a Data & Analytics Layer for real-time insights.
- Foundational layers for Security & Compliance, SaaS Integration, and Monitoring & Ops ensure that every agent action is secure, interoperable, and auditable.

A reference framework for zero-fallout healthcare

Infosys Helix's reference framework provides a cohesive blueprint for deploying composable Agentic AI, emphasizing end-to-end orchestration without revisiting foundational layers or training paths. At its core, a resilient enterprise event bus manages asynchronous, real-time events, triggering workflows across distributed components for minimal latency. Complementing this, an open API gateway exposes standardized endpoints, enabling extensible connectivity while maintaining data sovereignty and integrity.

A centralized agent registry dynamically catalogs and deploys agents, classifying them by function and dependencies to support rapid assembly. The policy engine acts as a governance hub, applying rules-based logic to enforce security protocols, ethical guidelines, and adaptive responses to workflow variations. The framework's design ensures seamless integration with the broader SaaS ecosystem through API interoperability (including RESTful APIs, GraphQL, and Webhooks). Its cloud-native foundation is built for scalability, featuring a multi-tenant architecture and latency optimization to handle enterprise-grade volume and spikes in usage.

Integration patterns prioritize standards-compliant linkages: with EHRs for streamlined clinical data flows, PACS for efficient imaging retrieval, RCM tools for automated financial reconciliation, and third-party services for enhanced analytics or telehealth extensions. These patterns utilize secure, API-mediated exchanges to ensure interoperability and data integrity.

The framework advances 'innovate-to-zero' objectives by systematically targeting inefficiencies: preemptively identifying and resolving fallouts in processes such as enrollment or appeals, and optimizing latency in care pathways through predictive routing and automated escalations. This results in near-zero disruptions, fostering continuous, high-fidelity operations.

Outcome Optimization Layer

- innovate-to-zero Objectives
- Preemptive fallout detection (e.g., enrollment, appeals)
- Predictive routing in care pathways
- Automated escalations
- Near-zero disruptions
- Continuous, high-fidelity operation

Integration Layer

- Standards-Compliant Interfaces
- EHRs – Clinical data flow
- PACS – Imaging retrieval
- RCM Tools – Financial reconciliation
- Third-Party Services – Analytics, telehealth
- Secure API-Mediated Exchanges
- Ensures interoperability
- Maintains data integrity

Intelligence & Governance Layer

- Centralized Agent Registry
- Dynamically catalogs and deploys agents
- Classifies by function and dependencies
- Supports rapid composability
- Policy Engine
- Applies rules-based logic
- Enforces security and ethical protocols
- Adapts to workflow variations

Core Orchestration Layer

- Enterprise Event Bus
- Manages asynchronous, real-time events
- Triggers workflows across distributed components
- Ensures minimal latency and high resilience
- Open API Gateway
- Exposes standardized endpoints
- Enables extensible connectivity
- Preserves data sovereignty

Agentic AI in action: From theory to transformation

The true value of a composable Agentic AI architecture is revealed in its application. By orchestrating complex, multi-step processes, Infosys Helix agents transform high-friction administrative tasks into streamlined, automated workflows. These use cases illustrate how agentic capabilities deliver tangible improvements in efficiency, compliance, and member experience.

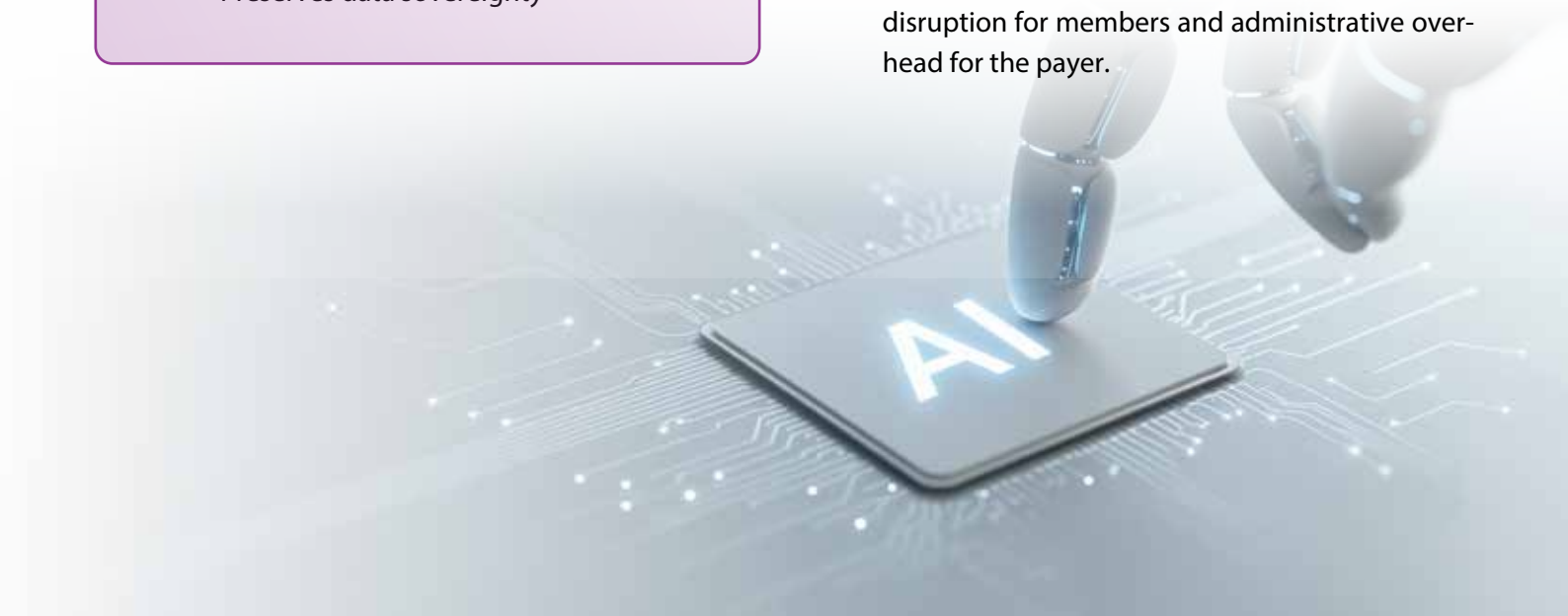
Use case 1 Seamless mass member migration

Migrating a large population of members from one health plan to another is a notoriously complex process, fraught with risks of data entry errors, eligibility gaps, and communication failures. A single master agent in Infosys Helix can orchestrate this entire workflow autonomously.

Initiation: The master agent receives a directive to execute the mass move.

Orchestration: It deploys specialized worker agents to perform parallel tasks: one agent extracts and validates member data from the source system, another configures the new plan benefits and eligibility rules, and a third handles the generation of welcome kits and updated policy documents.

Execution and Verification: The agents execute the transfer, cross-validating every record to ensure data integrity. A final agent manages the communications, sending timely notifications to all affected members and confirming their successful transition. The result is a fast, accurate migration with a complete audit trail, minimizing disruption for members and administrative overhead for the payer.



Use case 2 Intelligent clinical utilization review

When claims are flagged for utilization review, the process often requires painstaking manual effort from clinical staff. Infosys Helix deploys a specialized Clinical AI agent to automate this from end to end.

Triage: An agent continuously monitors incoming claims and automatically identifies those that meet the criteria for review based on predefined rules.

Data Synthesis: The Clinical AI agent retrieves the member's complete clinical history from integrated EHRs, pulls relevant medical policies, and synthesizes the information into a concise summary for review.

Decision Support: Based on its analysis, the agent can approve the claim if it clearly meets guidelines or escalate it to a human clinician with a full packet of organized information, reducing review time from hours to minutes.

Use case 3 Dynamic provider network and member management

Maintaining an accurate provider directory is critical for member trust and regulatory compliance. When a provider is sanctioned or leaves a network, swift action is required.

Detection and Action: An agent monitoring provider databases detects a sanctioned primary care physician (PCP). It immediately flags the provider in the system and initiates a remediation workflow.

Intelligent Remediation: A second agent identifies all affected members, searches the network for suitable replacement PCPs based on location and specialty, and performs the mass reassignment.

Automated Communication: Concurrently, another agent triggers the reprinting and mailing of new ID cards with the updated PCP information and sends notifications to the members, ensuring they are informed of the change without delay. This proactive, automated response prevents care disruptions and ensures compliance with network adequacy standards.

- Mass move of members from one plan to another
- Tagged Claims for Utilization review are reviewed by Clinical AI agents
- Sanctioned provider, find a new provider as PCP, notify members for change in PCP and reprint ID cards

Driving measurable efficiency

Preliminary estimates indicate that Infosys Helix can unlock productivity gains of 60–70% by enabling adaptive, compliant AI workflows in core administrative areas like enrollment, provider data management, and claims processing.

These gains are rooted in the platform's ability to target and resolve systemic inefficiencies in high-volume, high-touch administrative processes. Key areas of improvement include:

- Enrollment: Automating eligibility verification, data entry, and issue resolution reduces manual intervention and accelerates member access to care.
- Provider data management and onboarding: AI-driven workflows for credentialing, contracting, and data updates reduce onboarding cycles from months to days, ensuring network adequacy and accuracy.
- Claims processing: Intelligent automation of claim intake, validation, and adjudication minimizes errors, reduces denial rates, and speeds up payment cycles.

Trust, transparency, and risk mitigation with healthcare agents

Governance and auditability are foundational to Infosys Helix, ensuring the ethical deployment of AI and the integrity of operations. The platform's security framework is built on end-to-end encryption and robust authentication protocols like OAuth2 and SAML. Agents adhere to strict role-based access controls, while an immutable agent ledger provides a comprehensive and verifiable audit trail for all actions, supporting both forensic analysis and compliance. This approach to data governance, combined with user-managed privacy controls and proactive bias detection, ensures that all interactions align with stringent standards like HIPAA and GDPR.

The platform aligns with stringent standards like HIPAA and GDPR, incorporating evolving AI regulations through adaptive governance models. Built-in audit dashboards provide granular visibility, enabling stakeholders to monitor system performance and agent behaviors in real time.

To counter potential risks, Infosys Helix tackles technical limitations with resilient designs, including redundancy and error-handling mechanisms to minimize downtime. Ethical hurdles, such as data privacy concerns, are mitigated via continuous bias monitoring and transparent algorithms. Socio-organizational challenges, like resistance to AI adoption, are addressed through intuitive interfaces and change management protocols, ensuring smooth integration and user buy-in.

Charting a course for resilient healthcare AI in the future

The future of healthcare technology, as envisioned by Infosys Helix, centers on advancing multi-agent collaboration and federated learning to spur innovation at scale. Building on adaptive governance, the platform aims to realize a self-optimizing digital nervous system that seamlessly integrates data, AI agents, and human workflows to anticipate and respond dynamically to operational challenges. Infosys Helix's architecture paves the way for resilient, transparent, and continuously evolving healthcare operations that keep pace with regulatory evolution and emergent care paradigm shifts.

The imperative to adopt composable, governable Agentic AI platforms, such as Infosys Helix, has never been more urgent. Only by embracing architectures that are inherently transparent, adaptable, and resilient can healthcare organizations transcend legacy limitations, forge new standards of trust, and deliver superior member outcomes through seamless collaboration and automation. Infosys Helix stands at the forefront of this transformative journey, empowering stakeholders with the tools to navigate complexity confidently and innovate continuously.

For more information, contact askus@infosys.com

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