Rimini Street®

The Software Support and
Agentic AI ERP Company™

THE RISE OF AGENTIC AI ERP

Leveraging Agentic AI to achieve ERP
transformation for enhanced productivity,
greater agility and reduced cost

Contents

Executive summary

The purpose of this white paper is to educate readers about the disruptive trends related to ERP, ERP Software, AI, Agentic AI and Agentic AI ERP and share our thought leadership on the adoption of Agentic AI ERP to achieve operational, business and competitive goals.

AI is changing everything. While existing ERP Software can continue providing great value for many years to come as a transactional backbone, we believe ERP Software is peaking in capability and there is little value to any further investments in ERP Software upgrades or migrations. Instead, we believe new ERP capabilities will be deployed in Agentic AI ERP.

Below are the eight key points discussed in this white paper:

- **Enterprises use ERP Processes to operate.** Since the advent of enterprises, there have been ten core business processes (see Chapter 1 for list of processes) needed to run and manage an enterprise — collectively and commonly referred to as Enterprise Resource Planning Processes, or ERP Processes. The execution of these core processes has gone from verbal communication, to leveraging paper, spreadsheets, computers and now AI.

- **ERP Software was a technological paradigm shift.** As enterprises gained access to compute capability, ERP Software reduced the amount of labor needed to execute ERP Processes, increased the speed of process execution, provided easier integration of business processes across the enterprise and enabled better business outcomes. Over the decades, ERP Software evolved into an integrated "monolithic" ERP Software Suite.

- **ERP Software has evolved and is reaching technical and functional limits.** In the 2010s, the emergence of single-function Software-as-a-Service (SaaS) products (e.g., Salesforce, Workday, Concur) began to break the ERP Software Suite into smaller ERP Software components. SaaS offerings allowed enterprises to "mix, match and integrate" different vendor ERP Software functionality into a Composable ERP Software model. In the 2020s, incremental ERP Software value began to decline as the software approached technological, functional and flexibility limitations — while related costs continued to increase due to unending vendor upgrades, migrations and evolving license fee models.

- **ERP Software vendors keep pressuring upgrades and migrations to already dated technology and evolving license models.** ERP Software vendors such as Oracle, SAP, Infor and Microsoft pressure continual updates, upgrades and migrations to newer ERP Software releases or products that are built with what we believe is already dated technology (e.g., SAP pressure to migrate ECC 6.0 and older S/4HANA releases to newer S/4HANA releases). These updates may deliver low value and ROI, stifle innovation, limit integration with other technologies and can bring significant, unnecessary costs and operational risks to stable, mission-critical systems. Further, the ERP Software vendors are evolving their licensing models in ways that may further increase ERP Software costs, including subscription and consumption fees.

- **Agentic AI ERP is the new paradigm shift disrupting ERP Software.** New technology called Agentic AI deploys Intelligent electronic "agents" with the ability to "think like humans" and autonomously set goals, make decisions and take actions in pursuit of those goals. Agentic AI is now ushering in the rise of the next ERP technology paradigm shift — Agentic AI ERP. Enterprises can use Agentic AI ERP to autonomously execute and orchestrate business processes across software products and data stores — without limitation to where data or application logic resides. Benefits of Agentic AI ERP include faster and more accurate transactions, better decision making and automation of processes previously performed by human labor.

- **Agentic AI ERP is a better investment than ERP Software Suite upgrades or migrations.** The ERP Software Suite, whether perpetual or subscription license, is peaking in capabilities and there is little value for most enterprises to continue performing ERP Software Suite upgrades and migrations that are often expensive, risky and low ROI. Instead, enterprises can extend the useful lifespan of their existing customized and stable versions of ERP Software, ERP Software Suites, Composable ERP Software and invest the savings to fund deployment of an Agentic AI platform and Agentic AI ERP.

- **Existing ERP Software can continue to provide value for many years.** Existing ERP Software with modern integration capabilities such as APIs, SOA/microservices, event-driven messaging and Integration Platform as a Service (iPaaS) can continue to provide a transaction backbone for ERP Processes and deliver value and ROI for many years to come. Enterprises can leverage existing ERP Software as the base of a Composable Architecture and simply deploy an Agentic AI ERP platform "over the top" of their current ERP Software, turning their ERP Software into a backend functional "engine" with Agentic AI technology taking over execution of automated business processes and acting as a new human user interface. Some experts have labeled this architecture **Headless ERP.** Agentic AI ERP functions can eventually replace ERP Software and obviate the need for underlying ERP Software.

- **Agentic AI ERP can be easily deployed over existing ERP Software.** With nominal investments and minimal risk compared to ERP Software upgrades and migrations, enterprises can begin leveraging Agentic AI ERP processes and deliver value in weeks, not months and years — like traditional ERP Software upgrade and migration projects.

Enterprises use ERP Processes to operate

There are ten core ERP Processes that are generally executed today using ERP Software. Below is a list of these processes and a general description of the operational scope:

Lead-to-Opportunity (L2O)
Tracks marketing leads through the sales funnel.

Opportunity-to-Order (O2O)
Converts sales opportunities into confirmed orders.

Quote-to-Cash (Q2C)
Starts with configure, price and quote and ends with revenue recognition.

Order-to-Cash (O2C)
Starts after customer places order and ends with fulfillment and payment.

Plan-to-Make (P2M)
Encompasses production planning, scheduling and manufacturing.

Forecast-to-Stock (F2S)
Involves demand forecasting and inventory planning.

Procure-to-Pay (P2P)
Covers purchasing goods/services and processing supplier payments.

Design-to-Deliver (D2D)
Integrates product development with delivery logistics.

Hire-to-Retire (H2R)
Manages the full employee lifecycle — from recruitment to retirement.

Record-to-Report (R2R)
Handles financial reporting, accounting and compliance.

These ten ERP Processes form the operational backbone of enterprises. While ERP Software has evolved to support their execution with increasing sophistication, the processes themselves have remained universal. This enduring relevance makes them a critical lens through which to evaluate both the limitations of current ERP Software and the transformative potential of the new Agentic AI ERP technical paradigm.

ERP Software was a technological paradigm shift

ERP Software has evolved over nearly six decades, transforming how enterprises execute core ERP business processes. As computing power became more accessible, ERP Software emerged as a technological paradigm shift — reducing the labor required to perform business operations, accelerating execution speed, lowering operating costs and enabling integration across functional domains. Over time, ERP Software became the digital backbone of enterprise operations.

From its origins running on centralized Mainframe computing to running across today's modular software platforms, ERP Software has evolved in tandem with technological advancements.

Enterprise computing began on mainframes with Material Requirements Planning (MRP) and later Manufacturing Resource Planning (MRP II) systems, which automated inventory control and production scheduling. These systems introduced structured data and process discipline but operated in silos. The lack of integration across finance, human resources and other departments created the demand for more comprehensive, integrated ERP Software solutions.
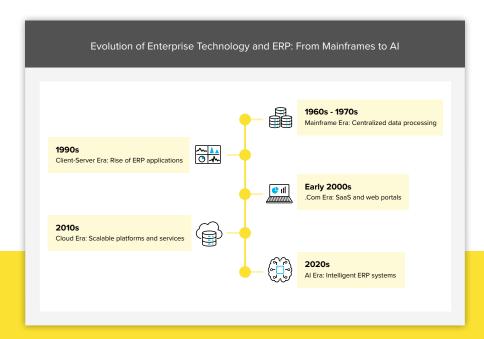
The proliferation of desktop computing and client-server architectures in the late 1980s and early 1990s marked a turning point. With more affordable and distributed computing, ERP Software expanded in scope and scale. Enterprises began adopting on-premises enterprise software and ERP

Software at scale. ERP Software became available from software vendors as a "monolithic" ERP Software Suite where the various core ERP functions were performed by a single piece of software with broad functionality. The ERP Software served as the "System of Record" for many enterprises and generally included capabilities to execute core ERP Processes.

The rise of the Internet triggered yet another ERP Software transformation. Web portals and early software-as-a-service (SaaS) applications improved user experience, increased accessibility and lowered entry costs. SaaS application and subscription license models for ERP Software grew in popularity.

In the 2010s, cloud computing introduced new possibilities for scalability, elasticity and cross-application integration. Many enterprises migrated their on-premises, perpetual license model ERP Software to cloud platforms, while also embracing Service-Oriented Architectures (SOA) and API-first design principles. These developments allowed ERP systems to integrate seamlessly with external applications and data sources.

Each technological era incrementally expanded the scope and capabilities of the ERP Software being used, driving improvements in operational efficiency, business innovation and organizational agility.

Evolution of Enterprise Technology and ERP: From Mainframes to AI

1960s - 1970s
Mainframe Era: Centralized data processing

1990s
Client-Server Era: Rise of ERP applications

Early 2000s
.Com Era: SaaS and web portals

2010s
Cloud Era: Scalable platforms and services

2020s
AI Era: Intelligent ERP systems

ERP Software has evolved and is reaching technical and functional limits

Today, the monolithic ERP Software Suites represent the culmination of decades of technological and functional innovation. However, as needs for improved speed to market, business flexibility and lower cost to serve become key strategic and operational advantages in a fiercely competitive world, we believe that the monolithic ERP Software Suites are reaching technical and functional limitations that can be resolved with a paradigm shift to Agentic AI ERP.

Two converging trends are reshaping the future of ERP Software. First, ERP Software value began to decline as the software approaches technological, functional and flexibility limitations — while related costs continued to increase due to unending vendor upgrades, migrations and evolving license fee models. Second, as ERP Software value declined, there has been a decomposition of traditional monolithic ERP systems into modular, best-fit architectures.

ERP Software declines in value

While ERP Software remains vital for managing core business operations, its overall value has diminished. As technology matures, systems face growing limitations in their flexibility — yet the costs continue to rise. Organizations are burdened by constant vendor-driven upgrades and evolving license models that add complexity rather than clarity. These considerations have creating additional pressures, giving rise to the following challenges:

Value gap

Over time, the share of IT budget allocated to ERP Software has grown substantially, yet the return on investment is declining. Enterprises are spending more on costs associated with annual software maintenance, continuous upgrades and migrations for ERP Software, but the returns, measured in speed to market, business flexibility and reduced cost to serve have significantly declined. This "value gap" is a significant contributor to the imbalance in distributed use and leverage for IT budgets, with Gartner Research data showing that, on average, 91% of budgets are spent maintaining current operations — leaving just 9% of budget spend for innovation.[1]

Slow time-to-value

In today's fiercely competitive global market, time-to-value and business agility are defining factors for success. Modern enterprises must respond rapidly to changing customer expectations, market conditions and competition, political and economic volatility and operational challenges. Traditional ERP Software projects, with long implementation cycles, continuous multi-year updates and migrations, rigid architecture and technical limitations, struggle to meet these modern demands. They lack the agility required for rapid iteration and dynamic orchestration and deliver slow time-to-value.

> In fact, McKinsey & Company research shows that enterprises with high-performing IT departments achieve faster time-to-market, and up to 35% higher revenue growth and 10% higher profit margins.[2]

A System of Record, not a System of Action

Monolithic ERP Software Suites continue to serve as reliable but static Systems of Record, preserving transactional integrity, providing fast transactional throughput and supporting regulatory compliance. However, they are not designed to orchestrate real-time business actions across diverse systems. New technical paradigms that include Agentic AI and orchestration platforms are enabling new Systems of Action that connect business processes across applications and departments with Agentic AI, driving autonomous and augmented decision making for improved efficiency and effectiveness.

Systems of Record and Systems of Action must evolve at different velocities. The former are stable and commoditized, while the latter are strategic and require rapid, continuous innovation. Enterprises must prioritize investment in Systems of Action to maintain competitive advantage.

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[1] Gartner, Gartner IT Key Metrics Data 2024: Industry Measures — Executive Summary, 14 December 2023, ID G00802506
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[2] André Jerenz, Arsen Storozhev, Leorizio D'Aversa, Natalia Boksha, Naufal Khan, Rahil Jogani and Alexey Ivanov, "How high performers optimize IT productivity for revenue growth: A leader's guide," McKinsey & Company, retrieved 3 October 2025 from https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/how-high-performers-optimize-it-productivity-for-revenue-growth-a-leaders-guide

Silos limit productivity and business impact

To fully leverage transformative technologies such as AI, Hyperautomation and intelligent analytics, innovation initiatives must extend across the enterprise and not be confined within the boundaries of a single software suite. Today, enterprises have, on average, nearly 300 applications,[3] and core ERP Processes must be seamlessly supported across these applications and engage the entire enterprise.

Achieving this requires enterprise-wide strategies and technologies that transcend single-vendor systems. Orchestrating actions across departments, integrating decentralized data sources and delivering unified analytics demand a holistic approach that traditional ERP architectures cannot support.

The decomposition of ERP Software

ERP Software has long been synonymous with monolithic, single software vendor platforms offering tightly integrated modules for finance, human resources, supply chain and other core functions. Traditional ERP systems provided centralized control and consistency, but their rigidity and slow innovation cycles have become misaligned with the dynamic needs of modern enterprises.

ERP modules are typically designed to serve a broad customer base, resulting in generalized functionality that often fails to meet the specialized needs of individual enterprises. As a result, enterprises have increasingly sought differentiated applications outside the traditional ERP Software Suite to gain competitive advantage. This shift has driven a systematic decomposition of ERP into more agile, modular components.

The rise of best-fit external solutions

HR, CRM and procurement functions are increasingly handled by specialized applications that offer superior functionality, faster innovation cycles and lower costs. Additionally, enterprises are adding new modules and capabilities where comparable modules are not even available in the ERP Software Suite, whether from other software providers or custom solutions built using low-code and no-code tools.

This modularization of the traditional monolithic ERP Software Suite has enabled enterprises to access innovation more rapidly without the delay, cost or risk of large ERP upgrades, which are often costly, time-consuming and disruptive. The result is a shift away from monolithic ERP toward a more flexible, responsive and Composable ERP strategy.
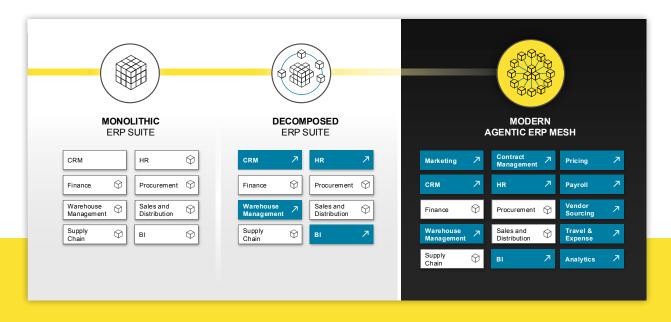
Accelerating decomposition of the ERP Software Suite

As more functional components migrate outside the monolithic suite, ERP Software transforms from a single-vendor rigid suite to a multi-vendor loosely coupled Service Mesh. Each module, whether human resources, finance, supply chain or otherwise, is optimized independently and integrated via APIs with orchestration managed through middleware or enterprise integration platforms. ERP no longer serves as the sole central nervous system but becomes one node among many, exposing functionality and data through defined service APIs.

This decomposition is beyond macro modules. Subsystems within modules, such as payroll, travel and expense management, as well as specific capabilities like pricing, inventory and credit checks, are increasingly externalized into specialized platforms. This micro-decomposition reflects a growing preference for targeted, best-in-class services that deliver measurable results.

This architecture aligns with the principles of composability and was enabled by evolving technology infrastructure and standards. It allowed enterprises to plug in new capabilities without disrupting the entire system, fostering innovation and responsiveness.

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[3] Scott Brinker, "How big is your tech stack, really? Here's the latest data…" chiefmartec, retrieved 3 October 2025 from https://chiefmartec.com/2023/04/how-big-is-your-tech-stack-really-heres-the-latest-data/

MONOLITHIC ERP SUITE

CRM	HR
Finance	Procurement
Warehouse Management	Sales and Distribution
Supply Chain	BI

DECOMPOSED ERP SUITE

CRM	HR
Finance	Procurement
Warehouse Management	Sales and Distribution
Supply Chain	BI

MODERN AGENTIC ERP MESH

Marketing	Contract Management	Pricing
CRM	HR	Payroll
Finance	Procurement	Vendor Sourcing
Warehouse Management	Sales and Distribution	Travel & Expense
Supply Chain	BI	Analytics

ERP Software vendors keep pressuring upgrades and migrations to already dated technology and evolving license models

ERP Software vendors continue to exert pressure on enterprises to upgrade and migrate to newer versions of their platforms. These initiatives are often framed as necessary for innovation and compliance, yet they frequently deliver limited value, introduce operational risk and rely on technology that may already be dated. At the same time, vendors are evolving their licensing models in ways that increase complexity and cost, further straining enterprise IT budgets.

Vendor-pressured upgrades and migrations

Major ERP vendors, including Oracle, SAP, Infor and Microsoft, routinely promote upgrades and cloud migrations as strategic imperatives. These campaigns often target stable, mission-critical systems that have been customized and optimized over years of use. For example, SAP has aggressively pushed customers to migrate from ECC 6.0 and earlier versions of S/4HANA to newer S/4HANA cloud subscription releases, despite limited functional improvements and questionable ROI.

These vendor-driven initiatives may feel compulsory. Support timelines, security updates and access to new features are often tied to compliance with upgrade schedules. As a result, enterprises can feel compelled to invest in costly and disruptive projects that may not align with their business priorities or deliver meaningful innovation.

The cumulative impact of these migrations includes prolonged implementation cycles, increased reliance on external consultants and significant internal resource allocation. In many cases, the business case for upgrade is weak and the opportunity cost of diverting funds from transformative initiatives such as AI or automation is substantial.

Dated technology

Despite being marketed as modern solutions, many ERP Software upgrades are built on architecture and design principles that do not offer the technological capabilities of new Agentic AI ERP. The core platforms of leading ERP vendors were developed years ago and have undergone incremental enhancements — but not fundamental redesigns.

For instance, while cloud-based ERP offerings promise new incremental functionality, they often retain legacy constraints in data models, user interfaces and integration capabilities. The result is a hybrid architecture that inherits limitations of both on-premises and cloud systems.

This reliance on dated technology restricts the ability of enterprises to adopt emerging paradigms such as Composable Architecture, intelligent automation and Agentic AI. It also creates friction in integrating ERP systems with modern tools and platforms, reducing agility and responsiveness.

Evolving license models

In parallel with technical pressures, ERP vendors are evolving licensing strategies in ways that increase cost and reduce transparency. Traditional perpetual licenses are being replaced with subscription-based models, often bundled with consumption-based pricing and tiered access to features.

These changes complicate budgeting and forecasting, as enterprises must navigate fluctuating costs tied to usage metrics, user counts and data volumes. Additionally, license audits and compliance enforcement have become more aggressive, introducing financial and legal risk.

The evolving license landscape also limits flexibility. Enterprises may find themselves locked into vendor ecosystems, unable to scale or pivot without incurring penalties or renegotiating contracts. This dynamic undermines the strategic autonomy of IT departments and reinforces vendor dependency.

Agentic AI ERP is the new paradigm shift disrupting ERP Software

Agentic AI disrupts Software

AI "agents" — or Agentic AI — will eventually become the primary interface for users, interacting via prompts, autonomously performing tasks, automating workflows and serving up intelligent recommendations. While prompts are the most visible interface today, the rapid evolution of multimodal AI models will soon introduce new ways for users to interact with enterprise systems, including voice commands, augmented reality (AR) overlays and predictive, context-aware actions that anticipate user needs. AI agents will execute and orchestrate business processes through APIs, unconstrained by where data or application logic resides and will increasingly leverage these advanced modalities to deliver seamless, intuitive and proactive user experiences.

As AI agents evolve and take over more business processes, the application logic will migrate into the AI layer of the architecture. AI agents are not bound to any one software package or supplier, but operate independently across software systems and data stores, orchestrating actions and tasks for optimal outcomes.

The rise of Agentic AI ERP

Agentic AI ERP does not simply modify existing ERP Software — it completely reinvents the way we execute ERP Processes in a new technology paradigm. Ultimately, it redefines the very concept of ERP, transforming it from a linear, transactional System of Record to a System of Action with capabilities aligned by the exponential power of Agentic AI. This redefinition will entirely change how users interact with and get value from enterprise applications.

To accomplish work and deliver outcomes on behalf of users, AI agents will orchestrate processes and workflows across systems, making decisions, taking actions and making recommendations where human oversight is required.

AI agents will agnostically rely on Composable Business Services to access the functional capabilities in ERP Software and other software via APIs that expose business logic and transaction processing like sales order entry or warehouse inventory letdowns, without regard to what software package or vendor sourced the business service. ERP Software of the future is not a product or a vendor strategy as it has been in years past. Enterprise applications are evolving to provide a robust, multifaceted mesh of interdependent platforms and processes, powered by AI agents.

The following are important concepts and building blocks to fully realize Agentic AI ERP:

ERP becomes an Agentic AI mesh

Historical, monolithic ERP Software, characterized by large, inflexible modules, is dissolving into a distributed, Composable Architecture. In its place emerges a dynamic mesh of interconnected systems, each specialized and optimized for specific business functions. When new fit-for-purpose tools emerge, integrating them into the mesh becomes far simpler and less disruptive. Agents act as intermediaries and orchestrators, making the ERP not just modular but autonomous. Processes and data are no longer chained to rigid workflows inside a single suite; they are portable, observable and orchestrated across a living fabric of systems.

AI as the operating system

AI is not an add-on. It natively drives orchestration, monitors governance and compliance, replaces static rules with dynamic agents and adapts in real time. In the Agentic AI ERP Era, AI is not simply embedded into processes — it is the overarching system logic.

AI serves as the universal interpreter — translating intent, context and data into action while understanding every language and industry-specific term. Just as an operating system abstracts and manages hardware complexity, AI abstracts and manages business data, logic and operational execution. Recognizing that seamless interoperability between AI agents is essential for the future of Agentic AI, industry leaders are actively investing in cross-agent communication standards such as Agent2Agent (A2A) Protocol, Model Context Protocol (MCP) and Agent Communication Protocol (ACP).

Hyper-personalized user experiences

In the Agentic AI ERP Era, interactions are persona-driven and intent-aware. Agents deliver role-specific insights and take proactive action based on the context — the user's goals, behavior patterns, market conditions, external events and system signals.

This transforms dashboards from passive displays into active role-based command centers — like intelligent copilots that suggest actions, resolve anomalies and highlight opportunities. ERP becomes deeply human-aware, adapting in real time to the user's evolving needs. Over time agents evolve from executing predefined workflows to autonomously inferring strategic objectives. By analyzing contextual signals, historical patterns and real-time data, they anticipate business priorities and act proactively reducing the need for explicit human direction.

Hyperautomation at the core

Business processes are connected across system boundaries and become self-healing, goal-oriented and event-driven. AI agents learn, adapt and execute based on desired outcomes of human leaders.

AI agents monitor systems, detect deviations and act without waiting for human intervention. Agents do not just automate known processes; they learn and evolve from operational feedback, continuously improving their performance. Where humans have intervened in the process, the AI agents learn why and can make the same decisions in the future without requiring costly employee work. This allows enterprises to move from process automation to intent automation — where desired outcomes are achieved dynamically through self-optimization and event-driven processes. This approach can leverage but goes well beyond robotic process automation (RPA) — it is autonomous operation by design.

Microservices + API-first architectures

Flexibility replaces rigidity. ERP will continually break down into services that can evolve independently.

Agentic ERP thrives in decentralized ecosystems. Microservices and API-first design principles enable each ERP capability in finance, procurement, HR, CRM, sales, supply chain and beyond to be delivered independently as a business service, updated frequently and composed flexibly. This architecture empowers enterprises to mix and match best-of-breed capabilities, inserting or replacing components without disrupting the whole ecosystem. APIs serve as the arteries for AI agents to move data, trigger actions and learn from outcomes, making interoperability and continuous evolution a native feature of the ERP fabric.

Established standards already allow integration leveraging API architectures available today for the agile enterprise. Where modern APIs or microservices do not exist, AI-assisted code generation can rapidly create secure interface layers — API façades and adapters — around legacy ERP Software, exposing REST, GraphQL, gRPC or event streams without changing the System of Record.

Using model-driven specs (OpenAPI/AsyncAPI), LLM-generated connectors and code scaffolds, teams can autogenerate data mappers and tests, deploy to gateways or serverless runtimes and register capabilities for AI agent discovery and orchestration. When direct APIs are not feasible, AI agents can still mediate via RPA-to-API transformers, message queues, or change data capture (CDC) events — providing a pragmatic bridge from screens and files to durable services while the core is modernized.

ERP as a data source, not a data warehouse

With Agentic AI ERP, trusted stores of data remain as important as ever. The ERP becomes an important contributor to a federated enterprise data fabric but not a sole source.

The Agentic AI ERP Era treats ERP as just one crucial node of many in a Federated Data Fabric, contributing real-time data and context to a larger mesh of enterprise systems and data sources both internal and external to an organization.

AI tools and agents will access data wherever it resides, respecting governance, chain-of-custody and security while providing synthesized intelligence at the point of need. This approach removes the dependency on large, centralized data warehouses by enabling broader access to insights and allowing innovation to progress independently of major ERP Software upgrades. It's important to note that, in the past, many AI projects struggled because they relied heavily on vector-based Retrieval-Augmented Generation (RAG) models, which required complex data pipelines and often failed to deliver business-ready insights at scale. Recent and ongoing advances in AI are reducing — and will continue to reduce — the need for RAG-based architectures, enabling AI agents to access, interpret and synthesize data more natively and flexibly across distributed sources.

Gartner Research warns that through 2026, 60% of AI projects will be abandoned due to lack of AI-ready data,[4] highlighting the need for federated approaches in ERP. As AI models become more capable of direct, context-aware data access and reasoning, the barriers imposed by legacy RAG pipelines will diminish, accelerating the adoption of federated, agentic architectures.

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[4] Gartner, Lack of AI-Ready Data Puts AI Projects at Risk, By Roxane Edjlali, 26 February 2025

Governance at the core

In the evolving landscape of AI-powered enterprise systems, governance takes on a central and strategic role. Rather than being a procedural compliance layer, governance becomes the foundation for responsible and effective operations.

As autonomous agents increasingly drive business processes, enterprises must implement and enforce clear policies for their use — ensuring compliance, security and continuity. Agent-driven decisions and actions must remain aligned with organizational objectives and regulatory requirements across five key governance pillars: Data, Model, Process, Economic and Security.

Agentic AI ERP is anticipated to be even more impactful and disruptive than the introduction of the Internet, with Agentic AI rearchitecting the way we carry out our day-to-day work and the speed and quality in which decisions are made and executed.

Agentic AI ERP requires a break from legacy thinking. Agents become the primary interface of action. AI becomes the engine of orchestration. And the ERP? It becomes one of many nodes in a "system-sentient," distributed, intelligent enterprise — where speed, adaptability, agility and intelligence define success.
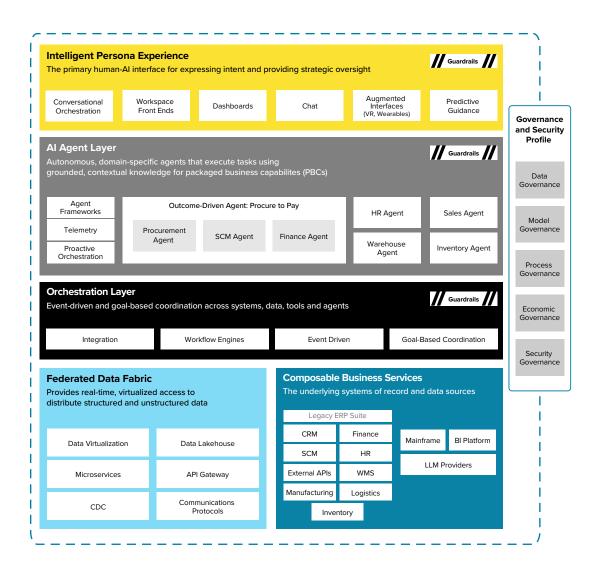
Agentic AI ERP reference architecture: Layered, intelligent, secure

The architecture of tomorrow's ERP technology will be fundamentally different from today's ERP Software Suite architecture.

The Agentic AI ERP architecture is built on a series of connected layers, each playing a critical role in enabling secure, intelligent and adaptive operations. Unlike traditional single technology stacks, this architecture forms a dynamic mesh — modular, scalable and enterprise-owned. It is not dictated by monolithic vendor constraints but flexibly architected by the organization to meet its strategic goals.

Each layer interacts seamlessly to deliver workflows and business functions, all governed by embedded compliance, security and oversight protocols. Together, they enable a collaborative experience between humans and AI — where users express intent and prompt strategic outcomes through intelligent orchestration.

Intelligent Persona Experience
The primary human-AI interface for expressing intent and providing strategic oversight

Guardrails

| Conversational Orchestration | Workspace Front Ends | Dashboards | Chat | Augmented Interfaces (VR, Wearables) | Predictive Guidance |

AI Agent Layer
Autonomous, domain-specific agents that execute tasks using grounded, contextual knowledge for packaged business capabilites (PBCs)

Guardrails

- Agent Frameworks
- Telemetry
- Proactive Orchestration

Outcome-Driven Agent: Procure to Pay
- Procurement Agent
- SCM Agent
- Finance Agent

- HR Agent
- Sales Agent
- Warehouse Agent
- Inventory Agent

Orchestration Layer
Event-driven and goal-based coordination across systems, data, tools and agents

Guardrails

| Integration | Workflow Engines | Event Driven | Goal-Based Coordination |

Governance and Security Profile

- Data Governance
- Model Governance
- Process Governance
- Economic Governance
- Security Governance

Federated Data Fabric
Provides real-time, virtualized access to distribute structured and unstructured data

- Data Virtualization
- Data Lakehouse
- Microservices
- API Gateway
- CDC
- Communications Protocols

Composable Business Services
The underlying systems of record and data sources

Legacy ERP Suite
- CRM
- Finance
- SCM
- HR
- External APIs
- WMS
- Manufacturing
- Logistics
- Inventory

- Mainframe
- BI Platform
- LLM Providers

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The Agentic AI ERP reference architecture is composed of several layers

Intelligent Persona Experience

The user experience layer serves as the human-AI interaction hub, providing a unified experience for all interactions, monitoring and decision-making, adapting to an individual's preferred method for working across any device. It includes conversational orchestration, dashboards and augmented interfaces such as VR, wearables and future modalities.

Prompts will evolve as a primary interface methodology, with AI agents becoming the face of future applications. With predictive guidance, Intelligent Persona Experiences anticipate user needs, surfacing next-best actions and insights before they are requested. This layer operates within Embedded Governance and guardrails, ensuring that all interactions remain compliant, transparent and aligned with enterprise policies.

AI Agent Layer

At the core, this layer hosts autonomous, domain-specific agents that execute tasks using contextual knowledge. These agents leverage proactive orchestration, self-optimizing behaviors and standardized protocols to deliver outcomes across procurement, finance, HR and supply chain. The AI Agent Layer relies on access to data across and even outside the enterprise through the Federated Data Fabric directly at their source without the need to aggregate ahead of use.

While powered by large language models, their integration and governance are facilitated through the Composable Enterprise Platform and Orchestration Layer, ensuring responsible and controlled autonomy.

Orchestration Layer

Coordinates systems, data, tools and agents through event-driven and goal-based workflows to complete work and achieve outcomes. It accomplishes this by following directives from the AI Agent Layer to query data sources, connect business processes steps, automate actions and tasks and leverage Composable Business Services.

It ensures that processes are dynamically aligned with business objectives and provides the guardrails for agentic behavior, enforcing governance policies and escalation paths when human oversight is required.

Federated Data Fabric

Provides real-time, virtualized access to distributed structured and unstructured data, enabling other services to find the data needed to complete tasks and processes. It focuses on distilled, high-quality data rather than raw or redundant sources, enabling agents and orchestration tools to act on trusted information wherever it resides. Data is deployed using a mix of data fabric and data mesh approaches.

The Federated Data Fabric leverages metadata to identify and coordinate access to data across the enterprise. Data is served up to the AI Agent layer to support intelligent decision making and recommendations. Orchestration relies on source data to understand which services to invoke and how to organize execution.

Composable Enterprise Platform

The foundation of the architecture comprises Systems of Record and external data sources such as ERP, CRM, finance, HR and logistics, and accessed via APIs. By taking a composable approach, application capabilities are accessible as modular, composable services that execute specific functions. These services can be orchestrated to complete a specific business process or use case, either autonomously via an AI Agent or directed by a user via AI prompt.

This platform supports modular integration, honors governance standards such as SOX, ITAR and segregation of duties, and feeds the agentic mesh for continuous evolution. An API-first design model is preferred and enables this modular model.

Composable Business Services can include a combination of best-fit application modules from software vendors, built for purpose custom applications and microservices built using low-code/no-code platforms.

Governance and Security Protocols

A vertical layer ensuring compliance, transparency and resilience across the architecture. It includes data governance, model oversight, process control, economic accountability and embedded security, with guardrails that define boundaries for both human and autonomous actions.

Agentic AI ERP is a better investment than ERP Software Suite upgrades or migrations

Agentic AI ERP represents a transformational platform shift for enterprise applications that frees enterprises from the constraints of the monolithic ERP Software operating model, creating significant efficiencies and improvements in core enterprise applications while also unlocking massive economic and business model advancements through disruptive Agentic AI technology.

Faster time-to-value

Agentic AI ERP redefines the ERP value equation. This new model delivers faster time to value by decoupling innovation agility from the constraints of the core transaction system. Enterprises can deploy modular AI-powered agents that operate alongside and in collaboration with existing ERP and other enterprise software. Modern low-code and no-code platforms accelerate value realization with deployed Agents delivering results in weeks, unlike the months and years common for ERP Software upgrades and migration projects.

This contrasts with large-scale ERP systems that necessarily move at a slower pace, demand large implementations measured in terms of years, require rigid adherence to vendor roadmaps and consume large chunks of IT budgets at a time for limited ROI. Enterprises no longer need to rely on monolithic upgrades of vendor-controlled features to unlock new capabilities.

Increase innovation in IT budget mix

The Agentic AI ERP model redefines how enterprise application investments are architected and managed by shifting from broad, upfront capital expenditures with significant periodic upgrades to targeted, outcome-driven deployments. Unlike traditional ERP implementations that often span several years and require costly replatforming and/ or upgrading over time, this new approach delivers value in cost-effective sprints. Innovation speed and investment is decoupled from the constraints of monolithic ERP Software and accelerated without the overhead of the suite, enabling enterprises to leapfrog ahead of competitors that are mired in the old operating model.

This shift is enabled by a modular architecture powered by AI agents and enabled by access to Composable Business Services. These agents are deployed to address specific business pain points, such as automating procurement approvals, optimizing inventory levels or accelerating the financial close. This iterative model enables enterprises to reinvest realized value into further innovation and industry or regional specific gains — without waiting for budget cycles or vendor upgrades.

Enhanced productivity

The Agentic AI ERP model empowers machines to serve human goals, enhancing productivity and freeing talent for strategic work. AI agents continuously learn, adapt and act, reducing manual effort and operational overhead. Agents drive cost efficiency while liberating talent to focus on strategic initiatives. The combined enterprise becomes a System of Action, not just a System of Record.

By reducing the traditional ERP to its core transactional data store role, enterprises preserve their existing investments while building a flexible, Composable Architecture around it, resulting in:

- Minimized disruption
- Simplified change management
- Improved user experience

Changes to the backend no longer ripple through the enterprise; instead, they are absorbed by the orchestration layer, enabling continuous evolution without chaos.

Freedom to innovate

Perhaps most importantly, this approach introduces more contemporary thinking of how to bring forth innovation, breaking the cycle of single-vendor control. Enterprises are no longer beholden to a single monolithic ERP Software Suite roadmap or pricing model. They orchestrate their own future, choosing best-fit tools, deploying AI agents where needed and evolving at their own pace. In doing so, they transform ERP from a static platform into a dynamic, Agentic AI mesh across the entire enterprise — one that adapts to the business, not the other way around.

Business impact and ROI

The transition to Agentic AI ERP promises not just technological advancement but profound economic impact, redefining ROI in enterprise IT. PWC research predicts AI could contribute up to $15.7 trillion to the global economy in 2030, including $6.6 trillion from increased productivity.[5] Benefits of Agentic AI on ERP Processes can be significant, with McKinsey demonstrating more than 50% reductions in time and effort and 60% potential productivity gains in early adopter case studies.[6]

Direct savings come from hyperautomation, where agents handle routine tasks like procurement approvals, cutting processing times by 70% and labor costs by 50% according to analysts, with indirect gains like enhanced agility enabling 20-30% faster market responses, as seen in retail sectors where agentic inventory agents minimize stockouts and overstock. Bain and Company's Agentic AI commerce insights highlights how AI also helps teams improve conversion rates across the selling funnel, with improvements that add up to more than a 30% increase in win rates.[7]

The final stage of ERP Software decomposition

The final stage of ERP Software decomposition envisions a future where the "monolithic" ERP Software no longer continues to exist. Instead, business processes are executed by autonomous AI agents that coordinate across a network of specialized systems. These agents understand context, infer intent and act proactively, eliminating the need for centralized ERP altogether. AI agents serve as the connective tissue, orchestrating workflows, enforcing governance and delivering outcomes in real time.

ERP Software vendors are not blind to this driving force and are attempting to maintain relevance by making their own solutions more modular and service oriented. They are even adopting marketing phrases like "best of breed as a suite." Knowingly or unknowingly, these actions acknowledge the powerful ERP decomposition forces in play. Fortunately for customers, the increasing modularity of ERP Software Suites makes it easier to selectively leverage ERP Software modules in a more composable ERP Software landscape.

The economics of enterprise ERP Process technology have shifted as CIOs reallocate budgets from ERP upgrades to AI enablement, cloud-native orchestration and federated data architectures.

[5] https://www.pwc.co.nz/insights-and-publications/2023-publications/artificial-intelligence-study.html

[6] https://www.mckinsey.com/capabilities/quantumblack/our-insights/seizing-the-agentic-ai-advantage#/

[7] Ann Bosche, Jue Wang, Peter Bowen, Tamara Lewis, Justin Murphy and Mark Kovac, "AI Is Transforming Productivity, but Sales Remains a New Frontier," Bain & Company, retrieved 2 October 2025 from https://www.bain.com/insights/ai-transforming-productivity-sales-remains-new-frontier-technology-report-2025/

Existing ERP Software can continue to provide value for many years

Extending the useful life and value of existing ERP Software

Despite the technical and functional limitations of traditional ERP Software, existing ERP Software continues to provide substantial value as a stable transaction backbone for enterprise operations. These systems, often customized and deeply embedded within business processes, remain reliable platforms for executing core ERP functions such as finance, procurement and supply chain management. Rather than ripping and replacing these systems outright, enterprises now can continue using their ERP Software and extend the lifespan and strategic value of the platforms by deploying Agentic AI ERP platforms "over the top" of the existing ERP Software.

ERP Software can serve as a long-term functional engine

ERP systems have long served as Systems of Record — preserving transactional integrity, supporting compliance and enabling standardized workflows. These capabilities remain essential and will likely continue to deliver ROI while enterprises evolve. However, the role of ERP is shifting. Rather than acting as the central orchestrator of business processes, ERP is increasingly positioned as a backend functional engine that supports data persistence and transactional execution.

This shift allows enterprises to decouple process execution from the ERP interface and logic, enabling more flexible and intelligent orchestration of business activities. By maintaining the ERP system as a stable foundation, enterprises can avoid the disruption and cost of full-scale migrations while still pursuing innovation.

Agentic AI ERP as a front-end orchestrator

Agentic AI ERP introduces a new architectural paradigm in which intelligent agents autonomously execute and manage business processes across disparate systems. These agents can set goals, make decisions and take actions that mimic human cognition and behavior. When deployed over existing ERP systems, Agentic AI platforms serve as the new front-end interface, interacting with the ERP backend to initiate transactions, retrieve data and coordinate workflows.

This overlay model enables enterprises to automate processes previously reliant on human input, improve decision-making through real-time data analysis and orchestrate actions across multiple applications and data stores. The result is a more agile, responsive and intelligent enterprise environment.

The emergence of Headless ERP

This architectural approach is increasingly referred to as "Headless ERP." In a headless configuration, the ERP system operates without a traditional user interface, functioning purely as a transactional engine. The user experience and process logic are managed by external platforms powered by AI that interact with the ERP via APIs and service layers.

Headless ERP allows enterprises to modernize their operations without disrupting the underlying system. It supports rapid deployment of new capabilities, seamless integration with external applications and enhanced user experiences through conversational interfaces, predictive analytics and autonomous agents.

Toward ERP Software obsolescence

While existing ERP Software can continue to provide value for potentially years to come, the long-term trajectory points toward their gradual obsolescence. As Agentic AI ERP functionality is deployed, it will increasingly assume the roles traditionally fulfilled by ERP Software such as process execution, data management and decision support. Over time, the need for a traditional ERP system may diminish entirely, replaced by a distributed, intelligent network of agents and services.

This transition does not require immediate disruption. Enterprises can adopt a phased approach, layering Agentic AI capabilities over existing systems, optimizing specific processes and gradually shifting orchestration away from the ERP Software Suite. This strategy preserves existing investments while positioning the organization for future innovation.

Agentic AI ERP can be easily deployed over existing ERP Software

The Agentic AI ERP Era is already here. The question is not if your ERP technology will evolve — it's how fast you will lead that evolution from "monolithic" ERP Software to Agentic AI ERP.

By following these steps, enterprises can transition their ERP Software Suites from static Systems of Record to dynamic Systems of Action — unlocking agility, intelligence and competitive advantage with Agentic AI ERP. Embarking on the journey toward Agentic AI ERP requires a deliberate and strategic approach. The following steps provide a pragmatic path forward to achieving quick wins with minimal investment and low project risk:

Redefine your ERP mindset

Your Agentic AI ERP strategy is not a software vendor. Begin by challenging the conventional definition of ERP Software Suites. Recognize that the future of ERP is not dictated by vendor roadmaps or monolithic upgrades, with rip-and-replace approaches being the default option. Instead, it is shaped by business needs, modular architecture and AI-driven orchestration. Think enterprise-wide, not silos. This mental shift is foundational, and without it, transformation efforts risk becoming incremental rather than revolutionary. Most importantly, you can begin building this new Agentic AI system as an overlay while your existing ERP Software continues to run — uninterrupted. This parallel approach allows you to innovate and modernize without disrupting current operations, ensuring business continuity as you transition to a more agile, intelligent ERP environment.

Preserve the core and reimagine the periphery

Retain your existing ERP System of Record and shift your focus and resources to Agentic AI investments for bigger impact and value. If you are fortunate to still be running perpetually licensed ERP applications, you can maximize the value of those licensed assets in perpetuity and leapfrog the competition that has embarked on a multi-year migration to cloud applications. Run your licensed ERP for years into the future and build around it — layering AI agents, orchestration tools and federated data access to create a flexible, composable ecosystem that evolves independently of the core, realizing that as agentic ERP matures the traditional ERP will naturally dissolve.

Architect governance and security from day one

Before scaling, embed governance and security protocols into the architecture. You must define clear policies for data access, model behavior and human oversight. Further, you must ensure that every AI agent is auditable, explainable and aligned with ethical standards. This foundation is essential for trust, compliance and long-term resilience.

Leverage Enterprise AI platforms

The reference architecture for Agentic AI ERP specifies the required core layers of capabilities. There are tools and packages available for each specified layer, but there are also emerging platforms that combine the layers into a single solution for enabling Agentic AI across your enterprise. These enterprise AI platforms include integrated capabilities for Agentic AI, orchestration, data fabric, API integration and even creating new composable services with low-code/no-code tools. These platforms can accelerate your ability to achieve Agentic AI ERP benefits quickly layered over the top of your existing packaged and custom application software.

Align AI with business goals

Avoid the trap of deploying AI for its own sake. Each agent must be tied to a specific business objective, process, data and personas — be it reducing cycle time, improving forecast accuracy or accelerating time to market. Keep in mind that the value of AI is not in its novelty but in its ability to drive measurable outcomes, which can only be achieved when deployed strategically.

Whether it is adjusting production schedules, reallocating resources or triggering customer engagement, the actions of AI must be visible, traceable and impactful. This ensures that the technology is not just intelligent but truly functional.

Start small and prove value with AI agents

Begin with a high-impact, low-risk AI agent to deploy, such as automating invoice approvals or optimizing workforce scheduling. The goal is not just to demonstrate functionality, but to measure tangible financial outcomes. Track metrics like time saved, cost avoided, error reduction and throughput improvement. These early wins generate measurable savings that can be reinvested into subsequent deployments, creating a self-funding cycle. Each success builds confidence, reduces risk and accelerates time to value.

Scale with confidence

Once the initial use cases have proven successful, expand methodically. Introduce new agents, integrate additional data sources and extend orchestration across departments. As you move forward, maintain a feedback loop to continuously refine models, update governance and align with evolving business goals.

Study industry use cases for Agentic AI ERP

Agentic AI's reinvention of ERP extends beyond general principles, delivering tailored transformations across industries where legacy systems have long stifled agility. In manufacturing, for example, agentic agents can autonomously reroute supply chains in response to real-time disruptions, such as geopolitical events or material shortages.

Manufacturers can leverage agentic ERP to reduce downtime, where agents can predict equipment failures using Federated Data Fabrics and orchestrate maintenance without human intervention. This not only cuts costs but also enhances sustainability by optimizing energy use, aligning with global social mandates.

In retail, the shift to Agentic AI ERP enables hyper-personalized inventory management and customer experiences. Agents can analyze consumer behavior across distributed sources to forecast demand with up to 95% reported accuracy, while dynamically adjusting stock levels and pricing. Bain and Company highlights that with Agentic AI, by 2027 the activities that fill a procurement worker's typical nine-hour workday will shrink to less than one hour.[8]

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[8] https://www.bain.com/insights/ready-set-go-ai-is-poised-to-automate-procurement-interactive/

Looking ahead, these industry transformations underscore agentic ERP's role in creating Composable Enterprises that adapt to sector-specific regulations and market dynamics. Early adopters in high-stakes fields like finance will leverage Outcome-Based Licensing to scale agents for fraud detection and risk assessment, fostering innovation while mitigating vulnerabilities. The key takeaway for leaders: Agentic AI is not a one-size-fits-all solution but a customizable mesh that amplifies industry strengths, turning ERP from a cost center into a strategic asset for resilience and growth.

Key Agentic AI ERP and white paper terminology

Agentic AI

Agentic AI refers to artificial intelligence systems that exhibit agency, meaning they can autonomously set goals, make decisions and take actions in pursuit of those goals, often with minimal human intervention.

Agentic AI ERP

An ERP model built around autonomous AI agents that orchestrate workflows, make decisions and deliver outcomes in real time. It replaces traditional modules with modular, composable services governed by embedded intelligence and security.

Agentic AI ERP Era

A coined term representing the next phase of enterprise IT, where ERP systems are reimagined as dynamic, AI-powered ecosystems. It marks a shift from static Systems of Record to intelligent Systems of Action.

AI-Powered Agents

Software entities that use artificial intelligence to perceive context, make decisions and execute tasks autonomously. These agents continuously learn and adapt to optimize business processes.

Composable Architecture

A modular design approach that enables enterprises to assemble and reconfigure ERP capabilities as needed. It supports flexibility, scalability and integration of best-of-breed tools.

Composable Business Services

Composable Business Services can include a combination of best-fit application modules from software vendors, built for purpose custom applications and microservices built using low-code/no-code platforms.

Composable Enterprise

An organization that operates using modular, interoperable systems and processes, allowing rapid adaptation to change. Agentic ERP is a key enabler of this model.

Composable ERP Systems

A more modern approach to ERP that allows an enterprise to construct their ERP System using a flexible and modular framework. Unlike older, monolithic ERP Software which may require extensive customization to adapt to specific business needs, Composable ERP Systems enable enterprises to select and integrate best-of-breed applications and services tailored to their unique requirements.

Embedded Governance

A design principle where compliance, auditability and ethical AI controls are built into every layer of the ERP architecture, rather than added as external processes.

ERP Software

A collection of software that includes ERP Software at the center, integrated (connected) together with other software — that collectively form the backbone of ERP Processes.

Federated Data Fabric

A decentralized data architecture where data remains distributed across systems but is accessible in real time through AI agents. It replaces the need for centralized data warehouses.

Headless ERP

The deployment of an Agentic AI ERP platform "over the top" of ERP Software, turning the ERP Software into a backend functional "engine" with front-end Agentic AI technology taking over execution of automated business processes and functioning as the human user interface.

Hyperautomation

The concept of automating everything in an enterprise that can be automated. Enterprises that adopt Hyperautomation aim to streamline processes across their business using artificial intelligence (AI), robotic process automation (RPA) and other technologies to run without human intervention. AI agents may be used to automate not just repetitive tasks — but entire workflows and decision-making processes. Hyperautomation can also enable self-healing, goal-oriented and event-driven operations.

Intelligent Persona Experiences

Role-specific, AI-enhanced workspaces that serve as the primary interaction layer between human users and the agentic ERP ecosystem. They deliver contextual insights, personalized automation and decision support.

Outcome-Based Licensing

A monetization model where ERP usage is billed based on business outcomes, task completion, or agent activity rather than traditional seat-based licenses.

RPA

Robotic process automation is used to automate processes that otherwise would have to be performed manually.

Service Mesh

A distributed architecture that enables independent ERP modules to communicate and coordinate via APIs. It replaces the traditional monolithic ERP Software Suite with loosely coupled services, allowing for greater flexibility, scalability and integration across multiple vendors and platforms.

System of Action

A system that enables real-time decision-making and process execution across applications and departments. Powered by technologies like AI and automation, a System of Action orchestrates business outcomes by connecting data, insights and actions across the enterprise.

System of Record

A stable, authoritative source of truth for enterprise data and transactions. It ensures data integrity, compliance and consistency across core business functions such as finance, HR and supply chain.

About Rimini Street, Inc.

Rimini Street, Inc. (Nasdaq: RMNI), a Russell 2000® Company, is a proven, trusted global provider of end-to-end, mission-critical enterprise software support, managed services and innovative Agentic AI ERP solutions, and is the leading third-party support provider for Oracle, SAP and VMware software. The Company has signed thousands of IT service contracts with Fortune Global 100, Fortune 500, midmarket, public sector and government organizations who have leveraged the Rimini Smart Path™ methodology to achieve better operational outcomes, billions of US dollars in savings and fund AI and other innovation.

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