

CHAPTER 10

Agentic Artificial intelligence (AI) : The next frontier in Automation

Dr. V. Suganthi

Sri Ramakrishna College of Arts and Science - Coimbatore

Dr. K. Nagarajan

Nehru Institute of Engineering and Technology - Coimbatore

Mr. G. Jeevanantham

Nehru Institute of Engineering and Technology - Coimbatore

Dr. S. Sivakumar

Nehru Institute of Engineering and Technology - Coimbatore

ABSTRACT

Agentic AI is emerging as the next frontier in automation, addressing limitations in Robotic Process Automation (RPA) and unstructured data processing by enabling cognitive capabilities and dynamic decision-making for complex tasks. With its human-like architecture, Agentic AI processes unstructured data, applies reasoning, and uses memory to enhance task execution and reduce errors. Diverse workflow automation—sequential, parallel, hierarchical and iterative—allows organizations to implement tailored automation and AI-driven solutions that adapt to evolving business needs.

Keywords: *Agentic AI , Large Language Models (LLMs) , etc.*

INTRODUCTION

Artificial intelligence (AI) is entering a transformative phase, defined by intelligent autonomy. Leading this shift is agentic AI, a framework of autonomous systems capable of making decisions, initiating actions and adapting in real time to dynamic operational conditions. Unlike earlier models that required constant human intervention, these agents operate independently, learning continuously and executing tasks with minimal oversight. This evolution is powered by the perceive, reason, act and learn (PRAL) loop, a cognitive framework that enables agents to function with intelligence, accountability and adaptability. This iterative process transforms AI from static automation into dynamic, memory-driven intelligence that evolves with business needs.

As organizations adopt agentic AI across operations, they are deploying specialized agents tailored for critical business functions. These agents are not generic; they are purpose-built to address unique challenges and opportunities across the enterprise.

Agentic AI is the technology that powers AI agents so they can operate autonomously without constant human oversight. It functions as a comprehensive platform that facilitates seamless interaction between AI agents and humans, fostering a collaborative environment. This platform includes a suite of tools and

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services to help AI agents learn, adapt, and collaborate to efficiently handle complex, dynamic tasks. It is the next frontier of AI known for its ability to operate independently by setting goals, reasoning, making decisions, and adapting to dynamic situations.

One of the standout features of Agentic AI is that it simplifies the development and deployment of AI agents, making the integration of advanced AI into daily operations less resource-intensive. With this framework, businesses can customize AI agents to meet specific needs, whether those needs involve automating repetitive tasks, enhancing customer service, or driving strategic decision-making.

Where traditional AI systems are rigid and struggle with complex, multistep tasks, Agentic AI is flexible and adaptable. This flexibility ensures that AI agents can be tailored to a wide range of industries and applications. Through natural language processing (NLP), Agentic AI systems like Agent force can mimic human-like decision making, making them ideally suited to handle intricate and ever-changing business situations.

Over the past decade, Robotic Process Automation (RPA) has evolved from simple task-based tools into sophisticated hyper-automation platforms. These platforms integrate various AI services to meet diverse cognitive demands for end-to-end automation. However, real-world applications often fall short, with automation covering only 30% to 40% of processes, mainly targeting rule-based tasks. This limitation stems from several factors: Lengthy and costly AI service implementation, Dependence on training data, Dynamic and evolving business process steps, frequently changing application interfaces requiring ongoing maintenance. Organizations initially expected high return on investment from RPA by automating high-volume transactions. However, as Automation Centres of Excellence (COEs) have addressed rule-based tasks, identifying new use cases that meet ROI expectations has become challenging. These use cases often demand cognitive capabilities, cost-effectiveness, predictability and trust. Many struggle to sustain ROI as evolving business needs outpace technological readiness—calling for improved strategies to boost automation ROI.

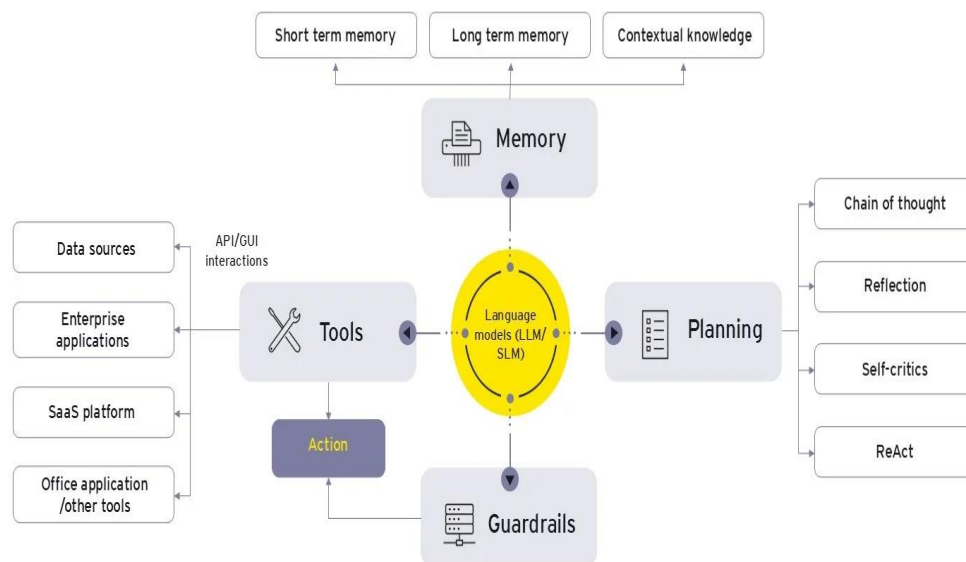


Figure 1: Agentic AI

Agentic AI addresses these limitations by processing unstructured data and enabling dynamic decision-making. It can independently perform tasks, use tools, and respond to feedback. Unlike GenAI, which offers

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insights, Agentic AI applies reasoning to achieve goals and execute actions, delivering measurable outcomes. Through cognitive automation, it strengthens business process optimization and intelligent process automation. With its evolving capabilities, Agentic AI benefits from innovation across the ecosystem, including start-ups, providing Automation COEs with new solutions to explore.

AGENTIC AI ARCHITECTURE

The architecture of Agentic AI mimics human behavior. When given a task, humans start with a goal, apply experience, analyze context and adjust based on available data.

Agentic AI follows a similar pattern, enabling human-like execution. With the right architecture, organizations can achieve significant automation ROI through streamlined workflows and comprehensive enterprise automation strategies.

At its core, Agentic AI leverages language models with cognitive capabilities to process unstructured data, reason and coordinate tasks. Understanding its components is key to building effective automation solutions. These include:

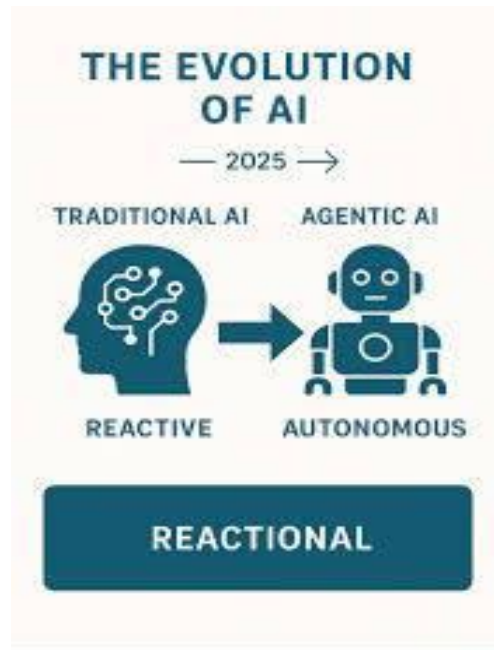


Figure 2: Traditional AI Vs Agentic AI

1. Planning and reasoning: When set up with instructions, language models use frameworks like 'chain of thoughts' or 'tree of thoughts' to create optimal plans based on context and input data. They apply reasoning through reflection loops, iterating actions until goals are met. In multi-agent scenarios, different language models can be assigned based on specific capabilities.
2. Tools: Agents interact with external systems using tools to execute planned activities. They utilize APIs or can be trained for GUI-based tasks, marking a significant advancement over Generative AI, which only provided insights.
3. Memory: Memory is vital for incorporating best practices and contextual knowledge. It allows agents to remember attempts and outcomes, enhancing execution. Agents typically have both short-term memory for

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specific transactions and long-term memory for enterprise data, enabling Retrieval Augmented Generation (RAG).

4. Guardrails: While agents' autonomy offers opportunities, it also risks incorrect execution. To mitigate errors from language models, guardrails must be established to define actions and when human approval is necessary.

CONSTRUCT OF AGENTIC SYSTEMS

Robust solution development is vital for Agentic AI. The solution designer leads by selecting agents, building workflows, and integrating tools. Much like a team lead assigns tasks and ensures access, designers configure agents with goals, instructions, guardrails and access to tools and memory. Each agent is built with capabilities that enhance reasoning and reduce hallucinations as follows:

1. Sequential workflow agents: Tasks are executed in a predetermined sequence, where the output of one activity serves as input for the next. Each agent is configured for a specialized activity and communicates only with the next agent. This method is used in well-defined processes requiring strict adherence to sequence (e.g., invoice processing: extract data, validate data, approval workflow, payment processing).

2. Parallel workflow: Tasks are executed simultaneously for greater efficiency and faster processing. Each agent operates independently, allowing concurrent work on different tasks. This approach is suitable for high-throughput situations where tasks can be processed independently (e.g., customer support: Agent A categorizes requests, Agent B reviews history, Agent C checks for live support).

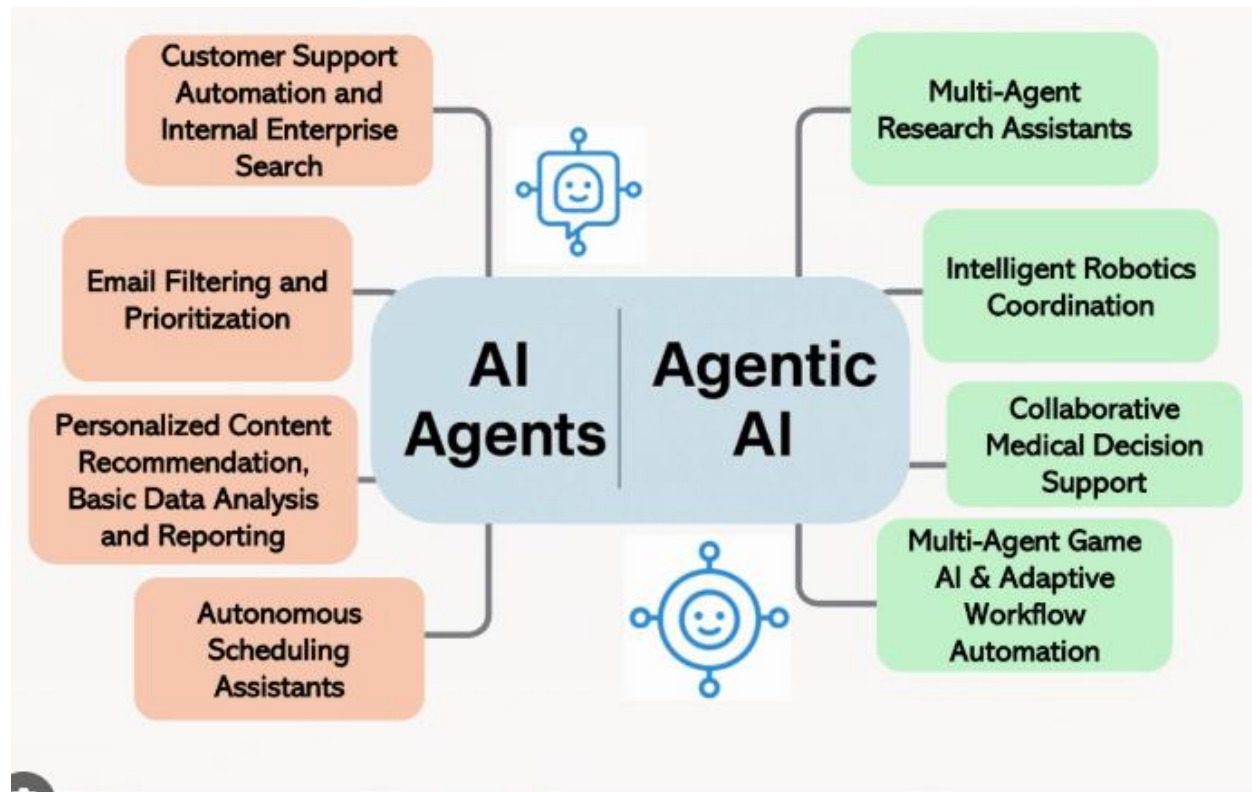


Figure 3: AI agents Vs Agentic AI

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3. Hierarchical workflow agent: Processes are categorized into groups of supervisory and subordinate tasks. This structure enables agents to manage complex processes with varying autonomy and decision-making capabilities. Each agent may oversee specific sub-tasks and have authority over lower-level agents, ideal for environments needing clear task assignment and supervision (e.g., document management: Agent A leads, supported by creation, review, and approval agents, along with archiving and compliance review agents).

4. Iterative workflow agent: Processing activities are executed in multiple iterations for continuous improvement. Agents can revisit previous steps based on feedback or results. This is ideal for scenarios needing ongoing adjustments based on performance metrics (e.g., app builder agents: Iteration 1 builds code; Testing Agent provides feedback. Iteration 2 redefines code based on feedback, repeating until the goal is achieved).

The choice of workflow depends on the nature and complexity of the business process. As organizations transition from automation to emerging technologies, Agentic AI represents the new frontier, bridging gaps left by traditional automation and enriching the technology landscape. With its autonomous decision-making, dynamic decision making and robust architecture, Agentic AI has the potential to unlock efficiencies and deliver significant value to organizations.

THE NEW ARCHITECTURE OF THE INTELLIGENT ENTERPRISE

As agentic AI scales across the enterprise, agents are rapidly evolving into the functional equivalents of a distributed nervous system: responsive, intelligent, and deeply integrated. At the user interface layer, agents can generate dynamic, intent-aware UIs in real time—whether you're coding, analyzing a dataset, writing an article, or managing workflows. No two interfaces need to be the same, but instead they can shift based on context, role, and task, making digital experiences more fluid and personalized than ever before.

Under the surface, agents increasingly own core application logic. From code generation to test case design, deployment orchestration, and exception handling, agentic systems are collapsing the traditional SDLC into an interactive, continuous process. Data pipelines, once rigid and manually curated, will soon be agent-driven and able to aggregate across structured and unstructured sources, apply business logic, and produce real-time summaries or insights on demand. In this new architecture, product development is accelerated to a never before seen pace as simple English becomes the new programming language, replacing manual coding as the primary application building modality.

HOW DOES AGENTIC AI WORK?

Agentic AI operates through a core loop of components that allow autonomous agents to pursue a goal from start to finish. This process is powered by a central large language model (LLM) that acts as the agent's "brain," enabling it to reason, plan, and make decisions. The operational core of Agentic AI relies on a few fundamental concepts: Planning: Breaking a complex, high-level goal (e.g., "Resolve the customer's billing dispute") into a sequence of smaller, manageable, executable steps (e.g., "Search the knowledge base," "Verify the payment history in the CRM," "Generate a resolution email"). Reasoning: The ability to evaluate the current situation, understand the task, select the right tools for the job, and determine the next best action. This is where the LLM's intelligence is crucial. Tool Use: The agent's ability to connect with external systems through APIs or other interfaces to perform actions. These "tools" can be anything from a CRM system to a coding environment or a data query engine. Memory: The system must retain context about its past actions and observations to ensure a coherent, multi-step workflow. This includes short-term memory (context for the current step) and long-term memory (learned information and past outcomes). Reflection: The process of observing the result of an action, comparing it to the goal, and adjusting the plan if the result was unsatisfactory. This is the mechanism for self-correction and continuous improvement. This process

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allows the AI agent to solve complex problems through a five-step, continuous loop: Perceive: The AI agent gathers and decodes information from its environment, such as user prompts, sensor data, or entries in a database. It identifies the goal and the current state of its environment. Reason: The LLM guides the reasoning process—understanding the task, crafting an initial solution plan, and coordinating specialized models or tools for required actions. Act: The agent performs a task by connecting with external systems (like a CRM, a financial ledger, or a manufacturing control system) through APIs (Tool Use). Built-in guardrails ensure safety and compliance. Learn (Observe & Reflect): The agent observes the outcome of its action. It reflects on whether the action moved it closer to the goal. If not, it learns from the failure and adapts its strategy for the next attempt. Iterate & Collaborate: This continuous loop drives refinement. In multi-agent systems, multiple specialized agents may collaborate, sharing information and coordinating their actions to solve larger, more intuitive, and complex problems.

BENEFITS OF AGENTIC AI

Agentic AI represents a leap forward in AI capabilities, offering businesses advantages that older AI systems simply cannot match. Enhanced adaptability and efficiency: One of its standout advantages is the ability of Agentic AI to learn and adapt to dynamic business environments. By automating complex, multi-step tasks and making decisions independently, AI agents significantly speed up operational processes. This autonomy saves time, reduces operational costs, and minimizes the potential for human error in routine tasks. The core ability to reason and self-correct ensures improved overall performance and makes it an indispensable asset for comprehensive workflow automation.

Increased Productivity and Strategic Focus: Agentic AI automates repetitive, time-consuming tasks and streamlines complex workflows, effectively providing scalable digital labor. This frees up human teams from administrative burden, allowing them to shift their focus to strategic, high-value work that requires creativity, empathy, and specialized human insight. With real-time decision-making and continuous learning, AI agents complete tasks faster and with higher accuracy, boosting overall employee and team efficiency.

Informed, Real-Time Decision-Making: Autonomous agents process vast streams of data from various sources in real-time, far faster than any human team could. By detecting subtle patterns, synthesizing information across systems, and forecasting outcomes, they provide actionable insights for smarter, more confident decisions. This capability ensures that business decisions are always data-driven and timely, providing a significant competitive edge in fast-moving markets.

Deep Personalization at Scale: Agentic AI has the potential to create profoundly personalized and engaging interactions for customers. By mimicking human-like decision-making and having access to full customer context — including past interactions, preferences, and intent — AI agents can offer intuitive and seamless experiences. Whether in personalized customer service, targeted marketing, or tailored financial advice, the ability to provide hyper-personalized experiences leads to higher user satisfaction and long-term loyalty.

WHAT'S NEXT FOR AGENTIC AI?

Agentic AI is well-positioned to fundamentally revolutionize business operations. Its compatibility with existing systems, ability to create personalized user experiences, and robust security features make it an indispensable tool for the future. Gartner predicts that “by 2028, 15% of day-to-day work decisions will be made autonomously through Agentic AI, up from 0% in 2024.”

The potential for Agentic AI to streamline operations and enhance customer experiences is immense. Imagine a world where AI agents can seamlessly handle complex customer inquiries, adapt marketing strategies in real-time, and optimize supply chains with unparalleled efficiency. The most exciting aspect

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is the continuous learning and improvement over time. As these AI agents accumulate more data and experience, their decision-making abilities will become increasingly sophisticated. This continuous learning process will help businesses stay ahead of the curve, responding quickly to market changes and customer needs. The integration of Agentic AI with Data 360 will be a game-changer, providing seamless access to vast amounts of information and enabling more informed and timely decisions. This technology has the potential to reshape entire ecosystems, fostering collaboration and innovation on a global scale. As more organizations adopt this technology, we expect to see the emergence of new business models and partnerships that fully utilize the unique capabilities of Agentic AI.

Agentforce, as an example of Agentic AI, is the agentic layer of the Salesforce Platform that helps companies get more done, enables representatives to build better customer relationships, and serves as an always-on digital workforce for AI success. The future of Agentic AI is not just about what is possible today, but the endless possibilities that lie ahead for every industry.

CONCLUSION

Agentic AI represents a fundamental paradigm shift from traditional automation, moving the enterprise beyond narrow, rule-based workflows into the era of autonomous decision-making. While previous generations of Robotic Process Automation (RPA) excelled at repetitive, structured tasks, Agentic AI introduces cognitive capabilities—including reasoning, long-term memory, and self-correction—that allow systems to perceive context and pursue high-level objectives independently. Key Strategic Takeaways: Intelligence as Infrastructure: By 2030, Agentic AI will likely transition from an experimental innovation to the primary working layer of enterprise ecosystems, effectively becoming a "new operating system" for the modern business. The "Human-on-the-Loop" Shift: The future of work is not a binary choice between human and machine. Instead, roles will evolve toward orchestration and oversight, where humans define the vision and ethical guardrails while agents provide the scale of execution. Outcome-Based Value: Organizations are shifting from measuring success by task completion to focusing on goal attainment. This transition is projected to automate up to 70% of office tasks by 2030, drastically reducing transaction costs and shortening decision cycles from days to seconds. Governance as a Prerequisite: The same autonomy that drives efficiency also introduces risks, such as goal divergence and security vulnerabilities. Success requires a robust trust infrastructure, combining active human oversight with rigorous governance and auditability. Ultimately, the next digital revolution will be powered not just by automation, but by agency. For organizations to thrive in this landscape, they must move beyond "AI as a tool" and embrace it as a collaborative partner, redesigning workflows to harness the full potential of systems that don't just follow instructions—they act with purpose.

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