Sema4.ai

AI agents: Top 8 practical use cases

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Chapter 1:

The AI revolution and the rise of intelligent agents

The business landscape is undergoing a seismic shift, driven by an unprecedented AI revolution. No longer just a tool for automation, AI has become an indispensable strategic asset across industries, fundamentally redefining how businesses operate, compete, and create value.

The statistics are staggering: global AI adoption has surged by 270% over the last four years, with 9 out of 10 leading businesses now investing in AI. By 2030, AI is projected to contribute $15.7 trillion[1] to the global economy, more than the current output of China and India combined.

This AI boom, fueled by the convergence of big data, advanced algorithms, and exponential growth in computational power, is reshaping entire industries. In healthcare, AI is revolutionizing diagnostics and drug discovery, potentially saving 400,000 lives annually by 2025. In finance, AI-powered systems are detecting fraud 95% more accurately than traditional methods. Manufacturing is seeing a 20% reduction in maintenance costs and up to 50% reduction in production time through AI-driven optimizations. More recently, the AI innovations have accelerated even further with advancements in Generative AI (GenAI), a technology branch that has democratized AI access to everyone.

The initial wave of AI innovations came in the form of ChatGPT(chatbots) and copilots - AI-assisted tools designed to augment human capabilities. While powerful, these copilots have limitations, requiring constant oversight and struggling with complex, contextual tasks.

> **A significant 64% of businesses believe that artificial intelligence will help increase their overall productivity.**
>
> - Forbes Advisor survey.

Enter AI agents - the next transformative step. Unlike copilots, AI agents operate with higher autonomy, capable of understanding context, making decisions, and executing complex tasks with minimal human intervention. They can perceive their environment, learn from interactions, and adapt their behavior to achieve specific goals. **While copilots assist, agents act.**

This leap from assistance to agency represents a paradigm shift in how businesses leverage AI. As we explore in subsequent chapters, this shift offers unprecedented opportunities for efficiency, innovation, and competitive advantage. Organizations that harness the power of AI agents stand to gain a decisive edge in the AI-driven future that is rapidly becoming our present reality.

1 https://www.pwc.com/gx/en/issues/data-and-analytics/publications/artificial-intelligence-study.html

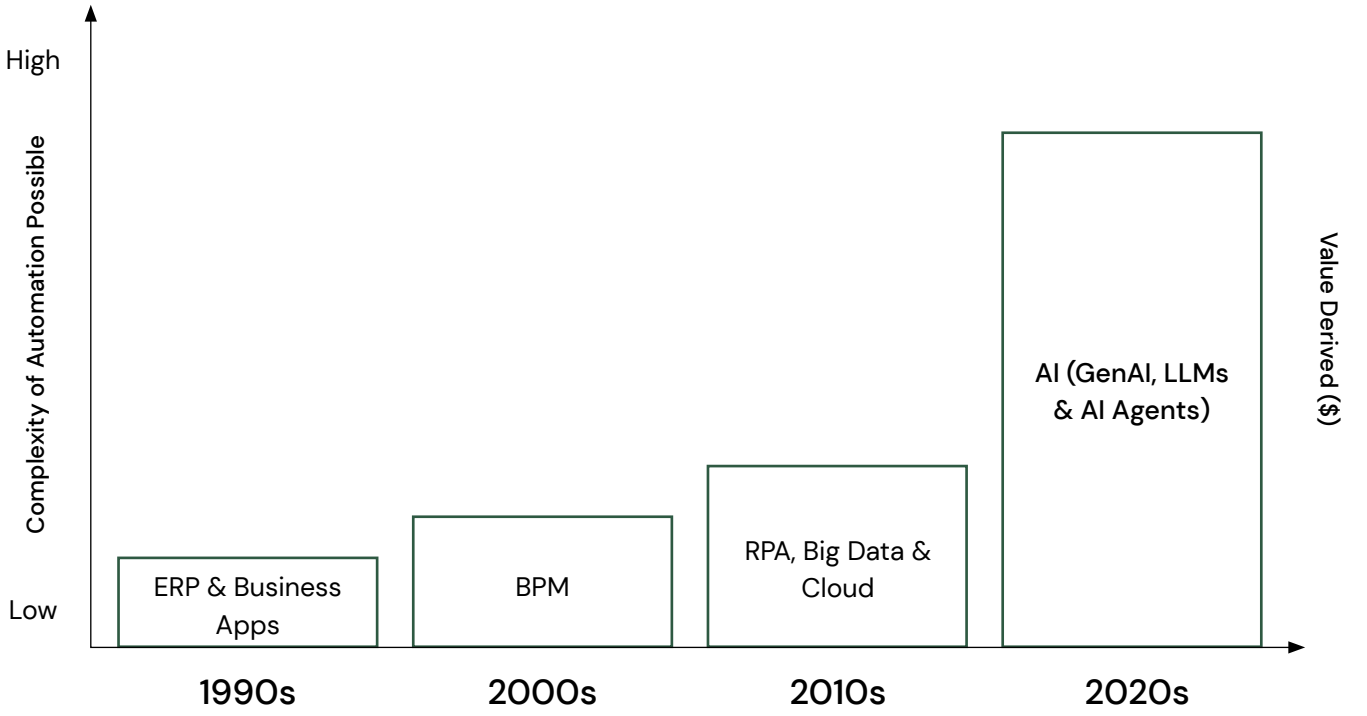
Chapter 2:
Understanding AI agents

What are AI agents?

AI agents are autonomous software entities designed to perceive their environment, make decisions, and take actions to achieve specific goals within the environment they operate. Unlike technologies such as Robotic Process Automation (RPA), AI agents leverage machine learning and other AI technologies to adapt and make complex decisions across multiple workflows easily.

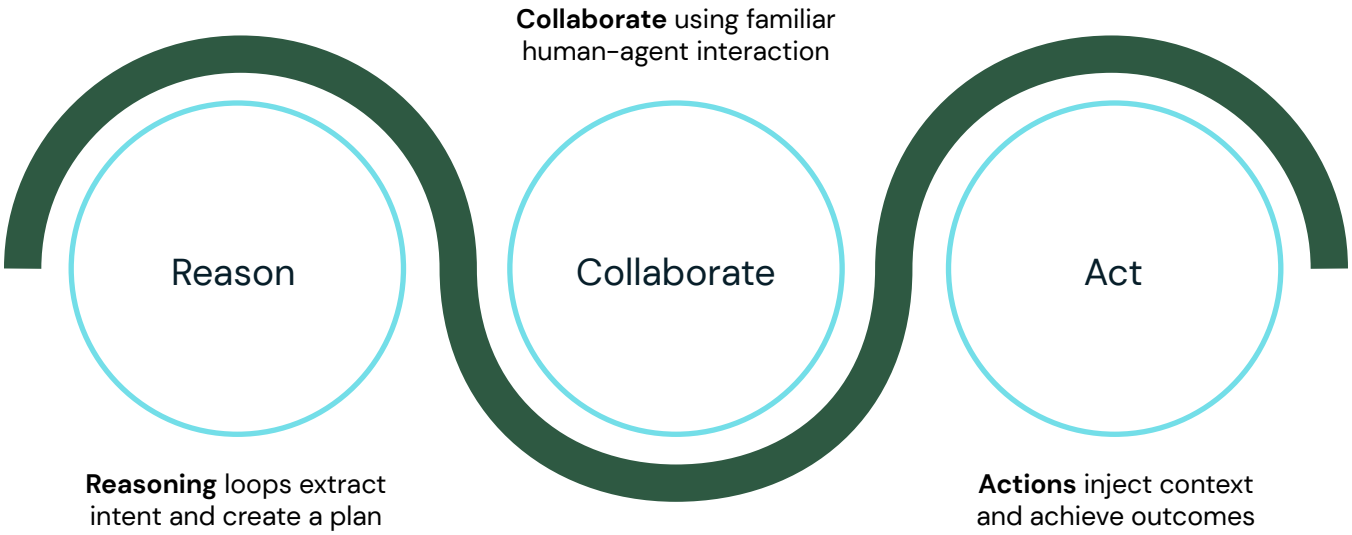
Agents are purpose-built for specific roles and so, each one of them varies in terms of adaptability, proactiveness, managing complex goals, and autonomy levels.

AI agents can automate highly complex, valuable work



How AI agents work

The functionality of AI agents revolves around a continuous cycle of reasoning, collaboration, and action:



Reasoning – Agents follow a human-like thought process of breaking down work into smaller sub-tasks and plans. They operate based on instructions, and training that provide guardrails for keeping the agent focused on its mission. Agents are "trained" to perform their work by providing them instructions in English rather than teaching them with thousands of examples like we have come to expect in machine learning.

Collaboration – Agents use natural language to communicate and collaborate with everything around them and seamlessly integrate into how we already do work. In fact, even agent-to-agent (multi-agent) collaboration is coordinated through natural language. This makes human-to-agent interactions feel natural. An agent can reach out to a human colleague through regular messaging apps, like Teams or Slack, or through voice interaction when it needs their feedback and guidance – just like any other colleague would.

Action – Agents utilize various tools and actions to perform tasks and enhance their problem-solving capabilities. Tools such as a web browser provide open-ended functionalities that allow agents to gather real-time information. Actions extend these capabilities, enabling agents to interact with external data sources and real-world applications effectively. For example, unlike Large Language Models (LLMs) or chatbots, agents can access databases for up-to-date information, send and receive emails, or update a CRM system, thus augmenting their reasoning and adaptability to user needs.

The role of humans and Subject Matter Experts (SMEs) in enabling agents is crucial. They provide:

1. Initial training data and domain knowledge
2. Ongoing supervision and feedback
3. Definition of goals and boundaries
4. Interpretation of complex or edge cases

Chapter 3:

Top 8 practical use cases for AI agents

1 | Compliance

Compliance is a critical area for many industries, and an AI agent can help ensure that your organization stays up-to-date with the latest regulations, avoiding costly penalties and reputational damage. This agent produces timely reports on changes in regulatory updates, such as export controls, and allows users to query them.

Current challenges in regulatory compliance:

- Rapidly changing regulatory landscapes
- Increasing complexity of compliance requirements
- Resource-intensive monitoring and reporting processes
- Risk of human error in the interpretation and application of rules

Agents with continuous learning capabilities are ideal for compliance tasks. These agents can maintain up-to-date models of regulatory requirements and organizational processes.

Key benefits:

- **Real-time monitoring**: agents can continuously scan operations for compliance issues
- **Risk assessment**: predictive analytics to identify potential compliance risks
- **Automated reporting**: generation of compliance reports with minimal human intervention
- **Adaptive rule interpretation**: ability to understand and apply new regulations quickly

Potential impact on compliance processes:

- Reduction in compliance-related errors and oversights
- Decreased cost of compliance management
- Improved ability to handle complex, multi-jurisdictional compliance requirements
- Enhanced audit trails and transparency

2 | Human resources

Onboarding is an important process for any organization, as it sets the tone for an employee's experience and can impact retention. An AI agent can streamline this process, ensuring that new hires have a smooth and efficient onboarding experience while reducing the administrative burden on HR staff. This agent can automate the end-to-end onboarding process, including creating accounts for company systems and engaging with hiring managers to complete processes.

Pain points in current HR practices:

- Time-consuming recruitment and screening processes
- Potential for bias in hiring decisions
- Inefficient employee onboarding and training
- Challenges in performance management and employee engagement

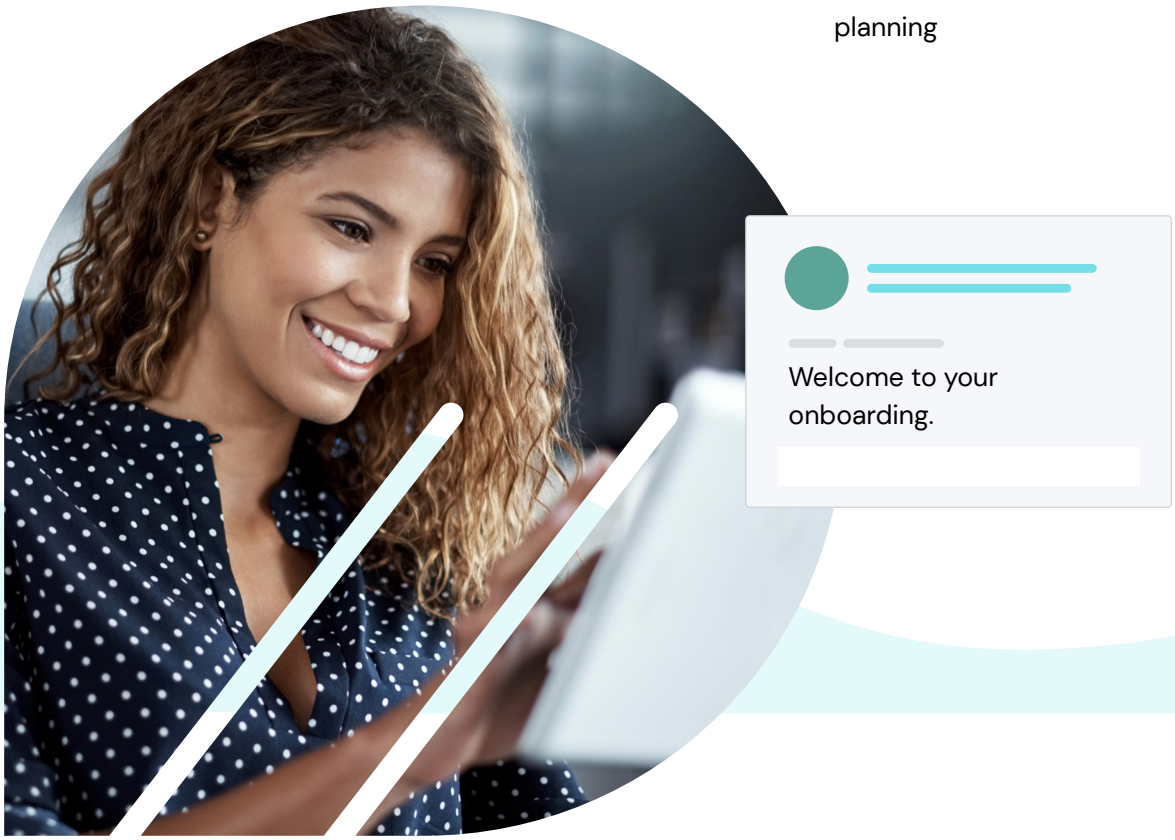
Agents with Natural Language Processing (NLP) capabilities are well-suited for HR tasks. These agents can balance multiple objectives such as finding the best candidates while ensuring diversity and reducing time-to-hire.

Benefits:

- **Unbiased screening**: AI agents can evaluate candidates based on objective criteria
- **Improved employee experience:** personalized onboarding and training programs
- **Enhanced performance management**: continuous feedback and development tracking
- **Predictive analytics**: forecasting employee turnover and identifying retention strategies

Transforming HR with AI agents:

- Shift from reactive to proactive HR management
- More strategic allocation of HR resources
- Improved employee satisfaction and retention
- Data-driven decision-making in workforce planning



3 | Finance

Complex invoice reconciliation work has rules and standard operating procedures that can be turned into agent workflows. Manually scrutinizing a 30-page invoice and matching it against internal systems might take hours for a human, but agents can free up this time for more productive work. By measuring the number of invoices successfully reconciled by the agent, you can track its effectiveness. This workflow is easy to expand to upstream and downstream agents, creating a more comprehensive financial management solution.

Complexities in financial operations and reporting:

- High volume of transactions requiring accurate processing
- Complex regulatory requirements for financial reporting
- Need for real-time financial analysis and forecasting
- Challenges in detecting fraudulent activities

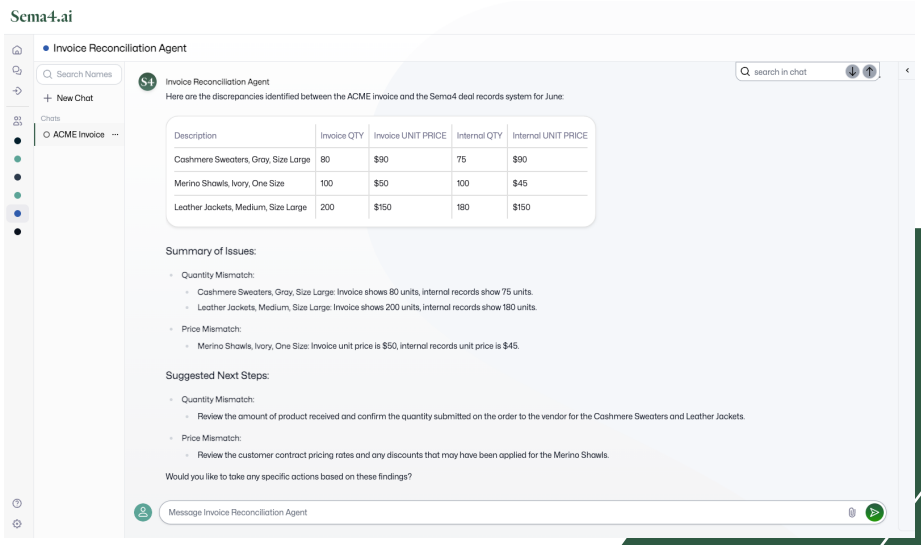
Learning agents with advanced pattern recognition capabilities are ideal for finance tasks. These agents can adapt to changing financial conditions and improve their accuracy over time.

Advantages:

- **Automated invoice processing**: rapid, accurate handling of invoices and payments
- **Fraud detection**: real-time monitoring of transactions for suspicious patterns
- **Automated reporting**: generation of financial reports compliant with regulatory standards
- **Predictive financial modeling**: accurate forecasting based on historical data and market trends

Enhancing financial decision-making with AI:

- More accurate and timely financial insights
- Reduced operational costs in financial processes
- Improved regulatory compliance and fraud prevention
- Enhanced ability to respond to market changes



4 | Marketing

Social media teams are always on the lookout for fresh content by monitoring competitors, customers, analysts, and industry leaders to stay ahead of the curve and create more relevant and engaging content for your audience. An agent can create timely suggestions for social media posts and reactions. It understands the company, brand, and purpose of the post to optimize content accordingly. By measuring the growth of selected metrics (engagement, followers, signups, leads), marketing teams can gauge its success.

Challenges in modern marketing landscapes:

- Increasing complexity of customer journeys
- Need for personalized marketing at scale
- Difficulty in measuring marketing ROI
- Rapidly changing consumer preferences and trends

Goal-based agents with advanced NLP and predictive analytics capabilities are well-suited for marketing tasks. These agents can optimize marketing strategies to achieve specific business objectives.

Benefits:

- **Targeted campaigns**: personalized marketing messages based on individual customer profiles
- **Real-time optimization**: continuous adjustment of marketing strategies based on performance data
- **Predictive customer insights**: forecasting future trends and customer behaviors
- **Automated content creation**: generation of personalized marketing content at scale

Revolutionizing marketing strategies with AI agents:

- Shift from segment-based to individual-based marketing
- Improved marketing ROI through more efficient resource allocation
- Enhanced customer experiences leading to improved loyalty
- Ability to rapidly adapt to changing market conditions

5 | Case intelligence

Customer support operations teams are always challenged when it comes to getting a 360-degree view of the customer. Regardless of the CRM they are using, there are multiple facets of customer knowledge siloed across different systems of record, making it difficult for them to make effective conversations and decisions. An AI agent can support backend processes allowing teams to get a holistic view based on the latest data or context from different systems of record and suggest the next best action. It can summarize incoming customer issues/tickets, perform context lookups across enterprise knowledgebases, and suggest optimal solutions and next steps.

Current issues in case intelligence across customer operations teams:

- Inconsistent service quality across different channels
- Long wait times during peak periods
- Difficulty in handling complex or unique customer issues
- Challenges in maintaining up-to-date knowledge bases

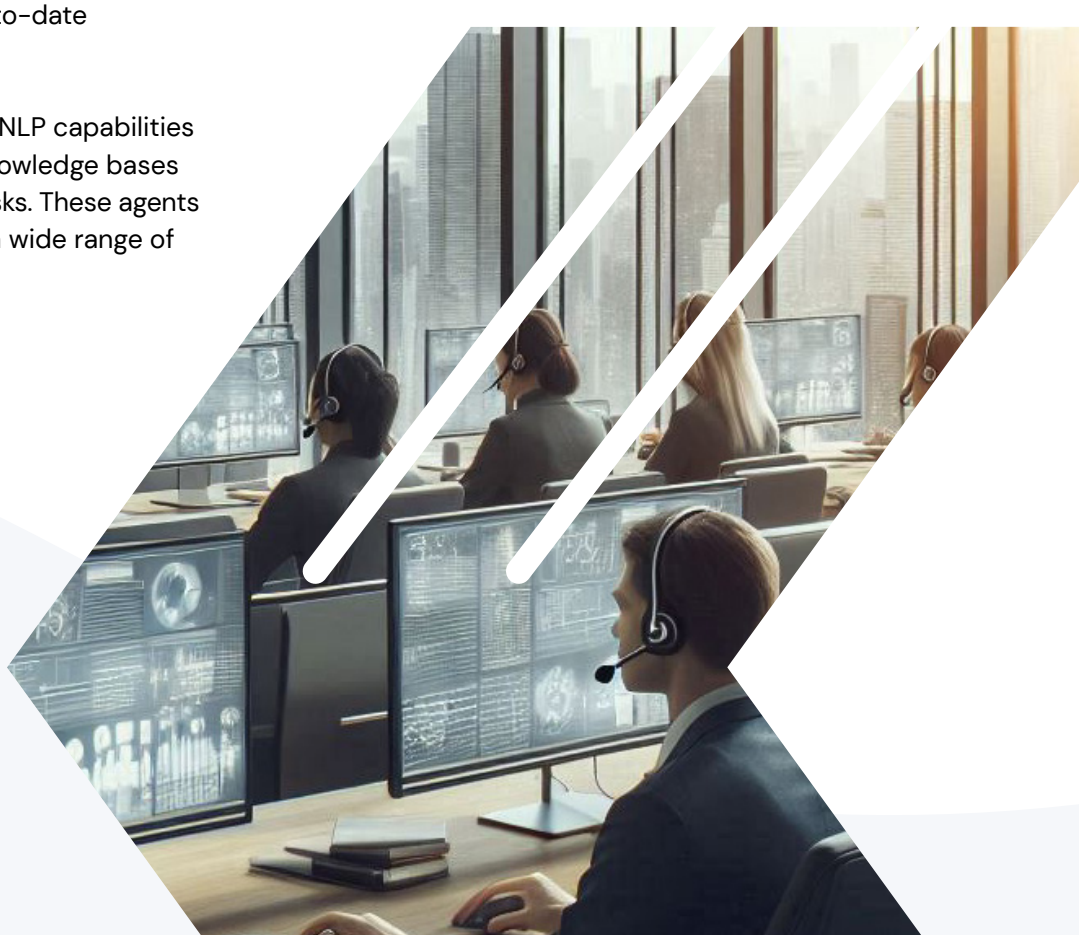
Model-based agents with strong NLP capabilities and access to comprehensive knowledge bases are ideal for customer support tasks. These agents can understand and respond to a wide range of customer queries.

Advantages:

- **24/7 availability**: providing consistent support regardless of time or day
- **Scalability**: ability to handle multiple customer interactions simultaneously, reducing workload on support staff for common issues
- **Consistent customer experiences**: ensuring faster ticket resolution and providing uniform responses based on best practices
- **Continuous learning**: improving responses based on customer interactions and better utilization of company knowledge

Transforming customer experiences with AI agents:

- Reduced wait times and improved first-contact resolution rates
- Enhanced customer satisfaction through personalized support
- More efficient allocation of human support staff to complex issues
- Improved gathering and analysis of customer feedback for product/service improvements



6 | Contract Management

Contract management is a critical yet challenging area for every medium to large enterprise that deals with dozens of vendors. While the enterprise may manage a knowledge base for understanding and managing its contracts, it takes a lot of human effort to review them whenever a contract comes up for renewal or when something changes. An AI agent can streamline the entire contract lifecycle, from initial drafting to renewal negotiations. This agent can parse complex legal language, track key dates and obligations, and ensure compliance with terms across thousands of contracts simultaneously.

Current challenges in contract management

- Manual review and analysis of complex legal documents
- Risk of missing critical deadlines and renewal dates
- Difficulty extracting and tracking key terms across contracts
- Time-consuming contract creation and negotiation processes

AI agents with advanced document processing and legal reasoning capabilities are ideal for contract management. These agents can maintain comprehensive contract knowledge bases and provide intelligent insights across the entire contract lifecycle.

Key benefits

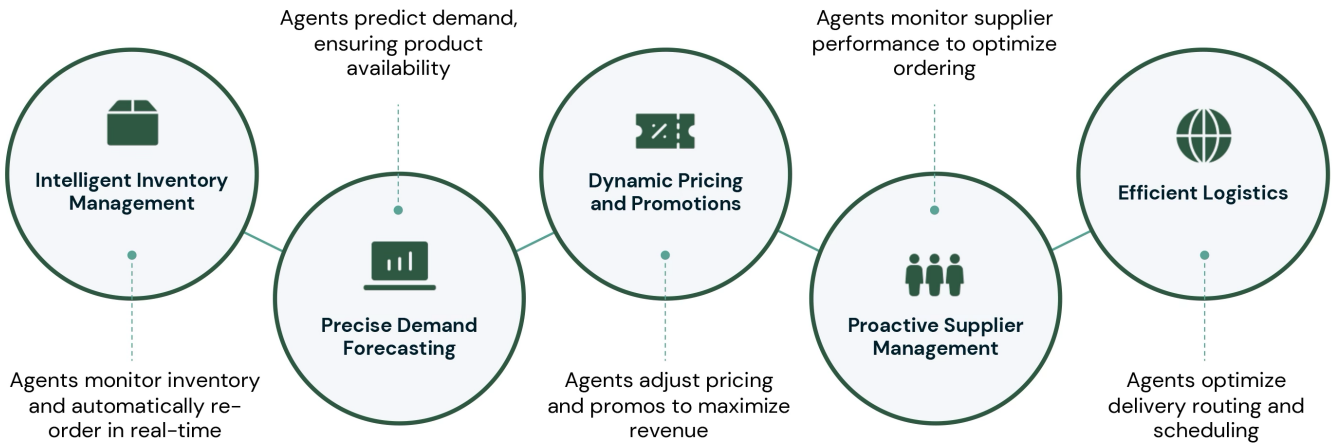
- **Automated contract analysis**: intelligent extraction of key terms, obligations, and clauses
- **Risk assessment**: proactive identification of potential compliance issues and conflicts
- **Deadline tracking**: real-time monitoring of renewal dates, milestones, and obligations
- **Template optimization**: creation of standardized templates based on best practices

AI's potential impact on contract processes

- Reduction in contract processing time from 2 days to just 20 minutes
- Decreased legal risks through consistent compliance monitoring
- Improved negotiation outcomes through data-driven insights
- Enhanced visibility into contract portfolio performance

7 | Supply Chain Management

Supply chain operations involve complex networks of suppliers, manufacturers, and distributors. This space has been the eye of optimization efforts for the last three or four decades. It requires significant human resources and automation to solve complex problems around inventory, supply, and demand. An AI agent can optimize end-to-end supply chain management by predicting demand, managing inventory levels, and identifying potential disruptions before they impact operations. This agent can process vast amounts of supply chain data to provide actionable insights for better decision-making.



Current challenges in supply chain management

- Complex multi-tier supplier relationships
- Difficulty predicting and responding to disruptions
- Inefficient inventory management and optimization
- Lack of real-time visibility across the supply chain

Predictive agents with machine learning capabilities are well-suited for supply chain tasks. These agents can analyze patterns from multiple data sources to forecast demand and optimize operations. They can also automate the operations that are redundant for humans.

Advantages:

- **Demand forecasting**: accurate predictions based on historical data and market trends
- **Inventory optimization**: automated reorder points and safety stock management
- **Supplier risk assessment**: continuous monitoring of supplier performance and reliability
- **Disruption prediction**: early warning systems for potential supply chain risks

Enhancing supply chain resilience with AI

- Improved customer satisfaction through better product availability
- Reduced carrying costs and waste through optimized inventory levels
- Enhanced supplier relationships through data-driven collaboration
- Increased agility in responding to market changes and disruptions

[2] https://aimagazine.com/articles/bcg-how-to-utilise-ai-effectively-for-cost-transformation

8 | Insurance Claims Processing

Insurance claims processing involves complex evaluation of policies, damages, and risk assessments. Most of the time taken by insurance companies when processing a claim is in the initial evaluation and validation phase. This is due to the massive volume of documentation that needs to be sifted to get the correct information and validate it across multiple systems. An AI agent can transform this traditionally manual and time-intensive process by automatically processing claims, validating coverage, and detecting fraud patterns while ensuring fair and timely settlements for legitimate claims

Current issues in insurance claims processing

- Lengthy manual review and approval processes
- Inconsistent claim evaluation and settlements
- Challenges in fraud detection and prevention
- High operational costs and resource requirements

Learning agents with pattern recognition and risk assessment capabilities are ideal for insurance claims. These agents can process multiple claim types while continuously improving their accuracy through machine learning. Recently, agents with multi-modal processing capabilities can review claims data submitted as documents, images, audio, and video as well.

Advantages:

- **Automated claim triage**: intelligent routing of claims based on complexity and risk factors
- **Fraud detection**: real-time analysis of claim patterns to identify suspicious activities
- **Policy validation**: instant verification of coverage and deductibles
- **Settlement optimization**: fair and consistent claim settlements based on historical data

Transforming insurance operations with AI agents

- Up to 50% faster claims resolution leading to improved customer satisfaction
- Reduced fraudulent payouts through advanced detection algorithms
- Lower operational costs through process automation
- Enhanced risk assessment capabilities for better underwriting decisions

[3] https://www.bcg.com/publications/2025/how-insurers-can-supercharge-strategy-with-artificial-intelligence

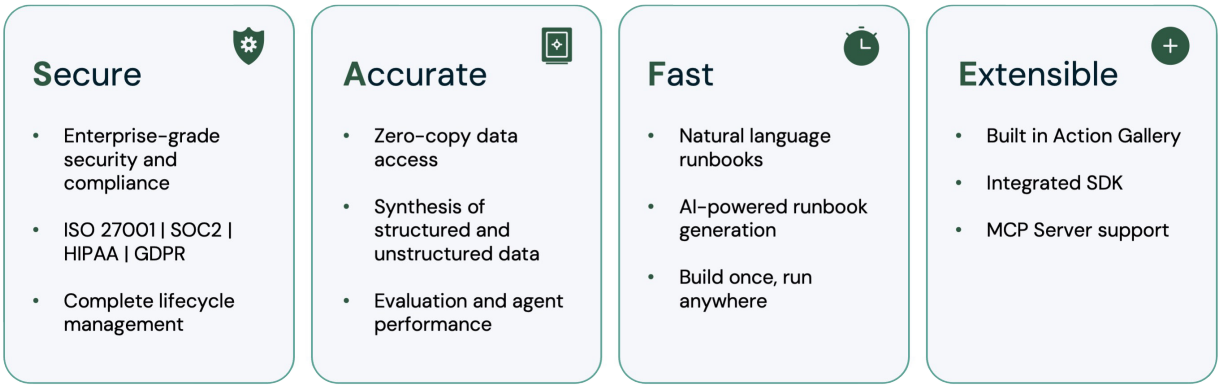
Chapter 4:

Sema4.ai - building SAFE agents

Introduction to Sema4.ai

Sema4.ai enables your enterprise to build, run, and manage intelligent AI agents that transform how people work. A lot of businesses are trying to harness the true potential of AI as a workforce collaborator. Sema4.ai makes it easier to tap into that power using AI agents that maximize efficiency and productivity in every aspect of your business. The agents can take on repetitive or knowledge work tasks and automate critical processes that were previously impossible to automate. With Sema4.ai, your teams can train AI agents that are built on your business processes, understand your data and applications, and perform the work you assign them.

While the possibilities exist to cater agents to many different use cases, it is pertinent to understand if they are safe, accurate, fast, and extensible (SAFE). The Sema4.ai Enterprise AI Agent Platform ensures comprehensive security and governance by providing controls to define guardrails and ensure compliance. The platform can provide agents with accurate extracted information from messy, unstructured text. Sema4.ai empowers business users to build agents quickly using natural language to describe the problem. Finally, the platform provides the necessary extensibility to ensure that your agents work seamlessly with other enterprise apps and data.



Key features of the Sema4.ai platform include:

- Author and train AI agents using plain English to describe their processes in detail
- Sai, an AI-powered guide, to streamline the entire agent-building process
- Use pre-built actions or the built-in MCP capabilities to connect agents with enterprise applications and systems
- Build, test, and validate actions using the Sema4.ai SDK and an intuitive developer IDE
- Enable pluggability of your choice of LLMs into the semantic reasoning layer
- Allow for human-in-the-loop planning and execution for consequential actions
- Get line-of-sight and access to all data sources and backend systems through UI, API and CLI
- Leverage document intelligence capabilities for unstructured document processing
- Share actions and agents with the rest of the organization using the Action Gallery
- Deploy and manage agents with Sema4.ai's Control Room for centralized management
- Gain assurance with comprehensive enterprise readiness, security, and governance

How Sema4.ai addresses the top use cases

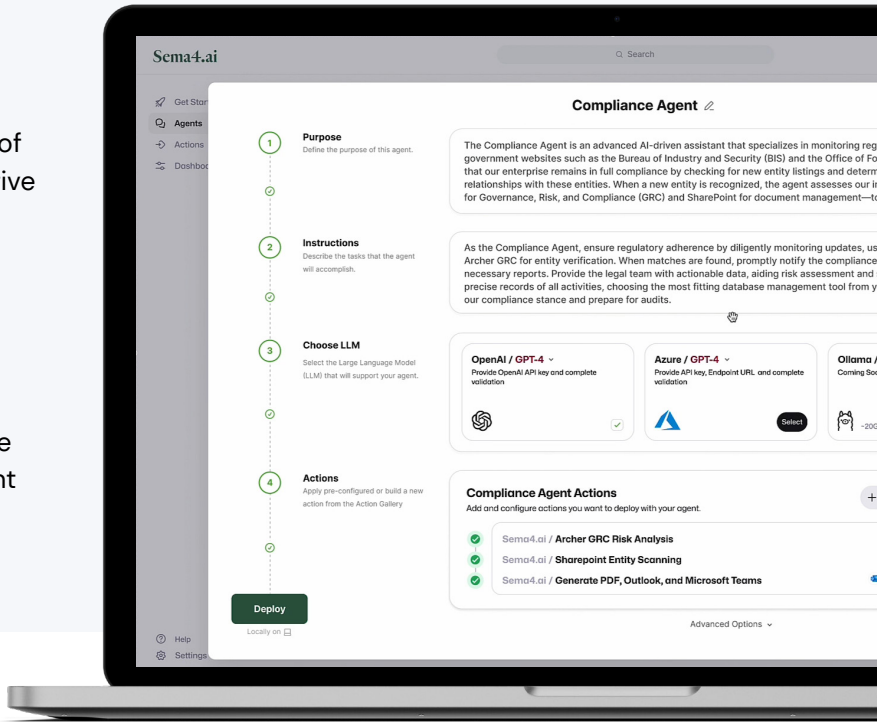
Sema4.ai enables you to build, manage, and run agents at enterprise scale:

- **Improve efficiency and business performance** - Sema4.ai agents quickly automate and execute redundant, tedious, undifferentiated work that is largely manual today
- **Empower LoB owners with easy-to-use technology** - Sema4.ai enables LoB owners to describe their processes and rules in plain English, which can then be mapped into actions.
- **Break down data silos and foster collaboration** - Sema4.ai supports seamless integrations with enterprise systems, enabling developers to build custom actions specific to their business using the Sema4.ai SDK.
- **Lower operational costs and risk** - Sema4.ai's Control Room lets you centrally manage and secure hundreds of agents so that you can focus on innovation rather than administration.

When should you choose Sema4.ai

Here are some of the scenarios when you should choose Sema4.ai to build and automate agents -

- When you want to build agents without making it a complex IT project.
- When you want to build agents by leveraging the help of your LOB owners and having them document the process in plain English.
- When you can automate practically 90% or all of the tedious, redundant tasks with agents and give your employees more time to focus on value-added work.
- When you want to leverage existing documentation or SME knowledge of Standard Operating Procedures (SOPs) to automate an end-to-end process.
- When you need tight collaboration between the LOB owners and the architects to build an agent to automate a cross-functional process.
- When your processes require you to treat documents with more intelligence to extract, parse, modify, augment, and process that data.
- When you need to build, execute, secure, and manage hundreds of agents across the enterprise.



Next steps

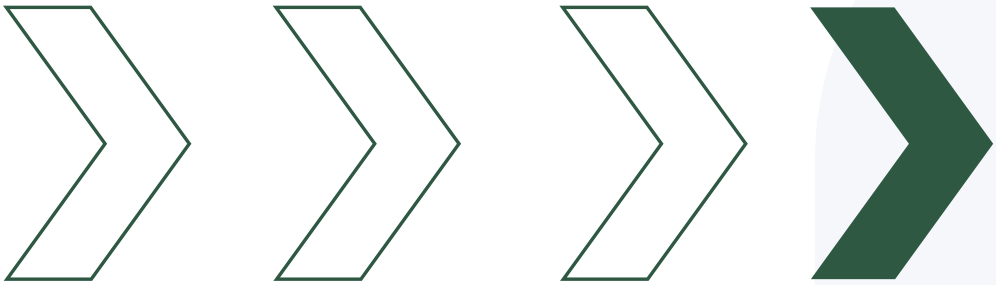
The advent of AI agents marks a significant milestone in the evolution of business technology. As explored throughout this eBook, these autonomous, intelligent entities have the potential to revolutionize operations across various sectors, from compliance and human resources to finance, marketing, and case intelligence.

The key advantages of AI agents - their ability to operate continuously, learn and adapt, and handle complex tasks with minimal human intervention - position them as powerful tools for enhancing efficiency, reducing costs, and driving innovation. As businesses face increasingly complex challenges in a rapidly changing global landscape, the strategic deployment of AI agents can provide a crucial competitive edge.

However, the journey toward implementing AI agents is not without its challenges - the need for business and IT to collaborate when building agents, the ability for SMEs to be able to describe their business processes without complex technology tooling, the need for pre-built templates for agent actions, and many more. This is where platforms like Sema4.ai come into play, offering robust, scalable solutions that can accelerate the development, adoption, and management of AI agents while ensuring security, compliance, and ease of integration.

As we look to the future, it's clear that AI agents will play an increasingly central role in business operations. Organizations that embrace this technology early and effectively will be well-positioned to lead in their respective industries.

The call to action is clear: Now is the time to explore the potential of AI agents for your business. Whether you're looking to streamline operations, enhance customer experiences, or drive innovation, Sema4.ai offers the right platform and expertise to help you harness the power of AI agents. Take the first step today in your AI agent journey and position your organization at the forefront of the AI revolution.



Written in partnership with Dinesh Chandrasekhar, chief analyst and founder of Stratola.

www.stratola.com

Sema4.ai

Sema4.ai believes enterprise AI agents are the “killer app” of the AI era—revolutionizing how knowledge work is executed. Our full lifecycle enterprise AI platform enables businesses to build, run, and manage AI agents at scale. Our platform was designed from the ground up to deliver SAFE AI agents that are secure, accurate, fast, and extensible. And, unlike other agentic offerings, our agents enable the business user to define the process and the best practice outcomes.

By empowering business people, and not just developers, to build and deploy AI agents that understand context, reason, and act autonomously, Sema4.ai is transforming how work gets done in the enterprise. This approach to agentic automation is driving significant gains in operational efficiency, productivity, and cost savings for some of the world’s largest and most successful companies.