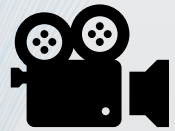


# Beyond Automation: Unleashing the Power of Autonomous AI Agents

AI: The Strategic Frontier –  
Beyond the Hype to Real-World Impact Webinar Series  
**Episode 1**

# Before We Get Started



## Recording

**A link to the recording and slides will be emailed to all registrants.**



## Recording

**Type in the question box, and we will answer in real time or during the Q&A.**



## Social

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# Panel



**Jim Hallenbeck**

Chief Executive Officer and  
President,  
Black Hills AI



**Thomas Marlow**

President, Black Hills Renewals  
Chief Technology Officer, Black  
Hills AI



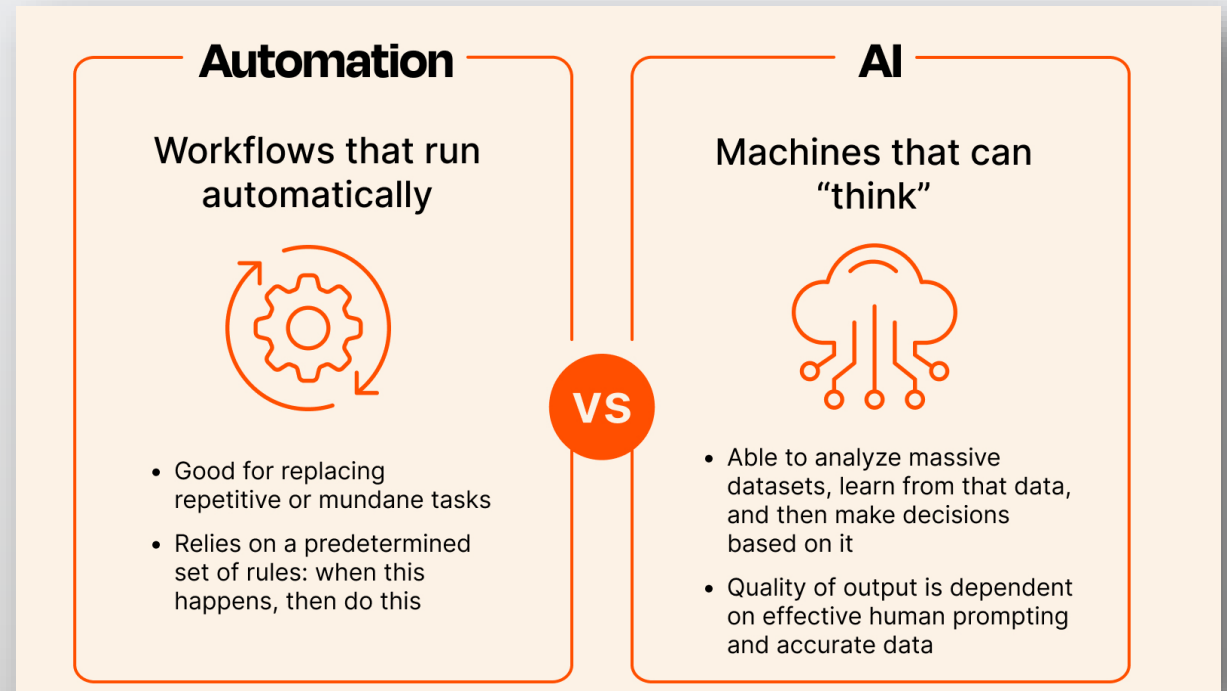
**Manjeet Rege**

Director of Center of Applied  
Artificial Intelligence and Professor,  
University of St. Thomas  
Advisor to Black Hills AI

# The Shift from Automation to Autonomy

Traditional automation follows pre-defined rules and performs repetitive tasks with little to no adaptation.

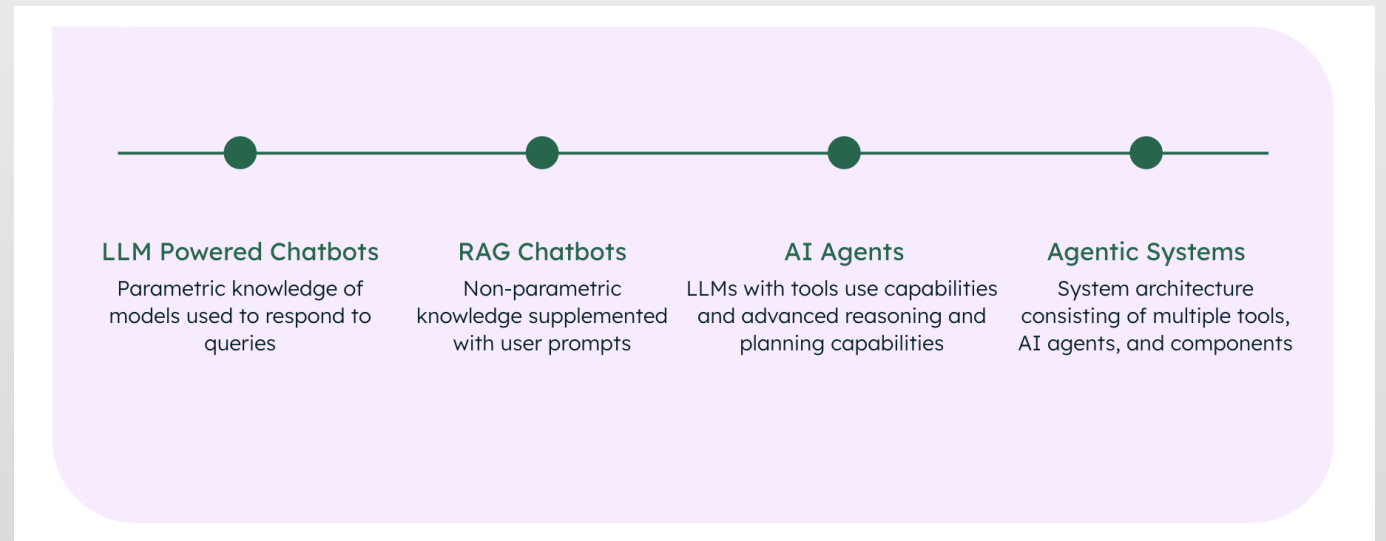
In contrast, autonomous AI agents can make intelligent decisions, learn from data, and dynamically adjust to changing scenarios. This shift allows businesses to move from rigid systems to adaptable, intelligent operations.



# Debunking the Myth - Beyond Simple Chatbot

Many believe AI agents are just advanced chatbots, but the reality is far more powerful.

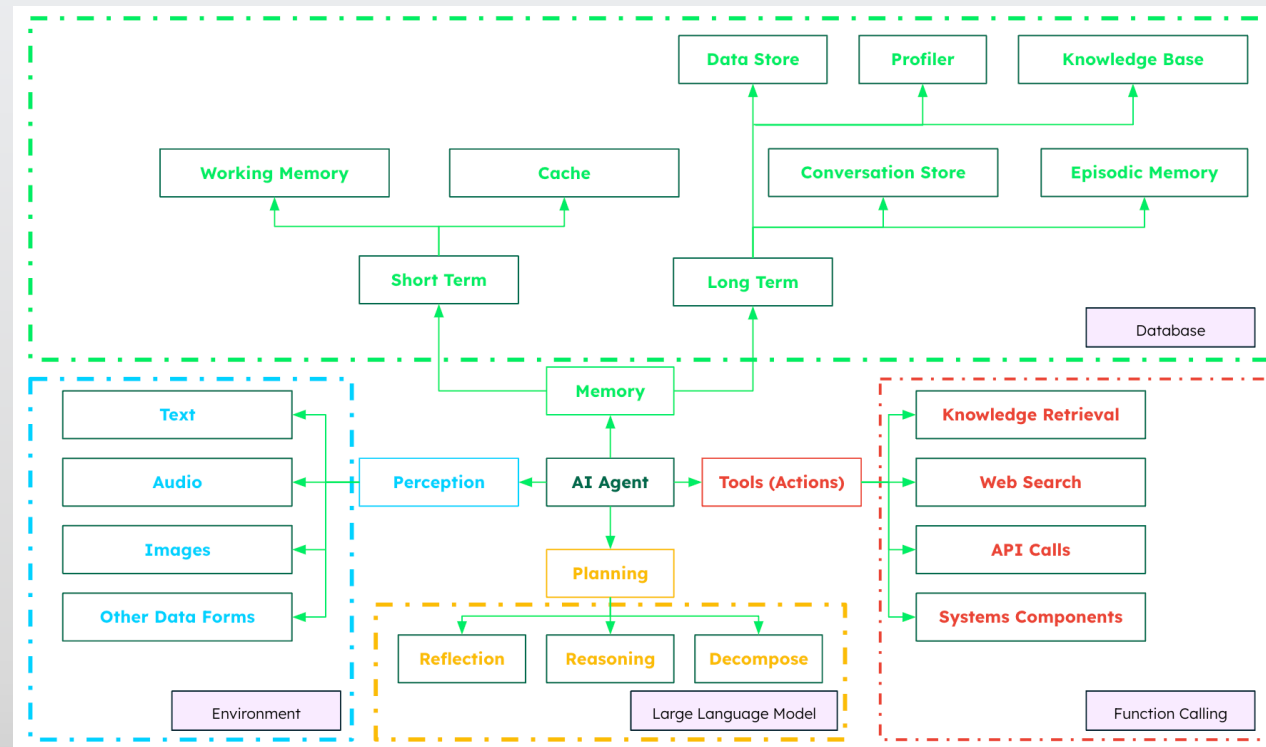
Unlike chatbots, which follow scripts, **AI agents** analyze context, plan actions, and optimize processes in real time. They can make strategic decisions, manage workflows, and continuously improve their own effectiveness.



Evolution of Chatbots, [source](#)

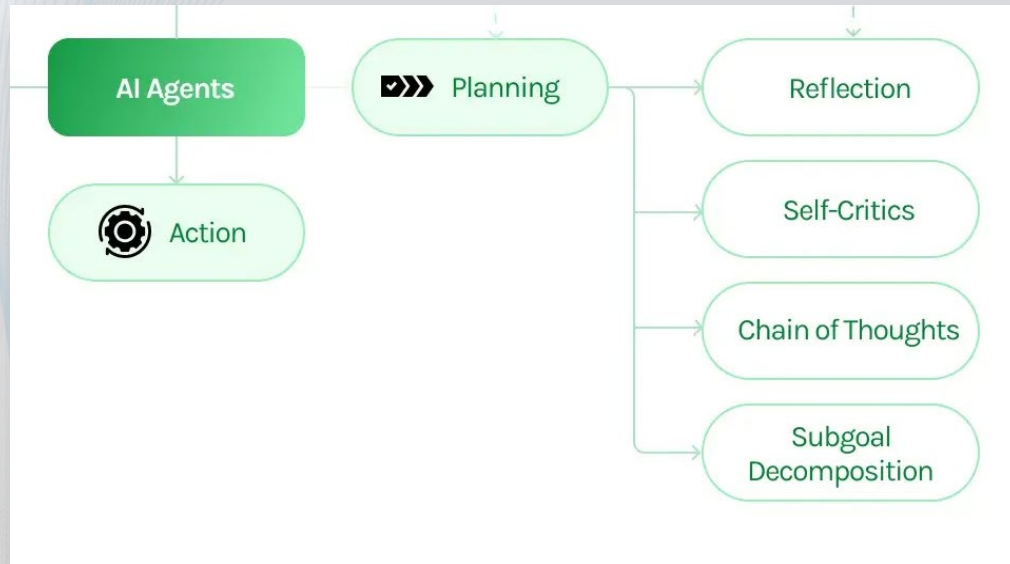
# How AI Agents Work - Architecture & Functionality

At the core of AI agents are key components like planning, memory, real-time learning, and tool integration.



Architecture of an AI Agent, [ref](#)

# Agentic Architecture - Planning



Agentic AI – Planning [ref](#)

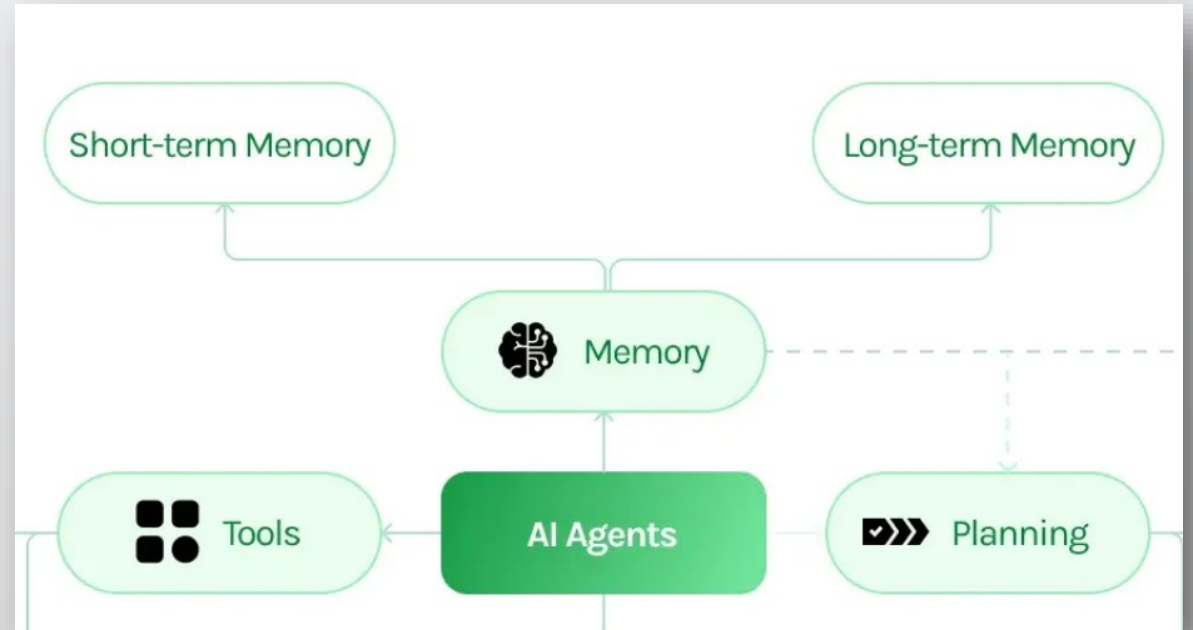
Planning is the AI agent's roadmap – breaking tasks into steps, learning from mistakes, and thinking ahead for smarter actions.

- **Reflection** – Learning from past decisions
- **Self-Critics** – Identifying and correcting mistakes
- **Chain of Thoughts** – Structuring logical reasoning
- **Subgoal Decomposition** – Breaking complex tasks into smaller, manageable steps

# Agentic Architecture - Memory

Memory powers AI agents – short-term for quick decisions, long-term for learning and growth.

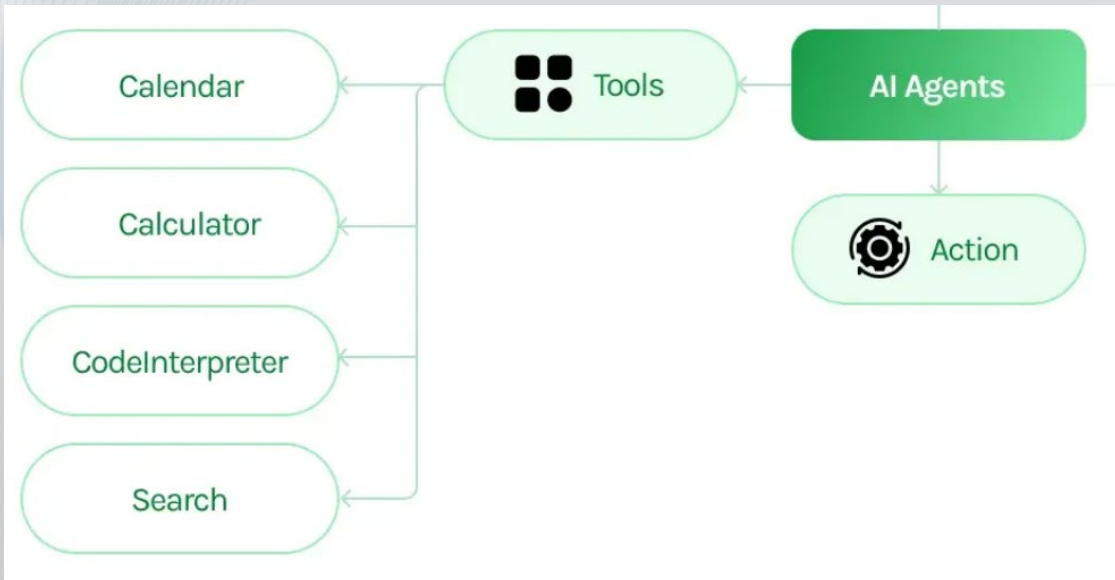
- **Short-term Memory** – Retaining and processing immediate information for quick actions
- **Long-term Memory** – Storing past experiences and knowledge for future decision-making



Agentic AI – memory [ref](#)



# Agentic Architecture – Tool Integration



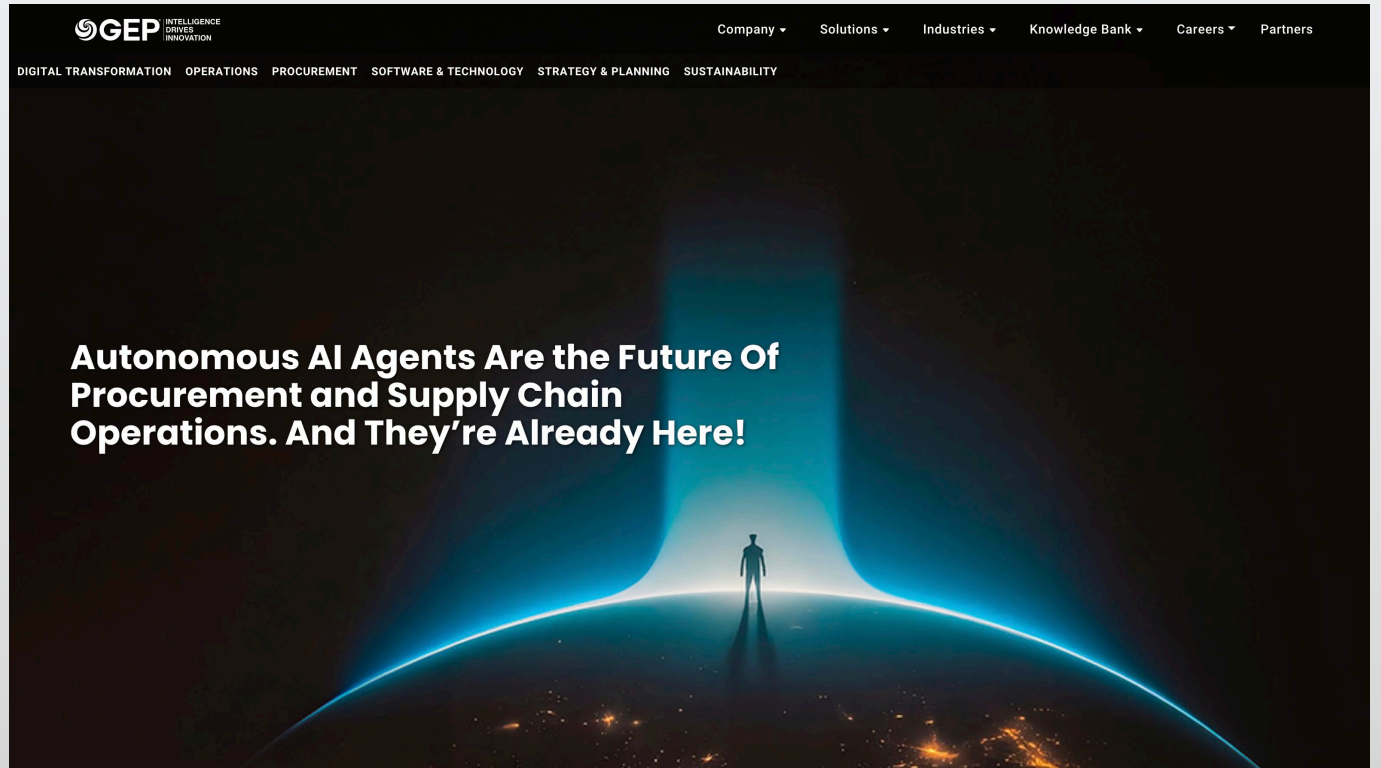
Agentic AI – Tool Integration [ref](#)

Tools empower AI agents by enabling calculations, data retrieval, execution, and organization.

- **Calendar** – Managing schedules and deadlines
- **Calculator** – Performing quick mathematical computations
- **Code Interpreter** – Executing and analyzing code
- **Search** – Retrieving relevant information quickly

# Example- Agentic AI in Supply Chain Management

By leveraging **real-time data and predictive analytics**, GEP has achieved **faster procurement cycles, improved risk management, and resilient supply chains**. As AI adoption accelerates, companies must **adapt quickly** to stay competitive in the evolving digital landscape.



Case Study – GEP [ref](#)

# Example - Complex Data Analysis using AI Agents

In 2025, JPMorgan Chase collaborated with Amazon Web Services (AWS) to enhance its financial operations using advanced AI capabilities. By integrating AWS's AI tools, JPMorgan streamlined model development and compliance processes, leading to more efficient operations and improved decision-making.

## JPMorgan Chase builds ambitious AI foundation on AWS

News

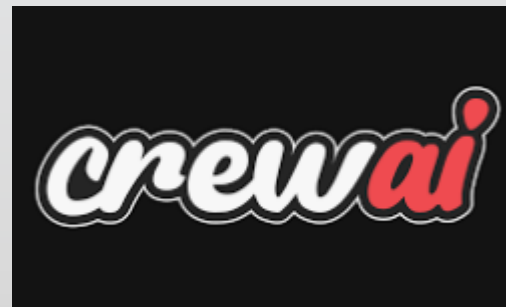
04 Dec 2024 • 6 mins

Amazon Web Services Amazon re:Invent Financial Services Industry

Global CIO Lori Beer detailed at AWS re:Invent the financial services firm's cloud and AI journey, including an internal generative AI assistant that's bringing efficiencies to 200,000 employees.

JPMorgan Chase Source: [Business Insider](#)

# Get Started with AI Agents - Frameworks



# Phidata Implementation

## Get Started Implementing AI Agents

- Phidata is a framework for building multi-modal agents and workflows.
- Build agents with memory, knowledge, tools and reasoning.
- Build teams of agents that can work together to solve problems.
- Interact with your agents and workflows using a beautiful Agent UI.

```
agent_team.py

from phi.agent import Agent
from phi.model.openai import OpenAIChat
from phi.tools.duckduckgo import DuckDuckGo
from phi.tools.yfinance import YFinanceTools

web_agent = Agent(
    name="Web Agent",
    role="Search the web for information",
    model=OpenAIChat(id="gpt-4o"),
    tools=[DuckDuckGo()],
    instructions=["Always include sources"],
    show_tool_calls=True,
    markdown=True,
)

finance_agent = Agent(
    name="Finance Agent",
    role="Get financial data",
    model=OpenAIChat(id="gpt-4o"),
    tools=[YFinanceTools(stock_price=True, analyst_recommendations=True, company_info=True, company_news=True)],
    instructions=["Use tables to display data"],
    show_tool_calls=True,
    markdown=True,
)

agent_team = Agent(
    team=[web_agent, finance_agent],
    instructions=["Always include sources", "Use tables to display data"],
    show_tool_calls=True,
    markdown=True,
)

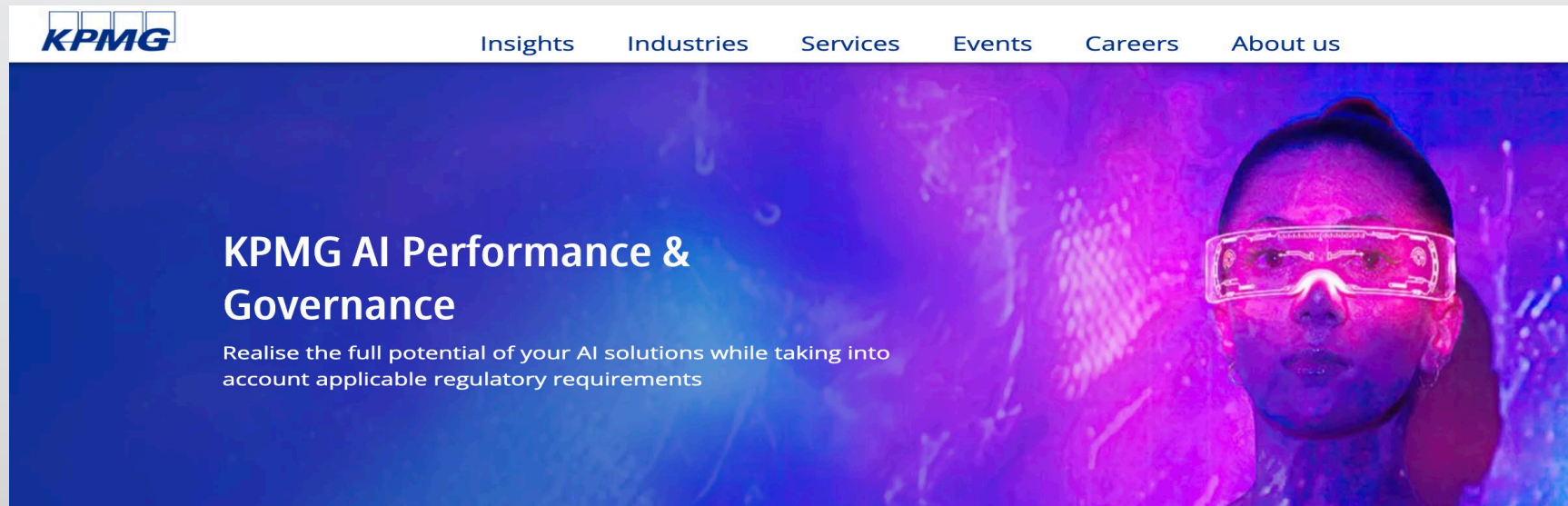
agent_team.print_response("Summarize analyst recommendations and share the l")
```

## Key Features

- Simple & Elegant
- Powerful & Flexible
- Multi-Modal by default
- Multi-Agent orchestration
- A beautiful Agent UI to chat with your agents
- Agentic RAG built-in
- Structured outputs
- Reasoning built-in
- Monitoring & Debugging built-in

# Ethical Considerations & Governance

KPMG struggled with AI adoption due to regulatory uncertainty and lack of trust in opaque AI models. By implementing **Explainable AI (XAI)** and a structured **AI governance framework**, the company improved model transparency, ensured compliance with the EU AI Act, and enhanced decision-making. This approach boosted trust, scalability, and AI adoption across the organization.



KPMG, [source](#)

# Strategy for Implementing AI Agents

- **Start with Routine, High-Volume Tasks**
  - Prior art search, office action analysis, docketing, invention triage
- **Leverage Internal & Public Data Sources**
  - USPTO, Google Patents, firm databases, examiner analytics
- **Use Multi-Agent Collaboration**
  - One agent drafts claims, another checks for 101/112 issues, another summarizes prior art
- **Focus on Strategic Augmentation**
  - Free up time for client interaction, portfolio strategy, and high-value analysis
- **Build Governance Into the Workflow**
  - Track agent contributions, ensure transparency, and reinforce client trust

# Future Trends



AI agents are evolving rapidly, with advancements in contextual intelligence and autonomy. Over the next **five years**, businesses will witness a deeper integration of AI in decision-making and strategic planning. Organizations that embrace these innovations early will gain a competitive advantage in an increasingly digital landscape.



# Up Next – April 10<sup>th</sup> New Product and Service Reveal

- A multi-channel ecosystem of products and services
- Platforms
  - Web Platform
  - Word Add-In
  - Mobile app for Apple and Android
- Products
  - AI and File Histories merged in a single interface
  - AI and File Histories within Word
  - Automated Office Action Response Drafts
  - Docket Analyzer
  - Proactive Matter Verification and Alerts
  - Black Hills AI APP – Docket in Your Pocket
  - Automated multi-jurisdictional Evidence of Use scanning

# An Integrated Ecosystem



**Otto Power Patent Center**



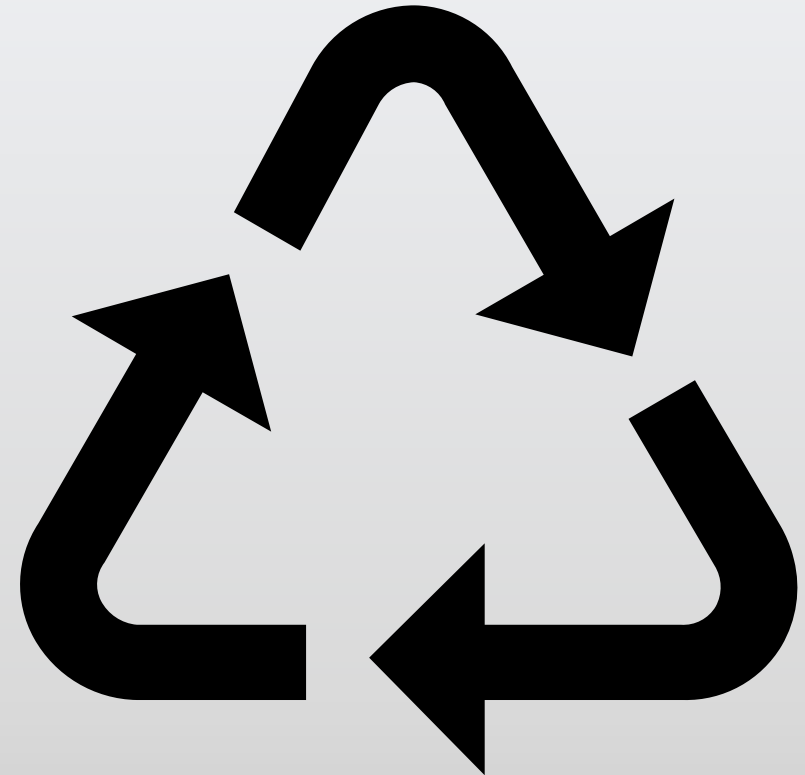
**Power Prosecutor+**



**Mobile App**



**IP Practice Group Dashboard**



# Automated Office Action Drafts

<b>A/N 17307823</b>		<b>PATENT</b>
<b>IN THE UNITED STATES PATENT AND TRADEMARK OFFICE</b>		
<b>IN THE CLAIMS</b>	<p>Applicant(s): Lundberg Application No: 17307823 Filing Date: May 4, 2021 Title: AUTOMATED BILLING VERIFICATION SYSTEM</p>	<p>Examiner: Michael Jared Walker Group Art Unit: 3627 Docket No: 3431.059US1 Confirmation No: 2271</p>
<p>Please amend the claims as follows:</p> <p>1. (Currently Amended) A computerized method of creating a customer formatted billing entry in a computerized billing system, comprising:</p> <ul style="list-style-type: none"><li>maintaining a universal code database containing a plurality of example activity descriptions and a plurality of universal codes;</li><li>maintaining a transfer database containing a plurality of customer codes, each customer code associated with a universal code;</li><li>receiving an uncoded billing entry including an activity description, wherein receiving the uncoded billing entry comprises receiving data from a billing system with an accounting system;</li><li>analyzing the uncoded billing entry by a natural language processing module to extract keywords from the activity description, wherein the natural language processing module is trained on a corpus of billing entries to identify domain-specific terminology;</li><li>querying the universal code database using the extracted keywords to identify a plurality of the universal codes;</li><li>converting the uncoded billing entry to a universally coded billing entry, wherein at least one universal code is by using a billing entry transfer engine, and the transfer database for subsequent processing;</li><li>configuring a billing entry coding engine to read the uncoded billing entry and apply one or more customer rules for associating one or more customer codes with the universal code;</li><li>replacing the activity description with a simple coded activity description corresponding to the customer code to which the universal code is associated;</li><li>aggregating one or more customer formatted billing entries into a single billing entry, wherein the one or more customer formatted billing entries are outside of the computerized billing system; and</li></ul>	<b>RESPONSE TO OFFICE ACTION</b> <p>Stop Amendment Commissioner for Patents Box 1450 Arlington, VA 22231-1450</p>	<p>16. (Currently Amended) A system for creating a customer formatted billing entry, the system comprising:</p> <ul style="list-style-type: none"><li>a memory that stores instructions for implementing a billing entry utility that is integrated with an accounting system, a billing entry transfer engine, and a billing entry coding engine;</li><li>a universal code database containing a plurality of example activity descriptions and a plurality of universal codes;</li></ul>
	<b>REMARKS</b>	<b>CONCLUSION</b>
	<p>This responds to the Non-Final Office Action dated February 28, 2021. Claims 1 and 16 are presently amended. No claims are presently canceled. Claims 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, and 15 were previously canceled. Claims 14 and 15 were previously canceled. As a result, claims 14 and 15 remain pending in this application.</p> <p style="text-align: center;"><u>Rejections Under § 101</u></p> <p>Claims 1-2, 6-13, and 15-20 are rejected under 35 U.S.C. § 101 for being directed to non-statutory subject matter, specifically an abstract idea without any practical application or significantly more than the abstract idea.</p> <p>Applicant has amended both independent claims 1 and 16 to clarify the nature of the claims. In particular, these amendments clarify the further technical embodiments, training of the natural language processing modules, and automatically updating based on system feedback.</p> <p>Applicant respectfully submits that these amendments are supported by the original filing, for example:</p> <ol style="list-style-type: none"><li>The natural language processing module being trained on a corpus of billing entries to identify domain-specific terminology is supported by paragraph [0170]. "For example, the activity description text may be analyzed by a natural language processing module to extract key words and/or to classify the activity description into a particular classification identifying the type of activity."</li><li>The automatic updating of the universal code database based on customer feedback is supported by paragraph [0170], which states: "The reviewer 520 may update the universal code database based on customer feedback, such as a program, or person, that analyzes the billing entry information, and the activity description. For example, the reviewer may verify the billing entry universal codes, activity description format, or other information."</li></ol>	<p>Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. If there are any matters that may be resolved or clarified through telephone interview, the Examiner is invited to telephone the undersigned at &lt;&lt;ctno&gt;&gt; to further facilitate prosecution of this application.</p> <p>If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. &lt;&lt;depositNo&gt;&gt;.</p> <p style="text-align: right;">Respectfully submitted,</p> <p style="text-align: right;">SLW / Black Hills IP Holdings P.O. BOX 2938 MINNEAPOLIS, MN &lt;&lt;ctno&gt;&gt;</p> <p>Date _____ By _____ Registration No: _____</p>
	<p>Applicant respectfully submits that the claims as amended are patent eligible under 35 U.S.C. §101 at least because the amended independent claims integrate the abstract idea into a practical application and provide significantly more than the abstract idea.</p>	<p>Applicant respectfully submits that the amended independent claims 1 and 16, as well as the remaining claims 2-15 and 17-20, integrate the abstract idea into a practical application and provide significantly more than the abstract idea itself. Therefore, Applicant respectfully submits that claims 1-2, 6-13, and 15-20, as amended, are patent eligible under 35 USC 101.</p>

# Up Next – Black Hills Renewals

- **Evidence of use scanning service for granted patents**
  - Market intelligence to assist renewal decisions
  - Regular monitoring to identify potential infringement
  - Clear justification for maintaining valuable patents
  - Litigation business development opportunities through infringement identification
  - Support for both US and international patents

# Evidence of Use Scanning Report

<b>Title</b>	Vehicle power supply system with redundancy and method for controlling the power supply system
<b>Patent No</b>	US10889203B2
<b>Evidence of Use Scan</b>	
Here's an analysis of manufacturers/products incorporating similar technologies to the described vehicle power supply system with redundancy and multi-voltage DC/DC conversion: Key Technology Elements from Abstract:	
<ol style="list-style-type: none"><li>1. <b>Parallel battery strings</b> for redundancy</li><li>2. <b>Switch mechanism</b> for output selection</li><li>3. <b>Multichannel DC/DC converter</b> with multiple output voltages</li><li>4. <b>Dual voltage distribution</b> (first output = battery voltage, second = stepped-down voltage)</li></ol>	
Manufacturers & Comparable Products	
<ol style="list-style-type: none"><li>1. <b>Tesla (Structural Battery Pack)</b><ul style="list-style-type: none"><li>• <b>Comparison:</b> Uses parallel battery module architecture for redundancy but lacks active switching between strings. Features integrated DC/DC conversion for 48V/12V systems.</li><li>• <b>Key Difference:</b> No explicit "switch mechanism" between parallel strings; focuses on module-level redundancy instead.</li></ul></li><li>2. <b>LG Chem (Auto Battery Systems)</b><ul style="list-style-type: none"><li>• <b>Comparison:</b> Provides multi-module battery packs with fail-safe circuitry. Partners with OEMs to implement DC/DC converters for auxiliary systems.</li><li>• <b>Key Difference:</b> Focuses on cell-level redundancy rather than parallel string switching.</li></ul></li><li>3. <b>BorgWarner (High-Voltage DC/DC Converters)</b><ul style="list-style-type: none"><li>• <b>Product:</b> 800V to 400V/48V bidirectional converters</li><li>• <b>Comparison:</b> Matches the multichannel voltage conversion aspect but doesn't integrate battery string switching.</li></ul></li><li>4. <b>Toyota (Hybrid System II)</b><ul style="list-style-type: none"><li>• <b>Comparison:</b> Uses dual voltage systems (244V for propulsion, 12V for accessories) with backup power pathways.</li><li>• <b>Key Difference:</b> Relies on separate DC/DC converters rather than a single multichannel unit.</li></ul></li><li>5. <b>Romeo Power (Commercial Vehicle Batteries)</b><ul style="list-style-type: none"><li>• <b>Comparison:</b> Modular battery systems with parallel string redundancy, acquired by BorgWarner in 2022.</li><li>• <b>Key Feature:</b> Hot-swappable modules align with the abstract's redundancy concept.</li></ul></li><li>6. <b>Lucid Motors (Wunderbox)</b><ul style="list-style-type: none"><li>• <b>Comparison:</b> Integrated 900V battery system with multi-voltage output (400V/800V compatibility).</li><li>• <b>Key Feature:</b> Combines voltage conversion with charging capabilities but lacks explicit battery string switching.</li></ul></li></ol>	
Technology Gap Analysis	
<ul style="list-style-type: none"><li>• <b>Unique Abstract Feature:</b> The combination of <b>switchable parallel battery strings + single multichannel converter</b> is rarely implemented together in current production vehicles. Most manufacturers use either:<ul style="list-style-type: none"><li>• Redundant battery modules (without active switching)</li><li>• Multi-voltage converters (without parallel string selection)</li></ul></li><li>• <b>Emerging Match:</b> Startups like <b>Our Next Energy (ONE)</b> and <b>StoreDot</b> are experimenting with similar architectures for EV range extension, but these remain in prototype stages (as of 2025).</li></ul>	
For a detailed technical comparison of specific systems, I recommend contacting automotive suppliers like <b>Marelli</b> or <b>Vitesco Technologies</b> directly, as many redundancy implementations are OEM-specific and not publicly documented.	

# Decision-Making Support

**BLACKHILLS RENEWALS** 0-Internal

DASHBOARD PORTFOLIO ANALYTICS SEARCH RENEWAL CENTER REPORTS

## Sulfide-containing polythiols

**United States of America Patent**  
PATENT NO 7009032  
APP PUB NO US-20040143090-A1  
SERIAL NO 10/725,034

MAR 07, 2006 JUL 22, 2004 DEC 02, 2003 DEC 20, 2002 GRANTED  
GRANT DATE APP PUB DATE FILING DATE PRIORITY DATE (Note) STATUS (Latency Note)

Patent Analytics Publications PTO File (PAIR) Legal Status Renewal Details

### Importance

CALCULATED RATING ●●●●●

US Family Size ●●●●●	Non-US Coverage ●●●●●
Patent Longevity ●●●●●	Forward Citations ●●●●●

CUSTOM RATING ○○○○○ EDIT

### Abstract

The present invention relates to sulfide-containing polythiols and their methods of preparation. Sulfide-containing polythiols can have a variety of uses and applications. The sulfide-containing polythiols of the present invention can be especially useful in polyurethane compositions for the manufacture of ophthalmic lenses.

### First Claim

1. A composition comprising one or more sulfide-containing polythiols chosen from materials represented by the following structural formulas:

Other Claims data not available

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RELATED FILES

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contents. If you'd like to know about similar matters, please provide that information directly.

What have I done with other matters in this family?

Here's a summary of the renewal plans across the patent family:

Current Renewal Plans (2024-2026):

- 1. Multiple matters have renewals due in 2025:
  - AU-2006252886-A: May 15, 2025 (Undecided)
  - AU-2010271090-A: June 10, 2025 (Undecided)
  - BR-112015022913-A: June 14, 2025 (Undecided)
  - BR-PI0613380-A: August 15, 2025 (Undecided)
  - BR-PI1009614-A: September 10, 2025 (Pay Always)
  - CA-2763416-A: June 10, 2025 (Undecided)
  - US-201414776375-A: April 19, 2025 (Undecided)
- 2. Matters with multiple upcoming renewals:
  - CA-2904414-A: March 14, 2025 and March 14, 2026 (Both Undecided)
  - US-201213712110-A: November 23, 2024 and November 23, 2028 (Both Undecided)

Recent Past Abandonments:

- BR-0214236-A: Instructed to abandon on Nov 14, 2020
- CA-2578723-A: Instructed to abandon on Aug 25, 2021
- CN-200580029436-A: Instructed to abandon on Aug 25, 2021

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Thank you for your interest.

# Questions?

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**Support:** [support@blackhills.ai](mailto:support@blackhills.ai)