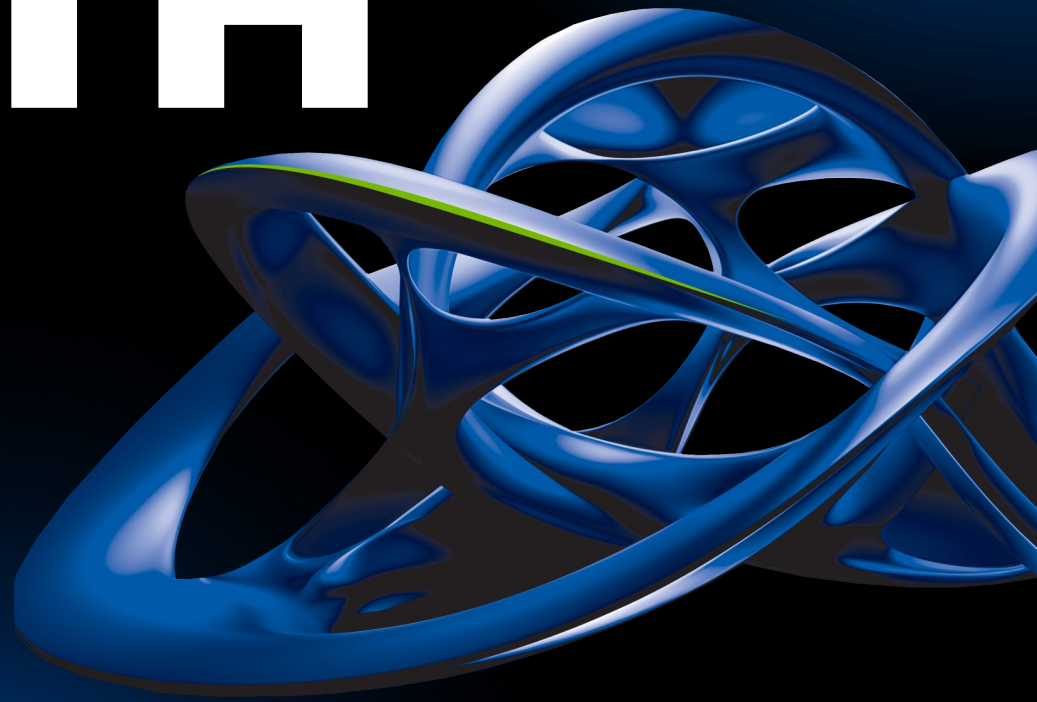
MAKING LLMs & RAG WORK WITH EASE



March, 2024

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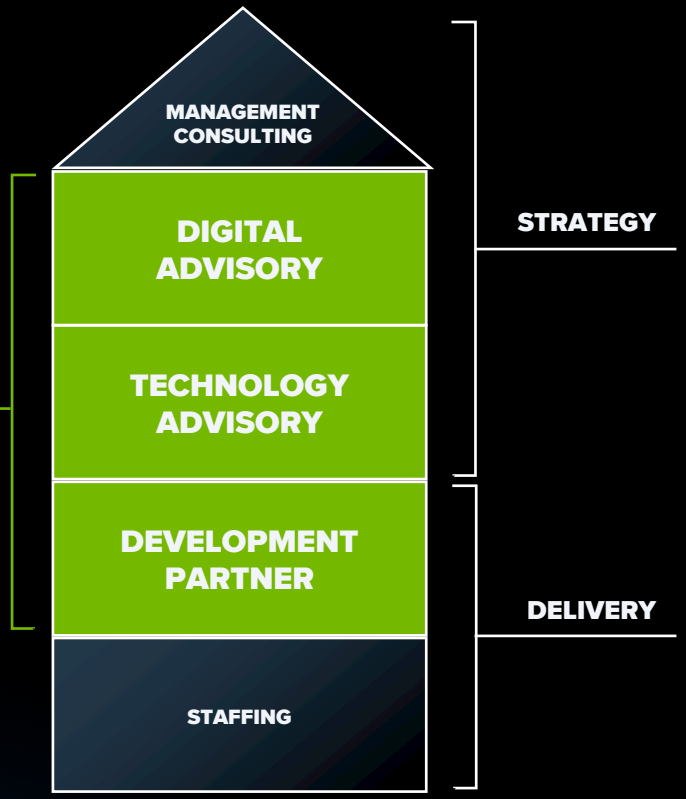
SOFTSERVE AT A GLANCE

WE ARE ADVISORS AND PROVIDERS WHO OPERATE AT THE CUTTING EDGE OF TECHNOLOGY

SOFTSERVE

We are also a **lean advisory** with iterative practical results rooted in **executable excellence**.

NVIDIA Elite Partner



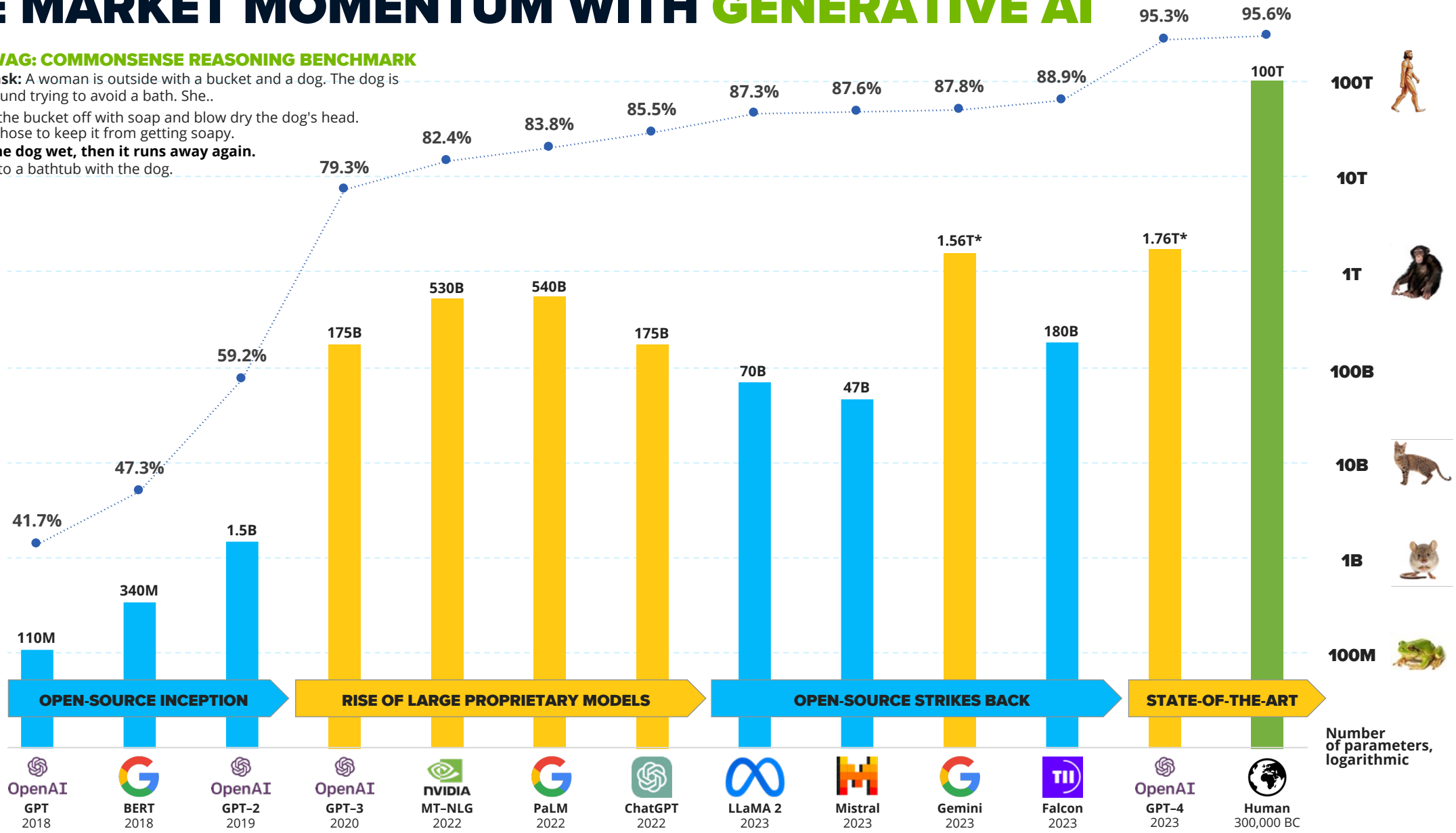
11,000+	30 YEARS	GLOBAL	20,000+
Associates worldwide	Across multiple industries	61offices, 16 countries	Complex projects delivered

SPEAKER

IURII MILOVANOV

AVP, AI & Data Science
SoftServe Inc.

THE MARKET MOMENTUM WITH GENERATIVE AI



* Model size is speculative and based on unofficial sources.

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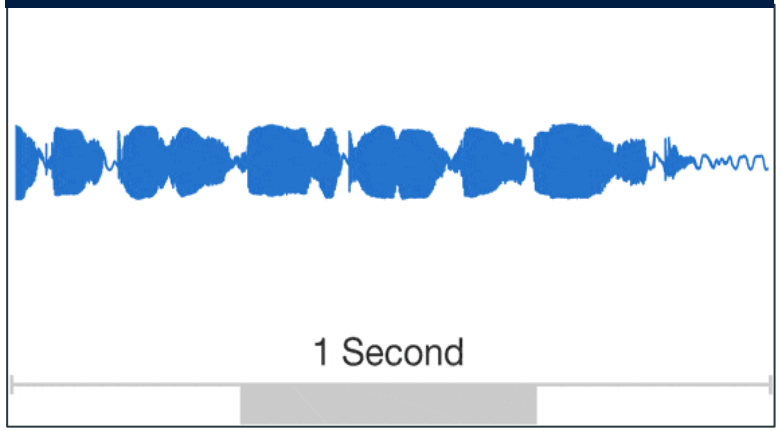
GENERATIVE AI LANDSCAPE

IMAGE

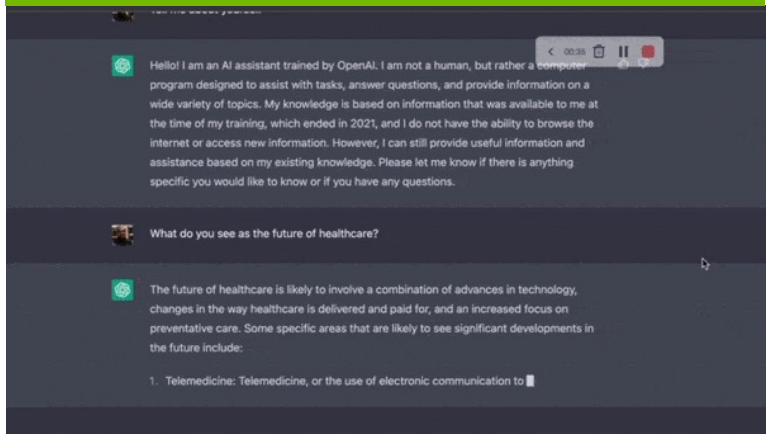
"A sci-fi panda in a yellow and blue costume eats softserve"

VIDEO

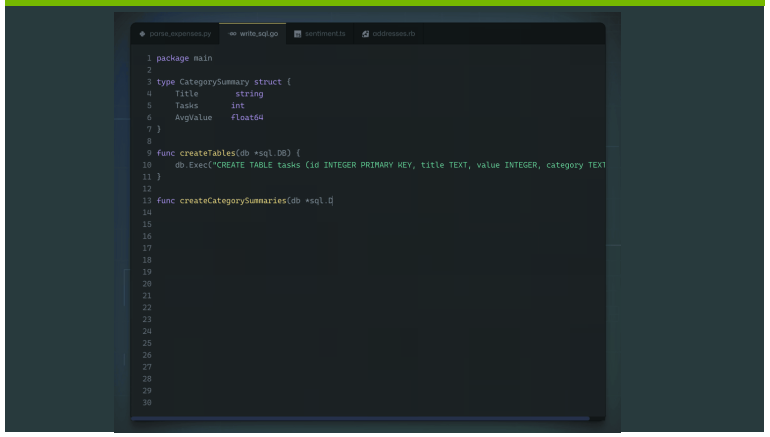
AUDIO



NATURAL LANGUAGE



SOURCE CODE



FOCUS AREA – LARGE LANGUAGE MODELS (LLMs)

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UNLOCKING BUSINESS POTENTIAL OPPORTUNITIES AND CROSS-INDUSTRY GENERATIVE AI USE CASES

ASK QUESTIONS AGAINST KNOWLEDGE

QUESTION ANSWERING
Enterprise search, regulatory compliance, medical discovery, troubleshooting, FAQs

SUMMARIZATION
Market research, financial and legal analysis, patient history, incident reporting

KNOWLEDGE GRAPHS
Inventory management, regulatory compliance, medical coding, operational excellence

SIMILARITY SEARCH
Product recommendations, patient matching, investment opportunity discovery, competitor analysis

DERIVE INSIGHTS FROM KNOWLEDGE

REASONING
Churn prediction, fraud detection, diagnosis assistance, root cause analysis

CLASSIFICATION
Customer segmentation, transaction categorization, patient triage, defect detection

TOPIC RECOGNITION
Market trends, customer sentiment, public health, emerging technologies

KEY-VALUE EXTRACTION
Claims processing, KYC data collection, EHR management, order processing

GENERATE NEW DATA BASED ON KNOWLEDGE

CONVERSATION
Customer support, financial advisor, telemedicine, operations assistant

TEXT GENERATION
Personalized marketing, patient education, financial reports, technical documentation

CODE GENERATION
Coding assistance, language conversion, API integration, test case generation

LANGUAGE TRANSLATION
Multilingual support, medical research translation, global compliance

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UNLOCKING BUSINESS POTENTIAL OPPORTUNITIES AND CROSS-INDUSTRY GENERATIVE AI USE CASES

BUSINESS FUNCTIONS

SEARCH

KNOWLEDGE DISCOVERY (RESEARCH)

ANALYTICS

DECISION-MAKING

DOCUMENT PROCESSING

COMMUNICATION

CONTENT WRITING

PROGRAMMING

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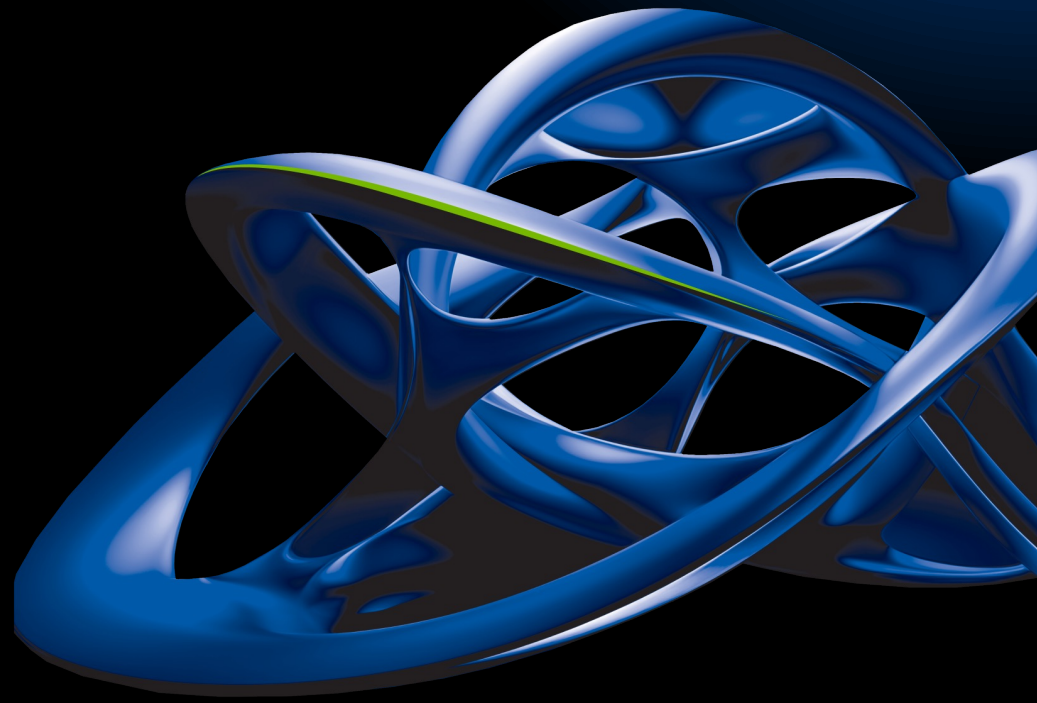
WHY RAG?



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GENERATIVE AI USE CASE ARCHETYPES

These archetypes simplify the understanding of Gen AI's functional outcomes and guide swift alignment with solution strategies.

DATA INSIGHT

Use cases following the **Data Insight** archetype help users quickly find and surface relevant information from large, complex, and diverse data repositories. This accelerates time-to-insight, allowing individuals and organizations to make more informed decisions faster than ever before.

Common challenges:
High data volumes, data source integration, data quality, hallucinations

VIRTUAL AGENT

Use cases adopting the **Virtual Agent** archetype enhance customer and employee experiences by integrating intelligent virtual assistants into interactions, either directly or via human augmentation. This facilitates a shift from traditional intent-based chatbots to AI agents capable of comprehending the conversation's context and delivering relevant data-driven responses.

Common challenges:
Low-latency, UX design, guardrails, privacy and security

CONTENT CREATION

Use cases following the **Content Creation** archetype automate and accelerate all forms of content creation, including code, text, images, audio, video, presentations, and documents. This improves content creation speed and quality, reducing the time and effort required for developers and creators to produce and customize content for specific audiences or tasks.

Common challenges:
Multimodality, training data, compute infrastructure, quality assurance

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GENERATIVE AI USE CASE ARCHETYPES

DATA INSIGHT

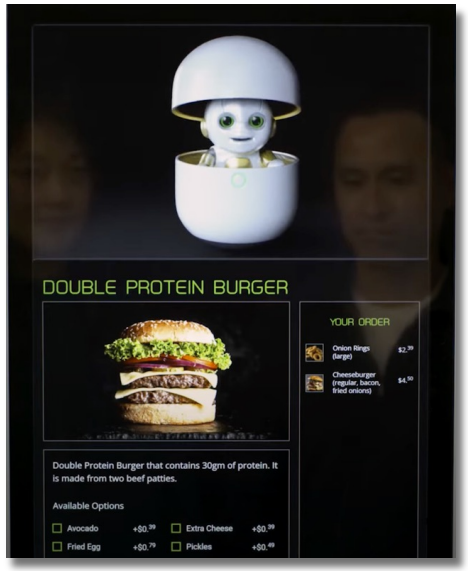
- Streamlining how employees access and utilize corporate knowledge.
- Enabling customers to quickly find the information they need to make a purchase decision.
- Relieving analysts from routine tasks and providing managers with instant data-driven responses, surpassing traditional corporate BI tools.

Example:

VIRTUAL AGENT

- Enhancing online customer support with more intuitive virtual assistants.
- Improving employee productivity with AI-powered virtual assistants.
- Innovating customer service with interactive digital avatar kiosks.

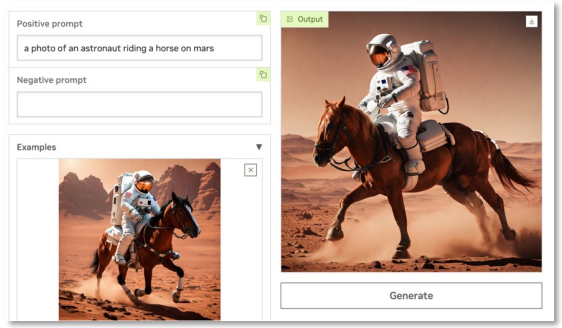
Example:



CONTENT CREATION

- Boosting software developers' efficiency by auto-generating code from natural language prompts.
- Accelerating content creation for marketing and advertising campaigns.
- Creating personalized product look and description through a deep understanding of customer preferences.

Example:



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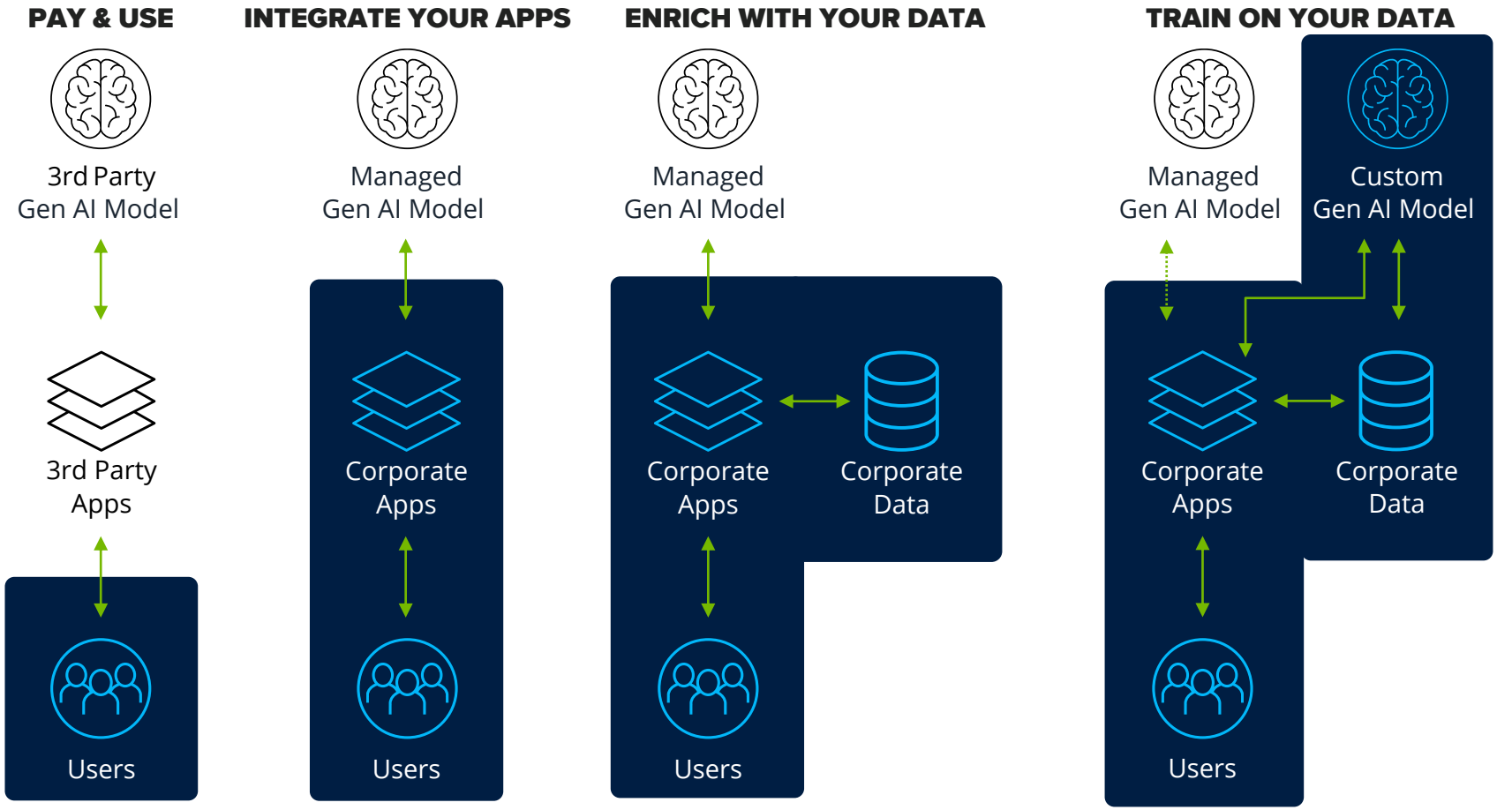
GENERATIVE AI ADOPTION PATTERNS



SHORTER TIME → **HIGHER VALUE**

- Licensing
- Privacy & security

- Prompt engineering
- API integrations

- Retrieval-augmented generation
- Vector embeddings
- SQL adapter for structured data

- Model fine-tuning
- Instruction-tuning
- Learning from human feedback

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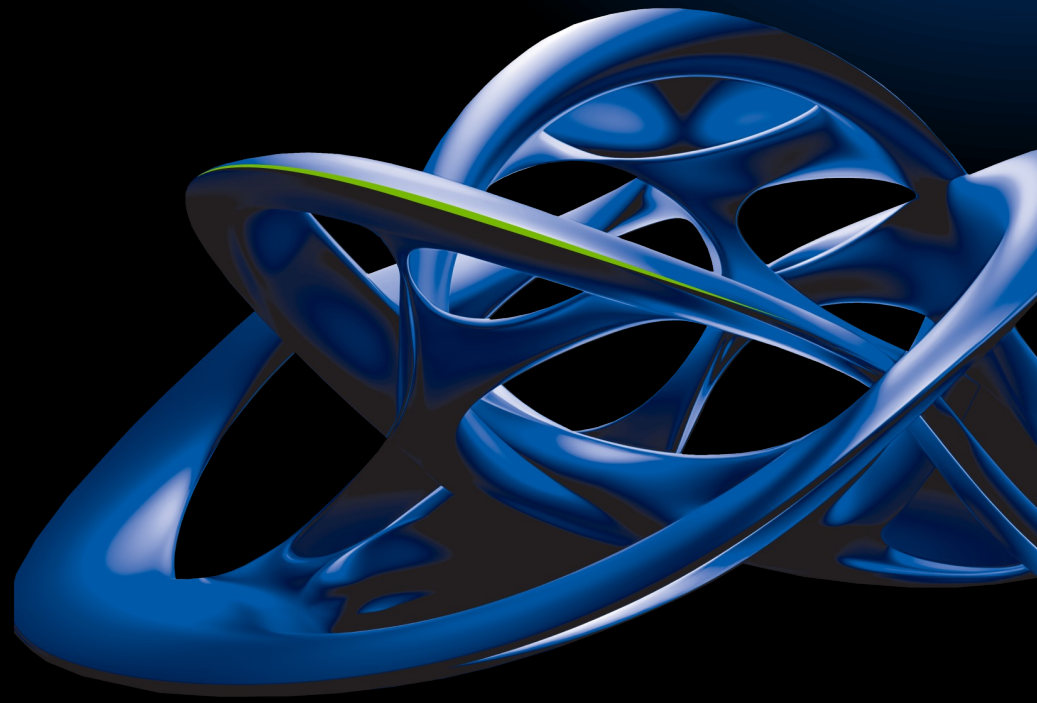
HOW TO RAG WITH NVIDIA?



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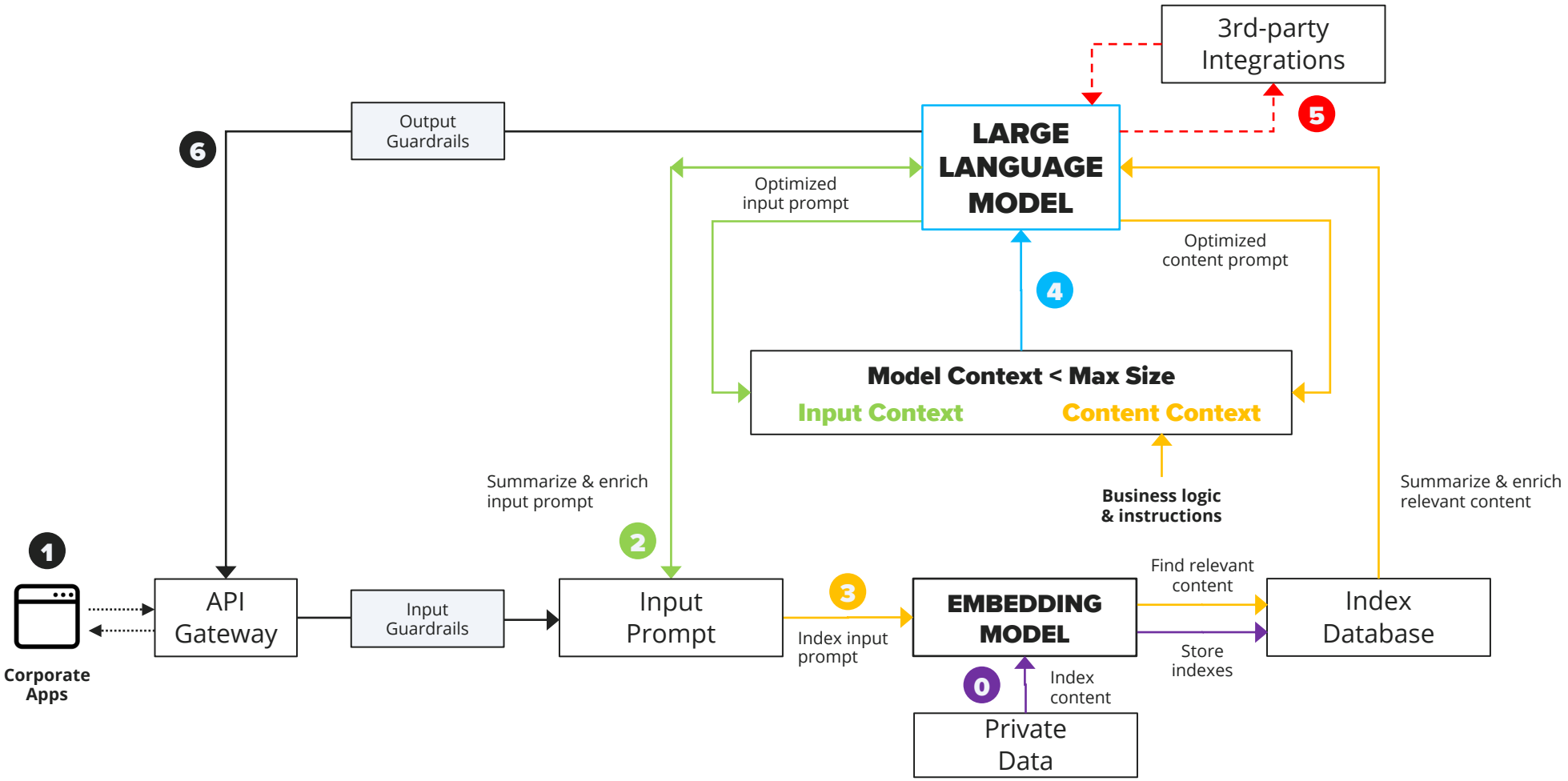
DESIGN PATTERN: RETRIEVAL AUGMENTED GENERATION (RAG)



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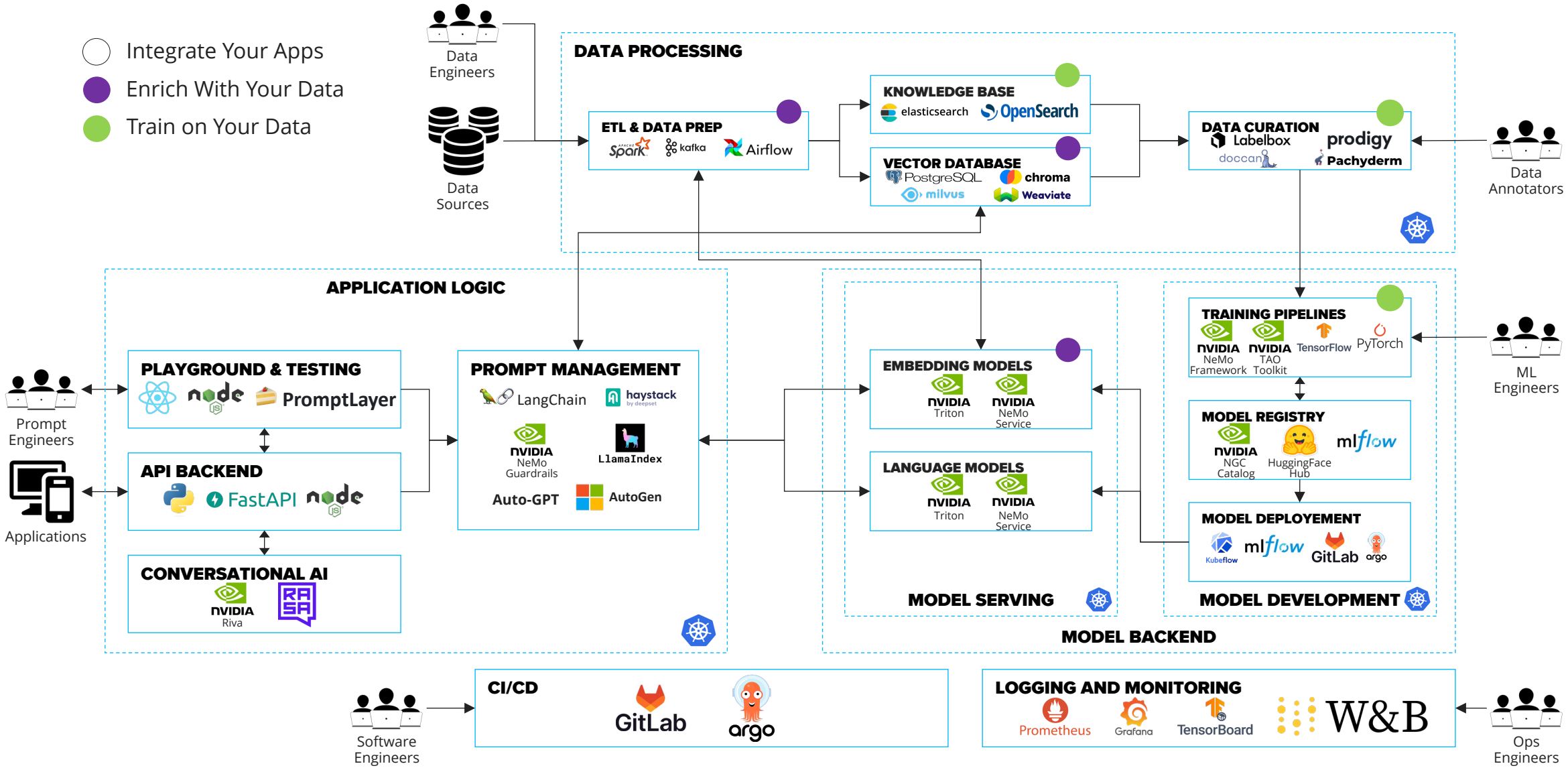
GENERATIVE AI REFERENCE ARCHITECTURE



INTEGRATING GEN AI WITH JIRA AND CONFLUENCE FOR ENHANCED KNOWLEDGE MANAGEMENT

BUSINESS CHALLENGE

The fragmentation of knowledge across Jira and Confluence platforms presented a significant challenge in accessing and utilizing information efficiently. This separation hindered the ability to perform cross-platform searches and complicated the process of finding relevant data, affecting productivity and decision-making processes within organizations.

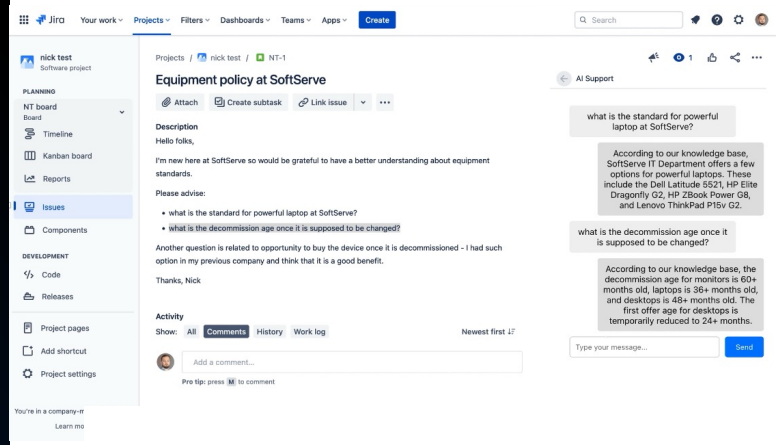
SOLUTION

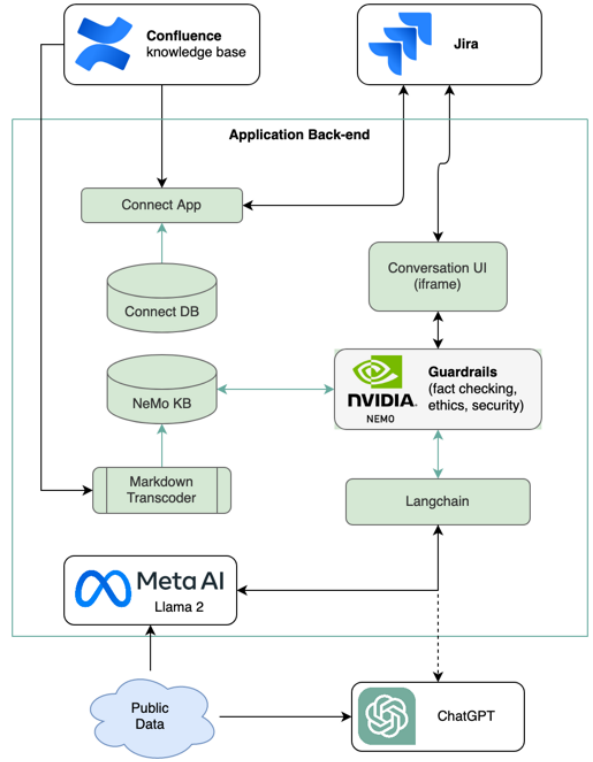
SoftServe, leveraging its status as an Atlassian Silver Solution partner, developed a proof of concept (PoC) integrating Generative AI (Gen AI) with Jira and Confluence knowledge bases. This innovative solution aimed to streamline the search process across these platforms, enhancing user experience and operational efficiency. Key features of the solution included:

- Custom integration of Gen AI services with Confluence and Jira Cloud, utilizing large language models (LLMs) for improved security and data privacy.
- A conversational UI embedded into the Jira interface, facilitating efficient knowledge base utilization and ticket processing.
- Implementation of data privacy measures, hallucination detection, and internal knowledge base synchronization to ensure accuracy and security.

IMPACT

- **Enhanced Productivity**: The solution significantly improved the productivity of IT support teams by optimizing search processes and providing quick hints for ticket resolution, leading to faster customer service.
- **Improved Data Security and Privacy**: By employing encryption, user authentication, and hallucination detection, the solution ensured the confidentiality and integrity of data across platforms.
- **Streamlined Knowledge Management**: Automated synchronization and integration with Gen AI models facilitated seamless access to up-to-date information, overcoming the challenge of disparate knowledge repositories.





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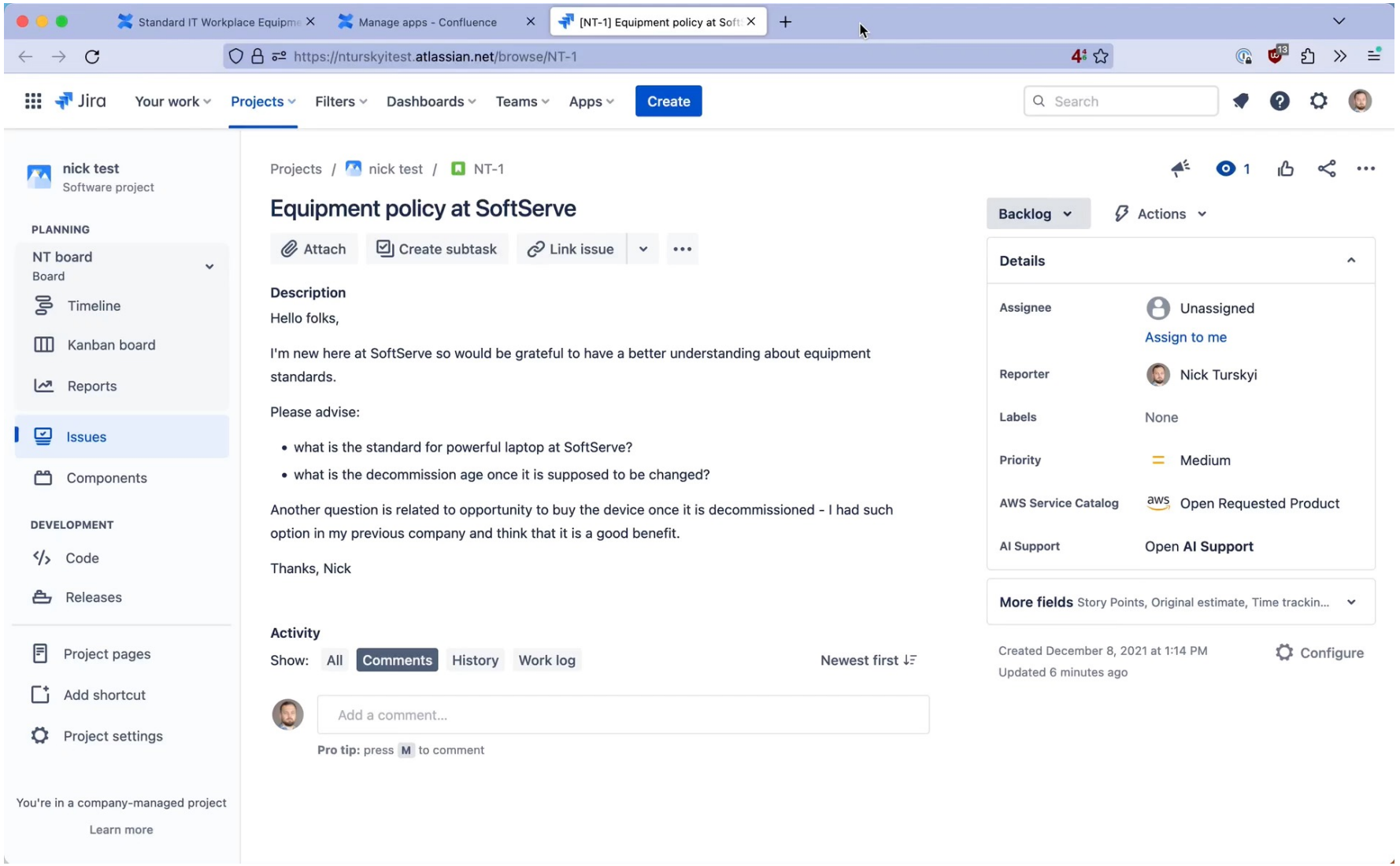
ASSISTANT FOR CONFLUENCE: APPROACH



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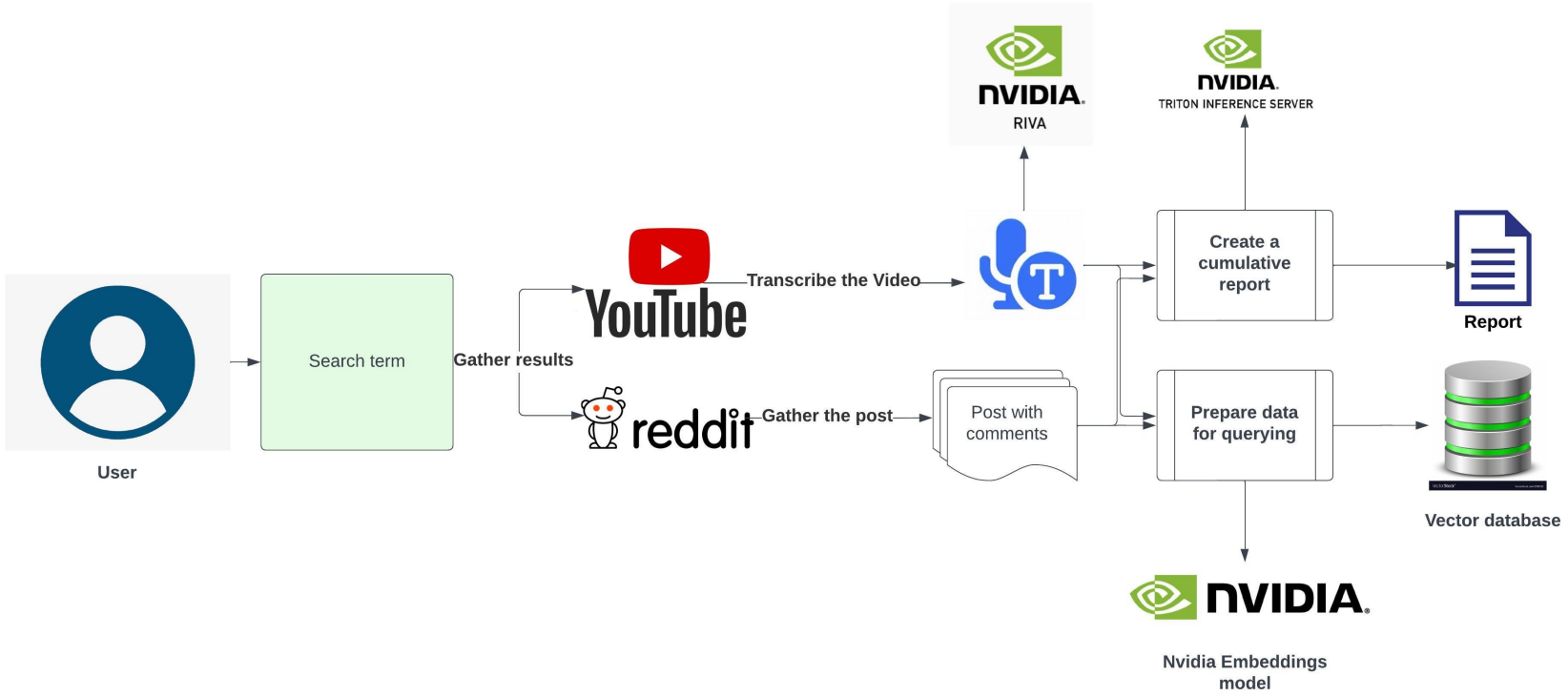
USER FEEDBACK ANALYZER USING NEMO RAG



- Solution is suitable for analyzing user feedback regarding a service or a product
- Collects data from publicly available sources such as YouTube or Reddit
- Utilizes RIVA for video transcriptions, NVIDIA Retrieval QA Embedding for text embeddings and Llama-2 as LLM
- Collected data is processed by a LLM to generate the desired reports

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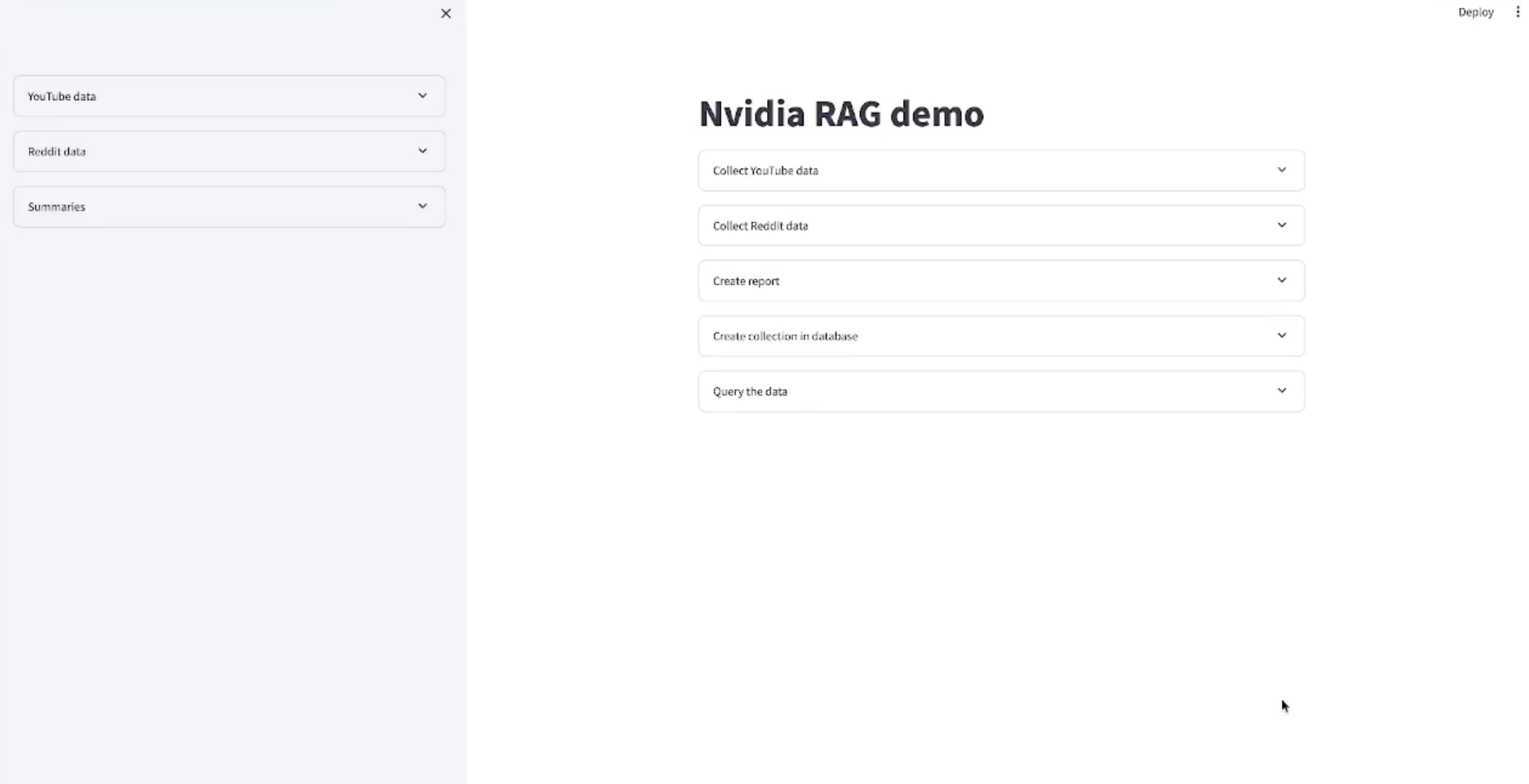
USER FEEDBACK ANALYZER: DEMO



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Q&A

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FEELING LUCKY?

SIGN UP TO WIN
A NINTENDO SWITCH


FOR
softserve
THE
FUTURE