Next-Gen AI-Powered Search

SIEMENS AND GROUNDFOG SET NEW DIGITAL STANDARDS

CASE STUDY

GROUNDFOG SIEMENS

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Revolutionizing Search

with AI-Powered Summarization and Contextual Retrieval

Every day, professionals waste valuable time searching for information buried deep within a complex digital ecosystem.

With over **1.2 million web pages**, Siemens faced a significant challenge: How could employees and customers quickly find the right information without scrolling through endless irrelevant links?
Traditional keyword-based search, reliant on lexical matching, often failed to understand the user's true intent, leading to frustrating search experiences.

To solve this, Siemens partnered with Groundfog to develop an advanced AI-powered search system that fundamentally redefines information discovery.
By combining contextual retrieval with real-time AI-generated summaries, this new system delivers not just results, but answers — making search faster, smarter, and more intuitive than ever before.

Did you know?

From June 28, 2025, the *Barrierefreiheitsstärkungsgesetz (BFSG)* will require digital services, like websites and apps, to be accessible for people with disabilities. AI-powered search functions are key to this as they help users quickly find and understand information, making navigation easier for everyone.

Siemens and Groundfog

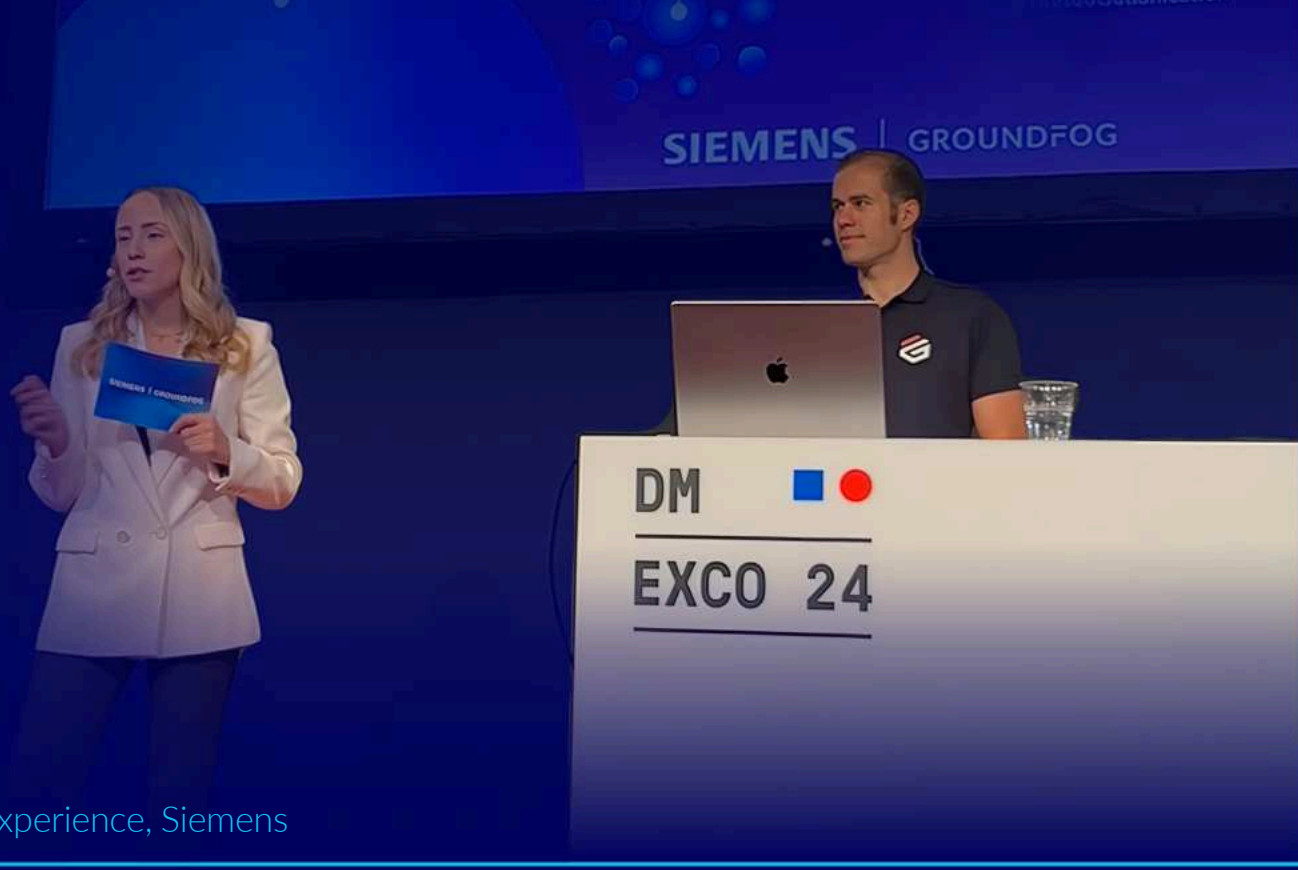
A Strategic Partnership

When Siemens decided to revolutionize their search functionality, they knew they needed a partner with proven expertise in AI and digital innovation.

Enter Groundfog, a company known for crafting next-gen digital solutions. Together, they envisioned a search experience that not only understood user intent beyond simple keyword matching but also leveraged AI Summary to provide quick, direct answers while linking to related content—offering users a seamless and enriched search experience.

“Our partnership with Groundfog has played a key role in refining AI Search at Siemens.
By leveraging their expertise, we’ve made search results more intuitive and useful, enabling users to find information more easily and enhancing the overall search experience.”

Melanie Mrochen, Senior Product Owner, Digital Experience, Siemens



Groundfog's long-standing partnership with Siemens is built on mutual trust and a shared vision for the future. Now, this strategic collaboration is focused on setting a new standard for digital experiences. Groundfog and Siemens have developed a solution that leverages a deep understanding of AI and advanced digital technologies, strengthened by deep industry expertise and extensive resources.

This partnership exemplifies how strategic collaborations can transform challenges into opportunities, creating smarter and more impactful digital experiences.

Beyond Keywords

AI-Powered Contextual Retrieval

The cornerstone of Siemens' new search engine is contextual retrieval, which takes semantic search to the next level and moves beyond simple keyword matching. Traditional search engines struggle when users enter complex, vague, or ambiguous queries because they only look for exact word matches. Siemens' semantic search with contextual retrieval, however, understands meaning, relationships, and intent.

How It Works

01

Document Chunking and Contextual Enrichment

At first, documents are broken into smaller, manageable sections. For each section, AI is used to create context within the document, generating a relevant text that reflects the surrounding content.

02

Context-Enhanced Embedding

Each chunk, along with its contextual text, is then embedded into a vector. This combination of chunk text and its contextual information results in a higher-quality embedding compared to using the chunk text alone.

03

AI-Powered Re-Ranking

After retrieving search results from the vector database, AI re-ranks the documents by scoring each one according to the user's intent, ensuring that the most relevant results appear at the top.

AI Summarization

Delivering Instant, Reliable Answers

While contextual retrieval brings the right content to the forefront, AI-powered summarization instantly extracts key insights. Using **Retrieval Augmented Generation (RAG)**, the system first identifies the most relevant content pieces, then leverages them to generate accurate, context-aware summaries. Instead of forcing users to sift through long reports or web pages, the AI generates a concise summary tailored to their query, reducing search time from minutes to seconds.

Retrieval Augmented Generation

A technique for enhancing the accuracy and reliability of generative AI models with information fetched from specific and relevant data sources.

Ensuring Accuracy and Compliance

For an enterprise-scale AI system, precision, security, and compliance are undeniably essential. Siemens' AI Summary engine was built with:

Guardrails for Legal and Ethical Safety

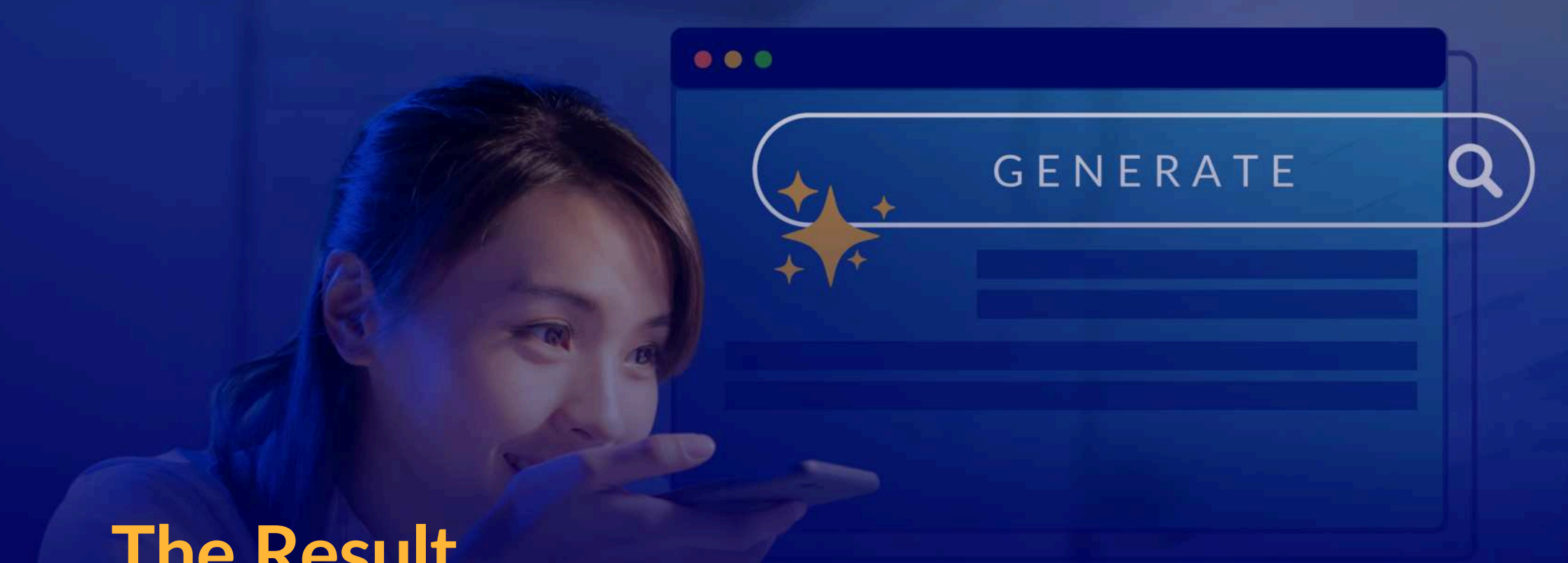
The system is designed to avoid generating misleading or inappropriate content. Siemens has implemented strict prompt engineering and custom filtering to prevent sensitive, speculative, or non-compliant information from appearing in summaries.

Enterprise Data Protection

Unlike public AI models, all data processing occurs within Siemens' secure AWS environment, ensuring complete control over data privacy and security.

Real-Time AI Summarization

The AI analyzes multiple sources simultaneously, cross-checking information to generate the most reliable and accurate summary possible.



The Result

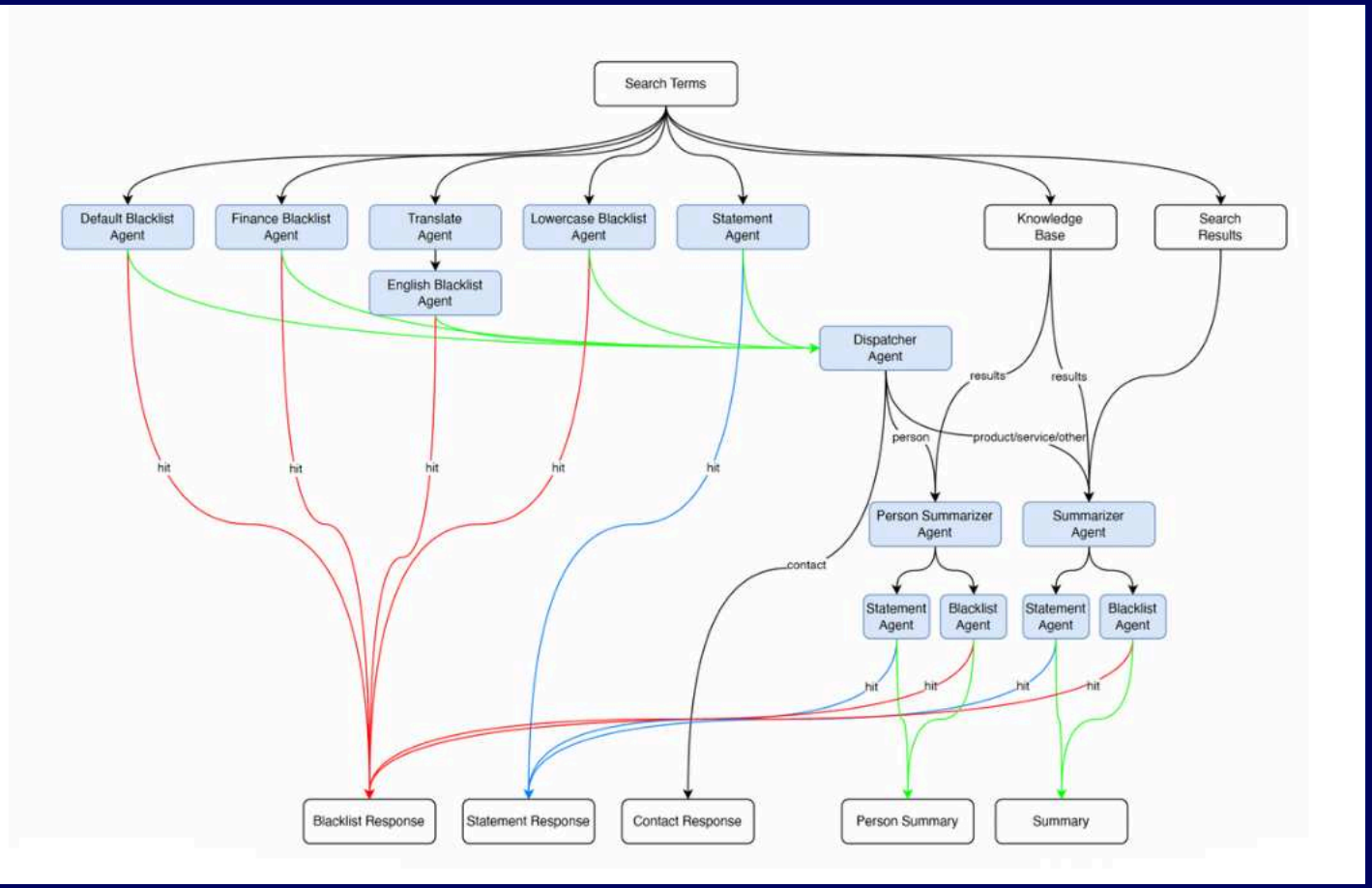
A Search Experience That Works Like an Expert

Instead of overwhelming users with endless links, Siemens' AI-powered search provides instant, context-aware summaries tailored to each query. Whether users have technical product inquiries, need compliance guidelines, or seek internal documentation, the system delivers precise, summarized answers accompanied by direct links to the most relevant resources.

Every innovation journey comes with challenges, and transitioning to Gen-AI-powered search on Siemens.com was no exception. Building an AI-powered search at this scale presented several challenges.

Technical Breakthroughs

Overcoming the Challenges



Source: Groundfog

Showing optimization of search accuracy and efficiency with specialized **AI Search Agents**

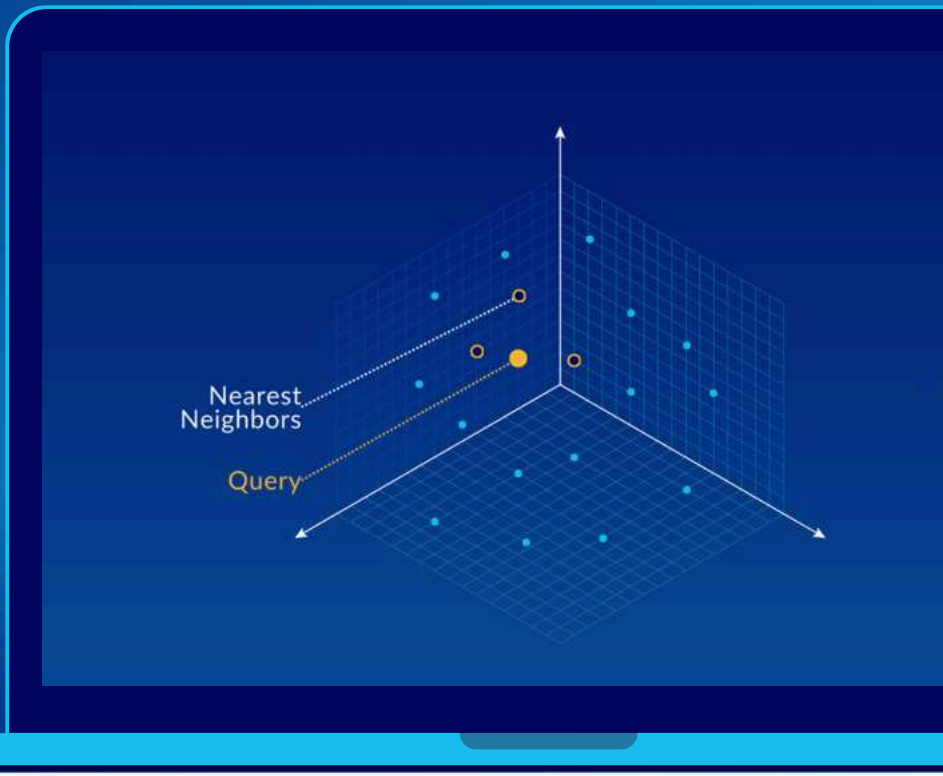
Handling Extreme Query Volume at High Speed

Siemens required a system capable of processing an estimated up to

11 million monthly visits

globally, without lag. To achieve this, the team:

- Implemented high-performance **vector search** using **K-Nearest Neighbors (KNN)** combined with pre-filtering to narrow down relevant results before deeper AI processing.
- Optimized search operations with extreme parallelization, reducing retrieval time including AI base re-ranking to **~300 milliseconds** and AI summary generation to just **~3 seconds**.



Vector Search:

A method of information retrieval where documents and queries are represented as vectors instead of plain text.

K-Nearest Neighbors (KNN):

A technique that identifies similar vectors based on proximity in embedding space.

Maintaining Compliance and Data Security

Enterprise search solutions must balance AI intelligence with corporate risk management. Siemens ensured that:

- **No proprietary or confidential data is used to train external models.**
- **Responses remain neutral and fact-based, avoiding AI hallucinations or speculation.**
- **All processing remains within Siemens' AWS infrastructure, ensuring regulatory compliance.**

Seamlessly Transitioning from Keyword-Based to AI-Powered Search

Users accustomed to keyword search needed a gradual introduction to the new AI-driven experience. Siemens implemented:

A Hybrid Transition Phase

Traditional and AI search ran in parallel, allowing users to compare results.

User Analytics & Feedback Loops

Enabling continuous refinement based on real-world usage.

The Business Impact

Speed, Efficiency, and User Satisfaction

The AI-powered search solution on ***Siemens.com*** has transformed the way employees, customers, and stakeholders interact with information.

By leveraging **20 integrated data sources**, the system delivers **fast, precise, and intuitive results**, providing users with concise, AI-generated summaries and relevant links for deeper exploration. This eliminates the need to sift through irrelevant results, making information retrieval significantly faster and more efficient.

This next-generation search experience ensures Siemens remains at the forefront of AI-driven digital transformation, enabling users to find what they need in seconds.

Faster decision-making

Users spend significantly less time searching for information.

Increased customer satisfaction

Visitors to Siemens.com quickly access relevant information.

Higher efficiency for user

Customers and employees retrieve information and technical documents faster.

Scalability for the future

The system continuously evolves, improving accuracy and responsiveness over time.

Pioneering Digital Transformation

Siemens is the first company in the Corporate Benchmark to deploy an AI-powered search on its corporate website, setting a new industry standard and shaping the future of digital communication.

Recognized by the ***NetFed Corporate Benchmark 2024*** as a digital leader, Siemens' AI search stands as a groundbreaking innovation in corporate communication, offering a personalized user experience by intelligently combining website content.

This strategic move not only strengthens Siemens' position as a pioneer in digital transformation but also ensures users can effortlessly and accurately navigate its extensive digital ecosystem.

More than just a search engine, this AI-powered solution acts as an intelligent assistant, transforming data into actionable knowledge. As Groundfog and Siemens continue refining this technology, the future holds even more advanced AI-driven capabilities, from predictive search to automated knowledge graphs. By staying ahead of the curve, Siemens is not just adapting to digital transformation — it is leading it.

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