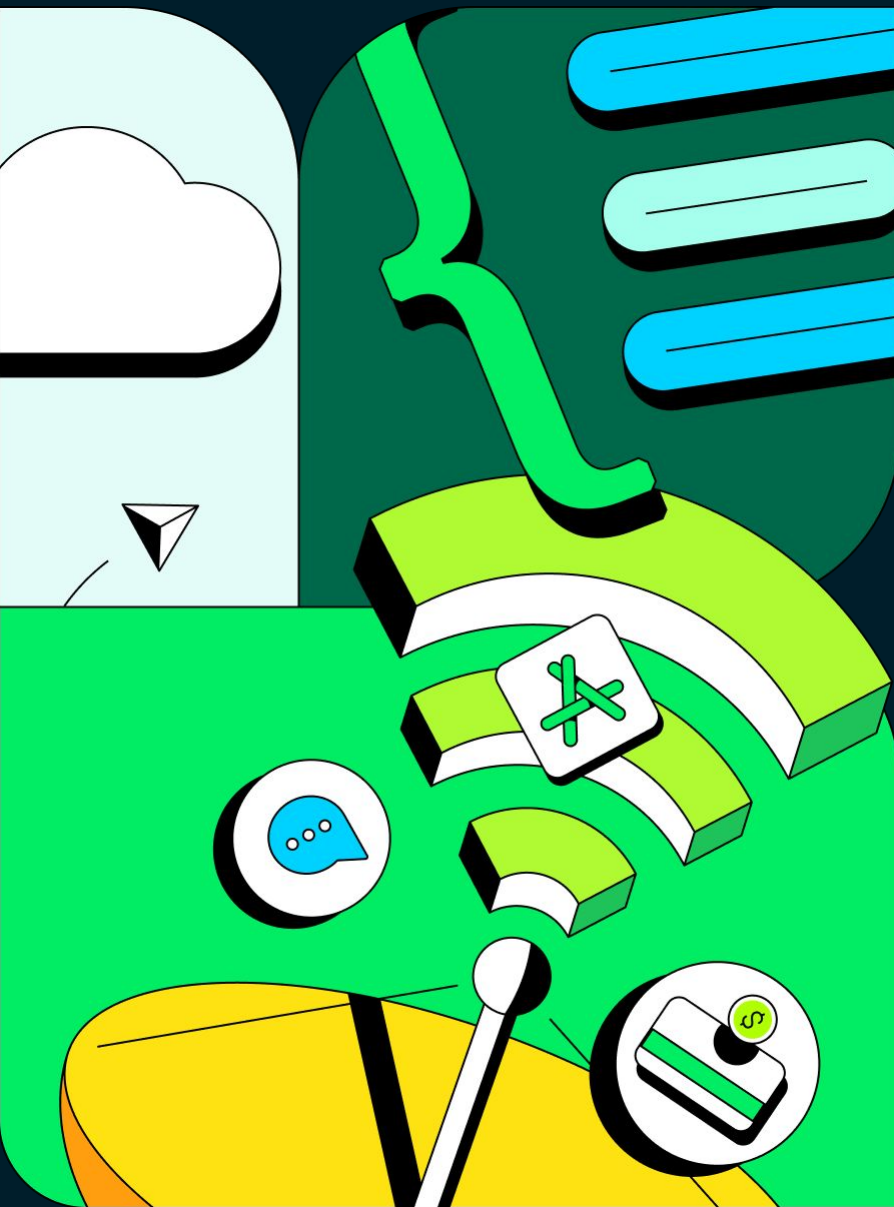




Atlas for Industries

Telecommunications and Media

Faced with high operational costs and low margins, the telecommunications and media industries are exploring new ways to create value and enhance revenue streams with AI.



AI investments in the telco & media industry



Generative AI is set to revolutionize the media and telecommunications sectors, significantly impacting content creation, distribution, service assurance, anti-fraud measures, and overall industry dynamics.

Content Creation and Distribution

AI will dramatically enhance both content creation and distribution. Search generative experiences (SGE) and AI-driven chatbots are expected to provide faster, more intuitive access to information, shifting audience flows and financial dynamics within the industry. As referral traffic from traditional social media platforms like Facebook and X (formerly Twitter) declines, media companies face the challenge of maintaining their audience and revenue streams.

In response to these challenges, media organizations are focusing on building direct relationships with their audiences and investing in intellectual property protection. This strategy aims to reduce dependence on major tech platforms but risks alienating younger, tech-savvy audiences who are already comfortable with algorithmically generated news.

Opportunities and Strategies

Despite the challenges, the shift towards AI offers numerous opportunities. News organizations are exploring innovative ways to integrate AI, emphasizing the importance of balancing technological benefits with potential risks.

These are some of the key findings from an [industry survey](#) of over 300 digital leaders across 50 countries:

- **Referral Traffic:** 63% are worried about declining traffic from social media, with significant drops reported from platforms like Facebook and X/Twitter. Traffic to news sites from Facebook fell 48% in 2023, with traffic from X/Twitter declining by 27%.
- **Platform Strategies:** Publishers are prioritizing platforms like WhatsApp and Instagram while maintaining interest in video networks such as TikTok and YouTube.
- **Content Focus:** There is a strong emphasis on increasing video, newsletters, and podcasts to engage audiences, while concerns about news fatigue and selective avoidance persist.

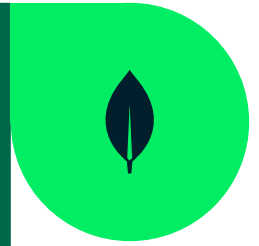
Revenue and AI Integration

Subscription and membership models are seen as vital revenue streams, with publishers also exploring lucrative AI platform licensing deals. AI is primarily viewed as a tool for backend automation, improved recommendations, and commercial uses.

Today's leading companies in the telecommunications and media industry are leveraging AI to enhance operations, safeguard their businesses, deliver relevant content and services to customers, and drive innovation.

The telecommunications industry operates in a landscape characterized by tight profit margins, particularly in commoditized communication and connectivity services where differentiation is minimal.

With offerings such as voice, data, and internet access being largely homogeneous, telecom companies need to differentiate and diversify revenue streams to create value and stand out in the market.



As digital natives disrupt traditional business models with agile and innovative approaches, established companies are not only competing among themselves but also with newcomers to deliver enhanced customer experiences and adapt to evolving consumer demands.

To thrive in an environment where advanced connectivity is increasingly expected, telecom operators must prioritize cost efficiency in their Operations Support Systems (OSS)

and Business Support Systems (BSS), elevate customer service standards, and enhance overall customer experiences to secure market share and gain a competitive edge. They're not alone—media publishers, too, must streamline operations through automation while strengthening reader relationships to foster a willingness to pay for personalized and relevant content.

Service Assurance

Telecommunications providers need to deliver network services at optimal quality and performance levels to meet customer expectations and service level agreements. Key aspects of service assurance include performance monitoring, quality of service (QoS) management, and predictive analytics to anticipate potential service degradation or network failures. With the increasing complexity of telecommunications networks and the growing expectations of customers for high-quality, always-on services, a new bar has been set for service assurance, requiring companies to invest heavily in solutions that can automate and optimize these processes and maintain a competitive edge.

Service assurance has been revolutionized by AI through several key capabilities: ML can be the powerful foundation for predictive maintenance, analyzing patterns and predicting network failures, allowing for preemptive maintenance and significantly reducing downtime. AI techniques can also sift through complex network systems to accurately identify the root causes of issues, improving the effectiveness of troubleshooting efforts. AI can also have a huge impact on network optimization, analyzing log data to identify opportunities for improvement, raising efficiency and thus reducing operational costs and optimizing network performance in real-time.

MongoDB Atlas's JSON-based document model is the ideal data foundation to underpin intelligent applications. It stores log data from various systems without the need for time-intensive upfront data normalization efforts and with the flexibility to deal with a wide variety of different data structures, as well as with their potential change over time.

By vectorizing the data with an appropriate ML model, it will be possible to reflect the healthy system state and to identify log information that shows abnormal system behavior. Atlas Vector Search allows for conducting the required search in an effective way and as a fully included service of the MongoDB cloud data platform. Finally, using LLM, information about the error, including the analysis of the root cause, can be expressed in natural language, making the job of understanding and fixing the problem much easier for the staff who are in charge of maintenance.

Fraud Detection and Prevention

Telecom providers today are utilizing an advanced array of techniques for detecting and preventing fraud, constantly adjusting to the dynamic nature of telecom fraud. Routine activities for detecting fraud consist of tracking unusual call trends and data usage, along with safeguarding against SIM swap incidents, a method frequently used for identity theft. To prevent fraud, strategies are applied at various levels, starting with stringent verification for new customers, during SIM swaps, or for transactions with elevated risk, taking into account the unique risk profile of each customer.

Machine learning offers telecommunications companies a powerful tool to enhance their fraud detection and prevention capabilities by training ML models on historical data like Call Detail Records (CDR). Moreover, these algorithms can assess the individual risk profile of each customer, tailoring detection and prevention strategies to their specific patterns of use.

The models can adapt over time, learning from new data and emerging fraud tactics, thus enabling real-time detection and the automation of fraud prevention measures, reducing manual checks, and speeding up response times.

To deal with fraud successfully, a multitude of data dimensions need to be considered, with reaction time being a critical factor in preventing the worst things from happening, so the solution must also support fast, sub-second decisions. By vectorizing the data with an appropriate ML model, normal (healthy) business can be defined, and in turn, deviations from the norm identified, for instance, suspicious user activities. In addition to Atlas Vector Search, the MongoDB Query API supports stream processing, simplifying data ingestion from various sources.

One of the customers utilizing MongoDB for its anti-fraud strategy is [AT&T](#). The company selected MongoDB for its ability to ingest and store rapidly changing data. Moreover, MongoDB Atlas meets AT&T's key requirements for performance, availability, and security. The fraud prevention platform now operates over 50 different AI models, utilizes more than 1,200 features, stores 30TB of data, and processes up to 20 million events daily. Events are processed in under 200 milliseconds, enabling real-time fraud detection and prevention. As a result, fraud—particularly iPhone-related fraud, which was previously a \$1 billion problem—has been reduced by over 80%.

Content Discovery

Today's media organizations are expected to offer a degree of content personalization, from streaming services to online publications and more. Viewers want intelligently selected and suggested content tailored to their interests.

Leveraging AI can significantly enhance the process of suggesting the next best article to read or show to stream. The most powerful implementations of content personalization track behavior of the user, like which content was searched for, how long was content displayed before the next click happened, what categories, etc. Based on these parameters, similar content can be presented, or, as an alternative strategy, content from unseen areas of the portal presented to have the user discover new types of media and check their appetite for consuming it.

To bring the right content to the right people at the right time, an automated system needs to maintain a multitude of information facets, which will lay the foundation for proper suggestions. With MongoDB and its document model, all required data points can be easily and flexibly stored in a user's profile, in content, and media.

Ultimately, by vectorizing the content, an even more powerful system of content suggestions can be built with Atlas Vector Search, which allows for similarity search that goes well beyond comparing just keywords or a list of attributes.

Content Suggestions and Personalization

By utilizing user data, behavior analytics, and the multi-dimensional vectorization of media items, the platform suggests content that aligns with individual preferences and past interactions. This not only enhances user engagement but also increases the likelihood of converting free users into paying subscribers. Vectors are embedded directly in MongoDB documents. This has several advantages. For instance, there are no complexities of a polyglot persistence architecture, and no need to extract, transform, and load (ETL) data between different database systems, which simplifies the data architecture and reduces overhead. Furthermore, MongoDB's built-in scalability and resilience become particularly advantageous when handling vector search operations. Organizations can scale their operations vertically or horizontally, and they can even choose to scale search nodes independently from operational database nodes, thus adapting to the specific load scenario.

Content Summarization and Reformatting

In an age of information overload, the solution provides concise summaries and adapts content formats based on user preferences and device specifications. This tailored approach addresses the diverse consumption habits of users across different platforms.

Keyword Extraction

Essential information is drawn from content through advanced keyword extraction, enabling users to grasp key news dimensions quickly and enhancing the searchability of content within the platform. Keywords are fundamental to how content is indexed and found in search engines, and they significantly influence the SEO (search engine optimization) performance of digital content. With the help of the underlying [LLM](#), the solution extracts keywords automatically and with high sophistication.

Automatic Creation of Insights and Summaries

Our system can automatically generate comprehensive insights and summaries from multiple articles. This feature is particularly valuable for users interested in deep dives into specific topics or events, providing them with a rich, contextual experience. This capability leverages the power of one or more large language models (LLMs) to generate natural language output, enhancing the richness and accessibility of information derived from across multiple source articles.

Solution demo

[Discover](#) how to leverage MongoDB and Vector Search effectively to create more engaging, personalized user experiences.

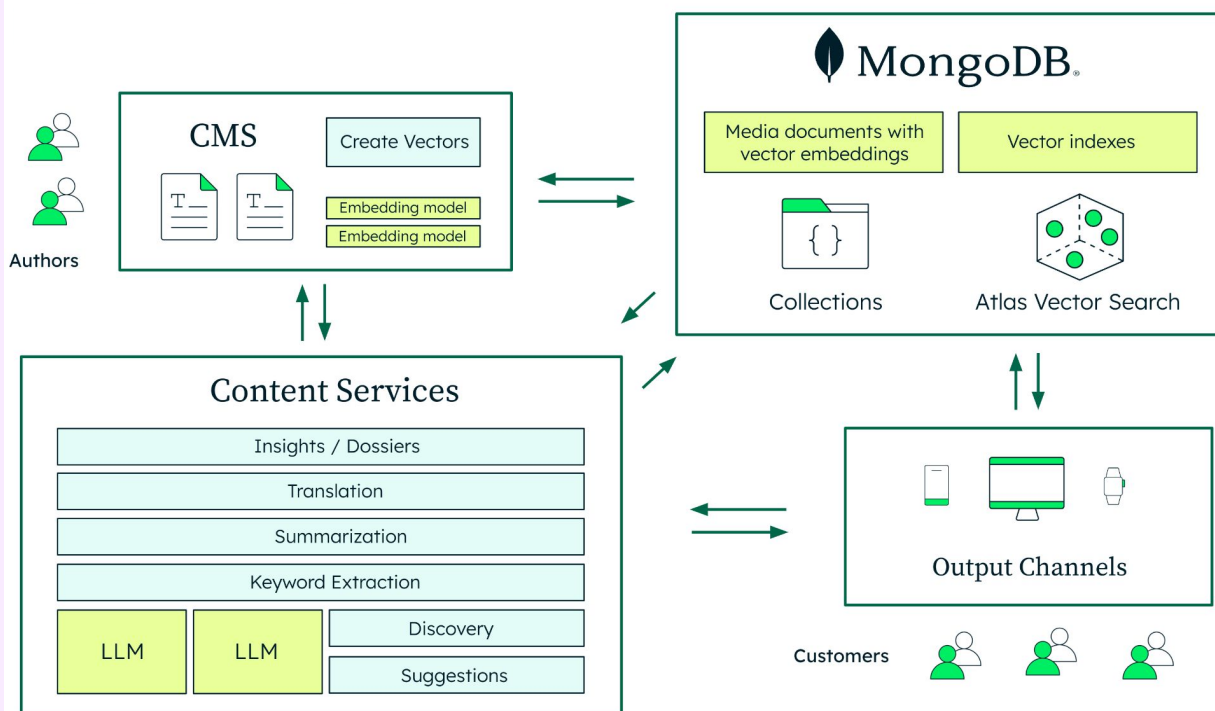


Figure 16: Reference architecture for to creating more engaging, personalized user experiences with MongoDB and Vector Search

Search Generative Experiences (SGE)

Search generative experiences (SGE) represent a transformative shift in how media and content industries interact with information retrieval and user engagement. SGE utilizes artificial intelligence to generate search results that are not just links to existing content, but comprehensive, synthesized responses tailored to the user's query. By providing immediate, concise answers, SGE helps media platforms keep users engaged longer, reducing bounce rates and increasing the likelihood of deeper interaction with the content.

With MongoDB and Vector Search being placed at the center of an SGE solution (as shown below in the reference architecture), multiple new revenue streams can be established.

Intelligent Research Tools

Provide easy access for researchers to the publisher's news archive, returning not just

the most relevant articles for a topic of interest, but also combining them into a concise summary, elevating the value for the customer.

Smart Conversational Interfaces

Content retrieval products that are accessible from smartwatches, AR and VR glasses, lapel pins, and other wearable devices, or from the car, allow for the consumption of data in more day-to-day situations.

Gamified Learning Experiences

Develop educational content with interactive quizzes and activities that adapt to the user's knowledge level and learning pace using Atlas Vector Search and SGE to provide personalized feedback.

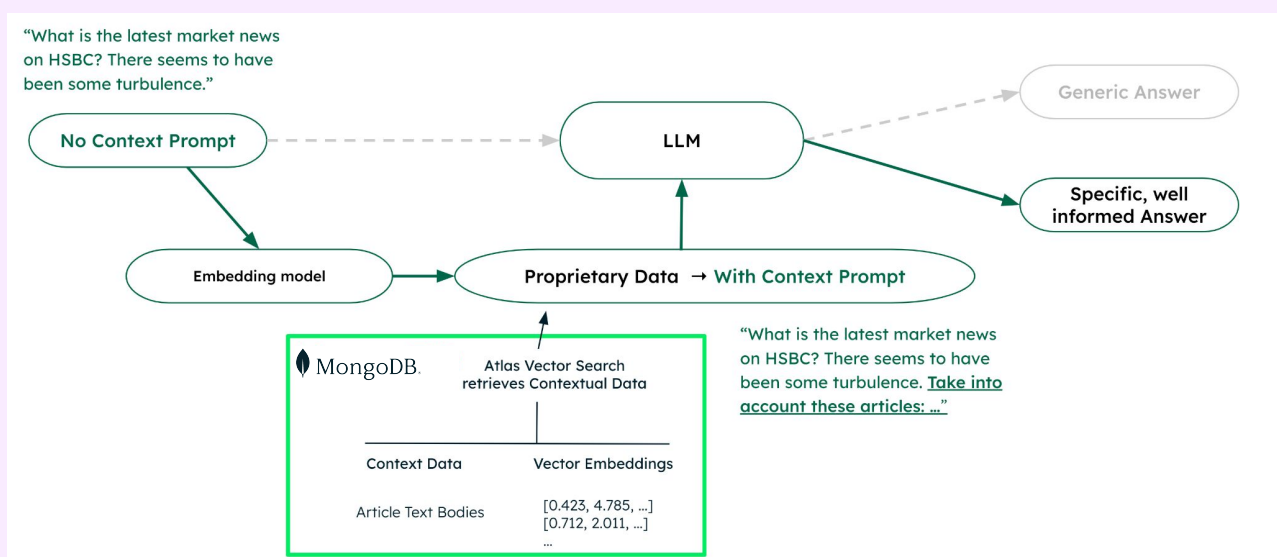


Figure 17: Reference architecture for creating Search Generative Experiences

Other Notable Use Cases



Differential Pricing

Gather insights into what customers are willing to spend on content or a service by conducting A/B tests and analyzing the data with an ML algorithm.

This method facilitates the adoption of dynamic pricing models instead of sticking to a standard price list, thereby increasing overall revenue, and enlarging the paying customer base.

Backend Automation

Extract relevant keywords from news articles using one or several LLMs, thus supporting search engine optimization (SEO), as well as content indexing and categorization.

Assist in copyediting, by identifying and correcting grammatical errors, spelling mistakes, and punctuation issues. Suggest improvements in sentence structure, style, and tone, ensuring high-quality content production.



Vodafone's New Developer Speed and Dexterity—Powered by MongoDB

Vodafone transformed its software development with a "telco-as-a-service" (TaaS) model and MongoDB Atlas, enabling faster, more secure app development. This shift to serverless computing cut costs, improved customer experience, and boosted developer productivity, allowing teams to quickly deploy code and innovate.

Contact Information



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