

# Investor Session: Product Update

MongoDB.local NYC 2024



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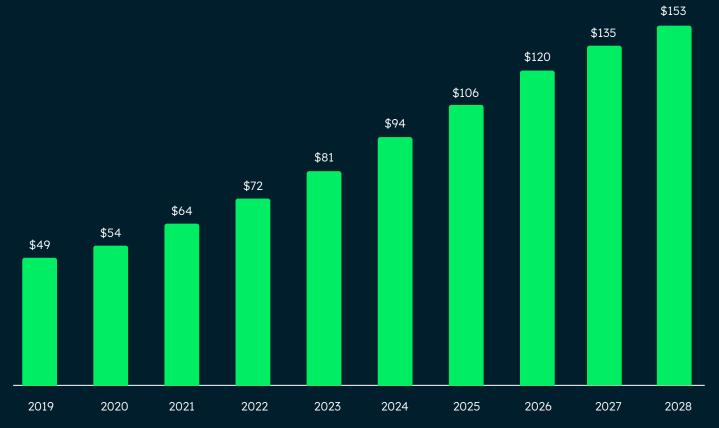
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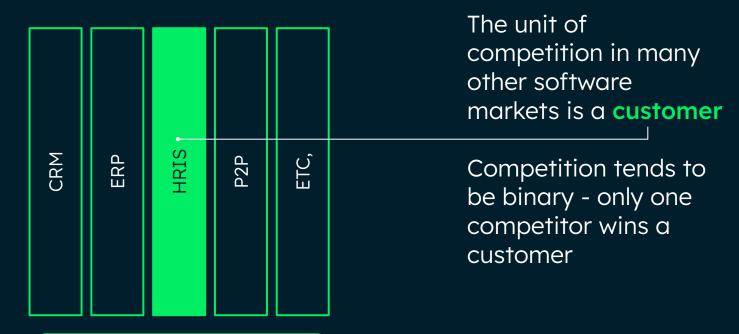
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# We are pursuing one of the largest & fastest growing markets in software

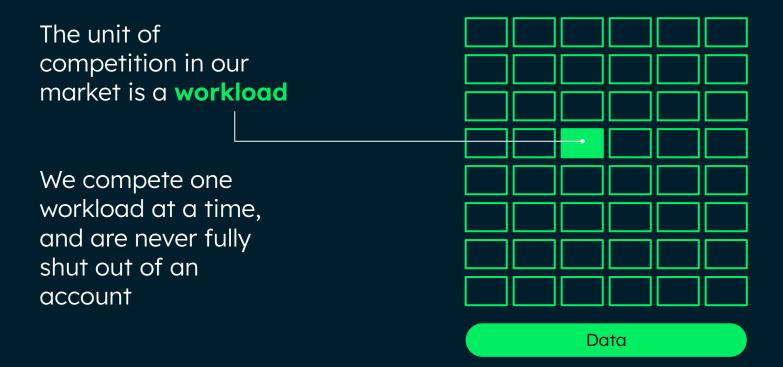
### Data Management Software Market, \$Bn 🕴







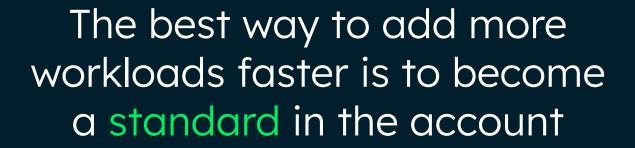
**Application Software** 



# To grow within an account, we need to acquire more workloads over time



				BL3			BL1	BL3	BL5		BL1	BL2	BL3	BL4	BL5	BL6



Becoming a standard means that MongoDB is approved to be broadly used in the account

# Benefits of becoming a standard





Explicit C-level Support



Company-wide developer access

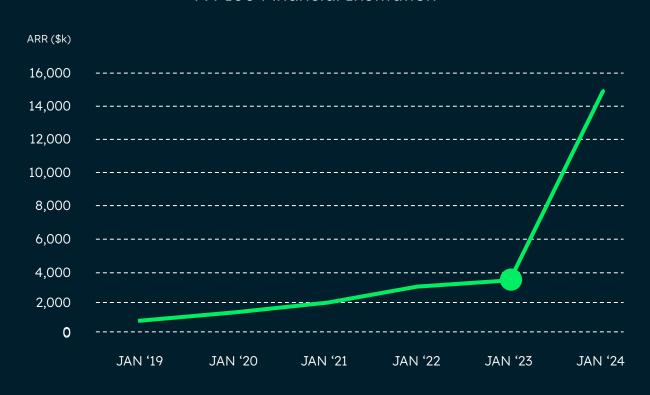


Streamlined app deployment

# Benefits of Becoming a Standard



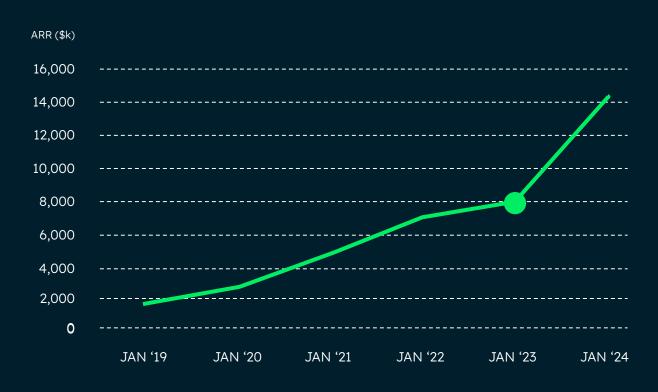
### A F100 Financial Institution



# Benefits of Becoming a Standard



A F100 Healthcare Multinational



# Benefits of Becoming a Standard



A Global Retail Company





# How we become a standard

Solve a broad range of problems

Accelerate application modernization

Establish ourselves as a trusted AI partner

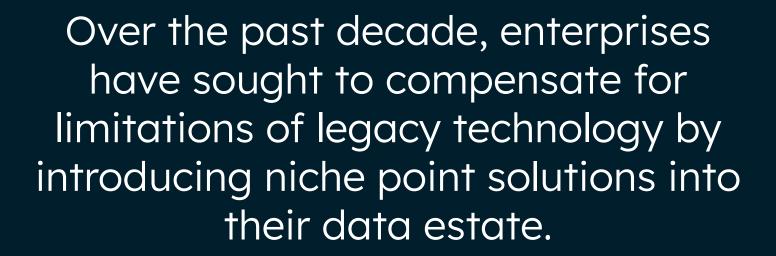


# How we become a standard

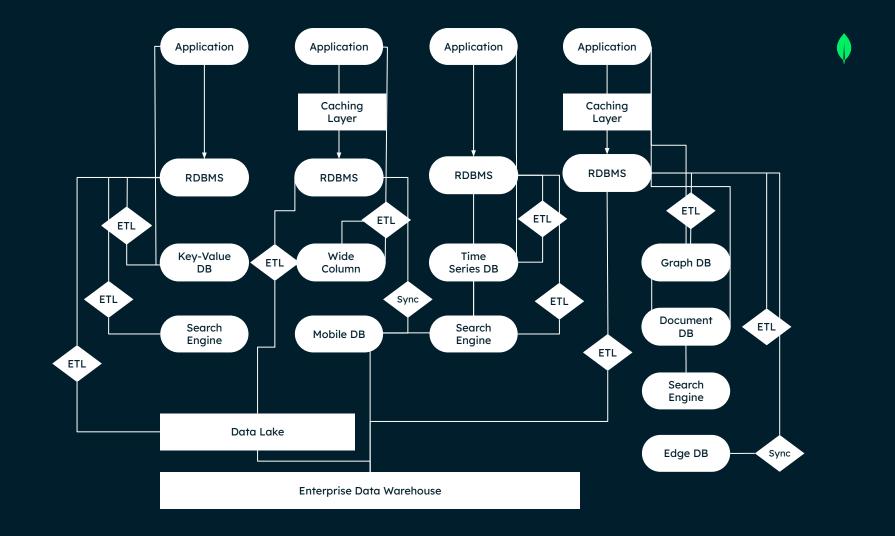
Solve a broad range of problems

Accelerate application modernization

Establish ourselves as a trusted AI partner



Resulting in architectures that look like this...



# This complexity inhibits innovation



87%

of CIOs agree that complexity is slowing them down

75%

of Developers say
working with data is the
hardest part

<u>McKinsey:</u> <u>CIO Agenda</u> <u>MongoDB:</u> <u>Report on Data and Innovation</u>

# Enterprises are moving away from point solutions





Improve developer productivity



Eliminate back end complexity



Reduce costs and improve ROI



MongoDB's Developer Data Platform is designed to allow customers to address a broad set of use cases across a variety of deployment models on one standard platform





### **Document Model & Query API**















Your Data

Secure • Global & Multi-Cloud • Resilient & Elastic

On AWS, Azure, GCP







Reminder:
MongoDB's origin
story was to address
the limitations of
relational databases

Rigid to change + imposes unnecessary constraints for developers

Don't cope well with high-fidelity data

Not appropriate for Internet scale

Not appropriate for distributed data

Expensive hardware, punitive licensing, cloud lock-in, intrusive audits



Developer Experience

Security, Resilience & Scalability

Run Anywhere



MongoDB's foundational technical advantage is the document model

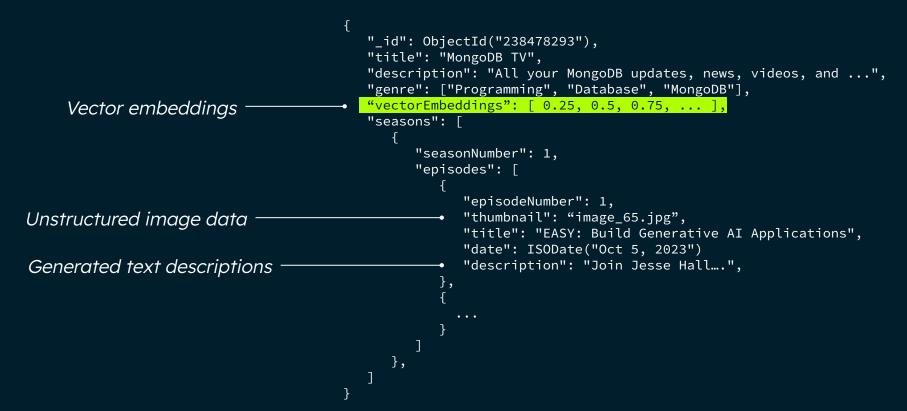
**Developer Experience:** The document model is flexible and maps to how developers think and code

Flexibility: Documents are a superset of all other data models, allowing us to address the vast majority of operational / transactional use cases

**Scalable:** Documents put data together in a way that is more performant and efficient and allows almost infinite scalability

# Document model brings all data types together





### We are seeing success across industries and use cases

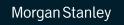






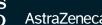
























GE HealthCare COMCAST AUTOMOTIVE































































### WE ARE FURTHER DRIVING OLTP PERFORMANCE

# MongoDB 8.0

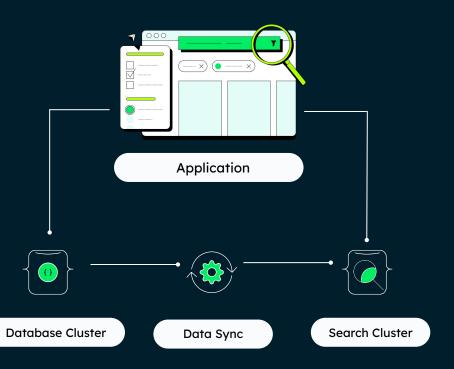
- Significant performance improvements (20-60%) across all common workload types, especially common read/write and time series workloads
- Materially enhancing our sharding capabilities, including resharding up to 50x faster and a more balanced distribution of data across shards
- Providing customers better control and performance visibility via Query Insights
- Continue to expand Queryable Encryption functionality, including range support



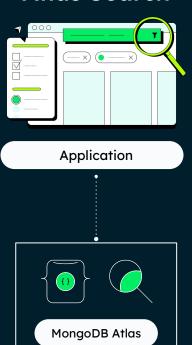




### **Search Before Atlas Search**



### **Atlas Search**





Eliminate "Synchronization Tax"

Superior Developer Experience

Fully Managed Platform

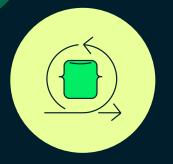


I thought it was going to be difficult to migrate the data, but it turns out that the toolkit Atlas provides made it incredibly simple. One of the big selling points for Atlas is that it has Atlas Search, meaning I can get rid of our search databases.

MongoDB Atlas Search was a game changer. We ran a proof of concept and discovered how easy it is to use. We can index in one click, and because it's a feature of MongoDB Atlas, we know data is always up-to-date and accurate. We don't need to maintain additional infrastructure as the new features were implemented in less than two weeks, compared to the three months it would have taken to roll out another solution.

Ken Schuelke,Division Information OfficerToyota Financial Services

Andrii Hrachov,Principal Software EngineerDelivery Hero



# Building a rich Full-Text Search experience

### **Recent Innovation:**

- Dedicated Atlas Search nodes on AWS and GCP
- Support for sequential pagination in Atlas Search
- Atlas Search local experience on Atlas CLI
- Atlas Search query analytics preview

### **Announcement:**

- Dedicated Atlas Search nodes on Azure (Public Preview)
- Search coming to MongoDB Community





### Building AI-enabled apps is difficult





### **Embedding Generation**

The process of representing data as vectors using embeddings models



### **Vector Search**

A method for retrieving similar items from a dataset by comparing their vector representations



#### Database

Contains high value proprietary operational data that can be retrieved to aid an LLM in answering a query



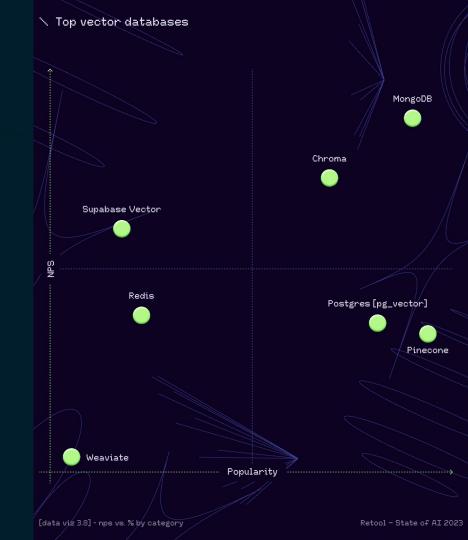
#### LLMs

Generates output based on relevant data that it receives from the vector search process Atlas Vector Search Value Proposition Streamline RAG with unified data

Enterprise readiness

Stay agile with flexible data model

Retool's State of AI 2023 report shows that our Atlas Vector Search value proposition is resonating with customers



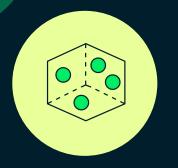


With Atlas Vector Search, we now possess a battle-tested vector/metadata database, refined over a decade, effectively addressing our dense retrieval requirements. There's no need to deploy a new database, as our vectors and artifact metadata can be seamlessly stored alongside each other.

- Russell Sherman,
Co-Founder & CTO
VISO Trust

The generative AI we've introduced currently creates vector embeddings from documents, so when a user asks a question, it retrieves the most relevant document and uses LLMs to build the answer. We're looking at migrating vector embeddings into MongoDB Atlas to create a fully integrated, functional system. We'll then be able to use Atlas Vector Search to build AI-powered experiences without leaving the Atlas platform – a much better experience for developers.

Sabato Severino,Senior AI Solution ArchitectEni



# Rapid pace of innovation in Vector Search

### **Recent Innovation:**

- Vector Search local experience with Atlas CLI (Sept 2023)
- Dedicated \$vectorSearch
   Aggregation Stage (Sept 2023)
- Vector Search GA (Dec 2023)
- Create and manage Atlas Vector Search indexes in Compass (Feb 2024)

#### **Announcement:**

- Dedicated Vector Search nodes on Azure in Public preview
- Vector Search as a datastore on Haystack and DocArray
- Vector Search as a knowledge base on AWS Bedrock
- Vector Search coming to Community





## Streaming data is critical for real time use cases







Energy company rapidly adding IoT devices seeks a **continuous view** into grid health



### Manufacturing

Pump Supplier using continuous monitoring for pump yield optimization, early failure detection, and equipment health



### Technology

An engineering software leader wants to offer more tailored app experiences



### **Airlines**

A major airline to power a crew maintenance application tracking parts use with **low-latency** 

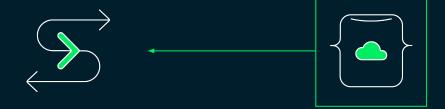
### Components of a streaming system





### **Streaming Transport**

Services that ingest data from "sources" as it's created and then stream that data to targets ("sinks"). Kafka is the dominant technology



### **Stream Processing**

Services that perform real-time queries on streaming data, such as transformations and aggregations

### **Databases**

Ingest and index data from streaming platforms and processors into a persistence layer, making it queryable Atlas Stream
Processing
Value Proposition

Data model natural fit for stream processing

An integrated and unified experience

Operational simplicity



We process about half a billion messages per month in one of our busiest microservices. Atlas Stream Processing has the potential to help us greatly simplify our architecture and leverage powerful operators like windowing and validation are critical to us as our business evolves and scales. It will potentially reduce the latency in our aggregation pipelines.

Our Acoustic Connect platform must be able to efficiently process and manage millions of marketing, behavioral, and customer signals as they occur. With Atlas Stream Processing, our engineers can leverage the skills they already have from working with data in Atlas to process new data continuously, ensuring our customers have access to real-time customer insights.

<sup>–</sup> Ray Chew,
Principal Software Engineer
Playvox

John Riewerts,
 EVP Engineering
 Acoustic

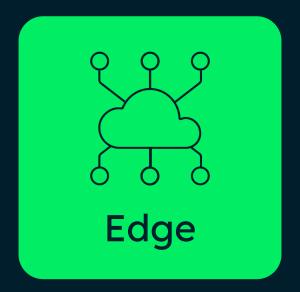


WE ARE EXCITED FOR THE NEXT MILESTONE

# Atlas Stream Processing GA

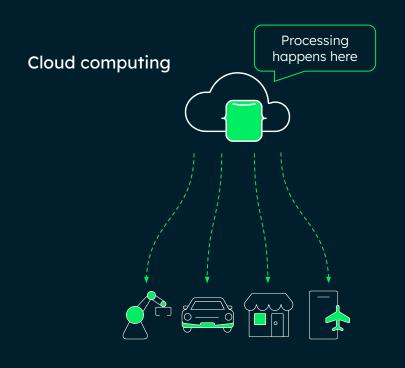
- Initial support for AWS expanding to Azure and GCP
- Integrates with Apache Kafka, Confluent, AWS MSK and other Kafka-compatible streaming platforms such as Azure Event Hubs and Redpanda
- Available presized for Development and Production workloads

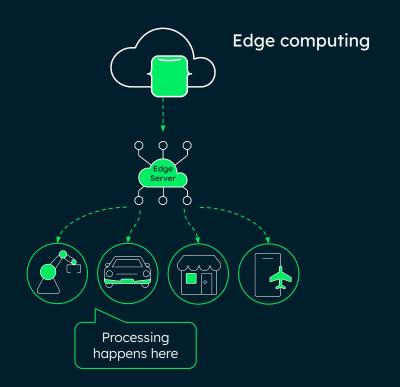




### Cloud computing vs. Edge Computing









### Benefits of Edge Computing

- Local processing and low latency
- Tolerance to disconnection or unreliable connection
- Real-time data enabling time-sensitive use cases
- High volume and variance
- Cost optimization
- Data privacy

# Despite the benefits, building edge applications is challenging





Complex data synchronization & management



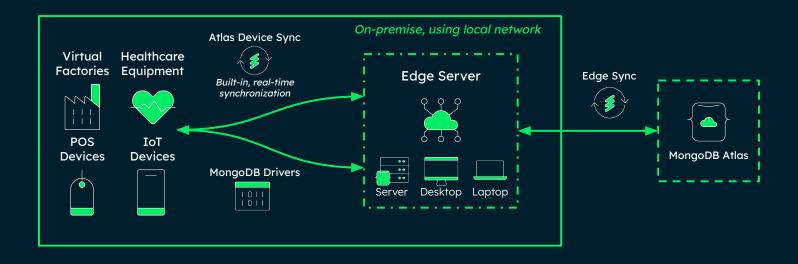
Diverse hardware and software requirements



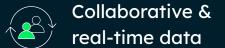
Security
vulnerabilities
and risks

# Atlas Edge Server enables end-to-end connectivity











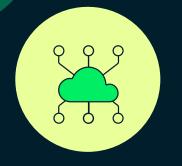
Secure by default

### Atlas Edge Server Value Proposition

Real-time sync

Optimized bandwidth

Low latency/always on



WE ARE OPENING ACCESS TO MORE CUSTOMERS

# Atlas Edge Server Public Preview

- Announced Atlas Edge Server Private Preview October 2023
- Local MongoDB paired with a sync server that runs on-premises to enable bidirectional sync between the edge server and Atlas.
- Ensures local capabilities, such as inventory management and point-of-sale, run smoothly in disconnected and offline situations.



# How we become a standard

Solve a broad range of problems

Accelerate application modernization

Establish ourselves as a trusted AI partner

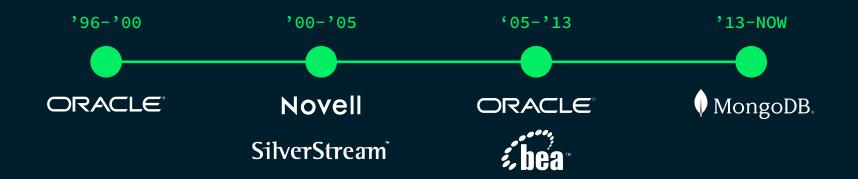
# Personal Intro: 28 years of data and middleware experience





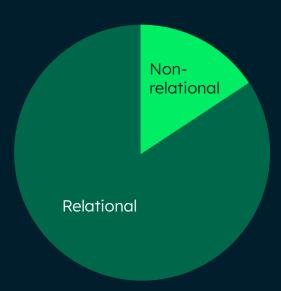
**Paul Done** 

Field Chief Technology Officer Modernization Factory





Our principal competitor remains legacy relational technology





Relational technology is no longer capable of meeting the needs of today's modern applications

Rigid to change + imposes unnecessary constraints for developers

Don't cope well with high-fidelity data

Not appropriate for Internet scale

Not appropriate for distributed data

Expensive hardware, punitive licensing, cloud lock-in, intrusive audits



Because getting off relational is very hard.

# There is tremendous variety within relational applications



User Interface	ORACLE' Forms	Win32	JSP &	ASP.NET
DB Integration	HIBERNATE	Stored Procedures	ODBC	Java EJB
Runtime	Microsoft COM	JBoss®  by Red Hat	IBM WebSphere	Apache Tomcat
Language	(E) Java	COBOL	C	<b>G</b>
Database	ORACLE	SQL Server	Sybase	DB2

## Reminder: three steps in app modernization



Update schema

Rewrite code

Migrate data

### A more detailed look at the process



Analyze legacy system Create end-to-end tests Design solution architecture

Rewrite & add code

User testing & developer fixing

Migrate data & deploy

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Last year, we announced the general availability of Relational Migrator, a product that simplifies modernization

# Relational Migrator makes these steps easier today:









Analyze legacy system Create end-to-end tests Design Solution architecture

Rewrite & add code

User testing & developer fixing

Migrate data & deploy



Relational Migrator is an easy and seamless tool for apps looking to migrate from RDBMS to MongoDB. All we needed to give is the MongoDB destination and with one click the records started migrating to the destination.

Relational Migrator is a great tool to support the migration, especially the graphical support for modeling the data streams from the source structure to the target structure. The MongoDB enabling team did an excellent job in helping us to be able to go through the migration steps.

DBAfrom a Fortune 50Health Insurance Company

Lead Architectfrom a Global 50Financial Services Company

## But we can make app modernization much easier thanks to AI

We are running several pilots this year to learn how much easier

### AI can simplify every step of app modernization

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Activity	AI Acceleration	AI Impact
ANALYZE LEGACY SYSTEM	Use LLMs to analyze legacy codebase in order to understand its structure, eliminating the need for input from original developers who will have moved on	VV
CREATE END-TO-END TESTS	Analyze how users interact with the app and then feed that information to an LLM to create tests that ensure the viability of the new application	V V V
DESIGN SOLUTION ARCHITECTURE	Identify how to "pull out" potential microservices from the monolith by using existing source code + recorded end-user behaviour with LLMs	<b>V</b>
REWRITE & ADD CODE	Partially automate the creation of microservices by using existing source code + recorded end-user behaviour with LLMs	V V V
USER-TESTING & DEVELOPER-FIXING	Human intervention for testing and bug code fixing is still needed but can be streamlined through the use of LLMs	VV
MIGRATE DATA & DEPLOY APP	Reduce deployment risk by using the LLMs to identify how best to structure code to dual-run old and new databases during intermediate phases of migration	<b>~</b>

# Some (very early) lessons from the pilots





AI-Generated tests
hold great promise to
shorten development
and testing cycles
and reduce risk



Capabilities of LLMs vary significantly, increasing the importance of picking right



"Last mile" human expertise will remain critical to validate code and ensure quality

### Where do we go from here?



FY 24







This year we are focused on deep engagements with a small number of customers, to prototype and iterate on a number of approaches for AI-enhanced app modernizations

### Playbooks/Templates

In the future, we'll consolidate the learnings to build processes and templates to accelerate app modernization for each customer and also scale the number of engagements we can run

#### **Product**

We expect that app modernization will always involve some human interaction. However, over time, we will incorporate many of our learnings into Relational Migrator, the product.

## In summary... Getting off relational is very hard

We are learning how to harness the power of AI to make the process much easier



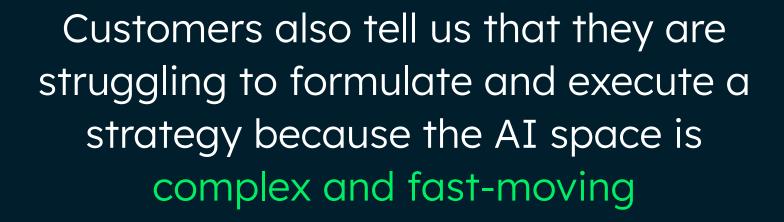
# How we become a standard

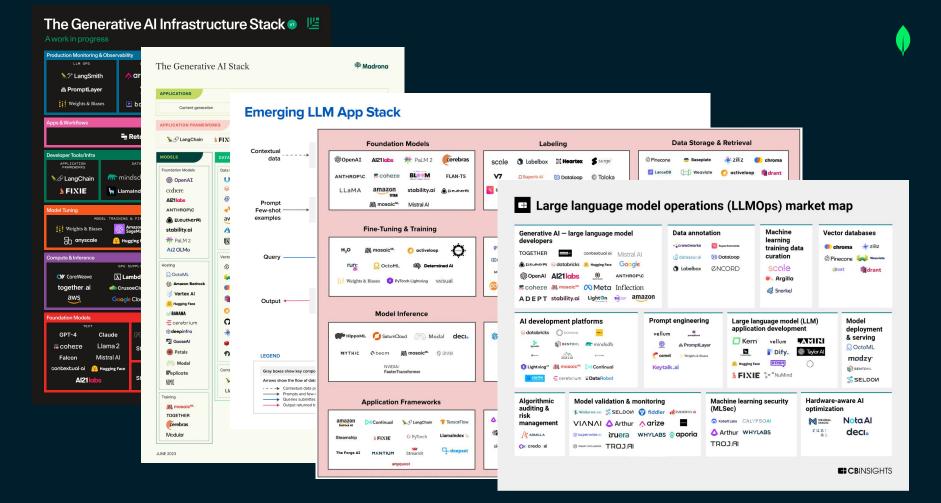
Solve a broad range of problems

Accelerate application modernization

Establish ourselves as a trusted AI partner

Enterprise customers tell us that AI strategy is a board-level priority, due to its promise to dramatically change cost structures and enhance customer experiences





Introducing the next generation of Claude

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Mar 4, 2024 • 7 min read

Introducing Meta Llama 3: The most capable openly available LLM to date

UPDATED 20:11 EDT / APRIL 10 2024

Mistral AI debuts Mixtral 8x22B, one of the most powerful open-source AI models yet



Apr 04, 2024

Introducing Command R+: A Scalable LLM Built for Business

AIDAN GOMEZ

NEWSROOM PRODUCT

15 Apr

Reka Core: Our Frontier Class Multimodal Language Model



Introducing Phi-3: Redefining what's possible with SLMs

By Misha Bilenko, Corporate Vice President, Microsoft GenAl



OpenAl @OpenAI · Apr 9

Majorly improved GPT-4 Turbo model available now in the API and rolling

Introducing DBRX: A New State-ofthe-Art Open LLM

by The Mosaic Research Team

March 27, 2024 in Mosaic Al Research

Share this post



Introducing Marengo-2.6: A New State-of-the-Art Video Foundation Model for Any-to-Any Search



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87%

of customers don't feel equipped to transform with AI

- WEBER SHANDWICK - UN/PREDICTIONS 2024



Customers do understand they need a holistic and flexible approach to AI

Any Use Case

Any Model

**Any Cloud** 

Any Data Type



**Customer AI Needs** 

Any Use Case

Any Model

Any Cloud

Any Data Type

MongoDB.

Deep Market Expertise

Any LLM Provider

Cloud Independent

**Document Model** 

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In other words, we are well positioned to serve as a trusted AI advisor to our customers as they navigate this mega trend

But what does that have to do with becoming a standard?

Traditionally, we grow in an account through a land-and-expand motion

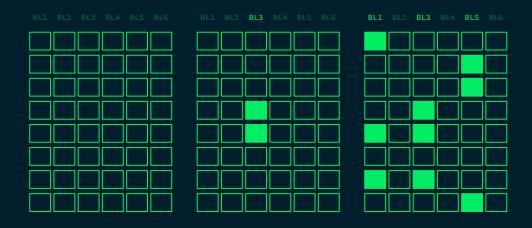


We land in an account by engaging with developers to help them solve problems they cannot solve with their existing tech stack

					BL3		
	_	_	 				



We expand by building momentum with more developer teams and business unit leads





We become a standard when we are so spread in the account that the C-suite realizes the strategic benefits of partnering with us



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Increasingly, thanks to our AI positioning, we are engaging in strategic C-level conversations with customers sooner, giving us an opportunity to sell tops down to accelerate our land-and-expand motion

# Case study: GenAI Executive Briefing

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We organized a GenAI executive briefing in London on April 18th

The event attracted 40 C-level execs from 10 countries, representing verticals including finance, retail, technology and government among others



"The depth of discussion was invaluable, MongoDB are uniquely positioned to garner such a cross section of CxOs."

— Head of AI, Large Global Consulting Firm



How will we seize this AI moment?

# We will continue with AI innovation in our product



### **Infrastructure and Vectors:**

- \$vectorSearch Aggregation Stage
- MongoDB BSON Specification for Vectors
- Dedicated nodes for Vector Search
- Programmatic deployment for Search nodes (Terraform + Cloudformation)
- Broad Vector Search performance improvements
- Local Development with Atlas CLI
- Vector Search coming to MongoDB Community

### **AI Stack Integrations:**

- New partnerships with Fireworks.ai and Mistral, adding to a growing list
- Atlas Vector Search as an AWS Bedrock Knowledge Base GA
- Dedicated Langchain-MongoDB package in Python and JS
- OpenAI ChatGPT retrieval plugin for MongoDB
- Microsoft Semantic Kernel integration for Atlas Vector Search
- Atlas Vector Search as a datastore on Haystack and DocArray

## **Productivity & Migrations:**

- Collaboration with Amazon
   CodeWhisperer, Microsoft Copilot and
   Google Gemini
- Intelligent query experience in Compass
- Vector Search index management in Compass
- Create visualizations using natural language in Charts
- SQL-to-Query API Conversion in Relational Migrator
- Upcoming innovations in application modernization (code analysis, schema mapping, code conversion)

# We will keep expanding our AI ecosystem 🕴







#### **ATLAS**

Pre-configured and optimized MongoDB products, features, and services

### **PARTNERS**

Pre-selected, leading AI tech partnerships



# REFERENCE ARCHITECTURES

Proven, repeatable architectures for simple implementation

### **SERVICES**

PS & expert Boutique SIs to handle implementations