



mongoDB

## MongoDB - Paradigm shift in working and managing data

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```
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LinkedIn : https://www.linkedin.com/in/oliverwedell/,  
Xing : https://www.xing.com/profile/Oliver\_Wedell/ }
```

# Agenda



90 minutes

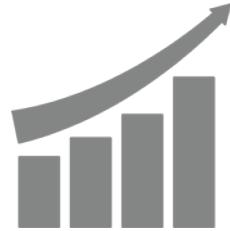
- MongoDB Introduction & Technology
- MongoDB DBaaS - Atlas & Azure
- Atlas Demo
- Backend as a Service Demo
- Q&A

# MongoDB Figures

# MongoDB figures



2007 / New York



Growth 52% YoY



IPO 2017



1000+ Employees



5700+ Enterprise  
Customers

FORTUNE  
**100**

50%



60 Mio-  
Downloads

# The Evolution of MongoDB

3.0	Doc-Level Concurrency Compression Storage Engine API ≤50 replicas Auditing ++ Ops Manager	Document Validation \$lookup Fast Failover Simpler Scalability Aggregation ++ Encryption At Rest In-Memory Storage Engine BI Connector MongoDB Compass APM Integration Profiler Visualization Auto Index Builds Backups to File System	Linearizable reads Intra-cluster compression Views Log Redaction Graph Processing Decimal Collations Faceted Navigation Zones ++ Aggregation ++ Auto-balancing ++ ARM, Power, zSeries BI & Spark Connectors ++ Compass ++ Hardware Monitoring Server Pool LDAP Authorization Encrypted Backups Cloud Foundry Integration	Change Streams Retryable Writes Expressive Array Updates Query Expressivity Causal Consistency Consistent Sharded Sec. Reads Compass Community Ops Manager ++ Query Advisor Schema Validation End to End Compression IP Whitelisting Default Bind to Localhost Sessions WiredTiger 1m+ Collections MongoDB BI Connector ++ Expressive \$lookUp R Driver Atlas Cross Region Replication Atlas Auto Storage Scaling	Multi-Document ACID Transactions Atlas Global Clusters Atlas HIPAA Atlas LDAP Atlas Audit Atlas Encrypted Storage Engine Atlas AWS Backup Snapshots Atlas Full CRUD Agg Pipeline Type Conversions 40% Faster Shard Migrations Snapshot Reads Non-Blocking Secondary Reads SHA-2 TLS 1.1+ Compass Agg Pipeline Builder Compass Export to Code Charts Beta Free Monitoring Cloud Service Ops Manager K8s & OpenShift MongoDB Stitch GA MongoDB Mobile Beta
3.2					
3.4					
3.6					
4.0					

# MongoDB Technology

# Digitization: Challenges in working with data

## Data:

- Data silos
- Inflexible data structures
- Complex data structures/data models
- Distribute Systems/Data Synchronization
- Growing data volumes  
(horizontal/vertical scaling)
- Real-time data
- High availability
- Data analysis/data queries
- Structured/semi-structured/unstructured data

## Employees:

- Developers difficult to hire
- Developers very expensive
- Knowledge of self developed systems/technologies is decreasing over time
- Developers want to work with new technologies
- Effective use of developers
- DevOps Teams for Microservices: Less time for operations
- Backend vs. frontend activities: Less time for differentiating code

# Intelligent Operational Data Platform

## 1. Best way to work **with** data



### Easy

Work with data in a natural, intuitive way



### Fast

Get great performance without a lot of work



### Flexible

Adapt and make changes quickly



### Versatile

Supports a wide variety of data and queries

## 2. Intelligently put data where you want it



### Availability

Provide High-Availability by intelligent replication



### Scalability

Ability to add or reduce resources per demand



### Workload Isolation

Simultaneous use of the same data for different types of processing



### Locality

Supports a wide variety of data and queries

## 3. Freedom to run anywhere



### Runs the same Everywhere

(OnPremise, Hybrid, Cloud: AWS, Azure, GCP)



### Coverage in any geo



### Leverage multi-cloud strategy



### Avoid lock-in from cloud-provider

# 1. The Best Way To Work With Data

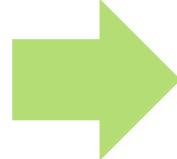
## Relational

Customer ID	First Name	Last Name	City
0	Dunne	Sargent	Frankfurt
1	Sade	Coles	München
2	Safiyah	Marriott	Vienna
3	Hazel	Davie	Frankfurt
4	Hana	Moreno	Krefeld

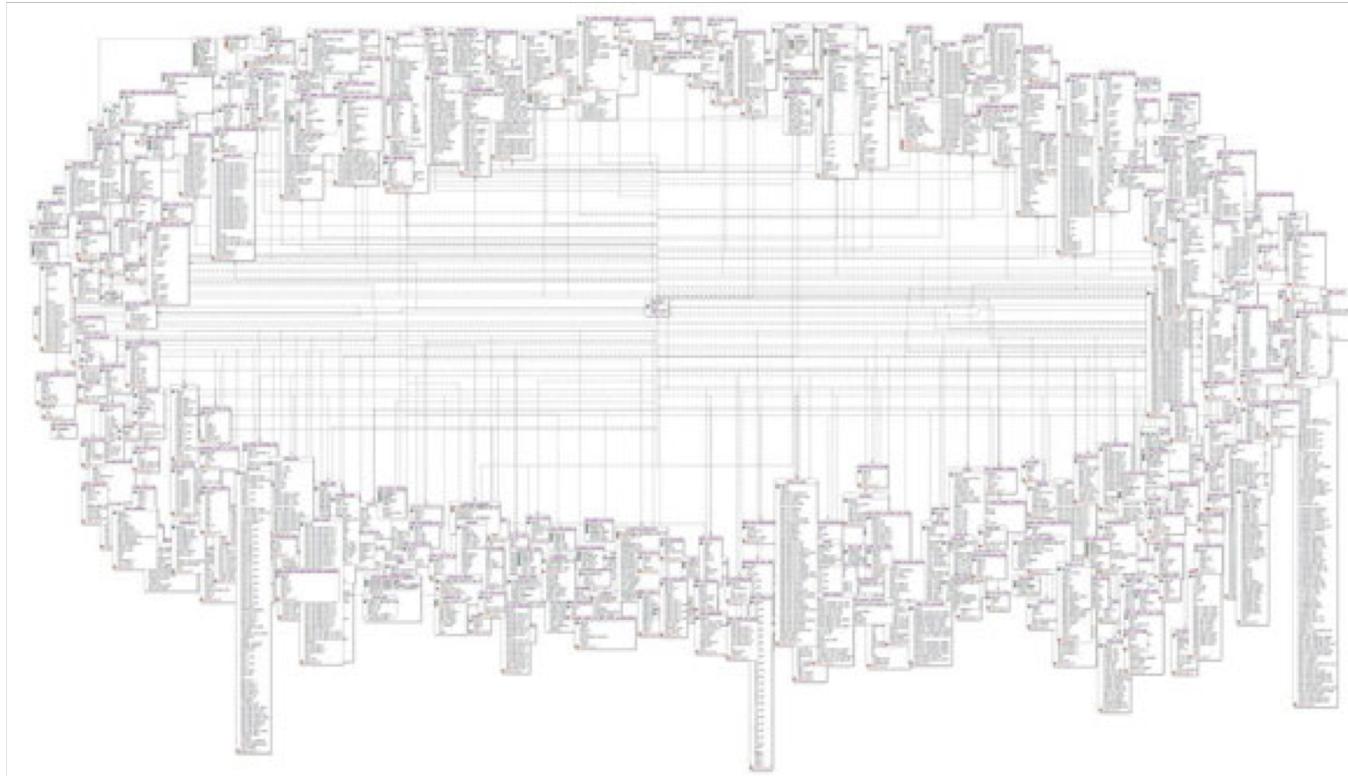
Phone Number	Type	DNC	Customer ID
49-69-223-9828	home	T	3
49-69-143-45986	home	T	0
49-173-555-12144	cell	(null)	3
49-69-777-1212	home	T	1
49-175-698-1213	cell	(null)	1
49-162-767-444	cell	F	2

## Document Model - MongoDB

```
{customer_id : 3,  
 first_name : "Oliver",  
 last_name : "Wedell",  
 city : "Frankfurt",  
 phones: [  
     {number : "49-69-223-1111",  
      dnc : true,  
      type : "home"},  
     {number : "49-172-246-8115",  
      type : "cell"}  
 ]}
```



## Entity Relationship Diagram

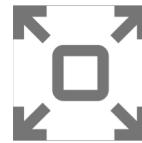


# 1. The Best Way To Work With Data

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**Easy:** Work with data in a natural, intuitive way



**Flexible:** Adapt and make changes quickly



**Fast:** Get great performance with less code



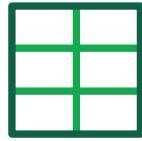
**Versatile:** Supports a wide variety of data models and queries

# 1. The Best Way To Work With Data

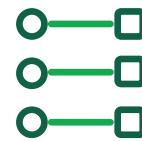
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JSON  
Documents



Tabular



Key-Value



Text



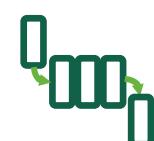
Geospatial



Graph



File Storage



Events

## Rich Queries & Indexing

Point | Range | Geospatial | Faceted Search | Aggregations | JOINs | Graph Traversals

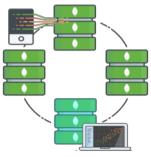
## 2. MongoDB: Intelligently Put Data Where You Want It

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### High Availability

Built-in **multi-geography** high availability, replication & automated failover



### Workload Isolation

Ability to run both **operational & analytics** workloads on same cluster, for timely insight and lower cost



### Scalability

Elastic horizontal scalability - add/remove capacity dynamically **without downtime**



### Locality

Declare **data locality rules** for governance (e.g. data sovereignty), tiers of service & local low latency access

### 3. MongoDB: Freedom To Run Anywhere

Fully managed cloud service

Local



On-premises  
Server & Mainframe



Private cloud



Hybrid cloud



Public cloud



#### Run The Same Everywhere

Run DB on laptop, on-prem, in cloud or as-a-service -  
**same consistent developer API** everywhere



#### Multi Cloud Provider Portability

Migrate from one cloud provider to another **in hours**,  
to meet regulatory requirements, for example



#### Coverage In Any Geography

Deploy database close to where your business lives  
and your customers live – **54+ cloud regions globally**



#### Avoid Technology Lock-In

In addition to avoiding cloud provider lock-in, avoid DB  
vendor lock-in by leveraging an **open source DB**

# MongoDB Atlas: Database as a Service

## Self-service and elastic

- Deploy in minutes
- Scale up/down without downtime
- Automated upgrades

## Global and highly available

- 54 Regions worldwide
- Replica sets optimized for availability
- Cross-region replication

## Secure by default

- Network isolation and Peering
- Encryption in flight and at rest
- Role-based access control
- SOC 2 Type 1 / Privacy Shield

## Comprehensive Monitoring

- Performance Advisor
- Dashboards w/ 100+ metrics
- Real Time Performance
- Customizable alerting

## Managed Backup

- Point in Time Restore
- Queryable backups
- Consistent snapshots

## Cloud Agnostic

- AWS, Azure, and GCP
- Easy migrations
- Consistent experience

# MongoDB Atlas

The global cloud database for MongoDB — eliminate the tedium of database administration with secure defaults, automated backups, one-click deployment and operations, guaranteed availability, and more.

Available on AWS, Azure, and GCP.

[Get started free](#)

Already have an account? [Log in here →](#)

<http://atlas.mongodb.com>



AWS, N. Virginia (us-east-1) >

Cloud Provider & Region  
Choose your preferred cloud provider and the region nearest to clients

Select a cloud provider to see its region availability.

AWS   Google CloudPlatform   Azure

Configure a **free tier cluster** by first selecting a region labeled with **FREE TIER AVAILABLE**, then choose the M0 option in the Cluster Tier below.

★ recommended region ⓘ

NORTH AMERICA	EUROPE	ASIA
N. Virginia (us-east-1) ★ <b>FREE TIER AVAILABLE</b>	Ireland (eu-west-1) ★	Tokyo (ap-northeast-1)
Ohio (us-west-1) ★	London (eu-west-2)	Seoul (ap-northeast-2)
N. California (us-west-1)	Frankfurt (eu-central-1) <b>FREE TIER AVAILABLE</b>	Singapore (ap-southeast-1)
Oregon (us-west-2) ★		Mumbai (ap-south-1)
Montreal (ca-central-1)	São Paulo (sa-east-1)	
SOUTH AMERICA	AUSTRALIA	
	Sydney (ap-southeast-2) ★	

Configure cross-region replication (M10 and up)  
Better withstand data center outages and optimize for reads in selected service areas.

OFF

# Atlas & Stitch DEMO

# Lets Keep in Touch!

## MongoDB Network - Baden Württemberg -

```
{ name : "Oliver Wedell",  
location : "Stuttgart",  
phone : "+49 172 2468115",  
email : oliver.wedell@mongodb.com  
LinkedIn : https://www.linkedin.com/in/oliverwedell/,  
Xing : https://www.xing.com/profile/Oliver\_Wedell/ }
```



Meetup Group: MongoDB Users Stuttgart

<https://www.meetup.com/de-DE/MongoDB-Users-Stuttgart/>



MongoDB Resources

MongoDB University: <https://university.mongodb.com/>

MongoDB Atlas: <https://www.mongodb.com/cloud/atlas>

MongoDB Events: [oliver.wedell@mongodb.com](mailto:oliver.wedell@mongodb.com)



# MongoDB Meetup Angebot

## Health Check / Architektur Workshop

- Kostenloser Health Check / Architektur Workshop
- 4 Stunden vor Ort bei Ihnen
- Von MongoDB Senior Solution Architekt durchgeführt
- MongoDB Empfehlungen und Architekturverbesserungen basierend auf Best Practices



## Kostenloser Zugang MongoDB University

- 3 Monate alle MongoDB Kurse on-demand kostenlos auf <https://university.mongodb.com/>



## MongoDB Job Angebote in BW und DACH

- MongoDB Solution Architekten & Consultants
- MongoDB Account Manager



## MongoDB & IoT Ressourcen:

<https://www.mongodb.com/presentations/time-series-data-and-mongodb-best-practices>

<https://www.mongodb.com/collateral/time-series-best-practices>

# MongoDB Meetup Angebot

## Kontaktdaten

Vorname: \_\_\_\_\_

Nachname: \_\_\_\_\_

Unternehmen: \_\_\_\_\_

Mailadresse: \_\_\_\_\_

Telefonnummer: \_\_\_\_\_

## Datenbank

Datenbanktyp: \_\_\_\_\_

Im Einsatz seit: \_\_\_\_\_

Anzahl der Server: \_\_\_\_\_

ca. \_\_\_\_\_

Anzahl der Applikationen: \_\_\_\_\_

ca. \_\_\_\_\_

Größe der Datenbank in GB: \_\_\_\_\_

Altas (Cloud) ( )

Community (Cloud) ( )

Enterprise (On-Prem) ( )

Community (On-Prem) ( )

## Kostenloser Zugang MongoDB University

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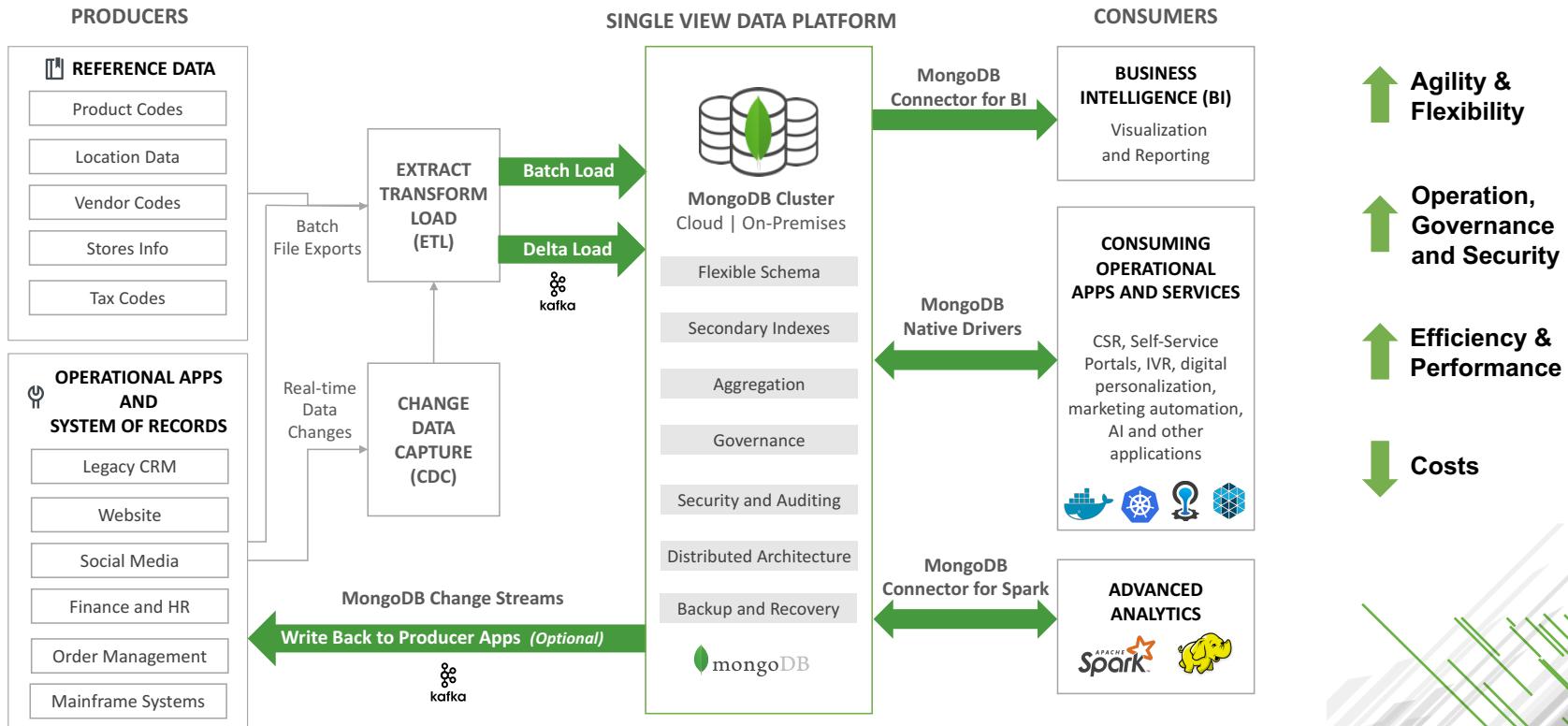
## Health Check / Architektur Workshop

- Kostenloser Health Check / Architektur Workshop
- 4 Stunden vor Ort bei Ihnen an Ihrer Installation (MongoDB oder Legacy Datenbank)
- Mit MongoDB Senior Solution Architekt
- MongoDB Empfehlungen und Architekturverbesserungen basierend auf Best Practices
- MongoDB Performance Tuning

Sie fragen.

Wir  
antworten.

# Operational Data Layer – Technology Sample



# MongoDB Enterprise Advanced

24x7 Support  
(1 hour SLA)

## MongoDB Ops Manager



- Monitoring & Alerting
- Query Optimization
- Automation & Configuration
- Backup & Recovery

REST API

## MongoDB Compass



- Schema Visualization
- Data Exploration
- Ad-Hoc Queries

## MongoDB Connector for BI



- Visualization
- Analysis
- Reporting

## Commercial License

(No AGPL CopyLeft  
Restrictions)

Indemnification

Limitation of Liability

Warranty

Platform  
Certifications

Emergency  
Patches

Customer  
Success  
Program

On-Demand  
Online  
Training

Encryption at Rest

LDAP & Kerberos

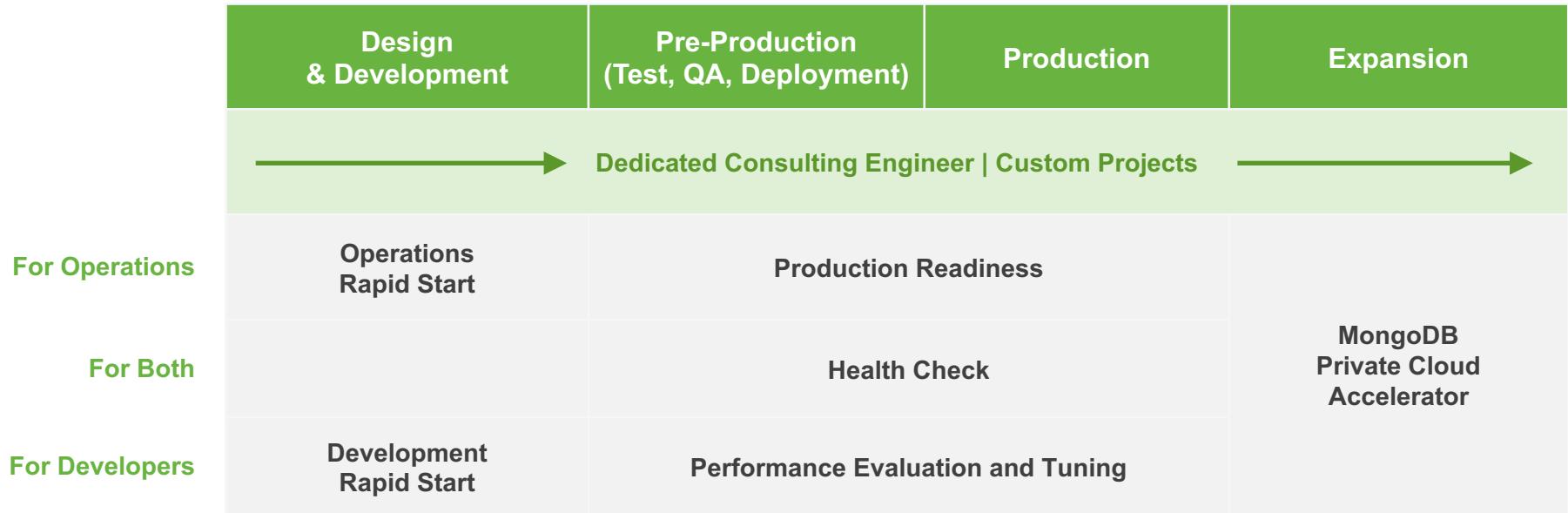
Auditing

FIPS 140-2

MongoDB Enterprise Server

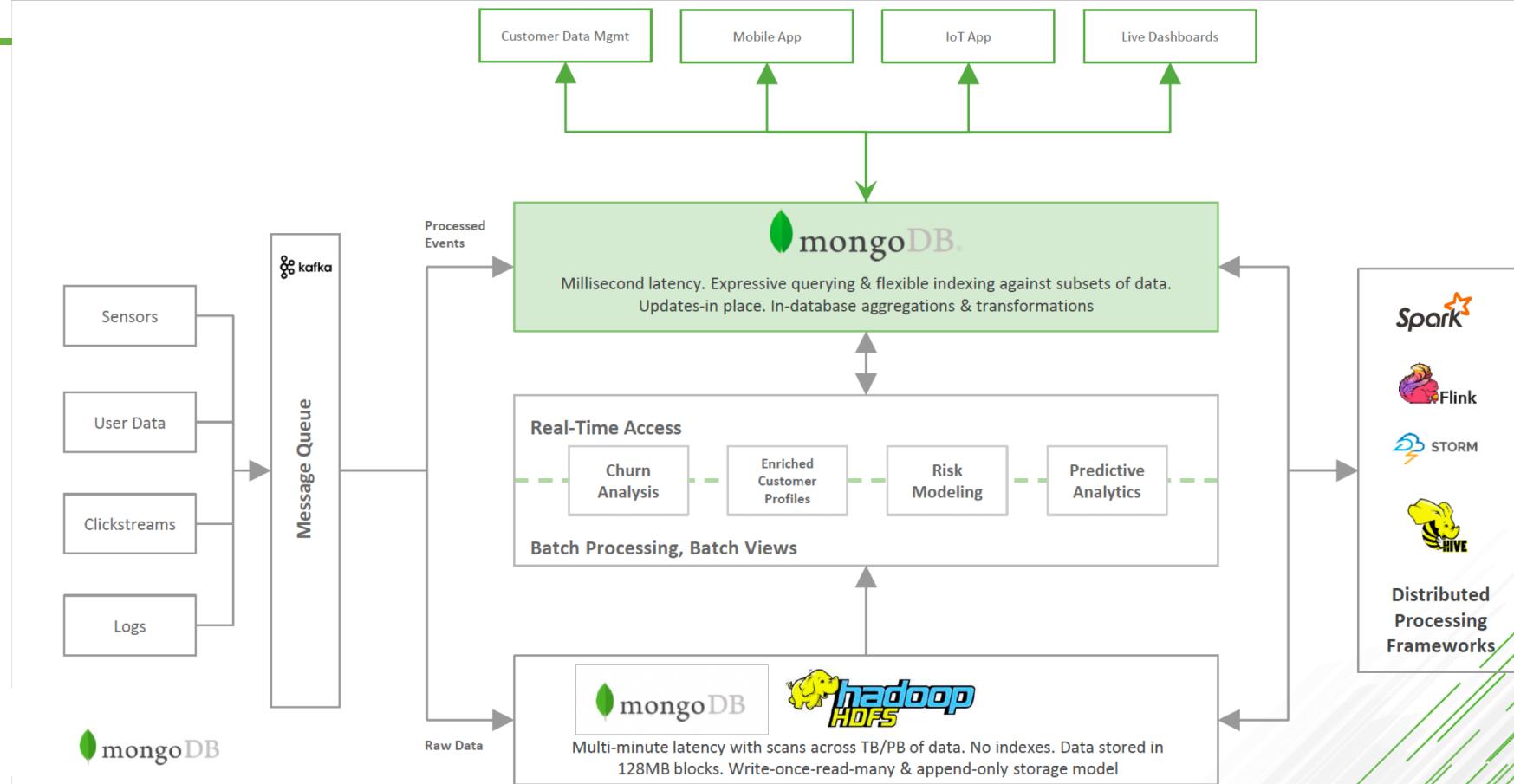
# MongoDB Services

Consulting, training, and professional services throughout your project lifecycle

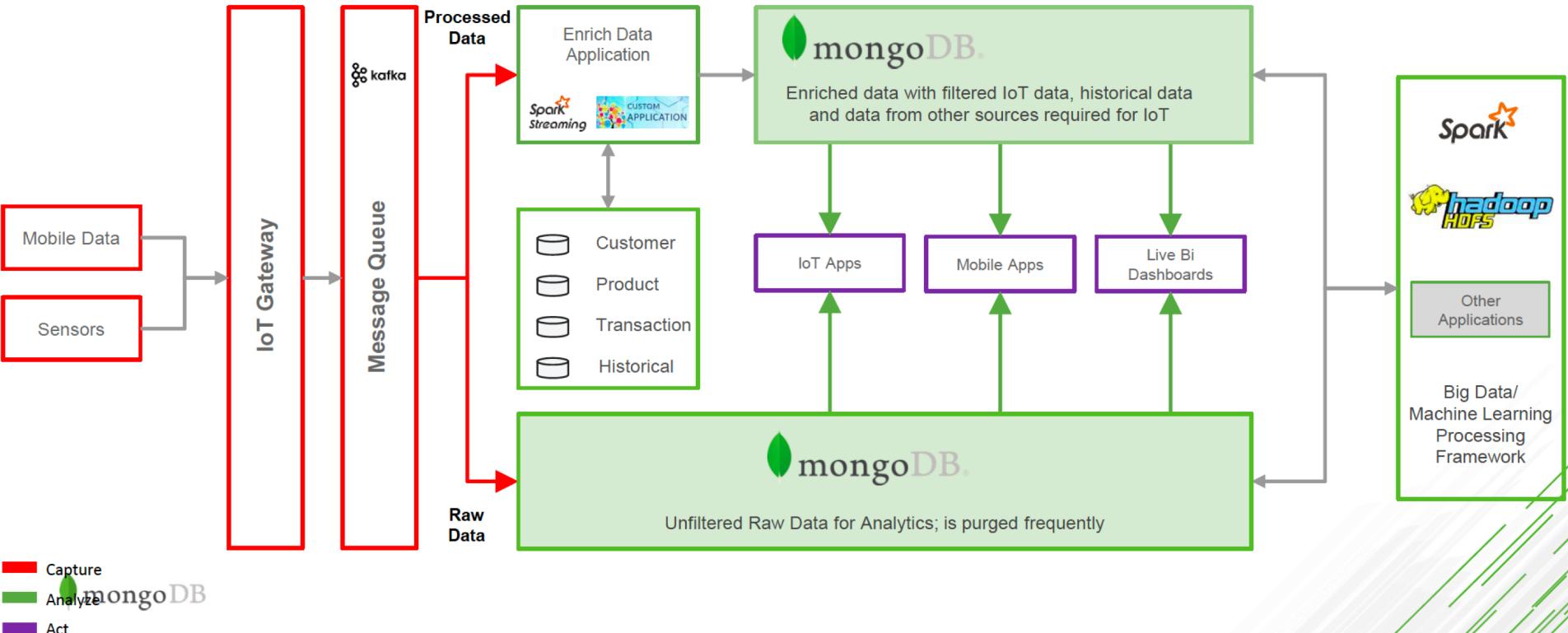


# Use Cases

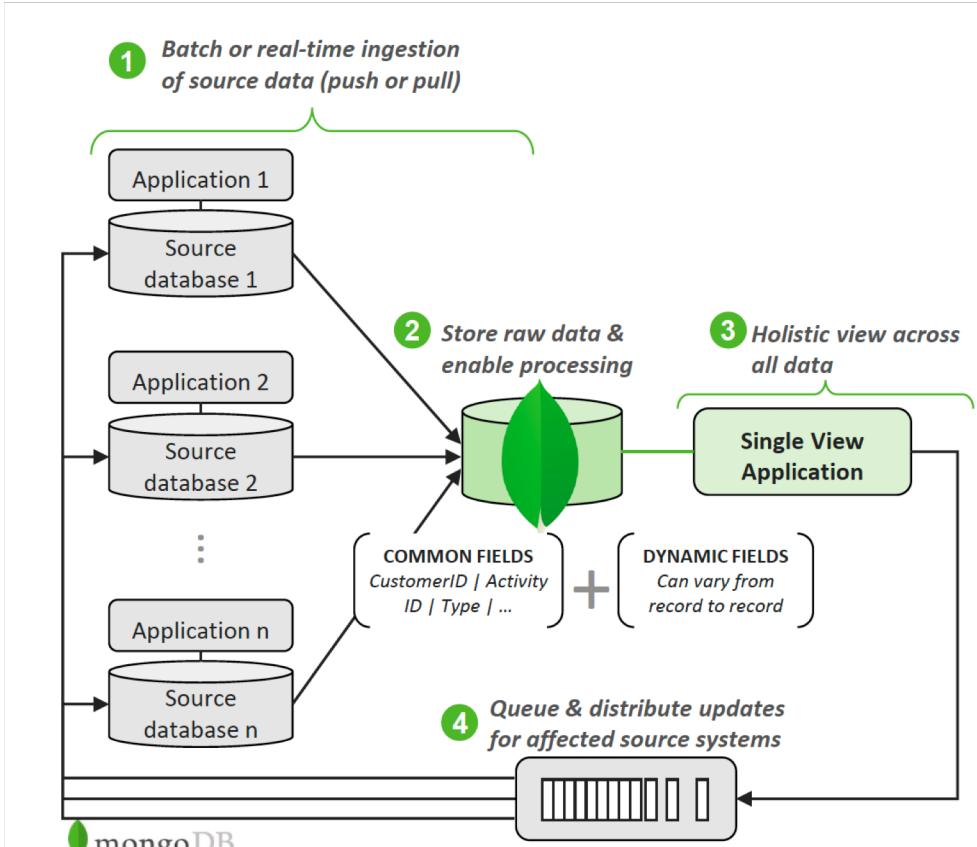
# Use Case - BI & Analytics



# Use Case - IoT

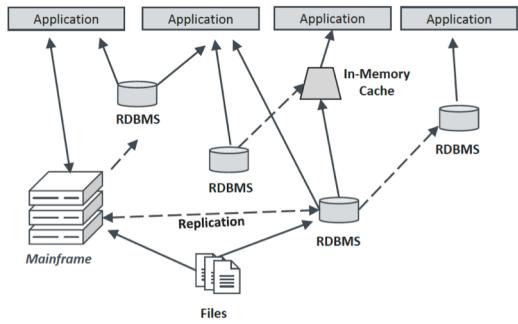


# Use Case – Single View

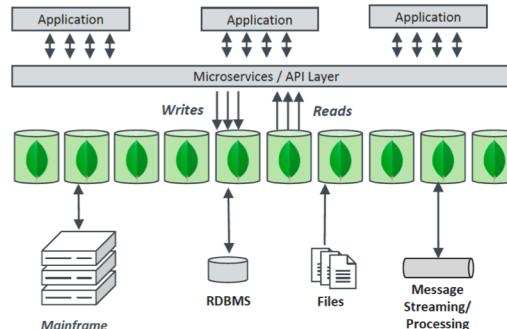


# Use Case – Legacy Modernization

Typical Architecture - Complex & Fragile

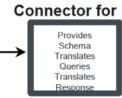


Operational Data Platform (ODP)  
Simplified & Resilient



Standardized Data Access

Analytics/BI



Analytics, visualization,  
& SQL access

Aggregation Framework

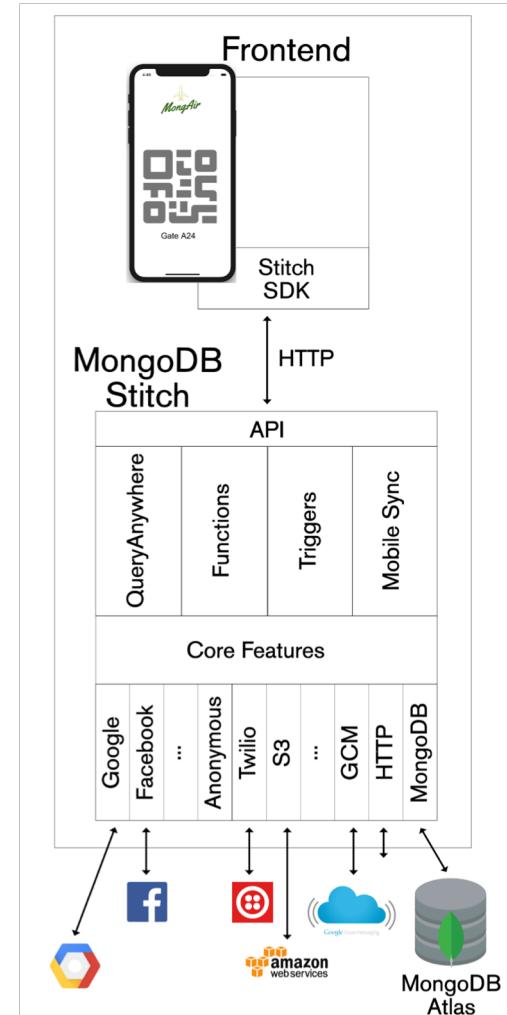
**Vielen Dank**



# MongoDB Stitch

Developers spend even less time on plumbing code.

Developers focus more on high-value code that differentiates the experience delivered by their app.



# Stitch use Cases



	🔍	✍	✓
👤	○	✗	○
👤	○	○	✗
👤	✗	✗	✗



## Add Features

- Take your app to a new platform
- Build a better permissions system or a separate admin portal
- Add additional authentication providers

## Expose Data

- Provide an API for safe, internal data access
- Build a precise permissions system
- Create a realtime dashboard with authentication and security built-in

## Integrate Services

- Integrate with any service or API with minimal code
- Consume/action on data in realtime with webhooks
- Communicate with data using text, e-mail, slack, etc.

## Complete Backend

- Build faster without boilerplate code
- Easily span multiple platforms
- Scale at a moments notice
- Single, simplified point to manage infrastructure/logic