FerretDB

The Current State of MongoDB Alternatives
Two Years of FerretDB

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Document Database Community webinar, September 2023

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AGENDA

- Introduction
- The state of the Document Database market
- MongoDB as an Open Standard?
- Intro to FerretDB
- Roadmap

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About us

Alexey Palazhchenko, CTO

Ex-Percona, Talos

Peter Farkas, CEO

Ex-Percona, Cloudera

Peter Zaitsev

Founder, former CEO of Percona

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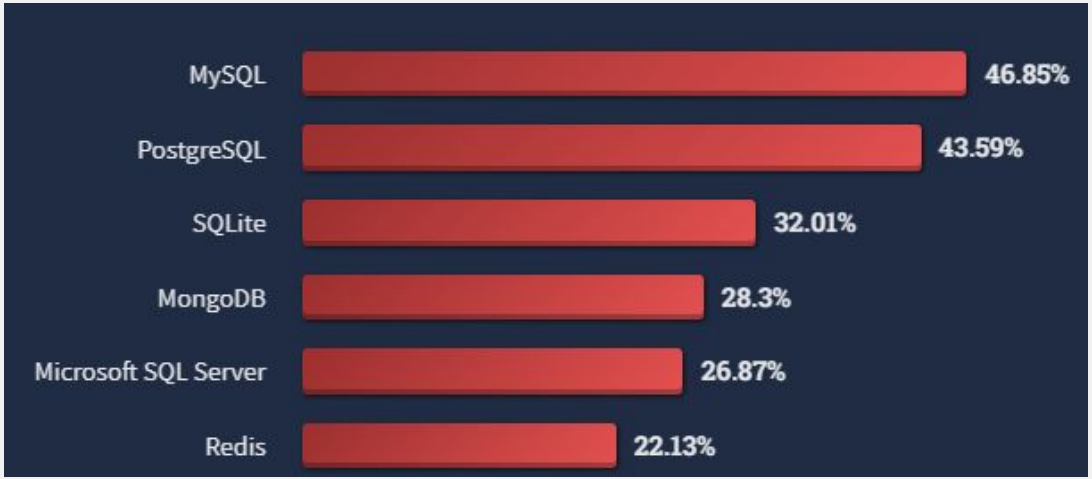
MongoDB's popularity



"Which database environments have you done extensive development work in over the past year, and which do you want to work in over the next year? " 65k responses

Source: StackExchange Developer Survey, 2022 (excerpt)
"Which database environments have you done extensive development work in over the past year, and which do you want to work in over the next year? "

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It’s all great, but then…SSPL

MongoDB - since 2018, released under the Server Side Public License (SSPL).

*If you make the functionality of the Program **available to third parties as a service**, you must make the **Service Source Code** available to everyone under the terms of this License.*

More info:

www.ssplisbad.com

Also: Peter Zaitsev and Matt Yonkovit’s articles on Percona Blog

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We've talked to users - here's what they said

"The SSPL license is vague - we are looking to replace MongoDB due to the legal risks and uncertainty." - a FAANG company

"We are looking to find a MongoDB Atlas alternative, without vendor lock-in." - Major travel search portal

"Pricing of MongoDB Atlas is not suitable for our use case." - Small SaaS business

"We are unable to offer our customers an open-source, MongoDB-compatible database." - Cloud Infrastructure provider

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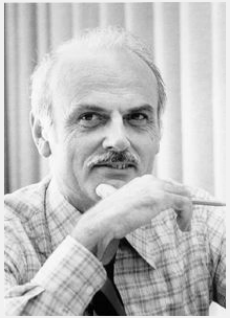
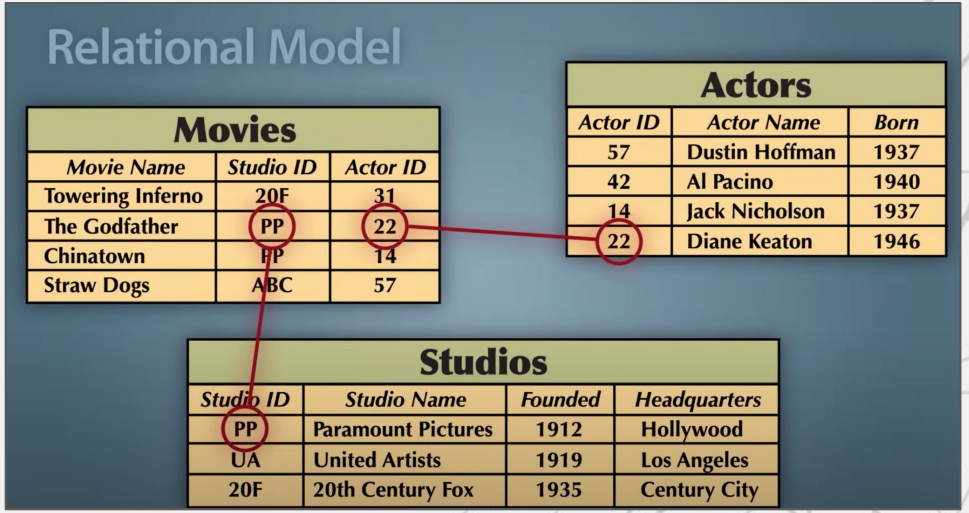
The short story of SQL

The short history of SQL

ACM paper: A relational model of data for large shared data banks, Jun/1970
Author: Edgar F "Ted" Codd, IBM Research Labs



1.2.3. *Access Path Dependence.* Many of the existing formatted data systems provide users with tree-structured files or slightly more general network models of the data. Application programs developed to work with these systems tend to be logically impaired if the trees or networks are changed in structure. A simple example follows.



Muthukkaruppan, K. (2023) " Evolution of transactional databases," *Postgres Conf. SV*. *Postgres Conf. SV*, San Jose: Hilton, 20 April.

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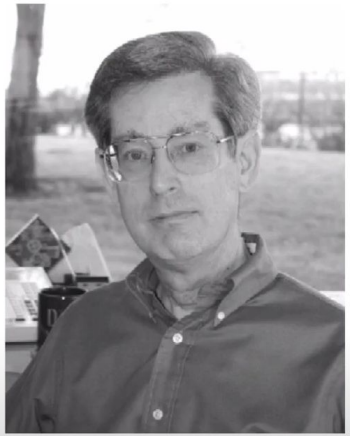
The short history of SQL



Don Chamberlin

Ray Boyce (†1974)

At IBM, in the early 70s, Don Chamberlin and Ray Boyce laid down the foundations of the SQL query language for relational databases, which even non-developers could use.

Advanced SQL — Chapter 01 (2020) Torsten Grust. YouTube. Available at: https://www.youtube.com/watch?v=HAI5DG_I60k (Accessed: April 22, 2023).

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The short history of SQL - late 70s

- IBM releases multiple relational database products speaking SQL
- Vendor lock-in,
  no other commercially available SQL database
- Like SQL? Use IBM.

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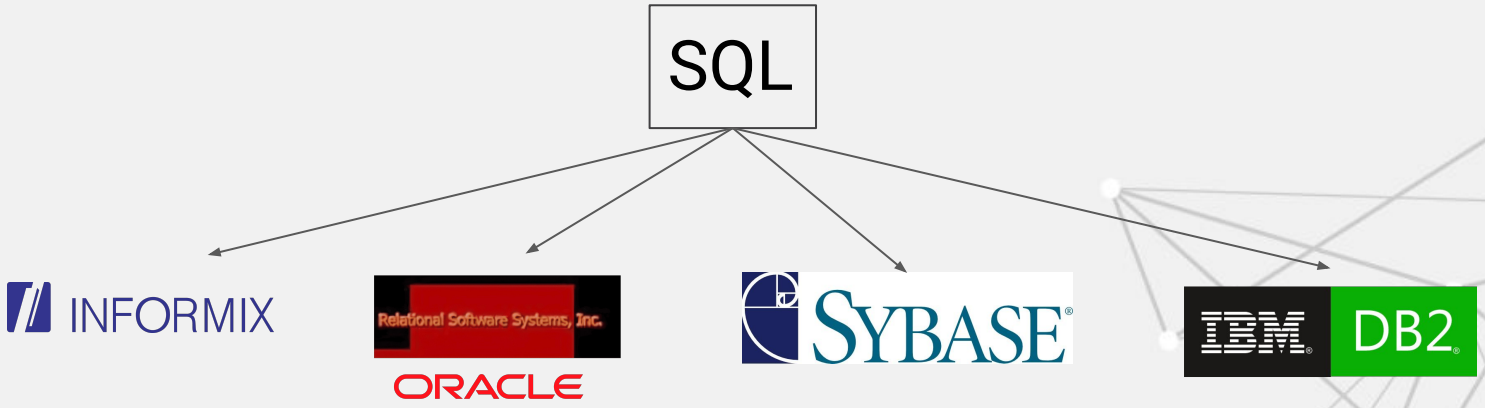
The evolution of SQL as an Open Standard - 80s

SQL is great, let's implement it in dozens of different ways!



Many different dialects, no conformity between products.

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The evolution of SQL as an Open Standard - 86-87

- SQL Becomes an ANSI and later ISO Open Standard called SQL86.
- Anyone can implement them
- Features can be added on top (standard extension)

All vendors were proprietary, this still meant vendor lock-in.

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SQL, an Open Standard. Here comes Open Source!

Mid 90s, early 2000s: Open Source projects started adopting SQL, partial implementations of the standard.

SQL is available to be used by anyone.

Since then: hundreds of derivatives

History repeats itself...sort of

Is this just the thing of the past?

No. Look at Document Databases!

- MongoDB, a then open source database, develops MQL - the MongoDB Query Language.
- “Don’t need to be a DBA to run a database”
- Achieves market dominance in certain segments
- Goes proprietary in 2018
- Attempts to redefine the meaning of “open source” - SSPL license

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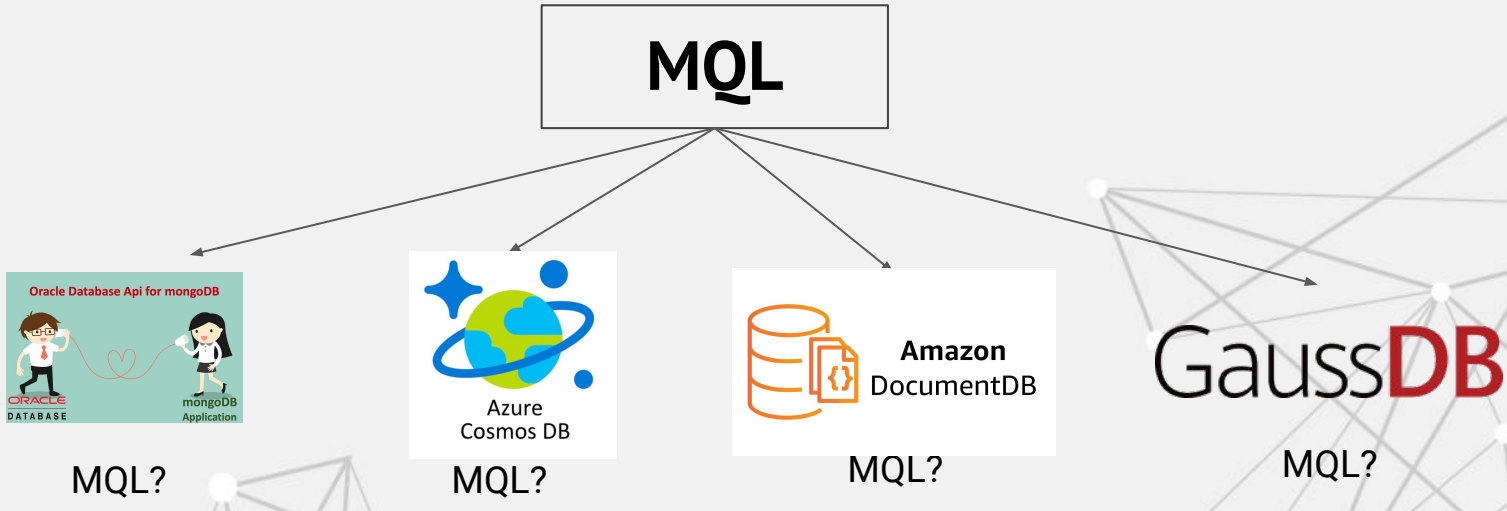
A familiar situation

MQL is great, let's implement it in dozens of different ways!



All proprietary. Products look similar, but incompatible with each other.
Once you choose one, you may be stuck with that.

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MQL, an Open Standard?

- A standardized, core feature set based on MongoDB
- A JSON query language
- Can be extended at the expense of portability

Overwhelming interest from vendors and developers in the industry.

It will:

- Ensure portability between products
- Can be extended, just like SQL
- Stimulates innovation, increase competition
- Be very good for users

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MongoDB compatibility means that all of the existing elements of the MongoDB Ecosystem (tools, frameworks and applications) are possible to use with the alternative, such as FerretDB.

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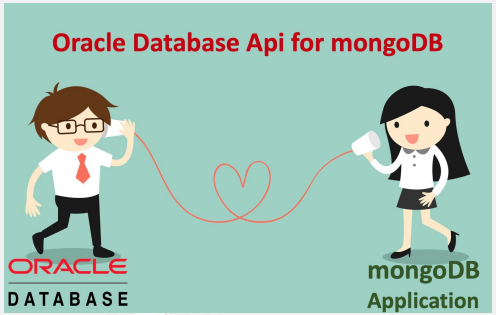
OK, let's take another look at the alternatives...

IBM Informix database software

Amazon DocumentDB

GaussDB
Huawei GaussDB for MongoDB

Azure Cosmos DB



MariaDB MaxScale

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The issue with most MongoDB Alternatives

All great products!

Similar query language, but

- vastly different feature set
- different degree of compatibility
- no chance of migration between them
- all proprietary
- most tied to cloud vendors

For a “MongoDB alternative” - MongoDB sets the pace.

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So we started working on FerretDB

- A MongoDB compatibility layer
- Written in Go
- Set out to become the de facto MongoDB Alternative
- Usable on-prem or in the cloud
- Can utilize various DBMS as backend
- Released under Apache 2.0

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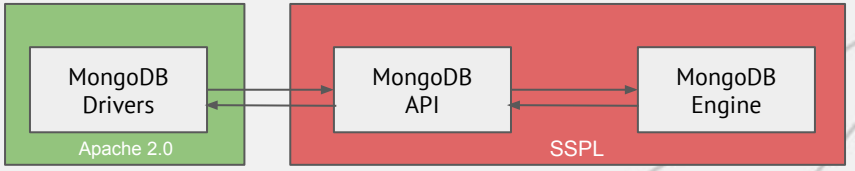
FerretDB vs. MongoDB architecture and licensing

MongoDB Drivers

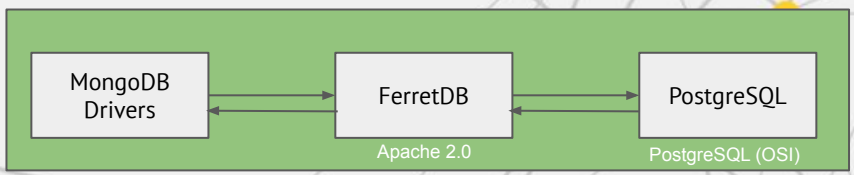
- Main reason behind high adoption of MongoDB
- Provides unmatched Developer Experience
- Free to use under Apache 2.0

MongoDB Backend

- Licensed under SSPL
- Proprietary vendors (Amazon, IBM, Oracle, etc.) replaced it in their own implementations of a compatible product



FerretDB replaces the MongoDB Backend with another database backend, mainly PostgreSQL.



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Why PostgreSQL?

- FOSS
- Huge, supportive community
- High number of PostgreSQL users run MongoDB
- Existing JSON compatibility
- Strong interest from users with extensive operational experience

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Runs with many derivatives of PostgreSQL...

Why not just use Postgres and JSON?

Ease of use and compatibility. Many JS frameworks, stacks (MERN, MEAN, MEVN…) and other tools include or depend on MongoDB compatibility to work.

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Not just Postgres...

FerretDB can add MongoDB compatibility to various backends:

Backend	FerretDB Version
PostgreSQL	v1.0
SQLite	v1.10
SAP HANA	experimental

It is possible for anyone to create a handler for FerretDB to support a database or database as a service.

Conclusion

- There is a need for an Open Standard for MQL
- MongoDB will become a commodity, like SQL

Best outcome for developers and the industry.

- FerretDB leads the way opening up the Document Database market
- We build FerretDB with the community, you are welcome to join the effort

Roadmap

https://github.com/orgs/FerretDB/projects/2/views/1

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Questions

Try FerretDB for free: https://try.ferretdb.io/ or www.scaleway.com
Run it on prem: https://docs.ferretdb.io/
Visit us on GitHub: https://github.com/FerretDB/FerretDB

www.ferretdb.io

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The Document Database Community

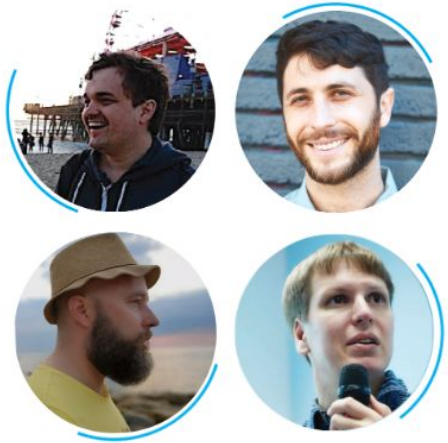
Founded by FerretDB, open to all.

October 5 @ 12:00 pm - 1:00 pm

SSPL vs Open Source

ONLINE

Explore the pivotal «SSPL vs Open Source» panel on Oct 5, 2023, at 12 PM EST. Delve into the impact of MongoDB's licensing shift and gain insights from industry experts. Understand the nuances between SSPL and Open Source, guiding your software development decisions. Join the debate for a deeper understanding of this critical issue.



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