

# Databases, Crypto & Decentralization

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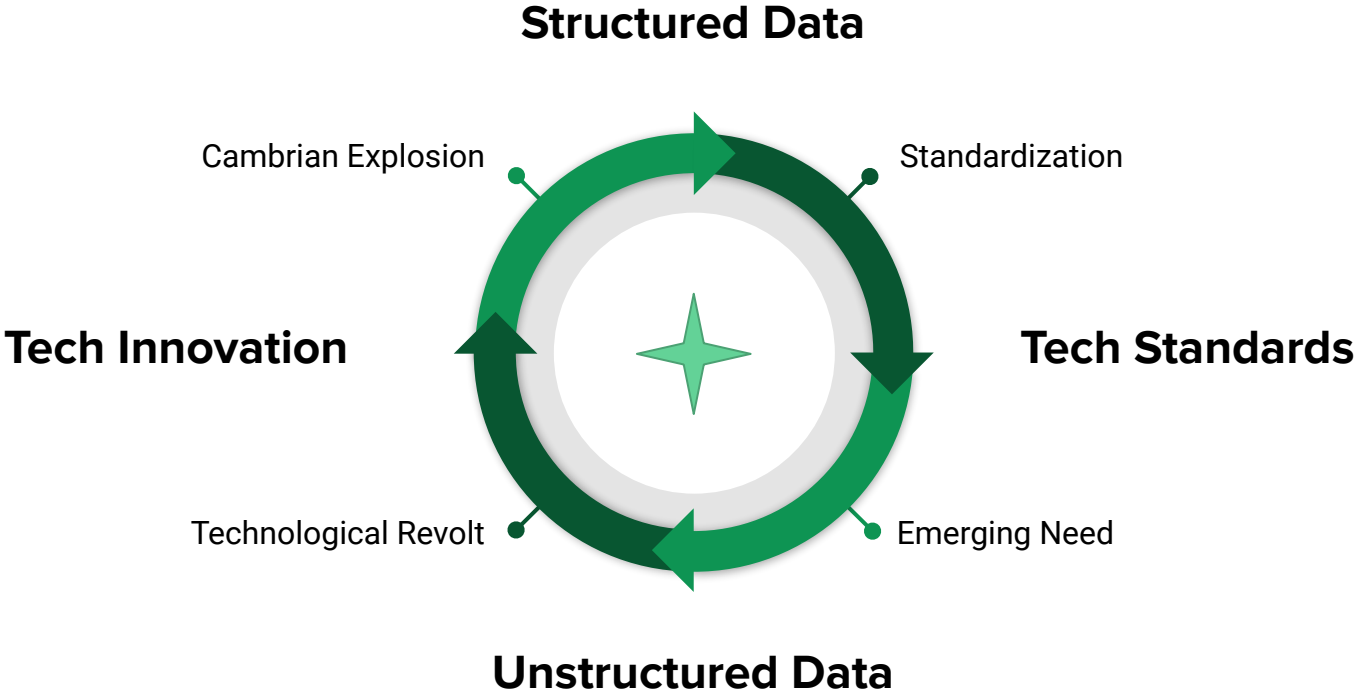
# What is this talk about ?

- Who I am
- History of database adoption
- The Web2.0 revolution and NoSQL
- The re-decentralize movement
- A new vision for storage

# Who I am

- Not a database person
- Programmer, Researcher, Manager, Founder
- Identifies as: *Protocol Designer*
  - Information security
  - Cryptography
  - Decentralized systems
  - Networking
- “What database should I use for this application”

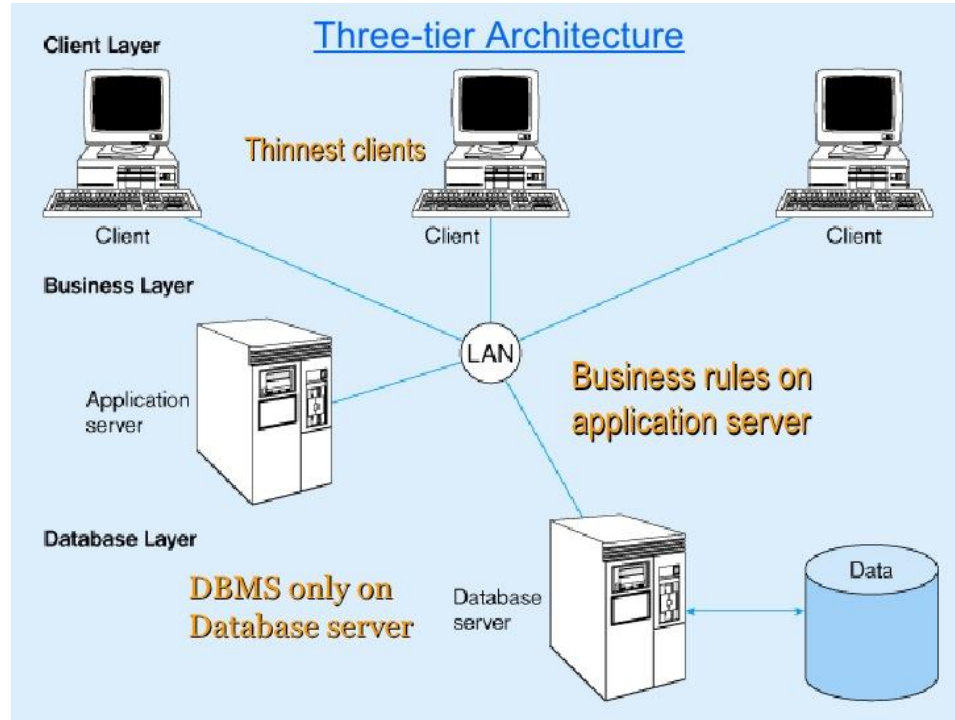
# Database evolution spiral



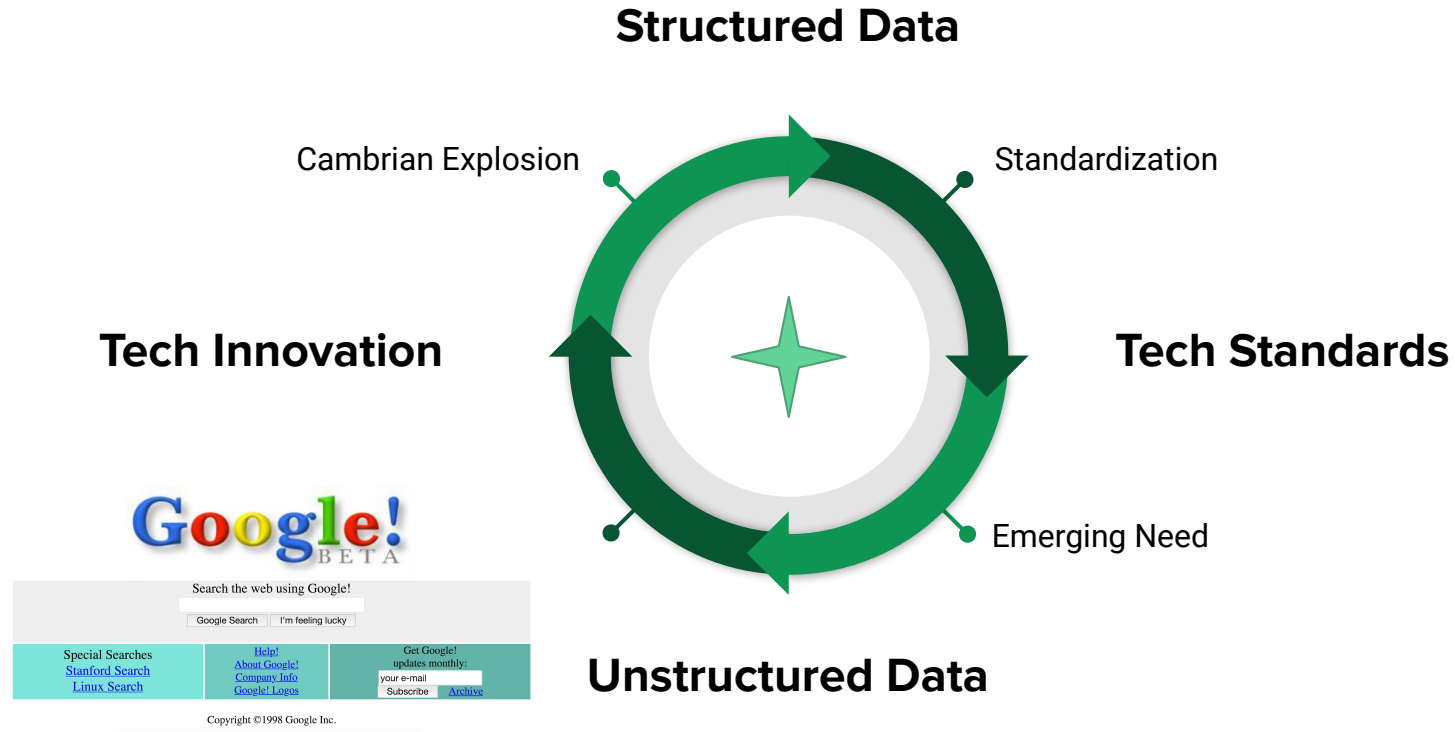
# Storage at the dawn of the PC

	<b>Tech Innovation</b>	<b>Tech Standards</b>
<b>Structured Data</b>	Spreadsheet	SQL
<b>Unstructured Data</b>	Key/Value (eg: BerkeleyDB)	Filesystem

# Technological Centralization - “The Database”



# Revolt from “The Database” model



# Cambrian Explosion of NoSQL datastores

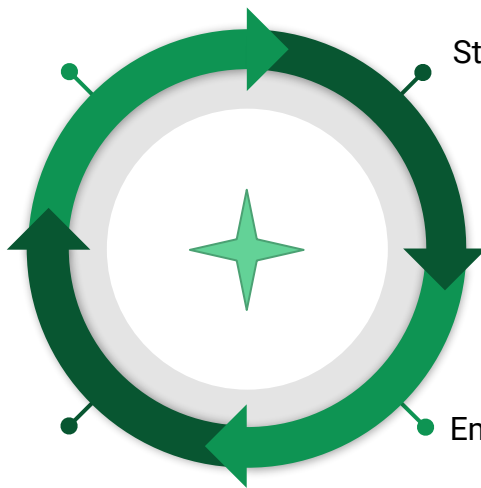


**Tech Innovation**



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**Structured Data**



Standardization

**Tech Standards**

Emerging Need

**Unstructured Data**



# Beginnings of standardization



Tech Innovation



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Structured Data

ISO/IEC JTC1 SC32  
WG 3  
Database Languages

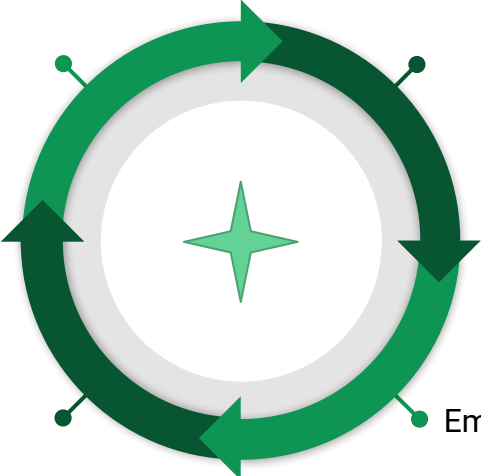
Existing Project

SQL

New Project

GQL

Tech Standards



Emerging Need

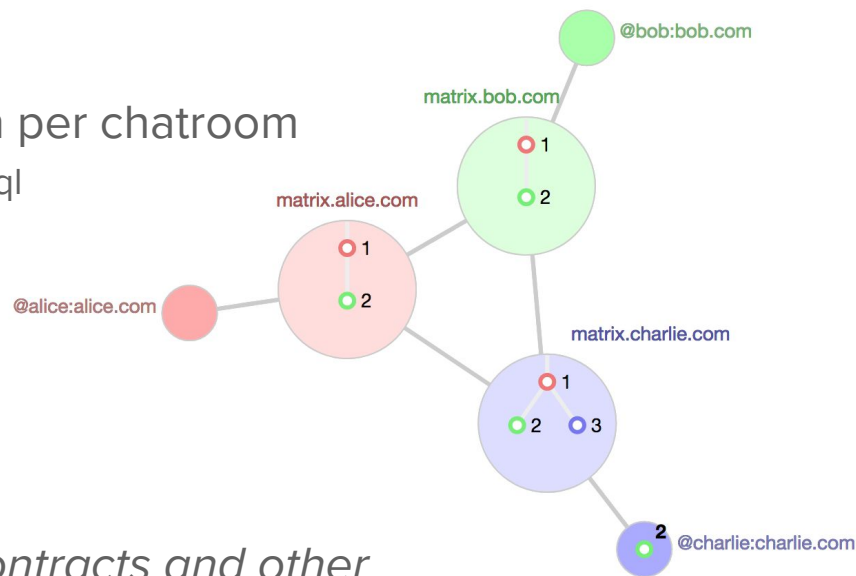
Unstructured Data

# Emerging need: Political Decentralization

- Never before has a single company been able to interact with over half the world's population
- GDPR
- Re-decentralize movement
- National firewalls
- Blockchains

# Focus on Matrix chat

- Anybody can run a matrix server
- Username is like an email address
- Data is conceptually a tiny blockchain per chatroom
  - Protip: This is **not** how it looks in postgresql
- Beautiful technology, hideous effort



*Matrix, ActivityPub, Blockchains, Smart Contracts and other decentralized apps are stuck reinventing the same wheel over and over*

# A new vision of database

- Create a table
- Write an “update filter” with all of the business logic for validating updates
- Anyone with the same DBMS can *subscribe* to your table and interact with it
- Everything is replicated and synchronized behind the scenes
- Only share with a whitelist of nodes -> Replicate the whitelist
- Federated deletion

*To make a decentralized app, just make a centralized app on a decentralized database*

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# Thank You

*To make a decentralized app, just make a  
centralized app with a decentralized database*

