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

Structured Data

Cambrian Explosion

Standardization

Tech Innovation

Technological Revolt

Emerging Need

Unstructured Data

Tech Standards
## Storage at the dawn of the PC

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<th>Structured Data</th>
<th>Tech Innovation</th>
<th>Tech Standards</th>
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<tbody>
<tr>
<td></td>
<td>Spreadsheet</td>
<td>SQL</td>
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<tr>
<th>Unstructured Data</th>
<th>Key/Value (eg: BerkeleyDB)</th>
<th>Filesystem</th>
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Technological Centralization - “The Database”

Three-tier Architecture

- **Client Layer**: Thinnest clients
- **Business Layer**: Application server, Business rules on application server
- **Database Layer**: DBMS only on Database server

The diagram illustrates a three-tier architecture with clients accessing a database server through an application server, which enforces business rules on the data.
Revolt from “The Database” model

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Unstructured Data
Cambrian Explosion of NoSQL datastores

Structured Data

Standardization

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Emerging Need

Unstructured Data

Tech Innovation
Beginnings of standardization

Tech Innovation

Structured Data

Unstructured Data

Tech Standards

Emerging Need

ISO/IEC JTC1 SC32
WG 3
Database Languages

Existing Project
New Project

SQL

GQL
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
Thank You

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