

# The Democratization of Databases

BRUCE MOMJIAN



Democratic governments have a long history of success, with some setbacks. This talk explains how democratic principles underpin the success of the open source relational database Postgres.

*<https://momjian.us/presentations>*



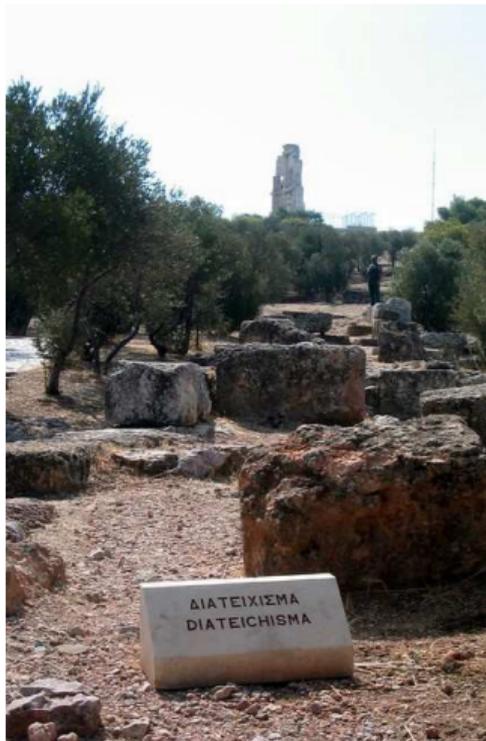
*Creative Commons Attribution License*

*Last updated: November 2025*

# Outline

1. History of governance structures
2. Strengths of each structure
3. Efficiency and messiness of democracy
4. Ultimate success of democracy
5. Software governance history
6. Where does this leave Postgres?
7. Democracy in action

# 1. History of Governance Structures



Pnyx Hill, Athens

<https://www.flickr.com/photos/wallyg/>

# Autocracy

- Single person or small group in power
- Examples
  - dictatorship, e.g., Belarus
  - absolute monarchy, e.g., Saudi Arabia
  - communist, e.g., North Korea
- First governing structure

# Representative Democracy

- First established in ancient Athens
- Historically only a small group of the population could vote
- Elect representatives to vote on issues

## 2. Strengths of Each Structure



Chepstow Castle, Wales

<https://www.flickr.com/photos/damiavos/>

# Autocracy Strengths

- Good for focusing a fixed amount of resources on a clear goal
- Examples
  - space exploration
  - military

# Democracy Strengths

- Allows rapid adjustment for unclear goals
- Emboldens talent to act near the problem
- Expands the pool of talent
- Examples
  - consumer goods
  - software

### 3. Efficiency and Messiness of Democracy



Madison, Wisconsin

<https://www.flickr.com/photos/dennisdeery/>

# Efficiency of Democracy

- Unleashes a flurry of activity based on agency, i.e., personal power
- Fluidity of solutions

# Messiness of Democracy

- Hard to predict behavior
- Problems can get stuck
- Difficulty with large projects that span multiple elections
- Direct democracy rarely tried, yielded mixed results

## 4. Ultimate Success of Democracy



Moscow

<https://www.flickr.com/photos/varfolomeev/>

# Democracy's Checkered History

- First democracy in Athens, suspended during wars
- Roman democracy ended in dictatorship
- Middle Ages, Magna Carta, Renaissance
- American Revolution, black and women's voting rights
- French Revolution leads to monarchy

# Democracy Today

- Democracy continues to make steady progress
- There are still setbacks

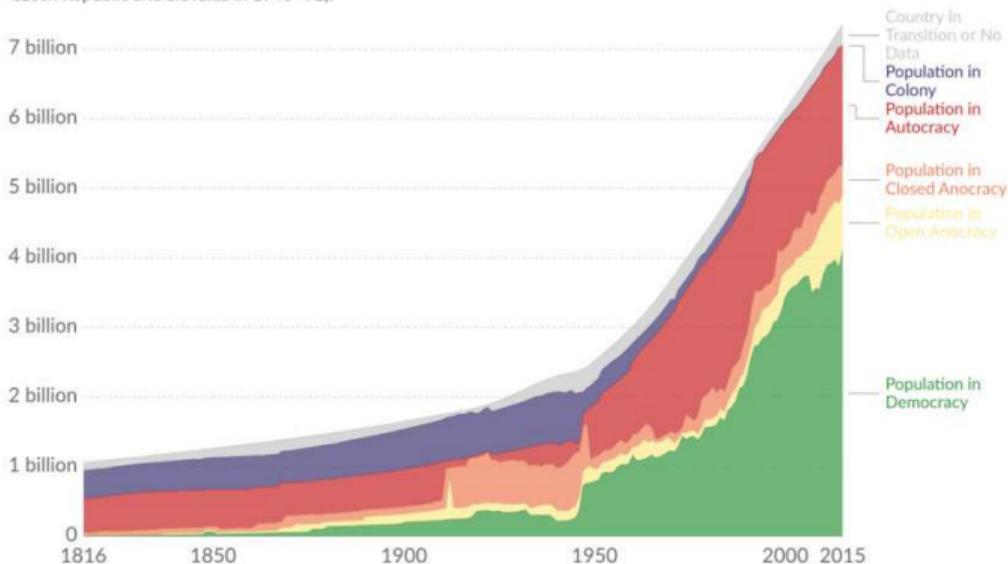
# Democracy in the Past 200 Years

<https://www.flickr.com/photos/dennisdeery/>

## Number of world citizens living under different political regimes

The scale goes from -10 (full autocracy) to 10 (full democracy). Anocracies are those scoring between -5 and 5. "Colony" (coded as -20) includes not only colonies, but also countries that were not yet sovereign states (e.g. the Czech Republic and Slovakia in 1945-92).

Our World  
in Data



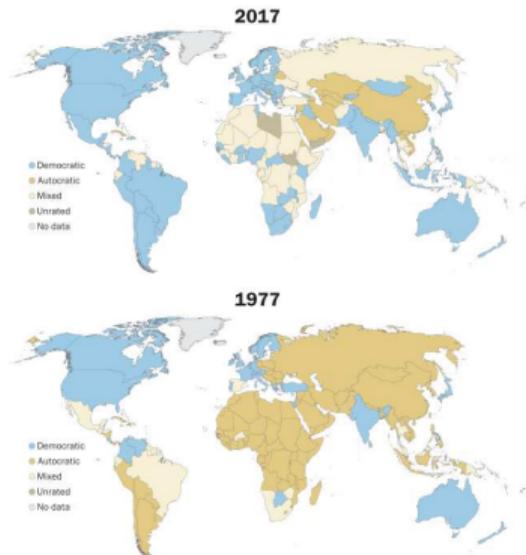
Source: World Population by Political Regime they live in (OWID (2016))  
OurWorldInData.org/a-history-of-global-living-conditions-in-5-charts/ • CC BY

<https://ourworldindata.org/democracy>

# Democracy in the Past 40 Years

Democracy has grown across the world over the past four decades

Regime types in each country, 1977 and 2017



Note: Map depicts data for the 167 countries included in the Polity IV database. Countries labeled "mixed" have a blend of democratic and autocratic regime characteristics. "Unrated" countries are those whose central government has or had completely collapsed, which are or were subject to foreign intervention or occupation, or which are or were in the midst of a regime transition. "No data" refers to states or entities that either have fewer than 500,000 people or are not internationally recognized as fully sovereign.

Source: Center for Systemic Peace's Polity IV Project.

PEW RESEARCH CENTER

<https://www.pewresearch.org/fact-tank/2019/05/14/more-than-half-of-countries-are-democratic/>

## 5. Software Governance History



Redwood City, California

<https://www.flickr.com/photos/nzdave/>

# Proprietary Autocracy

- Executives make decisions
  - input from sales and marketing
  - indirectly from customers
- Decision matrix
  - “If we do this, what percentage of customers will we gain?”
  - “If we don’t, what percentage of customers will we lose?”
  - gains are more sensitive to the decision than losses
  - “Do gains or avoided losses justify the implementation costs?”

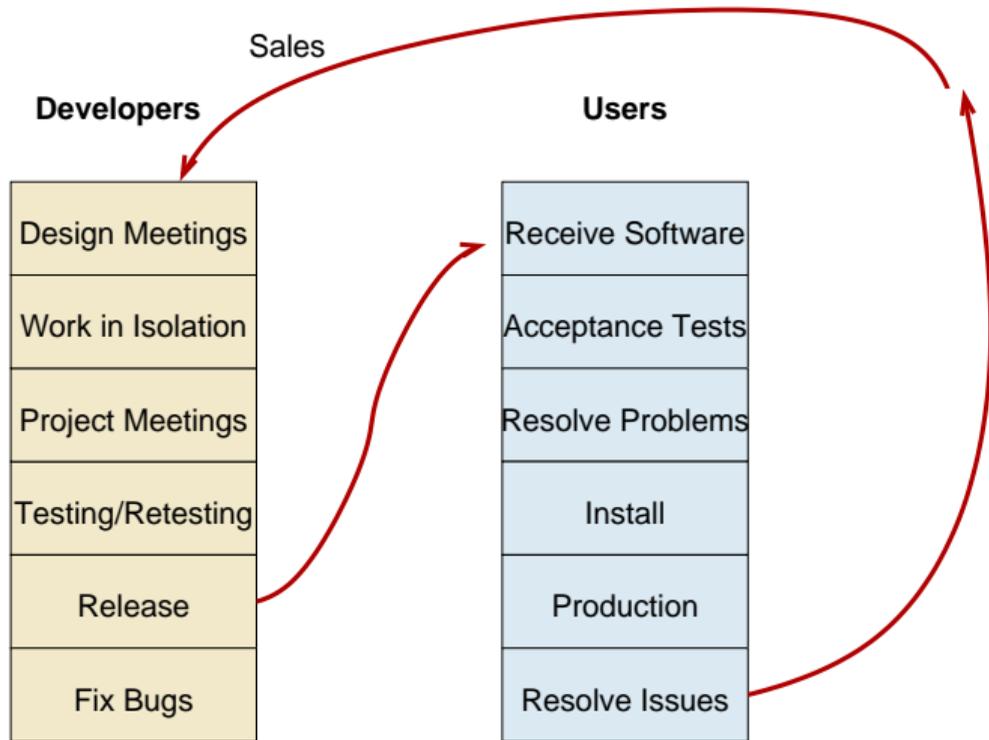
# Open Source Democracy

- Mix of direct democracy and meritocracy
- Voting can be problematic
- Sometimes too much feedback
  - bike shedding
- Bad decisions can be quickly corrected, i.e., easy to revert
- No reliable road map

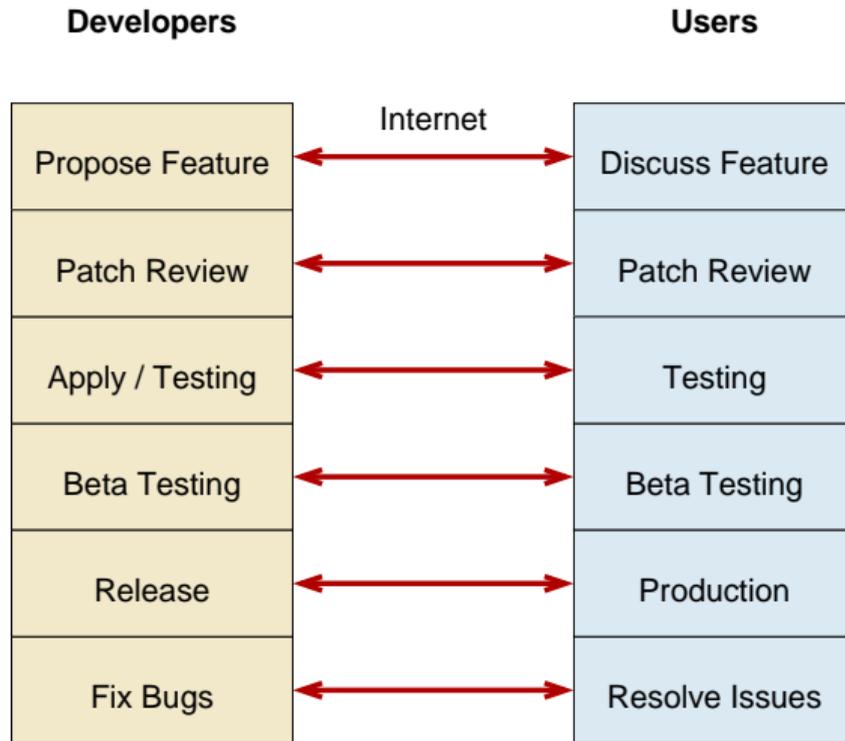
# Internet Makes Direct Democracy Possible

- Easy to share ideas and iterate new solutions
- Rapid global communication

# Autocratic Development Flow



# Democratic Development Flow



# Hybrid Development Models

- Single company controls development
- Open source distribution
- Uses autocratic decision matrix
- Lacks democratic feedback
- More comfortable for users transitioning from proprietary since there is a single company to contact
- Examples
  - MySQL, MariaDB
  - MongoDB

## 6. Where Does This Leave Postgres?

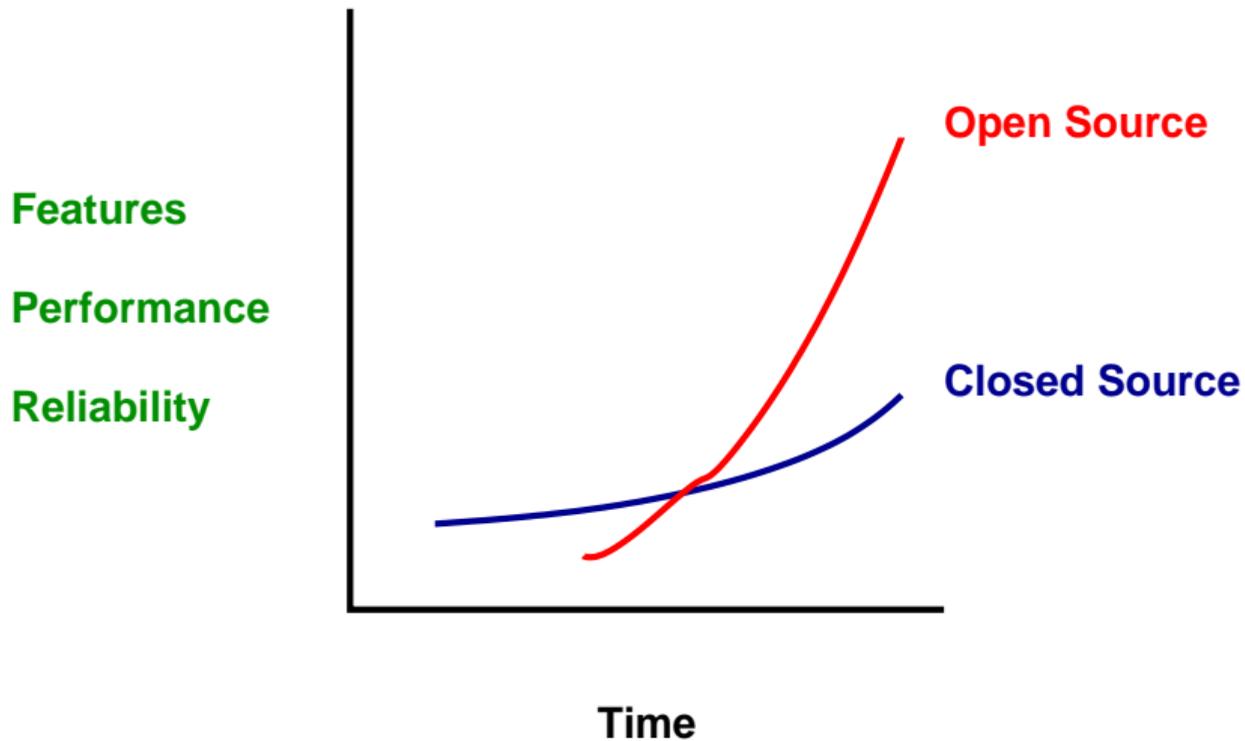


[https://www.flickr.com/photos/tomas\\_vondra/](https://www.flickr.com/photos/tomas_vondra/)

# Postgres Wins Because Democracy Wins

- Uses democracy to attract talent
  - talent pool can easily compete with proprietary staff
- Superior feedback and decision matrix lead to success
- This is a challenge for niche software
- Setbacks still possible

# Rise of Open Source

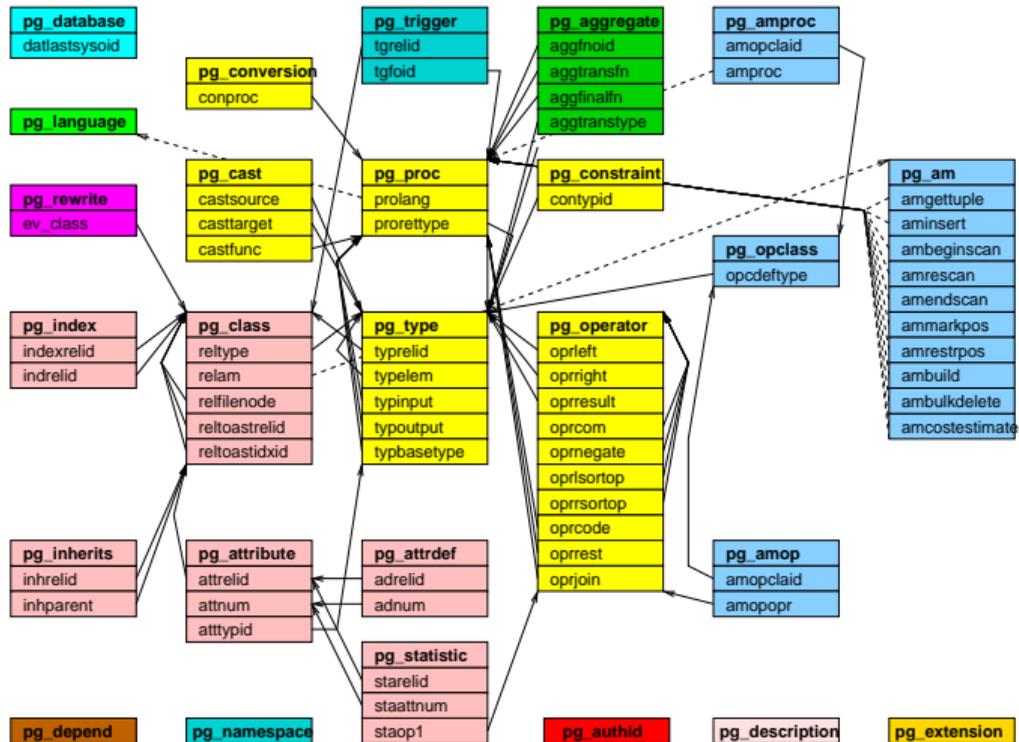


## 7. Democracy in Action

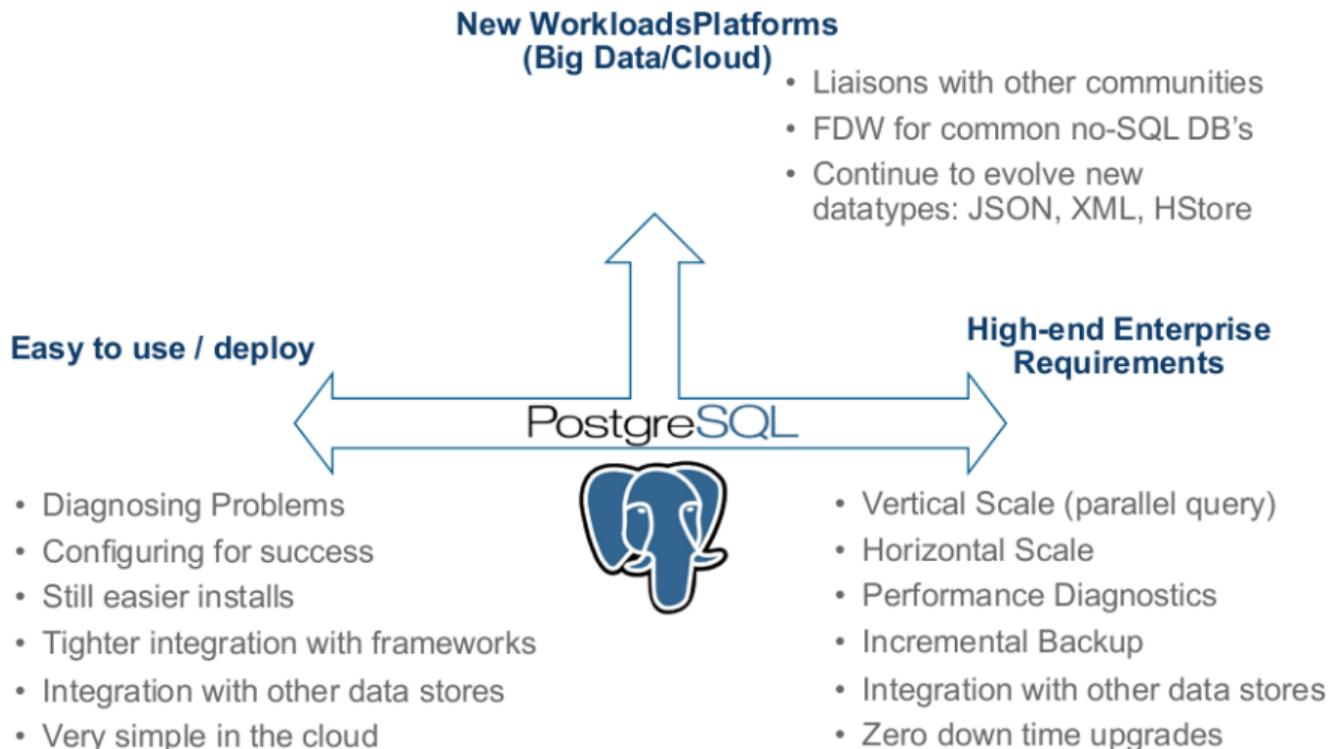


[https://www.flickr.com/photos/tomas\\_vondra/](https://www.flickr.com/photos/tomas_vondra/)

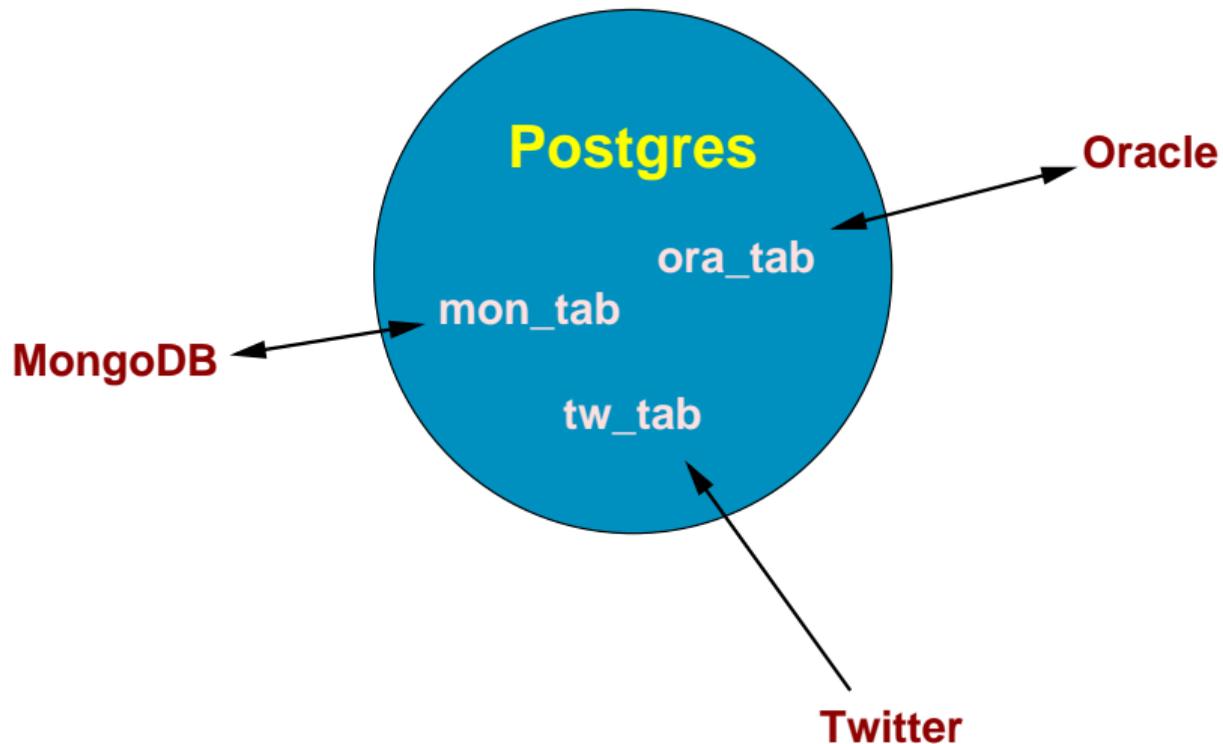
# Postgres Extensibility



# Many Focuses



# Foreign Data Wrappers



# Foreign Data Wrappers

- 100+ interfaces to foreign data
- Read/write
- Sophisticated push down of joins, sorts, and aggregates

The screenshot shows the PGXN website interface. At the top right, the PGXN logo and 'PostgreSQL Extension Network' are visible. Below the header is a navigation bar with 'users', 'tags', and 'recent'. A search bar is located in the top left of the main content area. A large list of tags is displayed in the center, with 'foreign data wrapper' being the most prominent. To the right, a 'Recent Releases' section lists several PostgreSQL extensions with their versions and brief descriptions.

PGXN, the PostgreSQL Extension network, is a central distribution system for open source PostgreSQL extension libraries.

**Recent Releases**

**pg\_truncate 0.8.0**  
 pg\_truncate turns PostgreSQL into a real-time data platform. Define source tables on top of any base table and let the extension maintain materialized views incrementally—keeping only the delta in flight. Unlike their counterparts the full result set, built on a trigger-based CDC pipeline and a differential database engine written in Rust.

**pg\_trickle 0.8.0**  
 Query Tealicious databases from PostgreSQL.

**pgvector 0.3.0**  
 Provenance-gated, vector-hybrid necessary for LLM agents in PostgreSQL.

**pgrowl 1.0.0**  
 Setting provenance and probability management for PostgreSQL.

**storage\_engine 2.2.8**  
 Columnar (vscompress) and row-compressed (rowcompress) Table-AMs for PostgreSQL, with vectorized GROUP BY aggregation, parallel vax, and user-range pruning.

[More Releases](#)

Tags: [administration](#) [aggregate](#) [aggregate function](#) [aggregates](#) [analytics](#) [arrays](#) [audit](#) [background worker](#) [bitmap](#) [compatibility](#) [count](#) [data type](#) [datatype](#) [dictionary](#) [distinct](#) [estimate](#) [extension](#) [external data](#) [fdw](#) [foreign data wrapper](#) [function](#) [functions](#) [hash](#) [hint](#) [index](#) [json](#) [jsonb](#) [log](#) [logging](#) [maintenance](#) [math](#) [meta](#) [monitoring](#) [partitioning](#) [performance](#) [pgrx](#) [plan](#) [pipsql](#) [postgresql](#) [replication](#) [rust](#) [search](#) [security](#) [sql](#) [sqlmed](#) [statistics](#) [table](#) [template](#) [testing](#) [trigger](#) [type](#) [vectors](#)

Eng: [Manolis](#) [Johnston](#) PGXN | About: [Doc](#) [Warning](#) [Feedback](#)

- PostGIS is a full-featured Geographical Information System (GIS)
- Implemented as a extension
- Independent development team and community



# PostgreSQL Tenth Anniversary in 2006



[https://www.postgresql.org/files/community/conference06/conference\\_group.html](https://www.postgresql.org/files/community/conference06/conference_group.html)

# My Postgres Activities



# Voting

- Committers nominate new committers
- Core team nominates new core members
- Development is open to all, even occasional visitors
  - “Let the best idea win!”
  - “Where did that guy come from?”
  - Focus talent like a lens on every task

# Roadmap

- Individuals and political parties have roadmaps
- Democratic governments don't
- Developers and companies have roadmaps
- Postgres doesn't

### Users

- General Re: Problem linking with Release library
- Other Re: BUG #18158: Assert in pgstat\_report\_stat() fails when a backend shutting down with stats pending
- Announce Ajqvue Version 3.6 Released

### Developers

- Hackers PostgreSQL 19 Beta 1 release date
- Commit psql: save/restore truePrint/falsePrint printQueryOpt values
- Versions **Stable:** 18.3+, 17.9+, 16.13+, 15.17-, 14.22- | **Development:** 19 devel, in commitfest

### External

- Blogs Christophe Pettus: All Your GUCs in a Row: backend\_flush\_after
- News pgAdmin 4 v9.15 Released
- Media How lakebase architecture delivers 5x faster Postgres writes - Databricks
- Events PostgreSQL Development Conference 2026 (pgconf.dev)

### IRC (also Slack)

StyXman: :)

iRobbery: StyXman: <https://community.grafana.com/t/merging-rows-with-same-timestamp-for-time-series/103254> came across this few days ago

StyXman: iRobbery: :)))

iRobbery: worky works?

StyXman: yeah! \o/

StyXman: thing is, the transformations are not available in the explore mode

iRobbery: the stats look great in grafana, the ui is not as intuitive sometimes

StyXman: this is wonderful :)))

London 02:20 Berlin 03:20 Moscow 04:20 Mumbai 06:50 Beijing 09:20 Tokyo 10:20 Los Angeles 18:20 New York 21:20 São Paulo 22:20

Content updates automatically | [About](#) | [Submit Feedback](#)

# Conclusion



<https://momjian.us/presentations>

<https://www.flickr.com/photos/atbaker/>