The Democratization of Databases

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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.

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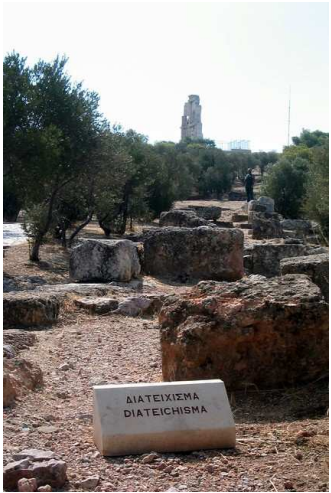
Outline

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., Syria
  - 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

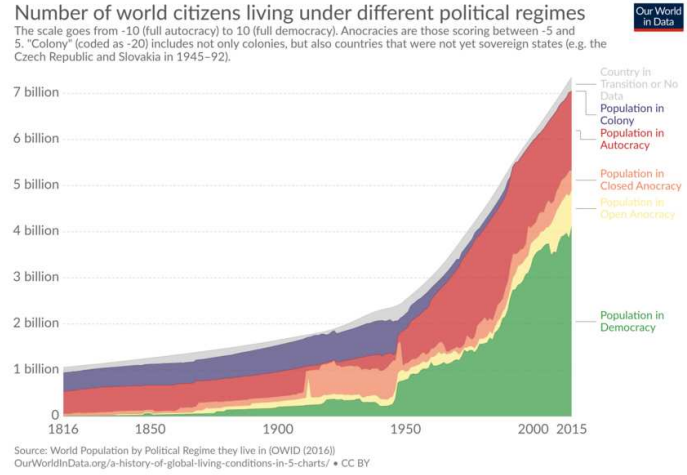
- First democracy in Athens, suspended during wars
- Roman democracy ended in dictatorship
- Middle Ages, Magna Carta, Renaissance
- American Revolution, black and women's voting rights
- French Revolution leads to monarchy

Democracy Today

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

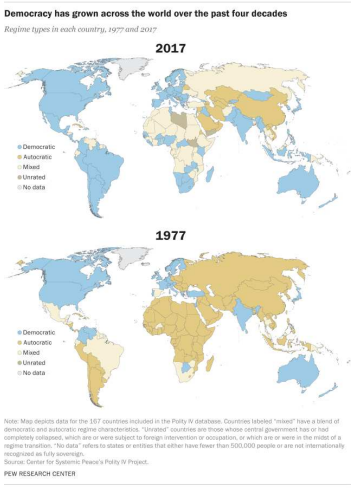
Democracy in the Past 200 Years

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



https://ourworldindata.org/democracy

Democracy in the Past 40 Years



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?”

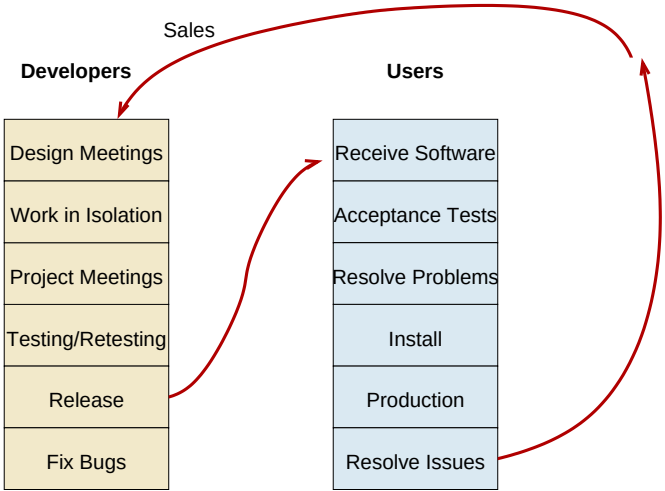
Open Source Democracy

- 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

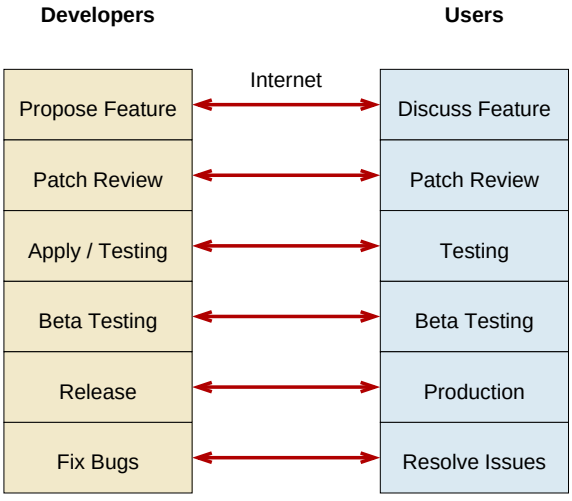
Internet Makes Direct Democracy Possible

- 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

https://www.techrepublic.com/article/mongodb-ceo-tells-hard-truths-about-commercial-open-source/

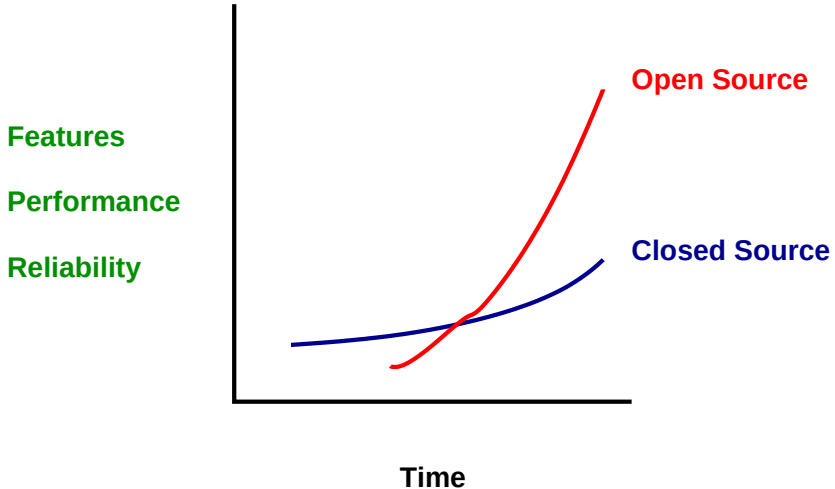
6. Where Does This Leave Postgres?

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

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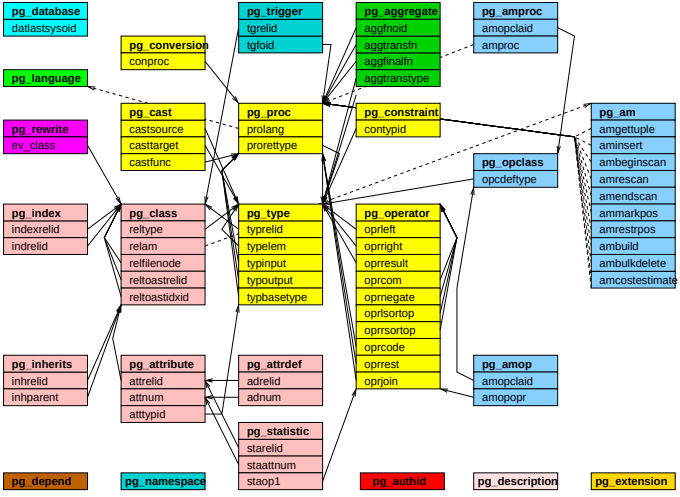
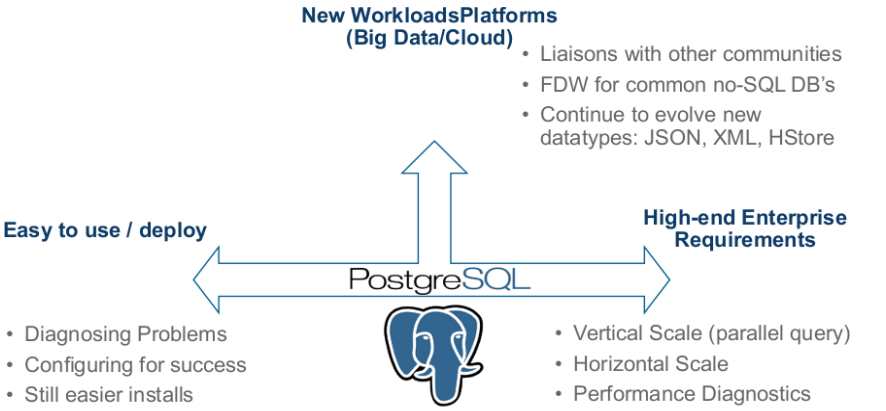
Postgres Extendability

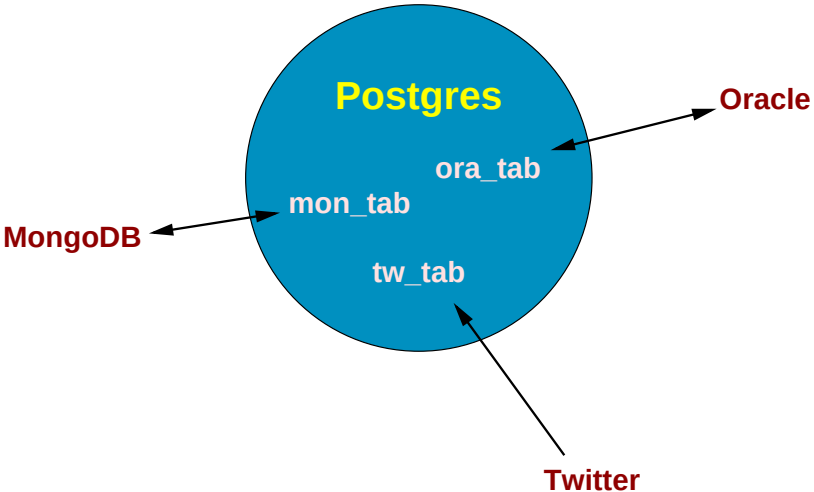


Many Focuses



Keith Alsheimer, EDB, 2013

Foreign Data Wrappers

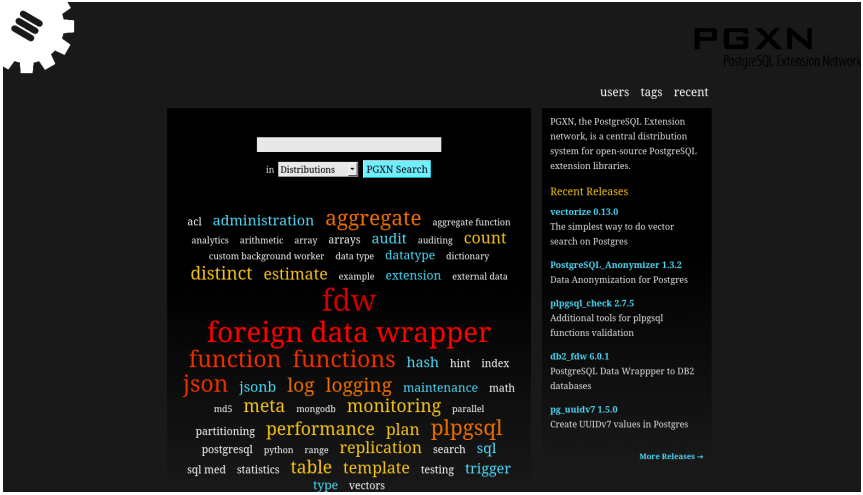


Foreign Data Wrappers

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

https://momjian.us/main/writings/pgsql/central.pdf

PGXN



http://pgxn.org

PostGIS

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

https://postgis.net/

PostgreSQL Tenth Anniversary in 2006

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

PgLife

PgLife Postgres Community Life

Users

General	Re: Getting wrong datetime in database using insert into table query.
Other	Re: Deadlock
Announce	pgmoneta 0.10

Developers

Hackers	Re: Cutting support for OpenSSL 1.0.1 and 1.0.2 in 17~?
Commit	Avoid function call overhead of pg_popcount() in syslogger.c.
Versions	Stable: 16.2+, 15.6+, 14.11+, 13.14+, 12.18+ | Development: 17 devel, in commitfest

External

Blogs	Álvaro Hernández: Why Postgres Extensions should be packaged and distributed as OCI images
News	Ora2Pg 24.3 have been released
Media	Index Creation in PostgreSQL Large Tables: Essential Checklist for Developers - Medium
Events	PGDay at FOSSASIA Summit

IRC (also Slack)

buu: but with treeparser it should be possible to pull out the sql bits
buu: *treesitter
pnorman: I try to keep my coding making sense if you looked at any jinja2 part in isolation or took them out. so if I open up a (in a conditional I also close it as well
buu: yeah those old school types are obnoxious
buu: I'm so happy I never have to read <* if 1 { *> ... <* } *>
pnorman: so WHERE (foo {% if bar %}AND baz){% else %}){% endif %} would always generate valid SQL, I avoid it
buu: augh
pnorman: actually, the worst things are commas. if you have a condition like foo IN (1,2,3,4) where depending on some other variable you keep on adding on to the list of 1,2,3,4 and 1 is always present you need to really tie the comma with the item *after* it, not before

London 19:59 Berlin 20:59 Moscow 21:59 Mumbai 00:29 Beijing 02:59 Tokyo 03:59 Los Angeles 11:59 New York 14:59 São Paulo 15:59

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Conclusion

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