Abstract

In an era of geopolitical shifts, countries seek technological independence, with open source as a key strategy. While US/European developer density is well-known, their interconnections with China’s ecosystem remain under explored. This talk aims at providing an overview based on quantitative data of the evolution of the European and Chinese ecosystems. And give indicators of commonalities across both industries through potentially shared interests.

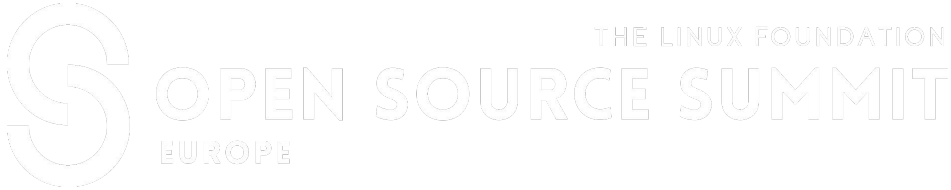
According to 2024 global open source data released by China's OpenAtom Foundation:

• Europe leads with 3M+ active developers (17.8% YoY growth), while China follows with 2.2M+ (24.05% growth).

• Europe dominates mature domains like OS (3.49M annual contributions) and front-end (9.59M), while China excels in emerging fields such as AI (+29.94%) and semiconductors (+121.64%).

This is growing a non-exclusive and possibly complementary ecosystem of body of knowledge, tools, and processes where different parties can take advantage of.

This talk will share some thoughts on possible collaboration pathways including: technical synergies (trusted AI and compliance), policy alignments, and community coordination by lowering the barriers.



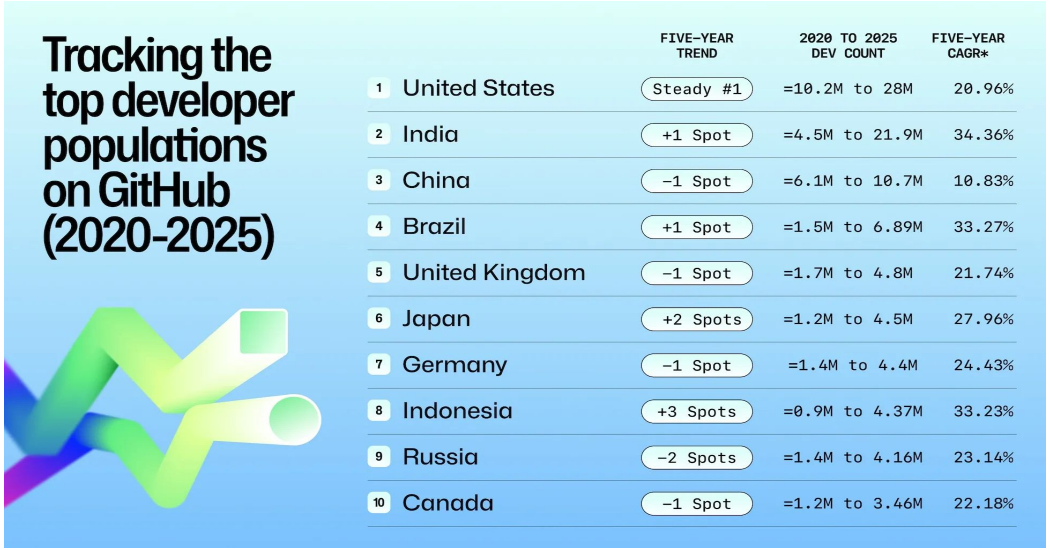
Open Source in Europe & China

Digital Sovereignty & Sustained Collaboration

Daniel Izquierdo, CHAOSS Board Member, CEO @Bitergia

Where are we at?

Geopolitical shifts => Technological Independence => Open Source



https://github.blog/news-insights/octoverse/octoverse-a-new-developer-joins-github-every-second-as-ai-leads-typescript-to-1/

(FOSS) constitutes 70%-90% of any given piece of modern software solutions

A Summary of Census II - The Linux Foundation

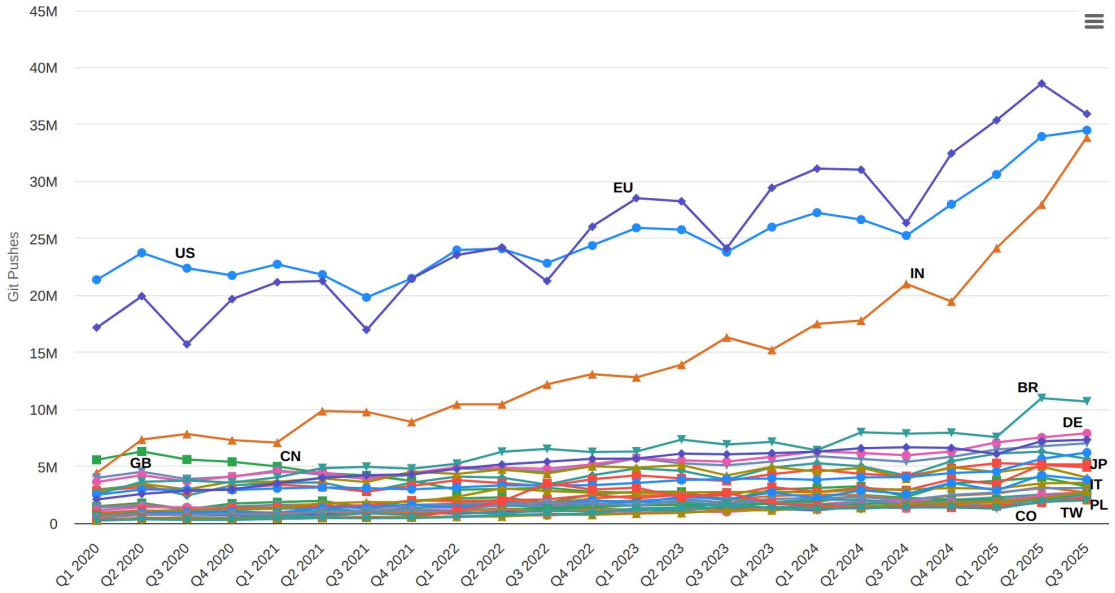
The Challenge: GitHub's Geographic Data Distortion

14. What errors, sources of noise, or redundancies are important for dataset users to be aware of?

GitHub activity is assigned to an economy based on the **IP address** of the given developer or organization. Thus, **VPNs and other means of altering or hiding IP addresses** distort the metrics. Economies where developers may be more likely to use such tools will be affected more than others; **thus, international comparisons should note this limitation.**

https://github.com/github/innovationgraph/blob/main/docs/datasheet.md

https://innovationgraph.github.com/global-metrics/git-pushes



Count of Git Pushes Among Top 30 Economies

Current challenges

Challenges

- No existing archive for Chinese data sources (e.g., GitCode or Gitee)
- Almost impossible to start from scratch
- VPN hiding IPs
- Only code hosting platforms has access to IP information

Data Strategy

- Lack of accurate data when dealing with IPs
- Timezone and profile analysis

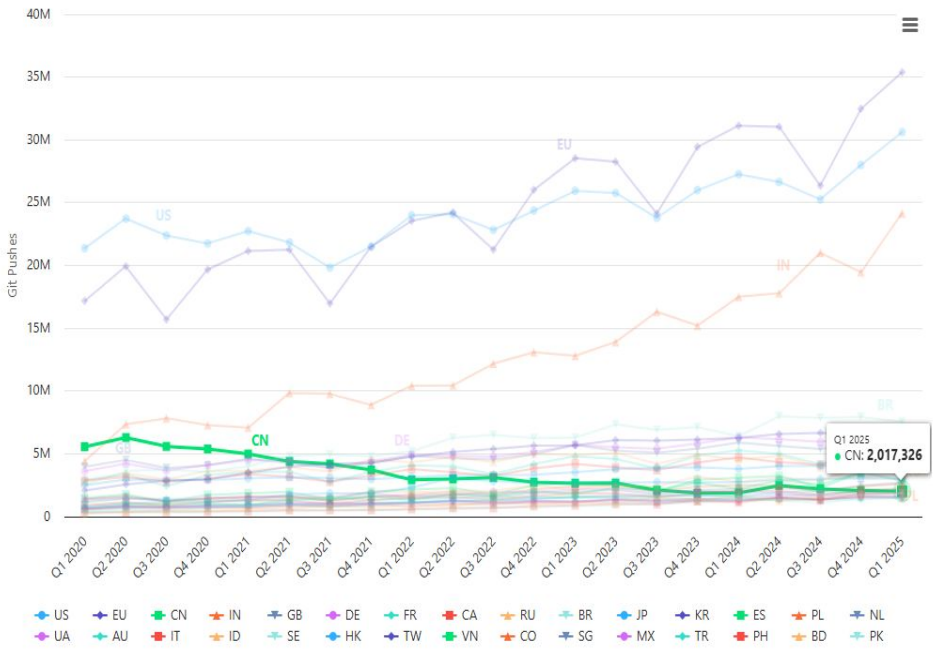
Improvement: OSS-Compass's Enhanced Methodology

Time Zone Verification: OSS-Compass effectively avoids inaccuracies in GitHub's IP-based statistics for high-interference regions (e.g., China) through time zone verification (+8 time zone).

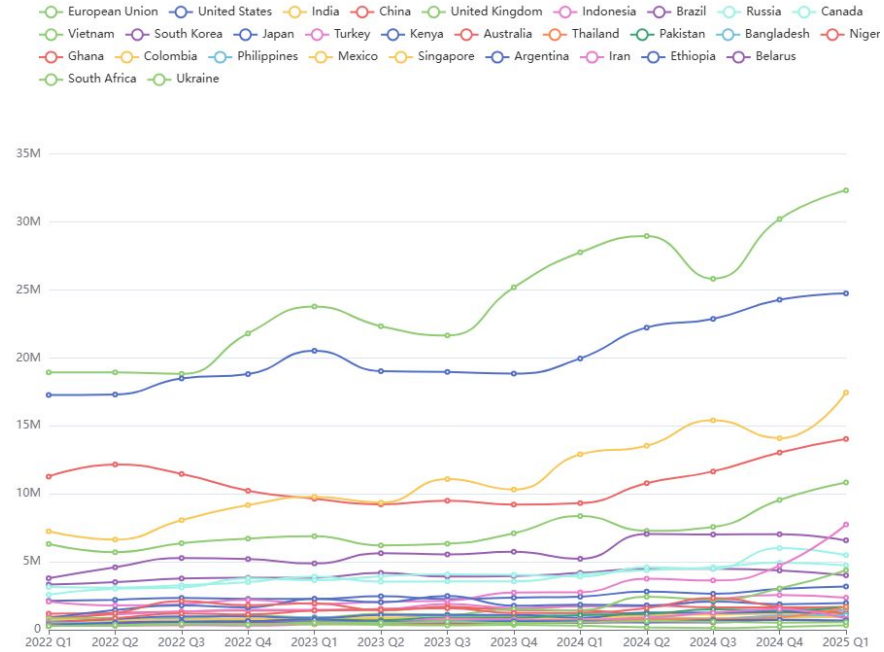
Data Expansion: OSS-Compass also incorporates the Gitee code hosting platform.

China's Code: Across Platforms	2022 Year (Unit: Count)	2023 Year (Unit: Count)	2024 Year (Unit: Count)
Active GitHub Projects	1, 384, 124	1, 511, 342	1, 755, 881
Active Gitee Projects	658, 322	722, 961	1, 109, 724
Active GitHub Developers	650, 746	701, 535	750, 698
Active Gitee Developers	604, 929	1, 086, 702	1, 458, 204

Clearer Insights Through Data Correction



Github Innovation Graph: Count of Git Pushes Among Top 30 Economies

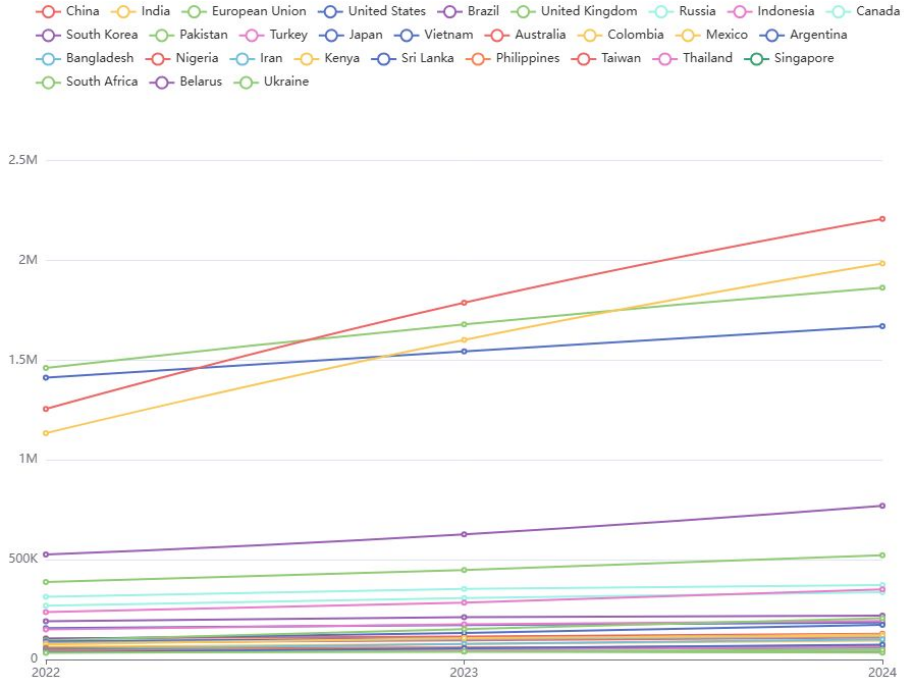


OSS-Compass: Count of Git Pushes Among Top 30 Economies

China Open Source Development Deep Insight Report

https://www.openatom.org/journalism/detail/Uq3AysHvzvLd

2022-2024 Number of Active Code Developers and Repos in Top 30 Countries and Regions



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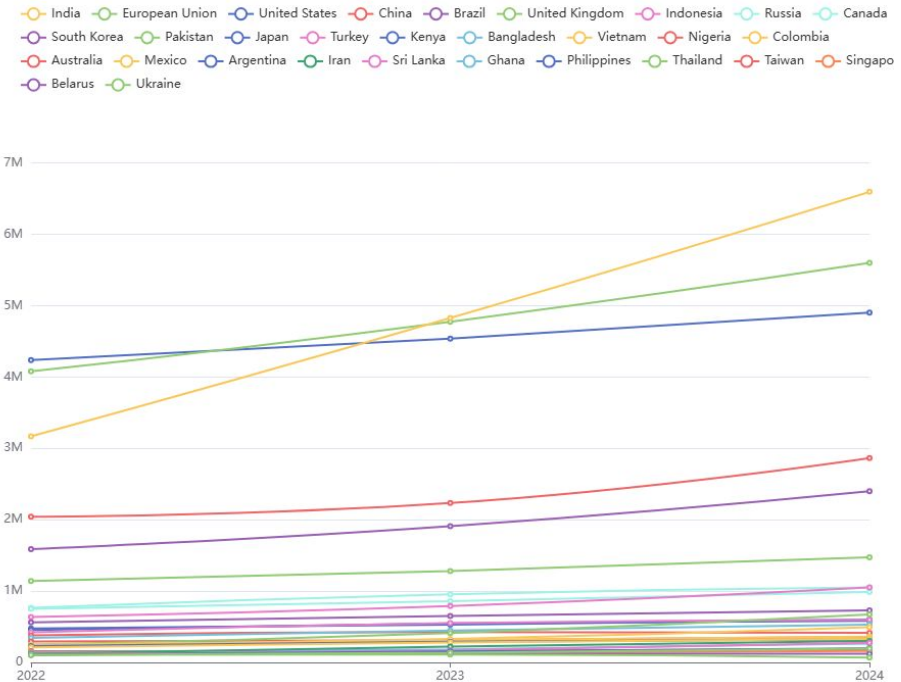

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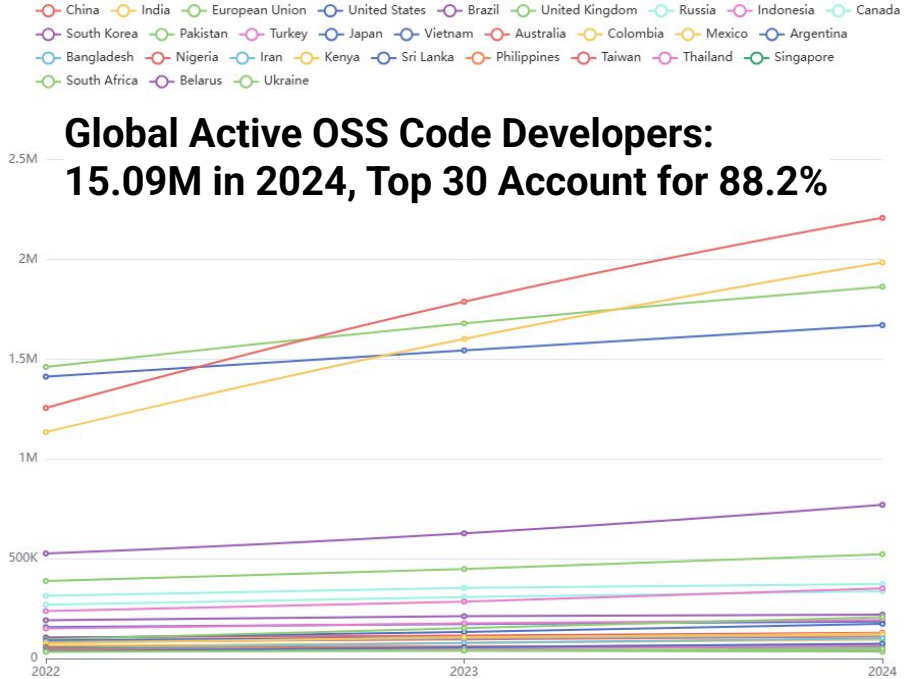

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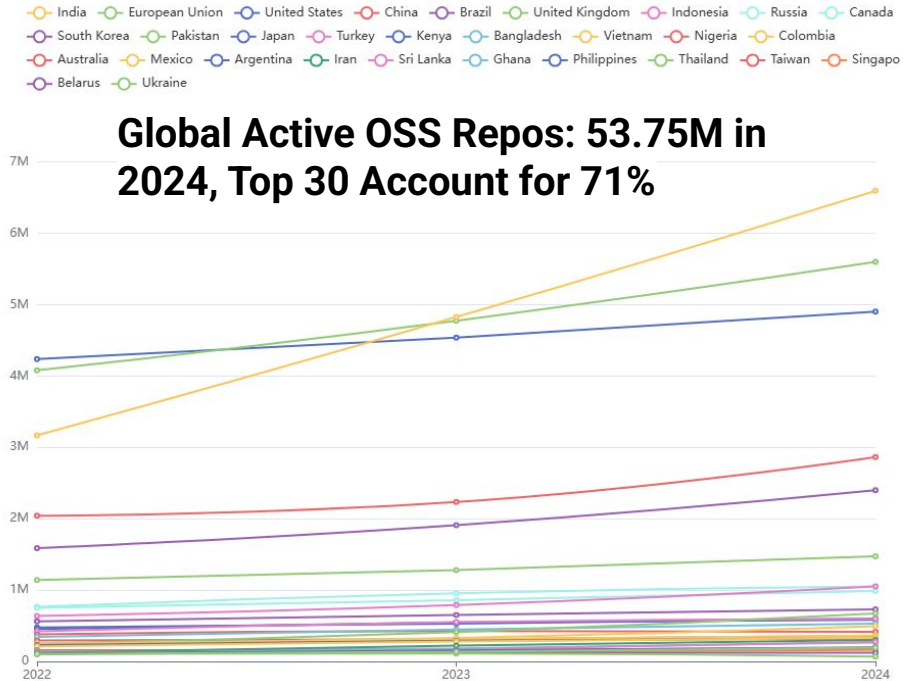
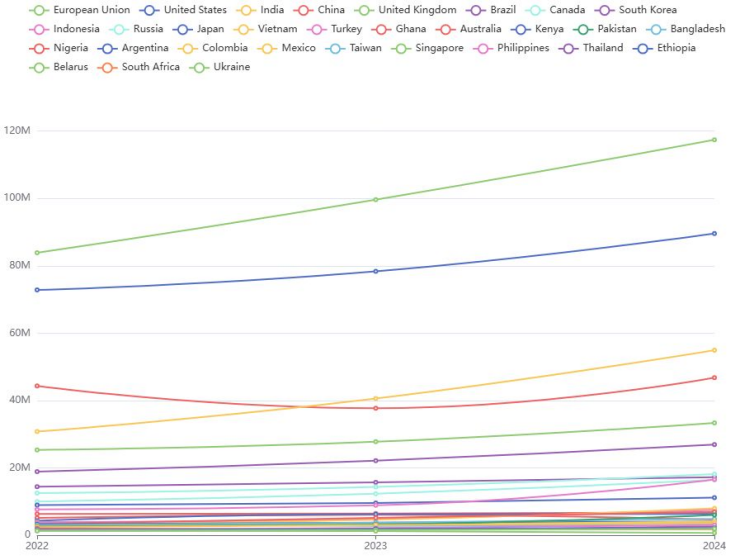
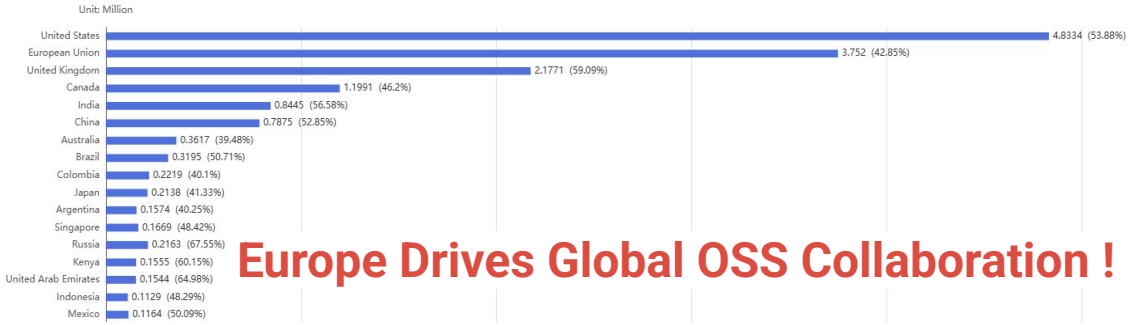


2022-2024 Number of Active Repositories in Top 30 Countries and Regions

Global OSS Contributions Surpass 700M in 2024, Marking Deepened Worldwide Collaboration





Europe Drives Global OSS Collaboration !

2024 Global Distribution of Open Source Export Contributions by Top 30 Countries and Region

Export: Code contributed by developers from a country/region to projects outside of it.

Import: Code contributed by developers outside of a country/region to projects within it.

2024 Global Distribution of Open Source Import Contributions by Top 30 Countries and Region

Europe and China, introductory stats

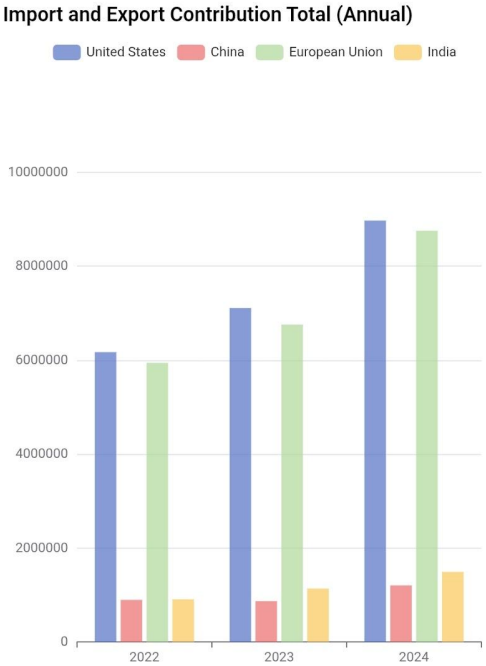
	M. Commits	% YoY Growth	M. Active Projects
Europe	92.53	16.95	5.6
China	50.34	24.44	3.03

Europe and China, introductory stats

Germany - France

Leading Regions

Beijing, Shanghai, Shenzhen, Hangzhou



Europe and China, introductory stats

	China	Europe
Population	1.41 billion	449.2 million
GDP (2024)	$18,74 trillion USD	$19,42 trillion USD
ICT Employees	8.9 million	>10 million
OSS Contributions	50.34 million commits	92.53 million commits
OSS Active Projects	3.03 million	5.6 million
Active Developers	2.27 million	1.86 million

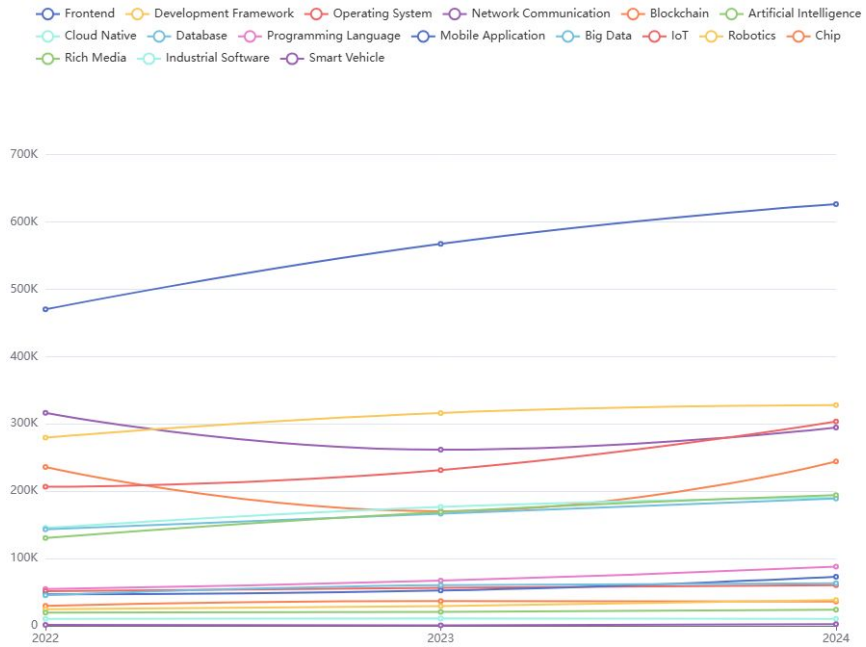
Europe and China, industrial priorities

Europe TOP 10

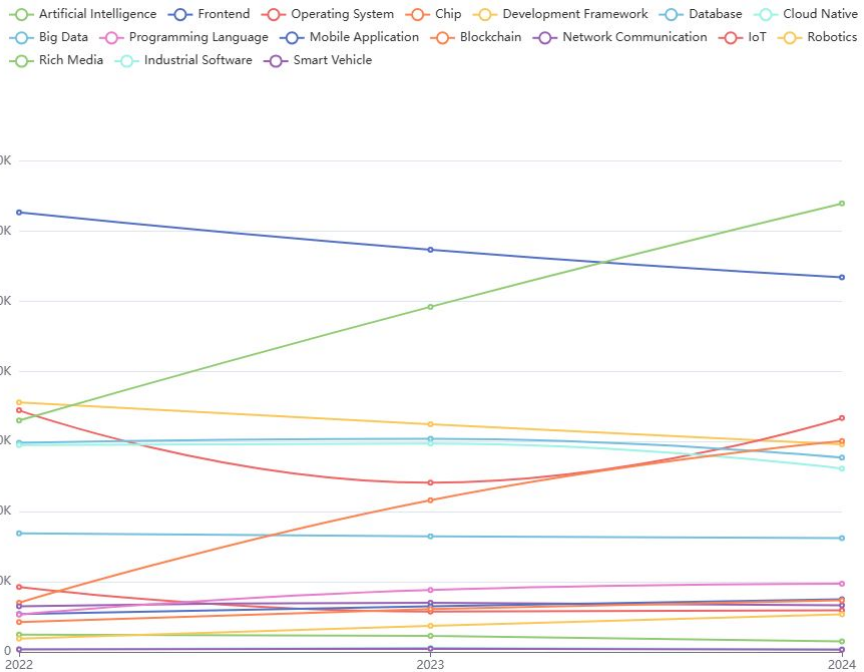
Domain	2023 Contributions	2024 Contributions	YoY Growth
Frontend	567,590	626,681	10.41%
Development Framework	316,341	327,832	3.63%
Operating System	231,478	344,722	48.93%
Network Communication	261,703	294,859	12.66%
Blockchain	170,332	244,462	43.52%
Artificial Intelligence	169,191	194,305	14.84%
Cloud Native	176,652	190,518	7.85%
Database	166,528	189,263	13.64%
Programming Language	67,078	88,106	31.37%
Mobile Application	52,638	72,960	38.63%

China TOP 10

Domain	2023 Contributions	2024 Contributions	YoY Growth
Artificial Intelligence	246,165	319,605	29.85%
Frontend	286,876	267,223	-6.85%
Operating System	120,640	166,802	38.26%
Chip	108,265	150,495	39.02%
Development Framework	162,392	148,107	-8.79%
Database	151,927	138,633	-8.75%
Cloud Native	148,580	130,797	-11.97%
Big Data	82,394	81,223	-1.42%
Blockchain	30,611	36,903	20.55%
Network Communication	35,098	33,274	-5.20%



2022-2024 Development Trends of Code Contributions in Various Technology Fields Within the EU



2022-2024 Development Trends of Code Contributions in Various Technology Fields in China

Initial Conclusions

More deeply embedded open source culture within Europe (higher OSS production rate per capita)

And more mature ecosystem within Europe

China has the potential to massively grow as soon as their ICT employees base keeps growing

Growing faster on incipient markets and edge technologies as AI

Open Discussion: Complementary markets?

Based on previous datasets and the table:

- Expansion of mobile Chinese technology in Europe given the skills and importance of the market, as well as operating systems
- Learning each other from areas such as AI, Blockchain, and operating systems
- Expansion of European technology within Chinese hardware

How much do we want to reinvent the wheel in both parties?

Open Discussion: Challenges

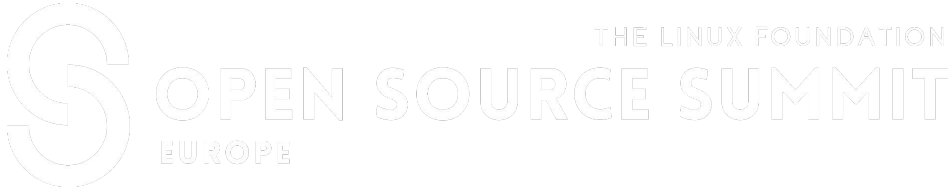
Challenges:

- Trusting each other (open source may help here),
- Political environment,
- Government public funding help,
- Market distortion,
- Export control on crypto (Europe) and AI (China),
- Language barriers and cultural differences

Open Call

If you are interested in producing and understanding the Chinese ecosystem, please contact us.

- Experts in data mining
- Market analysis
- Real facts and development data within the Chinese ecosystem
- Connections with the industry



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