Engineer Software

Made a geographical data pipeline 50x faster

Recorded a 50x geographical data-pipeline improvement in the founder's Utiligize work through SQL and data-model changes across PostgreSQL, MS SQL and Google Cloud BigQuery.

2022 – 2024

50x

faster geographical data pipelines

Situation. The organization faced significant delays in processing large sets of geographical data, which affected the efficiency of data-driven decision-making processes and analytical reporting.

Task. The objective was to optimize the geographical data pipeline to enhance performance and reduce processing time, ensuring that data analytics could be performed more effectively and in real-time.

Action. The existing SQL programming and data modeling structures across PostgreSQL, MS SQL, and Google Cloud BigQuery were meticulously analyzed, which surfaced bottlenecks related to inefficient indexing strategies, suboptimal query designs, and lack of appropriate constraints. To address these issues:

- The data models were redesigned to normalize critical datasets, with partitioning strategies implemented to improve data retrieval times.
- Applied advanced indexing techniques, including B-tree and GiST indexes for PostgreSQL, filtered indexes in MS SQL, and clustering in BigQuery.
- Optimized complex SQL queries by refactoring subqueries, reducing join operations, and incorporating materialized views where relevant.
- Established data integrity constraints such as foreign keys and check constraints to ensure data consistency without compromising performance.

Result. The founder's achievement record reports a 50x improvement for the geographical data pipeline in this engagement. That is the recorded project result, rather than a guarantee for other datasets or systems. The published record does not specify the benchmark dataset, hardware or comparison procedure.

Bring this experience to your project

Use "Made a geographical data pipeline 50x faster" as a starting point for a similar challenge in your organisation. The services behind this work are available for your project. Anything that happens in a place — vessels, vehicles, plots, sensors — put on a map you can search, measure and share.

Explore our services Get in touch →

Look behind the result

Read the situation, decisions and result in this example. We can discuss which parts transfer to your constraints and which need another approach. Made a geographical data pipeline 50x faster — 50x faster geographical data pipelines

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Need your data pipelines to run faster?

Talk through your project with the engineer responsible for delivery. We agree the scope, price basis and handover in writing before work begins.

Role context: Data Engineer. It draws on Databases, PostgreSQL, SQL, Data Warehousing, Data Engineering, Data Pipelines (ETL/ELT), Data Governance, Performance Tuning and GIS / Geospatial. And while you are here, we are rather good at GIS & Geospatial Solutions, Database Performance Tuning, Data Pipeline Development (ETL/ELT), Data Warehouse Design and AI Data Readiness.

Get in touch Explore our services

One piece of **a longer record** — and it is all on this site.

Every entry is written the same way: the situation, the task, what we did and what changed.

See the whole record

Define the improvement you need

Describe the workflow, the existing interfaces and the users who need the change. We can define a testable delivery and a handover that lets your team maintain it.

See what it costs Get in touch →

Need your data pipelines to run faster?

Ask about the decisions behind “Made a geographical data pipeline 50x faster”. You will speak with the people who can explain the work and assess your own project.

Explore our services

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