GIGASPACES

PSA
GROUPE

CASE STUDY:

PSA Group Automotive Undergoes Digital Transformation with GigaSpaces, Increasing Performance by Over 15x

About PSA Group

The PSA Groupe, a French multinational automotive manufacturing company produced automobiles and motorcycles under the Peugeot, Citroën, DS, Opel and Vauxhall brands. In 2021 it merged with Fiat Chrysler Automobiles (FCA) to form Stellantis. As of 2022, Stellantis was the fourth-largest automaker by sales.

Business Challenge

In response to the European Union's Clean Air For Europe Programme (CAFE) and WLTP Protocol (Worldwide Harmonized Light Vehicle Test Procedure), vehicle suppliers and manufacturers must produce less polluting vehicles by assigning them an average CO2 rate per kilometer emitted annually on all sold vehicles.

For every configured car, PSA Group needs to calculate the CO2 emission.
Failure to calculate and display the CO2 emission can lead to heavy fines. For example, an extra gram of CO2 emission per kilometer might mean a fine of €100 per vehicle.

Technical Challenge

Customers, dealership staff and partners use an online web configurator to build and price cars. The mainframe platform that hosts the PSA Group car configurator had a maximum capacity of 200 requests per second, while PSA Group estimated that actual demand would be over ten times higher. In addition, the mainframe response time was very slow, inadequate to support an online web experience.

Why Did Simple Cache Fail?

PSA Group's first attempt to solve the challenge using a basic cache failed, as that technology is designed for primary key access with simple key lookups, without secondary indexing. Working around this limitation requires duplicating the data multiple times, increasing the footprint and impacting performance. The number of possible configurations reached billions, causing the basic cache to be inefficient, and so was not a viable option.
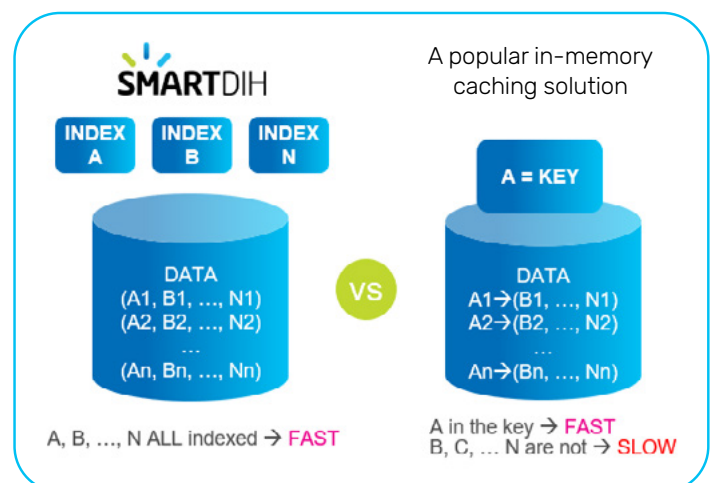
Solution

GigaSpaces technology was implemented with Capgemini to resolve the bottleneck problem by offloading mainframe requests to its core in-memory data grid engine. A mask was applied to the configuration options, eliminating many of which were irrelevant to the CO_2 emission calculation. As a result, the number of configurations dropped significantly, allowing the majority of them to reside in the in-memory multi-model data fabric. This dramatically reduced the number of calculations that needed to be sent to the mainframe.

Dynamic multi-criteria queries allowed for superfast access to the data, without duplicating data per each possible combination of criteria. For high availability, the data is automatically backed up to a database so in case of a server failure, the cache can be restored automatically from the database. The solution was developed and deployed within 12 weeks from kickoff to go-live.

"The databases we compared GigaSpaces to were much more costly, and were less efficient in terms of performance."

Frédéric Warin
Managing Enterprise Architect
at Capgemini for the PSA Group Project

Benefits

Over 95% of requests for CO_2 are served by GigaSpaces technology

Calculator capacity increased 15x without upgrading the mainframe

GigaSpaces technology effectively handles 2800 requests per second

Improved usage of mainframe resources continues to reduce the cost of operations

GigaSpaces technology response times ranges between 15-19 milliseconds vs. 200-300 milliseconds on the mainframe

Accurate, timely calculations ensure compliance with EU regulations, with the elimination of the risk of fines

ABOUT GIGASPACES

GigaSpaces is building on its in-memory computing and operational data store technologies to offer one of the market's first Digital Integration Hubs (DIH), an out-of-the-box solution that simplifies organizations' digital transformation, while drastically lowering legacy systems' TCO. Whether you need to accelerate one application with cache, or modernize your entire architecture with a Digital Integration Hub, the GigaSpaces in-memory data platform can future-proof your investment. Never before has it been this straightforward to accelerate API-powered digital applications to transform user engagement, legacy modernization, and 'Customer-360' software infrastructure projects. Smart DIH is part of the GigaSpaces Smart suite of products, alongside the award-winning Smart Cache solution.

GigaSpaces offices are located in the US, Europe and Israel with partners such as Capgemini and Cognizant around the globe; serving customers such as Morgan Stanley, Bank of America, CSX, Goldman Sachs, Societe Generale, Credit Agricole, American Airlines, Avanza Bank, Avaya, CLSA, PSA Group and UBS. For more information visit www.gigaspaces.com.