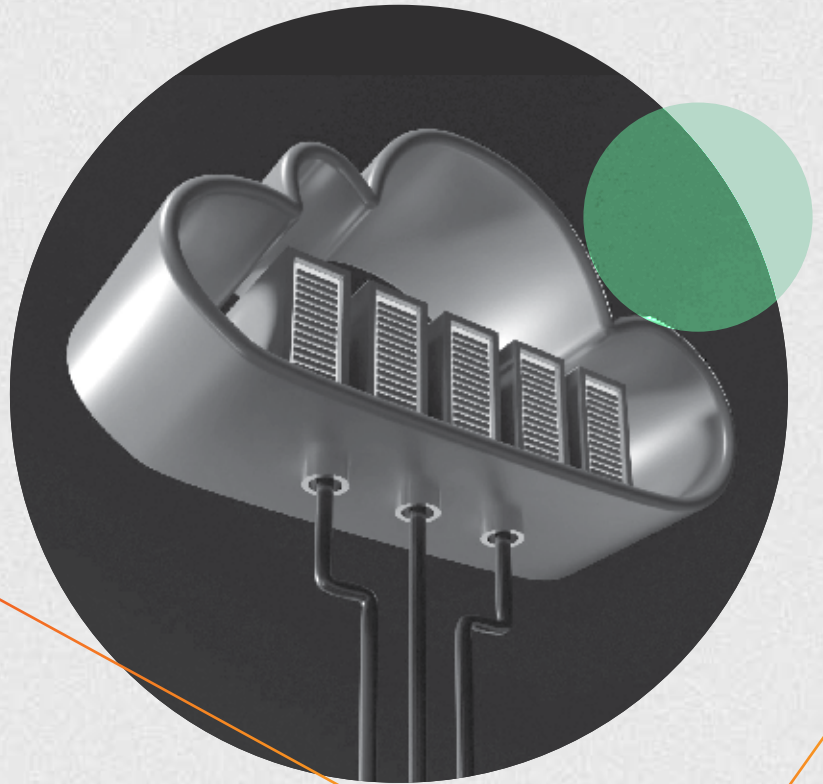


CASE STUDY

# Vodafone Portugal

**Empowering Analytics**  
A Seamless Migration to  
Cloud-Based Online  
Analytical Processing  
(OLAP)




*"Vodafone PT D&A team has successfully leveraged the use of AtScale, in collaboration with Celfocus, to enhance our daily operations and Financial Month End Close process. This implementation has significantly empowered all our Financial, Operational, and Business units. They now have the capability to access and analyse extensive data sets, streamlining daily workflows and enabling quicker decision-making.*

**Nuno Heitor**  
Head of Data & Analytics at Vodafone Portugal

*Our Vodafone PT D&A solutions, supported by Celfocus's expertise, are widely adopted in operations, and AtScale's ability to handle larger data volumes without compromising performance is a significant advantage. Moreover, the larger the operation, the more cost-effective the solution becomes.*

**CELFOCUS**

 **vodafone**

**ATSCALE**

# Adapting to a Data-Driven World: **Overcoming Challenges in Telecom Analytics**

The telecommunications industry operates in a highly competitive environment where innovation, efficiency, and data-driven decision-making are critical to maintaining market leadership. As the demand for better customer experiences grows, Communication Service Providers (CSPs) must rely on robust analytics to extract insights from massive datasets and make their data actionable.

## But how can CSPs address the challenges of the digital era?

CSPs face several challenges in today's digital world, including managing and analysing vast amounts of data from diverse sources, maintaining data governance to ensure consistency and trust, and delivering real-time insights to support decision-making. Additionally, as CSPs migrate to cloud-native solutions, they must address the complexity and cost of modernising legacy systems while ensuring scalability and performance.

For Vodafone Portugal, enhancing their analytics capabilities became an essential step toward maintaining their competitive edge, supporting their operational objectives, and aligning with the strategic goals of the broader Vodafone Group.

As organizations embrace cloud platforms, the ability to process and analyse vast amounts of data becomes a cornerstone of success. Vodafone Portugal recognised the need to modernise its analytics ecosystem, leveraging advanced technologies to empower its business users while reducing costs and operational inefficiencies.

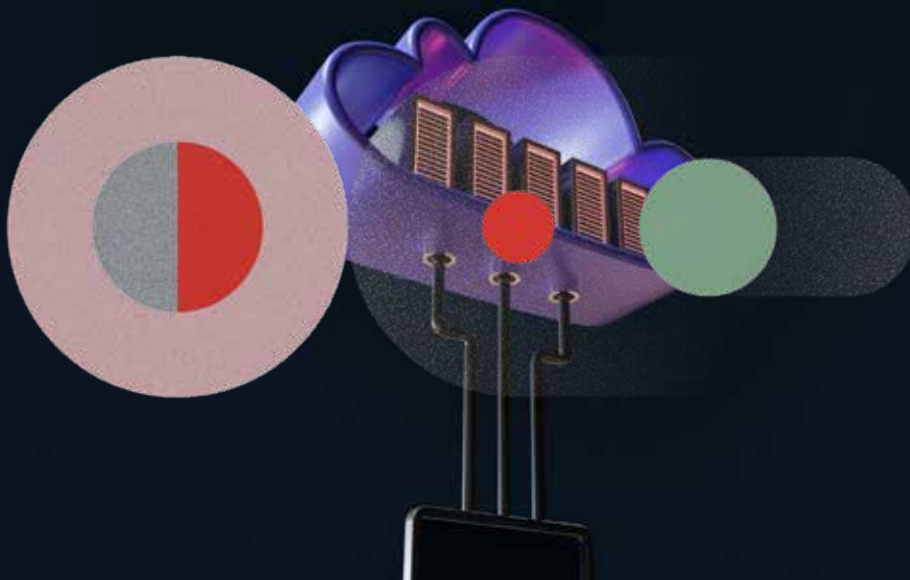


# Transforming **Legacy Analytics** for the **Cloud Era**

Online Analytical Processing (OLAP) is a technology that allows businesses to analyse multidimensional data interactively, helping uncover trends, correlations, and insights. OLAP systems are often used for business intelligence applications where quick and accurate reporting is essential for informed decision-making. OLAP platforms like the current local version of Microsoft SQL Server Analysis Services (SSAS) have been deployed on-premises, but the shift to cloud-based architectures has highlighted their limitations.

The OLAP cubes migration project emerged as part of the Vodafone Nucleus (D&A Data Warehouse Cloud Migration) Program, an ambitious initiative to consolidate analytics platforms across Vodafone's global offices. The Nucleus program emphasises standardising of analytical tools and deployment configurations on Google Cloud Platform (GCP), creating economies of scale while enhancing user experience.

Vodafone Portugal's specific SSAS use case posed a particular challenge from the Legacy OLAP environment in terms of cloud compatibility, scalability and cost efficiency. To address these issues, Vodafone Portugal sought a solution that could integrate seamlessly into the GCP ecosystem while maintaining the functionalities that business users valued in their existing OLAP tools.



## About Vodafone Portugal

Vodafone is a leading European and African telecoms company. They provide mobile and fixed services to over 330 million customers in 15 countries, partner with mobile networks in 46 more and have one of the world's largest IoT platforms. In Africa, their financial technology businesses serve almost 83 million customers across seven countries – managing more transactions than any other provider.

As of March 31, 2023, Vodafone Portugal holds over 4.7 million mobile customers and has nationwide coverage that reaches 4.6 million homes and businesses with its fast next-generation network (including partnerships). The company's purpose is to connect for a better future by using technology to improve lives, businesses and help progress inclusive sustainable societies.

*Source: Vodafone.com*



## Project in a nutshell



Migrated OLAP functionality from SSAS to AtScale on GCP.



Extended OLAP capabilities beyond the Data & Analytics domain.



Improved user experience with self-service and real-time access



Reduced query times significantly (e.g., from 3 hours to 45 minutes).

## The Challenge

Vodafone Portugal faced a pressing need to overcome the limitations of its existing on-premises OLAP system.

The Local Market specific use of SSAS technology in the reporting processes was not designed to handle the scale and complexity of Big Data environments or integrate efficiently with cloud ecosystems. Furthermore, the system led to the creation of unmanaged data silos, resulting in inconsistent metric definitions and governance issues.

The reliance on third-party connectors to bridge SSAS with GCP introduced additional costs and inefficiencies. Business users found it increasingly difficult to extract timely insights, and the overall cost of maintaining the legacy system was unsustainable. These challenges highlighted the urgency of transitioning to a cloud-native solution that could meet Vodafone Portugal's current and future analytics needs.



## The Solution

To address the challenges faced by Vodafone Portugal, Celfocus and AtScale delivered a cutting-edge solution leveraging AtScale's Universal Semantic Layer on the GCP. This solution seamlessly integrated with Vodafone's existing ecosystem while introducing advanced capabilities tailored to their analytics needs.

The core of the solution was the migration of OLAP cubes from SSAS to AtScale. This involved replicating Vodafone's existing OLAP structures, ensuring a smooth transition for end users who depended on OLAP for multidimensional data analysis.

Celfocus led the implementation of AtScale at Vodafone Portugal, managing all phases of the migration assessment, design, execution, and deployment, while ensuring smooth stakeholder collaboration and alignment of technical and business needs.

AtScale provided several critical features that transformed Vodafone's analytics ecosystem. One of its core functionalities was the ability to support both SQL and MDX-based tools, such as Excel, enabling analysts to continue using familiar interfaces without requiring extensive retraining.

This Universal Semantic Layer bridged the gap between traditional OLAP systems and GCP, making it possible for users to perform complex, multidimensional analyses directly on Google BigQuery data without manual intervention.

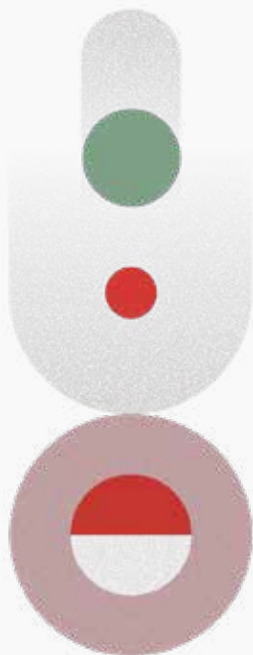
The solution also introduced automated data engineering, a technology that dynamically optimises data structures based on user behaviour. This feature not only accelerated query performance but also minimised the cloud resources required, reducing operational costs significantly.

For Vodafone, this meant queries that previously took hours in SSAS could now execute in minutes or even seconds with AtScale, providing real-time insights.

AtScale’s centralised governance was another key feature, allowing for consistent metric definitions and eliminating discrepancies caused by unmanaged data exports. This ensured that all business users worked from a single source of truth, improving the reliability of reports and analyses. The solution also supported role-based access controls, safeguarding sensitive data and meeting compliance requirements. Hosted on Linux virtual machines within GCP, AtScale connected to BigQuery through secure service accounts, offering robust performance and security.

By integrating seamlessly with GCP, AtScale enabled Vodafone to move away from costly third-party connectors. The cloud-native approach also eliminated data silos, consolidating all analytics within a unified platform. Furthermore, AtScale’s compatibility with Vodafone’s existing BI tools preserved the user experience while introducing advanced capabilities such as real-time processing, automated aggregations, and sub-second query responses.

In terms of scalability, the solution provided a robust framework capable of handling growing data volumes and expanding use cases.





It was designed to support Vodafone’s future needs, including extending OLAP functionalities beyond the Data & Analytics domain and scaling to other business units and operational companies within Vodafone Group.

The implementation not only supported the migration goals of the Nucleus program but also laid the foundation for extending analytics capabilities across other business areas and Vodafone OpCos. Beyond the migration, Celfocus is currently exploring new initiatives to expand AtScale’s use in other Vodafone business areas, reinforcing their commitment to innovation and long-term value.

## ARCHITECTURE COMPARISON

### WITHOUT AtScale

**PROS**

- Reduced GBQ cost Through “extract and then process model”
- Incumbent technologies

**CONS**

- Data movement and duplication of data
- Long cube refresh (37min+)
- Data silos
- Definitions of data in each tool
- Security is more complex
- Limited Scale of Data



### WITH AtScale

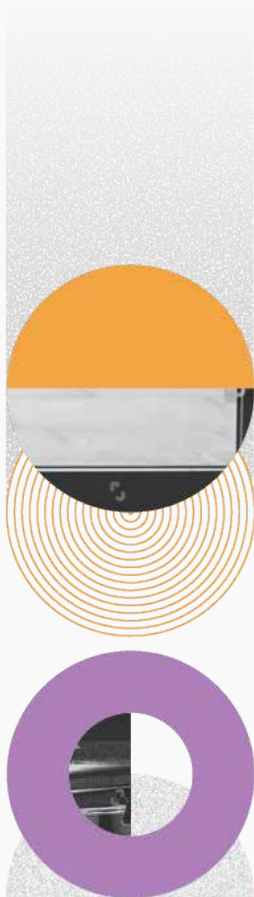
**PROS**

- Single definition of data
- No data Movement
- Autonomous Data Engineering
- SQL & MDX Endpoints to same data definition
- Speed to refresh cubes (1:1 min)
- Single Security Definition
- Simpler Architecture

**CONS**

- Queries against GBQ





## Benefits

The OLAP cubes migration project delivered transformative benefits across multiple dimensions, positioning Vodafone Portugal for success in a cloud-first, data-driven future:



### Faster Decision-Making

query performance was significantly improved, reducing processing times from 3 hours in SSAS to just 45 minutes with AtScale for the largest OLAP cubes, thanks to real-time data access.



### Cost Optimisation

through automation and optimised queries, Google BigQuery expenses and manual data engineering costs were substantially reduced. It also eliminated licensing and operational expenses tied to third-party connectors.



### Enhanced Data Governance

centralised metric definitions and governance ensured all business users operated from a single source of truth, reducing discrepancies and errors in reporting.



### User Empowerment & Satisfaction

supported self-service analytics across BI tools, allowing users to analyse data independently without needing extensive IT support.



### Scalability & Future-Readiness

enabled seamless scaling to handle growing data volumes and integrate additional business domains.

## Why Celfocus and AtScale?

Celfocus and AtScale were uniquely positioned to deliver this project due to their expertise and complementary strengths. Celfocus brought deep knowledge of system integration and analytics, ensuring a seamless transition to the new platform. AtScale’s unique capabilities, including its Semantic Layer and compatibility with GCP, provided the perfect foundation for this transformation.

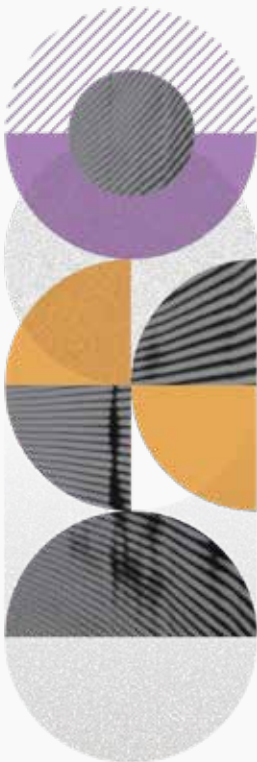
Based on the acquired experience, Celfocus and AtScale have built a framework and an underlying a set of processes and tools to streamline OLAP migration projects, which aim to reduce the required time, investment, risk and business impact to business users.

*“Our aim in deploying AtScale was to add flexibility and effectiveness to the business without disrupting the way users were used to explore their data. The result was highly satisfying for all stakeholders involved, with seamless adoption while extending data insights and awareness.”*

**Pedro Fonseca** - Account & Delivery Director at Celfocus

*“Our collaboration with Celfocus allowed us to combine AtScale’s Semantic Layer technology with their integration expertise to create a streamlined migration of Vodafone’s business semantics and OLAP functionality. This approach accelerated the project timeline and set a new standard for cost efficiency and scalability in analytics transformation.”*

**David Mariani** - Chief Technology Officer, Founder of AtScale



## About AtScale

AtScale was founded by members of the data team at Yahoo in 2013. They began working on the AtScale semantic layer after working on big data from the trenches – dealing with the basic challenges of data scale, query performance, metrics sprawl, complicated data pipelines and shadow BI.

AtScale takes a highly unique approach to accelerating time to insights, enabling data literacy, and driving value from AI/ML and data assets. AtScale enables smarter decision-making by accelerating the flow of data-driven insights.

The company's semantic layer platform simplifies, accelerates, and extends business intelligence and data science capabilities for enterprise customers across all industries. With AtScale, customers are empowered to democratise data, implement self-service BI and build a more agile analytics infrastructure for better, more impactful decision making.



## About Celfocus


Celfocus is a European high-tech system integrator, providing professional services focused on creating business value through Analytics and Cognitive solutions – addressing Telecommunications, Energy & Utilities, Financial Services and other markets' strategic opportunities.

As a highly specialised technology company, Celfocus helps clients undergo their innovation path, providing technological solutions to extract value from data for successful business evolution.

Serving Clients in 25+ countries, Celfocus delivers solutions such as accelerating digital network transformation in Autonomous Networks, elevating and monetising business services in B2B2x ecosystems, and providing highly relevant customer experiences through Hyper-personalisation solutions.

Founded in 2000, Celfocus started as a joint venture between Novabase and Vodafone Portugal and is now entirely owned by Novabase. The company is listed on the Euronext Lisbon Stock Exchange.

For more information about CELFOCUS,  
please visit our website  
[www.celfocus.com](http://www.celfocus.com)

Follow us on: 

Copyright © CELFOCUS. All RIGHTS RESERVED TO CELFOCUS and its Licensors under Law. The disclosure, copying, adaptation, citation, transcription, translation, and/or any other form of total or partial use of the content, layout and graphic design, images or sound of this document or accessible herein, by any means of using any format (physical or virtual) without the respective authorization or licensing by CELFOCUS or its Licensors is prohibited and offenders shall be prosecuted. The user or licensee of all or part of this document may only use the document under the terms and conditions agreed upon with CELFOCUS and/or its Licensors for the purposes determined, otherwise subject to civil and/or criminal prosecution of the offenders.

**CELFOCUS, S.A..**  
Avenida D. João II, Lote 34  
Parque das Nações  
1998-031 Lisboa, Portugal  
Tel. +351 213 836 300 . Fax +351 213 836 301  
[www.celfocus.com](http://www.celfocus.com)