https://www.bayer.com/

INDUSTRY
Life Sciences

PROFILE
With a vision to produce more, restore nature, and scale regenerative agriculture, Bayer Crop Science believes that feeding the world and restoring the planet must go hand-in-hand. The world's farmers need to grow by 50% by 2050 to feed, clothe and fuel the growing demand. They also believe that technology must serve as a foundation for increasing crop production.

> Denodo serves as a high-performance semantic layer between our disparate data sources like SAP, Google BigQuery, and on-premises MES and business applications like Power BI, Veezoo, and others. We have been able to democratize our data and maximize our lakehouse investment – improving time-to-insights by 5x and containing costs by 90%."
>
> — **Eric Carvalho**, Data Architecture Manager, Bayer Crop Science, LATAM

Bayer Crop Science LATAM is Solving the World's Hunger Crisis with Denodo as a Technology Enabler

Bayer Crop Science LATAM (Latin America) is a critical pillar of the global Bayer organization, as the Latin American region remains one of the world's most significant agricultural hubs for soybean, corn, and sugarcane production. As of 2026, LATAM has had a central focus on the company's overarching vision of "Hunger for None," leveraging the region's vast scale to drive innovation in regenerative agriculture.

From a technology perspective, Bayer LATAM's Crop Science operations are characterized by a sophisticated "cloud-first" data strategy that integrates precision agriculture tools and business applications through advanced data virtualization capabilities.

Denodo democratizes data, enabling the Bayer Crop Science LATAM to contain costs by 90%

Business Need
In Latin America, the Crop Science Product Supply team is responsible for the manufacturing and distribution of seeds and chemicals. To feed the growing demand, optimize production, and streamline supply – the team put an IT infrastructure in place with Google BigQuery at the center, acting as a cloud data lakehouse.

While that served the technical teams well, the Manufacturing and Business teams faced a multitude of challenges in accessing data due to their limited SQL knowledge. They needed a simpler way to connect to Power BI, their business intelligence tool of choice. Adding to this complexity, disparate data was trapped in multiple different sources and formats across a distributed hybrid environment.

Bayer Crop Science LATAM faced the following challenges in leveraging data:

- Technical barriers to entry: Google BigQuery, the division's primary data lakehouse, required SQL knowledge that business users in manufacturing often lacked, creating a serious bottleneck.
- Data silos and fragmentation: Critical information was scattered across over 20 disparate business applications, including SAP, Excel worksheets, external SaaS tools, and manufacturing-specific systems like MES and Shift Connectors.
- Inaccurate information: Users were manually extracting data and sharing Excel files via email, leading to the risk of version control errors. In addition, by the time they completed their analyses, the data was out of date, often leading to flawed decision-making.

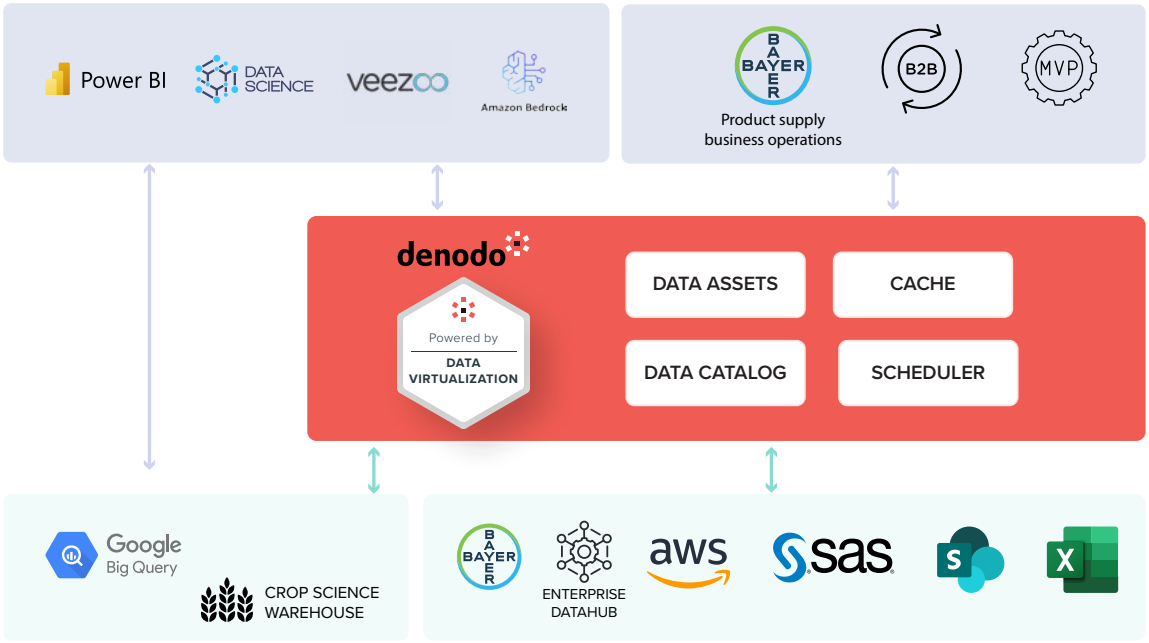
Eric Carvalho, data architecture manager at Bayer Crop Science LATAM shared a practical example. “If a team member had an idea to improve a business process and wanted to validate it with data, they had to first connect to SAP or Google BigQuery or ask around, then they would have to spin up an Excel Worksheet, then analyze information systems within manufacturing, and then repeat it with newer data,” said Carvalho. “Clearly the process was tedious, time consuming, and frustrating.”

To solve the data access, integration, and delivery challenge, Carvalho recognized the business need for a modern data architecture, powered by a unified semantic layer.

The Solution

Carvalho and team found their solution in Denodo’s logical data management platform, which would optimize its existing lakehouse investment. They implemented the Denodo Platform for its unified semantics capabilities and optimized access to distributed data.

DATA DEMOCRATIZATION AND SELF-SERVICE ANALYTICS PROVIDING AGILITY ON DATA INTEGRATION AND REAL-TIME ACCESS TO BUSINESS USERS



As reflected in the simplified version of the reference architecture diagram above, the bottom layer shows Google BigQuery serving as the Crop Science Warehouse for managing enterprise data in the cloud. The bottom right maps other data sources such as the Enterprise Datahub, Bayer’s internal data repository, AWS, SaaS applications, Microsoft SharePoint, Microsoft Excel, and Bayer’s internal systems.

Denodo forms the middleware connecting all of these applications and data sources in real time to deliver business-ready data via the consumption layer at the top. Denodo’s universal semantic layer enables end users to readily find, integrate, and consume data in a self-service manner, without the need for advanced SQL knowledge.

The top layer consists of a slew of applications that pull data from Denodo, with the left depicting analytics and AI tools (like Power BI, Veezoo, and other general modeling and advanced analytics tools) and the top right depicting operational applications (like Bayer’s internal operational software and partner integrations).

Denodo, along with Veezoo and CSW, serves as the data foundation for democratizing data, at scale, among business users. The LATAM Crop Science division can now support more users and more concurrent workloads, while reducing infrastructure costs and operational overhead. As a result, there’s been an increase in the crop yield which directly feeds into the company’s overarching vision of “Hunger for None.”

Benefits

Bayer Crop Science LATAM is well on its way to building a thriving product supply chain, increasing crop production, and making headway on solving the world's hunger crisis.

The Latin American division of Bayer Crop Science is not stopping technological innovation anytime soon. Now that generative and agentic AI is becoming table stakes, Crop Science LATAM has also completed a successful MVP of the Denodo AI SDK and plans to move to production soon.

On a departmental level, Carvalho and his team have been able to log the following tangible business outcomes:

Data Democratization: With a modern data architecture in place, Bayer Crop Science LATAM has been able to achieve data democratization. Business users can now access, integrate, and deliver real-time, trust-worthy data with agility and confidence.

Accelerated Time-to-Value: With Denodo and CSW, Bayer Crop Science LATAM has been able to optimize its lakehouse investment in Google BigQuery and accelerate time-to-value by more than 5x, going from days to hours. The Denodo Platform makes it easier to turn data into outcomes faster, at lower cost, with less operational complexity.

Time Savings and Cost Avoidance: Now business users don't require SQL expertise to access Google BigQuery or spend weeks trying to analyze data spread across 20+ business applications. Not having to employ experts with SQL knowledge alone has resulted in tremendous cost savings. As a result, Bayer Crop Science LATAM has been able to contain costs by nearly 90%.

Using AI to Future-Proof the Architecture: After the completion of a successful MVP, Bayer Crop Science LATAM plans to leverage Denodo's AI capabilities for Query RAG and accelerating AI agent development. In the near future, not only will users be able to ask questions in natural language, but they will also be able to benefit from seamless data integration and MCP support, to facilitate the building of agents.

"Over the past 18 months, we've significantly optimized our production capabilities, bringing us closer to deliver excellence to our customers in Latin America," said Carvalho. **"Denodo serves as our foundational virtualization platform, providing the agility we need to turn complex data into immediate agricultural impact."**

Looking ahead, Carvalho envisions a future defined by intelligence: **"I'm very happy with the initial results of the Denodo AI SDK,"** he said. **"My dream is to empower the team to reach new levels of productivity and innovation with generative and agentic AI."**