GoodData

The Modern Data Stack: What is it and where does GoodData fit in?

In 2022, we're living in a data-driven world. Over the last decade, data analytics, metrics, and business intelligence (BI) have rapidly become must-haves instead of nice-to-haves. The modern data stack was born out of rapid technological progress, making it possible to explore data, build visualizations and dashboards for all end users, and set alerts based on custom metrics. While the data stack is not a new concept, GoodData invites you to explore what these advancements mean for you as we define the modern data stack and where GoodData sits within it.

What is the modern data stack?

Before we jump into the tools most commonly found in the data stack, let's define the phrase "modern data stack." **At GoodData, we define the modern data stack as a deliberate combination of different technologies specifically built to support data storage, management, and access.** Data stacks are typically created by (but not limited to) organizations striving to leverage their data for strategic decision-making. It is important not to confuse this with the term "tech stack," which is usually used to describe the sum of an organization's technological apparatus and is generally focused on multiple use cases (rather than solely data). With technology and data evolving, GoodData views the modern data stack as a necessary asset in an organization's comprehensive technology stack. So what are the tools that make up the modern data stack?

Modern Data Stack Tools

The modern data stack, much like the tech stack, consists of multiple technologies and services. After reviewing the essential components, we've identified four main elements:

Public/Private cloud:

With improvements in security and scalability, as well as a decrease in cost, private and, in particular, public clouds have become increasingly popular in place of the on-prem alternative. The reduced resource requirements and flexibility provided by cloud storage as opposed to an on-prem storage solution further underline the reason for this shift. While GoodData caters to all of these options, it is clear to see that cloud is becoming the new norm. Examples of cloud storage solutions include AWS and Google Cloud.

Data storage:

While the public or private cloud provides the underlying storage for the entire analytics platform as well as a company's other software and applications, the data itself requires its own storage solution. This could be one of a number of different data storage types, depending on the wider use case, including a data warehouse like Snowflake or Redshift, an SQL database like PostgreSQL, a data lakehouse like Dremio, or a combination thereof.

Analytics engine:

The analytics engine sits at the heart of the modern data stack. One of its key components is the semantic model. The semantic model streamlines data management, translating the complex data structures within your data storage into easy-to-understand, highly reusable abstractions. These abstractions define the relationships between datasets and, importantly, require no prior SQL knowledge from your end users. In other words, when multiple end users work with the same data, they get the same consistent outputs, regardless of the way in which they calculate them. The semantic model can be easily built from physical data model fields or pre-built views, with the entities mapped to one or more data sources (e.g., Snowflake, Redshift, Dremio, etc.).

Presentation layer:

The final piece of the modern data stack is the plethora of tools that end users use to visualize the data. There are many, many different visualization tools available, and more often than not, different users will want to use different tools. These could be legacy applications still used within the organization, popular BI tools like Tableau or PowerBI, or more specialist apps used for machine learning or AI.

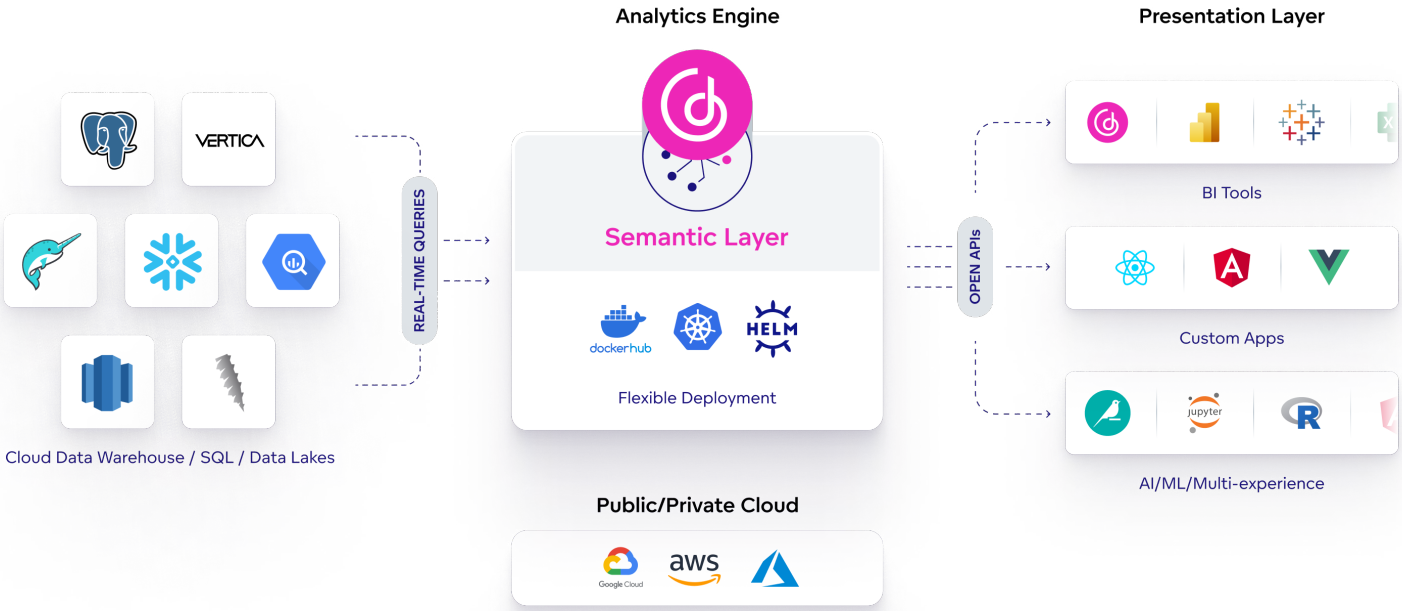
How does GoodData fit into the modern data stack?

GoodData is the leading BI platform that enables businesses to find value in their data by providing real-time queries, embedded analytics, cloud-native technology, and headless BI. In short, GoodData is both an analytics engine and UI app.

The modular, microservice-based architecture of the platform lets it seamlessly fit into the wider data stack. As a result, businesses can seamlessly integrate GoodData alongside existing infrastructure and effortlessly implement analytics using exactly the tools their end users require.

GoodData's analytics engine sits at the center of the modern data stack and directly queries your cloud-stored data in real time for always up-to-date analytics. Its "single-source-of-truth" metrics provided via a robust semantic model result in an API-first approach to analytics. Capitalizing on this API-first approach, headless BI enables you to use the visualization apps of your/your end user's choice (as mentioned above) while still obtaining consistent results. You can learn more about headless BI and API-first analytics here.

As mentioned, GoodData also provides a set of rich UI (dashboarding, visualization, etc.) tools that can be embedded directly in an application or portal, or, alternatively, can be white labeled to match the organization's look and feel.



The Value

The modern data stack brings enhanced capabilities and a number of possibilities. Let's recap its main benefits in comparison to staying with the legacy data stack:

1. **Cost-efficiency:**
   Cloud-based storage (and technology) is typically significantly cheaper than on-premise. With cloud-based solutions, you only pay for what you use and can efficiently scale up as needed.

2. **Modularity:**
   Modularity translates to flexibility. As your requirements change, you can update the corresponding individual components accordingly, avoiding the need to roll out an entirely new solution.

3. **Speed:**
   The modern data stack has become substantially more efficient, allowing you to refresh data in minutes rather than hours, and allowing you to spin up a trial of an entire stack in hours, rather than days or weeks.

The ever-evolving data stack is a key piece of an organization's assets. Gone are the days of one size fits all, with one all-encompassing product. The modern cloud era is geared toward a data stack built up of several interconnecting pieces. For this reason, companies should strive to find flexible solutions in their pursuit of data analysis that not only work in harmony with their wider data stack but offer the flexibility and futureproofing needed for long-term success.

Next Steps

Now that you understand the benefits of the modern data stack and where GoodData fits within it, why not take the next step and discover what your own data stack could look like?

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