REACTOR

Faster is Better:

Stream Data Through your Pipelines for Real-Time Analysis and Applications

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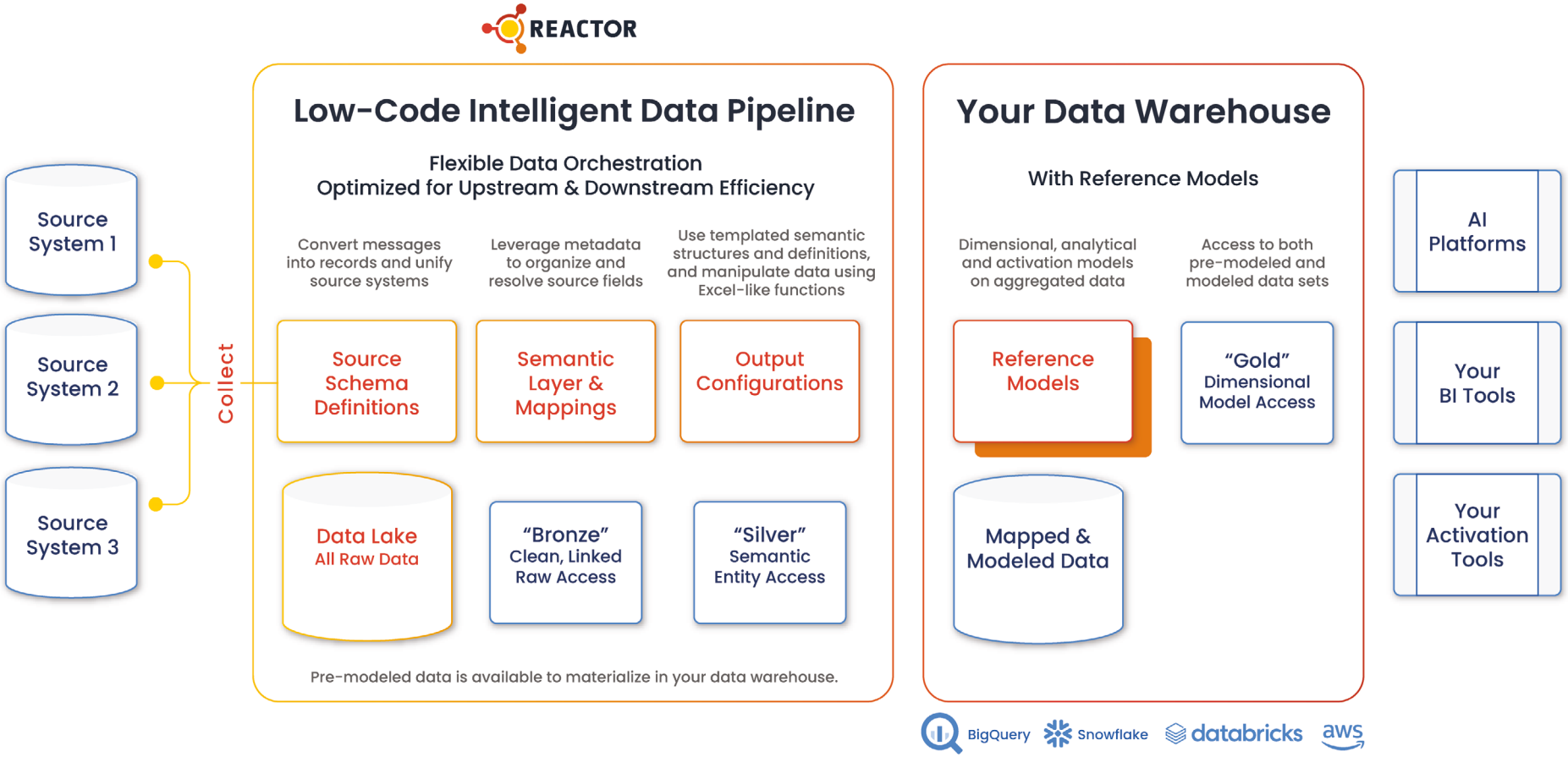
Introduction: The cloud changes everything

Cloud data warehouses can transform the way you run your business, revealing the drivers and detractors of profitable growth. But cloud data warehouses can also become expensive dumping grounds for unusable data.

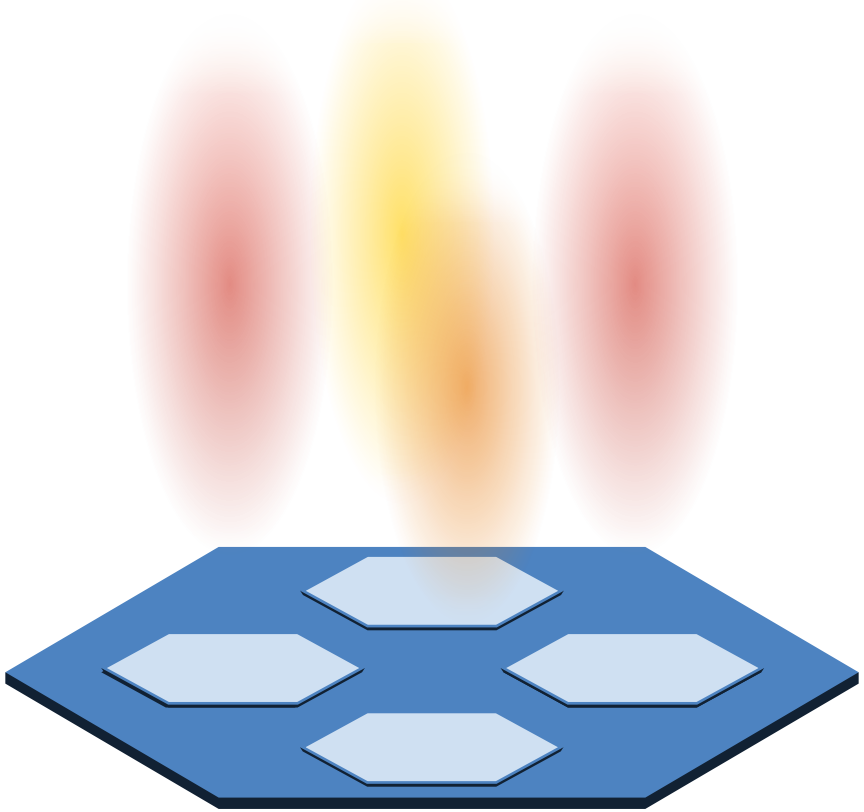
A useful and cost effective data infrastructure requires more than just a data warehouse filled with raw data, dependent upon brute-force data engineering to map and model data into useful business output.



Beam Me Up, Scotty

While early science fiction shows like Buck Rogers (1939) and The Fly (1950) depicted teleportation technology, it was **Star Trek**'s transporter room that made real-time living matter transfer a classical sci-fi trope. While we haven't built technology that **enables real-time matter transfer yet**, modern science is pursuing concepts like superposition and quantum teleportation to facilitate information transfer across any distance at speeds faster than light. Thanks, Albert Einstein!

Back in the data world, we have no need to wait for these future technologies to arrive. Data practitioners today are already using real-time data pipelines to enable a broad set of use cases ranging from website optimization to reactive and predictive fulfillment and delivery routing. Modern data flows including iPaaS and ETL services can achieve millisecond latencies, moving useful data into downstream apps almost instantaneously. The advent of generative AI is massively increasing the uses and value of real-time data for predictive software applications and analytics.



From Batch Processing to Streaming

Batch processing of data is the established paradigm – a function of practical limits on storage and processing power dating back to punch card computing. With the advent of cloud computing, moving from batch to real-time or "in-stream" processing has become practical and even affordable. Data streaming is now a driver of new business capabilities and a source of competitive advantage. Real-time data streaming can enable businesses to optimize decisions and actions in seconds rather than minutes, hours, or days.

Shifting from batch to real-time streaming data transfer can serve to unify disparate and potentially redundant data flows that previously served operational (e.g. payment processing) and simple analytical (e.g. BI dashboard) work. In the retail industry, applications for real-time data range from responding instantly to shopper behavior to flagging and resolving operational exceptions as they occur.

Getting to Practical Applications

Here are a few examples of how DTC and omnichannel brands are using real-time data streaming in practice today:

Real-time inventory management:
Retailers can track inventory levels in real time and trigger automated reorders when inventory reaches a certain threshold, helping to avoid stockouts and overstocking.

Real-time order routing:
Brands can use real-time data to track order fulfillment lifecycles, determining where and how product should be picked, packed, routed, and delivered to optimize time to doorstep and fulfillment costs.

Personalized marketing:
By analyzing customer behavior in real time, retailers can create personalized marketing campaigns that are targeted to individual customers.

Fraud and loss detection:
Ecommerce and POS platforms can use real-time data analysis to identify and prevent fraudulent transactions, reducing the risk of financial losses and damage to reputation.

Dynamic pricing:
Retailers can use real-time data to dynamically adjust pricing based on supply and demand, competition, and other market factors, optimizing revenue and profits.

Customer support:
Retailers can use real-time data to provide personalized support to customers, offering relevant recommendations, and answering questions or concerns.

Supply chain optimization:
Retailers can use real-time data to optimize their supply chain operations, improving delivery times and reducing costs.

Social media monitoring:
Retailers can use real-time data to monitor social media channels for mentions of their brand or products, responding quickly to customer feedback and concerns.

Store layout optimization:
Retailers can use real-time data to analyze customer behavior in physical stores, optimizing store layout, product placement, and staffing levels for maximum efficiency and sales.

Predictive maintenance:
Retailers can use real-time data to identify and prevent equipment failures, reducing downtime and maintenance costs.

Key Benefits of Real-Time Data Streaming in Retail

Streaming data to address use cases like those outlined above can deliver key advantages for your retail brand. Real-time data pipelines enable organizations to respond quickly to changing business needs and market conditions, creating a more agile and competitive brand. Streaming data pipelines provide real-time insights, enabling faster and more accurate decision-making. Real-time data processing ensures that data is processed and made available for analysis as soon as it's generated, reducing processing time and latency. Real-time processing enables organizations to streamline and automate data processing workflows, reducing manual effort and improving operational efficiency. And perhaps most importantly, real-time insights into customer behavior and preferences enable organizations to deliver more personalized and relevant experiences, increasing customer satisfaction and loyalty.

For data engineering and analytics teams, real-time data processing can enable faster identification and correction of data errors, ensuring greater accuracy of data used for analysis. Real-time data processing ensures that only clean, validated data is available for analysis.

These advantages apply directly to analytics and business intelligence use cases, as they enable organizations to process and analyze data more quickly and accurately and respond more effectively to changing business needs.

Optimizing for IT Return on Investment

A key risk worth noting for organizations pursuing real-time data capability is cost. Streaming rather than batch processing data may not generate additional storage or compute expense, but the engineering burden to cost-optimize streaming data pipelines and analytical models can be significant. Cloud computing costs can spiral, especially when storage and compute are concentrated within cloud data warehouses like Snowflake or Google BigQuery.

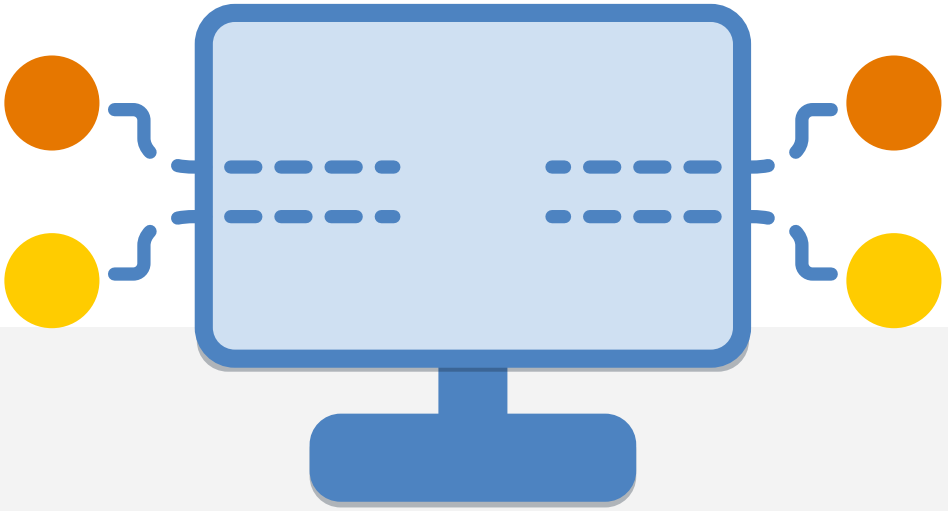
Addressing logging and semantic cataloging and mapping of streaming data early in the data pipeline can help reduce analytical expense downstream when it comes time to materialize, model and activate data.

Get Started with Real-Time Data

How does an organization adopt real-time data streaming? Many modern cloud services and retail data platforms already support streaming data transfer and processing. **You can check with your current software and cloud service providers to confirm they support streaming data transfer.**

Imagine what life will be like when we can instantly move our stuff and ourselves from anywhere to anywhere else instantaneously! We can thank futurists like Gene Roddenberry and scientists like Albert Einstein for advancing our vision of what's possible for humanity.

Until that future stardate — when we finally invent a working transporter, or when quantum computing becomes a commercial reality — **you can apply real-time data streaming to create an unfair advantage for your retail business today.**



Future Proof your Data Stack with Real-Time Streaming

Real-time data pipelines can enable your teams to respond quickly to changing business needs and market conditions, creating a more agile and competitive organization. Streaming data pipelines provide real-time insights, enabling faster and more accurate decision-making which leads to better business outcomes.

Find out more about all **nine characteristics of a Future-Proof Cloud Data infrastructure** in our comprehensive exclusive ebook.

Contact Reactor to learn more and get started today!

REACTOR

Reactor provides the fastest, most efficient path to useful, business-ready data for generative AI, analytics and activation. Built for retailers of any size or complexity, Reactor transforms your unique data infrastructure into an easy-to-use, no-code environment that's accessible to everyone — no engineering degree required. Reactor onboards and ingests data from business critical systems and applications, landing clean, well-defined data modeled directly in your data warehouse.

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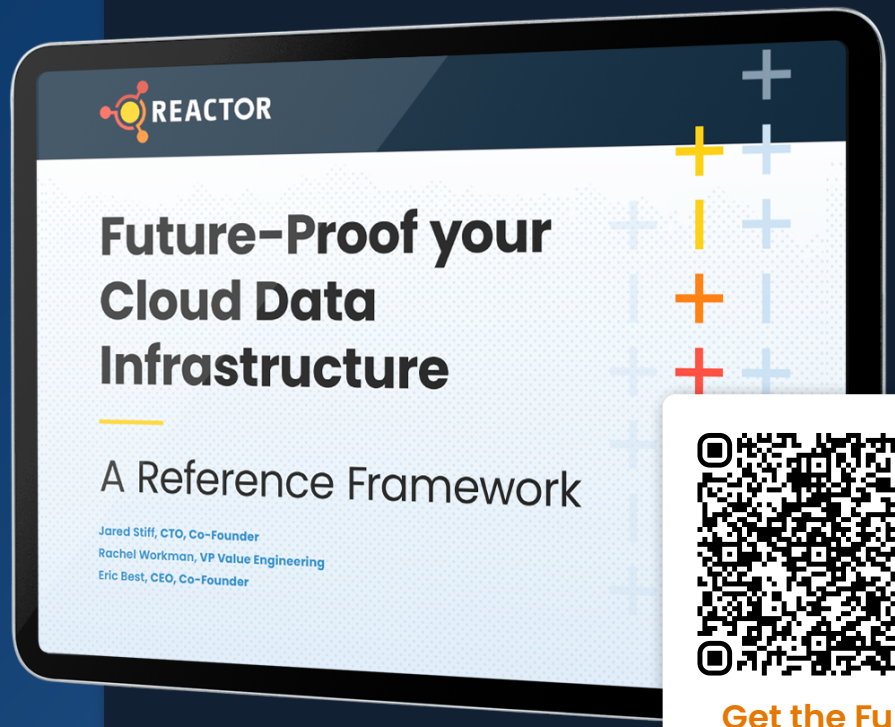
Put Your Data to Work.



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