



6

Qlik Data Integration  
**Reference Architectures**  
for Business Acceleration

# The Value of Effective Data Integration

Take a minute to think about one of your organization's new business initiatives. Whether it's a customer experience, a new service, or a cost-saving effort, the likelihood that it's dependent on data is high. And not just data from one source, but all types of data – historical and real time – from many sources at once are now required to make every digital business initiative a success.

All the data your organization collects should contribute to delivering real growth, innovation, and competitive edge to your business. Yet as more data floods into your environment faster from more sources than ever, people-intensive integration tools are getting in the way. They're bottlenecking the process of delivering analytics-ready data to all your business initiatives the moment they're needed which is creating significant challenges when it comes to assessing data's value and identifying valuable resources. That's no way to get ahead.

## In need of a better approach?

### **Consider these important questions:**

- How will you improve the speed at which you deliver data?
- Can you increase the volume of data you deliver with your current model?
- How will you boost access to data you provide to your people and teams?
- Can you grow the efficiency of your data integration process with existing tools?

# The Need is Clear

Organizational leaders aren't shy about expressing what they want from you, data engineers, and data integration solutions to accelerate top business initiatives:



**Integrated access to all data** – Leaders want to bring together increasingly high volumes of data from a growing array of sources and replicate it to data management and analytics platforms – without production app disruption



**Governance** – Business leaders expect IT to track, maintain, and protect data at every stage of the lifecycle



**Agility** – Leaders hope for the automation of the design, creation, and continuous updating of data warehouses and data lakes on any cloud platform to speed decision making

Qlik Data Integration meets these requirements and more. It's the most effective data integration for delivering all types of data from any source to the right people as quickly and safely as possible. Qlik Data Integration automates the creation of data streams and efficiently moves them to applications, data warehouses, and data lakes, delivering business-ready data to Qlik Sense or other analytics solutions.

## Strong investment in data management & analytics yields significant benefits:

- Operational efficiency improvement (76%)
- Revenue increase (75%)
- Profit increase (74%)

Source: IDC, InfoBrief sponsored by Qlik, ["Data as the New Water: The Importance of Investing in Data and Analytics Pipelines," June 2020.](#)

# 6 Data Integration Use Cases

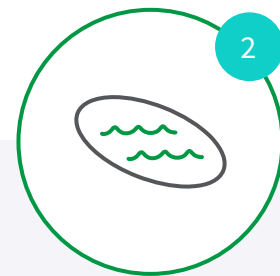
Effectively balance rising demands for data – at speed – against security and performance risks with modern, secure, efficient data-to-analytics pipelines through DataOps for analytics from Qlik. Discover the value of Qlik Data Integration for bringing together all data from many sources and making it more valuable to your business in these detailed reference architectures for six popular use cases.



## Data Warehouse

Power agile data warehousing with automation to quickly design, build, deploy, manage, and catalog purpose-built data warehouses (especially cloud-based) faster than traditional solutions.

**Data engineers:** Meet or exceed the demands for analytics-ready data marts that enable data-driven insights at the speed of change.



## Data Lake

Continuously provide accurate, timely, and trusted transactional data sets for business analytics. Automate the entire data pipeline (from real-time data ingestion to the creation and provisioning of analytics-ready datasets) without manual scripting.

**Data engineers:** Realize faster return on data lake investments while confidently meeting growing demands for analytics-ready datasets in real time.



## Data Lakehouse

Architect for a single source of truth for all analytic initiatives – artificial intelligence (AI), business intelligence (BI), machine learning (ML), streaming analytics, data science, and more.

**Data engineers:** Unify both data lake and data warehouse automation in one user interface to plan and execute either with ease.



## Event-Driven Data – Lambda

Reliably update a data lake and efficiently train ML models using three layers. Understand the batch layer, operating on all data, produces the most accurate results but at high latency; the speed layer shows real-time views in a low-latency, near real-time model; and the serving layer supports queries from batch and speed layer results.

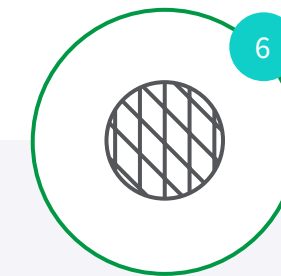
**Data engineers:** Predict upcoming events accurately.



## Event-Driven Data – Kappa

Handle real-time data processing and continuous data reprocessing using a single stream processing engine.

**Data engineers:** Invest in less expensive hardware and solve multi-layered, Lambda architecture redundancy by replaying data instead of maintaining two code bases (batch and speed layers) to process unique events continuously in real time while meeting standard quality of service.



## Data Mesh

Form a decentralized and distributed data fabric foundation where domain data product owners use common data infrastructure via self-service to develop pipelines that share data in a governed, open approach. Adhere to core principles: a.) domain-oriented, decentralized data ownership and architecture for scale, b.) data-as-a-product as an architectural unit (built, deployed, maintained), c.) self-service data infrastructure for the autonomous creation and consumption of data products, and d.) federated governance and interoperability standards to aggregate and correlate independent data products.

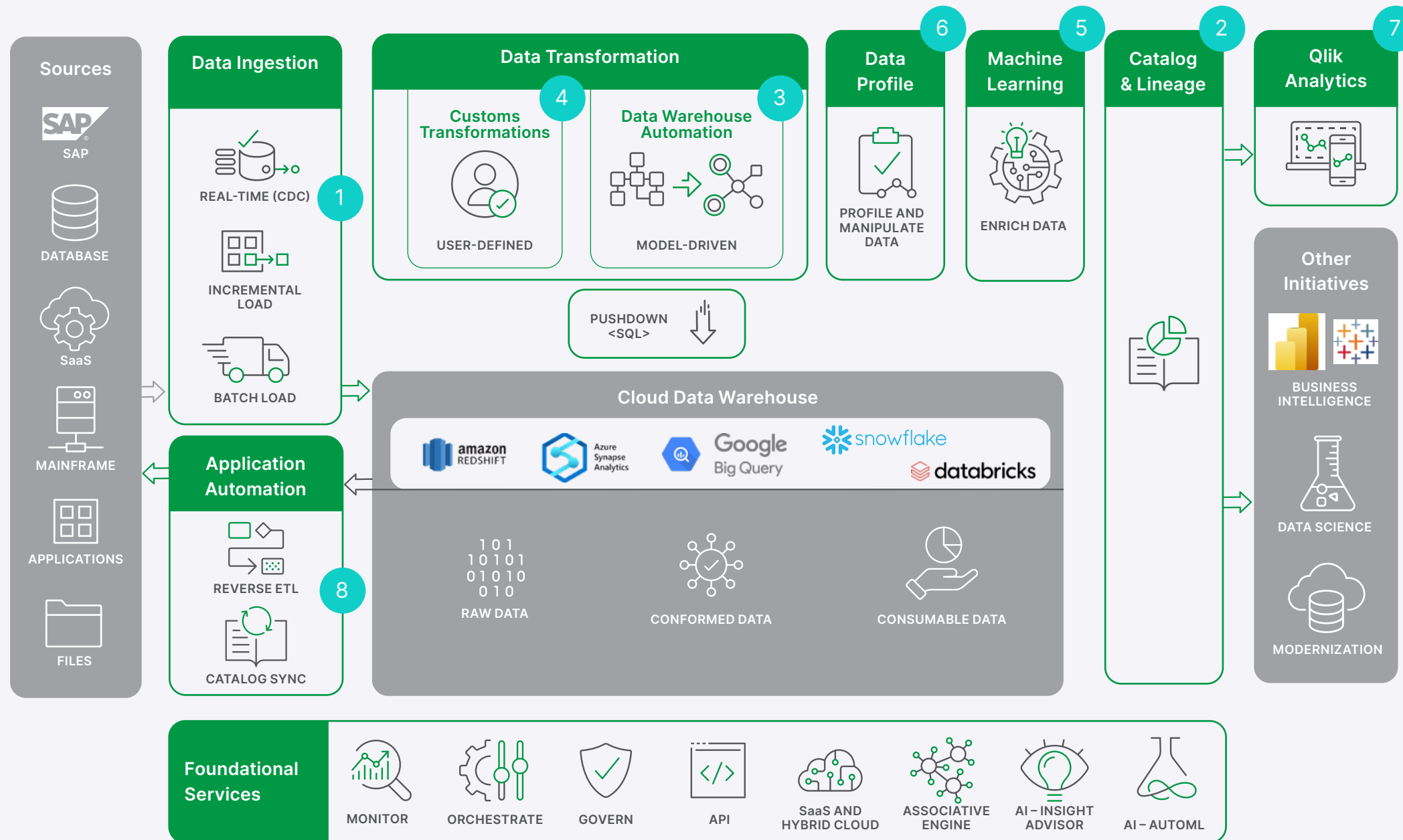
**Data engineers:** Derive value from analytical data at scale while the data landscape, use cases, and responses constantly change.

# 1

## REFERENCE ARCHITECTURE

# Data Warehouse

Speed and simplify your data warehouse lifecycle – design, build, deploy, manage and catalog purpose-built data warehouses – with automation for faster time to insights.



- 1 **Real-Time Data Ingestion**  
Change data capture for real-time data replication without impairing production system performance
- 2 **Catalog & Lineage**  
Discover, govern, and protect data by leveraging a layer of common enterprise metadata
- 3 **Data Warehouse Automation**  
Automate the entire data warehouse lifecycle to accelerate the availability of analytics-ready data
- 4 **Custom Transformation**  
Create flexible, fit-for-purpose data pipelines to transform raw data into data that is ready for analytics
- 5 **Machine Learning to Enrich Data**  
AutoML to enrich data with prediction, scoring, classification and more
- 6 **Data Profiling**  
Assess the quality and structure of data sources to fix data quality issues and promote good data governance
- 7 **Qlik Analytics**  
Empower all your users to explore freely at the speed of thought with hyperfast calculations, always in context, at scale
- 8 **Reverse ETL**  
Replicating enriched data from the warehouse back to the operational systems of record

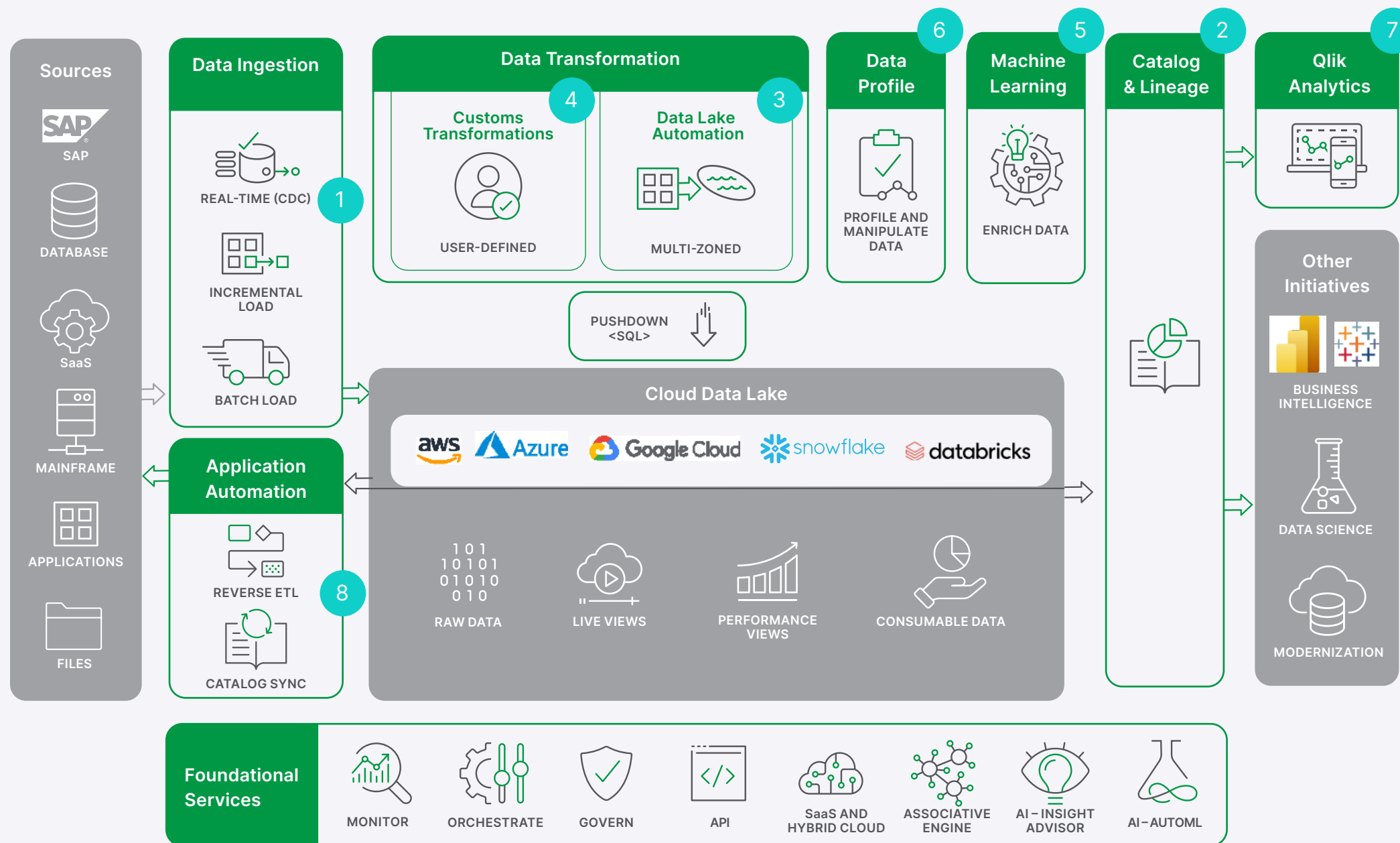
Qlik Capabilities  
Others



# 2

## REFERENCE ARCHITECTURE Data Lake

Automate your data lake pipeline – from real-time ingestion to processing and refining raw data and making it accessible to consumers – without writing code for greater speed and agility.



- 1 **Real-Time Data Ingestion**  
Change data capture for real-time data replication without impairing production system performance
- 2 **Catalog & Lineage**  
Discover, govern, and protect data by leveraging a layer of common enterprise metadata
- 3 **Data Lake Automation**  
Automate the process of providing continuously updated, accurate, and trusted datasets for business analytics
- 4 **Custom Transformation**  
Create flexible, fit-for-purpose data pipelines to transform raw data into data that is ready for analytics
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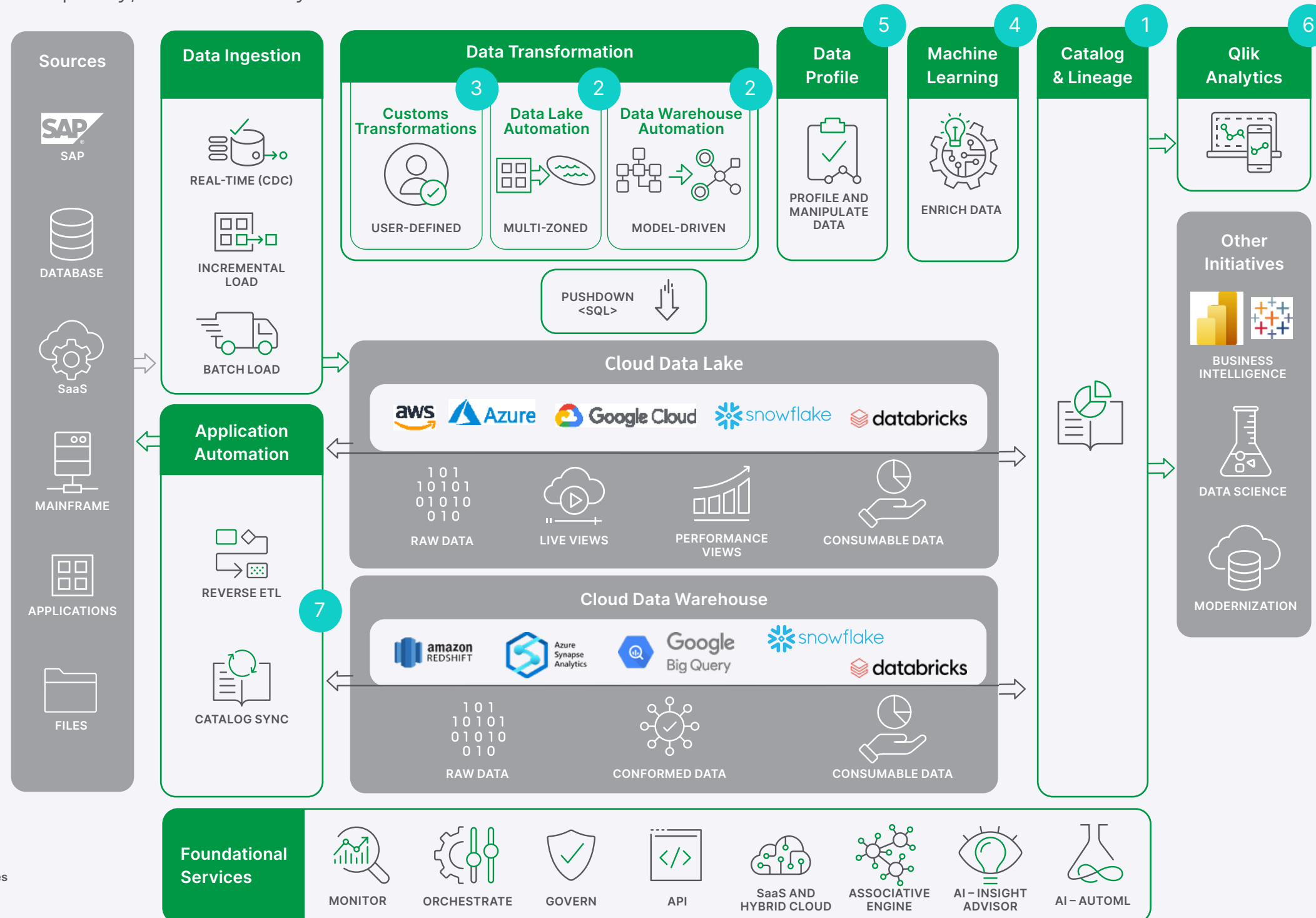
Qlik Capabilities  
 Others

# 3

## REFERENCE ARCHITECTURE

# Data Lakehouse

Combine the low-cost, broad data access and structured management of data lakes and data warehouses to apply the full, current data set toward business intelligence, data analytics and machine learning for flexibility, simplicity, and efficiency.



Qlik Capabilities  
Others

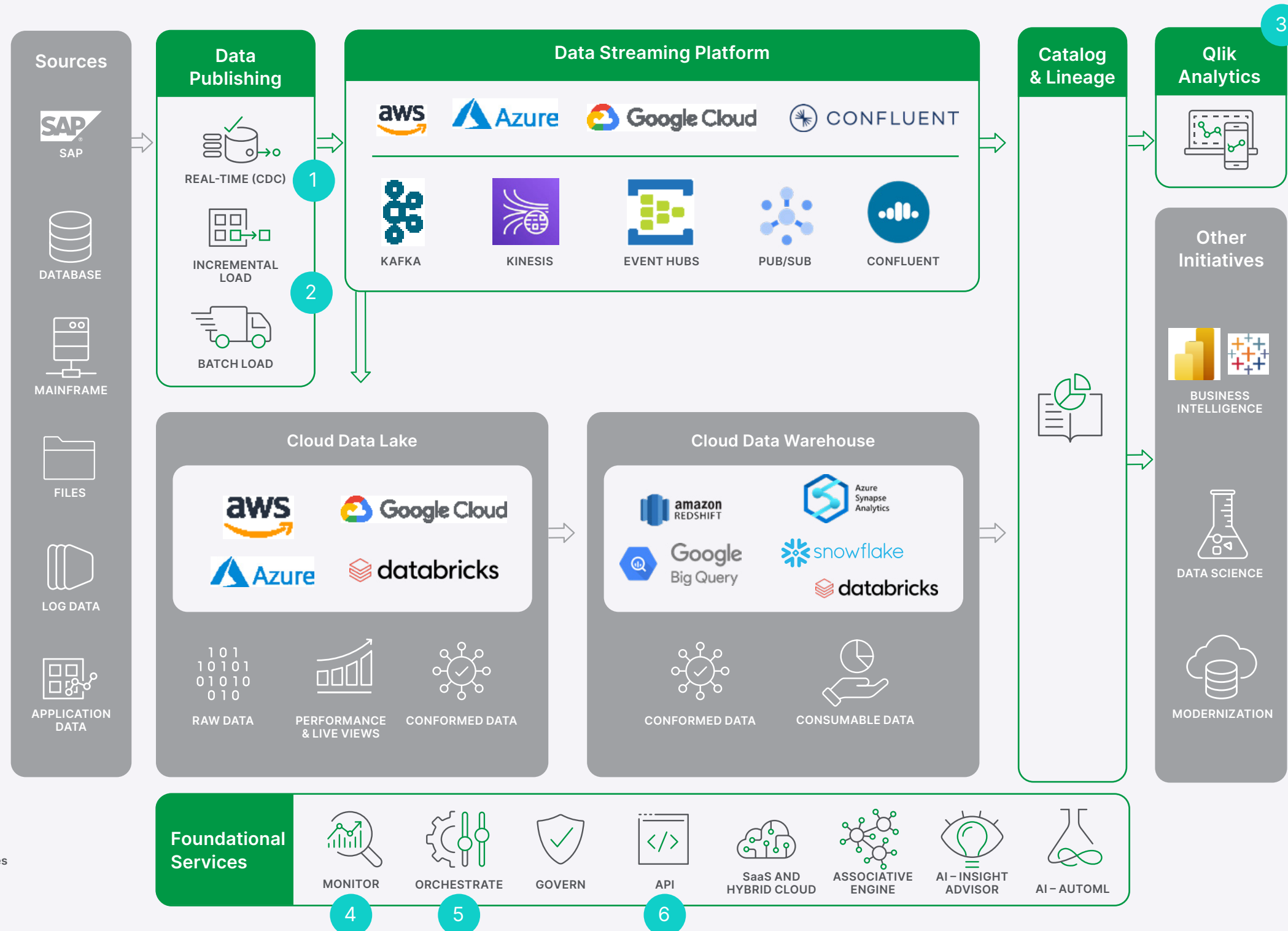
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Create flexible, fit-for-purpose data pipelines to transform raw data into data that is ready for analytics
- Machine Learning to Enrich Data**  
AutoML to enrich data with prediction, scoring, classification and more
- Data Profiling**  
Assess the quality and structure of data sources to fix data quality issues and promote good data governance
- Qlik Analytics**  
Discovery, interpretation, and communication of meaningful patterns in data to apply towards effective decision making
- Reverse ETL**  
Replicating enriched data from the warehouse back to the operational systems of record

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## REFERENCE ARCHITECTURE

# Event Driven Data Architecture - Lambda

Reliably update your data lake and efficiently train machine learning models – using batch, speed/ stream and serving layers – for accurate predicting of upcoming events.



- 1 **Real-Time Data Ingestion**  
Change data capture for real-time data replication without impairing production system performance
- 2 **Batch / Incremental Load**  
For historical data with the fault-tolerant, distributed storage, ensuring a low possibility of errors even if the system crashes
- 3 **Qlik Analytics**  
Empower all your users to explore freely at the speed of thought with hyperfast calculations, always in context, at scale
- 4 **Monitor**  
Monitor data ingestion tasks from a single pane of glass view
- 5 **Orchestrate**  
Orchestrate data ingestion tasks from a single pane of glass view
- 6 **API**  
APIs to automate and integrate with other applications for monitoring and orchestration

Qlik Capabilities  
Others

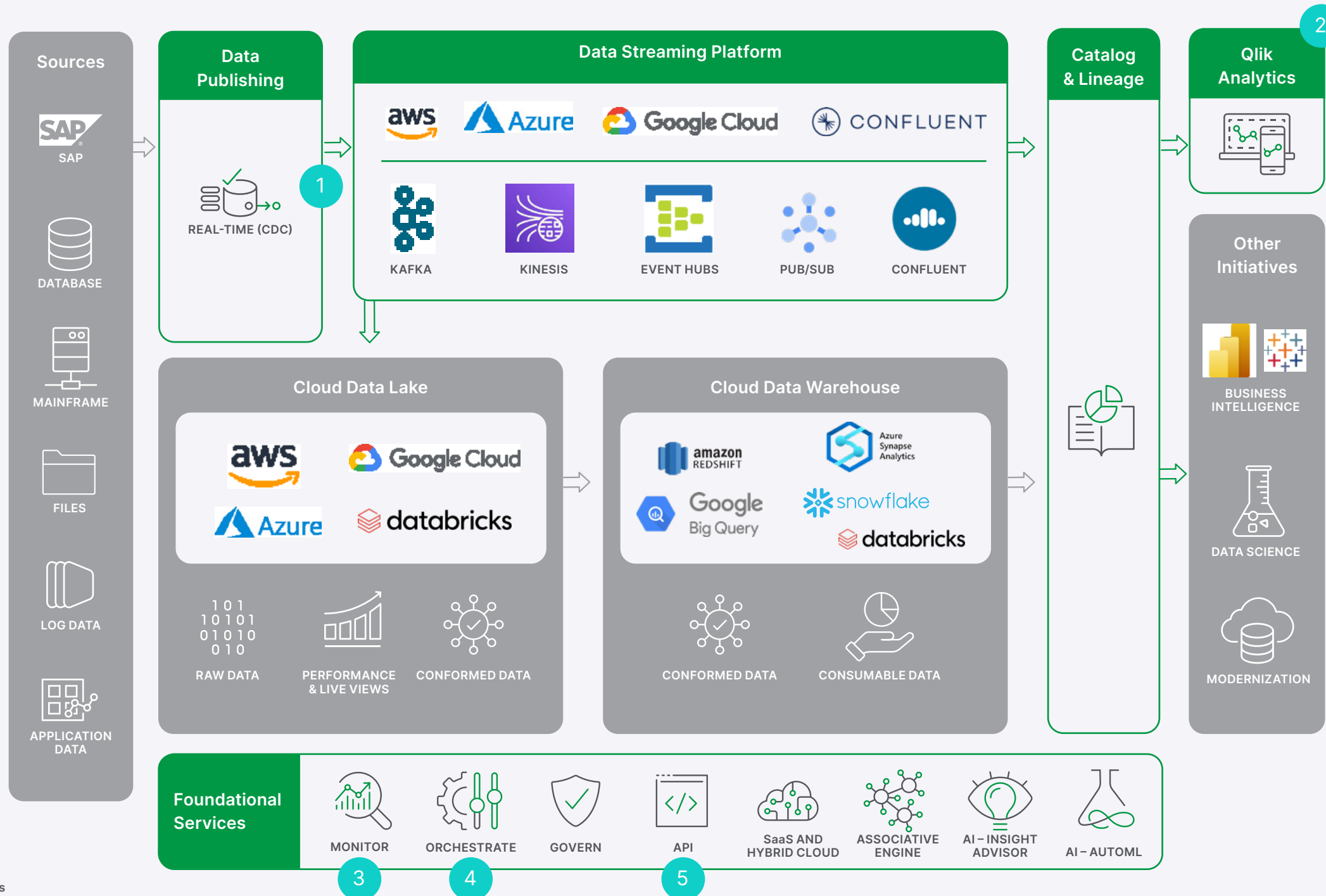


# 5

## REFERENCE ARCHITECTURE

# Event Driven Data Architecture - Kappa

Handle real-time data processing and continuous data reprocessing with a single stream engine and low-cost hardware for accurate processing of unique events happening continuously.



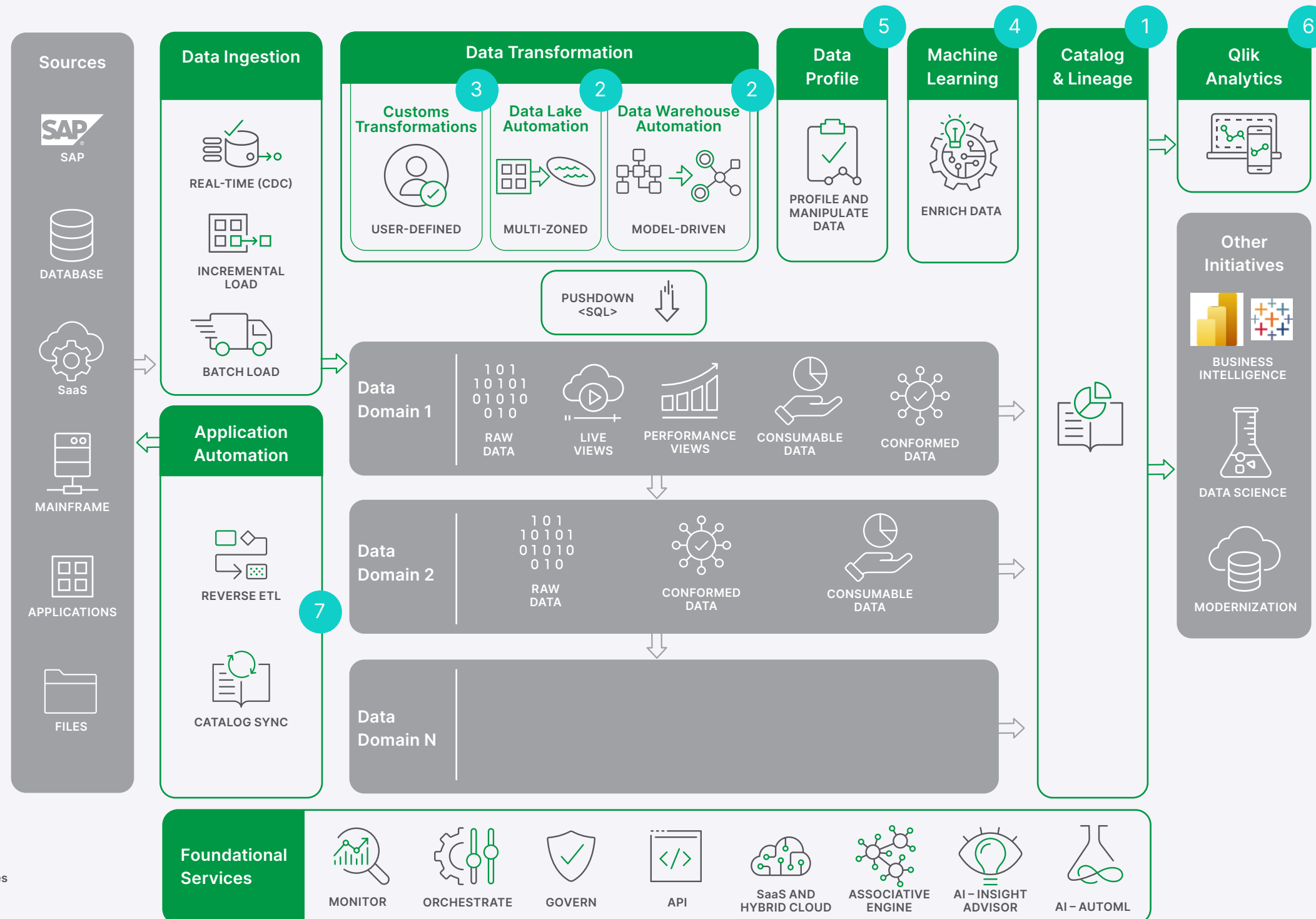
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Create a foundation for deriving value from analytical data at scale as your data landscape, use cases, and responses continually change.



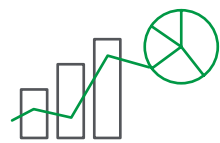
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# The Advantages of Qlik Data Integration

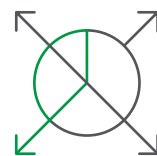
With reference architectures such as Qlik Data Warehouse, Qlik Data Lake, Qlik Data Lakehouse, Qlik Event-driven Data, and Qlik Data Mesh, you and your organization gain:



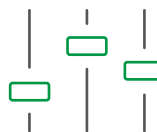
**Real-Time Insights** – Our solutions uncover actionable insights at the speed of business from critical transaction systems and other enterprise sources without sacrificing accuracy or quality so leaders can better respond to intensifying competition.



**Data Speed and Scale** – Our modern, cloud-based infrastructures together with real-time streaming and automation help leaders quickly process and monetize fast-growing data from all sources and formats.



**Flexibility and Agility** – Since data and analytics infrastructures constantly change and grow, our solutions allow technology (rather than scarce expertly skilled resources) to scale and adapt to shifting needs to speed outcomes and democratize access to quality data.



**Efficiency** – Our solutions lower costs, boost productivity, and speed time-to-market.



# Accelerate Your Business with Qlik

Qlik Data Integration automates the creation of data streams from core transactional and enterprise systems, efficiently moving data to applications, data warehouses, and data lakes in the cloud or on-premises, and then cataloging and delivering analytics-ready data to Qlik Sense or other analytics solutions including those provided by the major cloud providers.

By quickly delivering data to the user without typical business friction, Qlik Data Integration powers the agility necessary to drive needed business value out of scattered and disparate data.

[Visit Qlik Data Integration to learn more »](#)



## About Qlik

Qlik transforms complex data landscapes into actionable insights, driving strategic business outcomes. Serving over 40,000 global customers, our portfolio leverages advanced, enterprise-grade AI/ML and pervasive data quality. We excel in data integration and governance, offering comprehensive solutions that work with diverse data sources. Intuitive and real-time analytics from Qlik uncover hidden patterns, empowering teams to address complex challenges and seize new opportunities. Our AI/ML tools, both practical and scalable, lead to better decisions, faster. As strategic partners, our platform-agnostic technology and expertise make our customers more competitive.

[qlik.com](https://www.qlik.com)