JABIL

Case study

Grid Dynamics Analytics Platform for smart manufacturing:

A Jabil case study

www.griddynamics.com

Grid Dynamics

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Overview

Jabil Inc. is a global manufacturing solutions provider. Headquartered in St. Petersburg, Florida, Jabil is one of the largest companies in the Tampa Bay area. Jabil has 100 plants in 30 countries, and 260,000 employees worldwide. Jabil customers span numerous industries, including healthcare, life sciences, clean technology, instrumentation, defense, aerospace, automotive, computing, storage, consumer products, networking and telecommunications.

The company combines an unmatched breadth and depth of end-market experience, technical and design capabilities, manufacturing know-how, supply chain insights and global product management expertise to enable success for the world's leading brands.

Jabil partners with customers to help them achieve leadership in established markets; expand into new ones; and move with greater speed, confidence and agility even in uncertain environments.

Companies today are facing a perfect storm of regulatory requirements, consumer demands, and industry disruption. Jabil's expert teams leverage over 40 years of industry experience, fueling speed-to-market, ingenuity, and agility. To help their customers focus on core competencies, Jabil partnered with Grid Dynamics to build a cloud Analytics Platform.

Company: Jabil

Industry: Electronics Manufacturing Services

Region: Global

Vision: To build an Analytics Platform and unify existing data processing pipelines.

Strategy: Accelerate speed-to-market with Grid Dynamics and an AWS Analytics Platform.

Challenges facing the manufacturing industry

Modern manufacturing processes and supply chain management are never easy. Running global manufacturing operations requires supply chain management, facilities coordination across multiple sites and locations, predictive maintenance and IT operations to manage facilities.

Hardware issues in particular are extremely costly in terms of direct losses and equipment downtime and repairs. With fierce competition and the rapid speed of innovation in the industry, manual analysis and traditional data validation takes too much time and slows down the time-to-market. Nowadays, time-consuming approaches to anomaly detection - like jobs running once a day to prepare data or data mart creation - have become obsolete.

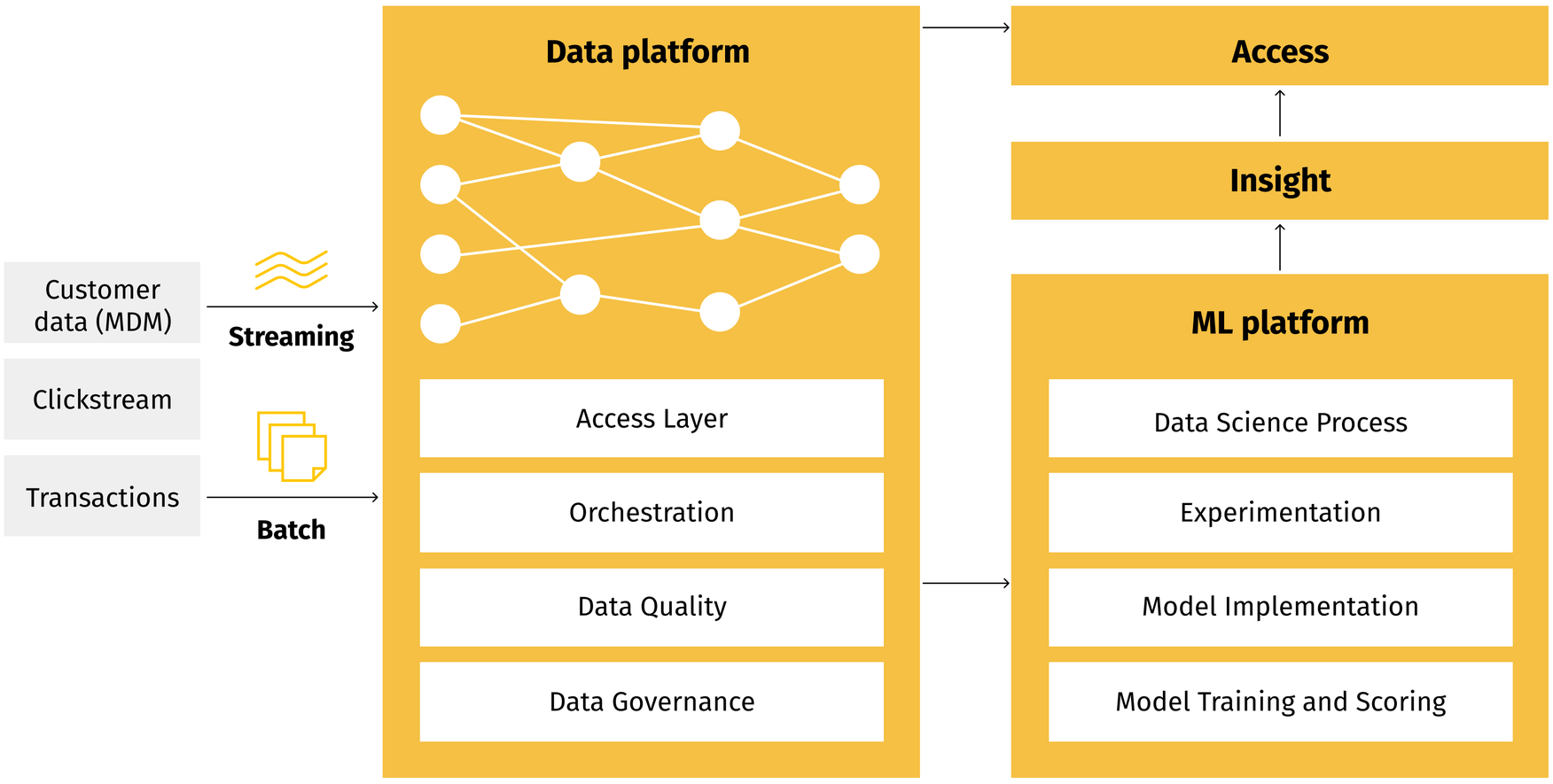
To solve these challenges, Grid Dynamics has developed a modern, mature Analytics Platform that consists of pipeline orchestration, data quality and self service capabilities, as well as:

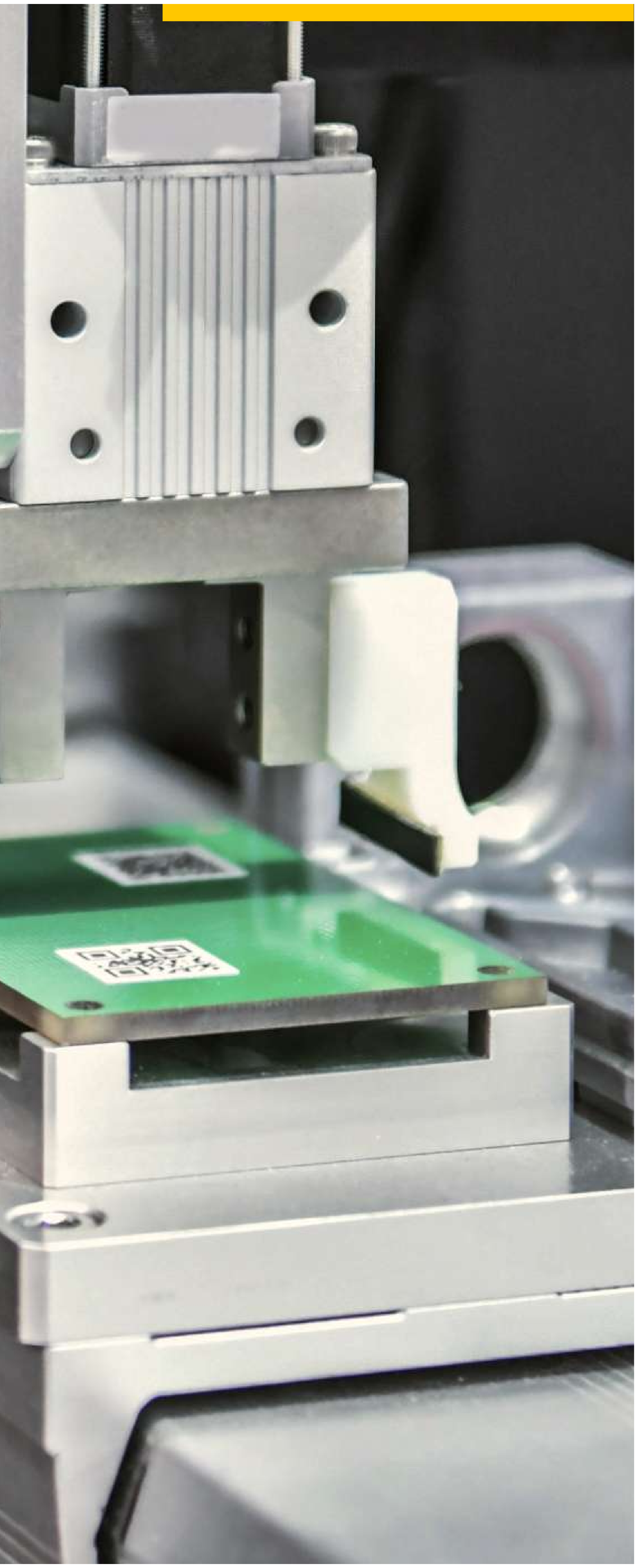
1. Data gathering, storage and access layer;
2. Ability to explore existing datasets by data science and business intelligence teams;
3. Ability to create features for ML models;
4. Immediate reactions to issues;
5. Self-service data marts.

Modern data platforms such as the Grid Dynamics Analytics Platform are not only responsible for data gathering, storage and enrichment, but also for data quality, data governance, metadata management and providing easy access to query data. When it comes to data, it's no longer enough to implement lakehouse architecture to manage volume, velocity and variety. The veracity, trustworthiness and ability to create and manage data extracts - in other words, data features - has become a must-have requirement for modern data platforms.

Companies today have no interest investing in complex platforms; what they really want is more actionable insights from data - something a modern data platform can seamlessly provide.

In this case study, we'll show the limitations of on-premise data platforms and how Jabil improved time-to-market, data management and scalability by building a cloud Analytics Platform and migrating applications from on-premise to the cloud Analytics Platform.





The challenge

By connecting equipment, devices and systems, Jabil's strategy was to use data to create a predictable environment with efficient process and materials controls. In such an integrated ecosystem, Jabil is able to use predictive analytics to respond quickly to detected issues and make data-driven decisions to maintain process efficiency.

As their trusted solutions partner, we investigated the drivers of market change, and identified the following typical challenges facing modern manufacturing companies that we would need to solve:

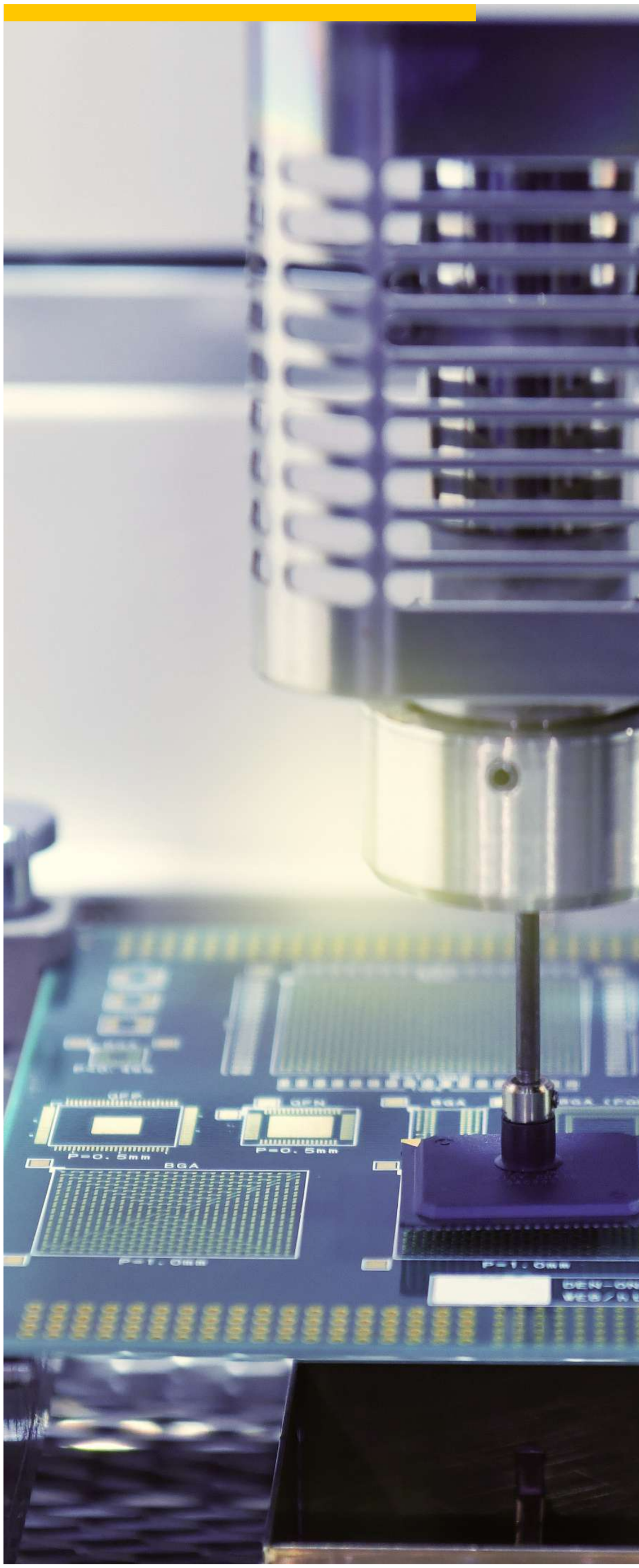
- Time-to-market
- Unified approach to building data platforms
- Company-standard Data Governance approach
- Self-service access to the data, ability to browse and query the data
- Tools for data visualization & reporting

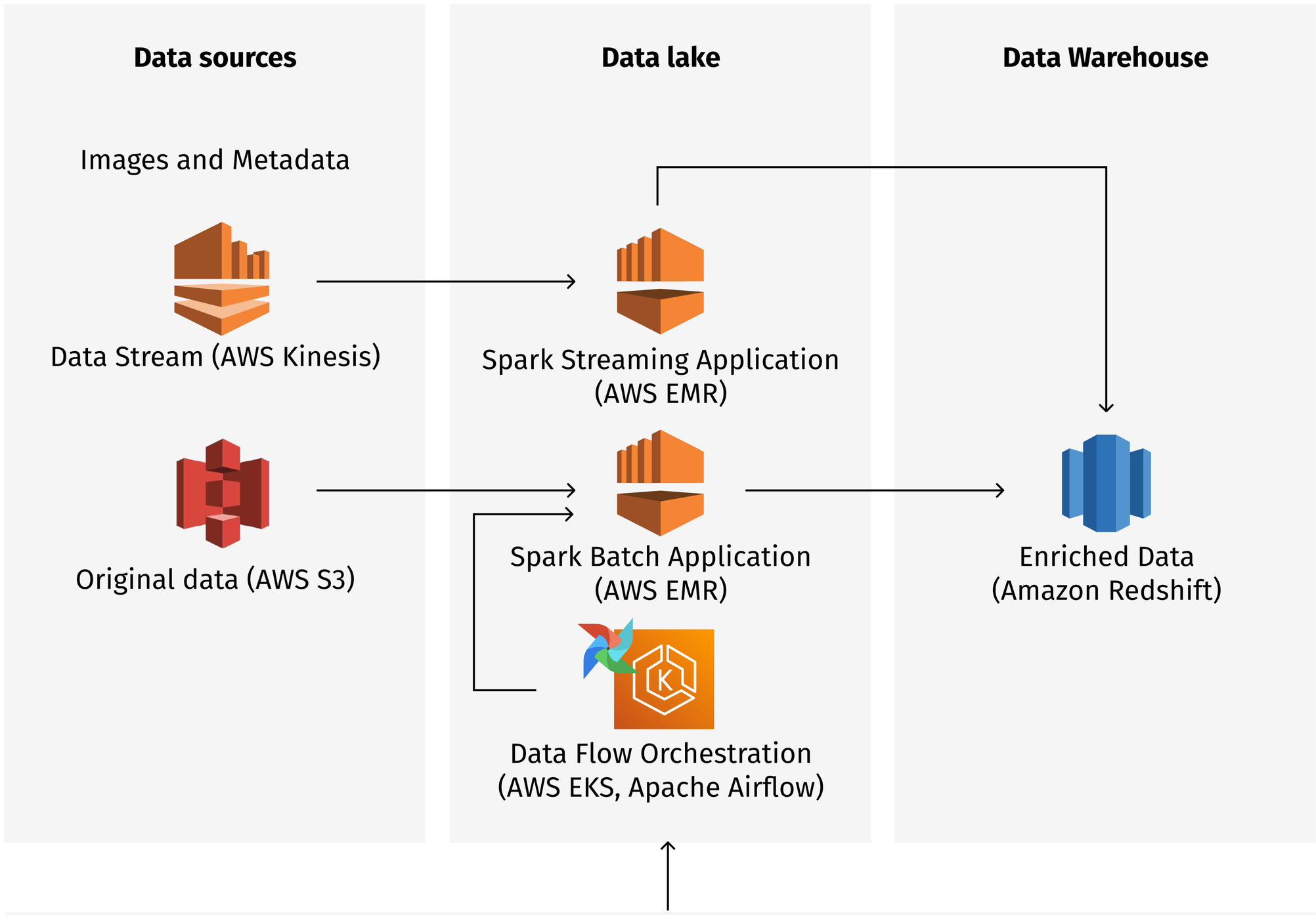
Further, to facilitate ongoing data processing and data validation, data would need to be collected from the on-premise, real-time systems and stored in a distributed data lake. This would need to be followed by preprocessing to prepare for data changes expected in different use cases. Further data analyses would include data quality capabilities and the provision of actual reports based on relevant system state. Implementation of this flow will reduce resources on data reporting and raise data visibility in internal systems for the end users.

The solution

Jabil's existing on-premise data platform serves parametric and machine data in a batch manner. Some time ago, new business objectives required Jabil to start processing data in near real time, resulting in the decision to build a brand new platform in the cloud. The existing on-premise data platform remained for enterprise use cases, providing curated access to historical enterprise data for ERP, purchasing and finance, with all new use cases to be onboarded to the cloud Analytics Platform. Along with streaming capabilities, the cloud Analytics Platform also provides such benefits as easier support, pipeline orchestration, access to the data and ability to experiment with the data, as well as the ability to onboard AI/ML use cases and enable data quality.

Grid Dynamics developed an Analytics Platform that provided lakehouse architecture, enabled metadata management, and unified orchestration to automate data quality processes. Required functionality for the platform also included in-stream processing of machine and parametric data, with the ability to onboard more capabilities in the future.





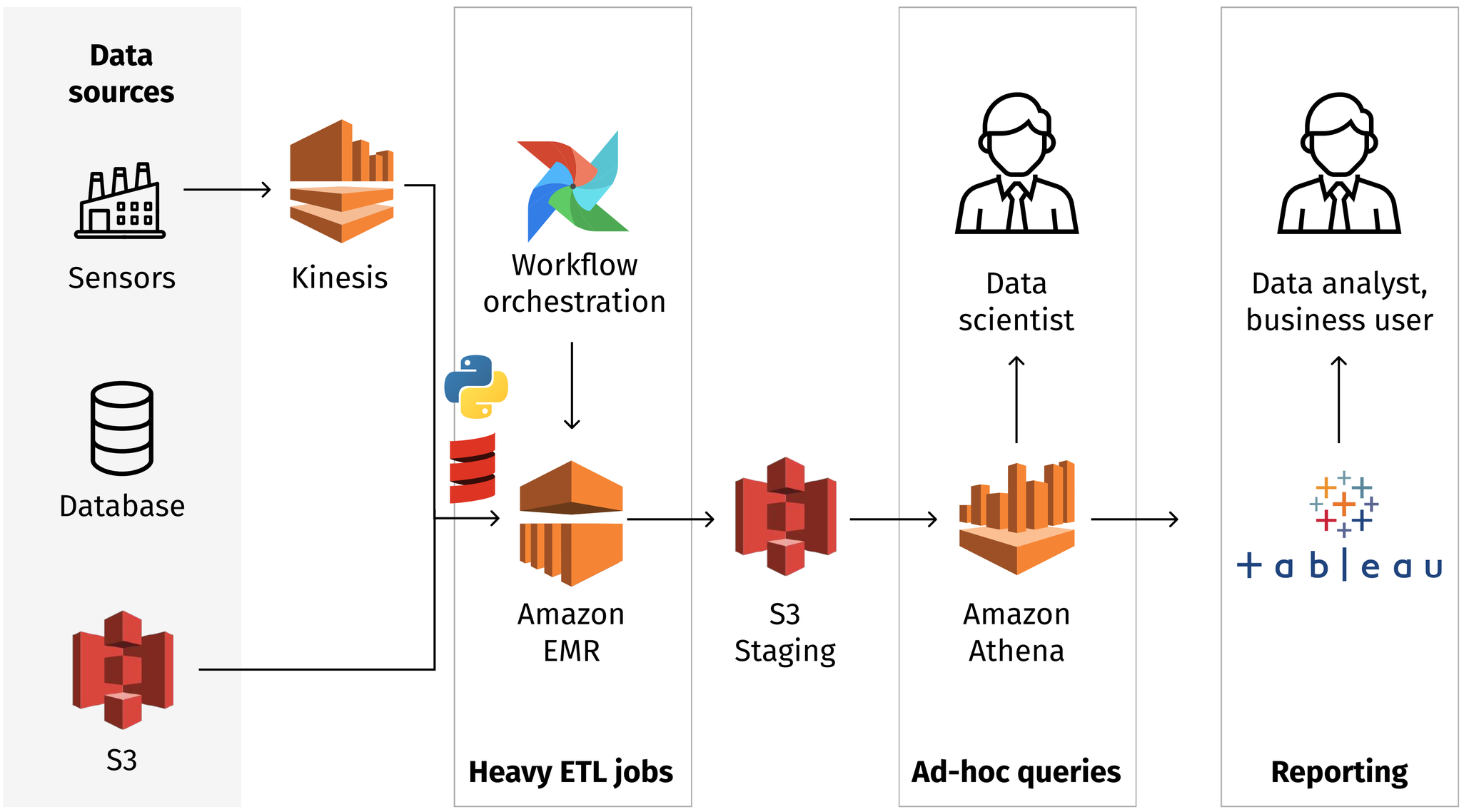
To avoid long and costly platform development, the Grid Dynamics Analytics Platform was used to accelerate the process of infrastructure provisioning. Initial use cases onboarding, implementation, improvements, pre-production testing and actual release to production took about seven months.

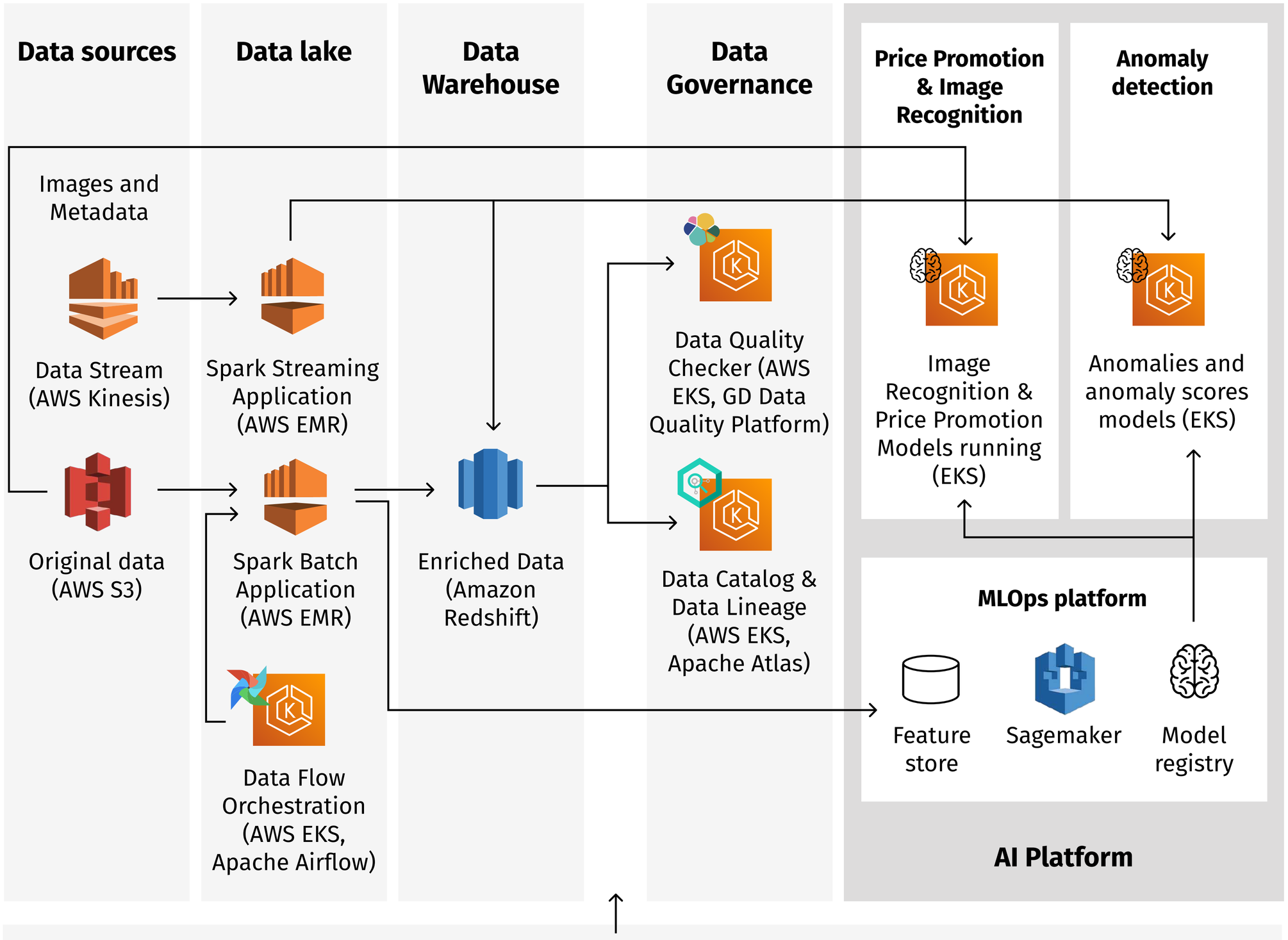
Infrastructure creation and development was a minor part of the project, where most of the time was spent on business use cases implementation. It took several iterations to adjust the Analytics Platform to Jabil security standards: network and IAM roles configuration, and integration with Jabil 3rd party systems.

What is the Grid Dynamics Analytics Platform?

The Analytics Platform is built on cloud-native and open source technology stacks. It includes advanced analytics capabilities such as data lake, streaming, and batch data ingestion and processing, data pipeline orchestration, data quality, data governance, EDW, and an ML platform. The solution implements an end-to-end DataOps and MLOps process, enabling companies to focus on business value and reduce the time to turn data into insights with AI and ML.

The platform is designed according to microservices architecture best practices which means that when onboarding the platform, companies can choose whether to provision all capabilities at once or select the ones that are most important at the time, and add the rest as needed. The Analytics Platform is compliant with best cloud practices and is available on the AWS marketplace and service catalog for ease of deployment and self-service.





On top of the provisioned platform, the data engineering team also onboarded several business critical applications:

1. Shop floor machine monitoring
    a. Reports
    b. Develop process of control and predictive alerting
2. Production operations visibility
    a. Data marts
    b. Reports
    c. Access
    d. Central data warehouse for the company

Many enterprises face the same issue managing clusters on-premise: they need to do capacity planning in advance, taking business growth into account. In the cloud Analytics Platform, scaling is a core part of infrastructure-as-code (IaC) automation that helps to reduce costs.

The results

Starting in AWS from scratch, provisioning the infrastructure, onboarding data processing applications and preparing the production release took only about seven months. The new Analytics Platform has demonstrated efficient flexibility, readiness to migrate on-premise applications and platform scalability.

Besides recognizing business value, the platform served as a robust foundation to move from batch to stream analytics, improving the speed of anomaly detection from days to hours. At the corporate level, it facilitated the consolidation of data analytics efforts on a single platform and technology stack focused on cloud-native technologies and the MLOps process.

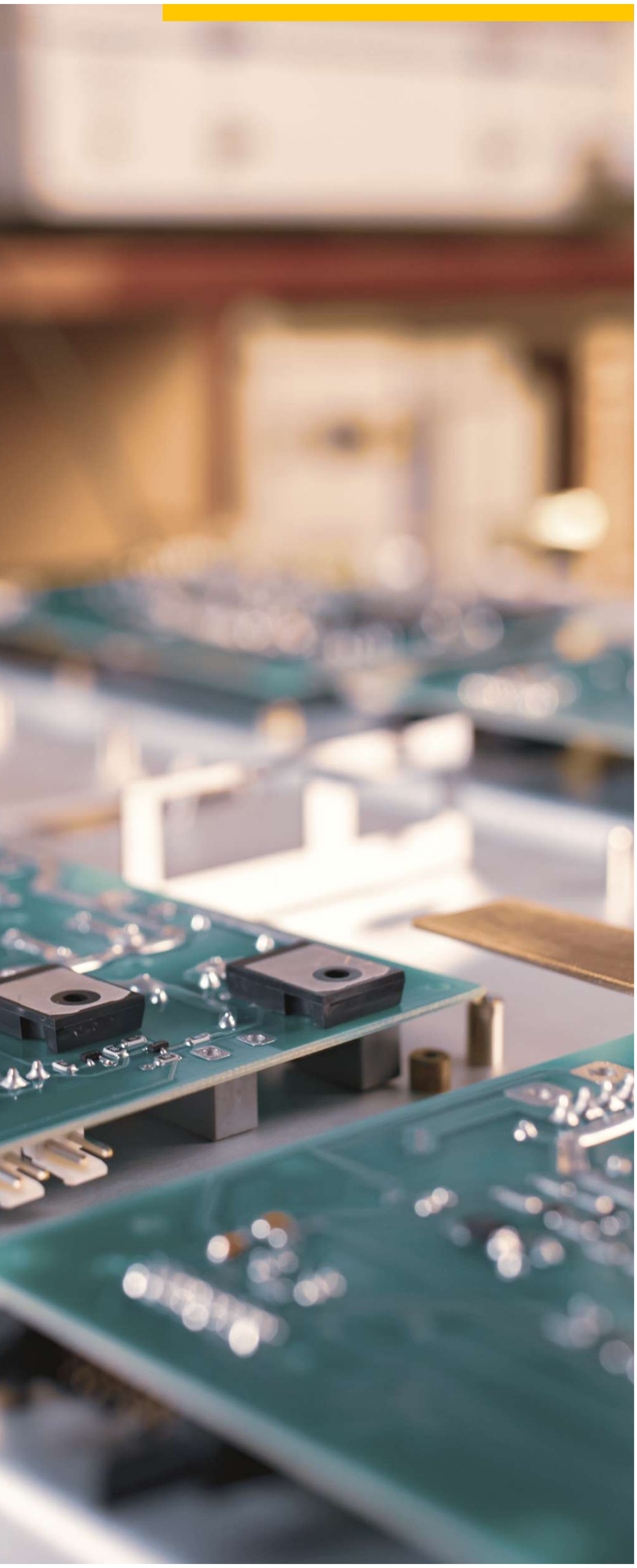
Seven months from first development deployment to production

Three-years cost saving estimated at 0.5 million

Data analysis of machines and supporting future AI/ML use cases is much easier

Jabil was able to sunset the infrastructure for several more projects and migrate all applications to the unified Analytics Platform

Ability to easily extend Analytics Platform capabilities



Conclusion

As manufacturers continue accumulating data assets, the number of predictive maintenance, anomaly detection and other AI use cases will increase and become industry standard practice to run operations. To address this challenge, Grid Dynamics and Amazon Web Services partnered to implement an Analytics Platform and a series of Industry 4.0 AI solutions. With these solutions, companies don't have to spend months building foundational data platforms, can increase speed to insights, and get to business value in weeks.

In this case study we have demonstrated how on-premise manufacturing can be migrated to the cloud and provide business value right from the start.

About Grid Dynamics

Grid Dynamics is a global digital engineering company that co-innovates with the most respected brands in the world to solve complex problems, optimize business operations, and better serve customers. Driven by business impact and agility, we create innovative, end-to-end solutions in digital commerce, AI, data, and cloud to help clients grow.

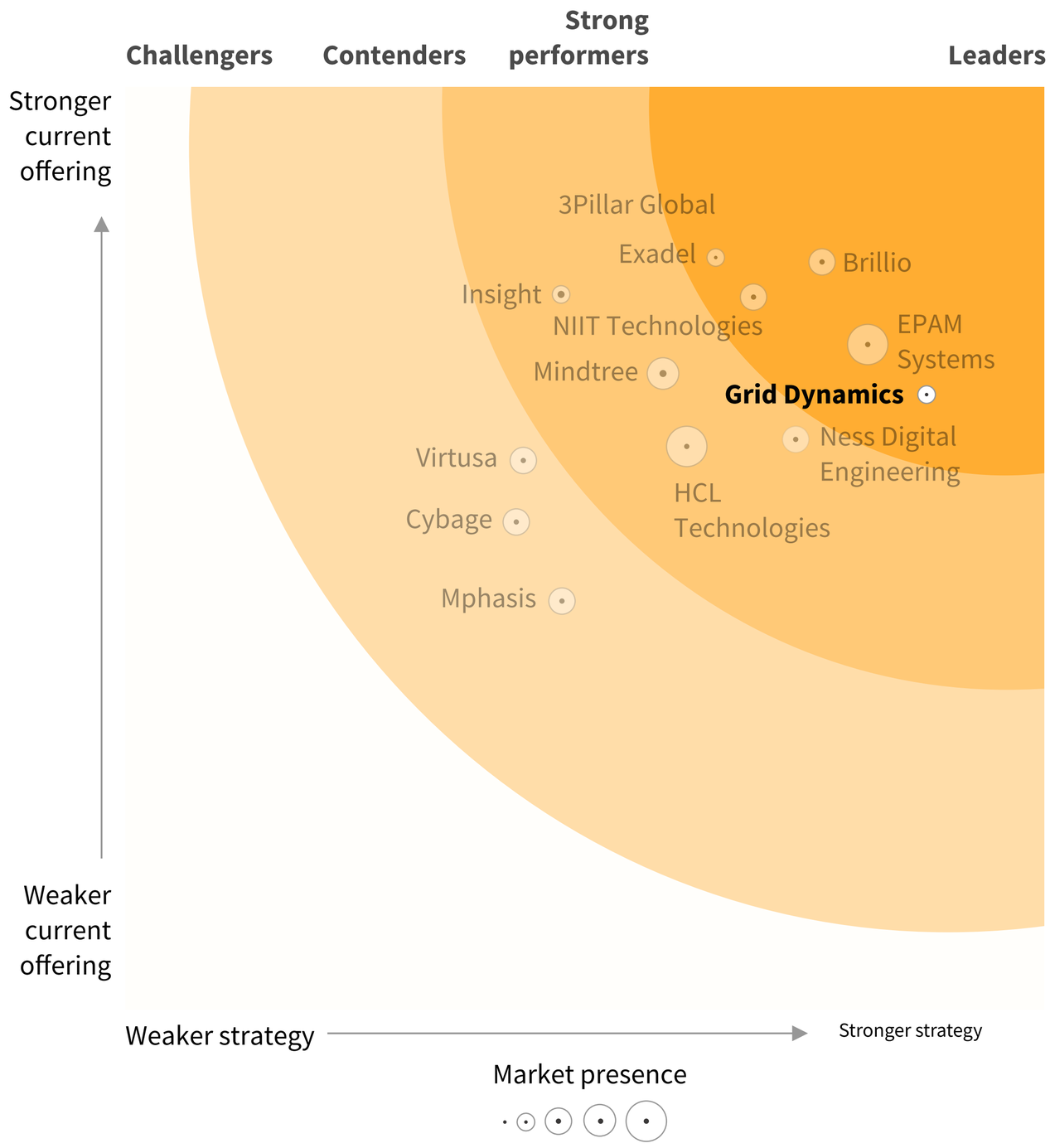
Headquartered in Silicon Valley, with delivery centers located throughout the globe, Grid Dynamics is known for architecting revolutionary digital technology platforms for 7 of the 25 largest retailers in the US and 3 of the 10 largest consumer goods companies in the world, as well as leading brands in the digital commerce,

manufacturing, finance, healthcare, and high tech sectors.

Our secret sauce? We hire the top 10% of global engineering talent and employ our extensive expertise in emerging technology, lean software development practices, a high-performance product and agile delivery culture, and strategic partnerships with leading technology service providers like Google, Amazon, and Microsoft.

In 2019, Forrester named Grid Dynamics a leader among midsize agile development service providers. In 2020, Grid Dynamics went public and is trading on the NASDAQ under the GDYN ticker.

The Forrester wave™
Midsize Agile Development Service Providers Q2 2019



About Grid Dynamics

Key facts

- 12 countries across North America and Europe
- 4,000 employees in Q2 2022
- Forrester Leader Midsize Agile Software Development Service Provider Q2 2019

Areas of expertise

- **Experience engineering**
  Web | Mobile | AR/VR
- **Data Science and AI**
  Search | Personalization | Supply chain | IoT
- **Platform engineering**
  Microservices | MACH | Composable
- **Data engineering**
  Big data | Streaming | MLOps
- **Cloud and DevOps**
  CICD | AIOps | SRE | QE

Clients

	Google	NIKE
align	Levi's	StanleyBlack&Decker
RAYMOND JAMES	svb Silicon Valley Bank	AMERICAN EAGLE
LVMH	INSPIRE Brands	HELLO FRESH

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