NTT DATA
Trusted Global Innovator

Success Stories
Data Mesh Application in the Cloud Journey

Client

Client in the logistics sector

Industry

Multi-business

Country

Italy

Data Mgmt. Services

The goal, therefore, is to define and implement an innovative data architecture paradigm to support the company's growth as a Data-Driven Organization while mitigating technical and organizational challenges related to centralized data architectures.

TECHNOLOGIES LEVERAGED

Azure – Databricks, DataFactory, Datalake Storage Gen2, EventHub, Functions, PurView, Synapse, KeyVault, Azure AD, Application Insights, and Grafana, Prometheus, GitLab, Terraform, OpenMetrics, OpenTelemetry

HISTORY OF TRANSFORMATION

Technological evolution has brought the need to overcome centralized data architectures. Many organizations are struggling with outdated Data Architecture, unable to scale the need of large multi-spectral organizations. Taking advantage of Cloud Data Platforms, the establishment of frameworks, tools, and best practices for Data Governance as well as the adoption of a new paradigm, such as Data Mesh, can support the growth of our client, Italy's largest postal service, as a Data-Driven Organizations.

CLIENT CHALLENGE

The recent technological evolution and digital services as well as the company's growth in data volume, variety, and velocity have resulted in:
• Growing computational pressure on analytical and operational systems.
• Greater organizational complexity in terms of change management, data lifecycle management, and operations.

SOLUTION OVERVIEW

We supported the customer in developing and implementing the Data Mesh paradigm, in order to allow improving the provisioning of logistics, financial and insurance services, while also giving support in the definition of architectural and technical guidelines as well as best practices throughout their Cloud Journey, with the following goals in mind:
1. A domain-oriented decentralization.
2. Data was considered as a product being the fundamental building block of the mesh.
3. A self-service data infrastructure as a platform implementation leveraging the Azure Data Services ecosystem.
4. Azure PurView will be used as their data governance solution, with each domain governed by an open standard in accordance with federated governance.

BUSINESS VALUE & KP

Tackled the complexity of the Data Mesh paradigm assisting the customer in getting started quickly, simply, and effectively. Furthermore, the adoption of Data Mesh on Azure Cloud services will help:

• Customer's response time for operational insights
• Time-to-market for application development
• Making data available to more business and technical departments (democratization of data)
• Faster data delivery, making data available to data consumers in a self-service manner
• Central governance, security, and compliance

TECHNICAL SPECIFICATIONS

NTT DATA's first real-world Data Mesh deployment, employing Azure Data & AI (D&I) services and Databricks. Unlike a centralized architecture based on a data warehouse and/or a data lake, a data mesh is a highly decentralized data architecture.

Data Mesh paradigm is built on these main principles:

1- Domain-oriented Decentralization: Analytical data should be composed around domains with domain teams to take full responsibility for their data, moving away from centralized data team approach.

2- Data as a product: Data was treated as a product, with each source having its own data product owner (who are part of a cross-functional team of data engineers and data scientists), becoming the fundamental building blocks of a mesh, leading to a domain-driven distributed architecture. It includes code for data pipelines, code for APIs that provide access to data, and code for control policies, compliance, etc. It also has an infrastructure component that enables building, deploying, and executing the code, as well as storage and access to big data and metadata.
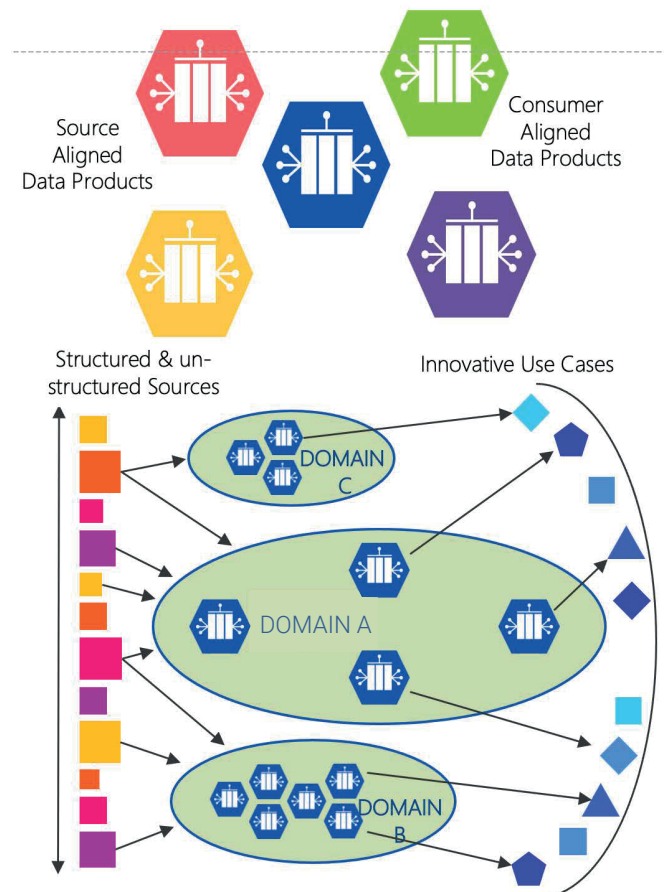
3- Self-service data infrastructure as a platform: A data infrastructure as a platform that offers domains with storage, a pipeline, a data catalog, and access control. The overall goal is to prevent duplicating work. This will enable each data product team to create data products quickly, in a self-serve way. The platform is entirely built on the Azure Data Services ecosystem.

4- Federated Governance: Defined federated governance, where each domain should be discoverable, addressable, self-descriptive, secure, trustworthy, and governed by an open standard. Azure PurView will be adopted by the customer as its data governance solution.
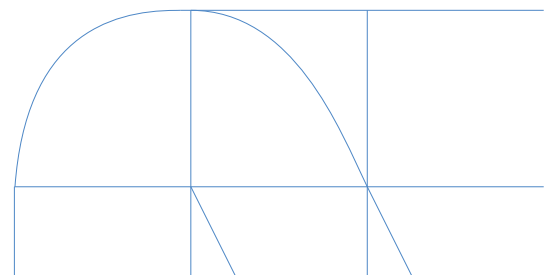

Centralized | Monolithic Data Architecture
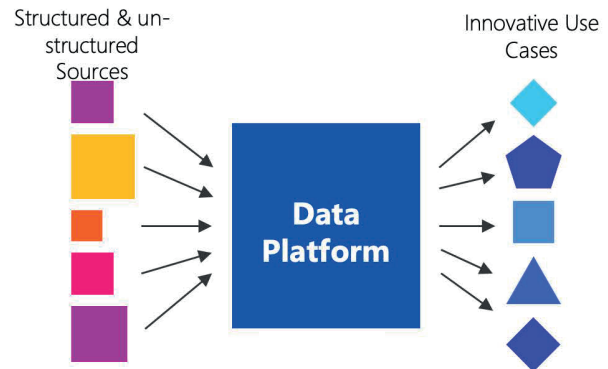
Decompose Data around Domains and Distributed Ownership

Key Success factors

• We are supporting the customer in defining architectural and technical guidelines and best practices, considering and balancing in the same time the adoption of an innovative data paradigm such as Data Mesh and the journey to cloud on Microsoft Azure.

• We are capable to tackle the complexity of Data Mesh paradigm, distilling its principles in simple guidelines and best practices, helping the customer to start early, simple and effective, continuously improving the paradigm knowledge and implementation.

• The adoption of Data Mesh on Azure Cloud services will help:
- *customer's response time for operational insights*
- *time-to-market for application development*
- *data available to more business and technical department, fulfilling a real data democratization*
- *Faster data delivery, making data available to data consumers in a self-service manner*
- *Central governance, security and compliance*

Senior IT Manager associated to the project