

Breaking the **data monolith**

How data mesh is revolutionizing data
architecture for the modern age

For many years, companies have been facing significant challenges in managing and leveraging their data effectively. The centralized data architecture approach, where data is controlled and managed by a centralized team, has become increasingly difficult to scale and adapt to rapidly evolving business needs. This is where data mesh comes in.



Data mesh is a relatively new approach to data architecture that advocates for the decentralization of data ownership and management. It is a paradigm shift from the centralized approach where data is managed by a centralized team, to a more distributed and autonomous approach where data is owned and managed by individual domain teams. In data mesh, the emphasis is on creating a self-service platform that empowers domain teams to manage their data and makes it easier for other teams to discover, access and use that data.

Why is data mesh needed?

The centralized data architecture approach has several limitations that make it difficult to scale and adapt to the rapidly evolving business needs. These limitations include:



Data control bottlenecks:

In a centralized data architecture, data is often controlled by a centralized team, making it difficult for domain teams to access and use the data they need to perform their tasks. This leads to accessibility and performance issues.



Slow time-to-value:

In a centralized data architecture, the time it takes to access and use data can be slow, which can slow down innovation and the ability to respond to changing business needs. In other words, the enterprise's adaptability to change is adversely affected.



Scalability issues:

As data volumes and complexity continue to grow, the centralized approach becomes increasingly difficult to scale and manage effectively.



High maintenance costs:

The centralized approach requires a significant investment in infrastructure and personnel to maintain, which can be costly and time-consuming.

How can you implement data mesh?

Implementing data mesh requires a fundamental shift in the way data is managed and accessed within an organization. Here are the key steps for successfully implementing data mesh using HCLTech ADvantage Data Mesh and Snowflake:

HCLTech ADvantage Data Mesh is a technology platform-agnostic solution comprising of a pre-built, persona-driven Experience Plane (to enable data product search, lineage and monitoring capabilities), a Developer's Plane (to enable data product creation and deployment) and an Infrastructure Plane (to provide storage, compute, IM and CI/CD tooling).

Snowflake provides a cloud-based data platform that is well-suited for implementing data mesh.

Define the domain:

Identify the domains within your organization that own and manage data. A domain is a specific business area that has its own set of data and business processes. Using the solution's Developer's Plane, it's easy to create and manage data domains and implement data quality controls within each domain to ensure that the data is accurate and consistent. Snowflake allows teams to create virtual warehouses that can be used to manage data and provide access to relevant team members.

Establish domain ownership:

Assign ownership of data within each domain to the appropriate team or individual. This creates a clear ownership structure that enables domain teams to manage their data more effectively. The Developer's Plane provides the capabilities to set privacy for data products.

Create domain APIs:

The solution's prebuilt APIs for each domain enable other teams to access and use the data owned by that domain. This creates a self-service platform that enables teams to discover and access the data they need to perform their tasks.

Implement data quality controls:

The Developer's Plane enables the implementation of data quality controls within each domain with the choice of tooling to ensure precise and reliable data.

Establish a federated governance model:

Establish a federated governance model that ensures data security and compliance while enabling domain teams to manage their data more effectively. Snowflake provides robust security features, including multi-factor authentication and end-to-end encryption, to ensure that data is secure at all times. Snowflake also provides fine-grained access controls that enable teams to manage data access and usage effectively.



Provide data mesh infrastructure:

Provide the necessary infrastructure, tools and training to support the data mesh approach. The solution's Infrastructure Plane enables the access of underlying tooling and services for storage, compute, orchestration and CI/CD processes.

Data product consumption:

The Experience Plane provides the capabilities to search, access and monitor data products, making it easier to consume and govern data for implementing various business use cases.

In conclusion, Snowflake's cloud-based data platform provides an excellent foundation and the HCLTech ADvantage Data Mesh solution accelerates the implementation of data mesh. With the joint capabilities of Snowflake and HCLTech, organizations can decentralize data ownership and enable cross-functional teams to work autonomously. By implementing data mesh, your enterprise can unlock the full potential of its data and enable faster innovation and responsiveness to changing business needs.

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