Transforming Data Mesh with Innovative Industry Data Models

Introduction

For Communication Service Providers (CSPs), who generate vast amounts of data across their business functions, the drive to transform into a data-driven organization continues to gain traction. Traditionally, since this data often remains confined within the silos of individual functions, analytics tools tend to focus only on the data within these isolated areas. With the advent of Generative AI (GenAI), however, these players are beginning to explore methods to correlate disparate data sets, enabling them to uncover comprehensive insights that can improve business operations. Yet, a significant challenge remains in the ability to rapidly integrate new data sources without relying heavily on central IT teams. While data mesh, with its decentralized architecture, offers a partial solution, a more holistic approach is required.

The promise of data

Like any enterprise, CSPs use data to drive their decision making–looking to improve efficiencies, increase revenues and deliver the best customer experience. CSPs are in a unique position, as they have access to customers' usage, financial, network and customer care information that, taken together, provide a 360-degree view of their experience. With Artificial Intelligence (AI) finding its way into nearly all of their OSS and BSS, CSPs can now support use cases in new and exciting ways.

Table 1 below presents some of the AI-driven use cases CSPs are deploying today.

Use Case	Description
Billing Customer Experience	Building an experience score for each customer based on his billing experience (invoice queries, issues with bill, change or anomalies in invoice and more)
Call interaction analysis	Creating call category for analysis and customer interaction
Predictive bad debt score	Building the propensity of a customer not to pay his bill
Predictive fraudulent behavior	Building a score predicting a customer propensity of a customer to commit fraud
Invoice error	Building a score predicting the propensity of an invoice to have an error
Invoice anomaly detection	Detecting invoices with anomalies thus requiring further investigation
Churn model	Predict the level of risk of each customer to churn, so we can adjust the retention offering on a personal level, reducing churn with minimal cost to the operator
Pre-to-post migration model	Predict the probability to migrate from prepay to postpay, for hyper personalized and contextual engagement, improving customer experience and satisfaction, and optimizing ARPU potential
Top-up prediction	Predict the timing of the next top-up and the amount, for hyper personalized and contextual engagement, stimulating ARPU increase

In each case, CSPs pull data from various operational and billing systems and process it to deliver the desired outcomes. Since all this data is in numerous and separate systems – many of which don't speak to one another, integrating them quickly and efficiently is a challenge. Support for the use cases listed above is an important, but not the only, motivation for CSPs to evaluate new data management architectures, including data mesh.

Data mesh: benefits and challenges

Data mesh is a decentralized data platform architecture that organizes data by business domain. This allows end-users to access important data without requiring the support of expert data teams or ingesting it into a data lake or data warehouse. This approach emphasizes decentralization by distributing data ownership among domain teams, enabling them to manage data as a product independently and securely.

Key business outcomes

- Because each domain develops their data products in isolation, there is a risk of duplication and inconsistency that can frustrate efforts to integrate and share data across departments. And it's the sharing that provides the quantum leap in terms of insights.

- Development costs and efforts associated with implementing a data mesh tend to be higher because the future business needs are not adequately considered during the initial data modeling phase. This could lead to re-work, therefore impacting development costs and time to market.

For these reasons, CSPs are advised to consider using Industry Standard Data Models (ISDMs) when developing their data management approach. ISDMs provide a structured and flexible framework that organizations can use to represent their business needs. Utilizing ISDMs can provide a solid foundation for domain teams to build upon, reducing complexity and accelerating the implementation of data mesh. To achieve the greatest benefit, though, CSPs need models specifically designed for telecom use cases, such as Amdocs Logical Data Model (aLDM).

Why aLDM?

Telcos are focusing on building a self-sustaining data practice to support citizen data scientists and other new users across the organization. When supporting these new roles, the gathering of knowledge from those who are experts in a particular data set and the systematizing of this knowledge in a business-ready and accessible data model is crucial, since this allows non-expert users to easily work with the data.

The Amdocs Logical Data Model (aLDM) is a TMF-certified, integrated data model optimized for modern technologies and near real-time processing in the telecom domain.

aLDM offers separate layers for operational and analytical solutions and covers a wide range of business domains, including BSS/OSS and network, B2C, and B2B. With support for over 60 operational and analytical areas, the model works with Amdocs and non-Amdocs platforms and understands the language of telecom.

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aLDM delivers a host of beneficial business outcomes including:

- Faster time to market: aLDM speeds up data mesh implementations by using prepackaged assets which helps domain teams quickly implement aLDM data products.

- Enhanced governance and compliance: aLDM comes with extensive documentation and metadata information, making it easy for any user to produce and consume data products. Since all domain teams can easily comply with the standards of the data model, data governance is enhanced as well.

- Easier adoption: aLDM includes predefined KPIs based on CSP business requirements. It uses intuitive business language rather than generic terms making it easier for domain teams and business users to adopt.

- Greater platform flexibility and choice: aLDM can run equally well on-premise or in a cloud, so users can choose whichever environment best suits their needs.

- Provides near-real-time reporting: Because it supports modern data warehouse architectures, aLDM can deliver near-real-time operational reporting.

Solution benefits:

1. **Data Quality and Consistency:** By avoiding data duplication due to more effective data governance process by using the reference model. Ensuring that data entities are clearly defined, business users are more likely to have high-quality, consistent data. High-quality data can lead to more accurate and reliable customer interactions, improving their overall experience with your products and services.

2. **Efficiency and Timeliness:** Reduced implementation costs and pre-mapped data sources can speed up the development of data products and services. This can result in faster response times to business users' requests and quicker innovation in your offerings, potentially leading to increased customer satisfaction.

3. **Immunity to Frequent Changes:** As business needs and preferences evolve, the ability to adapt quickly to these changes is crucial for customer satisfaction. Since aLDM already incorporates many anticipated changes and makes it easier to implement new ones, it can help business users remain responsive to customer demands, enhancing their experience.

Conclusion

Clearly, CSPs have an unprecedented opportunity to maximize the value of their vast stores of data. New architectural approaches are making data sharing across the organization more practical and powerful, allowing CSPs to get insights faster, develop strategies with more intelligence and uncover previously hidden relationships within the data.

A decentralized data mesh where data ownership and management are distributed across various domains enables organizations to achieve greater agility, faster time-to-market, and better alignment with business objectives. However, augmenting it with an industry-specific data model like aLDM minimizes risk, reduces implementation costs, and makes governance more manageable, while helping organizations prepare for future needs by supporting additional domains that may be required for business growth. aLDM is a business-driven, efficient, and telco-focused standard data model that supports modern technology and architectures, making it the preferred choice for data mesh implementations in the telecom industry.

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