

# Choice of Proper Data Operating Model: A study in telecom industry

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## Abstract

In the telecom sector the competition is always very high barring few occasions. Each of the service providers wants to stay top in the game and the role of data analytics is gaining more and more momentum to unearth the insights from all the data captured. The events of Covid-19 outbreak in early 2020 have turned the world completely upside down. Considering the exceptional economic & health crisis, organizations scrambled to adjust their ways of working to run their daily operations. They could no longer rely on previous assumptions about their customers, including their buying patterns e.g.; when the selling curve will go up, what are the seasonal patterns, what product mix make them buy etc. In no days, brick & mortar stores closed due to panic, e-commerce sales gradient rising, and customer center interactions exploded. Meanwhile, the new normal defines the new consumption pattern of media as more people started working from home, spending more time online and watching TV, and virtual interaction is all time high rather than contacting in person. Rapid change is obvious in this crisis period, and more than ever, organizations need to make decisions quickly that are however anchored in data. Yet, even as organizations bury themselves in data, they are getting an incomplete picture of performance and their customers and almost all the time this is data related [10]. This creates the classic dichotomy; you rely on data to make the decision and you are not sure whether data has the proper quality or not. Data is an important factor, for any strategy the leadership team of any organization is willing to take. In Telecom industry, managing data effectively and efficiently is one of the toughest challenges. Often, different functional departments and sub-functional departments create their own version of data and applications which can help their day to day activities. This kind of fit-for-application and their own set of data elements create the silos within the organization, duplicate the effort and make it nearly impossible to manage the data democratically. Different departments having different versions of the truth leads to plentiful issues including poor operational, predictive & regulatory reporting. In a big telecom organization, it is common that the same enterprise, network and product data gets replicated, processed and managed multiple times throughout the company. Transitioning a telecom organization to a truly data driven organization where data is 'managed' is not only difficult but need to overcome numerous common challenges. A successful data-operating model across the organization is the answer to that [1]. A successful data operating model helps to disrupt the technical silos existing in an organization. It builds upon the business model clearly indicates the value created out of it with a long-term goal alignment and addresses the way, data is going to be handled across the newly defined organizational processes; all the way from upstream data collection, cleansing and enrichment to the referencing and the downstream use of raw or transformed data [11].

## Keywords 1

Data Operating Model, Data Transformation, Centralized/Federated Model, Data Lineage, Data Quality

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## 1. Introduction

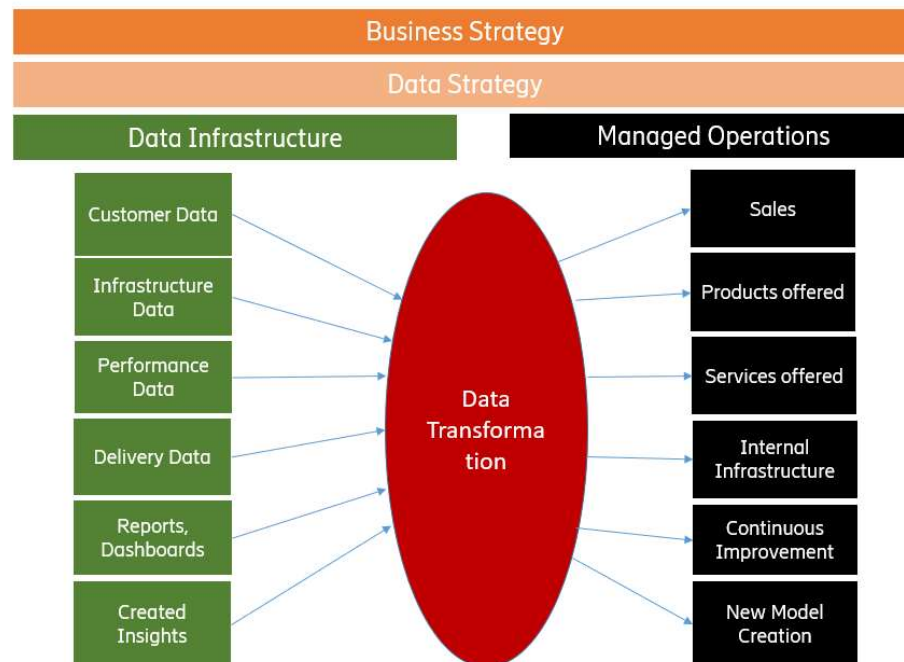


Figure 1: Example of a common data operating model

### Common blockers for the data operating model:

Several data management hubs in a telecom organization like infrastructure, digital business, manages services are very likely to create unreliable data [12], with succeeding issues including additional effort for data quality assessment and the probability of poor insight creation and predictive decision-making. Each group's rules for data quality assessment and control procedure may diverge and for the same data set from external data vendors multiple collection requests raised.

To optimize the operational expenditures, it is essential to remove duplication and incompetence in processes. Operational inefficiencies will hit the organization's bottom line.

A no or poor data operating model led to many issues [2]. Some of the common issues [7] in telecom are listed below:

#### Collection of same data for different fit-for-applications

- Increased operational expenditure to manage the same data set in different source systems
- Duplication of data management efforts
- Issues facing during reconciliations
- Issues regarding reporting using different values of same data elements
- Validation of inaccurate data elements
- Outdated data elements
- No clear accountability of data elements
- Trade breaks
- Incorrect operational reporting
- Incorrect cognitive reporting

- Incorrect insight creation
- Long time risk associated with inconsistent data
- Incorrect compliance reporting
- Incorrect regulatory reporting
- Poor decision due to inefficient market analysis
- Improper investment decisions
- RFP/RFI – inability to take quick action
- Incorrect product performance reporting
- Incorrect network performance reporting
- Increase of capital expenditure for collection of unnecessary market data

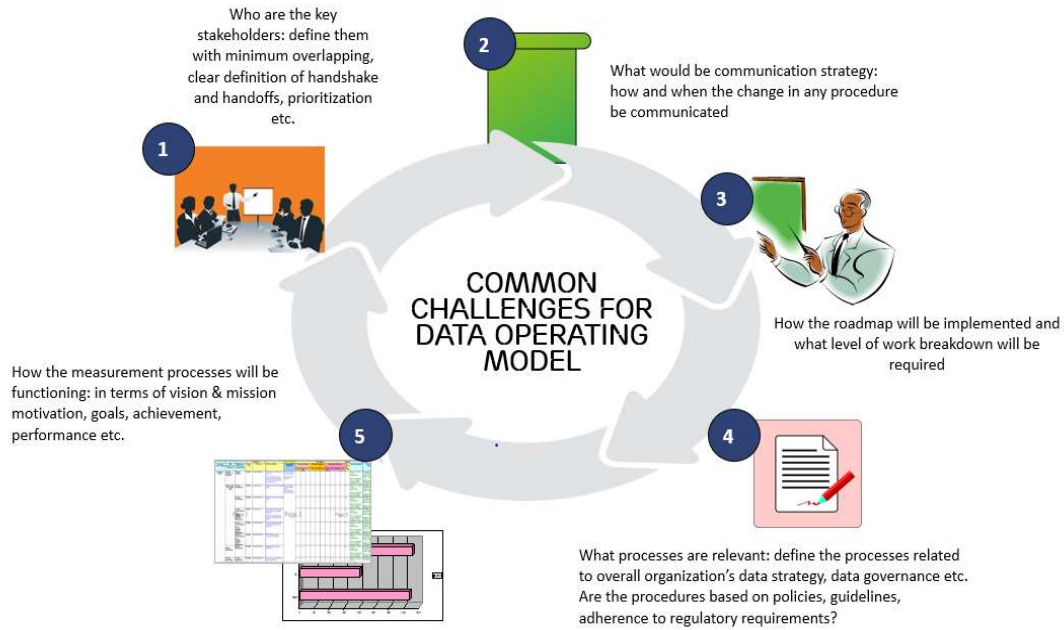
## 2. Ideas in Brief

**Table 1:** The Problem, The Argument, and The Probable Solution

<b>The Problem</b>	<b>The Argument</b>	<b>The Probable Solution</b>
<p>So how the data of an organization will be managed. Will the model be addressing the centralized model to have the structure and un-structured data or the federated model where each of the sub-organizations can have their say to keep the data while the overall data architecture &amp; policy be in place?</p>	<p>The telecommunication sector is experiencing a major change like moving from 4G (4<sup>th</sup> generation) to 5G (5<sup>th</sup> generation) technologies while a plethora of new business functions related to newer technologies like cloud, Internet of Things (IOT), Artificial intelligence / Machine Learning (AI/ML) based service operation are taking place. The data operating model starts with identifying the data strategy, which data would be required, how those data can create the value, data lineage, data quality, single source of truth for data etc. Finally, the organization based on the size and vision should identify the model ideal for the organization however, should have the scope to move to some other models if need arises.</p>	<p>Data Operating Model is a must as a good data operating model in place can aids the organization to break down the un-related data silos within a business and can jeopardize the business with wrong interpretation. Data operating model generally builds upon the business model as mentioned above and speaks how data is being treated across organizational processes, all the way from data collection, cleansing, transformation and enrichment to the sharing and use of data, i.e., the whole upstream and downstream of data. As the data moves around these different phases of the data operating model and data lifecycle, the business and technical architecture play an important role as well, yet many businesses struggle when trying to transition from the age-old legacy- systems to newer technology or complement existing systems like cloud data storage. A detailed and comparative study with the basic parameter of creating a data operating model is discussed in the next section.</p>

### 3. Comparing the different data operating models for telecom organization

As mentioned earlier to start the data operating model journey in an organization where different department span across different geographies and diverse stakeholders some essential aspects need to be addressed to achieve a winning operating model.



**Figure 2:** A Typical Data Operating Model Journey

There is no one size fit-for-all solution. The idea behind defining a data operating model should consider the aspects of control, type of organization and capabilities in different business units, sales organization and common enterprise functions [5, 6]. An effective data quality service orchestration highly depends upon the socio-cultural aspects of the business. The solution needs some of the common understanding in the organization to achieve the vision & strategy e.g.; shared business accountability, sponsorship from data domains and line organizations, shared attitude to data governance, knowledge base created & imparted and inclination to embrace changes. Striking a right balance amongst to the above aspects defines a successful data operating model that results to the enterprise to reach its data quality goals. A constant feedback process [3], helps to reduce the gaps and refine the processes continuously and assists the enterprise to its' goals.

The value driven approach should be the deciding factor whether the governance model needs to be centralized or federated. If the value created from one of the models can outweigh the others by at least 20% then the call should be in favor of that model.

Below is the table showing the merits and demerits of both the types which gives us the clear idea how to choose the right operating model:

**Table 2:** Parameters for Data Operating Models

<b>Value Parameters</b>	<b>Centralized Model</b>	<b>Federated Model</b>
Benefit management	Easy to manage. Reporting is easy to the organization leadership team	Managed by the business unit's data management team if the unit is operating independently
Accountability	The central cross functional team produces the rules, policies, controls etc. but for static data only	The source system owner and the business unit produce the rules, policies, controls etc. for static as well dynamic data
Change management	Mostly leadership decision i.e., top down approach	Here decision is taken by data domain managers, data stewards etc., i.e., bottom up approach
Time required to turn around	High to very high	Low, mostly agile
Required skillset	Highly skilled people required	Normal skillset with some re-skilling would be required
Process management	Process efficiency should be high	Regular knowledge with some re-skilling will suffice
Stakeholder management	High to very high	The number is less and how the business unit structured
Data catalog handling	Agile approach can be taken	Agile approach can be taken once the single truth of data established
Reporting mechanism	Since handled centrally, can be easier at enterprise level but quick change might be an issue	Since handled locally, reporting at enterprise level might be an issue, but change can be faster
Framework management	Centralized but continually improved by the feedback mechanism, with little flexibility	Siloed and the model can be tweaked having the structure intact
Data quality management	Large effort is required	Comparatively lesser effort required
Knowledge management	A central repository to be formed	Locally driven by the business units
Rules management	Stakes are high. A central expert team is required	Stakes are low. Localized control is required
Policy management	Any change impact is easy to measure and align	The impact is difficult to measure. Alignment should be taken care from the very beginning
Infrastructure management	Centralized control of the source systems	Distributed source system control
Service management	Easy to access, monitor and push to change	Most of the time it is overarching and less dependent to applications

Based on the type of the organization and assessing the value parameters a decision can be taken.

## 4. Conclusion

The big question is which model is suitable for the organization or more specific to the target organization?

The answer may not be simple as many factors are associated with; let say what kind of organization (as we are talking only about the telecom companies) is this.

Telco organization can be B2B (telecom gear manufacturer or app manufacturer) or B2C (service providers). The business strategy is the prime, so the decision should be taken in alignment with that. Sometimes size of the organization is so huge and have varied businesses all related to telecom but in different sectors like service, infrastructure, network etc. In those scenarios, having one single model or centralized model might exercise control on different department but on the other hand flexibility will be much lower and organization will be more bureaucratic. Each change in the system will take more time as compared to an agile organization. So, for the diversified organization it is advisable to use federated model rather than centralized one.

- A good data operating model is the catalyst to break the business and technical silos. On the other hand, a poor or non-existence of data operating model can create frustration, unnecessary delay in reporting, compromised reporting etc. For the same type of telecom application developer companies can afford to have the centralized model as it can give the leverage to prototype the applications in framework and can sell & distribute under common standard operating procedure.
- Not all the value creation parameter will be applied every time for every telco organization. As discussed above, in telecom we use many value creation parameters but for different set of businesses we use different subsets. Let say for service offerings, parameters like touchpoints reduction, mean time before failure, reduction of response time etc., are considered. If the organization is a service provider like Reliance Jio or VI or Airtel, they need to have the clear-cut data strategy in place which acts as a guideline to the whole organization, but the different verticals should have the liberty to implement the inner structure according to their business.
- Not every time a single model would be the answer to the data solution in a telco organization. It can be centralized, federated or a mix of both like some hybrid model needs to be adopted to find the right solution.

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