# Telecoms data monetization: Reality, not a mirage

*Big Data can deliver the promise of converting data into competitive advantage*

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# Content



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# Executive summary

Globally, telcos consider data analytics a key strategic pillar, and continue to invest in this direction. However, not many of them have reaped the benefits of these investments, because they face multiple dilemmas around finding the right use cases, making the right technology choices from ever-growing options, and adopting the right operating and governance models to foster data-driven decision-making. Our experience of working with multiple telco operators, complemented by interviews with 10+ Chief Data Analytics Officers from leading telcos across EMEA, reveals an addressable approach to these dilemmas. Telcos need to realize that data analytics is a "must-have capability" in this digital age, and related investments will help them survive in the emerging competitive landscape. They need to exploit analytics use cases across their core business functions, in customer facing as well as other areas, such as supply chain, HR and operations. Telcos are uniquely positioned to capture external data monetization opportunities, yet these should be explored on a case-by-case basis, while maintaining a primary focus on internal monetization. Lastly, telco executives must lead efforts to drive organization-wide change to foster data-driven decision-making.

# 1. Introduction

Globally, telcos are facing increasing top-line pressure in their core business due to intense competition from market players, as well as the growing threats from digital-native/OTT players. Telcos, thanks to their unique positioning in the ICT value chain, have access to arguably the deepest and richest insights into customers' behaviors and usage. Leading operators have set up analytics engines and capabilities to manage and process insight about their customers, products, quality of service and internal operations. Today, they are well positioned to enable digital ecosystems around emerging technologies such as artificial intelligence, Internet of Things and block chain. Telcos' business models in relation to all of these technologies must be enabled by real-time analytics capabilities so data can be processed in an efficient, secure and reliable manner, and with low latency. These ecosystems add new dimensions to the increasing volume, speed and nature of data capture and advanced analytics capabilities. Telcos that are well advanced in their data monetization strategies have developed innovative external partnership models to leverage data for creating innovative products and services in digital ecosystems.

Telcos' big data journey is not a recent trend; it began in early 2000 with their attempts to develop business intelligence and data warehousing capabilities. The journey before 2005 was based on technologies such as SQL, ETL and OLAP, and mostly limited to the IT landscape. Since 2005, with the advent of "big data" technologies (such as Hadoop), the analytics ecosystem has started to proliferate significantly with respect to technology maturity and supply, data policies and regulations. It has increasingly attracted executive focus and attention.

Several leading telcos have included "building big data and analytics capabilities" as a key strategic pillar, and continue to invest in this direction. However, the benefits of these investments have not been the same for all of them. We believe it is time for telcos to address the following complications when harnessing value from their analytics investments.

? **Identifying value pools:** A vast number of use cases are constantly appearing on the horizon, but where is the opportunity in the value chain, and which use cases represent the best value creation potential?

? **Making technology decisions:** A plethora of solutions and technology options are emerging in the data and analytics space. What are the key considerations for technology decision making?

? **Choosing the optimal operating model:** Different operating model archetypes exist for telcos to build data analytics capabilities in their organizations. What are the key considerations for operating model design in specific contexts?

? **Bringing monetization strategy to action:** Telcos need to figure out ways to execute data analytics to gain strategic advantage. How can telcos ensure sustainable execution of their big data initiatives?

# 2. Analytics value chain – Where are the value pools?

Today, customers are expanding their digital footprints to more and more applications and connected devices. The number of smartphone users has grown around 11 percent per annum in the last few years, and is expected to reach 3 billion by the end of 2020. According to Ericsson, the data traffic per smartphone will grow to 10 times its current volume by 2022. In Europe alone, the data traffic per smartphone will be around 15 GB per month by 2022.

Data has become more structured and data quality has improved significantly, leading to enriched customer databases. These can be used for plug-and-play solutions developed by third parties. Additionally, non-customer related data from internal business functions are presenting equally interesting opportunities to optimize telcos' internal operations. In this viewpoint, we examine the value and benefits available to telcos from both from internal and external monetization.

### Rejuvenate the core business first

Majority of telcos concur on internal/core business being the most tangible and valuable avenue to monetize their data analytics investments. There are numerous use cases of enabling revenue uplift through customer life cycle management and cost optimization through greater efficiency in network planning, sales, customer care, etc.

Telcos with the most advanced data analytics programs have maintained their focus on use cases in their core businesses and operations. For example, a challenger in Eastern Europe has employed a retention strategy using an advanced analytics based anti-churn model and next-best-recommendation engine. It has achieved 58 percent churn reduction in pay TV services and 17 percent in mobile services respectively. Another leading global telco is using customer data to enhance revenue assurance and fraud management. An incumbent in the Middle East combines mobile network probe data and customer information to analyze network quality of service and develop new insight into customer usage patterns. This insight is then used for selective promotional targeting.

Figure 1: Internal use cases

Focus big data/advanced analytics building block

| Marketing & sales | Customer service | Product | Enabling | Network | Steering & support |
|---|---|---|---|---|---|
| *Personalized marketing* | *Customer activation and provisioning* | *Automated tariff optimization* | *Automated IT security threat detection* | *Predictive maintenance of network services* | *HR process automation* |
| *Real-time sales process monitoring* | *Real-time field force scheduling* | *Real-time product creation and management* | *Real-time IT fault detection and prediction* | *Real-time network fault detection and prediction* | *Field force analytics* |
| *Real-time media performance tracking* | *Boosted failure analysis for complaints* | *Product renewal enhancement* | *IT development quality assurance* | *End-to-end service quality monitoring* | *Smart procurement* |
| *Customer Onboarding and ARPU growth* | *Customer journey and satisfaction* | *Credit scoring as service* | *Application performance monitoring* | *Network roll-out optimization* | *Inventory optimization* |
| *Heavy roaming abuse detection* | *Automated natural conversation* | *Product convergence* | *Service activation optimization* | *Network monetization* | *Receivables optimization* |
| *Outdoor advertising optimization* | *Contact center productivity* | *Recommendation engine for external clients* | *IPTC service assurance* | *Network performance optimizations* | *Revenue assurance and fraud management* |

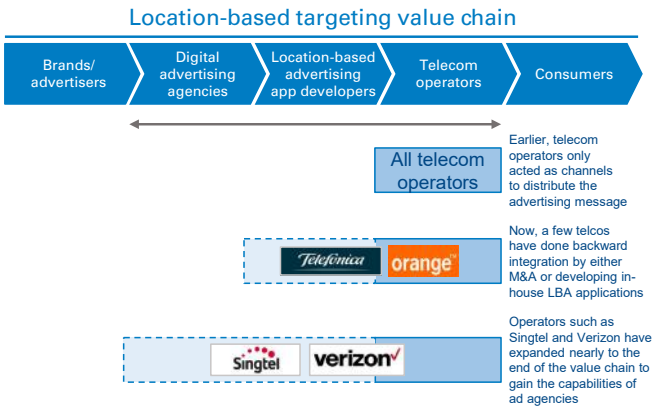
Source: Arthur D. Little

The most prevalent use cases among telcos are usually in commercial, network and customer experience processes. A vast number of opportunities in support processes such as HR, procurement and logistics remain largely unexplored. A leading European telco uses analytics techniques to manage procurement activities in massive purchasing operations in order to identify process gaps and deviations from standard procedures. A leading operator in the United States uses a text analytics and machine learning approach applied to customer complaints data to achieve operational efficiency by optimizing the trips of field engineers. An Asian operator responds to rising customer complaints by moving from a reactive to a proactive approach, in which it predicts complaints before customers register them and takes actions to resolve root causes.

## Exploit new revenue streams on a case-by-case basis

External data monetization is an advanced stage of a telco data analytics program and should be pursued on a case-by-case basis only. External monetization business models range from merely providing customized data as a service to developing custom products and solutions for third parties. Footfall analytics to track locations of customers and use them for marketing is one of the most popular monetization example for telcos. In many cases, this has enabled operators to diversify in the advertising value chain, either inorganically through acquiring such platforms, or by developing in-house, location-based analytics capabilities.

Figure 2: Selected examples of telcos playing in the location-based targeting value chain




Source: Arthur D. Little

Some interesting examples of external data monetization are as follows:

Credit scoring as a service: An Eastern European operator leverages internal data to provide "credit-scoring-as-a-service" to external clients. This credit scoring is significantly more effective than a traditional banking model, reducing credit risk by 40 percent as claimed by the operator.

Market Locator: DingoDot has developed an application – "Market Locator" – that enables diverse companies to gain access to powerful analysis based on real hard data. Several European telcos have been using Market Locator to create new revenue streams by providing anonymized and aggregated big data to their B2B customers in the form of a self-service population analytics and mobile marketing solution.

Digital advertising business: A leading US-based operator uses web-browsing history, app usage and location data to personalize rewards and deliver targeted advertising from third parties.

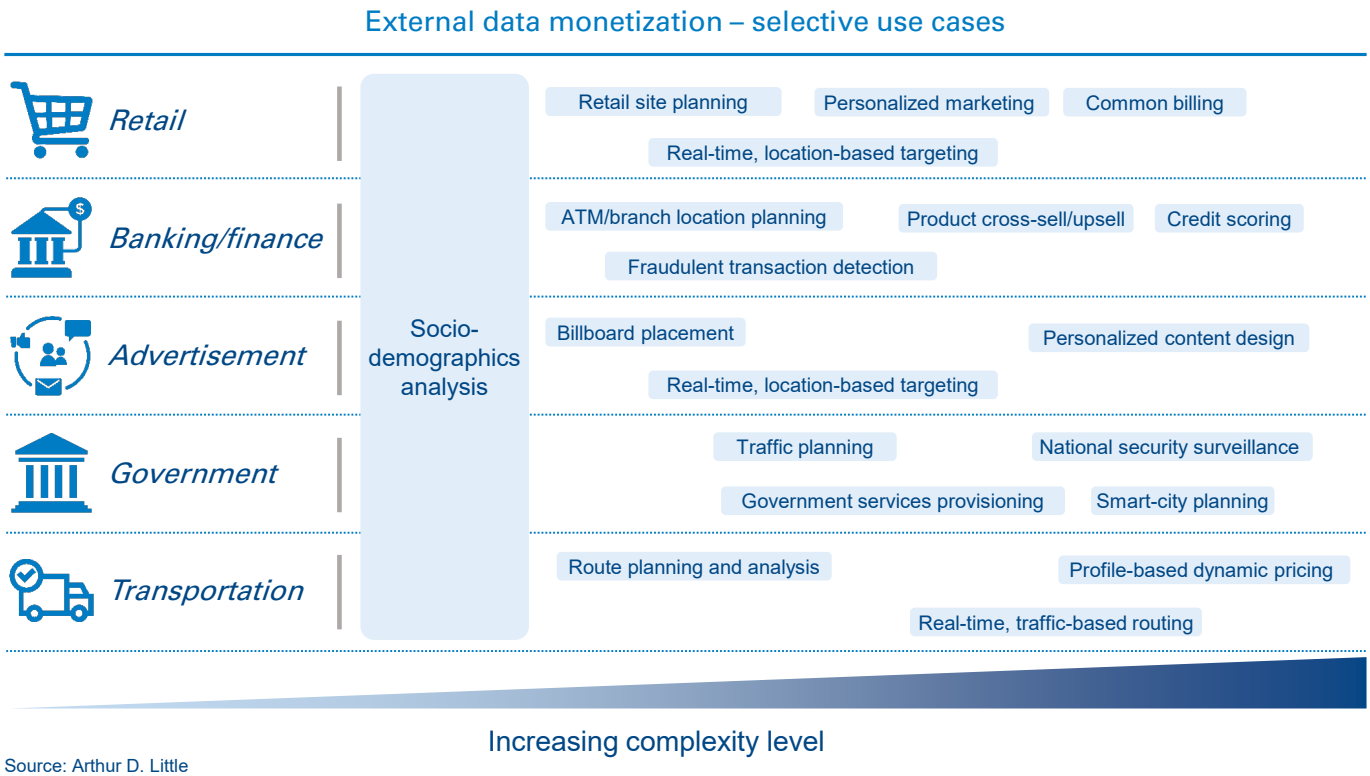
Telecom players, that have taken proactive steps towards external monetization of data, have primarily done so through partnership models across a variety of ecosystems in B2B and B2C segments. In some cases operators have also acquired start-ups for vertical integration across the value chain. Telefonica has engaged in multiple partnerships with leading brands such as Linio, Heineken, and United Colors of Benetton. In 2017, it acquired leading UK geolocation data start-up Statiq. Statiq processes billions of location data signals to identify the places people visit and build consumer profiles. This allows advertisers to better target ads based on a user's physical location, and track whether the user visited a retail store after seeing a mobile ad.

External data monetization efforts also accentuate the risk of losing customers' trust because of involuntary privacy breaches. Data privacy is a growing concern for regulators and national security organizations, and efforts to develop robust regulatory frameworks for data privacy are under way in several countries and regions. The European Union has introduced General Data Protection Regulation (GDPR), which gives users the right to protect their own personal data. This forces companies to be more attentive to how they handle customer data and gives users greater control over their data, including the ability to export it, withdraw consent or request access to it. For this reason, telcos should expedite advocacy efforts to shape the regulatory landscape and enable viable business models for the mutual benefit of customers and operators.

We recommend that external data monetization models are thoroughly assessed before resources are dedicated to external monetization efforts. In specific cases of attractive opportunities, telcos should develop partnership models by bringing players in the ecosystem together – customers, users of the data (e.g., B2B clients, start-ups) and intermediate parties (e.g., external analytics firms).

However, despite these developments, there remains general scepticism about external data monetization. Although external monetization opportunities exist, telcos struggle with where and how to start, and as a result find it hard to realize concrete benefits. Most external monetization use cases are local and require well-developed partner ecosystems. Furthermore, external monetization opportunities appear in a range of industry verticals (e.g., mobility, financial services), and telco players face the challenge of finding the appropriate entry points in specific value chains with data analytics offerings.

Figure 3: Data external monetization use cases



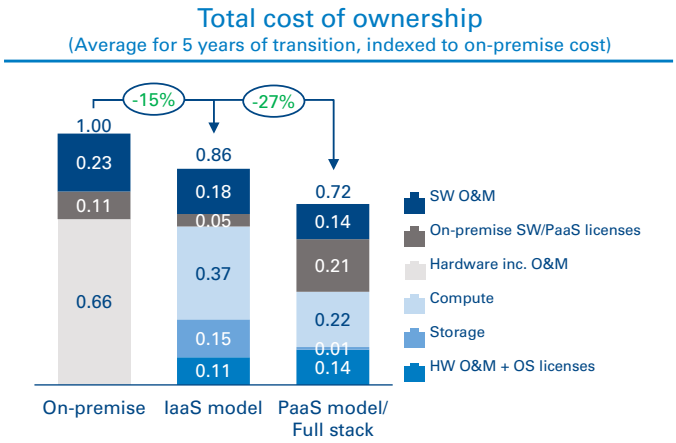

Source: Arthur D. Little

# 3. Invest in big data technology as a capability to survive

The analytics space has become extremely cluttered, with a plethora of solutions available across layers (infrastructure, platforms, analytics, visualization, etc.). As a result, technology decision-making is affected by multiple dilemmas, as discussed below. A common factor underlying most of these dilemmas is that the ROI for telcos' big data investments remains unproven on an incremental basis.

Cloud based versus own-facility based: In a cloud environment, full-stack implementation provides important operational and economic advantages. Based on our estimates of progressive cloud adoption for the six big data infrastructure categories for relevant players, telcos can reduce the total cost of ownership by 28 percent in moving from on premise set up to Platform as a Service (PaaS) models. However, strict data privacy laws for telecoms operators inhibit the adoption of full public cloud. Therefore, local on-premises servers, private cloud and public cloud (with data centre inside the regional permits) are the most likely options. These arrangements often reduce requirements for complex analytics models that need a lot of computing power. In such scenarios, these complex models can be trained in public cloud with data anonymization, saving on the costs of procuring expensive servers. Model scoring can be done on local servers later, during the production stage.

Figure 4: Cloud based vs on premise TCO comparison




Source: Arthur D. Little

Full stack versus incremental modules: The choice between implementing a full stack versus incremental modules depends on the maturity of the big data program in the organization. Most telcos implement technologies as needed, and use a mix of in-house and external technologies. The needs-driven implementation allows telcos to optimize the investments required, as most have yet to fully realize the benefits of big data. With technology evolution, this approach allows telcos to adopt best-of-breed solutions when they are available. However, it creates the challenge of integrating new tools with legacy technical architecture. In a cloud environment, full stack implementation provides important operational and economic advantages. Such a model enables managed services and minimizes installation and maintenance efforts.

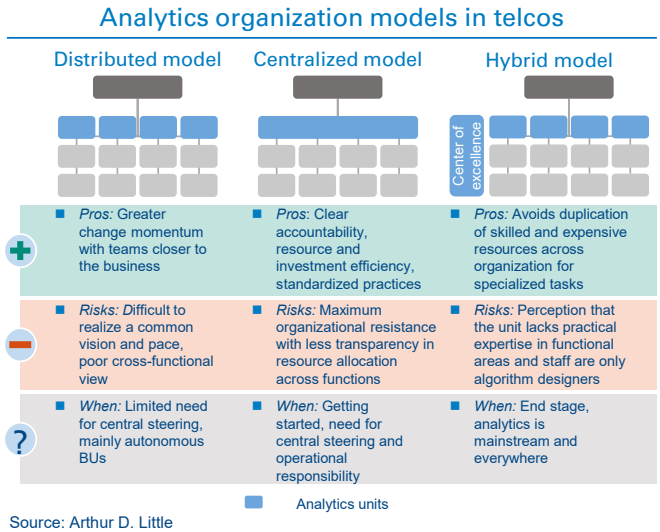
Open source versus license: Open-source technology is a major trend and preference for telcos, especially for advanced analytical algorithms. A range of open-source libraries exist for R, Python, TensorFlow, etc., supported by passionate communities of developers, and which telcos can leverage without major investment. For robust and standard analytics applications, traditional licensed tools such as SAS/SPSS are widely used.

Business case – Investment or return: The positive conviction about expected benefits (in core business areas) is the main driver of big data investments. The return on big data investments is not easy to ascertain, as the technology is used for a variety of purposes, such as reporting, dashboard visualization, and data-quality improvements. Contrary to telecom operators, leading digital players de-prioritize big data investment monetization concerns, and instead start with a philosophy of considering these capabilities as must-have to survive in the digital era, without over-emphasizing the traditional cost/benefit equations.

# 4. Choose the right operating model in your organization

While monetization opportunities are vast and technological dilemmas are easy to resolve, adopting a suitable operating model in the specific context of the telco remains a critical success factor in the big data analytics journey. A range of options exist for operating models in telcos, and we find different models implemented, depending on their roles in the value chain, organization capabilities and progress towards big data analytics.

Figure 5: Organization model for analytics unit




Source: Arthur D. Little

Centralized model: In the centralized model, a central data and business analytics function within the organization takes ownership of big data analytics and acts as a service provider to the entire organization for data, insight and advanced analytical offerings. The model facilitates centralized enterprise data management and inhibits silo thinking. This model is conducive for external monetization, as a single unit has a 360-degree view of the services that can be offered. A disadvantage of this model is that the central function may not have the subject-matter expertise required to exploit use cases across functions. An operator in the Middle East has implemented a centralized model for analytics that plays an active role in serving internal requirements, as well as products and services for customers.

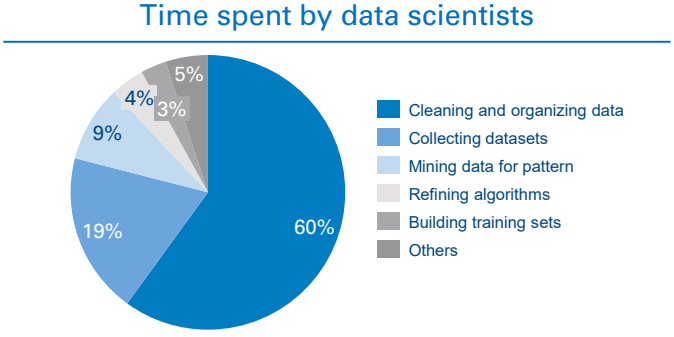
Distributed model: In the distributed model, big data analytical activities are distributed across different units in the organization. For example, each customer-facing business unit, technology unit, etc., performs its own analytics. This model is relevant when analytics-driven reporting requires subject-matter expertise.

Hybrid model: Many telcos start off with the centralized model and then move to distributed model. In the hybrid model, once big data analytics capabilities are established after the initial two to three years, big data lakes, data engineers and data stewards continue to be in the central function for enterprise-wide initiatives. Additionally, each function has a team so the use cases remain close to the business.

Large telecom groups with multi-geography operations aim to have centralized big data functions to serve all operating companies (opcos). The model aims to leverage the learnings and capabilities (use cases, architecture, etc.) across all opcos in the group. However, a key concern with this model is that the regulations in individual opco markets restrict them from exchanging customer data across geographic borders. Therefore, participation of opcos in this model may be limited. Telcos are also imposing stronger governance policies on how data is captured and data-driven decisions are taken. According to an estimate by CrowdFlower (now Figure Eight), data scientists spend around 80 percent of their time in collecting, cleaning, and organizing data, which calls for better data management policies.

Increasingly, data governance frameworks are the key themes for C-level executives, who need to push for them from the top. As big data analytics is becoming mainstream, telcos are upgrading their data policies and underlying data-related processes to ascertain data capture/updates according to the initial data models, in order to ensure there is a single source of the truth, and to safeguard data privacy issues, etc. Another equally important dimension is building a fact-based decision-making culture in the organization, as was emphasized by several telcos during our interviews.

Figure 6: Data Science Report 2016 by CrowdFlower




Source: Arthur D. Little

# 5. What is the way forward?

Telcos have successfully begun leveraging their data as an asset already, as is evident from the hundreds of different use cases that we have seen. However, we expect a second wave of the data analytics revolution for telcos to commence due to new trends around digitalization, as well as new technologies in relation to 5G and the IoT that will drive a fundamental shift in their service offerings and delivery models.

**Get started if you haven't already done!**

1 For some telcos that are still trying to separate mirage from reality, it is not too late to start leveraging their data as an asset. They should aim to build upon small successes and then roll out big data initiatives organization-wide. In our previous viewpoint, "Big data: A gold mine in telcos' backyard", in this same series, we recommend seven key steps to bring big data plans into reality.

**Drive organization-wide change to foster data-driven decision-making**

2 In our view, change management for adoption of analytics-related business processes is more important than development of analytics techniques and related use cases. Telco executives must increasingly take data-driven decisions, as analytics without business actions lead to failed investments. Internal analytics teams need support from the entire organization on management of data, adherence to data policies, and implementation of analytics solutions.

**Focus on developing innovative use cases in the core business**

3 Internal data monetization presents maximum business impact. The latest developments in machine learning (deep learning) technologies and cloud-based analytical solutions have opened up several new use cases for telcos. Machine learning is the next stage of big data investment monetization for telcos, and getting big data implementations right is key to build machine learning applications. (Refer to our viewpoint, "Why machine learning is crucial to effective utilization of big data"). In addition, with limited resources, analytics managers should strive to automate standard solutions in order to embed analytics into high-speed business processes and utilize those resources to work on new projects/use cases. Lastly, telcos should also start exploring application of analytics to opportunities in functional domains such as HR, procurement, finance etc.

**Stimulate external data monetization on a case-by-case basis**

4 Telcos should go after external monetization opportunities based on individual use cases. For selected high-potential use cases, telcos need to take the leadership role in developing partnerships with B2B businesses, start-ups, and technology vendors across the value chain.

**Secure an executive push**

5 Company-wide embracing of analytics drives changes in culture, processes, behavior, and skills for many employees. Telcos need strong sponsors of analytics at very senior levels with strong understanding of the ecosystem and a passion for fact-based decisions. This is important for not only securing buy-in during investment decisions, but also enforcement of the data-driven culture within the organization.

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**Telecoms data monetization:**
**Reality, not a mirage**

Big Data can deliver the reality of converting data into competitive advantage

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