Data-Driven Insights Improve CSP Business Outcomes

CARDINALITY.IO

It is a universally acknowledged truth that the telecommunications industry's technology rate of change is only accelerating, not slowing down. Exciting new communications and IT-centric services are a benefit of this acceleration, but new web scale competitors at the same time are contending even more fiercely for both new services and traditional telco revenue streams. Growth among communications service providers (CSPs) in developed markets has slowed to 1% annually* at a time when digital transformation initiatives and 5G network upgrades require significant telco investment. McKinsey's analysis (see quote) paints a sobering picture of a decade or more of stagnant growth and unmaterialized opportunities.

While looking to reinvent themselves and achieve greater results in their next stage, telcos have long recognized that there is untapped value in the growing volumes of data they generate. Data about their consumers' usage and preferences, data about their services, and data about their networks and operations is, you might say, everywhere.

In this paper, we will re-envision numerous business processes and CSP operations that can be improved through data-driven, real-time insights and provide a glimpse into the real-time AI, analytics and digital commerce solutions that can make all this happen.

*"Growing B2B2X: Taking telcos beyond connectivity and 5G," STL Partners, October 2020.

> **"Over the past decade, telcos have been under continuous pressure as their traditional value pools have gradually eroded and new growth horizons have proven elusive."**
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> McKinsey & Company, "A blueprint for telecom's critical reinvention," April 2021

Monetization and Data

Reinventing a CSP's business relies on many factors. One of these central factors is forsaking the long-established utility model. Telco services have been sold as connections plus on a cost-plus basis, forever. Reinvention requires embracing, creating, selling and operationalizing outcomes quantified by metrics that the user — either a consumer or an enterprise — values. By transforming the terminology underpinning your charging and revenue stream and adopting an agile approach to launching new offers with new value metrics, you will delight current customers and attract new ones.

A similar reinvention is possible through the greater understanding and application of rich insights gleaned through AI and analytics that combine numerous disparate data sources to stream previously insurmountable amounts of data in real-time to drive business processes.

Important technologies like 5G, IoT, AI and cloud are intentionally designed to proliferate shared technology infrastructure. CSPs face a growing opportunity to combine and use the data generated by these services in new ways and drive value out of them like never before. With modern applications running anywhere — at the edge, on-premises datacenters, and in public and hybrid clouds — the barriers that once kept data from different applications locked up in those separate, siloed environments are quickly disappearing and providing a seamless data environment.

But those barriers will not vanish of their own accord. The increasing volume and diversity of data and data sources can be overwhelming without the right data integration and analytics tools. Once they come down, however, the aggregated data becomes the source of rich insights that drive different and improved processes in the areas of customer experience, network operations, and product and market innovation.

With the intelligence and insights that the enriched data sets deliver to transformed monetization and customer experience processes, CSPs can create advanced customer experiences, offer personalized products and plans to their customers, and further streamline and optimize their operations.

Helping Businesses Do Business Better

CSP's have traditionally lagged in providing their business customers the same level of visibility and control into their services as they have done for consumers. Because business accounts have complex hierarchies and service arrangements, their customer service portals, if they even exist, don't typically provide real-time visibility in the account's data and therefore provide limited options for administrators to make changes to their services. However, savvy businesses have more

"A critical component of the Coordination Age is the universal availability of flexible, fast, reliable, low-latency networks that support a myriad of applications which, in turn, enable a complex array of communications, decisions, transactions and processes to be completed quickly and, in many cases, automatically without human intervention."

STL Partners "The Telco Cloud Manifesto: A growth enabler in the Coordination Age," April 2021

experience with digital interactions, demand more from their CSPs, and have a growing number of options for communications and IT services from global web scale providers.

Imagine if the CSP could provide not only the breadth of IT and communications services that a business needs, but also insights into its usage and guidance on how to optimize a service for cost, productivity and efficiency gains. Combining application and service usage data with network performance characteristics, the CSP's business customers will derive significantly greater value from their services. In addition to providing real-time information and forecasts about their network utilization, loads and costs (see sidebar on the right), other opportunities to help businesses increase their productivity include:

- Identifying when service levels have not been met, or are not likely to be met, given current network conditions and suggesting alternative connectivity while automatically adjusting charges/providing credits.

- Recognizing heavy users of applications or devices from among the broader business family or hierarchy of users, then suggesting add-ons or complimentary offers that optimize the cost and productivity of those users.

- Detecting where applications and devices are not used to their full capacity, then making recommendations for how they can be reallocated, disconnected or associated with a more effective price plan.

- Providing technology recommendations for the optimal mix of mobility and fixed connectivity based upon user and device location and behavior patterns, as well as enabling the ongoing evolution of hybrid home-office work patterns to recommend packages that ensure the employee has the same service level and application access in all their work locations.

A Better Customer Experience with Insights and Proactive Engagement

The typical digital user has become accustomed to serving themselves throughout their plan's life cycle. From consumers researching and exploring their purchasing options, to ordering, provisioning and paying for a service, to configuring customized parameters that control how they interact with that service, most CSPs deliver these capabilities to consumers through web portals and mobile apps. The most advanced CSP solutions deliver real-time views to the consumer through usage details and various account balances, enabling them to make informed decisions about their next transaction, such as "Have I got enough data left in my monthly allocation to allow my child to stream this HD film?"

"People analytics (represent) the strongest opportunity for telcos as it uses their comprehensive customer data. Analytics and machine learning are required for segmentation and personalization of messaging or action."

STL Partners: Growing Enterprise and Revenues

Combining data that represents the consumer's behavior and intent with their real-time balances and account status allows the CSP to proactively drive a more engaging experience. A complete profile of the consumer can be constructed by combining the CSP's information from various sources, including proactively addressing service quality issues (see box at right) and:

- Monitoring spending habits over time. How regularly do they top-up? How much do they spend on their top-ups? How quickly do they pay their bills?

- Observing usage patterns such as where and when they use a service, and for how long? Have these patterns changed at all or become more or less frequent? Use this information to present new and compelling personalized offers to encourage usage of more services that the consumer will value.

- Examining other quantitative behavior. By availing themselves to the entire consumer data set, a CSP can classify a consumer's propensity to spend or determine if they are likely to deactivate a service or leave. Are they likely to appreciate and sign up for an offer for a complimentary service? Predicting their mindset through analysis of a large dataset enables the CSP to proactively offer something that will assuage a dissatisfied customer or delight a satisfied customer who will latch onto a perceived bargain to do more.

Transforming Industries

The 5G network standards are unique in that they were crafted explicitly for networks that support the broadest set of use cases and applications. 5G is not "just another G," providing faster data speeds for watching high-definition videos on our mobiles. It will simultaneously support enhanced mobile broadband alongside other applications with differing network demands. 5G's high reliability and ultra-low latency connections are necessary for mission-critical applications like autonomous vehicles and the massive Internet of Things. It delivers connectivity and communications, and thus intelligence and control, to orders of magnitude with more devices per square kilometer than ever possible before.
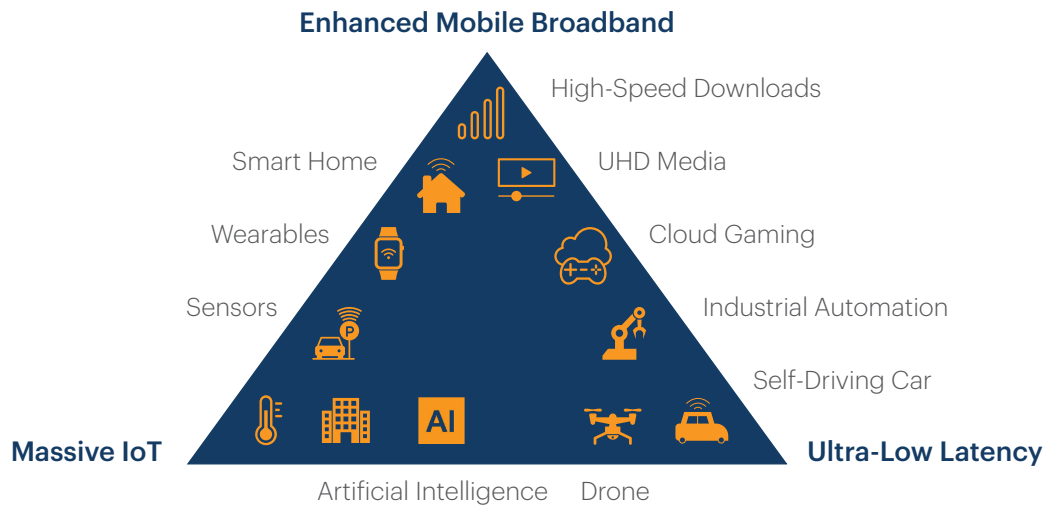
With the emergence of 5G's massive IoT capabilities and the race to embed sensors, communications and mobility into devices everywhere, new use cases are being launched that will transform industries such as agriculture, mining, transportation, logistics, healthcare, emergency services and more. There has never been a need to embed big data insights into these network connections until now. The use cases being considered and deployed across every industry sector are numerous. Some examples of incremental benefits delivered through the combination of real-time analytics with device and connectivity that generate actionable intelligence include:

USE CASE 2

Drive Personalized Customer Experiences
CSP's have a great opportunity to be proactive about service quality, identifying and responding to potential issues and, in doing so, engendering increased trust, customer satisfaction and loyalty. Real-time AI coupled with digital customer channels can produce a personalized Customer Experience Index Score correlating network parameters that identify potential issues with the quality of a session at any time — voice, video, browsing, gaming, etc. With this service quality information available in real-time, the consumer could be notified of other options and provided incentives, or compensation for the poor quality of service, through the communications channel of their choice.

5G IS MORE THAN JUST FASTER SPEEDS

Enhanced Mobile Broadband

- High-Speed Downloads
- Smart Home
- UHD Media
- Wearables
- Cloud Gaming
- Sensors
- Industrial Automation
- Self-Driving Car

Massive IoT — **Ultra-Low Latency**

- Artificial Intelligence
- Drone

- Prescriptive solutions for traffic management where vehicle speeds, vehicle density, weather conditions, presence of construction or public safety activity data is gathered and analyzed in real-time to warn about hazards and to automatically change signals to reroute vehicles.

- Network operational efficiencies that are enabled when CSPs avail themselves to the performance data from across their networks and from every network function. This will allow them to automate monitoring, maintenance and forecasting, thereby ensuring they can deliver carrier-grade services and keep pace with their users while providing the guaranteed quality of service that 5G eMBB and URLLC services require.

- Context-aware operations in environments where a diverse collection of devices, processing communications, data and connectivity of various critical degrees work in unison. For example, healthcare solutions that process a broad range of data. All this information creates a complete view of a patient as well as hospital performance, including transcribing and recording doctors' notes, sharing patient medical records and history, individual health monitors both inside and outside of a hospital, and operational information related to order entry, pharmacy, insurance and billing records.

USE CASE 3

Industries Transformed
Sectors like oil and gas pipelines depend on critical operations performed by workers being deployed in remote locations. With new capabilities to provide customized network coverage and services that 5G enables, such industries will benefit significantly through monitoring that can be reliably performed by machines and sensors. Gathering sensor and other data (visual information from drone-mounted cameras, pressure sensors, heat sensors, moisture sensors, temperature sensors, etc.), analyzing trends and predicting problems before they arise will allow organizations to direct high impact maintenance and repair, and dispatch human resources and equipment to distance locations when needed and before an issue occurs.

# MATRIXX and Cardinality.io Drive Value Together

MATRIXX and Cardinality.io are addressing the challenges of harnessing complex data in communications service providers' IT and network environments and collaborating to help organizations optimize the use of that data. With the intelligence and insights that the combined data sets deliver, CSPs can create advanced customer experiences, offer personalized products and plans to their customers and further optimize their operations. The combined solution is based upon the value of the individual platforms:

- Cardinality.io enables the CSP to develop rich insights through combining numerous disparate data sources, applying analytics and machine learning to produce insights and stream previously insurmountable amounts of data in real-time to drive business processes.

- Cardinality.io's platform delivers a rich set of connectors to telco data sources and the ability to move data from any source to where it needs to be, so it is processed regardless of whether it sits at the edge, in a core data center or in the cloud, simply anywhere.

- MATRIXX Digital Commerce Platform updates and manages customer accounts and services in real-time and will incorporate data streams and analysis from external sources to dynamically adapt charging algorithms as required.

- With an API-first architecture, MATRIXX exposes a complete and accurate view of user accounts and services to all customer-facing processes, including customer self-care apps directly, and enhanced with individualized insight variables will support personalized experiences.

With Cardinality.io and MATRIXX together, CSPs can improve their quality of service, realize operational efficiencies, strengthen their customer relationships and drive greater value.

"Becoming AI-driven is now crucial for CSPs. Network-based communications service providers need to better harness data, analytics and intelligence to identify the best approaches to drive growth, improve customer experience, streamline product development and optimize infrastructure operations."

Gartner Market Insight: Unleash the Potential of AI in the Telecom 5G Era (Peter Liu, March 2020)
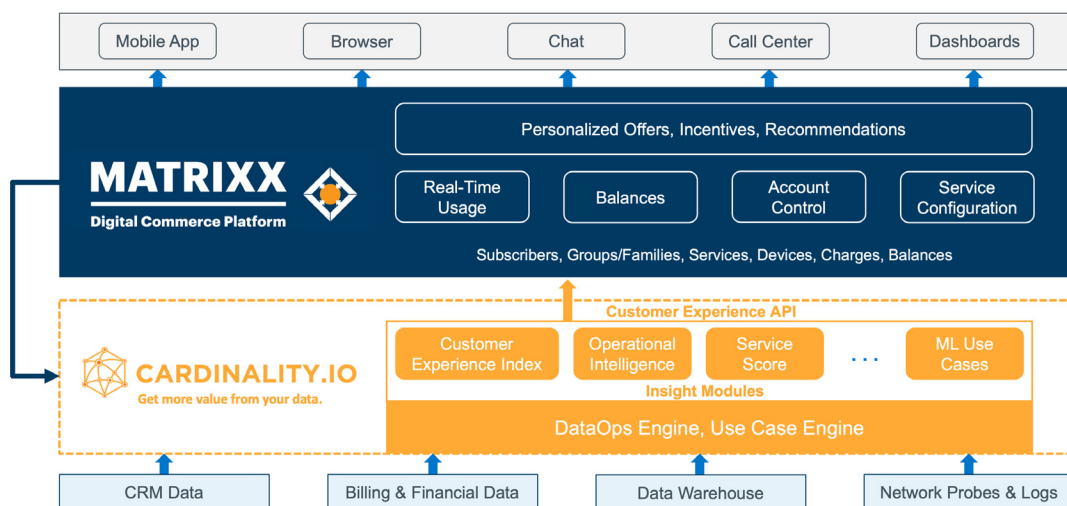
About MATRIXX Software

MATRIXX Software is a global leader in 5G monetization for the communications industry. Serving many of the world's largest operator groups, regional carriers and emerging digital service providers, MATRIXX delivers a cloud native digital commerce solution that enables unmatched commercial and operational agility. Unifying IT and networks, MATRIXX offers a network-grade converged charging system (CCS) enabling efficient hyper-scaling of infrastructure to support consumer services, wholesale and enterprise marketplaces. Through its relentless commitment to product excellence and customer success, MATRIXX empowers businesses to harness network assets and business agility to succeed at web scale.

About Cardinality.io

Cardinality.io is committed to helping organizations of all sizes get more value from their data. Cardinality.io's end-to-end data analytics and AI/ML platform allows users of all skill levels to create use cases using an intuitive, graphical user interface. Cardinality.io is Kubernetes-based and can run at the edge, in the data center, in the public cloud, and in hybrid environments. By making the complex easy, Cardinality.io helps customers turn data insights into amazing business outcomes.