Transform Telecom: A Data-Driven Strategy for Digital Transformation

By Hitachi Vantara
and Ravi Kalakota, Partner, LiquidHub

June 2019
Contents

Executive Summary 3
Digital Transformation of the Telecom Industry 4
Digital Trends Transforming the Telecom Industry 5
   The Network of the Future: 5G Networks 5
   Digital Media and Interactive Entertainment 6
   Over-the-Top Streaming 8
   Internet of Things (IoT) and Telematics 9
   Smart Software-Defined Networks (SDN) 9
Transformation Agenda: Five Key Strategic Initiatives for Every Service Provider 10
   Establish Data-Driven Customer Analytics Capabilities 11
   Digitize the Order Management Process 11
   Innovate Around the Customer Experience 12
   Streamline the Application Landscape 13
   Standardize and Automate the IT Infrastructure 13
Summary and Next Steps 14
Data-Driven Digital Transformation, Powered by Hitachi Vantara 14
Executive Summary

The digitization of content and services has increased choice, innovation and competition. As a result, it's no longer “business as usual” for telecom providers. The industry is at a crossroads. Like companies in most industries, telecom companies face a new landscape of competitive challenges and opportunities, thanks in large part to an increase in global mobile data traffic, driven by a strong growth in smartphone subscriptions and a demand for data-intensive applications, such as video (see Figure 1).1

For many years, telcos have dealt with network and service convergence within their own industry. The new wave of change, however, is far broader. It is a global dynamic in which industries are overlapping and colliding, and value chains are being redefined. Players are being brought together as both competitors and collaborators across traditional boundaries of industry and technology.

No organization is immune to disruption, and the best defense remains innovation. This white paper will start by examining the current landscape, in particular, some of the major trends that are causing dramatic changes in the industry. These trends are disrupting established value chains and business models while offering nontraditional

Figure 1. Global Mobile Data Traffic (exabytes per month)

---

2 Ibid.
growth prospects and new opportunities that were unheard of just a few short years ago.

**Digital Transformation of the Telecom Industry**

Customers, channels, content and competitors are all becoming digital, resulting in a whole new ecosystem of value. The digital transformation journey is so fundamental that it requires changing the DNA of every communications service provider.

The telco industry is going through massive structural changes. The rapid development of disruptive technologies (such as 4G LTE), messaging services (such as WhatsApp, WeChat), and products (such as over-the-top Netflix streaming) has eliminated many of the traditional distinctions between wireless, cable, internet and local and long-distance communication services. It has brought new competitors to telephone companies, cable companies, wireless service providers, satellite providers, application and device providers, and providers of Voice over Internet Protocol (VoIP) services.

The key market trends:

- Convergence of previously discrete markets (for example, content, TV, broadband, wireless and cable).
- Exponential growth of data volumes (for example, streaming apps in the cloud).
- Digitization: More and more services are moving to the cloud.
- New customer behavior patterns (for example, cord-cutting and binge watching).

While these changes have enabled companies to offer new types of products and services, they have also allowed providers to broaden the scope of their own competitive offerings. For instance, the large service providers (including Verizon, AT&T, Sprint, Comcast, Vodafone, BT and T-Mobile) as well as various regional wireless service providers face competition from other communications and technology companies. These providers, like their competition, seek to increase their brand recognition and capture customer revenue with respect to the provision of wireless products and services, in addition to nontraditional offerings in mobile data.

Nontraditional players such as Microsoft, Google, Apple, Facebook and others are offering alternative means for making wireless voice calls that in certain cases can be used in lieu of the wireless provider’s voice service; these players also offer alternative means of accessing video content.

Messaging apps (for example, Snapchat and Facebook Messenger) are increasingly becoming the primary vehicle of communication for millennials. Users are logging in to messaging apps not only to chat with friends, but also to connect with brands, interact over merchandise and watch content. What were once simple services for exchanging messages, pictures, videos and GIFs have evolved into ecosystems with their own development platforms, apps and APIs. Artificial-intelligence-enabled chatbots are beginning to enter the mainstream.

As revenue streams decline in core areas like voice and text messaging, service providers are investing in new business streams to stay relevant. Strong competition from IT and software companies is forcing service providers to remain competitive in terms of offerings as well as speed, trialing and the incorporation of customer feedback.

To arrest customer churn and value migration, telecom providers typically follow a three-tier digital strategy (see Figure 2). They work to lead network connectivity level in the markets served, develop new business models through global platforms in video and internet of things (IoT), and create certain opportunities in applications and content for
incremental monetization.

**Digital Trends Transforming the Telecom Industry**

Technology developments, interconnected markets, shifting consumer needs and converging industry ecosystems are creating innovative opportunities for communications service. Providers have the chance to transform around the capabilities of high-performing networks (4G and 5G networks) with a goal of future growth based on delivering what customers want and need in the new digital world.

We have identified a number of trends that are causing dramatic change in the communications industry. These trends disrupt established value chains and business models while also offering nontraditional growth prospects and new opportunities that may not have been accessible even a few years ago. This section will focus on several major trends we believe will have significant impact.

**The Network of the Future: 5G Networks**

In the last decade, advances in how we communicate have redefined what it means to “be online.” Consumers are ditching desktops and laptops in favor of constantly advancing smartphones. Today, there are over three billion global internet users. Billions of these consumers use their smartphones as their primary internet access point. And devices are not just useful for searching the internet, but are also beginning to help consumers manage important parts of their lives.

Over the next decade, the development of the next generation of wireless services will be enabled by 5G and wireless

---

1 A new mobile generation has appeared approximately every 10 years since the first 1G system, Nordic Mobile Telephone, was introduced in 1982. The first “2G” system was commercially deployed in 1992, and the first 3G system appeared in 2001. 4G systems fully compliant with IMT Advanced were first standardized in 2012. The development of the 2G (GSM) and 3G (UMTS and WCDMA) standards took about 10 years from the official start of the R&D projects, and development of 4G systems began in 2001 or 2002.
broadband. As networks evolve from dumb pipes to smart pipes, we expect that the next wave of use cases will be truly transformational.¹

Customers want faster access and richer services. 5G infrastructure promises the following:

- Up to 100 times faster data rates than 4G: instant access to services and applications.
- Network latency lowered by a factor of five: use cases in areas such as intelligent transport and remote machinery.
- Expand data volumes by a factor of 1,000.

This new innovation in bandwidth and speed enables a new set of digital use cases, sparking another wave of innovation (see Figure 3).

Figure 3. 5G Use Cases

Digital Media and Interactive Entertainment

Service providers are investing in emerging technology that taps into the market shift toward video content and advertising. The rapid growth in video consumption on mobile devices grants service providers an opportunity for revenue growth. They can make investments in converging technologies and services involving content delivery networks (CDNs), video streaming and related consumer hardware to leverage new content models.

It’s obvious that more consumers are shifting their media time away from live TV, instead opting for services that allow them to watch what they want, when they want. Indeed, we are seeing a migration toward original digital video, such as YouTube channels, Netflix and live streaming on social platforms (for example, Periscope).

Amid this rapidly shifting content landscape, traditional media companies are making moves across a number of different fronts. They are trying out new subscription models, creating new types of programming aimed at a mobile-first audience, and partnering with innovative digital media companies (see Figure 4). In addition, cable providers have begun offering bundling alternatives for consumers who may no longer be willing to pay for a full TV package.
The specific trends in digital media and interactive entertainment include:

- Access to live streaming video content with virtually no buffering, regardless of the number of devices using the service.
- Scalable platforms for delivering content (including live broadcasts, video on demand, games, software and websites) to customers on their devices at any time.
- Video scale expanding advertising opportunities and enhanced targeting.

Telecom providers are reacting with competitive strategies. For example, in 2015, Verizon launched go90, a mobile-first social entertainment platform that provides the opportunity for ad-supported mobile video streaming. Digital content available on the go90 platform includes live events, popular web and television content, and original content. In January 2016, Verizon introduced FreeBee Data, a sponsored data service that enables content providers to provide customers with access to some or all of the provider’s mobile content. It also offers the option for providers to sponsor specific consumer actions on a per-click basis, all free of data charges to the customer.

As digital platforms reshape the delivery of media entertainment, there is an increasing need for a stable, high-quality delivery and storage platform (see Figure 5). Communications service providers are focused on providing a simple, end-to-end, global platform for the delivery of media to customers, one that is superior to those offered by the existing and highly fragmented media delivery systems. This platform is targeted at media and entertainment companies as well as businesses focused on delivering their digital products and services through the internet.

Connected devices and associated online applications continue to experience significant growth as customers consume increasingly large amounts of broadband data. Broadband (fixed and wireless) represents a growth opportunity as the use of over-the-top (OTT) video and user-generated content and data accelerates and the number of connected homes and devices continues to grow.
Consumer adoption of streaming video services is surging. Connected TVs and streaming media devices like Amazon’s Fire TV Stick and Chromecast are driving this adoption, as will connected game consoles and set-top boxes that provide streaming video as a preloaded service.

In broadcasting, over-the-top (OTT) content is the delivery of audio, video and other media over the internet without involving a multiple-system operator (or telco) in the control or distribution of the content. OTT refers to content from a third party—such as Hulu, Netflix, Spotify or Amazon Video—that is delivered to an end user, with the ISP simply transporting IP packets. This is a mega-trend that is reshaping the broadcast industry.

The newer streaming media devices are making over-the-top services more accessible on the big screen of the living room TV. They not only simplify the process of getting connected, but they’re also sold at price points so low that buying a streaming media device is a no-brainer for many consumers.

Another advantage these streaming media devices have over smart TVs is that they’re able to work with older sets—basically turning “dumb” TVs into smart, connected devices. Given the long life cycle of TV sets, this has enabled a number of consumers to get on board with streaming video and make it a part of their regular TV viewing behavior.

This shift in consumer interest in OTT content has not gone unnoticed by the traditional industry players, either. A number of telecom and cable companies are now trying to attract potential cord-cutters or those no longer interested in large and expensive cable TV packages with a range of new services.

OTT can be seen in other services. For instance, over-the-top messaging is an instant messaging service provided by a third party as an alternative to text messaging services provided by a mobile network operator. Examples include WhatsApp, Messenger and Skype services (see Figure 6).

---

2 A report by Juniper Research has found that subscriber numbers for services like Netflix and Amazon Prime Instant Video will grow from 92.1 million in 2014 to 333.2 million global subscriptions by 2019.
Internet of Things and Telematics

IoT is emerging as the third wave in the development of the connected internet. Breakthroughs in the cost of sensors, processing power and bandwidth to connect devices are enabling ubiquitous connections in areas such as wearables, cars, homes, cities and industrials.

The adoption of IoT technology continues to increase, primarily led by the telematics and transportation industries as well as the fields of utility, asset tracking and energy management. The telecom strategy is to simplify the IoT and accelerate its adoption in major vertical markets, such as energy, health care and connected cities.

For instance, Verizon Telematics provides connectivity and telematics to manufacturers such as Mercedes-Benz to help manage large vehicle fleets more efficiently. Their suite of real-time vehicle communications services and applications connects automobiles with content services and call centers. The platform enables factory and aftermarket automotive safety and security features as well as location-based services and vehicle diagnostics.

IoT will generate voluminous amounts of unstructured data. The availability of big data analytics and predictive intelligence are seen as key foundational enablers in converting the data into useful insights. As the amount of data collected by connected devices grows, expect to see increased investment from telcos in analytical platforms and visualization technologies that will allow business managers to make sense of and react to this information.

Smart Software-Defined Networks (SDN)

The advent of cloud services and the explosion of mobile apps, devices and content, and server virtualization are among the trends driving service providers to re-examine traditional network architectures.

The resiliency, agility, flexibility and scalability of IT capabilities have become significant competitive differentiators and play a critical role in driving business success. Service providers face extreme dependency on IT as they aggressively compete for first-mover advantage in markets that have often presented minimal barriers to entry for new competitors.
These companies require IT infrastructure that enables rapid development and deployment of new applications and services (see Figure 7), effectively handles unpredictable and large-scale usage demands, and minimizes capital and operating expenditure (capex and opex).

Traditional IT infrastructure solutions have failed to meet these requirements. As a result, these companies have developed their own infrastructure stacks using web-scale architectures based on advanced distributed systems technology. These infrastructure stacks, driven by powerful proprietary software, provide greater agility, highly automated operations, predictable and linear scalability, and lower total cost of ownership.

Leading public cloud providers such as Google, Facebook and Amazon have embraced convergence and implemented web-scale technologies in their proprietary operating environments. They took these steps because traditional siloed IT infrastructure architectures had failed to deliver the levels of scalability and operational efficiency that their dynamic businesses required.

To address these challenges, a converged web-scale architecture is emerging that can be deployed by service providers of any size. The enterprise cloud platform overcomes the limitations of existing virtualization products. Such products often require days or weeks for simple provisioning or deployment tasks and limit the ability to migrate applications across computing environments such as different hypervisors. Such products also include software that allows multiple operating systems to share a single hardware host, containers, which are a method of virtualizing the operating system so that multiple applications and their dependent libraries can share the same Linux operating system instance, and public clouds.

While the public cloud offers significant agility, scalability and economic benefits over traditional infrastructure, full-scale adoption has been challenging for many organizations. Difficulties are primarily due to the lack of control over infrastructure service level agreements (SLAs), data integrity and compliance, as well as potentially higher total lifetime costs. Public cloud providers typically offer homogenous layers of infrastructure and do not provide control or granularity to customize specific services to deliver reliable application performance and availability for traditional enterprise workloads. Also, customers are dependent on public cloud providers to ensure data security and compliance with regulatory requirements, which are further complicated by providers operating across many jurisdictions and being subjected to local laws, increasing the potential for compliance risk.

Extensive usage of public clouds can also result in higher lifetime costs, particularly for applications with predictable and consistent infrastructure requirements. Analysts believe that the majority of existing enterprise applications exhibit predictable infrastructure consumption patterns and could be delivered with lower cost by using an enterprise cloud platform like the platform offered by Hitachi Vantara. Furthermore, most public cloud providers do not easily allow portability of applications and data to alternative providers or to enterprise cloud platforms as requirements, costs and service levels change. Removing an application from the public cloud is expensive and time-consuming, and creates a high risk of downtime.

Transformation Agenda: Five Key Strategic Initiatives for Every Service Provider

To meet the needs of the changing marketplace, service providers are creating initiatives for the development of new customer experiences, products and businesses. The goal is to leverage all of their assets to create products and services that can provide customers with integrated solutions that address their wireless, wireline and broadband needs (see example in Figure 8).
Establish Data-Driven Customer Analytics Capabilities

As most companies are learning, the ability to gain a 360-degree view of the customer (within the bounds of consumer privacy laws and regulations) allows marketing, sales and other customer-facing functions to make more precise, data-driven decisions that cut down on guesswork and wasted resources.

Studies have shown that high-margin telecommunications companies tended to outperform peers when it came to data mining and otherwise gaining insights from collected customer information.

As revenue for voice calls and texting declines, and as competition for broadband and mobile internet service increases, telecom providers have to look for new ways to generate revenue, and so have begun launching initiatives to monetize their data assets as a service offering.

Telecom providers generate and manage a wealth of customer profile, demographic, usage, network and location data. Apart from using these data for marketing, customer segmentation, and other internally oriented purposes, these data are also of value to external organizations. Figure 9 illustrates the rich set of structured and unstructured data that telcos have access to and are looking to monetize.

Digitize the Order Management Process

Because of their interactions with online companies such as Amazon, customers have come to expect speed, simplicity, convenience and accessibility in the purchasing and payment process. Companies in all industries are
therefore seeking to replicate such a self-service account opening or order management experience, which involves centralization of data and automation capabilities.

The top-performing telecom companies, for instance, are using automated order management systems to link everything from the initial capture and validation of service requests to fraud checks, payment authorizations, billing and customer communications, quickly and cost-effectively.

Many telecom companies, for example, have introduced full-service smartphone apps that can guide customers to the best product, pricing or bundle given their needs and behaviors, and can automatically order and activate the new bundles. Adoption of these guided selling apps has led to a significant decrease in customer churn and in the cost of serving customers through call centers.

**Innovate Around the Customer Experience**

Customer expectations are rising. Customers want ease of use and simplicity. Being able to get it right the first time without placing multiple calls or accessing multiple fragmented web portals is key to boosting revenue and profitability.

Digital technologies have made it easier than ever for customers to engage with companies, yet harder for companies to track, manage and analyze those interactions. Consider that in 2010, less than a quarter of all shoppers used the internet to gather information for purchases; today, that figure exceeds 80%.

The growth in multichannel access puts a premium on effective customer relationship management (CRM) systems. CRM systems are used not just to track customers’ digital footprints, but also to reduce order fallout and revenue leakage, enhance customer satisfaction and improve brand advocacy in social media. Improvements like paperless billing and statements have helped the top-performing telecom operators achieve greater cost efficiency and customer satisfaction.
The use of chat, social forums and lists of frequently asked questions, for instance, costs the average telecom company just 10% of its typical call-center baseline while providing customers with a convenient source for answers and advice. Guided service via community forums, sophisticated search capabilities and now natural language voice queries make it possible to address the majority of customer questions.

Streamline the Application Landscape

Aging and complex legacy IT applications are among the biggest obstacles for companies seeking to compete against nimble digital players. The core systems (CRM, billing, provisioning, fulfillment, inventory and so forth) have typically been built up over many years and comprise a landscape of sometimes incompatible stacks of technologies. Decisions about what to retain and what to upgrade become more complicated as IT organizations map all the inter-dependencies between functions and systems.

Growth in 4G device adoption is driving increased data and video usage. In turn, new messaging and video platforms are being engineered and integrated with existing applications to create seamless service orchestration. Innovation has always been critical to remaining competitive in the telecom market, but today it needs to be delivered at speed, at scale, and it must quickly yield results.

The top-performing telecom companies are also adding new capabilities, like predictive fraud analytics, which detects the likelihood of fraudulent behavior. Predictive analytics analyzes consumption patterns and internal and external data to determine the risk factors and levels associated with each service user, so that audit managers can be alerted to risky behavior.

Telcos everywhere are racing to streamline their application portfolios, removing redundant platforms, automating core processes, and consolidating overlapping capabilities. Through this difficult undertaking, service providers have made improvements that free up full-time employees. In addition, service providers are now able to gain a unified view of customer billing, resolve customer issues faster and reduce the rate of service errors.

Standardize and Automate the IT Infrastructure

Inefficient IT design, build, run and change processes and infrastructure supporting ordering, provisioning, activation, billing, customer care and channel applications are impediments. They obstruct companies seeking to digitize operations to successfully compete against the new breed of cloud and mobile companies.

As companies collect more customer information and content, and as they leverage real-time analytics across applications, they require more storage and computational power. But rather than add more capabilities and components to an already complex system, companies would do well to pursue consolidation and automation of what they already have. They can even use a variety of “infrastructure-as-a-service” strategies to shift the economics from capex to opex.

Indeed, the top-performing companies have pursued simplification and automation of various backbone IT processes and systems: for example, DevOps, server provisioning, load balancing and service-ticket management. These changes have not only generated significant cost efficiencies for those companies, but also given the operators much greater flexibility in terms of service capacity and load volumes.

In emerging markets, some fast-growing telecom operators are adding as many as one million to two million subscribers per month. Their ability to automate capacity, server throughput and storage has allowed operators to focus on business growth rather than forcing them to scramble to augment their IT infrastructure.
Summary and Next Steps

The telecom provider industry is experiencing rapid change as digital technologies transform the landscape. Innovations in messaging, mobile video and OTT services offer consumers an array of new choices for their communications needs and allow for new entrants into markets served by entrenched players.

Relentless product innovation is key. In order to grow and remain competitive, service providers will need to adapt to continuous changes in technology, enhance existing offerings and introduce new offerings to address customers’ changing demands (see Figure 10).

Consumers, especially millennials, want innovation, faster access and richer services. Service providers are expected to meet these customer needs at every touchpoint. At the same time, they must meet future challenges from competing technologies, on a timely basis and at an acceptable cost. If they fail, they will be disintermediated and will lose customers to competitors.

Figure 10. Strategic IT Initiatives in Typical Telecom Provider

Modernization of IT is a key enabler of every digital transformation. In addition to introducing new technologies and offerings, service providers must phase out outdated applications and infrastructure. If they are unable to do so cost-effectively, they could experience reduced profits or find themselves irrelevant.

Digital transformation isn’t an end goal: For telcos, it’s a continuous journey.

Data-Driven Digital Transformation, Powered by Hitachi Vantara

Organizational transformation in today’s volatile market is at the core of business survival. While business leaders expect IT to remain focused on results, enable innovation and provide continual improvements, it’s not enough to rely solely on technology to transform the business.

In the communications and content service provider industry, this value realization game plan translates into the following outcomes:

- Achieve cost savings and accelerate time to market by rethinking operations and processes.
- Increase customer loyalty and grow revenue through improved customer experience.
- Uncover new revenue streams and reach new markets with new business models.
Accomplishing this begins by transforming IT. A transformative organization must:

- Modernize their technology stack to address how data are managed and governed.
- Integrate siloed application platforms to centralize data to address mobility and analytics.
- Deploy automated tools for development and operations.
- Use data analytics for continual improvements, balanced utilization and new opportunities.

Successful digital business transformations are entirely dependent upon taking a strategic approach to your enterprise data. If you are like most companies, you have multiple data silos. Enterprise transformation starts with bringing those disparate data sets, whether structured, unstructured or machine generated, into a single data strategy. At Hitachi Vantara, we offer our customers an integrated and secure way to manage, govern, mobilize, analyze and ultimately turn those data into insights that create new opportunities for industry-specific use cases.

Figure 11 illustrates our data-driven digital transformation model, depicting the notion that data are the engine behind a transformation, but change quickly. With data continuing to originate from various sources, and presented in evolving types, ensuring the veracity of your data is key to monetizing it, and is the basis of your market leadership and ability to achieve your transformational outcomes.

Figure 11. Data-Driven Digital Transformation Model From Hitachi Vantara

A call to us to learn more about each element of our recommended data strategy could be the difference between success and failure.