

# Analytics in Next-Generation Telecom Services

**Competing in Adjacent Markets with Data-driven Analytics**

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# Analytics in Next-Generation Telecom Services

## Table of Contents

<i>Overview</i>	2
<i>Introduction</i>	3
<i>What are Next-Generation Services?</i>	4
<i>What is Next-Generation Analytics?</i>	5
<i>How the Landscape Will Change</i>	6
<i>The “Right” Business Model</i>	7
<i>Analytics for Next-Generation Services</i>	12
<i>The Teradata Solution and Benefits</i>	16
<i>Conclusion</i>	17
<i>About the Author</i>	17

## Overview

Recent advances in the information, telecommunication, and Internet technologies have been causing greater disruptions to the Communications, Media, and Entertainment industries compared with the slow and evolutionary changes of the past. For example, it took the telephone 35 years to reach 25 percent market penetration in the U.S., the PC 18 years, the mobile phone 15 years, and the Internet seven years.<sup>1</sup> Yet within six years of its launch in February 2004, facebook.com has more than 500 million users<sup>2</sup> who share information, pictures, and video content with “point and shoot” digital cameras integrated with mobile phones.

As the video content and quality on the Internet grew in popularity, the growth of broadband networks to support it has expanded dramatically. In Japan, Korea, the U.S. and several other countries,<sup>3</sup> fixed-line broadband penetration has reached close to 100 percent.<sup>4</sup> And mobile penetration itself is in excess of the population of several countries. Mobile Internet penetration is dramatically increasing driven by 3G network upgrades to 3.5G/4G, smart phones, netbook/notebook dongles, and affordable prices which have exerted downward pressure on bundled triple-play fixed-line networks.<sup>5</sup>

<sup>1</sup> “The Wireless Internet and Mobile Commerce: The Second Internet Revolution,” Commonwealth Associates (October, 2000).

<sup>2</sup> “Operators must ‘tune’ networks to cope with cloud services uptake – BT,” Total Telecom (October 28, 2010).

<sup>3</sup> “Monthly IPTV Bulletin,” MRG, Inc. (October 2006).

<sup>4</sup> “Asia tops in broadband speed, quality,” Telecomasia.net (October 18, 2010).

<sup>5</sup> “European monthly broadband prices down €5 during 1H,” Total Telecom (August 25, 2010).

# Analytics in Next-Generation Telecom Services

Business models are changing more rapidly than consumers' readiness to cope with the technological change. The traditional theatrical "movie release windows" are collapsing, and this is paving the way for multi-fold increase in revenues for DVD sales/rental, pay-per-view and video-on-demand.<sup>6</sup>

The traditional service provider market is being rapidly disrupted – Cable TV providers are offering voice and high-speed data; Internet service providers (ISPs) are providing voice over IP (VoIP) and IP video services; telecom service providers are expanding their broadband DSL networks to FTTH (Fibre-to-the-home) to offer triple-play services; and broadcasters are partnering with ISPs to offer video content to PCs and TV screens on demand. This is evident with the IPTV competition from Verizon, AT&T and PCCW which is now firmly being felt among dominant cable TV and satellite TV companies. Verizon and AT&T added FiOS TV (Fibre Optic Service) and U-verse subscribers, with their gains closely matched by the churn from the seven largest Cable operators (Comcast, Time Warner Cable, Charter, Cablevision, Mediacom, Insight, and CableOne).<sup>7</sup>

Despite disruptions in the industry and rapid advances in technologies, services, and business models, the communication service providers (CSPs) are still using traditional metrics to measure their performance with very little analytics performed behind such measures. With the CSPs now facing competition from adjacent markets, they need to rethink how they measure and demonstrate value both within their business and to shareholders.<sup>8</sup> According to Thomas Davenport, Distinguished Professor of Information Technology and Management at Babson College, and Jeanne Harris,<sup>9</sup> Executive Research Fellow and Director of Research for the Accenture Institute of High Performance Business, leading companies are doing more than just collecting and storing information in large quantities. They are now building their competitive strategies around data-driven insights that are, in turn, generating impressive business results.

This paper discusses the impact of convergence on the future of the communications, media and entertainment industries and examines how CSPs may leverage the opportunity to create compelling customer experience by developing an enterprise perspective with a focus on analytics for the next-generation services.

## Introduction

In the 1960s and 1970s, the telecommunications service providers used celluloid photographic equipment to capture the images of analogue subscriber meters at the telephone exchange as part of their billing function. Today, the digital camera that is an inherent part of the mobile phone is used for an entirely different purpose – customers use the mobile phone camera to capture events and can communicate them instantly with their social network of families and friends in any part of the world in a few simple keystrokes. (See Figure 1.). Mobile phones are also used as a payment device for ordering anything from a movie ticket to purchasing their favourite CD or books by simply selecting a convenient payment method, such as charging to their phone bill.

The past 30+ years have seen revolution in information and communications technologies that not only enabled affordable broadband access to mass consumers but have also provided the service providers

6 "OTT Video Services & Forecast," MRG, Inc. (August, 2009).

7 "Video Services Sector Analysis," OneTrak report (August 22, 2007).

8 "What do transforming telcos measure," Ovum (2010).

9 Thomas H. Davenport; Jeanne G. Harris (2007), "Competing on Analytics: The New Science of Winning," Harvard Business School Press.

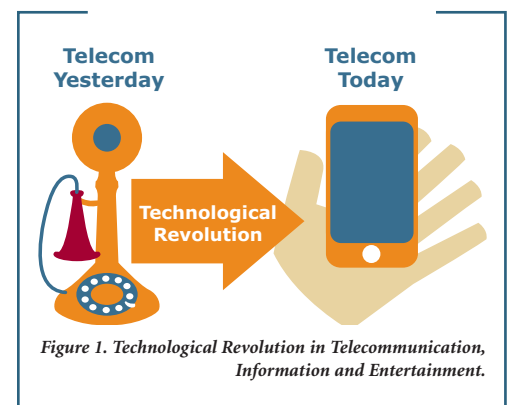


Figure 1. Technological Revolution in Telecommunication, Information and Entertainment.

# Analytics in Next-Generation Telecom Services

with additional revenue opportunities ranging from simple voice services to complex content and mobile commerce services. However, use of traditional metrics, such as Average Revenue Per User (ARPU), Minutes of Use (MOU), Count of Customers, and Churn (i.e., adds, disconnects, transfers, migrations) seem to be the norm with little emphasis on sophisticated customer experience measures across fixed-mobile networks conformant with the transformation that is taking place simultaneously in fixed, mobile, broadband, and media entertainment services.

We will examine these key aspects:

- > Dramatic changes in the landscape over the next few years with ever-increasing availability of next-generation devices,

networks, and content and the complexities involved in delivering communication and entertainment services.

- > The need for advancing the concept of subscriber to integrated view of the customer across networks and devices.
- > Better analytics and enterprise intelligence will lead to context-aware and personalised customer experience that can deliver powerful and lasting competitive advantages.

## What are Next-Generation Services?

While it took some time to reach consensus about the definition for value added services (VAS), there seems to be no single definition for next-generation services. However,

there is general understanding that next-generation services encompass seamless communication and media consumption experience for the customer through leveraging high-speed broadband networks, smart devices, and media rich content irrespective of whether the communication network is fixed, wireless, or mobile. mHealth, mCommerce, machine-to-machine, and 'service in the cloud' are all aspects of the value-added services for the next generation that CSPs are launching in various markets.

As a result of attractiveness of the content provided by the ISPs and enabled by the freedom of the Internet, customer behaviour is expected to transcend a network controlled by the CSP (i.e., Managed Network) to the 'unmanaged' Internet (also

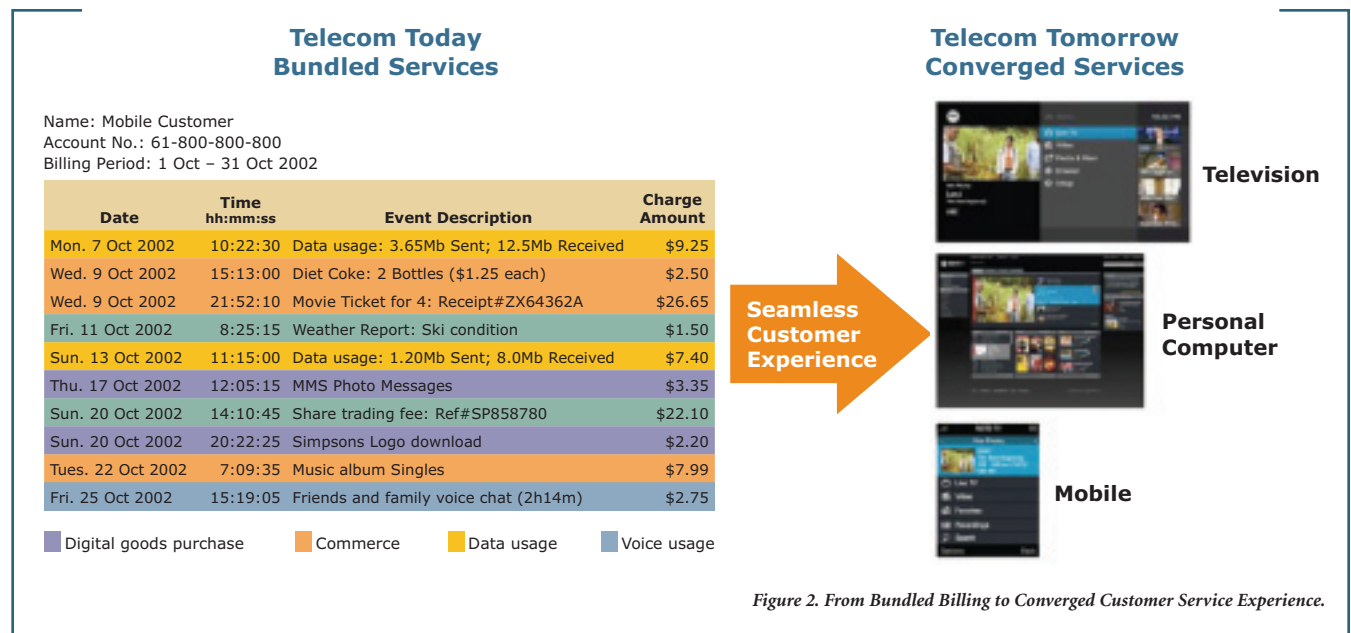


Figure 2. From Bundled Billing to Converged Customer Service Experience.

# Analytics in Next-Generation Telecom Services

known as over-the-top). Such a customer behaviour can be described by the concepts of time shifting (Prime Time vs. My Time), place shifting (“I decide where I want to watch.”) and media mobility or device shifting, (“I decide how I want to move and share media between different devices.”).

As a consequence of the changes in customer behaviour, customers are more likely to churn. CSPs can, however, retain and grow their customers by investing in next-generation technologies and rich media content partnerships. CSPs can also provide seamless customer experience across fixed and mobile networks by means of analytics on customer behaviour to provide relevant content and services that are perceived as valuable to them.

## What is Next-Generation Analytics?

It is natural for product managers of CSPs to be interested in how well their new products and services are performing after launch. This is often measured by looking at “What happened?,” while it is useful for them to know customer take up rates and revenue per product and services, it will also be useful to know why the service take up has been poor or why it went well. This can be determined using analytical measures. Even more important is the desire and ability to predict “What will happen,” so that they can predict customer behaviour

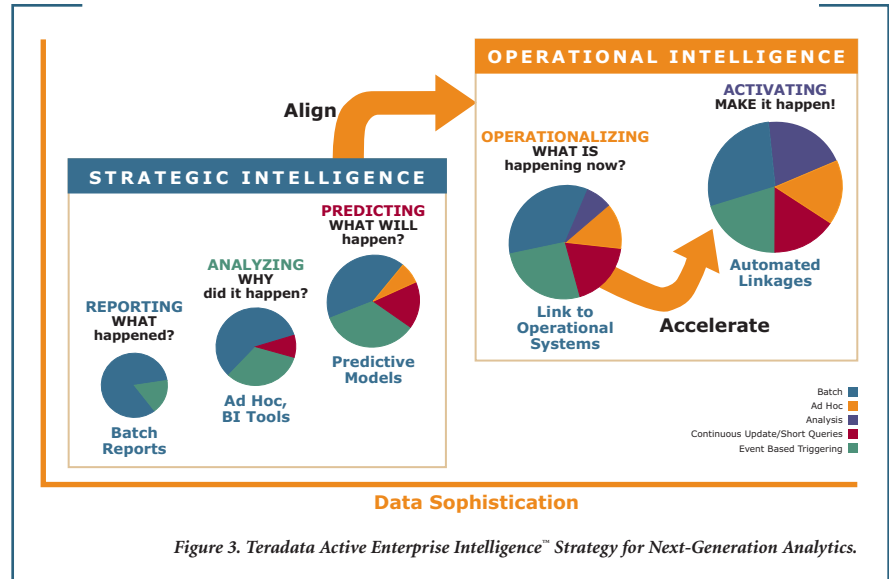


Figure 3. Teradata Active Enterprise Intelligence™ Strategy for Next-Generation Analytics.

and proactively manage service experience and customer retention across the enterprise rather than the specific product and services in isolation.

The CTO of Pacnet, a telecom and Internet provider, asks, “Do you know who your customers will be five years from now? What are the bread-and-butter products versus cutting-edge products? Who will you partner with?”<sup>10</sup>

Telenor, which has operations in Europe and Asia, believes ARPU is not the most important measure of performance when it comes to navigating intensely competitive markets.<sup>11</sup> You need to look at the price per minute, and weigh it against the cost per minute.

One of the top CSPs in India, Bharti Airtel, remains firmly focused on identifying opportunities to roll out value-added services as it is very difficult to have a sustained competitive advantage on price. China Unicom is looking to machine-to-machine for a new source of subscribers, as mobile penetration reaches saturation point in some of China’s cities.<sup>12</sup>

The consulting firm, Ovum, has identified ten core metrics that will enable the transforming telco to demonstrate that it is on the right path in the face of competition.<sup>13</sup> Ovum believes innovation, customer experience, and efficiency are key dimensions of the metrics for next-generation telcos.

10 “Don’t wait for NGN,” Network Strategies 2010, TelecomAsia (October, 2010).

11 “Telenor, Bharti share secrets of success in India,” Total Telecom (November 18, 2010).

12 “China Unicom looks to machines for new subscribers,” Total Telecom (November, 19 2010).

13 “What do transforming telcos measure?,” Ovum (June, 2010).

# Analytics in Next-Generation Telecom Services

Reporting, analysing and predicting are usually broad activities, taking place over an extended period of time, with the goal being improvement of the long-term performance of the enterprise. Operationalising and activating represent a CSP's ability to conduct 'Operational Intelligence' based on an active data warehouse – the ability to see what's happening right now, and react to it in a smarter, faster way. These tend to involve "smaller" decisions than much of the strategic analysis, but these decisions are made almost continuously across the organisation – and have the ability to drive real value in a short period of time.

Aligning and applying Strategic Intelligence must be the first goal of a program to activate intelligence in an organization (See Figure 3.). It's about taking all those deep insights and forward-looking goals and applying them to the operational systems so everyone – people, processes, and systems are all aligned. In the wake of next-generation services, the next goal, "accelerate" will be achieved when the enterprise can not only align everyone but make the systems as fast as required to make a business impact at the right time.

## How the Landscape Will Change

Today, our desire for immediate satisfaction in conveying our message is growing exponentially. Instant gratification and moment sharing plays a key role in inspiring use and adoption of a mobile

phone as a multifunction device. We expect our technology to provide communication at a distance as conveniently as we communicate face-to-face. At the same time, the media and entertainment industry is on the threshold of a revolution with implications that reach to the core foundation of their traditional business model.

### Fixed-line and Wireless Communications

#### *Role Reversal*

It's interesting to consider the development of telecommunications technologies over the past century and to note that fixed-line connection has been the norm for communications for most of that time in telegraph and telephone services, whereas, for broadcast information (for example, television and radio), wireless transmission has been the usual method. In the past few years, this arrangement has been dramatically altered. Both television and radio are frequently delivered to the home by hard wire (for example, coaxial cable and now through Digital Subscriber Line [DSL]/Fibre-To-The-Home [FTTH] broadband networks) whereas voice, data, and entertainment communications are rapidly shifting towards wireless delivery.

### Anytime, Anywhere Connectivity the Norm

With the rapid expansion of mobile phone usage, we have become accustomed to the idea of any time, anywhere connectivity. Expansion of this idea to include the full range of information and content services

is the logical next step, and we are seeing the introduction of a variety of portable user devices such as smart phones and small portable computers that have wireless (i.e., 3G and WiFi) connectivity.

Furthermore, connectivity and convergence of services across fixed-line, wireless, and broadband networks is blurring the distinction in service delivery and shifting attention towards quality of service and customer experience.

### Device Proliferation Challenges

Wireless architectures are often quite complex. Device limitations and network constraints add another layer of difficulty. Form factor complexities, new communication, and client/server protocols, and device nuances become even more challenging as manufacturers rollout all types of new fixed and portable devices with connectivity to the Internet (e.g., TV; set top boxes; game consoles; smart phones; and tablet computers).

The landscape will further change over the next few years in the following ways:

#### *Always on networks*

- > Data services will drive large volumes of transactions.
- > Always On networks will require always available applications and services; otherwise it has no meaning.
- > Personalisation and identification are an essential part of data services.

# Analytics in Next-Generation Telecom Services

## Enhanced device features and functions

- > Colour, video, and enhanced navigation.
- > Superior performance.
- > External device interfaces (e.g., barcode scanners, camera, medical instruments).
- > Mobile phone as a payment device.

## All IP (Internet protocol) networks

- > Open standards compliance.

## Explosion of Multimedia Content Catalogue

There is an evolution taking place in the TV business. In the digital era, the value of integrating TV and Internet content is clear, but the form and functionality seem to vary wildly. Over-the-top (OTT) is the term used to deliver video content over the open Internet that is a 'wide open, wild-west' business and technology concept that is catching on very quickly and generally bypasses the traditional CSP from the value chain perspective.

The Apple® App Store has captured the attention of the world's technology media and for some has set the ideal template for the way in which wireless applications and content should be offered. App Store end users set up a direct billing relationship with Apple and can make purchases from the store over-the-air, by WiFi or by side-loading from a desktop computer thus bypassing the wireless CSPs that had been the gatekeeper for authorising third-party access to their wireless subscribers.<sup>14</sup>

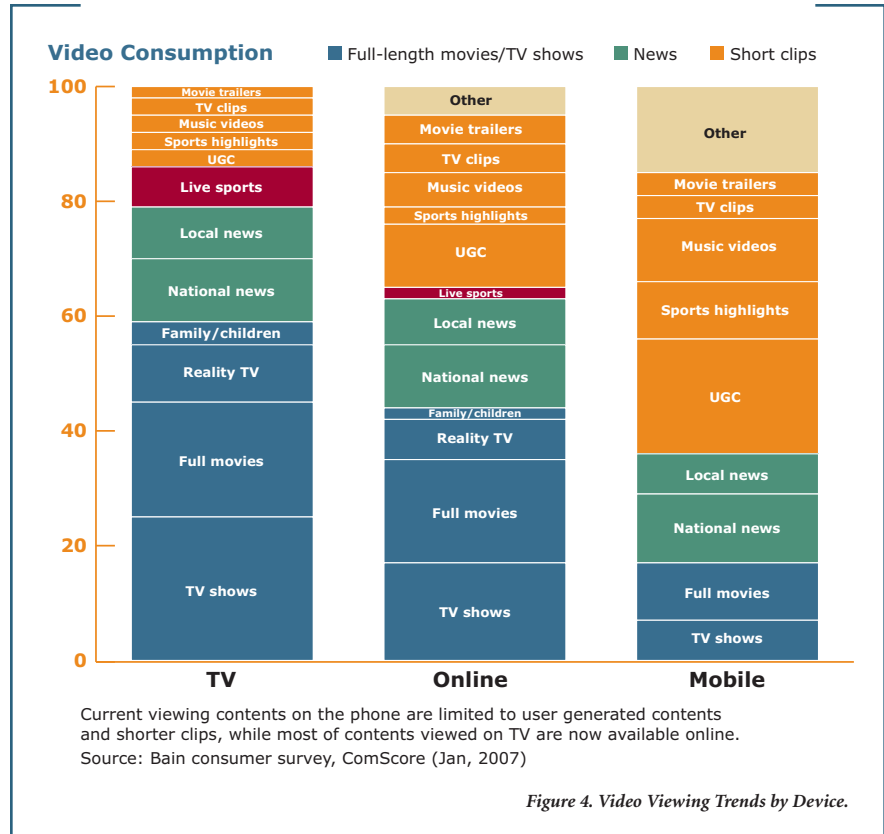


Figure 4. Video Viewing Trends by Device.

Google-owned video site YouTube has paved the way for the launch of live streaming as a new chapter in its video service offering essentially competing with PayTV and IPTV providers and wireless services providers who have traditionally offered this service for a fee.<sup>15</sup> Compelling service experiences across TV, Web, and mobile screens align with the industry trend in multimedia consumption (See Figure 4.). It is evident that multimedia and entertainment content infrastructure has become as critical as voice networks, but the CSPs are being bypassed as

customers directly access services they desire. In many cases, customers get these rich services for free.

## The "Right Business" Model

In this changing landscape one critical question remains for CSPs, "How will we derive revenue and continue to grow revenue from next-generation services?" Clearly, the winners in next-generation services will be those companies that listen to dynamic market requirements and

<sup>14</sup> "A billion can be such a small number," Telecom Asia (July 17, 2009).

<sup>15</sup> "YouTube tests live streaming," Telecomasia.net (September 14, 2010).

# Analytics in Next-Generation Telecom Services

adapt their businesses and technical infrastructure to meet these evolving customer demands.

The dilemma facing CSPs is this: Without the use of a crystal ball they need to know which business model will win. They must make infrastructure investments today that will directly impact their ability to compete tomorrow. Often the CSP's business model tends to be steered by the constraints and limitations of infrastructure.

The good news is that CSPs have the capability to combine different services on demand that will create highly profitable incremental revenues. (See Figure 5.).

There are several keys to making infrastructure decisions that will put a CSP in the best position to win:

- > Deploy a flexible, open architecture that brings as many users together with as many content providers as possible.
- > Create value where you – and only you – can.
- > Share your wallet with your content/application partners.
- > Effectively manage service activities.
- > Enable an integrated view of the customer.
- > Provide multi-modal access.

## Open Architecture That Connects Customers with Content Providers

Without a doubt, public data services is a volume business that requires connecting

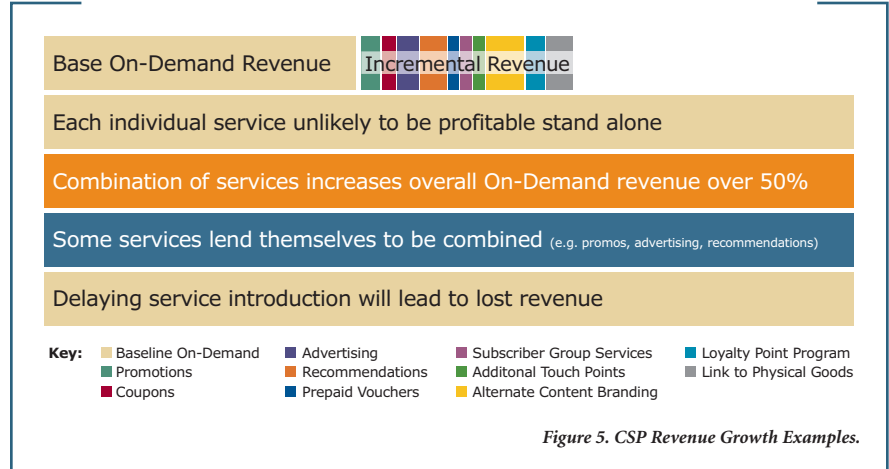


Figure 5. CSP Revenue Growth Examples.

the largest group of consumers with the largest selection of compelling content and applications. This requires a flexible, open technology foundation that can work with any device and can be accessed by any third-party content partner.

Today's CSPs must prepare for the unknown. Not many would have predicted people would pay for ring tones, but those operators who had the flexibility to react earned quick profits, not to mention the incremental customers as new consumers signed up for the value added services. Preparing for the unknown, however, is becoming increasingly difficult as the plausible range of services grows exponentially with the introduction of high bandwidth, packet-based networks and the seemingly daily evolution of devices. Predicting the next 'killer' application is difficult, but preparing for it is not. Failing to do so will result in niche applications serving discrete market segments, an unwise strategy in a volume business. The key is

how CSPs can enable others to build a market for them – one with a level of richness and diversity that they could never have created by themselves – by proactively providing the partners with all the tools that they need to do the job. This will allow customers to vote with their feet to determine which services, applications and content do and do not succeed.

## Create Value Where You Can

CSPs will never be the *dumb pipe* of the Internet as long as they can provide and charge for value-added services that they – and only they – can provide. Critical information, such as presence (“Is the user I want to reach currently on the network?”), identification (“Is the user who he says she/he is?”), and location (“Where is the user?”), is required for many compelling applications, which only the CSPs can provide as they have the ability to control the network and customer experience (See Figure 6.). This enables the CSPs to maximise the total available applications



# Analytics in Next-Generation Telecom Services

and content that can be delivered to the consumer as well as allow them to monetise their information assets (i.e., location, presence, identification) by delivering that information to the application.

For example, automated messaging notification applications, such as stock alerts that are time sensitive and mission critical, would be more useful if it was known whether the person had their phone turned on. If not, the application will most likely choose an alternative channel, such as a telephone call to the user's land line. This information is valuable to content providers, and the CSPs with the right infrastructure can provide and charge for this information. In addition, CSPs can provide other value-added services to the content providers. With

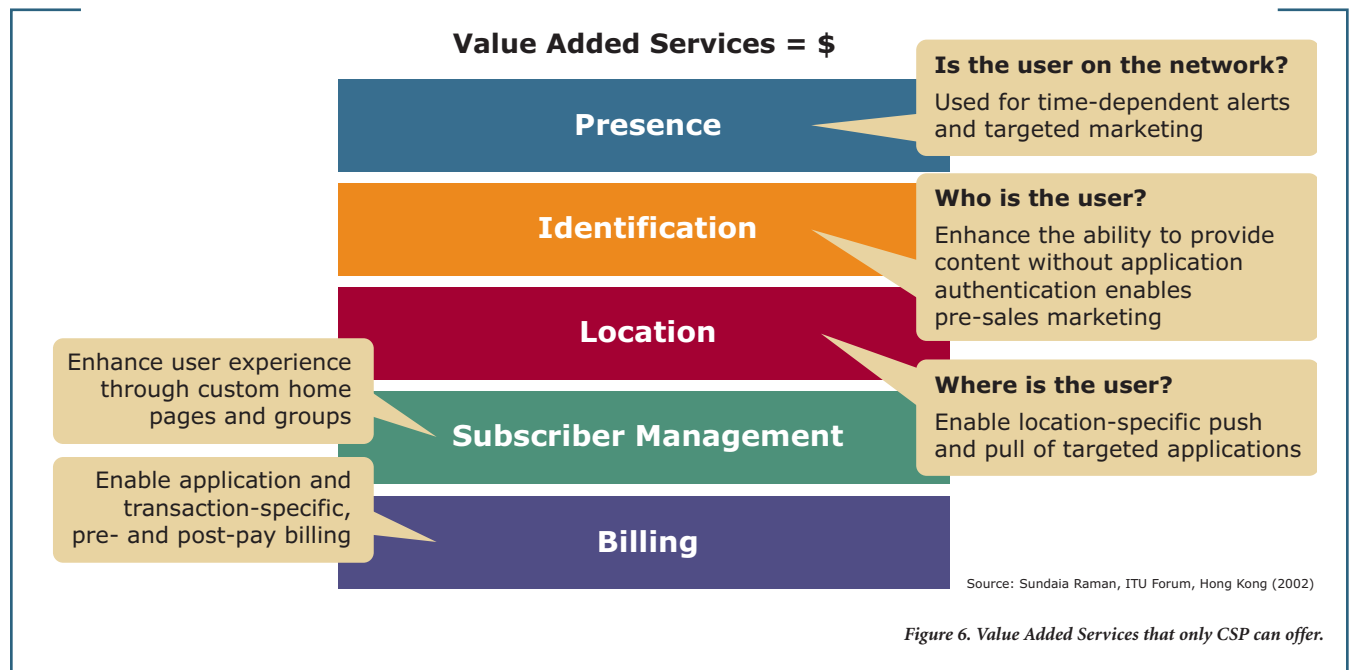
their knowledge of the customer, they can provide risk mitigation for third parties while personalising relevant content for their customers. Additionally, as the CSP's service delivery platform (SDP) is the common interface for all of the serviceable devices, the operator can provide content optimisation services that would reduce development costs for the content providers and lead to lower operating costs for the operator as content is cached and optimised at the edge of the network.

### Share Your Wallet with Partners

Being able to charge for services is obvious as it is critical to an operator's success, and the SDP should provide features to ensure value is extracted wherever possible. However, it requires the service providers to make a significant transition from their

current expertise of marketing handset and price plans, and billing of subscription services, to becoming trusted intermediaries who process and bill transactions of both low and high value on behalf of merchants and content providers.

The term billing is self explanatory and obvious. However, the telecommunications industry has gone through (and is still going through) paradigm shifts in the process of building the appropriate business models to charge the user for services and to collect payments. What was a simple process of billing the user has become more complex by the need for CSPs to purchase services from content providers and merchants and complete disbursement and settlement. "How do I



# Analytics in Next-Generation Telecom Services

charge for a person-to-person, multi-media message?” “How do I determine the characteristics of receiving device and/or network such that I can alter delivery mode and price scheme according to device/network capabilities? In a market where calling-party-pays is the norm, who pays for the value-added push services initiated by the service provider’s push initiator application? How can the growing segment of teenage and student users participate in device-initiated mCommerce services if they don’t have credit or debit card accounts?”

Flexibility in billing options is critical, and no business model has yet proven dominant in this unpredictable and highly fickle market space. Additionally, the SDP can provide the operator with the ability to offer controlled access to valuable customer information on permission basis. Many application providers will pay for information, such as presence, location, and user authentication, in order for them to provide more compelling applications.

## Manage Service Activities

The speed and ease of enabling the content provider to provision their content and applications with flexible content delivery, billing, and settlement services is key to the ability to get a large number of content providers onboard quickly and as a result make the wireless data services successful.

Such a goal requires the CSP to ensure that their customers have the appropriate

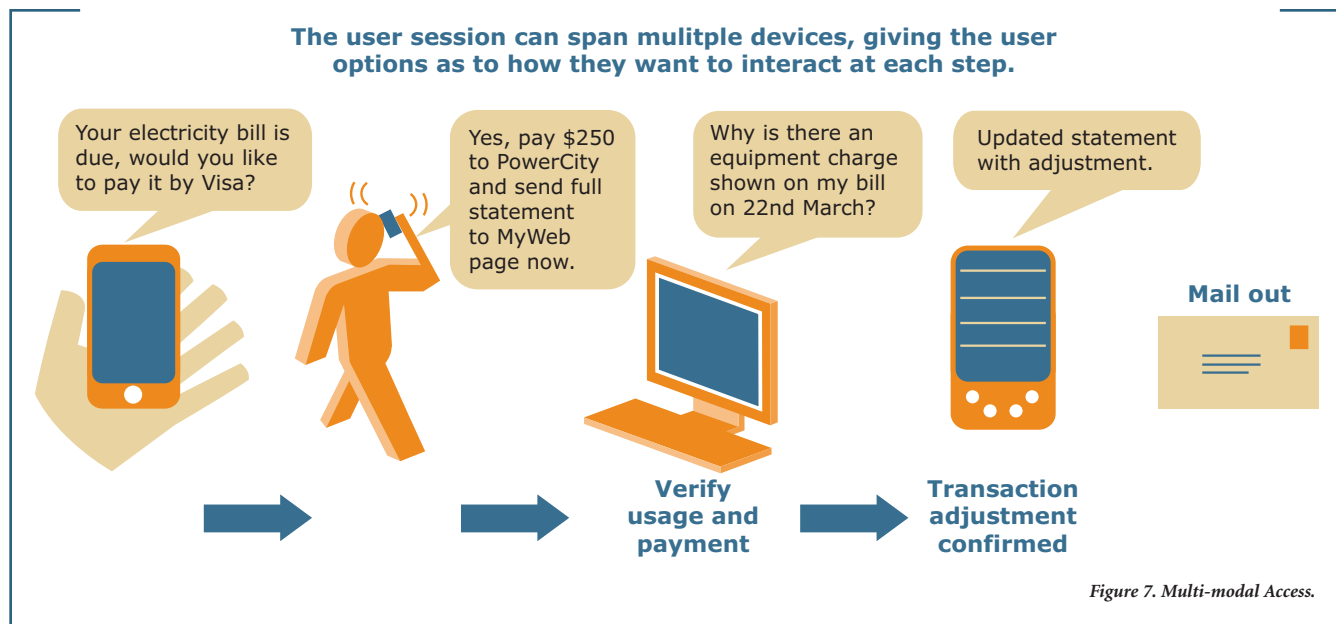
means to easily adopt and drop content provider services as well as to enable content providers to react swiftly by altering their content offering. For example, when uncertain about adoption rate of a new game, the CSP may offer the gaming application as a free trial offer. When the demand for the service increases, the operator and content provider may introduce a variety of pricing options and payment methods to suit the specific market segments. Also, quality and consistency of content delivery over the air interface is very important. For instance, when a streaming audio is unsuccessfully delivered to the customer’s wireless device, a context-aware workflow function should recognise this and automatically resend the content or refund the costs of the content by passing an adjustment to the payment system. Such features would provide the best possible user experience by compensating for problems with content provisioning on devices. By providing an open standards-based content provider management infrastructure and tools, CSPs can create new services ad hoc by incorporating dynamic workflow processes from a repository of prefabricated function modules as well as by changing existing processes easily to reflect customers’ new requirements such as free content trials, a flexible pricing model, and bundled services offerings. Besides this, service providers may be able to proactively deliver “push” notification messages to customers on an opt in basis to stimulate transactions.

## Enable an Integrated Customer View

As Internet access diversifies beyond PCs to smart phones, tablets, TV, game console, and other Internet-enabled devices, organisations face the challenge of staying connected with their customers, suppliers, and investors through an increasing number of interfaces and technologies. Organisations focused exclusively on a web-based architecture may find themselves cut off from increasingly mobile users demanding new ways to receive and interact with information.

Unique identification and presence of the customer as well as effective customer relationship management will therefore, be a dominant requirement for successful adoption of mobile data services. It is not simply enough to identify a customer by ownership of phone number or device number. For example, a multimedia message (MMS) may be sent to another mobile phone using a mobile phone number or sent as an attachment to email using email address. The customer may access her home page from different devices such as the desktop PC and/or WAP phone. Authentication of the customer in a device-independent manner will be a critical design requirement. In some cases, delegated authentication and authorisation of service will be required demanding coordination of two or more users. For instance, the demographics of the prepaid market have shown a high proportion of students and young people. This group of

# Analytics in Next-Generation Telecom Services



mobile users often does not have a credit card and in many cases, does not have a bank account to pay for goods and services. In order to overcome this problem, some service providers offer a feature called shared wallet in their software suite that allows peer-to-peer or parent-child account controls to be established between digital wallets. Parents can then directly pay for their children's accounts or enable teens to have time and value limited account access. A CSP, by nature, has a great deal of customer information and tools at its disposal including customer account information, billing data, credit history, usage information, and customer device profiles. Next-generation services solutions must be able to draw on these assets and leverage them in a fashion that enables the service provider to derive a purposeful revenue stream and increase profitability. Leveraging a service provider's

existing investment in network intelligence, customer care and billing capabilities is a key component to an overall strategy.

## Provide Multi-Modal Access

User communities are constantly changing as devices and networks are evolving rapidly. The market is essentially composed of many user communities grouped around specific devices, channels and network capabilities; alignment of service design with the unique capabilities of each service/channel/network combination is challenging.

From the customer's perspective, access must be evolved to be ultimately multi-modal (See Figure 7.). While multi-channel means that the user will be able to access the services using different devices and associated means – SMS, WiFi, mobile broadband, voice – multi-modal access

takes this one step further. Multi-modal access will allow the user to come in through one channel, such as voice, and have the responses, services or content delivered back to the user via another channel, such as SMS or WAP Push for example. This flexibility in user interaction and access is critical to making next-generation services access pervasive, thus increasing its usage and associated revenues. It is interesting to note that the American brokerage firm Charles Schwab has noticed an increase in the number of stock trades among the retail brokerage customers who use both the Internet and their mobile phones to receive Schwab alerts about stock prices. All elements of multi-modal service must be tied into the overall services management process to enable dynamic delivery of service based on the customer's profile and lifestyle.

# Analytics in Next-Generation Telecom Services

One of the ways people describe TV versus computer experiences is with phrases 'sit back' and 'lean backward.'<sup>16</sup> For example, when watching a movie or show in 'sit back' mode on the TV, the customer may like to share the experience with a friend. She may then pause the show and while sitting in the couch go online in 'lean forward' mode to send a Twitter or Facebook message to a friend with comments about the show.

## Analytics for Next-Generation Services

Application and content are now considered mission-critical services with demanding service levels for digital asset acquisition, management and control. Content management tools are required to keep pace with the scaling of the on-demand business environment, for video, and other forms of digital entertainment including music, games, pictures and applications.

However, managing ingestion, validation and transformation of various digital assets including video on demand (VoD) and advertising for distribution across TV, PC, and mobile for compelling customer experiences is a challenge due to the requirement of multiple formats for the same content while at the same time ensuring security and protection of the assets from misuse. In fact, many media and entertainment companies have been focused on generating revenues while neglecting the cost of operations. To be successful in a converged market, CSPs

and media and entertainment companies must deliver accurate forecasts and planning with a more responsive supply chain and a cost-efficient operation.

The digital supply chain will impact how CSPs distribute the content and applications and the diverse needs of their customers, as well as address piracy, and ensure payment of royalties and residuals to all parties. Not only will these changes require an integrated view of the customer, but also an integrated view of the business and organisational services and products offered.

Consider a consumer who is purchasing pay-per-view (PPV) and a DVD, views trailers online, and downloads screen savers, ring tones, and video clips. Understanding customers' behaviour will require a different level of information.

To respond to these changes, CSPs must have accurate, consistent, cross organisational, and timely data with appropriate analytical capabilities providing a 360-degree view of customers to deliver mass personalisation and customisation. Customers are overloaded with information and choices, requiring CSPs to have advanced knowledge of their preferences, needs, and behaviour.

### Data-Driven Business Model

With the growing number of delivery channels and formats, and a consumer with access to unlimited content, successful CSPs are recognising, more than ever,

that the future is data driven. The CSPs recognise that they must change from data marts, spreadsheets, access files, servers, and legacy systems and consolidate their enterprise data into an active enterprise data warehouse. Information will drive decision making, based on fact rather than anecdote. The current approach to enterprise data warehousing will need to move towards an operational decision making environment, which means that people throughout the organisation who interact directly with consumers and suppliers can be empowered with fact-based decision making at their fingertips.

Understanding available inventory, customer demand, and price elasticity from an active data warehouse provides a framework for optimising profitability. For example, an active decision-making environment will allow the CSP's product managers and third-party content providers to access product/service performance on a near-real-time basis. By being able to forecast consumer demand and understand price elasticity, they can adjust pricing or promotion appropriately on a per channel or asset basis in near real time.

The degree to which prices are adjusted based on such attributes as title, episode, format, promotion, special edition, advertising performance, games, and channels will be determined by price elasticity and the variable cost structure of the specific digital asset. The goal is to maximise sales at the maximum price possible. This tiered pricing strategy

<sup>16</sup>"OTT Video Services & Forecast," MRG, Inc., (August, 2009).

# Analytics in Next-Generation Telecom Services



Figure 8. Personalization and Customer Experience.

whereby maximum dollars are obtained along each point in the demand curve based on price sensitivity of the channel or the consumer, will depend on efficient use of data. This will enable the CSP to allow differentiated pricing for their customers who are willing to pay higher prices to download the most recent sequel of his/her favourite movie on the same day that it's released. (See Figure 8.).

Survival in the world of convergence will require bundling of services and products, cross selling, and up selling, requiring a closer relationship with the customer and an understanding of individual subscriber preferences.

The key requirement for the future is to keep the data fresh and to ensure that the pricing models have the most accurate and current view possible, as well as fast response time related to decision making for right pricing. But all of this begins with getting information into the hands of decision makers – at all levels in an organization. The CSPs are now establishing

guidelines and processes for data quality, which are critical to the success of their customer relationship initiatives.

## Data-Driven Service Management

CSPs must strike a balance between the quality of video content, the availability of sufficient network bandwidth, the efficiency of video encoding and encryption techniques, the viability of final customer experience, and the delivery of traditional communication services. This requires creating an end-to-end integrated view of network performance as experienced by the customer. The CSP must augment transmission, access, and core switching functions with customer service level agreements (SLAs) and customer lifetime value to the CSP. The improved intelligence will empower CSPs to go beyond service monitoring and reactive service restoration to add proactive service assurance. It requires a process to fully understand the variables contributing to network behaviour and experience

measurement – the whys behind events, not just the whats.

To make this happen, CSPs must shift their discipline from connectivity management to data-driven service management, with data relating to anything from a customer device to an application, Web page, content, or message that spans across the network.

Because customers have many choices for accessing service (e.g., WiFi, WiMax, Internet, mobile phone, computer, and TV), connectivity becomes a commodity, which is precisely why operators must turn their attention to data management, with a focus on:

- > Ease of use (clarity, quality, speed, availability, functionality).
- > Ease of purchase.
- > Ease of access.
- > Ease of management.

Managing data in this way, and with these goals, demands a tool that creates a single,

# Analytics in Next-Generation Telecom Services

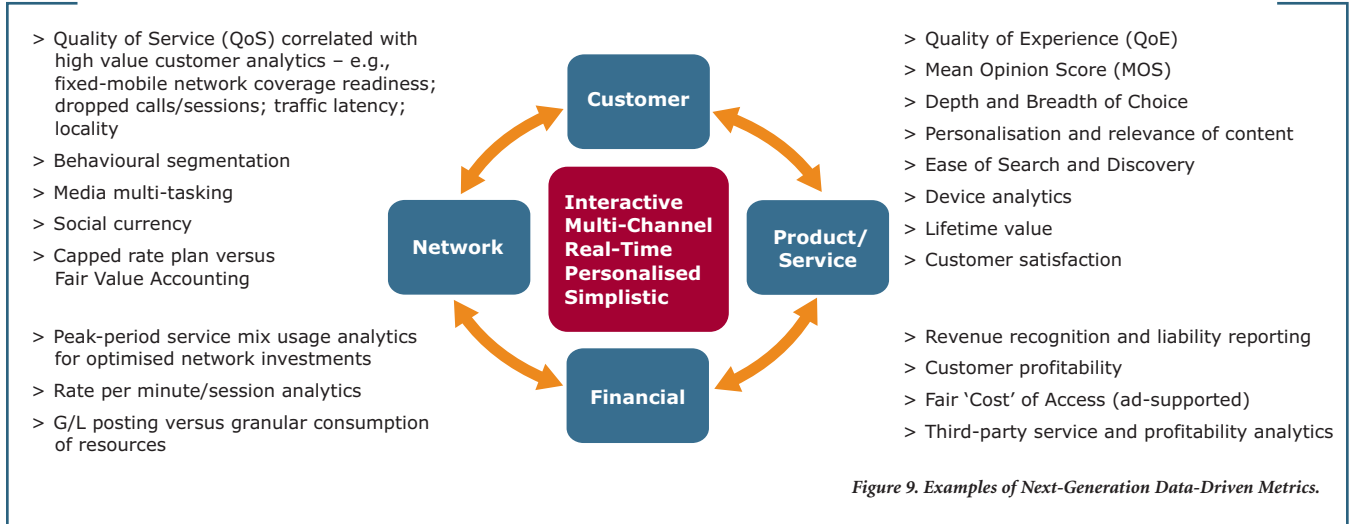


Figure 9. Examples of Next-Generation Data-Driven Metrics.

integrated view of critical business and technical data (See Figure 9.).

This tool must also transform the data into actionable intelligence that delivers new levels of transparency. This is the strategy from which Teradata Corporation's Active Enterprise Intelligence™ concept emerges (See Figure 10.). As the analytic hub for the business operations support systems (B/OSS) and network management systems, the active data warehouse (ADW) integrates all relevant current and historical data into a single relational model in a single application-neutral repository. It rationalises inconsistencies in data definitions and data values among network equipment from various vendors. By eliminating the walls that exist between OSS environments, the CSP now has an integrated and concise view of the capabilities available in the network. This leads to cost reduction by preventing overbuilding and fully utilising all network assets. It also

provides for an integration point of key customer data that gives insights to the model of handsets (smart device or not) purchased in which geographic area, where the most profitable customers are located, how they use their services, and

what their experiences have been. Driving higher efficiencies in the back office alone will produce a favourable ROI. Perhaps most important, however, the ADW facilitates a deep, timely, and consistent picture of the entire ecosystem.

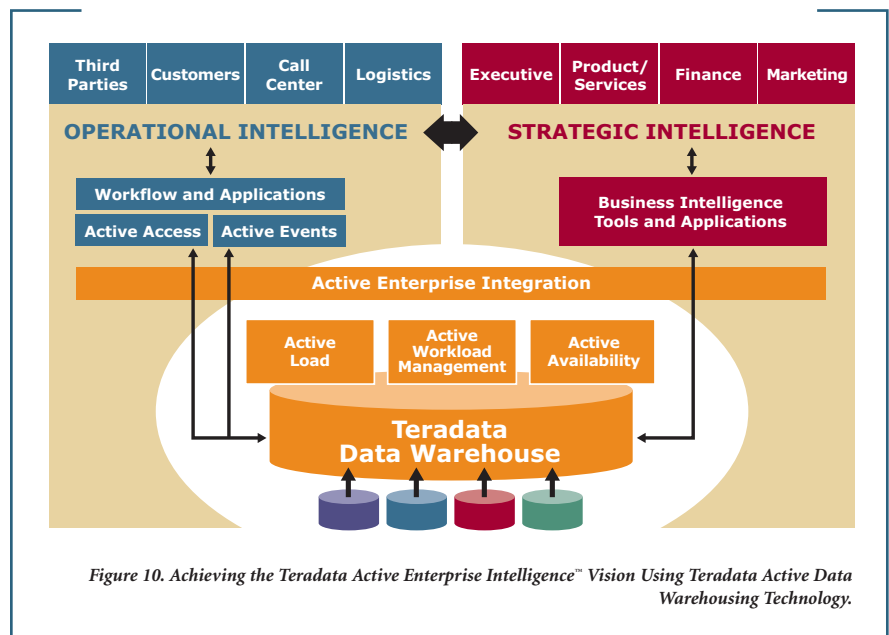


Figure 10. Achieving the Teradata Active Enterprise Intelligence™ Vision Using Teradata Active Data Warehousing Technology.

# Analytics in Next-Generation Telecom Services

## Simplified Control, Multiple Benefits

Strategic applications and the data found in the enterprise data warehouse (EDW) provide the technology necessary to make long-term decisions for the business. Applications of strategic decision support include market segmentation, product (category) management strategies, profitability analysis, forecasting, and many others.

Tactical or operational decision making is a key enabler that allows organisations to evolve into Real-Time Enterprises. Tactical decision making provides assistance to agents on the front lines of the enterprise whose actions reflect the implementation of a business strategy. Business process

automation enables the enterprise to react to events that occur throughout the environment. Gartner first published their definition of the real-time enterprise in October 2002 as: “An enterprise that competes by using up-to-date information to progressively remove delays to the management and execution of its critical business processes.”

The Teradata Active Enterprise Intelligence™ vision translates directly into improved efficiency in several key areas:

- > Leverage strategic intelligence data to drive higher completion rate of on-line sales and service transactions – reducing costs and increasing the on-line revenue.
- > Use web interaction events to drive event-based marketing (EBM) activity

directly back to the content management system.

- > Leverage customer interaction events from contact centres or third-party sites to drive EBM through on-line channels, enhance behavioural analytics.
- > Leverage on-line media consumption data to feed value and loyalty modelling and scoring.
- > Grow revenue through increased sales, loyalty, and product engagement.
- > Reduce costs in customer care and dissatisfaction induced churn.

The benefits ripple out from there (See Figure 11.). Quality of customer experience improves because a view of the entire ecosystem allows you to integrate service

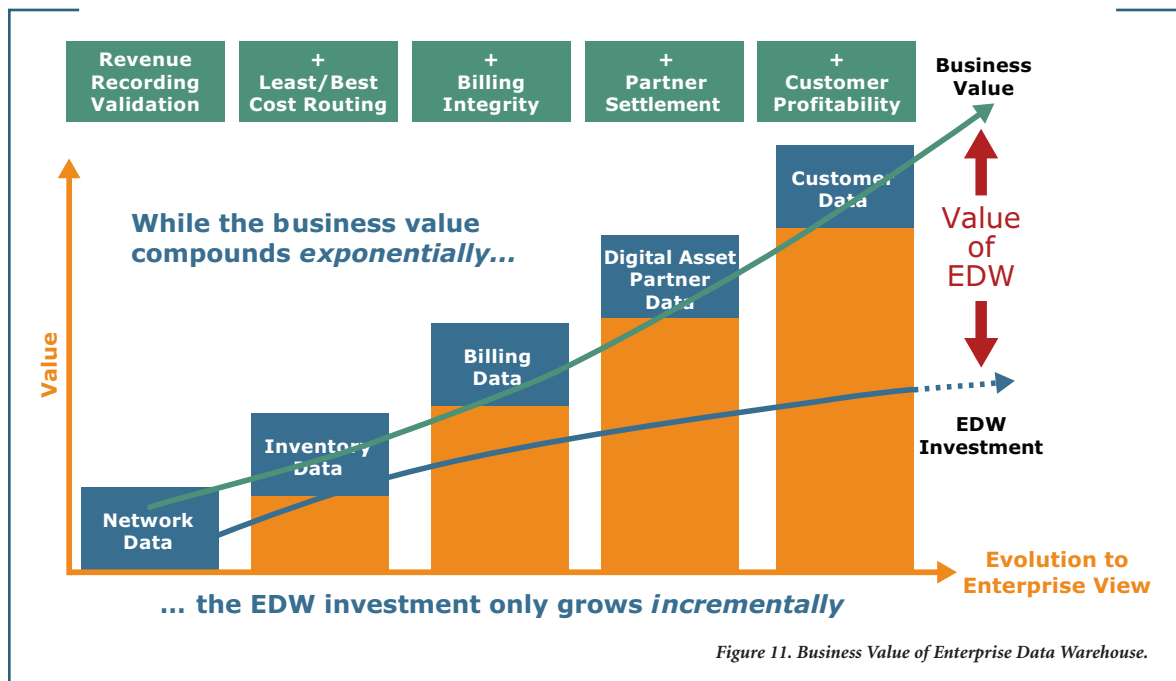


Figure 11. Business Value of Enterprise Data Warehouse.

# Analytics in Next-Generation Telecom Services

creation with assurance and management and to proactively address customer behaviour. These improvements – along with the way your integrated data can inform marketing efforts and lead to precisely tailored and expertly delivered new services – dramatically improve the customer experience. This means increased revenue through improved attraction and retention of your most valuable customers.

## The Teradata Solution and Benefits

Teradata, through its extensive expertise and experience, has developed solutions specifically for the communications, media and entertainment industries:

- > The Teradata Active Enterprise Intelligence™ strategy addresses traditional data needs, as well as real-time data needs with three basic characteristics that have become the Teradata trademark of excellence: performance, availability, and data freshness. As data volumes grow, extracting and analysing can either be a challenge or a simplified solution allowing your organisation to focus on strategic decision making rather than analysis and reporting.
- > The Teradata Communications and Media and Entertainment Logical Data Model (LDM), which is field-based, self-documented, and customised to the needs of CSPs and studios, is unmatched in the marketplace. The

Teradata Media and Entertainment LDM alone addresses more than forty areas, including intellectual property management, content, title, title level, item level, and merchandising. The Teradata LDM encompasses studios, broadcasting companies, on-line businesses, cable, gaming, and publishing industries with the ability to address current and emerging requirements.

- > Teradata has developed supply chain and demand planning, forecasting, and analytics solutions specifically to address digital and traditional supply chains.
- > Teradata’s price optimisation and revenue assurance capabilities ensure that your organisation is prepared to

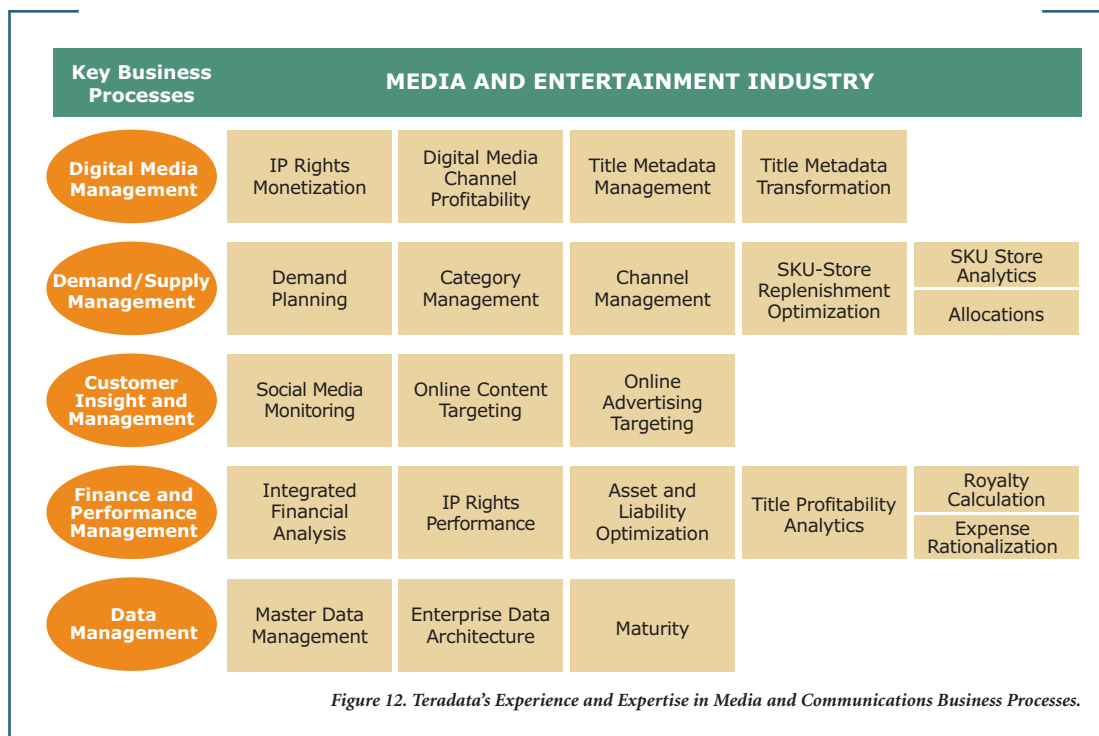


Figure 12. Teradata’s Experience and Expertise in Media and Communications Business Processes.



# Analytics in Next-Generation Telecom Services

address the variable pricing strategies, as well as prevent your organisation from revenue losses with your new partnerships being forced by the convergence in the marketplace.

- > The Audience Insight Factory provides the capability to aggregate historical and real-time consumer data from across multiple channels into a single source enabling the real-time serving of relevant ads and content to customers. This will result in significant bottom-line impacts such as increase in high value ad inventory, increase ad yield, and the ability to deliver new products and services.
- > Teradata's Global Corporate Governance process has been implemented at some of the largest CSPs and studios and has assisted in their global transformation projects by ensuring that IT planning and business planning are in concert with a common set of goals and objectives resulting in higher ROI and profits.

## Conclusion

Digitisation and convergence are being driven by new revenue opportunities. An increased number of distribution channels and the proliferation of devices are forcing CSPs to reevaluate their business models to keep pace with consumers' media choices and the additional data generated. These changes are requiring CSPs to recognise that future success will depend on developing business and technology environments that will more efficiently and effectively address operations, digital asset supply and demand chains, promotions, pricing, and forecasting capabilities.

The more successful and forward-thinking CSPs have already begun this transformative journey and are in the midst of reorganising their businesses, actively planning the incorporation of active intelligence, and have begun their courtship with the ultimate user and consumer. Teradata has partnered with many of these communication, media and entertainment companies in consolidating data marts, integrating B/OSS systems, service delivery platforms (SDP), optimising pricing, and integrating enterprise-wide operations that is resulting in significant decreases in costs and increases in savings.

## About the Author

**Sundara Raman** is a Communications Industry Consultant at Teradata. He has more than 20 years experience in the telecommunications industry that spans wireline, wireless, broadband and Pay TV sectors. He has worked for telecom service providers, consulting companies, telecom equipment providers and software solution firms. He has been responsible for product management, solution marketing, pre-sales and IT strategy and architecture development in the areas of telecom Business Support Systems (BSS), Service Delivery Platform (SDP), Fibre-to-the-Home (FTTH), Mobile TV, mobile commerce, IPTV, and analytics. Sundara has lived and worked in Asia, Australia, New Zealand, and the Middle East. Sundara has an MBA degree from Massey University, New Zealand.

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