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CEM

**Can CSPs use intelligence from multiple sources
to win the customer experience battle?**

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Introduction

There is much communications service providers (CSPs) want to know about customer experience management (CEM). The most important question is whether or not it makes for a good investment. To make for a good investment, CEM must produce the desired visibility and intelligence, and it must improve both customer satisfaction and revenue generation

The answer to the first question is yes. It has been proven to do all these things but answering any potential follow-up question about specific CEM approaches and solutions is not so simple. Mostly that is because CEM tools cannot answer questions that only individual CSPs can answer for themselves: Who are we and how do we want to be perceived by the world? What are our strengths in the marketplace and how can they be conveyed to customers? What products or services differentiate us from competitors? By what metrics do we want to measure our success in delivering a quality experience? How will we prioritise those metrics?

Once the CSP knows what it wants and who it wants to be – or how it wants to be known, company leaders can begin to ask themselves if their CEM solution should be focused broadly on company perception or on more targeted metrics. Assuming that every potential experience-affecting performance attribute can be measured, from product displays and pricing, to customer service and application performance, CSPs must be able to determine which attributes are most important for which customers.

Answering these questions takes a lot of soul-searching and self-analysis on the part of the CSP. Only the last unknown above – determining which attribute is most important for which customers – begins with a CEM approach. Secure in its identity and confident in its strategy, a CSP can begin to engage suppliers of CEM solutions. The type of engagement with suppliers will depend in large part on if the CSP plans to build an overall brand perception or drill down into specific areas for

improvement. Both strategies may ultimately result in the employment of an overarching CEM platform, but the former must begin with a platform while the latter can be built over time.

It is important to remember that companies successfully excelled at providing superior customer experiences long before software platforms came along to measure them quantitatively. Before technology, CEM was conducted by retailers large and small through the personal relationships they built with regular customers, knowing them on an intimate level and using that knowledge to provide the products and services they most desired. Predictive analytics resided in the brains of sales clerks who made suggestions based on previous purchases.

The big differences between then and now are (1) the personal relationship has now vanished in favour of an online one and (2) the retailer did not then have the capacity to know the customer was down the street ready to walk into a competitor's store, nor the ability to send that customer an advertisement enticing them to keep walking their way. They do now. Another difference is that the occasional bad experience was not transmitted instantly to tens or thousands of friends on the internet; it often waited until the next bridge club or football game where the damage was contained to a handful of friends. As the conveniences of a digital lifestyle are incorporated by customers today, frustration runs high whenever service falls short of expectations.

The level to which a retailer succeeded back then was reflected in the persistence of its reputation as a customer-focused business and its ability to act on ►



the knowledge built of that focus. Today we call that personalisation, as if it is something new. Personalisation as it was practiced prior to the age of digitalisation had a personal aspect to it. The concept of personalisation today is far from personal; it is statistical. However, there is no reason companies today cannot apply both analytics and good personal customer service simultaneously through the many touchpoints now available.

A lot of companies agree that CEM is a good investment. The global market for CEM solutions was nearly US\$4.4 billion in 2015. It is expected to grow to more than US\$10 billion by 2020 at a compound annual growth rate (CAGR) of nearly 18%. Almost all CEM solutions include some analytics capability.

Figure 1 below shows six ways analytics are viewed and used on various data inputs from the network and the customer.



Figure 1: Data analytics and customer experience

CEM is also a good investment for other business reasons. The opportunity for CSPs is two-fold: First, by executing a proper CEM programme for itself, the CSP can improve its own customer loyalty, average revenue per user (ARPU), reputation and competitive edge. Second, it can utilise and monetise the

customer data it possesses by helping other enterprises do the same for their customers. CSPs do not have to master CEM themselves before making use of the second opportunity, as it pertains primarily to either the transfer of customer usage and profile data, or allowing access to the data by enterprises and third-party developers. Still, CSPs can waste no time improving their own images through consistently well-delivered experiences.

Some of the common values that make companies stand out in the area of customer experience include:

- **Transparency in what is provided** and the value that is produced.
- **Delivery of a high quality personalised experience.** This means engaging with the customer concerning relevant information and capabilities tailored to personal preferences, regional factors and business circumstances. It is not always about providing the best technology interface or platform, but rather in providing the best personal interaction.
- **Knowing key facts about the customer.** Where applicable, these companies remember the customer's spending history and other revealed facts in a positive and flattering manner. They use this information to help customers know that their patronage is appreciated.
- **Timely updates about the status of a problem** whenever things go wrong. Nothing is more irritating than to be left in the dark about a complaint or question. If an issue can be resolved quickly, these companies try to do so immediately; and if not, then informing the customer with timely status updates makes good business sense.
- **Cultivating some level of customer loyalty.** Rewards can come via loyalty points, special promotion offers, preferential treatment in certain situations or other recognition avenues. Loyalty recognition is especially important for customers that do a lot of business with the organisation, or that drive business to the organisation.

Unfortunately, CSPs do not currently excel in all or most of these areas. Of all global service providers, only AT&T cracked the top 50 in Fortune Magazine's ranking for Most Admired Company in 2016. It ranked 48th. The ranking included reputation and customer experience as part of its metrics. BT, Deutsche Telekom, Time Warner Cable, Verizon and Vodafone



were somewhere within the top 340 companies. One proof-point for showing that the customer experience is not all about network quality is the ranking of Netflix at 19th on this list. Obviously the quality of the network that Netflix services ride over did not cause the company to be perceived badly. So CSPs must be doing all right regarding the network.

Digitising the old retail experience versus a focus on quality

- The modern digital form of the customer experience can be seen in two primary ways: Personalisation based on analysing customer usage and preferences over time for the purposes of marketing and upselling
- Personalisation through the agility of network operations to proactively respond to potential service-affecting performance issues for specific customer segments, groups or even individuals.

Both rely on analytics. However, not all analytics are applied in the same way.

The marketing-driven experience may employ some real-time analytics such as customer location, but the bulk of it does not necessarily have to be real-time. This is the purview of big data. Big data, which is the capture and analysis of extremely large and diverse sets of structured and unstructured data from network and non-network sources designed to provide deep business insights, targeted solutions and services. The customer service, marketing and sales analytics segment of the big data market accounted for 18.8% overall by the end of 2014, putting the value of the segment at US\$7.3 billion. The global big data and analytics market reached US\$41.18 billion and is expected to reach US\$67.89 billion by 2019.

Stratecast has long contended, however, that the bulk of operational analytics will be purpose-built rather than big data analytics. Purpose-built analytics provides intelligence for resolving specific business and operational needs in near real-time. The immediate CSP network management needs are more real-time in nature than big data can currently support. Real-time, purpose-built analytics are necessary for both network and service performance as well as monetisation and security, largely because the

processes that bind them together to deliver a customer experience are unique to CSPs. Any analytics applied to telecoms networks and customer data must take such processes into consideration. These processes include:

- Uninterrupted message delivery (voice, text, data) to any destination
- Assurance that each service will work consistently
- Message privacy
- Security monitoring
- Marketing new services to targeted customer groups
- Identification of customer usage, charging and billing creation
- Revenue collection
- Fraud protection

Saying that purpose-built analytics is a better tools for delivering and measuring the customer experience does not imply the tools should not be part of an overall analytics platform. A platform approach to analytics of any sort is the best way to correlate customer data that comes from a multitude of sources. Below is an example of a customer experience data analysis process: ▶

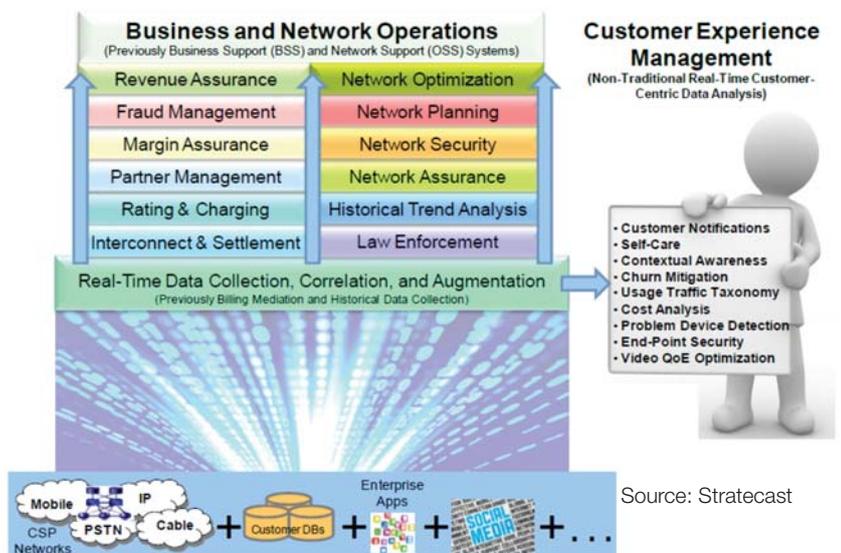


Figure 2: CSP business, operations and customer experience data analysis process



Two operations functions listed in **Figure 2** are not always synonymous with the customer experience, however, they provide great examples of how a corporate mindset with CEM as a priority filters down to every function and process. These functions are network optimisation and network planning. Planning, in particular, is generally the epitome of an engineering role. It is in fact often referred to as planning and engineering. That designation has not changed. What has changed are the drivers for how network builds are planned and how those plans are measured and maintained for optimisation. CEM is becoming a bigger part of planning in that it takes planning beyond frequencies and coverage and incorporates customer data into decisions about what market gets covered with how much bandwidth and what guarantees of service. Small cell planning, for example, can precisely target locations that are more socio-economically desirable with a concentration of high-end users. It can put a priority on crowded public places where throngs gather that have diverse network-service needs. Planners account for video users, messaging, social network analysis, ARPU, speed of both cars and downloads, and various demographics. Location has moved beyond the geo-location defined by traditional latitude and longitude coordinates. All decisions are made to provide not the best coverage map, but the best experience to the most valuable customer.

In-service CEM

Once a network has been designed and implemented, new methodologies must be used to maintain the experience the network was designed for. This is done through optimisation. And optimisation can no longer remain a manual process. Certain steps along the way in planning, provisioning, testing and validation, turn-up, and ongoing assurance and optimisation must be automated. It is well known that the industry is not yet ready for a full closed-loop self-organising network (SON). However, in small cell networks, many of these steps can be automated at low risk to the network and the customer experience. Stratecast believes CSPs should not hesitate to find use cases where they can automate processes comfortably.

Although not necessarily considered automation, planning tools are now capable of enabling template-based site creation which eliminates or reduces the

chance for error in some processes. Also, these templates can be used, in time, to automate the turn-up process. The following are examples of where automation can be applied to the small cell implementation process without the need to broach the subject of full SON:

- CSPs can incrementally experiment with more advanced machine learning techniques that can predict likely service degradation, as well as the impact of applying dynamically generated remedies.
- CSPs can also include dynamic optimisation, self-healing and closed loop operations management.
- CSPs can adopt software-based radios and base stations for virtual RAN environments.

It should be possible to localise any potential issues caused by automation in a small cell, and prevent it from cascading throughout the network.

Predicting the experience

Closely associated with automation is predictive analytics. The two are not co-dependent, but one day soon, the latter will help drive the former to make changes before any service degradation is noticeable by the customer. Virtualisation will also help here when, at the command of a predictive analytics engine, the network automatically spins up a new virtual machine to accommodate any necessary configuration changes. Predictive analytics are purely a customer experience-driven investment, because the promise of this technology is to mitigate performance issues before they impact the customer experience, although down the road, cost savings will also be a factor. Early predictive analytics solutions can tell a CSP when:

- Batteries are losing power
- Routers are dropping excess packets
- Links are growing congested
- Signalling is growing excessive
- Capacity is running low

Future predictive analytics will be able to tell:

- When and where changing weather conditions that may affect the network
- If a virtual machine is beginning to fail and where the most ideal location would be to spin up a new one ▶



- An social event occurred somewhere and how the increase in video traffic and inbound calls are likely to affect the network
- A new application went viral and how to accommodate it
- How a price increase or a dynamic discount will affect traffic today or tomorrow

All instances are experience affecting. And few are currently a part of most CEM strategies.

The burden falls to the network

Contrary to popular opinion, the lion's share of data produced and collected for analysis does not come from billing systems. This perception may stem from the early days of customer relationship management (CRM), which did take most of its cues from billing and customer data records. Network-facing systems collect approximately five times the amount of data for operational insights than are collected from billing systems. Some CSPs are collecting and processing more than 20 billion usage transactions per day for the purpose of analysing monetisation, whereas they process more than 100 billion transactions per day for network operations analysis.

Also, while the smartphones, tablets and laptop computers that launched the digital lifestyle contribute so much to traffic volume, their impact on the customer experience has been less than cloud-based applications, entertainment services and user-generated video. This is due in part because a less than optimal performance for these services is more obvious and less tolerable for customers.

Smartphones and tablets negatively impact the customer experience primarily when users exceed their allotted usage without prior notification or options for extending their limit. This provides a good example of how analytics for predicting usage patterns, combined with an integrated service activation platform and proactive messaging applications for notifying customers in real time can turn a bad experience into a good experience and drive some revenue to boot.

Taking responsibility for the experience

When a CSP considers how the many different applications and services running across its network affect the customer experience, it has no choice but to take responsibility for the quality of these apps.

Customer never think the app is at fault when it does not work as expected; poor performance is almost always presumed to be the fault of the network. The figure below shows only a small portion of the activity occurring on the network every minute of every day, each of which contains the potential for causing a bad experience and another black mark on the soul of the service provider even when the service provider is not at fault.

Source: Qmee; Stratecast



Figure 3: Global internet usage in 60 seconds

An interesting dichotomy emerges as CSPs try to differentiate some of their services based on quality. There is little a CSP can do for the applications and transactions listed above that run over their networks other than maintain an acceptable level of network performance. However, one service, voice-over-LTE (VoLTE) offers a chance to prove how a high standard of quality, even for a traditional service like voice, can be a differentiator.

As 4G deployment spreads and the network advances toward 5G, CSPs are looking to VoLTE to regain the advantage of quality, which once drove voice services, since commoditised and eroded by over-the-top ►



providers. CSPs are banking on the quality of the user experience with VoLTE to be a differentiator. And they are going to great lengths to measure the difference. Voice services were once thought unassailable, yet OTT providers found a way to challenge the service when Internet Protocol became the default transport protocol. Now CSPs are fighting back with the experience as their weapon of choice.

The VoLTE counterattack has not happened as fast as perhaps it could. This is due somewhat to interoperability issues and, until recently, handset availability. However, some delays rolling out VoLTE were intentional because CSPs, Verizon most publicly, expressed a commitment that customers would not see a degradation in their experience during the 3G to 4G conversion and the introduction of VoLTE.

The device challenges has largely been met. As of October 2015, The GSA said 246 VoLTE-capable devices, including 224 smartphones, had been announced and that 111 operators were investing in VoLTE service deployments, trials or studies in 52 countries. Forty of those operators had commercially launched VoLTE-based HD voice service in 28 countries. Eight months ago, Bouygues Telecom in France launched a pilot VoLTE service, involving 5,000 customers across 700 corporate clients. The company began commercial rollout this February and will continue into 2017. Mobile operator, U.S. Cellular, is also conducting testing of VoLTE in three markets, but has pushed its launch back to 2017.

Estimates range wildly as to the amount of revenue CSPs have lost, and are continuing to lose, to over-the-top providers of voice services – mainly Skype and

WhatsApp. However, the losses are safely in the range of hundreds of millions of dollars – incentive enough to do what is necessary to stem the tide.

The dichotomy for building a network robust enough to deliver a gold-standard quality VoLTE service is that the rising tide of network quality raises all boats. OTT voice services will also be running over a better network. However, OTT providers do not necessarily have access to the performance data so CSPs will have to measure and prove their performance. OTT providers generally rely on survey data to measure customers' perceptions of quality.

In spite of the wide acceptance of cost and convenience over quality, CSPs are banking on the idea that there is still room for quality in mobile voice communications. It is essential that CSPs get VoLTE service correct from the start, but delivering a high-quality, reliable service will not be easy. That is why CSPs have chosen to employ the uncommon practice – at least until now – of putting test, monitoring and analysis tools in place prior to launching VoLTE, kind of a pre-cursor to the continuous deployment/continuous test cycles they are adopting in building their NFV and SDN networks. The signalling traffic for VoLTE alone, is of greater volume and complexity than other applications running over the network. End-to-end visibility takes on a new meaning when it must look beyond mere latency, as with other IP-based network traffic. VoLTE monitoring involves handovers not only from cell site-to-cell site, which is difficult enough to control and track, but also to non-CSP technologies such as Wi-Fi. The service is complex; the monitoring of the service is even more so. Without it, visibility to the user experience of VoLTE goes out the window.



Conclusion

CSPs need not only to understand their place in the e-commerce universe, but also be willing to exploit it. They exist at the centre of the customer experience strategy for most other industries. It is hard to think of more than a few businesses that would not be well served by incorporating an embedded mobility services strategy. As industries and the businesses within them engage with each other in business-to-business relationships, mobility can add to their customers' experience the same way CSPs enhance their customers' experience. It could be

by accessing location data, understanding user profiles and preferences, or getting other anonymised customer profile data. Businesses also can use analytics to track their own employees' usage and behaviour.

Ultimately, CEM is first a corporate mindset that becomes a strategic direction. It is then supported by purpose-built analytics solutions, some big data analysis, and a CEM platform for correlation, measurement and assurance. Only then does it become a public identity. 

Stratecast

F R O S T  S U L L I V A N

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Company summary

Founded	1999
HQ	Dublin, Ireland
Employees	Approximately 680
Revenue	€96 million (2015)
Customers	Key customers include AT&T, A1 Telekom Austria, Bell Canada, Charter Communications, CTBC, Orange Group, Softbank, Sprint, Telus, Time Warner Cable, T-Mobile, Verizon Wireless, Videotron and Vodafone.
Partnerships	Partners with equipment vendors, system integrators and solutions vendors
Financial Status	Privately held

Customer experience management products

Policy Manager	<ul style="list-style-type: none"> Enables CSPs to dynamically control network resources with real-time policies based on service, subscriber or usage context. Policies also enable new business models and innovative new services.
Evolved Charging	<ul style="list-style-type: none"> Deployable as a standalone online charging system or adjunct system, it supports real-time alerts, dynamic pricing models, shared device plans, and service bundling for fixed and mobile family plans and dual persona enterprise plans.
Convergent Mediation	<ul style="list-style-type: none"> Collects network and usage data across a wide range of networks to be used as the primary source of customer usage for business intelligence as well as support a wide range of OSS/BSS functions, including charging, billing and policy.
Interaction Gateway	<ul style="list-style-type: none"> Manages real-time interactions between smart devices and BSS/OSS systems. Also enhances customer engagement with dynamic up-sell of services, and mobile self-care by exposing real-time network functionality.
Big Data Preparation Engine	<ul style="list-style-type: none"> Ensures the quality and speed of the data fed to analytics platforms and provides the scale to cope with the increasing volumes of big data.

Key differentiation and competitive pressures

Openet provides a complete solution for data management that includes real-time data collection and analysis for both customer experience and business management applications. Its data management capabilities are configurable and so address multiple mediation, rating and charging and policy needs. The company remains on the cutting edge of data management, going so far as to open its VNF Lifecycle Management solution to the open source community.

Company summary

Founded	1983
HQ	Stockholm, Sweden
Employees	Approximately 170
Revenue	Undisclosed
Customers	More than 110 CSP customers in more than 50 countries utilising analytics, CEM, managed services, network monitoring, and service assurance. Customers include Telia, Telenor, Tele2, T-Mobile, Singtel, Telefonica, Belgacom, Bell Canada, Three and others.
Partnerships	Polystar has an active and broad set of both OEM and channel partners.
Financial status	Privately held

Customer experience management products

Network Performance Insights Solution	<ul style="list-style-type: none"> Solutions under Network Performance Insights include network, device, roaming, and interconnect analytics as well as network monitoring. Together they derive actionable intelligence and create a visual understanding of network and service performance across domains and technologies.
Business Insights Solution	<ul style="list-style-type: none"> Solutions under Business Insights include subscriber, marketing and corporate/VIP analytics. These solutions help CSPs understand what services customers use, how much they use them and whether they experience problems using them.
Executive Insights Solution	<ul style="list-style-type: none"> Solutions for c-level management help company's executives get an overview of the usage, service level and performance of their networks and services from the business perspective.
KALIX	<ul style="list-style-type: none"> Helps CSPs become more customer centric and optimise network efficiency. It enables real-time visualisation that identifies how users are affected by network and service issues. Using a common data source, users can define which metrics are important to creating their particular view of the customer.
OSIX	<ul style="list-style-type: none"> The OSIX network monitoring probe extracts information from the control and users planes, then processes, consolidates and stores the information for both real-time and historic analysis and visualisation. The system maps the end-to-end view of service performance to each subscriber.

Key differentiation and competitive pressures

Flexibility and usability are key differentiating features of the Polystar portfolio. Flexibility stems from all technology solutions originating organically within Polystar, which eases interconnection and interoperability. Solutions are also flexible for CSP users who can self-adapt the system to its particular needs without the need for professional services. Usability is increased by the reliance on a common, single source of data and a customer-programmable dashboard and interface.