



OPENET[®]

DATA FABRIC PLAYBOOK
DATA MANAGEMENT USE CASES

INNOVATE WITH CONFIDENCE



Table of Contents

INTRODUCTION	3
CHAPTER 1: SERVICE ASSURANCE	4
CHAPTER 2: AUDIT & CONTROL	13
CHAPTER 3: INSIGHT	17
CHAPTER 4: MONETISATION	25
SUMMARY	29

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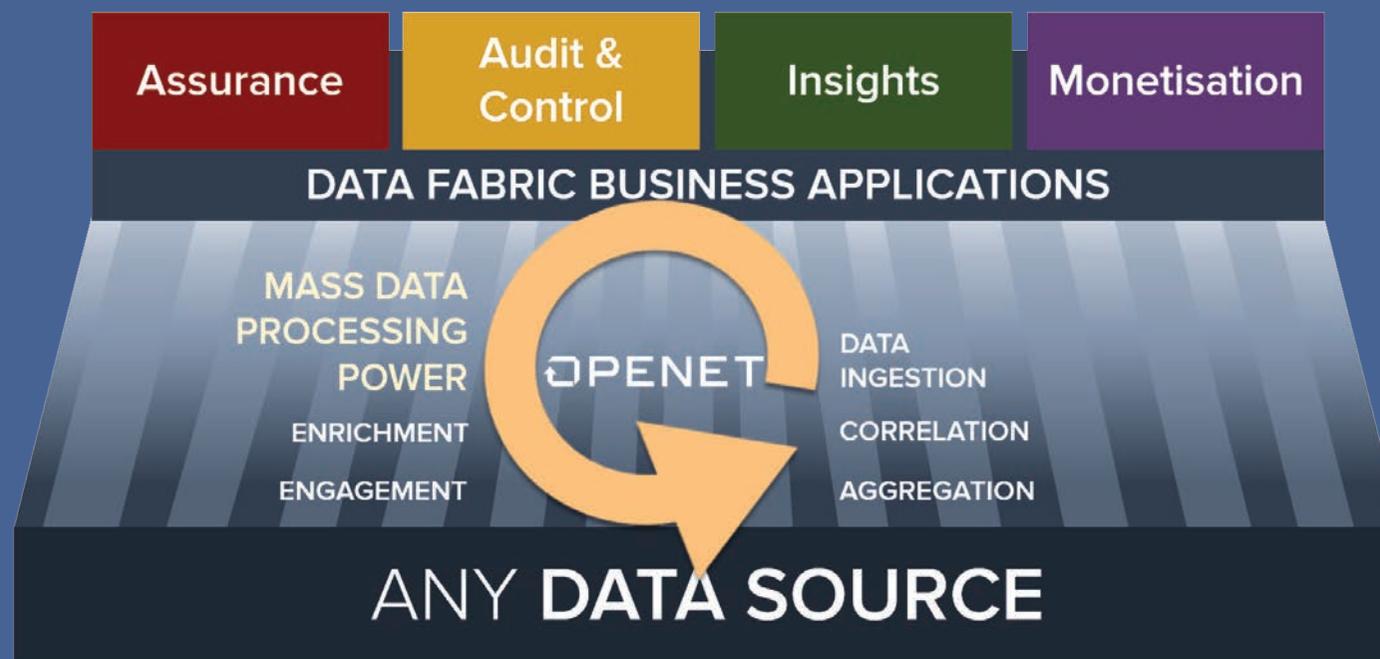
OPENET[®] DATA MANAGEMENT PLAYBOOK

DATA MANAGEMENT USE CASES

INTRODUCTION

As networks become more software-driven, they generate vastly greater amounts of data which creates some challenges – In particular, the need to adhere to compliance and customer privacy guidelines while harvesting value from such massive amounts of data. It is physically impossible for humans to manually tackle the sheer volume of data that is generated today. In July 2019, figures published by Ofcom indicate a staggering data volume increase of 724% in the previous 5 years. In 2018 alone, the average monthly use per mobile data connection increased by 25% to 2.9GB. Such vast amounts of data also provide an opportunity for businesses to turn activities into actionable insights, leading to increased revenues and reduced costs.

Artificial Intelligence (AI) is now considered a necessity for modern digital networks and services to optimise all elements of service provision and optimisation. Innovation based on intelligent automation, is a job-by-job, task-by-task transformation, according to the latest MIT Sloan Management AI publication (Summer 2019).



Openet presents some of the many applications and evolving trends based on the provision of quality datasets in a timely manner and have grouped these selected use cases under the following headings:

Service Assurance: Ability to profile expected service performance through data models and to detect slight anomalies to key attributes of these profiles. The slightest drop in network performance can have a significant impact to the customer experience of an augmented reality (AR) or virtual reality (VR) gamer, for example, and therefore Operators must ensure pro-active remedies for detected service degradations.

Insight: The key challenges operators face continue to be access to relevant data in a timely manner and the ability to execute on that data. It is, therefore, paramount for businesses to have access to real-time, quality datasets, processed at huge volumes for service and quality assurance, revenue reconciliation, network performance and optimisation and operational service compliance. Furthermore, data provides an ample source of upsell and monetisation opportunities with behavioural economic analysis for real-time offer management.

Audit & Control: Complex networks and services require the ability to perform reconciliation and compliancy checks to validate usage, service, transaction and charging activity.

Monetisation: Digital transformations are driving multi-dimensional B2B, B2B2C and B2B2X models, complex cross-sells, intricate loyalty schemes, complicated commissions handling as well as varying payment methods. Combined with constant fraud exposure and regulatory constraints, digitised commercial platforms today are highly complex systems. The ability to manage complex transaction data through financial checks and balances is a delicate art.

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DATA APPLICATION CATEGORIES



We hope this document provides food for thought on how to make your data work for you!

CHAPTER 1: SERVICE ASSURANCE

UC#1: Service Assurance for Operators Hosting Complex Services

Service assurance is becoming a key requirement for operators as the focus sharpens on QoS (Quality of Service) and QoE (Quality of Experience) with growing network complexity and service performance sensitivities. 5G heralds the way for unprecedented speeds. With enhanced mobile broadband, a user can download a 15GB full-length high-definition movie in 6 seconds- the same movie takes 4 minutes to download with 4G/LTE networks. If we consider the use cases associated with autonomous cars, a vehicle travelling at up to 60 miles/hour will be capable of receiving a stop signal when it detects danger with zero (1 millisecond) latency. The car would have moved just a few centimetres before stopping, whereas in 4G, the same car would have moved at least a meter. Insurance companies are obviously evaluating these capabilities with great interest. Furthermore, an explosion of IOT and enterprise applications is expected with the density of connectivity reaching 1 million devices per square kilometre. Operators are investing billions to deploy the 5G technology and faced with concerns such as 'how do we ensure that users are receiving the service they're paying for, in a highly dynamic and flexible world?' Or 'how do we ensure that enterprises hosted on our network are correctly billed with complex 3rd party value chains? The need for effective audit and monitoring systems to protect this investment has never been greater.

Ensuring QoE and QoS requires the ability to monitor end to end services as it traverses the network replicating key measurements from the perspective of the end consumer. Virtual probes and key component function data provide a holistic view of the services and enable the continuous analysis with expected SLAs and thresholds. AI models lend themselves to perform anomaly detection against these service profiles for multi-dynamic transactions and feed automated and closed loop actions to remediate degraded service performance.

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“The need for effective audit and monitoring systems to protect investment has never been greater”

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*“Through being able to **monitor and predict the quality of experience being delivered to customers, operators are able to identify and resolve issues that customers may be impacted by before they become consistent pain points.**”*

UC#2: Monitoring Quality of Service

Due to the sheer number of systems involved in delivering the multitude of complex services offered by operators, the ability to effectively monitor quality of service is severely hampered. In most instances, an operator is only capable of detecting decline in the quality of a service delivered to customers after those customers are impacted to the point of notifying the operator through customer care agents. Through being able to monitor and predict the quality of experience being delivered to customers, operators are able to identify and resolve issues that customers may be impacted by before they become consistent pain points. Prior to AI's arrival, network providers typically used some sort of packet filtering, such as deep-packet inspection (DPI), to dissect individual network packets and gather detailed information that could help them find and fix the network problem. However in order to understand the entire flow, metrics must be collected across multiple points through the delivery path and together with feature and data classification on those metrics, a holistic representation of the data flow is generated. This end to end view of the data flows, with the help of AI, can detect problems with 80% accuracy.



On its home networks, Verizon runs automated testing on a sample of 60,000 in-home routers every two hours, to ensure that customers are receiving the speed of service they are paying for. Verizon found that this analysis helped to drive business decisions. Testing showed that the home routers were consistently able to operate at higher speeds than was previously thought. This meant the business was able to market its service as a 1-gigabit connection, where previously it was advertised as 750 megabits. This led to a huge upsurge in sales.

UC#3: Widening the Profit Margins by Understanding Cost to Serve

The past several years have been tough for Operators with declining revenues and soaring costs. Since 2010, revenue and cash flows have dropped by an average of 6% a year. Consumption of mobile data, meanwhile, has continued to boom, as masses of wireless customers devoured all you can eat data bundles to quench their data appetite. Operators invested heavily in 4G network deployments, even as subscriber growth slowed, to feed demand. The turning tide however for many operators is expected thanks to the major advances in data analytics, artificial intelligence and network equipment.

Advanced analytics can help mobile operators to identify the true cost to serve, understanding the link between cost to maintain components and resource consumption. An operator can also determine the highest levels of network performance that do not yield diminishing returns in customer satisfaction. Fine tuning and analysis of the economics of service performance and cost can thus deliver significant capex investment reductions as well as stretching operational budgets.

Introducing the ability to monitor the total cost of delivering a service and the ability to predict the cost implications of differing configurations and delivery options is vital. With a view of these metrics when composing and operating a service, operators are empowered to truly optimise their network operation costs. In so doing, improving the ability to maximise operating margins while also gaining an unprecedented level of granular insight into the profitability of each service. McKinsey estimate that just 20 to 30 processes generate 45% of the average operator's operating costs. Using advanced technologies, such as machine learning, to simplify and digitize those processes can cut costs by as much as one-third, which translates to significant savings.



Alibaba Group, the Chinese multinational conglomerate specializing in e-commerce, retail, Internet, AI and technology, uses AI to help map the most efficient delivery routes. Alibaba claims that smart logistics have resulted in a 10% reduction in vehicle use and a 30% reduction in travel distances.

The logo for PENET, featuring a stylized white 'P' icon followed by the text 'PENET' in white, with a registered trademark symbol (®) to the right. The background of the right side of the page is a faded image of a person sitting at a desk with papers.

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*“Advanced analytics can help mobile operators to identify the true cost to serve, understanding the link between **COST** to maintain components and resource consumption.”*

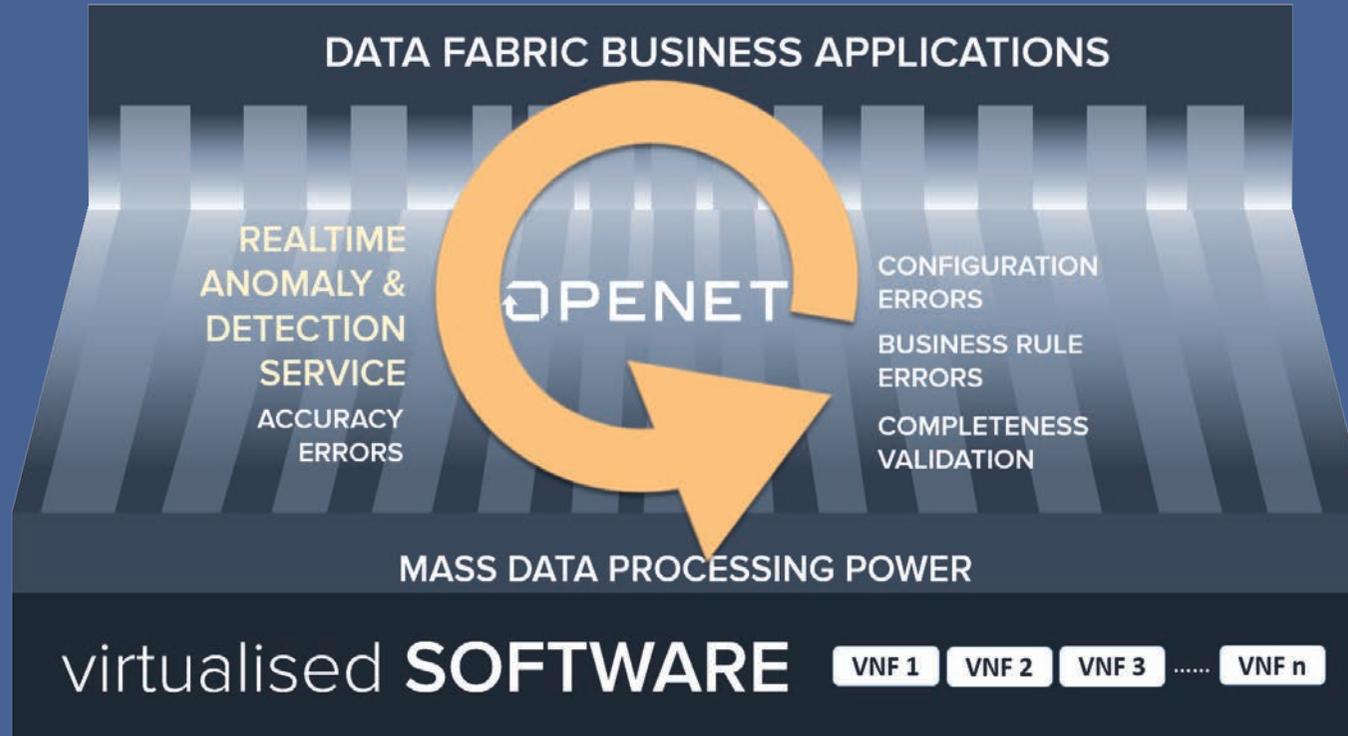


UC#4: Assuring Data Integrity for Virtualised Networks

Where networks are evolving from physical to virtualised infrastructures, the network becomes far more layered and complex. This makes analysis and reconciliation far more challenging. Data completeness becomes uncertain due to multiple network layers and there is increased risk to both customers and financials. This, in turn, requires a dynamic approach to managing data integrity – Making sure that all data gets from A to B uncompromised. Effective revenue assurance process, for example, must ensure that data integrity and synchronization across all the disparate systems and the network itself in order to ensure operational and financial efficiency

Challenges include a high rate of rollbacks, rollovers and server instantiation which requires audits and controls to adapt to the application footprint in real-time. More point-to-point checks are required as single end-to-end reconciliation is no longer reliable. Highly configurable data access points are required as networks are now managing multiple, rapidly evolving technologies and access points. A large number of smaller sized servers processing data in parallel require multiple-to-multiple reconciliations. This is beyond what legacy assurance systems can support today and requires sophisticated application of sequence gap analysis.

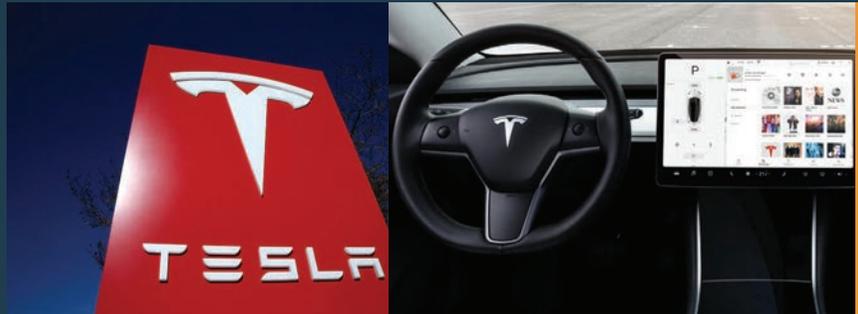
Data Integrity Assurance Systems



UC#5: Predictive Analytics Applied to Network Faults

Forecasting of network performance needs to be conducted in context, taking into account the wider variables which may impact performance. For example, the same methodology as is used by meteorologists to forecast weather patterns should be applied to predicting network behaviour. Where network behaviour should not be analysed in isolation, it is important to correlate this information with the likes of historical profile data and network event trends.

A historical account of location, communications and payment transactions can be cross-correlated with historical network event information. Big data analytics can play a significant role in mapping traffic patterns based on these impacting factors in order to optimise operations and network planning efforts.



Tesla has clearly always put data collection and analysis at the heart of everything it does. For example, Tesla cars send data directly to the cloud. A problem was detected with components occasionally overheating in 2014 by monitoring this data and every vehicle was automatically “repaired” by software patch thanks to this. The data collected from the cars is used to generate highly data-dense maps showing everything from the average increase in traffic speed over a stretch of road, to the location of hazards which cause drivers to take action. Machine learning in the cloud takes care of educating the entire fleet, while at an individual car level, edge computing decides what action the car needs to take right now. A third level of decision-making also exists, with cars able to form networks with other Tesla vehicles nearby in order to share local information and insights. In a near future scenario where autonomous cars are widespread, these networks will most likely also interface with cars from other manufacturers as well as other systems such as traffic cameras, road-based sensors or mobile phones.

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“It is well understood that typically, 90% of capacity consumption on mobile networks comes from less than 10% of the users”

UC#6: Real-Time Congestion Management

Typically, 5% of cells cause VoLTE voice interruptions of more than five seconds. Using conventional troubleshooting, one operator, Nokia reports, took two months to find the cause of VoLTE quality issues. Misbehaving OTT applications can cause issues like excessive signalling that are hard to detect. According to Nokia it took an operator five months to detect and resolve the issue.



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NBN chief blames online 'gamers predominantly' for fixed wireless congestion

By political reporter Jackson Gothe-Snape
Updated 4 Jun 2018, 2:27pm

Online gamers have been called out by the head of the National Broadband Network as a major cause of congestion on the fixed wireless network.

NBN Co is "evaluating" slowing down or limiting downloads for users during peak times in order to overcome these fixed wireless congestion problems.

At a parliamentary hearing in Sydney this afternoon, NBN Co chief executive Bill Morrow said that the heavy users likely targeted by a fair use policy were "gamers predominantly".





Verizon has the most congested network of any carrier, new report suggests

Chris Mills @chrismills
September 12th, 2018 at 7:12 PM

Share Tweet

For years, Verizon has had a reputation for owning the most reliable, furthest-reaching network in the US. It's the most expensive of the big four wireless companies, but the payoff (so the theory goes) is a better connection.

But as users get more data-hungry and spectrum becomes an increasingly in-demand resource, Verizon's position doesn't look quite so rosy. A new analysis of networks from around the globe, seen by *Forbes Wireless*, claims that Verizon's network is at 57% capacity, putting it comfortably at the top of the study.

It is well understood that typically, 90% of capacity consumption on mobile networks comes from less than 10% of the users. Policy controls to manage network resources fairly across consumers has been in practice for some time, but now with the advent of 5G, management of these resources is beyond the ability of humans due to the architecture and functional design of transaction flows.

UC#7: Ultra-Sensitive Performance Management

Small cells increase in importance with each new 'G' – Where for 3G, small cell deployments were largely used to deliver on rural coverage, 4G small cell deployments represented an opportunity to reduce CAPEX. In the move to 5G, small cells are set to play a role in optimising performance and capacity. If operators were to manage small cell deployments in an equivalent fashion to primary cell sites, the sheer number requiring maintenance would be too difficult to manage. This combined with the marginal utility delivered by each device results in small cell sites becoming unprofitable to operate and maintain.



Today, the average gamer spends 14.9 hours across 127 sessions per month, according to published figures by Verizon and it expects 5G to fuel consumption further by 22% annually. One minute of AR will consume 33 times more traffic with 5G than one minute of 480p video on 4G. Operators expect to make the most money from gaming bundles, with premiums on latency and throughput on top of all you can eat data bundles. Operators need to ensure that consumers get the latency and throughput speeds they pay for based on carefully monitored service profiles.

For example, AI powered gaming anomaly detection is fully automated and can detect any drop in app / game performance to enable closed loop remedial action. The correlation of this data with other relevant metrics to present the full story is required to reflect the true user experience. Both AR and VR applications can be very sensitive to network performance, with any interruption having a significant negative impact on user experience. The bare minimum for enjoying non-VR games is 50 milliseconds latency. In VR, users will experience nausea when latency is over 20 milliseconds. 5G provides sub-5 or sub-2 milliseconds latency.

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*“Operators need to ensure that consumers get the **latency and throughput speeds** they pay for based on carefully monitored service profiles”*

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“QoE degradation and cell anomalies in real time is crucial to optimising network performance”

UC#8: Managing Capacity

As network buildouts and capacity expansion efforts can be extremely costly for operators, it is essential to reduce CAPEX outlay on hardware and software by optimising existing network assets in order to manage the current usage at a given time. While managing network policy manually can be inefficient and complicated, analytics can be applied to expedite this process and the usage behaviours of particular subscriber segments can directly and automatically inform policy optimisation.

Allowing operators to proactively monitor and predict instances of service degradation, cell outages, sleeping cells, QoE degradation and cell anomalies in real time is crucial to optimising network performance. This capability combined with the ability to localise any potential issues in small cells allows operators to prevent a fault cascade throughout the network. This is achieved by dynamically generating autonomous action, which considerably reduce the operating and maintenance costs associated with small cell management.



Where network planning may identify an investment need for additional network infrastructure, network is able to make a trial assessment as to whether this requirement can be realised through a policy change rather than an expensive hardware investment. This way, the operator is able to make informed decisions quickly in order to minimise expenditure.

UC#9: Congestion Management Based on Value

Different subscribers have different expectations of their mobile provider and the service they receive. An individual's service expectations are greatly influenced by the specific activity they are performing at a given time. For example, seamless and continuous connectivity support for a video call is loaded with far greater expectation than buffering a YouTube video.



To inform the bandwidth assignment rules, operators need to consider factors such as customer lifetime value, churn propensity and NPS ratings. In this way, data analytics can be leveraged to better understand the profiles of the subscribers in a congested area, what usage behaviours they are currently undertaking, what their overall value grading is to the operator, what their ARPU is in a given month, etc. Based on this analysis, conclusions can be actioned to assign a treatment type for each subscriber based on their value.

“Conclusions can be actioned to assign a treatment type for each subscriber based on their value”

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“Traditionally, data analytics helped decision makers make informed decisions regarding process improvements and optimisation.”

CHAPTER 2: AUDIT & CONTROL

UC#10: Process Automation and AI

It is difficult to present data management use cases without mentioning AI these days. In fact, Gartner predicts that by 2020, 85% of all customer interactions will be managed without a human. Traditionally, data analytics helped decision makers make informed decisions regarding process improvements and optimisation. Today, benefits of objective analysis, removing human interaction and subjectivity, quickly becomes apparent for business applications and processes optimisation. Process intelligence is used to describe how process mining, industry best practice analysis tools, real-time monitoring through text messaging, e-mail and prediction provides 100% transparency into how processes are working in real life, enabling them to pinpoint business process inefficiencies. Robotic Process Automation (RPA) is being introduced to processes to create Intelligent Automation which uses advanced process analytics to observe historical patterns and flag future constraints that are not easily perceived by a human. Failure to adopt such capabilities means that organisations will remain reactive to problems.



One company, according to McKinsey, had 600 IT systems; another had 3,000 prepaid plans. Many wireless operators therefore stand to benefit from taking a fresh look at the needs of their businesses and customers and eliminating superfluous systems. To take one example, we estimate that a typical operator could trim the custom code in its customer-relationship-management (CRM) system from 350,000 lines to 20,000—a 95% reduction—by removing unnecessary applications and features.

UC#11: Automated Quality Assurance

Challenge: Simplification of test process and speed of service delivery in CI/CD environments

Feedback from automated testing and quality assurance (QA) equipment allows AI systems to build statistical models of what normal service operation should “look like,” giving it the means to identify errors when anomalies occur. Within each technical domain, operators have the option to combine multiple layers of components, with various network slices dedicated to better serve specific applications, each with its own set of expected use patterns. The characteristics and interactions of traffic traverse the network in unique ways requiring a range of specific treatments and policy control systems using a multi-variant decision trees. These decision trees must be highly tuned in order to guarantee the optimum user experience for each network or service slice.

The adoption of microservices and CI/CD environments by Operators means that the need for automated AI test tools to continuously test and verify new features and service applications will become more and more important. A key benefit of these tools is the time to market financial benefits along with the productivity savings by virtue of the automated test process. For example the Vermont Retail Store claim that their adoption of AI powered test automation helped to increase their test Coverage to 95% and doubled their speed to market. Many of the specialised automation tools available today claim 6 fold increase in productivity along with 90% speed improvement in test creation.

A Global Tier 1 Operator used a KPI-based analytical model to capture inputs at various stages of testing cycle and proposes set of test cases for execution, exhaustive reports and dashboard metrics reporting. In addition, it adopted ML- risk-based testing and orthogonal array based testing approach to improve software quality by focusing on critical test areas and optimization of test cases. The output provided a 25% reduction in test cases with a 35% reduction in delivery time.

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“Applying machine learning algorithms and scenario modelling techniques can greatly improve the accuracy of calculation”

UC#12: ROI Analysis for Technology & Marketing

An operator’s profitability rises and falls on an ongoing basis depending on network usage and total customer base. Monitoring of investment at a corporate level is continually trying to understand the interrelationship between network investments and marketing investments. The management of both is usually conducted by two separate business functions who convene quarterly to try to make the link between network performance, product changes, etc. and customer attrition/satisfaction and revenues.

Modelling the outputs and evaluations and their impact on upcoming investment decisions is complicated and tedious due to the number of variables at play. Therefore, applying machine learning algorithms and scenario modelling techniques can greatly improve the accuracy of calculations.

UC#13: Fraud Detection

As security landscapes and compliance requirements continue to adapt and evolve, so do the bad players as they continue to attempt to defraud your business and your customers. Data-driven insights allow an operator to detect when and where fraudulent activity may have occurred, reducing the risk to data security for the customer and the operator. Such insights include time series analysis, data profiling and accuracy calculations, data standardization, root cause analysis, breach detection, and fraud scoring.

This growing threat was made clear by the Fraud Control Association (CFCA) last year, reporting that the most common fraudulent activities amounted to almost \$30 billion globally for telecoms providers. Hard revenue losses, such as external fraud, bad debt and internal fraud were estimated to total 6.9% of global telecom revenue, equivalent to approximately \$155 billion.

UC#14: Fraud Detection for 3rd Party Channel

Fraud can be committed on both the consumer side and through 3rd Party exposure. Where a 3rd Party channel is leveraged by an operator, there is a potential risk of the 3rd Party fraudulently rerouting incentives meant for the end customer to achieve market advantage for the 3rd Party. This kind of untoward activity can be uncovered by correlating usage, location and customer information.

Addressing the reduction/elimination of 3rd Party fraud ensures the operator reconciles 100% of its profitability and maintains trusted and satisfactory customer relationships with all targeted offers and incentives reaching their intended recipient. Evaluating the conduct of 3rd Party partnerships on an ongoing basis allows for engagements with bad players to be discontinued and for the integrity of the operator business to be safe-harboured.

UC#15: Revenue Audit & Control

Operator networks are changing how they deliver services to their customers. There is an increase in digitised content across new platforms, which fundamentally changes how the business of Revenue Assurance is conducted. This new environment requires greater visibility and granularity of events, real-time access to anomalies that impact CX and billing, reconciliation of 100% of records to provide comprehensive assurance of all data and improved controls.

As operators move to commercial models where, through partnerships, they are offering 3rd party, over-the-top (OTT) content, such as music and video streaming, the need to have robust measures in place to audit for partner revenue share agreements or agreed SLAs. The advent of dynamic pricing or provisioning across an omni-channel environment necessitates Revenue Assurance to expand its capability to meet this new business environment.



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“Addressing the reduction/elimination of 3rd Party fraud ensures the operator reconciles 100% of its profitability”

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“CSPs require a centralised, technology-agnostic approach in order to reduce costs and effectively monetize video services”



CHAPTER 3: INSIGHT

UC#16: Audience Measurement Optimising Advertising Revenues

Video services are presenting a significant challenge to CSPs when it comes to analysing the volumes of data now at play and managing the increased complexity brought about by a multitude of data sources and format types. CSPs require a centralised, technology-agnostic approach in order to reduce costs and effectively monetize video services.



CSPs require the ability to manage the end-to-end process of data collection, enrichment with data from multiple sources across MSO platforms, correlation of data with related viewing and anonymisation of data to protect subscriber privacy. Such functionality supports multiple business processes, including measurement of the engagement and performance of both ad and marketing campaigns, creation of target audiences based on subscriber behaviour, negotiations with content partners, advanced network planning and optimization and provision of already-filtered data to 3rd Party platforms (for example, search and recommendation engines).

UC#17: eHealth for the Connected Human

With the annual spend on corporate wellness in the United States estimated to be in the region of \$6 billion, ensuring a return on this investment is paramount. The annual cost to insure an employee ranges from \$6,000 to \$10,000. The prevalence of chronic conditions, such as heart disease and diabetes, has driven up insurance premiums – Resulting in the vast majority of expenditure on health insurance absorbed by the minority of the employee population with chronic disease. Preventative measures are essential in the effective management of corporate wellness programs, with approximately 47% of the American population suffering from at least one major risk indicator of chronic disease.

Big data enables the aggregation and consolidation of all data relating to employee health, wellness and fitness from a wide array of disparate sources. A single application allows the individual to control and manage their own health experience, centralizing all doctor visit information, prescription detail, and insurance claims data, along with fitness data from 3rd Party devices.

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“Big data enables the aggregation and consolidation of all data relating to employee health, wellness and fitness”

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“Reconciling the inherent payment complexities requires a data management approach which guarantees 100% data completeness and timeliness.”

UC#18: Connected Car

With the move to 5G, the delivery of complex IoT propositions is becoming more tangible for operators. In this way, car manufacturers are developing smart car services together with a chosen prime operator partner. This prime operator manages, amongst other things, global connectivity services. Services to the end user or ‘driver’ include: vehicle health and maintenance, location, security and emergency services, in-vehicle Wi-Fi and push notifications to parents or insurance companies regarding speed limit violations.

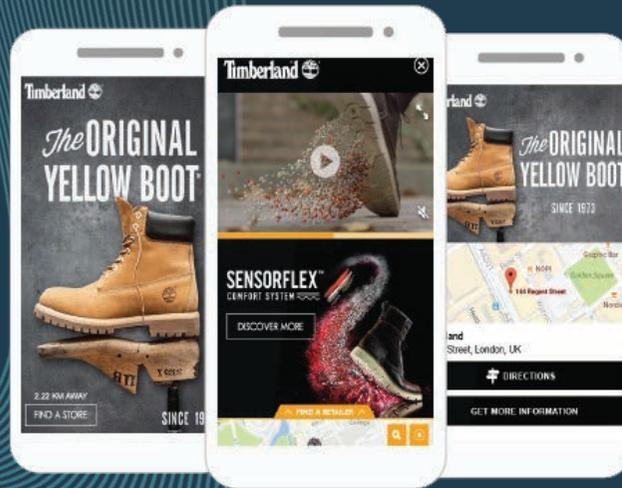


Connectivity services supporting the connected car include voice, data and messaging. Payments are complex - sometimes they are made by the manufacturer, sometimes by subscription or pay-per-use by the end user and sometimes by a Third Party such as an insurance company. The market leading operators in this space (so far) are priming the connected car business in conjunction with up to 500 other carriers globally, across 200 countries. Reconciling the inherent payment complexities requires a data management approach which guarantees 100% data completeness and timeliness.

12 Ways Machine Learning Can Drive Data Insights for 5G

UC#19: Context-Aware Offer Targeting

When a customer is targeted with an offer relevant to their usage behaviour at a time which is contextually relevant, they are more likely to avail or purchase the upsell offer. In our experience, real-time, contextually-aware offer targeting increases upsell success by as much as 70%. This also provides the end customer with a personalised experience and the perception that they are valued and that their operator 'knows' them. This impact on sentiment is integral to retention efforts.



Location-based offers allow for an operator to push an offer to a customer when they enter a geo-fenced zone and when they fit within a particular segment. An example of this is Timberland driving in-store visits by 6% through a real-time context-aware marketing campaign. Timberland identified audiences most likely looking to buy footwear based on recent brand engagement and physical proximity to a store. This resulted in a 6.2% increase in visits to stores and stock-lists, with 20% of these taking place within 24 hours of viewing the targeted ad. Those targeted based on their geographical vicinity to a store were 52% more likely to engage with the brand.

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“Timberland raised in-store visits by 6% using location-based targeting”

The logo for OPENET, featuring a stylized square icon with a circular arrow inside, followed by the word "OPENET" in a bold, sans-serif font.

“Nets is the second largest payment processor in Europe implementing a real-time fraud detection system”

UC#20: Context-Aware Fraud Detection for Banks

Banking services are under continuous threat from illicit efforts to undermine the secure integrity of the institutions. For this reason, banks and credit card companies are increasingly eager to implement preventative measures to counteract fraudulent transactions.

The logo for nets, featuring the word "nets" in a lowercase, sans-serif font, followed by three blue circles of varying sizes arranged in a triangular pattern.

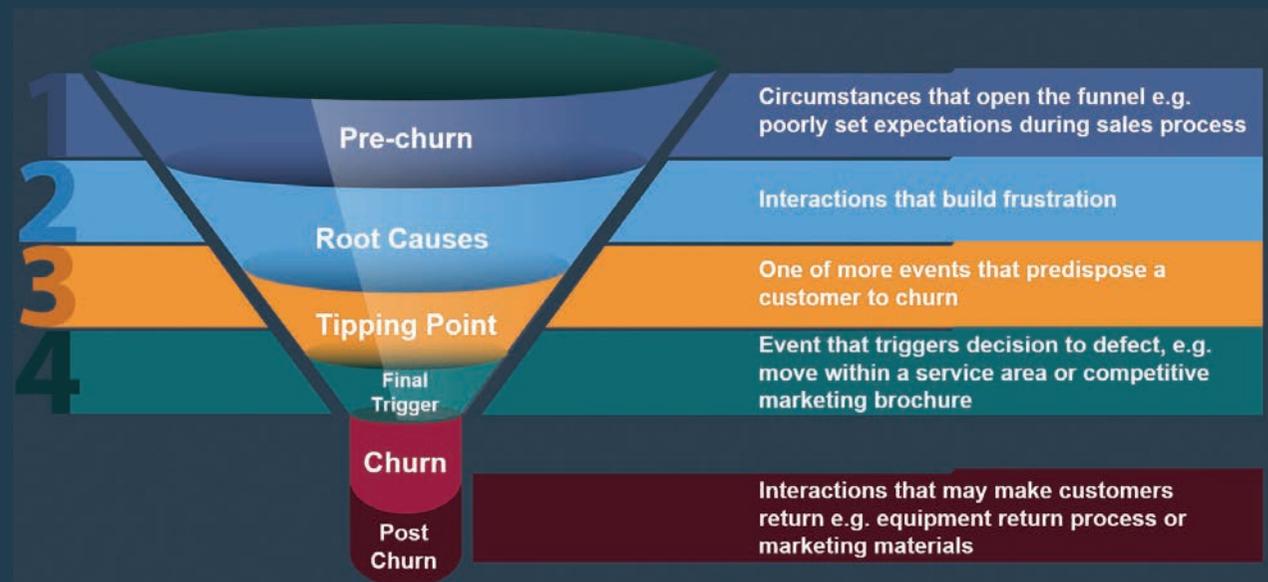
Nets, a Nordic-based payment service provider, tackled fraudulent activities such as skimming and phishing by leveraging incisive data analytics techniques. The increased convenience of online payment transactions has the potential to lead to increased consumer vulnerability. For this reason, Nets is the second largest payment processor in Europe implementing a real-time fraud detection system to remain vigilant in their threat management on behalf of their customers. This drove impressive results – improving fraud detection by 50% and reducing card fraud by 50 – 70%.

UC#21: Churn Analytics and AI solutions

Churn remains a consistent and expensive obstacle for all operators. The current strategies employed to combat churn revolve around post-decision reparation. This is resource-draining, costly and often ineffective means of retention where, after a subscriber has already decided to leave, an operator attempts to convince the customer to stay through conventional offers which may not reflect or resolve the specific subscriber's issue.

According to McKinsey companies that implement a comprehensive, analytics-based approach to base management can reduce their churn by as much as 15%. By pre-emptively identifying customers who are likely to churn and the specific user experience issues which are driving them to leave, operators can proactively put measures in place to minimise churn. This not only protects current and future revenues, but also improves overall customer experience as issues specific to a subscriber are addressed before becoming serious points of contention for the customer. Research by one mobile operator by McKinsey determined that 2% of its customers had a 48% likelihood of cancelling their service in the next three months—a rate much higher than the 5% likelihood among its other customers. It divided the “likely churners” into segments based on the reasons they might cancel. The offers it extended to them, depending on their concerns, reduced cancellations by 15%. And because the operator targeted its outreach efforts precisely, it spent 40% less than it usually did to carry them out.

Not only is AI necessary to translate all this data into strategy, but it can be used to launch proactive marketing/communication campaigns to reach out to current and potential customers. AI can automate a telco's routine, high-volume customer support issues – often far quicker than a human agent. When AI takes over these roles, experienced human agents are no longer bogged down with repetitive customer requests, and can spend time addressing complex or unique customer needs.



ANALYSIS
DATA
SEARCHING
VERIFICATION
CODING
SENDING

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“Marketing campaigns are often created on a population-wide basis, with limited tailoring to reflect individual customer preferences”

UC#22: Target & Context Aware Campaign Management

Marketing campaigns are often created on a population-wide basis, with limited tailoring to reflect individual customer preferences. Traditional campaigns also do not take into account the purchasing context in which marketing content is presented and lack the ability to measure campaign success in driving a buying decision.

According to Sky as of November 2018, the success of sales of Sky Sports products are up 57% due to two changes. Firstly, putting the product in front of the customer at the right time, Saturday afternoon not Friday night for example, and, secondly, selling the product in the right way. If you know you are engaging a football fan, tell them about the football benefits not Formula One.



By combining the ability to capture customer preferences on an individual basis and targeting directly with a relevant offer at the moment the customer is most likely to engage, operators are in a strong position to drive ARPU. With the ability to predict a subscriber's likely propensity to respond to an offer before the offer is launched, operators can more relevantly engage with their customers to drive new revenue.

In China, data analytics and automated transactioning (for deliveries) helped to power the massive success of Singles' Day. Singles' Day is anti-Valentine's Day and in 2017 it resulted in \$25 billion in sales, up from \$17.8 billion in sales for Single's Day 2016 and more than the GDP of Iceland and nearly \$20 billion more than Cyber Monday in the U.S. Alibaba uses its AI-powered algorithm backed by deep learning and natural language processing to recommend products to shoppers and then communicates to the retailers to increase inventory to keep up with the demand.

UC#23: Customer Journey Analytics

Operators are unable to track and analyse how their customers engage with and traverse through all service touch points with a globally unified approach. These user touch points may include digital channels, such as website, customer care app or traditional call centres. This leads to an operator being unable to gain a holistic view of how their customers engage with their service and limits an operator's ability to optimise this process. With the ability to access an end-to-end view of customer engagement, operators are able to optimise all channels by identifying where barriers exist in their processes. Such barriers, in turn, cause customers to disengage from their user journeys and result in diminishing revenues and increased churn propensity.

UC#24: Personalised Customer Experience in Omni-Channel Environment

Customer touch points are designed to facilitate engagement with all customers but, due to individual dispositions, what might be a seamless user experience for one subscriber segment may prove to be a friction-filled experience for another. This can lead to a sub-optimal experience for a large proportion of the customer base at a given time, traversing an operator's omni-channel environment.

The ability to identify and present the customer with a tailored omni-channel experience, predicted to best reflect and respond to their personal disposition, is critical for retention of high lifetime value customers today. In this way, customers are expedited through their user journey, optimising the overall user experience.



Japan's largest e-commerce site, Rakuten, continues to invest in AI to better predict customer behaviours as it is critical to the e-commerce success. Right now, with their Rakuten Institute of Technology, they are able to analyse their 200 million products to forecast sales with a high degree of accuracy. Now they are also capable of segmenting buyers more accurately using real-time data.

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“Driving segments towards relevant product bundles allows operators to better retain and grow their market share.”

CHAPTER 4

MONETISATION

UC#25: Smart Bundling

Segmentation strategies have left a lot to be desired in the past. Very rarely would the propositions pushed to the target segment be relevant and effective. Most of these traditional segments chopped up the base using simplistic demographic data, which would lend little insight into the buying tendencies and usage preferences of the customer. With a market which is becoming increasingly commoditised, understanding your customer is everything. Differentiating on usability and reliability alone is now defunct and we are experiencing a shift towards a focus on price, relevance and utility.



The winners in the digital arena have had to both know their customer and control their experience as competition was fierce and the barrier to entry was low. Their key differentiators became rapid innovation and securing a deep understanding of the end user experience. As a result, measuring the impact of changes and adapting accordingly has been vital. The ability to pivot and evolve their segmentation strategy remains key to competitive advantage. Driving segments towards relevant product bundles allows operators to better retain and grow their market share. Traditional segments have left a large amount underserved customers who are offered the ‘standard’ issue. Better segment modelling married with bundling which reflects actual usage profiles can transform upsell and customer value, reducing churn and driving ARPU.

UC#26: Real-Time Offers Based on Usage

Context is key when looking to drive purchase conversion with a customer. The more relevant the offer is to the real-time situational context of the recipient, the more likely they are to avail of the offer. Orchestrating targeted cross-sell and upsell efforts based on how the subscriber is using their device at a given time allows the service provider to generate a hyper personalised user experience.

The correlation of usage behaviours, subscriber profile information and service use history empowers the operator to create a bespoke offering which maximises the probability of purchase. This ensures that offers pushed to the subscriber are relevant to them, in turn, improving customer experience and increasing the value of the customer.



With predictive models fed by customer information, mobile operators can develop cross-selling offers that appeal to individual customers and determine how best to reach them, down to the time of day. This approach, McKinsey state, can add as much as two percentage points to a wireless operator's EBITDA margins. One company increased its sales from cross-selling campaigns by 25% once it started using analytics to plan those efforts.

“The correlation of usage behaviours, subscriber profile information and service use history empowers the operator to create a bespoke offering”

ANALYSIS
DATA
SEARCHING
VERIFICATION
CODING
SENDING

OPENET®

“Geo-locational data insight can be applied with great effect to innovative campaign concepts”

UC#27: Real-Time Offers Based on Location

Geo-locational data insight can be applied with great effect to innovative campaign concepts. This is particularly effective in driving footfall to make an instore purchase based on their proximity to a retail store. A particularly creative application of this approach is a campaign run by Guatemalan shoe company Meat Pack.

MEAT PACK



The ‘Hijack’ campaign triggered an offer when customers who had installed the ‘Hijack’ app entered a geo-fenced competitor store. The offer pushed to the user was for a 99% discount on their next Meat Pack purchase and this discount reduced by 1% every second, creating a gamified sense of urgency for the customer. The discount amount stopped depleting once the customer entered the nearest Meat Pack store. Within the first week, the campaign ‘hijacked’ over 600 customers from rival outlets. This highlights the power of understanding the locational proximity of a customer in order to drive purchase conversions and brand loyalty.

UC#28: : Real-Time Offers Based on Device

Convergence across access technologies has resulted in customers using a single subscription across multiple devices. In tandem, device longevity is decreasing over time. This presents a prime opportunity for the service provider to target existing customers with special offers based on their device history and usage profile. The not only maximises the likelihood of the subscriber availing of the offer, but also improves customer experience and operator perception to help secure later upsell attempts. Data analytics provide valuable insight to determine the device in use, how it is being used and to then discern the most relevant device to offer. For example, a mobile customer may be targeted with a timely device upgrade offer based on knowledge of the user and the device.



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“Convergence across access technologies has resulted in customers using a single subscription across multiple devices”



DATA MANAGEMENT USE CASES

SUMMARY

Operators and Industries face challenges on many fronts. Data is now an integral part of our business, social and personal life. Data usage is rising by 70% per annum along with investment costs, yet the average revenue per customer is stable at best. Operators face an ongoing battle as customer expectations are rising, along with the industry expectation for digital access and increased productivity. Competition is set to intensify and is increasingly coming from non-traditional players. Operators and industry players must continuously adapt in order to optimise technology, provide users with work and life-enhancing applications, along with excellent user experience.





About Openet

Openet provides real-time software solutions and services to enable service providers to create new revenues from digital services and improve customer engagement. Our Digital Business Platform and solutions enable service providers to be more agile, innovative and enjoy a faster time to value.

We are all for open solutions that deliver value and benefits to our customers. We are against vendor lock-in and the vendor first, second and third approach that has been endemic in telecoms. We work with our customers to deliver innovative solutions that drive value and enable change.

We passionately believe that the most adaptable businesses are those that prosper best. We help our customers transform their businesses and access new revenues and profits by using the latest technologies and methods—in ways ranging from augmenting existing architectures or replacement with more agile and cost-effective end to end platforms.

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