*Frameworx Best Practice*

# Big Data Analytics Guidebook

*Use Cases*

**Big Data Analytics Solution Suite**
**GB979 Addendum A**
**Release 16.5.1**
**June 2017**

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# Executive Summary

The Big Data Analytics Guidebook (GB979) provides guidance to a Communication Service Provider (CSP) on the major components that are needed for the implementation of real-life Big Data Analytics (BDA) use cases. This addendum provides a broad overview of the different big data analytics use cases that can be implemented in the CSP's business.

The structure of this addendum is as follows:

Section 1: **Introduction:** Provides an overview of this addendum covering the structure in which the use cases are documented, an overview of the use cases described, and the coverage that these use cases provide over the TM Forum Business Process Frameworks

Section 2: **Big Data Analytics Use Cases:** Documents the use cases in three groups, namely Customer, *Service, Resource, Product, Market & Sales, Enterprise, Engaged Party* in line with the domains of the TM Forum Business Process Framework (eTOM).

Section 3: **Administrative Appendix**: Provides document revision history, acknowledgements for work completed and information about the TM Forum.

# 1. Introduction

This addendum to the Big Data Analytics Guidebook provides a broad over of the different big data analytics use cases that can be implemented in the CSP's business in order to extract value from the data that CSPs collect.

The use cases are aligned against CSP Business Processes as defined in the TM Forum Business Process Framework, which can be seen in Figure 1 below. Defining the use cases in the context of the Business Process Framework (eTOM) enables a CSP to see the coverage provided by these use cases over the different aspects of their business (see section 1.3).
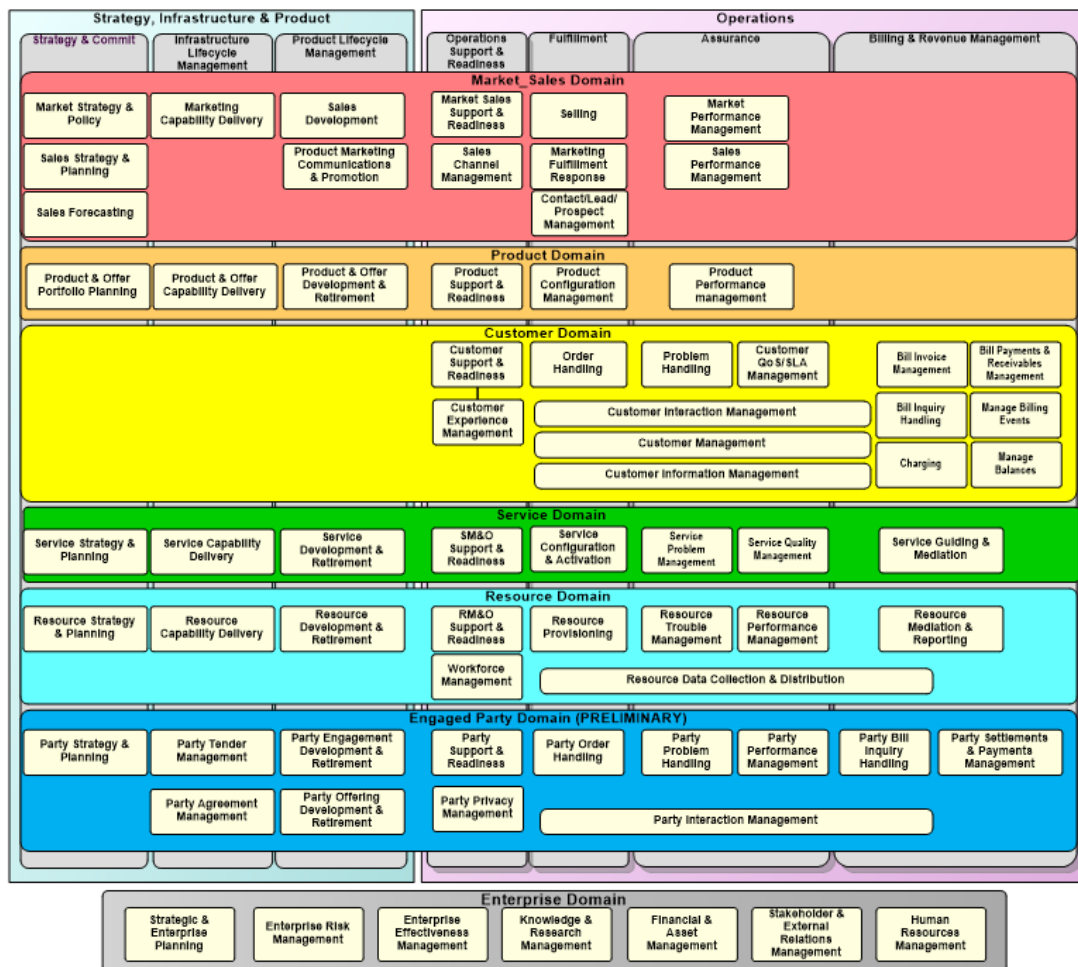


**Figure 1 – TM Forum Business Process Framework**

The suite of analytical use cases defined in this document can be used as a Big Data roadmap for CSP, or a list from which use cases can be cherry-picked in order to resolve particular issues within the CSP's business e.g. retention, or fraud.

## 1.1. Use Case Nomenclature

Each use case has an identifier that denotes where it fits in the TM Forum Business Process Framework (eTOM). The identifier is multi-level with the following meaning:

- MS = Market/Sales                  (Domain: Level 0)
  - MAM = Market Analysis and Management (Level 1)
  - SAM = Sales Analysis and Management (Level 1)
  - CAM = Channel Analysis and Management (Level 1)
- P = Product                      (Domain: Level 0)
  - PAM = Product Analysis and Management (Level 1)
  - CPAM = Customer Product Analysis and Management (Level 1)
  - OAM = Order Analysis and Management (Level 1)
- C = Customer                   (Domain: Level 0)
  - CAM = Customer Analysis and Management (Level 1)
  - CEM = Customer Experience Management (Level 1)
- S = Service                      (Domain: Level 0)
  - SAM = Service Analysis and Management (Level 1)
  - CSA = Customer Service Analysis and Management (Level 1)
  - OA = Order Analysis and Management (Level 1)
- R = Resource                   (Domain: Level 0)
  - NRAM = Network Resource Analysis and Management (Level 1)
  - SRAM = Support Resource Analysis and Management (Level 1)
- EP = Engaged Party            (Domain: Level 0)
  - PAM = Party Analysis and Management (Level 1)
  - PEM = Party Experience Management (Level 1
- EN = Enterprise               (Domain: Level 0)

- EAM = Enterprise Analysis and Management
  (Level 1)

- DM = Data Monetization
  (Level 1)

## 1.2. Tree Structure Overview

**An additional way to view these use cases is in a tree structure:**

## Use Case <-->eTOM Domain

### Market & Sales

**Market Analysis and Management**
- MS-MAM-1 Market Watch

**Sales Analysis and Management**
- MS-SAM-1 Enticing selling of bundled products
- MS-SAM-2 Identifying, segregating and targeting qualified and high scoring leads for improved customer conversion
- MS-SAM-3 Real-time personalized offers while browsing
- MS-SAM-4 Real-time personalized offers during checkout
- MS-SAM-5 Real-time personalized offers during a live interaction
- MS-SAM-6 Real-time personalized offers based on location
- MS-SAM-7 Real-time personalized offers based usage
- MS-SAM-8 Real-time personalized offers based on device
- MS-SAM-9 Intelligent advertising based on browsing history
- MS-SAM-10 Stimulating prepaid to postpaid conversion
- MS-SAM-11 Enticing usage from roaming customers

**Channel Analysis and Management**

### Product

**Product Analysis and Management**
- P-PAM-1 Product definition and development
- P-PAM-2 Product introduction analytics
- P-PAM-3 Product performance optimization
- P-PAM-4 Purchase propensity analytics for enhanced targeting

**Customer Product Analysis and Management**

**Order Analysis and Management**
- P-OAM-1 Increasing conversion in the ordering process
- P-OAM-2 Reduction of errors in the ordering process
- P-OAM-3 New enterprise order impact analysis

### Customer

**Customer Analysis and Management**
- C-CAM-1 Personalized collections treatment plan
- C-CAM-2 Personalization of Real-time interaction in assisted care
- C-CAM-3 Increase effectiveness of customer self service
- C-CAM-4 Personalized offers for customer retention
- C-CAM-5 Usage based real-time notifications based on threshold limits defined by the customer

**Customer Experience Management**
- C-CEM-1 Increase Service Awareness
- C-CEM-2 How to encourage dialog with customer
- C-CEM-3 Create a single per-customer customer experience index
- C-CEM-4 SMB sales interaction
- C-CEM-5 Personalized offering across customer lifecycle
- C-CEM-6 Alignment of customer contact center to CEM
- C-CEM-7 Innovative customer engagement
- C-CEM-8 Empowering retail customers through efficient self service
- C-CEM-9 Optimising the customer sales experience across Omni-channel
- C-CEM-10 Putting a business value on B2B Customer experience
- C-CEM-11 Differentiating on trust to provide a better customer experience
- C-CEM-12 Seamless customer experience during payments across channels
- C-CEM-13 Customer experience on bill shock
- C-CEM-14 Enhance roaming ARPU through customer insights
- C-CEM-15 Reduce network issues related churn-customer approaching CSP through various channels for network related issues
- C-CEM-16 Improving assisted care with network experience analytics
- C-CEM-17 Churn risk prediction for customer retention
- C-CEM-18 Churn motivation prediction for customer retention
- C-CEM-19 Retention offer acceptance propensity analytics
- C-CEM-20 Customer retention through proactive offer management
- C-CEM-21 Proactive care
- C-CEM-22 Right proactive care channel and time
- C-CEM-23 Proactive care based on poor care experience
- C-CEM-24 Proactive care during or after network fault
- C-CEM-25 Proactive care based on absence of usage
- C-CEM-26 Proactive care based on network experience analytics
- C-CEM-27 Roaming customer onboarding
- C-CEM-28 Proactive reduction of errors in the billing process from the customer's perspective
- C-CEM-29 Proactive customer care and upsell opportunities based on automated equipment audit

### Service

**Service Analysis and Management**

**Customer Service Analysis and Management**
- S-CSA-1 Data driven regulatory & legal compliance based on industry, business and social data
- S-CSA-2 Optimization of customer self-installation

**Order Analysis and Management**

### Resource

**Network Resource Analysis and Management**
- R-NRAM-1 Policy-based capacity management
- R-NRAM-2 Predictive analysis of network faults, traffic performance and location based product impact analysis
- R-NRAM-3 Network fault location and recovery
- R-NRAM-4 Real-time value-based congestion management
- R-NRAM-5 Real-time customer offload management
- R-NRAM-6 Proactive experience driven network repair
- R-NRAM-7 Optimal network technology utilization
- R-NRAM-8 Value-based network planning
- R-NRAM-9 Site planning

**Support Resource Analysis and Management**
- R-SRAM-1 Field technician assignment optimization
- R-SRAM-2 Field technician arrival optimization

### Engaged Party

**Party Analysis and Management**

**Party Experience Management**

### Enterprise

**Enterprise Analysis and Management**
- EN-EAM-1 Business Process Optimization
- EN-EAM-2 Fraud Management
- EN-EAM-3 Third Party Channel Fraud Management
- EN-EAM-4 Forecast and monitor impact of investment in network upgrades marketing programs
- EN-EAM-5 Revenue Assurance

**Data Monetization**
- EN-DM-1 Public transportation services optimization
- EN-DM-2 Location based real time credit card fraud detection
- EN-DM-3 MVNO Data monetization
- EN-DM-4 Real-time traffic information based on mobile device
- EN-DM-5 Retail branch outdoor analytics
- EN-DM-6 Retail branch indoor analytics
- EN-DM-7 Retail new branches planning optimization
- EN-DM-8 Increase footballs and improve sales through personalized offers to consumers
- EN-DM-9 Customized healthcare checks
- EN-DM-10 Audience measurement for pay TV-Advertising Scenario
- EN-DM-11 Tourists movement and Profile analysis
- EN-DM-12 Targeted offers and coupons

## 1.3. Use Case Coverage

The diagram below provides a visual representation of where the use cases documented in this addendum fit in relation to the domains (depicted as horizontal bars in the diagram below) of the TM Forum Business Process Framework (eTOM) and provides an understanding of the coverage that this addendum currently provides over the CSP's business.
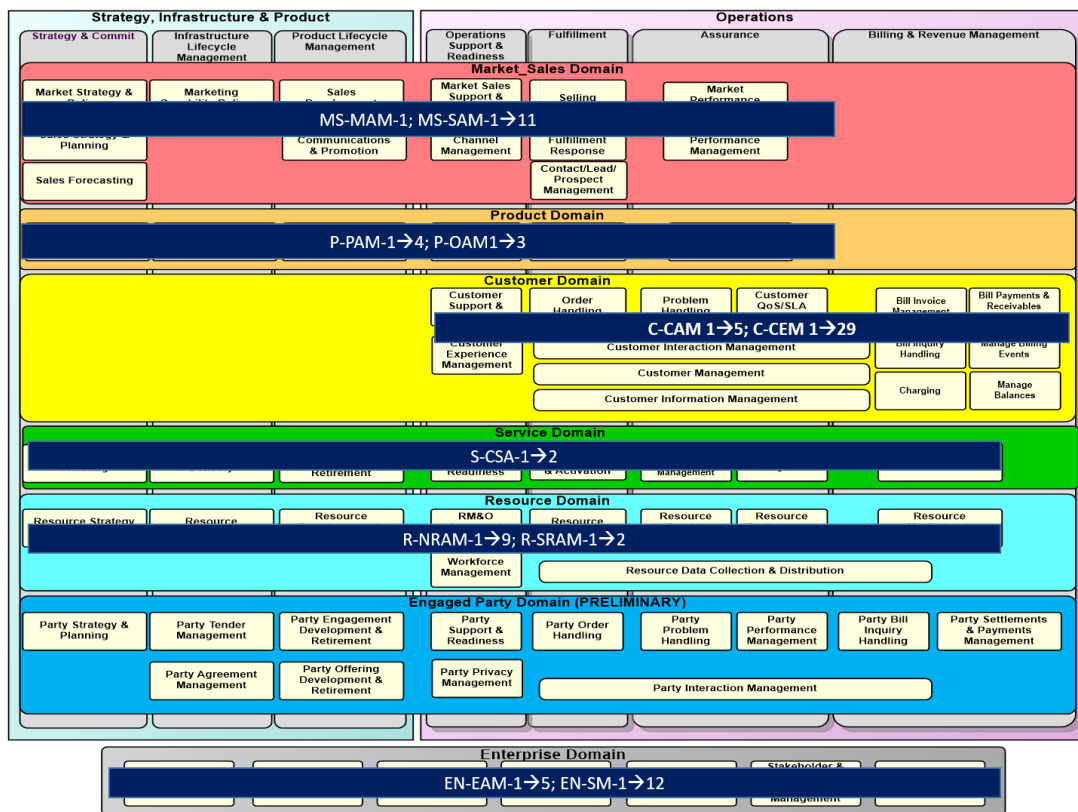


## 1.4. Use Case Structure

Each of the big data analytics use cases in this addendum are documented in a structured manner using the following attributes:

**Osterwalder Business Canvas**:  The canvas defines the business case for each use case and identifies the business reasons that validate the use case.

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
|  | The types of customers reached by this business model | The channels through which the business needs to reach its customers | The customer relationships that need to be established | Identify in which way the use case can improve the Customers' feelings about their experience |
| **Value Proposition** | The value, products, & services delivered to the customer | | | |

| Cost Structure | The most important costs incurred by this business model | |
|---|---|---|
| Revenue Streams | The streams through which this business model obtains revenue from customers. | |
| **Key Activities** | **Key Resources** | **Key Partners** |
| The most important activities the business must conduct to make the business model work; | The most important assets to make the business model work; | The key partners & suppliers needed to realize the business model; |

**Use Case Fields:**

| Attribute | Description |
|---|---|
| **ID** | A unique ID of the Use Case |
| **Name** | The name of the use case |
| **Hierarchy** | Relationship with other use cases |
| **Motivation** | Describes the business problem that shall be solved and the business value of a solution |
| **CxLC Stage(s)** | GB962, Be Aware, Interact, etc. |
| **Actors** | Entities involved in the use case, ordered by relevance. Primary Actor(s), Supporting Actor(s), other actors |
| **Entry conditions** | Describe a condition for an organization. The presented solutions are made for organizations that at least fulfill these conditions. The description can be provided using plain text, or it can utilize metrics and benchmarks in order to quantify the condition |
| **External References** | Mention the target model that is referenced (examples: Business Process Framework (eTOM), Information Framework (SID), Application Framework (TAM)). <If possible provide an online link> |
| **Customer Experience Metrics:** | A list of the customer experience metrics that this use case impacts. The metrics used to describe each use case are those defined in the TM Forum Customer Experience Management Lifecycle Metrics specification GB962-A; |
| **Other metrics:** | A list of the other metrics that this use case impacts. The metrics used to describe each use, e.g. TM Forum Business Metrics Specification GB935-A; |
| **Data Sources** | A list of every data source that is essential to the success of the use case implementation, ordered by relevance. |

## 2. Big Data Analytics Use Cases

| Title | Customer Experience Management | Data Analytics | Data Monetization | Fx15.0 Nomenclature | Fx15.5 Nomenclature |
|---|---|---|---|---|---|
| EN-DM-11: Tourists Movement and Profile Analysis R16.5.0 | | X | X | New | EN-DM-11 |
| EN-DM-11: Tourists Movement and Profile Analysis | | X | X | New | EN-DM-11 |

| Fx15.0 Nomenclature | Fx15.5 Nomenclature | Use Case | Customer Experience Management | Data Analytics | Data Monetization |
|---|---|---|---|---|---|
| E-EEM1 | EN-EAM-1 | Business Process Optimization | | x | |
| E-FAM1 | EN-EAM-2 | Fraud Management | | x | |
| E-FAM2 | EN-EAM-3 | Third Party Channel Fraud Management | | x | |
| E-KRM1 | EN-EAM-4 | Forecast and monitor impact of investment in network upgrades and marketing programs | | x | |
| E-SEP1 | MS-MAM-1 | Market Watch | | x | |
| New | C-CEM-15 | Reduce Network issues related Churn – Customer approaching CSP through various channels for Network related issues | x | x | |
| New | EN-DM-1 | Public Transportation Services Optimization | | x | x |
| New | EN-DM-9 | Customized Healthcare Checks | | x | x |
| New | EN-DM-10 | Audience Measurement for Pay TV - Advertising Scenario | | x | x |
| New | EN-DM-11 | Tourists Movement and Profile Analysis | | x | x |
| New | EN-DM-12 | Targeted Offers and | | x | x |

| Fx15.0 Nomenclature | Fx15.5 Nomenclature | Use Case | Customer Experience Management | Data Analytics | Data Monetization |
|---|---|---|---|---|---|
| | | Coupons | | | |
| New | EN-DM-5 | Retail Branch Outdoor Analytics | | x | x |
| New | EN-DM-6 | Retail Branch Indoor Analytics | | x | x |
| New | EN-DM-7 | Retail New Branches Planning Optimization | | x | x |
| New | EN-DM-8 | Increase Footfalls and improve Sales through Personalized Offers to Consumers | | x | x |
| New | MS-SAM-1 | Enticing selling of Bundled products | | x | |
| New | MS-SAM-2 | Identifying, segregating and targeting qualified and high scoring leads for improved customer conversion | | x | |
| New | R-NRAM-2 | Predictive analysis of Network Faults, Traffic performance and location based product impact analysis | | x | |
| New | S-CSA-1 | Data driven regulatory & legal compliance based on industry, business and social data | | x | |
| O-BRM1 | EN-EAM-5 | Revenue Assurance | | x | |
| O-BRM2 | C-CAM-1 | Personalized Collections Treatment Plan | x | x | |
| O-CRM-CC1 | C-CAM-2 | Personalization of Real-Time Interaction in Assisted Care | x | x | |
| O-CRM-CC2 | C-CAM-3 | Increase Effectiveness of Customer Self Service | x | x | |
| O-CRM-CC3 | C-CEM-16 | Improving Assisted Care with Network Experience Analytics | x | x | |
| O-CRM-CR1 | C-CEM-17 | Churn Risk Prediction for Customer Retention | x | x | |
| O-CRM-CR2 | C-CEM-18 | Churn Motivation Prediction for Customer Retention | x | x | |

| Fx15.0 Nomenclature | Fx15.5 Nomenclature | Use Case | Customer Experience Management | Data Analytics | Data Monetization |
|---|---|---|---|---|---|
| O-CRM-CR3 | C-CAM-4 | Personalized Offers for Customer Retention | x | x | |
| O-CRM-CR4 | C-CEM-19 | Retention Offer Acceptance Propensity Analytics | x | x | |
| O-CRM-CR5 | C-CEM-20 | Customer retention through proactive offer management | x | x | |
| O-CRM-PC1 | C-CEM-21 | Proactive Care | x | x | |
| O-CRM-PC2 | C-CEM-22 | Right Proactive Care Channel and Time | x | x | |
| O-CRM-PC3 | C-CEM-23 | Proactive Care Based on Poor Care Experience | x | x | |
| O-CRM-PC4 | C-CEM-24 | Proactive Care During or After Network Fault | x | x | |
| O-CRM-PC5 | C-CEM-25 | Proactive Care Based on Absence of Usage | x | x | |
| O-CRM-PC6 | C-CEM-26 | Proactive Care Based on Network Experience Analytics | x | x | |
| O-CRM-PC8 | C-CEM-28 | Proactive Reduction of Errors in the billing process from the customer's perspective | x | x | |
| O-CRM-PC9 | C-CAM-5 | Usage Based Real-Time Notifications Based on Threshold Limits Defined by the Customer | x | x | |
| O-FUL-I1 | S-CSA-2; | Optimization of Customer Self-Installation | x | x | |
| O-FUL-I2 | R-SRAM-1 | Field Technician Assignment Optimization | | x | |
| O-FUL-I3 | R-SRAM-2 | Field Technician Arrival Optimization | | x | |
| O-FUL-O1 | P-OAM-1 | Increasing Conversion in the Ordering Process | | x | |
| O-FUL-O2 | P-OAM-2 | Reduction of Errors in the Ordering Process | | x | |
| | P-OAM-3: | New Enterprise Order Impact Analysis | | x | |
| | P-OAM-4: | Proactive Monitoring of Progress of Enterprise Orders from Initiation to | | x | |

| Fx15.0 Nomenclature | Fx15.5 Nomenclature | Use Case | Customer Experience Management | Data Analytics | Data Monetization |
|---|---|---|---|---|---|
| | | Activation | | | |
| O-RMO1 | R-NRAM-3 | Network Fault Location and Recovery | | x | |
| O-RMO2 | R-NRAM-4 | Real-time Value-based Congestion Management | | x | |
| O-RMO3 | R-NRAM-5 | Real-Time Customer Offload Management | | x | |
| O-RMO4 | R-NRAM-6 | Proactive Experience Driven Network Repair | | x | |
| O-RMO5 | R-NRAM-7 | Optimal Network Technology Utilization | | x | |
| O-SPRM1 | EP-PAM-1 | Partner Value Optimization | | x | |
| S-MOM-O1 | P-PAM-1 | Product Definition and Development | | x | |
| S-MOM-O2 | P-PAM-2 | Product Introduction Analytics | | x | |
| S-MOM-O3 | P-PAM-3 | Product Performance Optimization | | x | |
| S-MOM-O4 | P-PAM-4 | Purchase Propensity Analytics for Enhanced Targeting | | x | |
| S-MOM-T1 | MS-SAM-3 | Real-time Personalized Offers while Browsing | | x | |
| S-MOM-T11 | C-CEM-29 | Proactive customer care and upsell opportunities based on automated equipment audit | x | x | |
| S-MOM-T2 | MS-SAM-4 | Real-time Personalized Offers during Checkout | | x | |
| S-MOM-T3 | MS-SAM-5 | Real-time Personalized Offers during a Live Interaction | | x | |
| S-MOM-T4 | MS-SAM-6 | Real-time Personalized Offers Based on Location | | x | |
| S-MOM-T5 | MS-SAM-7 | Real-time Personalized Offers Based on Usage | | x | |
| S-MOM-T6 | MS-SAM-8 | Real-time Personalized Offers Based on Device | | x | |
| S-MOM-T7 | MS-SAM-9 | Intelligent Advertising Based on Browsing | | x | |

| Fx15.0 Nomenclature | Fx15.5 Nomenclature | Use Case | Customer Experience Management | Data Analytics | Data Monetization |
|---|---|---|---|---|---|
| | | History | | | |
| S-MOM-T8 | MS-SAM-10 | Stimulating Prepaid to Postpaid Conversion | | x | |
| S-MOM-T9 | MS-SAM-11 | Enticing Usage from Roaming Customers | | x | |
| S-RDM1 | R-NRAM-8 | Value-based Network Planning | | x | |
| S-RDM2 | P-OAM-3 | New Enterprise Order Impact Analysis | | x | |
| S-RDM3 | R-NRAM-1 | Policy-based Capacity Management | | x | |
| S-RDM4 | R-NRAM-9 | Site Planning | | x | |
| S-SDM1-E1 | EN-DM-3 | MVNO Data Monetization | | x | x |
| S-SDM1-E3 | EN-DM-2 | Location Based Real Time Credit Card Fraud Detection | | x | x |
| S-SDM1-E4 | EN-DM-4 | Real-time traffic information based on mobile device | | x | x |

# 3. Engaged Party Related Use Cases

## 3.1. EP-PAM-1: Partner Value Optimization

### 3.1.1. Attributes

| Attribute | Description |
|---|---|
| ID | EP-PAM-1 |
| Name | Partner Value Optimization |
| Hierarchy | TBD |
| Motivation | TBD |
| CxLC Stage(s) | TBD GB962 |
| Actors | Primary Actor(s): Partner Manager, Business Analyst Supporting Actor(s): Financial Officer |
| Entry conditions | TBD |
| External References | TBD |
| Customer Experience Metrics: | TBD GB962-A; |
| Other metrics: | TBD GB935-A; |
| Data Sources | • Partner Management Data<br>• Billing and Usage Events<br>• Product Catalogue<br>• Network data<br>• CRM Data<br>• Purchase History |

| Business Model Canvas of the Use Case | TBD |
|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | This use case has no direct interaction with customers; however changes to how the CSP works with its partners may have a knock on effect to the CSP customer, which should be considered when optimizing the partner interaction | | | |

| | processes. | | | |
|---|---|---|---|---|
| **Value Proposition** | CSP Partners provide a strong stream of revenue for the CSP; however if the associated incentives, commissions, and settlement arrangements are not optimized there is a potential for revenue leakage and sub optimal costs. This use cases addresses these issues by optimizing the way in which the CSP interacts with its partners to strength revenues received from these partners. | | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. Existing costs associated with partners will be reduced through improvements in the process of interacting with these partners. | | | |
| **Revenue Streams** | This use case opens no new revenue streams; however the profitability of existing revenue streams is enhanced by reducing the costs associated with them. | | | |

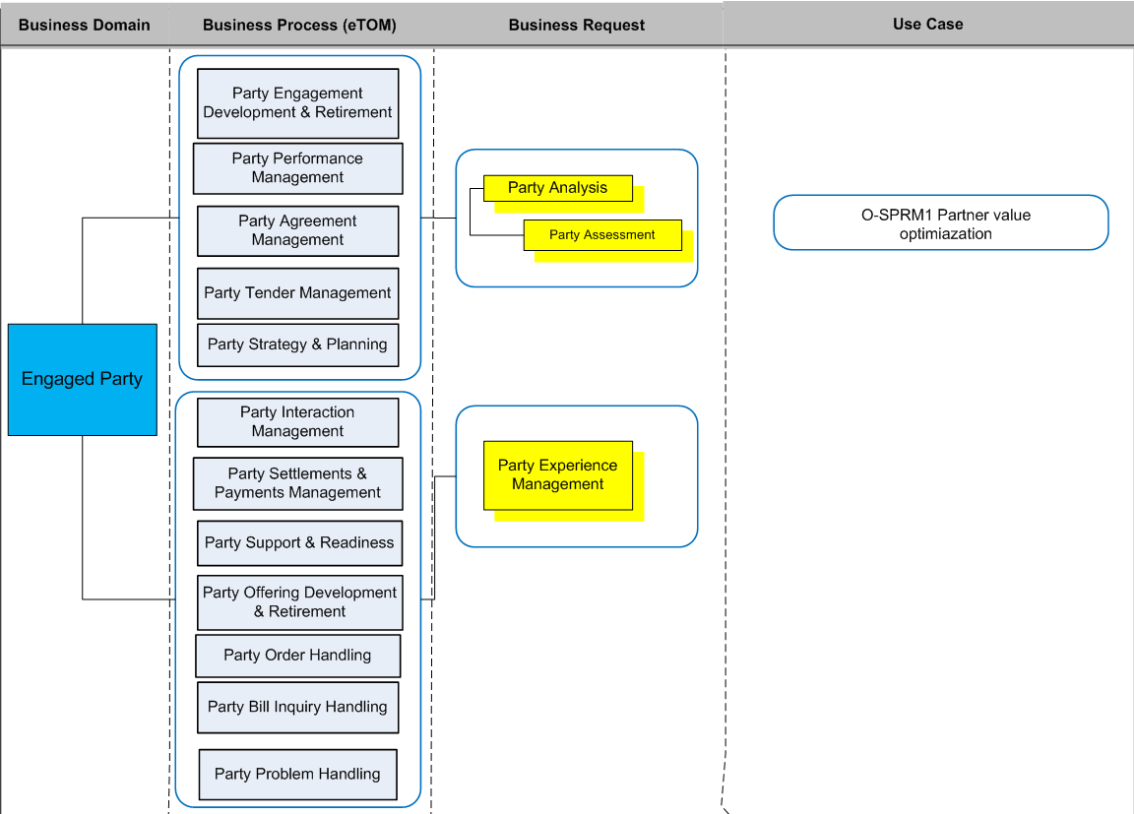| **Key Activities** | **Key Resources** | **Key Partners** |
|---|---|---|
| • Measure the performance of existing incentive plan, commission rules and settlement arrangement;<br><br>• Forecast their performance in the future;<br><br>• Design optimized incentive plans, commission rules and settlement arrangements;<br><br>• Simulate their performance before launch | There are considerable data requirements related to how the CSP currently interacts with its partners, the performance of those partners, the incentives they receive, the commissions they make, etc. | No new partners are required as part of this use case; however the main effect of this use case will change the way that the CSP interacts with its existing partners. |

| **Attribute** | **Description** |
|---|---|
| **Story:** | Big data analytics can be applied in this use case to maximize the value of partners through optimized incentive programs, commission rules, and settlement arrangements. In addition, analytics can be used to increase profitability from partner services usage by optimizing new product & rate plan introduction as well as optimizing consumer usage.<br><br>Big data analytics can also be applied to measure incentive plan effectiveness based on historical data and from that to forecast future sales revenue. Furthermore, analysis of past and future dealer sales performance can provide the ability to simulate incentive spend based on pre-defined incentive plans. |
| **Actions and processes** | TBD |
| **Building Block(s)** | **TBD** |
| **Privacy Risk Score** | TBD |
| **Feasibility Parameters** | **TBD** |

## 3.2. Use Case Management-Engaged Party Domain

Please see attachment visio version:

# 4. Enterprise Related Use Cases

## 4.1. Data Monetization Related Use Cases

## 4.2. EN-DM-1: Public Transportation Services Optimization

| Attribute | Description |
|---|---|
| ID | EN-DM-1 |
| Name | Public Transportation Services Optimization |
| Hierarchy | None |
| Motivation | Governments and Transportation Authorities are ready to pay data providers from any kind who could help them analyze and improve their services.<br><br>By gathering and analyzing relevant information, CSPs can use information captured by their network (mainly location information) and to provide these third parties with a successful solution to answer their complex requirements. |
| CxLC Stage(s) | N/A |
| Actors | • CSP: Representatives from Network & IT, Legal and Business Relationships teams.<br>• Public Transportation Authority: Management, IT, relevant business teams<br>• Vendors who provide comprehensive/supporting solutions for this project |
| Entry conditions | PTA:<br>• Needs to have a budget for such a project. Usually it will release an official tender.<br>• Need to have an Analysts team to set requirements, needs and goals for such a project.<br>CSP: Need to have the relevant location data sources to start such project, so as technical capabilities and legal team approval. |
| External References | N/A |
| Metrics: | Increase 193 – $ Revenue from new data monetization revenue stream |
| Data Sources | • Location data from all available sources – CDR, LBS, GPS, Wi-Fi.<br>• All additional available telecom data sources: CRM, Usage & Billing Information, Network elements etc.<br>• PTA relevant information - Train/bus schedule, Vehicles'' GPS device information, lines and stations information etc. |

| | |
|---|---|
| | • Relevant external data sources – third party data sources, social media information, etc. |

| | |
|---|---|
| **Business Model Canvas of the Use Case** | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |

| **Customer** | **Segment** | **Channel** | **Relationship** | **Experience** |
|---|---|---|---|---|
| | Public Transportation Authorities | • Real-time integration<br>• Ad-hoc reports<br>• Web portal | CSPs need to create a relationship with an unfamiliar organization such PTAs. Therefore, they need to study the organization needs and structure and to develop a relevant solution and business model. | N/A |
| **Value Proposition** | CSPs control the pipe through which massive amounts of customer geo-location and behavioral data flows on a daily basis. Collecting, aggregating, manipulating, enriching and exposing this information to Public Transportation Authorities can create a new and significant revenue stream for the CSP.<br><br>Furthermore, after creating a relationship with the PTA, the CSP will have upsell opportunities to answer other requirements raised by the PTA, such as Real Time alert system, advertising activities and corporation with other industries. | | | |
| **Cost Structure** | In case of self-development, which is possible only if the CSP have the relevant knowledge, the CSP will incur additional costs in relevant manpower, integration with data sources, developing geo-location algorithms and business logics and maintenance of the big data storage and processing infrastructure, developing and managing the service through which third parties access the data. In case of external-development, the CSP will have to purchase services and solutions from external vendors.<br><br>Furthermore, there are additional costs in LBS implementation and other network components. Additional costs may also be incurred in maintaining the customer's image of the CSP in the light of privacy and security of data exposure. | | | |
| **Revenue Streams** | PTAs will pay for the data analytics solution according to the decided business model (license fee, revenue share etc.). Since the outcome of this use case will be many time a web portal including a map component and not an-hoc reports, the business model will be many times a payment for the solution plus license fee. | | | |

| **Key Activities** | **Key Resources** | **Key Partners** |
|---|---|---|
| One of the most important activities the business must conduct is to find and approach the right personas in the PTAs, then to understand their existing | In order to make the business model work, CSPs have to make sure they can produce | • PTAs<br><br>• LBS providers<br><br>• Access Point (AP) providers<br><br>• Vendors that provide external |

| systems, data sources and finally to understand their requirements. In case the CSP choose to buy services and solutions from external vendors, the CSP has to engage with the right partners in order to get the best results. The partner can be a vendor which provides a comprehensive solution or multiply vendors which provide the GUI layer, relevant models etc. separately. | accurate location information that could provide insights about commuters' behavior. | Monetization solutions <br><br> • External sources providers, e.g. Google Maps which provides relevant POIs <br><br> • GIS vendors |
|---|---|---|
| | | | | | | |

| Attribute | Description |
|---|---|
| **Story:** | Public Transport Authorities (PTAs) are constantly looking to optimize their operations providing an optimized experience for commuters while maintaining operational efficiency. <br><br> In order to do so, they need to get answers for important questions, such : <br><br> - What are the most crowded stations/routes and when? <br><br> - Where and when do commuters wait for buses/trains the most? <br><br> - What's the longest travel from home to work and vice versa? <br><br> - What route holds the largest ratio of travel time vs. travel distance? <br><br> - Where the commuters in the station are coming from/going to? <br><br> To answer these questions, they need to know, track and analyze relevant measures to get analysis like: <br><br> Station Analysis <br><br> - Waiting time (SWT, AWT, EWT): <br><br> • SWT – Scheduled Waiting Time: Number of minutes the commuters should wait on platform until the next bus/train to come according to PTA's schedule <br><br> • AWT – Average Waiting Time: Number of minutes the commuters actually waited on platform until the next bus/train came <br><br> • EWT – Excess Waiting Time: the gap between AWT and SWT which represents PTAs level of success to provide their service as planned. <br><br> - Station Congestion Analysis. <br><br> - Previous/Next location <br><br> • The location (in city/district etc. level) the commuters were located in x hours before/after they were located at the station. <br><br> Route Analysis <br><br> - Bus/Train arrival time to station <br><br> - Bus/Train departure time from station <br><br> - Train headway: the gap between train arrival time and previous train arrival time |

- Commuters boarding the bus/train

- Commuters alighting the bus/train

- Bus/Train congestion analysis

- Bus/Train Load analysis

Journey Analysis

- From Origin to Destination

The time, distance, comfort and complexity it takes to commuters to get from their origin (e.g. home) to their destination (e.g.) work. This analysis should include not only one bus/train line, but all kind of transportation types ( e.g. walk+bus+train+walk)

- Developing Home and work detection models will be relevant for this case.

Additional relevant analysis:

- Public Vs Private transport comparison

- Peak vs off peak analysis

- NRT Analysis of commuters location

| | |
|---|---|
| **Actions and processes** | 1. PTA to set requirements and to provide relevant information (geographical areas of interest, schedules and lines info etc)<br><br>2. CSP to explore relevant data sources to decide what is doable<br><br>3. CSP to get approval from legal team to use the information<br><br>4. CSP to gather, anonymize and aggregate the relevant Info<br><br>5. CSP to develop data model including stations, routes and other polygons information<br><br>6. CSP to load the data model results to a visualization layer |
| **Building Block(s)** | **CL1: Geocoding**<br><br>**CL2: Customer Location Detection**<br><br>**CL3: Customer Location Prediction**<br><br>**CL4: Key Location Profiling** |
| **Privacy Risk Score** | **45 (high)**<br><br>Security and privacy can be an obstacle for CPS that want to sell customers information and data to third party, as well as for third parties to use it. All regulation issues should be discussed at the beginning of the sell process, according to privacy rules applied in the region. It is important to highlight during this process that no private information is going to be shared, and the aggregated data that is going to be shared is secured.<br><br>Since in this use case CSP sell information to a government organization, it seem to help approve and justify such a use case from a legal perspective. |
| **Feasibility Parameters** | In order to implement this External Monetization use case, CSPs have to be in such maturity level to be able to:<br><br>• Produce high quality location information (in terms of location accuracy and frequency).<br><br>• Approve the usage of customer information from a legal perspective<br><br>• Collaborate with other vendors which have experience with third parties from the transportation industry, so as vendors which develop advanced visualization layer e.g. map component with geographical features. |

|  | • Invest efforts to support big data processes this project demands. It requires the relevant manpower, data storage etc. |
|---|---|

| Fx15.0 Nomenclature | New |
|---|---|
| Fx15.5 Nomenclature | EN-DM-1 |

## 4.3. EN-DM-2: Location Based Real Time Credit Card Fraud Detection

| Attribute | Description |
|---|---|
| ID | EN-DM-2 |
| Name | Location Based Real Time Credit Card Fraud Detection |
| Hierarchy | N/A |
| Motivation | Banks and credit card companies are looking for creative solutions to prevent fraud transactions, which cause to revenue losses and a negative customer experience. Most of these fraud transactions occur in different locations than the card owner's location and many times even in different counties. Therefore, CSPs, which collect real time location of their subscribers, can provide a real time solution to help them solve that problem and by that also to create a new revenue stream and also to enhance customer satisfaction from the unique service. |
| CxLC Stage(s) | N/A |
| Actors | Credit Card Company: Management, IT, Fraud and relevant business teams.CSP: Representatives from Marketing, Billing, Network & IT and Corporate Development teams. |
| Entry conditions | Banks/Credit Card Companies:<br><br>• Need to have a budget to finance the implementation of this use case<br><br>• Need to have the technical capabilities to provide real time locations of purchase transactions and to block them in real time in case of fraud event.<br><br>CSP<br><br>• Need to be able to capture real time reliable location of its customers<br><br>• Need to be able to compare the real time subscribers' location with their real time purchase transactions and to alert the CC companies about fraud transactions. |
| External References | N/A |
| Customer Experience Metrics: | N/A |
| Other metrics: | Increase 193 – $ Revenue from new data monetization revenue stream |

| Data Sources | • Location data from all available sources – CDR, LBS, GPS, Wi-Fi. |
| | • Purchase transactions locations and customers' phone number from the CC company |

| **Business Model Canvas of the Use Case** | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |

| **Customer** | **Segment** | **Channel** | **Relationship** | **Experience** |
|---|---|---|---|---|
| | Credit Cards companies | Real-time integration | CSPs need to create a relationship with an unfamiliar organization such banks and credit card companies. In order to sell them there service, they need to study the organization needs, structure and to develop a relevant solution and business model. | N/A |
| **Value Proposition** | According to the Nilson Report, Global card fraud cost $12.4 billion in 2013. CSP's, which control the pipe through which massive amounts of customer geo-location data flows on a daily basis, could provide a one of a kind service that could reduce dramatically fraud activities, and by that to reduce expenses and to improve customer experience. | | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with both CSPs and credit card's data sources, the maintenance of the big data storage, real-time processing infrastructure and the real time response and action of the service. Additional costs will be incurred in case of using external vendor services due to lack of expertise inside of the CSP. | | | |
| **Revenue Streams** | For the CSP, a direct monetization of its customers' data to credit cards companies is a completely new revenue stream that becomes possible by utilizing innovative big data capabilities. Additional indirect revenues will occur from reduce in churn rate and increase in customer satisfaction, since the CSP now provides a unique service to make its subscribers financial lives more secure. There could be few ways to implement the business model. One of them could be to charge the credit card company for every purchase transaction being analyzing in CSPs servers. | | | |

| **Key Activities** | **Key Resources** | **Key Partners** |
|---|---|---|
| One of the most important activities the business must conduct is to find and approach the right personas in the CC companies, then to understand their need for this use case and their technical capabilities to support this | Real-time location of CSP subscribers integrated with real time purchase transaction location identification by | • Banks / Credit Card Companies<br>• LBS providers<br>• Access Point (AP) providers<br>• Vendors that provide external Monetization solutions |

| | | | | | | |
|---|---|---|---|---|---|---|
| use case. | | the CC company. | | | | |
| | | | | | | |

| Attribute | Description |
|---|---|
| Story: | According to the Nilson Report, Global card fraud cost $12.4 billion in 2013.

This use case could be very relevant when a credit card (or debit card) is either stolen or "duplicated" and used by another person in another location to purchase a good or withdraw cash.

CSPs can use their network data and relevant subscribers' geo-location sources to provide a service that Identifies in real time (when transaction is submitted) that the use of the card is not performed by the card owner and to block the card from additional use and/or block the transaction.



In addition to preventing fraud, a phone-location system could also help get rid of false positives -- transactions that are denied because the customer wasn't in her customary location and forgot to report her travel plans to the bank. Four out of five declined transactions didn't actually need to be denied. If so, this service could not only save money for credit cards companies, but to also improve their customer experience.

In order to implement this use case successfully based using CSPs' geo-location data, CSPs need to know how to turn location information into valuable insights for credit card companies. In other words, subscribers' location information must be accurate and well calculated. In case of basing the solution on roaming usage, and alerting on purchase transactions were made in a different country only, the location level doesn't have to be so accurate. However, if the CSP want to alert on suspicious transactions inside the country, Cell-ID location level won't be always enough in order to analyze subscribers' location because the accuracy range it provides sometimes is too wide to analyze subscriber's journey. If that would be the case, CSP will have to consider using Location Based System (LBS) that could calculate subscribers' movements in more accurate way and/or utilizing Access Points (Wi-Fi) data sources that could provide more accurate location data about customers that located in specific shops/malls. |
| Actions and processes | • CC company to set requirements for the project and to provide relevant information about their real-time technical capabilities.

• CSP to explore its location data sources and its real-time technical capabilities.

• CSP and CC Company to offer the service to their customers and to get their approval. |

| | |
|---|---|
| | • CSP to develop/purchase this real-time service and to implement it together with the CC Company. |
| Building Block(s) | **CL2: Customer Location Detection** |
| Privacy Risk Score | 45 (high). <br><br> Security and privacy can be an obstacle for CPS that want to sell customers location data to credit card companies. All regulation issues should be discussed at the beginning of the sell process, according to privacy rules applied in the region. It is important to highlight that the service will be implemented only for subscribers who will approve and register for the service. In addition, all the private information that is going to be shared will be secured as safe. |
| Feasibility Parameters | In order to implement this External Monetization use case, CSPs have to be in such maturity level to be able to: <br><br> • Develop and maintain such real-time service including so many events from both CSP and CC Company sides. <br><br> • Have an integration layer with a CC company. <br><br> • Get approval from their customer to use their location data to provide this service <br><br> • Collaborate with relevant vendors which have experience implementing such use cases |

## 4.4. EN-DM-3: Data Monetization Applications for MVNOs

| Attribute | Description |
|---|---|
| ID | EN-DM-3 |
| Name | Data Monetization Applications for MVNOs |
| Hierarchy | N/A |
| Motivation | MVNO's have traditionally offered CSP's an opportunity to make additional revenues utilizing the investment already made in their network. One key challenge for MVNO's is that they have little access to many of the traditional CSP data sources, as this data is within the partner CSP's organization. CSP's can generate additional revenues from MVNO's by providing the big data analytics on top of this data to the MVNO's as a service. |
| CxLC Stage(s) | N/A |
| Actors | • CSP: Representatives from Network & IT, Legal and Business Relationships teams. <br><br> • MVNO: Representatives from Network & IT, Legal and Business Relationships teams. <br><br> • Vendors who provide comprehensive/supporting solutions for this project |
| Entry conditions | MVNO |

| | |
|---|---|
| | • Needs to have a budget for such a project. |
| | • Need to have an Analysts team to set requirements, needs and goals for such a project. |
| | CSP: need to have the relevant data sources to implement such project, so as the technical capabilities and legal team approval. |
| External References | N/A |
| Customer Experience Metrics: | Affects the same customer experience metrics as the underlying BDA (Big Data Analytics) use cases exposed to the MVNO's |
| Other metrics: | Increase 193 – $ Revenue from new data monetization revenue stream |
| Data Sources | MVNO's Data:<br><br>• Customers' profile and usage information from all relevant sources – CRM, CDR, XDR, DPI, Network elements etc.<br><br>• Location data from all available sources – CDR,<br><br>• Other relevant MVNO's data sources<br><br>CSP's Data:<br><br>• Network data<br><br>• Location data LBS, GPS, Wi-Fi.<br><br>• other relevant CSP's data sources<br><br>Note: The CSP may be able to assist the MVNO further by drawing conclusions from its own customers and applying these conclusions onto the MVNO's customers, e.g. by analyzing the churn behavior of the CSP's customers, the CSP may be able to help the MVNO with the retention of their customers. This should be done with caution however, as the MVNO customers' behavior may be different from that of the CSPs customers. |
| Business Model Canvas of the Use Case | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | The MVNO's of the CSP. | N/A | New relationships will be established between departments in the MVNO, e.g. marketing, and the partner CSP. | N/A |
| Value Proposition | The data gathered within the CSP network related to the behavior of the MVNO's customers is largely underutilized. Monetizing this data source opens a new revenue stream for the CSP.<br><br>There are different options for the CSP in terms of the deliverables: to deliver the additional data in a grid level, to build the whole production infrastructure, and/or to mine the actual insights for certain use cases out of the data.  The CSP and MVNO will agree on the deliverables conditions according to project's budget, the maturity of CSP etc. | | | |
| Cost Structure | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | | |

| Revenue Streams | The CSP will open a new revenue stream by delivering additional valuable insights to the MVNO's it partners with. | | |
|---|---|---|---|
| Key Activities | | Key Resources | Key Partners |
| • Gather data related to MVNO customers; <br><br> • Produce BDA services for specific use cases that the MVNO finds valuable. | | The data gathered about MVNO customers, which the MVNO does not have access to. | MVNO's are the key partner in this use case. The CSP must engage with its MVNO's to identify the use cases that they will find valuable and will invest in. |
| Attribute | Description | | |
| Story: | CSPs can choose use cases from across this catalogue of big data analytics and deliver them as a service to MVNO's. Examples of this would be enabling MVNO's to deliver targeted and personalized offers through use cases in the Marketing and Offer Management catalogue (S-MOM-*) or enabling MVNO's to enhance their care channels with the use cases in the customer relationship management catalogue (O-CRM-*). | | |
| Actions and processes | • MNVO to prioritize needs and requirements <br><br> • MNVO to explore internal data sources and provide gaps and data sources they need <br><br> • CSP to test MNVO's requirements and explore relevant data sources to accomplish them <br><br> • CSP to get approval from legal team to use the relevant customer information <br><br> • CSP to gather, anonymize and aggregate the relevant Info <br><br> • CSP to develop data model including stations, routes and other polygons information <br><br> • CSP to load the data model results to a visualization layer | | |
| Building Block(s) | Depends on MNVO requirements | | |
| Privacy Risk Score | 45 (high) <br><br> Security and privacy can be an obstacle for CPS that want to sell customers information and data to third party, as well as for third parties to use it. All regulation issues should be discussed at the beginning of the sell process, according to privacy rules applied in the region. It is important to highlight during this process that no private information is going to be shared, and the aggregated data that is going to be shared is secured. <br><br> Since in this use case CSP sell information to a government organization, it seem to help approve and justify such a use case from a legal perspective. | | |
| Feasibility Parameters | In order to implement this External Monetization use case, CSPs have to be in such maturity level to be able to: <br><br> • Produce high quality customers' information from any type. <br><br> • Approve the usage of customer information from a legal perspective <br><br> • Collaborate with other vendors which have experience with Data Monetization projects. | | |

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|---|---|
| | • Invest efforts to support big data processes this project demands. It requires the relevant manpower, data storage etc. |

## 4.5. EN-DM-4: Real-Time Traffic Information Based On Mobile Device

| Attribute | Description |
|---|---|
| ID | EN-DM-4 |
| Name | Real-time traffic information based on mobile device |
| Hierarchy | N/A |
| Motivation | Governments and Transportation Authorities are ready to pay significant amount of money in order to get real-time traffic information that could help them to response to unusual cases such as accidents, congestions etc.<br><br>By gathering and analyzing relevant information, CSPs can use information captured by their network (mainly location information) and to provide these third parties with a successful solution to answer their complex requirements. |
| CxLC Stage(s) | N/A |
| Actors | • CSP: CMO, Representatives from Network & IT, Legal and Business Relationships teams.<br>• Government : Management, IT, relevant business teams<br>• Vendors who provide comprehensive/supporting solutions for this project |
| Entry conditions | Government:<br>• Need to have a budget for such a project. Usually it will release an official tender.<br>• Need to have an Analysts team to set requirements, needs and goals for such a project.<br>• Need to have the technical capabilities to receive information in real-time.<br>CSP: Need to have the relevant location data sources to start such project, so as technical capabilities to provide a real-time solution and the legal team approval. |
| External References | N/A |
| Customer Experience Metrics: | N/A |
| Other metrics: | Increase 193 – $ Revenue from new data monetization revenue stream |
| Data Sources | • Location data from all available sources – CDR, LBS, GPS<br>• Map and Traffic Data from external sources |

| Business Model Canvas of the Use Case | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |
| --- | --- |

| Customer | Segment | | Channel | | Relationship | Experience |
| --- | --- | --- | --- | --- | --- | --- |
| | • Governments<br>• Enterprises | | • Web Portal | | New customers attracted by the service, existing customers  enhanced satisfaction by the service | N/A |
| Value Proposition | Governments and other Enterprises will receive traffic information in real-time | | | | | |
| Cost Structure | CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. Additional costs may also be incurred in maintaining the customer's image of the CSP in the light of privacy and security of data exposure. | | | | | |
| Revenue Streams | A new revenue stream is created by providing real-time traffic information to third parties.<br><br>The existing revenue stream is also enhanced by delivering a superior quality of experience, increased customer satisfaction to CSP customers, leading to future revenues and retention. | | | | | |
| Key Activities | | Key Resources | | Key Partners | | |
| • Real time reporting to present the traffic information<br>• Identify customers location<br>• Understand each customers behavior | | This use case requires customers' location information, mobile signaling data. This use case also requires external data like map and traffic data. | | • Governments, PTAs<br>• LBS providers<br>• Vendors that provide external Monetization solutions<br>• External sources providers, e.g. Google Maps which provides relevant POIs<br>• GIS vendors<br>• Third party application designer<br>• Operations team<br>• Sales team | | |
| | | | | | | |

| Attribute | Description |
| --- | --- |
| Story: | Mobile communication networks generate massive signaling data, big data analytics use these data to generate real-time traffic information:<br><br>• Collect mobile signaling data<br>• Input mobile signaling data, do sample filtration, noise processing, map matching, statistical modeling and speed computation.<br>• Output real-time traffic information<br><br>Real-time traffic information can provide better travel route options for customers with lower cost and more comprehensive coverage. CSPs can provide real-time traffic information to government and enterprise customers to expand the market, |

| | |
|---|---|
| | as well as individual customers. CSP can also use this opportunity to push advertisement on customer's mobile application, which bring more revenue. |
| Actions and processes | • Government/customer to set requirements and to provide relevant information (geographical areas of interest, maps, routes information, technical capabilities etc. <br><br> • CSP to explore relevant data sources to decide what is doable <br><br> • CSP to get approval from legal team to use the information <br><br> • CSP to develop data model including stations, routes and other polygons information <br><br> • CSP and third party to develop an infrastructure to transform the data in real time from CSP's system to third party's environment. |
| Building Block(s) | **CL1: Geocoding** <br><br> **CL2: Customer Location Detection** <br><br> **CL3: Customer Location Prediction** <br><br> CL4: Key Location Profiling |
| Privacy Risk Score | 42 (High) <br><br> • Data Collection: Method of Content = 4, Intended Use = 4, Transparency = 4 <br><br> • Data Handling: Human Access = 4, Data Processing = 2, Comingling = 2 <br><br> • Transmission: Transport = 2, Human User Device End Point =4 <br><br> • Disclosure: Use of Meta Data = 4, Data sharing = 2 <br><br> • Data Storage: Retention period=1, storage security=2, trusted custodian=1 <br><br> • Service Training: User Keeping user data private=4, staff keeping user data private = 2 <br><br> Security and privacy can be an obstacle for CPS that want to sell customers information and data to third party, as well as for third parties to use it. All regulation issues should be discussed at the beginning of the sell process, according to privacy rules applied in the region. It is important to highlight during this process that no private information is going to be shared, and the aggregated data that is going to be shared is secured. <br><br> Since in this use case CSP sell information to a government organization, it seem to help approve and justify such a use case from a legal perspective. |
| Feasibility Parameters | In order to implement this External Monetization use case, CSPs have to be in such maturity level to be able to: <br><br> • Produce high quality location information (in terms of location accuracy and frequency). <br><br> • Approve the usage of customer information from a legal perspective <br><br> • Have to technology to capture, process and transform real-time location events. <br><br> • Collaborate with other vendors which have experience with third parties from the transportation industry, so as vendors which develop advanced visualization layer e.g. map component with geographical features. <br><br> • Invest efforts to support big data processes this project demands. It requires the relevant manpower, data storage etc. |

## 4.6. EN-DM-5: Retail Branch Outdoor Analytics

| Attribute | Description |
|---|---|
| ID | EN-DM-5 |
| Name | **Retail Branch Outdoor Analytics** |
| Hierarchy | N/A |
| Motivation | In today's competitive environment for retailers, any information about the people hanging around their branches, including where they are coming from, where they are going to, where do they live and work and what is the reason they were located around the branch could be very relevant to develop targeted on site/on the road/mobile marketing activities, tailored menus, products etc. and by that to improve customer experience, increase retention and revenues. |
| CxLC Stage(s) | N/A |
| Actors | • CSP: Representatives from Network & IT, Legal and Business Relationships teams.<br><br>• Retail: Management, IT, relevant business teams, Branch Management<br><br>• Vendors who provide comprehensive/supporting solutions for this project |
| Entry conditions | Retail<br><br>• Needs to have a budget for such a project. Usually it will release an official tender.<br><br>• Need to have an Analysts team to set requirements, needs and goals for such a project.<br><br>CSP: Need to have the relevant data sources to start such project, so as technical capabilities and legal team approval. |
| External References | N/A |
| Customer Experience Metrics: | N/A |
| Other metrics: | Increase 193 – $ Revenue from new data monetization revenue stream |
| Data Sources | • Location data from all available sources – CDR, LBS, GPS, Wi-Fi.<br><br>• All additional available telecom data sources: CRM, Usage & Billing Information, Network elements etc.<br><br>• Relevant external data sources – third party data sources, social media information, etc. |

| Business Model Canvas of the Use Case | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |
|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | Retailers | • Real-time integration<br>• Ad-hoc reports<br>• Web portal | CSPs need to create a relationship with an unfamiliar organization such retailers. Therefore, they need to study the organization needs, structure and to develop a relevant solution and business model. | N/A |
| Value Proposition | CSPs control the pipe through which massive amounts of customer geo-location and behavioral data flows on a daily basis. Collecting, aggregating, manipulating, enriching and exposing this information to retailers could benefit both retailer and CSP revenues; CSPs will create a new and significant revenue stream and the Retailer could improve its customer experience level and attract new type of customers. | | | |
| Cost Structure | In case of self-development, which is possible only if the CSP have the relevant knowledge, the CSP will incur additional costs in relevant manpower, integration with data sources, developing geo-location algorithms and business logics and maintenance of the big data storage and processing infrastructure, developing and managing the service through which retailers access the data. In case of external-development, the CSP will have to purchase services and solutions from external vendors.<br><br>Furthermore, there are additional costs like in LBS implementation and other network components. Additional costs may also be incurred in maintaining the customer's image of the CSP in the light of privacy and security of data exposure. | | | |
| Revenue Streams | Retailers will pay for the data analytics solution according to the decided business model (license fee, revenue share etc.). Since the outcome of this use case will be many time a web portal including a map component and not ad-hoc reports, the business model will be many times a payment for the solution plus a license fee. | | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| One of the most important activities the business must conduct is to find and approach the right personas in the retailers, then to understand their existing systems, data sources and to understand their additional requirements.<br><br>In case the CSP choose to buy services and solutions from external vendors, it has to engage with the right partners to get the best results. The partner can be a vendor which provides a comprehensive solution or multiply vendors which provide the GUI layer, | In order to make the business model work, CSPs have to make sure the can produce accurate location information. In addition, the CSP should be able to provide insights about customers behavior by analyzing data sources like DPI, CRM and CDR. | • Retailers<br><br>• LBS providers<br><br>• Access Point (AP) providers<br><br>• Vendors that provide external Monetization solutions<br><br>• External sources providers, e.g. Google Maps which provides relevant POIs<br><br>• GIS vendors |

| | | | | | | |
|---|---|---|---|---|---|---|
| relevant models etc. | | | | | | |
| | | | | | | |

| Attribute | Description |
|---|---|
| Story: | By combining and analyzing location, behavior and profile information, CSPs can provide different retailers valuable insights about their customers and their potential customers: <br><br> Profile <br><br> • Interests <br><br> • Popular domains <br><br> • Age & Gender <br><br> • Ethnicity <br><br> • Country of Origin (for Roamers) <br><br> Location Visit Features <br><br> • Visit Behavior (Weekdays/Weekend, Time of Day) <br><br> • Visit Frequency <br><br> • Home/Work Orientation <br><br> • Dwell time <br><br> Journey Analysis to Branches <br><br> • Origin Locations <br><br> • Transportation means <br><br> • Travel Times <br><br> In order to make the analysis more relevant, many retailers which have branches in crowded areas need the CSP to make sure that the analyzed segment actually walked by the branch and not only were located in a 300 meters radios as many time provided by cell ID level. In that cases, the CSP will have to implement a LBS which could answer the retailer requirement. <br><br> After implementing the solution, retailers could use the information for many purposes: <br><br> Attracting new customers <br><br> • Targeted On-site & on the road marketing activities <br><br> • Targeted Mobile Activities <br><br> Increase retention and customer satisfaction <br><br> • Tailored Menu/Products to consumers/potential consumers' needs (ethnic/children/ etc.) <br><br> • Tailor Tourists menus according to origin country habits |
| Actions and processes | 1. Retailers to set requirements and to provide relevant information (Branches information, target audience, market share, competitors' branches location etc.) <br><br> 2. CSP to explore relevant data sources to decide what is doable <br><br> 3. CSP to get approval from legal team to use the information <br><br> 4. CSP to gather, anonymize and aggregate the relevant Info |

| | |
|---|---|
| | 5. CSP to develop data model including stations, routes and other polygons information |
| | 6. CSP to load the data model results to a visualization layer |
| Building Block(s) | **CL1: Geocoding** |
| | **CL2: Customer Location Detection** |
| | **CL3: Customer Location Prediction** |
| | CL4: Key Location Profiling |
| Privacy Risk Score | 45 (high) |
| | Security and privacy can be an obstacle for CPS that want to sell customers information and data to third party, as well as for third parties to use it. All regulation issues should be discussed at the beginning of the sell process, according to privacy rules applied in the region. It is important to highlight during this process that no private information is going to be shared, and the aggregated data that is going to be shared is secured. |
| Feasibility Parameters | In order to implement this External Monetization use case, CSPs have to be in such maturity level to be able to: |
| | • Produce high quality location information (in terms of location accuracy and frequency). |
| | • Approve the usage of customer information from a legal perspective |
| | • Collaborate with other vendors which have experience with third parties from the transportation industry, so as vendors which develop advanced visualization layer e.g. map component with geographical features. |
| | • Invest efforts to support big data processes this project demands. It requires the relevant manpower, data storage etc. |

## 4.7. EN-DM-6: Retail Branch Indoor Analytics

| Attribute | Description |
|---|---|
| ID | EN-DM-6 |
| Name | **Retail Branch Indoor Analytics** |
| Hierarchy | N/A |
| Motivation | In today's competitive environment for retailers, any information they could get about customers which located inside their branches will be valuable; their profile, visit features and journey etc. |
| | This kind of information could help retailers to increase revenues by marketing activities and customer experience improvement and also to save money by monitoring branch's efficiency. |
| CxLC Stage(s) | N/A |
| Actors | • CSP: Representatives from Network & IT, Legal and Business Relationships teams. |

| | |
|---|---|
| | • Retail: Management, IT, relevant business teams, Branch Management |
| | • Vendors who provide comprehensive/supporting solutions for this project |
| Entry conditions | Retail<br><br>• Needs to have a budget for such a project. Usually it will release an official tender.<br><br>• Need to have an Analysts team to set requirements, needs and goals for such a project.<br><br>CSP: Need to have the relevant data sources to start such project, so as technical capabilities and legal team approval. |
| External References | N/A |
| Customer Experience Metrics: | N/A |
| Other metrics: | Increase 193 – $ Revenue from new data monetization revenue stream |
| Data Sources | • Location data from all available sources – CDR, LBS, GPS, Wi-Fi. Note that Access Point (WiFi) information is critical for this use case.<br><br>• All additional available telecom data sources: CRM, Usage & Billing Information, Network elements etc.<br><br>• Relevant external data sources – third party data sources, social media information, etc. |

| | |
|---|---|
| Business Model Canvas of the Use Case | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | Retailers | • Real-time integration<br><br>• Ad-hoc reports<br><br>• Web portal | CSPs need to create a relationship with an unfamiliar organization such Retailers. Therefore, they need to study the organization needs, structure and to develop a relevant solution and business model. | N/A |
| Value Proposition | CSPs control the pipe through which massive amounts of customer geo-location and behavioral data flows on a daily basis. Collecting, aggregating, manipulating, enriching and exposing this information to retailers could benefit both retailer and CSP revenues; CSPs will create a new and significant revenue stream and the Retailer could improve its customer experience level and attract new type of customers. | | | |
| Cost Structure | In case of self-development, which is possible only if the CSP have the relevant knowledge, the CSP will incur additional costs in relevant manpower, integration with data sources, developing geo-location algorithms and business logics and maintenance of the big data storage | | | |

| | and processing infrastructure, developing and managing the service through which retailers access the data. In case of external-development, the CSP will have to purchase services and solutions from external vendors. |
| --- | --- |
| | Furthermore, there are additional costs like in WiFi implementation and other network components. Additional costs may also be incurred in maintaining the customer's image of the CSP in the light of privacy and security of data exposure. |
| Revenue Streams | Retailers will pay for the data analytics solution according to the decided business model (license fee, revenue share etc.). Since the outcome of this use case will be many time a web portal including a map component and not ad-hoc reports, the business model will be many times a payment for the solution plus a license fee. |

| Key Activities | Key Resources | Key Partners |
| --- | --- | --- |
| One of the most important activities the business must conduct is to find and approach the right personas in the retailers, then to understand their existing systems, data sources and to understand their additional requirements.<br><br>In case the CSP choose to buy services and solutions from external vendors, it has to engage with the right partners to get the best results. The partner can be a vendor which provides a comprehensive solution or multiply vendors which provide the GUI layer, relevant models etc. | In order to make the business model work, CSPs have to make sure the can produce accurate location information. In addition, the CSP should be able to provide insights about customers behavior by analyzing data sources like DPI, CRM and CDR. | • Retailers<br><br>• Access Point (AP) providers<br><br>• Vendors that provide external Monetization solutions<br><br>• External sources providers, e.g. Google Maps which provides relevant POIs<br><br>• GIS vendors |
| | | |

| Attribute | Description |
| --- | --- |
| Story: | By combining and analyzing location, behavior and profile information, CSPs can provide different retailers with valuable insights about their customers:<br><br>**Consumers in Branches**<br><br>• Profile<br><br>• Visit Features<br><br>• Journey<br><br>**Operational Stats**<br><br>• Congestion<br><br>• Dwell Time<br><br>This kind of insights can help retailers with:<br><br>• Targeted loyalty activities |

| | |
|---|---|
| | • Optimize branch performance |
| | • Optimize in-store up-sell/advertising activities |
| | • Improve customer experience |
| | • Special events based activities (music/sports etc.) |
| | By adding also 'in –house' data like purchase transactions to the data model, CSP can provide more comprehensive analysis and insights about the purchase habits of different customers types etc. |
| Actions and processes | 1. Retailers to set requirements and to provide relevant information (Branches information, target audience, market share, purchase transactions etc.) |
| | 2. CSP to explore relevant data sources to decide what is doable |
| | 3. CSP to get approval from legal team to use the information |
| | 4. CSP to gather, anonymize and aggregate the relevant Info |
| | 5. CSP to develop data model |
| | 6. CSP to load the data model results to a visualization layer |
| Building Block(s) | **CL1: Geocoding** |
| | **CL2: Customer Location Detection** |
| | **CL3: Customer Location Prediction** |
| | CL4: Key Location Profiling |
| Privacy Risk Score | 45 (high) |
| | Security and privacy can be an obstacle for CPS that want to sell customers information and data to third party, as well as for third parties to use it. All regulation issues should be discussed at the beginning of the sell process, according to privacy rules applied in the region. It is important to highlight during this process that no private information is going to be shared, and the aggregated data that is going to be shared is secured. |
| Feasibility Parameters | In order to implement this External Monetization use case, CSPs have to be in such maturity level to be able to: |
| | • Produce high quality location information to decide how many people were located inside the branch at any point of time. |
| | • Approve the usage of customer information from a legal perspective |
| | • Collaborate with other vendors which have experience with third parties from the transportation industry, so as vendors which develop advanced visualization layer e.g. map component with geographical features. |
| | • Invest efforts to support big data processes this project demands. It requires the relevant manpower, data storage etc. |

## 4.8.  EN-DM-7: Retail New Branches Planning Optimization

| Attribute | Description |
|---|---|
| ID | EN-DM-7 |

| Name | **Retail New Branches Planning Optimization** |
| --- | --- |
| Hierarchy | N/A |
| Motivation | In today's competitive environment for retailers, any information about the best location to open a new branch can be very valuable and actually to make the difference between a successful branch and an unprofitable branch. |
| | CSPs capture both location and profile information about their customers, and by processing and analyzing it properly, it could provide the insights every retail management would like to see before it decides on a new branch location. |
| CxLC Stage(s) | N/A |
| Actors | • CSP: Representatives from Network & IT, Legal and Business Relationships teams. |
| | • Retail: Management, IT, relevant business teams, Branch Management |
| | • Vendors who provide comprehensive/supporting solutions for this project |
| Entry conditions | Retail |
| | • Need to have the basic need, which is a plan to open a new branch someday. |
| | • Needs to have a budget for such a project. Usually it will release an official tender. |
| | • Need to have an Analysts team to set requirements, needs and goals for such a project. |
| | CSP: Need to have the relevant data sources to start such project, so as technical capabilities and legal team approval. |
| External References | N/A |
| Customer Experience Metrics: | N/A |
| Other metrics: | Increase 193 – $ Revenue from new data monetization revenue stream |
| Data Sources | • Location data from all available sources – CDR, LBS, GPS, Wi-Fi. |
| | • All additional available telecom data sources: CRM, Usage & Billing Information, Network elements etc. |
| | • Relevant external data sources – third party data sources, social media information, etc. |


| Business Model Canvas of the Use Case | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |
| --- | --- |


| Customer | Segment | Channel | Relationship | Experience |
| --- | --- | --- | --- | --- |
| | Retailers | • Real-time integration<br>• Ad-hoc reports | CSPs need to create a relationship with an unfamiliar organization such Retailers. | N/A |

| | | • Web portal | Therefore, they need to study the organization needs, structure and to develop a relevant solution and business model. | |
|---|---|---|---|---|
| Value Proposition | CSPs control the pipe through which massive amounts of customer geo-location and behavioral data flows on a daily basis. Collecting, aggregating, manipulating, enriching and exposing this information to retailers could benefit both retailer and CSP revenues; CSPs will create a new and significant revenue stream and the Retailer could increase its revenues by opening its next branch in the optimal location. | | | |
| Cost Structure | In case of self-development, which is possible only if the CSP have the relevant knowledge, the CSP will incur additional costs in relevant manpower, integration with data sources, developing geo-location algorithms and business logics and maintenance of the big data storage and processing infrastructure, developing and managing the service through which retailers access the data. In case of external-development, the CSP will have to purchase services and solutions from external vendors. Furthermore, there are additional costs like in Wi-Fi implementation and other network components. Additional costs may also be incurred in maintaining the customer's image of the CSP in the light of privacy and security of data exposure. | | | |
| Revenue Streams | Retailers will pay for the data analytics solution according to the decided business model (license fee, revenue share etc.). Since the outcome of this use case will be many time a web portal including a map component and not ad-hoc reports, the business model will be many times a payment for the solution plus a license fee. | | | |

| Key Activities | | Key Resources | | Key Partners |
|---|---|---|---|---|
| One of the most important activities the business must conduct is to find and approach the right personas in the retailers, then to understand their existing systems, data sources and to understand their additional requirements. In case the CSP choose to buy services and solutions from external vendors, it has to engage with the right partners to get the best results. The partner can be a vendor which provides a comprehensive solution or multiply vendors which provide the GUI layer, relevant models etc. | | In order to make the business model work, CSPs have to make sure the can produce accurate location information. In addition, the CSP should be able to provide insights about customers behavior by analyzing data sources like DPI, CRM and CDR. | | • Retailers<br><br>• LBS providers<br><br>• Vendors that provide external Monetization solutions<br><br>• External sources providers, e.g. Google Maps which provides relevant POIs<br><br>• GIS vendors |
| | | | | |

| Attribute | Description |
|---|---|
| Story: | By combining, processing and analyzing location and profile information, CSPs can help retailers with two important tasks:<br><br>• Identify potential locations for new branches<br><br>• Tailor branch characteristics to expected customers (e.g.: menus/size etc.)<br><br>CSPs have valuable information about their customers; location, profile, usage, etc. By analyzing these data sources properly, CSPs can provide retailers with the following analysis types:<br><br>**Catchment area analysis**<br><br>• From/to analysis of customers to existing branches<br><br>• Home/Work Orientation<br><br>• 'Non' covered areas with potential traffic<br><br>**Branch profile predictions**<br><br>• Profile of potential visitors<br><br>• **Demographic Insights.** Create and analyze attribute-rich profiles of specific subscriber segments, populated with demographics such as age, gender, family status, household income, lifestyle and interests.<br><br>• **Social Segmentation Insights.** Interpret the social graph, inferred by the user interaction patterns, to identify meaningful social communities such as household, friendship or co-worker circles.<br><br>• **Geographical Mobility Insights.** Visualize chosen attributes of any subscriber group on static or animated color-coded ('heat') maps and analyze home & work locations, commute trajectories, wealth/poverty distribution over a territory, and many, many more.<br><br>• **Time Series Insights.** Analyze the evolution of key business variables or KPIs over time to discover trends and patterns. |
| Actions and processes | 1. Retailers to set requirements and to provide relevant information (Branches information, target audience, market share, competitors' branches location, relevant maps etc.)<br><br>2. CSP to explore relevant data sources to decide what is doable<br><br>3. CSP to get approval from legal team to use the information<br><br>4. CSP to gather, anonymize and aggregate the relevant Info<br><br>5. CSP to develop data model<br><br>6. CSP to load the data model results to a visualization layer |
| Building Block(s) | **CL1: Geocoding**<br><br>**CL2: Customer Location Detection**<br><br>**CL3: Customer Location Prediction**<br><br>CL4: Key Location Profiling |
| Privacy Risk Score | 45 (high)<br><br>Security and privacy can be an obstacle for CPS that want to sell customers information and data to third party, as well as for third parties to use it. All regulation issues should be discussed at the beginning of the sell process, according to privacy rules applied in the region. It is important to highlight during this process that no private information is going to be shared, and the aggregated |

| | |
|---|---|
| | data that is going to be shared is secured. |
| Feasibility Parameters | In order to implement this External Monetization use case, CSPs have to be in such maturity level to be able to: |
| | • Produce high quality location information. |
| | • Approve the usage of customer information from a legal perspective |
| | • Collaborate with other vendors which have experience with third parties from the transportation industry, so as vendors which develop advanced visualization layer e.g. map component with geographical features. |
| | • Invest efforts to support big data processes this project demands. It requires the relevant manpower, data storage etc. |

## 4.9. EN-DM-8: Increase Footfalls and improve Sales through Personalized Offers to Consumers

We have defined a Unified Use Cases template that can be applied to both Big Data Analytics (BDA) and Customer Experience Management (CEM) projects.

### 4.9.1. Attributes

| Attribute | Description |
|---|---|
| ID | EN-DM-8 |
| Name | Increase Footfalls and Improve Sales through Personalized Offers to Consumers |
| Hierarchy | Related to Marketing, Buying and selling use cases. Need to check on this. |
| Motivation | Coffee shops can provide value added services (free Wi-Fi) to their consumers thereby enhancing their overall Customer Experience when visiting their outlets. |
| | CSPs can target consumers with specific ads relevant to current browsing interests of the consumers. It becomes a differentiator for communication providers compared to other marketing campaign services. |
| | The use case can also target all the interested partners in vicinity of that shopping mall or coffee shop who will : |
| | a. Sponsor the data access(Wi-Fi access) to the consumers |
| | b. Also offer discount coupons or shopping offers to consumers who latch onto that Wi-Fi network. So it acts as incentive that consumers latch onto that Wi-Fi and businesses get to sell their ads for consumers to at least walk in through store. |
| CxLC Stage(s) | Choose, Renew & Recommend |
| Actors | Customer/Consumer, Wi-Fi provider, CSP, Coffee shop owners, other participating businesses in the vicinity or commercial public area (in a shopping mall) |
| Entry | • To be able to provide competent browsing experience to end consumers |

| conditions | while consumers are in partner coffee shops. |
| --- | --- |
| | • Coffee shops have tie up with Wi-Fi partners or Wi-Fi providers (incl CSPs) who can provide the Wi-Fi connectivity in those coffee shops. CSPs can negotiate with such outlets or even public congregation places such as Malls, shopping centers wherein people can access Wi-Fi for free, sponsored by CSPs. CSPs to advertise their products along with getting access to users browsing history, buying patterns, interests etc |
| | • Of course there will privacy issues that could be raised by consumers by adopting this approach |
| External References | N/A |
| Customer Experience Metrics: | • Increase CH-C-1 # Customers Acquired |
| | • Increase CH-C-3 # Orders |
| | • Increase RN-C-1 # Renew Orders |
| | • Increase RN-C-3 # Customers Renewing |
| | • Depending on channel used by customer to make order, this use case will increase one of: |
| | o CH-F-5 Authorized Dealer Subjective Score – Place Order |
| | o CH-F-6 Retail Outlet Subjective Score – Place Order |
| | o CH-F-7 Sales Hotline Subjective Score – Place Order |
| | o CH-F-8 Online Channel Hotline Subjective Score – Place Order |
| | o CH-F-7 Customer Service Representative Subjective Score – Place Order |
| | • Increase RC-F-1 NPS – Relational |
| | • Increase RC-F-2 NPS – Transactional |
| Other metrics: | Increase 193 – $ Revenue from new data monetization revenue stream |
| Data Sources | • Offers information and discount coupons from partners: other brands/shops in mall |
| | • Call Detailed Records - details on subscriber's browsing history & browsing pattern so as to make relevant offers. |
| | • Offering of this data (browsing history etc) to Businesses to modify their offers in real time |
| | • Information on upcoming events at stores/malls |
| | • Mobile Location Information – Wi-Fi information is critical to answer the use case's requirements |
| | • Social Media Records |
| | • Web Browsing History |

| Business Model Canvas of the Use Case | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |
| --- | --- |

| Customer | Segment | Channel | Relationship | Experience |
| --- | --- | --- | --- | --- |

| | | | | |
|---|---|---|---|---|
| | Businesses<br>Consumers | B2B<br>B2B2C | CSPs need to develop a relationship with both retailers and Wi-Fi providers in order to create a successful business model that will benefit all parties. | Customers get access to free Wi-Fi in addition to getting to enjoy latest offers or discounts from participating outlets, try out their products/services that too very much based on the consumers actual interests (reflected by their browsing habits/patterns. |
| Value Proposition | Customer gets to access free Wi-Fi. CSP or Wi-Fi providers get to know subscribers browsing patterns based on which targeted ads can be sent to those subscribers.<br><br>Business partners get to understand potential subscribers' interests and can send targeted ads. Again customer get advance info on discounts offered by participating businesses. | | | |
| Cost Structure | The most important costs incurred by the business model will be agreed on. Wi-Fi coverage installation and storage the massive data it's going to provide are another costs need to take into count | | | |
| Revenue Streams | Increased footfalls leading to potential increase in buying<br><br>Increased consumption of services offered by primary partner where free Wi-Fi is offered (coffee shop or shopping mall) leading to increased revenue.<br><br>Revenue generated from targeted ads from participating business partners in the overall use case offering. | | | |

| Key Activities | Key Resources | Key Partners | | |
|---|---|---|---|---|
| • Pinpoint the customers current location;<br><br>• Understand each customers behavior;<br><br>• Consumer looking out for specific offers or deals or discounts<br><br>• Send targeted ads depending on customer location, history etc<br><br>• Buy-in from consumers<br><br>• Participation from partners | • Customer walks in data, browsing history, buying patterns.<br><br>• Data about all relevant shopping outlets in vicinity that CSP can send offers about (discount coupon to other outlets, or participating outlets in vicinity) | • Coffee shops<br><br>• ?Shopping malls<br><br>• Other Participating outlets/shops in that mall.<br><br>• CSP/Wi-Fi provider | | |
| | | | | |

| Attribute | Description |
|---|---|
| Story: | Consumer is in a popular shopping mall or a coffee shop. Consumer is offered free Wi-Fi till the time he browses or is in that targeted area. The shopping mall/ coffee outlet partners with CSP or Wi-Fi providers who will in turn get the access to consumer browsing history, buying patterns and activities. CSP can sell targeted ads to consumers based on their browsing, buying patterns. Also further CSP ties up with relevant consumers businesses in that mall or near that outlet who can bear part of Wi-Fi expenses in return for targeted ads featuring that its own outlet/shop or ongoing offers. This can entice consumers to walk into those outlets thereby increasing footfalls and also potential buys. |
| | Due to real-time nature of the marketing offers, the Campaign Management System is required to send out the messages to customers within a few minutes of before or after customer arrival at the location. In case of predicting customer locations, their information such as customer demographics, web browsing history, call history and social media records can be used to augment the analytics to make the location predictions more accurate. System can learn the consumer behavior over period of time |
| Actions and processes | 1.Retailer to set requirements and to provide relevant information (areas of interest, relevant segments to focus on etc) |
| | 2. CSP to explore relevant data sources to decide what is doable |
| | 3.CSP to install Wi-Fi devices and to get the data out of them |
| | 4. CSP to get approval from legal team to use the information |
| | 5. CSP to gather and anonymize the relevant Info |
| | 6. CSP to develop data model |
| | 7. CSP to load the data model results to a visualization layer |
| Building Block(s) | CL1: Geocoding |
| | CL2: Customer Location Detection |
| | CL3: Customer Location Prediction |
| | CL4: Key Location Profiling |
| Privacy Risk Score | 53 (High) |
| Feasibility Parameters | In order to implement this External Monetization use case, CSPs have to be in such maturity level to be able to: |
| | • Produce high quality location information (in terms of location accuracy and frequency) from the Wi-Fi devices and to be able to cross it with the subscribers' CRM ID. |
| | • Approve the usage of customer information from a legal perspective |
| | • Collaborate with other vendors which have experience with third parties data monetization projects |
| | • Invest efforts to support big data processes this project demands. It requires the relevant manpower, data storage etc. |

## 4.10. EN-DM-9: Customized Healthcare Checks

We have defined a Unified Use Cases template that can be applied to both Big Data Analytics (BDA) and Customer Experience Management (CEM) projects.

### 4.10.1. Attributes

| Attribute | Description |
|---|---|
| ID | EN-DM-9 |
| Name | Customized Healthcare Checks |
| Hierarchy | |
| Motivation | Healthcare/Health Insurance industry wants to automate the process of standard health checks like Blood Sugar and Blood Pressure and thus reduce Operational costs. The variations of Blood Sugar/Blood Pressure levels over the course of the day provides good insight in to reasons for variations and can help diagnose root causes of increase in Blood Sugar/Blood Pressure levels. Lifestyle relates diseases are ever increasing in today's world and Blood Sugar and Blood Pressure are key parameters linked to Heart diseases.  The main challenge in achieving this without compromising security of personal data. CSPs with wide customer base and state-of-the-art Network infrastructure are uniquely positioned to provide customized Healthcare packages for their customers. CSPs can provide the actual location of the customer along with Blood Sugar/Blood Pressure readings thereby giving an indication of lifestyle activity the customer is involved in during different phases of the day and its impact on Blood Sugar/Blood Pressure levels. |
| CxLC Stage(s) | |
| Actors | Customer/Consumer, Mobile App provider, CSP and Healthcare Service Provider |
| Entry conditions | Customer/Consumer<br><br>1. Customer/Consumer with Mobile service opting for Healthcare service to measure and report Blood Sugar/Blood Pressure details on a regular basis.<br><br>CSP<br><br>2. The Capability to capture Blood Sugar/Blood Pressure levels along with actual location of the Customer using a secure platform and<br><br>3. Handle Customer's medical records in a secure manner without compromising privacy of customer.<br><br>Healthcare Provider<br><br>1. Healthcare provider who monitors blood sugar levels on periodic basis and revises medication in case the blood sugar level breaches threshold limits or as required. Actual location of customer can be used to analyze changes in Blood sugar/Blood Pressure levels over performing various activities like Travelling, doing exercises etc. |
| External References | |

| Customer Experience Metrics: | |
|---|---|
| **Other metrics:** | Increase 193 – $ Revenue from new data monetization revenue stream |
| **Data Sources** | Customer/Consumer's personal data, Customer's location information. |

| Business Model Canvas of the Use Case | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |
|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | Retail Customers | B2B2C | The customer relationships that need to be established | Customers get access to securely monitor their Blood Sugar/Blood Pressure levels and report to Healthcare provider on a periodic basis. |
| **Value Proposition** | Customers get access to a secure framework to perform periodic Blood sugar/Blood Pressure tests and share results with Healthcare provider at a fraction of the cost to visiting nearest Healthcare center. CSP can send actual location of customer along with Blood Sugar/Blood Pressure information. | | | |
| **Cost Structure** | 1. Cost of Development of Mobile App.<br><br>2. Data charges incurred for transferring data between customer and Healthcare provider. | | | |
| **Revenue Streams** | 1. Customers can be charged based on Usage, number of times used or pay a fixed monthly charge for using the App.<br><br>2. Also, Customers would need to pay Healthcare providers a reduced fee for advice as compared to Physical visit to Healthcare provider.<br><br>3. Reduction in Health Insurance costs. | | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| 1. Customer need to regularly measure and update Blood Sugar/Blood Pressure levels.<br><br>2. Healthcare provider monitors and suggests revisions to medications as required. | Mobile App with Bio metric security to capture and share information | Healthcare Provider |

| Attribute | Description |
|---|---|
| **Story:** | Customer/Consumer with a need to have periodic blood sugar/Blood Pressure monitoring signs up to Mobile App to record Blood Sugar/Blood Pressure level. Mobile App then transfers the Blood sugar/Blood Pressure reading across to Healthcare provider along with actual location of customer. The Mobile app can also compare it with historic data and flags in case current Blood Sugar/Blood Pressure levels are beyond standard threshold levels. Healthcare provider reads |

| | |
|---|---|
| | the Blood Sugar/Blood Pressure levels and advises any changes in medication if required. |
| **Actions and processes** | 1. Customer logs in to secure App (using Biometric validation like Finger print). |
| | 2. CSP provides a standard Mobile Application to gather Blood Sugar/Blood Pressure levels from prospective customers and update to Preferred Healthcare providers (chosen by customer). |
| | 3. Customer uploads Blood Sugar/Blood Pressure level on regular basis and chooses to share Blood Sugar/Blood Pressure level with Healthcare provider. |
| | 4. CSP can add actual location information to the Blood test results based on actual Network co-ordinates. |
| | 5. CSP can also build intelligence in the Mobile Application to track Blood Sugar/Blood Pressure levels over a period of time and raise alarm to Healthcare provider in case Blood sugar/Blood Pressure levels are over or under guideline values. |
| | 6. This helps Healthcare provider to attend to Customer/Patients in near real-time rather than having to wait for Regular Appointment booking. |
| | 7. The Mobile application can also email or SMS the blood sugar/blood Pressure readings to user's accounts for reference. |
| | 8. This solution will reduce costs of Healthcare provider/Insurance provider as Blood Sugar/Blood Pressure test can be done manually at Customer/Patients locations and easily transfer the results to Healthcare provider instead of need to go physically to Healthcare provider on regular basis. |
| **Building Block(s)** | **It applies to BDA Use Cases.** <br><br> Refers to relevant building blocks (there can be a many to many relationship among use cases and building blocks). |
| **Privacy Risk Score** | **It applies to BDA Use Cases.** <br><br> The privacy risk score shown in each use case table provides a simple indication of the privacy related risks associated with that use case.  An overall risk score is generated indicating the worst case, together an explanation so that high scores can be brought down to an acceptable level (use case dependent).  The score ranges from 0 to 75: <br><br> Above 40:  High, should act on advice <br><br> 20-40   :  Average, ok in most cases <br><br> Below 20:  Superior privacy, little concern. <br><br> Further detail can be found in GB979 Addendum A-Privacy - in the Risk Scoring Matrix for each use case and from which the score was derived. |
| **Feasibility Parameters** | 1. Feasibility of this use case depends on seamless integration of Blood Pressure/Blood Sugar monitoring device with Mobile Phones. This might need research and identification of ways to integrate Blood Pressure/Blood Sugar monitoring device with Mobile phones. |

## 4.11. EN-DM-10: Audience Measurement for Pay TV - Advertising Scenario

We have defined a Unified Use Cases template that can be applied to both Big Data Analytics (BDA) and Customer Experience Management (CEM) projects.

### 4.11.1. Attributes

| Attribute | Description |
|---|---|
| ID | EN-DM-10 |
| Name | Audience measurement for Pay TV - Advertising Scenario |
| Hierarchy | |
| Motivation | Multi-Channel Video Programming Distributors(MVPDs) need a robust mechanism to measure audience behavior based on Program viewership, ad engagement, audience profiling and social engagement in order to arrive at an optimum pricing of advertising slots. MVPDs need a mechanism to ascertain actual viewership of advertisements to provide maximum conversion rate to advertisers. Big Data Analytics can be leveraged to analyze customer's social media comments to understand actual ad engagement of customers. |
| CxLC Stage(s) | |
| Actors | Customer/Consumer, MVPDs, Advertisers. |
| Entry conditions | Retail Advertisers<br>1. Advertisers with a need to hit a specific demography or age group or social class of consumers to maximize the strike rate for their advertisements.<br><br>MVPDs<br>2. MVPDs with a need to price advertising slots in an optimum range in order to strike the win-win balance with Advertisers.<br>3. Need to have ability to modify telecast of adverts based on changes Neighborhood sentiment.<br>4. Need to have ability to broadcast different adverts in different localities |
| External References | |
| Customer Experience Metrics: | |
| Other metrics: | |
| Data Sources | 1. Consumer's viewership data from Set-top Boxes(STBs),<br>2. Customer's personal information like demography, age, and<br>3. Customer's social media activity<br>4. Customer's travel/e-Commerce activities from Broadband service |

| | 5. Customer's location information |
|---|---|

| | |
|---|---|
| **Business Model Canvas of the Use Case** | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | Retail Advertisement | B2B2C | The customer relationships that need to be established | Customers get access to more targeted advertisements which would satisfy their needs. Advertisers will have a higher chance of customers actually buying/using the product being advertised. |
| **Value Proposition** | MVPDs will be able to advise advertisers with customer viewership details to finalize the advertisements will be interesting to audience watching different programs from different geographies. This will results in higher sales based on advertisements to the advertisers and increase advertisement revenue for MVPDs. | | | |
| **Cost Structure** | 1.   Advertisements slots can be priced optimally based on number of viewers, age/sex of viewership, their social interests.  2. Customers get to see more relevant advertisement which they can take advantage of. | | | |
| **Revenue Streams** | 1.   Increase in advertisement revenue for MVPDs.  2. Higher sales for advertisers. | | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| 1.   Analyze Customer interests, program viewerships and demography based on customer program viewership data from STBs and from social media.  2. Arrive at optimal pricing of advertisement slots based on customer viewership details. | Big Data Analytics engine to process huge volume of data from STBs, customer profile information and Social media to predict audience's interest in advertisements. | Advertisement agencies |

| Attribute | Description |
|---|---|
| **Story:** | MVPDs possess enourmous volumes of customer viewership data on Pay TV Channels and advertisement is key revenue stream for MVPDs. MVPDs currently price advertisement slots based on popularity of programs and is not based on actual viewership of advertisements. It would be really intelligent to broadcast advertisements that suit/attract the audience viewing Pay TV Channels. MVPDs can in fact analyze viewership data from STBs and combine |

it with user's profile and social data to arrive at right slots for specific advertisements. Also, this would help MVPDs to price advertisement slots in an optimum range for various programs and in fact convert a large customer base to prospective buyers.

Main Data sources that can be leveraged to identify Best advert slots for a locality.

**Customer Profile**

1. Age
2. Gender
3. Vehicle Ownership
4. Income Group
5. Favorite Holiday Destinations

**STB**

1. Favorite Programs watched - Travel, Science, Sports, Kids etc.
2. Regularly watched Programs

**Social**

1. Frequently visited e-commerce sites.
2. Recent travel locations
3. Fashion/Sport related purchases
4. Customers view on Brands in Facebook, Twitter.

**Location**

1. Customer Location.
2. Neighborhood Sentiment Analysis.

| | |
|---|---|
| **Actions and processes** | 1. Customer viewership information over days/months is captured in set-top boxes (STBs). This is enormous data already available with MVPDs.<br><br>2. Customer profile information like location, age group, family income, preferred holiday destinations, ownership of home and vehicle.<br><br>3. Customer feedback on Pay TV Programs on social media like Twitter, Facebook.<br><br>4. Anonymize the data from above data sources to avert any privacy concerns.<br><br>5. MVPDs can build a Big data analytics framework to analyze data from above anonymized data sources to understand customer's viewership information based on various factors like viewership of specific shows based on age group, demography, Sex, annual household income. It is also possible to measure devices like TV, Tablets, Mobile phones through which Pay TV Content are watched.<br><br>6. Data on actual viewership can be used to ensure optimum pricing is done for advertisement slots thus resulting in win-win solution for both MVPDs and advertisers.<br><br>7. As advertisements are customized based on actual viewership data, the likelihood of customer actually watching the advertisements and likelihood of actually buying/using the product is maximized.<br><br>8. This solution will enhance advertisement revenue for MVPDs with optimum price assurance and higher conversion rate for advertisers. Customers will also get to watch advertisements that are more likely to interest them. |

| | |
|---|---|
| **Building Block(s)** | **It applies to BDA Use Cases.**<br><br>Refers to relevant building blocks (there can be a many to many relationship among use cases and building blocks). |
| **Privacy Risk Score** | **It applies to BDA Use Cases.**<br><br>The privacy risk score shown in each use case table provides a simple indication of the privacy related risks associated with that use case. An overall risk score is generated indicating the worst case, together an explanation so that high scores can be brought down to an acceptable level (use case dependent). The score ranges from 0 to 75:<br><br>Above 40: High, should act on advice<br><br>20-40 : Average, ok in most cases<br><br>Below 20: Superior privacy, little concern.<br><br>Further detail can be found in GB979 Addendum A-Privacy - in the Risk Scoring Matrix for each use case and from which the score was derived. |
| **Feasibility Parameters** | |

## 4.12. EN-DM-11: Tourists Movement and Profile Analysis

| Attribute | Description |
|---|---|
| ID | EN-DM-11 |
| Name | **Tourists Movement and Profile Analysis** |
| Hierarchy | N/A |
| Motivation | For travel agencies, airlines companies and hospitality agencies, any information they could get about tourists in a specific region could be very valuable and help their activity like creating targeted campaigns and offers, and by that to increase their revenues.<br><br>CSPs gather location, profile and usage information not only of their own customers, but also for roamers who use their network while their stay in the country. Utilizing this information to produce insights for travel and hospitality agencies could be very **beneficial** for both sides. |
| CxLC Stage(s) | N/A |
| Actors | • CSP: Representatives from Network & IT, Legal and Business Relationships teams.<br><br>• Travel Agencies: Management, IT, relevant business teams<br><br>• Vendors who provide comprehensive/supporting solutions for this project |
| Entry conditions | Travel Agencies<br><br>• Needs to have a budget for such a project. Usually it will release an official tender. |

| | |
|---|---|
| | • Need to have an Analysts team to set requirements, needs and goals for such a project.<br><br>CSP: Need to have the relevant data sources to start such project, including roamers information, so as technical capabilities and legal team approval. |
| External References | N/A |
| Customer Experience Metrics: | N/A |
| Other metrics: | Increase 193 – $ Revenue from new data monetization revenue stream |
| Data Sources | • The following data sources should be available for both operators' customers and roamers:<br><br>1. Location data from all available sources – CDR, LBS, GPS, Wi-Fi.<br><br>2. All additional available telecom data sources: CRM, Usage & Billing Information, Network elements etc.<br><br>3. Relevant external data sources – third party data sources, social media information, maps etc<br><br>• Additional data sources from the travel agency - POIs, hotels and attractions locations etc. |

| | |
|---|---|
| Business Model Canvas of the Use Case | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | Travel Agencies<br><br>Airlines companies<br><br>Hospitality<br><br>Tourist Authorities | • Ad-hoc reports<br><br>• Web portal | CSPs need to create a relationship with an unfamiliar organization such Travel Agencies. Therefore, they need to study the organization needs, structure and to develop a relevant solution and business model. | N/A |
| Value Proposition | CSPs control the pipe through which massive amounts of customer geo-location and behavioral data flows on a daily basis. Collecting, aggregating, manipulating, enriching and exposing this information to travel agencies could benefit both to travel agencies and CSP revenues; CSPs will create a new and significant revenue stream and the travel agencies could increase its revenues by creating targeted campaigns and offers, and also improving their efficiency. | | | |
| Cost Structure | In case of self-development, which is possible only if the CSP have the relevant knowledge, the CSP will incur additional costs in relevant manpower, integration with data sources, developing geo-location algorithms and business logics and maintenance of the big data storage and processing infrastructure, developing and managing the service through which retailers access the data. In case of external-development, the CSP will have to | | | |

| | purchase services and solutions from external vendors. |
| | Furthermore, there are additional costs like in LBS implementation and other network components. Additional costs may also be incurred in maintaining the customer's image of the CSP in the light of privacy and security of data exposure. |
| Revenue Streams | Retailers will pay for the data analytics solution according to the decided business model (license fee, revenue share etc.). Since the outcome of this use case will be many time a web portal including a map component and not ad-hoc reports, the business model will be many times a payment for the solution plus a license fee. |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| One of the most important activities the business must conduct is to find and approach the right personas in the travel agencies, then to understand their existing systems, data sources and to understand their additional requirements.<br><br>In case the CSP choose to buy services and solutions from external vendors, it has to engage with the right partners to get the best results. The partner can be a vendor which provides a comprehensive solution or multiply vendors which provide the GUI layer, relevant models etc. | In order to make the business model work, CSPs have to make sure the can produce accurate location information. In addition, the CSP should be able to provide insights about customers behavior by analyzing data sources like DPI, CRM and CDR. | • Travel agencies/ Airline Companies/ Hospitality/ Tourist Authorities<br><br>• LBS providers<br><br>• Vendors that provide external Monetization solutions<br><br>• External sources providers, e.g. Google Maps which provides relevant POIs<br><br>• GIS vendors |
| | | |

| Attribute | Description |
|---|---|
| Story: | By combining, processing and analyzing location and profile information of roamers, CSPs can help travel agencies with creating targeted campaigns and offers.<br><br>Movement Analysis<br><br>CSP can analyze its location data sources and to understand what is the travel patterns and behavior of visitors (roamers) in the country:<br><br>• Where business visitors/tourists go right after arriving to the country<br><br>• What transportation types (taxi, train etc.) they mostly use<br><br>• Which areas are the most popular for leisure and entertainment<br><br>• Which areas are the most popular for a hotel location<br><br>Profile Analysis<br><br>CSPs can also provide insights about the profile of visitors in any area in the country (e.g. a main city) and in every time frame (e.g. high season). |

|  |  |
|---|---|
|  | • Purpose of visit<br><br>• Visit duration<br><br>• Age & gender of the visitor<br><br>• Social-economic level<br><br>• Etc.<br><br>For example, hotel's marketing team could use this analysis to understand the profile of their visitors, and by that to improve their customer experience and satisfaction, and also to attract new potential customers by providing a targeted campaigns and offers, using the DPI (URL) analysis the CSP could provide and the movement analysis which can tell the marketing team where to put the next billboard.<br><br>In addition to that, using the analysis hotels could understand which hotels are their biggest competitors and how to attract their guests. |
| Actions and processes | 1. Travel Agencies to set requirements and to provide relevant information (hotels and attractions locations, target audience, market share, competitors, relevant maps etc.)<br><br>2. CSP to explore relevant data sources to decide what is doable<br><br>3. CSP to get approval from legal team to use the information<br><br>4. CSP to gather, anonymize and aggregate the relevant Info<br><br>5. CSP to develop data model<br><br>6. CSP to load the data model results to a visualization layer |
| Building Block(s) | **CL1: Geocoding**<br><br>**CL2: Customer Location Detection**<br><br>**CL3: Customer Location Prediction**<br><br>CL4: Key Location Profiling |
| Privacy Risk Score | 45 (high)<br><br>Security and privacy can be an obstacle for CPS that want to sell customers information and data to third party, as well as for third parties to use it. All regulation issues should be discussed at the beginning of the sell process, according to privacy rules applied in the region. It is important to highlight during this process that no private information is going to be shared, and the aggregated data that is going to be shared is secured. |
| Feasibility Parameters | In order to implement this External Monetization use case, CSPs have to be in such maturity level to be able to:<br><br>• Produce high quality location information.<br><br>• Approve the usage of customer information from a legal perspective<br><br>• Collaborate with other vendors which have experience with third parties from the transportation industry, so as vendors which develop advanced visualization layer e.g. map component with geographical features.<br><br>• Invest efforts to support big data processes this project demands. It requires the relevant manpower, data storage etc. |

## 4.13. EN-DM-12: Targeted Offers and Coupons

We have defined a Unified Use Cases template that can be applied to both Big Data Analytics (BDA) and Customer Experience Management (CEM) projects.

### 4.13.1. Attributes

| Attribute | Description |
|---|---|
| ID | EN-DM-12 |
| Name | Targeted Offers and Coupons |
| Hierarchy | N/A |
| Motivation | By being able to target based on the contextual and personal information customers receive offers and coupons that are relevant to them and are seen as additional value. The CSP´s can generate higher revenues as the response rate is going to be higher. |
| CxLC Stage(s) | The term "offers" in this use case can be used very widely to make consumers aware of new offerings or services, to give consumers additional information about or try out products and services or to actually purchase and sign up for them. So the use case covers all phases of the Buying stage: Be Aware, Interact and Choose. Additionally the Renew & Recommend phase of Sharing are covered. |
| Actors | CSP´s, Media Agencies, Brands (Advertisers), End Customers, External Data Providers |
| Entry conditions | CSP´s need to have or create an opt in base of their customers that have given permission to receive relevant marketing messages<br><br>CSP´s need to have the capability or partnership in place to sell available audiences to advertisers<br><br>CSP´s need to have the capability of location based targeting |
| External References | N/A |
| Customer Experience Metrics: | <ul><li>Advertising Effectiveness<ul><li>BA-F-1: #Gross Rating Points</li><li>BA-F-2: Advertisement Effectiveness Subjective Score</li><li>BA-F-3: #Responses to Advertising Promotion</li></ul></li><li>Trust<ul><li>BA-F-31 % Customers - Marketing Opt-Out</li><li>BA-F-32 % Customers - 3rd Party marketing Opt-Out</li></ul></li><li>Sales performance<ul><li>CH-C-1 # Customers Acquired</li><li>CH-C-3 # Orders successful (Coupons redeemed)</li></ul></li><li>Real Time Offers<ul><li>RN-C-13 # Real Time Offers</li><li>RN-C-14 # Real Time Offers Accepted</li></ul></li></ul> |

| | |
|---|---|
| | o    RN-C15 % Real Time Offers Accepted<br><br>• Customers Renewing (Renewal offers for subscription services)<br><br>    o    RN-C-1 # Renew Orders<br><br>    o    RN-C-3 # Customers Renewing |
| **Business metrics:** | Metrics based on TM Forum Business Metrics Specification GB935A;<br><br>    o    8: % Customers acquired<br><br>    o    9  % Customers Lost<br><br>    o    181 # Customers Acquired<br><br>    o    182 # Customers Lost<br><br>    o    199 # Customers<br><br>    o    193 Revenue<br><br>    o    1673 Number of subscribers using location based services<br><br>    o    1675 Average revenue per subscriber for location services<br><br>    o    1376 Target lists for direct marketing campaign<br><br>    o    1332 Advertising expenditure as a percentage of revenue<br><br>    o    484 % Customers - 3rd Party Marketing Opt-Out<br><br>    o    445 # Responses to Advertised Promotion |
| **Data Sources** | CSP Data:<br><br>1.  Customer profile data<br><br>2.  Customer location data<br><br>3.  Browsing and app usage data to derive interests<br><br>    Additional external information<br><br>4.  Campaign information including offers and coupons from brands, geofences<br><br>5.  Location Reference data for Point of Interests (POI)<br><br>6.  Weather data<br><br>7.  Pollen data |

| | |
|---|---|
| **Business Model Canvas of the Use Case** | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | Advertisers: Brands or Media Agencies | Messaging (SMS. MMS or app push notifications) | Customers need to opt in to receive the service | Customers get relevant messages at the right time. |
| **Value Proposition** | The end customer only gets messages that are relevant to him. | | | |

| Cost Structure | Plan, build and run the technical infrastructure to get, store and stream the relevant data and create insight and execute campaigns, |
|---|---|
| | cost of sales to acquire and run campaigns |
| Revenue Streams | Revenue generated from campaigns sold based on the value of the target audience and success criteria like click through rates or cost per action. |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Build the opt in customer base | • Location Data, Profile data, WEB and App usage data | • Media Agencies, |
| • Build a customer profile | | • Brands (Advertisers), |
| • Access contextual information like location | • build and maintain an attractive opt-in customer base | • External Data Providers |
| • Attract relevant campaigns for targeted offers and campaigns | | |
| • Send out relevant offers | • strong relationship with brands and advertisers | |
| • Manage the offer redemption and feedback the offer acceptance to improve future targeting | | |

| Attribute | Description |
|---|---|
| Story: | The CSP´s enable location-based and personalized offers and coupons. In this scenario the consumer enters a certain geographic zone (geofence) and may receive a non-chargeable timely advertising message based on a defined customer segmentation and the customer preference and acceptance history but also based on contextual factors like the capacity of stores if service is involved. To further enhance the consumer experience coupons can be integrated into a mobile wallet and ideally coupons can be redeemed easily by scanning a unique barcode at the point of sale. |
| Actions and processes | N/A |
| Building Block(s) | VT2: Text classification to build an interest profile based on web pages visits |
| | CL 1: Geocoding to better understand customers habitual and actual locations |
| | CL 2: Customer Location Detection in order to detect when a customer breaks a predefined geofence |
| | CL 3: Customer Location Prediction: Send offers to customers before they arrive at a specific location |
| | CL 4: Key Location Profiling in order to identify habitual locations of customers |
| | OR1: Popularity Based Offer Recommendation especially for new customers |
| | OR 2: Hot Offer Recommendation overall or for a specific location to create interest and hype |
| | OR 3: Profile Based Offer Recommendation for personalized contextual offers |
| | OR 4: Community Based Offer Recommendation based on the behavior of the |

| | |
|---|---|
| | behavior of similar customers |
| **Privacy Risk Score** | This service will only be accepted if customers see the offers they will be getting as valuable. Only then will they be willing to share their data. Customers need to give explicit consent and need to understand which category of data is used to provide the service to them. After giving consent they need to stay in control of how their data is used. Their also needs to be an easy mechanism to opt-out of the program with automatic data deletion in that case.<br><br>Privacy Risk Score: 37 (Average)<br><br>• Data Collection: Method of Content = 4, Intended Use = 3, Transparency = 3<br><br>• Data Handling: Human Access = 4, Data Processing = 1, Comingling = 1<br><br>• Transmission: Transport = 1, Human User Device End Point =4<br><br>• Disclosure: Use of Meta Data = 4, Data sharing = 2<br><br>• Data Storage: Retention period=1, storage security=2, trusted custodian=1<br><br>• Service Training: User Keeping user data private=4, staff keeping user data private = 2 |
| **Feasibility Parameters** | In order to implement this External Monetization use case, CSPs have to be in such maturity level to be able to:<br><br>• build a huge enough opt-in base to be relevant for advertisers<br><br>• manage data privacy and security with highest standards as a trustful partner<br><br>• be able to sell audiences and campaigns that create value for the opt-in base.<br><br>• be able to utilize the relevant data sources<br><br>• build and maintain advanced analytical models throughout the model lifecycle |

## 4.14. EN-EAM-1: Business Process Optimization

| | |
|---|---|
| **Name:** | Data-driven Business Process Management |
| **Horizontal:** | Enterprise Effectiveness Management |
| **Actors:** | Any possible actor within the organization as well as the customer |
| **Business Drivers:** | The objective of business process management is to optimize performance and improve business outcomes |
| **Business Metrics:** | • Decrease **179 - $ Capex**<br><br>• Decrease **186 - $ Opex** |
| **CxLC Stage:** | N/A |
| **Customer** | N/A |

| Experience Metrics: | |
|---|---|
| **Story:** | Utilizing big data analytics over a wide variety of internal, external and social data allows business processes to become 'intelligent', resulting in better business and process outcomes. Next-generation BPM tools with integrated real-time analytics are enabling this important trend. <br><br> • Processes in execution can access performance analytics and automatically adapt and optimize **performance**. <br><br> • Using analytics over business outcomes, intelligent processes can adapt their behavior to maximize business **outcomes**. <br><br> • Using **social analytics**, processes involved in marketing and selling can improve their recommendations and targeting. Sentiment analysis and trend analysis can guide those processes toward hot products and away from problem areas. <br><br> • By monitoring and analyzing **external factors**, business processes can adapt and optimize even in the presence of rapid change. <br><br> • **Predictive** Analytics can lead processes to avoid problems before they begin. |
| **Required Data Sources:** | • CRM and Billing data <br><br> • Order Management and Provisioning Data <br><br> • Marketing and Retention Offer data <br><br> • Partner Data <br><br> • Customer Complaints <br><br> • Service Problems <br><br> • Business Process Events and Data <br><br> • Business Process Logs <br><br> • Social Media |
| **Optional Data Sources:** | Other external data including: <br><br> • Supply Chain <br><br> • Workforce <br><br> • Weather <br><br> • Traffic <br><br> • Etc. |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
| | This use case does not involve direct interaction with the customer; however improving business processes across the CSP organization ultimately enables the CSP to deliver a streamlined and efficient experience to its customers. | | |
| **Value Proposition** | Ineffectual processes are a considerable source of cost leakage for CSP's. Repeated process failures with in the business may not be visible to key stakeholders unless an overarching macro analysis of the process is performed. | | |
| **Cost** | The CSP will incur additional costs in the integration with data sources and the | | |

| Structure | maintenance of the big data storage and processing infrastructure. Improving business processes within the CSP business will enable considerable cost savings as processes are made more efficient. |
|---|---|
| Revenue Streams | This use case is a cost saving use case; however process efficiencies introduced can result in improved customer experience and loyalty, ultimately leading to higher customer life-time value and increased revenue. |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| <ul><li>Identify process failures and opportunities for improvement;</li><li>Predict process failures before they happen;</li><li>Recommend proactive actions to resolve process failures before they happen;</li><li>Optimize performance and maximize business outcomes through adaptive process improvement.</li></ul> | This use case will rely on data from across the CSP organization relative to each business process that is to be optimized. Obtaining this traditionally siloed data can be a considerable challenge from CSPs. | No additional partners are required. |

## 4.15. EN-EAM-2: Fraud Management

| Name: | Detect, analyze, and prevent known fraud patterns as well as new or complex fraud forms |
|---|---|
| Horizontal: | Financial & Asset Management |
| Actors: | <ul><li>Financial Officer</li><li>Fraud & Security Manager</li></ul> |
| Business Drivers: | Despite CSP's continuous battle to prevent fraud, it still accounts for approximately 3% of revenue lost according to market analysts. In times of ever increasing margin pressures fraud prevention can deliver improvement to the bottom line and a quick ROI. |
| Business Metrics: | <ul><li>Increase **16 - % Revenue Recovered**</li><li>Increase **17 - $ Revenue Recovered**</li></ul> |
| CxLC Stage: | Consume |
| Customer Experience Metrics: | <ul><li>Increase **CO-E-10 Network Security Subjective Score (Enterprise)**</li></ul> |
| Story: | Communication providers can leverage big data analytics to detect, analyze, and prevent standard, new and complex fraud schemes across the entire telecom process, from customer acquisition to traffic/usage, business workflow, collections and bad-debt analysis. Emergence of IP and converged networks |

<table>
<tr><td></td><td>and the proliferation of new services and technologies now bring new fraud schemes in services like VoIP, IPTV, M-commerce, content and more. Real-time monitoring of data derived from sources across all business lines and services provides the inputs to big data analytics, which can be used to detect predefined fraud signatures as well as new or emerging fraud signatures. Furthermore, big data analytics can be applied to minimize false alarms via adaptive thresholds and intelligent rule tuning. Fraud examples include:

<ul>
<li>Subscription Fraud</li>
<li>Abnormal Usage Fraud</li>
<li>Interconnect Bypass</li>
<li>False Answer Supervision</li>
<li>SIM Cloning</li>
<li>Dealer Fraud</li>
<li>Internal Fraud</li>
<li>Roaming Fraud.</li>
</ul>
</td></tr>
<tr><td>**Required Data Sources:**</td><td>
<ul>
<li>Billing and Usage Events</li>
<li>Network Data</li>
<li>Location Data</li>
<li>CRM Data such as payment history</li>
<li>Point of Sale Data</li>
<li>Provisioning Data</li>
<li>Credit Score/History Data</li>
<li>External Law Enforcement Data (Investigations, Police & Justice)</li>
</ul>
</td></tr>
<tr><td>**Optional Data Sources:**</td><td>None</td></tr>
</table>
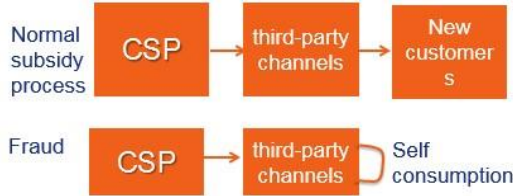
The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
| | All customers | All channels | Fraud often impacts the customer as much as it impacts the CSP's bottom–line. Reducing customer's involvement in fraud by a third party through the CSP prevents damage to customer experience and customer loyalty. |
| **Value Proposition** | Reducing fraud within the CSP business can greatly improve profitability and solidify customer experience and customer loyalty. Fraud Management may be seen as a traditional data analytics use case by some; however the ability of big data analytics to perform analytics over a wider set of data sources sets enables more accurate pattern detection and fraud prediction to be made. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. There may also be a perceived short-term loss of revenue where fraudulent providers are cut-off; however as the fraud would ultimate impact on operator cost, there is a net boost in profit. | | |

| Revenue Streams | Fraud Management is a cost saving use case; although it may result in revenue stability through maintaining customer experience with the CSP. | |
|---|---|---|
| **Key Activities** | **Key Resources** | **Key Partners** |
| • Learn fraud patterns from existing fraud cases;<br><br>• Identify and report on anomalies for new fraud pattern detection;<br><br>• Predict fraud on an event-by-event basis;<br><br>• Take appropriate action to prevent fraud (block, alert, etc.) | The key resource is the data that supports the execution of the key activities. This use cases requires considerable integration with a wide variety of different data sources. | No additional partners or suppliers are needed. |

## 4.16. EN-EAM-3: Third Party Channel Fraud Management

| Name: | Third Party Channel Fraud Management |
|---|---|
| **Vertical:** | Financial and Asset Management |
| **Actors:** | Fraud and security manager |
| **Business Drivers:** | For CSP Fraud is found at both the customers and third-party channel levels as both can contribute to fraud, but the actions are quite different. This Use Case focuses on how to prevent the fraud management from third-channel party, to avoid loss of revenue due to channel fraud, improve the efficiency of marketing and result in the offers made by the CSP actually reaching the intended customers of CSP. |
| **Business Metrics:** | • Reduced revenue loss<br><br>• Increased fraud recovery<br><br>• Increased margins |
| **Customer Experience Lifecycle Stage:** | Customer acquisition |
| **Customer Experience Metrics:** | Not directly applicable |
| **Story:** | Often CSPs may offer incentives or subsidize new customers. This can also take place through third-party channels who CSPs are using to increase their |

market share. In the normal subsidy process, the incentives intended for the customers are distributed to the customers and the CSP gains through obtaining new valuable customers.

However, if the offer is attractive, the third party may be tempted to buy mobile numbers for their own use, pretending to be new customers, and keep the incentives for their own use.



Through mobile usage data, customer data and location information, this use case aims to detect the fake customers and using this information also the dishonest third parties, as a result exposing the third party channel fraud.

| Required Data Sources: | • Billing Events |
| | • Usage Events |
| | • Network Data |
| | • Location Data |
| | • CRM Data |
| | • Payment history |
| | • Third party SIM identifiers |
| **Optional Data Sources:** | None |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
| | All | Third-party | New customers to the CSP, indirect impact on existing customers |
| **Value Proposition** | Reducing third-party fraud can ensure better profitability for the operator, better customer satisfaction as the offers reach the intended targets, and discover and discontinue dishonest third party channel relationships. | | |
| **Cost Structure** | Fraud incurs significant cost to the operators as investment intended for obtaining new customers is misused and the fraudulent actors hence do not pay for their usage as they should have. | | |
| **Revenue Streams** | Primarily cost savings | | |
| **Key Activities** | **Key Resources** | **Key Partners** | |
| • Analyze data<br>• Detect fraud<br>• Act upon patterns to discover dishonest third parties | | N/A | |

- Take action towards third parties
  - o Data
  - o Analytic s capability
  - o Process to detect and act upon fraud

## 4.17. EN-EAM-4: Forecast and monitor impact of investment in network upgrades and marketing programs

### 4.17.1. Attributes

| Name: | Forecast and monitor impact of investment in network upgrades and marketing programs |
|---|---|
| Horizontal: | Marketing and Offer Management & Service Management and operations |
| Actors: | • Marketing, Customer Value Manager, Finance, Network Planner |
| Business Drivers: | Profitability rises and falls on a daily basis affected by the usage of networks and the volume of paying customers. The planners of the organization try to understand the interrelationship between investment in the network and investment in marketing on customer value. |
| | Many Communication Service Providers (CSPs) employ a function in the business for Customer Value Management and Network Investment Planning. Each period both functions in the business try to monitor the effect on customer satisfaction, customer attrition, customer revenue from **pricing change, network performance, competitor activity, marketing activity and changes in the environment and society**. |
| | Modelling the outcomes and calculating the value of many investment options is difficult because of the number of options and the number of variables to calculate and simulate. |
| | Actors in all CSPs are always striving to increase Return on Investment from Marketing and Network activities. They want much better control of the impact on Revenue, Cost, Margin and Productivity from all the factors listed in **bold**, above. |
| Business Metrics: | **Because this Use case is a pan-business assessor of value creation and limitation, there are many output metrics that are monitored.  Listed below are the metrics that are produced from the calculations carried out during this use case that  are key to customer value and network planning:** |
| | • Increase **1 - Profitability** |
| | • Increase **2 - Average Revenue per User (ARPU)** |
| | • Manage  **5 - % Revenue, by Bearer Service and Application Type** |
| |     o Manage **6 - % Revenue, by Voice Services** |
| |     o Manage **7 - % Revenue, by Data Services** |
| |     o Manage **8 - % Customers Acquired** |

| | |
|---|---|
| | o Manage **9 - % Customers Lost** |
| | o Manage **44 - % Cost of Sales, of Revenue** |
| | o Manage**46 - % Revenue, by Channel Type** |
| | o Increase **62 - Service Availability** |
| | o Manage **71 - % Problem Reports, by Cause Type** |
| | o Increase **107 - Net Promoter Score, Relational (NPS-R)** |
| | o Manage **108 - Net Promoter Score, Transactional (NPS-T)** |
| | Reduce **123 - # SLA Violations** |
| | • Manage **154 - $ cost of sales** |
| | • Increase **181 - # Customers Acquired** |
| | • Reduce **182 - # Customers Lost** |
| | • Increase **183 - $ Operating Income** |
| | • Increase **184 – Revenue (6)** |
| | • Manage **186 - $ Opex** |
| | • Manage **187 - $ Revenue (5)** |
| | • Increase **188 - $ Revenue, by Channel Type (2)** |
| | • Manage **189 - $ Revenue, by Data Services** |
| | • Increase **199 - # Customers** |
| | • Manage **204 -$ Cost of Customer Management** |
| **CxLC Stage:** | The customer experience lifecycle impacted most will be |
| | • Buying - Be Aware        - React |
| | o Buying –Choose-Select Product/Service |
| | o Buying –Choose-Receive |
| | o Sharing-Recommend-Gain Loyalty |
| | o Sharing-Leave-Feedback |
| | However, this use case is about identifying and managing  the best way to provide the right marketing, products and quality of network service |
| **Building Blocks Used** | • CI1        Customer Influence Scoring |
| | • CI2        Customer Social Influence Scoring |
| | • CV1        Customer Value Scoring |
| | • CV2        Customer Lifetime Value Scoring and Prediction |
| | • CL2        Customer Location Detection |
| | • CL3        Customer Location Prediction |
| | • CL4        Key Location Profiling |
| **Customer Experience Metrics:** | • Increase CH-C-1 # Customers Acquired |
| | • Increase CH-C-3 # Orders |
| | • Increase RN-C-1 # Renew Orders |

- Increase RN-C-3 # Customers Renewing

- Increase BA-F-3    # Responses to Advertised Promotion

- Increase BA-F-4    # Customers in Market

- Increase BA-F-5    # Customers All Service Providers in market

- Increase BA-F-6    % Market Share

- Increase BA-F-8    # Government Authority Registered Complaints

- Increase BA-F-18    # Unique Website Visits

- Increase BA-F-29    # Customers per Service Plan

- Increase CH-F-2 % Orders of Enquiries

- Increase CH-F-2a% Customers Acquired

- Increase CO-C-1 # Mobile Originated Call Attempts

- Reduce network CO-C-6  # Calls Dropped

  - Increase CO-C-24 # Kb/s Web Page Download Throughput

  - Increase CO-C-22a  # Kb/s Video Download Throughput

  - Increase CO-C-27 # Kb/s WAP Page Download Throughput

  - Increase CO-C-33  # Kb/s MMS Send Throughput

  - Increase CO-C-45 # Kb/s Email Send Throughput

  - Increase CO-F-9 % Availability – Actual

  - Reduce M-C-13 # Complaints

    - Manage CO-C-50# Wi-Fi Registrations

| | |
|---|---|
| **Story:** | This use case supports the marketing and network planning stages. It is focused on day to monitoring of customer behavior and their usage and the behavior of the network. |
| | A customer value manager wants to present budgets and investment scenarios based on goals of the organization provided during marketing reviews or planning cycles.  The Network manager has a limited budget to apply in ensuring good customer experience and to maintain service levels.  Each actor currently runs models with available data or using experience to calculate the return from using scarce financial resources.  The data and calculations are used to manage customers between value segments or to prioritize network change. |
| | Currently the actors' calculations are manual and incomplete in terms of data inputs.  Scenario modelling is based on many assumptions.  The planning and budget round is limited to a few occasions and are easily challenged and left inconclusive due to the complexity of the process. |
| | The use of machine learning algorithms and scenario modelling techniques increase the number and accuracy of plans.  Results can be monitored and the outcome is automatically reused in the planning and forecasting of the next round. |
| | The value is generated from simplifying, improving and visualizing the impact of investments.  The goal is a continuous improvement in the effect of investment application based on mathematical modelling of large data sets from multiple sources. |
| **Required Data Sources:** | - Call Logs/CDRs<br><br>- Billing rated events |

|  |  |
|---|---|
|  | • Cell used in traffic events (Network) |
|  | • Credit Score History |
|  | • CRM Data (including customer lifecycle events |
|  | • Finance Ledger data |
|  | • Mobile Location Information |
|  | • Mobile Data – 3G & 4G network |
|  | • Network Performance Data- Traffic, performance events, type |
|  | • Signaling Data |
|  | • Marketing Campaign Data – Plan and History record |
|  | • Tariff plans – Price/Product Bundles |
|  | • External Market Data – Products, packages, marketing |
|  | • External Environmental data – Weather, Sport, TV, Event |
|  | • Payment History |
|  | • Loyalty Program Data |
|  | • Payment History |
|  | • Purchase History |
|  | • Contact Centre |
|  | • Provisioning History |
| **Optional Data Sources:** | • Social Media Records<br>• Web Browsing History |

The Osterwalder Business Model Canvas for this use case is as follows:

| **Customer** | **Segment** | **Channel** | **Relationship** |
|---|---|---|---|
|  | All consumers falling in to calculated value (Gross Lifetime Value) segments<br><br>Output is recommended actions to groups of customers | All | Customers behave according to the benefits and difficulties perceived in working with the CSP. This business model seeks to correct and create the best service experience in a wide range of CSP generated and externally generated circumstances |
| **Value Proposition** | The customer is placed into action lists for marketing, service management and service experience management that reflect personal preferences. The goal is to increase their value from the business and to the business according to prioritized options available based on best value in current circumstances. This may also involve network planning and switching and tariff optimization for specific segments and occasions.<br><br>The business is able to clarify the likely outcomes of different market conditions, |  |  |

| | |
|---|---|
| | marketing and network investments. The return is in an improved Return on investment in both revenue, customer retention and network productivity. |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the provision of the data storage and calculation /presentation engine. |
| **Revenue Streams** | The additional revenue is generated by optimizing market and service experience to take advantage of calculated, but previously missed opportunities, as well as intercepting revenue loss as a result of poor customer experience. |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Calculate an operating margin for each customer;<br><br>• Place each customer in dynamically changing segments<br><br>• Calculate value of each customer under different events (marketing, service, network capacity, external)<br><br>• Calculate the value of marketing and network investments<br><br>• Monitor the impact of previous and current investment decisions<br><br>• Output clear investment strategies and tactics and value impact assessments in "easy to view" data visualizations. | This use case requires a broad range of data and mathematical modelling techniques to calculate the potential outcomes.  In addition it requires the partnership and collaboration of teams not necessarily associated with collaborative working: Finance/Marketing/Network Operations. | There are potential new partners in acquiring optional data from third party sources. |

## 4.18. EN-EAM-5: Revenue Assurance

### 4.18.1. Attributes

| Attribute | Description |
|---|---|
| **ID** | EN-EAM-5 |
| **Name** | Revenue Assurance |
| **Hierarchy** | TBD |

| Motivation | TBD |
|---|---|
| CxLC Stage(s) | TBD GB962 |
| Actors | Primary Actor(s): Revenue Assurance Manager, Billing Manager<br>Supporting Actor(s): Financial Officer |
| Entry conditions | TBD |
| External References | TBD |
| Customer Experience Metrics: | TBD GB962-A; |
| Other metrics: | TBD GB935-A; |
| Data Sources | • Billing and Usage Events<br><br>• Network Data – as an additional source for accurate usage information<br><br>• CRM Data such as payment history |

| Business Model Canvas of the Use Case | TBD |
|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | This use case does not involve a direct interaction with the customer; however improving the process of accurately billing customers prevents later complaints and disputes which can improve customer experience, stickiness, loyalty, and life time value. | | | |
| Value Proposition | The CSP is constantly looking for new opportunities for revenue, which can be increasingly hard to find. This use case applies big data analytics in order to maximize the revenue returned from existing sources. | | | |
| Cost Structure | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | | |
| Revenue Streams | Existing revenue streams will be enhanced by ensuring that all transactions are correctly billed and revenue opportunities for existing customers are maximized. | | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Detect unbilled transactions;<br><br>• Identify opportunities to improve the collection process and reduce complaints;<br><br>• Identify partners, interconnect, and roaming processes that | This use case requires considerable data from across the CSP's organization from partner and suppliers, from the charging, invoicing and order systems, and from the network. | No new partners are required as part of this user case; however this use case may result in changes to way that the CSP current interacts with existing partners. |

| | |
|---|---|
| can be improved. | |

| Attribute | Description |
|---|---|
| **Story:** | Big data analytics is utilized in the use case to ensure that orders sold translate into real revenue for the provider. This includes:<br><br>• Accurately capturing registration, subscription and network usage, and billing in a timely manner.<br><br>• Collecting billed revenues in a timely manner and minimizing customer complaints and bad debts.<br><br>• Installing adequate monitoring and reconciling capabilities throughout an organization's end-to-end revenue stream.<br><br>• Controlling relationships with roaming, interconnect, and content partners.<br><br>• Network assets are optimally utilized<br><br>• Providers are immediately made aware of exceptions and their sources<br><br>This will ensure that the actual revenue streams match the forecast streams and that actual partner costs match the expected ones. |
| **Actions and processes** | TBD |
| **Building Block(s)** | **TBD** |
| **Privacy Risk Score** | TBD |
| **Feasibility Parameters** | TBD |

## 4.19. Use Case Management-Enterprise Domain

Please see attachment visio version:



Use Case
Classification-business
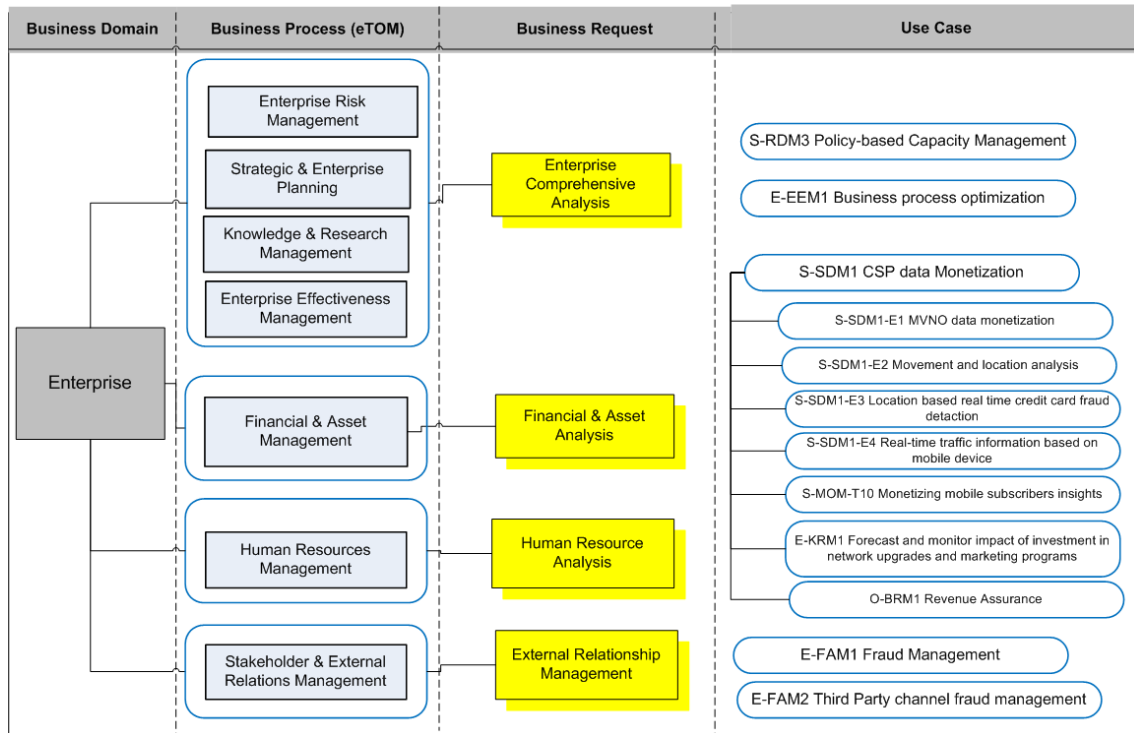
# 5.   Market & Sales related Use Cases

## 5.1.   MS-MAM-1: Market Watch

| | |
|---|---|
| **Name:** | Detect and analyze market trends to guide the strategic planning for the enterprise |
| **Horizontal:** | Strategic & Enterprise Planning |
| **Actors:** | • Marketer<br>• CMO |
| **Business Drivers:** | The strategic plan for an enterprise depends to a large degree on the market that surrounds it and adequately positioning on it. Knowing what other companies in the same industry are doing or are planning to do, can help as a guideline to take decisions on what way the enterprise should follow. |
| **Business Metrics:** | • Increase **177 - # Orders Accepted by Customer (2)**<br>• Increase **193 – $ Revenue** |
| **CxLC Stage:** | N/A |
| **Customer Experience Metrics:** | N/A |
| **Story:** | Marketers and CMOs has to be aware not only of their own product and how to promote it in the best possible way, but how it affect to the strategic plan of the enterprise and what other factors can be involved in the decision making too. For that, there is information that can be extracted about the environment that surrounds a company that can be decisive.<br><br>The most relevant information Big Data Analytics can offer to enterprise strategic plan definition is as follows:<br><br>• Competitors: Main competitors a company has in the industry or in a particular service or product, referring to various aspects such as economical or quality of service.<br><br>• Market: Areas of the market covered by other companies, market niches, etc.<br><br>• Products and Acceptance: Acceptance of products currently in the market, watch of new products that are going to be released and prediction of their impact on the market.<br><br>Exploring external data such as Social Network Data, opinion and acceptance of products can be sketched, as well as new products to be thrown by other companies. Relevant information can also be extracted from product performance data in the company. Analysis of External Technology and Market Data in combination with Internal Data such as Enterprise Marketing Plan or Product Performance Data can help to know more about the competitors in the industry and the market the company is in.<br><br>Using Big Data Analytics, it will be extracted some interesting clusters, by means of space-temporal analytics, on what are the most relevant market |

| | |
|---|---|
| | trends and which ones the company could be benefited by can be given. |
| **Required Data Sources:** | • Enterprise Strategic Plan<br><br>• Product performance data<br><br>• Enterprise Marketing Plan<br><br>• External Social Network Analysis<br><br>• External Technology Data<br><br>• External Market Data |
| **Optional Data Sources:** | None |

The Osterwalder Business Model Canvas for this use case is as follows:

| **Customer** | **Segment** | **Channel** | **Relationship** |
|---|---|---|---|
| | All customers. | All channels. | Customers expect products and services sold by the CSP to be competitively priced, innovative and adequate to the market. CSP's that fail to offer this will lose ground to its competitors. |
| **Value Proposition** | Company leaders can have some extra recommendations about what market trends they should follow and which ones should avoid or abandon in order to design an adequate enterprise strategic plan. Market niches that could benefit the enterprise may be discovered. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | |
| **Revenue Streams** | Some of the existing revenue stream through the CSP stores could be maintained or enhanced by increasing the number of purchase transactions, others could be eliminated. Some new revenue streams could be opened if it is considered that the company should take new market opportunities. | | |

| **Key Activities** | **Key Resources** | **Key Partners** |
|---|---|---|
| • Understand which are market trends;<br><br>• Assess which market trends should be followed by the company;<br><br>• Design enterprise strategic plan based on market perspective and internal enterprise information. | This use case requires external data on market and technological trends. It also requires information on internal strategic plan, technologies being exploited, and product performance data. | No new partners are required for this use case. |

## 5.2. MS-SAM-1: Enticing Purchase of Bundled products

This document aims to make the documentation of new use cases as simple as possible.

This template may be used to develop a use case to be contributed to TM Forum or to provide a blueprint for work within your own organization.  This template brings together many elements of TM Forum best practices and standards to create a single view of business drives, processes, applications, information, metrics and solution approaches in order to speed up data analytics projects.

We recommend following along a completed example to help you fill out this use case: Real Time Personalized Offers while Browsing

- Use Case Credentials

- Use Case Description

- Osterwalder Canvas Template

- Business Canvas for CEM Implementation UC

### 5.2.1. Use Case Credentials

| Name | Enticing selling of Bundled products | *17 Aug 2015* |
|---|---|---|
| **Submitted By** | Nikhil Mhatre | Cognizant |
| **Contributed by** | Mrinal Moitra | Cognizant |
| **Reviewed by** | Larry Chesal | Spirent |
| **Team Approved** | *Yes/No* | *Date* |
| **Comments** | | |
| **Security & Privacy Scored** | *Yes/No* | *Date* |

### 5.2.2. Use Case Description

| Name | Enticing selling of Bundled products |
|---|---|
| **Vertical** | Marketing & Offer Management , Customer Relationship Management |
| **Actors** | • Customer<br><br>• Marketing Managers<br><br>• CSR |
| **Business Drivers** | According to a survey conducted by Federal Communications Commission (FCC) it is observed that there is co-relation between bundling and churn. Nearly half of the respondents noted that having to change their bundle was a major reason for them to keep the service. Details of the survey can be found at: https://apps.fcc.gov/edocs_public/attachmatch/DOC-303264A1.pdf<br><br>Selling bundled products/services is a win-win for both CSP and customers -<br><br>• Customer gets better pricing in return bundled products improves customer |

|  |  |
|---|---|
|  | stickiness |
|  | • Customer gets all service support from one stop, that also enables CSPs deliver personalized end user support |
|  | • Customer receives bundled freebies, in return CSP can vouch for customer referrals and enhanced market share |
|  | Analytics can play a significant role by analyzing data to derive insights on how different products and services are related to a particular customer segment, based on demographic variables and their social interactions, to identify |
|  | • Correlation between offers and demand based on customer needs |
|  | • Correlation of products and services that are purchased together |
|  | • Conjoint analysis to determine the profit-maximizing price |
| **Business Metrics** | • Increase **G-RM-1- Profitability** |
|  | • Increase **G-RM-1b - Average Revenue Per User(ARPU)** |
|  | • Increase **G-RM-5a - % Customers Acquired** |
|  | • Decrease **G-RM-5b - % Customers Lost** |
|  | • Decrease **154 - $ cost of sales** |
|  | • Decrease **186 - $ Opex** |
|  | • Increase **193 – $ Revenue** |
| **Customer Experience Lifecycle Stage** |  |
| **Customer Experience Metrics** | BA-F-5      : # Customers All Service Providers |
|  | BA-F-26    : # Service Plans Introduced |
|  | CH-C-11     : # Hours to Deliver, from Request to Delivery |
|  | CH-C-10b : # Deliveries on Committed Time |
| **Story** | In this fast commoditizing market, providing quality services at competitive price is a continuous quest for Service Providers. Enticing purchase of bundled products will enable CSPs gaining & retaining their market share and serve better to their end customers. |
|  | Traditional customer segmentation techniques employed by CSPs leaves a big void of under or unserved customers that are being offered with standard product bundle sets, targeting a specific customer group that may not always be relevant for all customers in that segment. Need of the hour is to break away from the traditional methods of customer segmentation and re-define product bundles that are not relevant to changing customer needs. |
|  | BDA will act as a key enabler for CSPs to maximize the reach  and conversion of bundled services to its target customers by - |
|  | 1. **Enabling optimum product/service bundling:** One size does not fit all. Identify, tailor and match to create right fit bundled product offerings based on segmented customer needs, tastes, likes, wants, personas, consumption patterns and demographics |
|  | 2. **Enabling bundle mapping to customer segments:** Analyze bundle attributes vis-à-vis consumer behavior to find how positively or negatively they are correlated with various demographic variables to better customize / personalize the product bundles and accordingly map these to potential |

| | customer segment |
|---|---|
| | 3. **Enabling bundle adoption for better market share:** Enable market oriented, bundle bench marking vis-à-vis other competitor offerings |
| | 4. **Track and monitor adoption** of bundled offerings and showcase realized correlation among bundle adoption, churn rate, market share and overall profitability. |
| **Security and privacy** | |
| **Required Data Sources** | |
| **Optional Data Sources** | |

### 5.2.3.   Osterwalder Canvas Template

To complete this canvas you must first save the page.  Once the page is saved, you can edit and add to the canvas from the page.

The business model for each use case is described using the Business Model Canvas from Osterwalder. Each canvas provides a mechanism for the CSP to discuss the business models that lie behind a particular BDA use case, which can be used to start a strategic conversation within their business.

*Business Canvas for CEM Implementation UC*

| Customer Segment | Customer Channel | Customer Relationship |
|---|---|---|
| The types of customers reached by this business model | The channels through which the business needs to reach its customers | The customer relationships that need to be established |
| The types of customers reached by this business model | The channels through which the business needs to reach its customers | The customer relationships that need to be established |

| Value Proposition |
|---|
| The value, products and services delivered to the customer |
| The value, products and services delivered to the customer |

| Cost Structure |
|---|
| The most important costs incurred by this business model |
| The most important costs incurred by this business model |

| Revenue Streams |
|---|
| The streams through which this business model obtains revenue from customers |
| The streams through which this business model obtains revenue from customers |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| The Most important activities the business must conduct to make the business model work | The most important assets to make the business model work | The key partners and suppliers needed to realize the business model |
| The Most important activities the | The most important assets | The key partners and |

| business must conduct to make the business model work | to make the business model work | suppliers needed to realize the business model |
|---|---|---|

## 5.3. MS-SAM-2: Targeting leads for improved customer conversion

This document aims to make the documentation of new use cases as simple as possible.

This template may be used to develop a use case to be contributed to TM Forum or to provide a blueprint for work within your own organization. This template brings together many elements of TM Forum best practices and standards to create a single view of business drives, processes, applications, information, metrics and solution approaches in order to speed up data analytics projects.

We recommend following along a completed example to help you fill out this use case: Real Time Personalized Offers while Browsing

- Use Case Credentials
- Use Case Description
- Osterwalder Canvas Template
- Business Canvas for CEM Implementation UC

### 5.3.1. Use Case Credentials

| Name | Identifying, segregating and targeting qualified and high scoring leads for improved customer conversion | *3rd August 201* |
|---|---|---|
| **Submitted By** | Mrinal Moitra | Cognizant |
| **Contributed by** | Ruchi Banga | Cognizant |
| **Reviewed by** | Larry Chesal | Spirent |
| **Team Approved** | *Yes/No* | *Date* |
| **Comments** | | |
| **Security & Privacy Scored** | *Yes/No* | *Date* |

### 5.3.2. Use Case Description

| Name | Identifying, segregating and targeting qualified and high scoring leads for improved customer conversion |
|---|---|
| **Vertical** | Marketing and Offer Management |
| **Actors** | Marketing Manager, Product owner, Lead Manager |
| **Business Drivers** | Leads signify new opportunities for business. And with 10% increase in lead quality, Forrester Research reports that sales can be 40% more productive. |
| | By merely collecting leads from various channels, without an efficient |

| | |
|---|---|
| | system to analyze and manage those, can result in low conversion rates and loss of sales productivity. |
| | Big Data Analytics can help identifying potential prospects and mapping them with right product offerings for better customer conversion and revenue maximization. |
| **Business Metrics** | <<NEW>> - Leads to Customers ratio |
| | Increase G-RM-5a - % Customer Acquired |
| | Decrease F-OE-1b - % Cost of Sales, of Revenue |
| | Increase 150- $ Value of  Sales Per Day |
| | Decrease 154 - $ Cost of Sales |
| | Increase 231 - # Customers |
| | Increase BA-F-6 - Market Share |
| **Customer Experience Lifecycle Stage** | Be Aware, Interact, Choose |
| **Customer Experience Metrics** | Increase CH-F-2 % Orders of Inquiries |
| | Decrease CH-E-3 %Quotations Unsuccessful |
| | Increase RC-F-14 % Social Network Comments Positive |
| | Decrease RC-F-15 % Social Network Comments Negative |
| **Story** | With increasing competition in the industry and soaring cost of customer acquisition (COCA), communication service providers need an efficient solution for finding and acquiring new customers. |
| | This use case undertakes following processes: |
| | **Lead identification:** |
| | A telecom service provider has various channels (customer care centers, official website, targeted marketing campaigns) by which interest of potential customers is captured. |
| | Lead identification builds a pool of qualified leads and maintains their information, collected from possible external (public Wi-Fi, shared databases) and internal systems (email or phone registered on website /customer care centers). |
| | Big data analytics can leverage other internal and external data sources for enriching identified lead data with lead persona and buying propensity. |
| | **Lead Categorization:** |
| | Lead categorization deals with 2 vital decision attributes i.e. 'who will buy' and 'what will he/she buy'. |
| | Big data analytics can play an important role in segregating leads in categories based on their buying propensity i.e. hot leads, warm leads and cold leads. |
| | Similarly Big data analytics can be leveraged for categorizing potential prospects (hot leads) in to different segments based on their actual needs and total value to provider i.e. platinum customer, gold customer and silver customer. |
| | Big data analytics would play a key role for directing scarce sales effort on high potential and high value customers. |

| | |
|---|---|
| | **Product recommendation:** |
| | Selling right product to right customer over right channel at right time is the key to maximizing the lead to customer conversion. |
| | Big data will aid in optimum product recommendation which will use combination of lead profile information, lead persona, channel preference, social media behavior etc. to deliver competitive product offering and act as catalyst for higher lead conversion. |
| **Security and privacy** | |
| **Required Data Sources** | **External Data Sources**<br>• Legally shared databases<br>• Social channel data<br>**Internal Data Sources**<br>• CRM data<br>• Online channel feed<br>• Store front data<br>• Lead management data base<br>• Product catalog |
| **Optional Data Sources** | |

### 5.3.3. Osterwalder Canvas Template

To complete this canvas you must first save the page. Once the page is saved, you can edit and add to the canvas from the page.

The business model for each use case is described using the Business Model Canvas from Osterwalder. Each canvas provides a mechanism for the CSP to discuss the business models that lie behind a particular BDA use case, which can be used to start a strategic conversation within their business.

*Business Canvas for CEM Implementation UC*

| Customer Segment | Customer Channel | Customer Relationship |
|---|---|---|
| The types of customers reached by this business model | The channels through which the business needs to reach its customers | The customer relationships that need to be established |
| The types of customers reached by this business model | The channels through which the business needs to reach its customers | The customer relationships that need to be established |

| Value Proposition |
|---|
| The value, products and services delivered to the customer |
| The value, products and services delivered to the customer |

| Cost Structure |
|---|
| The most important costs incurred by this business model |

| The most important costs incurred by this business model | | |
|---|---|---|
| **Revenue Streams** | | |
| The streams through which this business model obtains revenue from customers | | |
| The streams through which this business model obtains revenue from customers | | |
| **Key Activities** | **Key Resources** | **Key Partners** |
| The Most important activities the business must conduct to make the business model work | The most important assets to make the business model work | The key partners and suppliers needed to realize the business model |
| The Most important activities the business must conduct to make the business model work | The most important assets to make the business model work | The key partners and suppliers needed to realize the business model |

## 5.4. MS-SAM-3: Real-Time Personalized Offers while Browsing

| | |
|---|---|
| **Name:** | Generation of personalized and targeted cross-sell and up-sell offers based on the context of the products/services currently being viewed by the customer |
| **Horizontal:** | Marketing and Offer Management |
| **Actors:** | • Customer |
| **Business Drivers:** | The communication provider online store gives a direct channel to the customer in the buying process. The customer has a much higher propensity to buy when they are already engaged with this storefront. Therefore considering what they are currently looking at, in order to deliver alternative or complimentary products/services while they browse the catalogue, can guide the customer to buying the right products and services. This ultimately leads to more sales, increased revenues, and happier customers who have the right products/services that suit their behavior. |
| **Business Metrics:** | • Increase **2 - Average Revenue per User (ARPU)**<br>    o Increase **177 - # Orders Accepted by Customer (2)** |
| **CxLC Stage:** | Choose, Renew, & Recommend |
| **Customer Experience Metrics:** | • Increase **CH-C-1 # Customers Acquired**<br>• Increase **CH-C-3 # Orders**<br>• Increase **RN-C-1 # Renew Orders**<br>• Increase **RN-C-3 # Customers Renewing**<br>    o Increase **CH-F-8 Online Channel Subjective Score – Place Order**<br>    o Increase **RC-F-1 NPS – Relational**<br>• Increase **RC-F-2 NPS – Transactional** |
| **Story:** | A customer is browsing products on the provider's online store. While looking at a particular product or service, a set of recommendations of alternative or |

complimentary products and services are displayed to the customer.

Big Data Analytics is applied to understand the customer from a multitude of perspectives in order to provide relevant recommendations. The product or service that the customer is currently looking at provides the context of the type of product or service that they are looking for and constrains the set of recommendations displayed to the customer. Recommendation strategies that can be applied in this context include (but are not limited to):

- **Demographic-based:** Recommendation of items typically bought by customers of this age, gender, etc.

- **Usage-based:** Recommendation based on how the customer uses their device(s) and the services they are subscribed to

- **Purchase-based:** Recommendations based on items purchased by this customer in the past

- **Location-based:** Recommendations bought by customers in this location in the past

| | |
|---|---|
| **Required Data Sources:** | - Product Catalogue<br>- Availability & Eligibility Rules<br>- Items currently being or recently viewed |
| **Optional Data Sources:** | - CRM Data<br>- Usage & Billing Information<br>- Purchase History<br>- Network & Usage Data<br>- Customer location information |
| **Privacy Risk Score** | 48 (high) | Key to this use case is to ensure you explain precisely what, and how, you will deal with their data and then stick to - do what you have agreed and no more. Particular care around use/transmission of real time location data together with other personal data. |

The Osterwalder Business Model Canvas for this use case is as follows:

| **Customer** | **Segment** | **Channel** | **Relationship** |
|---|---|---|---|
| | Individual subscribers with online usage.<br><br>(Does not target corporate customers, or customers that do not use the CSP's online store.) | CSP Online Store | Customers understand that an online store interaction is automated; however they still expect the experience and recommendations to be personalized for them. |
| **Value Proposition** | Customers receive personalized and targeted offers where they currently receive generic offers. Delivering more relevant offers to the customers increases offer acceptance rate and drives and increase in revenue. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | |
| **Revenue Streams** | The existing revenue stream through the CSP online store is enhanced by increasing the number of purchase transactions. No new revenue streams are opened. | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Understand each customers behavior;<br><br>• Treat each customer as an individual;<br><br>• Leverage feedback to continually refine targeting. | This use case requires data on customer usage, their devices, and past purchases in order to discern the most likely offer that will lead to retention of that customer. The use case also requires information on the content the customer is currently browsing in the store. | No new partners are required for this use case. |
|  |  |  |

## 5.5. MS-SAM-4: Real-Time Personalized Offers during Checkout

| | |
|---|---|
| **Name:** | Generation of personalized and targeted cross-sell and up-sell offers based on the products that the customer currently has in their basket at checkout |
| **Horizontal:** | Marketing and Offer Management |
| **Actors:** | • Customer |
| **Business Drivers:** | The checkout process offers a unique opportunity to upsell while the customer is in the right frame of mind to purchase. Accurately targeted offers, which are relevant to the customer, have a significantly higher acceptance rate than untargeted offers. |
| **Business Metrics:** | • Increase **2 - Average Revenue per User (ARPU)**<br>• Increase **177 - # Orders Accepted by Customer (2)** |
| **CxLC Stage:** | Choose, Renew, & Recommend |
| **Customer Experience Metrics:** | • Increase **CH-C-1 # Customers Acquired**<br><br>• Increase **CH-C-3 # Orders**<br><br>• Increase **RN-C-1 # Renew Orders**<br><br>• Increase **RN-C-3 # Customers Renewing**<br><br>    o Increase **CH-F-8 Online Channel Subjective Score – Place Order**<br><br>• Increase **RC-F-1 NPS – Relational**<br><br>• Increase **RC-F-2 NPS – Transactional** |
| **Story:** | A customer has filled a shopping basket on the online store and has clicked on the checkout button in order to complete the order. The customer is delivered a set of recommendations of alternative or complementary offers based on the contents of their shopping basket. |

|  | Big Data Analytics is applied to understand the customer from a multitude of perspectives in order to provide relevant recommendations. The set of products or services in the shopping basket guide the recommendation process to ensure that the recommendations are relevant to what the customer is trying to achieve with their current purchase. Recommendation strategies that can be applied in this context include (but are not limited to): |
|---|---|
|  | • **Shopping Basket Analysis:** Recommendations based on items that typically appear in shopping baskets together |
|  | • **Demographic-based:** Recommendation of items typically bought by customers of this age, gender, etc. |
|  | • **Usage-based:** Recommendation based on how the customer uses their device(s) and the services they are subscribed to |
|  | • **Purchase-based:** Recommendations based on items purchased by this customer in the past |
|  | • **Location-based:** Recommendations bought by customers in this location in the past |
| **Optional Data Sources:** | • CRM Data<br><br>• Usage & Billing Information<br><br>• Purchase History |
| **Required Data Sources:** | • Product Catalogue<br><br>• Availability & Eligibility Rules<br><br>• Items currently in the customers basket |
| **Privacy Risk Score** | 48 (high)<br><br>Key to this use case is to ensure you explain precisely what, and how, you will deal with their data and then stick to - do what you have agreed and no more. Particular care around use/transmission of real time location data together with other personal data. |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
|  | Individual subscribers with online usage.<br><br>(Does not target corporate customers, or customers that do not use the CSP's online store.) | CSP Online Store | Customers understand that an online store interaction is automated; however they still expect the experience and recommendations to be personalized for them. |
| **Value Proposition** | Customers receive additional offers that are targeted to their current buying process at the point when they are ready to provide their payment details. This provides a powerful opportunity to increase the revenue gained by the CSP through the transaction that is the currently being conducted by the customer. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | |
| **Revenue Streams** | The existing revenue stream through the CSP online store is enhanced by increasing the value of each purchase transaction. No new revenue streams are opened. | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Understand each customers behavior;<br><br>• Treat each customer as an individual;<br><br>• Under the customers current context;<br><br>• Leverage feedback to continually refine targeting. | This use case requires data on customer usage, their devices, and past purchases in order to discern the most likely offer that will lead to retention of that customer. This use case requires real-time information on the content of the subscriber's basket. | No new partners are required for this use case. |

## 5.6. S-MOM-T3: Real-time Personalized Offers during a Live Interaction

| Name: | Generation of personalized and targeted cross-sell and up-sell offers during an assisted customer interaction |
|---|---|
| **Horizontal:** | Marketing and Offer Management |
| **Actors:** | • Customer<br><br>• Provider Representative |
| **Business Drivers:** | One to one interactions between provider representatives and customers provides a unique opportunity to cross-sell or up-sell to that customer; however the time to deliver this offer is short and customers will quickly dismiss irrelevant offers. Providing targeted and personalized offers that is relevant to the current interaction between the customer and provider increases the likelihood of offer acceptance. |
| **Business Metrics:** | • Increase **2 - Average Revenue per User (ARPU)**<br>   o Increase **177 - # Orders Accepted by Customer (2)** |
| **CxLC Stage:** | Choose, Renew & Recommend |
| **Customer Experience Metrics:** | • Increase **CH-C-1 # Customers Acquired**<br><br>• Increase **CH-C-3 # Orders**<br><br>• Increase **RN-C-1 # Renew Orders**<br><br>• Increase **RN-C-3 # Customers Renewing**<br>   o Increase **CH-F-9 Customer Service Representative Subjective Score – Place Order**<br><br>• Increase **RC-F-1 NPS – Relational**<br>   o Increase **RC-F-2 NPS – Transactional** |

| Story: | A provider representative is concluding an interaction with a customer and has an opportunity to provide a cross-sell or up-sell offer. The representative is delivered a set of targeted recommendations that are relevant to the customer, to guide them through the offer recommendation process. |
|---|---|
| | These recommendations also take the topic and context of the customer interaction into account such that the offers are not only relevant to the customer but relevant to the discussion that the customer has been having with the provider representative. For example, a customer and a provider representative are concluding an interaction where the customer has been resolving a mobile device issue.  The provider is a quad-play provider and there are relevant cross-sell and up-sell offers for the customer from the different parts of the providers business. |
| | The recommendations provided to the provider representative would consider the most relevant offers to the customer as well as the fact that the topic of the call was related to the mobile offering of the provider. |
| | In this particular example, the representative would deliver a recommendation for a plan bolt-on related to the customers' data usage rather than an equally relevant TV related offer, due to the fact that it is more relevant to the discussion that the provider representative has been having with the customer. |
| **Optional Data Sources:** | • CRM Data<br>• Usage & Billing Information<br>• Web Browsing History<br>• Purchase History<br>• Network Usage Data<br>• Device Usage Data |
| **Required Data Sources:** | • Product Catalogue<br>• Availability & Eligibility Rules<br>• Current interaction context |
| **Privacy Risk Score** | 48 (high)<br><br>Key to this use case is to ensure you explain, before you collect any data, precisely what, and how, you will deal with their data- and then stick to - do what you have agreed and no more. |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
| | All customers that contact the CSP through assisted channels.<br><br>Note: In corporate cases it may not be possible for the customer to accept the offer. | • Voice Calls<br>• Text Chat<br>• Tickets | In assisted channels the customer expects the CSP representative to understand them completely. Recommendations must be highly personalized. |
| **Value Proposition** | Personal & contextual recommendations can be utilized by the CSP to turn a customer query into a sales opportunity that can drive revenue. | | |
| **Cost** | The CSP will incur additional costs in the integration with data sources and the | | |

| Structure | maintenance of the big data storage and processing infrastructure. |
|---|---|
| Revenue Streams | If the CSP is not utilizing care channels as a sales channel then a new revenue stream is opened. If untargeted offers are currently being pushed then revenue is enhanced. |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Understand each customers behavior;<br><br>• Treat each customer as an individual;<br><br>• Under the customers current context;<br><br>• Leverage feedback to continually refine targeting. | This use case requires data on customer usage, their devices, and past purchases in order to discern the most likely offer that will lead to retention of that customer. Contextual information on the content of the current interaction is needed to contextual the recommendations made. | No new partners are required for this use case. |

## 5.7. MS-SAM-6: Real-time Personalized Offers Based on Location

| Name: | Personalized Marketing to Mobile Subscribers Based on Customer Location |
|---|---|
| Horizontal: | Marketing and Offer Management |
| Actors: | • Customer |
| Business Drivers: | Mobile Marketing is both profitable and risky. When relevant marketing messages are pushed to customers, they are useful information that enhances customer experience; on the other hand, when they are not relevant to customers, they become spam and customers are at risk of churning. Leveraging Big Data Analytics, Mobile Marketing can be triggered by customer location changes and thus increase the chance of relevancy to what customers need. At the same time, it becomes a differentiator for communication providers compared to other marketing campaign services. |
| Business Metrics: | • Increase **2 - Average Revenue per User (ARPU)**<br> ○ Increase **177 - # Orders Accepted by Customer (2)** |
| CxLC Stage: | Choose, Renew, & Recommend |
| Customer Experience Metrics: | • Increase **CH-C-1 # Customers Acquired**<br><br>• Increase **CH-C-3 # Orders**<br><br>• Increase **RN-C-1 # Renew Orders**<br><br>• Increase **RN-C-3 # Customers Renewing**<br><br>• Depending on channel used by customer to make order, this use case will |

increase one of:

  - ○ **CH-F-5 Authorized Dealer Subjective Score – Place Order**

  - ○ **CH-F-6 Retail Outlet Subjective Score – Place Order**

  - ○ **CH-F-7 Sales Hotline Subjective Score – Place Order**

  - ○ **CH-F-8 Online Channel Hotline Subjective Score – Place Order**

  - ○ **CH-F-7 Customer Service Representative Subjective Score – Place Order**

- Increase **RC-F-1 NPS – Relational**

  - ○ Increase **RC-F-2 NPS – Transactional**

| | |
|---|---|
| **Story:** | This use case utilizes big data analytics to ensure that the mobile marketing messages, from a catalogue of most relevant, pre-defined campaigns, are sent only when customer arrives or is about to arrive at certain pre-defined geo-fenced locations.  Due to real-time nature of the marketing offers, the Campaign Management System is required to send out the messages to customers within a few minutes of before or after customer arrival at the location. In case of predicting customer locations,  their information such as customer demographics, web browsing history, call history and social media records can be used to augment the analytics to make the location predictions more accurate. Over time, the system can build a profile of the customer locations and distinguish different locations with different labels so that the right advertising is sent to customer at the right location. |
| **Required Data Sources:** | • Offer Catalogue<br><br>• Availability & Eligibility Rules<br><br>• Mobile Location Information<br><br>• Customer List (opt-in or opt-out) |
| **Optional Data Sources:** | • Call Detailed Records<br><br>• Social Media Records<br><br>• Web Browsing History |
| **Privacy Risk Score** | 53 (high) | Key to this use case is to ensure you explain precisely what, and how, you will deal with their data and then stick to - do what you have agreed and no more. Particular care around use/transmission of real time location data together with other personal data. |

The Osterwalder Business Model Canvas for this use case is as follows:

| **Customer** | **Segment** | **Channel** | **Relationship** |
|---|---|---|---|
| | Customers for which mobile location information can be gathered (either via cell tower triangulation or from device) | • SMS/MMS | Poorly pushed messages can lead to customer fatigue and customers ignoring future messages. CSP's should avoid spamming customers and all messages sent should be personalized, timely and relevant to the customers' current location. |
| **Value Proposition** | Relevant recommendations located in the customer's current location provide the customer with the opportunity to buy with a low cost of effort on their part to accept the offer. This can help the CSP to increase offer acceptance and | | |

| | |
|---|---|
| | revenue. |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. Obtaining real-time customer location can prove to be a time consuming and costly aspect of this use case. |
| **Revenue Streams** | The existing revenue stream from offers pushed through direct messaging is enhanced by increasing the number of purchase transactions. No new revenue streams are opened. |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Pinpoint the customers current location; <br><br> • Understand each customers behavior; <br><br> • Treat each customer as an individual; <br><br> • Leverage feedback to continually refine targeting. | This use case requires data on customer usage, their devices, and past purchases in order to discern the most likely offer that will lead to retention of that customer. On top of other marketing and offer Management use cases the ability to obtain accurate and timely location data for customers is a key issue. | • New partners for acquiring customer location data from the network or from the customer's device. |

## 5.8. MS-SAM-7: Real-time Personalized Offers Based on Usage

| Name: | Generation of personalized and targeted cross-sell and up-sell offers based on how the customer is currently using their device(s) and the services offered by the provider |
|---|---|
| **Horizontal:** | Marketing and Offer Management |
| **Actors:** | • Customer |
| **Business Drivers:** | Pushing untargeted cross-sell or up-sell offers to a providers customer base leads to customer fatigue and ultimately to notifications being ignored or disabled by the customer. Considering customer behavior, the way in which they use their device, and the services they are subscribed to, enables the provider to personalize the offers that are pushed to customers. This ensures that offers received by customers are relevant to them, reducing the likelihood of the customer ignoring the notification and increasing the likelihood of the offer being accepted. |
| **Business Metrics:** | • Increase **2 - Average Revenue per User (ARPU)** <br>      o Increase **177 - # Orders Accepted by Customer (2)** |
| **CxLC Stage:** | Choose, Renew, & Recommend |

| Customer Experience Metrics: | • Increase **CH-C-1 # Customers Acquired** |
| --- | --- |
| | • Increase **CH-C-3 # Orders** |
| | • Increase **RN-C-1 # Renew Orders** |
| | • Increase **RN-C-3 # Customers Renewing** |
| | • Depending on channel used by customer to make order, this use case will increase one of: |
| |     ◦ **CH-F-5 Authorized Dealer Subjective Score – Place Order** |
| |     ◦ **CH-F-6 Retail Outlet Subjective Score – Place Order** |
| |     ◦ **CH-F-7 Sales Hotline Subjective Score – Place Order** |
| |     ◦ **CH-F-8 Online Channel Hotline Subjective Score – Place Order** |
| |     ◦ **CH-F-7 Customer Service Representative Subjective Score – Place Order** |
| | • Increase **RC-F-1 NPS – Relational** |
| | • Increase **RC-F-2 NPS – Transactional** |
| **Story:** | Big data analytics is employed to identify products and services that are relevant to a given customer behavior. These products and services are then pushed to the customer through the appropriate channel and at the appropriate time. |
| | For example, the data usage behavior of a particular customer increases over a number of months and the analytics identifies that the new customer behavior is strongly linked with a particular plan bolt-on that many other customers with this behavior are subscribed to. The plan bolt on is thus highly relevant to the customer and is pushed as a campaign to the customer. |
| **Required Data Sources:** | • Product Catalogue |
| | • Availability & Eligibility Rules |
| | • Network Usage Data |
| | • Device Usage Data |
| **Optional Data Sources:** | • CRM Data |
| | • Usage & Billing Information |
| | • Purchase History |
| **Privacy Risk Score** | 48 (high)   Key to this use case is to ensure you explain precisely what, and how, you will deal with their data and then stick to - do what you have agreed and no more. |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
| --- | --- | --- | --- |
| | All customers | All channels | The relationship required varies depending on the delivery channel for the offers (see SMO-T1 to SMO-T4). In all cases the customers experience and recommendations must be personalized and relevant. |
| **Value** | Offers targeted at a customers need based on understanding their behavior and | | |

| Proposition | their usage over time have a higher likelihood of being accepted by the customer, thus increasing acceptance rates and revenue for the targeted offers. |
|---|---|
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. |
| **Revenue Streams** | The existing revenue stream through the CSP online store, through live interactions, or through direct messaging channels are enhanced by increasing the number of purchase transactions. No new revenue streams are opened. |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Understand each customers behavior & usage;<br><br>• Treat each customer as an individual;<br><br>• Leverage feedback to continually refine targeting. | This use case requires data on customer usage, their devices, and past purchases in order to discern the most likely offer that will lead to retention of that customer. | No new partners are required for this use case. |

## 5.9. MS-SAM-8: Real-time Personalized Offers Based on Device

| Name: | Generation of personalized and targeted cross-sell and up-sell offers based on the device(s) being used by the customer |
|---|---|
| **Horizontal:** | Marketing and Offer Management |
| **Actors:** | • Customer |
| **Business Drivers:** | Service convergence provides the capability for a customer to use a subscription over multiple devices. Furthermore, as a result of frequent upgrades, the lifetime of a mobile device continues to reduce over time. Operators can utilize this to upsell new products and services (for example, at a discounted rate) to existing customers. This ensures likelihood of acceptance by the customer, and at the same time improves credibility and customer experience. |
| **Business Metrics:** | • Increase **2 - Average Revenue per User (ARPU)**<br>    o Increase **177 - # Orders Accepted by Customer (2)** |
| **CxLC Stage:** | Choose, Renew, & Recommend |
| **Customer Experience Metrics:** | • Increase **CH-C-1 # Customers Acquired**<br><br>• Increase **CH-C-3 # Orders**<br><br>• Increase **RN-C-1 # Renew Orders**<br><br>• Increase **RN-C-3 # Customers Renewing**<br><br>• Depending on channel used by customer to make order, this use case will |

|  | increase one of: |
|---|---|
|  | <ul><li>○ **CH-F-5 Authorized Dealer Subjective Score – Place Order**</li><li>○ **CH-F-6 Retail Outlet Subjective Score – Place Order**</li><li>○ **CH-F-7 Sales Hotline Subjective Score – Place Order**</li><li>○ **CH-F-8 Online Channel Hotline Subjective Score – Place Order**</li><li>○ **CH-F-7 Customer Service Representative Subjective Score – Place Order**</li></ul><ul><li>Increase **RC-F-1 NPS – Relational**</li><li>Increase **RC-F-2 NPS – Transactional**</li></ul> |
| **Story:** | Big Data Analytics can be employed to determine the device that is being used by a customer and how the customer is using it, in order to provide an opportunity for the operator to sell additional products and services.<br><br>For example, a customer with two TV sets uses a DSL service. At present, the customer uses the same connection for the two TVs, and is therefore unable to watch different channels simultaneously. Big Data Analytics can be used to detect this and offer an additional DSL connection (at a discounted price), thereby providing the customer an increased number of channels and option to watch different channels simultaneously.<br><br>Alternatively, for a mobile subscriber, Big Data Analytics can be used to detect the handset being used, and offer an upgrade (at a discounted cost) if the handset has become outdated. |
| **Optional Data Sources:** | <ul><li>Customer churn motivation prediction</li><li>Order Data</li></ul> |
| **Required Data Sources:** | <ul><li>CRM Data</li><li>Purchase History</li><li>Product Catalogue</li><li>Network and Service Inventory Data</li><li>Product performance data</li></ul> |
| **Privacy Risk Score** | 48 (high) Key to this use case is to ensure you explain precisely what, and how, you will deal with their data and then stick to - do what you have agreed and no more. |

The Osterwalder Business Model Canvas for this use case is as follows:

| **Customer** | **Segment** | **Channel** | **Relationship** |
|---|---|---|---|
|  | All customers | All channels | Customers expect the CSP to understand how they use the services they have subscribed for. Offers should be made that solve customer's ongoing issues. |
| **Value Proposition** | The devices that customers currently use and the way in which they use these devices provide a key insight into the issues that they struggle with on a daily basis. Offers that solve these issues for the customers are more likely to be accepted. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the | | |

| | maintenance of the big data storage and processing infrastructure. |
|---|---|
| **Revenue Streams** | The existing revenue stream through the CSP online store, through live interactions, or through direct messaging channels are enhanced by increasing the number of purchase transactions. No new revenue streams are opened. |

| **Key Activities** | **Key Resources** | **Key Partners** |
|---|---|---|
| • Understand the devices currently used by the customer; <br><br> • Understand how the customer uses their devices on a daily basis. | This use case requires data on customer usage, their devices, and past purchases in order to discern the most likely offer that will lead to retention of that customer. | No new partners are required for this use case. |

## 5.10. MS-SAM-9: Intelligent Advertising Based on Browsing History

| **Name:** | Injection of personalized and targeted advertising based on customer's browsing history |
|---|---|
| **Horizontal:** | Marketing and Offer Management |
| **Actors:** | • Customer |
| **Business Drivers:** | A customer's browsing history provides a unique opportunity to know regular activities, likings and preferences of the customer. Advertisements can be inserted intelligently by analyzing the sites browsed, time spent on each site and any operation performed on the sites. The adverts can belong to either the provider (thereby providing a way to cross-sell and up-sell its own products and services) or a third party (with which the provider may have an agreement for revenue sharing). |
| **Business Metrics:** | For CSP's Advertisements: <br><br> • Increase **2 - Average Revenue per User (ARPU)** <br><br> • Increase **177 - # Orders Accepted by Customer (2)** |
| **CxLC Stage:** | For CSP's Advertisements: Choose, Renew, & Recommend <br><br> For Third Party Advertisements: Be Aware (of third party brands) |

| **Customer Experience Metrics:** | For CSP's Advertisements: <br><br> • Increase **CH-C-1 # Customers Acquired** <br><br> • Increase **CH-C-3 # Orders** <br><br> • Increase **RN-C-1 # Renew Orders** |
|---|---|

|  |  |
|---|---|
|  | • Increase **RN-C-3 # Customers Renewing** |
|  | • Depending on channel used by customer to make order, this use case will increase one of: |
|  |     ○ **CH-F-5 Authorized Dealer Subjective Score – Place Order** |
|  |     ○ **CH-F-6 Retail Outlet Subjective Score – Place Order** |
|  |     ○ **CH-F-7 Sales Hotline Subjective Score – Place Order** |
|  |     ○ **CH-F-8 Online Channel Hotline Subjective Score – Place Order** |
|  |     ○ **CH-F-7 Customer Service Representative Subjective Score – Place Order** |
|  | • Increase **RC-F-1 NPS – Relational** |
|  | • Increase **RC-F-2 NPS – Transactional** |
|  | For Third party Advertisements: |
|  | • Increase BA-F-2 Advertisement Effectiveness Subjective Score |
|  | • Increase BA-F-3 # Responses to Advertised Promotion |
| **Story:** | Tracking past customer browsing behavior provides a mechanism for extremely well targeted advertising. Big Data Analytics has a key role to play here, analyzing the past customer browsing history, identifying time spent on individual sites and pages, tracking clicks and activities, and making recommendations of advertisements based on these insights. |
|  | There are a large number of common activities that are conducted by users on the internet, for example: |
|  | • Searching for a new device or plan on the CSP website; |
|  | • Searching for flights and hotels for a trip; |
|  | • Searching for movies, restaurants, or events for a night out; |
|  | • Searching for books, music, movies to buy; |
|  | • Searching for houses or apartments to rent or buy; |
|  | Taking the example of a customer that has performed one of these activities but not completed a transaction, that is browsing another site a short time later. Delivering a targeted advertisement relevant to that task can be used to increase the likelihood of the customer completing the transaction. For example presenting an offer for the device that the customer was considering in the CSP online store on a third party news website. |
|  | If the advertisement belongs to the operator, it provides a direct way of up-selling and cross-selling its own products. Views and clicks on third party advertisements provide a new revenue stream. |
| **Required Data Sources:** | • Web Browsing History (including time spent on each page and activities performed along with date/time stamp) |
| **Optional Data Sources:** | • CRM Data |
| **Privacy Risk Score** | 53 (high) Key to this use case is to ensure you explain precisely what, and how, you will deal with their data and then stick to - do what you have agreed and no more. |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
| | All customers that use mobile or broadband internet from the CSP | Web | Targeting of advertising has become so prevalent that untargeted advertising is almost immediately ignored by customers. |
| **Value Proposition** | Tracking customer's exploration of the CSP's online store and later targeting offers based on incomplete transactions provides a means for the CSP to increase product sales and revenues. The further ability to target third party advertisements generates a new revenue stream on top of the CSP data. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | |
| **Revenue Streams** | This use case opens up two revenue streams:<br><br>• CSPs gain a new channel through the Web that enables them to target advertisements for their own products and generate additional revenue;<br><br>• Targeting of third party advertisements and charging third parties per click through or per purchase provides additional revenues | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Understand the customers browsing behaviors<br><br>• Target offers relevant to the customers past behavior | The ability to gather and process the vast quantity of data associated with the web browsing is key to the success of this use case. | • Third party partners that provide the service of inserting advertisements into external websites;<br><br>• Third party partners with advertisement catalogues that they wish to target to CSP customers. |

## 5.11. MS-SAM-10: Stimulating Prepaid to Postpaid Conversion

| Name: | Identify the prepaid customers that are most likely to be enticed to switch to postpaid and the appropriate offers to make to them |
|---|---|
| **Horizontal:** | Marketing and Offer Management |
| **Actors:** | • Customer<br><br>• Marketer |
| **Business Drivers:** | Prepaid customers have considerably less stickiness and generally lower ARPU than their postpaid counterparts. Enticing prepaid customers to convert to postpaid enables the CSP to increase revenue by effectively increasing ARPU from their existing subscriber base. |
| **Business Metrics:** | • **Increase G-RM-1b - Average Revenue per User (ARPU)**<br><br>• **Increase G-RM-4: % Revenue, by Bearer Service and Application Type** |
| **CxLC Stage:** | Choose, Renew, & Recommend |

| | |
|---|---|
| **Customer Experience Metrics:** | • Increase G-RM-5a % Customers Acquired<br><br>• Increase CM-CE-1 Contracts Renewed by Channel type |
| **Story:** | The marketer is looking for potential prepaid customers that can be targeted with offers that can entice them to switch to postpaid. Every time a prepaid customer decides to switch to postpaid the CSP is given a window into the type of customer that wants to make this switch. By spotting patterns across these customers an effective set of target groups made up of prepaid customers for conversion can be identified and the appropriate action or offer needed to convert each group of customers from prepaid to postpaid.<br>Data Analytics is applied in this use case on a wide variety of data sources to identify patterns of behavior of customers that have recently switched from prepaid to postpaid, and these patterns are used to target customers that have not switched with offers and incentives to make the switch. |
| **Required Data Sources:** | • CRM Data<br><br>• Purchase History<br><br>• Product Catalogue<br><br>• Network and Service Inventory Data<br><br>• Product performance data<br><br>• Usage Data |
| **Optional Data Sources:** | • Social media data |
| **Privacy Risk Score** | 48 (high) — Key to this use case is to ensure you explain precisely what, and how, you will deal with their data and then stick to - do what you have agreed and no more. |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
| | All prepaid customers | All channels | Provide enticing offerings to prepaid customers to lower their barrier to becoming postpaid customers. This solidifies the relationship between the CSP and the customer. |
| **Value Proposition** | Postpaid customers are considerably more profitable than prepaid customers, churn rates are traditionally lower for postpaid customers, and revenues are more predictable due to contracts with postpaid customers. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. Additional costs may be incurred based on the offers that need to be made to prepaid customers to get them to switch to postpaid customers; however the additional revenues made from these customers should offset these costs. | | |
| **Revenue Streams** | Increased ARPU by increasing the percentage of postpaid subscribers since post paid subscribers have higher ARPU and lower churn rates than prepaid subscribers. | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Understand why | A wide variety of data | No new partners are required for this use |

| | | |
|---|---|---|
| customers switch from prepaid to postpaid<br><br>• Identify customers with the same circumstances as those that have switched;<br><br>• Target prepaid customers with the right offer to convert them to postpaid. | sources are required to spot why the customer has switched from prepaid to postpaid. | case. |

## 5.12. MS-SAM-11: Enticing Usage from Roaming Customers

| | |
|---|---|
| **Name:** | Identifying new and repeat roaming customers with data roaming turned off on their devices and provide targeted, personalized offers to encourage them to activate data roaming. |
| **Horizontal:** | Marketing and Offer Management |
| **Actors:** | • Customer<br>     o Marketer |
| **Business Drivers:** | Customers roaming on to the CSP's network represent a valuable source of revenue that makes up a considerable amount of many CSP's bottom line. Voice and SMS roaming make up a large bulk of that roaming today, but as customer behavior switches to the usage of data services these revenues will begin to be eroded. In order to continue to receive these revenues, CSP's must encourage roaming customers to utilize their networks rather than using WIFI and other mechanism of getting online. |
| **Business Metrics:** | • Increase **193 – $ Revenue** due to additional revenue from roamers |
| **CxLC Stage:** | Consume |
| **Customer Experience Metrics:** | • Increase **CO-F-3 % Returning Roaming Registrations – Border Cell**<br>     o Increase **CO-F-4 Roaming Subjective Score** |
| **Story:** | Big Data Analytics is employed in this use case to:<br><br>• Identify customers that have roamed onto the network that have no data service usage;<br>     o Find patterns in repeat customer roaming, e.g. weekly/monthly repeat visits from business customers;<br>     o Correlate voice, text, and data usage from across the customer base in order to identify roaming customers that are likely to be using data services on WIFI;<br>     o Learn from cases in the past where a given customer has activated data roaming for a short period in order to learn the types of |

| | services used by this customer; |
|---|---|
| | o   Make targeted offers to customers either when they begin roaming on the CSP network, or when they are anticipated to be roaming on the network based on their repeated pattern. |
| | Once the roaming customer has been encouraged to turn on data roaming while in the foreign location they will become used to this behavior and will continue to use these services during future roaming. |
| **Required Data Sources:** | • Network data<br><br>• Usage data<br><br>• Previous offers made to roaming customers and their success |
| **Optional Data Sources:** | • CRM and usage data can be acquired from the roaming customers home provider if relationships exist with these providers<br><br>• The CSP can work with any WIFI providers that it partners with to correlate usage on these third party networks with the network data. |
| **Privacy Risk Score** | 48 (high) | Key to this use case is to ensure you explain precisely what, and how, you will deal with their data and then stick to - do what you have agreed and no more. |

The Osterwalder Business Model Canvas for this use case is as follows:

| **Customer** | **Segment** | **Channel** | **Relationship** |
|---|---|---|---|
| | All Roaming Customers | • Messaging | Establish a closer relationship with customers roaming on the CSP's network by understanding their behavior. |
| **Value Proposition** | Understanding the behavior of roaming customers better enables the CSP to provided targeted offers to encourage those roaming customers to activate data roaming on their devices and spend more on the CSP's network while roaming. This can be particularly lucrative with repeat roaming customers. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. Other costs may be incurred if the CSP wants to obtain other data about customers from WIFI providers or other CSPs. | | |
| **Revenue Streams** | With the ongoing switch of customer behavior from voice and text to data services this use case will strengthen the revenue streams associated with roaming customers now and into the future. | | |
| **Key Activities** | **Key Resources** | | **Key Partners** |
| • Understand the roaming behavior of customers;<br><br>• Learn their usage and identify prime targets for data services;<br><br>• Recommend an appropriate offer to | Data on roaming customer usage is key to gaining an understanding of the customer. The success of past offers will guide the best ways to convert different types of customers. | | The CSP may need to establish partnerships with other providers in other countries in order to obtain customer level data to guide their targeting. |

| entice them to activate data roaming. | | |
|---|---|---|

## 5.13. Use Case Management (Market/Sales Domain)

Since the number of BDA use case is increasing, we propose a management approach which aims to management use case to match with business objectives and business process.

It will help CSP to identify the gap between their business objective and Use case supported scenarios, and to identify the gap between their business processes and application of BDA.

The following diagram shows this use case management in Market/Sales domain.

Please download visio version: **Use Case Classification-busines**
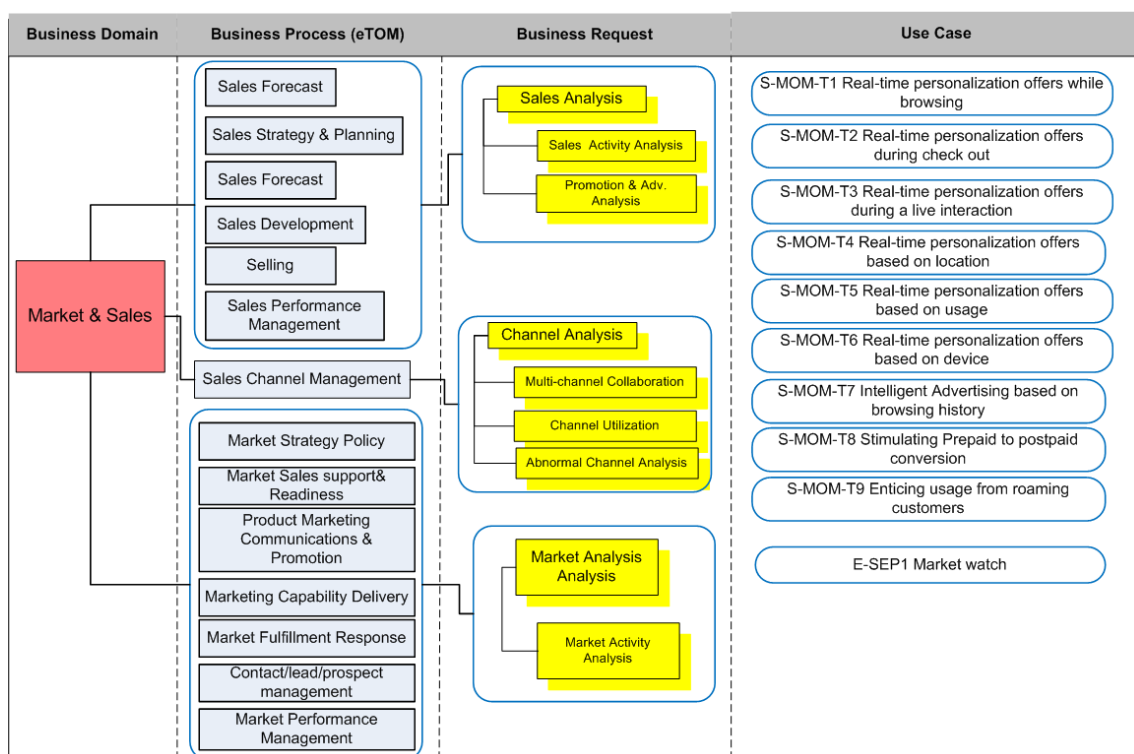
# 6. Product Related Use Cases

## 6.1. P-OAM-1: Increasing Conversion in the Ordering Process R16.5.0

### 6.1.1. Attributes

| Attribute | Description |
|---|---|
| ID | P-OAM-1 |
| Name | Increasing Conversion in the Ordering Process |
| Hierarchy | TBD |
| Motivation | TBD |
| CxLC Stage(s) | TBD GB962 |
| Actors | Primary Actor(s): Customers, CSR, Order Process Expert<br>Supporting Actor(s): TBD |
| Entry conditions | TBD |
| External References | TBD |
| Customer Experience Metrics: | TBD GB962-A; |
| Other metrics: | TBD GB935-A; |
| Data Sources | • Order data and any associated meta-data;<br><br>• Customer data gathered in the ordering process, including demographics;<br><br>• Customer context data, e.g. location, device, physical infrastructure for cable CSP's;<br><br>• Event data associated with every action taken with respect to each order. |

| Business Model Canvas of the Use Case | TBD |
|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | All customers with an open order | • Inbound & outbound call center<br><br>• Retail | Understanding the customer and their requirements more fully and treating them in the best way possible to | TBD |

| | | • Online store | ensure the completion of the open order. | |
|---|---|---|---|---|
| **Value Proposition** | Ever customer acquired by the CSP represents considerable revenue over their lifetime, especially given the size of average contract lengths and the average revenue per user. Converting even a small percentage more of orders can have a dramatic effect on the CSP's bottom line. | | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | | |
| **Revenue Streams** | The existing revenue stream from the ordering process can be greatly enhanced through the conversion of more orders. | | | |

| **Key Activities** | **Key Resources** | **Key Partners** |
|---|---|---|
| • Understand the customers' requirements<br><br>• Treat customers as individuals;<br><br>• Change the ordering process to ensure success. | Data is required from across the business to understand the customer and the ordering process in order to enable a domain expert to make appropriate changes to the ordering process. | No new partners are required as part of this use case |

| Attribute | Description |
|---|---|
| **Story:** | Big Data Analytics is applied in this use case to explore patterns across orders that are abandoned or cancelled before completing the ordering process. These patterns can be used to identify changes in the way that orders are handled, the systems through which they are processed, the sales channels and sales applications through which they are received.<br><br>Furthermore, analytics can be used find patterns in customer demographics, context, or behavior that can be used to identify orders that are highly unlikely to complete. This insight can be utilized to aid domain experts in finding new mechanisms for getting these orders to complete, or can be used to weed out orders that the CSP should not waste excess time on as they are deemed to be failed already.<br><br>Optimizing the ordering process in this way can reduce these abandonments and cancellations and have dramatic impact on CSP revenue. |
| **Actions and processes** | TBD |
| **Building Block(s)** | **TBD** |
| **Privacy Risk Score** | **TBD** |
| **Feasibility Parameters** | TBD |

## 6.2. P-OAM-2: Reduction of Errors in the Ordering Process

### 6.2.1. Attributes

| Attribute | Description |
|---|---|
| ID | P-OAM-2 |
| Name | Reduction of Errors in the Ordering Process |
| Hierarchy | TBD |
| Motivation | TBD |
| CxLC Stage(s) | TBD GB962 |
| Actors | Primary Actor(s): Customer, CSR, Order Process Expert Supporting Actor(s): TBD |
| Entry conditions | TBD |
| External References | TBD |
| Customer Experience Metrics: | TBD GB962-A; |
| Other metrics: | TBD GB935-A; |
| Data Sources | • Order data and any associated meta-data; <br><br> • Customer data gathered in the ordering process, including demographics; <br><br> • Customer context data, e.g. location, device, physical infrastructure for cable CSP's; <br><br> • Event data associated with every action taken with respect to each order. |

| Business Model Canvas of the Use Case | | | | TBD |
|---|---|---|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | All customers with an open order | • Inbound & outbound call center <br><br> • Retail <br><br> • Online store | Understanding the customer and the ordering process more completely in order to find and fix issues quickly or before they happen and deliver a superior quality of experience. | TBD |
| Value Proposition | Delivering a poor quality of experience in the ordering process can lead to order abandonment and cancellation at worst, and lower NPS and customer satisfaction at best. Analyzing all the orders in the order process to find common issues and fixing them either reactively or proactively can deliver a superior quality of experience to CSP customers and aid in future revenues, referrals, and | | | |

| | retention. |
|---|---|
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. |
| **Revenue Streams** | No new revenue streams are established; however existing revenue streams are enhanced by delivering a superior quality of experience to CSP customers, leading to future revenues, referrals, and retention. |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Understand where errors occur in the ordering process; <br><br> • Prioritize these errors based on the value of the customers they impact; <br><br> • Fix the most important issues reactively or proactively. | Data is required from across the business to understand the customer and the ordering process in order to enable order errors to be repaired in a proactive or reactive fashion. | No new partners are required as part of this use case |

| Attribute | Description |
|---|---|
| **Story:** | The ordering process in a CSP involves many different back end systems working in harmony to complete the order and thus the process can be become complex and cumbersome. Errors can easily occur in this process, which can block an order from completing and result in due dates being shifted, repeated back and forth with the customer, or manual intervention into the order completion. <br><br> Big Data Analytics can be applied to find these issues in the order process quickly after they happen in order to alert the relevant teams (reactive) or before they happen to reduce the operational cost of fixing them after the fact (proactive). The analytics has multiple benefits: <br><br> • The process is easier to manage for the sales representatives; <br><br> • Issues in the process are easier to find for the order process expert; <br><br> • Critically the order process is simpler and smoother for the customer, giving a superior quality of experience in the ordering process. |
| **Actions and processes** | TBD |
| **Building Block(s)** | TBD |
| **Privacy Risk Score** | **TBD** |
| **Feasibility Parameters** | **TBD** |

## 6.3. P-OAM-3: New Enterprise Order Impact Analysis

| | |
|---|---|
| **Name:** | Automatically identifying the impact that a new enterprise order will have on the network and making relevant recommendations for network changes based on that impact. |
| **Horizontal:** | Resource Development & Management (Application, Computing and Network) |
| **Actors:** | • Network Planner |
| **Business Drivers:** | Obtaining new business is a positive for any communication provider, but it is critical that the impact of this new business on the network is understood by network planners to ensure that desired QoS can be delivered and SLA's met. |
| **Business Metrics:** | N/A |
| **CxLC Stage:** | Consume, Manage, & Renew |
| **Customer Experience Metrics:** | • Increase **CO-E-1 Network Outdoor Coverage Subjective Score (Enterprise)**<br><br>• Increase **CO-E-2 Network Outdoor Coverage Comparative Subjective Score (Enterprise)**<br><br>• Increase **CO-E-3 Network Indoor Coverage Subjective Score (Enterprise)**<br><br>• Increase **CO-E-4 Network Indoor Coverage Comparative Subjective Score (Enterprise)**<br><br>• Increase **CO-E-5 Network Service Subjective Score (Enterprise)**<br><br>• Increase **CO-E-6 Network Service Comparative Subjective Score (Enterprise)**<br><br>• Decrease **M-C-6 # Issues**<br><br>• Decrease **M-C-13 # Complaints**<br><br>• Decrease **M-F-14 # Contacts**<br><br>• Increase **RN-C-1 # Renew Orders**<br><br>• Increase **RN-C-3 # Customers Renewing** |
| **Story:** | Big data analytics is employed to identify the relationship between the new enterprise order and other orders from the same customer. Furthermore, if this enterprise order comes from an entirely new customer, similarities between this customer and existing enterprise customers will be identified in order to understand the expected usage of individual users from this enterprise customer (business domain, department, location, mobility, etc.).<br><br>The big data analytics solution will make a prediction of expected usage the will be generated on the network by this new order and make recommendations to the network planner of where network additions or changes may be need to address predicted capacity or congestion issues. |
| **Required Data Sources:** | • Order Data<br><br>• Network Quality Data (for existing enterprise customers)<br><br>• CRM Data (for existing enterprise customers) |

| | |
|---|---|
| | • Customer Value Data (for existing enterprise customers) |
| | • Usage & Billing Information (for existing enterprise customers) |
| **Optional Data Sources:** | None |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
| | This use case does not involve direct interaction with the CSP's customers; however customers at this time expect network to be bullet proof, calls to not be dropped and data services to be always available and performant. Network planning has a key role to play in delivering on this expectation. | | |
| **Value Proposition** | This use case enables the CSP to stay ahead of the game and ensure that new enterprise orders will not result in an undue stress on the network. If they will then recommendations assist the CSP in investing in the right areas to protect their network. Ultimately this use case ensures that the high quality experience, received by customers before the order, is maintained after the order. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. Recommendations made by this system for investment in the CSP's network will have associated cost; however these costs are considerably better spent before network issues start occurring and customer experience is impacted. | | |
| **Revenue Streams** | This use case will help to make existing revenue streams more solid by improving the quality of service delivered to customers by the CSP network. The knock on effect of better quality is increased usage by customers, which can drive increases in revenues from overage or billing offer upgrades. | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Understand subscriber behavior from this enterprise customer in the past and correlate behavior with other enterprise customers; <br><br> • Predict the expected usage of new subscribers as part of the new order from the enterprise; <br><br> • Predict the impact on the network quality based on these new subscribers; <br><br> • Recommend network changes based on the predicted impact. | This use case requires considerable data regarding network behavior and usage in order to learn patterns and make the relevant predictions. Furthermore, information on the current network structure and the possible changes that can be made to the network and their cost, are also required to make effective recommendations of network changes. | No new partners are required beyond those used by the CSP for network planning currently. |

## 6.4. P-OAM-4: Proactive Monitoring of Progress of Enterprise Orders from Initiation to Activation

### 6.4.1. Contribution Credentials

|  | Name | Company | Date |
|---|---|---|---|
| Original Contribution by | Loganathan Murugesan | TATA Consultancy Services | Aug-08-2016 |
| Additions and updates by |  |  |  |
| Reviewed by | Abinash, Satish, Ashraf | NetCracker, Wipro, Verizon | Aug-08-2016 |
|  | Abinash, Ashraf, Snigdha |  | Aug-22-2016 |
| Approved by | Data Analytics Team |  | Sept-05- 2016 |

### 6.4.2. Attributes

| Attribute | Description |
|---|---|
| ID | TBD |
| Name | Proactive Monitoring of Progress of Enterprise Orders from Initiation to Activation |
| Hierarchy | P-OAM-1 Increasing Conversion in the Ordering Process<br><br>P-OAM-2 Reduction of Errors in the Ordering Process<br><br>are related use cases. |
| Motivation | Communication/Network is an integral part of any enterprise business. Shifting of due dates and delays in activation of service requests (New/Change orders) from enterprise customers can have a negative impact on their business, leading to churn or non-renewal of contract. Delayed activation with SLA violations could lead to CSPs paying penalty to their enterprise customers. For any order initiated, before order submission, the solution should alert potential delays in activation, suggest ways to proactively avoid delays in activation.<br><br>For example, consider a multi-site enterprise requesting for SIP sessions on current networking service it has already subscribed from the same service provider. Say an order is captured and submitted to provisioning. It is realized only later in the order journey that the current bandwidth would not be sufficient to provide requested SIP sessions. Provisioning rejects the order. The order is then amended to upgrade the bandwidth in addition to adding SIP sessions. Consider the time and effort lost in between original order capture and order amendment. Analytics could be used to proactively sense this scenario and alert upfront so there is no time lost. Analytics can also be used to proactively alert to raise resource order upfront when the required CPE is not available in inventory.<br><br>The solution should make use of patterns in the order data to provide proactive alerts. For example, if an order is configured for a customer at a specific location, the solution can look for patterns of similar service configuration at the same geographic location serviced by same LEC. Say if the solution finds a pattern that 40% of the orders for same service at the same geographic location serviced by same LEC are delayed by 2 days in completing a particular task, |

| | |
|---|---|
| | the solution can use this information to proactively alert about the 40% probability in delay of activating the current service order. The solution should help - <ul><li>Enable timely activation leading to timely revenue realization for CSP, uninterrupted service without any negative business impact to enterprise customers.</li><li>Avoid SLA violations by CSP.</li></ul> |
| **CxLC Stage(s)** | 6. Choose (Select Product, Place Order, Receive) |
| **Actors** | Primary Actors: Customers, CSR, Order Process Expert<br><br>Supporting Actor(s) : TBD |
| **Entry conditions** | TBD |
| **External References** | TBD |
| **Customer Experience Metrics:** | <ul><li>Increase in **CH-E-7: % Deliveries on Requested Time (Enterprise) (6.2.2 Delivery Performance)**</li><li>Increase in **CH-E-8: % Deliveries on Committed Time (Enterprise) (6.2.2 Delivery Performance)**</li><li>Increase in **CH-E-10: % Delivery Satisfaction Subject Score (6.2.2 Delivery Performance)**</li><li>Increase in **CH-F-11: % Deliveries on Requested Time (6.3.6 Delivery Performance)**</li><li>Increase in **CH-F-12: % Deliveries on Committed Time (Enterprise) (6.3.6 Delivery Performance)**</li></ul> |
| **Other metrics:** | <ul><li>Increase in **% Orders delivered by Committed Date**</li><li>Reduction in **# Hours per order, from Ordering to Activation**</li><li>Reduction in **# Hours per order, from Ordering to Activation, by Process Type**</li><li>Reduction in **# Hours for all orders, from ordering to activation**</li><li>**Reduction in # Hours for all orders, from ordering to activation, by process type**</li></ul> |
| **Data Sources** | <ul><li>Order data and any associated meta data</li><li>Customer data gathered in the ordering process</li><li>Defined SLA Data</li><li>Event data associated with every action taken with respect to each order</li></ul> |

**Business Model Canvas of the Use Case**

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | Enterprise | Inbound & | 1. New service | The enterprise customers |

| | Customers.<br><br>All enterprise customers with an open order. | outbound call center.<br><br>Sales.<br><br>Account Manager/Customer Relationship Manager | request from a new or existing enterprise customer.<br><br>(Or)<br><br>2. Move/Add/Change/Delete request on existing service from existing enterprise customer.<br><br>leading to the creation of open orders in the system. | can forget about their communication/networking challenges to be taken care by the CSP partner and focus on their core business. |
|---|---|---|---|---|
| **Value Proposition** | Shifting of due dates and delays in activation of service requests (New/Change orders) for enterprise customers can have a negative impact on their business, leading to churn or non-renewal of contract. Delayed activation with SLA violations could lead to CSPs paying penalty to their enterprise customers. Alerting potential delays before order submission and suggesting options to improve timelines based on historical order data, can have a good impact on keying experience, customer experience and on-time revenue realization. | | | |
| **Cost Structure** | The CSP will incur additional cost in the integration with the data sources and the maintenance of the big data storage and processing infrastructure. | | | |
| **Revenue Streams** | The existing revenue stream from the ordering process can be greatly enhanced through on-time activation of service and billing. | | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| Recognize that delays in order activation can cause customer frustration and reduction in overall revenue (on time service activation would mean on time kick-off of bill cycle. Delayed activation would mean delay in beginning to bill that customer for that service). | Order data and the events data in the ordering process. | No new partners required as part of this use case. |

| Attribute | Description |
|---|---|
| **Story:** | Analytics is applied to –<br><br>• Monitor the time between any two events from order initiation to activation for different products.<br><br>• Identify the best, average, worst time between every possible events categorically. |

| | |
|---|---|
| | • Analyze and identify patterns in orders closing in best, worst time between every possible events. |
| | • Based on historical order data, alert the order keyer or CSR after order capture and before order submission, of potential delay in activation, and suggest ways to improve the O2A timelines for that particular order being captured. |
| | • Report the total penalty paid to customers because of SLA violation in service activation. |
| | • Report the potential revenue loss to business because of such delays (delayed kick-off of bill cycle), highlighting the need to address causes of delays mapping to higher revenue loss. |
| **Actions and processes** | TBD |
| **Building Block(s)** | TBD |
| **Privacy Risk Score** | TBD |
| **Feasibility Parameters** | TBD |

## 6.4. P-PAM1: Product Definition and Development

| | |
|---|---|
| **Name:** | Identification of new products and product features that are desired by customers and that can be used by the CSP in order to enhance their product catalogue |
| **Horizontal:** | Marketing and Offer Management |
| **Actors:** | • CMO<br>• Marketer |
| **Business Drivers:** | Detecting and offering the products customers need is the key for their satisfaction. However, it can be difficult for CSP's to tap into the customers need and assess which new products or product features should be developed and added to the product catalogue. By performing big data analytics on existing products, their features, and their sales success the CSP can identify the key success factors in successful products. Furthermore by tapping into social networking sources the CSP can listen to their customers and the customers of their competitors, in order to use this insight to guide product definition and development in the future. |
| **Business Metrics:** | • Increase G-RM-1b **- Average Revenue per User (ARPU)**<br>• Increase G-RM-4: **% Revenue, by Bearer Service and Application Type** |
| **CxLC Stage:** | Be Aware, Choose, & Renew |
| **Customer Experience Metrics:** | • Increase G-RM-5a **% Customers Acquired**<br>• Increase **CM-CE-1 Contracts Renewed by Channel type** |

| | |
|---|---|
| **Story:** | CSP's need a Product Catalogue that has compelling and desirable products. Product performance information and customer value data analysis are a key components in gaining insight that enables marketers to continuously refine and improve the product catalogue. |
| | Big Data Analytics is applied to provide insight into the products or product features that are desirable to add or maintain in the Product Catalogue. The recommendations are given based on Customer Value Data Analysis over unstructured and semi-structured data sources, including Customer Experience Data, Order Data and Social Networks. Furthermore, performance data related to Usage & Billing, CRM Data and Order Data is analyzed in order to identify the success and failure factors of existing products in the catalogue. The key information extracted from this analysis includes: |
| | • **Purchase-based**: Recommendations based on which products that have high acceptance, revenue, and profit, products that have seen recent increases in these values, or niche products that are outperforming expectations (long-tail). |
| | • **Customer experience-based**: Recommendations based on customer satisfaction as gathered from existing channels and social media. |
| | • **Market-based**: Recommendations based on customer opinions gathered from surveys and social media. |
| | Analytics will also be used to: |
| | ○ Pivot and make adjustments to: |
| | ○ Promotional and campaign decisions (best time, location, channel etc.) |
| | ○ Feature bundling and customer segment suitability |
| | ○ Price changes to optimize each of the lifecycle stages |
| | ○ Product impact on portfolio ecosystem |
| | Cross – effect of products on each other |
| **Required Data Sources:** | • Order Data<br><br>• Product Catalogue<br><br>• CRM Data<br><br>• Customer Value Data<br><br>• Usage & Billing Information<br><br>• Product performance data<br><br>• Interaction Logs from multiple channels |
| **Optional Data Sources:** | • External business data sources can be ingested to enhance prediction on future usage or needs the customer may have, for example other competitor companies products.<br><br>• External social network analysis |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
| | All customers. | All channels. | Customers expect products and services sold by the CSP to be competitive, innovative |

| | | | and adapted to their needs. CSP's that fail to offer this will lose ground to its competitors. |
|---|---|---|---|
| **Value Proposition** | Exploring the success of existing products and their features and listening to customer opinions of competitor products gives the CSP a unique window into what customers want to see from the product catalogue. This enables the CSP to provide compelling products in their product catalogue. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | |
| **Revenue Streams** | Having the right product in the products, with the right features in the product catalog increases ARPU and the number of subscribers. | | |

| **Key Activities** | **Key Resources** | **Key Partners** |
|---|---|---|
| • Understand which products are maximizing performance and why;<br><br>• Understand customers preferences;<br><br>• Gain insight into other competitors' products. | This use case requires data on customer experience and product performance, such as purchase and billing information. The use case also requires information on social network to gain insight in customers' opinion on competitors' products. | No new partners are required for this use case. |

## 6.5.  P-PAM2: Product Introduction Analytics

### 6.5.1.  Attributes

| Attribute | Description |
|---|---|
| **ID** | P-PAM-2 |
| **Name** | Product Introduction Analytics |
| **Hierarchy** | TBD |
| **Motivation** | With ever increasing competition, communication providers need to differentiate themselves by offering relevant and enticing products and product bundles to their customers thereby maximizing revenue opportunities and customer stickiness to increase overall customer LTV. Big data analytics has a key role to play in giving the provider the insight prior to the launch of new products into how they will behave in the context of existing offerings. |
| **CxLC Stage(s)** | Be Aware, Interact |
| **Actors** | Marketing, Product Engineering, Intellectual Property & Legal, Customer Relationship |

| Entry conditions | product view available and necessary tools to sync with the sample customer |
|---|---|
| External References | GB962A |
| Customer Experience Metrics: | Be Aware, Interact metrics from GB962A |
| Other metrics: | TBD |
| Data Sources | • Customer experience on Product teaser<br>    o various channels |

| Business Model Canvas of the Use Case | Provide a business model canvas about this use case. Use this canvas to develop and create a business case for this use case and identify if there is a business reason to proceed. |
|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | All Customers | Channels which provide abilities to introduce new products | Increase stickiness by providing right combination of the products | One stop for customers increasing ease of handling multiple of their day-to-day needs from one common place/app/channel etc.,. |
| Value Proposition | Use cases SMO-T1 to SMO-T8 improve the targeting of offers by understand the customer's behavior and current context. The effectiveness of this targeted relies on the underlying offers being compelling and desirable by the CSPs customers. This use case ensures that new product offerings are fit for the market, which ultimately impacts the customer acceptance rates and revenues obtained from these offerings. This use case also assists the CSP in understanding the impact new offerings will have on their infrastructure. The introduction of CEM/BDA provides the ability to automate such abilities to new offering makes the RoI structure more efficient for CSP in testing new products. | | | |
| Cost Structure | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. The additional time it takes the CMO and the marketer to validate products can incur additional cost in the time it takes to develop new products. Implementing CEM maturity level can optimize the costs for future introductions and reutilize channels of engagement. | | | |
| Revenue Streams | The existing sales streams through all channels are enhanced through the increased quality of new products coming to market using more precise feedbacks. This drives increases in revenue and reduce product introduction costs. | | | |
| Key Activities | Key Resources | | Key Partners | |
| • Understand the success and | • The key resource for this use case is | | • Third parties that provide abilities and core customer experience/analytical abilities to | |

| failure factors for past and current products;
- Understand the competitive market in which the CSP operates;
- Identify opportunities for new products in the market;
- Simulate the performance of new products with historic data. Get feedback by using channel experiences. | to combine historic data to start model product/feature introduction with using channel experiences to judge the new products before they are brought to market.
- CEM maturity for multiple organizational silos, combinational approach in judging the result of the introduction. | make this feature a success |
|---|---|---|

| Attribute | Description |
|---|---|
| **Story:** | NA |
| **Actions and processes** | NA |
| **Building Block(s)** | TBD |
| **Score** | NA |
| **Feasibility Parameters** | NA |

## 6.6. P-PAM-3: Product Performance Optimization

| Name: | Analytics of existing products that are provided by the communication provider in order to optimize them for the market. |
|---|---|
| Horizontal: | Marketing and Offer Management |
| Actors: | · CMOMarketer |
| Business Drivers: | With ever increasing competition, communication providers need to differentiate themselves by offering relevant and enticing products and product bundles to their customers thereby maximizing revenue opportunities and customer stickiness to increase overall customer LTV. As with "Product Introduction Analytics", big data analytics has a key role to play in giving the provider insight on the behavior of their deployed products within the market, such that they can be optimized to actual customer behavior. |

| | |
|---|---|
| **Business Metrics:** | • Increase **2 - Average Revenue per User (ARPU)** |
| **CxLC Stage:** | Be Aware, Choose, & Renew |
| **Customer Experience Metrics:** | · Increase **BA-E-2 Product Choice Subjective Score (Enterprise)**<br><br>· Increase **BA-E-3 Product Choice Comparative Subjective Score (Enterprise)**<br><br>· Increase **BA-E-4 Service Plan Choice Subjective Score (Enterprise)**<br><br>· Increase **BA-E-5 Service Plan Choice Comparative Subjective Score (Enterprise)**<br><br>· Increase **BA-F-10 Product Choice Subjective Score**<br><br>· Increase **BA-F-11 Product Choice Comparative Subjective Score**<br><br>· Increase **BA-F-12 Service Plan Choice Subjective Score**<br><br>· Increase **BA-F-13 Service Plan Choice Comparative Subjective Score**<br><br>· Increase **CH-C-1 # Customers Acquired**<br><br>· Increase **CH-C-3 # Orders**<br><br>· Increase **RN-C-1 # Renew Orders** Increase **RN-C-3 # Customers Renewing** |
| **Story:** | Leverage big data analytics to optimize communication provider offerings post launch by analyzing product uptake and its progress through the product lifecycle:<br><br>· Anticipate peaks and factors that impact usage and uptake<br><br>· Track customer acceptance of the product and analyze customer experience score and satisfaction<br><br>· Pivot and make adjustments to:<br><br>o Promotional and campaign decisions (best time, location, channel etc.)<br><br>o Feature bundling and customer segment suitability<br><br>o Price changes to optimize each of the lifecycle stages<br><br>o Product impact on portfolio ecosystem<br><br>o Cross – effect of products on each other Analytics will prolong overall lifecycle by making adaptations to these factors to maximize product profitability |
| **Required Data Sources:** | · Product Catalogue<br><br>· Availability & Eligibility Rules<br><br>· Items currently being or recently viewed/in basket<br><br>· Current usage<br><br>· Device usage data<br><br>· Network data<br><br>· CRM Data<br><br>· Usage & Billing InformationPurchase History |
| **Optional Data Sources:** | |

| | |
|---|---|
| | · Customer location information |
| | · Social network data |
| | Voice call analysis |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
| | All customers | All channels | Customers expect products and services sold by the CSP to be competitively priced and innovative. CSP's that fail to offer this will lose ground to its competitors. |
| **Value Proposition** | As noted in SMO-O1, it is important that products and services offered by the CSP are compelling and desirable to CSP customers. This use case ensures that products stay competitively priced and compelling to customers through their lifecycle, in order to ensure that customers are sticky to the operator and are more likely to renew their contracts that churn to a competitor with more desirable offerings. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. There is also additional investment required in having the CMO and marketer continually tracking and improving the quality of existing opportunities. | | |
| **Revenue Streams** | The existing sales streams through all channels are enhanced through the increased quality of existing products in the CSP's catalogue. This drives increases in revenue. | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| · Understand the success and failure factors for past and current products; · Identify opportunities for improving current products; Simulate the performance of product changes with historic data. | The key resource for this use case is historic data that can be used for monitoring and reporting of existing products as well as simulation of changes to these products before these changes are made. | · · Third parties that provide competitive market data on products and services sold by other CSP's in the market |

Analytics of existing products that are provided by the communication provider in order to optimize them for the market.

### 6.7. P-PAM-4: Purchase Propensity Analytics for Enhanced Targeting

| | |
|---|---|
| **Name:** | Improve the performance of any targeted cross-sell and up-sell offers by learning the customer's propensity to purchase based on their location, the channel they are using, and the current day and time. |
| **Horizontal:** | Marketing and Offer Management |
| **Actors:** | • Customer |
| **Business Drivers:** | The time of day, day of week, channel, location, and place in the customer lifecycle have considerable impact on the likelihood of an offer being accepted by the customer. Sending the offer in the right context dramatically increases the conversion of offers to sales. |
| **Business Metrics:** | • Increase **2 - Average Revenue per User (ARPU)**<br>    o Increase **177 - # Orders Accepted by Customer (2)** |
| **CxLC Stage:** | Choose, Renew, & Recommend |
| **Customer Experience Metrics:** | • Increase **CH-C-1 # Customers Acquired**<br>• Increase **CH-C-3 # Orders**<br>• Increase **RN-C-1 # Renew Orders**<br>• Increase **RN-C-3 # Customers Renewing**<br>• Increase **RC-F-1 NPS – Relational**<br>• Increase **RC-F-2 NPS – Transactional** |
| **Story:** | The communication provider has identified a particular offer that they would like to push to a particular customer. This use case provides the ability for the provider to schedule the delivery of this offer when it is most likely that the customer will accept that offer. For example:<br><br>• A roaming bolt-on to the customer plan can be scheduled for the next time the customer is roaming<br><br>• A device up-sell offer may be delayed as the customer has just recently paid their bill and their purchase propensity is low<br><br>• An up-sell or cross-sell offer in a live interaction may not be made due to the fact that the customer has been calling with a complaint in this interaction and thus their propensity to purchase is low.<br><br>The actual time, date, channel, and location when the customer will be pushed this offer will be learnt by using big data analytics to mine the past success rate of offers made to the customer, the customers purchase history, and customer lifecycle events that may affect their propensity to purchase any cross-sell or up-sell offers made to them.  The resulting propensity model, which is learnt per customer, can be queried to provide:<br><br>• A purchase propensity score for the customer based on the current day and time, their current location, and their current channel<br><br>    o A predicted propensity score for a period in the future, based on the future day and time, the predicted future location and channel<br><br>    o The best predicted day and time , location and channel where the |

| | | |
|---|---|---|
| | customer propensity will be highest | |
| **Required Data Sources:** | • History of offers made to the customer in the past, stamped with the Date, Time, Location and channel information, along with the success of these offers<br><br>• Purchase history, stamped with the Date, Time, Location, and Channel stamped<br><br>• Date and time stamped customer lifecycle events, e.g. Refund, Pay Bill, Dispute, Complaint, etc. | |
| **Optional Data Sources:** | None | |

The Osterwalder Business Model Canvas for this use case is as follows:

| **Customer** | **Segment** | **Channel** | **Relationship** |
|---|---|---|---|
| | All customers | All channels | Customers expect to receive offers on their timetable. Offers made at the wrong time, in the wrong location, or through the wrong channel are an inconvenience to customer and reduce the likelihood of acceptance. |
| **Value Proposition** | Customers receive offers when they are going to be most receptive to accepting them. Delivering offers at the right time increases the acceptance rate for the targeted offers and drives up revenue. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | |
| **Revenue Streams** | The existing revenue stream through the CSP online store, through live interactions, or through direct messaging channels are enhanced by increasing the number of purchase transactions. No new revenue streams are opened. | | |

| **Key Activities** | **Key Resources** | **Key Partners** |
|---|---|---|
| • Understand when and through which channel each customer prefers to interact with the CSP;<br><br>• Treat each customer as an individual;<br><br>• Learn the locations and times that resulted in other customers accepting the offer. | The key resources for this use case is the meta-data associated with every purchase made by customers, especially the time of day, day of week, location, and channel through which the purchase was made. | • New partners for acquiring customer location data from the network or from the customer's device. |

## 6.8. Use Case management-Product and Service Domain

Please see visio version:

**Use Case Classification-business**

| Business Domain | Business Process (eTOM) | Business Request | Use Case |
|---|---|---|---|
| **Product** | Product & Offer Capability Delivery<br>Product & Offer Development & Retirement<br>Product & Offer Portfolio Planning<br>Product Configuration Management<br>Product Performance Management | **Service /Product Analysis**<br>Service/Product Comprehensive Analysis<br>Related Industry Data Analysis<br>Related Internet Content Analysis<br>Product Design Asset | S-MOM-O1 Product Definition and Development<br>S-MOM-O2 Product Introduction Analysis<br>S-MOM-O3 Product performance optimization<br>S-MOM-O4 Purchase Propensity Analytics for enhanced targeting<br>S-RDM3 Policy-based capacity management<br>S-RDM2 New enterprise order impact analysis<br>O-FUL-O1 Increasing conversion in the ordering process<br>O-FUL-O2 Reduction of errors in the ordering process |
| | Service Problem Management<br>Service Configuration & Activation<br>Service Capability Delivery<br>Service Quality Management<br>Service Guiding & Mediation<br>Service Strategy & Planning<br>Service Development Retirement<br>SM&O Support & Readiness | **Order Analysis**<br>External Public Service<br>Comprehensive Order Analysis<br><br>**Customer Service Analysis**<br>Operation Comprehensive Analysis | |

# 7.  Service Related Use Cases

## 7.1.  S-CSA-1: Data driven regulatory & legal compliance

This document aims to make the documentation of new use cases as simple as possible.

This template may be used to develop a use case to be contributed to TM Forum or to provide a blueprint for work within your own organization.  This template brings together many elements of TM Forum best practices and standards to create a single view of business drives, processes, applications, information, metrics and solution approaches in order to speed up data analytics projects.

We recommend following along a completed example to help you fill out this use case: Real Time Personalized Offers while Browsing

- Use Case Credentials
- Use Case Description
- Osterwalder Canvas Template
- Business Canvas for CEM Implementation UC

### 7.1.1.  Use Case Credentials

| Name | Data driven regulatory & legal compliance based on industry, business and social data | 03 Aug 2015 |
|---|---|---|
| **Submitted By** | Mrinal Moitra | Cognizant |
| **Contributed by** | Nikhil Mhatre | Cognizant |
| | Ruchi Banga | Cognizant |
| **Reviewed by** | Larry Chesal | Spirent |
| **Team Approved** | *Yes/No* | *Date* |
| **Comments** | | |
| **Security & Privacy Scored** | *Yes/No* | *Date* |

### 7.1.2.  Use Case Description

| Name | Data driven regulatory & legal compliance based on industry, business and social data |
|---|---|
| **Vertical** | Enterprise Risk Management, Service Assurance |
| **Actors** | Chief Compliance Officer (CCO), Product Owner |
| **Business Drivers** | Legal and Regulatory compliance is an organization's adherence to laws, regulations, guidelines and specifications relevant to its business in a particular jurisdiction. Violations of regulatory compliance often result in legal |

| | |
|---|---|
| | punishment, including federal fines. |
| | There are undeniably more rules and regulations with which companies (in most of the industries) need to comply, but perhaps what is equally important for companies & service providers is to accept that regulators are getting tougher in their enforcement of existing rules. |
| | Talk to any compliance officer these days and the chances are they will tell a story about too many new rules from too many jurisdictions that are too complicated, labor-intensive and expensive to implement. Big Data Analytics would enable companies assess their legal and regulatory compliance readiness, identify areas of non-compliance and suggest remedial actions for ensuring compliance, consistency and completeness against enforced laws and conventions. |
| **Business Metrics** | <<NEW>>   - # Noncompliance instances registered |
| | G-RM-RA-DQc   Reduce    - % Data Record Misaligned |
| | F-OE-6    Reduce    - % Future Infrastructure Build Investment, Of Revenue |
| | A-CE-4c   Reduce    - % Problem Report From Customers |
| | A-CE-6b   Increase   - % Problem Report Actually Closed In Compliance With SLA |
| | G-RM-CA-PEb   Reduce  - % Cost Leakage Detected And Not Recovered, Of Revenue |
| | 118   Increase - # Problem Reports Resolved To Customer Satisfaction |
| | 123   Reduce  - # SLA Violations |
| | 152   Reduce  - # Activations Completed But Failed |
| **Customer Experience Lifecycle Stage** | |
| **Customer Experience Metrics** | BA-E-1 - Brand Value Comparative Subjective Score (Enterprise) |
| | BA-F-8 - # Government Authority Registered Complaints |
| | BA-F-9 - # Government Authority Registered Deceptive Conduct Records |
| **Story** | Telecommunication Development Bureau (BDT) of the International Telecommunication Union (ITU) has spotlighted the theme of "Fourth-Generation Regulation: Driving Digital Communications Ahead." Regulations to this generation require adaptability and diversity for an industry that not only growing exponentially but experiencing constant innovations, causing radical changes in both business scenarios and consumer behavior. |
| | Big Data Analytics can play a major role and a key enabler that will act as a yard-stick for Telecom and ICT providers to be complied to regional and global laws, reforms and sanctions. Few key areas where BDA will play a pivotal role are as below - |
| | **Consumer Protection** |
| | -        Oversee an increased range of services, delivered over multiple broadband and converged networks that form the new digital reality, and monitor any instances of personal data breach |
| | -        Examine the digital broadcasting and online content delivery, to ensure meeting the customer protection norms to avoid any punitive actions |
| | **Fair Services** |
| | -        Proactively monitor and report defined QoS parameters to highlight any |

| | |
|---|---|
| | potential deviations from target service performance |
| | -        Oversee mobile payments and digital transactions, which are on the verge of rapid growth around the world |
| | -        Oversee Electromagnetic spectrum realm of Television White Spaces (TVWS), a pioneering regulatory construct that attempts to make use of spectrum sharing in the Intervals between existing TV broadcasting transmissions |
| | BDA will help Telecom and ICT providers, by not only identifying areas of non-compliance, but also act as a watchdog on social platforms to tap customer grievances and pro-actively mitigate the chances of regulatory arbitration. |
| **Security and privacy** | |
| **Required Data Sources** | **External Data Sources**<br><br>• Regulatory Report Database<br><br>• Legal Requirement Database<br><br>• Data from Social Channels<br><br>**Internal Data Sources**<br><br>• Financial database<br><br>• Customer complaints<br><br>• Call data records (CDR)<br><br>• Network and Service Usage Data<br><br>• Network fault data<br><br>• Network, EMS/NMS log files<br><br>• Network performance data |
| **Optional Data Sources** | • Service quality data<br><br>• Customer Care Agent transcripts<br><br>• Internal Communication between NOC Operators<br><br>• Network and Service Inventory Data |

### 7.1.3.   Osterwalder Canvas Template

To complete this canvas you must first save the page.  Once the page is saved, you can edit and add to the canvas from the page.

The business model for each use case is described using the Business Model Canvas from Osterwalder. Each canvas provides a mechanism for the CSP to discuss the business models that lie behind a particular BDA use case, which can be used to start a strategic conversation within their business.

*Business Canvas for CEM Implementation UC*

| Customer Segment | Customer Channel | Customer Relationship |
|---|---|---|
| The types of customers reached by this business model | The channels through which the business needs to reach its customers | The customer relationships that need to be established |
| The types of customers reached by this business | The channels through which the business needs to reach its | The customer relationships that need to be established |

| model | customers | |
|---|---|---|

| Value Proposition |
|---|
| The value, products and services delivered to the customer |
| The value, products and services delivered to the customer |

| Cost Structure |
|---|
| The most important costs incurred by this business model |
| The most important costs incurred by this business model |

| Revenue Streams |
|---|
| The streams through which this business model obtains revenue from customers |
| The streams through which this business model obtains revenue from customers |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| The Most important activities the business must conduct to make the business model work | The most important assets to make the business model work | The key partners and suppliers needed to realize the business model |
| The Most important activities the business must conduct to make the business model work | The most important assets to make the business model work | The key partners and suppliers needed to realize the business model |

## 7.2. S-CSA-2: Optimization of Customer Self-Installation

### 7.2.1. Attributes

| Attribute | Description |
|---|---|
| ID | S-CSA-2 |
| Name | Optimization of Customer Self-Installation |
| Hierarchy | TBD |
| Motivation | TBD |
| CxLC Stage(s) | TBD GB962 |
| Actors | Primary Actor(s): Customer, Shipping Agent Supporting Actor(s): CSR |
| Entry conditions | TBD |
| External References | TBD |
| Customer Experience Metrics: | TBD GB962A; |
| Other metrics: | TBD GB935A; |

| Data Sources | • Order data and any associated meta-data, especially meta=data regarding the product to be installed;<br><br>• Customer data gathered in the ordering process, including demographics;<br><br>• Customer context data, e.g. location, device, physical infrastructure for cable CSP's<br><br>• Inbound call records from past self-installation cases;<br><br>• Shipment records for outbound equipment;<br><br>• Data from customer devices on premises. |
|---|---|

| Business Model Canvas of the Use Case | TBD |
|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | All customers requiring a new piece of equipment deployed on site. | • Inbound & outbound call center<br><br>• Retail<br><br>• Online store | Empower expert users with the ability to install the product themselves, support less advanced users with field technician installs. | TBD |
| Value Proposition | Getting customer self-installation wrong can have a large impact on the customer's satisfaction with the CSP. Delays in the customer getting the service up and running due to failed self-installations and waiting for a newly scheduled field technician led install can result in customers cancelling their order. | | | |
| Cost Structure | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. The CSP may see the number of truck rolls (and the associated costs) increase or decrease depending on their current strategy for self-installation, i.e. CSP's that aggressively push self-installation may see an increase in cost from truck rolls, while CSP's that are more cautious may see a reduction in cost from truck rolls. | | | |
| Revenue Streams | No new revenue streams are established; however existing revenue streams are enhanced by delivering a superior quality of experience to CSP customers, leading to future revenues, referrals, and retention. | | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Understand the customer's technical skill level and target self-installation's accordingly;<br><br>• Ensure that the customer is continually updated on the status of the order;<br><br>• Ship the hardware | Data is required from across the business to understand the customer, the delivery mechanisms, the provisioning systems, and the installed devices to deliver this use case. | No new partners are required as part of this use case |

| | |
|---|---|
| to the customer at the optimal time;<br><br>• Ensure that the customer successfully completes the self-installation. | |

| Attribute | Description |
|---|---|
| **Story:** | Big Data Analytics can be applied to a number of different locations in the customer self-installation process:<br><br>• **Predicting Customer Suitability:** Utilizing past successes and failures of customer self-installation, analytics can find patterns in customer type and demographics, products being installed, and physical on-premise conditions to identify the right and wrong circumstances to make a real-time recommendation to the sales representative of whether to follow a customer self-installation or a field technician installation;<br><br>• **Optimizing Hardware Shipment:** Identify the right day and time to ship the required hardware to the customer such that this hardware will arrive at the right time for the customer self-installation. This analysis will take into account cases where the hardware has arrived too early (resulting in calls from customer due to the hardware not functioning when plugged in) or has arrived too late (resulting in calls from the customer looking for the location of the promised hardware) in order to identify the optimal shipping date and time for this customer in their location;<br><br>• **Proactive Customer Notification:** Automatically recognize conditions where hardware has arrived early and all provisioning activities have completed early and proactively notify the customer that they may proceed with the installation before the pre-appointed time. *Note: This use case is only applicable where the CSP provides the customer with an "install no early than" condition with the self-installation.*<br><br>• **Detect Customer Installation Success:** Analyze data from the device to confirm that the customer has successfully completed the installation of the hardware and that the hardware is functioning correctly after the installation. Proactively take action to repair issues or notify the customer of the appropriate fix, in cases where the installation has not been successfully completed. |
| **Actions and processes** | TBD |
| **Building Block(s)** | **TBD** |
| **Privacy Risk Score** | TBD |
| **Feasibility Parameters** | **TBD** |

# 8. Resource Related Use Cases

## 8.1. R-NRAM-1: Policy-based Capacity Management

| | |
|---|---|
| **Name:** | Increasing network capacity through optimizing existing network policy to bring it in-line with current and predicted customer usage behavior |
| **Horizontal:** | Resource Development & Management (Application, Computing and Network) |
| **Actors:** | • Network Planner<br>• Network Manager |
| **Business Drivers:** | Building new networks and adding capacity to existing network represents significant capital expense for communication providers. In certain cases adding more hardware or software to the network can be avoided by optimizing the network management policy to fit the current usage by customers. |
| **Business Metrics:** | • Decrease **179 - $ Capex**<br>  o Decrease **186 - $ Opex** |
| **CxLC Stage:** | Consume, Manage, Renew, & Recommend |
| **Customer Experience Metrics:** | • Increase **CO-E-1 Network Outdoor Coverage Subjective Score (Enterprise)**<br>• Increase **CO-E-2 Network Outdoor Coverage Comparative Subjective Score (Enterprise)**<br>• Increase **CO-E-3 Network Indoor Coverage Subjective Score (Enterprise)**<br>• Increase **CO-E-4 Network Indoor Coverage Comparative Subjective Score (Enterprise)**<br>• Increase **CO-E-5 Network Service Subjective Score (Enterprise)**<br>• Increase **CO-E-6 Network Service Comparative Subjective Score (Enterprise)**<br>• Increase **CO-F-1 Network Outdoor Coverage Subjective Score**<br>• Increase **CO-F-2 Network Indoor Coverage Subjective Score**<br>• Decrease **M-C-6 # Issues**<br>• Decrease **M-C-13 # Complaints**<br>• Decrease **M-F-14 # Contacts**<br>• Increase **CO-F-5 Network Service Subjective Score**<br>• Increase **RN-C-1 # Renew Orders**<br>• Increase **RN-C-3 # Customers Renewing**<br>  o Increase **RC-F-1 NPS – Relational**<br>  o Increase **RC-F-2 NPS – Transactional** |

| | |
|---|---|
| **Story:** | Managing network policy by hand is considerably complex and time-consuming task. Big data analytics can be applied in this use case to learn the nuances of behavior of particular customers and customer segments and optimize policy accordingly. The resulting network policy can be more dynamic and significantly more complex than can be encoded by hand by a human. |
| | In this use case a network planner may have identified a particular physical network addition or change that is required based on current user behavior, predicted user behavior, or customer value. Prior to deploying that change the network planner can consult with the network manager to identify if the goals that this physical addition/change to the network are attempting to achieve can be realized by a significantly cheaper change to the network policy. |
| | The network manager will utilize this big data system to run "what-if" scenarios and identify potential changes to network policies that could achieve the goals as specified by the network planner. If such policy changes can be found then the network manager can roll out these policy changes rather than the provider having to make expensive investments in network infrastructure. |
| **Required Data Sources:** | <ul><li>Network Quality Data</li><li>CRM Data</li><li>Customer Value Data</li><li>Usage & Billing Information</li></ul> |
| **Optional Data Sources:** | None |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
| | This use case does not involve direct interaction with the CSP's customers; however customers at this time expect network to be bullet proof and network planning has a key role to play in delivering on this expectation. | | |
| **Value Proposition** | This use case provides an advanced mechanism for reducing the cost of investment in the CSP network through the optimization of policy to ensure that exist network elements are used most effectively. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. Existing costs associated with network investment can be reduced through the better management of existing network infrastructure by optimized CSP policy. | | |
| **Revenue Streams** | No new streams of revenue are generated; this is a cost-saving use case. | | |
| **Key Activities** | **Key Resources** | **Key Partners** | |
| <ul><li>Understand customer behavior;</li><li>Learn network performance under current policy;</li><li>Design & Simulate network policy</li></ul> | This use case requires considerable historic data in order to understand the performance of the network currently and simulate the performance of the network in the future. | No new partners are required beyond those used by the CSP for network planning currently. | |

| Customer | Segment | Channel | Relationship |
|----------|---------|---------|--------------|
| changes | | | |
| | | | |

## 8.2. R-NRAM-2: Predictive analysis of Network Faults, Traffic performance and location based product impact analysis

This document aims to make the documentation of new use cases as simple as possible.

This template may be used to develop a use case to be contributed to TM Forum or to provide a blueprint for work within your own organization. This template brings together many elements of TM Forum best practices and standards to create a single view of business drives, processes, applications, information, metrics and solution approaches in order to speed up data analytics projects.

We recommend following along a completed example to help you fill out this use case: Real Time Personalized Offers while Browsing

- Use Case Credentials
- Use Case Description
- Osterwalder Canvas Template
- Business Canvas for CEM Implementation UC

### 8.2.1. Use Case Credentials

| Name | Predictive Analysis of Traffic pattern, network faults and performance issues based on Historical Data | *Original start date* |
|------|--------------------------------------------------------------------|-----------------------|
| **Submitted By** | Gaurav Tiwari | TechMahindra Ltd |
| **Contributed by** | | |
| **Reviewed by** | | |
| **Team Approved** | *Yes/No* | *Date* |
| **Comments** | | |
| **Security & Privacy Scored** | *Yes/No* | *Date* |

### 8.2.2. Use Case Description

| Name | Predictive Analysis of Traffic pattern, network faults and performance issues based on Historical Data |
|------|--------------------------------------------------------------------|

| Vertical | Service Assurance, SM&O and RM&O |
|---|---|
| **Actors** | NOC, SOC etc |
| **Business Drivers** | Big data Analysis of Traffic, fault and performance monitoring should be similar to the way Meteorological department see planet earth from a Satellite and predict about the weather, cyclone, temperature variation etc. Network behavior should not be analyzed in isolation it should also include the historical analysis of human behavior on events affecting network traffic like geographical events which include earthquake, tsunami etc, financial events similar to Greece crisis, social events like festival season which trigger online shopping or travel booking. |
| | Even to get the review before or after a product launch the Big Data analytic can play a major role by clubbing social media reviews and feedback. It has been seen that the human behavior varies from one geographic location to other and the linking of such analysis with the customer care tickets can help in better planning and optimization of network operations. |
| **Business Metrics** | |
| **Customer Experience Lifecycle Stage** | |
| **Customer Experience Metrics** | |
| **Story** | Product performance of same or competitive vendor on social sites can help business leader to identify the sentiments of people in that particular region and that can be correlated with the fault and performance of network in that particular region. This impact analysis can help in predicting the future investment in that particular region or to improve the service quality. |
| | Many time though we do proactive monitoring of devices however we forget to check the overall behavior of same type of device at network level because of reactive analysis. If any problem occurs the effort is to identify the root cause of the problem at device level and to solve it. Even the service and network impact analysis does not help. However the same behavior may be occurring in other devices and may be the culprit is the model of that particular device. Such prediction can be done using Big data analysis. |
| | Historical database of geographical, social, financial events can be linked with the historical data of network events and that can be analysis to build the traffic pattern during these events. Big data analytic can play a big role in making these patterns across the globe for any CSP's network. It will not only provide the stress network handle during the event but will tell how to predict the faults which can occur and how CSP can plan the remedies to convert challenge into opportunities. |
| | Social networking sites are becoming a big source of information of human sentiments around any product. The CSP before launching a similar product in a region can do sentiment analysis of other service provider product to understand the behavior of human for that product, so the product can be customized according to the behavior of people in that geographical region. At the same time social sentiments trigger any product to get success or failure in the market. If that kind of analysis is done the CSP can take appropriate decision before expanding the network or to launch a new product in the market. |
| | Financial crisis or stress on economy also triggers sentiments and almost |

| | |
|---|---|
| | similar human behavior. This can either put stress on the network or reduce it. A close steady can help CSP to predict traffic flow, device behavior and cause of concern from sales/marketing point of view. This will help them to plan accordingly. |
| **Security and privacy** | |
| **Required Data Sources** | <ul><li>Social networking sites</li><li>Environmental/geographical database.</li><li>Financial database</li><li>Network and Service Inventory Data</li><li>Network Fault Data</li><li>Network, EMS/NMS log files</li><li>Network Performance Data</li><li>Service Quality Data</li><li>Customer Complaints</li><li>Field Tests</li><li>Customer Care Agent transcripts</li><li>Internal Communication between NOC Operators</li><li>Network and Service Usage Data</li></ul> |
| **Optional Data Sources** | |

### 8.2.3.   Osterwalder Canvas Template

To complete this canvas you must first save the page.  Once the page is saved, you can edit and add to the canvas from the page.

The business model for each use case is described using the Business Model Canvas from Osterwalder. Each canvas provides a mechanism for the CSP to discuss the business models that lie behind a particular BDA use case, which can be used to start a strategic conversation within their business.

*Business Canvas for CEM Implementation UC*

| Customer Segment | Customer Channel | Customer Relationship |
|---|---|---|
| The types of customers reached by this business model | The channels through which the business needs to reach its customers | The customer relationships that need to be established |
| The types of customers reached by this business model | The channels through which the business needs to reach its customers | The customer relationships that need to be established |
| **Value Proposition** | | |
| The value, products and services delivered to the customer | | |
| The value, products and services delivered to the customer | | |
| **Cost Structure** | | |

| | |
|---|---|
| The most important costs incurred by this business model | |
| The most important costs incurred by this business model | |

| Revenue Streams |
|---|
| The streams through which this business model obtains revenue from customers |
| The streams through which this business model obtains revenue from customers |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| The Most important activities the business must conduct to make the business model work | The most important assets to make the business model work | The key partners and suppliers needed to realize the business model |
| The Most important activities the business must conduct to make the business model work | The most important assets to make the business model work | The key partners and suppliers needed to realize the business model |

## 8.3. R-NRAM-3: Network Fault Location & Recovery

### 8.3.1. Attributes

| Attribute | Description |
|---|---|
| ID | R-NRAM-3 |
| Name | Network Fault Location & Recovery |
| Hierarchy | TBD |
| Motivation | TBD |
| CxLC Stage(s) | Consume (CO) |
| Actors | Primary Actor(s): NOC<br>Supporting Actor(s): None |
| Entry conditions | TBD |
| External References | TBD |
| Customer Experience Metrics: | • Increase CO-E-1, Network Service Experience, Network Outdoor Coverage Subjective Score (Enterprise)<br>• Increase CO-E-2, Network Service Experience, Network Outdoor Coverage Comparative Subjective Score (Enterprise)<br>• Increase CO-E-3, Network Service Experience, Network Indoor Coverage Subjective Score (Enterprise)<br>• Increase CO-E-4, Network Service Experience, Network Indoor Coverage Comparative Subjective Score (Enterprise)<br>• Increase CO-E-5, Network Service Experience, Network Service Subjective Score (Enterprise) |

| | |
|---|---|
| | • Increase CO-E-6, Network Service Experience, Network Service Comparative Subjective Score (Enterprise)<br><br>• Increase CO-F-1, Network Coverage Experience, Network Outdoor Coverage Subjective Score<br><br>• Increase CO-F-2, Network Coverage Experience, Network Indoor Coverage Subjective Score<br><br>• Increase CO-F-5, Network Coverage Experience, Network Service Subjective Score |
| **Other metrics:** | TBD GB935A; |
| **Data Sources** | • Network and Service Inventory Data<br><br>• Network Fault Data<br><br>• Network, EMS/NMS log files<br><br>• Network Performance Data<br><br>• Service Quality Data<br><br>• Customer Complaints<br><br>• Field Tests<br><br>• Customer Care Agent transcripts<br><br>• Internal Communication between NOC Operators<br><br>• Network and Service Usage Data |

| | |
|---|---|
| **Business Model Canvas of the Use Case** | TBD |

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | This use case does not involve direct interaction with the CSP's customers; however customers at this time expect networks to be bullet proof, always available and performant. Resolving network faults in a timely manner has a key role to play in delivering on this expectation and establishing a good relationship with the customer. | | | |
| **Value Proposition** | Automatically identifying faults and recovering them without human intervention reduces the cost of network management and increases the speed with which faults can be resolved. Increasing the speed of recovery has the knock on effect of minimizes the impact of the fault on the CSP's customers and prevention impact to customer experience. | | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. Existing costs in network management can be reduced through automation of time consuming tasks that would normally be conducted by hand. | | | |
| **Revenue Streams** | This use case is cost saving; however prevent faults from impacting on customer experience solidifies existing revenue streams by improving customer experience, stickiness, loyalty, and ultimately life time value. | | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Learn fault patterns from past fault data;<br><br>• Learn recovery actions from past fault data;<br><br>• Predict network faults based on learnt patterns;<br><br>• Recommend or action the right recovery process to resolve the fault. | This use case requires considerable data from the network in order to able to find faults. Furthermore, examples of past faults and how they were handled are required to enable learning of the best recovery techniques from these faults. | No new partners are required for this use case. |

| Attribute | Description |
|---|---|
| **Story:** | In this use case, big data analytics is applied in order to automatically identify the presence of a fault, congestion, or performance deterioration within the CSP's network from the available CSP data, including network alarms, network performance metrics, and log files from network domains of multi techniques. BDA is also applied to look at fault recovery made manually by humans in the past in order to learn the appropriate actions to take to recover from different types of faults and the success of these actions.<br><br>The application of big data analytics improves the automation level as part of the network management process. Fault can be located and recovered without human intervention, and the overall process can be made faster and more accurate. This is especially important for multi-layer networks, where the root cause analytics would normally be performed manually one network layer at a time. Having the capability to automatically resolve the fault across all layers reduces the operational expense of fault location and recovery and enhances the efficiency of the fault management process |
| **Actions and processes** | TBD |
| **Building Block(s)** | **TBD** |
| **Privacy Risk Score** | TBD |
| **Feasibility Parameters** | **TBD** |

## 8.4.  R-NRAM-4: Real-time Value-based Congestion Management

### 8.4.1.  Attributes

| Attribute | Description |
|---|---|
| | |

| ID | R-NRAM-4 |
|---|---|
| **Name** | Real-time Value-based Congestion Management |
| **Hierarchy** | TBD |
| **Motivation** | TBD |
| **CxLC Stage(s)** | Consume (CO) |
| **Actors** | Primary Actor(s): NOC<br><br>Supporting Actor(s): Customer |
| **Entry conditions** | TBD |
| **External References** | TBD |
| **Customer Experience Metrics:** | • Increase CO-E-1, Network Service Experience, Network Outdoor Coverage Subjective Score (Enterprise)<br><br>• Increase CO-E-2, Network Service Experience, Network Outdoor Coverage Comparative Subjective Score (Enterprise)<br><br>• Increase CO-E-3, Network Service Experience, Network Indoor Coverage Subjective Score (Enterprise)<br><br>• Increase CO-E-4, Network Service Experience, Network Indoor Coverage Comparative Subjective Score (Enterprise)<br><br>• Increase CO-E-5, Network Service Experience, Network Service Subjective Score (Enterprise)<br><br>• Increase CO-E-6, Network Service Experience, Network Service Comparative Subjective Score (Enterprise)<br><br>• Increase CO-F-1, Network Coverage Experience, Network Outdoor Coverage Subjective Score<br><br>• Increase CO-F-2, Network Coverage Experience, Network Indoor Coverage Subjective Score<br><br>• Increase CO-F-5, Network Coverage Experience, Network Service Subjective Score |
| **Other metrics:** | TBD GB935-A; |
| **Data Sources** | • Network Quality Data<br><br>• CRM Data<br><br>• Customer Value Data<br><br>• Usage & Billing Information |

| **Business Model Canvas of the Use Case** | | | | TBD |
|---|---|---|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | All customers | Customer Device | Customers expect networks to be bullet proof, available | TBD |

| | | and performant. Where congestion exists the CSP can maintain a good relationship with customers by prioritizing the network availability appropriately for each customer. | |
|---|---|---|---|

| **Value Proposition** | Different customers have different expectations from the CSP network, and the activity being performed by the customer has an impact of this expectation, i.e. video calling has different network expectations than watching online video, which in turn is different to web browsing or reading email. Providing the right experience to match the customer's expectation and considering important factors like customer value, the CSP can improve customer stickiness, loyalty and life-time value. |
|---|---|
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. |
| **Revenue Streams** | This use case will maintain existing revenue streams through improvement of the customers experience with the operator's networks. |

| **Key Activities** | **Key Resources** | **Key Partners** |
|---|---|---|
| • Identify need for intervention in network policy;<br><br>• Identify current customer activity;<br><br>• Predict appropriate throttling level for each customers predicted activity based;<br><br>• Prioritize network access based on key business factors, e.g. customer value, churn risk, etc. | This use case requires key data on the quality of CSP networks in order to identify the need for intervention. Further data is required to understand the customer in the right business context to make decisions about how to influence the network. | • The CSP may need to engage with technology partners to perform deep packet inspection to learn customer activity patterns. |

| **Attribute** | **Description** |
|---|---|
| **Story:** | Big data analytics is employed in this use case to understand each of the customers in the congested area in detail, the activities that they are currently performing on their device, their value to the provider, recent congestion events that they have been involved in, etc. Based on this analysis a recommended treatment for each customer in the congested area is recommended based on policy established by the NOC.<br><br>The use case enables the NOC to ensure that lower value customers are throttled harder than high value customers, that customers performing data intensive activities (e.g. watching video) are treated different to customers performing low intensity activities (e.g. checking email). |
| **Actions and processes** | TBD |

| Building Block(s) | TBD |
|---|---|
| Privacy Risk Score | TBD |
| Feasibility Parameters | TBD |

## 8.5. R-NRAM-5: Real-Time Customer Offload Management

### 8.5.1. Attributes

| Attribute | Description |
|---|---|
| ID | R-NRAM-5 |
| Name | Real-Time Customer Offload Management |
| Hierarchy | TBD |
| Motivation | TBD |
| CxLC Stage(s) | Consume (CO) |
| Actors | Primary Actor(s): Network Manager<br><br>Supporting Actor(s): Customers |
| Entry conditions | TBD |
| External References | TBD |
| Customer Experience Metrics: | • Increase CO-C-50 # Wi-Fi Registrations<br><br>• Increase CO-E-1 Network Outdoor Coverage Subjective Score (Enterprise)<br><br>• Increase CO-E-2 Network Outdoor Coverage Comparative Subjective Score (Enterprise)<br><br>• Increase CO-E-3 Network Indoor Coverage Subjective Score (Enterprise)<br><br>• Increase CO-E-4 Network Indoor Coverage Comparative Subjective Score (Enterprise)<br><br>• Increase CO-E-5 Network Service Subjective Score (Enterprise)<br><br>• Increase CO-E-6 Network Service Comparative Subjective Score (Enterprise)<br><br>• Increase CO-F-1 Network Outdoor Coverage Subjective Score<br><br>• Increase CO-F-2 Network Indoor Coverage Subjective Score<br><br>• Increase CO-F-5 Network Service Subjective Score |

| Other metrics: | TBD GB935-A; |
|---|---|
| Data Sources | • Network Quality Data<br><br>• CRM Data<br><br>• Customer Value Data<br><br>• Usage & Billing Information |

| Business Model Canvas of the Use Case | TBD |
|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | All customers | Customer Device | Customers expect network to be bullet proof, available and performant. Where network congestion exists the CSP can maintain a good customer relationship by offloading them to better quality networks. | TBD |
| Value Proposition | Customer experience on operator networks is key to ensuring customer stickiness and loyalty. This use case understands the activities that the customer is likely to perform in this session and identifies the best network to perform those actions on. It also takes into account customer value to ensure that the quality of experience for higher value customer is maintained over lower value customers. | | | |
| Cost Structure | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | | |
| Revenue Streams | This use case will maintain existing revenue streams through improvement of the customers experience with the operator's networks. | | | |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Learn temporal quality of different network options;<br><br>• Learn temporal customer behavior activity patterns;<br><br>• Predict appropriate network for customer predicted activity based on available networks and their quality<br><br>• Prioritize network assignment based on key business factors, e.g. customer value, | This use case requires key information on the quality of CSP networks and external WIFI networks. Gather external network data may require an application running on customer devices that reports back to the CSP on the quality of each network. | • The CSP may need to engage technology partners for developing on device applications for crowd sourcing network quality<br><br>• The CSP may be able to find partners that can provide temporal network quality data.<br><br>• The CSP may need to engage with technology partners to perform deep packet inspection to learn customer activity patterns. |

| Attribute | Description |
|---|---|
| churn risk, etc. | |

| Attribute | Description |
|---|---|
| **Story:** | Increased usage in a specific location can overload the provider network and degrade customer experience at a specific time. Big data analytics can be applied in this use case to understand the context of the current usage and the profile of the customer. The system then needs to decide on the optimal priority of one customer over another, taking into consideration risk of churn, customer value, etc. In addition, the system needs to consider the activity being conducted by each customer, for example prioritizing video calls over video streaming (as a video streaming which could buffer another second whereas a video call cannot be buffered without degrading the experience significantly).<br><br>Taking all these contextual aspects into consideration, the system then needs to assess the capacity on each of the available networks at this location, for example Macro cell, small cell and Wi-Fi and make the right offloading and service prioritization decision. |
| **Actions and processes** | TBD |
| **Building Block(s)** | **TBD** |
| **Privacy Risk Score** | **TBD** |
| **Feasibility Parameters** | **TBD** |

## 8.6.  R-NRAM-6: Proactive Experience Driven Network Repair

### 8.6.1.  Attributes

| Attribute | Description |
|---|---|
| **ID** | R-NRAM-6 |
| **Name** | Proactive Experience Driven Network Repair |
| **Hierarchy** | O-CRM-CC3 and O-CRM-PC6 |
| **Motivation** | TBD |
| **CxLC Stage(s)** | Consume (CO), Manage (M) |
| **Actors** | Primary Actor(s): NOC Supporting Actor(s): Customers |
| **Entry conditions** | TBD |
| **Entry conditions** | TBD |
| **Customer** | • Increase CO-E-1, Network Service Experience, Network Outdoor |

| Experience Metrics: | Coverage Subjective Score (Enterprise) |
|---|---|
| | • Increase CO-E-2, Network Service Experience, Network Outdoor Coverage Comparative Subjective Score (Enterprise) |
| | • Increase CO-E-3, Network Service Experience, Network Indoor Coverage Subjective Score (Enterprise) |
| | • Increase CO-E-4, Network Service Experience, Network Indoor Coverage Comparative Subjective Score (Enterprise) |
| | • Increase CO-E-5, Network Service Experience, Network Service Subjective Score (Enterprise) |
| | • Increase CO-E-6, Network Service Experience, Network Service Comparative Subjective Score (Enterprise) |
| | • Increase CO-F-1, Network Coverage Experience, Network Outdoor Coverage Subjective Score |
| | • Increase CO-F-2, Network Coverage Experience, Network Indoor Coverage Subjective Score |
| | • Increase CO-F-5, Service Experience, Network Service Subjective Score |
| | • Decrease M-C-6, Incident Resolution Performance, # Issues |
| | • Decrease M-C-13, Complaint Handling Performance, # Complaints |
| | • Decrease M-F-14, Complaint Handling Performance, # Contacts\ |
| Other metrics: | TBD GB935-A; |
| Data Sources | • Network data |
| | • CRM Data |
| | • Customer Value Data |

| Business Model Canvas of the Use Case | TBD |
|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | All customers | Customer Device | Customers expect network traffic to be bullet proof, available and performant at all times. Where a network issue exists the CSP can maintain a good customer relationship by proactively fixing these issues and keeping the customer informed when necessary. | TBD |
| Value Proposition | Customer experience on operator networks is key to ensuring customer stickiness and loyalty. This use case helps automatically detect and repair network issues before the customer needs to complain about them. It also takes into account customer value to ensure that the issues of higher value customers are resolved before those of lower value customers. | | | |
| Cost Structure | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | | |

| Revenue Streams | This use case will maintain existing revenue streams through improvement of the customers experience with the operator's networks. | |
|---|---|---|
| **Key Activities** | **Key Resources** | **Key Partners** |
| • Automatically detect customer network issues from network data<br><br>• Automatically open NOC tickets for repair<br><br>• Geo-locate issues to improve NOC handling time<br><br>• Prioritize tickets based on customer(s) value<br><br>• Proactively notify the customer of issue and proactive fix | The key resource in this use case is the network data required to understand where problems exist in the CSP network for different types of customers. | No new partners are required for this use case. |

| Attribute | Description |
|---|---|
| **Story:** | Big Data Analytics is employed in this use case to find groups of customers that are experiencing network issues and report these issues to the NOC so that they can be fixed proactively. This use case goes far beyond the traditional high-level network issues, e.g. localized network outage, cell tower outage, network congestion. It uses all the information available about the customer's location, device, current task(s), etc. to find issues.<br><br>This use case is complementary to use cases O-CRM-CC3 and O-CRM-PC6, which reactively and proactively identify customer network experience issues and propose care solutions to these problems. While these use cases focus on the individual customer, this use case looks more holistically for groups of customers. By doing this a given customer problem may in fact be more endemic to a given type of customer, or location of customer. These issues can be fixed by repairing the underlying network rather than providing care solutions to customers.<br><br>While the number of customers experiencing a given issue will usually dictate its severity to the NOC team, customer value can also be brought in here in order to predict the impact of all current issues. A given network issue may be affecting a small number of very high value customers and should be fixed as a priority over a network issues affecting a larger number of low value customers. |
| **Actions and processes** | TBD |
| **Building Block(s)** | **TBD** |
| **Privacy Risk Score** | **TBD** |

| Feasibility Parameters | **TBD** |
|---|---|

## 8.7.  R-NRAM-7: Optimal Network Technology Utilization

### 8.7.1.  Attributes

| Attribute | Description |
|---|---|
| ID | R-NRAM-7 |
| Name | Optimal Network Technology Utilization |
| Hierarchy | TBD |
| Motivation | TBD |
| CxLC Stage(s) | TBD GB962 |
| Actors | Primary Actor(s): Network Manager Supporting Actor(s): Customers |
| Entry conditions | TBD |
| External References | TBD |
| Customer Experience Metrics: | TBD GB962-A; |
| Other metrics: | TBD GB935-A; |
| Data Sources | • Network Data<br>• Network Quality Data<br>• Location Data<br>• Info about customers' devices<br>• Customers' usage data<br>• Customer profiles |

| Business Model Canvas of the Use Case | TBD |
|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
|  | All | Device | Improve customer relationship through better service | TBD |
| **Value Proposition** | Provide best possible customer experience and optimize network resource use through offering customers the optimal medium of connection | | | |

| Cost Structure | No additional costs assuming networks and big data analytics capabilities are present |
|---|---|
| Revenue Streams | Save on unnecessary or non-critical investments and generate additional revenue through increased customer loyalty and usage of the operator network |

| Key Activities | Key Resources | Key Partners |
|---|---|---|
| • Understand in real time the availability and quality of services in a location<br><br>• Understand in real-time the usage of subscribers in that location<br><br>• Offer to users the option to switch to a more appropriate network | • Real-time and Big data analytics<br><br>• Network | None needed |

| Attribute | Description |
|---|---|
| **Story:** | Based on analysis of the users' prior behavior and the current network situation, the network could automatically in real-time select which technology to utilize to provide the best possible customer experience and network utilization.<br><br>• Example 1?In a location where there is WLAN capability but users are using 3G, encourage WLAN offload or even automate it based on BDA., We find that in one area where WLAN capacity is enough but customers always use 3G to get to the Internet, and these selected customers would benefit from this<br><br>• Example 2: In another location there is 4G capacity but users use 2G for making calls. Utilizing analytics on the subscriber data, subscribers are encouraged to migrate to 4G or automatically switched when possible<br><br>• Example 3: In a third location there is 3G but it is very congested, not enabling user's access. Users are guided to use lower bandwidth network technologies to provide a better latency and end user experience for usages that do not require pure bandwidth |
| **Actions and processes** | TBD |
| **Building Block(s)** | **TBD** |
| **Privacy Risk Score** | TBD |
| **Feasibility Parameters** | **TBD** |

## 8.8. R-NRAM-8: Value-based Network Planning

| Name: | Automatically identify the value of different network based investments to aid network planners in selected the additions to the network that yield the best value |
|---|---|
| Horizontal: | Resource Development & Management (Application, Computing and Network) |
| Actors: | • Network Planners |
| Business Drivers: | Building new networks and adding capacity to existing network represents significant capital expense for communication providers. Taking into account usage trends and prediction, customer profiling and lifetime value can add business metrics into the network planning process thereby reducing costs whilst improving customer experience for important customers. |
| Business Metrics: | • Decrease **179 - $ Capex**<br>    o Decrease **186 - $ Opex** |
| CxLC Stage: | Consume, Manage, Renew, & Recommend |

| Customer Experience Metrics: | • Increase **CO-E-1 Network Outdoor Coverage Subjective Score (Enterprise)**<br><br>• Increase **CO-E-2 Network Outdoor Coverage Comparative Subjective Score (Enterprise)**<br><br>• Increase **CO-E-3 Network Indoor Coverage Subjective Score (Enterprise)**<br><br>• Increase **CO-E-4 Network Indoor Coverage Comparative Subjective Score (Enterprise)**<br><br>• Increase **CO-E-5 Network Service Subjective Score (Enterprise)**<br><br>• Increase **CO-E-6 Network Service Comparative Subjective Score (Enterprise)**<br><br>• Increase **CO-F-1 Network Outdoor Coverage Subjective Score**<br><br>• Increase **CO-F-2 Network Indoor Coverage Subjective Score**<br><br>• Increase **CO-F-5 Network Service Subjective Score**<br><br>• Decrease **M-C-6 # Issues**<br><br>• Decrease **M-C-13 # Complaints**<br><br>• Decrease **M-F-14 # Contacts**<br><br>• Increase **RN-C-1 # Renew Orders**<br><br>• Increase **RN-C-3 # Customers Renewing**<br>    o Increase **RC-F-1 NPS – Relational**<br>    o Increase **RC-F-2 NPS – Transactional** |
|---|---|
| Story: | Big data analytics can be employed in order to optimize the financial value of the investment by: |

- Learning the value of customers in different locations

- Understanding current usage trends in a given location

- Predicting future trends in usage for a particular location

- Incorporating external data for business oriented network decisions

In this use case a network planner would use such a system to rank different candidate network additions/changes based on these factors, or receive a list of new candidate network additions/changes that have not been considered to date. By understanding customers and their current/future usage, a network planner can better plan the network coverage and QoS provided to customers, ensuring that that locations frequently used by high value customers have the appropriate investment level.

| | |
|---|---|
| **Required Data Sources:** | - Network Quality Data<br><br>- CRM Data<br><br>- Customer Value Data<br><br>- Usage & Billing Information |
| **Optional Data Sources:** | - Social Media Data can be used to enhance the knowledge of the customer<br><br>- External business data sources can be ingested to enhance prediction of future usage, for example the placement of a new stadium or business park which may drive additional usage on the network, or change the value of a location. |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
| | This use case does not involve direct interaction with the CSP's customers; however customers at this time expect network to be bullet proof, calls to not be dropped and data services to be always available and performant. Network planning has a key role to play in delivering on this expectation. | | |
| **Value Proposition** | Value based network planning ensures that CSP's networks provide a better service to its high-value customers, improving the CSP's relationship with these customers. Value-based network planning also ensures that operational expense and capital expenditure can be reduced by not investing in area's that do not deliver value for the investment. | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | |
| **Revenue Streams** | This use case will help to make existing revenue streams more solid by improving the quality of service delivered to high-value customers by the CSP network. The knock on effect of better quality is increased usage by these customers, which can drive increases in revenues from overage or billing offer upgrades. | | |
| **Key Activities** | **Key Resources** | | **Key Partners** |
| - Understand customer value distributions across locations;<br><br>- Understand customers usage in different locations; | The key resource is the data that supports the execution of the key activities. This use cases requires considerable integration with a wide variety of different data sources. | | No new partners are required beyond those used by the CSP for network planning currently. |

| Customer | Segment | Channel | Relationship |
|---|---|---|---|
| • Predict changes in usage in particular locations | | | |

## 8.9.   R-NRAM-9: Site Planning

| | |
|---|---|
| **Name:** | Identify the best location of business offices, self-service terminals, WLAN hotspots etc. that yield the best value |
| **Horizontal:** | Resource Development & Management (Application, Computing and Network) |
| **Actors:** | • CMO<br><br>• Marketer<br><br>• Network Planner<br><br>• Network Manager |
| **Business Drivers:** | Building more business offices, self-service terminals, WLAN hotspots represent significant expense for communication providers. Choosing the optimal location of these can save costs, bring more revenue. |
| **Business Metrics:** | Decrease **179 - $ Capex**<br><br>Decrease **186 - $ Opex**<br><br>Increase **193 – $ Revenue** |
| **CxLC Stage:** | Interact, Choose, Consume, Renew & Recommend |
| **Customer Experience Metrics:** | • Increase **I-C-1 Enquiries**<br><br>• Decrease **I-C-2 Seconds Queue Time – Retail Outlet**<br><br>• Decrease **I-C-2a Seconds Interaction Time – Retail Outlet**<br><br>• Increase **CH-C-1 Customers Acquired**<br><br>• Increase **CH-C-3 Orders Successful**<br><br>• Increase **CO-E-1 Network Outdoor Coverage Subjective Score (Enterprise)**<br><br>• Increase **CO-E-2 Network Outdoor Coverage Comparative Subjective Score (Enterprise)**<br><br>• Increase **CO-E-3 Network Indoor Coverage Subjective Score (Enterprise)**<br><br>• Increase **CO-E-4 Network Indoor Coverage Comparative Subjective Score (Enterprise)**<br><br>• Increase **CO-E-5 Network Service Subjective Score (Enterprise)**<br><br>• Increase **CO-E-6 Network Service Comparative Subjective Score (Enterprise)**<br><br>• Increase **CO-F-1 Network Outdoor Coverage Subjective Score**<br><br>• Increase **CO-F-2 Network Indoor Coverage Subjective Score** |

| | |
|---|---|
| | • Increase **CO-F-5 Network Service Subjective Score** |
| | • Increase **RN-C-1 # Renew Orders** |
| | • Increase **RN-C-3 # Customers Renewing** |
| | • Increase **RC-F-1 NPS – Relational** |
| | • Increase **RC-F-2 NPS – Transactional** |
| **Story:** | Communication provider needs to consider multiple factors to make site planning decision. Big data analytics can be applied to understand the current situation and the customers from a multitude of perspectives, such as: |
| | 1. Current distribution of the business offices, self-service terminals, WLAN hotspot etc. |
| | 2. Population distribution: their age, gender, whether are they VIP customers etc. |
| | 3? Customers location change: where are they going, where do they stay most of the time |
| | 4. Customers usage habits: when and where do they use WLAN, what's application or service do they use |
| | In this use case, communication provider can use these knowledge to choose the best locations of business offices, self-service terminals, WLAN hotspots etc. They can continue to optimize the location of these places. |
| **Security & Privacy** | 42 (High) |
| | • Data Collection: Method of Content = 4, Intended Use = 4, Transparency = 4 |
| | • Data Handling: Human Access = 4, Data Processing = 2, Comingling = 2 |
| | • Transmission: Transport = 2, Human User Device End Point =4 |
| | • Disclosure: Use of Meta Data = 4, Data sharing = 2 |
| | • Data Storage: Retention period=1, storage security=2, trusted custodian=1 |
| | Service Training: User Keeping user data private=4, staff keeping user data private = 2 |
| **Required Data Sources:** | • Network Quality Data |
| | • CRM Data |
| | • Customer Value Data |
| | • Location & mobility information, from cellular network antennas or on-device GPS |
| | • Handset usage information, including browsing history, applications  type and usage |
| | • Self-service terminal device usage, including customer interaction events |
| | • Usage& Billing Information |
| **Optional Data Sources:** | • Call Detail Records(CDRs) |
| | • Location Environment Information |

The Osterwalder Business Model Canvas for this use case is as follows:

| Customer | Segment | | Channel | Relationship |
|---|---|---|---|---|
| | Enterprise Customer (with specified requirements) Enterprise Customer (with common feature) Individual Customer | | Self-service terminals CSP offline store | Existing customers and new customers attracted by CSP's new services or good network quality |
| Value Proposition | The best locations of business offices, offline stores and WLAN hotspots etc. make customers easy to interact with customer representatives and buy new products, and use better quality network with better services. | | | |
| Cost Structure | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. | | | |
| Revenue Streams | The existing revenue stream is enhanced by delivering a superior quality of experience, increasing the number of purchase transactions, increased customer satisfaction to CSP customers, leading to future revenues and retention | | | |
| Key Activities | | Key Resources | | Key Partners |
| • Choose the optimal location for customers. • Identify what products/services customers really need, whether network quality should be improved. • Understand each customer's behavior. | | This use case requires data on customer usage, their location. The use case also requires information of what the customer is browsing on the handset and the network quality | | No new partners are required for this use case |

## 8.10. R-SRAM-1: Field Technician Assignment Optimization

### 8.10.1. Attributes

| Attribute | Description |
|---|---|
| ID | R-SRAM-1 |
| Name | Field Technician Assignment Optimization |
| Hierarchy | TBD |
| Motivation | TBD |
| CxLC Stage(s) | TBD GB962 |

| **Actors** | Primary Actor(s): Customer, Field Technician Supporting Actor(s): None |
|---|---|
| **Entry conditions** | TBD |
| **External References** | TBD |
| **Customer Experience Metrics:** | TBD GB962-A; |
| **Other metrics:** | TBD GB935-A; |
| **Data Sources** | • Catalogue of field technicians<br><br>• Data on past on-site support jobs, what the technician had to do onsite, the time that it took, the success or failure, and what went wrong<br><br>• Customer demographics and onsite context for each job |

| **Business Model Canvas of the Use Case** | TBD |
|---|---|

| **Customer** | **Segment** | **Channel** | **Relationship** | **Experience** |
|---|---|---|---|---|
| | All customers who are expecting a field technician to be sent to their premises. | Face to Face on customer premise. | Customers expect that a field technician, who is sent to their premise, will be able to install hardware or fix issues with the minimum of fuss. Ensuring the right technician goes to each job, with the right tools, prevents delays or failures in this process that result in poor customer experience. | TBD |
| **Value Proposition** | Improving the speed and quality of each field technician visit to a customer, and removing the need for repeat visits by one or more technicians, enables a CSP to make the best use of its field technicians. Customers are more satisfied as there installations and maintenance issues are performed quickly and without issues. | | | |
| **Cost Structure** | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. The CSP may see a reduction in costs over time as the same set of field technicians whose workload is now optimized can perform more jobs in less time. | | | |
| **Revenue Streams** | This use case does not open a new revenue stream; however delivering a better experience in the installation and maintenance of on-site equipment helps to strengthen existing revenue streams by improving the customer experience and making the customer more loyal to the CSPs brand. | | | |

| **Key Activities** | **Key Resources** | **Key Partners** |
|---|---|---|
| • Understand the key skills of each field technician;<br><br>• Find the right technician to solve a particular onsite | The key resource here is the data associated with the past onsite support jobs conducted by each field technician. | No new partners are needed to conduct this use case. |

| | | |
|---|---|---|
| support job;<br><br>• Inform the technician of any important aspects of the job that he needs to prepare for. | | |

| Attribute | Description |
|---|---|
| **Story:** | Big Data Analytics is applied in this use case in order to understand the skills of each of the field technicians working for the CSP and to match these skills to the set of onsite support jobs that are scheduled in the coming days. This big data analytics will learn from successful and failed jobs performed by each technician in the past, the time that it took them to complete the job, the number of issues and repeat callouts that happen in the weeks and months after the technician is onsite. With all this information to hand the right technicians can be targeted at the right jobs in order to ensure the best quality onsite support is delivered to each customer in the minimum time.<br><br>BDA can also be applied to understand the common issues associated with different types of installations and to prepare the technician to face these issues, for example a particular type of product installation may fail if the technician does not realize that the physical infrastructure present at the customer site requires a special type of tool to complete. Analyzing successful and unsuccessful jobs in the past enables a set of recommendations to be delivered to each field technician for each job, such that they can prepare everything they need to be successful before they go onsite. |
| **Actions and processes** | TBD |
| **Building Block(s)** | **TBD** |
| **Privacy Risk Score** | TBS |
| **Feasibility Parameters** | TBD |

# 8.11. R-SRAM-2: Field Technician Arrival Optimization

## 8.11.1. Attributes

| Attribute | Description |
|---|---|
| **ID** | R-SRAM-2 |
| **Name** | Field Technician Arrival Optimization |
| **Hierarchy** | TBD |
| **Motivation** | TBD |

| CxLC Stage(s) | TBD GB962 |
|---|---|
| Actors | Primary Actor(s): Customer, Field Technician Supporting Actor(s): None |
| Entry conditions | TBD |
| External References | TBD |
| Customer Experience Metrics: | TBD GB962-A; |
| Other metrics: | TBD GB935-A; |
| Data Sources | • Field Technician job schedule, with meta-data for each job<br><br>• Historical archive of jobs and their durations<br><br>• Real time notification from field technician when jobs are started and finished |

| Business Model Canvas of the Use Case | TBD |
|---|---|

| Customer | Segment | Channel | Relationship | Experience |
|---|---|---|---|---|
| | All customers who are expecting a field technician to be sent to their premises. | All channels | Customers find waiting around for a field technician to arrive at their premises an extremely frustrating time. Ensuring that they are aware of when the technician will arrive and any delays that occur increases the transparency with the customer and reduces this frustration, delivering a better customer experience. | TBD |
| Value Proposition | Ensuring that the customer is fully aware of when the technician will arrive prevents them from becoming annoyed with the CSP for making them wait, it also results in them not repeatedly calling the call center asking for the location of the technician. | | | |
| Cost Structure | The CSP will incur additional costs in the integration with data sources and the maintenance of the big data storage and processing infrastructure. The CSP may see a reduction in the cost of handling calls from customers asking when the technician will arrive at their premises. | | | |
| Revenue Streams | This use case does not open a new revenue stream; however delivering a better experience in the installation and maintenance of on-site equipment helps to strengthen existing revenue streams by improving the customer experience and making the customer more loyal to the CSPs brand. | | | |
| Key Activities | Key Resources | | Key Partners | |
| • Continuously | The key resource is the | | Partnerships with map or traffic companies, | |

| | | |
|---|---|---|
| understand the status of each technician in the field;<br><br>• Predict the arrival time of each technician at the other jobs they have scheduled over the course of the rest of the day;<br><br>• Proactively notify the customer of the arrival time of the technician when its changes;<br><br>• Reschedule a job where it will not be possible for the technician to reach the customer on a given day. | day regarding the technicians' progress on the current job, the schedule of other jobs that he has on a given day, the purpose of these jobs, and other contextual data that will enable the calculation of the arrival time for a given job. | than can help deliver this key piece of data, may need to be established. |

| Attribute | Description |
|---|---|
| **Story:** | Big Data Analytics is applied in this use case to learn from historical jobs, their features, and their durations in order to predict potential delays or issues. Using this information the arrival time of the field technician for each of the jobs on his schedule for the day can be predicted. These arrival times can be continually revised throughout the day as the technician completes jobs early, on time or late. The customer can be continually notified of the arrival time of the technician either through a push or pull mechanism. The big data analytics can also incorporate data sources from outside of the CSP's business, i.e. traffic data that can help to predict the travel time for the technician between jobs. |
| **Actions and processes** | TBD |
| **Building Block(s)** | TBD |
| **Privacy Risk Score** | TBD |
| **Feasibility Parameters** | **TBD** |
| | |

## 8.12. Use Case Management - Resource Domain

Please see attachment visio version:  **Use Case Classification-business**
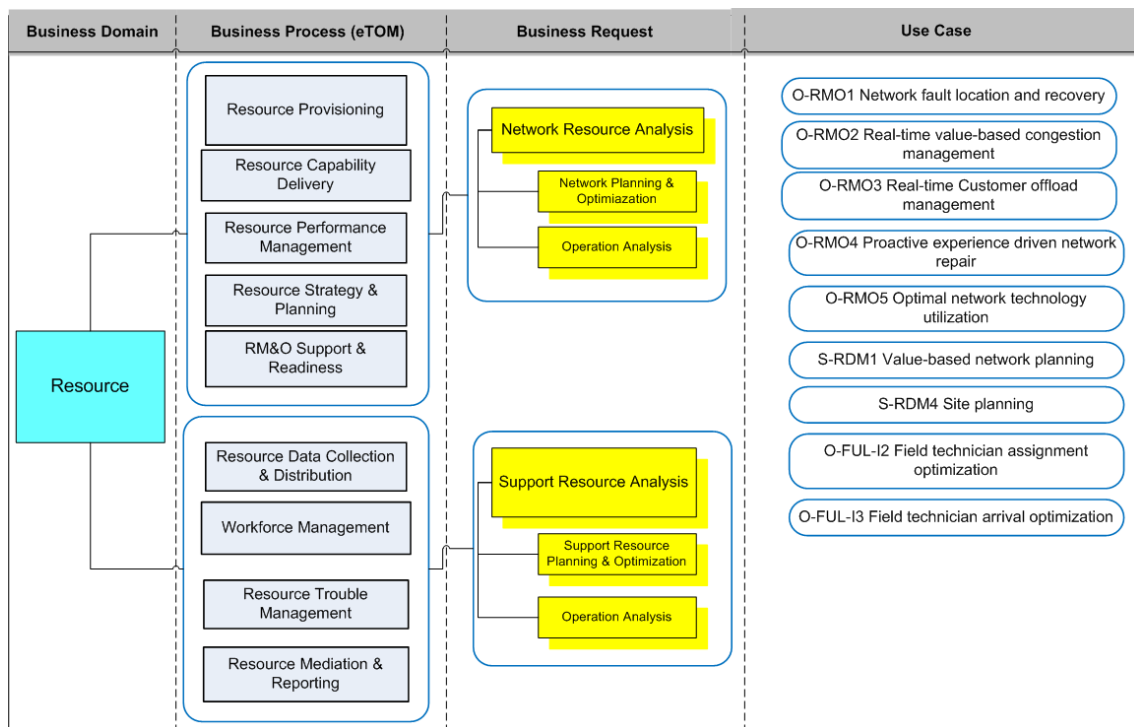
# 9. Administrative Appendix

## 9.1. About this document

This document is the first addendum to the TM Forum Guidebook GB979.

## 9.2. Document History

### 9.2.1. Version History

| Version Number | Date Modified | Modified by: | Description of changes |
|---|---|---|---|
| 0.1 | 24/Jul/2013 | Mick Kerrigan | • ToC + migration of content from TR202 |
| 0.2 | 04/Sept/2013 | Mick Kerrigan | • Integration of use case contributions from NetCracker, Intracom, & China Telecom<br>• Reorganization of use cases to prevent need for future renumbering<br>• Documented use case nomenclature<br>• Updated use case coverage<br>• Addition of Osterwalder Business Model Canvas for each use case. |
| 0.3 | 18/Sept/2013 | Mick Kerrigan | • Integration of use case from Gradiant<br>• Editorial Fixes |
| 1.0 | 26/09/2013 | Wei Dong | • Align S-MOM-T4 with GB979<br>• Editorial Fixes |
| 1.0.1 | 10/10/2013 | Alicja Kawecki | Updated cover, header & footer, minor cosmetic fixes |
| 1.1 | 04/03/2014 | Mick Kerrigan | • Added new Use Cases<br>• Aligned all use cases with business metrics and customer experience metrics |
| 1.2 | 06/03/2014 | Mick Kerrigan | • Minor Formatting updates |

| 2.1 | 11/20/2014 | Sophie Nachman  Chris Stock  Rebecca Sendel | • Addition of Privacy Risk Scores to 10 Use Cases in the S-MOM-T section |
|-----|-----------|----------------|----------------------------------|
| 2.1.1 | 11/23/2014 | Matti Aksela | • Addition of three new use cases, one from BAE and two from China Mobile |
| 3.0 | 11/20/2015 | Rebecca Sendel | Edits for 15.5 for unified use case template, cleaned up use cases |
| 3.0.1 | 15/12/2015 | Alicja Kawecki | Formatting/style corrections throughout prior to publishing |
| 4.0.0 | 11/11/2016 | Snigdha Mitra | New Use Case added - P-OAM-4 |
| 4.0.1 | 07/12/2016 | Alicja Kawecki | Updated cover, minor formatting/style edits prior to publication for Fx16.5 |
| 4.0.2 | 14/06/2017 | Alicja Kawecki | Updated cover, header, footer and Notice to reflect TM Forum Approved status; applied rebranding |

### 9.2.2.  Release History

| Release Number | Date Modified | Modified by: | Description of changes |
|----------------|---------------|--------------|------------------------|
| 2.0 | 05/15/2015 | Snigdha Mitra | 8 new use cases added contributed by China Mobile, TEOCO and cVidya |
| 3.0 | 011/11/2016 | Snigdha Mitra | New Use Case added - P-OAM-4 |
|  |  |  |  |

## 9.3.  Company Contact Details

| Company | Team Member Representative |
|---------|----------------------------|
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## 9.4.  Acknowledgments

The original version of document was prepared by the members of the TM Forum Big Data Analytics team:

- Dr. Mick Kerrigan, Amdocs Management Limited, **Co-project leader & Co-author/Editor**

- Wei Dong, Big Data Works, **Co-project leader & Co-author/Editor**

- Nikos Tsantanis, Intracom Telecom, **Co-author/Editor**

Since that time, additional input has been provided by the following people:

- Sophie Nachman, Orange SA, **Charter co-sponsor and contributor**

- Sagnik Bakshi, NetCracker Technology

- Jinghua Chen and Zhao Lifen, China Telecom

- Nigel Sanctuary, BAE Systems

- Jinjin Wang, China Mobile

- Barak Alon, cVidya

- Australia Action Day participants

- Yves Robinson, TEOCO and members of the Dubai Action Day

- Larry Chesal, Spirent

- Antonio Cuadra Sanchez, Indra

- Lloyd Heck, Mediacom

- Craig Farrell, IBM

- Singdha Mitra, TM Forum