Migration

Analytics

LTE

Prescriptive

Predictive

NPS

Huawei SmartCare®

Service Quality & Customer Experience Management

Content

Huawei SmartCare®
Service Quality & Customer Experience Management

CEM / SQM / NPM / SOC – Huawei's Capability

Customer Experience Management

NPS	CSAT	Churn	OTT Analysis	Digital Care	Monetization

Service Quality Management

Quality Dashboard	Traffic Hotspots & Geo-location	User / Service / Network Mapping	Benchmarking & Quality	Proactive Care

Network Performance Management

Network Planning	Service based Capacity	Network Optimization	Long Term Service Performance	ARPU driven Planning

Service Operation Centre

VIP Care	Automated Root Cause Analysis	Enterprise Care	Customer Care Efficiency	User centric Operation	Business Transformation	OPEX Savings	3rd Party Services Analysis	CEM Enabling

What Huawei can deliver

Platform
CEM
SQM
NPM
Geo-Location
Optimization
Tracing

Service
Set of Use Case
NPS prediction
Churn prediction
SOC Establishment
Quality Improvement
Network Optimization

Operation
Service Operation Centre
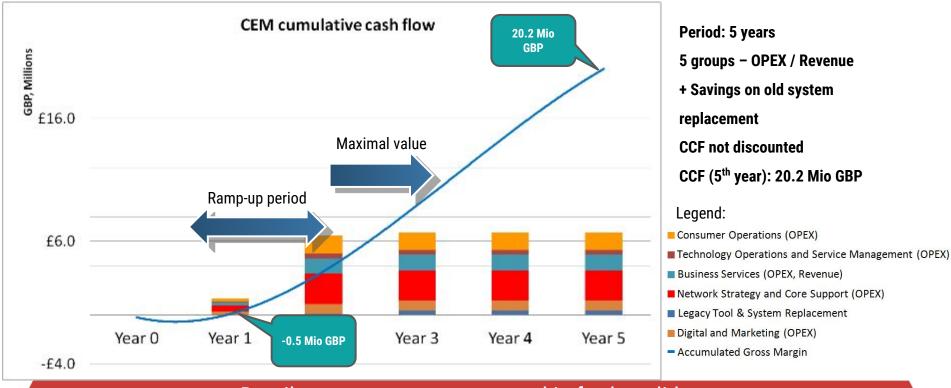Establishment & Operation
Network Operation
Network Planning

Set of platforms / tools, services and operation support to increase Operator's value

Content

Huawei SmartCare®
Service Quality & Customer Experience Management

Savings and Earnings by Huawei CEM Platform (CCF)

Period: 5 years

5 groups − OPEX / Revenue

+ Savings on old system replacement

CCF not discounted

CCF (5th year): 20.2 Mio GBP

Legend:
- Consumer Operations (OPEX)
- Technology Operations and Service Management (OPEX)
- Business Services (OPEX, Revenue)
- Network Strategy and Core Support (OPEX)
- Legacy Tool & System Replacement
- Digital and Marketing (OPEX)
- Accumulated Gross Margin

Details per stream are presented in further slides

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Savings and Earnings by Huawei CEM Platform (Overview)

Group **C**	Group **T**	Group **B**	Group **N**	Group **D**
OPEX Savings in Consumer Operations	Savings in Technology Operations and Service Management	Revenue Generating by Business Services (CEM Monetization)	Efficient Operations in Network Strategy and Core Support	Digital and Marketing Impact to OPEX Savings
Efficient CC activity and reduced number of complaints	Reduced number of End Users TT, less time for demarcation per TT	B2B Support, SLA Reporting, Account Management	Efficient planning, roaming support, LTE users migration	Digital channels reduce Customer Care Support efforts
1.5 Mio	0.4 Mio	1.3 Mio	2.5 Mio	0.9 Mio

Estimated benefits from CEM Platform on a level of 6.6 Mio per year

- NPS Improvement
- Churn Prediction
- Multi SIM usage
- Location based Marketing
- Third Party Demarcation
- Other cases

+15-25 Mio / year

By additional use cases, not requested in RFP Huawei is happy to propose / demonstrate / discuss

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Content

Huawei SmartCare®
Service Quality & Customer Experience Management

Use Cases & Demo

3V Demo

2G/3G/4G User Migration

NPS

Customer Care Assistance

First 30 days journey

Roaming Service Quality Assurance

Churn

Architecture & Platform

VVIP Service Quality Assurance

CEM vs SQM

Digitizing Customer Care

ARPU Driven Network Planning

Enterprise (B2B) Service Quality Assurance

Persona Based Experience Assurance

Value-Experience Matrix Migration

Service Operation Centre

Content

1. CEM & SQM & NPM – Huawei's Capability

2. SmartCare® Business Value on a Customer Cases

3. Use Cases & Demo & Moscow SQM Pilot

4. Global References & Why HUAWEI

Huawei SmartCare®
Service Quality & Customer Experience Management

Huawei SmartCare® is Leading the CEM Industry

...delivered projects with tangible value

Global Market Reference

- Serving **40+** Service Operations Centers for 14 of GSMA Top 30 Operators
- Helped **120+** networks to improve network & service quality

Indonesia: Revenue Improvement
- ~10% revenue increase from high value users

China: Churn Rate Reduction
- Prepaid churn rate reduced from 5.17% to 3.66% within 12 months

Denmark: Quality Benchmarking Improvement
- No.1 in 3rd party quality benchmarking

KSA: Propensity to Call (PTC) Reduction
- VIP service quality issues reduced by 90%+ within 6 months

Ghana: NPS Improvement
- NPS of business elite persona improved by 10pts

Huawei CEM World Class

Customer	Project Technologies Scope	Mobile Subscriber	Covered Vendors (Wireless)	Use Case	Key Benefit
XL Indonesia	GSM/UMTS/LTE	60M	HW, E///	Traffic Insights /SQM/VIP CARE /CCA/CCH	1. Customer Complaint TT reduced by 30% ~ 60% average in different regions 2. MTTH improved 60% average
STC Saudi Arabia	GSM/UMTS/LTE/Fix	27M	HW,E///,NSN	SQM/Roaming Performance Mgmt VIP CARE /Marketing /Campaign Support	1.VIP trouble tickets reduced by ~90% within 24 weeks 2.MKT Support Capability Improved 3. Ramadan & Hajj's successful guarantee greatly improved STC's reliable brand image
PCCW HongKong	GSM/UMTS/LTE	3M	HW	SQM/Roaming Performance Mgmt/VIP CARE /CCH/CCA/OTT Analytics	1.MTTD : from 3 hours to 0.5 hours 2.Billing enquiries / complaints handling time: reduced 60% 3.Provides proactive care to 9000+ high value users
Mobile zhejiang	GSM/UMTS/LTE	55M	HW , NSN , AL, ZTE , Datang	CCA/CCH/Service Quality Management/Smart CAPEX	1.Customer satisfaction improved by 20% 2. Reduced OPEX compared with traditional DT
Unicom Shanghai	UMTS/LTE	6.5M	HW,NSN,ZTE	SQM/Enterprise Assurance /CEI Dashboard/Smart CAPEX/Churn Prediction/NPS Analytics	1.Complaint Rate Reduced by 37.6% 2.VIP Complaint Rate Reduced by 31%
TDC Denmark	GSM/UMTS/LTE	3.2M	HW,E///	End-to-end Session trace /SQM/Roaming Performance Mgmt VIP CARE /OTT Analytics/Smart CAPEX	1.Network quality score No.1 in Denmark 2.Ps data traffic increased by 3 times

HUAWEI SmartCare® 3rd Party Partners

Thank you

Appendix & Supportive Materials

Huawei SmartCare®
Service Quality & Customer Experience Management

Group C – OPEX Savings in Consumer Operations

Group C

OPEX Savings in Consumer Operations

Efficient CC activity and reduced number of complaints

1.5 Mio

Summary (details in further slides):

✔Reduction of AHT of massive network issues related calls by 15% (1 min savings per call)

✔Reduction of AHT of technical incident related calls by 10% (1.6 min per call)

✔Improved FCR by 20% by automated root cause analysis per End User

✔Improved SQ / CE leads to deduction of complaints by 20% with less complaints calls

✔Expected savings start from 1.5 Mio GBP per annum

Detailed analysis and planning supported BC calculation for OPEX savings

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Consumer Operations OPEX Savings Calculation Approach

Number of TT related Calls →

Huawei CEM

Required Personnel ←

Approach

All Calls 86 Mio per year

- All Calls
- Information / Sales Marketing
- Query / Usage / Issue
- Complex Issue / Complaint
- Incident / Service Request

Rest Calls (Sales, Tariffs, Marketing,

Resolved at first call FCR=70% (Benchmark)

Complaints 1,059,872 0.012% per User

Trouble Tickets 30%

Target

↑FCR

↓ AHT

↓ TT

AHT ~ 6.3 − 6.8 min

Call Time

3.5	Marketing
9	Query / Usage
12	Complex Issue
16	Incident

6,677,196 min per year

+

4,928,407 min per year

Retail 8,500 (est.)

Call Centre 2,500 (est.)

11.000 Staff (CC & Retail)

Source

EE RFP

Benchmarks

MetricNet

Ofcom

EE Results

Huawei expects significant savings in Call Centre by CEM Platform Implementation

Details – please see next page

Benchmarks

GSMA

EE RFP

HUAWEI

Call Centre OPEX reduction – details and clarifications

What

How

Benefits

Network issues calls

15%

CE / SQ deterioration caused by network elements fault per User will be seen in CRM system for CC L2 staff) – 18 sec savings per call

Assumed performance impact only for the 7.4% of calls

1.2M

↓ AHT

Complaints calls

10%

Demarcation on End User Level with pre-resolution by CEM Backend system for CC L3 will reduce technical incidents calls time by 1.6 minutes per technical incident call

Impacting 0.31% of all calls (only technical incidents)

0.03M

Network issues calls

20%

Pre-automated root cause identification by CEM Backend for CC L3 helps to correlate known network issues with CE / SQ thus to reduce number of TT to NOC/SOC and to reduce time for the ticket creation

Assumed only 0.37% of all calls refer to TT creation

0.2M

↑FCR

Complaints calls

20%

General improvement of Service Quality / Customer Experience will help to reduce potential number of complaints and will reduce number of calls

Assumed only 1.23% of all calls are related to technical

0.07M

↓ TT

£ 1.5 M
per year

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Group T – Technology Operations and Service Management Savings

Group T

Savings in Technology Operations and Service Management

Reduced number of End Users TT, less time for demarcation per TT
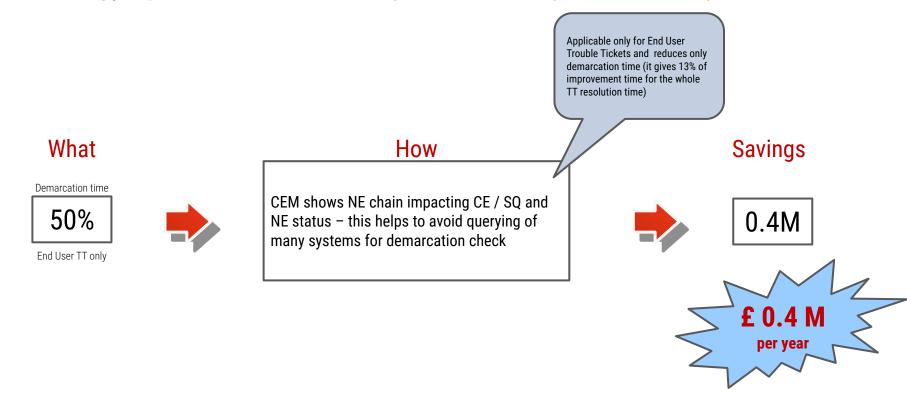
0.4 Mio

Summary (details in further slides):

✔ Reduction of AHT by automated demarcation within the End User TT resolution

    ✔ CEM Platform allows to demarcate the issue automatically

    ✔ Demarcation includes demonstration of the NE in the chain

    ✔ Demarcation includes statistic and status per NE

    ✔ It helps to save time and not to address to many systems within the demarcation

    ✔ In BC the time reduction (for demarcation only) is counted on 50% level

✔ Expected savings start from 0.4 Mio GBP per annum

By experience from many MS projects Huawei foresees even higher benefits

Technology Operations OPEX Savings Estimation (EU TT related)

Applicable only for End User Trouble Tickets and reduces only demarcation time (it gives 13% of improvement time for the whole TT resolution time)

What

Demarcation time

50%

End User TT only

How

CEM shows NE chain impacting CE / SQ and NE status – this helps to avoid querying of many systems for demarcation check

Savings

0.4M

£ 0.4 M

per year

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Business Services − Efficient Operation and extra Revenue

Group B

Revenue Generating by Business Services (CEM Monetization)

B2B Support, SLA Reporting, Account Management

1.3 Mio

Summary (details in further slides):

✔ Enterprise Monitoring and SLA Management
  ✔ Automated operations by CEM Platform will allow to significantly save OPEX
  ✔ Additional revenue / benefits were not counted here:
    ✔ Huawei has a dedicated Use Case Enterprise Assurance
    ✔ Estimation of extra revenue by UC Enterprise Assurance requires more input from EE
    ✔ Huawei suggests to have a workshop with EE to estimate additional value for EE
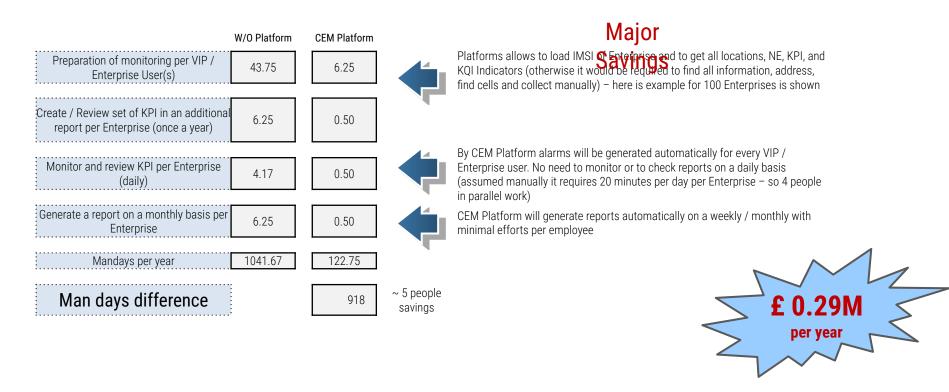
✔ New SLA offers for EE Enterprise Customers (per year)
  ✔ SLA and KQI* visibility for CE will be given to Enterprises
  ✔ BC calculation includes expenses for the network optimization to fulfill SLA

✔ Expected savings start from 1.3 Mio GBP per annum

Extra support for Enterprises / B2B customers and Account Management

* KQI − Key Quality Indicator

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Enterprise Monitoring and SLA Management

	W/O Platform	CEM Platform	
Preparation of monitoring per VIP / Enterprise User(s)	43.75	6.25	
Create / Review set of KPI in an additional report per Enterprise (once a year)	6.25	0.50	
Monitor and review KPI per Enterprise (daily)	4.17	0.50	
Generate a report on a monthly basis per Enterprise	6.25	0.50	
Mandays per year	1041.67	122.75	
Man days difference		918	~ 5 people savings

Major Savings

Platforms allows to load IMSI of Enterprise and to get all locations, NE, KPI, and KQI Indicators (otherwise it would be required to find all information, address, find cells and collect manually) – here is example for 100 Enterprises is shown

By CEM Platform alarms will be generated automatically for every VIP / Enterprise user. No need to monitor or to check reports on a daily basis (assumed manually it requires 20 minutes per day per Enterprise – so 4 people in parallel work)

CEM Platform will generate reports automatically on a weekly / monthly with minimal efforts per employee

£ 0.29M
per year

Only OPEX savings are counted (Enterprise appreciation – is a bonus)

Enterprise Monitoring and SLA Management

Approach:

✔Enterprise gets SQ reports

✔Either automated reports or online portal can be given*

✔Enterprise pays 5% more on a monthly basis

✔Assumed – 10% of customers would go for it

Benefits:

✔CEA* is a strong differentiation factor for Enterprises

✔Such an approach can help to secure business

✔Either to reduce churn or to increase market share

✔Assumed 0.1% market share increase

Outcome:

✔Accumulated income will be completely spent for dedicated optimization

✔So it will become a Service Quality Assurance approach

or

✔No price increase – optimization costs to be covered by benefits (See above)

**£ 0.98M
per year**

Only OPEX savings are counted (Enterprise appreciation – is a bonus)

* CEA – Customer Experience Assurance

Network Strategy and Core − Efficient Operation and extra Revenue

Group N

Efficient Operations in Network Strategy and Core Support

Efficient planning, roaming support, LTE users migration

2.5 Mio
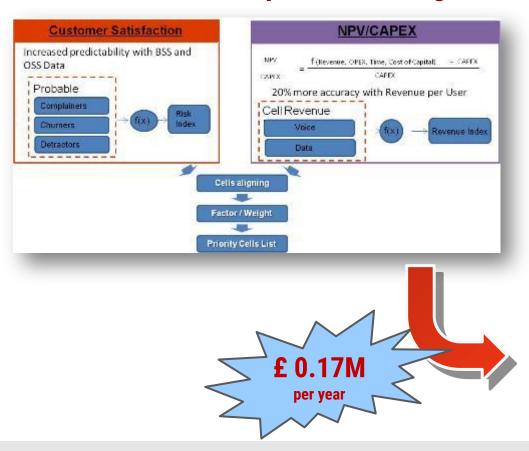
Summary (details in further slides):

✔Smart Investments Planning Approach (Traffic / ARPU / Complaints driven)

    ✔Analysis and setting up priorities for Cell Planning / Expansion

    ✔Analysis done by ARPU, Complaints, VIP, etc

    ✔Only OPEX savings for ARPU driven Planning Process are counted

✔2G-3G-4G Users Migration (per year)

    ✔Identification of the users having LTE capable handset and not using LTE network

    ✔Analysis can be done either to identify users with no subscription or wrong configuration

    ✔Potential revenue increase (by 5% for 0.5% of only postpaid subscribers)

✔Roaming Customers Traffic-Churn reduction

    ✔Analysis of the location / hotspots where EE lose their roamers (due to insufficient coverage)

    ✔Recovery of 1.5% of roamers is considered as a benefit for the use case

✔Expected savings start from 2.5 Mio GBP per annum
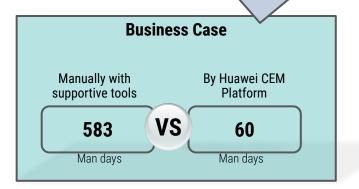
Extra support for Enterprises / B2B customers and Account Management

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Traffic / ARPU / Complaints Planning driven − OPEX Savings

Customer Satisfaction

Increased predictability with BSS and OSS Data

Probable
- Complainers
- Churners
- Detractors

f(x) → Risk Index

Cells aligning → Factor / Weight → Priority Cells List

NPV/CAPEX

$$NPV/CAPEX = \frac{f(\text{Revenue, OPEX, Time, Cost of Capital}) - CAPEX}{CAPEX}$$

20% more accuracy with Revenue per User

Cell Revenue
- Voice
- Data

f(x) → Revenue Index
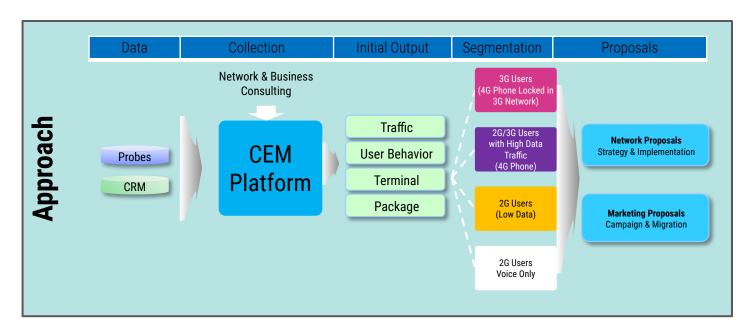
By ARPU / Complaints driven Planning EE can achieve better ROI and generate new revenue streams − all those will bring extra benefits for EE, which are not presented in BC at the moment (extra bonus)

£ 0.17M per year

Business Case

Manually with supportive tools		By Huawei CEM Platform
583	VS	**60**
Man days		Man days

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2G-3G-4G Users Migration − Additional Revenue Generation

Approach

Data	Collection	Initial Output	Segmentation	Proposals

Network & Business Consulting

Probes

CRM

CEM Platform

Traffic

User Behavior

Terminal

Package

3G Users (4G Phone Locked in 3G Network)

2G/3G Users with High Data Traffic (4G Phone)

2G Users (Low Data)

2G Users Voice Only

Network Proposals
Strategy & Implementation

Marketing Proposals
Campaign & Migration

Assumed: 0.5% of current postpaid customers per year to be migrated
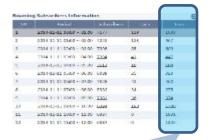
Assumed: 5% of monthly ARPU increased per user

1.3 Mio GBP additional revenue per year

Roaming Business Leakage Retention – Additional Revenue

Step1: Lost roaming user detection

Step2: Collect lost roamer location details (Cell ID)

Step3: Prioritize network quality optimization
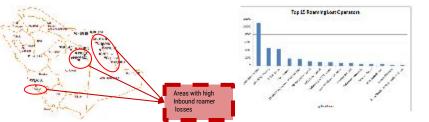
Huawei CEM Platform can demonstrate areas with last roamers activity – areas of roamers losing

Areas with high Inbound roamer losses

Assumed: due optimized network the number of active inbound roamers will increase by 1.5%

This is expected to bring min 1 Mio GBP per year

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Digital Marketing – data usage / CE / SQ Info via MyApp and online*

Group D

Digital and Marketing Impact to OPEX Savings

Digital channels reduce Customer Care Support efforts

0.9 Mio
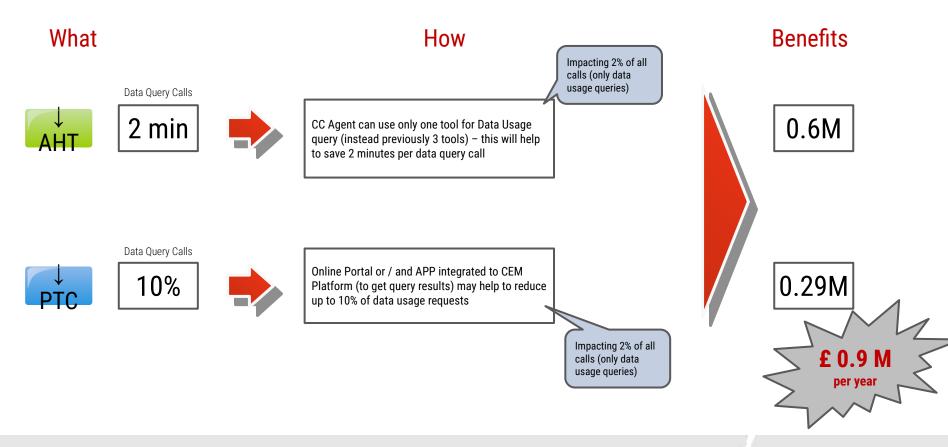
Summary (details in further slides):

✔ Data usage and network experience details to customers via MyEE and online:

    ✔ Ability for end users to query / see data usage via EE online or App

    ✔ Customer Care efforts reduction due to digital channels migration

✔ Simplification of the data queries by CC Agent by only one tool (instead of existing three)

    ✔ Assumed agent can query information from IT system by 2 minutes shorter than before

    ✔ Applicable only for the data query calls (assumed 1.7% of all calls)

✔ Expected savings start from 0.9 Mio GBP per annum

This case requires more detailed analysis dependant on number of queries

* As there is no specific technical requirement in RFP for CEM tool to support MyEE or online complaint, MyEE or online complaint support is out of the proposal scope and needs further discuss with EE

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Data Query Calls Efficiency Improvement – OPEX savings

What

How

Benefits

Data Query Calls

2 min

AHT

CC Agent can use only one tool for Data Usage query (instead previously 3 tools) – this will help to save 2 minutes per data query call

Impacting 2% of all calls (only data usage queries)

0.6M

Data Query Calls

10%

PTC

Online Portal or / and APP integrated to CEM Platform (to get query results) may help to reduce up to 10% of data usage requests

Impacting 2% of all calls (only data usage queries)

0.29M

£ 0.9 M

per year

Appendix & Supportive Materials

1. SmartCare® Business Value on a Customer Case

2. Use Cases Set

3. Global References & Why HUAWEI

Huawei SmartCare®
Service Quality & Customer Experience Management

3V Demo – Supportive Materials

Very Important Person

96
⬆0%

Satisfied Users

92%

V.I.P.	V.V.I.P.
96	98

Very Important Service

76
⬆2.98%

Satisfied Users

73%

WEB	VOICE	STREAMING	WECHAT
69	92	75	74

Very Important Area

75
⬆2.28%

Satisfied Users

72%

CAMPUS	HIGH-SPEED RAILWAY	HOSPITAL	GOVERNM-ENT	INDUSTRY ESTATE
74	78	73	70	80

Last Update 2016-9-6 15:19 PM   Update Interval 00:04:50

V.I.P.   V.V.I.P.

96
 0%

Customer Experience Index
88%
% Satisfied Users

V.I.S.
76
 3.98%

V.I.A.
75
 3.98%

TREND OF CUSTOMER EXPERIENCE

Customer Experience Index   % Satisfied Users

SERVICE EXPERIENCE

Web	Streaming	Voice	IM(WeChat)
96	88	97	98
1.21%	0.12%	1.11%	2.31%

Device Cause — 38.1%
RAN Cause — 16.9%
Oth Cause — 17.2%
OTT SP Cause — 25.9%

WORST EXPERIENCE USERS

MSISDN	CEI	Abnormal Event #	Very Annoyed Call
13657*****	54	6	zone1
18828*****	61	18	zone2
18736*****	61	21	zone3
13869*****	65	8	zone4
13893*****	65	15	zone5

Device Cause — 58.4%
RAN Cause — 9.3%
Oth Cause — 0%
OTT SP Cause — 32.3%

QUALITY ISSUE MAP

SHANGHAI UNICOM EXPERIENCE MANAGEMENT DASHBOARD

V.I.P.
96
0%

V.I.S.
76
2.98%

V.I.A.
75
2.28%

Customer Experience Index
72%
% Satisfied Users

TREND OF CUSTOMER EXPERIENCE

Customer Experience Index — Industry Estate — Campus — Government — Hospital — High-speed Railway

AREA EXPERIENCE BENCHMARKS

Campus	High-speed Railway	Hospital	Industry Estate	Government
74	78	73	80	70

Web	Streaming	Voice	Wechat
65	70	90	68
3.23%	1.78%	2.65%	4.25%

AREA EXPERIENCE MAP

3V Demo – end of supportive materials

First 30 days journey – Supportive Materials

First 30-Day Journey

Winner of "Best CEM Culture Transformation Program"

Business Objectives :

- [ ] Improve Position in High Value Post-paid Market
- [ ] Exploit First Mover Advantage from Early LTE Launch
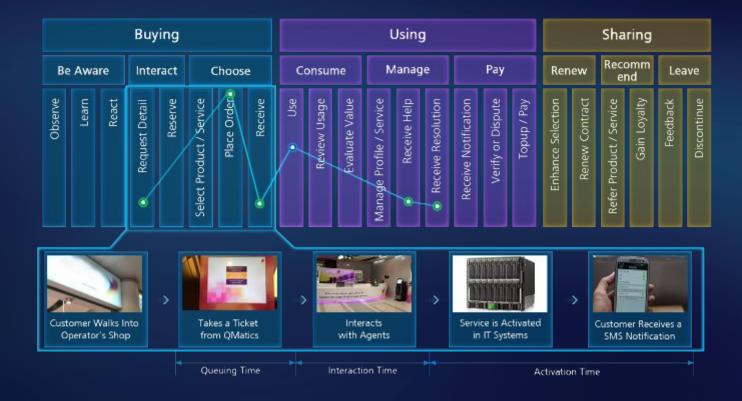
Customer Experience Management :

- [ ] First 30-day Experience Assurance (ICT Journey)
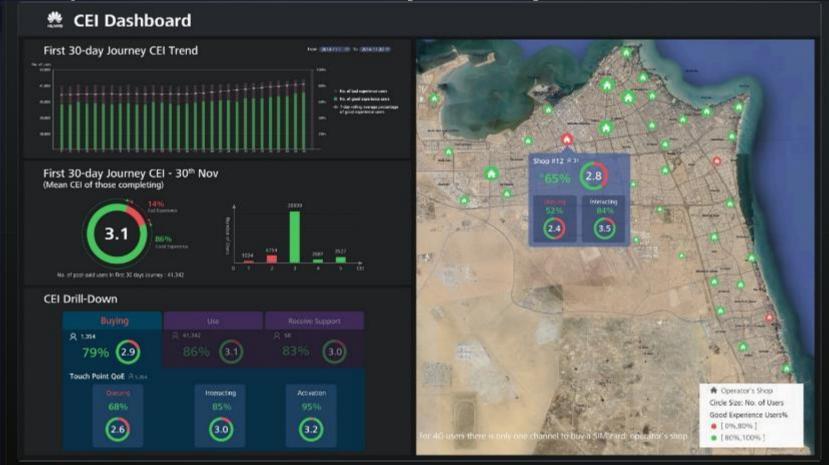
Complete View of the 30-day Journey

Complete View of the 30-day Journey

First 30 days journey – end of supportive materials
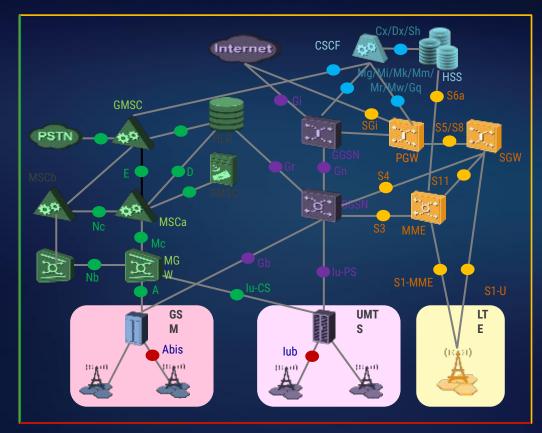
Network Data Sources
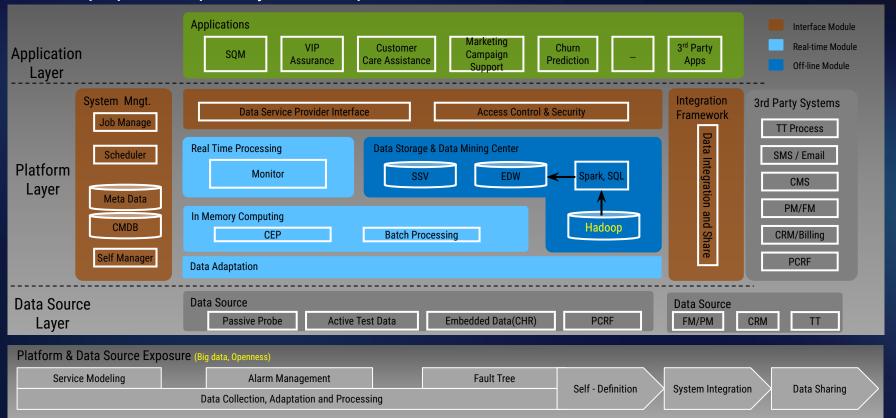
Domain	Interface	Protocol
Wireless	Abis	RR/BTSM
	Iub	NBAP
Core CS	A	BSSAP
	IuCS	RANAP
	Nc	BICC/ISUP/SIP
	Nb	RTP/RTCP
	Mc	H.248
	C/D/E/F	MAP
	CAP	CAMEL
Core PS	Gb	BSSGP
	IuPS	RANAP
	Gr	MAP
	Gn	GTP
	Gi	Gi-U, Gi-Radius
IMS	Gm, ISC, Sh/Dh, Cx/Dx, Mr, Mx, Mi, Mj, Mg, Mw DNS	SIP/Diameter
LTE	S1-MME	S1-AP
	S1-U	GTP-U
	S6a	Diameter
	S5/S8	GTP
	S11	GTP-C
	SGi	TCP/UDP
	S4	GTPv2
	S3/S10	GTP
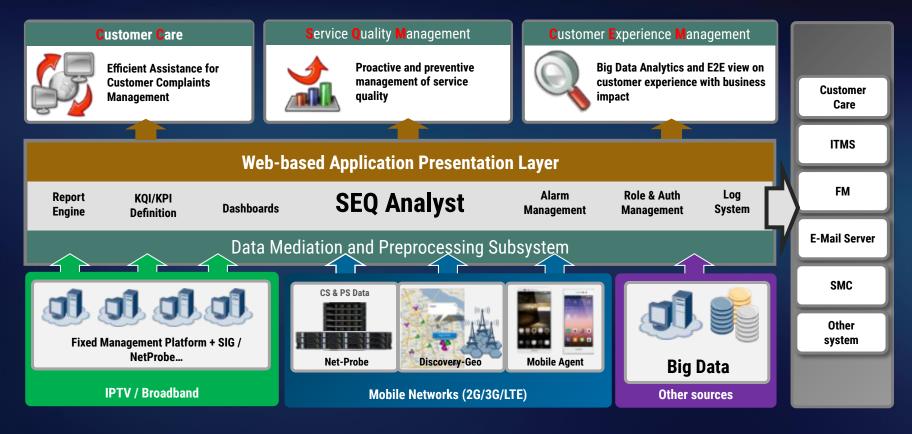
CEM Platform to deliver value through use cases

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Customer Care

Efficient Assistance for Customer Complaints Management

Service Quality Management

Proactive and preventive management of service quality

Customer Experience Management

Big Data Analytics and E2E view on customer experience with business impact

Web-based Application Presentation Layer

| Report Engine | KQI/KPI Definition | Dashboards | **SEQ Analyst** | Alarm Management | Role & Auth Management | Log System |

Data Mediation and Preprocessing Subsystem

Fixed Management Platform + SIG / NetProbe…

IPTV / Broadband

CS & PS Data

Net-Probe

Discovery-Geo

Mobile Agent

Mobile Networks (2G/3G/LTE)

Big Data

Other sources

Customer Care

ITMS

FM

E-Mail Server

SMC

Other system

Value through Use Cases for Operator's needs
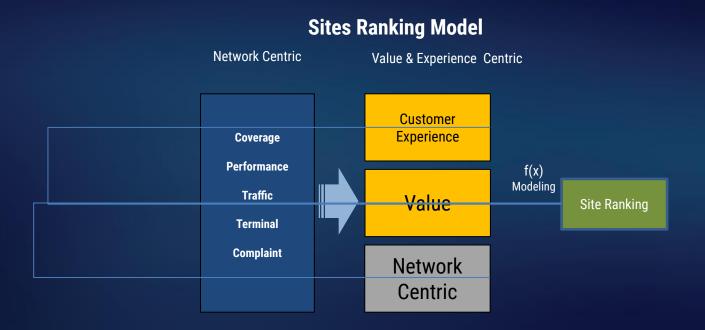
ARPU Driven Network Planning – Supportive Materials
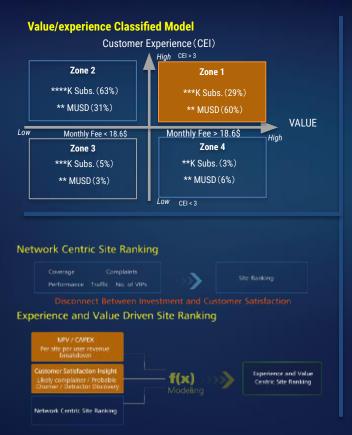
Quality Brand Experience & Value Driven Site Ranking

Sites Ranking Model

Quality Brand Experience & Value Driven Site Ranking

Value/experience Classified Model

Customer Experience（CEI）

High CEI > 3

Zone 2	Zone 1
****K Subs.（63%）	***K Subs.（29%）
** MUSD（31%）	** MUSD（60%）

Low Monthly Fee < 18.6$ Monthly Fee > 18.6$ VALUE   *High*

Zone 3	Zone 4
***K Subs.（5%）	**K Subs.（3%）
** MUSD（3%）	** MUSD（6%）

Low CEI < 3

Network Centric Site Ranking

Coverage   Complaints
Performance Traffic No. of VIPs   →   Site Ranking

Disconnect Between Investment and Customer Satisfaction

Experience and Value Driven Site Ranking

NPV / CAPEX
Per site per user revenue breakdown

Customer Satisfaction Insight
Likely complainer / Probable Churner / Detractor Discovery

Network Centric Site Ranking

f(x) Modeling → Experience and Value Centric Site Ranking

23.7%

Matched with Traditional KPI Focused List

● Zone 4 Target Sites

○ Traditional KPI Focused TOP 1000 Sites

Quality Brand Experience & Value Driven Site Ranking

Quality Brand Experience & Value Driven Site Ranking

ARPU Driven Network Planning – end of supportive materials
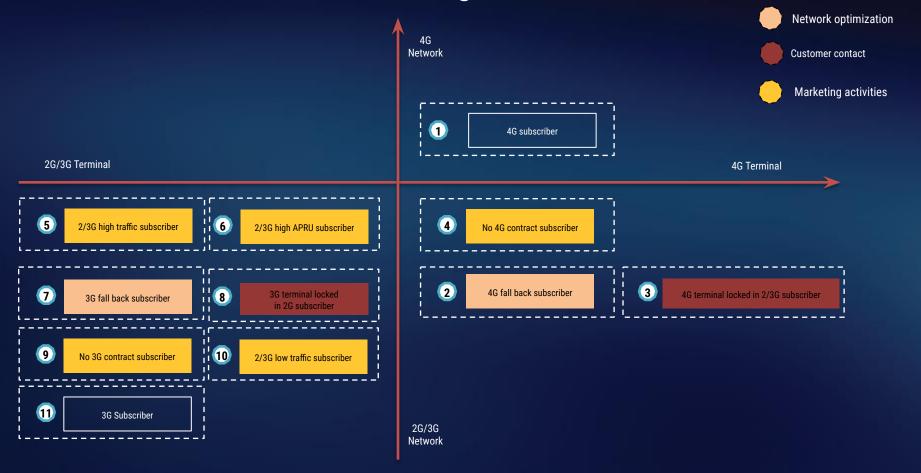
Migration Analytics to Action Overview
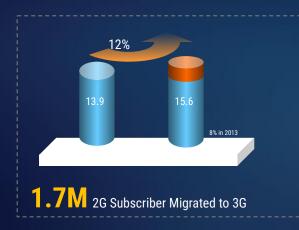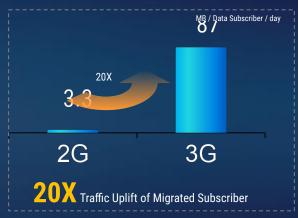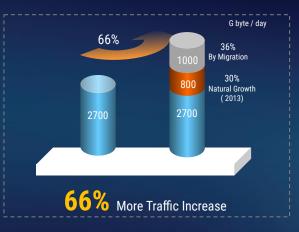
User Segmentation

A | **Fall back subscriber** : 4G device terminal using 2/3G network
- **2** 4G fall back subscriber
- **7** 3G fall back subscriber

B | **Terminal locked subscriber** : 4G device model terminal locked in 2/3G network
- **3** 4G terminal locked in 2/3G subscriber
- **8** 3G terminal locked in 2G subscriber

C | **Potential subscriber** : Need marketing support
- **4** No 4G contract subscriber
- **9** No 3G contract subscriber
- **5** 2/3G high traffic subscriber
- **6** 2/3G high APRU subscriber

Influence factors

Network
- Coverage
- RF Setting
- Others

Marketing
- Terminal
- Contract
- Package
- Others

Action

Network service quality optimization

Terminal sales promotion

Customer care & marketing

Package adjustment

Solution Overview

Roaming Quality Monitoring

Select carri... | Select KPI | Configure thr... | Perfor m mo nit...
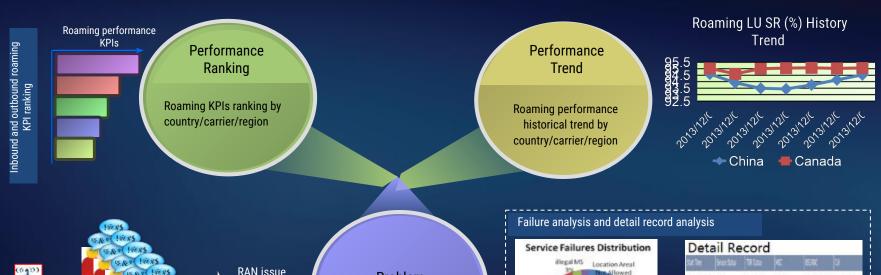
Key Monitored Contents:

- Number of inbound and outbound roamers

- Historical trend for the number of inbound and outbound roamers

- Specified KPIs and carrier

- Top poor-quality carriers ranking

- Supports drilldown to trend analysis.

- Interfaces include MAP, CAP, ISUP, Gp, IuPS, S1MME, S8, and S6a.

- KPIs of LU, Voice, SMS, and Data services

Roaming Mo...

▽ Roamers [2014-09-29 14:00~15:00 GMT+08:00]

Inbound Roamers
34687
Delta Threshold:-1849

Outbound Roamers
13058
Delta Threshold:-5

40,000
30,000
20,000
10,000

19:00   21:00   23:00   01:00   03:00

☑ Inbound Roamers   ☑ Outbound Roamers

Performance:7Days

21:30 09-28 23:30 09-29 01:30 09-29 03:30 09-29 05:30 09-29 07:30 09-29 09:30 09-29 11:30 09-29 13:30 09-29 15:30

Operators Ranking

Status	Operator
	Du--United Arab Emirates
	Telefonica O2 (CellNet)--United Kingdom
	Vodafone(QATAR)--Qatar
	Vodafone(EGYPT)--Egypt
	Al-Wataniya--Kuwait

Performance Analysis

Roaming performance KPIs

Inbound and outbound roaming KPI ranking

Performance Ranking

Roaming KPIs ranking by country/carrier/region

Performance Trend

Roaming performance historical trend by country/carrier/region

Roaming LU SR (%) History Trend

95.5
94.5
93.5
92.5

2013/12/C 2013/12/C 2013/12/C 2013/12/C 2013/12/C 2013/12/C 2013/12/C

China   Canada

RAN issue

SP issue

Device issue

……

Problem Demarcation

Failure analysis and detail record analysis

Service Failures Distribution

Illegal MS 3%
Location Areal Nos Allowed 2%
No Suitable cells 13%
Congestion 82%

Detail Record

Steering Analysis

Steering identification

Identify steering status of carriers in different countries

Country	Operator	LU Attempt	Steering	Steering Success Rate
A	XXX	59545	59545	100%
B	XXX	46324	46324	100%
C	XXX	41037	28746	70%
D	XXX	36928	23654	64%
……	…	…	…	

Steering Analysis

Steering failure analysis
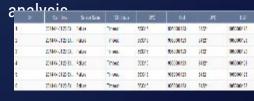
Steering failure code distribution

Steering detail record analysis

Best Practice

Roaming KPI Analysis

Select query criteria, including Time Period, RAT, Roam Type.

Top 10 country/Carrier list. And then select the indicator such as Location Update Success Rate.

Using History Analysis function to see the indicator history trend.

Roaming KPI Demarcation

Using failure analysis and detail record analysis to demarcation Roaming failure.

Failure cause category and cause analysis distribution for demarcation roam failure.

Detail Record analysis to see the detail failure information and signal flow

Suggestions:

1. Confirm the roaming user has been configured in the network.

2. Need check MAP log for detail reason of network failure.
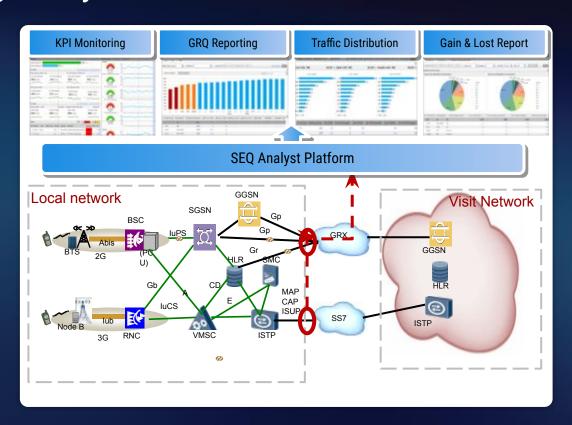
International Roaming Analysis

Background:
- The right partnerships are critical for optimal roaming revenues(Best Roaming Experience and Appropriate Rate);
- The operator need detailed, prioritized and actionable information to avoid roaming revenues lost;
- The operator need finely solution to optimize network for increase roaming traffic

Value Proposition:
- Increase roaming traffic
    - Fast fine and locate inbound roaming barriers
    - Indentify the outbound roaming destination gaps
- Avoid roaming revenue lost
    - Detect roaming fraud behaviors
    - Provide proofs for controversial roaming billing settlement
- Reduce MTTR of roaming issue
    - Real-time roaming traffic and performance monitoring
    - Deeply root cause analyze base on per roamers
- Gain new business opportunity
    - Provide competitive SLA to gain more roaming partners
    - Up-sell promotion base on rich roaming service analysis

KPI Monitoring | GRQ Reporting | Traffic Distribution | Gain & Lost Report

SEQ Analyst Platform

Local network

Visit Network

Roaming Business More Effectively

Analysis roaming KPI and alarm event.

Analyze roaming failure cause

Best Partners and New Partners Insight

Partners Network Quality Insight

1. Fraud : HPLMN send bar to VPLMN to limit the calling right , but VPLMN not receive the bar

2. Steering : HPLMN steer roamers onto best partners networks to ensure QoS and cut costs

3. Anti-Steering : VPLMN reserve the inbound roamers onto network to increase revenue

Anti-steering is proscribed by the GSMA

The Customized Report for Specific Roaming Scenario (Gain and Lost CELL List)

Detect the inbound Roamer first visit CELL

Detect the inbound Roamer lost CELL

Roaming Analyses help operator run roaming network more effectively
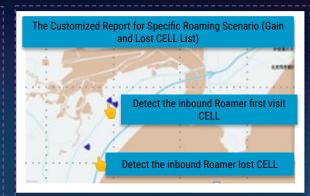
- Real-time roaming traffic and performance analysis, deeply cause analyze base on per roamers, It can help operator reduce MTTR of roaming issue and gain new business opportunity
  - ✔ Which operators have the bad or best networks? Why cannot connect to network?
  - ✔ Which operators should be your best partner with?
  - ✔ Which operators should be your new partner with?

Roaming Audit help operator avoid roaming revenue lost

- Roaming audit can help operators to prevent revenue losses through find:
  - ✔ Fraud calls: Cast back the lost revenue
  - ✔ Steering: Perfect QoS and cut costs
  - ✔ Anti-steering: Visit PLMN Increase roaming revenue , but Home PLMN is a casualty

Roaming Gain & Lost analyses help operator promote the roaming traffic

- Roaming Gain & Lost analyses can help operator to increase number of first visiting roamers and roaming traffic through optimize following cells:
  - ✔ Top cells for roamers may be lost to competitors
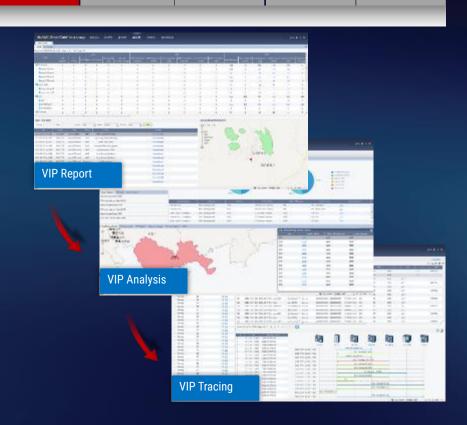 - ✔ Hot cells for first visiting roamer

VIP Assurance

360°VIP Understanding:

- What application the VIP is using.
    - HTTP, Video, MMS, WAP, FTP, Email, Voice, SMS
- Where the VIP is.
- What handset the VIP using.
- What network assets are being using.
- What errors the customer experiencing.

Used to:

- Understand the VIP Failure in real-time.
- Fast analyze any problem of VIP.
- Measure the impact of service decline to VIP.
- Provide data source to evaluate the QOE of VIP.
- Steer the optimization to improve VIP experience.

VIP Report

VIP Analysis

VIP Tracing

VIP and VIP Groups Real Time Monitoring

VIP Management :

- 1 000 VVIPs Real-time Care

- 2 000 VIP Groups Under Real-Time Care

- Voice service and packet service.

- Drill down analysis to call trace

Customer Group Management:

- Grouping customer by data consumption volume, spending characteristics, device, etc.

- Analysis by distribution, terminal, root cause

VIP Group CS Weekly Report

VIP Group PS Weekly Report

VVIP Monitoring --1 minute interval

CS Service : Voice, SMS
PS Service : MMS, Web, WAP, Streaming, Email …

VIP Subscriber Failure Alert

VIP Subscriber Location Map

VIP Group Management –5 minutes interval

VIP Group CS and PS Service Quality monitoring

VIP Experience Insight

Start from 21:00,09 May 2016
Her video stalled frequently

User 1, High revenue generator
Like surfing in internet and prefer
Youtube

Experience Insight

Real-time KQI alarm triggered

Failure history analysis

Location Analysis

Device Analysis

Time	User	Service	Failures
2012-10-09 21:00	User 1	Youtube	Streaming Stall Frequency over threshold
2012-10-09 21:01	User 1	Youtube	Streaming Stall Frequency over threshold
2012-10-09 21:03	User 1	Youtube	Streaming Stall Frequency over threshold

Device Type	Device Brand	Operation System	Service Failures	Service Requests	Service Failure rate(%)
C5	Nokia	S60V3	6	10	60%

SGSN
City
Province

JinYu

Discover VIP's service abnormity within 1 minute

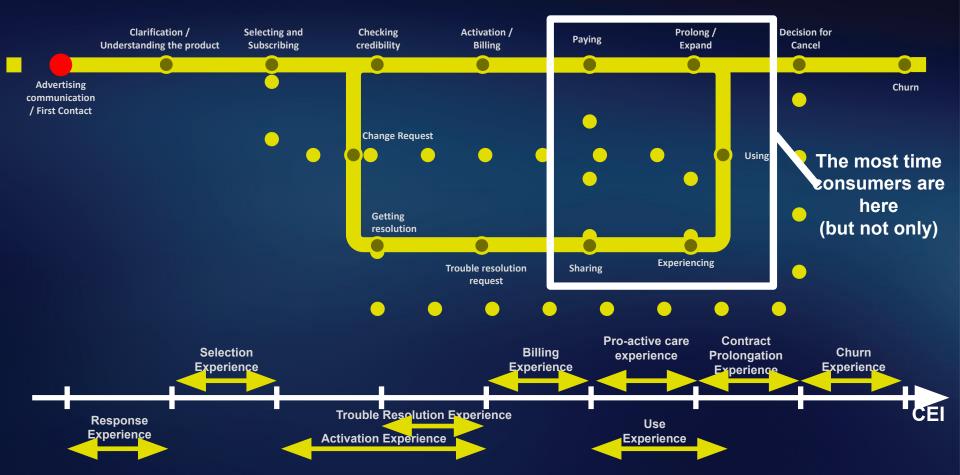# Customer Experience from whole Customer Journey

Consumer

- ✔ Advertisement
- ✔ Product Information
- ✔ Product Comparison
- ✔ Subscribing
- ✔ Activating
- ✔ Using
- ✔ Paying
- ✔ Requesting for Help
- ✔ Resolving
- ✔ Prolonging / Canceling

Here are touch points within a complete Customer Journey

Journey and Touch Points – Experience is in between

Clarification / Understanding the product

Selecting and Subscribing

Checking credibility

Activation / Billing

Paying

Prolong / Expand

Decision for Cancel

Advertising communication / First Contact

Churn

Change Request

Using

The most time consumers are here (but not only)

Getting resolution

Trouble resolution request

Sharing

Experiencing

Selection Experience

Billing Experience

Pro-active care experience

Contract Prolongation Experience

Churn Experience

Response Experience

Trouble Resolution Experience

Activation Experience

Use Experience

CEI

KPI from each Point to create CEI of End User

CEI – Customer
Experience Indicator

Expecting

Selecting

Buying

Using

Sharing

Prolonging

User

$CEI = F(CEI_1, CEI_2, .., CEI_N)$

2 4 6 8 10

Some Touch
Points
examples
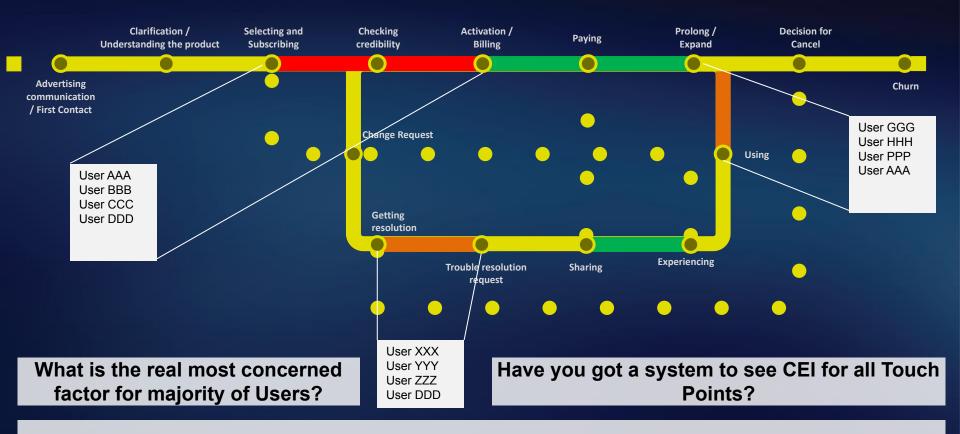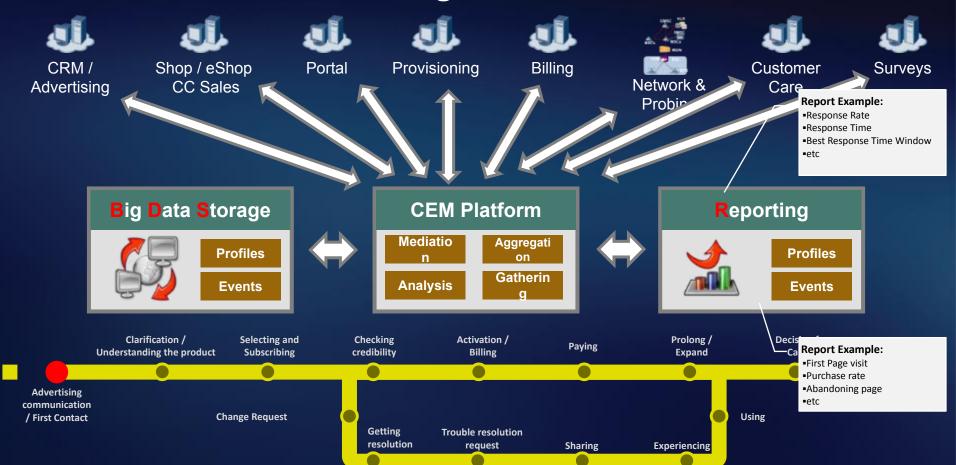
Do you already cover complete Customer Journey for your CEM?

HUAWEI
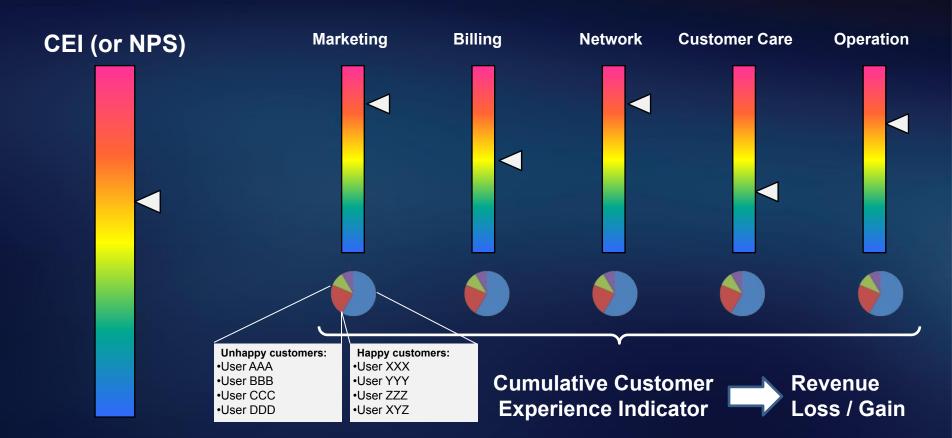
How it works – Info to be gathered from whole ICT

HUAWEI

CRM / Advertising

Shop / eShop CC Sales

Portal

Provisioning

Billing

Network & Probing

Customer Care

Surveys

Report Example:
- Response Rate
- Response Time
- Best Response Time Window
- etc

Big Data Storage

Profiles

Events

CEM Platform

Mediation	Aggregation
Analysis	Gathering

Reporting

Profiles

Events

Report Example:
- First Page visit
- Purchase rate
- Abandoning page
- etc

Clarification / Understanding the product

Selecting and Subscribing

Checking credibility

Activation / Billing

Paying

Prolong / Expand

Decision for Care

Advertising communication / First Contact

Change Request

Getting resolution

Trouble resolution request

Sharing

Experiencing

Using

See at whole and by details to improve by Influencer

CEI (or NPS)

Marketing Billing Network Customer Care Operation

Unhappy customers:
- User AAA
- User BBB
- User CCC
- User DDD

Happy customers:
- User XXX
- User YYY
- User ZZZ
- User XYZ

Cumulative Customer Experience Indicator → **Revenue Loss / Gain**

Huawei's CEM Solution under the name SmartCare®

Experience Visualization
- Customer Journey definition, E2E experience gathering and visualization

CEM Solution

Experience Problems Quick Demarcation
- Experience Problem demarcation to decrease customer complaints

Service Quality Management
- Huge application analysis with real-time monitoring for the service quality visualization

Various Report/Use Case
- Various report generation based on Big Data Analysis

CEM or SQM
What is the difference?

What kind of service we manage quality for?

Simple Question

What kind of services you deliver to your End Users?

?

Voice

SMS

Internet

WAP / MMS

M2M

YouTube?

Facebook?

Instagram?
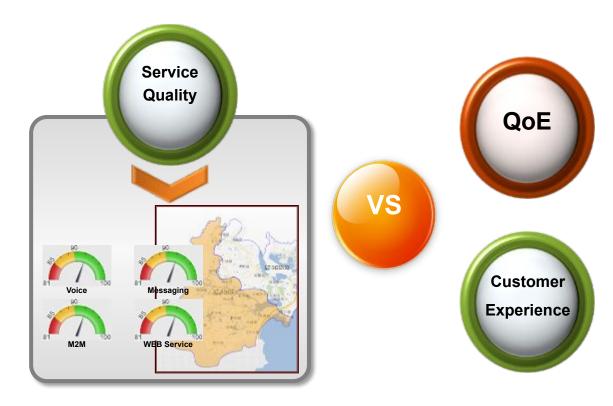
It is hard to manage quality of services for non-own services

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From QoS via Service Quality to Customer Experience

QoS

Defined by ITU many years ago:

✔ Throughput

✔ Latency

✔ Packet Loss

✔ Jitter

Service Quality

Voice

Messaging

M2M

WEB Service

VS

QoE

Customer Experience
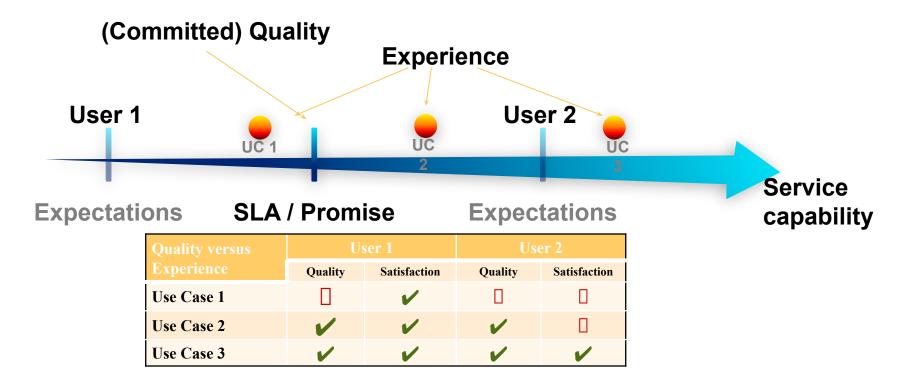
SQM is a typical entity existing almost in all network operators

HUAWEI

From Service Quality to Customer Experience

(Committed) Quality

Experience

User 1

User 2

UC 1

UC 2

UC 3

Expectations

SLA / Promise

Expectations

Service capability

Quality versus Experience	User 1		User 2	
	Quality	**Satisfaction**	**Quality**	**Satisfaction**
Use Case 1	☐	✔	☐	☐
Use Case 2	✔	✔	✔	☐
Use Case 3	✔	✔	✔	✔
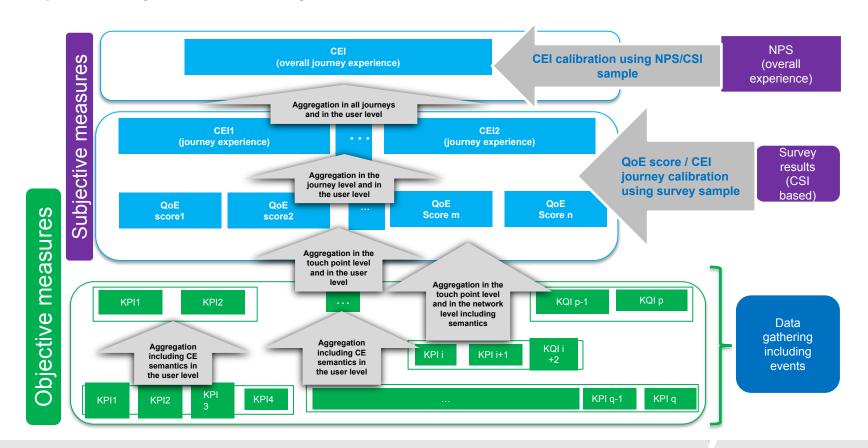
CEM correlates real Experience and Customer Expectations

HUAWEI
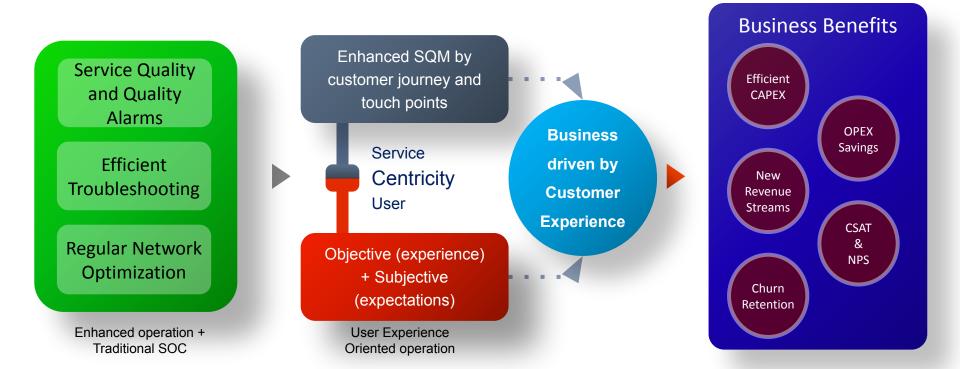
Merge of subjective and objective to have real CEI

CEM Summary – from traditional QoS to QoE driven CEM

Service Quality and Quality Alarms

Efficient Troubleshooting

Regular Network Optimization

Enhanced operation + Traditional SOC

Enhanced SQM by customer journey and touch points

Service **Centricity** User

Objective (experience) + Subjective (expectations)

User Experience Oriented operation

Business driven by Customer Experience

Business Benefits

Efficient CAPEX

OPEX Savings

New Revenue Streams

CSAT & NPS

Churn Retention

CEM is a new way of Business in Digital Telco World

HUAWEI
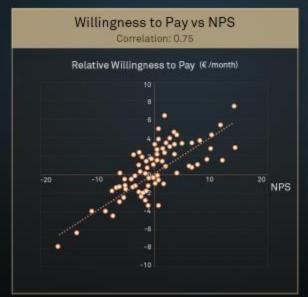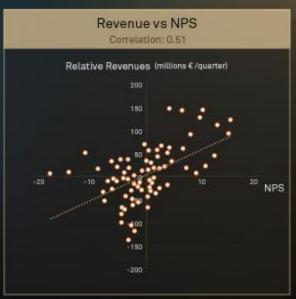
Net Promoter Score
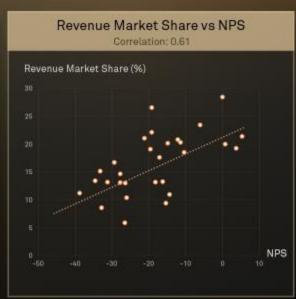
VALIDATE POSITIVE IMPACT OF IMPROVING NPS

UNCOVER NPS INFLUENCING FACTORS PER PERSONA

- Factors Where The Customer Expectation is High are HYGIENE FACTORS. Good Performance Reduce Detractors and Negative WoM.
- Factors Where The Customer Expectation is Low Offer an Opportunity to Delight. Good Performance Creates Promoters and Positive WoM.

Source: CETC Persona Research & Bain Company, 2015

PERSONA BASE NPS IMPROVEMENT APPROACH
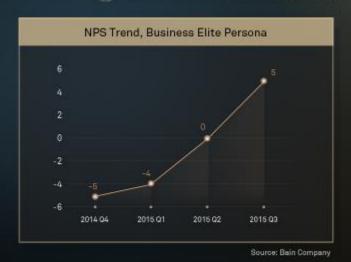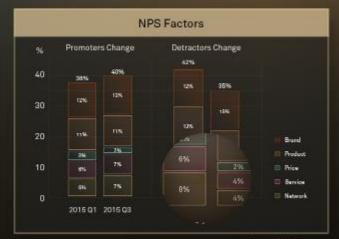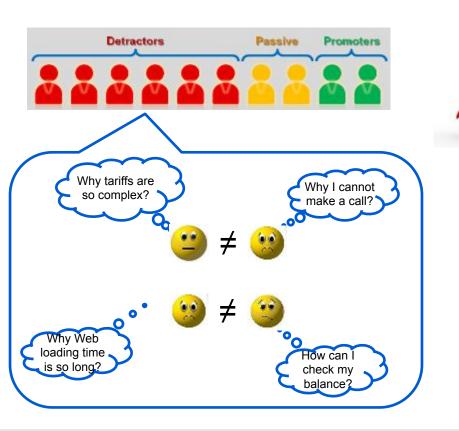## *Reduce Detractors & Monetize Promoters*

NPS Detractors – not a one but many different groups

All Users are different and their concerns are different

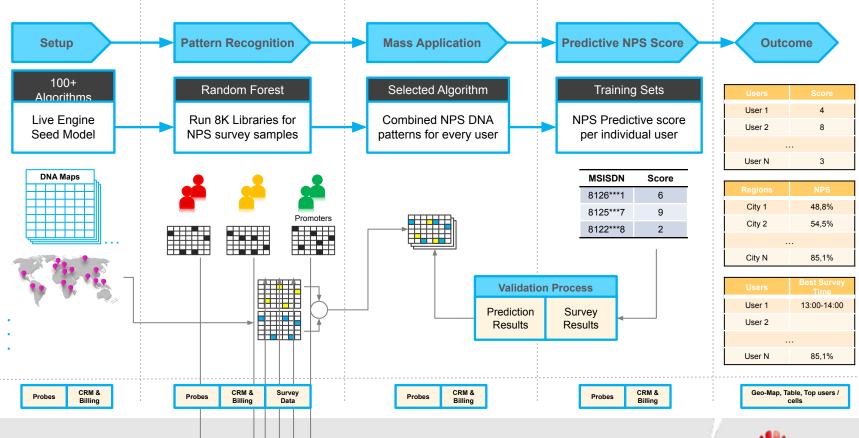We cannot simply improve NPS by same / one action(s) for all users

What to do and where to start?

Detailed view on Promoters and Detractors with particular step(s) for every group
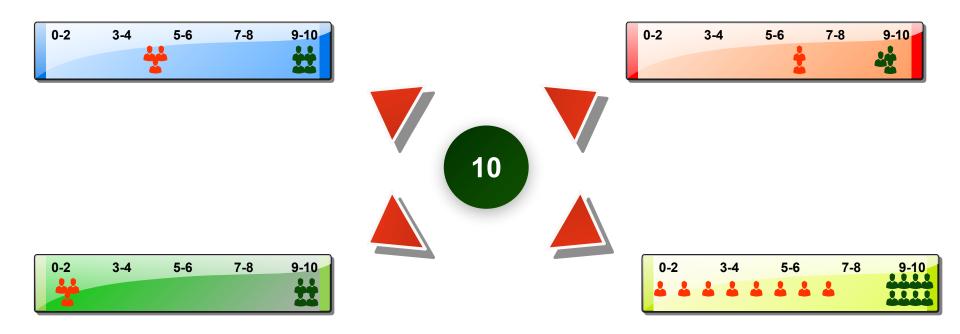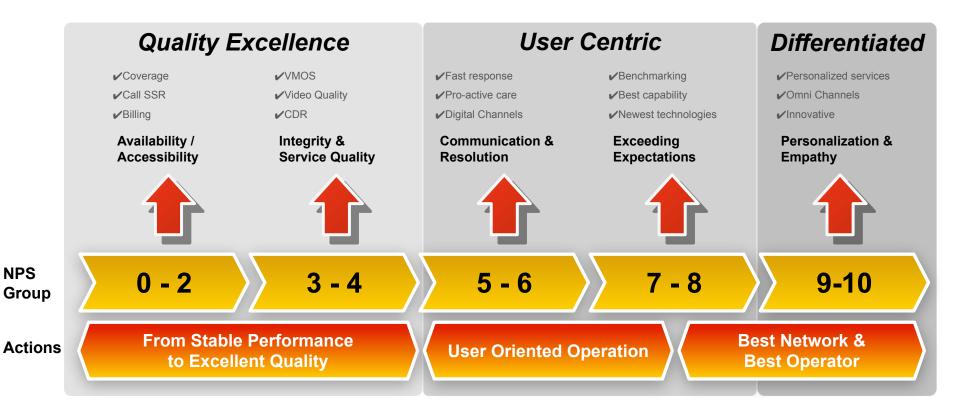
Net Promoter Score Prediction Framework

Setup	Pattern Recognition	Mass Application	Predictive NPS Score	Outcome

100+ Algorithms	Random Forest	Selected Algorithm	Training Sets
Live Engine Seed Model	Run 8K Libraries for NPS survey samples	Combined NPS DNA patterns for every user	NPS Predictive score per individual user

DNA Maps

Promoters

MSISDN	Score
8126***1	6
8125***7	9
8122***8	2

Validation Process

Prediction Results	Survey Results

Users	Score
User 1	4
User 2	8
…	
User N	3

Regions	NPS
City 1	48,8%
City 2	54,5%
…	
City N	85,1%

Users	Best Survey Time
User 1	13:00-14:00
User 2	
…	
User N	85,1%

Probes	CRM & Billing

Probes	CRM & Billing	Survey Data

Probes	CRM & Billing

Probes	CRM & Billing

Geo-Map, Table, Top users / cells

HUAWEI

Let us imagine – measured NPS is 10 (%)

| 0-2 | 3-4 | 5-6 | 7-8 | 9-10 |

10

Shall we use same improvement mechanism for every case?
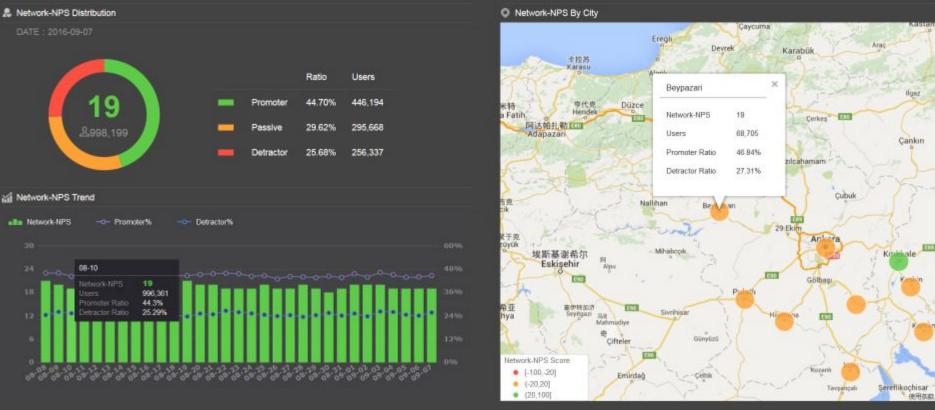
Huawei proprietary. No spread without permission.

HUAWEI

Address Expectations of every NPS Score Group

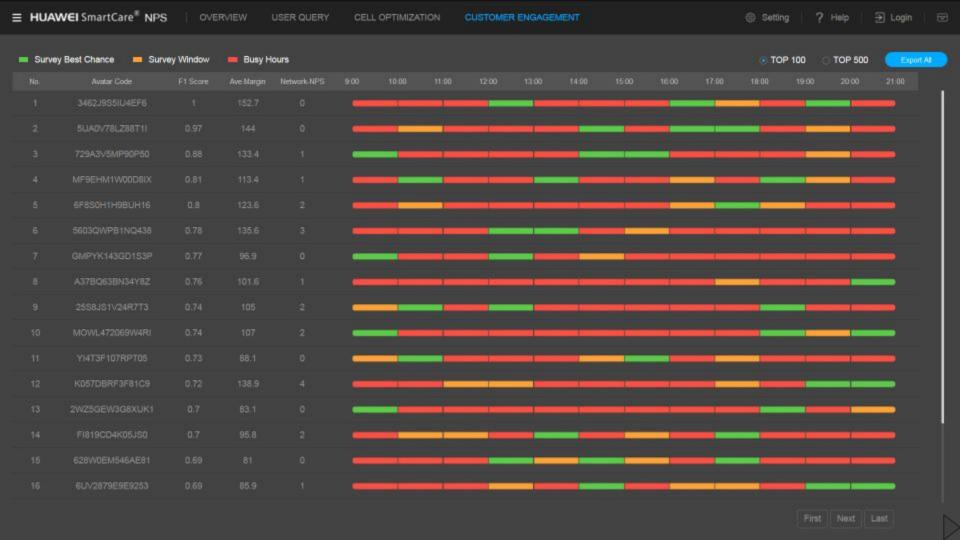## Quality Excellence

✔Coverage
✔Call SSR
✔Billing

✔VMOS
✔Video Quality
✔CDR

Availability / Accessibility

Integrity & Service Quality

User Centric

✔Fast response
✔Pro-active care
✔Digital Channels

✔Benchmarking
✔Best capability
✔Newest technologies

Communication & Resolution

Exceeding Expectations

Differentiated

✔Personalized services
✔Omni Channels
✔Innovative

Personalization & Empathy

NPS Group				
0 - 2	**3 - 4**	**5 - 6**	**7 - 8**	**9-10**

Actions	
From Stable Performance to Excellent Quality	**User Oriented Operation**	**Best Network & Best Operator**

NPS Demo

2016-08-08 — 2016-09-07   Day

Submit

NPS Type

○ Network-NPS   ○ Voice-NPS   ● Data-NPS

No.	Cell	Data-NPS	No. of Users
1	Anatolium	25	3,614
2	Kalesi	25	3,201
3	Araplar	25	2,647
4	Ahi Elvan	25	2,572
5	Susuz	25	3,390
6	Arafat Cami	24	2,468
7	Bilkent	24	3,198
8	peyami Safa	23	2,149
9	Mamak Cd	23	2,345
10	Tayland	23	2,910
11	Anitkabir	23	2,738
12	Kepir	23	3,990
13	Orhan Bey	23	2,489
14	Yukari	21	3,976
15	Natoyolu	21	2,641
16	Trt Verici	21	2,471

Anitkabir   ✕

Data-NPS	23
Promoter Ratio	63%
Detractor Ratio	40%
No. of Users	2738

Data-NPS Score
- ● [-100,-20]
- ● (-20,20]
- ● (20,100]

→ Data KQI Trend

■ Survey Best Chance   ■ Survey Window   ■ Busy Hours   ◉ TOP 100   ○ TOP 500   Export All

No.	Avatar Code	F1 Score	Ave.Margin	Network-NPS
1	3462J9S5IU4EF6	1	152.7	0
2	5UA0V78LZ88T1I	0.97	144	0
3	729A3V5MP90P50	0.88	133.4	1
4	MF9EHM1W00D8IX	0.81	113.4	1
5	6F8S0H1H9BUH16	0.8	123.6	2
6	5603QWPB1NQ438	0.78	135.6	3
7	GMPYK143GD1S3P	0.77	96.9	0
8	A37BQ63BN34Y8Z	0.76	101.6	1
9	25S8JS1V24R7T3	0.74	105	2
10	MOWL472069W4RI	0.74	107	2
11	YI4T3F107RPT05	0.73	88.1	0
12	K057DBRF3F81C9	0.72	138.9	4
13	2WZ5GEW3G8XUK1	0.7	83.1	0
14	FI819CD4K05JS0	0.7	95.8	2
15	628W0EM546AE81	0.69	81	0
16	6UV2879E9E9253	0.69	85.9	1

First Next Last

Churn Prediction – Details

Why we should manage Churn?

- New subscriber attraction cost is 3..10 times higher than retention cost

- Loyalty decrease of 5% causes 25% revenue loss

- Packages/tariffs promotion success rate is only 15% for new subscribers, while for existing subscribers it's 50%

- Annual churn decrease of 5% might increase revenue by 25-85%

FORMULA OF ANTI-CHURN
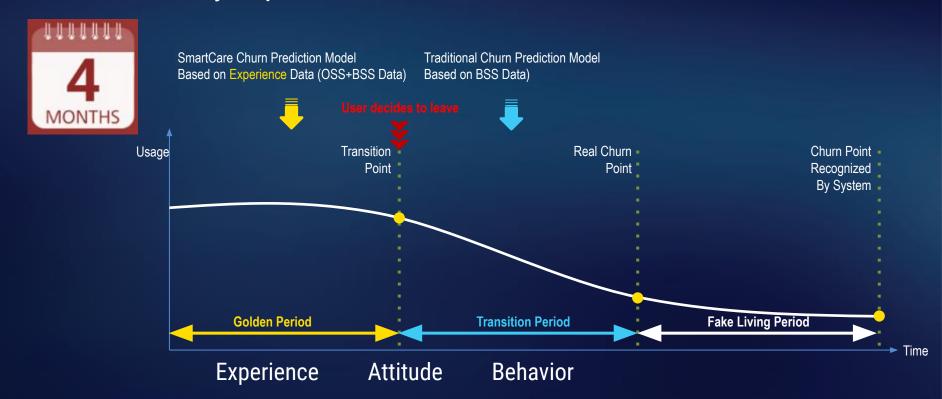
Methodology

Better Result by Experience Oriented Churn Detection

HUAWEI Churn Prediction Solution Highlight

Usage

Transition Point
Decide to leave

Real Churn Point
Change operator

Customer Experience based analytics from **OSS+BSS data,** with churn probably motivation:

Network　　Service　　Campaign　　Billing

Customer usage based analytics from **BSS data only**

Time

4 Months advanced

2-4 weeks advanced

Churn Prediction Model on both OSS+BSS Variables:

Recall Rate: **43%**
Top 20% Precision: **65%**

Churn Prediction Model on BSS Variables:
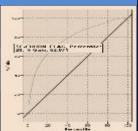
Recall Rate: 38%
Top 20% Precision: 62%

Source: China Unicom SH

Marketing Closed Loop
- Retention Process Consulting Enriched By Analytics

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Retention Ranking

From customer value only

➡ **Customer Value & Influence**

✔ Current Value

✔ Potential Value

✔ Influence

Customer Segmentation

From contract based segmentation

➡ **MOT Design 1: 6 types of persona based customer segmentation ***

*IPR apply processing

Value Chaser

Heavy User

Entertainer

Family Focused

Socializer

Business Elite

Retention Offer

From one-offer-fits-all

➡ **MOT Design 2: Various personalized retention offers for personas**

persona

root cause

Channel & Time

Inside-out Channel & Timing Allocation

➡ **MOT design 3: Outside-in preferred channel & time allocation**

Reference Case
- early predication & MOT improve retention effect greatly

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The churn rate of "Retention Group" is much lower than the ones of "Base Case" and "Control Group" based on **accurate & 4 months ahead churn predication with MOT designed retention offer**

Base Customers

Accurate & 4 moths ahead and Churn Prediction Model

Prediction List

Random Subgroup

Control group without retention (20%)

Retention group with MOT design (80%)

Churn Rate Comparison

49.3%

5.4%

0.87%

Control Group without retention

Unicom

HUAWEI

- Base case churn rate was sourced as Ave. of 2013.
- The prediction list was generated in Aug 2015.
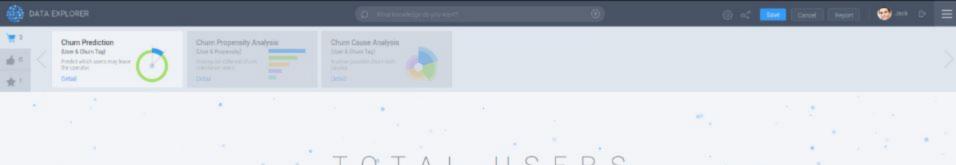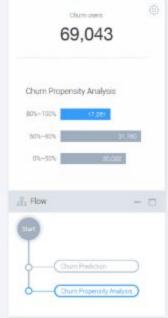- Control group & Retention group's churners were verified in Feb 2016

Source: China Unicom SH
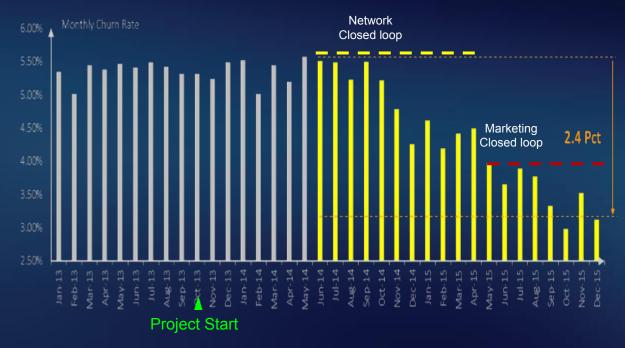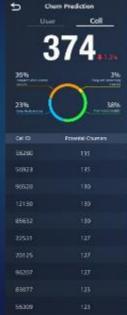
Data Explorer Demo – Churn

In this demo we monitor all users to identify churners among them
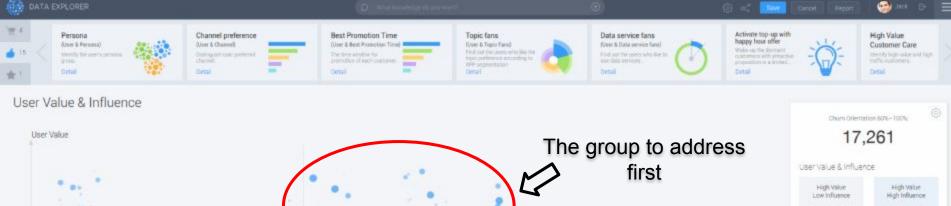
More details are available with a list of potential churners for actions

Churn Cause Analysis helps to identify Root Causes for churners

The group to address first

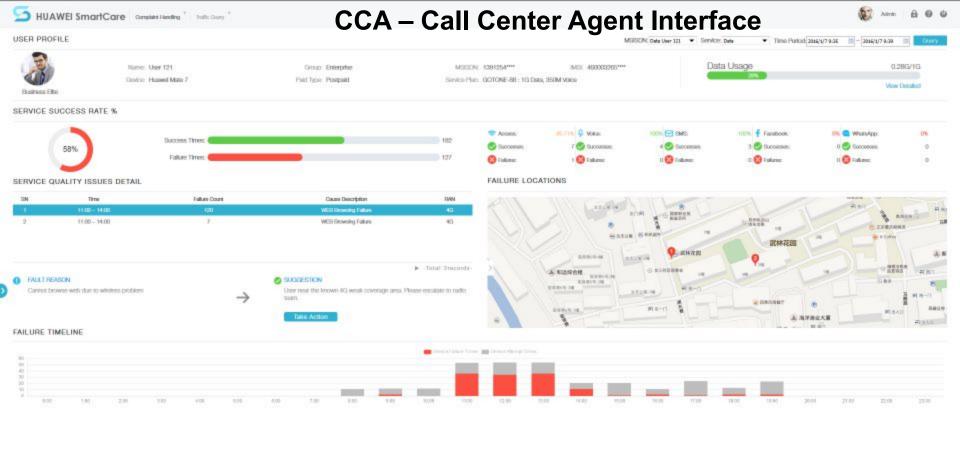Different value groups show customers that bring more value to address them first
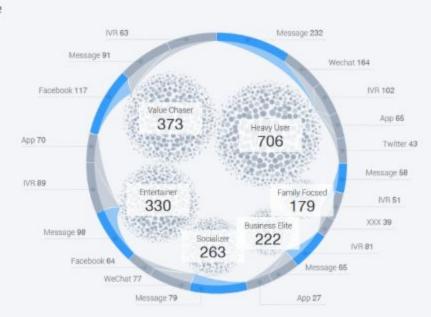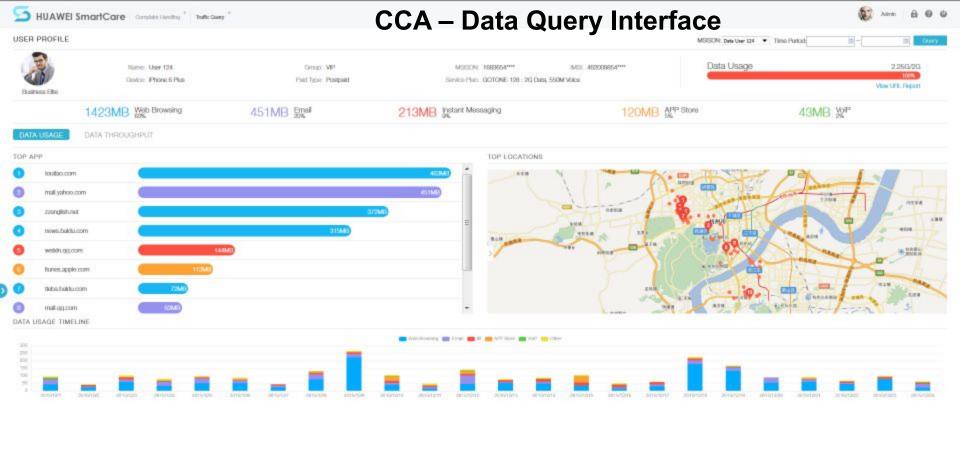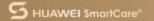
Even the most preferred communication channel identified & recommended

Customer Care Assistance Module

CCA – Call Center Agent Interface
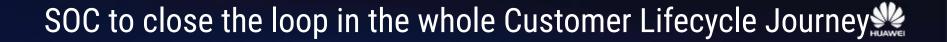
Customer Service Experience Management

HUAWEI SmartCare® · SOC

Sizable reduction in OPEX for complaint handling by 10~30%, Significant improvement in CSat by 10~15%

Digital Channel Usage (digital channel) **60%↑**

Propensity to Call (digital channel) **30%↓**

Average Handling Time (traditional channel) **20%↓**

First Call Resolution (traditional channel) **60%↑**

Integrated Customer Complaint Experience Management

Customer complaint — "Zero" Waiting
- Call (IVR)
- Raise complaint
- Feedback
- Self-service diagnosis / One-click Discovery
- Customer service app / SNS
- SDK

CSP 1st/2nd Line — "Quick" Feedback
- Complaint handling
- Generate complaint ticket
- Demarcation request
- Result
- Demarcation result / API

O&M Engineer — "Deep" Diagnosis
- Back office complaint analysis
- Complaints analysis team
- Ticket diagnosis
- Preventive analysis
- Demarcation result / API

Experience based complaint handling platform
- Smart fault decision tree
- PSPU / Per service per user data
- Network & terminal analysis engine
- Expert knowledge management

SOC to close the loop in the whole Customer Lifecycle Journey

Service Centric Operations -> Network + Service

SOC

Experience	
Service	Content
KQI	CSAT	NPS

+

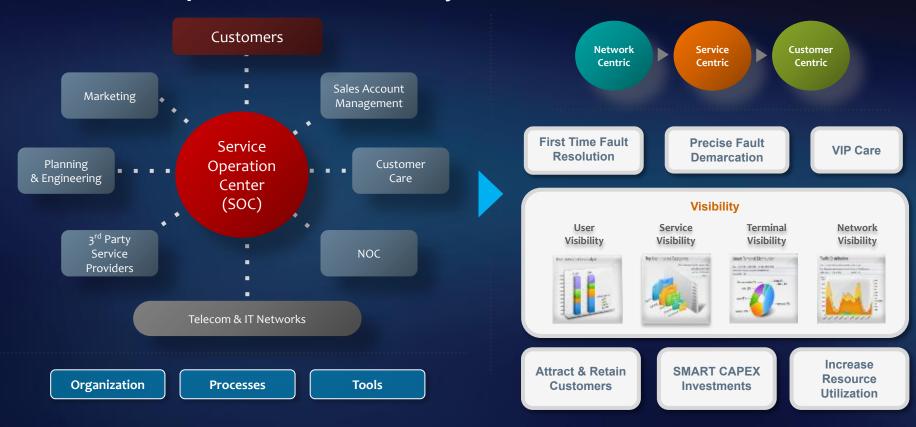**NOC**

Network	
KPI	SLA	MTTR

Benefits

- Service Quality Monitoring
- Service Quality Alarm Consolidation
- Closed-loop complaint handling
- KQI Demarcation for Data Service
- VIP Care
- Partner with Customer Care
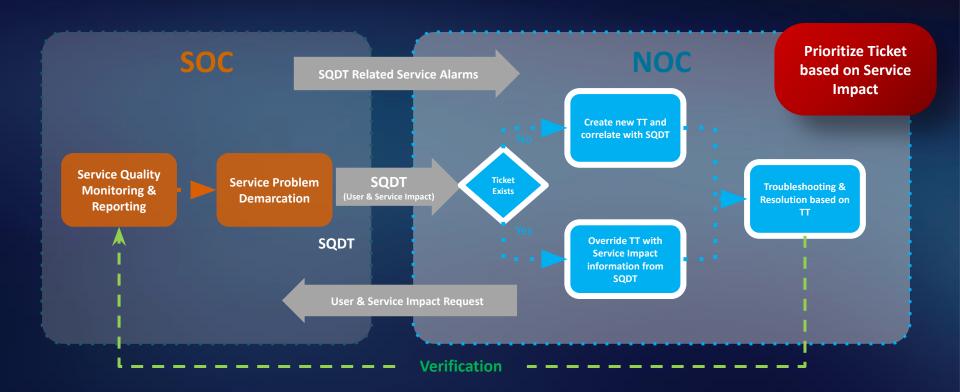- Fast Response to New Service launch
- …..

External Operation Driven By SOC

HUAWEI

Customers

Marketing

Sales Account Management

Planning & Engineering

Service Operation Center (SOC)

Customer Care

3rd Party Service Providers

NOC

Telecom & IT Networks

Organization

Processes

Tools

Network Centric → **Service Centric** → **Customer Centric**

First Time Fault Resolution

Precise Fault Demarcation

VIP Care

Visibility

User Visibility

Service Visibility

Terminal Visibility

Network Visibility

Attract & Retain Customers

SMART CAPEX Investments

Increase Resource Utilization

Example of NOC-SOC Synergy

Service Operation Centre will enhance customer life cycle management towards Buying & Sharing Domains

Closed-loop with **SOC**	Internal Rate of Return **25~40** %	**Buying**	**Using**				**Sharing**	
		Order to Activation	Network Service KQIs	Propensity to Call	Mean Time to Resolution	First Call Resolution	Network NPS	Churn Rate
Assure the Experience of New Customers	Improve NPV/CAPEX	Maintain Customer Satisfaction While Moving Customer Care to Digital Channels	Ensure Consistent High Performance across Group		Tailor Service to Individual Customer Needs		Improve Network NPS	
Network ➤ ICT	**KPI Focus** ➤ **Business Focus**	**Muliti-Channel** ➤ **Omni-Channel**	**Local Strength** ➤ **Group Excellence**		**One-Size-Fits-All** ➤ **Persona-Based**		**Sample Survey** ➤ **Comprehensive Analytics**	
1st 30 Days Experience Assurance	Experience and Value Based Cell Ranking	Digitizing Customer Care	Global Experience Umbrella		Business Elite Experience Assurance		Network NPS Analysis and Improvement	

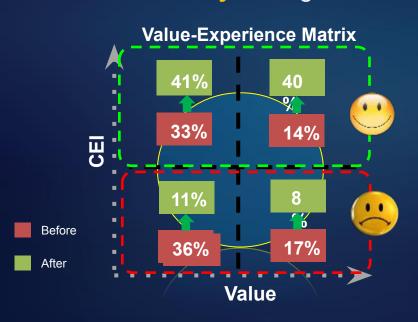## Huawei has delivered already 30+ SOC over the world

Separator

Value-Experience Matrix Migration Result in Operator X

Subscriber are shifting towards good customer experience and **inline with the customer lifecycle** to grow more traffic volume

Value-Experience Matrix

41%	40%
33%	14%

11%	8%
36%	17%

CEI

Value

Before

After

Data Traffic usage per user increase by 80%

Average Payload per user (MB)

2.91   5.27

before   after

Customer complaint Reduced by 50%

NQI

January February March April May June July

High Value User Traffic   Low Value User Traffic

Traffic (GB)

before   after

90% Increase in high value user data traffic

1X.x% improvement in revenue

Separator

General Description

Use Case Name:	Enterprise Service Quality Assurance

Description:
- For Enterprise Users SLA Assurance, this service will periodically monitor and analyze the KQIs/KPIs of voice and data services used by different Enterprise Users with whom the carriers have signed service level agreements (SLAs).
- Enterprise Users SLA Assurance consists of SLA Task Management, SLA Monitoring, and SLA Analysis.

Benefits:
- This Enterprise Users SLA Assurance shows the service quality of Enterprise Users with whom the operators have signed SLAs, helping the operators to evaluate the fulfillment of SLA commitments to their customers within the validity periods of the SLA contracts.
- Improved Enterprise Users satisfaction and loyalty.

Data Source:
- Passive probe data
- CRM

System Integration:
- Passive probes
- CRM

Activities:
- Enterprise Users SLA Violation Alarm Monitoring
- Enterprise Users SLA Violation Demarcation with indicative suggestions
- Enterprise Users SLA Violation Tracking and Manage
- Enterprise Users SLA Reporting

Solution Overview

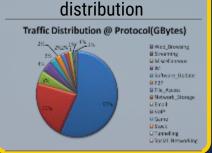| Customer quantity | Traffic analysis | Service KQI analysis | Modeling analysis |
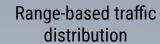
User quantity trend

Range-based traffic distribution
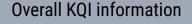
Overall KQI information
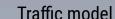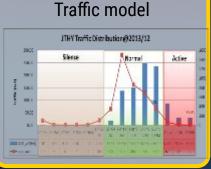
Traffic model

- User distribution
- User quantity trend

- Traffic trend
- Application-based traffic distribution
- Range-based traffic distribution
- User-based traffic distribution
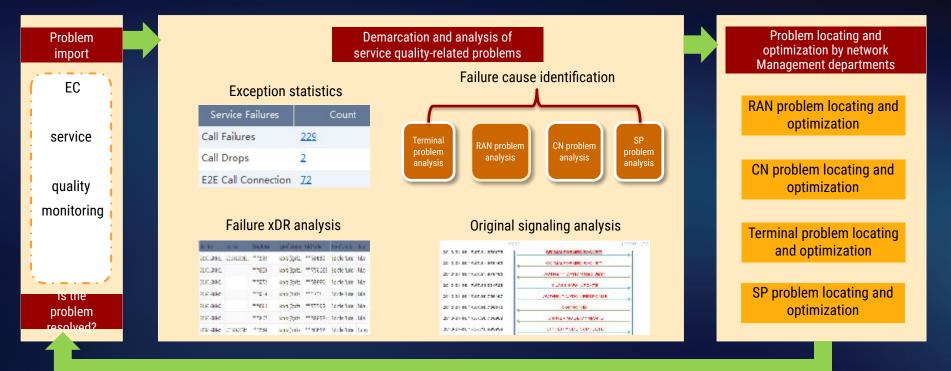
- KQI trend
- Failure cause distribution
- TOP VAPs

- Traffic model
- Abnormal user identification

Methodology

Problem import

EC service quality monitoring

Is the problem resolved?

Demarcation and analysis of service quality-related problems

Failure cause identification

Exception statistics

Service Failures	Count
Call Failures	229
Call Drops	2
E2E Call Connection	72

Terminal problem analysis

RAN problem analysis

CN problem analysis

SP problem analysis

Failure xDR analysis

Original signaling analysis

Problem locating and optimization by network Management departments

RAN problem locating and optimization

CN problem locating and optimization

Terminal problem locating and optimization

SP problem locating and optimization

KPIs and xDR are analyzed and problem scenarios are reproduced to quickly locate and isolate problems.

Best Practice

Enterprise service monitoring

EC monitoring information

Customer name: Shanghai LKL
Counter name: PDP active success rate
Date: 2013/11/12
Location: Shanghai
Exception: PDP active success rate abruptly drops by 10% after 15:00.
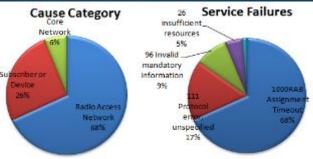
Trend of PDP Activation Success Rate

Service failure analysis

Failure analysis results
 Failure category: Wireless access failure is the main category, accounting for 68%.

 Cause Category: Long duration of 1000 RAB assignment is the main cause.

Failure Analysis on PDP Activation Success Rate

In-depth drilling analysis

Analysis on the long duration of 1000 RAB assignment time
Analysis Period: (15:00 – 16:00)

Conclusion

Long duration of wireless RAB assignment time is the main reason that causes PDP active success rate exception after 15:00 in Shanghai LKL on November 12, 2013. Wireless access failure mainly occurs in 3G01_Site4_Cell1. NOC team is advised to check wireless access RAB counter in 3G01_Site4_Cell1 and further locate the problem.

The monitoring result shows the problem, and then the problem can be gradually demarcated through multi-dimensional failure analysis.
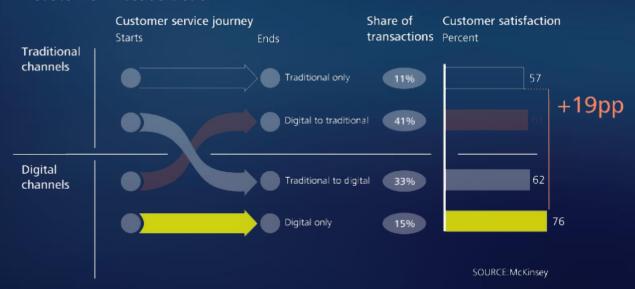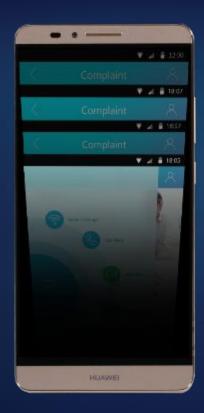
Separator

Digitizing Customer Care

Digitizing Customer Care

Digitalization Challenge

* A Purely Digital Journey Drives Higher Customer Satisfaction
* Fallback From Digital Channel to Traditional Channel without Closed-loop Brings Customer Dissatisfaction.

	Customer service journey		Share of transactions	Customer satisfaction Percent
	Starts	Ends		
Traditional channels		Traditional only	11%	57
		Digital to traditional	41%	61
Digital channels		Traditional to digital	33%	62
		Digital only	15%	76

+19pp

SOURCE:McKinsey

Digitizing Customer Care

Executive View

> Omni-Channel Care
  Performance Monitoring

Backend

> Fast Demarcation
  Using Smart Fault Tree

Digitizing Customer Care

Value Delivered by Digitizing Customer Care

50%~70%
OPEX Saving

19%
Customer Satisfaction
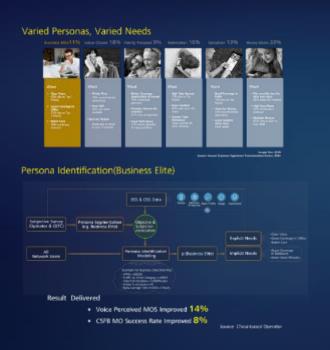Improved

24*7
Self-care

~15 mins
Fast Complaint Handling

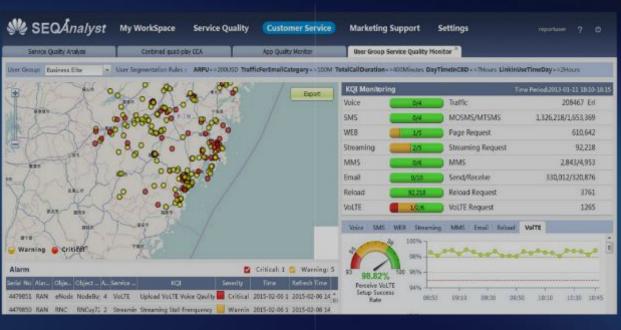# Separator

Persona-based Experience Assurance

Persona–based Experience Assurance

Varied Personas, Varied Needs

Business Elite 11%

Want

- **Clear Voice**
  60% rate as Top 1 Priority

- **Good Coverage in Office**
  51% rate as Top 2 Priority

- **Better Care**
  36% would pay premium

Value Chaser 18%

Want

- **Cheap Price**
  35% would tolerate advertising

- **Free Wifi**
  63% use when available

Hard to Retain

Most likely to churn in next 12 months

Family Focused 9%

Want

- **Better Coverage (particularly at home)**
  40% would pay premium

- **Cheaper devices via contract**
  61% rate as important

- **Least Tech-Savvy**
  41% blame Operator for App problems

Entertainer 16%

Want

- **High Data Speeds**
  72% rate as Top Priority

- **More Content**
  47% seek more HD Video

- **Greater Data Allowance**
  Future growth 2X other personas

Socializer 13%

Want

- **Good Coverage in Public**
  70% rate as Top Priority

- **Value for Money**
  30% would tolerate advertising

- **Good reliability rather than more speed**

Heavy Users 33%
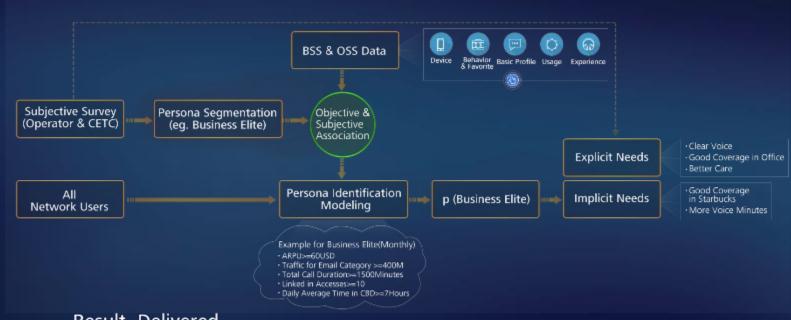

Want

- **Flat monthly fees for data and voice**
  65% prefer this method

- **High Data Rates**
  55% would pay a premium

- **Multiple Devices**
  83% own or plan to buy tablet

Sample Size: 3100
Source: Huawei Customer Experience Transformation Center, 2014

Persona-based Experience Assurance

Persona Identification(Business Elite)

BSS & OSS Data

Device | Behavior & Favorite | Basic Profile | Usage | Experience

Subjective Survey (Operator & CETC) → Persona Segmentation (eg. Business Elite) → Objective & Subjective Association

All Network Users → Persona Identification Modeling → p (Business Elite) → Implicit Needs

Explicit Needs
- Clear Voice
- Good Coverage in Office
- Better Care

Implicit Needs
- Good Coverage in Starbucks
- More Voice Minutes

Example for Business Elite(Monthly)
- ARPU>=60USD
- Traffic for Email Category >=400M
- Total Call Duration>=1500Minutes
- Linked in Accesses>=10
- Daily Average Time in CBD>=7Hours

Result Delivered

- Voice Perceived MOS Improved **14%**
- CSFB MO Success Rate Improved **8%**
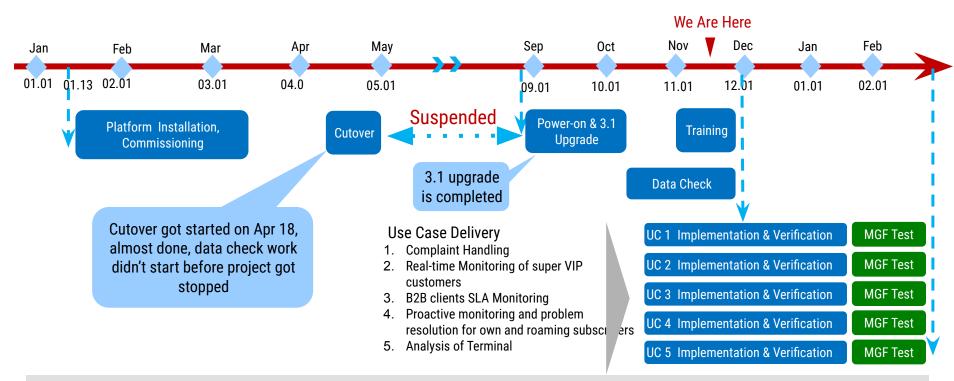
Source: China-based Operator

Separator

Scope of Pilot – Use Case Delivery

No.	Use Case Name	Description
1	Customer complaint handling	• Implement Customer Care system integration with SQM system, help Call Center agents L1/L2 quickly make reply to complaint calls, decrease FCR, improve complaint handing efficiency • Integration with Megafon HPSM system to improve compliant handling efficiency
2	Proactive monitoring and problem resolution	• Proactive monitoring of service quality of Megafon Moscow mobile network in different dimensions, such as cell level, network level, location level, etc. • Quick problem demarcation and root cause resolution for service quality problems
3	Real-Time Monitoring of VIP & super-VIP subscribers	• Real-time (5 minutes) proactive monitoring of service quality problems for VVIP users • Quick problem demarcation root cause resolution for service quality problems
4	B2B clients SLA monitoring	• Proactive monitoring of B2B users service quality problems violating SLA • Quick problem demarcation and root cause resolution for service quality problems
5	Analysis of Terminals	• Analysis reports of terminal ranking in brands, traffic, service qualities, etc. • Customized reports

5 Use Cases supporting operation & maintenance has been defined as the scope of Use Cases delivered in pilot
There is also planned Churn and NPS detractors analytics after 4 months of collected data.

Milestones & Progress

We Are Here

| Jan | Feb | Mar | Apr | May | Sep | Oct | Nov | Dec | Jan | Feb |

01.01 01.13 02.01 03.01 04.0 05.01 09.01 10.01 11.01 12.01 01.01 02.01

Platform Installation, Commissioning

Cutover

Suspended

Power-on & 3.1 Upgrade

Training

3.1 upgrade is completed

Data Check

Cutover got started on Apr 18, almost done, data check work didn't start before project got stopped

Use Case Delivery
1. Complaint Handling
2. Real-time Monitoring of super VIP customers
3. B2B clients SLA Monitoring
4. Proactive monitoring and problem resolution for own and roaming subscribers
5. Analysis of Terminal

UC 1 Implementation & Verification	MGF Test
UC 2 Implementation & Verification	MGF Test
UC 3 Implementation & Verification	MGF Test
UC 4 Implementation & Verification	MGF Test
UC 5 Implementation & Verification	MGF Test

- MegaFon requested to have preliminary trial results by end of Oct. 2016
- It's proposed to focus on Use Case 1 Complaint Handling delivery for phase 1, due to limited time left for delivery

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Выполненные работы

1) Оборудование смонтировано, включено и настроено

2) Программное обеспечение установлено

3) Произведены отладочные работы

4) Завершена интеграция с различными IS/IT системами (CC, NRI, TT)

5) Сформирована и русифицирована экспертная система рекомендаций для L1/L2

6) Настроена и русифицирована система root cause analysis для L3

7) Проведено обучение сотрудников МегаФон

8) Предоставлен доступ к решению сотрудникам МегаФон

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Текущие и запланированные работы

1) Проверка полноты и целостности входных данных

2) Калибровка KPI/KQI, установка пороговых значений аварий

3) Реализация, имплементация и демонстрация пяти юзкейсов

4) Расширение проб-серверов и установка TDM-конвертеров

5) Передача системы в пользование

6) Подготовка и реализация юзкейсов по анализу NPS и оттока абонентов

7) Интеграция с Metricell Agent

Собираемые KPI

Voice:
- Perceived Call Success Rate
- E2E Call Connection Delay
- Perceived Call Drop Rate

WEB:
- Page Response Success Rate
- Page Response Delay
- Page Browsing Success Rate
- Page Browsing Delay
- Page Download Throughput

SMS:
- SMS Origination Success Rate
- SMS Origination Delay
- SMS Termination Success Rate
- SMS Termination Delay

MMS:
- MMS Send Success Rate
- MMS Send Delay
- MMS Send Throughput
- MMS Download Success Rate
- MMS Download Delay
- MMS Download Throughput

Email:
- Email Login Success Rate
- Email Login Delay
- Email Send Success Rate
- Email Send Throughput
- Email Download Success Rate

Streaming:
- Video Streaming Start Success Rate
- Video Streaming Start Delay
- Video Streaming Stall Frequency
- Video Streaming Stalled Time Rate
- Video Streaming Plays

Thank you