



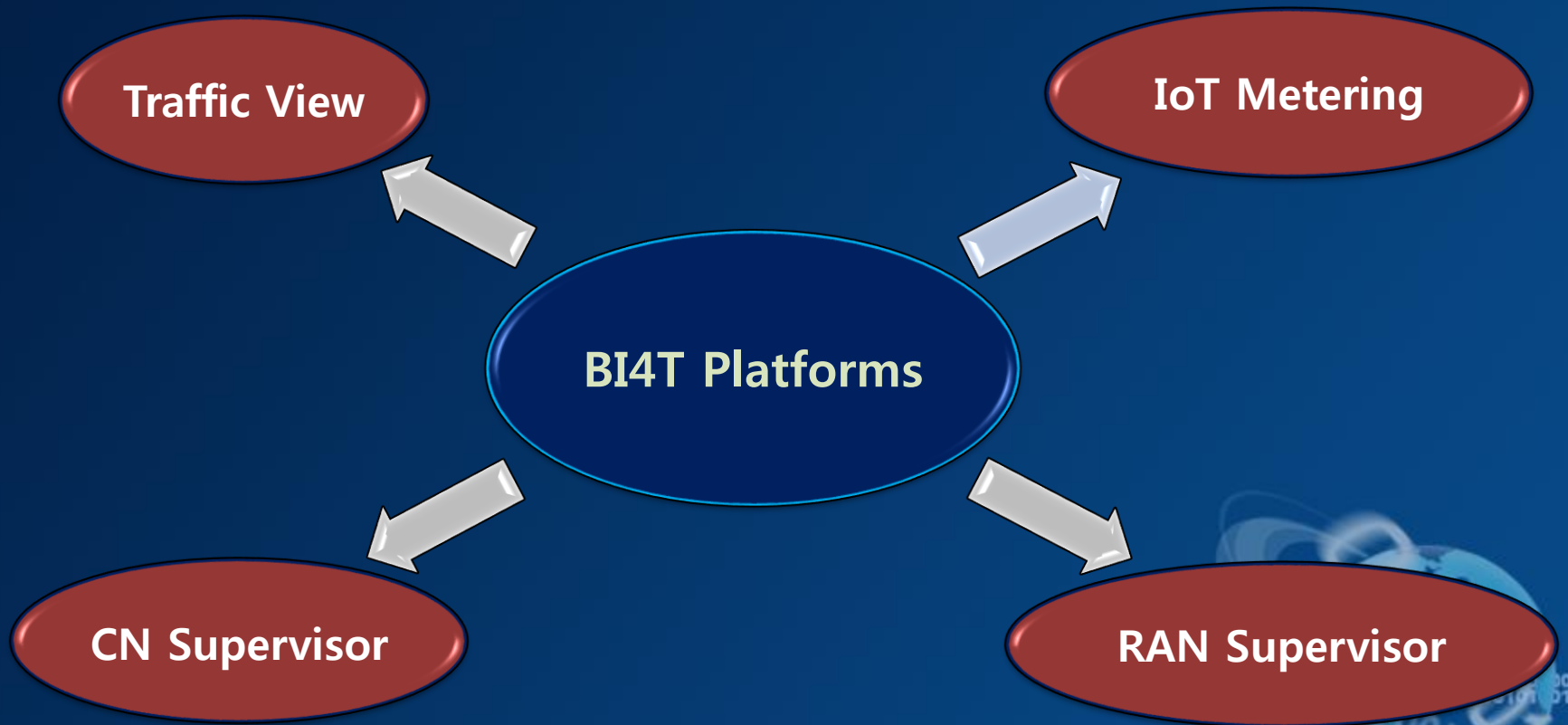
QoS & QoE

Measurement Tools and Strategies



Presentation

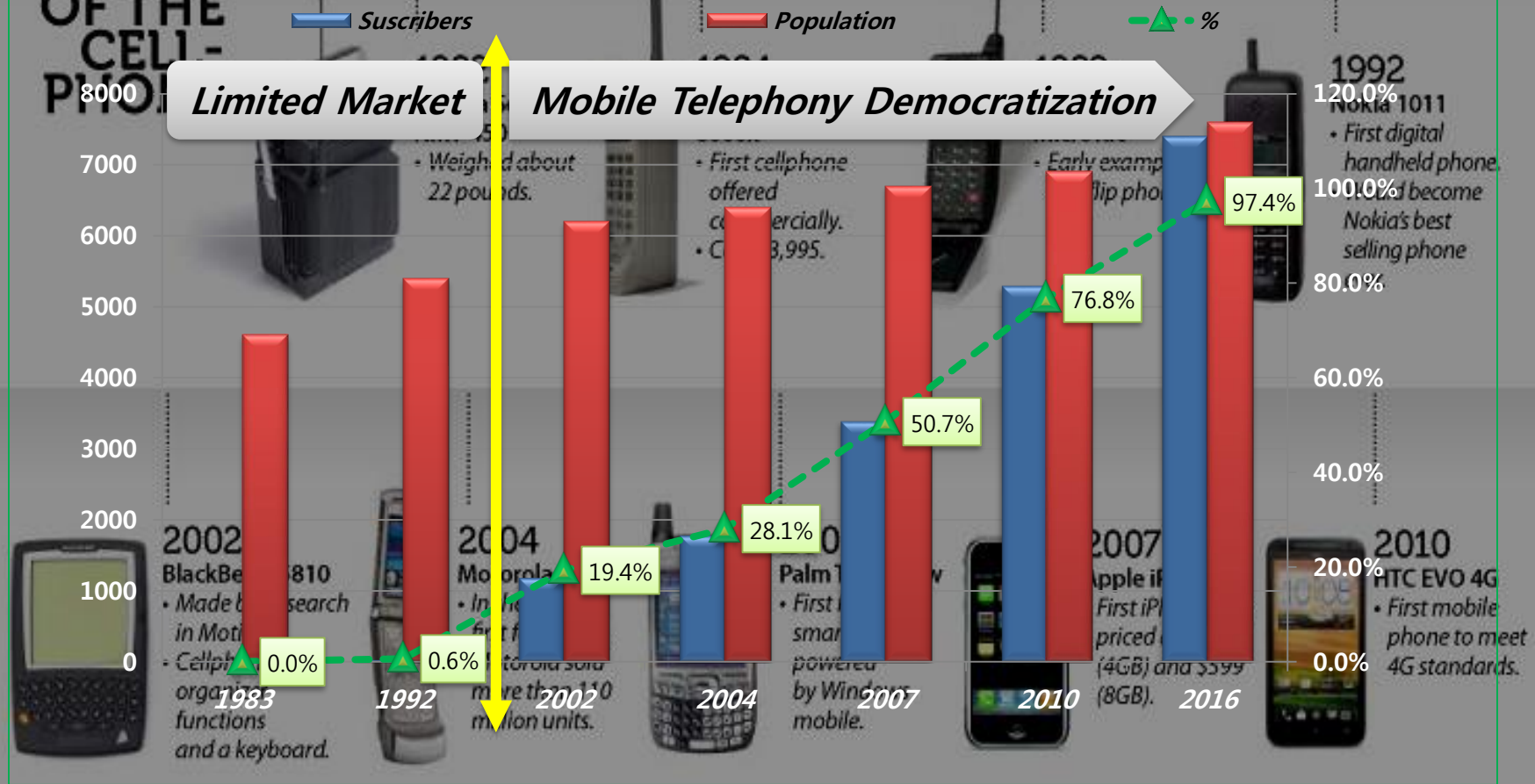
Tunisian ICT company providing solutions for mobile networks
survey insuring monitoring of QoS, QoE & Traffic surveys



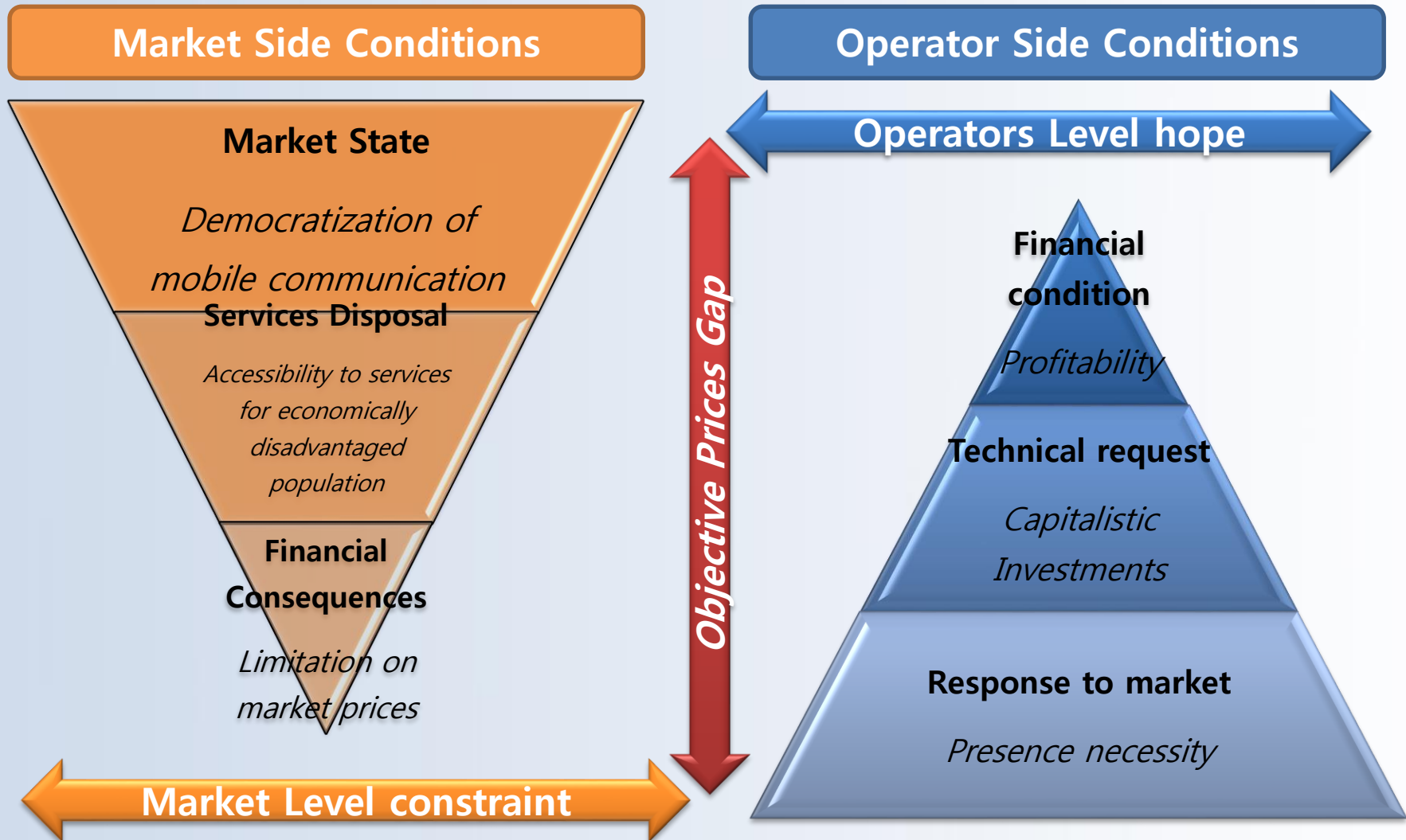
Mobile Communication Evolution



HISTORY OF THE CELL-PHONE

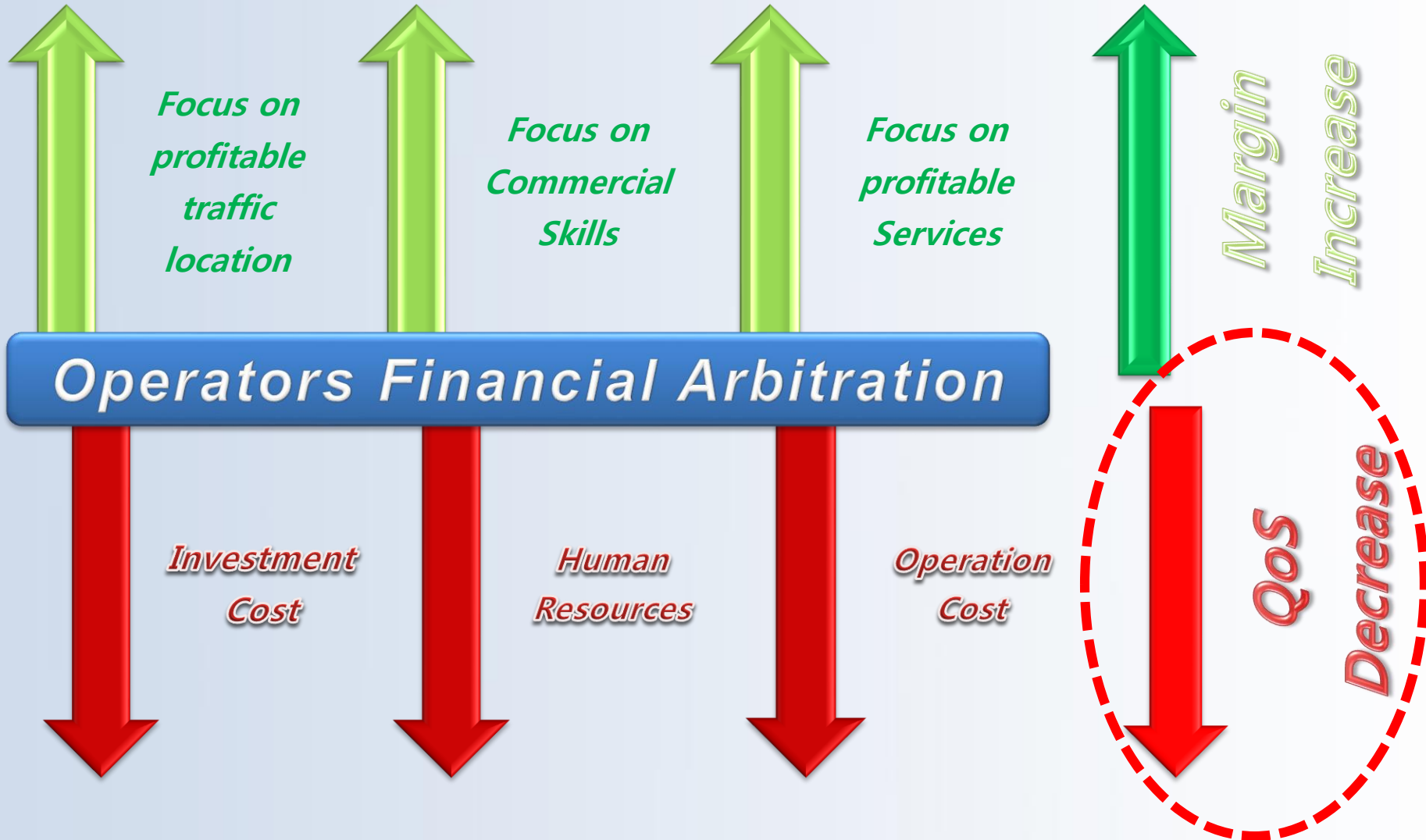


Mobile Communication Financial Dilemma





Network No QoS Originating



Users No QoS Originating

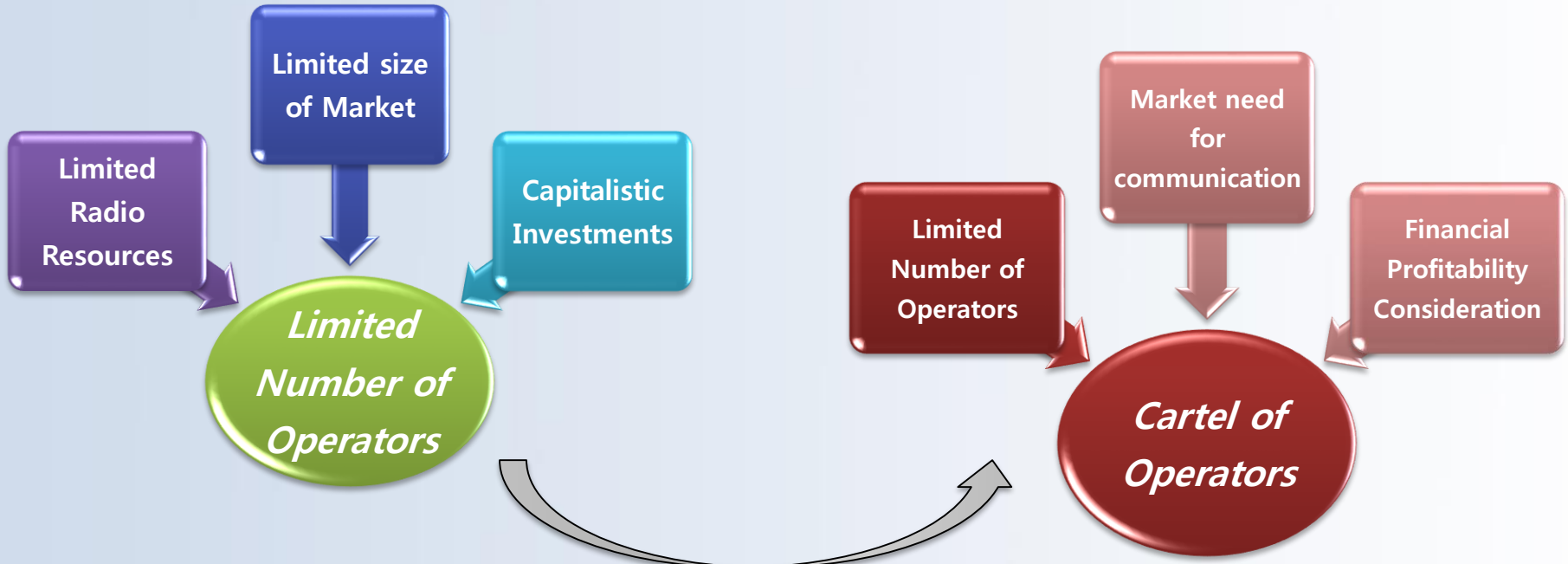




What is Requested ?

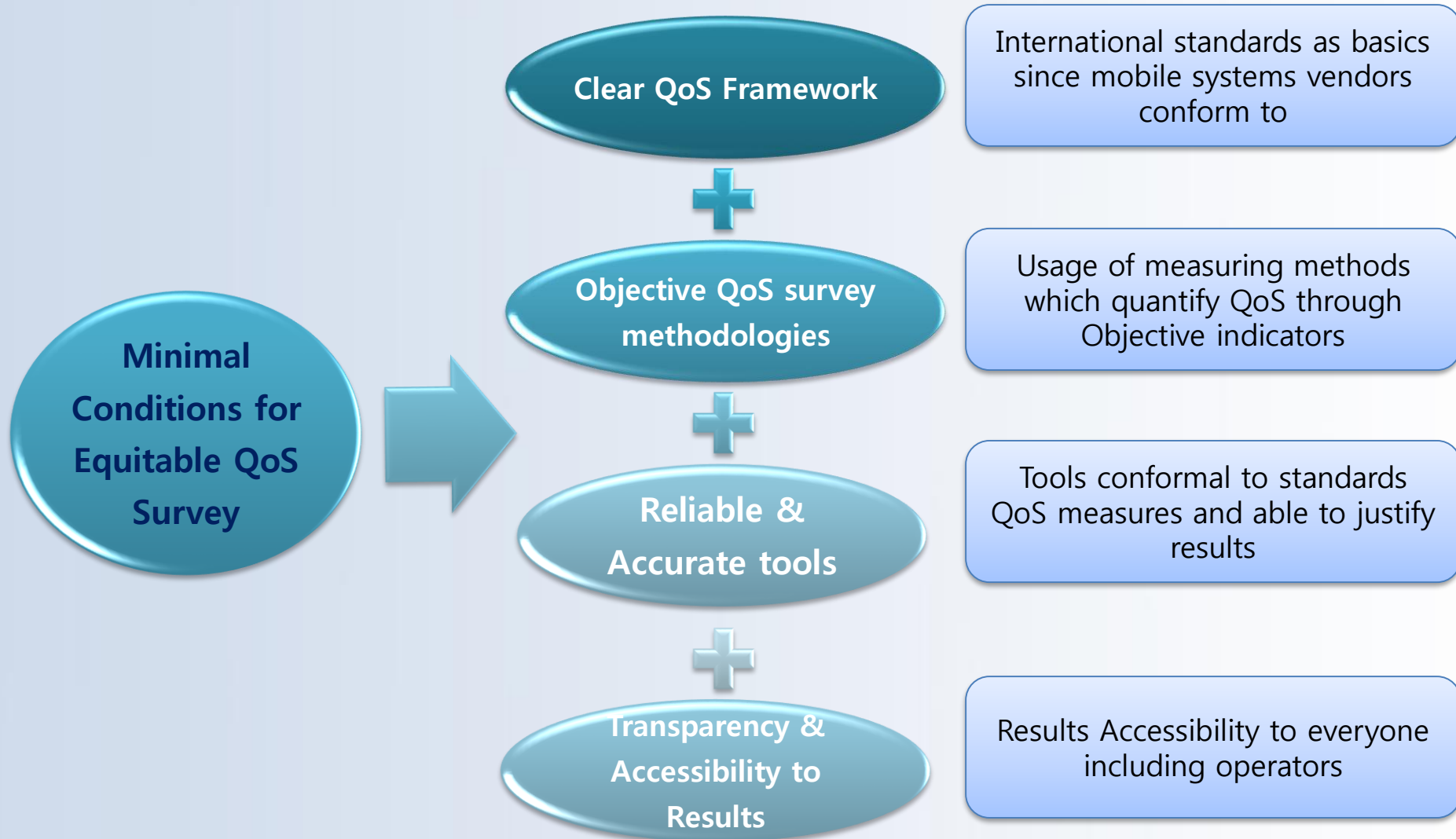


Challenges for Regulators



Need for STRONG regulatory framework provided with accurate tools to GUARANTEE a Fair Market

Regulators for QoS Defense

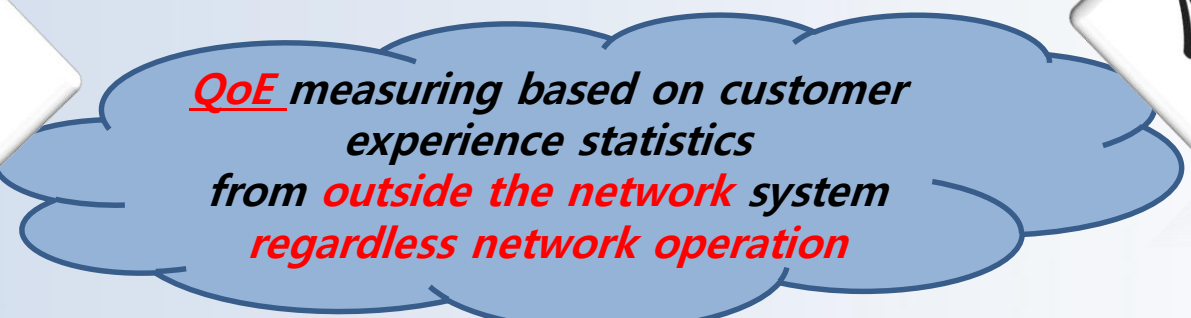


QoS VS QoE



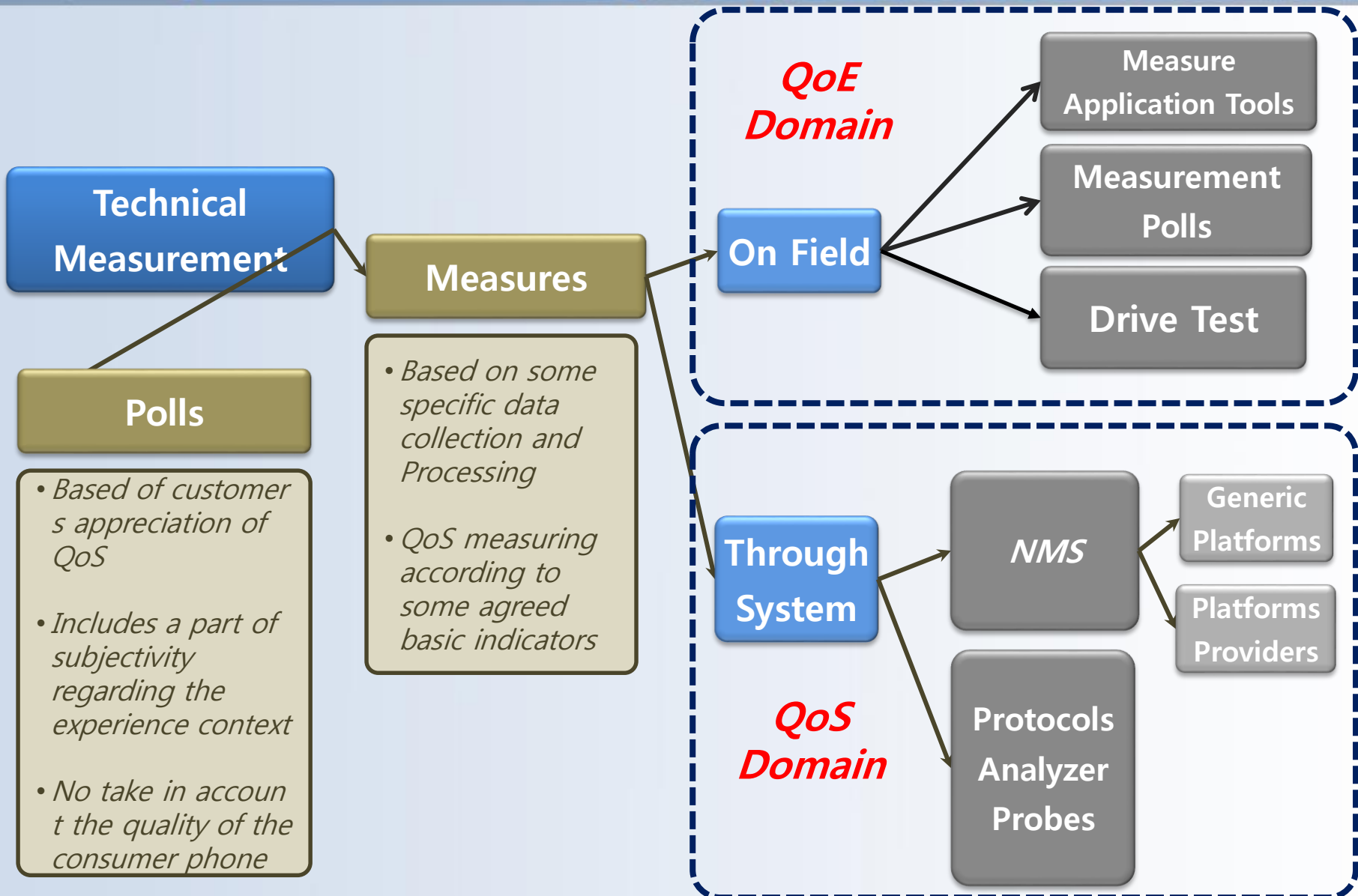
NETWORK INCLUDING INTERCO

QoS measuring based on statistics
from *inside the network* system
regardless the customer experience



QoE measuring based on customer
experience statistics
from *outside the network* system
regardless network operation

QoS Measuring Methods





For Accurate QoS Survey

QoS Description Through NMS Solution

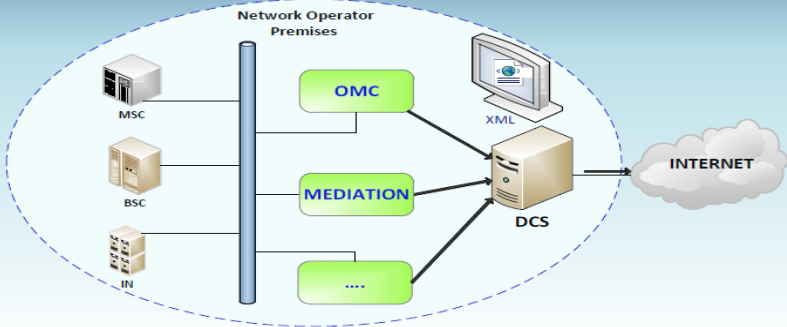
- Descriptive statistics
- Faithful image of networks state
- Description continuously in time
- Tight survey of hole networks
- Rapid identification of problems
- Circumscribe the survey locally

QoS Qualification Through QoE Solution

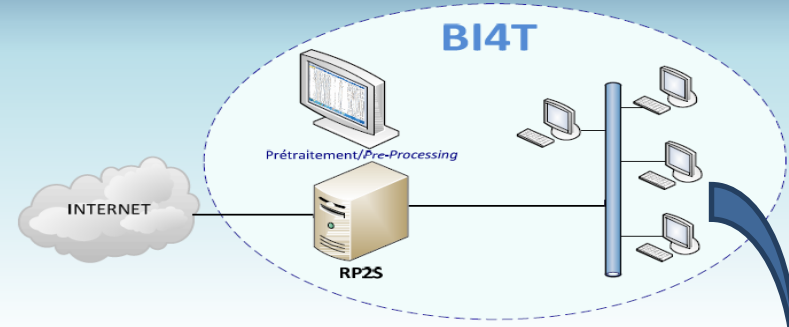
- *Focus on specific path*
- *Benchmark fo NMS results*
- *Reality of customer experience
@ a given time*
- *Quantizes customer experience
appreciation*
- *No subjectivity in experience de
scription*

BI4T Platforms Architecture

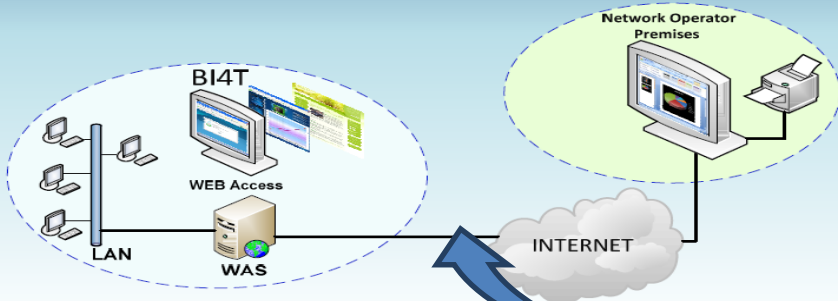
Serveur de Collecte de Données Client
Customer Data Collection Server



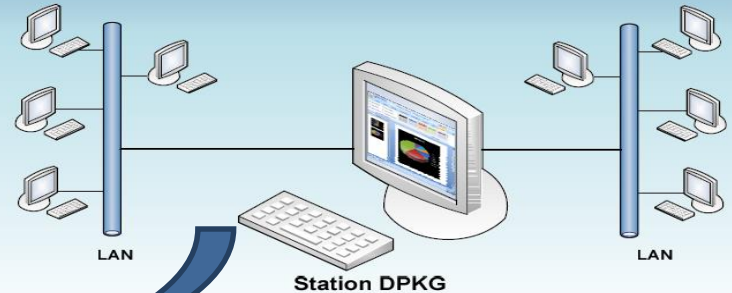
Serveur de Réception, Stockage et Prétraitement
Reception, Pre-Processing and Storage Server



Serveur Web d'Accès
Web Access Server



Station de traitement des données et génération des KPIs
Data Processing and KPI Generation Station





Tight QoS Survey

Traffic Tracker
OCELL
NATIONAL TRAFFIC ANALYSE JANUARY 2017

Mobile Network Cartography

Log out

Plan
Satellite

Operator: mtn_huawei_2g X
 cell Name: KHT074A
 Region: Khartoum
 long: 32.51413504
 lat: 15.57696214
 azimuth: 0
 Value CSSR: 97.89

HUAWEI
 ERICSSON
 ZTE

2G
 3G
 4G

Region
 Cell

CSSR

Submit
Reset

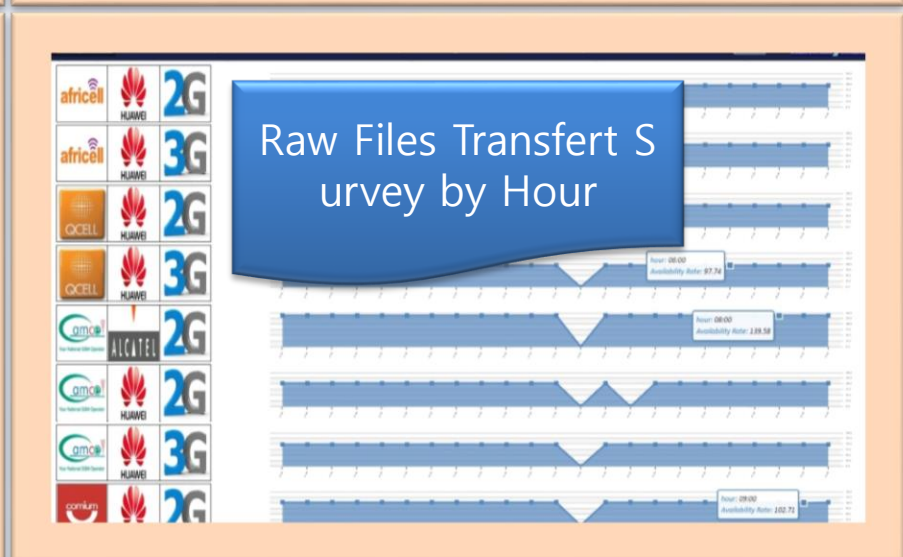
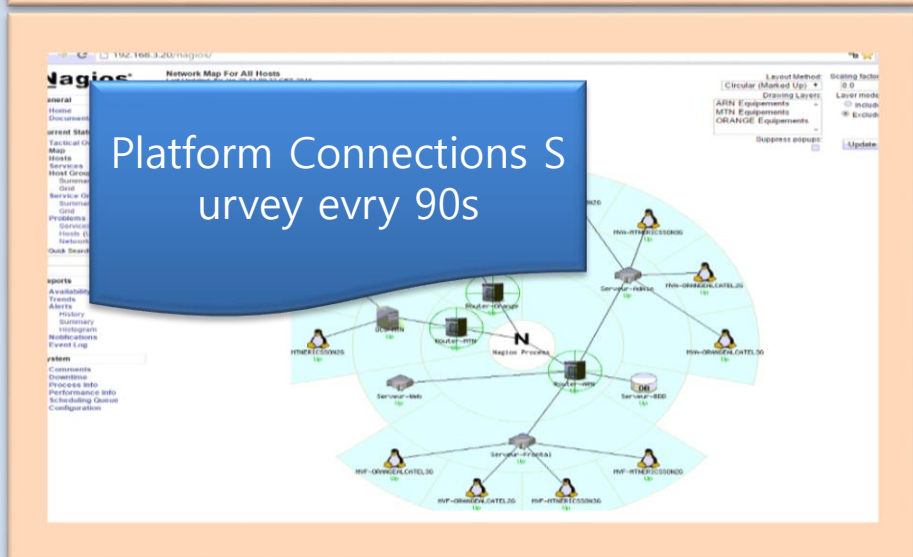
Global Cartography

● Conform
● Not Conform

Google

Données cartographiques ©2018 Google Imagerie ©2018, CNES / Airbus, DigitalGlobe, Landsat / Copernicus | Conditions d'utilisation

NOC Configuration



Interface to Benchmark QoS & QoE

Netlook

Welcome,

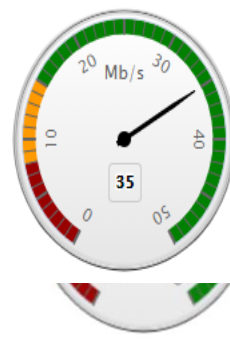
- Home
- Maps
- Data Presentation
- Reporting
- KPIs Tables
- Report

StartDate: EndDate: **validate**

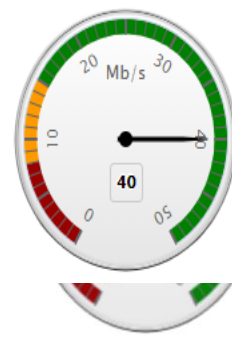
Cell_ID	Cell_Name	Passive Tests						Active Tests			
		Voice				Coverage		GPS	Latency	HTTP Web Browsing	Video Streaming
		Call Setup Time	CSSR	International Call	Call Drop Rate	Signal Level	Network Information				
C0001	C_Name1	12:56	96.5%	95.2%	0.78%	-35 dbm	Network1	(48.65;2.02)	1.5ms	1s	2Mb/s
C0002	C_Name2	10:32	96.5%	97.2%	0.98%	-65 dbm	Network2	(37.65;2.02)	1.6ms	1s	2Mb/s
C0003	C_Name3	23:12	96.52%	95.9%	0.55%	-82 dbm	Network3	(47.65;6.02)	1.5ms	1s	2Mb/s
C0004	C_Name4	08:56	96.5%	95.2%	0.78%	-38 dbm	Network4	(48.65;2.02)	1.5ms	1s	2Mb/s
C0005	C_Name5	12:56	96.5%	95.2%	0.78%	-66 dbm	Network5	(22.65;1.08)	1.5ms	1s	2Mb/s

OTT (Facebook, Instagram)

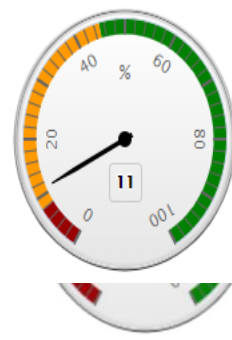
Average Upload Speed



Average Download



Average Data Loss





IoT System for QoE

Vers le Réseau de collecte
Possibilité : 3G/4G
Ethernet

LORA GW

Compteur E2M de Bi4t

Compteur E2M de Bi4t

Compteur E2M de Bi4t



Interface de supervision



BI4T
BUSINESS INTELLIGENCE TELECOMMUNICATION



THANKS
for Kind Attention