
ITU

ETSI TC INT work on Internet Speed Measurements

Test specification and methodology for E2E internet related quality of experience measurements for fixed and mobile networks

ITU Regional Conference on "Internet of Things, Telecommunication Networks and Big Data as basic infrastructure for Digital Economy"

San Petersburg 4-6 June 2018

Summary

- *From Network to End to End performance*
- *The Benchmarking Role*
- *Internet related QoE Measurements Ecosystem*
- *Reason why Internet related QoE Measurements Standardization*
- *Status of TC INT work on Internet Speed Measurements*

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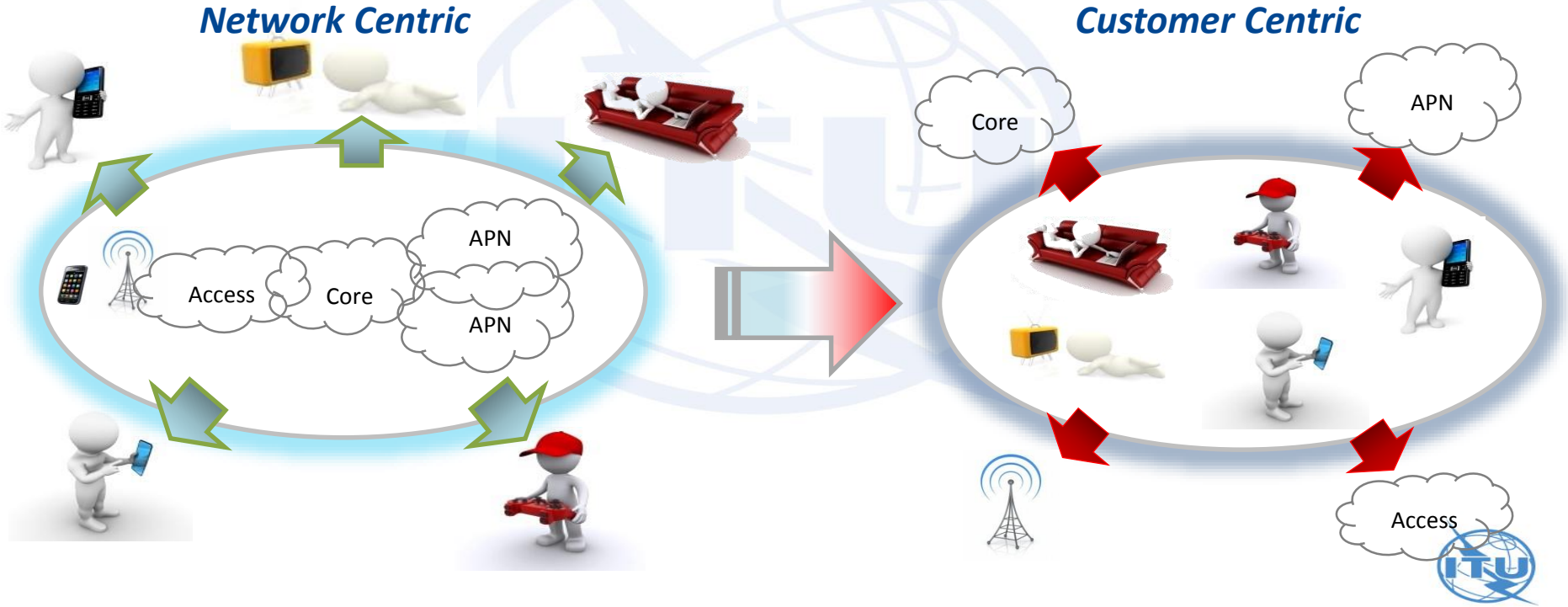
From Network to End to End Performance

- **Quality** is the **most important factor** in client choice and churn.
- In order to offer the best user experience it's necessary to shift in the quality monitoring: **from a "Network Centric" point of view to "Customer Centric"**



QoE Customer Centric: a complex system

- Network and service evolution brings **customers to personalize their use of MBB**
- In order to have a **complete view of the QoE** it's necessary to **analyze the service from different points of view** which take in to account the location, the service and the device used
- **Streaming** will be the «**killer app**», reason why TI is **focusing** on this service, **especially** in **LTE prospective**

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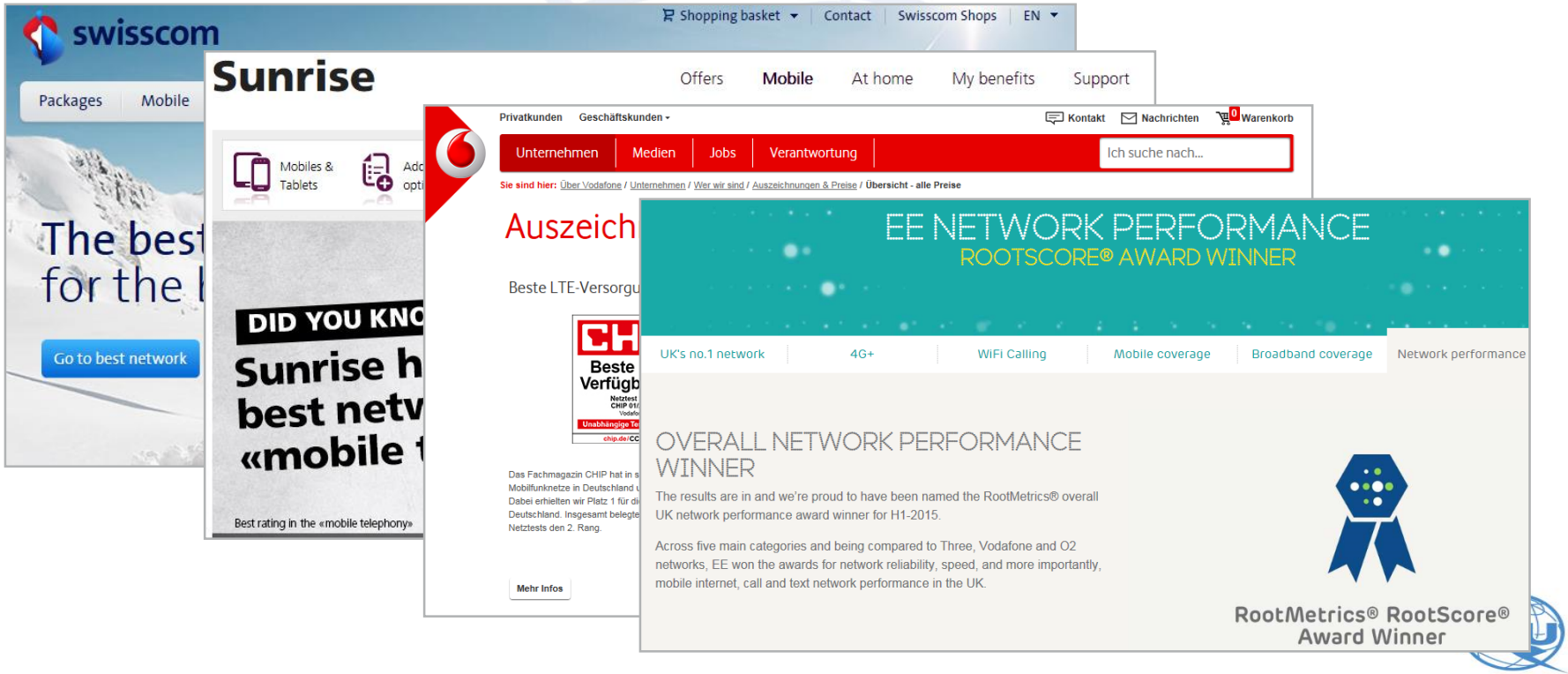
Network Performance as a Marketing Tool



The Value of Performance

Analysts view

Having the best network is the best churn control mechanism…It takes years (and hundreds of millions) to win it

Here's what it's worth

Based on our calculations in mature markets globally, an incumbent mobile carrier that still possesses "the best network" perception tends to have **4 percentage points lower annual postpaid churn** (e.g. 14% instead of 18%) compared to a challenger with a good (or even better) network – but without owning "the best network" perception.

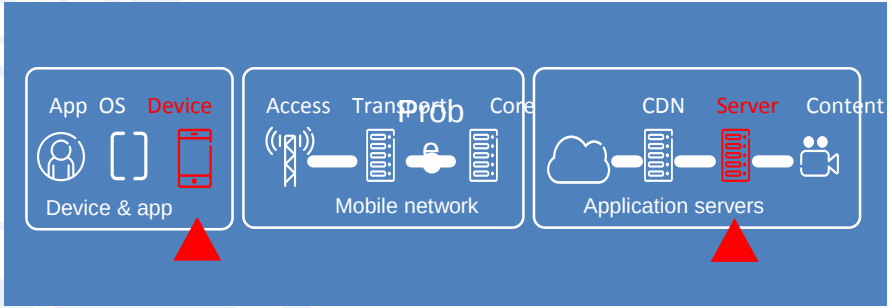
With a typical subscriber acquisition cost (SAC) of 220 EUR, not having to acquire 4% of a postpaid subscriber base every year **saves costs equal to 2-3% of annual mobile service revenue.**

This corresponds to about 6% of mobile EBITDA

* Source: http://tefficient.com/the-best-network-worth-6-of-ebitda/

Key aspects to take into account

- S-KPI breadth
- Statistical significance of captured/collected samples
- Does the network achievable throughput consider the Zero Buffering?
- Location & Sampling
- RF conditions
- External resources can impact S-KPI performance
  - limited or no control over the capability, capacity or interconnections to these external resources
- Important to distinguish between “bad” Packet Loss and “not always bad” packet loss (e.g. over radio



Output from crowdsourcing data may not be fully correlated with service performance, but will serve as a guiding principle

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Benchmarking Tipology overview

Mainly coverage maps based on own app,
but now also from lib/sdk included in other apps

Drive testing but moving into crowdsource

Regulatory Activity with Drive test

Speed metrics global leader

Crowdsourcing company
Quite strong in some markets

Quite new company with a global agreement with Telefonica
Based on crowdsourced data

Overview of the different methodologies

Inputs	Company 1	Company 2	Company 3	Company 4	Company 5
Data Source	DT + crowsourcing	Speedtest App	1000+ apps, lib/ sdk	Lib/ sdk in apps	Mainly own APP
Infrastructure	Public cloud, distance determined (AWS/ Akamai)	Servers (~7000) with min req, monitored by Speedtest. Server selection based on distance and shortest latency	Public cloud, Amazon CloudFront. Server selection based on distance	Public cloud, distance determined (AWS/ Akamai)	Public cloud, distance determined (AWS/ Akamai)
Throughput	Traffic stat API	TCP based with multiple conn. DL/UL files (Stressing the network → reliable)	Active test run in background. TCP based DL/UL files, normal configuration is 2MB/1MB	Traffic stat API	HTTP based with multiple connections DL/UL files
Latency	ICMP towards own and public servers	TCP packets sent/ received towards same server as throughput server	20x1 byte packets sent to server and echoed	ICMP towards public servers, every minute	http head to a number of public sites
Location	GPS, Own db or Google location	GPS or based on client IP address	GPS or Google location	GPS or Google cell location	GPS if available. Unknown if other methods used.
Rf metrics (*)	Android based	Android based	Android based	Android based	Android based
Data usage	Data consumption (own app)	Data consumption (own app)	Data consumption per app only for apps that already ask for this permission		
Other	CS/VoLTE metrics available Possible to differentiate indoor vs outdoor		CS/VoLTE metrics available		

(*) RF metrics calculated with different sampling intervals; e.g. Company 4 very good, Company 2 low sampling rate

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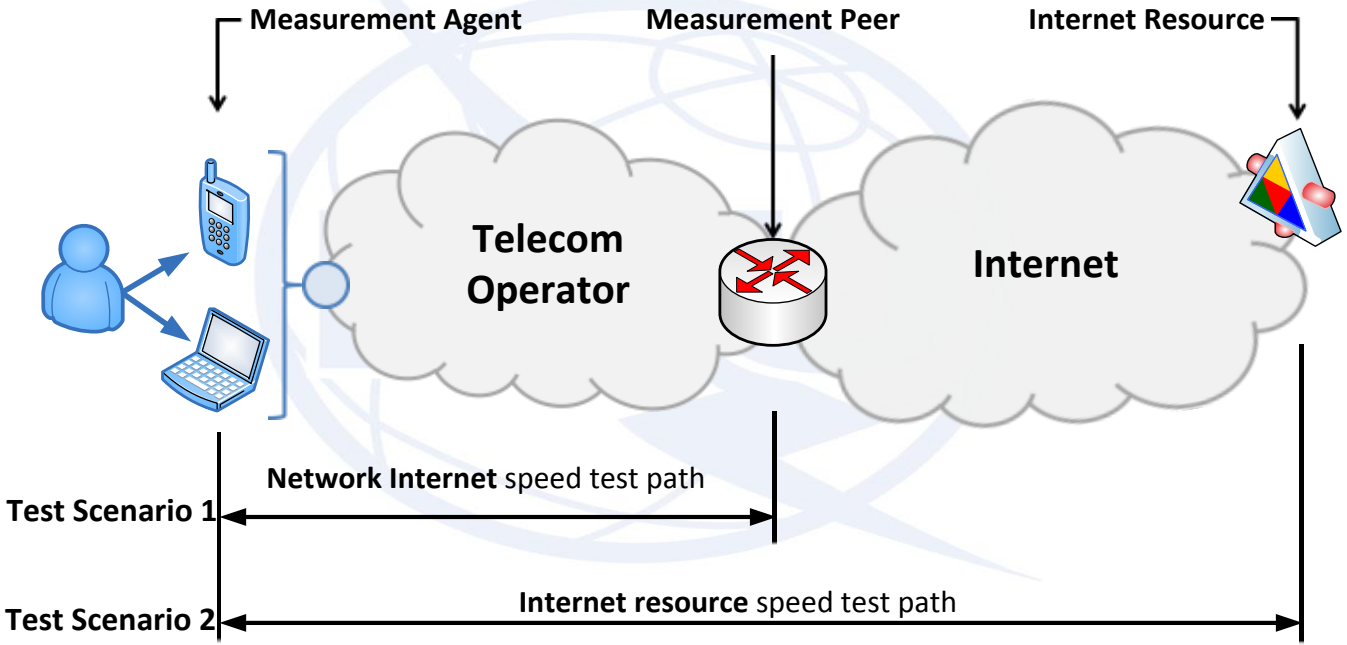
Reason why Internet related QoE Measurements Standardization

- To provide a framework for conducting E2E internet related quality of experience measurements for fixed and mobile networks when using commercial and crowdsourcing tools.
- *The purpose is to provide to the operators and the Internet service providers experience measurements enabling operators and Internet service providers to deliver improved QoE and QoS .*

TS 103 427 Global scenario



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TS 103 427 working plan

- TS 103 427 went on remote consensus for approval in December 2017, receiving request of clarification from members
- The comments will be discussed shortly
- The document will be discussed finally in June 2018 in the joint meeting with ITU-T SG11

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