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experience

Customer Experience Threshold: Benchmarking mobile network operators – who wins?

ITU Workshop on Quality of Service and Quality of Experience of Multimedia Applications and Services

Haarlem, 9.5.2016 – Arnold van Holten

Introduction of an on Customer Experience focussed KPI

% Above Average Customer Experience

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agenda

1. Introduction
2. Network Performance vs. Customer Experience
3. Customer Experience Threshold

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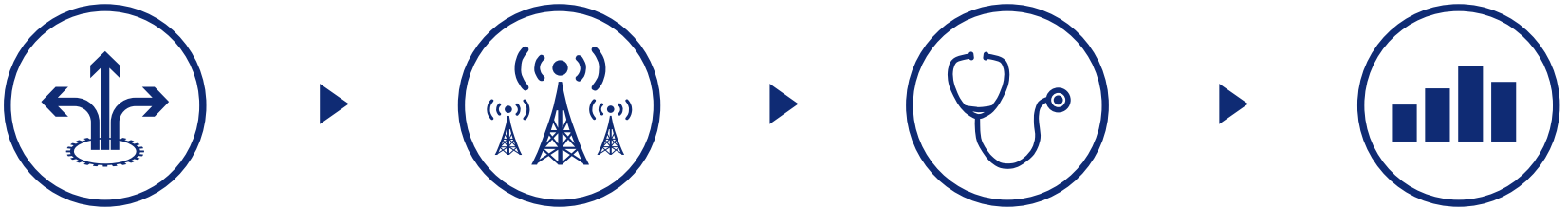
Our Company

Pioneering	founded in 1988 to design and rollout world's first GSM network, 1000+ projects in 80+ countries since then
Independent	owned by Finnish telecom investors, independent of all operator groups and equipment vendors
Consulting	consulting and professional services for telecom service providers and regulators

for mobile industry since 1988

Our Services



maximised customer experience
minimised network cost

Our Experience

United Arab Emirates performance management Rwanda network sharing POC Zimbabwe
capacity utilisation audit Kuwait RAN modernisation support Greenland end-user QOS benchmark
Iceland competitive network benchmark Finland network infrastructure swap Isle Of Man
DVB-T2 network design Haiti LTE700 network design Sweden customer experience optimisation
DRC LTE vendor selection Faroe Islands PM vendor selection and sourcing Switzerland
HSPA optimisation Jordan frequency refarming Qatar network design audit and optimisation
Estonia radio network capacity expansion strategy Netherlands GSM-R planning Suriname
HSPA network nominal plan Bahrain TETRA indoor design Slovenia post-hurricane network audit
Angola frequency management strategy Jamaica LTE800 frequency licence verification Jersey

1000+ Projects in 80+ Countries

agenda

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Network Performance vs. Customer Experience

…pre-HSPA networks

General user experience depends on
two basic services

Voice Services

MOS, Success Rates, Drop Rates,
Setup Time

Data Services

Throughput

Generally available bitrates are not sufficient for data services. As throughput is the bottleneck, it becomes the measure to define the QoS

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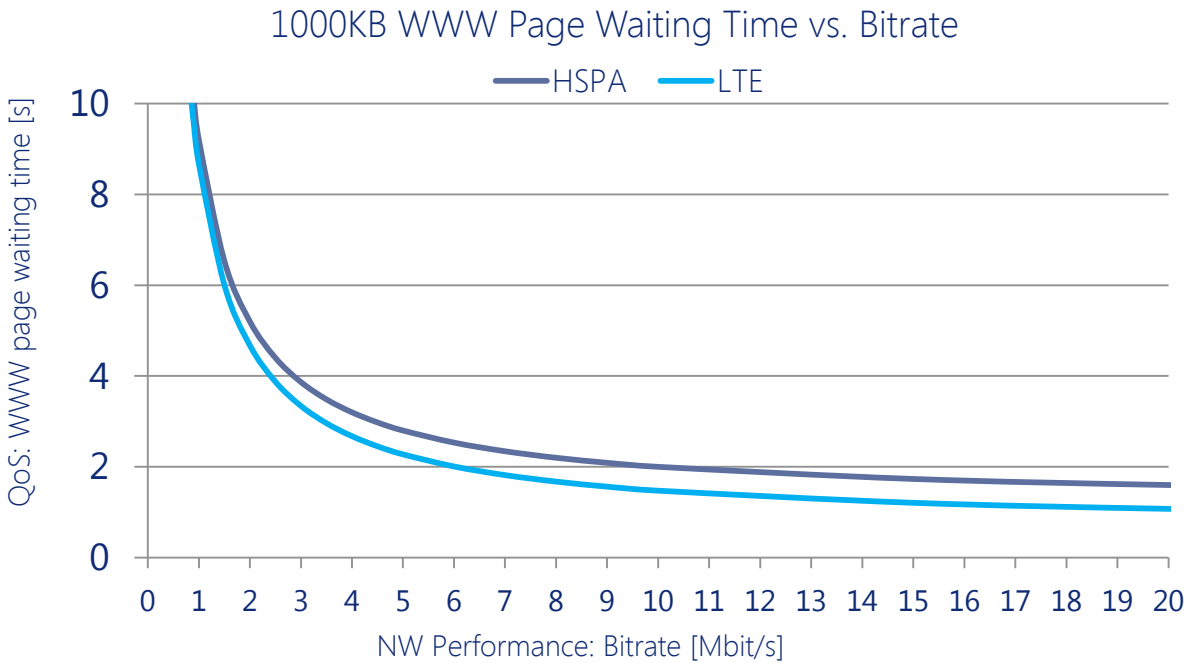
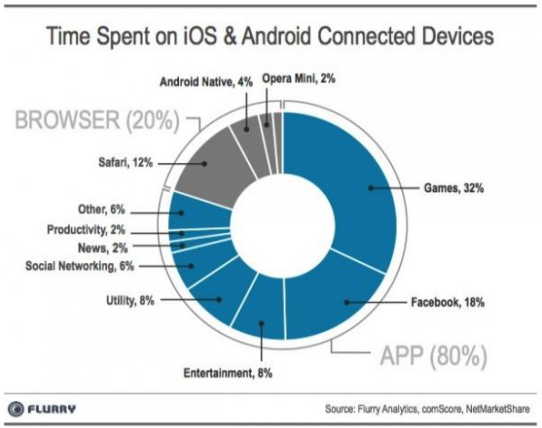
Customer Experience Challenge

Bitrate is no longer the ultimate mobile network quality indicator

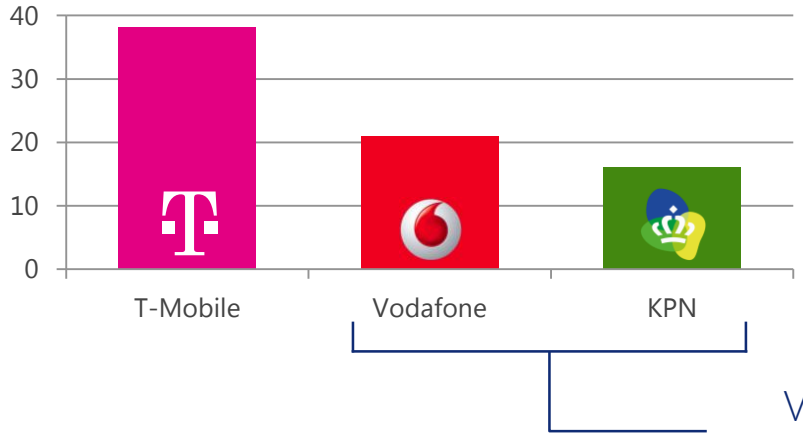




Customer Experience Challenge

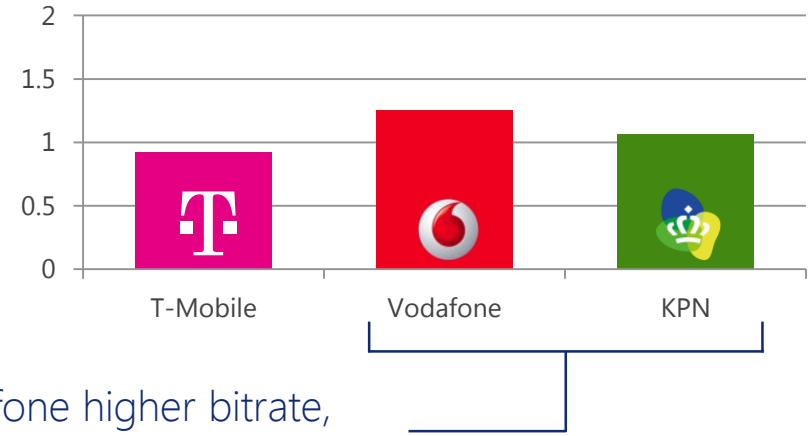
big difference in NW performance…

bitrate [Mbit/s]



…thin margins in Quality of Service

YouTube buffering time [s]



Vodafone higher bitrate,
but KPN faster YouTube

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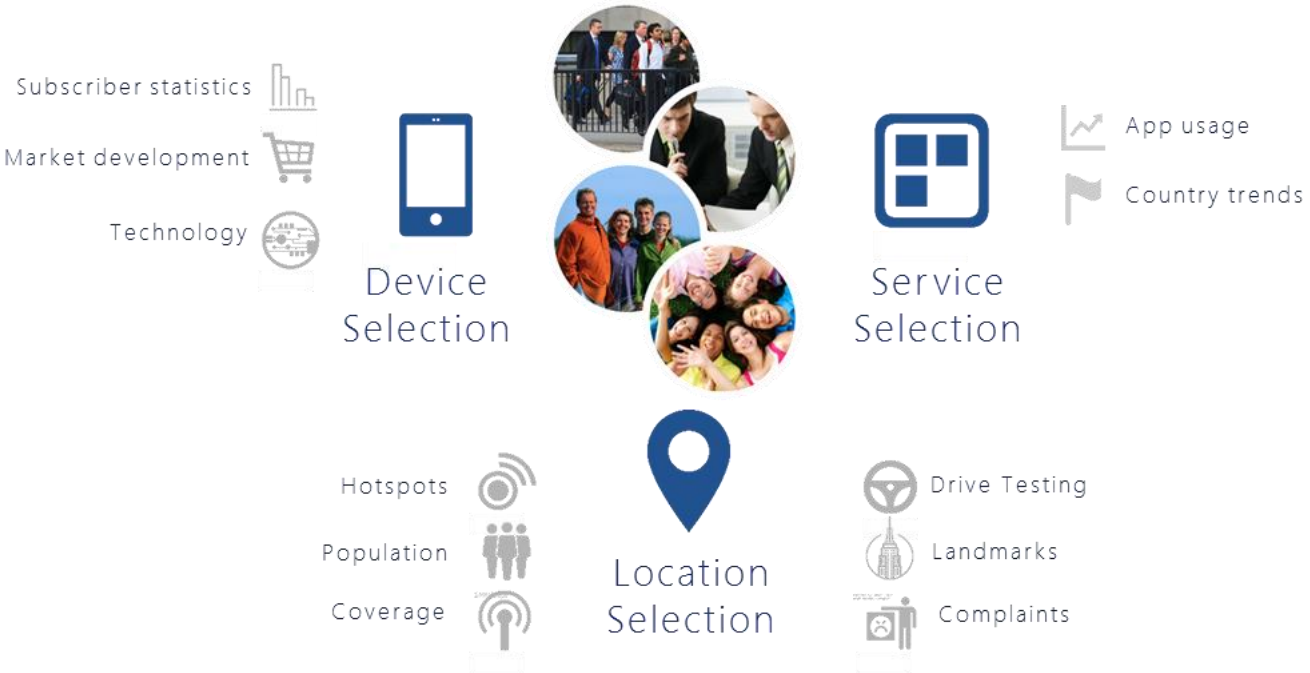
Customer Experience Benchmark "Be the Customer"



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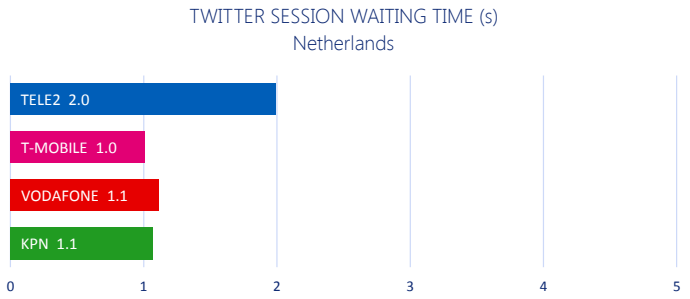
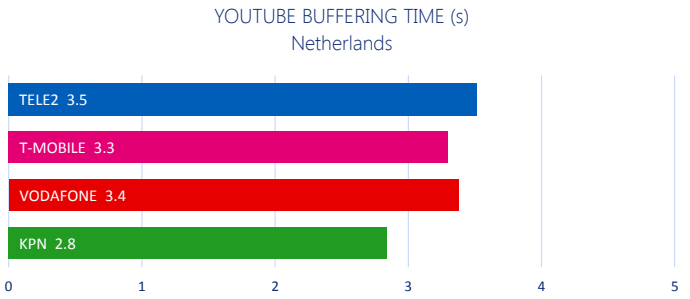
Benchmarking MNOs – who wins?





In mature networks average results show very similar QoS performance for OTT services

Identified issues:

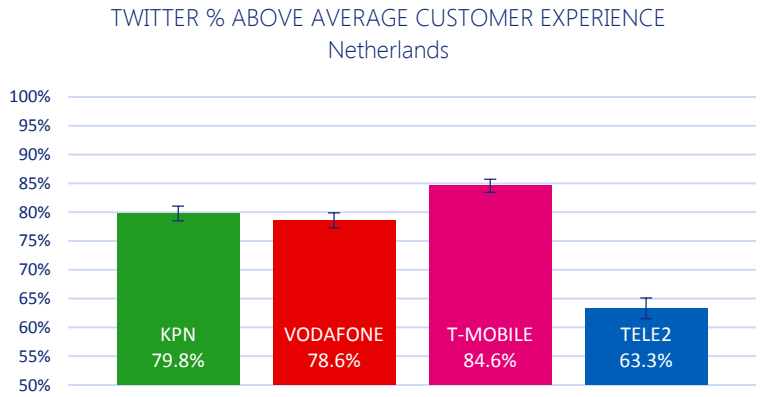
1. How to assess the competitive advantage/disadvantage between operators

   By default operators give good QoS performance - differentiate on how often a substandard customer experience is provided

2. What is the real QoE experienced by mobile subscribers?

   Defining good/bad performance falls into QoE domain, which is not straightforward to measure and enviromentally dependent

Customer Experience Threshold



The Customer Experience Threshold is defined as the average figure from the samples obtained from all operators – it is an indicator of the average performance expected by customers in that country

'% Above Average Customer Experience' depicts the amount of samples above/below the Customer Experience Threshold – it is an indicator of how often substandard experience is delivered

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% Above Average Customer Experience

- All application tests are analysed in terms of following key performance indicators (KPI):
  - Accessibility (successful tests / all tests),
  - Usability (time-to-content)
  - % Above Average Customer Experience
- The "*% Above Average Customer Experience"* combines Accessibility and Usability into a single KPI. It illustrates the share of each operator's test samples being faster than the average *time-to-content* of all samples.
- The average time-to-content is calculated over all successful samples of all operators. Failed test samples are treated as *slower than the average*.
- The objective is to show how consistent an operator is. That is, how often an operator delivers quality better than the typical quality in the market (country average result).
- The "% Above Average Customer Experience" KPI is binomially distributed which allows for straightforward statistical analysis of results and comparison of results between operators.

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Example CE Benchmark in the Netherlands

- Drive test and Hotspot measurements
- The benchmark was conducted with Omnitele's internally standardised *be-the-customer* methodology. Rather than only evaluating the technical network performance (data rate, signal strength), the analysis focuses on the usability of mobile services and smartphone applications.
- In this project the scope consisted of Mobile Voice, Web browsing, Twitter, Facebook and YouTube customer experience measurements.
- Each network was measured in the very same locations simultaneously with identical measurement equipment.
- Measurements have been executed where (location), when (time) and how (services, devices) real subscribers typically use mobile services
- Execution: February 2016
- Drive tests
  - 70 cities (> 40 K inhabitants)
  - All A-roads
  - Most important N-roads

Example CE Benchmark – Measurement Equipment

Samsung Galaxy S6 Edge+

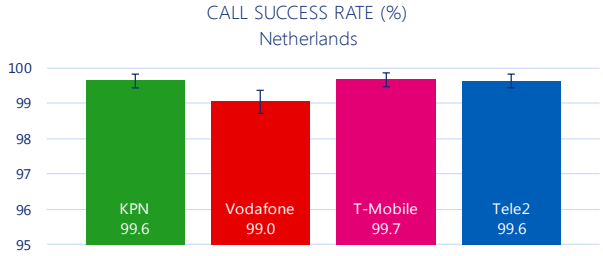
Samsung Galaxy Note 4

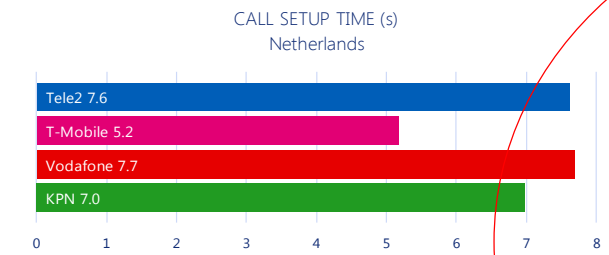
Nemo Walker Air

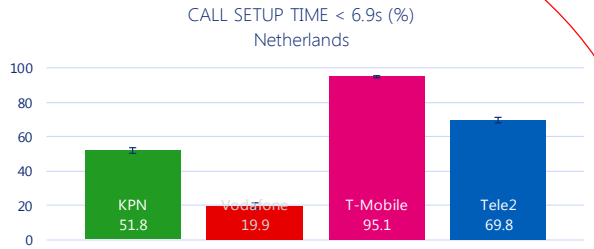
Nemo Invex

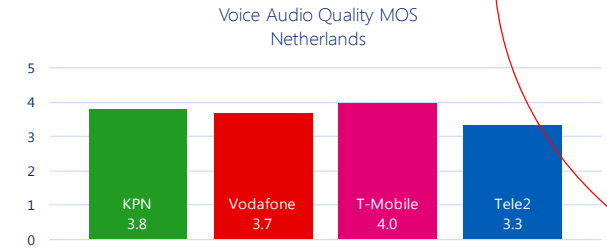
Results – Summary Data

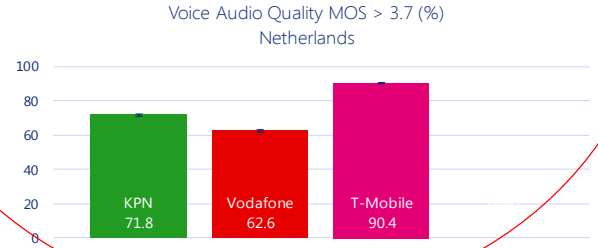
Results – Summary Telephony



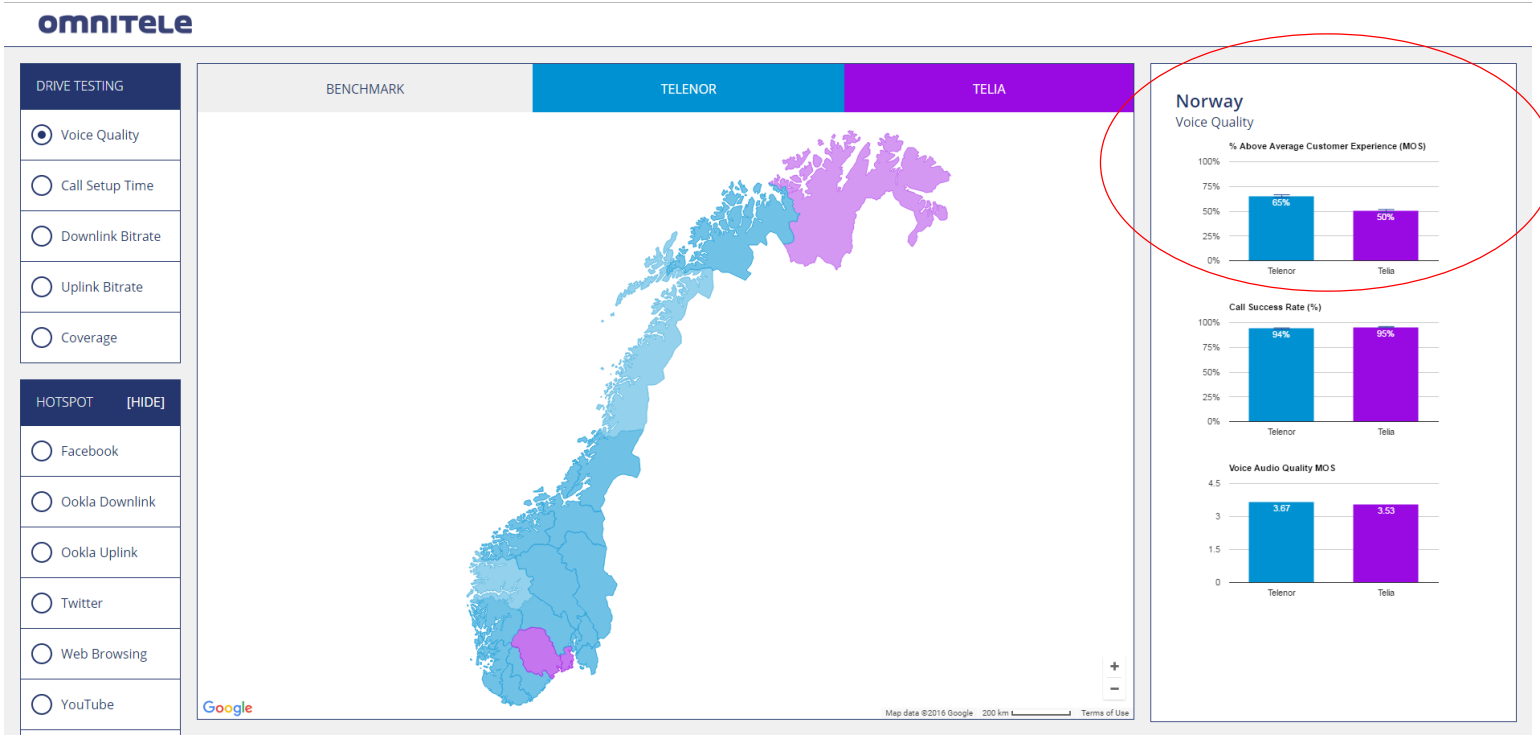








Web Portal Presentation



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