

### Meaningful Quality, beyond Meaningful Connectivity in Africa

Industry viewpoints on approaches, best practices and challenges experienced in evaluating QoS/QoE

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## Meaningful Quality, beyond Meaningful Connectivity



### A Path Towards Impactful Connectivity

QoE Everywhere in the Digital Era



The Four Pillars of Meaningful Connectivity:

- Universal Access
- Affordability

Ouality

Usability

### Moving up the Maslow's Pyramid

- Impactful Connectivity: use of connectivity to achieve societal development while closing the digital divide.
- Meaningful Quality: high-quality, satisfying and productive experiences online.
- Meaningful Connectivity: social media, video calls or accessing rich media online.
- Functional Connectivity: stable internet, transmitting pictures and accessing basic information online.
- Basic Connectivity: any internet connection, phone conversations and text messaging.

### Connectivity speed requirements for a minimum set of universal services

Internet Services	Min. Download Speed (Mbps)
E-mail	2.6
Search engines enabling search and finding of all type of information	2.3
Basic training and education online tools	1.01
Online newspapers or news	3.20
Buying or ordering goods or services online	2.86
Job searching and job searching tools	1.37
Professional networking	0.75
Internet banking	1.49
eGovernment service use	1.37
Social media and instant messaging	3.20
Calls and video calls (standard quality)	0.34

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### **Quality of Experience Everywhere**

"Universal access to reliable enriching, satisfying, and productive Services"

Speed is not enough, comprehensive KPIs are necessary

Accessibility
Speed Delivery Time
MOS Reliability
Time to content
Stalls

## Measuring Meaningful Quality



### A Multiplatform strategy | Massive field-data & Grand scale monitoring

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### Robots

- Emulating end-user's behaviour with dedicated active testing devices is crucial to provide reliable QoS and QoE measurements with in-depth information.
- It allows to compare, diagnose and troubleshoot network coverage and **quality issues** in specific locations in **real-time**.



### **Crowdsourcing & Agents**

- Massive measurements from end user perspective using real consumer devices are essential to understand network connectivity status and detect network issues at large geographical levels
- Very useful for **improving QoS** and **enhancing QoE** nationwide.

#### A unique Meaningful Quality Multi-platform approach for

### **Regulators**

Provides both high-level and detailed connectivity information and QoE KPIs comparison at different geographical levels. It enables benchmarking, service compliance and punitive regulatory use cases.

#### **Operators**

Enables both high-level and detailed understanding of network performance and different use cases such as benchmarking, planning, optimization and trouble-shooting, based on coverage, performance, service degradation and targeted lower-layer KPIs.

### **End-users**

End-users are empowered via value added services and utilities. This generates a new touchpoint with their service provider, catering for an open service provision

## Tool to evaluate Meaningful Quality



### MedUX Score Card | Overview, Goal and Benefits



### **Overview**

- With the goal of providing an **independent** and **international** benchmarking tool.
- MedUX Score Card to determine and certify the **best provider** with respect of the services accessed via **mobile and/or fixed networks**.

### **One distilled QoE Score**

- Providing an international
   Leveraging benchmarking tests that represent a major part of the services used by final customers.
  - The results are individually and collectively weighted and aggregated into an overall score.

### **Actionable Benefits**

- The service category scoring model and its drill-down capabilities makes it exploitable by different stakeholders from executive management (CxOs) to more technical departments (engineering and optimization).
- Operators can improve their networks and services offering a better experience to their customers.

### MedUX Score Card | How it works



## International use cases



## **Grand scale QoE monitoring**

for CSPs and Regulators

Robots

Senegal – Light Drive Testing Robots



### Mass event monitoring and benchmarking in Senegal

### Understand the performance of mobile networks in Senegal during a crowded pilgrimage



- Gaining actionable insights into real services experience.
- Leveraging results to make informed regulatory decisions.

#### **MedUX Solution**

MedUX deployed **active testing robots** to measure mobile network performance and quality of service along the predefined city and route. To provide meaningful quality results we applied our scoring methodology.

#### Service category weights:

- 厚 🔹 35% Voice & SMS
- 🔄 🔹 5% Accessibility
- ↔ ↔ 20% Value for speed
  - 20% Streaming Experience
- () f + 20% Web & OTT

#### Test area weights:

- 60% City
- 40% Road



## Massive field-data monitoring

**CSPs and Regulators** 

Crowdsourcing

Spain – Crowdsourcing

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### Massive monitoring for regulatory purposes in Spain.

### Understand the QoS and QoE of mobile networks in Spain throughout the entire country.

Evaluate how network investments have an impact on the quality perceived by citizens at any type of community

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Ensure that Rural Urban operators make efforts to close the gap between urban and rural connectivity

#### **MedUX Solution**

MedUX has massively deployed an **Crowdsourcing solution,** that collects quality of service and quality of experience data from embedded SDKs deployed into multiple apps available in the main market places.

Our **Crowdsourcing methodology** allows operators to access information in near real-time to meet performance requirements, including specific regulation on data granularity (geographical and demographical levels) and minimum number of samples.



## Integral multi-platform testing and monitoring strategy



### A meaningful quality multi-platform monitoring strategy



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### **Crowdsourcing** Data

### Initial crowdsourcing fast & direct data access

- Objective: monitoring and **benchmarking of different market actors**
- Use cases: monitoring, benchmarking and identification of improvement areas

### SDK or Stand Alone App

### Massive QoE data augmentation

- Objective: massive monitoring of own network quality
- Use cases: massive own network quality monitoring, basic service, network planning and optimization, **end user branded utilities**

### **Deploying Robots**



- Objective: monitoring and advanced network quality testing with plug&play robots
- Use cases: advanced planning & optimization, VIP customers, Troubleshooting



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### The internet integral Multi-platform testing and monitoring company.

- Communication service Providers
- Telecom Regulators
- End-users

For

Multi platform	Multi network	Multi technology
al <	WiFi	
	((î.	xDSL
Mobile & Home Robots	Fixed	Fiber
Agent App		FWA
	се» Д	2G
SDK & Crowdsourcing		3G
Advanced Analytics	Mobile	4G

# THANK YOU



## SUSTAINABLE GALS



## #MedUXImpact



### **QoE Everywhere** in the Digital Era

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## Gracias

### Thank you



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## **BACK-UP**

## **About MedUX**



## The internet <mark>Quality of Experience</mark> testing and monitoring company.

**QoE** Everywhere in the digital Era.



## Why MedUX

### With MedUX, you get a unique ecosystem that provides a one-stop-shop QoE suite for all your needs.

We integrate robots and agents, our full-stack technology and advanced analytics to deliver comprehensive multi-play testing and grand scale monitoring.













Communication service Providers



**Telecom Regulators** 



**Digital Enterprise** 

### **Multiplatform QoE Suite**



**Mobile & Home Robots** 

Mobile network monitoring and In-Home QoE measurements from real end-user perspective.



### Agent App

Available on iOS, Android and Harmony; supports various QoE measurements.



#### **SDK & Crowdsourcing**

QoE insights from real world end users. Collects information on the mobile network.



#### **Advanced Analytics**

Offers Agile tools for monitoring network services and discovering insights in real time.



### **QoE Revolution.**

Since 2014, MedUX has been revolutionizing networks and services testing from the **customer perspective**. Our figures have not stopped growing.



### X

### **Global Trusted Partner.**

+ 20 Countries International presence.

**Global presence.** Centers of excellence throughout the world.



Offices



### **Success stories.**



The solutions



### Massive field-data monitoring

**CSP & Regulator** 

### Testing everything, with real-field information from everywhere

Challenges persist in Telco industry due to poor network quality and limited visibility of user experience. In the Digital era, understanding performance from the user's perspective is essential

### **Value Proposition**



Our Massive Field Data Monitoring solution, leveraging **Applications, SDK and crowdsourcing**, enables a wealth of insights to optimize network performance, enhance customer satisfaction, and stay ahead in the digital era.

With MedUX, MNOs and regulators can unlock network performance **field-data gathered directly from end-users**, provide utilities to verify internet service compliance, promote customer experience improvements, and contrast regulatory KPIs at different geographical levels.

### **Use Cases**





### Massive Coverage Analysis





### Regulatory compliance

### Network insights

- Detection of network coverage holes
- Tracking of new cells installations
- Spectrum frequency and Bandwidth usage
- Before/after network changes analysis

- Benchmarking reports for positioning and intelligence purposes
- Mobile and Fixed Operators own and competitors' network quality experience
- Subscriber segments performance

- Network monitoring and auditing
- Consumer-focused utilities and applications
- End-user empowerment with reports based on transparent information

- Network optimization analysis
- Network Planning strategies
- Site prioritization
- Capacity planning
- Customer care and
  - roaming performance tools





### **Use Cases**



### Quality of Experience



### **Marketing Claims**



### Subscriber level insights

### Used Technology Analysis

- Video streaming experience
- Social media platforms performance
- Website browsing time
- Gaming experience indicators

- Brand awareness as performance leader
- Certifications to accredit service and network quality
- Assessment to become best in class

- Subscriber-centric QoE data
- Speed test foreground layer
- Background testing
- Contracted service compliance reports
- Metrics enrichments with MNO data

- Device performance analysis across dimensions (model, OS, etc)
- Access technology capacity and service quality
- Used technology and coverage correlation
- Wholesale performance insights



The solutions

### Grand scale QoE monitoring

Mobile

Fixed

CSP & Regulator

Technical indicators converted in QoE metrics measured from a customer perspective.

High speed connections and the new digital experiences demand true OTT visibility and a cost- effective data collection and probes deployment strategy. MedUX offers Technical indicators converted in Quality metrics measured from a customer perspective.

### **Value Proposition**



MedUX's Grand Scale Quality monitoring solution enables operators and regulators to **gain** valuable insights into users' everyday internet habits, whether at home or on the go.

With MedUX, operators can **investigate faults and degradations** of real applications and services, leveraging deep-dive analysis of technical network parameters. Uncover actionable intelligence with MedUX and optimize your network performance.



Wide Network Monitoring

- Benchmark campaigns.
- Troubleshooting analysis.
- Optimization strategies.
- Regulatory tests.



Technology and Spectrum Analysis

- Environmental data.
- Transport layer information.
- Network layer information.



OTT and digital services Insights

- Cloud services.
- Streaming platforms.
- Social Networks.
- Messaging apps.