Enhancing Over-The-Top (OTTs) service quality and connectivity assessment in mobile networks

ITU Workshop on "Telecommunication Service Quality“

Freetown, Sierra Leone,

July 2025

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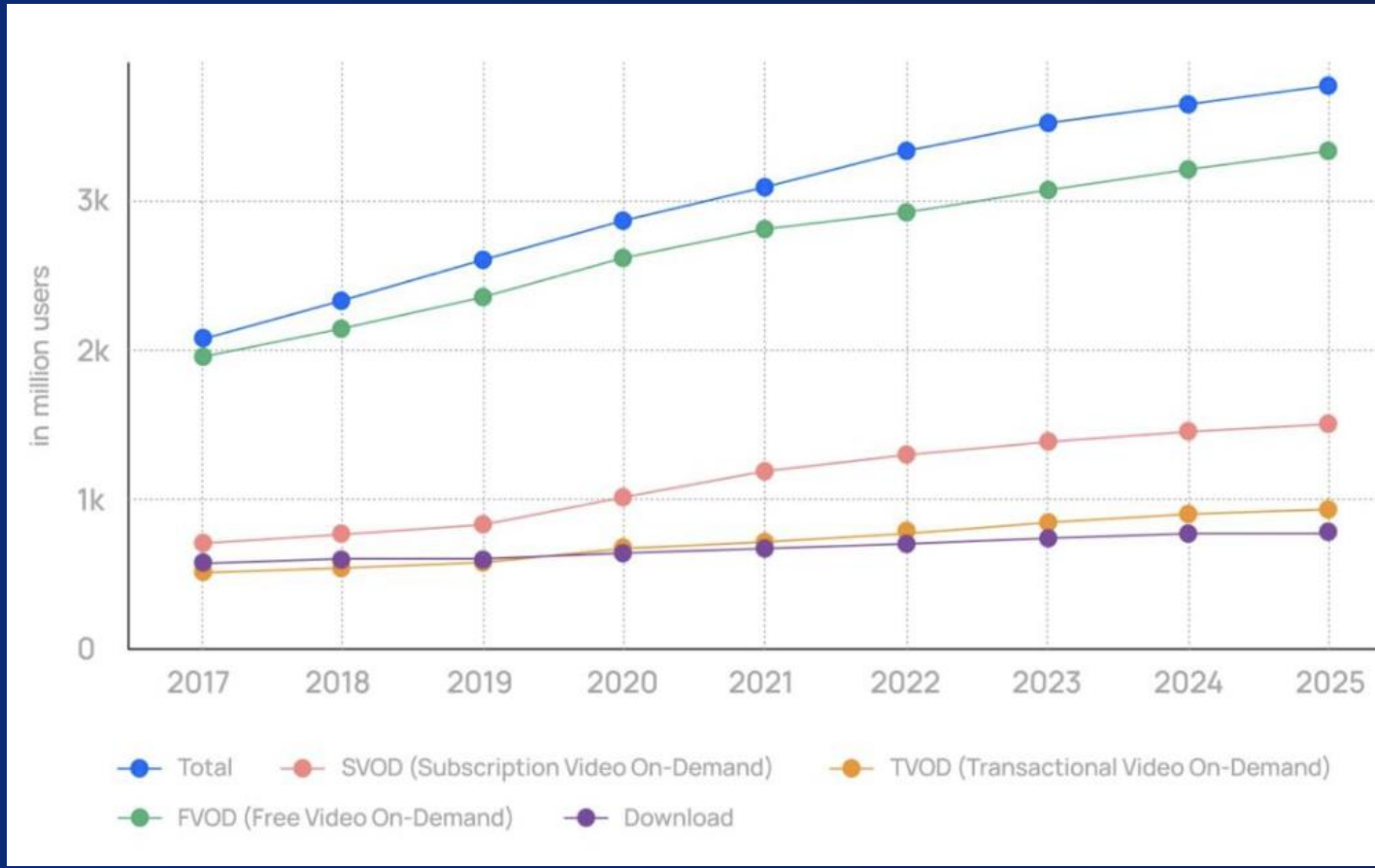
Introduction

- Over-The-Top (OTT) services
  - refers to ***Apps like Netflix, WhatsApp, YouTube*** delivered over the internet that bypass traditional network operators.
  - 70%+ of mobile data traffic is OTT

- Generally, users expect high performance regardless of network - **no longer signal strength or call drop rates**
  - ✓ Hence, Quality of Service (QoS) and accurate Quality of Experience (QoE) assessments is technically complex.

The Rise of OTTs – wings of fire



https://www.uscreen.tv/blog/ott-statistics/

OTT & Mobile Network Ecosystem

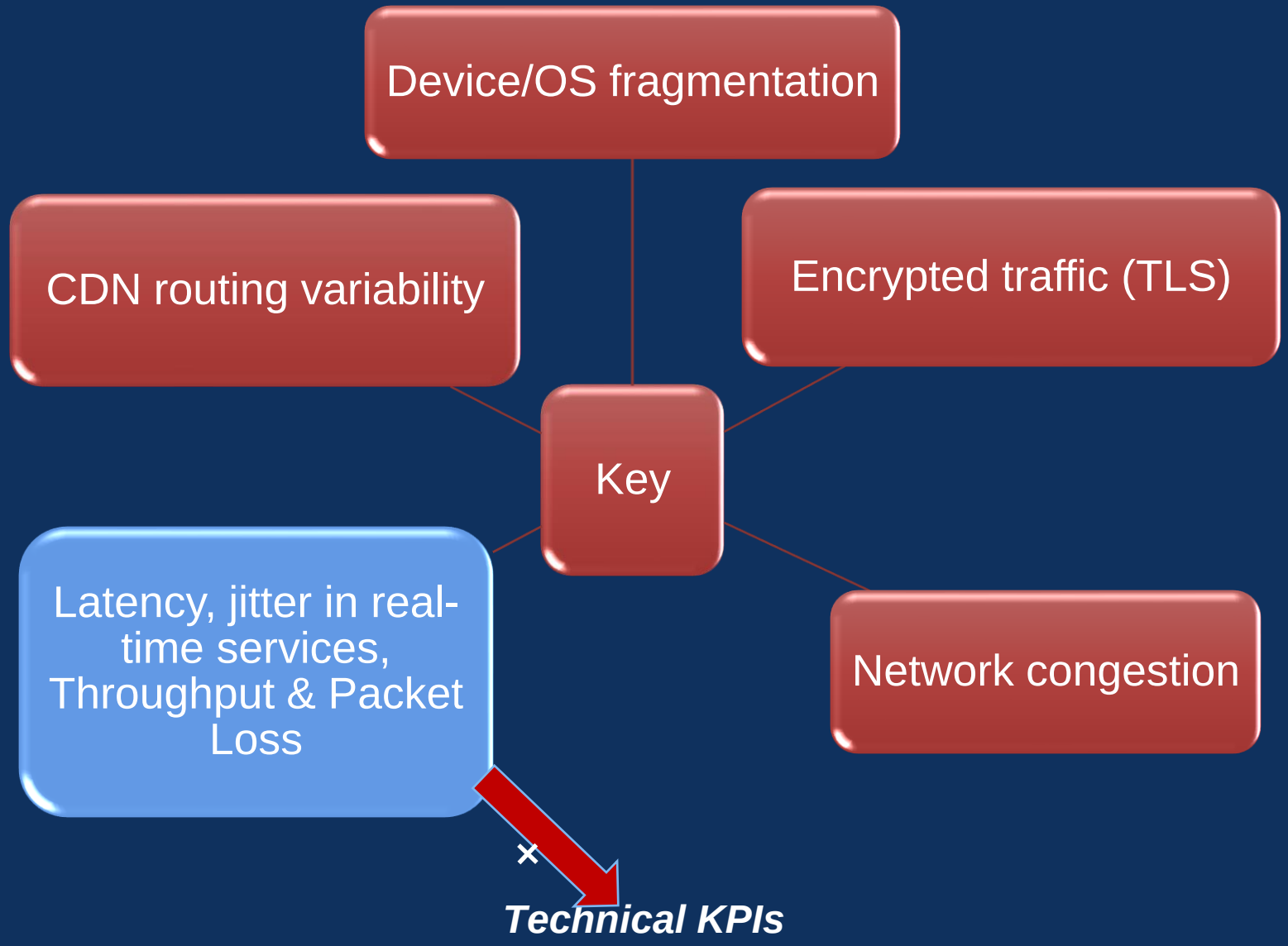
Layers

- Application (OTT apps)
- Transport (IP routing)
- Access (RAN: 4G/5G)
- Core Network

Stakeholders

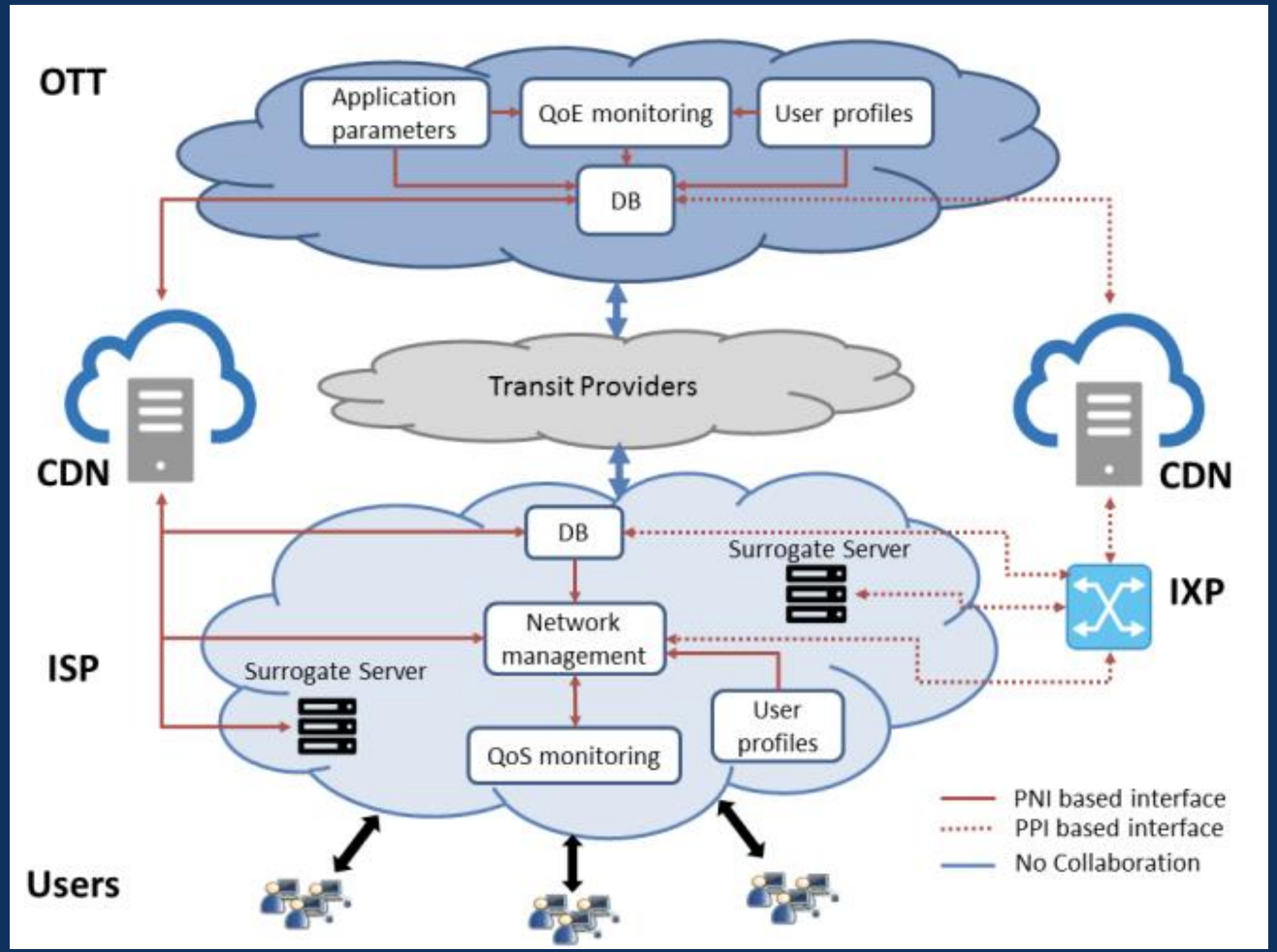
- Regulators – (NatCA)
- MNOs
- OTT Provider - Optimize content delivery -
  - **Techniques** (adaptive bitrate streaming, edge caching)
- Customer – App centric expectation

Key Challenges in OTT Service Delivery

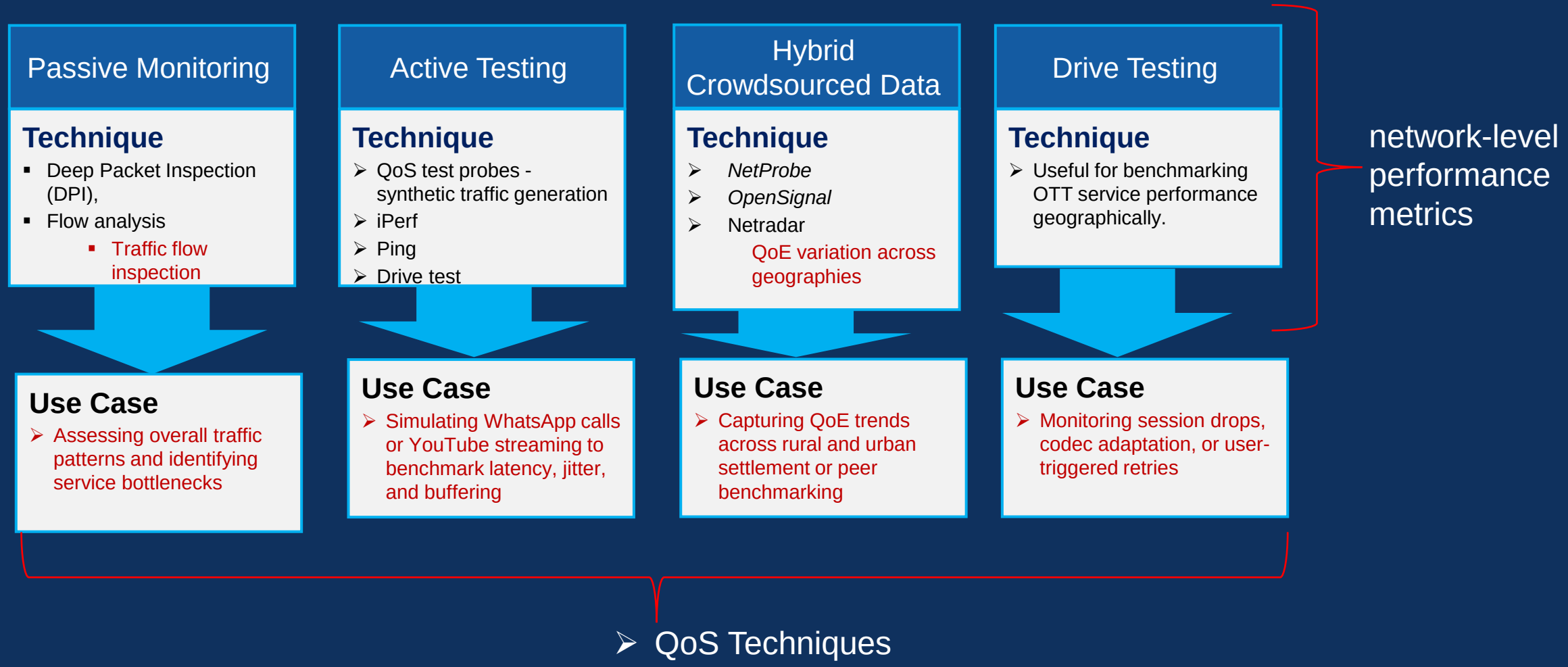


- To address CDN routing variability challenges

- Arslan et al proposed **a QoE-aware collaboration approach**
  - Joint optimization on both network and application sides - ***basis of economic factors***



OTT QoS/QoE Assessment Methods



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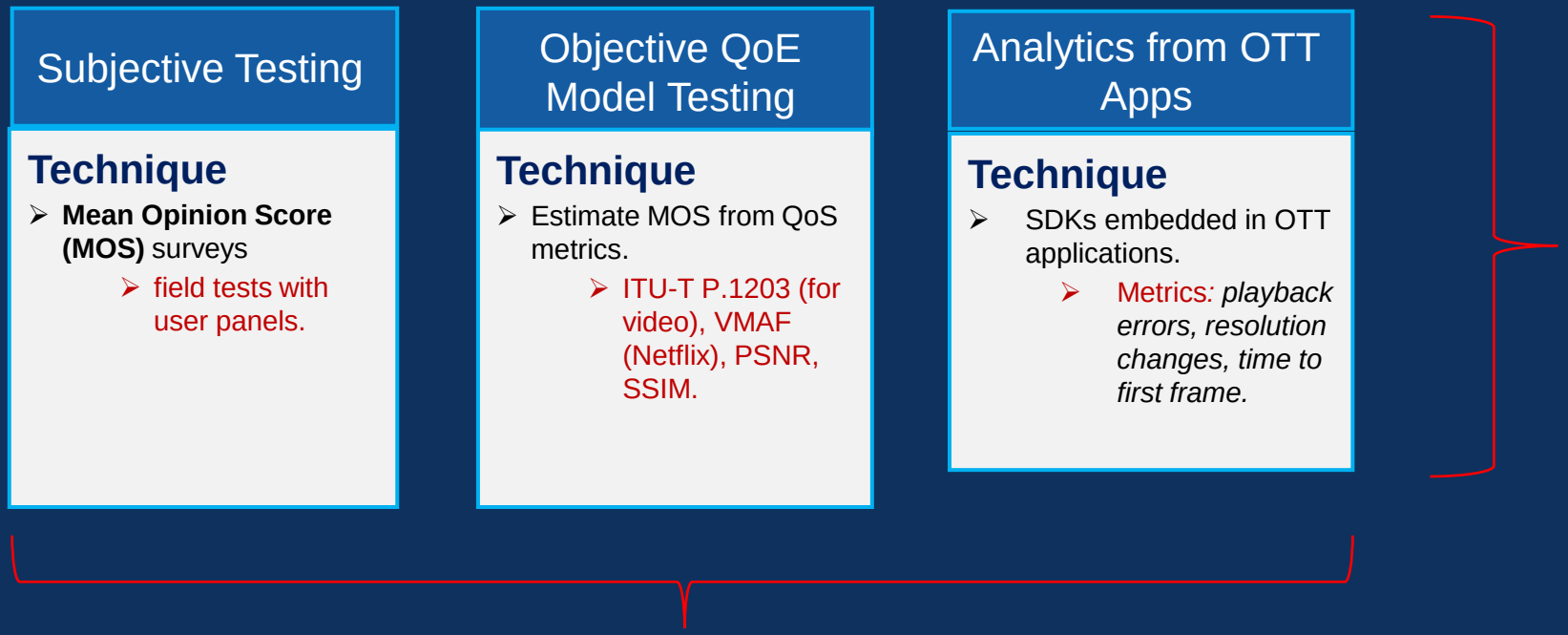

- QoE Techniques

Practical Insights

Use Case: Enhancing OTT Service Quality in West Africa

Use case

- Rapid rise in **YouTube and Netflix** consumption in urban zones at 6 – 10pm.
  - triggers increased buffering and latency

Technique

- Passive Monitoring
- Active Testing
- KPI Analysis

Tools

- QoE Engines, DPI
- Drive Tests, Test UEs
- Latency, Throughput

- High buffering ratio during peak hours
- DNS delays, server path suboptimal
- Backhaul congestion, weak RSRP in clusters

- Improve Quality of Experience (QoE) and reduce customer complaints

- **Outcome**
  - **Buffering Incidents ↓ 34%**
  - **Video Startup Time ↓ 1.2 seconds**
  - **User Satisfaction ↑ 20+ pts**

Lessons Learned

- MNO - OTT collaboration is essential
- QoE + QoS = full visibility
- MEC enhances OTT experience
- Monitor continuously, not occasionally
- Content localization drives bandwidth constrained areas

Conclusion

- OTT ecosystem complexity requires cross-layer visibility
- Passive and active monitoring are complementary tools
- QoS & QoE assessment must be continuous and dynamic (align with evolving regulatory standards
- Prioritize user-centric metrics that reflect perceived quality, not just technical performance.
- Clear regulatory framework that encourage transparent quality reporting, net neutrality compliance, and OTT–MNO collaboration

THANK YOU