VoLTE & Big Data

Improving Subscriber Experience

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EXFO

VoLTE: Slow Start but Gaining Momentum

- 90 operators in 47 countries are investing in VoLTE
- 16 operators in 7 countries with commercially launched VoLTE service.
- 186 smartphones support VoLTE

Source: GSA

Source: Infonetics

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The Perfect Storm

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High Expectations

- 2G/3G Mobile networks have set a high bar for voice call quality
- Subscribers have become accustomed to free OTT voice calls
- VoLTE promises HD voice quality, longer battery life, faster call setup times

	OTT VoIP	VoLTE
Treated as	A Data stream	**A Voice Grade Call**
QoS Class	Non-GBR Best Effort data service: QCI = 7	**High quality GBR: QCI=1 Conversational Voice**
Emergency Call	NO	**YES**
Service Set	NO Stand alone voice	**Service Orchestration** **Operator provides a set of service.**
Infrastructure support	Treated as a data stream (in LTE->3G HO, quality degradation may occur)	**Infrastructure supports the quality. (e.g., SRVCC/eSRVCC)**

Source: DoCoMo

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Complexity

switching the device between 2G, 3G and LTE networks can also lead to an unacceptable amount of time that a phone is unable to be reached. It may only be five to 10 seconds at a time that a device is

Ericsson exec: VoLTE deployment delays not surprising due to network complications

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Incessant Mobile Data Growth

› Global phenomenon…….

Figures in parentheses refer to regional share in 2018.

Source: Cisco VNI Mobile, 2014

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Overloaded Networks

› Networks are already struggling to cope with mobile data growth

Source: Light Reading

› VoLTE introduces an extremely <u>sensitive and demanding</u> type of data

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VoLTE: A Demanding & Sensitive Data

- VoLTE places significantly greater demands on the network
  - Call Setup: CSFB (5 secs) vs. VoLTE (< 1 sec)
  - Latency: Data (100ms) vs. VoLTE (10ms)
  - Packet loss: Data (> 10^{-2}) vs. VoLTE (< 10^{-3})
  - Handovers timing: Data (> 500ms) vs. VoLTE (< 100 ms)

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The Value of Big Data…..

Why did the VoLTE QoE suddenly degrade amongst heavy users?

Why are the top apps providing poor QoE?

Why does Blackberry cause availability issues to VIPs?

On average, in which locations do subscribers experience most dropped calls?

Helps you answer such Critical Questions

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Focus needs to be on Subscriber QoE

In traditional network-centric approach all indicators are green…

…but your subscribers may be unhappy and considering a move.

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Identify Service Blindspots

- Analysis of Big Data in near real-time is key
- Synthesize data from customer facing groups & network focused teams

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VoLTE KPIs to focus on…..

Quality of Experience	Key Performance Indicators (KPIs)
Setup & Maintain calls, esp. during Handovers & failovers	Call Initiation Rate (%), Call Drop Rate (%)
Time it takes for a UE to register, start ringing or to perform Handovers or failovers	Registration/Call Setup/HO Time
Voice Quality. Impact of mobility	E Model/R Factor/MOS
Overall QoE	Loss, delay, jitter
Impact on other data	http response times, ftp download times, etc.

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EXFO Big Data Framework

Live Network

Test Lab

- Active Testing
- Passive Monitoring

- High Capacity Simulators
- Live network traffic models

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Thank You!

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