Setting the right environment for VoLTE

Eduardo Polacchini   Ericsson   July 2018

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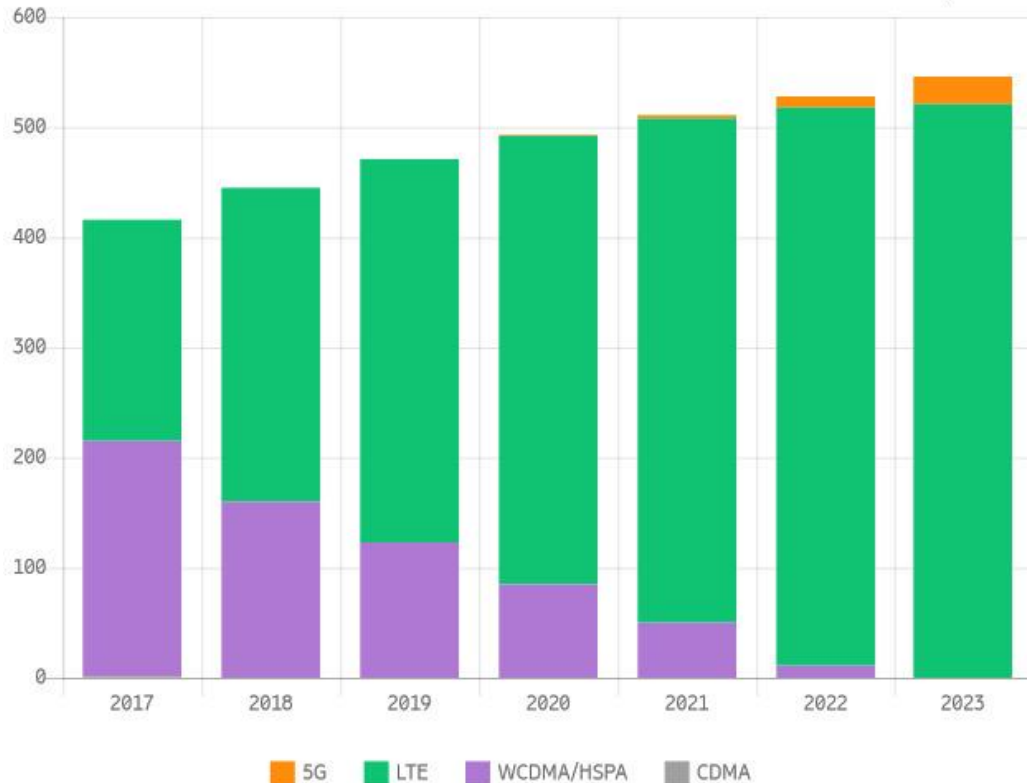# Mobile and VoLTE subscriptions

Mobile subscriptions

Unit: Million
5G | LTE | WCDMA/HSPA | GSM/EDGE | TD-SCDMA | CDMA | Other technologies
Smartphones | Feature phones | Mobile PCs/Tablets/ Routers
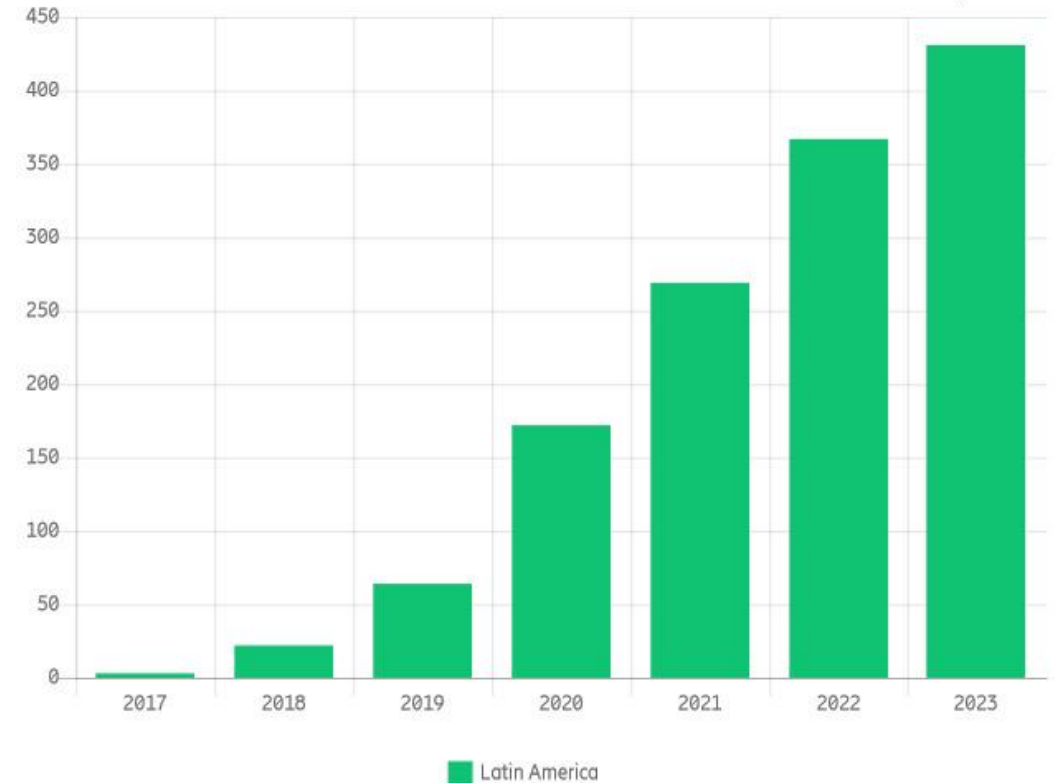Year: 2017 – 2023

Source: Ericsson (June 2018)

Legend: 5G | LTE | WCDMA/HSPA | CDMA

VoLTE subscriptions

Unit: Million
VoLTE
All devices
Year: 2017 – 2023

Source: Ericsson (June 2018)

Legend: Latin America

Mobile Voice

- Declining in North America

- Stable in most regions

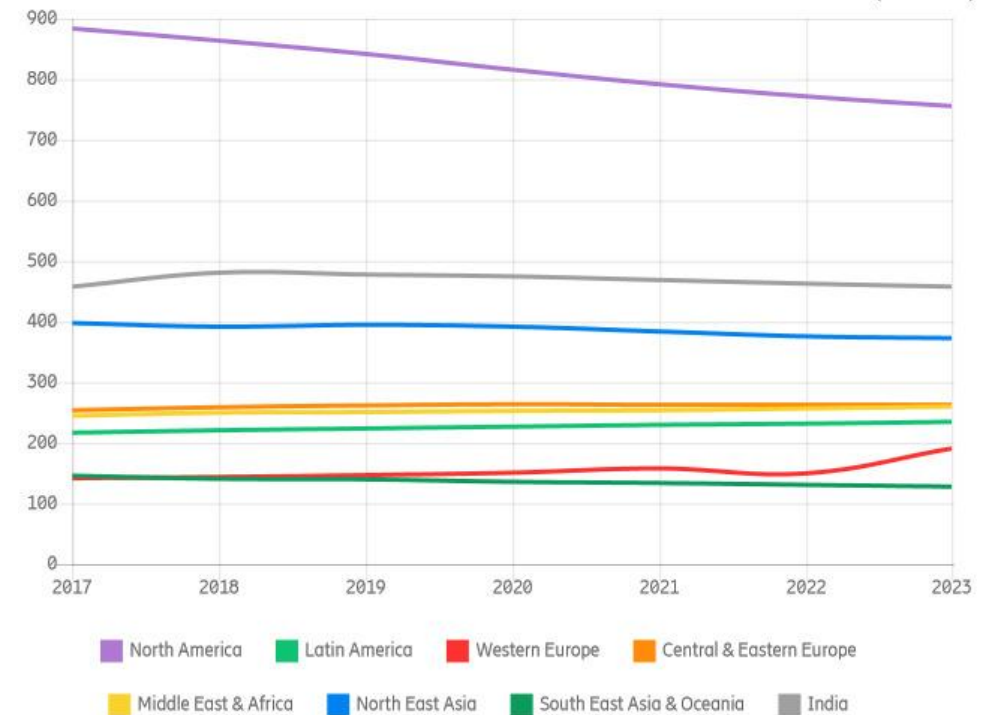- Still significant source of revenue for carriers

Voice traffic

Unit: Monthly Minutes of Use (MMoU)
All technologies
MoU
Year: 2017 - 2023

Source: Ericsson (June 2018)

Legend: North America, Latin America, Western Europe, Central & Eastern Europe, Middle East & Africa, North East Asia, South East Asia & Oceania, India

VoLTE industry insights

— 650 million+ VoLTE subscriptions, expected to reach 5.5 billion in 2023 (Ericsson Mobility Report 2017)

— 127 live VoLTE networks in 63 countries on 1,218 devices (GSMA April 2018)

— Several IMS virtual deployments

— Most VoLTE service providers expanding with Wi-Fi calling and multi-device

— IoT voice

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VoLTE KPIs Maturity

MOS ≥ 3.5
Voice Quality

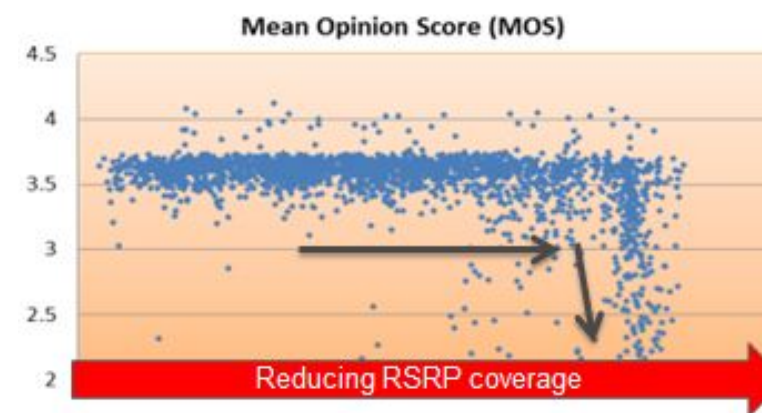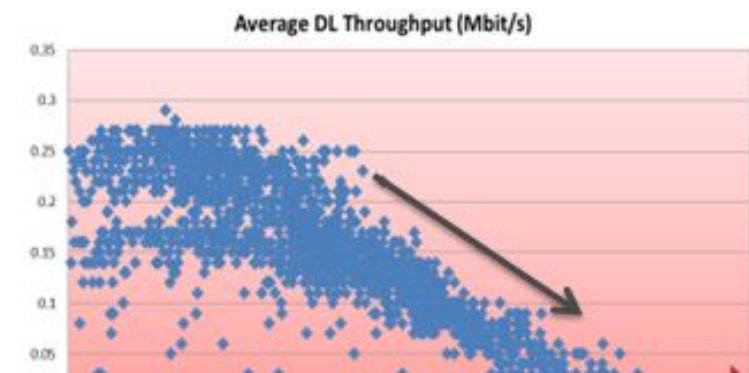<200ms
HO Interruption

<225ms
Speech Delay

VoLTE

better or on par with
2G/3G voice KPIs

<1%
Drop Rate

≥ 99%
Setup Success

<2,5-4s
Call Setup Time

VoLTE network readiness

Different requirements compared to MBB:

- MBB high throughput, low mobility with short duration connections

- VoLTE: Low throughput, smaller packets, more mobility & longer duration calls (120+s)

- More sensitive to poor RF coverage/quality - effort to be focused on poor areas and cell edge

Average DL Throughput (Mbit/s)

Mean Opinion Score (MOS)

Reducing RSRP coverage

Radio Quality vs Drop Rate
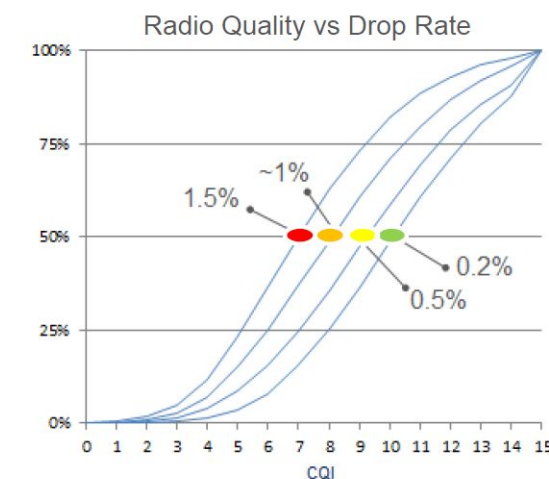
What to measure for VoLTE

- Voice is carried in data packets

- To monitor real user experience an E2E approach is needed

- Radio, Transport and Core KPIs needs to be monitored

- QoS is fundamental to achieve good user experience

E2E Readiness

IMS & Core ☑

Transport & IP Network ☑

RAN ☑

UE ☑
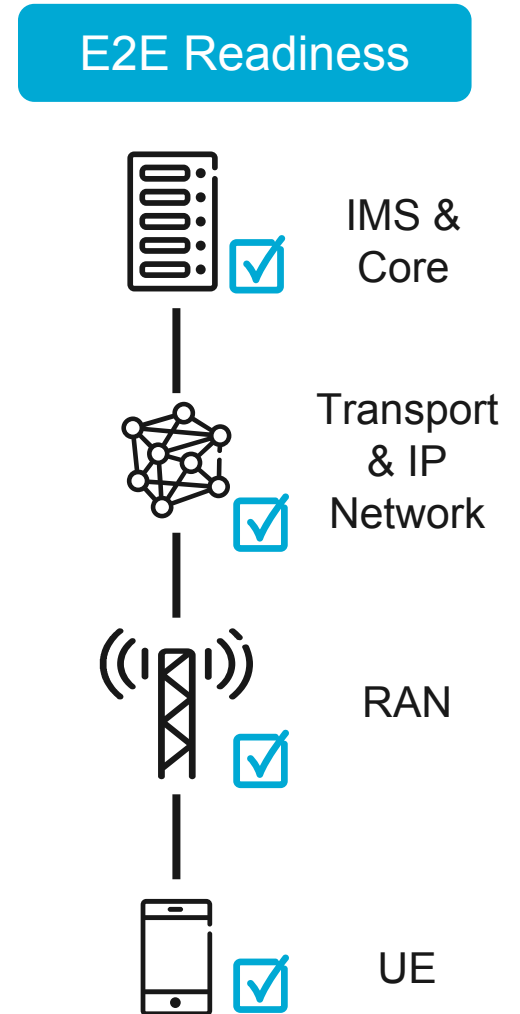
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Voice Quality beyond HD Voice with EVS

— Improved quality for narrowband and wideband

— Super wideband and Fullband audio voice quality

— Improved robustness – better quality at cell edge, areas with interference and for Voice over WiFi

Quality Comparison – Clean Speech

Robustness Comparison – Clean Speech
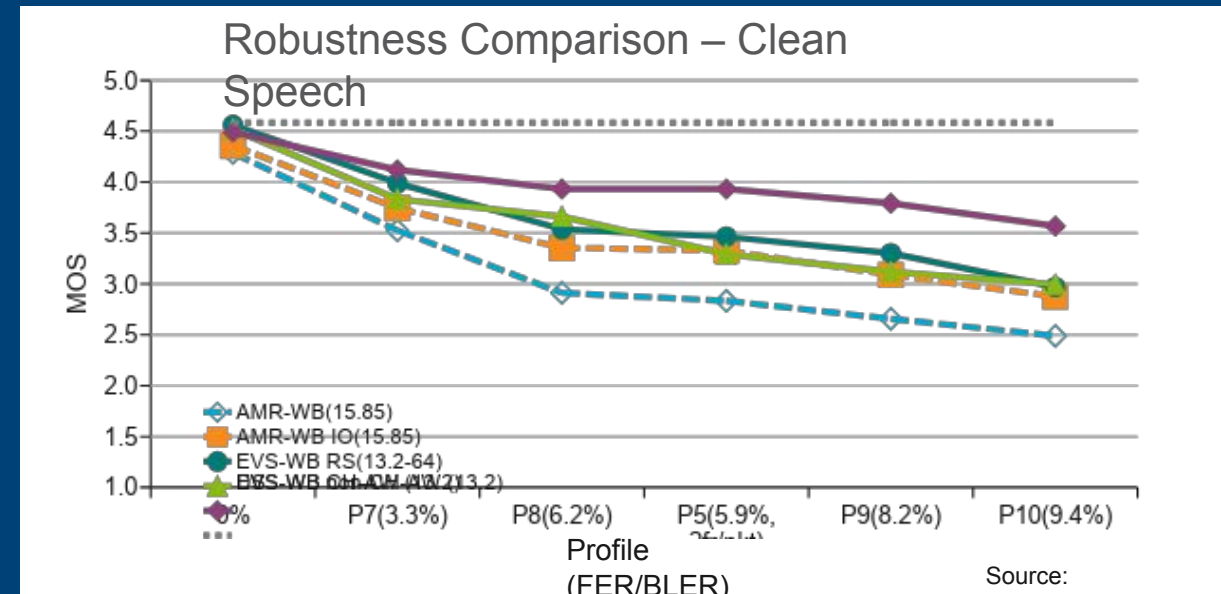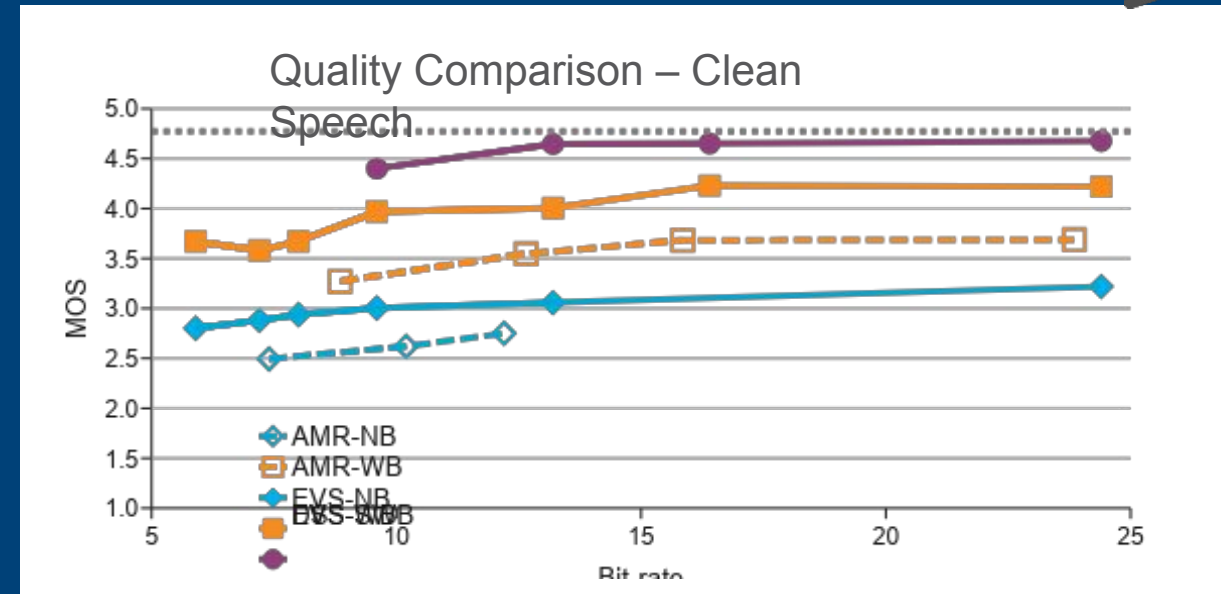
Superior communication experience
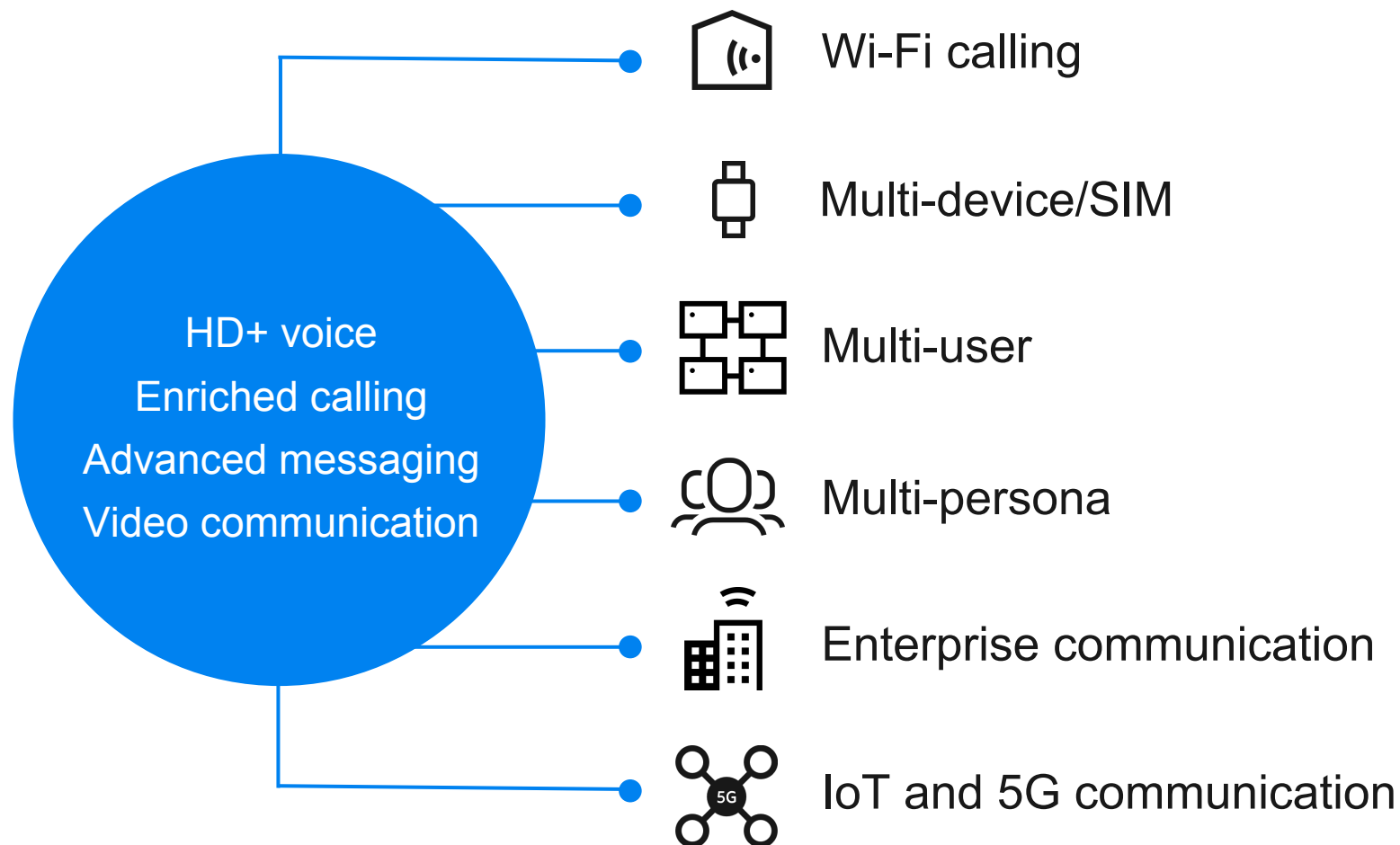
Difference between VoLTE and OTT voice

— VoLTE is delivered with telecom grade quality

— RAN uses scheduling and adaptation techniques to mitigate poor radio conditions

— OTT VoIP services run as best-effort data services
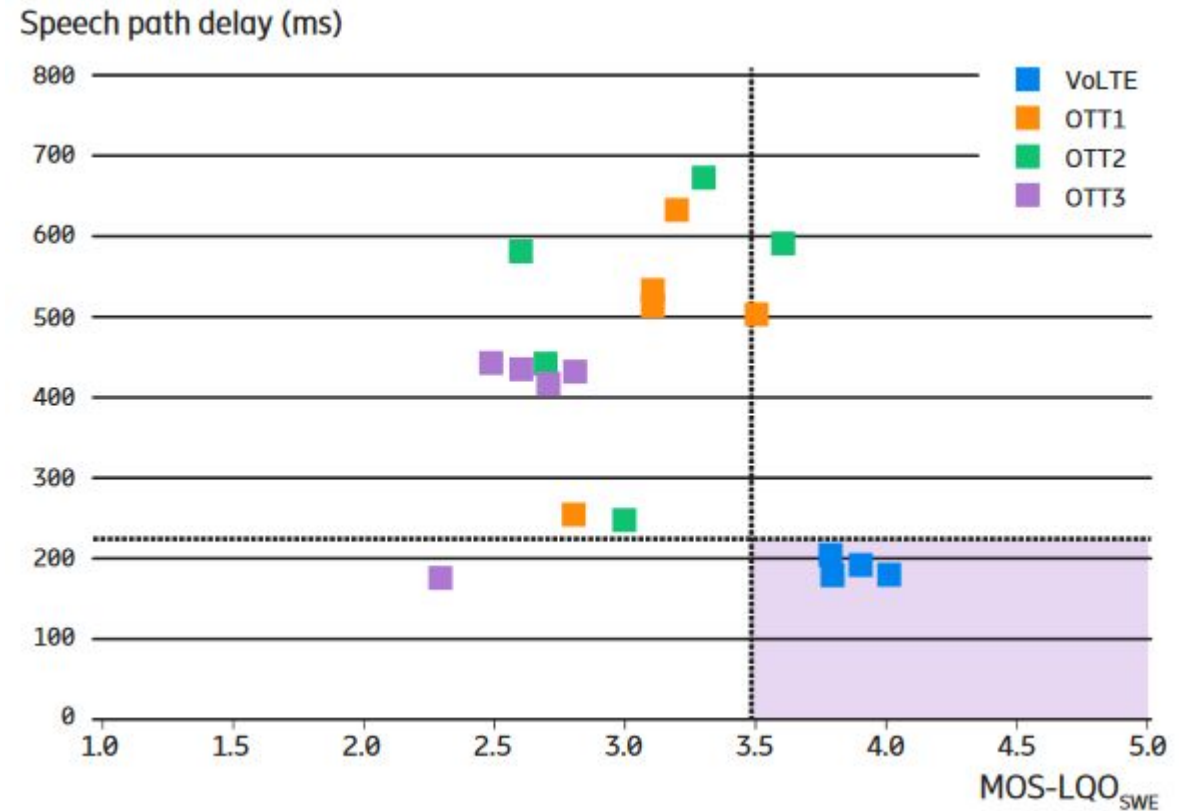
Tests performed in drive test in busy and non busy hours in South Korea

Additional Use Cases

HD+ voice
Enriched calling
Advanced messaging
Video communication

Wi-Fi calling

Multi-device/SIM

Multi-user

Multi-persona

Enterprise communication

IoT and 5G communication

Designed
to provide tomorrow's
advanced services

First to market
in collaboration
with device partners

Architected to quickly
launch offerings

Enriched Communications

Video Calling

— Support in majority of VoLTE smartphones

— Ease of use

— Communication continuity with HO to voice

— Live in close to 20 networks

RCS

— Enriched messaging, chat, file messaging, etc

— Users can, from the messaging app itself, engage with virtual assistants or chatbots to interact with business without having to download multiple apps.

Wi-fi calling market opportunity

Improve voice and video calling coverage

— Extend to areas with limited 3GPP access

— Utilize already deployed Wi-Fi

Wi-Fi calling solution

— 3GPP standardized

— Native device support from all major device vendors

90%
of our time spent indoor

Only 40%
of users are satisfied with cellular coverage indoor

Wi-Fi calling on smartphones

Wi-Fi calling for multi-device on selected device brands

Use mobile phone number to call over any Wi-Fi

Multi-device/SIM one number on multiple devices

— Allow several devices to share the same number

— Answer calls in any device

— Transfer calls between devices

Multi-persona use case
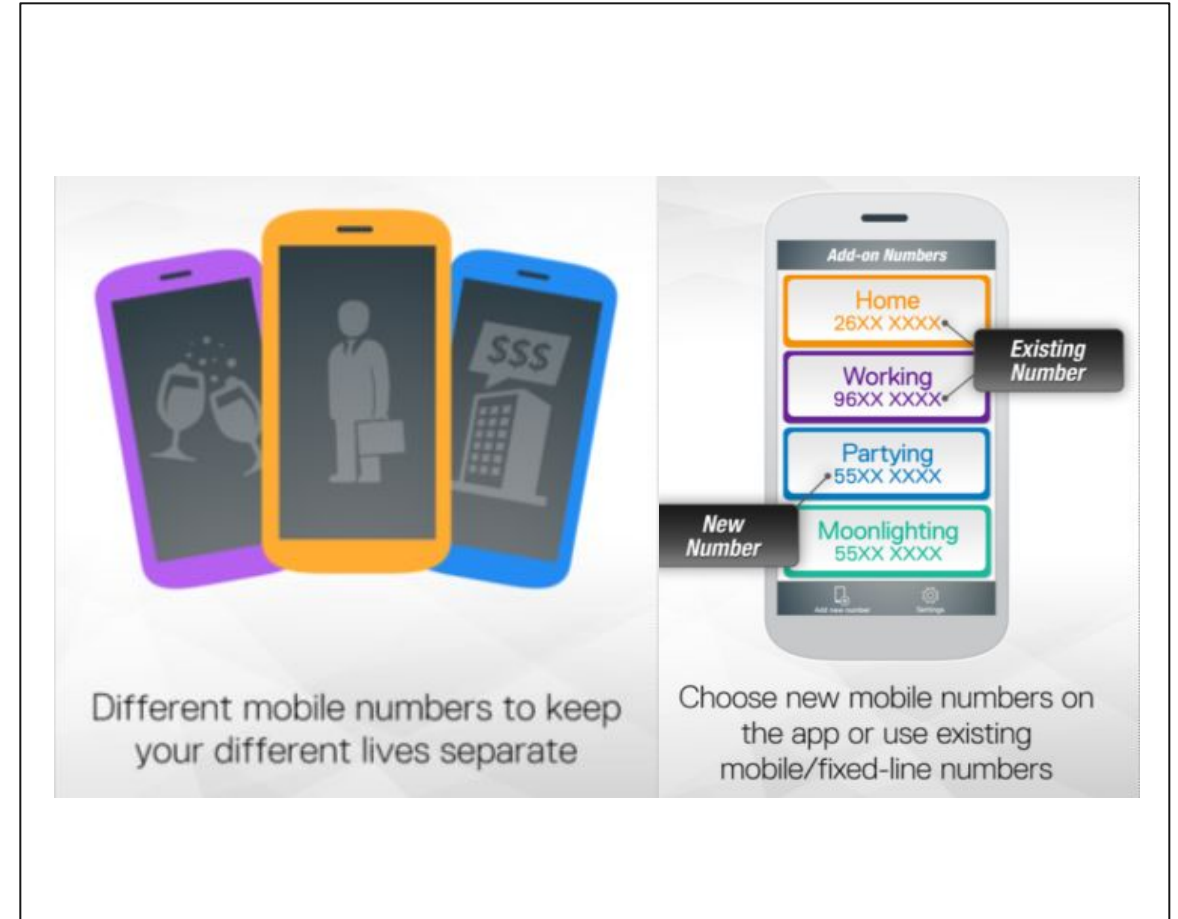
Many numbers on the same subscription

— Multi-persona settings and names

— Keep separate calling ID, message folders, phone book, voice mail

Persona selection

— Select which persona/dialer you want to use before you place the call: Private mobile, Work mobile, Private home, etc

Shown identity

— The receiving call party will only see the phone number you chose to call from

Different mobile numbers to keep your different lives separate

Choose new mobile numbers on the app or use existing mobile/fixed-line numbers

IoT voice call through VoLTE
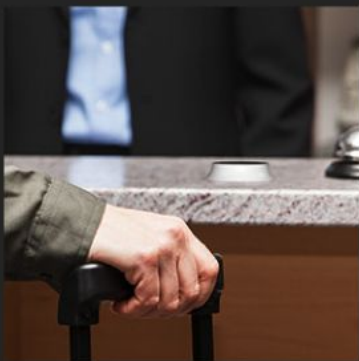
VoLTE for Unified Communication (VUC)

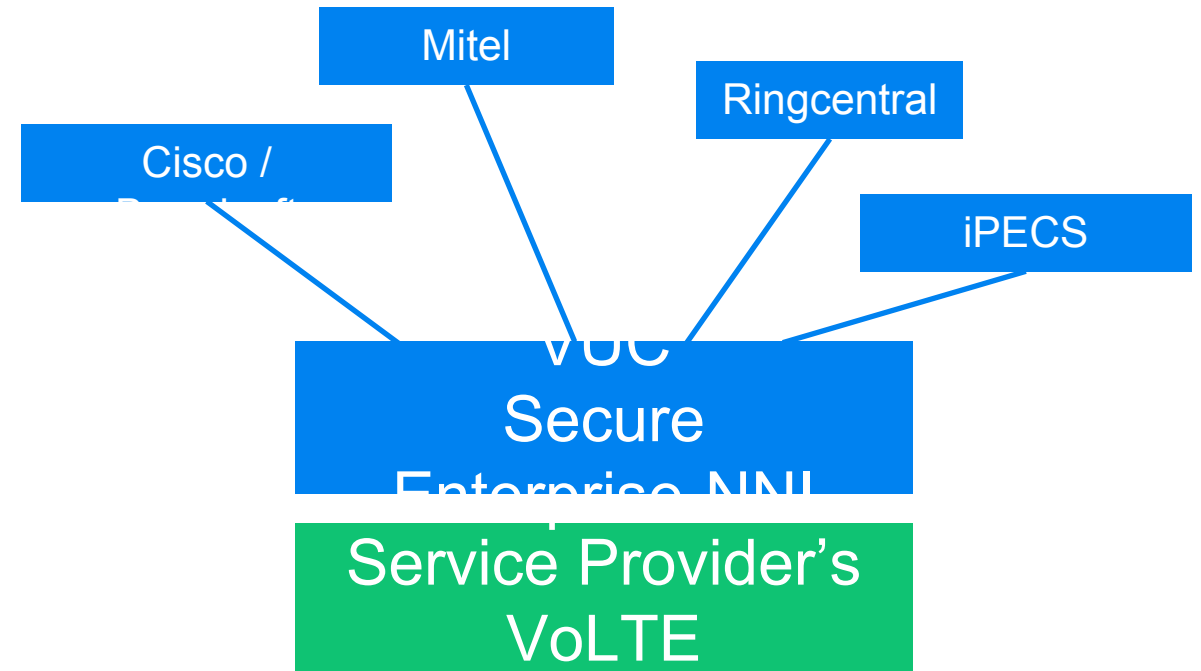— Leverage on IMS core to integrate with enterprise applications

— Collaboration features

— Control and compliance for the enterprise

— Can be integrated with presence, rich collaboration and real time business applications (CRM, ERP, etc)

Mitel

Ringcentral

Cisco / ~~Broadsoft~~

iPECS

VUC
Secure
~~Enterprise NNI~~

Service Provider's VoLTE

Roaming & interconnect

— <u>Roaming and IP Interconnect</u> happening, driving VoLTE take up and global expansion.

— <u>S8HR</u> the dominant roaming standard currently being deployed. Built on EPC/data roaming.

🟠 VoLTE roaming live
🟢 IP Interconnect live

<u>IP Interconnect</u> for VoLTE to VoLTE and for VoLTE to non-VoLTE terminals/networks
Live operations
— South Korea (2015)
— USA (2016)

5G and voice services

— Voice will continue to be offered alongside with new 5G specific services

— The 5G voice introduction starts with VoLTE as a base

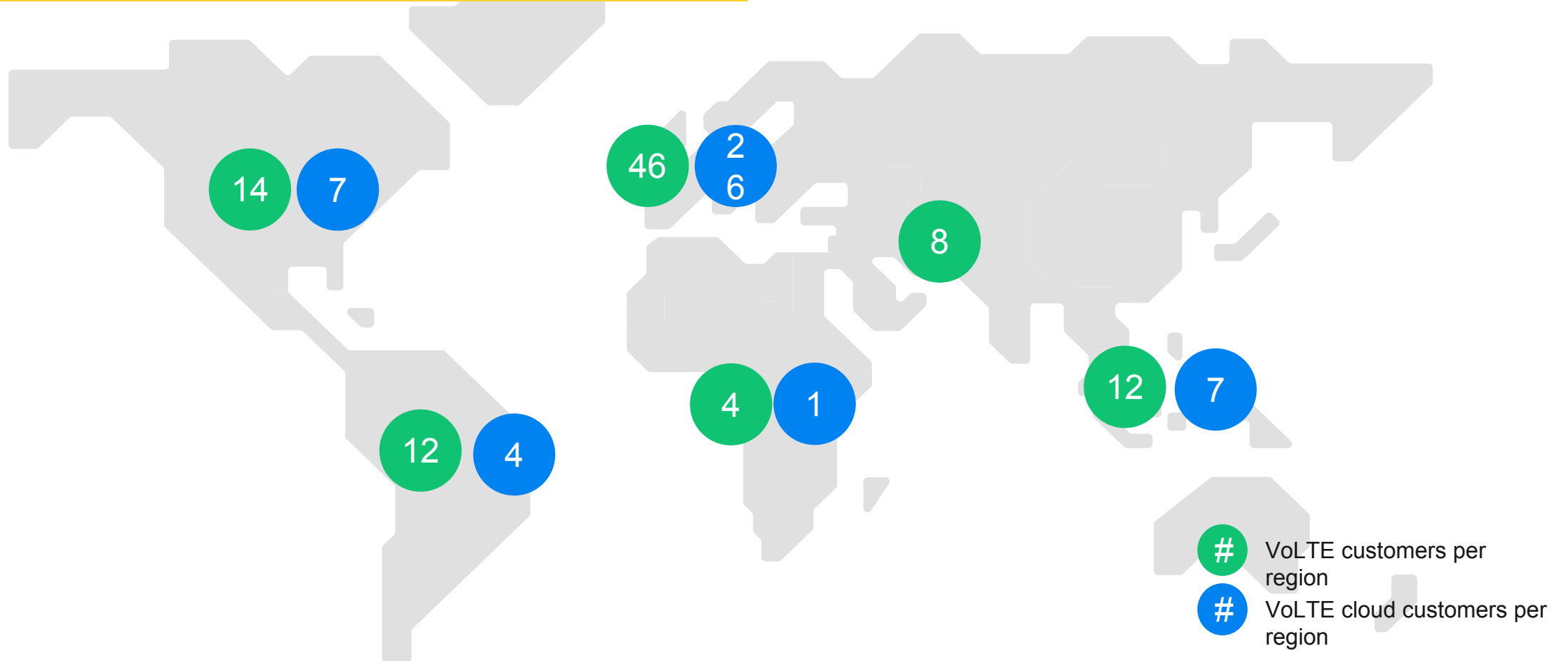— IMS continues as the voice service engine

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Ericsson VoLTE commercial networks

100+ VoLTE customers with 45+ live networks
50+ VoLTE cloud customers with 10 live networks

14 7

46 2
    6

8

12 4

4 1

12 7

VoLTE customers per region

VoLTE cloud customers per region

Key Takeaways

— Global, interoperable with unmatched voice quality

— Environment ready: LTE coverage and terminals availability

— Mature solution with additional opportunities

— VoLTE and IMS evolution to 5G

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