

# High Quality of Experience Critical in MCC/MCX Communications

*Softil's Director of Standards and Products, Anatoli Levine, delves into the paradigm shift being experienced by the mission-critical communications industry*

TEL AVIV, ISRAEL, April 2, 2019 /EINPresswire.com/ -- Today's public safety communications are entering a period of significant change. Where once the humble radio was the sole means of communicating in firefighting and police incidents, the smartphone is now the de facto choice of public servants enabling them to communicate better and work faster.

But the smartphone is only part of the story. An end-to-end public safety broadband network has to be established moving beyond today's clustered, limited and unconnected networks to end-to-end, ubiquitous, extensible connectivity for any public agency at any time.

MSC/MCX first began in 3GPP Release 13 and work continues in trade bodies and standards groups to this day. As with all standards, definitions are essential to human understanding and Softil has laid out its quality of experience (QoE) suggestion to working groups for MSX solutions as the "optimal experience supporting the needs of the user based on the technology capabilities at a given moment in history."

Three factors determine QoE in MCX solutions – the network, devices and system (network plus devices). The network QoE factors depend upon availability, bandwidth/speed, priority and pre-emption.



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Drilling down, availability is dependent on having a dedicated core network, no gaps in network coverage, in-building connectivity and communication continuity, and a private LTE network in the "backpack."

Turning to factors affecting QoE bandwidth/speed in MCX solutions, capabilities for file and video sharing demand additional bandwidth from a network to avoid the risk of group communications overloading it, eMBMS/multicast capabilities and it is essential that network delays be minimized at all costs.



. Anatoli Levine, Director, Products & Standards at MCC enabler Softil

On the two remaining factors affecting the best possible QoE experience in using MCX solutions, priority and pre-emption, Softil believes that mission-critical/public safety traffic should be prioritized over all other traffic with guaranteed bandwidth allocation and that when necessary, non mission-critical communications should be pre-empted.

There are six standout features affecting the device QoE – ergonomics such as buttons and controls, connectivity, audio quality, video quality, KPIs and UI.

Drilling down again, QoE factors affecting ergonomics, it should be recalled that an MCPTT handset is not a radio and presents different capabilities and is operated in a different way. Devices should have PTT/PTV buttons for group emergency communications, UI hardware controls and instant voice controls such as “take a video.”

For connectivity issues affecting QoE factors, MCX/LTE/5G handsets will rely upon assisting devices for Bluetooth, NFC and ProSe for example.

Device QoE factors for audio quality are numerous and MCX devices must include features for acoustic echo cancelling, automatic gain control, noise suppression and adaptive jitter buffer. When delivering audio over unmanaged networks, devices must allow for packet loss concealment, forward error correction and have quality audio measurement tools such as MOS scores, PESQ and POLQA.

On factors affecting QoE of video quality in MCX devices, again six factors stand out – their ability to manage packet loss concealment, rate shaper, packet loss recovery, forward error correction, scalable video coding and bandwidth loss prediction and management.

Four KPI factors affect device QoE – MCPTT access time (must be less than 300ms), end-to-end MCPTT access time (<1,000 ms), mouth to ear latency (<300ms) and late call entry time (<150ms without application encryption and <1,000 ms with encryption).

Turning to QoE factors affecting the User Interface, device manufacturers should make it easy for first responders to push a button on a handset on the run and when wearing gloves. They should also harness the great potential of virtual reality/augmented reality.

QoE factors on any system are predominantly KPIs, LMR interworking, continuous operation, full system design integration (situational awareness) and even fuller design (IoLST). It should be remembered that a network is part of all KPIs.

Three factors dominate QoE when it comes to LMR interworking – seamless connectivity, audio quality and location sharing.

System QoE factors for the continuous operation of a network must allow in-building coverage, direct mode (device-to-device or D2D), isolated operation for public safety and the seamless and instant interconnection of mobile networks.

For full system operation, devices should allow single sign-on, provide cartographic and location services, ensure end-to-end security, address any large scale deployment issues and allow mobile broadcasting.

Full system QoE factors are essentially brought about by the Internet of Saving Things (MCX plus IoT) and smart things such as vests, sensors, cars et al.

## Road to True MCX

With all these QoE factors in mind, Softil has developed its BEEHD client framework specifically for device manufacturers to develop customizable MCX communications tools with a focus on

QoE. BEEHD is 3GPP Release 15 compliant, provides modular and layered architecture, is intuitive and easy to use, ensures interoperability of devices amongst many other features such as the use of an HW codec and algorithms to preserve battery life and improve quality.

The unique BEEHD solution has a rich modular architecture and allows device manufacturers to mix and match components to develop a specific solution for a specific application.

Softil's MCX approach to MCX can be summarized as leading the way to true MCX based on open standards and ensuring the interoperability of devices.

#### About the Author

Anatoli Levine is Softil's Director of Standards and Products. He has worked in the IP communications industry for over twenty years and serves on the Executive Advisory Board of the PSTA. He was also President of the International Multimedia Telecommunications Consortium (IMTC) from 2006 to 2017.

#### About Softil

Softil's is the de-facto IP communications leader and enabler for more than 800 corporations across the globe. Our technological achievements include the pioneering of Voice and Video over IP with a range of embedded technologies and testing solutions, combining our unique expertise in signalling, multimedia and IMS. Softil's award-winning suite of Protocol Stacks, including IMS, Diameter, SIP and H.323, provide the core technology behind the rich media applications and products of the communications industry, greatly simplifies their development, and ensures earliest time-to-market. Visit [www.softil.com](http://www.softil.com)

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