



# BEEHD MCX / MCPTT SDK Software Development Framework

Mobile broadband networks have evolved to become the next-generation technology for Mission Critical Communication (MCX) infrastructure, substituting legacy technologies based on narrowband such as P25 and TETRA, which support mainly audio services. The new MCX technology and standards use the benefits embedded in broadband networks by offering stronger usage of live mobile video and audio, multicasting and broadcasting capabilities, location, situational awareness, dispatching and more.

Softil's BEEHD is a multi-platform SDK, designed to enable developers of mission-critical communication solutions to build MCPTT and MCX products such as handsets and terminals, dispatch consoles, gateways, recording appliances, and wide range of mission-critical applications.

The BEEHD has intuitive and flexible APIs that developers can use to quickly implement applications while meeting the requirements of mission critical communications (MCX), focusing on first responders such as remote medical assistance, search and rescue, firefighting and law enforcement personnel, as well as any other authority that benefits from real-time situational awareness.

## Advanced MCX Capabilities

- **Push-to-Talk (MCPTT):** Broadcasting live audio to members of a specific group, in accordance with MCPTT
- **Push-to-Video (MCVideo):** Instant sharing of first-responder video streams to members of a specific group
- **High Quality Audio and Video:** Ensuring the ability of emergency response team members to clearly see the scene and understand the speaker in real time
- **Instant Messaging, Chat, Image Transfer (MCData):** Group messages to recipients
- **Mobile Broadcast:** Enabling efficient use of network resources for communication of large groups of first responders



- **Direct Mode:** Support for off-network/D2D capabilities using 5G-Sidelink
- **Management Interfaces:** Identity Management Client, Configuration Management Client, Group Management Client, Key Management Client

## Highlights

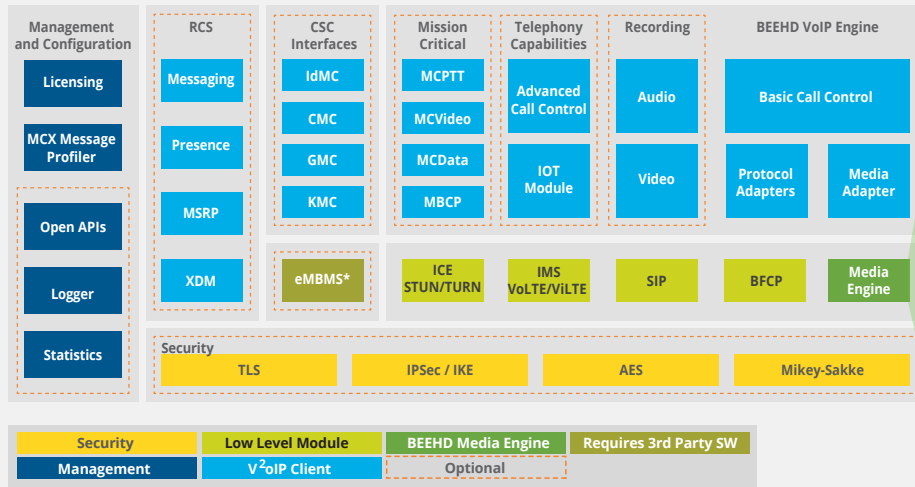
- **Ready-to-use, Multi-platform Engine:** Consolidated framework for signaling, call control and media handling.
- **Standards-compliant:** Supports all requirements and capabilities of the latest 3GPP MCX standard
- **Shortest Time to Market:** Reduces development, integration, and testing efforts.
- **Guaranteed High Quality of Experience:** Utilizes advanced algorithms to ensure superb video quality even in harsh network conditions.
- **Interoperability:** Standards-based, extensively tested and preintegrated with all major MCX servers
- **Field-proven:** In deployment worldwide since 2018
- **Integration with Hardware:** Provides an optimized solution for many chipsets and seamless integration with peripherals.
- **Operating Systems:** Supports Android, iOS, Windows, Linux and Mac OS X.

# BEEHD MCX / MCPTT SDK

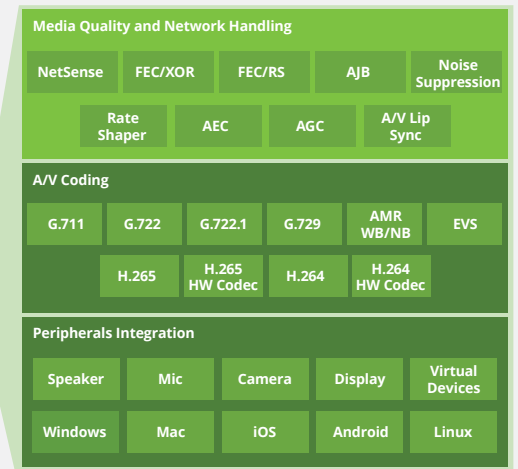
## Software Development Framework

### Modular Architecture:

Framework



Media Engine



### Product Specifications

<b>Mission Critical</b>	<ul style="list-style-type: none"> <li>VoLTE IR.92 and ViLTE IR.94</li> <li>MCVideo</li> <li>MCDData</li> </ul>	<ul style="list-style-type: none"> <li>MCPTT</li> <li>One-to-many Audio and Video</li> <li>FRMCS</li> </ul>	<ul style="list-style-type: none"> <li>eMBMS</li> <li>LTE-R</li> <li>MCX for Rail</li> </ul>
<b>Signaling Protocols</b>	<ul style="list-style-type: none"> <li>SIP (RFC 3261)</li> <li>IMS/VoLTE/ViLTE SIP</li> </ul>	<ul style="list-style-type: none"> <li>HTTP/HTTPS</li> <li>Presence and IM: SIMPLE</li> </ul>	<ul style="list-style-type: none"> <li>FW/NAT Traversal: ICE, STUN TURN</li> <li>MBCP Floor Control</li> </ul>
<b>MC Management Interfaces</b>	<ul style="list-style-type: none"> <li>CSC-1 - IdMC - Identity Management Client</li> <li>CSC-2 - GMC - Group Management Client</li> </ul>	<ul style="list-style-type: none"> <li>CSC-4 - CMC - Configuration Management Client</li> <li>CSC-8 - KMC - Key Management Client</li> </ul>	
<b>Operating Systems</b>	<ul style="list-style-type: none"> <li>Android (software codecs)</li> <li>iOS (software codecs)</li> </ul>	<ul style="list-style-type: none"> <li>Windows</li> <li>Mac OS/X</li> </ul>	<ul style="list-style-type: none"> <li>Linux</li> </ul>
<b>Hardware Codec Acceleration</b>	<ul style="list-style-type: none"> <li>Qualcomm Snapdragon</li> <li>Samsung Exynos</li> </ul>	<ul style="list-style-type: none"> <li>Intel Atom</li> <li>Texas Instruments</li> </ul>	<ul style="list-style-type: none"> <li>NVIDIA</li> <li>MediaTek</li> </ul>
<b>Management</b>	<ul style="list-style-type: none"> <li>Configuration and provisioning logger</li> <li>RESTful Open APIs</li> </ul>	<ul style="list-style-type: none"> <li>Call history</li> <li>SIP server-less operation</li> </ul>	<ul style="list-style-type: none"> <li>Contact list management</li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>AES-128 and AES-256</li> <li>TLS</li> </ul>	<ul style="list-style-type: none"> <li>IPsec</li> <li>S RTP</li> </ul>	<ul style="list-style-type: none"> <li>Mikey-Sakke</li> <li>IKE</li> </ul>
<b>Voice and Video Call Types and Services</b>	<ul style="list-style-type: none"> <li>Group Call (ad-hoc, pre-established)</li> <li>Emergency and Immediate Peril Calls</li> <li>Early Media</li> </ul>	<ul style="list-style-type: none"> <li>Push to Talk, Push to Video</li> <li>Private Call</li> <li>Ambient Viewing</li> </ul>	<ul style="list-style-type: none"> <li>1-to-1, 1-to-Many</li> <li>Group Chat</li> <li>Hold, Mute, Transfer, Forward</li> </ul>
<b>Quality</b>	<ul style="list-style-type: none"> <li>Reed Solomon FEC (Forward Error Correction)</li> <li>Automatic Gain Control (AGC)</li> </ul>	<ul style="list-style-type: none"> <li>NetSense™ bandwidth estimation and adaptation technology</li> <li>Audio Echo Cancellation (AEC)</li> </ul>	<ul style="list-style-type: none"> <li>Noise Suppression (NS)</li> <li>Audio Packet Loss Concealment (PLC)</li> </ul>
<b>Audio</b>	<ul style="list-style-type: none"> <li>G.711, G.722, G.722.1, G.729</li> </ul>	<ul style="list-style-type: none"> <li>AMR WB, AMR NB, EVS</li> </ul>	<ul style="list-style-type: none"> <li>Audio Recording</li> </ul>
<b>Video</b>	<ul style="list-style-type: none"> <li>H.264 AVC, H.264 High Profile</li> <li>H.265</li> <li>BFCP</li> </ul>	<ul style="list-style-type: none"> <li>Resolution: CIF/VGA/SVGA/720p/1080p</li> <li>External H.264 camera support</li> <li>Capture snapshot to JPEG file</li> </ul>	<ul style="list-style-type: none"> <li>Text overlay</li> <li>Video recording</li> <li>Frame rate: up to 30fps</li> </ul>
<b>Interoperability</b>	<ul style="list-style-type: none"> <li>Interoperable with all major vendors and MC systems</li> </ul>		
<b>RCS and Advanced Services</b>	<ul style="list-style-type: none"> <li>Option based Capability exchange</li> <li>Stand Alone Messaging</li> <li>CPM, CPIM based Instant Messaging</li> <li>IM large message mode (MSRP)</li> </ul>	<ul style="list-style-type: none"> <li>Multiple recipients (multi 1-1 IM)</li> <li>Store &amp; Forward</li> <li>HTTP/HTTPS Provisioning</li> <li>Integrated Messaging Inbox, including SMS and MMS</li> </ul>	<ul style="list-style-type: none"> <li>Voice and Video Calls</li> <li>SIMPLE presence</li> <li>File Transfer</li> <li>XDM</li> </ul>

For more information, contact Softil at [info@softil.com](mailto:info@softil.com)

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