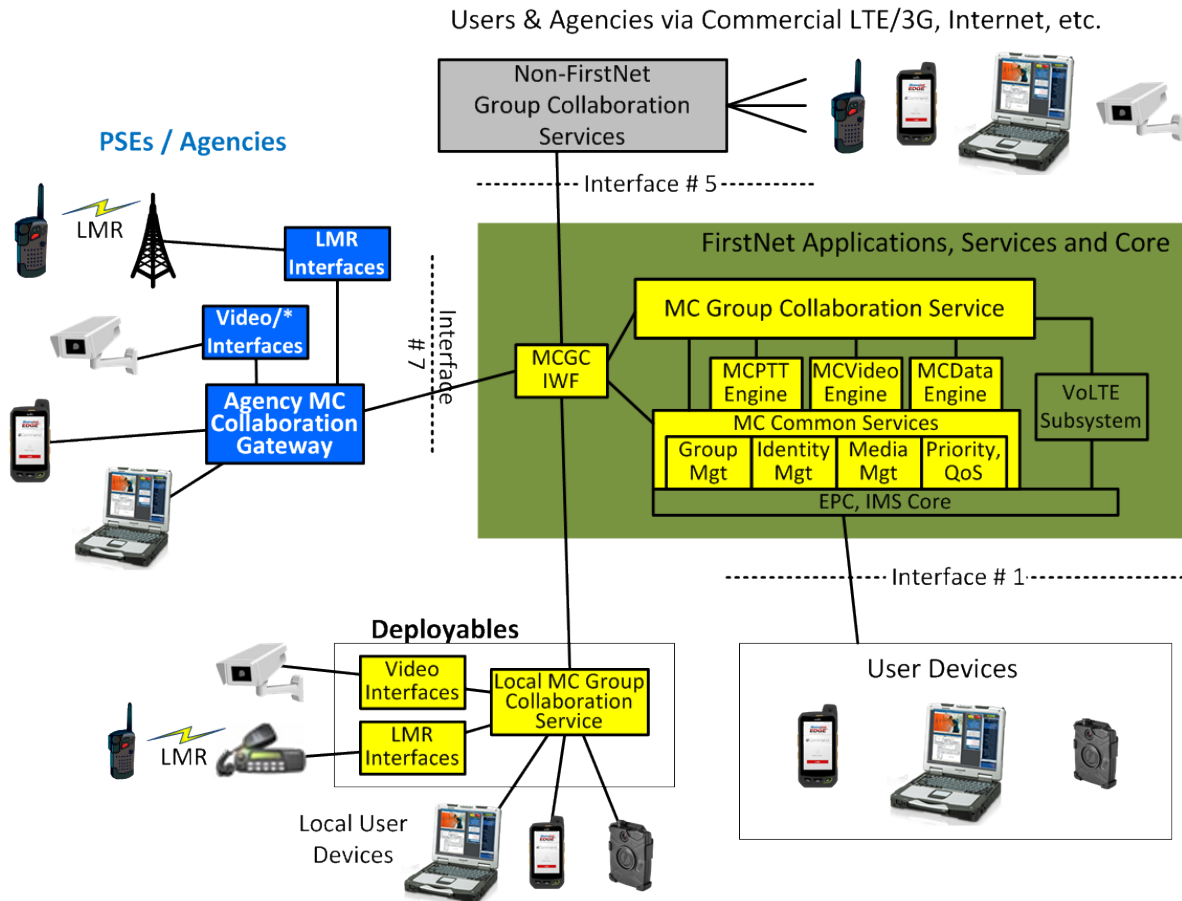# NPSBN Capability Statement

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This document describes the functionality that Mutualink is able to provide to meet the requirements of the FirstNet NPSBN Request For Proposal.

1.Mission Critical Group Collaboration Service

Group communications is a fundamental and critical need for first responders. We offer the Mission Critical Group Collaboration application (MCGC) to bring the next generation capabilities of the NPSBN to group communications. MCGC is a full multimedia platform that enables both intra-agency and cross-agency group communications to include voice, video, text messages, file sharing, and location sharing.

Mission Critical Group Collaboration is a multimedia application that encompasses current and planned 3GPP mission critical services including:

- **Mission Critical Push To Talk (MCPTT)**. The voice-specific functions of MCGC are provided by the MCPTT Engine. These functions include floor control and audio processing such as transcoding and audio mixing.

- **Mission Critical Video (MCVideo)**. The video-specific functions of MCGC are provided by the MCVideo Engine. These functions include send/receive control and video processing such as transcoding and video overlays.

- **Mission Critical Data (MCData)**. The data-specific functions of MCGC are provided by the MCData Engine. These functions include connection and conversation management, simple messaging, file distribution, data streaming, etc.

These media-specific functions all utilize a set of common media-agnostic services including:

- **Group Management**. This service handles all aspects of group creation, deletion, and member management for both static and dynamic groups.

- **Identity Management**. This service provides management of users, user profiles, and user devices. It also provides a common interface to the Identity, Credential, and Access Management (ICAM) subsystem.

- **Media Management**. This service provides control, allocation, and management of media resources such as LTE bearers and non-LTE media paths. This service interfaces to the BMSC for coordinating eMBMS broadcast and multicast paths to UEs.

- **Priority and Quality of Service** (QoS). This service provides QoS treatment of media and control of priority between various users and their respective traffic flows. This service interfaces to the Local Control application to allow administrators to view users' media flows and adjust the priority of users and flows according to current situational needs.

All external component interfaces will adhere to appropriate 3GPP standards to guarantee vendor interoperability; if an appropriate 3GPP standard does not exist then standards from other recognized standards bodies will be used. Any such interface that does not have an applicable existing standard will be published as an open interface specification.

2.MCGC Service Interworking

To extend MC Group Collaboration capability beyond the FirstNet NPSBN administrative boundaries, the MCGC Interworking Function (IWF) is used to inter-connect multiple MCGC service instances. These instances may be located in Public Safety Entity (PSE) facilities, deployable systems, other carrier networks, or other connected IP networks.

The MCGC instances may be located in different security and/or administrative domains, so a critical function of the MCGC IWF is that it enables MC collaboration groups to span multiple MGCG instances while maintaining appropriate security and privacy policies between the various instances. This assures that necessary media & data can flow between systems without violating the security boundaries of any of the systems.

3.Agency MC Group Collaboration Interface

Extending the Mission Critical Group Collaboration capability to Public Safety Entities (PSEs) and other agencies enables the following functionality:

- Users of devices attached to the PSE network (either wired or wireless) may now fully participate in group collaboration sessions.

- Private Land Mobile Radio (LMR) systems can be integrated. LMR users and talkgroups may now become members of groups for PTT voice and text messaging communication. Available LMR interfaces include P25 ISSI/CSSI, BSI, IP, and E&M/analog.

- Private video management systems (VMSs) can be integrated. Agency video feeds may now be transmitted to groups, and group feeds may be received as inputs by the VMS.

- Data systems such as CAD, AVL, and GIS may be integrated to provide and receive resource location information, incident data, etc.

An agency interfaces to the core MCGC environment via one or more Mission Critical Collaboration Gateways. These gateways act as security and privacy control points to ensure that agency media/data resources remain under complete sovereign control of the agency at all times. These gateways are administered solely by the owning agency.

4.Deployable MC Group Collaboration

The MCGC service is able to be deployed in a small scale version in deployable LTE systems such as Systems on Wheels (SOWs) or Vehicle Network Systems (VNSs). This enables MC group collaboration between LTE UEs within coverage even when limited or no backhaul is available.

In addition, LMR and video interfaces may be deployed to provide tactical LMR<>LTE voice and video feed sharing capability between first responders on scene.

If backhaul is available, the local MCGC service connects to the core MCGC Interworking Function and is able to extend group collaboration to the rest of the network. If backhaul is lost at any time, the local MCGC service will resort to standalone mode, thereby providing a resilient local mission critical service.

5.MC Group Collaboration Clients

MCGC-compatible client applications will be provided for common device platforms such as Android, iOS, and Windows. MC Group Collaboration capabilities provided by these applications will be PTT voice, video Rx/Tx, text messaging, location sharing, and file sharing.

These applications will connect to the MCGC service via 3GPP standard protocols so that any vendors may create applications to utilize this service.

These clients will also provide off-network MC Group Collaboration operation using the 3GPP Proximity Services (ProSe) and Isolated E-UTRAN Operation for Public Safety (IOPS) specifications. Off-network operations supported will be device-to-device direct mode as well as device-to-network relay functions.

6.Interim OTT Service

Prior to the full availability of Mission Critical services in the NPSBN, we will provide a commercial over-the-top (OTT) solution for all users. This interim solution will include full voice, video, messaging, file sharing, and location sharing capabilities so that users may start taking full advantage of the network from day one.

As Mission Critical services are deployed in the NPSBN, this solution and associated clients will gracefully transition one service at a time to the MC back-end so that daily operations will not be impacted.