

Title: Discussion document on priorities for public safety functionality
Agenda Item: 2.2 Deployment Scenarios
Source: Emergency Services Mobile Communications Programme (Home Office)
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Abstract: A high-level discussion document considering the priorities for public safety functionality in 3GPP release 12, and the market opportunities in the UK and elsewhere for these new capabilities.

1. Introduction:

The Emergency Services Mobile Communications Programme (ESMCP) is the means through which the UK Home Office seeks to address the provision of future mobile voice and broadband data services for the emergency services community in the UK.

ESMCP will replace and /or enhance existing voice and data services to satisfy the developing operational requirements of the emergency services for routine business as usual activity, incident management and emergency response.

We seek to make best use of existing and future technologies based upon open standards and the associated services and products. We desire to deliver our users' requirements in a way that utilises a truly global platform which meets their needs today and establishes a clear evolution path for the future, taking advantage of new innovation within the telecommunications industry.

We believe that the incorporation of enablers for public safety requirements into 3GPP technology represents a new opportunity for networks to deliver services to a new set of users worldwide, including both public safety users, and other user groups that currently make widespread use of Private Mobile Radio systems.

ESMCP would like to see these evolved public safety communications capabilities and services available in the UK as soon as possible. We aim to begin delivering these evolved services to UK public safety agencies within the next four years.

2. The future communications needs of UK public safety agencies:

ESMCP expects that the future public safety landscape will involve the use of multiple networks based upon the availability of coverage, the appropriateness of available bearers and the services offered on the networks that are locally available to users. The use of multiple networks should not introduce additional complexity for end-users, with the choice of network bearer being as transparent to them as possible.

Our expectation is that this future network mix will include LTE networks capable of supporting a range of group voice and data services with the richness of dispatcher features, quality of service levels and priority access and pre-emption capabilities that the public safety environment requires. We believe that the current work in 3GPP on Group Communications Service Enablers (GCSE_LTE) will assist in the ability of networks to deliver these services.

A long-term future migration path from Private Mobile Radio narrowband platforms to GCSE_LTE enabled critical communication platforms is envisaged as LTE coverage is expanded, either through private, commercial or mixed networks.

Interoperability across legacy and GCSE_LTE networks needs to be maintained through innovative approaches. ESMCP is aware of the suggestions of CCBG, TC WG4 and others that interoperability should be driven from a critical communication application, accessible via the radio access networks of both GCSE_LTE and PMR, but separate from the radio layer enablers of each. Whilst we are aware of the potential benefits of this architecture we are keen to see enablers developed that maximize the opportunity for the development of innovative new services for public safety users (and others). We are agnostic to the precise technological approach, but would like to see interoperability enabled by open standards.

ESMCP is keen to see 3GPP release 12 define standards that enable network operators to provide services to meet the public safety requirements. We believe that the features requiring most attention by 3GPP at this stage:

- A push-to-talk group voice call capability, with late entry capability and able to support very large numbers of users in a single group, both across multiple cells, and when many users are in the same cell.
- A high-priority emergency group call capability, for use in “officer in distress” type scenarios.
- Direct device-to-device group communications, including for example relay node/mesh networking capabilities. Users may need to use these capabilities both in and out of network coverage.
- A multi-level prioritisation and pre-emption capability across both the RAN and EPC.
- The ability to devolve management of groups, priority levels, usage policy and rules, UE tracking, ambient listening etc., to a dispatcher, control room or other authorised user.
- Low latency call establishment for all call types

Users will also of course require the use of many other features. These include standard telephony features (e.g. 2-way telephony calls, network location tracking, caller ID), features that are available to users on many existing PMR networks (many of which are described in detail in use cases presented to 3GPP SA1 by CCBG and other bodies), and other features such as rich multimedia services that will become available as technology develops. The features that we have listed above are distinguished by being both critical to users, and likely to require careful consideration by 3GPP in this release.

3. ESMCP Timelines:

The submission from TCCA CCBG-SA to 3GPP-SA1 titled “General Architecture Considerations for GCSE_LTE work” mentions a maturing of the requirement for broadband Critical Communications in 3 to 8 years. ESMCP sees itself beginning to deliver against user requirements within the earlier part of that timeframe.

ESMCP would therefore like to see Group Communication System Enablers as well as the other related Critical Communications functionality discussed above being available in equipment, and ready for use in public safety operations in the next four years.

4. Conclusion:

ESMCP sees the 3GPP GCSE_LTE and ProSe enhancements proposed as being critical to future public safety communications across the world. We believe that delivery of the functionality listed above will be critical in achieving our goals.

Furthermore, we feel that progress in addressing GCSE_LTE and ProSe features within 3GPP standardization will help to influence spectrum regulators and respective national authorities and will assist in making the case for the implementation of LTE based mission critical systems.

ESMCP welcomes this opportunity to contribute to the work of 3GPP SA1 alongside TCCA CCBG-SA, ETSI TC TETRA WG4 and others. We look forward to making a continued contribution to 3GPP efforts to establish the details of the Functional and High Level user requirement for TS 22.468.