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Definition of Users in Mission Critical Networks

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List of abbreviations and acronyms

EUCCS	European Critical Communications System
ISI	Inter System Interface
LRWG	Legal and Regulatory Working Group
MCBN	Mission Critical Broadband Network
MCN	Mission Critical Network
MCS	Mission Critical Services
QPP	Quality, Priority & Pre-emption
TCCA	The Critical Communications Association

1. Introduction

Mission Critical Networks (MCN) are national networks that first and foremost support the Blue Light organisations/ emergency services such as the police, fire & rescue and ambulance services with their critical communications, broadly called Mission Critical Services (MCS). However, based on the experience of TCCA's Legal and Regulatory Working Group (LRWG) the MCN are also used by other user groups who depend on MCS or support Blue Light organisations. TCCA's description of operations reliant on critical communications underlines this broader usage:

"…There are many and varied types of operations which need critical communications. These include public safety and security, emergency services, critical infrastructure, public utilities, transportation, critical industries and related activities, where failures in critical communications would lead to catastrophic degradation of services..." [1]

So far, it is the country itself that defines the users of their MCN. This is reflected in the findings from LRWGs survey on users that was carried out in 2025 showing that there is no clear common approach on user groups that are given access to the MCN. Apart from the Blue Light organisations, the user groups vary from country to country, and sometimes even from region to region and network to network.

Today, a majority of countries that operate MCN rely on state-owned dedicated narrowband networks such as TETRA networks. As critical communications transition to Mission Critical Broadband Networks (MCBN) which utilise network services of the commercial networks that are shared with commercial users, the reliance on mobile network operators (MNO) increases. On top of this, there are plans to interconnect the MCBN across national borders in order to enable and support seamless cooperation and collaboration between countries, such as the planned European Critical Communications System (EUCCS).

Due to the transition to MCBN and the international development in cross-border communication, MCN users is a topic that needs further attention in order to achieve enhanced interoperability and cooperation as well as effective integration in the commercial networks.

In this white paper, the LRWG examines and elaborates on the need for a common approach on the definition of users. The white paper is based on findings from the LRWG survey regarding MCN users, information from the planned EUCCS and the experience from the Inter System Interface (ISI) project that has enabled cross-border communication between Sweden, Norway and Finland through their TETRA networks. The term user of the MCN will hereinafter be referred to as 'User' and 'Users'.

2. The need for a definition of 'Users'

A majority of the countries that provide MCN are currently working on a transition to MCBN. As the new MCBNs will be based on the commercial networks, the transition must entail a transfer of the high security and reliability features that emergency services across the globe have come to rely on from the current legacy networks. In addition to this, the users of the MCN also have special requirements compared to ordinary commercial users that will need to be enabled in the commercial networks (e.g. priority and pre-emption and a high level of service quality (QPP)). The LRWG White Paper "Legal and Regulatory aspects regarding the realisation of Quality of Service, Priority and Pre-emption (QPP) in commercial networks" addresses one aspect of these requirements[2]. Since not all users of the commercial networks can benefit from the features and advantages of MCBN, there will be a need to define who the Users of MCBN shall be. A definition may also be required in cases where a country wishes to establish an internal hierarchy within the MCBN in order to dedicate QPP to certain resources in the event of capacity limitations.

As a result of the global trend of moving towards MCBN with enhanced technical functionalities, cross-border interoperability and cooperation between critical communication agencies is expected to improve significantly. An example of this is the EUCCS that aims to connect national MCBNs through seamless critical communication and operational mobility across the EU and Schengen area in order to strengthen public safety and civil protection.

Additionally, UK and France will have to enable interworking between their respective MCBN, UK's Emergency Services Network for Great Britain (ESN) and Réseau Radio du Futur (RRF) of France, for instance to aid cooperation in and around the Channel Tunnel.

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[1] https://tcca.info/documents/Pocket-Guide-to-Critical-Communications.pdf/

[2] https://tcca.info/documents/September-23_LRWG_QPP_whitepaper.pdf/

In the case of bilateral relations, such as between UK and France, a common understanding in operational aspects is critically important. For example, roaming across networks requires each party to recognise Users of the other network on their own network. This raises the question of which Users are to be accepted and can gain access to the visited network. If the definition of User differs significantly between networks/agencies, enabling roaming would be operationally complicated.

Experience from the ISI project, which interconnects TETRA systems in the Nordics, shows that even countries with a great degree of similarities such as the participating countries of Sweden, Finland and Norway have different Users of the networks and views on who the Users should be. Due to this, the definition of Users turned out to be a potential showstopper for interconnecting the countries. To resolve the issue, the parties have entered into agreements that regulate interconnection between different MCNs, which lay down individual responsibilities and tasks vis-à-vis ISI. In order to handle the diversity, the parties have granted each other the authority to approve users with ISI approved radio terminals to become ISI end users and utilise the ISI functionalities. Without this common approach and formal agreements, the diversity of definitions of Users would have prevented ISI from achieving its full potentials.

As the critical communication sector is comparatively much smaller than the consumer sector, critical communication agencies have come to realise that they have to work closely together and present a common front to demonstrate the potential of the market so that the industry takes due notice and invests in research and development needed to serve the sector. This also holds true in relation to policymakers in order to achieve necessary regulation, for instance on dedicated spectrum for the critical communication sector. Among other things, close collaboration requires a common understanding and common approaches. Critical communication agencies closely consult with each other on matters of mutual interest such as in procurement. For common approaches to be effective, the terminology used must have the same or similar meaning throughout the sector and across the agencies.

Over the years, the wider telecommunication sector has developed a set of terms with globally accepted definitions, which has contributed to the overall development of the sector. Norms in terminology help improve collaboration, leading to innovation and economies of scale. The critical communication sector should also follow this path to foster strong collaboration between all stakeholders. TCCA, as a global organisation working for the benefit of critical communications, has a central role to play in this regard.

The term User is thus a key term that requires a common definition, not least as a prerequisite for effective cross-border communication.

3. Comparison and common threads of definition of Users applied in the EU/ European countries

As part of its work, the LRWG has carried out a survey to gather information on Users that have access to the existing MCN in a selection of European countries; United Kingdom, Denmark, Hungary, Netherlands, Spain, Norway, Finland and Germany. In the survey, the governmental agencies operating the MCN were asked to provide information regarding the definition of Users, both for the existing narrowband networks and the new broadband networks. As most of the countries have not yet deployed the new MCBN, only a few agencies were able to provide information regarding the MCBN. The majority of responses are therefore based on practice from the existing TETRA networks. However, the countries that could respond to the question of future Users of the MCBN generally plan to maintain the User groups as in the current MCN, with some indicating that the User groups may be expanded in the new MCBN.

3.1 Blue Light organisation Users and 'other' Users

The Blue Light organisations (police, fire & rescue and ambulance) form the core Users of the MCN in all the surveyed countries. In addition, several countries have enabled other User groups to use the MCN. The category of other Users that have access to the MCN in the countries span a broad range of sectors and entities, reflecting distinct national approaches to safety and civil contingency. Examples include Users within the military and customs authorities as well as critical infrastructure operators such as utility companies. Some countries also include non-state organisations that support emergency services, such as the Red Cross and Mountain Rescue in Norway. The current Airwave TETRA network of Great Britain is used by a number of other organisations, in addition to the Blue

[2] https://tcca.info/documents/September-23_LRWG_QPP_whitepaper.pdf/

Light organisations, called Sharers who are likely to be users of the upcoming Emergency Services Network which is the broadband network replacing the TETRA network.

3.2 Mandatory, voluntary or approval based MCN usage

The LRWG identified three main approaches to the MCN utilisation; mandatory, voluntary or approval-based MCN usage. The survey results show that half of the countries have legally obliged Users to use the existing MCN through national laws. The obligations primarily cover Blue Light organisations, and to some extent the military. This is for instance the case in Denmark, where Blue Light organisations must use the MCN when performing their emergency tasks in order to secure necessary communication between the sectors. Currently, none of the countries mandate use of the new MCBN, although several countries expect that such obligation will be enacted in the future as the transition to MCBN progresses.

Nearly all the remaining surveyed countries allow certain Users to use the MCN at their own discretion. As is the case with countries mandating usage, it is primarily Blue Light organisations.

In all the surveyed countries, other Users (non-Blue Light organisations) must be formally approved in order to become Users of the MCN. The approval process, criteria and decision are determined by the agencies operating the MCN or by the strategic owners.

3.3 User hierarchy

Lastly, the survey examined whether the User groups have different priority levels within the MCN. Most responding countries replied that no such measures are applied, meaning that all Users are treated equally. In contrast, just under half confirmed that priority levels are implemented, granting certain User groups higher priority during network congestion. The type of priority levels applied vary by country and consist of mechanisms such as organisational level prioritisation (e.g. Blue Light organisations that are given priority over other Users), prioritisation based on operational needs and prioritisation of specific talk groups such as emergency talk groups.

Regarding prioritisation in the MCBN, responses from the survey indicate countries plan to continue with the same practice as applied today. As a point of nuance, at least one country intends to implement the User hierarchy in the MCBN in a different manner than in the existing MCN, indicating a further need to reassess User definition in light of the added functionality and complexity associated with MCBN.

4. Legal assessment and recommendations

The LRWG survey indicates that there is no common approach to the definition of Users between countries. However, as the ISI project clearly shows, it is essential to establish a common approach in order to interconnect the MCBN between countries.

In the ISI project, the common approach was achieved through contracts. While this is an option, particularly the countries in EU and Schengen that are establishing the EUCCS would benefit from a common regulatory framework that harmonises legislation in order to avoid any divergence, which may well occur with a contractual solution involving numerous countries negotiating multilaterally.

The LRWG therefore is of the view that it is beneficial for the critical communication sector to consider setting a definition of the User through legislation. An option is to establish a common definition or setting minimum criteria defining core Users, mainly in the form of the Blue Light organisations (police, fire & rescue and ambulance services). This would largely correspond to an 'emergency service' as defined in existing EU-legislation.[3] Additionally, as supported by the findings of the survey, legislation could define other Users who may utilise the MCBN and MCN[4] in accordance with national practice and thereby require mutual recognition of such Users amongst interconnected countries. The latter category could include both public and private entities such as customs authorities, utilities and other critical services as defined nationally.

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[3] Cf. Directive 2018/1972, art. 2 (39): "'emergency service' means a service, recognised as such by the Member State, that provides immediate and rapid assistance in situations where there is, in particular, a direct risk to life or limb, to individual or public health or safety, to private or public property, or to the environment, in accordance with national law;"

[4] Since there may be a need to interconnect MCBN and other MCNs during the transition period, it is important that the definition applies to both systems.

Such regulation would thus be clear in defining a core set of Users while allowing sufficient flexibility for each country to make adaptations in alignment with specific national conditions. Establishing a common definition of Users, for instance under the framework of EUCCS considering its pan-European outreach, would act as a catalyst in harmonising the PPDR-community, increase trust and transparency between cooperating countries and signal a common stand towards industry and policymakers alike.

In addition to the definition of Users, it may be relevant to define mission critical functionalities that the MCBN should generally support. This is to ensure that Users visiting another country can have access to the same or similar levels of functionalities as in their home networks thereby optimising operational mobility. This aspect is however not a part of the scope of this white paper.