ETNO Reflection Document on "Draft ECC Report 212: Evolution in the Use of E.212 Mobile Network Codes"

January 2014

Executive Summary

- ETNO welcomes the opportunity to comment on Draft ECC Report 212 "Evolution in the Use of E.212 Mobile Network Codes".
- ETNO considers that the current E.212 numbering management process has been working in a fairly straightforward way and does not foresee the need for a major change in its functioning.
- ETNO views the Draft ECC Report as a preliminary "reflection document" whilst recognises that the issues addressed therein potentially have very relevant technical/operational/business implications not only in terms of future but also for current services. It is, therefore, of utmost importance to fully take all those into consideration before moving forward and taking any policy decision at this point.
- ETNO shares the ECC point of view that an efficient use of such scarce resources is essential for the management of the E.212 identification plan. ETNO considers that at this stage no major change is necessary to the current rules of allocation and management in Recommendation E.212, both for national MCCs and shared MCC.
- ETNO considers the distinction between shared MCCs and national MCCs important to maintain in order to determine the appropriate resource to use for a mobile application. At this stage, the existing ITU-T SG2 procedures have not demonstrated serious shortcomings in this area for ETNO.
- It is ETNO's view that one single identification solution cannot meet all requirements from the M2M market as a whole: some of these services may overlap with normal voice/data services while others would not, and a case by case evaluation is generally necessary to determine the appropriate identification/numbering resource.
- Regarding the risk of exhaustion of the plan, ETNO sees no cause of concern for E.212 availability in the medium / long term if normal ITU-T rules are followed (for instance for M2M, femtocells and possible innovative services). It is therefore premature for ETNO to envisage extending the MNC format that is currently the most widely in use within the industry.
- ETNO considers that continuing with existing monitoring by ITU-T SG2, national Administrations and providers, of E.212 evolution needs, is the right way to efficiently manage future needs. Some of the models already

identified as "emerging business models" (ie. M2M) are being developed and can further evolve subject to new collaborative models among the players involved across the value chain: market-based negotiations should drive this forward whilst regulation should avoid choosing a specific business model.

- ETNO also notes that the Commission and BEREC indicated recently that there is no immediate need for specific regulation of M2M technologies.

Introduction

The Association of European Telecommunications Network Operators (ETNO)[1] would like to thank the CEPT/ECC (Electronic Communications Committee) for the opportunity to comment on Draft ECC Report 212 "Evolution in the Use of E.212 Mobile Network Codes".

ETNO considers that the current E-212 numbering management process has been working in a fairly straightforward way and does not foresee the need for a major change in its functioning. Indeed, ETNO views the Draft ECC Report as a preliminary "reflection document" but also recognises that the issues addressed therein potentially have very relevant technical/operational/business implications not only in terms of future but also for current services. It is, therefore, of utmost importance to fully take all those into consideration before moving forward and taking any policy decision at this point.

General comments

The general comments address the following:

- Efficient use of resource
- Consultation and cooperation
- Methodology
- Definition of M2M services
- M2M service provider switching
- Review of management and guiding principles
- MNC format
- Use of shared MCCs vs national MCCs

Efficient use of resource: ETNO shares the ECC point of view that efficient use of resources in the E.212 identification plan is essential. As a result, revising the current rules of management in Recommendation E.212 should be considered with due care (both for national MCCs and a shared MCC). ETNO considers that a significant distinction exists between the applications that fall under the shared MCC and those

that are national by nature and that such distinction should be maintained. ETNO appreciates that evaluating the need of an emerging industry is not straightforward but also considers that evaluating the exact volume of resources that will be necessary in the future is essential prior to determining the future need of the plan and therefore the exact nature of the revision to be made on the plan. ETNO considers that such evaluation has been limited so far.

Consultation and cooperation: ETNO would like to stress the importance of involving all interested parties on this topic, notably ETSI and 3GPP standards, who define the standards that use E.212 resources, and beyond the industry associations (GSMA, ETNO, etc.) to evaluate the impact the mobile networks on a global level. To this purpose, any developments of Recommendation E.212 have to be discussed in ITU-T SG2 in consultation with these bodies, in order to ensure compatibility and interoperability, at limited impact and reasonable costs. This is, indeed, one of the most relevant issues to be considered. ETNO notes that such consultation has been made on similar discussions in the past and encourages all stakeholders to do the same in this case.

In this respect, we suggest to consider ETSI TC M2M standards and 3GPP standards regarding both M2M and femtocells technical solutions, that define functional architectures which do not exhaust E.212 resources. For example, gateways, inside business companies/utilities, that handle, as a unique terminal equipment with a unique SIM, aggregated distributed access networks with a large number of sensors.

ETNO also notes that historically, E.212 resources have been tied to IMSIs and the identification of public mobile subscriber/customer/user subscriptions. The format and number space were designed accordingly and ETNO would be concerned if this baseline underlying principle were to be radically changed. For example, extending it to private services or assigning MNCs purely for billing or accounting purposes on a large scale is not desirable. Likewise, assigning MNCs to Mobile VoIP Service Providers regardless of the nature of the MCC is premature for ETNO given that the requirements for such uses have not been put forward at this stage. In any case, should these players need numbering/identification resources, they could become an operator entering into negotiations with the existing ones, or, even, becoming operator themselves, subject to the current regulatory framework.

Methodology: ETNO would like to see the new uses put forward in the document assessed in terms of volume and requirements before making decisions that would impact the industry at large. At present, ETNO sees no real issue, even in the long term, with regard to the availability of E.212 resources, also taking into account new mobile operators and service providers for innovative services. This is also relevant for any policy decision as the potential benefits for a wider availability of resources will probably not surpass the potential costs and disruption to the current model.

In general, ETNO does not foresee scarcity of E.212 resources in a scenario of medium / long term provided that the present management of E.212 resources continue to be performed at the national level and ITU -T SG2.

Definition of M2M: ETNO notes that the report tends to address M2M requirement as a standalone category. ETNO considers that it is sometimes difficult to address all

the requirements related to machine type communication with one single solution in terms of subscriber identification:

- Some of these services are embarked on terminal that also supports conversational services; in this case, using a dedicated IMSI does not seem to be a very efficient use of the resource if the "conversational service" IMSI can be used instead. In fact M2M services in general include a large number of voice / data services, where the customer involved is human, through a device or terminal equipment, and usually do not require regulatory interventions to increase E.212 identifier availability. As a result, the solutions do not require higher amounts of IMSIs than normal evolutions of mobile services.

- In other cases, dedicated IMSI may be necessary, and indeed in such cases the volume of available E.212 resources will have to grow accordingly. The case of sensor networks and/or smart grids could be considered particular, provided that standard technical solutions are developed using public numbering resources in efficient way. In fact, in the case of sensor networks and/or smart grids, a SIM for each sensor may not be required, considering that mobile networks are just one possibility of access network among many others (WIFI, WiMAX, fixed networks, etc.); some cases require mobile management of sensors but others do not and an imperial need of E.212 resources would have to be assessed.

M2M service provider switching: ETNO is doubtful that a solution based solely on a dedicated MNC assignment can provide a solution to the issue of switching between different operators. There are indeed a number of conditions necessary for an equipment to register to a mobile network and in this respect, having the appropriate MNC is only one of such conditions and providing the right IMSI structure is not sufficient to be granted registration on a mobile network. ETNO considers that this issue essentially applies to embedded SIM cards because for 'traditional' SIMs, the change of SIMs is normal practice.

If a remote reconfiguration of an embedded SIM card was necessary to achieve such a switching procedure, this could be used to change the MNC/IMSI of the donor operator into the receiving operator without assigning a dedicated value. ETNO appreciates that there are security concerns on this matter which would also have to be taken into account.

When considering solutions of switching between different operators, a clear assessment should be made of who would benefit of this change. In this respect a distinction is to be made between the network operator level, the service provider level and the end-user level.

It should be taken into account that most of the M2M services/business models are not only based on pure connectivity but, more importantly, they generally are built upon a full end-to-end management platform that essentially provides real "functionality" to the underlying connectivity service and facilitates the operation/management of the application provided over the connectivity (i.e. configuration of sensors to measure the temperature). This fact basically implies that switching among connectivity providers will not necessarily be essential in terms of

ensuring a competitive landscape. Finally, relevant to this competition issue is also the bargain power of, in particular, large M2M customers when they freely choose one provider in the market and which, indeed, may lead to a certain degree of personalization of the solution deployed.

ETNO would therefore suggest a deep analysis of evolving standards on this matter before evaluating any further steps in MCC/MNCs governance.

Review of management and guiding principles: from a general standpoint, ETNO is of the opinion that assigning MNCs to non-publicly authorized/registered providers ought to be envisaged cautiously, given the impact this would have on the efficient use of MNCs. In this respect, only the most significant use cases should be considered and evaluated to review the existing criteria. Regarding the assignment of E.212 public resources for private use in particular, ETNO considers that a more thorough analysis is necessary. It is indeed important to determine whether mobile public networks could manage mobility instead of opening the door for what may end up being a potentially-costly assignment policy from a resource management perspective.

MNC format: ETNO notes that past consultations between the ITU-T, 3GPP and the GSMA indicated that coexistence of 2- and 3-digits MNCs within one MCC domain is highly discouraged. It is also important that any evolution guarantees backward compatibility, because of the relevant impacts on the continuity of mobile service provision.

ETNO welcomes the draft benchmark outlined in the report regarding the use of 3 digit MNCs under existing MCCs but expected the analysis had been pursued further by ECC because the conclusions seem hasty. For example, the report rightly points out that a number of existing plans indeed have 3 digit MNCs in structure but eludes the fact that in those plans, given that MNCs are assigned to the same provider in blocks of 10 or only with a trailing 0, those MNCs are actually treated like 2 digit MNCs, thereby providing further evidence of the constraints regularly put forward on this issue. Should these hidden 2 digit based MCCs be taken out of the list, it would seem to ETNO that the actual number of cases is much smaller.

Taking into consideration that the option of using both 2- and 3-digits MNCs within one MCC domain was subject to a thorough review and is highly discouraged by standardization bodies such as 3GPP and GSMA, ETNO would consider it preferable to exclude entirely the option of mixing 2 and 3 digit MNCs under the same MCC for current and future European MCCs.

Regarding the risk of exhaustion in general, ETNO considers that there is no cause for concern for E.212 availability in the medium / long term if normal ITU-T rules are followed (for instance for M2M, femtocells and possible innovative services). It is therefore premature for ETNO to envisage extending the MNC format that is currently the most widely in use within the industry. It is obviously crucial that close monitoring of the E.212 plan be maintained to continuously reassess this risk on a regular basis.

Use of shared MCCs vs national MCCs: ETNO notes that public mobile services may be intrinsically considered as "cross-border" given that any IMSI (national MCC/MNCs or shared) enables roaming functionalities at a global level. As a consequence ETNO shares the ECC point of view that there may be reasons for considering both a new shared MCC and national resources in some very specific cases. ETNO would nonetheless point out that:

a) It is important that the distinction between shared MCCs and national MCCs be preserved to determine the appropriate resource to use for a mobile application;
b) Applicants should not be in a position to turn to one option if they cannot have the other for any reason;
c) Dedicating resources both at geographic MCC and shared MCC level in parallel may lead to inefficient use of the resource;
d) Such scenarios should be considered globally and not just for the European area.

In all cases, it is a matter to be discussed and defined in ITU-T SG2.

Detailed comments

The following comments specifically refer to the dedicated sections in the text of the proposed report.

M2M Services

ETNO would not consider efficient to reserve a single MCC for each new emerging future service in absence of clear requirement, but would welcome more work on the reservation of a new MCC (e.g. 90x) to be shared among different categories of future services under conditions yet to be defined depending on the assessment and forecasts of how many MNCs are necessary. In this respect, the MNC, for future services, should continue to indicate a network operator and not be service specific. This would be in line with the current practice. In any case, already deployed models should remain compatible and technically/operationally feasible in the future (including the use of an IMSI range from an existing MNO).

eCall

It has to be underlined that the eCall service is not a pure M2M service, since it is not only data connection service, but it has a voice component (the user in the car can speak with the emergency personnel dealing with 112 calls).

In addition, the European regulation on eCall does not identify a requirement on specific IMSIs or MNCs. ETNO is uncertain at this stage that dedicated IMSIs are necessary for eCall since the use of normal national MCC+MNC enables access to the existing roaming agreements around the EU. The field trial inside the European HeERO project does not seem to provide evidence for dedicated IMSIs at this stage and existing roaming agreements, favored by the use of existing E.212 numbering allocations, also simplify the eCall implementation. ETNO however acknowledges

that a volume of resources matching the number of cars in Europe may be a challenge if it were to fit in the existing resources.

VoIP Service Providers

The rationale put forward in the draft report for the use of MNCs by VoIP service provider, is chiefly its use as a billing or accounting identifier. ETNO does not consider that using E.212 resources is the solution for any new requirement for a new unique international identifier given the resource scarcity. The same considerations apply also to eventual "VoIP based voice-roaming", if ever emerging in the context of Alternative Roaming Providers.

In addition, ETNO notes that access to MNCs, nationally or internationally, always depends on the endorsement of a country whether through an authorization/license regime or ITU (full/associate) membership. For example, for "geographic MCCs", VoIP service providers should in advance be authorized/registered as operators in EU, to get public numbers rights of use, according to the European regulatory framework; and future of national E.212 resources should also adhere to this principle.

Private Wireless Networks

<u>Private wireless networks</u> offer private electronic communications services to private users in a private environment usually without interoperability with public electronic communications networks.

In ETNO's opinion, these private wireless networks do not need E.212 resources for their correct functioning, so private autonomous numbering resources should be used.
When private network mobile users need to roam to public mobile networks, a specific commercial agreement may be entered with a mobile public operator, that may provide public resources; this takes into account that roaming provision is under the responsibility of the public operator.

In addition it is worthwhile to mention Annex B of Recommendation E.212 "Principles for the assignment of mobile network codes (MNCs) within geographic MCCs". This annex forms an integral part of Recommendation E.212, and the first two principles read:

"1) MNCs are to be assigned to permit the most effective and efficient use of a finite resource in order to defer, as long as practical, the need to request additional MCC resources.
2) MNCs are only to be assigned to, and used by, public networks offering public
telecommunication services."
(emphasis added)

The rational for these principles is to recognize that MNCs are a finite resource, and that they have to be assigned only to providers that really have a need for them having to provide a public service. In ETNO's opinion there is no need to change these principles. Moreover, any other player that could consider the need to have

access to these resources would be able to become a public operator subject to the regulatory framework.

Femtocells network

These networks are in general offered by public mobile network operators. As a consequence the MCC/MNCs uses defined in 3GPP standards apply (e.g. in association with gateways). In general, an appropriate balance has to be found between E.212 efficient use and new innovative offers to end users.

As an example, a specific national MNC could be used for innovative services, also applying 3GPP standards (where radio coverage differentiation is provided for business uses). For the sake of completeness, it is worthwhile mentioning that in 3GPP standards, the LAC alternative is based on assigned MCC/MNCs, so it is not, in reality, an alternative to the E.212 resources use.

In conclusion, femtocells networks have not the potential to impact on the E.212 availability in the medium / long term, if appropriate choices are made following existing E.212 Recommendation.

Home Location Register Proxy Solution

In the Report it is mentioned the use of an E.212 MNC of which MSIN ranges are assigned to different networks (i.e. HLR Proxy Solution described in section 5.4). In ETNO's opinion, the technical and administrative challenges associated with putting appropriate structures in place for such an approach, should not be absolutely underestimated and should be evaluated also by standardization bodies such as 3GPP and GSMA.

2-digit and 3-digit Mobile Network Codes

The Report refers to the possibility to use both 2- and 3-digit MNCs within one MCC domain. It has to be underlined that when the issue was subject to correspondence between the ITU, 3GPP, and GSMA this possibility was highly discouraged. In particular, a reply Liaison Statement to ITU-T SG2 (GEN21 – January 2013) expressed serious concerns with regards to the impacts that mixing of 2-digit and 3-digit MNCs under a single MCC would have had on existing devices and network implementations. 3GPP strongly advised ITU-T SG 2 not to mix 2-digit and 3-digit MNCs under a single MCC.

***n*-digit MNCs**

In the Report (in particular in Clause 7.1.4 "Extend existing 2-digit MNCs to *n*-digit MNCs") it is also mentioned as a future possibility the use of MNCs longer than 3-digits. ETNO considers utterly disruptive, also for the future and with migration paths, the possibility of assigning MNCs that are not consistent with the length

recommended by E.212. A thorough analysis would be necessary by standardization bodies such as 3GPP and GSMA to review the recommendation to this end.

Soft-SIM / e-SIM / Over-The-Air (OTA) provisioning of IMSIs

ETNO appreciates the on-going evolutions and those expected in the future on this broad topic. The security issues associated with the use of 'open' or semi open provisioning interfaces with the SIM card are very complex and ETNO is doubtful that a single "one size fits all" solution be found.

Some of the already identified as "emerging business models" (ie. M2M) are being developed and can further evolve subject to new collaborative models among the players involved across the value chain: market-based negotiations should drive this forward whilst regulation should avoid choosing a specific business model.

ETNO notes it is ECC's sentiment that *"it is unlikely that established MNOs would be in favour of soft-SIM applications on a voluntary basis as this would further reduce switching barriers and could be perceived by MNOs as a threat to existing market share"* but considers that the reservations put forward on security issues should not be neglected and customer confidence is paramount to the development of future applications.

With regard to E.212, ETNO does not see an emerging solution solely based on E.212 (e.g. assigning dedicated MNCs to application providers) and therefore suggests ECC continue to investigate remote provisioning mechanisms to address such requirements (for instance regarding OTA provisioning in 3GPP), before considering revising E.212 assigning principles.