



Commission for
Communications Regulation

Numbering for Machine-to-Machine Communications

Response to Consultation

Response to Consultation

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An Coimisiún um Rialáil Cumarsáide
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Additional Information

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1 Executive Summary

- 1 ComReg has statutory obligations¹ to manage the national telephone numbering resource in an effective and efficient manner. A key objective of this role is to ensure that adequate numbers and numbering ranges are provided for publicly available electronic communications services. Pursuant to that objective, and in line with recommendations of the ECC² and the recommendations of its Numbering Advisory Panel (NAP)³, ComReg published a consultation (ComReg Document 13/33) proposing to introduce a new dedicated numbering range for Machine-to-Machine (M2M) communications. The objective was to supply sufficient numbers to meet potential numbering demands for M2M communications⁴.
- 2 ComReg received diverging views in responses to its consultation⁵. Responses were less supportive of ComReg's proposals than could have been foreseen from previous discussions with industry. Some respondents argued that the cost of implementing a new M2M numbering range in their networks would be significant, increasingly more for longer numbers (i.e. the longer the subscriber number for a device the more complexity and cost involved).
- 3 In view of the divergence of views and the high-level nature of many responses, ComReg took the further step of commissioning the joint consultants [Analysys Mason](#) and [Antelope Consulting](#) (the Consultants) to investigate these matters directly with respondents, with a specific focus on mobile network operators⁶ (MNOs) who would need to meet most demand for M2M devices and in order to bring a greater understanding on the various issues raised.

¹ In particular, the Communications Regulation Acts 2002 to 2011 and – for the purposes of this document - the related Framework Regulations, Authorisation Regulations, and Universal Service Regulations.

² The Electronic Communications Committee of CEPT, which is The European Conference of Postal and Telecommunications Administrations.

³ The NAP is a specialist committee that provides guidance to ComReg on key issues concerning numbering policy and number management. NAP consists of representatives from the vast majority of communication service providers within Ireland.

⁴ It is expected that numbers will only be used for M2M until such a time when IPv6 addressing becomes the addressing of choice for M2M devices. IPv6 is anticipated to be widely utilised by 2016.

⁵ Responses to the consultation are published in ComReg Document 13/66. A revised version of ComReg Document 13/66 will be published shortly which will include a late submission from Intel and notes from the bilateral meetings with Mobile Network Operators.

⁶ Discussions with Eircom/Meteor related to matters surrounding mobile and fixed network implications of M2M.

- 4 On receipt of the Consultants' report, ComReg decided to undertake one further round of consultations directly with MNOs to clarify a small number of residual issues, particularly with regard to detailed cost implications and implementation difficulties associated with the original proposal. This further round of consultation also highlighted critical new information that had not been presented to the consultants, or set out in initial written responses. Key amongst this was that one MNO does not use telephone numbers for most new M2M applications in any event and instead relies on the International Mobile Subscriber Identity (IMSI) embedded in SIM cards. Although not presented to the consultants, this new information nevertheless further supports their conclusions.
- 5 The comprehensive Consultants' report⁷ reviews the need for a specific new M2M numbering range in the context of whether M2M numbering needs could largely be met from regular mobile voice numbering resources in the absence of the introduction of a new range. The Consultants have concluded that there is every likelihood that the existing mobile numbering ranges, once used efficiently, could meet all such M2M demands. As mentioned, this conclusion is strengthened by the outcomes of the further direct consultations with MNOs, which highlighted the significant costs for some MNOs of introducing a new number range, and brought to light that one MNO uses IMSIs rather than telephone numbers for most M2M applications. The Consultants report usefully sets out a number of practical number conservation measures that could be implemented to make more telephone numbers available from the mobile ranges. The Consultants further recommend that ComReg should monitor developments in the M2M area and only release a dedicated M2M number range if prevailing circumstances determine that one is required.
- 6 Having taking into account the views of respondents, bilateral discussions with the various parties and the Consultants' report, ComReg has decided not to introduce a dedicated M2M number range at this time. ComReg believes that M2M needs can be adequately met from existing number ranges (primarily mobile numbering ranges) for the foreseeable future. ComReg will however keep this matter under constant review and address if required.

⁷ The Consultants' report is published in parallel with this document as ComReg Document 13/110.

- 7 As highlighted by some respondents to consultation and by MNOs in our bilateral meetings, ComReg acknowledges that Internet Protocol version 6 (IPv6) addressing is likely to be the preferred method of addressing for the vast majority of M2M communications in the future and so the use of telephone numbering should be viewed very much as an interim or transitional step. In this regard, ComReg notes that IPv6 could be in use as early as 2016 on some mobile networks, as M2M applications begin to migrate to networks based on Long Term Evolution (LTE), which is an IP-based network.
- 8 Additionally, ComReg plans to introduce a series of number conservation measures for the mobile 08X⁸ number ranges, which may include certain options identified for it by its Consultants. These options will in the first instance be placed before ComReg's Numbering Advisory Panel (NAP). This will assist ComReg with option selection and with identification of implementation methodology, as appropriate. The targeted ranges are all of those within the 08X category. Full and active participation of interested parties at the NAP will be essential in this regard and ComReg expects a full contribution by all organisations represented there. In the course of this consultation, ComReg has had discussions with a range of network operators and it understands that voluntary steps towards number conservation may also be proposed within industry fora such as TIF; ComReg looks forward to receiving their proposals in due course.

⁸ 'X' indicates any numerical digit 0-9.

2 Introduction

- 9 The purpose of this document is to set out ComReg's response to consultation on ComReg Document 13/33⁹. That document presented ComReg's proposals to pre-empt potential future numbering shortages that could arise as a consequence of any very large demand for telephone numbers emanating from Machine-to-Machine (M2M) communications.
- 10 Eight interested parties submitted responses to ComReg Document 13/33, and these submissions are published in ComReg Document 13/66¹⁰. The respondents were:
- Alternative operators in the communications market (ALTO);
 - BT Communications Ireland Ltd (BT);
 - Eircom/Meteor (Eircom Group);
 - Hutchison 3G Ireland Limited (H3GI);
 - Intel Ireland;
 - Magnet Networks;
 - Silver Spring Networks; and
 - Telefónica Ireland Ltd (Telefónica).
- 11 ComReg has given careful consideration to all the material submitted by the interested parties, as well as to other available information before it. In view of the significant divergence of views and the nature of responses received, ComReg also took the additional step of engaging Consultants to investigate these matters in more depth.

⁹ ComReg Document 13/33 – Numbering for Machine-to-Machine Communications - published 28 March 2013.

¹⁰ ComReg Document 13/66- Publication of responses to ComReg Consultation Document 13/33 (revised) – published 3 July 2013. A revision of this document will be published shortly which will present a late submission from Intel and the notes from meetings between ComReg and the Mobile Network Operators.

- 12 ComReg also undertook one further round of consultations directly with mobile¹¹ network operators to clarify any residual issues, particularly with regard to detailed cost implications and implementation difficulties associated with the original proposal, and to understand their positions more clearly. ComReg therefore met with or held teleconferences with H3GI, Telefónica, Eircom/Meteor and Vodafone¹² during August and September 2013. A summary of the outcome of these meetings will be included in ComReg Document 13/66R¹³ and references are made to these outcomes in relevant sections of this document (e.g. under the heading of “Additional Information”).
- 13 ComReg has been guided in this work by its statutory functions, objectives and duties related to the management of Ireland’s national numbering resource (which are set out in Annex 2 of this document).
- 14 This document is structured as follows:
- Section 3: explains the background to this consultation process;
 - Section 4: considers submissions made by interested parties on ComReg’s proposals in Document 13/33;
 - Section 5: sets out ComReg’s views on other issues raised by respondents; and
 - Section 6: sets out the next steps to be followed.

¹¹ M2M is primarily concerned with mobile communications and it was in that area that the greatest divergence of views was noted.

¹² To ensure it obtained the views of all MNOs, ComReg also consulted with Vodafone Ireland which had not submitted a response to the original consultation.

¹³ ComReg Document 13/66R, a revision of ComReg Document 13/66, will be published shortly.

3 Background

- 15 M2M communications can be defined as data communication between devices or systems in which human intervention is not a part. M2M communication continues to expand, driven primarily by the expansion of next generation telecommunications technology and a decline in the cost of the embedded wireless modules and sensors that enable M2M services. This continued improvement in the infrastructural environment surrounding M2M has led to growth in the number of applications and services now available.
- 16 M2M communications currently deployed in Ireland are in part based on existing numbering resources. Estimates of strong growth in M2M communications over the coming years have drawn the attention of regulatory authorities worldwide, keen to pre-empt potential shortages of numbering resources in the short and medium term, prior to the widespread advent of later addressing technologies, such as IPv6.
- 17 In May 2011, the ECC recommended that National Regulatory Authorities (NRAs) should consider the provision of numbering solutions for M2M applications as part of their national numbering plans, particularly if there was any risk that M2M addressing could not be fully met from existing numbering resources. It proposed, amongst other things, that consideration should be given to opening up new number ranges as part of this process. It also recommended that the number lengths to be used for this purpose should be as long as possible (i.e. up to the maximum of 15 digits for E.164-type telephone numbers).
- 18 Some European countries, such as Belgium and the Netherlands, have opened up specific M2M number ranges, though some adopting a number length of less than 15 digits (see Annex 2 of ComReg 13/33). Other European countries such as Italy and France also considered opening numbering ranges for M2M but have determined that the need does not currently exist.

19 ComReg, in line with the ECC recommendations, published ComReg Document 13/33 setting out its proposal to open up a dedicated M2M number range. The aim of this proposal was to avoid any risk of future numbering shortages that could in turn require costly number changes in Ireland. This initiative followed preliminary consultation with industry within ComReg's Numbering Advisory Panel (NAP¹⁴). ComReg circulated a detailed questionnaire to industry to determine its needs and preferences. Industry was supportive of opening a dedicated M2M number range or ranges at this time. ComReg decided to consult on the matter given international developments in this area and NAP's support for same.

¹⁴ The NAP is a specialist committee that provides guidance to ComReg on key issues concerning numbering policy and number management. NAP consists of representatives from the vast majority of communication service providers within Ireland.

4 Numbering and Addressing

20 Section 2 of ComReg Document 13/33 set out background information regarding current M2M usage, predicted benefits of M2M and forecast future deployments.

21 Section 3 of that Document set out ComReg's preliminary views on:

- a new number range for M2M, including details of number length and proposals for sub ranges for fixed, mobile and premium rate services (PRS);
- block allocation size;
- limitation on PRS number ranges to be assigned;
- number portability and block re-allocation for M2M; and
- Shared Mobile Country Code (MCC) and Mobile Network Code (MNC) to overcome operator tie-in, and direct allocation of MNCs to large M2M Service Providers (SPs).

4.1 New Number range for M2M

4.1.1 ComReg's Proposal in Document 13/33

22 Section 3.1 of ComReg Document 13/33 outlined the relevance of E.164¹⁵ Numbers for M2M communications. Section 3.2 described feedback received from the Numbering Advisory Panel (NAP) and other industry members to a questionnaire circulated by ComReg in early 2012. The principal message was that a risk was emerging that in the absence of targeted action, any proliferation of M2M services on existing voice numbers might deplete that numbering resource, potentially leading to the costly disruption of one or more number changes and/or the difficult task of migrating large numbers of developed M2M services onto a new range.

23 To address this risk, ComReg proposed through Consultation Question 1 to introduce a new dedicated number range for M2M purposes.

¹⁵ E.164 is an ITU-T recommendation that defines a numbering plan for the world-wide public switched telephone network (PSTN) and some other data networks.

4.1.2 Views of Respondents on ComReg Document 13/33

- 24 Seven respondents, Telefónica, H3GI, BT, Eircom Group, Magnet Networks, Silver Spring Networks and Intel offered their views on the introduction of a new number range for M2M.
- 25 Four respondents agreed with the release of a new number range for M2M. Telefónica, H3GI and Intel fully supported such a release. Telefónica also pointed out that E.164 numbers need not be used for Short Range Device (SRD) components of M2M networks as these generally do not communicate across public networks.
- 26 BT agreed in principle with the release of a new number range; though it argued that outstanding issues remain to be resolved, which it described in response to other consultation questions.
- 27 Three respondents, Magnet Networks, Eircom Group and Silver Spring Networks, did not favour the release of a new number range for M2M. Magnet Networks noted that opening a new range carries cost implications for operators; it would welcome an evaluation of such costs. Both Magnet Networks and Silver Spring Networks considered that Internet Protocol (IP) must be used to address M2M communications rather than E.164 numbers. Magnet Networks further maintained that enough capacity remains in IPv4 to deal with current demand after which a move to IPv6 could take place. Silver Spring Networks went further, recommending that ComReg should require Internet Service Providers (ISPs) to introduce IPv6 capabilities in their networks to support M2M connections.
- 28 Eircom Group stated it did not agree with the introduction of a new number range at this time, arguing that a new number range should only be introduced if proven to be justified in the future through evidence that demand for M2M numbers had moved close to exhausting the existing number ranges. Eircom Group also recommended that ComReg set a threshold which would trigger the introduction of such a new number range. It considered that a more detailed assessment of the necessity for specific M2M numbers must be provided in the form of a Regulatory Impact Assessment (RIA). Eircom Group stated its preference that the existing E.164 number ranges be used to satisfy demand for M2M numbers.

4.1.3 Additional information

- 29 As discussed in paragraph 12 above, ComReg sought and received further information during follow-up discussions with all four MNOs.

- 30 Telefónica remained of the view that a new dedicated M2M numbering range was required. Telefónica considered this option to be the best in terms of future proofing ComReg's proposals, as to continue using mobile numbers for M2M alongside traditional mobile phone usage could place strain on those numbering resources. H3GI maintained its position that a new number range for M2M should be introduced to satisfy the demand for numbers arising from the emerging M2M services. H3GI also considered that MSISDNs (mobile numbers) would be required for the foreseeable future.
- 31 Eircom Group maintained that the usage of existing mobile numbers to be the most practical solution. Vodafone considers that MSISDNs (mobile numbers) are only necessary in a minority of cases and IMSIs could be used to identify devices, thereby substantially relieving any pressure on mobile numbers.

4.1.4 Consultants' View

- 32 The Consultants' report provided detailed analysis on the scenarios that would present in the event that mobile number allocations continued at the existing rate and M2M deployments were rolled out at the levels predicted by Machina¹⁶ (as presented in ComReg Document 13/33). The Consultants recommended implementing number conservation techniques to manage the risk of number exhaustion, while enabling M2M and mobile phone users share the currently utilised mobile ranges.
- 33 In the event that the existing mobile ranges are nevertheless threatened with exhaustion, even with number conservation techniques applied, the Consultants recommended opening new number ranges in which the digit length of subscriber numbers is determined by the forecasted demand. In the meantime, in the absence of risk of exhaustion, the Consultants recommended that a new number range not be opened at this time.

¹⁶ For example. Machina's predictions, as presented in ComReg Document 13/33, stated that there could be 25 million M2M connections in Ireland by 2020, with approximately 7.5 million M2M connections using public communications networks.

4.1.5 ComReg's Position

- 34 ComReg notes that some respondents were focused on the use of IP communications for M2M purposes rather than the deployment of E.164 number ranges. ComReg is fully supportive of the use of IPv6 as the ideal solution for M2M addressing. It must nevertheless also recognise that a significant proportion of industry still sees benefits in using telephone numbers with legacy systems and networks - and this is likely to continue for some time to come. ComReg has a statutory duty to ensure, amongst other things, that rights of use for numbers and number ranges are granted in a proportionate manner and in a manner that gives fair and equitable treatment to all undertakings providing publicly available electronic communications services. Given the further detailed analysis carried out by ComReg and its Consultants, there is currently what appears to be a valid and more cost effective alternative to the introduction of a new M2M number range (i.e. relying on existing numbering resources complemented by the application of appropriate conservation measures).
- 35 ComReg also notes that most MNOs are willing to continue the use of mobile numbers (or IMSIs) for the moment. IPv6 addressing could in time meet industry's need for addressing and ComReg's investigations have identified that, additionally, some current players can or already are using IMSI's for M2M deployments, and may move to IP addressing on LTE networks as early as 2016/7. This consultation – and follow-up direct consultations - have established that introducing a new M2M range, particularly with subscriber numbers exceeding 7 digits, creates real costs for operators, potentially in some cases of a significant level; a cost that may ultimately prove unnecessary. A programme of number recovery and conservation, with ongoing more efficient mobile number usage, may likely prove sufficient until IPv6 addressing has become the norm.
- 36 ComReg notes that most fixed-line respondents opposed the introduction of new number ranges. Those who supported such an initiative only did so on a conditional basis.
- 37 Taking cognisance of these matters, ComReg considers that it could and should apply a 'wait and see' approach, and meanwhile should not release a specific M2M number range.

- 38 Instead, ComReg will continue to allocate mobile numbers for M2M purposes from the normal mobile ranges for the time being, while closely monitoring spare mobile numbering capacity. ComReg also intends to introduce new number conservation steps, in line with its statutory responsibilities, and it will undertake early discussions with NAP to determine which techniques offer the greatest benefits and efficiency. This will be progressed during the remainder of this year and through 2014 and repeated as necessary thereafter. ComReg anticipates the full co-operation of all parties in the introduction and implementation of such number conservation techniques. ComReg will also review the terms of reference and membership of the NAP to ensure that adequate representation and appropriate expertise is made available to it. This will assist ComReg in ensuring that Ireland's M2M addressing needs can be fully met in the short-medium term, whilst not compromising numbering resources for traditional mobile services.
- 39 ComReg will consider setting a trigger point for introduction of an M2M range or for expansion of the existing mobile range. This is set out as 'technique 1' in the Consultants' report¹⁷. Such a trigger point is required in order to address any ultimate inability of the existing mobile number ranges to satisfy demand for M2M communications, without compromising numbering for traditional services. Any precise trigger point will be set in consultation with the NAP. The length (i.e. number of digits) of any new number range, if required, will also be determined in consultation with the NAP, taking into account the rate of demand of numbers at that time.

4.2 M2M Sub-ranges

4.2.1 ComReg's Proposal in Document 13/33

- 40 In paragraph 34 of ComReg Document 13/33, ComReg considered it prudent to initially break down any new number range for M2M into sub-ranges, with specific sub-range(s) for fixed, mobile and PRS. ComReg considered that this proposal would facilitate operators (e.g. with respect to billing and routing of users) and if not required in the future, ComReg could allow the sub-range distinctions to lapse.

4.2.2 Views of Respondents on ComReg Document 13/33

- 41 In their responses to ComReg Document 13/33, five respondents, Telefónica, H3GI, BT, Eircom Group and Silver Spring Networks commented on the proposed use of a single number range, segmented among fixed, mobile and PRS M2M services.

¹⁷ The Consultants' report is published in parallel with this document as ComReg Document 13/110

- 42 Four respondents; Telefónica, Eircom Group (without prejudice to its overarching reservations about release of a new M2M number range), BT and H3GI supported ComReg's proposal to use a single number range for M2M. BT nevertheless also expressed reservations about the risk of consumer confusion when PRS is included, along with the increased risk of PRS type scams. Telefónica considered ComReg's approach to be sensible, in distinguishing fixed and mobile services from each other for the present (i.e. until this is seen to be unnecessary) but wondered if this segmentation also implied that operators would actually be prohibited from mixing fixed and mobile numbers, where that suited them.
- 43 Silver Spring Networks argued that introducing 'fixed' and 'mobile' M2M services in the same range is not technology neutral and risks locking in an inappropriate architecture (i.e. telephone numbers instead of IPv6 addresses).

4.2.3 Consultants' View

- 44 The Consultants considered the benefits and disadvantages of distinguishing fixed-line, premium rate and mobile services from each other within a single number range (i.e. by segmenting into discrete sub-ranges) in Section 6 of its report.
- 45 The Consultants noted that the distinctions between fixed and mobile services is blurring as time passes, thereby reducing any benefits that might be gained from segregation. The Consultants also felt that the proposed segregation of M2M services might have the effect of impeding the introduction of M2M services using SIM cards embedded at point of sale. The Consultants therefore concluded that such segregation, rather than benefiting service providers, might instead simply create inefficiencies in number usage. The Consultants therefore recommended that ComReg should not sub-divide the proposed M2M range.

4.2.4 ComReg's Position

- 46 There was broad support for the concept of using a single number range for both fixed and mobile M2M services¹⁸.
- 47 ComReg also notes that those who supported this approach did so on the basis that opening a single range that incorporates sub-ranges (at least initially), was felt to be a prudent and future proofed step. Segregation could be subsequently dropped if it is found to offer no real advantages.

¹⁸ The question of PRS inclusion, or otherwise, is addressed separately later in this document.

- 48 ComReg notes Telefónica's query as to whether rigid segmentation could be applied between fixed and mobile M2M numbers. ComReg notes that the intention of the proposed segmentation within an M2M range was to facilitate operators and service providers rather than numbering management, so it would be logical for ComReg to allow maximum flexibility in cross-over of the segmentation barriers in cases where that was most helpful.
- 49 Notwithstanding, and taking account of the Consultants' analysis, ComReg has concluded that separate sub-ranges within any M2M range would bring little advantage and should not be implemented. If it becomes necessary later to open a dedicated M2M number range, this consultation process has usefully identified that this should in any case be limited to mobile services, with any (perhaps limited) demand from fixed-line and/or PRS services being adequately met from the regular (voice) numbering ranges.

4.3 Number length and specific number range

4.3.1 ComReg's Proposal in Document 13/33

- 50 In paragraphs 35-37 of ComReg Document 13/33, ComReg proposed that it would be prudent to use an M2M range of numbers that deploys the maximum possible number of digits to ensure it can meet all future needs. The ITU Recommendation E.164 establishes that the maximum permissible number length is one of 15 digits (i.e. including country code 353 for Ireland, access code, and subscriber number), and ComReg proposed to follow that approach, which is also recommended by CEPT.
- 51 This would result in a 2 digit access code, followed by a 10- digit subscriber number, potentially making 10 billion numbers available for use. ComReg proposed to use the access code '77' (dialled as '077' within the Republic of Ireland). ComReg noted that other EU countries which have already designated number ranges for M2M have generally used 10 or 11 digit subscriber numbers and the maximum of 15 digits for the whole (international) number.

4.3.2 Views of Respondents on ComReg Document 13/33

4.3.2.1 Number length

- 52 In response to ComReg Document 13/33, six respondents, Telefónica, H3GI, BT, Eircom Group, ALTO and Silver Spring Networks expressed their views on the most suitable number length for a new M2M number range.

- 53 Telefónica and H3GI fully supported ComReg's proposal to use the maximum permissible number length, per ITU-T, as well as its rationale for selecting this length. Telefónica stated that doing so may mean international operators need to be informed that Ireland has increased its maximum number length, and local operators would need to programme switches to differentiate between the number length for 077 and other access codes.
- 54 Both Eircom Group and Silver Spring Networks disagreed with ComReg's proposals. Silver Spring Networks argued that using telecoms infrastructure to route data between M2M devices is inappropriate and likely to prove expensive. Eircom Group saw no necessity to exceed existing fixed and mobile number lengths of 12 digits (inclusive of country code and access code). Given Machina's projections¹⁹ of 7.5 million numbers for M2M by 2020, Eircom Group argued that demand could be met from within the already available E.164 number ranges. Eircom Group also asserted that in any case E.164 numbers would only be needed for a relatively short term for M2M purposes before IPv6 comes into wider use.
- 55 BT and ALTO commented in more general terms on the proposed M2M number length without expressing a particular preference. BT predicted that, based on experience of previous number length increases, the proposal would be non-trivial to implement. In that respect, BT expressed concerns that existing switch infrastructures might be found incapable of supporting the introduction of longer dialling numbers. BT therefore requested that ComReg conduct a detailed feasibility study to calculate the cost of increasing number length before any new range is introduced, including coverage of whether it is economically viable for current generation platforms. ALTO also referred to issues with previous number length increases and recommended that any proposals made by ComReg should be interoperability tested, preferably in a "laboratory" environment.

4.3.2.2 Access Code (77/077)

- 56 In response to ComReg Document 13/33, five respondents, Telefónica, H3GI, BT, ALTO and Magnet Networks provided specific comments on the access code for a new M2M number range. As noted earlier, Silver Spring Networks and Eircom Group were opposed in principle to the introduction of an M2M range.
- 57 Telefónica and H3GI both supported ComReg's proposal of using the '(0)77' access code for a new M2M number range.

¹⁹ Those estimates excluded all situations where human involvement occurs (e.g. P2M and M2P)

- 58 BT and ALTO both expressed concerns about the specific use of '(0)77' as the access code, on the basis that the '07' number range is used in the UK (including Northern Ireland) for mobile numbers. BT referenced previous issues (i.e. with 028 numbers in Skibbereen, where misdialling instances occurred) in this regard.
- 59 Magnet Networks disliked having the proposed access code in close proximity to the '076' nomadic/VoIP number range, maintaining that this is a factor that ComReg and others considered to be an asset.

4.3.3 Additional information

4.3.3.1 Number length

- 60 ComReg discussed number length and associated impacts with operators during its further discussions.
- 61 Eircom Group stated that it would incur direct costs from increases of subscriber number length beyond 7 digits. While this may become less of an issue over time for that party, it nevertheless considered that the existing 7-digit mobile number range provides sufficient capacity at this time and would therefore prefer that it not be exceeded.
- 62 Vodafone also felt that the introduction of a range with number length longer than 7 digits would take time and introduce unnecessary costs. It stated that the opening of a new range with 7 digits, having therefore similarity with existing arrangements, would in comparison incur lower costs.
- 63 Telefónica reiterated that it preferred the 15 digit number length (i.e. 10 digit subscriber number) proposed initially by ComReg. It considered that this provides increased likelihood of avoiding any future number changes. It did however add that mixed number lengths within a single range are undesirable and should be avoided.

4.3.4 Consultants' View

- 64 The Consultants recommended that ComReg should initially use existing mobile numbers for M2M services, given that this carries the lowest cost. Only in the event of impending exhaustion of mobile numbers from this combined usage by M2M and traditional mobile phone devices, do the Consultants recommend opening a new number range dedicated to M2M. The subscriber number length of a new M2M range should then be dependant on the projected quantity of numbers required.

65 The Consultants suggested using the 072 access code as an alternative to the 077 access code proposed by ComReg. They suggested that the repeated 7's in the 077 access code could make that code attractive for Person to Person (P2P) communications, whereas that advantage would be lost in M2M communications.

4.3.5 ComReg's Position

4.3.5.1 Number length

66 As noted earlier, ComReg has concluded that it should not release a new M2M number range at this time. Accordingly, ComReg will only re-visit the issue of M2M range number length if conditions arise in the future justifying the release of a new M2M number range.

4.3.5.2 Access Code (77/077)

67 ComReg considers that the 077 range is suitable for M2M usage and there should not be a problem of misdialling to Northern Ireland consumers in the case of M2M. M2M numbers are generally set up once-and-for-all and are subsequently dialled automatically. Calls to fixed-line '077' M2M numbers (if used), would never leave the State's networks and the risk from mobile M2M calls would only occur within installations close to the Northern Ireland border.

68 Furthermore, UK 077 mobile numbers are in the format 077XX + 6 digits, so avoiding that number of digits would also resolve the problem. ComReg is also not persuaded that previous use of 07X numbers in areas around Donegal have any resonance today, many years following the number changes in that region.

69 ComReg notes the Consultants' suggestion of considering the 072 range as an alternative to 077 and will bear that in mind should an M2M range be opened in due course.

4.4 Block size

70 Given the predicted deployments of M2M, ComReg proposed to initially allocate minimum block sizes of 100,000 for qualifying mobile applicants and 10,000 for qualifying fixed-line applicants. ComReg argued that this best afforded practical and administrative efficiency both for M2M users and for ComReg.

4.4.1 Views of Respondents on ComReg Document 13/33

- 71 Five respondents, Telefónica, H3GI, BT, Eircom Group and Silver Spring Networks provided specific comments on ComReg's proposed block size proposal for M2M providers.
- 72 H3GI, Telefónica and BT supported ComReg's proposal of continuing existing or recent practice of allocating blocks of 100,000 mobile numbers and 10,000 fixed-line numbers, albeit with some concerns. Telefónica contended that if block transfer is to be facilitated then clean blocks are required which could lead to inefficiency with a block size of 100,000. Telefónica also raised a point regarding any distinction between fixed and mobile usage by an operator, suggesting that if ComReg intends to not allow a mix of fixed and mobile in a block, this should be made clear in the Numbering Conventions. BT also expressed some reservations regarding what it termed 'technology distinctions' in allocations. H3GI suggested that, as a number conservation measure, smaller "qualifying mobile applicants" should be given blocks of 10,000 numbers only.
- 73 Eircom Group and Silver Spring Networks maintained their opposition to the opening of any M2M number range.

4.4.2 Consultants' View

- 74 The Consultants considered the matter of block size in 'technique 2' (Section 6.3) of its report. The Consultants considered that 'technique 2', reducing allocations of mobile numbers from 100,000 to 10,000, would encourage applicants to consider more carefully what quantity of numbers they really need. The Consultants also observed that to reduce allocations to 10,000 numbers would incur a small administrative overhead, whilst also potentially creating costs for communication service providers²⁰ due to the necessary deeper digit analysis. The Consultants recommend that ComReg should allocate M2M and mobile numbers in blocks of 10,000 from some point in time agreed with communication service providers. The Consultants also recommended that communication service providers should commence building into their upgrade programmes the introduction of block sizes of 10,000 mobile numbers.

²⁰ One such communication service provider claimed this cost could be between €50,000 and €200,000 per mobile operator, depending on the upgrade required.

4.4.3 ComReg's Position

75 ComReg will not release a dedicated M2M range at this time and M2M numbers will be allocated from normal voice ranges (see paragraphs 37 and 38 above). Accordingly, with the potential for increased pressure on the existing mobile ranges, ComReg needs to consider the mobile block allocation size to be used going forward. In light of the reservations expressed concerning blocks of 100,000 mobile numbers, ComReg considers that an allocation size of 10,000 numbers for full MNOs seems to be more appropriate. ComReg will raise this matter at its next NAP meeting and seek to reach a conclusion on it within the NAP forum.

4.5 M2M PRS

76 In response to the questionnaire circulated by ComReg in 2012, NAP recognised that numbers may be required for M2M PRS. ComReg stated in paragraph 39 of its Document 13/33 that it considered usage of M2M PRS would be for once-off transaction based services, used sporadically. NAP had reservations regarding the use of 15XX PRS numbers for M2M and ComReg agreed on the basis that this number range does not permit international access. ComReg therefore proposed to use a dedicated part of the proposed 077 M2M range (i.e. 077-9Y) for any future use of M2M PRS. ComReg also proposed to restrict the number of PRS codes within that range to three.

4.5.1 Views of Respondents on ComReg Document 13/33

4.5.1.1 M2M PRS using 077-9Y Range

77 Five respondents, Telefónica, H3GI, BT, Eircom Group and Silver Spring Networks provided specific comments on ComReg's proposed 077-9Y range for M2M PRS.

78 Telefónica and H3GI agreed with ComReg's proposal that M2M PRS should be accommodated using the 077-9Y range. Telefónica stated that allocations should not take place until this was further evaluated by ComReg and/or NAP. Telefónica also stated that there is currently no business model that would require individual PRS numbers per machine, but there is potential for individual PRS number(s) that could cater for thousands of terminals served by M2M numbers, although this needs further consideration. H3GI considered that ComReg's proposal would provide clarity and simplicity for Service Providers (SPs)²¹ using such services.

²¹ A Service Provider is an intermediate organisation between the telecommunications provider and the specific end user/consumer, e.g. a car manufacturer would be the Service Provider to a car owner, using someone else's telecommunication network.

- 79 Eircom Group and Silver Spring Networks opposed this proposal. Eircom Group argued against the logic of providing equivalents to existing non-geographic ranges in the M2M environment, maintaining that pricing requirements could be dealt with at business level rather than individual transaction level. Silver Spring Networks recommended the use of existing number ranges for fixed and mobile M2M PRS.
- 80 BT neither supported nor opposed the proposal, instead expressing its concern that a common M2M number range for fixed, mobile and PRS purposes could risk customers being misled on pricing whilst also giving rise to potential PRS scams.

4.5.1.2 Quantity of M2M PRS number ranges

- 81 Five respondents, Telefónica, H3GI, BT, Eircom Group and Silver Spring Networks provided specific comments on ComReg's proposal to limit the number of M2M PRS ranges made available.
- 82 H3GI, Telefónica and Silver Spring Networks supported ComReg's proposal. H3GI suggested that it would provide clarity and simplicity. Telefónica held similar views while also re-iterating its suggestion in answer 5 that further analysis should be carried out by ComReg and/or NAP regarding this question.
- 83 BT opposed the proposal, stating that it is premature to limit the potential of a new market.
- 84 Eircom Group opposed the designation of a specific new number range dedicated to M2M PRS, arguing it could be impractical due to the potential high transaction values involved. Notwithstanding, if demand for low value M2M applications was to emerge, Eircom Group would agree with the proposal of three ranges (low, mid and high price point).

4.5.2 Consultants' View

- 85 For reasons set out in Section 4.2.3 of this document, the Consultants did not recommend ComReg's proposal in ComReg Document 13/33 to have a specific sub-range (e.g. 077-9Y) for M2M PRS.

4.5.3 ComReg's Position

- 86 ComReg considers that some potential exists for M2M services of a premium nature to emerge. However, as set out in Section 4.2.4 above, ComReg is satisfied that the provision of a dedicated M2M sub-range is unnecessary. ComReg also notes the views expressed by respondents that only a limited quantity of PRS M2M numbers is ever likely to be needed in any case and this need can easily be met from within the existing 15XX PRS ranges.
- 87 Accordingly, and in line with ComReg's earlier conclusion in paragraph 49 above, no dedicated M2M PRS range will be opened. M2M PRS needs can be met from existing number ranges.

4.6 M2M Number Portability and Block Re-allocation

- 88 In Section 3.5 of ComReg Document 13/33, ComReg discussed number portability and block re-allocation in the M2M environment. ComReg outlined how the physical switching of SIM cards to change service provider in the M2M environment (where a customer may have millions of devices) is not viable given the cost, effort and time involved in changing the SIM card in each device. ComReg suggested other solutions are needed to avoid "operator tie-in". ComReg further recognised that the same need may not exist for M2M numbers to be ported as is required for traditional geographic and mobile phone numbers.
- 89 ComReg's current National Numbering Conventions (NNC) permit large contiguous blocks of numbers to be re-assigned from one operator to another (at the request of the number holder) if the number holder is the sole user of that block. ComReg considered such moves would be rare but wished to make it possible for a M2M Service Provider (SP) to efficiently move its services from a current operator to one that better meets its needs, without requiring a large number of ports.
- 90 ComReg asked whether interested parties thought:
1. there is a need for number portability for M2M;
 2. that the block re-allocation process (as stated in the NNC) is adequate for M2M SPs wishing to change network operator; and
 3. that text relating to block re-allocation in the NNC needs to be broadened to cover re-allocation of all large blocks (including M2M).

4.6.1 Views of Respondents on ComReg Document 13/33

4.6.1.1 Number Portability

- 91 Six respondents, Telefónica, H3GI, BT, Eircom Group, ALTO and Silver Spring Networks provided specific comments on whether number portability (NP) is required for M2M.
- 92 Three respondents, Eircom Group, Silver Spring Networks and BT supported NP in an M2M environment. Eircom Group preferred the use of existing E.164 numbers for M2M, and considered that the current NP regime should remain in place for M2M. BT stated that customers have rights under the Universal Service Directive to change provider and considered that these rights should apply to M2M services. Silver Spring Networks believes that NP should apply for all numbers including any used for M2M, and M2M should not get special status in this regard.
- 93 Two respondents, Telefónica and H3GI, opposed the application of NP in its current form to the M2M environment. Telefónica stated that habitual dialling is not a consideration in the case of M2M, given that M2M is about devices talking to each other, so that human issues about memorising numbers and physical dialling do not arise. Rather the issue is one of remotely changing an IMSI, which Telefónica noted can be done over the air. It also stated that M2M numbers need not be quarantined. Telefónica also noted that existing porting arrangements are not designed for M2M and to use them for that purpose could involve a costly re-design and re-build of the processes, making it infeasible. H3GI also pointed out that M2M numbers differ from traditional fixed and mobile numbers in that they are not key to the customer. It also stated that such individual M2M porting of numbers would place a considerable strain on Network and IT systems of all network operators and SPs, and an impact assessment would be required to justify the mandating of NP for M2M.
- 94 ALTO neither supported nor opposed NP for M2M numbers, but instead requested that ComReg revisit issues that it recalls arose in the past in relation to number lengths and inter-operator billing for geographic, non-geographic and mobile NP, in respect of M2M.

4.6.1.2 Block re-allocation

- 95 Five respondents, Telefónica, H3GI, BT, Eircom Group and Silver Spring Networks provided specific comments on whether block re-allocation, as currently supported for other numbers in the National Numbering Conventions, is appropriate for M2M use.

- 96 Two respondents, Telefónica and H3GI agreed that the block re-allocation process described in ComReg Document 13/33 was adequate to meet the needs of SPs who wish to move services from one operator to another. Telefónica stated that fragmented blocks cannot be transferred and there is a trade off between block size and efficiency of use. H3GI felt that consideration must be given to large block re-allocations as these should be carried out in tranches, with negotiated agreement between ComReg, the donor and recipient operators and with timely notifications to other operators. Both of these operators considered the block re-allocation process to be more appropriate for M2M than Number Portability.
- 97 Silver Spring Networks opposed the proposal, being against the use of numbers for M2M as a principle. It stated that porting of numbers for M2M is just the first example of complications that telephone numbering would introduce.
- 98 Eircom Group remarked that such a process could create additional costs, which must be considered in a RIA framework. It argued that there is no evidence to show that demand could not reasonably be met through existing porting capacity and recommended that any decision should be deferred until such demand can be accurately forecasted.
- 99 BT considered that both NP and block re-allocation are required. It stated that when a large re-allocation takes place, there is need for a formal process to inform other operators, so they may change their routing appropriately to avoid unintentional transit.

4.6.1.3 Proposed textual change to NNC

- 100 Five respondents, Telefónica, H3GI, BT, Eircom Group and ALTO provided comments on the proposed re-wording of the National Numbering Conventions to support block re-allocation for all large number blocks regardless of technology.
- 101 H3GI and Telefónica both supported the re-wording of text in the NNC.
- 102 Eircom Group opposed the re-wording of text in the NNC.
- 103 BT argued that the proposal has wider ranging implications and ComReg should delay its decision in this regard, given that M2M number allocation is not imminent. BT along with ALTO considered the upcoming consultation on the Conventions to be more appropriate to address this and other issues.

4.6.2 Additional information

104 H3GI made specific additional comments on Number Portability. It reiterated its consultation response which stated that M2M MSISDNs are not key to the user and should provide access to the service only, as it is the service that is critical not the number. Therefore, H3GI considers that numbers should not go into the porting system.

4.6.3 Consultants' View

105 The Consultants consider it necessary to permit M2M numbers to be portable. However, they also consider that the current mobile number portability system may not be the most suitable mechanism for porting large quantities of numbers simultaneously, and may even add unnecessary cost. The Consultants recommended a block re-allocation process in cases where the numbers being ported are the only numbers in a given block. The block size would then determine the efficiency of number allocation; the smaller the block size the more efficient the allocations.

4.6.4 ComReg's Position

106 ComReg considers a RIA to be unnecessary at this point. Reasons supporting this are detailed in Section 5.1.

107 ComReg agrees with BT that subscribers (who by definition include both natural and legal persons) have a legal entitlement²² to retain their numbers independently of the undertaking providing their service. Although M2M telephone numbers are assigned to machines, those machines are undoubtedly terminal equipment, owned and operated by real subscribers, as with any other end-user terminal equipment. ComReg notes that the legal obligation set out in Regulation 25 of the Universal Service Regulations²³ refers to retention of numbers and to changing of service providers, rather than being restricted to any narrow interpretation of number portability. ComReg notes that the Consultants have recommended the implementation of such a block re-allocation process.

²² Universal Service Regulation 25: "Facilitating change of service provider".

²³ S.I. No. 337/2011 - European Communities (Electronic Communications Networks and Services) (Universal Service and Users' Rights) Regulations 2011.

108 Number Portability (in the full sense of retaining numbers and changing service providers as described in Regulation 25 of the Universal Service Regulations) is therefore an entitlement of M2M number holders (as described above). In line with ComReg's decision not to introduce a new M2M number range at this time (instead relying on the use of mobile numbers for M2M services); it considers that the existing mobile NP process should apply.

109 The existing NP process should be supplemented by a mobile block re-allocation process, as block re-allocation can be more efficient in certain cases than number portability. ComReg will discuss this matter with NAP in the first instance, taking account of existing geographic/non-geographic block reallocation processes and timelines, with a view to encouraging mobile operators to investigate the possibility of introducing a block re-allocation process for mobile numbers as soon as possible²⁴.

110 ComReg also notes that there is potential inefficiency in the number portability process, and that some numbers that are ported and subsequently taken out of use have not then become available for re-assignment. This has resulted in an unknown, but perhaps notable, quantity of mobile numbers resting idle and unavailable for use. In line with technique 5 in the Consultants' report, ComReg will work with operators allocated mobile numbers to ensure that such mobile numbers can re-enter service.

4.7 Shared MCC and National Roaming

111 In Section 3.6 of ComReg Document 13/33, ComReg outlined how manufacturers of M2M devices would prefer to install M2M identification functionality at the point of manufacture, and a number of different solutions could help address this need, while facilitating more seamless switching between SPs. ComReg also detailed how it administers MNCs within its MCC, in line with ITU-T Recommendation E.212.

112 The ITU designated MCC 901 as a shared MCC, allowing provision of MNCs which are not country specific or tied to one market. This allows qualified SPs to use such MNCs to operate cross-border services using a single SIM charged at a single (national or cross-border) price for data connectivity. This is generally beneficial as it allows SIM functionality to be configured in devices at point of manufacture whilst also allowing M2M providers to negotiate agreements with numerous MNOs on a national or international roaming basis.

113 ComReg asked interested parties if they agreed that a shared MCC and MNC provides a practical solution to operator tie-in whilst also meeting the needs for economies of scale in the manufacture and distribution of M2M devices.

²⁴ Note: It is not presently possible to port a fixed number to a mobile device or vice versa.

4.7.1 Views of Respondents on ComReg Document 13/33

- 114 Five respondents, Telefónica, H3GI, BT, Eircom Group and Silver Spring Networks provided specific comments on the potential applicability of shared MCC and national roaming.
- 115 Two respondents, H3GI and Telefónica, both agreed that a shared MCC and MNC provides benefits as outlined by ComReg. H3GI stated that operators would need to assess the potential impacts on network and IT systems, and once the current ITU consultation on E.212 numbering is complete, ComReg should take into account the impacts on industry, giving operators sufficient time to accommodate the use of shared MCC and MNC.
- 116 Both Eircom Group and Silver Spring Networks opposed the proposal. Eircom Group stated that it is not clear how the use of shared MCC and MNC reduces any alleged operator tie-in or how manual porting improves on the automatic MNP facility in place. Silver Spring Networks argued that IPv6 and its management offer a perfectly viable way of managing the transfer of devices between SPs.
- 117 BT provided commentary on this proposal without expressing a preference. BT stated that the development of rules and recommendations by the ITU on the issue of shared MCC and MNC will take some time. BT considered that this could be a barrier to national development of M2M, and suggested that ComReg could instead consider allocating a shared MNC behind Ireland's MCC, which BT maintained is permitted under the current ITU-T Recommendation on E.212.

4.7.2 ComReg's Position

- 118 ComReg recognises that other countries have different criteria for assessing applications for MNCs. Some countries (e.g. Portugal) have given MNCs to SMS providers.
- 119 ComReg recognises that the allocation of MCC's (including shared MCC's) is the sole responsibility of the ITU. In this regard, ComReg will monitor ITU developments in this area. Once the ITU makes recommendations in this area, ComReg will take into account its outcome, its benefits, its impacts on industry and what steps ComReg may need to take to support the use by Irish SPs of shared MCC/MNCs.

4.8 Direct allocation of MNCs

120 In Section 3.6.1 of ComReg Document 13/33, ComReg elaborates on how M2M providers could be at a disadvantage when seeking to negotiate commercial terms with MNOs in the absence of their own MNC. ComReg considered that acquiring an MNC (whether a national MNC or shared international MNC) could provide more negotiating power, which in turn could help M2M service providers to agree roaming agreements with multiple MNOs and thereby achieve wide scale coverage at competitive costs. ComReg suggested that this could stimulate competition while also reducing the costs of switching to a different MNO, if required.

121 ComReg is guided by the rules and recommendations established by the ITU and therefore asked interested parties in ComReg Document 13/33 whether it should directly allocate MNCs and M2M numbers to very large M2M SPs, should the ITU permit this. ComReg also invited views on what would be an appropriate minimum number of M2M applications for an M2M SP to have in hand before it should be directly allocated MNCs and M2M numbers.

4.8.1 Views of Respondents on ComReg Document 13/33

122 Four respondents, Telefónica, H3GI, BT and Eircom Group provided specific comments on the issue of direct allocations of MNCs.

123 H3GI supported the proposal, and also stated that 1 million numbers should be the threshold, as fewer would be onerous to administer and wasteful of MNCs.

124 Eircom Group opposed the proposal, stating that there is no evidence to suggest that large M2M providers would suffer from insufficient choice and sub-optimal market power which it considered had been implied by ComReg's proposal. It also considered that the implications of the proposals for existing systems (referencing MNP as an example) had not been considered. Eircom Group also stated that the suggested re-wording of National Numbering Conventions text appeared to allow for M2M SPs to use MNCs outside of the country whereas network operators could not. Eircom Group asserted that this was a discriminatory action against mobile operators in Ireland.

125 Telefónica and BT provided comments on the matter but neither expressed support nor opposition to the proposal. Telefónica highlighted the limited quantity of MNCs available under the MCC administered by ComReg and urged caution against making allocations to non-mobile operators. Telefónica was also uncertain as to the number of M2M applications that should be set as the criteria for determining whether an M2M SP qualifies for allocation of an MNC. Telefónica considered that the matter requires further consideration, and suggested the possibility of using the same criteria to allocate MNCs as is used to allocate short codes. BT considered that were the ITU-T to make a formal Recommendation on shared MCC and MNC, then relevant rules would be developed to govern the allocation of these. Where such rules are applied to global resources (i.e. shared MCC), then BT considers that ComReg and individual NRAs would have no significant role in allocations.

4.8.2 ComReg's Position

126 ComReg notes the ongoing work on the E.212 Recommendation in ITU Study Group2 (SG2) and is minded to align its proposals with any ITU Recommendations emanating on the allocation of shared MNCs. ComReg has, in light of responses received, concluded that it should not in the meantime, and in the absence of more compelling reasons, allocate MNCs directly to large M2M service providers prior to the completion of work by SG2.

5 Other Issues Raised

127 This Chapter considers a number of other issues raised by respondents, namely:

5.1 The Need for a RIA

128 Eircom Group disagreed with ComReg's rationale for not carrying out a RIA, providing reasons for its position. Some other respondents felt a RIA would be useful in respect of specific points.

129 ComReg's published RIA Guidelines²⁵ (Doc 07/56a), in accordance with a policy direction to ComReg²⁶, state that ComReg will conduct a RIA in any process that may result in the imposition of a regulatory obligation, or the amendment of an existing obligation to a significant degree, or which may otherwise significantly impact on any relevant market or any stakeholders or consumers. However, the Guidelines also note that in certain instances it may not be appropriate to conduct a RIA and, in particular, that a RIA is only considered mandatory or necessary in advance of a decision that could result in the imposition of an actual regulatory measure or obligation, and that where ComReg is merely charged with implementing a statutory obligation then it will assess each case individually and will determine whether a RIA is necessary and justified.

130 In this Response to Consultation, ComReg considers that it is not imposing a discretionary regulatory obligation but is acting in accordance with the statutory obligation imposed by section 12(1(b)) of the 2002 Communications Act to "*ensure the efficient management and use of the radio frequency spectrum and numbers from the national numbering scheme in the State*". Therefore, a RIA is not being undertaken on this occasion. The rationale presented by respondents for requesting a RIA was based upon the costs borne industry should ComReg implement a new dedicated M2M number range. Given that ComReg are not releasing such a range at this time, there is no rationale for conducting RIA(s) in this regard.

²⁵ Which have regard to the RIA Guidelines issued by the Department of An Taoiseach in June 2009

²⁶ Ministerial Policy Direction made by Dermot Ahern T.D. Minister for Communications, Marine and Natural Resources on 21 February, 2003

5.2 Inter-operability Testing

131 ComReg notes ALTO's suggestion that inter-operability testing of M2M solutions should be carried out prior to introduction, and preferably within a test laboratory context. ComReg would, in principle, support any such industry driven initiative to lab-test in that way, if its terms of reference was to address and identify any potential problems prior to start of service, and such a test was planned and managed efficiently.

5.3 Other Miscellaneous Issues

132 ComReg notes ALTO's request for it to return to a range of issues that have previously been decided upon, but this time within the context of the present M2M consultation. Apart from topics already covered elsewhere in this document, ALTO lists Interoperability of Porting with LLU; Interoperability of Porting with Wholesale Line Rental – Single Billing, - WLRSB; NGN & NGA; and Billing as being issues that require consideration in an M2M context. ALTO would also like to see a consultation undertaken on the National Numbering Conventions and proposes a number of elements of the Conventions that could be reviewed, including Premium Rate Service (PRS) regulation.

133 ComReg has already established the focus of this M2M numbering consultation. While ComReg notes that NGN/NGA may impact M2M numbering, that does not materially affect this consultation process.

134 Regarding regulation of PRS, ComReg notes that PRS is a very specific matter subject to its own regulatory regime. This is not in conflict with the proposals and/or outcomes discussed in this document.

135 Finally, it should be noted that ComReg will be undertaking a separate consultation exercise early in 2014 on the National Numbering Conventions and looks forward to receiving ALTO's considered views on this and related matters in due course as part of that consultation process.

6 Next Steps

136 In accordance with ComReg's positions listed in earlier sections of this document, no new numbering range specifically dedicated to M2M will be introduced in the immediate future. Instead, numbers from existing number ranges will continue to be used for M2M purposes. As the great majority of M2M services are expected to use mobile numbering, there is an increased risk of exhausting the mobile numbering ranges and active steps will be needed to avert that situation. Clearly, numbering conservation, and measures to address same, takes on a renewed and greater importance for the industry at large.

137 Accordingly, ComReg plans to introduce a series of number conservation measures for the mobile 08X²⁷ number ranges, which may include certain options identified for it by its Consultants. These options will in the first instance be placed before ComReg's Numbering Advisory Panel (NAP). This will assist ComReg with option selection and with identification of implementation methodology, as appropriate. The targeted ranges are all of those within the 08X category. Full and active participation of interested parties at the NAP will be essential in this regard and ComReg expects a full contribution from all.

138 The options identified by the Consultants are set out in the Consultants' report, ComReg 13/109, which is published in parallel with this document. In the course of this consultation, ComReg has had discussions with a range of network operators and it understands that voluntary steps towards number conservation may also be proposed within industry fora such as TIF; ComReg looks forward to receiving any such proposals in due course.

139 Having taken account of all views, ComReg is satisfied that it is prudent to proceed with the approach outlined in this paper. ComReg considers that it is also prudent to carefully monitor M2M developments going forward, in view of the degree of uncertainty that still exists and particularly with regard to how that marketplace will develop.

²⁷ 'X' indicates any numerical digit 0-9.

Annex 1: - Glossary

E. 164:	A protocol for telephone numbers promulgated by the ITU
E. 212:	A protocol for IMSIs promulgated by the ITU
IBEC:	Irish Business and Employers Confederation
IMSI:	International Mobile Subscriber Identity, is a unique identification associated with all GSM and UMTS network mobile subscribers
ITU:	International Telecommunications Union
LLU:	Local Loop Unbundling
MCC:	Mobile Country Code (one element of an IMSI)
MNC:	Mobile Network Code (one element of an IMSI)
MNO:	Mobile Network Operator
MSISDN:	Mobile Subscriber Integrated Services Digital Network-Number. This is the mobile telephone number, which uniquely identifies a subscription in a GSM or a UMTS mobile network and which provides a link to the subscriber's SIM card.
M2M:	Machine to Machine communications and/or technologies
NAP:	(ComReg's) Numbering Advisory Panel
NDC:	National Destination Code
NGA/NGN:	Next Generation Access / Next Generation Network
NNC:	National Numbering Conventions
PRS:	Premium Rate Service(s)
TIF:	Telecoms Industry Forum; a function within the IBEC.
SP:	Service Provider(s)
WLR-SB:	Wholesale Line Rental – Single Billing
Framework Regulations:	European Communities (Electronic Communications Networks And Services) (Framework) Regulations 2011; S.I. No. 333 of 2011
Authorisation Regulations:	European Communities (Electronic Communications Networks And Services) (Authorisation) Regulations 2011; S.I. No. 335 of 2011
Universal Service Regulations:	European Communities (Electronic Communications Networks And Services) (Universal Service and Users' Rights) Regulations 2011; S.I. No. 337 of 2011

Annex 2: Legal basis

Policy Objectives

A1.1. The policy objectives set down for ComReg in the Act of 2002²⁸ form the background against which its decisions are taken.

A1.2. In exercising its functions in relation to the electronic communications sector, ComReg is required to have regard to those statutory objectives as set out in Section 12 of the Communications Regulation Act, 2002. These objectives require ComReg:

- To promote competition;
- To contribute to the development of the internal market;
- To promote the interests of end-users within the Community; and
- To ensure the efficient management and use of the radio spectrum and numbers from the national numbering scheme in the State.

A1.3. In working towards these objectives, the Act provides guidance as to the principles that ComReg is required to follow to meet these objectives. In the context of the numbering proposals currently under review, only a subset of the full list of measures is relevant. Some could be relevant in respect of the trans-national aspect of certain M2M services. The following extracts have been taken from Section 12 of the Act, which states²⁹:

A1.4. In relation to the objectives referred to in subsection (1)(a), the Commission shall take all reasonable measures which are aimed at achieving those objectives, including- :

(a) *in so far as the promotion of competition is concerned:*

(i) *ensuring that users, including disabled users, derive maximum benefit in terms of choice, price and quality;*

(iv) *encouraging efficient use and ensuring the effective management of radio frequencies and numbering resources.*

(b) *in so far as contributing to the development of the internal market is concerned—*

²⁸ Communications Regulation Act, 2002

²⁹ See Section 12(2) of the Communications Act 2002 for full listing

- (i) removing remaining obstacles to the provision of electronic communications networks, electronic communications services and associated facilities at Community level,*
- (ii) encouraging the establishment and development of trans-European networks and the interoperability of transnational services and end-to-end connectivity,*
- (c) in so far as promotion of the interests of users within the Community is concerned:*
 - (iii) contributing to ensuring a high level of protection of personal data and privacy,*
 - (iv) promoting the provision of clear information, in particular requiring transparency of tariffs and conditions for using publicly available electronic communications services,*
 - (v) encouraging access to the internet at reasonable cost to users, and*
 - (vii) ensuring that the integrity and security of public communications networks are maintained.*

A1.5. Regulation 12(5) of the Act states that in carrying out its functions, the Commission shall have regard to international developments with regard to electronic communications networks and electronic communications services, associated facilities, postal services, the radio frequency spectrum and numbering. Regulation 12(6) requires ComReg to support technological neutrality while exercising its functions aimed at achieving the above objectives.

Numbering and Number Allocation

The majority of the proposals put forward by ComReg in this document relate to numbering and therefore the following regulations are relevant:

A1.6. The National Numbering Scheme is³⁰ “... *the scheme administered by the Regulator which sets out the sequence of numbers or other characters which must be used to route communications to specific locations, terminals, persons or functions on public electronic communications networks*”.

A1.7. Framework Regulation 20(4) establishes that it is an offence for anyone other than ComReg to assign numbers from the scheme, unless those numbers have been specifically allocated to them by ComReg (i.e. secondary allocation of numbers allocated to network operators by ComReg to their own customers is permitted and normal).

A1.8. Framework Regulation 20 assigns specific responsibilities to ComReg in respect of the numbering scheme. The Regulator shall:-

³⁰ Framework Regulations (SI No. 333 of 2011)

- Grant rights of use for all national numbering resources for all publicly available electronic communications services (subject to ensuring the proper management of the national numbering scheme in accordance with ComReg's objectives under section 12 of the Act of 2002 and [Framework] Regulation 16).
- Do so in a manner that gives fair and equitable treatment to all undertakings providing publicly available electronic communications services (subject to ensuring the proper management of the national numbering scheme).
- Establish objective, transparent and non-discriminatory procedures for granting rights of use for national numbering resources.
- Ensure that adequate numbers and numbering ranges are provided for all publicly available electronic communications services.
- Subject only to limitations which may be specified by the Minister on the grounds of national security, from time to time publish the details of the national numbering scheme and significant subsequent additions or amendments to it.

A1.9. Furthermore Regulation 13(2) of the Authorisation Regulations states that "*The Regulator shall establish open, transparent, non-discriminatory and proportionate procedures for the grant of rights of use for numbers and shall cause any such procedures to be made publicly available.*"

A1.10. The National Numbering Conventions (currently ComReg 11/17) is ComReg's main vehicle for setting out the framework for management and use of numbering resources and for making its procedures open and transparent, while the Numbering Applications Procedures (currently described in ComReg 11/18) inform potential number users of how to apply for numbers and it provides them with formats for that purpose.

Public Consultations

A1.11. Under Framework regulation 12, where ComReg "*intends to take a measure in accordance with the specific regulations or intends to provide for restrictions in accordance with Regulation 17(3) and (5), which have a significant impact on a relevant market, the Regulator shall ... publish the text of the proposed measure, give the reasons for it, including information as to which of the Regulator's statutory powers gives rise to the measure, and specify the period within which*

submissions relating to the proposal may be made by interested parties". ... The Regulator may then, having considered any representations received, take the measure with or without amendment.

A1.12. ComReg's obligation to ensure the existence of adequate numbers and numbering ranges is described at A1.7 and A1.9 above, whereas its powers regarding rights of use for numbers in this context derive from Authorisation Regulations 13 and 14. The latter are implemented in the National Numbering Conventions, as described in A1.9 above.

Tariffs and Access

A1.13. The setting down of formal retail tariff ceilings by ComReg and its predecessor the ODTR goes back to the first version of the National Numbering Conventions in 2000, though de facto tariff ceilings already existed before the ODTR was set up. Since 2002, the underpinning legislation has been Regulation 14(1) and its Condition C1 of the Schedule to the Authorisation Regulations, published that year.

A1.14. The current Regulation 14(1) ("Conditions attached to rights of use for numbers") states that: "*The Regulator shall, as soon as practicable after the commencement of these Regulations, specify conditions to be attached to a right of use for numbers only as are listed in Part C of the Schedule.*"

Condition C1 of Part C then states that [a condition which may be attached to rights of use for numbers is] "*Designation of service for which the number shall be used, including any requirements linked to the provision of that service and, for the avoidance of doubt, tariff principles and maximum prices that can apply in the specific number range for the purpose of ensuring consumer protection in accordance with section 12(2)(c)(ii) of the Act of 2002.*"

A1.15. Machine-to-Machine communications, by definition, do not (normally) directly affect consumers and it will usually be the case that consumers – even for calls to machines within the home – will remain unaware of the telephone numbers set up during the installation phase to receive those M2M calls. For that reason, when ComReg carries out its duty under Regulation 14(1) to set conditions of use for M2M numbers, it should in most cases avoid setting pricing conditions designed to ensure consumer protection. It is also the case that operators are already very aware that the success of M2M communications depends critically upon very low charges, and if they are to negotiate effectively to be the carriers of such services then they need to support those existing pricing practices of the

marketplace. The self-interest motivation should therefore obviate any need to intervene regarding retail prices.

A1.16. Wholesale pricing for M2M is best left to the marketplace to resolve, with the regulator only stepping in if development of M2M is being stunted nationally through unreasonable or discriminatory practices. In the event that such a situation arises, it would be incumbent upon ComReg to examine compliance vis-à-vis (inter alia) the Access Regulations and – if relevant – to examine the details of any disputes that might be brought to its attention.