



Report on the deadlines for implementation of ComReg's proposed interventions to combat nuisance communications

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About Plum

Plum offers strategy, policy and regulatory advice on telecoms, spectrum, online and audio-visual media issues. We draw on economics and engineering, our knowledge of the sector and our clients' understanding and perspective to shape and respond to convergence.

About this document

This document is a report to ComReg on the timelines proposed in its consultation (23/52) for the implementation of technical interventions to address the harm arising from nuisance communications in Ireland.

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Summary

This Report sets out Plum's analysis of the timelines proposed by ComReg for implementing the proposed interventions to address nuisance communications in Ireland.

Plum has assessed the timelines ComReg proposed for implementation of six interventions:

- Do Not Originate (DNO) List
- Protected Numbers (PN) List
- Fixed CLI Call Blocking
- Mobile CLI Call Blocking
- Voice Firewall
- Sender ID Registry

ComReg has previously discussed an additional remedy to combat scam SMS messages, the SMS Scam Filter. ComReg has not made a formal proposal for implementation of the SMS Scam Filter at this time due to the lack of a legislative basis. It intends to consult further on this intervention this year. Plum will provide separate advice on this if requested at that time having received further information on the form and manner of any intervention to introduce Scam Filters.

Our conclusions on ComReg's proposed interventions are as follows:

- The proposal for implementation of the DNO List 6 months from a final decision for implementation is reasonable and achievable.
- The proposal for implementation of the PN List 6 months from a final decision for implementation is reasonable and achievable.
- The proposal for implementation of Fixed CLI Call Blocking 6 months from a final decision for implementation is reasonable and achievable. Deployment of call blocking by 6 months is dependent on planned changes to Mobile Station Roaming Number (MSRN) number ranges being sent to ComReg in advance – ComReg has set a deadline for receiving this information from operators of 3 months after the final decision.
- The proposal for implementation of Mobile CLI Call Blocking Phase 1 which requires implementation of a mobile roamer check function within 6 months of a final decision is reasonable and achievable. Note that the requirements for this remedy have been adjusted in light of stakeholder responses to ComReg's proposed interventions, and specifically to meet the needs of smaller International Gateway Operators (IGOs). We also understand that ComReg recognises that deployment of call blocking within 6 months is conditional on any changes to MSRN number ranges being sent to ComReg within 3 months of any final decision.
- The proposal for implementation of Mobile CLI Call Blocking Phase 2 which requires deployment of a roaming proxy server within 24 months of a final decision is reasonable and achievable. We note that ComReg now intends to add further detail to the roadmap for deployment by specifying that the

roaming proxy server be operational within 21 months of a final decision with full blocking operational within 24 months. This adjustment is reasonable and achievable.

- The proposal for implementation of the Voice Firewall remedy within 18 months of a final decision is reasonable and achievable.
- The proposal for implementation of a SMS Sender ID Registry within 18 months of a final decision is reasonable and achievable. We note that the implementation also has complex dependencies, specifically the setting up of the Registry by ComReg, which may make the proposed timescales challenging, but manageable.
- In summary, we have concluded:
 - The overall proposed timeline for each individual intervention is appropriate;
 - the proposed timelines for enabling actions required to facilitate the delivery of interventions are appropriate; and
 - the combined impact of all the proposed interventions is not unduly burdensome, nor disproportionate for the industry or any individual operator.

Introduction

The Commission for Communications Regulation (ComReg) has commissioned Plum to conduct an independent assessment of the timelines proposed by ComReg for implementation of interventions to address nuisance communications in Ireland. These interventions were proposed and described in detail in ComReg's consultation document, "Combatting Scam Calls and Texts"¹ which was published in June 2023 (the June 2023 consultation).

ComReg's consultation identified harm as a consequence of nuisance communications in a number of areas affecting consumers, businesses, public bodies and voluntary organisations. ComReg calculated the aggregate cost of this harm at over €300m a year. In the June 2023 consultation, six technical measures were proposed to counter nuisance communications and hence address the harm. The consultation contained ComReg's supporting analysis to demonstrate that these proposed interventions would be effective and proportionate.

Given the very significant benefits of the interventions which ComReg consulted on, ComReg wishes to ensure that, if they are mandated, they are implemented as quickly as possible and in line with statutory objectives and duties, including taking account of the time needed for operators to do this efficiently. This means ComReg must balance the need for interventions to be effective as quickly as is reasonable to improve protections against nuisance communications, with the need for implementation and compliance requirements to be reasonable and proportionate. The requirement for proportionality takes account of the different starting positions from which Electronic Communications Networks (ECNs) must implement the new requirements, and the relative size of each ECN (e.g. interventions with fixed implementation costs are likely to be relatively more costly for smaller than larger ECNs). ComReg must give reasonable timelines for implementation.

In responses to consultation, some commentators questioned the timelines proposed by ComReg for implementation of the interventions. ComReg has commissioned Plum to provide an independent assessment of the timelines proposed for the implementations. This will inform ComReg's development of decisions to combat nuisance communications.

This report contains the results of Plum's assessment and sets out the supporting analysis.

The remainder of this Report is set out as follows:

- Section 1 explains Plum's approach to this assignment.
- Section 2 presents a summary of the proposed interventions and timelines, and stakeholder comments on the proposed timelines.
- Section 3 sets out Plum's analysis and conclusions on the timelines proposed by ComReg.
- Section 4 recaps our findings.
- Appendix A contains information on stakeholder interviews conducted by Plum.
- Appendix B is a list of members of the Nuisance Calls Industry Taskforce (NCIT).

¹ <https://www.comreg.ie/media/2023/06/Consultation.pdf>

1 Plum's approach to this assignment

Plum conducted an analysis to evaluate the timelines proposed by ComReg for the implementation of interventions to address the harm which results from nuisance communications in Ireland.

To deliver this assignment we undertook the following tasks.

- We carried out a review of the proposed interventions contained in ComReg's June 2023 consultation and focussed on the timelines proposed for each of the technical measures.
- We reviewed stakeholder submissions on the timelines and other aspects of the proposed interventions.
- We assessed the existing capabilities of electronic communications network and service (ECN/S) providers as far as this was possible from available evidence.
- We sought the views of equipment and systems vendors on ComReg's proposed interventions. This included interviews with a number of stakeholders (see Appendix A for further information on this).
- We conducted a benchmarking exercise to gather evidence on the implementation of equivalent or similar technical interventions in other jurisdictions.
- We sought the views of other regulators on the implementation of equivalent or similar technical interventions in the jurisdictions for which they are responsible. We conducted this engagement through a written request for information (RFI) issued by ComReg, and interviews with selected regulators (see Appendix A for further information on this).

We have assessed the evidence gathered from these sources to produce this report of our analysis and findings to ComReg.

2 The proposed interventions, and timelines for intervention

In the June 2023 consultation ComReg proposed six interventions to address the harm arising from nuisance communications. These proposed interventions are designed to reduce and mitigate the harm caused by scam calls and texts.

The six proposed interventions are described in Figure 2.1.

Figure 2.1. Summary of the six interventions proposed by ComReg

Proposed remedy	Harm addressed	Description
Do Not Originate (DNO) List	Harmful voice calls	A list of numbers which are never used for outgoing calls, e.g. numbers used by retailers and banks for inbound calls only. Any call displaying such numbers are spoofed and should be blocked.
Protected Numbers (PN) List	Harmful voice calls	A list of numbers which have not been assigned by ComReg. Any call displaying such numbers are spoofed and should be blocked.
Fixed CLI Call Blocking	Harmful voice calls	Blocks calls that are from spoofed numbers (geographic and non-geographic) in the Irish Numbering Plan.
Mobile CLI Call Blocking	Harmful voice calls	Blocks calls from international networks which present with Irish mobile caller IDs unless the mobile caller is genuine and known to be calling from an Irish number while roaming abroad.
Voice Firewall	Harmful voice calls	A dynamic intervention and can be updated in real time using AI analytical capabilities to address different threats as illegitimate callers adapt their methods of reaching consumers.
Sender ID Registry	Harmful SMS messages	Messages with a Sender ID which is not registered would be blocked. ComReg would establish and manage the Sender ID Registry.

The June 2023 consultation also discussed a further potential remedy, the SMS Scam Filter. The SMS Scam Filter is similar in concept to the Voice Firewall or the filtering capabilities which detect and filter potentially harmful email content using automated analytical capabilities to do so. ComReg did not include a proposal for SMS Scam Filter in the June 2023 consultation because imposing a mandate for its implementation would require enabling legislation. We understand that ComReg is engaged with the Department of the Environment, Climate and Communications (DECC) on this matter.

2.1 Timelines proposed by ComReg for implementation of technical interventions

In the June 2023 consultation, ComReg included timelines for implementation of the six proposed interventions plus SMS Scam Filter as follows:

- **DNO List** within 6 months of any final decision;

- **PN List** within 6 months of any final decision;
- **Fixed CLI Call Blocking** within 6 months of any final decision;
- **Mobile CLI Call Blocking.** The implementation for this remedy was proposed to be phased:
 - Phase 1 within 6 months of any final decision;
 - Phase 2 within 24 months of any final decision.
- **Voice Firewall** within 18 months of any final decision; and
- **SMS Sender ID Registry.** The implementation for this remedy is proposed to be phased:
 - Partial temporary implementation within 12 months of any final decision; and
 - full implementation within 18 months of any final decision.

Four of the interventions were set out in ComReg’s proposals as single step interventions, and two were proposed as phased implementations, as described below.

2.1.1 Implementation of DNO List, PN List and Fixed CLI Call Blocking

ComReg proposed relatively speedy implementations for these interventions, they were proposed to be in place within 6 months of any final decision. This reflected the position that:

- These interventions work together to combat nuisance calls from illegitimate numbers.
- DNO and PN Lists and facilities to support them are already in place.²

2.1.2 Implementation of Voice Firewall

The Voice Firewall would be a complementary capability to the DN List and PN List and would improve the capability of ECNs to identify and block scam voice calls. The Voice Firewall would require procurement, testing and integration of a new system for some ECNs, and hence ComReg proposed a longer timeline for implementation than the other fixed call blocking interventions.

2.1.3 Phasing of Mobile CLI Call Blocking implementation

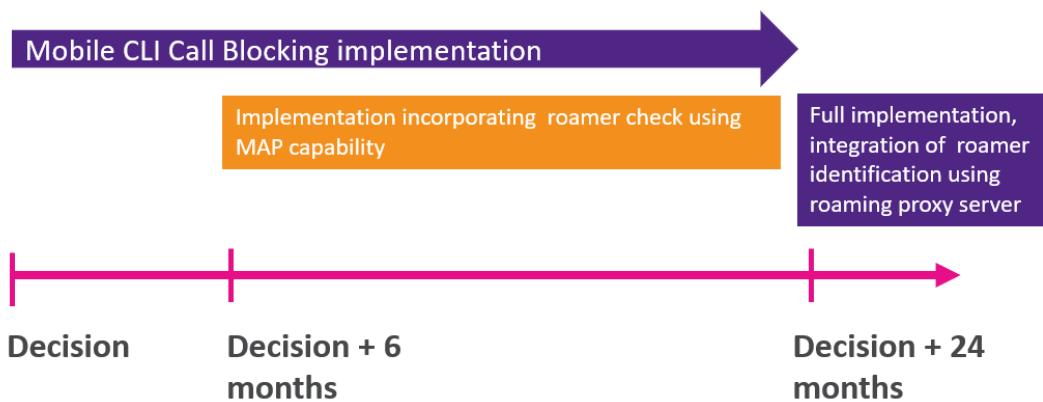
The implementation of Mobile CLI blocking is more complex than Fixed CLI blocking because it involves the identification of legitimate calls from Irish mobile numbers made by consumers calling from overseas when they travel and call back to Ireland whilst roaming on networks in the country they have travelled to. Of course these legitimate calls should reach their destination, and hence should be filtered out of any CLI blocking solution.

² For example, guidance for organisations wishing to add numbers to the DNO List - <https://www.comreg.ie/publication/do-not-originate-list-guidance-note-for-organisations-and-application-form>.

The implementation is being phased because of the need to introduce new functionality to process roaming calls, including Voice over LTE (4G voice). This requires introduction of a roaming proxy server, and ComReg has proposed a 24 month implementation period for this.

For the first phase of implementation which does not include introduction of the proxy server functions, generally, larger networks are able to check and identify Irish numbers roaming outside of Ireland and calls from them, using the Mobile Application Part (MAP) signalling protocol. In the June 2023 consultation, ComReg reported that some of the smaller International Gateway Operators (IGOs) do not have this capability at present. To implement Phase 1 of Mobile CLI Blocking, IGOs who cannot perform roamer checking would, under the proposed interventions set out in the consultation, need to procure this service from another operator.

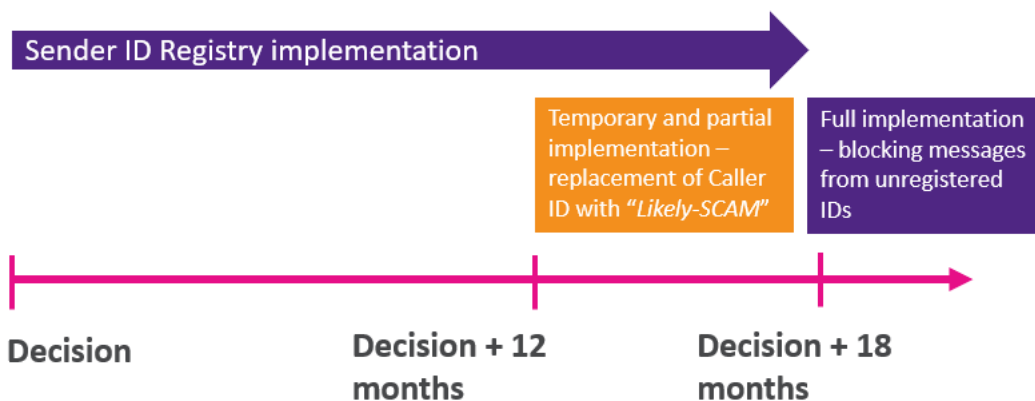
Figure 2.2: ComReg proposal for implementation of Mobile CLI Call Blocking



2.1.4 Phasing of SMS Sender ID Registry

ComReg proposes that the Sender ID Registry be implemented in two phases. A partial and temporary implementation within 12 months of any final decision. This would not enable blocking of unregistered use of Sender IDs, but would identify them to the recipient by replacing the Sender ID with a label “Likely-SCAM”. This system would be replaced within 18 months of any final decision with a requirement for blocking of messages from unregistered Sender IDs.

Figure 2.3: ComReg proposal for implementation of Sender ID Registry



3 Identification of potential concerns with the proposed timelines

In carrying out our analysis, we have taken account of a number of factors, including:

- The existing capabilities of ECS providers and ECNs in Ireland in relation to the interventions;
- Industry positions on the proposed interventions as expressed in responses to ComReg’s consultation;
- Activity and progress in the Nuisance Communications Industry Taskforce (NCIT);
- Deployment of equivalent or similar interventions in other jurisdictions;
- Evidence from interviews we conducted with network and software vendors; and
- Evidence gathered from other regulators.

3.1 Existing capabilities

In evaluating ComReg’s proposed interventions for implementation timelines, we have considered existing industry capabilities, based on available evidence.

It is helpful that some preparatory work for implementation of the proposed interventions has been done already. The NCIT has played an important role in this process.

3.1.1 The Nuisance Communications Industry Taskforce

We note that activity has been underway to tackle nuisance communications in Ireland for some time. To facilitate coordinated action across stakeholders, the NCIT was established in 2022.³ The NCIT has been instrumental in making progress on the discussion and identification of potential interventions, working on the design, development and in certain cases the implementation of these interventions for roughly 18 months. Some initiatives have been agreed within NCIT, but this does not include all of the interventions proposed by ComReg in the June 2023 consultation. The NCIT, and its activities are valuable in any evaluation of the proposed interventions as NCIT membership covers all key ECN/S providers, and its output can therefore be regarded as representative on issues where consensus has been achieved. A list of NCIT members is provided at Appendix 2.⁴

The NCIT was instrumental in specifying some of the interventions proposed by ComReg, and has endorsed their suitability. Whilst this does not mean they have agreed to the proposed implementation timeline, it is a significant step towards the potential implementation of these measures. The current position is summarised in Figure 3.1.

³ NCIT terms of reference <https://www.comreg.ie/media/2021/12/ComReg-21129-1.pdf>

⁴ The list of NCIT members is also published here <https://www.comreg.ie/media/2022/09/ComReg-2277.pdf>

Figure 3.1: Status of NCIT discussion on the suitability of the ComReg proposed interventions

Remedy	NCIT discussed
DNO List	Yes
PN List	Yes
Fixed CLI Call Blocking	Yes
Mobile CLI Call Blocking	Yes
Voice Firewall	Yes
Sender ID Registry	No

3.1.2 Current readiness

We also understand that functionality to deliver some of the proposed interventions is widely deployed across the sector. DNO List, PN List, Fixed CLI Blocking and Mobile CLI Blocking require the capability of networks to block troublesome and illegitimate calls once they are identified. Call blocking or filtering is a well-established capability in ECNs.

For this capability to be effective, ECNs need to be able to identify which numbers to block. The DNO List and PN List will improve the ability of the industry to work from common resources to identify illegitimate CLIs. Operation of these lists and integration of them with operator systems will therefore enhance the ability of ECN providers to block calls presenting illegitimate CLIs.

The DNO List and PN list would be complemented by blocking of calls presenting Irish CLIs illegitimately on calls from outside Ireland (Fixed CLI Blocking and Mobile CLI Blocking).

We understand that ECN providers in Ireland have deployed functionality to support the DNO List, PN List and Fixed CLI Blocking, with the exception of Voxbone, for whom deployment status is unknown at the time of writing.⁵ ECNs are currently actively monitoring and blocking calls presenting traffic on the DNO and PN lists which are updated and issued to industry each month.

The identification of illegitimate CLIs for Mobile CLI blocking is more complex than for fixed because of the need to distinguish roaming calls. As explained in Section 2, the functionality to support this is not yet available in all networks.

3.1.3 Ongoing work on readiness

For the proposed interventions with less developed readiness, activities to make progress are underway or planned. These are described in this section.

3.1.3.1 Mobile CLI Call Blocking

As explained in Section 2.1 successful implementation of Mobile CLI Call Blocking as proposed by ComReg is dependent on a number of activities:

⁵ Information provided by ComReg.

- The Phase 1 implementation requires a “roamer check” capability based on the MAP SS7 protocol which facilitates a number of roaming processes. This capability is widely available in Irish ECNs, but not in all of them. Phase 1 implementation and compliance by all operators would be dependent on those operators who do not currently have MAP being able to interconnect to and utilise the facilities of others who do. The MAP enabled operator may then perform a roamer check and block calls from illegitimate numbers on behalf of the non-MAP enabled operator. This arrangement would require commercial and operational arrangements to be in place between the MAP enabled and non-MAP enabled operator.
- Phase 2 implementation is dependent on the availability of a proxy server to validate inbound international calls presenting Irish numbers. The roaming proxy server would interrogate roaming validation requests enabling them to be blocked at the international gateway if they are illegitimate. Deployment and integration of a proxy server will require procurement and testing prior to implementation.

3.1.3.2 Sender ID Registry

Implementation of the Sender ID Registry will provide significant new capability for Irish ECNs to identify and block scam SMS. The implementation of this remedy is complex and there are some key dependencies. Firstly it requires the establishment of a Registry by ComReg. Secondly, it will require the collaboration of Sender ID Operators (SIDOs) and Aggregators to integrate to the registry so that calls they send can be identified, and calls from unregistered sources blocked.

In the case of Mobile CLI Blocking and Sender ID Registry, there are therefore significant dependencies which would affect implementation to the specifications set out by ComReg in the June 2023 consultation, as summarised in Figure 3.2.

Figure 3.2: Implementation dependencies for Mobile CLI Call Blocking and Sender ID Registry

Remedy	Dependency
Mobile CLI Call Blocking Phase 1	MAP roamer check capability available to all ECNs, including use of the facilities of MAP enabled operators by non-MAP enabled operators
Mobile CLI Call Blocking Phase 2	Procurement, testing and integration of Roaming Proxy Server
Sender ID Registry	Establishment of Registry by ComReg Integration of ECNs Integration of SIDOs and Aggregators

3.1.3.3 Voice Firewall

The Voice Firewall would provide a complementary capability to other interventions which deal with scam voice calls. It would add intelligent learning software to the ECN toolkit to identify scam calls. It could work alongside and be integrated with the DNO and PN lists.

Voice Firewalls deploy real time call data analytics to detect and act upon unusual patterns in call data. The Voice Firewall can interrogate call signalling, traffic volumes and CLI data. The Voice Firewall is therefore dynamic, adapting as it goes and can deliver incremental benefits to the other voice call blocking interventions through automated real time updates to the lists used to identify nuisance calls. The Voice Firewall also has integrated call blocking capability.

The key dependency for implementation of a Voice Firewall remedy in Ireland would be procurement, testing and integration of Voice Firewall software by ECNs.

3.2 International evidence from other jurisdictions

As noted by ComReg in the June 2023 consultation, the proposed interventions are deployed in a number of other jurisdictions. We have conducted an analysis of these deployments to obtain insights into the timescales which are likely to be appropriate for implementation in Ireland.

The analysis takes account of the following limiting factors:

- Documentation of evidence on timelines between the date of regulatory mandate to the date of implementation of interventions for deployment in other countries is patchy and not consistent.
- Mapping experience elsewhere to requirements in Ireland is an imprecise exercise because of differences in operating conditions and the regulatory landscape which exist between countries.
- Some deployments were not the result of regulatory mandates, or in some cases they were made in response to regulatory initiatives focussed on outcomes rather than mandating particular technical solutions.

International benchmarking analysis is presented in Figure 3.3. Note that this analysis includes examples of Scam Filter deployment, though there is at present no formal proposal for deployment of this in Ireland.

Figure 3.3: Examples of deployment in other countries

Remedy	Sample of countries where deployed	Notes
DNO and PN Lists, Fixed CLI Call Blocking	Finland	The obligations to prevent the use of spoofed numbers become applicable to telephone numbers in fixed networks from 1 July 2022 (2 months after Recommendation by the Transport and Communications Agency ⁶).
	UK	In November 2022 Ofcom mandated measures to address nuisance calls through ⁷ modification of General Condition C6 to require providers, where technically feasible, and issued updated guidance. The measures were required to be implemented 6 months after the decision. In February 2024 Ofcom proposed strengthening their Guidelines on blocking calls from overseas using spoofed numbers. ⁸
	USA	Implementation of STIR/SHAKEN identification and blocking of illegitimate calls. ⁹

⁶

<https://www.kyberturvallisuuskeskus.fi/sites/default/files/media/regulation/EN%20Recommendation%20to%20Telecommunications%20Operators%20on%20Detecting%20and%20Preventing%20Caller%20ID%20Spoofing.pdf>

⁷ https://www.ofcom.org.uk/_data/assets/pdf_file/0031/247486/statement-improving-accuracy-CLI-data.pdf

⁸ https://www.ofcom.org.uk/_data/assets/pdf_file/0031/276727/further-action-scam-calls-consultation.pdf

⁹ <https://www.fcc.gov/document/fcc-acts-stop-international-robocall-scams>. STIR/SHAKEN refers to protocols to identify spoofed caller IDs.

Mobile CLI Call Blocking	Finland	The obligations to prevent the use of spoofed numbers become applicable to in mobile networks from 2 October 2023 (17 months after Recommendation by the Transport and Communications Agency ¹⁰). The blocking of mobile calls will be achieved through the introduction of a common database where any operator can check whether a subscriber is roaming or not.
	France	The telecom code ¹¹ requires validation of caller IDs by operators.
	Germany	In December 2022, ¹² the German regulator introduced a new regulation to improve protection against number spoofing. This includes blocking of calls, including inbound international calls displaying German numbers unless made by a roaming customer.
Voice Firewall	India	Deployment of Voice Firewall by industry under direction by the regulator. ¹³
	Norway	Deployment of Voice Firewall by industry. ¹⁴
	UK	Deployment of Voice Firewall by industry. ¹⁵
Sender ID Registry	Australia	Implementation of Sender ID Registry by the regulator. ¹⁶
	Finland	Establishment of Sender ID Registry by regulator. ¹⁷
	Singapore	Industry established Sender ID Registry. ¹⁸
SMS Scam Filter (no formal proposal for implementation in Ireland)	Australia	Deployment of SMS Scam Filter by industry. ¹⁹
	Belgium	Scam Filters introduced by Proximus and Telenet. ²⁰
	India	Deployment of Scam Filter by industry under direction by the regulator. ²¹
	Singapore	Deployment was mandated in October 2022 for implementation in January 2023. ²²
	UK	Deployment of SMS Scam Filter by industry. ²³

¹⁰

<https://www.kyberturvallisuuskeskus.fi/sites/default/files/media/regulation/EN%20Recommendation%20to%20Telecommunications%20Operators%20on%20Detecting%20and%20Preventing%20Caller%20ID%20Spoofing.pdf>

¹¹https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI000042155976/#:~:text=L'authorit%C3%A9%20veille%20%C3%A0%20ce%20qu'une%20personne%20morale%20%C3%A0,donner%20acc%C3%A8s%20%C3%A0%20leurs%20services.

¹²

https://www.bundesnetzagentur.de/SharedDocs/Pressemitteilungen/EN/2022/20221129_NumberManipulation.html#:~:text=Providers%20of%20publicly%20available%20telecommunications%20services%20must%20now,cases%20the%20caller%27s%20number%20must%20be%20hidden.%20

¹³ <https://www.indiatoday.in/technology/news/story/new-rule-for-incoming-calling-and-messages-starting-today-brings-relief-from-spam-calls-2366934-2023-05-01>

¹⁴ <https://www.hiya.com/press-releases/hiya-and-telenor-norway-announce-new-strategic-partnership-to-strengthen-fight-against-fraud-and-nuisance-calls>

¹⁵ For example, <https://newsroom.ee.co.uk/ee-announces-new-security-technology-updates-to-improve-scam-detection/>

<https://www.techradar.com/news/phone-and-communications/vodafone-will-now-block-scam-calls-before-they-even-hit-your-phone-1329035>

¹⁶ <https://www.acma.gov.au/sms-sender-id-registry>

¹⁷ <https://www.traficom.fi/en/communications/broadband-and-telephone/sms-sender-id>

¹⁸ <https://www.sgnic.sg/faq/sms-sender-id-registry>

¹⁹ For example, <https://www.telstra.com.au/exchange/blocking-scam-text-messages-before-they-even-reach-you>

²⁰ <https://desutter.belgium.be/nl/de-nieuwe-telecomwet-van-de-sutter-staat-aan-zijde-van-klant%E2%80%AF>

²¹ <https://www.indiatoday.in/technology/news/story/new-rule-for-incoming-calling-and-messages-starting-today-brings-relief-from-spam-calls-2366934-2023-05-01>

²² <https://www.imda.gov.sg/resources/press-releases-factsheets-and-speeches/press-releases/2022/full-sms-sender-id-registration-to-be-required-by-january-2023>

²³ For example, <https://newsroom.ee.co.uk/ee-announces-new-security-technology-updates-to-improve-scam-detection/>

<https://www.techradar.com/news/phone-and-communications/vodafone-will-now-block-scam-calls-before-they-even-hit-your-phone-1329035>

3.3 Respondents views on the proposed intervention timelines

ComReg received 31 responses to their consultation, of which 11 made substantive comments on implementation timelines for the interventions. These are summarised in Figure 3.4.

Figure 3.4: Substantive views on timelines contained in responses to the June 2023 consultation

Respondent	Summary of positions expressed on implementation timelines	Selected extract from response
Eir	Operators that have not yet commenced implementation of static voice interventions (e.g., non-NCIT members) may find it challenging to implement multiple interventions within 6 months, Eir advocated staggered interventions. Mobile CLI Phase 1 should be 12, not 6 months. Impact of other parallel implementation requirements will require resources, e.g. ECSMs – ComReg should take a flexible approach to implementation.	<i>With regard to implementation deadlines. eir has commented below on the reasonableness of proposed implementation deadlines in respect of each proposed intervention. This is based on an assessment of the individual interventions. What we have not done is to consider the reasonableness of multiple coincident deadlines. This is in part because eir has already voluntarily commenced implementation of a number of the proposed measures. However those operators that have not yet commenced implementation may find it challenging to implement multiple interventions within 6 months and as a general principle staggered implementation dates should apply. [Page 5]</i>
Hiya	Interventions could be combined to in the Voice Firewall to form a more efficient solution, this could be implemented more quickly than 18 months.	<i>Hiya notes that some Comreg proposed solutions (i.e. DNO list / Protected Number lists) form part of most Voice Firewall solutions. The proposed implementation timeline for DNO/Protected number list solutions is 6 months, and for a voice firewall it is 18 months. Combining the number list proposal into the Voice Firewall proposal and bringing forward the Voice Firewall timeline would form a more efficient solution. [Page 3]</i>
Imagine	Mobile CLI Blocking Phase 1 is not achievable in 6 months.	<i>Having examined the operational, commercial and technical viability of such a method, considering the date for Phase 1 deployment, and the current status of operators to offer such a method, we don't see this Phase 1 implementation date as being achievable, and would propose that the Phase 1 stage is removed as an obligation for non-direct operators, pending Phase 2. [PAGE 1]</i>
Microsoft	18 months is not enough time to test and deploy firewalls.	<i>The risk with firewalls, however, is rushing them to market, before they are fully tested and proven. This will result in overreach and blocking of legitimate calls. Based on Microsoft's experience studying these types of tools, we believe 18 months is not enough time to develop, test, and deploy appropriate firewalls. [PAGE 3]</i>

Revolut	Urges full implementation and “progress more rapidly” on all interventions..	<i>Overall, it is vital that the important measures set out by ComReg are introduced quickly and in full. The longer the timeframe required for implementation, the more people will be the victim of such fraud attacks; and the longer criminals will have to attempt to devise new ways around these measures. As Chief Superintendent Lordan also noted in his recent interview, while welcoming ComReg’s efforts in this area, “it needs to progress more rapidly”. [PAGE 3]</i>
Tanla	Believes that the Sender ID Registry can implemented in 12 months.	<i>Tanla believes the solution can be up and running within 12 months in Ireland: 9 months for development and 3 months for onboarding businesses. [PAGE 9]</i>
Telecommunications industry Ireland (TII)	Proposed interventions on cost and timing does not take account of other regulatory systems development requirements. Implementation overlaps with requirements from DECC for the public warning system, data retention, and network roll out requirements.	<i>The consultation document does not take adequate account of the wider context of the time frames and overall level of investment required by a range of sector specific regulatory obligations. These time frames are overlapping, and industry has no discretion regarding the deadlines, which in some cases are mandatory under Irish or European legislation. [PAGE 2]</i>
Tesco	ComReg should be cognisant of the other regulatory initiatives (EECC, Public Warning System, Customer Charter)	<i>Tesco Mobile believes that ComReg should be cognisant of all of the areas that ComReg and or the EU are currently requiring investment by operators for example to ensure compliance with the Electronic Code, the Public Warning System and the Customer Charter to highlight a few. ComReg has the opportunity via the NCIT to ensure that the right interventions are invested in and that timeframes for compliance are fully considered. [PAGE 4]</i>
Three	On Mobile CLI blocking, the effective date for the obligation can be no earlier than the 6 months after the decision has been consulted on.	<i>Three believes that, based on a Decision being issued in Q1 2024[1], the effective date for the obligation can be no earlier than the 6 months after the Decision as has been consulted on.</i>
Virgin Media	[Redacted]	[Redacted]
Vodafone	The timelines proposed for Mobile CLI Blocking on a statutory basis are challenging.	<i>Vodafone have commenced implementation of mobile CLI blocking on a voluntary basis as we believe it will provide an important protection for consumers. This has been prioritised on the Vodafone 2023 IT and networks capital programme and resources are allocated. ComReg are now putting the NCIT programme on a legislative basis. The timelines proposed remain extremely challenging. [PAGE 5]</i>

We have taken account of these views in our assessment of the proposed timelines.

3.4 Summary of challenges in the proposed implementation timelines

Since the June 2023 consultation, ComReg has considered a number of challenges to the timelines identified by stakeholders. These are summarised in Figure 3.5.

It should be noted that none of the identified issues relate to the overall timeline, rather these relate to the timeline for enabling actions which if delayed could impact the overall timeline.

Table 3.5: Summary of implementation challenges reviewed by ComReg

Proposed intervention	Nature of concern	Potential concern	Potentially affected party
DNO List	Time permitted	2 working days to update blocking is challenging	Originating voice operator and IGOs
PN List	Time permitted	2 working days to update blocking is challenging	Originating voice operator and IGOs
Fixed CLI Call Blocking	Sequencing	Risk of delay by MSPs sharing MSRN could impact IGO ability to implement blocking in 6 months	IGOs
Mobile CLI Call Blocking	Sequencing	Phase 1 Risk of delay by MSPs sharing MSRN could impact IGO ability to block by 6 months	IGOs
	Sequencing	Phase 1 Risk of delay by MSPs permitting Roamer check could impact IGOs ability to block by 6 months	IGOs
	Coordination and complexity	Phase 1 Sheer number of smaller IGOs seeking access for testing of Roamer Check could create complexity, making a 6 month timeline a challenge	IGOs and MSPs
	Sequencing	Phase 2 Risk of delayed in creation by MSPs in creating Proxy Roamer Database could impact IGOs ability to block by 24 months	IGOs
SMS Sender ID Registry	Time permitted	Timelines for ComReg to create the registry appear tight. Any delay impacts Aggregators and MSPs ability to modify or block invalid SMS.	ComReg, potentially Aggregators and MSPs

3.5 ComReg's updates to the proposed timelines

In light of the potential concerns identified by stakeholders following consultation, ComReg submitted a number of changes for Plum to consider, in its evaluation of the timelines, outlined in the list below.

- **DNO and PN** - Increasing the requirement for updating blocking lists to 5 working days.
- **Fixed and Mobile CLI Call Blocking** - MSPs to provide MSRN to ComReg within 3 months after a final decision, i.e. 3 months before the implementation of Phase 1.
- **Mobile CLI Call Blocking – Phase 1:** A turnover-based cut-off of €50 Million a year for Phase to apply to IGOs (Phase 1 IGOs), MSPs to provide access to Roamer Check to Phase 1 IGOs 5 months after a final decision. **Phase 2:** MSPs to create the Proxy Roamer Database of 21 months after a final decision.

- **SMS Sender ID Registry** – ComReg has moved to a different model of a SMS Sender ID Registry which does not require a direct connection, thereby reducing the need for participating aggregators to reorganise their routing where they connect with another participating aggregator.

It should be noted that all such changes relate to timelines for enabling actions and not for the overall timelines.

4 Evaluation of timelines for implementation of interventions

The conclusions from our analysis of the timelines proposed by ComReg for the implementation of interventions to address the harm of nuisance communications are set out here.

4.1 DNO List, PN List and Fixed CLI Blocking

As reported above, capabilities to support these interventions are widely deployed by ECNs in Ireland, the proposed interventions are currently operational and in use for most operators.

We note that respondents to consultation have questioned the timing of multiple proposed interventions for simultaneous implementation in a 6 month timeframe. Respondents also questioned the timing of implementation of nuisance communications interventions when other regulatory requirements also involve updates to their systems.

Our analysis indicates that:

- These proposed interventions are already widely deployed by and operational on ECNs in Ireland, with few exceptions;
- the proposed interventions require deployment of existing capabilities to identify and block nuisance calls, and integration of the DNO and PN Lists;
- implementation of other functions required by regulatory mandates (responses to consultation include references to network rollout requirements, Electronic Communications Security Measures (ECSM), and the public warning system) will not materially impact on the capability of ECNs to implement and operate DNO List, PN List and Fixed CLI call blocking.

We also note that a DNO List trial was successfully conducted by ComReg in 2022.²⁴

Our analysis concludes that the timeframe proposed by ComReg of 6 months from a final decision for implementation of DNO List, PN List and Fixed CLI Blocking is reasonable and achievable.

ComReg recognises that deployment of call blocking within 6 months is conditional on any changes to Mobile Station Roaming Number (MSRN) number ranges being sent to ComReg within 3 months of any final decision. This will improve protection from nuisance communications for visitors to Ireland when using their phones roaming on Irish networks. We understand ComReg now intends to make timely updating of MSRN number ranges an explicit requirement of the Fixed CLI Blocking implementation.

4.2 Mobile CLI Call Blocking Phase 1

We note that a number of responses to consultation argued that 6 months after a final decision for implementation of Mobile CLI Call Blocking Phase 1 would be challenging and potentially not achievable.

As explained in Section 2, not all ECNs currently have the MAP signaling capability to perform the mobile roamer checks which will be necessary to distinguish between legitimate calls from roaming customers and

²⁴ June 2023 consultation, see pager 69 <https://www.comreg.ie/media/2023/06/Consultation.pdf>

illegitimate use of Irish CLIs. In the June 2023 consultation, ComReg set out a roadmap for compliance involving interconnection between MAP enabled and non-MAP enabled operators to allow use by the latter of the roamer check facilities of the former.

This arrangement would require commercial and operational arrangements to be in place between the MAP enabled and non-MAP enabled operator. Some stakeholders have expressed concerns that achieving this on time may be an obstacle for full compliance with Phase 1 by some smaller operators. Plum recognises that this is a legitimate concern for operators which would have to develop the MAP roamer check capability from a standing start.

However, we understand that, having analysed the responses to consultation, ComReg 24/24, ComReg has reconsidered and adjusted the phasing of Mobile CLI call blocking. The requirement for Phase 1 implementation by non-MAP enabled operators will therefore be removed, meaning that the Phase 1 requirement will only apply to ECNs with existing capability to carry out mobile roamer checks. Therefore, only IGOs with MAP capability or the means to invest and achieve MAP capability are required to implement Phase 1 of Mobile CLI Call Blocking, thus removing.

- the need for non-MAP capable IGOs to acquire that capability; and
- reducing the burden on remaining IGOs in terms of facilitating access to smaller IGO.

In light of this change ameliorating concerns about the implementation of Phase 1 by non-MAP enabled IGOs, as well as MSPs,²⁵ our analysis concludes that the timeframe proposed by ComReg of 6 months from a final decision for implementation of Phase 1 of the Mobile CLI Call Blocking remedy is reasonable and achievable.

We further understand that ComReg recognises that deployment of call blocking within 6 months is conditional on any changes to Mobile Station Roaming Number (MSRN) number ranges being sent to ComReg within 3 months of any final decision, and we understand they now intend to make that an explicit requirement.

4.3 Mobile CLI Call Blocking Phase 2

Phase 2 of the Mobile CLI Call Blocking solution would require deployment of a roaming proxy server to identify calls from roaming customers. This facility would enable inbound international calls from Irish numbers to be checked to establish whether the call is being made legitimately by a customer who is roaming.

The roaming proxy server is not currently in use by Irish ECNs. Therefore, deployment will potentially require a number of coordinated activities by operators, including:

- Establishing an appropriate model for shared ownership, operation and governance of the roaming proxy server;
- vendor selection and procurement of the roaming proxy server;
- systems development, integration and testing.

This model for procurement, shared ownership and operation of facilities is in place for other solutions in the electronic communications sector, for example central database and clearinghouse facilities for number portability. Typical timelines for deployment of these facilities is between 9 and 18 months.²⁶

²⁵ Moreover, Plum notes that ComReg intends to approach compliance taking account of the specific circumstances of operators.

²⁶ For example, see <https://www.pxs.com/services/number-portability-clearinghouse>.

The Mobile CLI Call Blocking solution in Finland became fully operational in October 2023²⁷ following a recommendation issued in May 2022 by the Finnish Transport and Communications Agency²⁸ including provision for deployment of a proxy server. Implementation of the proxy server solution in Finland therefore took 17 months – less than the 24 months proposed by ComReg. We understand that the Finnish deployment was the first of its kind and that the implementation may be an effective blueprint for Ireland and other jurisdictions. Implementation in Finland was managed through a build to a pre-existing number portability platform which may have simplified the process relative to procurement of a solution in other jurisdictions.²⁹

Taking account of all the evidence, our analysis concludes that the timeframe proposed by ComReg of 24 months from a final decision for implementation of Phase 2 of the Mobile CLI Call Blocking remedy is reasonable and achievable.

We understand that ComReg now intends to add further detail to the roadmap for deployment by specifying that the roaming proxy server be operational within 21 months of a final decision with full blocking operational within 24 months of a final decision. Taking account of the deployment timeline in Finland, we believe this adjustment is reasonable and achievable.

4.4 Voice Firewall

As ComReg noted in the June 2023 consultation, voice firewall platforms have been successfully deployed by a number of operators in countries outside Ireland. The solution has also been identified as a potential way to dynamically address scam calls, and hence it will improve the ability of ECNs to identify and block scam calls beyond that provided by the DNO/PN Lists and fixed and mobile CLI (the so called static interventions).

Deploying voice firewall solutions may require procurement and integration of new systems and hence commercial procurement activity prior to system development, integration and testing. ComReg proposed an 18 month timeline for implementation of the remedy which would allow for this activity, and also took account of the other remedies for nuisance voice calls being deployed and preference for a layered approach to implementation to avoid the overuse of overlapping resources. The proposal for 18 months included 6 months to allow for the layered approach. It should be noted that all the operators that could be required to implement Voice Firewall have DNO, PN and Fixed CLI Call Blocking deployed now. This means that such operators must now only implement the Mobile CLI Call Blocking in terms of the voice interventions.

Voice Firewall deployment was discussed on interview calls with vendors. In these discussions, [redacted] expressed the view that the 18 months proposed by ComReg is a reasonable timeframe for implementation. We also spoke [redacted] It is therefore likely that [redacted] could activate a voice firewall capability using the [redacted] solution in considerably less time than 18 months, [redacted] stated 6 months was possible.

However, Plum does not propose this as an appropriate deadline because it could result in a vendor specific solution. Such an outcome is undesirable, leading to among other things reduced competition in the provision of firewall services and a lack of technological neutrality, and hence not appropriate for a regulatory mandate.

Furthermore, providing additional time to allow for the parallel implementation of other proposed interventions is sensible and will allow operators flexibility to manage their resources in the most efficient manner possible, noting that some operators may introduce the Voice Firewall much earlier depending on their resource management and desire to market important consumer protection measures.

²⁷ https://www.ofcom.org.uk/_data/assets/pdf_file/0025/260656/CLI-Authentication-potential-approach-to-detect-and-block-spoof-numbers.pdf

²⁸

<https://www.kyberturvallisuuskus.fi/sites/default/files/media/regulation/EN%20Recommendation%20to%20Telecommunications%20Operators%20on%20Detecting%20and%20Preventing%20Caller%20ID%20Spoofing.pdf>

²⁹ This point was discussed in a call between Plum ComReg and the Finnish regulator, Traficom on 4 March 2024.

Our analysis concludes that the timeframe proposed by ComReg of 18 months from a final decision for implementation of the Voice Firewall remedy is reasonable and achievable.

4.5 Sender ID Registry

ComReg has started preparatory work to establish a Sender ID Registry. This work is subject to, and does not preclude any decisions that ComReg may make on nuisance communications interventions.

As noted in Section 3.2, delivery of the Registry has a number of dependencies. Firstly, it will require the establishment of the Registry by ComReg. It also requires collaboration of SIDOs and aggregators, and integration of their systems. However, the change to a "circle of trust" model which does not require aggregators to connect directly with Irish MNOs greatly reduces the necessary network reconfiguration and testing.

If implemented, the project will be designed to deliver:

- partial and temporary implementation within 12 months of any final decision with delivery of unregistered numbers with the Sender ID replaced with "*Likely-SCAM*".
- full implementation in 18 months through blocking of messages from all unregistered Sender IDs.

We note that the bulk of the work to deliver this remedy in its early phase will be done by ComReg. Our analysis concludes that, subject to the dependencies identified being delivered on schedule, the timeframe proposed by ComReg of 18 months from a final decision for implementation of the SMS Sender ID Registry is reasonable and achievable, although challenging.

5 Summary of findings

Having completed our assessment of the timelines proposed by ComReg for implementation of the interventions to address harm arising from nuisance communications, we have found that the overall timelines proposed by ComReg are reasonable. We note that ComReg have made some adjustments to the detail of implementation for some of the interventions in response to evidence submitted by stakeholders and identified concerns.

Our findings are summarised in Figure 5.1.

Figure 5.1: Summary of findings

Intervention	Proposed timeline for implementation	Plum findings
DNO List	6 months	The proposal for implementation of DNO List 6 months from a final decision for implementation is reasonable and achievable.
PN List	6 months	The proposal for implementation of PN List 6 months from a final decision for implementation is reasonable and achievable.
Fixed CLI Call Blocking	6 months	The proposal for implementation of Fixed CLI Call Blocking 6 months from a final decision for implementation is reasonable and achievable. We understand that ComReg recognises that deployment of call blocking within 6 months is conditional on any changes to MSRN number ranges being sent to ComReg within 3 months of any final decision.
Mobile CLI Call Blocking	Phase 1: 6 months Phase 2: 24 months	<p>The proposal for implementation of Mobile CLI Call Blocking Phase 1 which requires implementation of a mobile roamer check function within 6 months of a final decision is reasonable and achievable. Note that the requirements for this remedy have been adjusted in light of stakeholder responses to ComReg’s proposed interventions, and specifically to meet the needs of smaller ECNs. We also understand that ComReg recognises that deployment of call blocking within 6 months is conditional on any changes to MSRN number ranges being sent to ComReg within 3 months of any final decision.</p> <p>The proposal for implementation of Mobile CLI Call Blocking Phase 2 which requires deployment of a roaming proxy server within 24 months of a final decision is reasonable and achievable. We note that ComReg now intends to add further detail to the roadmap for deployment by specifying that the roaming proxy server be operational within 21 months of a final decision with full blocking operational within 24 months of a final decision. This adjustment is reasonable and achievable.</p>
Voice Firewall	18 months	The proposal for implementation of the Voice Firewall remedy within 18 months of a final decision is reasonable and achievable.
SMS Sender ID Registry	Initial implementation: 12 months Full implementation: 18 months	The proposal for implementation of a SMS Sender ID Registry within 18 months of a final decision is reasonable and achievable. However, the implementation also has complex dependencies, specifically the setting up of the Registry by ComReg.

Appendix A: Summary of stakeholder engagement

Vendor interviews

Plum conducted interviews with four equipment and software vendors to get their insights on the interventions proposed by ComReg, and the timelines for implementation. The key points captured in these interviews are set out in Figure A.1.

Figure A.1: Key points from vendor interviews

Vendors	Key points
Ericsson	[Redacted]
Hiya	[Redacted]
Mavenir	[Redacted]
Openmind	[Redacted]

Regulator engagement

The Plum team engaged with regulators who have overseen implementation of interventions to combat nuisance communications in a number of jurisdictions. This engagement included an information request issued by ComReg to a number of regulators, and interview with Traficom, the regulator in Finland which has successfully overseen the implementation of interventions including Fixed and Mobile CLI Blocking, and a SMS Sender ID Registry.

Evidence received from this engagement is captured in Figure 3.3. in the main body of this report.

Regulators engaged by ComReg and Plum in this exercise were:

- RTR (Austria)
- Hakom (Croatia)
- OCECPR (Cyprus)
- ECPTRA (Estonia)
- ARCEP (France)
- Traficom (Finland)
- BNetzA (Germany)
- AGCOM (Italy)

- RRT (Lithuania)
- MCA (Malta)
- UKE (Poland)
- ANACOM (Portugal)
- RU (Slovakia)
- AKOS (Slovenia)
- CNMC (Spain)
- BAKOM (Switzerland)
- BTK (Turkey)

Appendix B: NCIT members

The following organisations are members of the NCIT:

- BT Ireland
- Blueface
- COLT
- eir
- Imagine Communications
- Intellicom
- Magnet
- Sky Ireland
- Tesco Mobile
- Three
- Twilio
- Verizon
- Viatel
- Virgin Media
- Vodafone