Your response

Question	Your response
Question 3.1: Do you have futher views about the implementation of STIR?	STIR seems an appropriate approach to help in addressing abuse of CLI. The use of a common database to allow active and in-active number allocations to be identified is the only practical way in which identification of mis-use of CLI can be achieved. I would also add that for at least the business telecoms community the addition of an end user (customer) identifier be considered as part of a common database so that any perpetrators of misuse can be identified and approached directly by appropriate regulatory bodies in cases of – for example, nuisance calls or fraudulent activity.
Question 3.2: Are there any other approaches we should consider for addressing CLI authentication?	The use of a common database for number allocation/management and the use by all CPs in referencing this database for allocation of numbers to its customers should be sufficient to ensure that any CLI can be validated as a call is attempted by an OCP and by a TCP for calls to valid UK telephone numbers. This would be the ideal position for full number validation. Obviously this does not address overseas call origination in cases where nuisance/fraud is generated from invalid/mal-formatted CLIs, and this would require that international inbound routes to the UK ensure validation of at the very least CLI formatting is correct prior to allowing calls to proceed. I can appreciate that calls from certain countries may not have CLIs present, in which case as Ofcom has previously stated, a number range has been set aside for CPs to apply a CLI from this range to aid in call origination identification.
Question 3.3: Do you agree a common database would be required to support the implementation of STIR?	Yes, I agree that a common numbering database is vital for the implementation of STIR.

Question 3.4: What are your views on using blockchain technology as the basis for a common numbering database to support CLI authentication? What other solutions do you think should be considered and why?	Blockchain provides a secure, accountable and traceable ledger system which lends itself well to number management, and hence as CLI authentication is dependent upon a common database, then blockchain is one method of providing this facility. Other distributed database structures could, however, also deliver similar functionality using existing and understood database technologies, and an open source approach could still be adopted. The key to the success of blockchain will be a successful proof of concept. The use of a common database will not (as discussed later) only be used for number management/CLI authentication but also for number portability, and hence performance of blockchain for processing number port orders and potentially allowing CPs to carry out real-time number lookup or download updates for call routing purposes will need extensive load testing. This may result in a hybrid approach with blockchain used for numbering and CLI authentication and integrated alternative database structures used for high volume order processing/call routing.
Question 3.5: What are your views on timeframes?	This is a very difficult question to answer as there are a number of dependencies not listed in this consultation. For example, it is not yet clear how the process of IP interconnects will work in a wholly IP world. The current process for Service Establishment is designed for the PSTN world, and relies upon many months of manual paper form exchanges to establish a new interconnect. The establishment of an IP interconnect can take a matter of hours/days, so processes and procedures need to be developed to aid this migration whilst ensuring a standard format for testing is agreed. There is also the requirement to compile all current used and unused numbers, which networks they reside on, who the end party is contracted with e.g. retailer; number range holder host, etc., etc.. Again, this process could take many months, if not years, to complete due to the disparate nature of numbering. There are also considerations of commercial agreements such as termination rates for differing number ranges, and the way in which current routing (SS7/ISDN) is replicated in a

	wholly IP to IP environment. Is this to be achieved using perhaps DNS lookups for termination of calls via a hosted LINX type exchange setup or do we just replicate PSTN routing but just use IP connections between CPs? There are therefore a number of greater considerations for timings before determining whether blockchain can be delivered on time in isolation.
Question 4.1: What are your views on the current implementation of number portability in the fixed and mobile sectors?	The current fixed number portability processes are decades old, so do not reflect the current environment with hundreds of CPs and resellers, as well as many rangeholders who don't operate their own network but "host" their Ofcom ranges with another CP. Suffice to say that for single number ports, the process "can" work if the CPS in the chain act responsibly and follow process. The problem occurs with more complex multi-number ports where often multiple resellers in a chain are present, multiple rangeholders and often the end user/customer not actually being clear on what numbers they actually have – hence introduction of a voluntary pre-order validation (PoV) process introduced over the past few years. This, however, is voluntary, and hence does not address all issues where data is mis-matched. Mobile porting is a much smoother process. Due to number data being more readily available for processing ports, the experience for consumers does appear to be a much more positive experience.
Question 4.2: What are your views on sharing the functionality of a common numbering database for CLI authentication to also support improvements in UK porting processes?	This is an ideal opportunity to address numbering, validation and porting, as at no point in the past has there ever been an opportunity (certainly for the fixed numbering world) to take advantage of the benefit of a common database combined with the move to a wholly IP network. As previously stated, there are a number of dependencies and considerations around the migration from PSTN to IP and these must be managed in conjunction with the common database, as all are inextricably linked.
Question 4.3: We are currently supporting a blockchain pilot. Do you have any views on using this technology for port transactions and	As answer to question 3.4. The use of blockchain may be suitable for the purposes of port transactions and supporting routing,

a routing database? Are there other alternatives that should be considered?	however until load testing has been completed it is unclear at this time as to whether blockchain in isolation is the correct technology
Question 4.4: What are your views on implementation timeframes and the importance of a common database solution being available to support the migration of telephony services to IP?	A common database is not vital for the migration of telephony to IP from PSTN, as that is simply a technology change and does not in itself affect current processes as IP services are offered by many CPs now, and no major change to processes has been required, (although the processes have needed to be adapted but have been achieved often through commercial methods such as BT IP Exchange), however a common database is vital to support the effective management of numbering and CLI validation and a more efficient and better controlled porting process. Timeframes, again, are not possible to confirm at this time, in my opinion, due to the interdependencies described previously.
Question 5.1: What are your views on the potential for a common database solution to also provide shared functionality to support number management?	A common database would be well placed to provide functionality for number management, CLI authentication and number portability, and I agree with combining these functions into a common database.
Question 5.2: What do you see as the benefits or disbenefits of changes to number management post PSTN retirement?	Benefits are: The ability to manage numbers on a more granular basis would be a primary benefit of using a common database. Allocation by Ofcom of numbers to CPs can be in single number or low volume block allocations rather than as currently, in allocations of 1k or 10k blocks which can be extremely wasteful of numbering resource. Number audits can be carried out directly by Ofcom on legacy blocks that will undoubtedly be transferred into the database at the point of initial common database population, and hence due to the ability to identify at single number level, Ofcom can return numbers to the pot, so to speak, for subsequent re-allocation. In situations where misuse of numbers/ranges is identified, Ofcom can withdraw a number of smaller ranges of numbers, or even an individual number if misuse is suspected. It may also be possible if there is an appetite for it in the future, for individuals/businesses

	who do not have a relationship with an existing CP, to request allocation of their own number(s) from the database and decide who they wish to host that number with. Disbenefits: Nothing other than greater visibility of CPs usage of numbers to Ofcom!
Question 6.1: Do you agree, in principle, with the need to develop and adopt a common numbering database? If not, why not?	I agree in principle with the requirement.
Question 6.2: If you do not agree with the need to develop and adopt a common numbering database, do you have any suggestions on how the issues we have set out in this consultation could be addressed?	N/A
Question 6.3: Do you agree that in the first instance industry should lead the implementation of a common numbering database, with Ofcom providing support to convene and coordinate key activities? If not, what are your views on how implementation should be taken forward?	I agree that industry must lead this development with Ofcom support, due to, as previously mentioned, the number of interdependencies that are involved in the migration from PSTN to IP both technically and process wise and the commercial implications this will no doubt have as well.