

Response to the

OfCom Consultation

**“Mobile Number Portability – Review of the
porting process.”**

(Consultation issued: 03rd August 2009)

Name Withheld

Response Date: 26th October 2009

Contents

Executive Summary	3
1. Introduction.....	4
2. Assessment of current MNP process.....	4
3. Assessment of alternative options	7
4. The potential change of the EU regulation	9
5. Assessment of costs.....	12
6. Repatriation, cleansing and recycling.....	14
7. Overview of the introduction of MNP in Germany	17
8. Further considerations	22
Appendix 1 Responses to the questions posed by OfCom.....	24
Appendix 2 Glossary	27

Executive Summary

There is a wide variety of research and statistics that show that:

- The porting process within the UK is not operating as effectively as it could (or in some cases not at all).
- Consumers in EU member states with a fast recipient led process are far more likely to port their numbers, thus ensuring greater competition in the market place.

Given the two points above, it is fair to say that the current UK donor-led porting process is, in a number of cases, adversely impacting the consumer.

This document (in response to the consultation) describes the process and a number of additional considerations which are key to a successful analysis and rollout. We believe there are a significant number of attributes which could ultimately determine the success of such an exercise. These are both attributes contained within the MNP processes of the MNOs, and attributes of other processes peripheral to MNP which could fail or cause impact to service if not considered in the correct fashion – such as cellular network provisioning. Another example would be the handling of the Data Protection Act when handing-off/validating a MSISDN from one MNO to another. With the impending changes to the powers of the Information Commissioners Office, it is essential that the MNOs operate within their guidelines to avoid potential sanctions and prevent breach of privacy.

Following this consultation process, the appointment of expert independent consultants to conduct a detailed and thorough cost/benefit analysis (CBA) in conjunction with the mobile industry is a logical and necessary next step.

We believe that the key factors that will determine the success or failure of the CBA are:

1. Appointing consultants with deep subject matter expertise who have a detailed understanding of mobile number management within UK Mobile Operators and who are able to understand, reconcile and challenge financial, operational and technical data.
2. That the mobile operators properly engage with the consultants and provide access to information/data/processes and to the experts within their companies to help with the interpretation of that data where needed.
3. Allocating sufficient time to conduct a thorough analysis (we believe that 3 months is not realistic to obtain a sufficient level of detail that will be defensible to all challenges)
4. Having experts that understand the realistic operational and technical limitations of such a wide ranging and high impact process change is essential to ensure that whatever conclusion is reached is workable and can be implemented in practice within a reasonable timeframe.

Given our direct experience, we have been working with UK Mobile Operators helping them define, implement and improve their number management strategies for the last 3 years, we believe we are better qualified than any other European team of consultants to undertake this analysis work for OfCom. As a company, we are known for our ability to reconcile technical, operational and financial data from MNOs and have a unique ability to interpret that data and draw out the most relevant conclusions.

1. Introduction

With the consultation document issued on the 3rd of August 2009, OfCom has requested the interested public and industry to offer its views on the current process of mobile number portability as well as on alternative porting processes. OfCom has laid out its research on consumer satisfaction with the current porting process as well as insights into consumers' willingness for a different and/ or fast porting process. Furthermore, OfCom has described alternative porting processes and the costs implied by them.

Complementing their research and perspectives, OfCom has asked for responses on the questions posed in the consultation document.

2. Assessment of current MNP process

At <Name Withheld>, we regard the decision of a future swifter porting process as crucial to maintaining competition in the mobile market. As demonstrated by the OfCom analysis, there is clear evidence that consumers are less inclined to seek out better deals in the marketplace due to the complexity in the transition and the pressure from the donor operator (cf. 1.1). Implementing a process with similarities to other operators within the EU would go some way towards standardisation across the member states and reduce the future effort and cost involved should a uniform process be introduced across all countries.

Q4.1: Do you agree with OfCom's view that the evidence suggests consumers would prefer a faster porting process?

We believe that consumers would prefer and furthermore, benefit from a faster porting process. Regarding consumers' preferences, we regard the results presented by OfCom as conclusively pointing towards the need for a swifter porting process.

The current (donor led) porting process is made up of:

The Port Request	The process by which the consumer approaches the donor operator to request a Port Authorisation Code (PAC).
The Port	The transition of the number from the donor to the recipient operator, after the subscriber has communicated the PAC to the recipient operator.
Intermediary Operations	Updates on the Port request and the Port itself, such as: Update of port date/time, port cancellations, emergency cancellations, etc.

- Currently, there is no legal specification as to the time in which the PAC code needs to be issued to the customer. The Industry Manual advises, however, a minimum requirement / maximum period of two working days. As the research OfCom summarised shows, for 22% of customers it takes 4 days to obtain a PAC code. Consistent with these findings, the delay in receiving the PAC code has also been reported to account for 50% of complaints to the OAT. Thus, the time for issuing the PAC code is certainly too long for a significant portion of customers.

- The second phase is the actual process of porting the MSISDN from the donor service provider (DSP) to the receiving service provider (RSP) which includes “erasing” the MSISDN from the systems of the former and integrating it into the systems of the latter as well as amending the routing accordingly, i.e. either setting up the onward routing or informing the originating network operator of the changed onward routing. For the porting process, a legal requirement of a 2 working day¹ maximum porting period is set. However, as OfCom reported, some customers feel this time is too long and they experience uncertainty and frustration about their service during this time. An additional consideration is that the SIM/Handset needs to be attached to the network at the planned time for the port to take place – the transition cannot take place if the subscriber is roaming – thus causing additional inconvenience to some subscribers.

So in theory, porting a mobile number should take no longer than 4 days. Summing up the empirically found times reported by OfCom leads to a significantly longer porting process of 6 (working) days at a maximum – 1 week. With some mandatory planning required on the subscriber side, this time is undoubtedly too long (at some point in the coming days, the number would switch and the subscriber will need to manage two SIMs to be certain of having their number active – additionally, if they are abroad, the port would fail).

Furthermore, research has shown that increasing the speed of porting is crucial for encouraging the use of MNP² as a long delay before the actual porting takes place constitutes a significant barrier to switching service providers³. As such, evidence suggests that MNP usage, and convenience for consumers, can be hindered if porting times are too long⁴.

Q4.2: Do you agree with OfCom’s view that the current process does not work well for all mobile consumers?

Yes, we consider it substantiated that a significant portion of consumers are deterred from porting their mobile phone number due to various reasons (the knock on effect being that if they are unable easily to port their number, they are also unlikely to change providers due to the reliance on mobile phone numbers being stored in their contact’s phones - this is particularly applicable to SME, Business & Corporate customers). As such, many consumers refrain from switching altogether. Other consumers would like to port, but are prevented by the resistance of their service provider when attempting to obtain a PAC to initiate the process (the Retention Process within MNOs). These issues have impacted a significant portion of consumers as the research OfCom cited shows:

- 17% do not switch their service provider to avoid the hassle of porting, meaning that they would rather remain with a suboptimal tariff than switch service provider with their number. This shows a substantial competitive bias in favour of the DSP who can therefore theoretically maintain higher prices than competitors for existing customers.

¹ Cf. Consultation by Ofcom on Mobile Number Portability, 3.23

² Buehler, S., Dewenter, R., Haucap, J., 2006. Mobile Number Portability in Europe. Telecommunications Policy. Vol. 30, Iss. 7, pp. 385-399.

³ Analysys Mason, 2006. Mobile Number Portability: Strategies for Operators and Regulators, December, available at: <http://research.analysys.com>

⁴ Lyons, Sean, 2006. Measuring the Benefits of Mobile Number Portability. Working Paper, Trinity College Dublin, Economics Department, <http://econpapers.repec.org/RePEc:tcd:tcduee:tep2009>.

- Approximately one third of consumers who switched without porting their number stated that they didn't know about the process or weren't given the option. If this research is representative, then this represents a clear case of consumer inconvenience and potentially financial 'harm'.
- At least 10% of consumers were not successful in obtaining a PAC from their service provider either because their request is refused or because they don't receive the requested PAC.

In addition, research using an economic analysis came to the conclusion that consumers in the UK face significant switching costs independent of the service provider⁵.

In general, consumers who do not switch providers are potentially remaining on legacy tariffs at their existing operator – traditionally, these offer less value for money than the more recent competitive tariffs used to attract subscribers from other operators.

Taken together, this shows that a percentage of mobile consumers are restricted in tailoring their mobile contract to their needs/financial benefit because the inherent problems of the current process.

Q4.3: Are there any other areas of consumer harm that have not been identified? Do you have any evidence to demonstrate other areas of consumer harm?

There are additional peripheral costs incurred by a consumer when porting their number. All additional/attributionable costs to consumers, which result from their porting or their attempt to port, could be classified as additional areas of consumer harm. They can be classified into a number of categories:

1	Compatibility costs brought about through the use of operator-locked handsets prevent consumers from switching to other networks (SIM Only Deals) after receiving a subsidised, locked handset. Banning the locking of handsets along with a fast and easy porting process has led to very high switching and porting rates in Finland ⁶ . However under the UK model of operators providing subsidised handsets, this could actually impede competition as operators may be forced to charge higher prices to take out a contract as there is less guarantee of call usage revenue if the handset can be used by multiple providers' SIM cards.
2	<p>There are transactional costs that consumers face when changing service provider:</p> <ul style="list-style-type: none"> • Contact to recipient operator to negotiate deal • Contact to donor operator to request PAC • Call to recipient operator to communicate the PAC • Call to recipient operator to confirm Port time (2 days later) <p>The potential high effort of obtaining and communicating a PAC code as well as the psychological pressure of enduring the donor retention activity has been detailed by the research results OfCom described.</p>

⁵ Grzybowski, L. 2007. Estimating Switching Costs in Mobile Telephony in the UK. Journal of Industry, Competition and Trade

⁶ Smura, T., 2004. Mobile Number Portability - Case Finland. Mimeo, Networking Laboratory, Helsinki University of Technology.

3	There are additional costs consumers incur when changing their mobile number after being refused a PAC. This means they would either need to remain on the more costly tariff or have to change number (with the new operator) thus needing to change business cards, company signage, company headed paper, advertisements, directory entries, etc. This would be of particular inconvenience to small businesses and sole traders. They may also be financially disadvantaged due to missed calls resulting from the number change.
4	Clearly within a donor led process there are multiple contacts/steps which need to happen to effect the port. This is likely to inconvenience the elderly, deaf and those suffering from learning difficulties.

Q4.4: Do you agree that OfCom should intervene to introduce changes to the current MNP process to address the harm identified?

We believe that there are a number of valid reasons to undertake a cost/benefit analysis into changing the present MNP process to ensure the interests of the consumer are maximised and fully protected. However, as any change introduced may have an impact on the associated internal processes of the operators and consequently affect the intricate system landscape of mobile operators, the implicated costs need to be thoroughly assessed and compared to the anticipated benefits.

There is strong evidence to suggest that some intervention from OfCom may be necessary. This will become apparent (or not) following the results of the analysis.

An additional point of consideration should be the market and social development. Based on our extensive telecom consultancy experience across Europe, we would anticipate consumers to increasingly expect to keep “their” mobile number for a life time, while being able to switch to the service provider who best meets their current needs. In light of this future trend, porting is likely to become routine for consumers and as such should be as easy and efficient as possible. This will require industry standardisation and as seen in other EU countries, this cannot be left to the MNOs themselves to agree and implement; both regulatory and independent consultants are needed.

3. Assessment of alternative options

Q4.5.2: Do you agree with the range of potential options OfCom has set out?

Q5.10: Please state whether you consider that OfCom should take any additional benefits into account and explain how. To the extent possible, please provide any estimates of these benefits and the supporting evidence.

Q5.11: Please explain whether you agree with OfCom’s assessment of the pros and cons of each option and if not, why not.

Q5.12: Please state which option(s) you favour and why?

Basically, two decisions are at the heart of the consultation: the issue of a donor vs. recipient-led process and the issue of the defined maximum length of the future process. We will look at the two issues in turn.

Donor vs. recipient-led process

Most countries have introduced a recipient-led porting process (3.11). Since the UK process was implemented in 1999, only one other significant donor led process has been implemented abroad, with the other countries opting for a recipient led process.

In our experience (e.g. from Ireland, Germany & Sweden), the concern about consumers missing the retention deal from the DSP is with limited foundation as consumers who would like to receive a better offer may still call to inform their current Service Provider about their search for a better deal (or offer from a competitor) with the intent to negotiate a discount without having to change operator. A number of MNOs already have analysis tools to review usage patterns for existing subscribers calling to negotiate a new deal, these then help suggest the most suitable deal for the consumer.

Despite some clear benefits of a recipient-led process, there are various issues which need to be considered if such a change were to take place. For example, customer authentication, possible open balance/unpaid invoices with the DSP, and security issues with a potential common database. From past projects, we have gained an extensive comprehension of the processes (technologies and systems) impacted as well as the many relevant issues to be considered with implementing a change from a donor-led to a recipient-led process [see Section 'Further consideration']. The above mentioned issues are clearly non exhaustive and a full and proper analysis needs to be carried out to ensure all issues relevant to all MNOs are captured before the optimal solution can be identified. In our previous experience, none of these issues are insurmountable but require deep subject matter expertise to overcome quickly and effectively.

One additional benefit of the recipient led process to all operators is that it would remove the need for written confirmation to be issued to each subscriber following the issuing of the PAC. With around 50,000 ports per month for some of the larger operators, this could present a significant cost saving (in postage alone, in addition to the other operational savings).

Porting duration

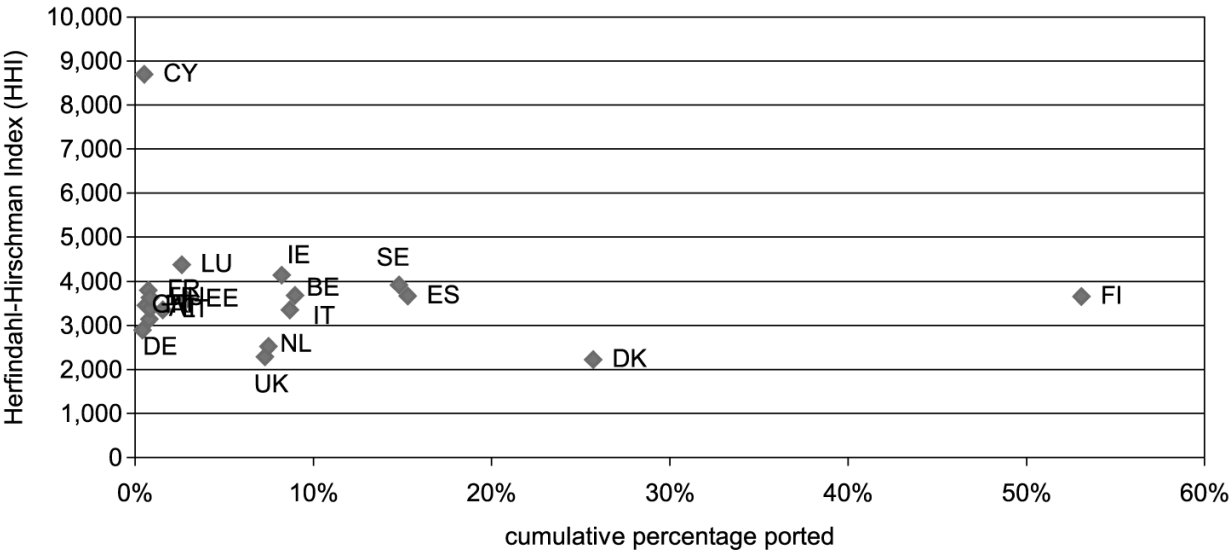
Given the complexity and age of the mobile telephony landscape of many of the UK MNOs, a two hour period to complete the porting process is likely to be very costly and time consuming to implement – in some cases whole components within the architecture may need to be replaced at potentially significant cost and risk to the operator and ultimately the customer. Examples would be systems running daily or overnight batch processes in support of bulk provisioning/deprovisioning. These would need to be adapted to handle real-time bulk transactions and this is likely to require a complete replacement in the case of legacy systems. In addition to this, it limits the time available to carry out full validation of ownership of the MSISDN (unlike other European countries, Prepay phones in the UK are anonymous, thus validation cannot be carried out by name, address, DOB, etc... and will need to be done by other methods, for example SIM Serial Number)

Thus, it is additionally sensible to consider alternative timescales which optimally balance consumer benefits with operators' cost and risk.

The option of a *next working day* porting process is likely to reduce the cost and risk to the MNOs whilst still allowing the UK to fall into line with the potential EU regulation timescales currently being discussed for the future.

4. The potential change of the EU regulation

The mobile market is the most dynamic of markets in the electronic communications sector as last year’s report of the EU commission stated⁷. Therefore, embracing competition remains very important for the UK mobile market, especially as research suggests that the telecommunications markets of the EU lack in competition⁸. The graph below shows the cumulative percentage of ported numbers in a country against the Herfindahl Hirschman Index (HHI). The HHI is a measure of concentration in a market where an increase of the index expresses an increase of concentration and a decrease of competition in the market. The scores shown in the diagram of above 1800 suggest high concentration and thus very little competition. It can be seen that all European countries listed show above this threshold, indicating a need to facilitate competition. While the UK does have a lower score in terms of the HHI relative to other EU member states, there is clearly room for improvement especially in the percentage of mobile number ports actually taking place, in which the UK is significantly behind other EU member states. It is also worth noting that the UK shows a 28% higher HHI (above the 1800 threshold) than what is considered to be acceptable competition.



Source: EC (2006)

One aspect of competition in the telecommunications market is the ability of consumers to freely switch between service providers without incurring any disadvantages such as the need to change their mobile phone number making mobile number portability (MNP) an important issue for market regulation.

⁷ European Commission, Progress report on the single electronic communications market 2008 (14th Report), 24 March 2009 Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0140:FIN:EN:PDF>
⁸ Sutherland, E., 2007. Mobile number portability. info, Vol.9, Issue 4, pp. 10 - 24., source: European Commission (EC), 2006. 11th Report on the Implementation of the Telecommunications Regulatory Package.

This would align the telephony industry with other utilities (e.g. electricity, gas) which have processes in place to allow easy switching of operators with the intention to stimulate competition. Utility provider switching is a recipient led process in the UK.

The EU commission has observed that porting frequencies across the EU countries are rising: in 2008 14.1 million more numbers were ported than in 2007. In total, since its introduction, 10.3% of mobile numbers had been ported within the EU. However, the EU commission also reports substantial variability in porting times across the EU countries (cf. OfCom consultation, 3.25, figure 3) which it does not consider justified by the national circumstances. The EU commission deems this variability critical because the time aspect of MNP is regarded as crucially important.

Therefore, the EU commissioner for information, society and media (Viviane Reding) introduced in her directive on the common regulatory framework for electronic communications networks and services (the 'telecom package') a regulation on the maximum time for porting mobile phone numbers. OfCom quotes the proposed amendment to the EU directive that in their consultation (2.42 to 2.45) where a porting period of "one working day", i.e. approx. 24 hrs., is defined.

The telecom package was passed by the EU parliament this May, but was subsequently rejected by the council of the European telecom ministers in June. At the end of September, a conciliation committee was set up - the results of which are expected by the 26th of October⁹. However, as the controversial issues of copyright protection and users' rights in the Internet were the main causes for the rejection, it is unlikely that the regulation regarding the porting duration will change. Although the final decision hasn't come yet, it can be regarded as probable that a regulation on tighter porting times will be forthcoming.

In anticipation of a change of EU regulations, other EU countries have already passed updates on their regulation to facilitate a faster porting process. Spain, for example – in a similar process to Germany, has obliged its mobile operators to develop a central database for all mobile numbers and provided the technical specifications of the process¹⁰. The Spanish mobile operators subsequently formed a common organisation, the association of operators for number portability (AOPM), which mandated an independent IT supplier to design, test and implement the new platform under the supervision of the Spanish regulator, CMT.

In light of these developments, we would suggest that all options considered for an improvement of the porting process should either be in line with the expected new EU regulation of a 1-working-day porting period, or that they allow sufficient flexibility for future adaptation without complete re-work at a high cost. A second implication of the likely change of the EU regulation is that "doing nothing" is may not be a sustainable option. We therefore suggest that any analysis considers the proposed EU changes, although not necessarily complying with them at this stage (as presently they are only proposals and are not fixed or obligated).

⁹ http://www.europarl.europa.eu/news/expert/infopress_page/058-61381-271-09-40-909-20090928IPR61380-28-09-2009-2009-false/default_de.htm

¹⁰ Especificación Técnica de los Procedimientos Administrativos para la Conservación de Numeración Móvil en caso de Cambio de Operador (Portabilidad Móvil) 2008.
http://www.cmt.es/cmt_ptl_ext/SelectOption.do?tipo=pdf&detalles=090027198005ffb5&nav=ult_resoluciones

Q5.3: Do you consider that there are additional options that OfCom should have considered? If yes, please explain what option(s) should have been considered and why.

It may be reasonable to consider more options regarding the time frame of the porting, e.g. a porting process of 12hrs or 48hrs, which may mean lower costs on the implementation side and higher consumer benefit than the current process. However it would not be sensible to propose any firm timescales until the full analysis has been carried out, all potential issues discussed/reviewed and a suitable way forward agreed.

Q5.4: Do you agree that a two hour timeframe in which to issue the PACs for Options B and D is appropriate? If not, please give reasons for your views.

We would agree that a two hour timeframe to issue a PAC would bring significant benefits to the consumer, however at this stage it is premature to quantify the impact to the MNOs. This would be a key factor in determining the sensible timeframe for PAC issue.

Although generating the PAC is carried out near instantaneously, the processes the MNOs need to go through may vary – for example, validating the identity of the requestor or querying the worldwide lost/stolen database (EIR) to ensure that there is no fraudulent activity. There will also be instances where the number has been disconnected in line with the MNOs prepay disconnection policies (e.g. after 3 to 6 months of inactivity) and the service will need to be re-activated first. Where in general this may happen very quickly, there will be certain cases where further investigation is required.

The setting and agreeing of any target Service Level Agreements (SLAs) is another area of significant importance but one which can only seriously be considered after the final way forward has been agreed.

A further consideration would be the handling of high-risk group MSISDNs. These would include pensioner alarms, numbers under police or government investigation, those deployed in the medical sector etc. It may be beneficial for these to be exempt from the SLA period to enable further checks to be carried out in order to prevent disconnection of these SIMs in error, which would result in interruption to critical service and bad press for the industry.

Q3.1: Do you agree that the bulk porting process should not be included in this review and should be left to industry agreement?

Q5.5: Do you agree there should be a difference between how the recipient-led processes in Option A and C should work for single account versus multi-account porting requests? Do you consider that the proposed authentication process (described in paragraph 5.41) for multi-line accounts is sufficient? Please explain any other differences you would expect to see whilst ensuring that any differences are still consistent with the overall objectives the options are trying to achieve.

We believe there are efficiencies to be made in synchronising the processes for single and multiple ports – at least the process whereby the authorisation is communicated between operators – although we accept that different SLA periods may be appropriate.

For authentication it would be sensible to ensure that any process coming out of the initial analysis is compliant with all requirements from the Data Protection Act. The recipient MNO would need to satisfy itself and the donor MNO that the subscriber is indeed the true owner of the number. Failure to do this could result in the inadvertent (or malicious) disconnection of other active subscribers. This is of particular importance in the bulk process as it would potentially affect multiple subscribers. As such the authentication process needs to be quite rigorous and minimum criteria agreed by all operators.

With respect to postpay numbers, confirmation of the account Name, Address, DOB and billing account number would provide a workable option. However prepay services (which –unlike in other European countries– are anonymous in the UK) present different challenges and would require a different authentication solution which would work via any of the sales channels of any recipient MNO (i.e. retailer, internet, telesales, etc.). As prepay represents a large proportion of the subscribers in the UK, this process also needs to be quick, efficient and secure. There are a number of options that can satisfy these requirements, however these would need collective agreement from the MNOs to ensure they meet all their minimum requirements for data protection, security and privacy. It would also be worth considering an extended SLA period to allow more rigorous validation for port authorisation requests which relate to numbers last used in handsets registered as stolen.

Q5.1: Do you agree with OfCom's view that the 'do nothing' option is unlikely to be appropriate in light of (i) evidence of consumer harm and (ii) noting the proposed one working day porting requirement under the New Telecoms Package? If not, please give reasons for your views.

We do not consider the 'do nothing' option as a viable way forward. In addition to the already-discussed factors (consumer harm & EU proposal), there is the expectation that any delay would lead to increased cost when the process is ultimately changed. In summary, as MNO customer bases and service offerings increase in size, the cost of implementing large process changes will also likely increase. An example would be with new service offerings. When Mobile Broadband (using HSDPA) was introduced in 2005/6 operators had to deploy new hardware, or enhance existing hardware to manage this new service. They would have also required additional MSISDNs to support this service. Had there been a new defined porting standard at the time, this would have been incorporated into the rollout of the new service offering and fully tested at the time. However, due to it not happening at the time, this would now need to be retrofitted and regression tested, leading to an expected higher cost and higher risk of change. Similarly, it is expected that new service offerings will be rolled out going forward. The sooner a new porting standard is defined, the sooner it can be incorporated without having to retrofit. Given the additional change and the pace with which that change now happens the quicker this process is completed the lower overall impact it will be to the operators in terms of total cost.

5. Assessment of costs

Q5.6: For each of the options set out, do you consider that OfCom has captured all the appropriate categories of cost likely to be incurred? If not, explain what categories you disagree with / believe are missing.

Q5.7: Do you agree with OfCom’s analysis of costs for each cost category? If not, please explain why. Please also state whether you are able to provide OfCom with a more accurate view of costs and if so, please submit your assessment, together with supporting evidence with your response to this consultation.

We believe it is not possible to identify all costs involved at this early stage. After a full cost/benefit analysis, the full cost and impact should become clear. However we have listed below, some example cost considerations should OfCom move ahead with the analysis and subsequent process changes.

1	Build of common infrastructure to enable porting process	One time cost
2	Build of MNO infrastructure to enable porting process <ul style="list-style-type: none"> - Full Impact Analysis to each MNO across all infrastructure components involved or interfacing with porting, and all systems using the MSISDN as a customer identifier - Functional and architectural design - New hardware across the multiple systems which handle or interface with the porting functionality - New software across the multiple systems which handle or interface with the porting functionality - New interfaces (internally between MNO systems and to any common porting infrastructure) - Cost of marketing and internal communication - Cost of change/downtime/rollback/failure - Cost of risk mitigation during and post change - Possible change to the MSISDN cleansing and recycling routines 	One time cost
3	Decommissioning of existing porting process	One time cost
4	Support for ‘old’ porting process	Recurring saving
5	Reduction in customer contacts and PAC mailing	Recurring saving
6	Support for ‘new’ porting process	Recurring cost
7	Implementation of any associated routing method changes	One time cost
8	Support of any associated routing method changes	Recurring cost
9	Changes to billing and debt-collection	One time cost
10	For MNOs which host one or more MVNO, the MVNE (Mobile Virtual Network Enabler) sub-infrastructure would also need to be developed to handle the new process. Effectively, such host MNOs would have a higher cost to implement the process than those without.	One time cost

Note that this list is not exhaustive, but is just to illustrate the wide variety of costs which would be identified in a full cost/benefit analysis.

It is also worth noting that the costs will impact each MNO differently depending on their history. More established operators will likely be impacted by higher costs due to the higher level of complexity in their legacy infrastructure, built up over a number of years, whereas newer operators and MVNOs will likely see a lower cost due to more recently deployed systems handling multiple functions. In addition, the level of risk may increase to such a level that additional risk mitigation may need to be put in place due to the expected significantly higher volumes of ports. Where the risk of an impact in the past may have been sufficiently low that a MNO could accept it, if the volume of ports increases significantly, the impact and risk would also increase, resulting in the MNO no-longer being willing to accept it and resulting in them needing to implement 'fixes' or other associated process changes to mitigate it. The repatriation/recycling example below is a good example of this.

6. Repatriation, cleansing and recycling

As the driver behind any possible changes to the porting process is to increase the number of ports (and thus making competition more effective), the MNOs may wish to revisit their repatriation process. Presently, when a MSISDN is ported out, then subsequently disconnected, it is returned to the donor MNO. It is an OfCom requirement for the MNOs to recycle disconnected numbers to avoid the need to request new number blocks. Presently the repatriation volumes are low (as a result of the porting volumes being low), however if they increase significantly, and the donor operator does recycle them, there is an increased impact of the existing risks associated with recycling MSISDNs, including:

- Data conflict with previous subscriber
- Data Protection Act considerations (becoming more important as the Information Commissioners Office (ICO) is due to be granted increased powers to apply penalties to organizations breaching the DPA in 2010¹¹) – for example, where a subscriber to operator X ports out to operator Y, subscribes to premium services (which are charged by termination, ie when the premium content is received, the charge is applied to the receiver), then disconnects. The number is then repatriated to operator X and given to a new subscriber. The ESME (content provider) then continues to send the premium (charged on termination) SMS, but this is now received by the new subscriber. This is an unwanted cost and could potentially result in a minor receiving inappropriate content.
- Provisioning failures
- Inactive numbers disconnection processes
- Service switches and unbilled usage

Where these were unlikely to happen in the past (and where they did happen, the impact was limited to a small portion of the subscriber base) due to low port volumes, with higher volumes, these are more likely to happen in the future and the impact be much wider ranging. If the MNO determines that it is necessary to mitigate this (where they may previously accepted it as low risk)

¹¹ Cf. <http://www.out-law.com/page-10188>

then this will result in significant additional costs to them. This is a single example of an increase in risk, this and others will come out more detailed in a full cost/benefit analysis.

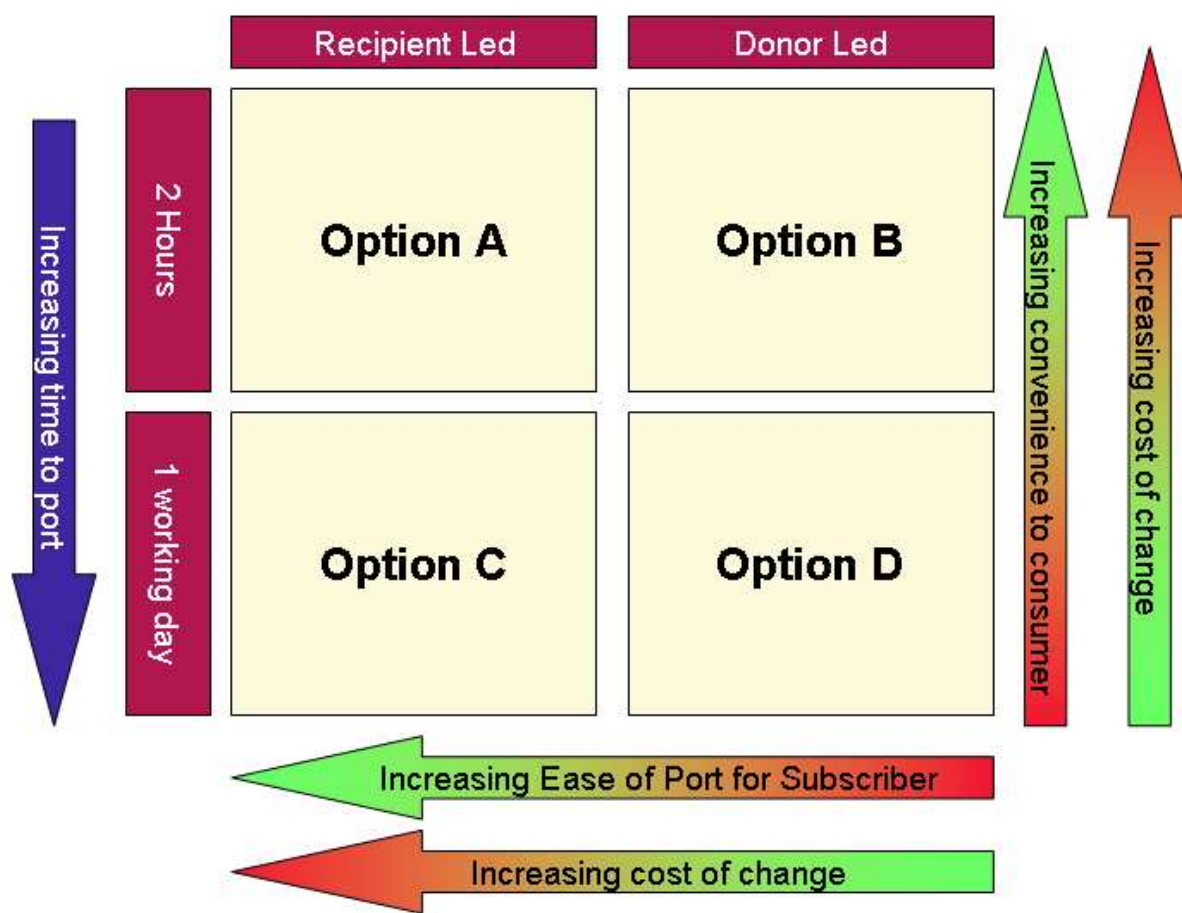
Q5.8: In the case of new entrant MNOs, what additional costs are likely to be incurred internally within each of the networks for each of the options? Please submit your estimates in your response to OfCom.

A new entrant MNO would further increase the competition in the market, however it would require significant infrastructure build and initial investment. So it is more likely that any new entrant would be a MVNO, making use of the architecture of the existing operators. With this being the case, there may be some additional cost involved to both the MVNO and the host MNO. It is therefore essential that any costs incurred to an MNO can be clearly broken down to allow onward charging to the MVNO. Without this, MNOs would be unwilling to take on MVNOs and this would negatively impact competition in the market.

It is worth noting that any additional cost with a new MNO is unlikely to be significantly higher than the cost of implementing the existing process. It is standard for an MNO to host an MVNO on a sub infrastructure, the MVNE (Mobile Virtual Network Enabler) as this ensures that the MVNO subscribers are kept segregated from those of the MNO, also enabling the charging of airtime between parties and carriers. An MVNE is normally designed to host any number of MVNOs, so the additional cost is likely to be low as it should have already been designed into an MNO's MVNE before any new entrant is integrated. This does indicate that any operators hosting MVNOs would be subject to a higher initial set-up cost as they would need to deploy both to their own network and to the sub-infrastructure of the MVNE.

Q5.9: Do you agree with OfCom's analysis of benefits for each option? If not, please explain why.

Yes, as described in the responses above, there are benefits to each option. In summary, taking into consideration the cost versus the convenience to the consumer, each option has its pros and cons.



There are additional benefits already described. Where it is expected that overall, there will be a financial cost to the operators, it is possible that there will be some small economies made overall and that the cost of operating a new and more efficient process may in fact not be higher than the existing process. These benefits should also be quantified during the cost/benefit analysis to give a realistic account both to the industry and to the regulator.

Q5.13: *What do you consider a reasonable implementation period for each of the options and why?*

It would be premature at this point to fix an implementation period. As discussed throughout this document, there are a very large number of factors to consider. However we do believe this is a significant change for the MNOs for the reasons we have discussed and as such, would suggest that the implementation is unlikely to take less than a year from consultation. This is down to the multitude of changes necessary in each operator and their need to ensure that any change doesn't adversely affect their Customer Experience – especially if the porting process is becoming easier for a consumer. Only after the full cost/benefit analysis – where in depth discussions have been had with the MNOs, and their timelines challenged – has been completed, will there be enough information to fully plan out the change.

7. Overview of the introduction of MNP in Germany

After introducing local and non-geographic number portability, the German regulator, the 'Bundesnetzagentur', commissioned a study regarding mobile number portability (MNP) focusing on the issues of market competition and consumer benefits. Based on the results of the study, they concluded that MNP is beneficial for both competition and consumers. After a public consultation on the introduction of MNP, it was set as a requirement for all mobile service providers to develop a central database for direct routing as well as to enable MNP. This requirement was unsuccessfully challenged in court by the mobile network operators T-Mobile and Vodafone¹².

Subsequently, the four mobile network providers in Germany (T-mobile, Vodafone, E-plus, and O2) formed a working group to coordinate development issues concerning the routing, the central database as well as administrative and operational questions. Additionally, the workgroup issued joint quarterly status reports on the implementation to the German regulator.

However, the working group of the MNOs proved to be inefficient due to differing interests of the participants and the lack of a formal lead. The MNOs asked the regulator for another suspension of the regulation (which was denied). Instead, the regulator urged the operators to engage an external consultant/project manager specialising in mobile telecommunications to oversee the development and co-ordination with the operators to ensure efficiency and adherence to the agreed time schedule. Following the advice of the consultant, the introduction of MNP was suspended for another seven months in order to ensure a reliable and user-friendly MNP process with limited risk to the operators or the consumer.

In parallel to the mobile network operators, mobile service providers were integrated into the development process so that they also support all operational processes.

The MNP process was introduced 18 months later (in November 2002) and on target to the revised schedule. A third party was engaged for the development and running of the common central database which facilitates the porting process as well as the direct routing – in this case it was T-systems, the sister company of T-Mobile.

MNP process in Germany

The MNP process implemented in Germany is a recipient-led process which gives the mobile network operators 31 days to complete the port.

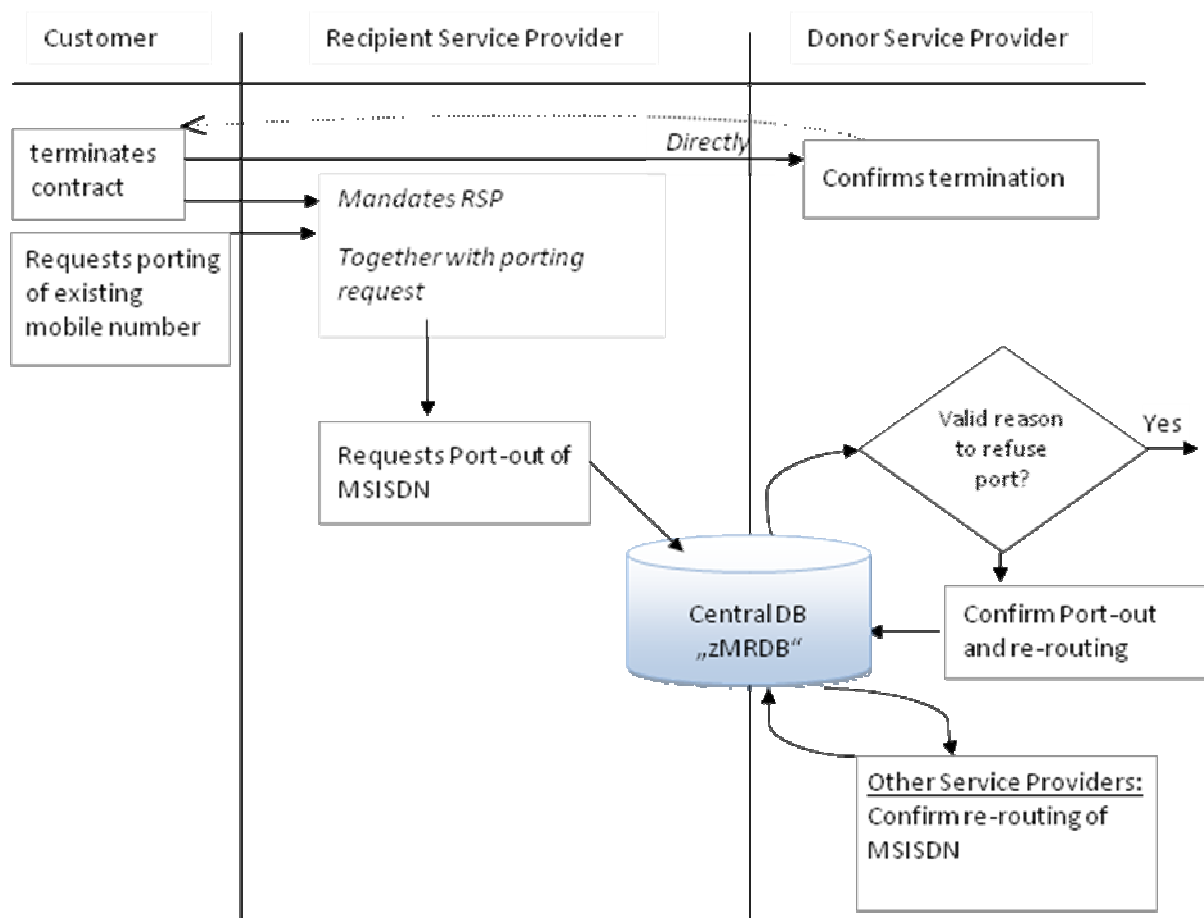
Thus, if a consumer wants to keep his mobile number when switching operators, he needs to start a contract with a new provider (RSP) and terminate his contract with the existing provider (DSP). Once his existing contract is terminated, the consumer can make a porting request with his new mobile service provider [between three months before his existing contract runs out and four weeks afterwards].

To request the port, the RSP inserts the port-out request of the MSISDN into the central database, which transmits the request first to the DSP for confirmation and then to all other mobile service providers to update their routing information accordingly – as per the agreed control database refresh policies. For the porting request to be successfully executed, the customer information needs

¹² The final decision of the court can be found at <http://www.flick-sass.de/mobilnummer.html>

to be identical on the old and new contract. Furthermore, customer authentication is assured with the customer's signature on the porting request to the RSP.

Note that this is possible in Germany where prepay customers are all validated and not anonymous.



The front end process differs slightly in Germany, between operators:

- ➔ O2: New MSISDN with temporary mobile number needs to be activated first, then port request is made
- ➔ Vodafone: Carries out the termination for the customer, then the customer gets the new SIM with a Welcome Letter in which the date of the port is communicated. After this date, the customer can use the new Vodafone SIM card with his number
- ➔ T-mobile: Customer needs to terminate himself, take the confirmation of termination to T-Mobile who will initiate the porting request. T-mobile says it will port-in the day after the termination of the old contract, however how that happens in practice is unconfirmed.
- ➔ E-Plus: Agrees the new contract, terminates old contract then makes port request

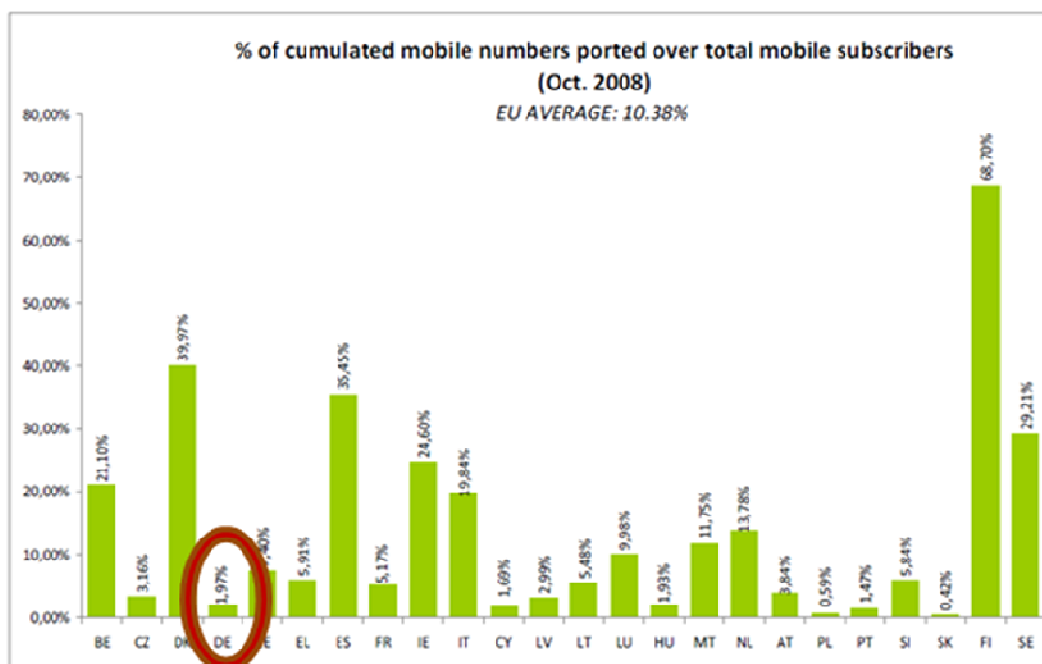
Costs

Costs are passed on to the consumer directly in Germany. Currently, as DSP Germany MNOs charge 25€ - 26.50€ for the porting process. The German regulator has set the maximum charge at 30.71€

Today, the porting process works well in Germany with few complaints to the regulator. However, the overall porting frequencies are rather low compared to other European countries as can be seen

by the low cumulative percentage of ported numbers in Germany (i.e. DE, 1.97%) in the below diagram¹³:

Mobile number portability
(= consumers switching the mobile operator while being able to keep their number, as required by EU law)



There are several factors contributing to this:

- 1) MNP is not advertised by the mobile service providers and thus awareness of MNP is rather low in Germany (unlike in the UK). However, mobile service providers are less concerned with any retention activity because a recipient-led process is in place.
- 2) One condition for number portability is that the existing contract is about to expire. Since the majority of German consumers opt for a postpay contract (unlike the UK) for their mobile services and contract durations average 24 months, most German consumers only have the option to switch mobile service providers and port their number every two years.
- 3) The most significant reason is likely to be around the high costs and long period associated with porting which may deter German consumers

Country	Regulation regarding costs for MNP	Costs charged by mobile service providers
Germany	Maximum of 30,72€	25€
Austria	Only DSP can charge	19€
Finland	No costs for consumers	
Spain	No costs for consumers	
UK	No costs for consumers	
Ireland	Maximum of 2,05€	

¹³ Mobile use up, consumer prices down: Europe's telecoms sector weathering economic downturn, says Commission report. Press release from the 25/03/2009 <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/473&format=HTML&aged=0&language=EN&guiLanguage=en>

In our communications with the German regulator, they highlighted their key conclusions from the introductory process, which indicates that MNP:

- is a complex project for which professional planning with clear timescales, responsibilities and conflict management processes are crucial.
- necessitates many technical and operational changes because nearly every unit within a mobile network operator is affected
- needs sufficient time if a high quality and low risk service is to be developed

Q6.1: Do you agree that it is appropriate for OfCom to appoint a qualified independent consultant(s) to work with industry to develop cost estimates for different implementation options? If not, please state why.

Given the prior history and the differences of opinion, it is essential that an independent team of experienced consultants is appointed to develop and agree the cost estimates for the potential implementation options. Given the sensitivity that surrounds any major change to the existing porting process the consultants appointed need to remain impartial to both the interests of OfCom and those of the MNOs. The consultant(s) must be able to progress through the discussions and conduct a proper cost/benefit analysis that is based on a thorough understanding of all of the issues (operational, technical, financial and regulatory) involved. The basis for the analysis must be sound and should be agreed with all MNOs. Even if the MNOs do not agree with the final results from the analysis, there should be no room for disagreement on the principles on which the analysis was based and the method in which it was carried out.

As the experiences of the introductions of MNP processes in European countries has shown, often, the introduction was delayed due to the inefficiencies in the co-operation between mobile network operators¹⁴.

What is of paramount importance is that the consultant(s) appointed have a deep subject matter expertise to be able to interact effectively with the MNOs and ideally to challenge their assumptions and to be able to engage in highly technical discussions around the feasibility and potential structuring of the different options for MNP to ensure that the baseline for the cost benefit analysis is realistic and agreed upon as valid by both the MNO and the consultant. Given the potential reluctance of some MNOs to engage willingly in this process, the ability to overcome potential or theoretical operational and technical reasons will determine the success of the consultant(s) in their undertaking.

Q6.2: Do you agree with the remit set out above for the consultant/expert? If not, please state why.

In the light that this decision will strongly affect mobile service providers and consumers alike, we regard it as sensible to first undertake a thorough and substantiated cost-benefit-analysis before deciding on any necessary process changes.

¹⁴ Buehler, S., Dewenter, R., Haucap, J., 2006. Mobile Number Portability in Europe. Telecommunications Policy. Vol. 30, Iss. 7, pp. 385-399.

A kind of flexibility must be present throughout the analysis phase to ensure a sensible and robust conclusion is reached. Regular review meetings (at least monthly) must be held to discuss findings, assumptions, issues and risks etc. and the remit should be adjusted slightly as appropriate. For example, if one or even two of the currently proposed options clearly emerge as not particularly viable, then there should be the flexibility to exclude that option(s) from further analysis and concentrate on the remaining options (or even to introduce a replacement option – time permitting).

Q6.4: Do you agree that three months is an appropriate period of time for this feasibility assessment to be undertaken? If not, please explain why and what you consider to be an appropriate timescale.

A period of three months to conduct a cost/benefit analysis at 5 different MNOs and potentially 2 or more MVNOs at a level of sufficient detail that will stand up to detailed scrutiny we believe is not realistic.

Clearly the more time allotted to undertaking the analysis, the more detailed it will be. Given that the analysis will undoubtedly have to withstand close scrutiny and potential challenges we believe that a timeline of 5-8 months is realistic. A key consideration in any timeline calculations will be the length of time taken to interact and receive data and information from the MNOs, as their potential reluctance to provide such data will clearly impact both the timelines and the level of detail the cost/benefit analysis could go down to at that MNO.

Q6.5: Do you agree that the criteria for making this process effective as outlined under paragraphs 6.14 to 6.16 is appropriate? What else is required to make this process constructive?

The criteria OfCom has outlined under paragraphs 6.14 to 6.16, namely establishing a clear and sensible timeline and appointing appropriate experts in each of the engaged organisations is a sensible starting position and does capture the key points (with the most important one being proper engagement from the mobile industry and that access to information is provided).

Furthermore, drawing from our experience in Germany, we recommend defining clear responsibilities for all parties and a method of regular feedback between all parties.

Q6.6: Do you agree with OfCom's proposed next steps following responses to this consultation? If not, how do you consider OfCom should complete its cost-benefit analysis and proceed to an implementation of one of the four options?

Yes, the next steps proposed are logical as it is key to appoint external consultants to undertake the detailed analysis before any next steps can be fully considered and potentially agreed. There are no other logical steps that could add value to the decision making process without having a solid analysis to refer to.

Q6.7: Do you have any comments on the proposed timings for reaching a conclusion for this review?

As mentioned we believe the suggested 3 months is too tight to be able to arrive at the appropriate level of considered detail and that a period of 5-8 months is realistic.

Our current view of the overall timelines, with that initial analysis period in mind, is that the cost/benefit analysis should be complete around July / August 2010 (based on a January 2010 start date) which would allow a period of consideration and the issue of the final consultation document in Autumn 2010 with a view to receiving the feedback by the end of 2010. This should then lead to a target implementation date Q1 (or perhaps Q2) 2011. Our current view is that allowing at least 12 months for implementing any changes or any new porting process should be allowed, thus giving a final implementation/go-live date of around Q1 2012. All of these target dates can only be firmed up as the process progresses and each stage is satisfactorily completed.

8. Further considerations

The following list comprises a short (and non-exhaustive) overview over additional issues which were not (yet) covered in OfCom's consultation.

Issues to consider regarding the new process

- Design an authentication process which includes also pre-pay consumers who didn't give their SP personal data/detail, such as name or address?
- Checks if the MSISDN/mobile number is with this SP, active, and portable need to be implemented
- With a simple and swift porting process, consumers may have an incentive to "spin", i.e. take advantage of new-customer-offers and leave right after this period for the next SP with another new-customer-offer.
- Responsibilities / SLAs between MNOs, MVNOs, and ISPs have to be defined
- If implementing a CDB, access rights and security issues need to be resolved (beforehand). For example, mobile marketing and mobile distribution agencies may wish to access such a CDB in order to be able to correctly route/direct messages. This implies on the other hand an additional partner with whom to share operational/set-up costs.
- If implementing a CDB, operators using a updatable local copy of it may have to implement only small changes to their routing procedure

Issues regarding the operators, their systems, costs, business relations

- A near-instant process could have a positive effect on operators' number management, as temporary numbers for the porting period are no longer needed and could thus be used for other customers.
- As the porting volume and maybe frequency (from port-out to repatriate) increase, operators' systems need to be able to handle the repatriation of numbers after a short period of time. Thus, potential problems out of it and consequential adaptations to the mobile number cleansing process should be evaluated by the operators.
- Cost savings may be realised from the discontinuation of the PAC letter issuing system as well as personnel savings from the call reception / retention team of the DSP. Indeed were the

whole PAC system to be discontinued then this would clearly result in some element of cost savings to the entire mobile industry.

- Operators may need more powerful hardware or high-performing software to handle the near-instant clearing of a mobile number or potentially the near-real-time routing updates if a direct routing scheme is implemented simultaneously.
- Operators need to scan their business partnership for potential impacts, e.g. partnerships with SMS/MMS-marketing agencies who are linked to their SMSC, may now generate higher costs for SMS to ported-out numbers.

Appendix 1 Responses to the questions posed by OfCom

Section 3

Q3.1: Do you agree that the bulk porting process should not be included in this review and should be left to industry agreement?

See page 12.

Section 4

Q4.1: Do you agree with OfCom's view that the evidence suggests consumers would prefer a faster porting process?

See page 4.

Q4.2: Do you agree with OfCom's view that the current process does not work well for all mobile consumers?

See page 5.

Q4.3: Are there any other areas of consumer harm that have not been identified? Do you have any evidence to demonstrate other areas of consumer harm?

See page 6.

Q4.4: Do you agree that OfCom should intervene to introduce changes to the current MNP process to address the harm indentified?

See page 7.

Section 5

Q5.1: Do you agree with OfCom's view that the 'do nothing' option is unlikely to be appropriate in light of (i) evidence of consumer harm and (ii) noting the proposed one working day porting requirement under the New Telecoms Package? If not, please give reasons for your views.

See page 13.

Q5.2: Do you agree with the range of potential options OfCom has set out?

See page 8.

Q5.3: Do you consider that there are additional options that OfCom should have considered? If yes, please explain what option(s) should have been considered and why.

See page 11.

Q5.4: Do you agree that a two hour timeframe in which to issue the PACs for Options B and D is appropriate? If not, please give reasons for your views.

See page 11.

Q5.5: Do you agree there should be a difference between how the recipient-led processes in Option A and C should work for single account versus multi-account porting requests? Do you consider that the proposed authentication process (described in paragraph 5.41) for multi-line accounts is sufficient? Please explain any other differences you would expect to see whilst ensuring that any differences are still consistent with the overall objectives the options are trying to achieve.

See page 12.

Q5.6: *For each of the options set out, do you consider that OfCom has captured all the appropriate categories of cost likely to be incurred? If not, explain what categories you disagree with / believe are missing. Review of the MNP process 76*

See page 13.

Q5.7: *Do you agree with OfCom's analysis of costs for each cost category? If not, please explain why. Please also state whether you are able to provide OfCom with a more accurate view of costs and if so, please submit your assessment, together with supporting evidence with your response to this consultation.*

See page 13.

Q5.8: *In the case of new entrant MNOs, what additional costs are likely to be incurred internally within each of the networks for each of the options? Please submit your estimates in your response to OfCom.*

See page 15.

Q5.9: *Do you agree with OfCom's analysis of benefits for each option? If not, please explain why.*

See page 16.

Q5.10: *Please state whether you consider that OfCom should take any additional benefits into account and explain how. To the extent possible, please provide any estimates of these benefits and the supporting evidence.*

See page 8.

Q5.11: *Please explain whether you agree with OfCom's assessment of the pros and cons of each option and if not, why not.*

See page 8.

Q5.12: *Please state which option(s) you favour and why?*

See page 8.

Q5.13: *What do you consider a reasonable implementation period for each of the options and why?*

See page 17.

Section 6

Q6.1: *Do you agree that it is appropriate for OfCom to appoint a qualified independent consultant(s) to work with industry to develop cost estimates for different implementation options? If not, please state why.*

See page 21.

Q6.2: *Do you agree with the remit set out above for the consultant/expert? If not, please state why.*

See page 21.

Q6.3: *If you would like to recommend suitable experts / consultancies to OfCom, please do so on a confidential basis.*

See page 24.

Q6.4: *Do you agree that three months is an appropriate period of time for this feasibility assessment to be undertaken? If not, please explain why and what you consider to be an appropriate timescale.*

See page 22.

Q6.5: *Do you agree that the criteria for making this process effective as outlined under paragraphs 6.14 to 6.16 is appropriate? What else is required to make this process constructive?*

See page 22.

Q6.6: *Do you agree with OfCom's proposed next steps following responses to this consultation? If not, how do you consider OfCom should complete its cost-benefit analysis and proceed to an implementation of one of the four options?*

See page 22.

Q6.7: *Do you have any comments on the proposed timings for reaching a conclusion for this review?*

See page 23.

Appendix 2 Glossary

AOPM	Association of Operators for Number Portability (in Spain)
CDB	Central Database
CMT	Comisión del Mercado de las Telecomunicaciones, the Spanish regulator
DOB	Date of Birth
DPA	Data Protection Act
DSP	Donor Service Provider
EIR	Equipment Identity Register
ESME	External Short Messaging Entity
EU	European Union
HSDPA	High Speed Downlink Packet Access
ICO	Information Commissioners Office
ISP	Independent Service Provider
MMS	Multimedia Messaging Service
MNO	Mobile Network Operator
MNP	Mobile Number Portability
MSISDN	Mobile subscriber Integrated Services Digital Network Number
MVNE	Mobile Virtual Network Enabler
MVNO	Mobile Virtual Network Operator
OAT	OfCom Advisory Team
ONO	Originating Network Operator
PAC	Port Authorisation Code
RSP	Recipient Service Provider
SLA	Service Level Agreement
SIM	Subscriber Identity Module
SMS	Short Message Service
SMSC	Short Message Service Centre
SP	Service Provider
UK	United Kingdom of Great Britain and Northern Ireland