

Report on
**“Transparency of retail prices (with
implementation of Number Portability)”**

2005

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1 EXECUTIVE SUMMARY

Recital 41 of the US Directive (2002/22) establishes that “the impact of number portability is considerably strengthened when there is transparent tariff information, both for end users who port their numbers and also for end users who call those who have ported their numbers. National regulatory authorities should, where feasible, facilitate appropriate tariff transparency as part of the implementation of number portability”.

In order to accomplish this aim, different NRAs have been developing measures they consider appropriate. In some countries, this intervention has been mandatory. In others, the measures have been developed by operators’ own initiatives, with varying levels of involvement of the NRA.

In April 2005, the IRG End users Group asked European NRAs to provide information about their involvement in TT both for end users who port their numbers and for end users who call to ported numbers.

23 NRAs responded to the IRG questionnaire, two of whom (Malta and Poland) had not yet implemented NP. In the Czech Republic Mobile Number Portability (MNP) had not been introduced.

As mentioned in Recital 41 of the US Directive, NP may have a double impact on TT:

1. TT for end users who port their numbers;
2. TT for end users who call ported numbers.

The findings of the survey may be summarised as follows:

1.1 TT for end users who port their number

Number 1 of Article 21 of the US Directive establishes that 'Member States shall ensure that transparent and up-to-date information on applicable prices and tariffs and on standard terms and conditions, in respect of access to and use of publicly available telephone services is available to end users and consumers'. In addition to this general rule in relation to TT, some countries have implemented specific measures/rules in relation to TT for those who port their numbers.

TT for end users who port their numbers is related to the existence of adequate information provided to end users on the following aspects:

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- Rules defining if operators (donor operators/recipient operators) may charge end users for the porting process;
- Values of retail prices practiced by operators (donor operator / receptor operator) in a portability process.

These kind of measures are mainly justified when providers levy charges.

The survey found that specific measures to promote TT for end users who port their number exist only in Austria, Italy, Greece, Lithuania and Portugal.

Most of the remaining countries indicated that operators do not levy charges or that when those charges exist self-regulation is playing a sufficient role.

1.2 TT for end users who call ported numbers

The need to establish/facilitate rules/measures to ensure that the aims of Recital 41 of the US Directive (2002/22) are met, as far as TT for end users who call ported numbers, are dependent on several factors, not all of which relate to NP.

In each country the relevance of this issue depends on the existence of certain circumstances (or a combination of such circumstances). Thus, the questionnaire also requested information regarding the framing factors which the IRG EU WG has previously identified as particularly relevant. The finds were:

a- Differential calling charges dependent on the fixed or mobile terminating network:

Where calling price differentials in terms of the fixed or mobile terminating network do exist, the introduction of NP may affect TT for end users who call ported numbers. In fact, when a ported number is dialled, the terminating network is not the same as it was before the number was ported and for that reason the price of the call may change.

b- Rules for numbering attribution:

Even when calling price differentials between terminating mobile or fixed networks are significant, TT problems associated with the introduction of NP still depend on the type of rules set for numbering attribution.

In fact, in several countries end users strongly associate numbering blocks released by NRAs with a specific mobile or fixed operator. In those countries, the possibility of identifying such an operator prior to the introduction of portability could be an

important element in terms of TT, in particular when differentials between prices of in-net and off-net calls were significant. In fact, in such circumstances knowing the network to which the dialled number belonged allowed end users to have an approximate perception of the price to pay for each call.

With NP, when dialling a ported number, end users may be misled into thinking they are still calling a certain network to which a certain tariff applies.

c- Rules applied by providers to the fixing of tariffs of calls to ported numbers:

Even when end users associate certain numbers with certain providers and simultaneously price differences depending on the terminating mobile or fixed network are relevant, the impact of NP implementation in terms of end user perception of tariffs also depends on the kind of rules applied by providers for the fixing of tariffs of calls to ported numbers as well as the calling party's knowledge of those rules. Thus, provided that the calling party is aware of the rules, such an impact only exists if tariffs of calls to ported numbers are defined in terms of the terminating network ("network oriented pricing"¹) and not in terms of the network to which the ported number was initially allocated ("number oriented pricing"²).

When the solutions are "network oriented pricing", the price may change when a number is ported, because the customer is billed on the basis of the calls to the recipient operator (operator to which the number becomes allocated after being ported).

When the solutions are "number oriented pricing", the price does not change, because the customer calling a ported number is billed as if it had not been ported. In fact, if operators continue to apply the same tariffs charged before the number was ported for calls to ported numbers ("number oriented pricing"), end users will never pay more for that call than prior to porting.

The fixing of these pricing rules is related to several factors, but it is important to point out the technical solutions adopted by operators for routing their calls to ported numbers. In fact, the technical solutions implemented (direct routing *versus* indirect routing) may impact on the rules applied for fixing tariffs of calls to ported numbers.

¹ When calling a ported number the price is equal to the price applied to calls terminating at the new network to which the number is now allocated.

² When calling a ported number the price is equal to the price applied to calls terminating at the network that was originally allocated to the number.

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Direct routing or “near direct routing” solutions (e.g. All Call Query, Query on Release) on calls to ported numbers will facilitate the adoption of “network oriented pricing” for these calls, because the originating operator is able to get, by his own means, all the information needed for applying “network oriented pricing” on calls to ported numbers.

On the other hand, when indirect routing systems are implemented, originating operators have, in general, an incentive to settle “number oriented” retail tariffs for calls to ported numbers, as the implementation of “network oriented pricing” would imply the settling of complex accounts

As the relevance of the TT for end users who call ported numbers depends on individual circumstances, the questionnaire sent by EU WG to NRAs also requested information regarding the framing factors which the IRG EU WG had previously identified as particularly relevant. The finds were:

1.2.1 Calling price differentials depending on the fixed or mobile terminating network

If differentials between call prices dependent upon the fixed or mobile terminating network exist and, in particular, if they are significant, then implementation of NP may imply a loss of TT for end users who call ported numbers (in some countries, the implementation of NP implies that it is no longer possible to identify, by means of the dialled code which is the destination network of a certain call).

Responses to the survey revealed that differentials exist for mobile to mobile; fixed to mobile; fixed to fixed and mobile to fixed calls.

Table 1 summarises the results:

Table 1 – Calling price differentials

Type of voice calls	Percentage of countries with a significant price according to the terminating network ³	Major “Highest price difference on-net calls and off-net calls”
Mobile to Mobile	73,7%	1635% (Portugal)
Fixed to mobile	83,3%	400% (Lithuania)
Fixed to Fixed	36,8%	150% (Lithuania)
Mobile to Fixed	26,3%	233% (Portugal)

Respondents who have not implemented MNP and/or NP for Fixed Telephone Service (FNP)⁴ are not included in these results.

1.2.2 Rules for numbering attribution

In several countries end users closely associate numbering blocks released by NRAs with a certain mobile or fixed operator. Prior to the introduction of NP, this gave end users a close perception of the price applied to each call, where the differences according to the terminating network exist (in several countries/services off-net calls are much more expensive than on-net calls). In these cases, the introduction of NP may lead to a loss of TT for end users calling ported numbers as the dialled number no longer indicates the destination network.

The association established between the dialling code and the respective providers is generally stronger for mobile than for the fixed providers.

The following table shows the relative weight attached in different countries:

³ This percentage was calculated based on the number of number of countries which responded to this specific question of the questionnaire and where FNP (for questions related to fixed terminating calls) or MNP (for mobile terminating calls) were implemented. In this case the number of countries in these circumstances was 19, except for fixed to mobile voice calls where 18 countries responded to the question.

⁴ Fixed Telephone Services do not comprise non-geographic numbers, in spite of many of these numbers being delivered over “fixed” networks.

Table 2 - Distribution of end user association between dialling code and operator

	FTS ⁵	MTS ⁶
End users do not associate dialling codes with any providers / operators	66,7%	15%
Few / some end users associate dialling codes providers / operators	23,8%	40%
There is a strong and general association between dialling codes and providers / operators	9,5%	45%
Σ	100,0%	100,0%

Note that MCA reported that in Malta (where NP has not been implemented) there is strong association between dialling coded to their respective providers/operators by end users.

1.2.3 Rules applied by providers to the fixing of tariffs of calls to ported numbers

The impact of NP implementation in terms of the tariff perception by end-users is also dependent on providers' tariff rules in relation to calls to ported numbers and the knowledge the calling party has of the rule.

In regard to the latter, as detailed in point 5.2.2.1, survey findings show that in most cases end users seem to be aware of such tariffing rules, as no particular problems were identified by NRAs. Although, there are five countries in which there are specific measures established to allow end users to be informed about the tariffing rule applied in calls to ported numbers.

Assuming that the calling party is aware of the tariff rule, the impact on TT following NP only arises where call tariffs to ported numbers are defined in terms of the terminating

⁵ This percentage is calculated based on the number of countries which responded to this specific question of the questionnaire and where FNP was implemented. In this case the number of countries in these circumstances was 21.

⁶ This percentage is calculated based on the number of countries which responded to this specific question of the questionnaire and where MNP was implemented. In this case the number of countries in these circumstances was 20.

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network (“network oriented pricing”⁷) and not in terms of the network to which the ported number was initially allocated (“number oriented pricing”⁸).

In countries where there is “number oriented pricing” for calls to ported numbers and where end users are aware of the tariff rules, TT problems do not exist (even where there is low associations between dialling codes and provider and even if the price differentials are high). There is a problem with TT problem but that is not as a result of f NP.

In countries where there is not a common practice in relation to the tariffing rule applied in calls to ported numbers, the introduction of NP may also have an impact on the TT.

NRAs and operators should be also aware that when adopting technical solutions for routing calls to ported numbers, this may influence the tariffing rule applied to those calls (direct routing facilitates the implementation of “network oriented pricing” while indirect routing facilitates the “number oriented pricing”). Consequently that decision may also impact on TT for those who call ported numbers.

In most cases network oriented pricing” rules have been adopted through formal or self regulation. Most respondents state that call prices to ported numbers are settled according to the operator’s network to which the number is now allocated (recipient’s network). In percentage terms:

- All providers adopted “Network oriented pricing” on calls addressed to mobile ported numbers applies in 85%⁹ of the respondent countries;
- All providers adopted “Network oriented pricing” on calls to fixed ported numbers applies in 62%¹⁰ of the respondent countries.

⁷ When calling a ported number the price is equal to the price applied to calls terminating at the new network to which the number is now allocated.

⁸ When calling a ported number the price is equal to the price applied to calls terminating at the network that was originally allocated to the number.

⁹ This percentage was calculated based on the number of countries which responded to this specific question of the questionnaire and where MNP has been implemented. In this case the number of countries falling within this group was 20.

¹⁰ This percentage is calculated based on the number of countries which responded to this specific question of the questionnaire and where FNP was implemented. In this case the number of countries falling within this group was 21.

1.2.4 Combination of framing factors

The following table illustrates where a combination of the three framing factors described above may present most risk in terms of TT following the introduction of NP: “High risk” factors may occur when a country has:

- A network oriented tariffing rules¹¹;
- price differentials according to the terminating network;
- a high association by end users between dialling codes and the respective providers/operators.

“Medium risk” factors may occur when a country has:

- a network oriented tariffing rules;
- price differentials according to the terminating network;
- a low / medium association by end users between dialling codes and the respective providers/operators.

Table 3 – Combination of potential “high risk”, “medium risk” or “no risk” of TT problems following NP implementation

	MTS ¹²	FTS ¹³
“High risk” combination of the framing factors	36,85%	10,5%
“Medium risk” combination of the framing factors	36,85%	10,5%
“No risk” combination of the framing factors	26,3%	79%

¹¹ In relation to the tariffing rule, when a country has no common practice it is likely that operators are implementing “network oriented pricing” solution, thus in this case the “no common practice” countries are included in this analysis.

¹² This percentage is calculated based on the number of countries which responded to this specific question of the questionnaire related to the framing factors and where MNP was implemented. In this case the number of countries falling within this group was 19.

¹³ This percentage is calculated based on the number of countries which responded to the specific questions of the questionnaire related to the framing factors and where FNP was implemented. In this case the number of countries falling within this group was 19.

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Σ	100%	100%
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The presented percentages above were calculated based on the methodology presented in **Annex 2**.

In conclusion, in 73,7% of the respondent countries where MNP has been implemented, conditions exist that that may lead to TT problems. In the case of FTS, 21% of the respondent countries where FNP has been implemented have conditions that may lead to TT problems in the context of NP, if no provider/NRA/legal remedial measures are taken. In countries with a medium combination of the framing factors the TT issue already existed prior to implementation of NP.

The countries with the following framing factors were considered as potentially problematic in terms of TT before the implementation:

- Price differentials according to the terminating network;
- No or low/medium association by end users between dialling codes and the respective providers/operators;

1.2.5 Measures

1.2.5.1 Measures taken to provide information about tariffing rules applied in calls to ported numbers

The survey found that only Denmark, Hungary, Iceland, Italy, Portugal and Finland NRAs introduced specific measures/rules for providing information to end users about the tariffing rules applied. NRAs from fourteen countries had not implemented any such measures. In many cases this was because self-regulation had played an important role.

1.2.5.2 Measures taken to facilitate end users' awareness the prices to ported numbers

In many cases, the measures comprise an on-line announcement at start of voice calls; and/or information services on the price of calls to ported numbers; and/or on the terminating network, provided by telephone, SMS or Internet. Other measures include information provided with a contract, or itemised billing (e.g. highlighting calls to ported numbers or the terminating network).

Table 4- Percentage of countries that introduced measures to facilitate end user awareness of prices to ported numbers

Type of measure	Percentage of countries where the measure is implemented ¹⁴
Telephone Information Service ¹⁵	57,1% (Denmark, Estonia, Finland, Greece, Hungary, Italy, The Netherlands, Norway, Portugal, Switzerland, United Kingdom, Germany)
Information Service provided by SMS ¹⁶	23,8% (Germany, Hungary, Ireland, Italy, Switzerland)
Information Service provided by Internet ¹⁷	40,0% (Austria, Denmark, Estonia, Finland, Germany, Iceland, Italy, The Netherlands)
On-line announcement at start of voice calls ¹⁸	30,0% (Austria, Germany, Ireland, Italy, Lithuania, Portugal)
Other measures ¹⁹	20,0% (Austria, Hungary, Germany, Lithuania)

On-line announcements at the start of voice calls exist mainly in those countries where there is a combination of “high risk” framing factors. TT problems following NP impact more on mobile telephone service (MTS) and thus measures tend to be mostly applied to mobile service.

Some NRAs may prefer to negotiate implementation of TT with operators or allow the industry to use its own initiative.

The following table shows the percentage of countries where measures were imposed (or at least recommended/suggested) by NRAs or through legislation. This percentage was calculated in relation to each of the types of measures identified above.

¹⁴ This percentage is calculated based on the number of countries where NP was implemented and which responded to the specific questions related to the several types of measures identified.

¹⁵ A total of 21 respondent countries apply such measures.

¹⁶ A total of 21 respondent countries apply such measures.

¹⁷ A total of 20 respondent countries apply such measures.

¹⁸ A total of 20 respondent countries apply such measures.

¹⁹ A total of 20 respondent countries apply such measures.

Table 5 - Imposition of measures

Type of measure	Percentage of countries where the measure was imposed ²⁰
Telephone Information Service ²¹	58,3% (Denmark, United Kingdom, Hungary, Finland, Greece, Portugal and The Netherlands)
Information Service provided by SMS ²²	0%
Information Service provided by Internet ²³	12,5% (Iceland)
On-line announcement at start of voice calls ²⁴	50% (Austria, Lithuania, Portugal)

In addition, nine of the respondents mentioned they are considering new measures to promote TT for those who call ported numbers.

1.3 Conclusions

This report summarises the responses from NRAs regarding measures implemented to promote TT in the context of NP as well as the respective existing framing factors.

The information contained in this survey aims to provide useful guidance to those NRAs which are implementing NP or to those regulatory authorities currently reevaluating TT measures in the context of NP to identify existing or potential TT problems related to NP, and to derive any specific measures needed to ensure TT. NRAs may also prefer to rely upon price evolution (e.g. calling price differentials) or numbering criterion attribution (e.g. to influence the end users association between the dialling codes with any providers / operators). NRAs should also be aware that when settling the tariffing rules for ported numbers, this may have implications on TT issues. Other factors such as price elasticity of demand might also need to be considered. In countries where there is a combination of “high risk” factors in terms of TT related to NP, but where consumers appear to have few

²⁰ This percentage is calculated based on the number of countries where each specific type of measure is implemented

²¹ A total of 12 respondent countries apply such measures.

²² A total of 4 respondent countries apply such measures.

²³ A total of 8 respondent countries apply such measures.

²⁴ A total of 5 respondent countries apply such measures.

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concerns about the price tariffs to ported numbers, NRAs may wish to evaluate the measure in place (e.g. in terms of end user satisfaction). This evaluation may be made through the complaints analysis. For that reason, it might be useful to also follow-up their evolution. Thus, the implementation of measures by both NRAs and operators/providers may take in consideration a variety of framing factors that should be analysed in an overall perspective.

Once the measures are implemented (e.g. telephone information service, Internet information service), NRAs may also wish to monitor their effectiveness.

Looking ahead, the introduction of 3G services, MVNOS and VoIP may also impact on the scope of NP.

2 INTRODUCTION

The IRG/ERG Work Programme of 2005 proposed the “Transparency of retail prices (with implementation of number portability) Project” and mandated the IRG End Users Working Group to develop and complete it.

The objective of this project was to prepare a report that identifies common problems and possible solutions adopted in each country in relation to transparency of prices with implementation of number portability [cf. also recital 41 of the US Directive (2002/22)].

In fact, Recital 41 of the US Directive (2002/22) establishes that “the impact of number portability is considerably strengthened when there is transparent tariff information, both for end users who port their numbers and also for end users who call those who have ported their numbers. National regulatory authorities should, where feasible, facilitate appropriate tariff transparency as part of the implementation of number portability”.

In order to accomplish this aim, different NRAs have been developing the measures they find adequate to ensure the transparency of tariffs. In some countries, this intervention has been mandatory. In others, the measures have been developed by the operators’ own initiatives, with the NRAs somehow involved in the process.

The experience already gathered in countries which have introduced these kind of measures may be relevant and useful for countries which are currently implementing Number Portability (NP) as well as for those who are reevaluating the issue of tariff transparency (TT) related to Number Portability (NP) and the efficiency of measures taken to ensure it.

It is also important to bear in mind that TT related to NP is also a relevant issue for countries which might re-evaluate previous choices taken in the scope of NP (e.g. technical solutions which need to be changed) or even choices taken in a more general context but still capable of interfering with TT in the context of NP (e.g. choices in terms of numbering attribution criterion, NRA’s intervention in the control of price differentials according to the terminating network, etc).

The need to establish/facilitate rules/measures to ensure that the aims of Recital 41 of the US Directive (2002/22) are met, are dependent on several factors, not all of which related to NP:

1. Measures to ensure TT for end users who port their numbers:

These measures/rules are mainly justified where providers levy charges on end users who wish to port their numbers. In such cases, providers must provide clear information about those prices and NRAs may intervene if necessary, to define the ways in which this objective is achieved.

2. Measures to ensure TT for end users who call ported numbers:

The definition of these kind of measures, which have not been easy to establish in terms that satisfy both end users and providers, is an important issue for most European NRAs. In each country the relevance of this issue depends on the existence of certain circumstances (or of a combination of such circumstances):

a- Differential calling charges dependent on the fixed or mobile terminating network:

In the first instance, if there are calling price differential dependent on the fixed or mobile terminating network exist and, in particular, if they are significant, the implementation of NP may mean a loss of TT for end users who call ported numbers. This is because they are no longer able to identify their destination network through the dialling code. If such identification had previously meant that end users had been able to get a close perception of the price which is applied to each call, then NP may, in fact, impact on TT.

This situation is common to both mobile services and Fixed Telephone Services (FTSs) but is not generally applied to calls to “other non-geographic numbers”²⁵. In this case, tariffs are usually defined by the terminating service provider and not by the provider who originates the call. So even before the implementation of NP, end users were often unable to identify these tariffs, except for example in calls to free phone numbers (a particular case of non-geographic numbers). This means that for calls to “other non-geographic numbers”, TT may be an issue but this occurred prior to NP, not a consequence of it. As a result, for these type of calls, TT related to NP has not been included in this report.

²⁵ Examples of non-geographic numbers include: freephone numbers, premium rate numbers, cost-share numbers, revenue-share numbers, etc.

b- Rules for numbering attribution:

Even when calling price differentials between terminating mobile or fixed networks are significant, TT problems associated with the introduction of NP still depend on the type of rules set for numbering attribution. In fact, in several countries end users strongly associate numbering blocks released by NRAs with a specific mobile or fixed operator. In those cases, before the introduction of NP, such association enabled end users to be able to get a close perception of the prices applied to each call, where price differentials between terminating networks applied (in several countries/services off-net calls are much more expensive than on-net calls). In those cases, where NP is introduced, there may be a loss of TT for end users who call ported numbers, as the dialled number no longer indicates the destination network. This possibility increases if there is a strong association between the number and a certain operator. If, on the other hand, such an association did not exist prior to the implementation of NP, then there may still be a lack of TT for end users, if price differentials dependent on the destination network are relevant. However, in this case, TT was an issue prior to the introduction of NP and not a result of it.

c- Rules applied by providers to the fixing of tariffs of calls to ported numbers:

Even when end users associate certain numbers with certain providers and simultaneously price differences depending on the terminating mobile or fixed network are relevant, the impact of NP implementation in terms of end user perception of tariffs also depends on the kind of rules applied by providers for the fixing of tariffs of calls to ported numbers as well as the calling party's knowledge of the rule which is in fact applied. Thus provided that the calling party is aware of the rule, such an impact only exists if tariffs of calls to ported numbers are defined in terms of the terminating network ("network oriented pricing"²⁶) and not in terms of the

²⁶ When calling a ported number the price is equal to the price applied to calls terminating at the new network to which the number is now allocated.

network to which the ported number was initially allocated ("number oriented pricing"²⁷).

The fixing of these pricing rules is related to several factors, but it is important to point out, the technical solutions adopted by operators for routing their calls to ported numbers. In fact, the technical solutions implemented (direct routing *versus* indirect routing) may impact on the rules applied for fixing tariffs of calls to ported numbers.

In general, when a central database with information on all ported numbers is implemented, each operator will have in its system its own "copy" of this database. Alternatively when a central database does not exist, each operator may have its own database. Whenever one of these databases is updated the owning operators communicates this to the remaining operators, so that their respective databases are also updated. As a result, in both circumstances it will be possible for each operator to implement direct routing or "near direct routing" solutions (e.g. All Call Query, Query on Release) on calls to ported numbers. This will facilitate the adoption of "network oriented pricing" for these calls, because the originating operator is able to get, by his own means, all the information needed for applying "network oriented pricing" on calls to ported numbers (although in QoR an initial enquiry is made to the donor²⁸ operator's central database copy):

- Query on Release (QoR) is not always considered as a "pure" direct routing because the originating operator first routes the call to the donor operator and this call may be sent back to the originating operator. This means that if, when checking its own database or central database "copy", the donor operator does not identify the dialled number as belonging to its network, it will send the originating operator an information "release". In this case, the call goes back to the originating operator who will then check in its own database or "mirror" central database, which is the recipient operator²⁹ of the dialled number. After this identification through this originating operator's database, the originating operator routes the call directly (in accordance with the interconnection agreement) to the recipient

²⁷ When calling a ported number the price is equal to the price applied to calls terminating at the network that was originally allocated to the number.

²⁸ Donor operator: the operator to which a certain ported number was initially allocated.

²⁹ Recipient operator: the operator to which a certain number is allocated after a portability process.

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operator, i.e. the originating operator identifies the recipient and conveys the call as normal, either directly or through transit.

- All Call Query (ACQ): When a call is originated by an operator's ACQ direct routing system, this operator begins by checking its own database (or central database "mirror") in order to identify the recipient operator of the dialled number. The originating party will directly route the call to the recipient operator once this is identified.

In indirect routing (or onward routing) solutions, the originating operator usually route the call to the operator to whom the number has been allocated as part of a block of telephone numbers. This operator, known as the donor operator in the context of NP, forwards or onward-routes the call to the serving or recipient operator where it identifies that the dialled number has been ported. In this system, defining "network oriented pricing" for calls to ported numbers is more difficult because the originating operator usually does not have the capacity to identify the network to which the ported number belongs. As a result, in principle, such identification will have to be made by the other operators involved in the indirect routing process, which would imply the need for the same providers to settle the correspondent and complex accounts in the case of "network oriented pricing". In conclusion, when indirect routing systems are implemented, originating operators have, in general, an incentive to settle "number oriented" retail tariffs for calls to ported numbers.

In summary, the need to protect end users who call ported numbers as well as end users who port their numbers depends on the conjugate existence of several circumstances, which are particular to each country. As a result, this report will not only identify the specific measures taken in each country in order to ensure TT in relation to NP, but also the framing factors, namely the ones above identified from a. to c. The provided information relates primarily to voice calls, but some information on other types of communication services (SMS, video-calling, etc.) is also included. The report also considers how NRAs monitor complaints regarding this issue, as this may help NRAs to understand whether their policy approach to TT is effective and helps them identify additional framing factors (e.g. price elasticity of demand).

Concerning calls addressed to mobile numbers, the information focused on GSM services provided by mobile networks, but there is also some information on 3G services and mobile virtual network operators (MVNOs).

3 METHODOLOGY

In order to draft the report, a Sub-group team was set up within the IRG END USERS WG with the following members:

Table 6 – Sub-group members

Function	NRAs
Chair	ANACOM (Portugal)
Drafters	ANACOM; ARCEP (France); EETT (Greece); MCA (Malta).
Commentators	BNetzA (Germany); Ofcom (UK); NITA (Denmark); AGCOM (Italy); URTiP (Poland); PTS (Sweden)

To obtain the required information on the current situation in Europe, a questionnaire on TT in the portability context was issued.

The aim of the questionnaire on NP was to gather information about the most relevant market circumstances that influence the transparency of retail prices with NP. The questionnaire also aimed to gather information about the measures which are being implemented throughout Europe to promote TT for those who port their numbers and for those who call ported numbers.

The final version of the questionnaire (**ANNEX 3**) was sent to the IRG END USERS WG, after its approval by the Group, on the 20th of April 2005.

23 NRAs provided feedback: Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, The Netherlands, Norway, Malta, Poland, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

On 18th May 2005, an additional question (**ANNEX 4**) was added, regarding to the principles of routing procedures in NP, (which relate to tariff rules of calls to ported numbers used in each country). The additional question was answered by 16 countries: Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Lithuania, The Netherlands, Norway, Portugal and Sweden.

All the documents related to the present report are available for consultation at IRGnet.

As far as scheduling of the project is concerned, the next table presents its key milestones.

Table 7 – Project Schedule

Question	Description	Note
10-11 Feb 2005	Approval of Project Requirement document by Heads	Plenary meeting
30 Aug 2005	[Deadline for documents for the CN to be sent to the IRG Secretariat]	Approx. 10 days prior to the CN meeting in Bucharest (8-9 Sep)
Sep 05	[Deadline for documents for ERG/IRG to be sent to the IRG Secretariat]	
22-23 Sep 05	Final approval by Heads + evaluation (cf. below) and termination of work	Plenary meeting

In accordance with the Project Requirement which was approved at the Plenary Meeting of 10-11 February 2005, the present report will not be submitted for consultation but it will be published.

Estonia has indicated that the Number of subscribers of MTS is confidential of Mobile Network Operators (MNOs). Therefore such information will strictly remain for internal use only, and will not be included in the published version

For this reason this version of the report does not include any confidential information from Estonia.

4 FACTS AND FIGURES

4.1 Number Portability in Europe

4.1.1 Date of Introduction of Number Portability

The purpose of this section of the report is to give a detailed overview of the implementation and take up of NP within European countries, over the period 2003 and 2004. To this end, NP has been categorised into three different types as follows:

- Mobile Number Portability (MNP);
- NP for “other non-geographic numbers”³⁰;
- NP for Fixed Telephone Service (FNP)³¹.

FNP was the first category of NP to be introduced in most countries, in accordance with the related obligations under the former telecommunications EU framework. FNP was thus introduced in the majority of countries prior to the adoption of the new regulatory framework. Table 8 illustrates the date of introduction of the various categories of NP as identified above. For those countries where NP has not been introduced yet, the fields are marked as “not applicable” (N/A). In those instances where NP was not available in 2003 but was introduced in 2004, the 2003 field is also marked as “not applicable”

³⁰ “Other Non-geographic numbers” are the non-geographic numbers other than mobile. Some examples of “other non-geographic numbers” are: freephone numbers, premium rate numbers, cost-share numbers, revenue-share numbers, etc.

³¹ Fixed Telephone Services do not comprise non-geographic numbers, in spite of many of these numbers being delivered over “fixed” networks.

Table 8 – Date of Introduction of Number Portability

Countries	Date of Introduction (YYYY / MM)		
	MNP	“Other non-geographic Numbers”	FNP
Austria	2004/10	2000/05	2000/04
Cyprus	2004/07	2004/07	2004/07
Czech Republic	N/A	2003/01	2003/01
Denmark	2001/07	2001/01	1999/10
Estonia	2005/01	2004/01	2004/01
Finland	2003/07	2000/01	1998/09
France	2003/06	2001/07	1998/01
Germany	2002/11	1998/01	1998/01
Greece	2004/03	2003/01	2003/01
Hungary	2004/05	2004/05	2004/01
Iceland	2004/10	2001/02	2000/09
Ireland	2003/07	2000/01	2000/11
Italy	2002/04	1999/12	1999/12
Lithuania	2004/01	2004/01	2004/01
Malta ³²	N/A	N/A	N/A
Norway	2001/11	1999/06	1999/06
Poland	N/A	N/A	N/A
Portugal	2002/01	2001/06	2001/06
Spain	2000/12	2001/03	2001/03
Sweden	2001/09	1999/07	1999/07
Switzerland	2000/03	2000/03	2000/03

³² MCA indicated that 31st August 2005 has been identified as the date by when ordering specifications for full number portability should be in place and which should also include agreement in relation to tariff transparency measures

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The Netherlands	1998/10	1998/10	1998/10
United Kingdom	1999/01	1997	1996

In most countries NP was introduced for fixed and “other non-geographic” simultaneously. The implementation of MNP took place at a later stage in most countries. However, Lithuania, Cyprus, Switzerland and The Netherlands introduced all three categories of NP simultaneously.

In Poland, the legal obligation on operators came into force in July 2004 in the case of MNP. For FNP and “other non-geographic numbers” the legal obligation came into force in July 2000. However, NP for mobile and fixed operators has been postponed following a decision communicated in early 2005 by the President of the Office of Telecommunications and Post Regulation (URTIP). In accordance with this decision MNP in Poland has been postponed until October 2005, whilst FNP has been postponed to January 2006.

In Malta, the legal obligation exists³³ on both mobile and fixed operators to provide for NP. To date, a partial MNP solution has been adopted in Malta, whereby a customer can switch mobile network operator and keep the last six digits of the mobile number. Discussions with MNOs are currently underway to formalise this procedure as an interim MNP solution by July 2005, in accordance with a Decision Notice³⁴ published by the Malta Communications Authority (MCA) in March 2005. Fixed and non-geographic NP is still not available in Malta. In its decision regarding NP the MCA requires both mobile and fixed operators to make full NP available by March 2006, including “other non-geographic numbers”.

In the Czech Republic, FNP, as well as NP for “other non-geographic numbers”, were implemented in 2003, however MNP has not been introduced yet. A new telecommunications law came into force on 1st May 2005, which imposes MNP as an obligation to be met by MNOs as from 1st January 2006.

In France the introduction of NP for “other non-geographic numbers” was introduced over a period of months spanning over 2002 as follows:

³³ Reg. 50 of LN412, which came in force on the 14th of September 2004, imposes the obligation on network operators to provide for number portability.

³⁴ The Decision Notice published by the MCA was entitled ‘Introducing Number Portability in Malta - A Report on Consultation and Decision’.

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- NP for freephone numbers took place in July 2001;
- NP for cost-sharing numbers³⁵ was introduced in December 2001;
- NP for revenue-sharing³⁶ numbers occurred in June 2002.

4.1.2 Quantity of ported numbers

The quantity of ported numbers with MNP is reflected in table 9 below. For those countries where MNP has not been introduced yet, the fields are marked as 'not applicable' (N/A). In those instances where MNP was not available in 2003 but was introduced in 2004, the 2003 field is also marked as 'not applicable'. In cases where the end of period figures for the years under review are not available, this is left blank. This structure applies to all other tables contained in this section of the report.

³⁵ In Cost Share numbers the cost of the call is shared between the calling customer and the company that holds the service and the revenue goes to the operators routing the call.

³⁶ In Revenue Share numbers the cost of the call is entirely assumed by the calling customer, but the income of the call is shared between the operators routing the call and the company that holds the service.

Table 9 - Quantity of ported mobile numbers

Countries	Quantity of ported Mobile numbers		% Growth
	2003	2004	2004 vs 2003
Austria	N/A	14.000	
Cyprus	N/A	925	
Czech Republic	N/A	N/A	N/A
Denmark	219.000	259.000	18%
Estonia	N/A	N/A	N/A
Finland	312.000	1.525.000	389%
France	120.000	250.700	109%
Germany	212.000	489.000	131%
Greece	N/A	16.123	
Hungary	N/A	43.997	
Iceland	N/A	3.000	
Ireland	80.000	236.000	195%
Italy	1.600.000	3.750.000	134%
Lithuania	N/A	20.000	
Malta	N/A	N/A	N/A
Norway	438.218	452.015	3%
Poland	N/A	N/A	N/A
Portugal	23.643	44.480	88%
Spain	1.201.307	4.274.905	256%
Sweden	241.805	399.351	65%
Switzerland	81.332		
The Netherlands	475.825	925.343	94%
United Kingdom	830.783	1.238.610	49%

There was a significant increase of ported mobile numbers in percentage terms during 2004 in Finland (by 389%), Spain (by 256%), Ireland (195%), Italy (by 134%), Germany (by 131%) and France (by 109%) when compared to 2003.

Third generation (3G) services are not yet available in some countries and hence there is no NP. Where 3G services are in operation (table 14), NRAs were not in a position to

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provide the quantity of ported third generation mobile numbers for the period 2003 and 2004.

Table 10 below illustrates the response obtained from different NRAs in relation to the quantity of ported “other non-geographic” numbers.

Table 10 - Quantity of other non-geographical ported numbers

Countries	Quantity of ported “other non-geographic numbers”	
	2003	2004
Austria	1.509	4.737
Cyprus	N/A	0
Czech Republic	222	497
Denmark	N/A	N/A ³⁷
Estonia	N/A	N/A
Finland	>10	>10
France	200	300 ³⁸
Germany	26.868	51.388
Greece	N/A	N/A ³⁹
Hungary	N/A	28
Iceland		
Ireland	5.508	6.046
Italy		
Lithuania	N/A	
Malta	N/A	N/A
Norway	1.215	1.748
Poland	N/A	N/A
Portugal	215	277
Spain		
Sweden	2.262	2.710
Switzerland		
The Netherlands		
United Kingdom		

³⁷ Denmark is in possession of a non-geographic numbering plan for fixed telephony and hence a global figure for ported non-geographic numbers is quoted in Table 6.

³⁸ The figures for 2003 and 2004 provided by ARCEP are an approximation.

³⁹ The quantity of ported “other non – geographical numbers” is included in the quantity of ported fixed telephone numbers. The EETT National Reference Database on Number Portability cannot provide information on the specific amount of ported “other non–geographical numbers”

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Germany registered the highest quantity of “other non-geographic” ported numbers during 2003 and 2004.

Information provided by the United Kingdom (where NP for geographic numbers was introduced in 1997) showed that about 1% of Internet traffic is to ported “other non-geographic numbers”. In 2003, total Internet traffic to “other non-geographic numbers” was 17.262 million minutes. Additional information provided also shows that about 10% non-Internet traffic in the United Kingdom is to “other” non-geographic ported numbers. In 2003, total non-Internet traffic to non-geographic numbers was 12.707 million minutes.

Table 11 below illustrates the quantity of ported fixed telephone numbers during 2003 and 2004 respectively.

Table 11 - Quantity of fixed ported telephone numbers

Countries	Quantity of ported fixed telephone numbers		% Growth 2004 vs 2003
	2003	2004	
Austria	11.019	39.576	259%
Cyprus	N/A	1.312	
Czech Republic	496.355	1.203.423	142%
Denmark	49.000	91.000	86%
Estonia	N/A	14.000	
Finland	15.000	15.000	-
France	250.000	400.000 ⁴⁰	60%
Germany			
Greece		1.156 ⁴¹	
Hungary	N/A	47.864	
Iceland			
Ireland	21.463	27.787	29%
Italy			
Lithuania	N/A	0	
Malta	N/A	N/A	N/A
Norway	105.283	199.504	89%
Poland	N/A	N/A	N/A
Portugal	118.016	158.623	34%
Spain	836.685	1.276.800	53%
Sweden	33.486	58.250	74%
Switzerland			
The Netherlands	628.702	919.773	46%
United Kingdom	1.800.000		

From an analysis of the information contained in the table above it can be noted that the highest increase was in Austria (by 259%) during 2004. A significant growth was also registered in the Czech Republic with the quantity of total ported fixed numbers being

⁴⁰ Figures related to the number of fixed ported numbers provided by ARCEP for 2003 and 2004 are an approximation.

⁴¹ The quantity of ported fixed telephone numbers (i.e. 1.156) includes the number of ported "other non – geographical numbers". Thus, EETT National Reference Database on Number Portability cannot provide information on the specific amount of ported "other non–geographical numbers".

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142% higher than that registered at the end of 2003. FNP was introduced during 2000 and 2003 in Austria and the Czech Republic respectively.

Growth in the quantity of such ported numbers during the period under review has been more contained in those countries where FNP was introduced earlier such as Norway, Sweden and Denmark (introduced in 1999) and The Netherlands (introduced in 1998).

4.2 Mobile Telephone Service

4.2.1 Number of active Mobile Network Operators

Table 12 below illustrates the number of active MNOs as at the end of 2003 and 2004 respectively for each respondent country, and the number of ported mobile numbers per year accordingly.

Table 12 – Number of Mobile Network Operators in Activity

Countries	Number of MNOs in Activity		Number of ported mobile numbers	
	2003	2004	2003	2004
Austria	5	5	N/A	14.000
Cyprus	1	2	N/A	925
Czech Republic	3	3	N/A	N/A
Denmark	4	5	219.000	259.000
Estonia	3	3	N/A	N/A
Finland	4	4	312.000	1.525.000
France	3	3	120.000	250.700
Germany	6	4	212.000	489.000
Greece	4	4	N/A	16.123
Hungary	3	3	N/A	43.997
Iceland	2	2	N/A	3.000
Ireland	3	3	80.000	236.000
Italy	4	4	1.600.000	3.750.000
Lithuania	3	3	N/A	20.000
Malta	2	2	N/A	N/A
Norway	2	3	438.218	452.015
Poland	3	3	N/A	N/A
Portugal	3	3	23.643	44.480
Spain	4	4	1.201.307	4.274.905
Sweden	4	4	241.805	399.351
Switzerland	3	5	81.332	
The Netherlands	5	5	475.825	925.343
United Kingdom	5	5	830.783	1.238.610

The majority of respondent countries have not experienced an increase in the number of MNOs, except for Switzerland which registered two additional MNOs in 2004. Norway, Denmark and Cyprus registered an additional mobile network operator in 2004.

4.2.2 Number of subscribers of Mobile Telephone Service

From Table 13, it is apparent that the highest ratios of the quantity of ported mobile numbers to the total “mobile population” in 2003 were registered in Norway (10,62%) and

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in Finland (6,50%). As at end 2004 Finland registered the highest ratio (30,50%) of ported mobile numbers, followed by Spain (10,92%).

Cyprus registered the lowest ratio in 2004, but this is could be attributed to the introduction of this category of number portability during the third quarter of the year.

Table 13 - Number of Subscribers of Mobile Telephone Service

Countries	Number of Subscribers of MTS		Ratio of ported numbers to Mobile service subscribers ⁴²	
	2003	2004	2003	2004
Austria	7.150.000	7.990.000	N/A	0,18%
Cyprus	551.752	647.645	N/A	0,14%
Czech Republic	9.500.000	10.000.000	N/A	N/A
Denmark	4.767.000	5.166.000	4,59%	5,01%
Estonia	confidential information of MNOs	confidential information of MNOs	N/A	N/A
Finland	4.800.000	5.000.000	6,50%	30,50%
France	40.388.700	43.139.700	0,30%	0,58%
Germany	64.800.000	71.300.000	0,33%	0,69%
Greece ⁴³	8.936.000	9.306.000	N/A	0,17%
Hungary	7.944.586	8.727.188	N/A	0,50%
Iceland	256.000	270.000	N/A	1,11%
Ireland	3.400.000	3.780.000	2,35%	6,24%
Italy	56.700.000	62.700.000	2,82%	5,98%
Lithuania	2.170.000	3.400.000	N/A	0,59%
Malta	289.902	308.401	N/A	N/A
Norway	4.126.000		10,62%	
Poland	17.401.222	23.096.065	N/A	N/A
Portugal	9.350.600	9.960.000	0,25%	0,45%
Spain	37.200.000	39.160.000	3,23%	10,92%
Sweden	8.651.000	9.326.000	2,80%	4,28%
Switzerland	6.188.793		1,31%	
The Netherlands				
United Kingdom	53.900.000	58.600.000	1,54%	2,11%

⁴² The quantity of ported numbers should ideally be compared to the quantity of granted mobile numbers in use. There may be situation where subscribers may have more than one number.

⁴³ Subscriber Figures provided by Greece reflect active subscribers as at the end of 2003 and 2004

4.2.3 Third Generation network – Date of introduction and number of subscribers

The following table presents the date of introduction and the number of subscribers of 3G networks, where available.

Table 14 - Date of introduction and subscriber population of 3G networks

Countries	Date of Introduction (YYYY / MM)	Number of Subscribers of 3G Networks	
		2003	2004
Austria	2003/04		
Cyprus	N/A	N/A	N/A
Czech Republic	2007/01	N/A	N/A
Denmark	2003/10		124.674
Estonia	N/A	N/A	N/A
Finland	2004/10	N/A	
France	2004/12	N/A	
Germany	2004/02	N/A	
Greece	2004/01	N/A	18.600
Hungary	2005/12	N/A	N/A
Iceland	N/A	N/A	N/A
Ireland	2004/02	N/A	
Italy	2002/04	400.000	2.800.000
Lithuania	N/A	N/A	N/A
Malta	N/A	N/A	N/A
Norway	2004/12	N/A	
Poland	2004/09	N/A	
Portugal	2004/04	N/A	
Spain	2004/03	N/A	150.000
Sweden	2003/05	18.000	322.000
Switzerland	2004/11	N/A	
The Netherlands	2004	N/A	
United Kingdom	2003/03	330.000	3.000.000

The take up of 3G services is most prominent in Italy and the UK during the review period.

In a substantial number of countries, networks offering third generation services were established during 2004, whilst in Hungary and the Czech Republic the introduction of 3G is scheduled to take place in December 2005 and January 2007 respectively.

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In the Czech Republic two authorisations⁴⁴ for providing 3G services were granted in December 2001 whilst a third was issued during 2005. All three undertakings will commence operations in the year 2007.

In Malta, work in relation to the establishment and development of 3G has been underway since 2004. On 1st April 2005 Malta also announced details of the three undertakings, which submitted an application for a grant of rights of use of spectrum allocated for 3G. Grant of rights of use of frequencies with respect to 3G is expected to take place in the coming months.

No further analysis can be conducted with relevance to NP in the absence of data as to the quantity of ported 3G mobile numbers during 2003 and 2004.

4.2.4 Date of Commercial launch of the MVNO⁴⁵ who first began to operate and number of MVNOs operating.

Table 15 below illustrates the date of commercial launch of the first MVNOs within each respondent country, together with the number of MVNOs operating as at end 2003 and 2004 respectively.

⁴⁴ Under the old framework, authorisations could include individual licences and/or general authorisations.

⁴⁵ MVNO – Mobile Virtual Network Operator

Table 15 - Date of Commercial Launch of first MVNO & Number of MVNOs in operations

Countries	Date of Commercial Launch (YYYY/MM)	Number of MVNOs in activity	
		2003	2004
Austria	2004/11	N/A	1
Cyprus	N/A	N/A	N/A
Czech Republic	N/A	N/A	N/A
Denmark	1997	10	11
Estonia	2004/11	N/A	2 ⁴⁶
Finland ⁴⁷	1999/06	3	10
France	2002/06	1	3
Germany	N/A	N/A	N/A
Greece	N/A	N/A	N/A
Hungary	N/A	N/A	N/A
Iceland	N/A	N/A	N/A
Ireland	N/A	N/A	N/A
Italy	N/A	N/A	N/A
Lithuania	2003/06	3	4
Malta	N/A	N/A	N/A
Norway	2004/02	N/A	1
Poland	N/A	N/A	N/A
Portugal	N/A	N/A	N/A
Spain	N/A	N/A	N/A
Sweden	1999/09	1	1
Switzerland	2000	3	2
The Netherlands	1998		3 ⁴⁸
United Kingdom	1999/11		9 ⁴⁹

In those countries where the launch of MVNOs took place prior to the year 2000, there has been a significant increase in the number of such operators. The decline in the number of

⁴⁶ In Estonia, there were 4 active MVNOs in September 2005.

⁴⁷ The information provided by Finland also includes mobile service operators, although the latter are not regarded as MVNOs in Finland. At the moment Finland only has one MVNO but there are several mobile service operators that have their own retail tariffs and hence the 'network' does not necessarily indicate the applicable tariff.

⁴⁸ In relation to the Netherlands the figure is related to September 2005

⁴⁹ In relation to the United Kingdom the figure is related to August 2005

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MVNOs in Switzerland during 2004 when compared to 2003 is due to one of the operators' decision to become a GSM-operator.

A substantial number of respondents have not yet experienced the introduction of MVNOs within their territories. In Poland, more than ten MVNO authorisations have been issued but none of the operators has yet started commercial activity.

4.3 Fixed Telephone Service

4.3.1 Number of main telephone accesses

The indicator "Main telephone accesses" refers to the total of simultaneous communications allowed by each telephone access (analogue or digital) installed. A single access may support several communications simultaneously:

- For each analogue telephone access it is not possible to establish more than a single communication at the same time.
- Although, in the case of basic ISDN accesses the number of communications allowed simultaneously is two and for primary ISDN accesses this number is raised to 30.

This indicator therefore corresponds to the sum of the indicators "number of analogue accesses" and "number of equivalent digital accesses"⁵⁰, including accesses installed at customer request, public payphones and the provider's own complement⁵¹.

Table 16 below illustrates the number of main telephone accesses in countries as at 2003 and 2004.

In Czech Republic the ratio of the number of fixed ported numbers to the number of telephone main accesses was the highest for both 2003 and 2004.

⁵⁰ The number of equivalent digital accesses corresponds to the sum of the maximum number of simultaneous communications that may be supported in each installed digital access. In ISDN accesses the number of equivalent accesses is two for each basic ISDN access and thirty for each primary ISDN access.

⁵¹ The own complement of accesses is understood to be the complement of access for use of the provider itself. Accesses pertaining to companies, with which the provider has a dominant or group relationship, are not included in its own complement and are accounted for as 'accesses installed at customer request'.

Table 16- Number telephone main accesses

Countries	Number of telephone main accesses		Ratio of ported fixed numbers to Main Accesses ⁵²	
	2003	2004	2003	2004
Austria	3.844.814	3.682.581	0,29%	1,07%
Cyprus	500.552	502.102	N/A	0,26%
Czech Republic	3.626.294	3.425.187	13,69%	35,13%
Denmark				
Estonia	461.000	444.000	N/A	3,15%
Finland	2.400.000	2.300.000	0,63%	0,65%
France	33.807.233	33.655.323	0,74%	1,19%
Germany	54.400.000	54.600.000		
Greece	6.290.000	6.293.000		0,02%
Hungary	3.602.659	3.564.439	N/A	1,34%
Iceland	192.552	190.478		
Ireland	1.960.000	2.020.000	1,10%	1,38%
Italy				
Lithuania	696.000	717.000	N/A	-
Malta	209.981	208.080	N/A	N/A
Norway	3.271.000		3,22%	
Poland	12.292.450 ⁵³	12.626.636	N/A	N/A
Portugal	4.280.579	4.237.730	2,76%	3.74%
Spain	17.759.164	19.097.723	4,71%	6,69%
Sweden	5.742.000	5.688.000	0,58%	1.02%
Switzerland	5.323.507			
The Netherlands				
United Kingdom	34.600.000	33.700.000	5,20%	

⁵² The quantity of ported numbers should ideally be compared to the quantity of granted fixed numbers in use.

⁵³ The number of telephone accesses as at end 2003 is not inclusive of payphones, whilst the same figure for end 2004 includes estimation for payphones.

Transparency of retail prices (with implementation of Number Portability)

5 TARIFF TRANSPARENCY IN THE CONTEXT OF NUMBER PORTABILITY

As mentioned in chapter “1. Introduction”, Recital 41 of US Directive (2002/22) establishes that:

- NRAs should, where feasible, facilitate appropriate TT as part of the implementation of NP;
- The impact of NP is considerably strengthened when there is transparent tariff information, both for:
 - end users who port their numbers;
 - end users who call those who have ported their numbers.

In this context, NRAs were asked to provide information on different measures implemented in their countries in order to promote TT from the end user perspective. This information received from NRAs is summarised below.

5.1 Tariff transparency for end users who port their numbers

Number 1 of Article 21 of the US Directive establishes that 'Member States shall ensure that transparent and up-to-date information on applicable prices and tariffs and on standard terms and conditions, in respect of access to and use of publicly available telephone services is available to end users and consumers'. In addition to this general rule in relation to TT, some countries have implemented specific measures/rules in relation to TT for those who port their numbers.

In fact, TT for end users who port their numbers is related to the existence of adequate information provided to end users on the following aspects:

- Rules defining if operators (donor operators/recipient operators) may charge end users for the porting process;
- Values of retail prices eventually practiced by operators (donor operator / receptor operator) in a portability process.

Transparency of retail prices (with implementation of Number Portability)

With this aim, some measures/rules might be implemented by NRAs themselves or by the operators but as a result of NRAs/legal specific imposition, in order to ensure that such information is in fact provided by adequate means to end users.

Thus NRAs were requested to provide information on the measures already taken to meet this objective or measures which are being considered for future implementation.

5.1.1 Measures already implemented to promote tariff transparency for end users who port their numbers

The following table provides information on the countries that have implemented measures to promote TT for end users who port their numbers.

Table 17 - Measures to promote tariff transparency for those who port their numbers

Question	Yes	No	NP not implemented
Is there any measure implemented by NRA to guarantee that end users who port their numbers are fully aware of the tariffs applied to the porting process?	5	16	2
Countries	Austria, Greece, Italy, Lithuania, Portugal	Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, The Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom ⁵⁴	Malta, Poland

NRAs which answered “Yes” provided a brief description on how end users could be informed about the tariffs applied to the porting process.

⁵⁴ In the UK there is no specific measure in relation to TT for those who port their number, however General condition 18 requires providers to provide number portability on reasonable terms, including charges, on request. General Condition 10 requires communications providers to ensure that clear and up to dates information is available on its applicable prices and tariffs.

Transparency of retail prices (with implementation of Number Portability)

RTR, from Austria, stated that this type of information is available on the RTR website. The Austrian system allows the customer to port at any time and not only at the end of his contractual binding time. The porting customer must be given a written information fact sheet (NÜV-Info) with all the relevant information (binding time, costs, loss of points in a customer binding program, monthly fees to be paid, costs for Sim-unlock etc.) about his "old" contract and the obligations which stem from it. The customer has to provide written confirmation of receipt of the fact sheet.

In Greece, the recipient operator is allowed to charge end users for the porting process. Under no circumstances should the above cost discourage the end user from proceeding with NP. However, the donor operator is not allowed to directly charge a customer who requests to port a number. In addition, EETT's regulations⁵⁵ on NP and TT oblige all operators to properly inform their customers on NP costs borne by subscribers.

In Italy, the recipient operator is allowed to charge end-users for the porting process. Under no circumstances should the above cost discourage the end user from proceeding with NP. In practice they are not charging their new clients (who ported their number) for the porting process. The donor operator is not allowed to directly charge a customer who requests to port a number. The operators have to update the "service chart" in order to inform the clients about the handling of "residual credit" in case of mobile number portability.

As far as Lithuania is concerned, public telephone network operators and providers of public telephone services must put a system in place whereby there is public access to information about NP conditions, including the fees, terms & conditions and other information, which may impact on the subscriber's decision to switch provider or the place and method of the service provision whilst retaining their subscriber number. Public telephone network operators and providers of public telephone services must publish information on their Internet website (if available). If they do not have a website, they must ensure that this information is publicly and officially accessible to any person.

Portugal reported that the main principles related to TT in the context of NP are set out in Regulation on NP and in legislation, Paragraph 3 of article 54 (Number Portability) of Law 5/2004 stipulates that "it is incumbent upon the NRA to ensure that undertakings provide subscribers with appropriate and transparent information of prices of portability processes, as well as of calls to ported numbers".

⁵⁵ EETT Regulations: Decision 277/64/2003, Government Gazette Issue 514/B/02.05.2003, article 6 and Decision 254/71/2002, Government Gazette Issue 791/B/26.06.2002, article 11.

Transparency of retail prices (with implementation of Number Portability)

The Regulations on NP define that former provider may not levy any charge to consumers.

Besides, ANACOM's website includes a set of FAQs on NP, which advise that:

- consumers will not have to make any payment to the former provider;
- according to NP Regulation it is a commercial decision for the new provider whether or not to charge for this service;
- this charge should not act as a disincentive for the use of NP.

In August 2003, ANACOM also published a pamphlet informing end users about NP. In this pamphlet customers were advised that on porting their number from their old operator to a new service provider, no charges are payable to the former, although the new operator may charge activation.

In Portugal, some recipients FTSPs are charging their new clients for porting the number. This practice has led to some complaints to ANACOM regarding the prices charged to end users for the porting process. End users have complained about these prices and want to know whether or not they are legal.

Most of NRAs that have not implemented any specific measures to guarantee that end users who port their numbers are fully aware of the tariffs applied to the porting process gave some reasons for that policy:

- With regard to Article 21 of the Universal Service Directive, UK providers are required to publish information regarding prices and tariffs⁵⁶. Ofcom has not intervened with regard to transparency of porting charges since few providers (fixed or mobile) levy any retail charges for porting telephone numbers. In the UK, a small number of mobile service providers charge their subscribers an administrative fee of about £20 per number (approx. 28,6 Euros) to port but most operators do not impose any charge.
- Cyprus, Finland, Ireland and Sweden mentioned that in spite of the fact that recipient network operators are allowed to charge end users for the porting process, in practice they are not charging their new clients (who ported their old number) for the porting process.

⁵⁶ General Condition 10 of the General Conditions of Entitlement concerning "Transparency and Publication of Information".

Transparency of retail prices (with implementation of Number Portability)

- Iceland referred that there are no measures to promote tariff transparency for end users who port their numbers since the porting process is free of charge for end users. Iceland also informed that operators bear the relevant costs
- Norway indicated that the recipient network operators are allowed to charge end users for the porting process, but operators are taking their own initiative to promote TT for end users who port their numbers.
- In Estonia, Switzerland and Germany both the recipient and the donor operators are allowed to charge end users for the porting process, but operators are taking at their own initiative the necessary measures to promote TT for end users who port their numbers.
- France indicated there were two main reasons for not implementing such measures. On the one hand, the recipient network operators are allowed to charge end users for the porting process, but in practice they are not charging their new clients (who ported their old number) for the porting process. On the other hand, they are taking their own initiative to promote TT for end users who port their numbers.
- NITA, from Denmark, does not administer the area of the tariffs applied to the porting process, which is self-regulated by operators. The price that operators have been charging is a once only price.
- In the Czech Republic the rules for MTS are the subject of negotiation between MNOs inside their association. As in Denmark, this is an issue where self-regulation will play a significant role.
- In The Netherlands, operators are obliged to abide by a maximum tariff limit for number porting set by national legislation. However, this is not always being charged.

5.1.2 Future measures

Cyprus informed the group that some measures to promote TT for those who port their numbers are being prepared. Thus, OCECPR will launch an awareness campaign to inform consumers of their rights regarding NP.

Sweden mentioned that actions were being planned regarding the promotion of TT in the near future, but no final decisions had yet been taken.

All other countries stated that no measures of that type were being considered.

Transparency of retail prices (with implementation of Number Portability)

France provided an explanation for not considering such measures. In fact, ARCEP considers that TT in the context of NP is more important for end users who make calls that terminate to ported numbers than for end users who just port their numbers.

5.2 Tariff transparency for end users who call to ported numbers

The approach to this issue varies across countries for a number of reasons e.g. the association established by end-users between dialling codes and the respective providers/operators, the tariffing rules applied to calls to ported numbers or calling price differentials depending on the terminating network.

These aspects are outlined as follows:

5.2.1 Framing Factors

5.2.1.1 Association established by end-users between dialling codes and the respective providers / operators

In some countries, prior to the introduction of NP end users strongly associated a given mobile or fixed number with the operator to which the same number was allocated. The possibility of identifying such an operator was an important element in terms of TT, in particular when differentials between prices of in-net and off-net calls were significant. In fact, in such circumstances knowing the network to which the dialled number belonged allowed end users to have an approximate perception of the price to pay for each call.

With NP, when dialling a ported number, end users may be misled into thinking they are still calling a certain network to which a certain tariff applies. Thus, a high association between the dialling codes/numbers and the respective operators is in principle a relevant agent for determining the necessity of defining measures/rules to facilitate TT for end users who call ported numbers.

The information received from the NRAs is summarised below and shows the association established in different countries by end users between dialling codes and the respective providers / operators for both FTS and MTS.

Table 18 - Association established by end-users between dialling codes and the respective providers / operators

	FTS	MTS
End users do not associate dialling codes with any providers / operators	14 Countries (Austria, Cyprus, Czech Republic, Denmark, Estonia, Germany, Hungary, Iceland, Ireland, Italy, Norway, Sweden, Switzerland, United Kingdom)	3 countries (Denmark, Norway, United Kingdom)
Few / some end users associate dialling codes providers / operators	5 countries (Finland, France, Greece, The Netherlands, Portugal)	8 countries (Estonia, Finland, France, Greece, Germany, The Netherlands, Sweden, Switzerland,)
There is a strong and general association between dialling codes and providers / operators	3 countries (Lithuania, Malta, Spain)	11 countries (Austria, Cyprus, Czech Republic, Hungary, Iceland, Ireland, Italy, Lithuania, Malta, Portugal, Spain)
No answer	1 country (Poland)	1 country (Poland)

France mentioned that the association between dialling codes and the providers/operators who own the number is published on the ARCEP website (<http://www.art-telecom.fr/interactive/numeros/corps.php?bloc=>). Although it is consumer friendly, but very few consumers appear to use or know about this service.

In The Netherlands there is a strong association between dialling code and tariffs for premium rate numbers, not geographical or mobile ones (although consumers know that calls to mobile numbers are considerably more expensive).

Spain stated that for mobile numbers everyone has some idea of the operator according to the number while for fixed numbers some people can easily identify the operator.

Ireland referred that the association between mobile dialling codes and operators is being continually diluted due to the introduction and continued uptake of mobile number portability.

5.2.1.2 Tariffs

This point will be divided in two main aspects related to tariffs applied to calls to ported numbers:

Transparency of retail prices (with implementation of Number Portability)

- A) Tariffing rules applied to calls to ported numbers;
- B) Differential calling charges dependent on the fixed or mobile terminating network.

A) Tariffing rules applied to calls to ported numbers

The aim of this part of the report is to understand the tariffing rules applied to calls to mobile (“other non-geographic” ported numbers are not included) and to fixed ported numbers, for both:

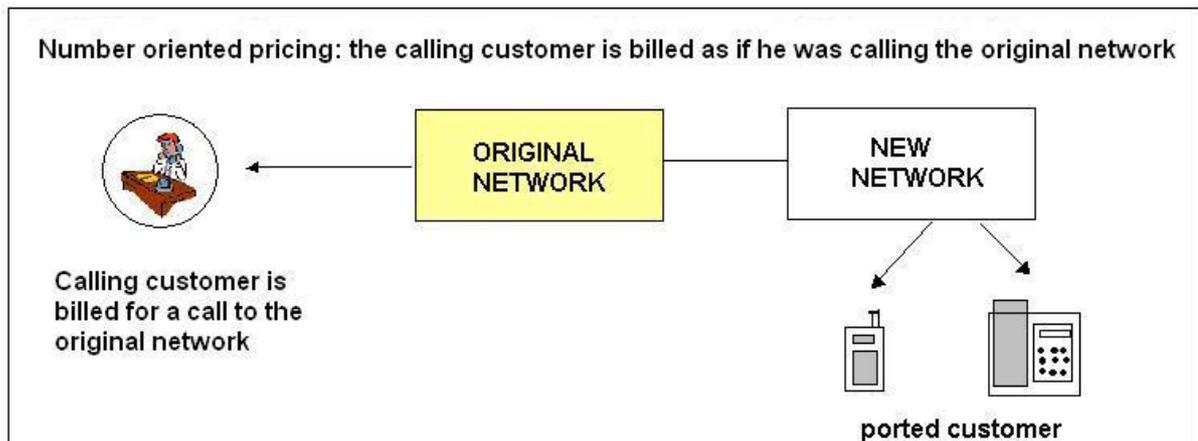
1. Voice calls;
2. Other types of communications (e.g. SMS, video-calling).

This is another relevant agent for determining which kind of measures/rules might be considered to promote TT for end users who call to ported numbers following the implementation of NP.

The introduction of NP implies that some numbers, initially allocated (commercial meaning) and attributed (technical numbering meaning) to an operator A (donor operator), can become allocated or transferred to an operator B (recipient operator). In this case, a call to a ported number has to be routed to the new allocated network, and the technical solution used in order to route the calls can have consequences on the price of these calls.

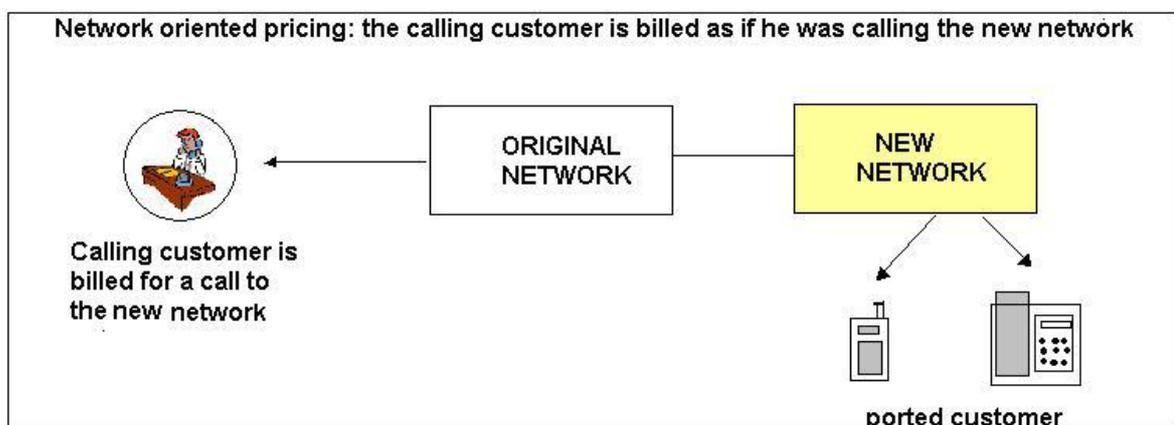
When the solutions are “number oriented pricing”, the price does not change, because the customer calling a ported number is billed as if it had not been ported. In fact, if operators continue to apply the same tariffs charged before the number was ported for calls to ported numbers (“number oriented pricing”), end users will never pay more for that call than prior to porting. However, it may somehow be invoked that the calling party would still be interested in previously knowing if the communication may be less expensive, so that a conversation can be, for example, maintained for a longer period of time. In such cases end users who call ported numbers are not misled into thinking that the calling price is lower than it actually is, and from this point of view, they are not penalised in terms of the price to pay. End users may also wish to know whether calls are actually cheaper than indicated by the dialling code. In this sense, measures to promote TT might be useful.

Chart 1- "Number Oriented Pricing"



When the solutions are "network oriented pricing", the price may change when a number is ported, because the customer is billed on the basis of the calls to the recipient operator (operator to which the number becomes allocated after being ported).

Chart 2- "Network oriented pricing"



Transparency of retail prices (with implementation of Number Portability)

Alternatively, when the prices of calls to ported numbers vary according to the network they are now allocated to (“network oriented pricing”), the customer risks receiving a telephone bill with an amount to pay higher than he had predicted. Thus, the need for measures to promote TT is higher in this case.

In this case, TT may become the main concern and can be addressed in two stages:

- 1) rules for TT (“network oriented pricing” Vs “number oriented pricing”) and the degree of knowledge of these rules by the customers,
- 2) TT as knowledge of the value of the prices applied to calls to ported numbers.

In the scope of NP, countries with “number oriented solutions” are in principle only concerned with the first step, and “network oriented countries” have concerns about the two steps.

A.1) Voice calls

For voice calls the questionnaire requested NRAs to provide the following specific information:

- Rules applied to calls to mobile networks (calls which terminate on mobile networks, independent of whether they originate from a fixed or mobile network);
- Rules applied to calls to fixed networks (calls which terminate on fixed networks, independent of whether they originate in a fixed or mobile network).

As far as tariffing rules are concerned, it was considered necessary to aggregate them in five main solutions:

- Solution 1 - The price to a ported number must be “number oriented”, that is to say that when calling a ported number, the price is equal to that applied to calls terminating on the network that was originally allocated to the number (the donor operator’s network).
- Solution 2 - The price must be “network oriented”, that is to say that when calling a ported number, the price is equal to that applied to calls terminating on the new network to which the number is now allocated (the recipient operator’s network).
- Solution 3 - Operators/Providers are free to decide about the tariffing rule, but all of them settled for “number oriented pricing”.

Transparency of retail prices (with implementation of Number Portability)

- Solution 4 - Operators/Providers are free to decide about the tariffing rule, but all of them settled for “network oriented” pricing.
- Solution 5 - There is no common practice among Operators / providers.

Taking into consideration these solutions, it is possible to conclude that tariffing rules can be divided into 3 groups:

- “Number oriented pricing” (solutions 1 and 3);
- “Network oriented pricing” (solutions 2 and 4);
- No common practices among operators/providers

The difference between solutions 1 and 3, and between solutions 2 and 4 exists whereby the tariffing rule is applied by legal or regulatory imposition or by the operator's decision.

In this scope any decision taken by NRAs is also considered as a regulatory or legal obligation (solutions 1 or 2). Alternatively any practice assumed by the operator's own decision, even with some involvement from the NRA, will be defined as solutions 3 or 4.

Table 19 - Comparison of tariffing rules for calls addressed to ported mobile numbers and for calls to ported fixed numbers

Common solutions for both calls addressed to mobile ported numbers and fixed ported numbers	Different solutions for both calls addressed to mobile ported numbers and fixed ported numbers	Other Cases
13 countries (Finland, Hungary, Lithuania, Sweden, The Netherlands, Iceland, Portugal, Denmark, Norway, Switzerland, Estonia, France, Greece)	3 countries (Italy, Ireland and Austria)	4 countries (Cyprus, Germany ⁵⁷ , Spain, United Kingdom ⁵⁸)

On a first point of the analysis, we can see that thirteen countries out of nineteen⁵⁹ present common solutions for both calls addressed to ported mobile numbers and fixed numbers.

⁵⁷ In Germany the tariffing rule for mobile calls addressed to mobile ported numbers is the same rule used in calls addressed to fixed ported numbers. However, fixed to mobile calls do not have any common practice.

⁵⁸ In UK the tariffing rule for fixed calls addressed to mobile ported numbers is the same rule used in calls addressed fixed ported numbers. However, in mobile to mobile calls there is a network oriented solution.

Transparency of retail prices (with implementation of Number Portability)

Three countries have different solutions depending on the call being addressed to ported mobile or fixed numbers.

Table 20 shows the solutions adopted in each respondent country.

Table 20 - Implemented solution in relation to tariffing rules

	"Number oriented pricing"		"Network oriented pricing"		No common practices
	Solution 1	Solution 3	Solution 2	Solution 4	Solution 5
Common solutions for both calls addressed to ported mobile and fixed numbers	France		Finland, Hungary, Lithuania, Sweden, The Netherlands, Iceland,	Portugal, Denmark, Norway, Switzerland, Estonia, Greece	Cyprus, Spain
Specific solution for calls addressed to ported mobile numbers		United Kingdom (fixed to ported mobile)	Italy	Austria, Ireland, United Kingdom (mobile to ported mobile), Germany (mobile to ported mobile)	Germany (fixed to ported mobile)
Specific solution for calls addressed to ported fixed numbers	Italy, Czech Republic ⁶⁰	Austria, United Kingdom		Germany	Ireland

The main tendency is the "network oriented pricing" solution, whether it is imposed or a result of self-regulation of the market. In fact, most countries stated that the price of a call to a ported number is settled according to the operator's network to which the number is now allocated (recipient's network).

The following table categorises the countries according to the prevalent tariffing rule in the context of calls addressed to ported mobile numbers.

⁵⁹ Only 19 of the analyzed countries have implemented both MNP and FTS. Out of this analysis are Malta, Poland and Czech Republic.

⁶⁰ MNP was not implemented yet at Czech Republic

Table 21 - Tariffing rules in calls addressed to ported mobile numbers

Calls addressed to mobile ported numbers		
“Network oriented pricing”	“Number oriented pricing”	No common practice
15 countries + UK (partial) + Germany (partial)	1 + UK (partial)	2 + Germany (partial)

Table 22 has a similar objective, but is related to FTS:

Table 22 - Tariffing rules in calls addressed to fixed ported numbers

Calls addressed to fixed ported numbers		
“Network oriented pricing”	“Number oriented pricing”	No common practice
13 countries	5 countries	3 countries

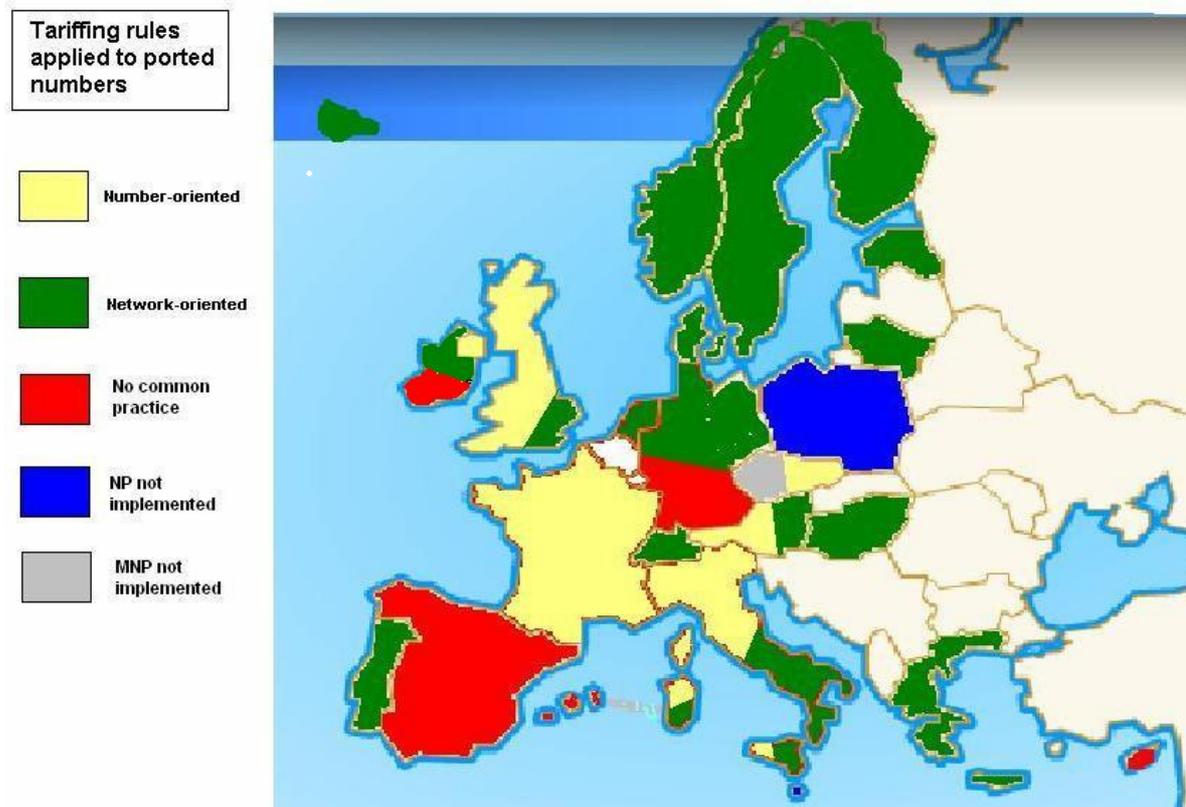
Thus, we may infer that:

- 65% of the contributors have the same system (number oriented or network oriented), for calls addressed to both ported mobile numbers and to ported fixed numbers;
- All providers adopted “Network oriented pricing” on calls addressed to mobile ported numbers applies in 85% of the respondent countries⁽⁶¹⁾;
- All providers adopted “Network oriented pricing” on calls to fixed ported numbers applies in 62% of the respondent countries.

The map below presents a geographical representation of the tariffing rules applied in each country.

⁶¹ UK and Germany are partially network oriented

Chart 3 - Tariffing rules applied in the respondent countries



Technical Note:

The fixing of these pricing rules (“network oriented pricing” versus “number oriented pricing”) is related to several factors, but it is important to point out, among these, the technical solutions adopted by operators for routing their calls to ported numbers. In fact, the technical solutions implemented (direct routing versus indirect routing) may influence the tariffs of calls to ported numbers.

Thus, NRAs were asked⁶² to provide information on technical routing solutions adopted. The table below summarises such information provided by 16 NRAs and it relates to with the elements gathered concerning the respective tariffing rules applied to calls ported numbers.

Tariffing rules for voice calls to ported numbers	Direct Routing (including Query on Release)	Indirect routing
Number oriented		France Italy (FIIP) UK
Network oriented	Austria (mandatory for MIIPs, Optional for FTSPs) Czech Republic Denmark Estonia	Austria (Optional for FTSPs) Finland (Fixed IIP – will be direct on 01.04.06) Netherlands (partial)
	Finland (MIIP – complete on 01.10.05) Greece (*) Italy (MIIP) Hungary Lithuania Netherlands (partial) Norway Portugal Sweden	
No common practices	Cyprus	

(*) Greece indicated that OTE (incumbent - former monopoly) and other fixed telephony providers utilise Query on Release, while all mobile providers utilise All Calls Query.

⁶² In the 18th May 2005 an extra question was added to the questionnaire (**ANNEX 3**).

Transparency of retail prices (with implementation of Number Portability)

A.2) Tariffing rules applied to other communications (eg. SMS, video calling) addressed to ported numbers

Some of the respondents described how the price of other types of communications (e.g. SMS, video calling) to ported mobile numbers is defined:

- Portugal⁶³, UK, Denmark, Finland⁶⁴, Greece, Lithuania, Ireland, Estonia and France mentioned tariffing rules applied to voice calls are the same as those applied to other communications (e.g. SMS, video-calling).
- Germany stated that the operators/providers are free to setup prices for these communications.
- Switzerland indicated that no specific definition for this type of communications is established.
- In Austria, the price is defined by the terminating network operator.

B) Calling price differentials dependent on the mobile or fixed terminating network

Where calling price differentials do not exist, the introduction of NP does not affect TT for end users who call ported numbers. In this case, when a ported number is dialled, the terminating network is not the same as it was before portability, but the price of the call doesn't change.

This part of the analysis intends to identify whether significant calling price differentials depending on the terminating network are present. A total of 15 answers were received. Each of the following types of voice calls was analysed:

- Mobile to mobile national calls;
- Fixed to mobile national calls;
- Fixed to fixed national calls;
- Mobile to fixed national calls.

⁶³ ANACOM only has information in relation to one of the MNOs.

⁶⁴ This information is referred to SMS communications only.

Transparency of retail prices (with implementation of Number Portability)

Due to the increasing relevance of other types of calls (e.g. SMS, video-calling) it may be useful to complement this report in future with information about price differences for these services.

B.1) Mobile to Mobile voice calls

In relation to Mobile to Mobile calls, the identification of the highest price difference between on-net calls and off-net calls in each country was considered in relation to the following ratio:

$$\text{Price difference between on-net calls and off-net calls Ratio}^{65} = [(\text{price of national off-net calls} - \text{price of national on-net calls}) / \text{price of national on-net calls}] * 100.$$

In this case, the formula is restricted to an “on-net” and “off-net” comparison, because in principle the price differentials depending on the terminating network in these cases are the highest.

Table 23 shows the highest price difference between on-net and off-net calls in each country.

Table 23- The highest price difference between on-net and off-net calls (mobile to mobile)

Country	Highest price difference between on-net calls and off-net calls– Mobile to Mobile calls
Portugal	1635%
Ireland	900%
Finland	500%
Switzerland	216%
Germany	200%
Lithuania	150%
Iceland	100%
Italy	69%
Spain	60,25%
Norway	30%
Estonia	25%

Austria that there differences to the mobile but those are not

mentioned are according terminating network, differences easily

⁶⁵ Example: Mobile operator XPTO has the following price plan relative to calls to mobile networks:
 Price / minute to national on-net calls = 0,50 €
 Price / minute to national off –net calls = 1 €
 Price difference = [(1-0,5)/0,5]*100= 100%

Transparency of retail prices (with implementation of Number Portability)

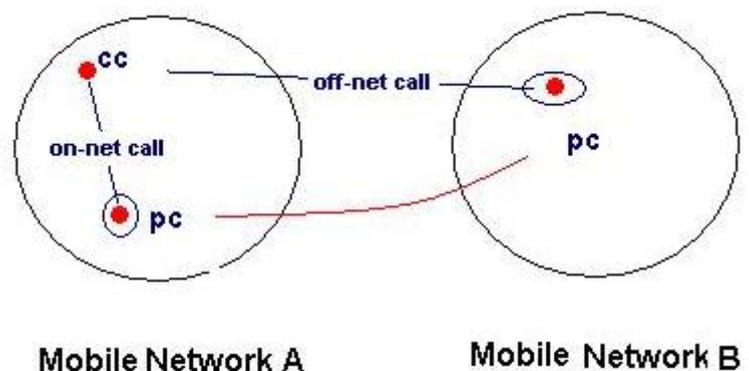
accountable. In fact, in some tariffs models offered by MNOs a limited number of minutes of on-net calls are free of charge. In France and Sweden there are also differences, but they are not quantified.

In relation to mobile to mobile calls, United Kingdom, Cyprus, Denmark, The Netherlands and Greece mentioned that there are no considerable price differences between on-net and off-net calls.

There is considerable variance between price differentials in the countries included in the table above. In Estonia it is 25%, whereas in Portugal it may reach 1635%⁶⁶.

These price differences provide some indication of the importance of providing clear information on tariffs to a mobile customer.

Chart 4 - Mobile to Mobile



cc is the "calling customer" and pc is the "ported customer": the call from cc to pc becomes, in Network-oriented solutions, an off-net call.

B.2) Fixed to Mobile voice calls

In relation to Fixed to Mobile calls, the highest price difference of fixed calls in relation to the mobile network of destination was compared using the ratio:

⁶⁶ Notice that this is not an average value but the highest price difference detected. In extreme, it might happen that values indicated in table 23, concern a single plan of tariffs, having remaining of tariffs null price differences depending on the terminating network.

Transparency of retail prices (with implementation of Number Portability)

Price difference of fixed calls according to the mobile network of destination⁶⁷ = [(Highest price charged in fixed calls to a mobile network – Lowest price charged in fixed calls to a mobile network) / Lowest price charged in fixed calls to a mobile network]*100.

This is illustrated in the following table:

Table 24 - The highest price difference of fixed calls according to the mobile network of destination (Fixed to Mobile National Calls).

Country	Highest price difference depending on mobile terminating network– Fixed to Mobile calls
Lithuania	400%
United Kingdom	71%
Portugal	46%
Denmark	45%
Iceland	43%
Switzerland	40%
Italy	40%
Norway	35%
Ireland	32%
Austria	30%
Greece	28%
Estonia	25%
Germany	20%
The Netherlands	10%

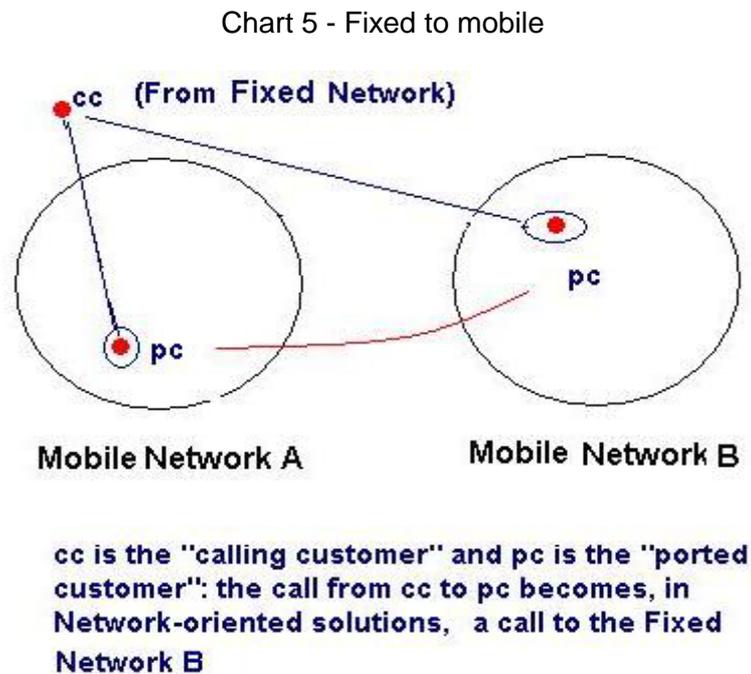
In Sweden there are considerable price differences but its amount is not known.

In Finland, Spain and Cyprus there are no differences in the price of fixed calls according to the mobile network of destination.

⁶⁷ Example: Fixed operator ABC has the following price plan:
Price / minute of a national call to mobile operator XPTO = 0,30 €
Price / minute of a national call to mobile operator STUV = 0,50 €
Price / minute of a national call to mobile operator WXYZ = 0,60 €
Major Price difference = [(0,6-0,3)/0,3]*100= 100%

Transparency of retail prices (with implementation of Number Portability)

The differences appear to be lower than for mobile to mobile calls (table 23), but affect more countries.



B.3) Fixed to Fixed voice calls

As far as Fixed to Fixed calls are concerned, the highest price difference between on-net calls and off-net calls in each country was identified using the following ratio:

$$\text{Price difference between on-net calls and off-net calls}^{68} = \left[\frac{\text{price of national off-net calls} - \text{price of national on-net calls}}{\text{price of national on-net calls}} \right] * 100.$$

The following table shows the highest price difference between on-net calls and off-net calls (fixed to fixed) in each country.

⁶⁸ **Example:** Fixed operator ABC has the following price plan relative to calls to fixed networks:
Price / minute to national on-net calls = 0,2 €
Price / minute to national off-net calls = 0,3 €
Price difference = $[(0,3-0,2)/0,2]*100= 50\%$

Table 25 - The highest price difference between on-net calls and off-net calls (fixed to fixed)

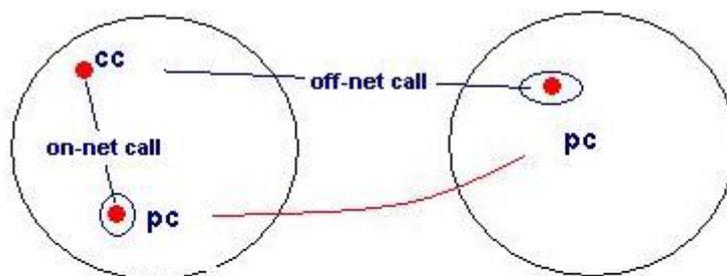
Country	Highest price difference between on-net calls and off-net calls– Fixed to Fixed calls
Lithuania	150%
Portugal	140%
Spain	60%
The Netherlands	20%
Iceland	16%

In Germany and Sweden there are considerable price differences but its amount is not known.

Austria, Switzerland, Denmark, United Kingdom, Czech Republic, Estonia, Finland, Greece, Cyprus, Norway, Ireland and Italy stated that there are no considerable price differences between on-net and off-net calls.

This data suggests the need for a fixed customer calling another fixed network, to be clearly informed of the tariff of the call. Few countries are affected but important differences were observed.

Chart 6- Fixed to Fixed



Fixed Network A

Fixed Network B

cc is the "calling customer" and pc is the "ported customer": the call from cc to pc becomes, in Network-oriented solutions, an off-net call.

Transparency of retail prices (with implementation of Number Portability)

B.4) Mobile to Fixed voice calls

In relation to Mobile to Fixed calls, the highest price difference of mobile calls according to the fixed network of destination was identified using the following ratio:

Price difference of mobile calls according to the fixed network of destination⁶⁹ = [(Highest price charged in mobile calls to a fixed network – Lowest price charged in mobile calls to a fixed network) / Lowest price charged in mobile calls to a fixed network]*100.

Table 26 shows the highest price difference of mobile calls according to the fixed network of destination (Mobile to Fixed National Calls) for each country.

Table 26 - The highest price difference of mobile calls according to the fixed network of destination (Mobile to Fixed National Calls).

Country	Highest price difference depending on fixed terminating network– Mobile to Fixed calls
Portugal	233%
Lithuania	150%
Iceland	43%
Estonia	20%

In Sweden there are considerable price differences but its amount is not known.

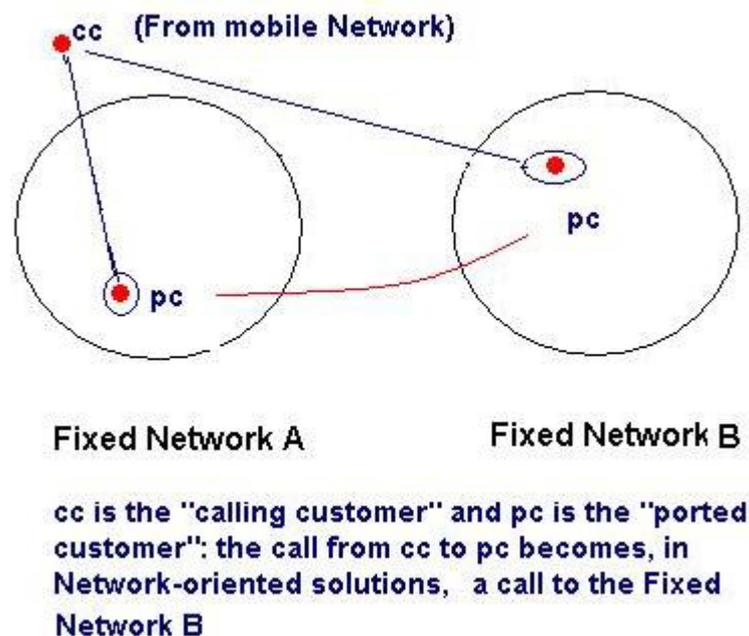
In Austria, Switzerland, Denmark, United Kingdom, Czech Republic, Ireland, Finland, Greece, Cyprus, Norway, Germany, The Netherlands, Spain and Hungary there are no significant differences in the price of mobile calls according to the fixed network of destination.

⁶⁹ Example: Mobile operator XPTO has the following price plan:
Price / minute of a national call to fixed operator ABC = 0,50 €
Price / minute of a national call to fixed operator DEF= 0,60 €
Price / minute of a national call to fixed operator GHI= 0,75 €
Major Price difference = [(0,75-0,5)/0,5]*100= 50%

Transparency of retail prices (with implementation of Number Portability)

This data shows the need for a mobile customer calling another fixed network, to be clearly informed about the price of the call. Few countries are concerned, as with calls from a fixed network, but important differences were observed.

Chart 7 – Mobile to Fixed



Differential calling charges dependent on the fixed or mobile terminating network may be summarised as follows:

- MNP (mobile to mobile or fixed to mobile calls)

Almost every country which adopted “network oriented” solution shows at least one type of call where there is a price difference according to the terminating network. The difference may exist either if the call is originated at a mobile network or at a fixed network.

- FNP (fixed to fixed or mobile to fixed calls)

In several countries, there are no significant price differences dependent on the fixed terminating network but where there are differences these are very large.

- Comparing calls addressed to fixed and mobile networks: price differentials dependent on the mobile terminating network apply more than those dependent on the fixed terminating.

5.2.2 Measures to facilitate Tariff Transparency for end users who call ported numbers

5.2.2.1 Measures taken to provide information about tariffing rules applied in calls to ported numbers

This chapter aims to identify if information about tariffing rules applied in calls to ported numbers is provided to end users in each of the countries surveyed.

NRAs did not use a uniform criterion for considering whether such services affect tariffing rules applied to calls to ported numbers. Some NRAs have answered “Yes” to the question related to the provision of information about the tariffing rules and mentioned that such services will in principle, aim to mainly inform end users on the total value of a call and/or the network to which numbers are commercially allocated. In order to harmonise the responses, these were changed to “No”, as this type of information is not directly related to the tariffing rule.

Table 27 presents a summary of the provision of such information to end users.

Table 27 – Information about tariffing rules

Question	Yes	No	NP not implemented
Is there any measure/rule established to guarantee that end users are informed by each MNO / Fixed Telephone Service Provider (FTSP) about the tariffing rules applied to calls to ported numbers (“network oriented pricing” or “number oriented pricing”)?	6	15	2
Countries	Denmark, Hungary, Iceland, Finland, Portugal	Germany, Lithuania, Ireland, Netherlands, UK, Czech Republic, Sweden, Cyprus, Spain	Greece, Estonia, The Austria, Switzerland, Republic, Norway, France, Malta ⁷⁰ , Poland

⁷⁰ MCA indicated that discussions with operators are currently under way with respect to future measures in the context of price transparency with the implementation of NP (see section 5.2.2.3).

Transparency of retail prices (with implementation of Number Portability)

Fifteen countries (71%) indicated that there are no measures/rules established to guarantee that end users are specifically informed by each MNO / FTSP about the tariffing rules applied to ported numbers (“network oriented pricing” or “number oriented pricing”).

Among the fifteen countries that answered “no”, France indicated that the Guidelines on MNP outline the tariffing rules.

Six countries (29%) answered “yes” to this question with various explanations:

- Denmark stated that the Provision in section 4 of the Executive Order on the Provision of Electronic Communications Networks and Services relates to calls to any number:
 - (1) Providers of public voice telephony services that enable end users to call other end users with numbers in the Danish numbering plan shall give their own customers access to a call-based charge advice facility. The providers shall offer this facility not later than six months following the provision of services.
 - (2) Via the charge advice facility mentioned in subsection (1), the end user shall be able to get information directly about all relevant costs, including any call setup charge and the list price per minute, by calling a number in the Danish numbering plan. However, the charge advice facility shall not contain price information regarding calls to number series designated for information and content services pursuant to section 27(1), no. 2, of the Act on Competitive Conditions and Consumer Interests in the Telecommunications Market. Nor shall information be given about the price for calls from abroad, e.g. when mobile telephones are used abroad.
 - (3) The facility mentioned in subsection (1) shall be offered free of charge or for a charge not exceeding the costs of providing the facility.
- Portugal indicated that the Regulation on NP⁷¹ stipulate that a customer should be clearly informed if for a given call configuration the solution is “number oriented pricing”.

⁷¹ The Regulation on NP was approved by ANACOM on the 22nd July 2005

Transparency of retail prices (with implementation of Number Portability)

- In Hungary, tariffing rules (“network oriented pricing”) are written in the providers' terms and conditions of contract;
- Iceland mentioned that this information is available on the operators' websites;
- In Italy, information about tariffing rules applied in calls to ported numbers is due to a rule that establish that the clients have the right to a complete information about the juridic, economic and technical modalities of the services. Moreover, considering the MNP, the user is informed of the tariffing rule (network oriented) also with the description of the tariffing transparency service based on the code "456".
- In Finland, operators must publish price lists in which tariffs are listed. The tariffs in price lists (especially those of MNOs) follow “network oriented pricing”.

5.2.2.2 Measures taken to facilitate end users to be aware of the prices of calls to ported numbers

The implementation of NP may imply a loss of TT for end users who call ported numbers because they are no longer able to identify their destination network by means of the dialling code. In many countries, such identification was possible before the introduction of NP and used to allow end-users to get a close perception of the prices applied to each call.

As mentioned in chapter “1. Introduction” the necessity of defining measures to promote TT for end users who call ported numbers (second approach contained in Recital 41 of the US Directive) depends on several circumstances, which were outlined in points 5.2.1.1 and 5.2.1.2.

In this section, we present the information provided by different NRAs on the measures implemented in their countries with this aim (e.g. telephone information service on prices of calls to ported numbers, on-line announcement giving details on the terminating network of the dialled ported numbers, etc). Such measures were in some cases established as a result of legal / NRA’s imposition, but in other situations they were implemented by a decision of the operators (although the NRA may have been somehow involved in such a decision).

NRAs where Mobile Virtual Network Operators (MVNOs) operate were also asked whether those operators implemented the same measures as MNOs to promote TT for end users who call ported numbers.

A) Telephone Information Service

The questions related to telephone services providing information on the prices of calls to ported numbers sought to identify the policies adopted by the different NRAs regarding the implementation of such services, including operators' involvement, provision of other information on NP, costs related to the use of the service, etc.

Table 28 – Telephone Information service

Question	Yes	No	NP not implemented
Is there any telephone information service implemented to promote TT on calls to ported numbers?	12	9	2
Countries	Denmark, Estonia Finland, Greece, Hungary, Italy, The Netherlands, Norway, Portugal, Switzerland, United Kingdom, Germany	Austria, Cyprus, Czech Republic, France ⁷² , Iceland, Ireland, Lithuania, Spain, Sweden	Malta, Poland

Some NRAs described existing services.

In Italy there is an innovative solution for mobile services. The mobile user dialling 456+<mobile number> receives a message via an Interactive voice response⁷³ (IVR) indicating whether the dialled <mobile number> belongs to its own operator (on-net call) or not (off-net call) or the name of the operator to which the number has been ported. After the information has been provided, some operators connect the user to the dialled number. The use of the code 456 for the transparency tariff service in mobile services has been set by an NRA decision.

⁷² In France the price must be “number oriented”.

⁷³ Interactive voice response: A telephony technology in which someone uses a touch-tone telephone to interact with a database to acquire information from the database. IVR technology does not require human interaction over the telephone.

Transparency of retail prices (with implementation of Number Portability)

In Finland and Germany⁷⁴ the service is also provided by an IVR system.

In Portugal, telephone information services are provided by a call centre operator. The user of the service asks the operator what the price of a certain phone call is to a certain number. The MNOs / FTSPs must be able to provide that information. There is also a MNO that uses an IVR service. The customer of that operator dials a short number to contact the service. The customer will then be asked (by recorded message) to dial the number on which information is required. An automatic answer informs the customer about the network that the dialled number belongs to. This service is similar to the solution introduced in Italy. However, in Portugal this service is only being provided by a single operator, who also provides a service to provide specific information about calling prices.

In the UK, any customer who contacts their mobile network provider can enquire, by calling customer services, whether a call to a particular mobile number will be charged at on-net or not.

In Switzerland, a call centre operator provides such an information service.

Greece reported that the service is provided by the individual operator's customer care services.

The Czech Republic, anticipates there will be measures foreseen to ensure TT in the context of NP, including a telephone information service, but these have not yet been implemented. Measures in relation to MNP are already subject to negotiation between MNOs' associations.

In Norway, Telenor Mobile AS has a service that allows a subscriber to dial 1945 directly before the subscriber number and get information about which operator the called party belongs to. So no direct tariff information is provided, but the subscriber can use the information to find out the tariff. Thus, this service is provided at Telenor's initiative.

In The Netherlands, the incumbent operates a service where tariff information can be obtained. When the incumbent is providing the tariff information, it takes into consideration the possibility that the number may have been ported. In fact, the incumbent knows whether or not a number is ported. In the case of mobile numbers, network information is provided by the incumbent (information regarding fixed numbers has not been confirmed).

In countries where telephone information services exist, NRAs were asked to explain whether this was because of the legal/NRA framework or whether the provision of the

⁷⁴ In the case of Germany, IVR services are used by some operators to inform the caller about the network operator.

Transparency of retail prices (with implementation of Number Portability)

service was an MNO initiative. Denmark, United Kingdom, Hungary, Finland, Greece, Portugal and The Netherlands indicated that the existence of the telephone information service was at the NRA's request⁷⁵.

Italy stated that the implementation of such a measure was due to joint action by the NRA and the operators. An "ad hoc" monitoring unit for the MNP, established following a decision of the NRA, required its introduction. The NRA provided guidelines (e.g.: the code to be used (456), that the service should be free of charge and that the information given should be sufficient to identify the applied tariff calling that number).

Each MNO has introduced the information service with additional capabilities.

Germany and Estonia mentioned that this service is provided by an MNOs and FTSP initiative. In Switzerland, MNOs took the initiative to implement a telephone information service. As previously mentioned, in the Czech Republic, MNOs are also taking the initiative to establish certain measures in the context of MNP.

Table 29 shows which entities are providing the service.

Table 29 - Entities that provide the telephone information service

Question	MNOs	FTSPs	Other entities
Is the referred telephone information service provided by (multiple choice is possible):	8	8	1
Countries	Denmark, Estonia, Greece, Italy, Portugal, Switzerland, United Kingdom	Denmark, Estonia, Greece, Italy, Hungary, The Netherlands ⁷⁶ , Portugal	Finland ⁷⁷

Denmark mentioned that the obligation in their legislation applies to all providers of public voice telephony services that enable end users to call other end users with numbers in the Danish numbering plan (for example VoIP service providers are also included).

⁷⁵ In the case of Denmark the requirement is specified in legislation. In Greece, this obligation is specified in EETT Regulation on NP (Decision 254/71/2002, Government Gazette Issue 791/B/26.06.2002, article 11)

⁷⁶ The incumbent operator

⁷⁷ The service is provided by the Master Database Company.

Transparency of retail prices (with implementation of Number Portability)

The Netherlands clarified that only the incumbent operates such a service. The United Kingdom described the service as available in mobile to mobile phone calls.

In Italy, the monitoring MNP unit asked MNOs and FTSPs to implement an information service in relation to calls to mobile numbers, with particular attention to the MNO, due to the different impact on prices. All MNOs have implemented the service but most of the FTSPs have yet to introduce it.

As for the type of information provided by the telephone service, in Denmark MNOs and FTSPs provide information on any number's network (including ported numbers) as well as information on tariffs for ported numbers (fixed, mobile and other ported numbers)⁷⁸.

In The Netherlands the incumbent operator is also obliged to provide information on any number's network, including the ported ones, and information on tariffs of calls to ported numbers. However, the service does not provide information about the ported status of a number.

In Portugal, the MNOs and the FTSPs should maintain a telephone service providing information on call (voice calls, data calls and short messages) charges to ported numbers.

In Greece, the customer care service of each operator provides information about call charges to ported numbers (fixed, mobile and "other non-geographic ported numbers").

In the UK, the customer services of each mobile network operator can respond to customer queries about its call tariffs for mobile ported numbers.

The telephone service in Finland provides information about any numbers' network, including ported numbers.

In Hungary, the telephone information service provides information about a ported number's network for both calls originated at FTSPs or MNOs.

In Italy the rule is s that the information provided should be sufficient to identify the applied tariff for calling that number: The MNOs only needs to provide information as to whether the dialled mobile number belongs to its own operator (on-net call) or not (off-net call). For the FTSPs the name of the operator should be provided if the service is given.

In Estonia, each operator provides consumer information on a number that is free of charge which provides information concerning the network of any number. If the network

⁷⁸ The Danish Law establishes that end users shall be able to get information directly about all relevant costs, including any call setup charge and the list price per minute, by calling a number in the Danish numbering plan.

Transparency of retail prices (with implementation of Number Portability)

of a certain ported number is known, then the consumer can obtain the information concerning the price of the call from the website of his service provider.

Portugal, Greece and Hungary stated that the obligation to implement telephone information service is imposed on MNOs and FTSPs whenever there is at least a tariff plan with different prices according to the mobile or fixed network of destination.

In relation to the costs of the service, in Estonia, Finland and Hungary NRAs require that these must be provided free of charge. In Denmark the service must be provided free or for a charge not exceeding the costs of providing the facility.

In Portugal, Greece and the UK, there are no limits established for the price of this service. However, the UK would expect the service would be provided using normal customer service numbers.

Finally, Finland, Denmark and the UK stated that MVNOs have the same obligations or responsibilities as MNOs with regard to this service.

B) Information Service provided by SMS

The following table presents a summary of the information services via SMS implemented in different countries to encourage TT in calls to ported numbers.

Table 30 - Information Service provided by SMS

Question	Yes	No	NP not implemented
Is there any information service provided by SMS implemented to promote TT on calls to ported numbers?	5	16	2
Countries	Germany, Hungary, Ireland, Italy ⁷⁹ , Switzerland	Austria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Iceland, Lithuania, The Netherlands, Norway, Portugal, Sweden, Spain, United Kingdom	Malta, Poland

⁷⁹ In Italy at least one MNO is providing this service

Transparency of retail prices (with implementation of Number Portability)

All the above mentioned countries mentioned that the Information service by SMS is provided at the MNOs' initiative. In Iceland, PTA is considering the implementation of an SMS information service.

In Italy, the information provided should be sufficient to identify the applied tariff when calling a ported number.

Ireland mentioned that one mobile network operator currently provides a service by which a consumer may send a free SMS to a specific number to obtain information regarding whether a certain number is on that network.

C) Information Service provided by Internet

The following table presents a summary of the implementation of information services via Internet to promote TT for those who call ported numbers.

Table 31 - Information service provided by Internet

Question	Yes	No	NP not implemented	No answer
Is there any Information Service provided by Internet implemented to promote TT on calls to ported numbers	8	12	2	1
Countries	Austria, Denmark, Estonia, Finland, Germany, Iceland, Italy, The Netherlands	Cyprus, Czech Republic, Hungary, Greece, France, Ireland, Lithuania, Norway, Portugal, Sweden, Switzerland, United Kingdom	Malta, Poland,	Spain

Iceland is the only country that mentioned an NRA decision to implement an Internet Service free of charge providing information about any numbers' network, including ported numbers. This is mandatory for all active MNOs.

In Austria, T-Mobile Austria offers a web-based service on a voluntary basis. A user may type in a number in order to know if this number has been ported. As far as RTR knows, no other MNOs are offering such services.

Transparency of retail prices (with implementation of Number Portability)

In Denmark this service is complementary to the regulatory requirement for a telephone service. Although there is no obligation to inform end users via the Internet, this practice is quite common among MNOs and FTSPs.

Finland and Germany described a similar scenario to Denmark: no obligation is established, but the service has been implemented at the operators / providers initiative.

Italy reported that there is no obligation either, but as far as AGCOM is aware, there is at least one MNO providing this service.

Estonia stated that there is an Internet service which the NRA promotes to check the service provider/operator of the ported number. Once the network of the ported number is known, then the consumer can obtain the information concerning the price of the call from the website of his service provider.

The Netherlands reported that there is a registry of ported numbers on OPTA's⁸⁰ website, so that consumers may verify whether a number has been ported. This registry is currently not up to date, but OPTA plans to update it. The registry gives information on the network to which a number is allocated.

In Portugal, there is no service of this type, however ANACOM's website⁸¹ provides some FAQs regarding NP, some of which relate to TT. ANACOM's website also provides a list of the numbers available and details of the telephone information services provided by the operators to promote TT. In addition information is also provided on the procedures which a customer should follow to block the on-line announcement implemented by their MNOs.

Among those countries where there is no Internet service France mentioned that there are Internet services to provide information on the networks to which numbers are allocated. In general, these had been introduced to solve the already existing problems of TT, as the introduction of NP did not, in general, impact on TT because prices of calls to ported numbers are, with a very few exceptions, *number oriented*. One of these services is provided by ARCEP⁸² and allows end users to know which network the number was originally (technically) allocated to by ARCEP, despite possible subsequent commercial allocations when the number was ported. In fact, information on such subsequent commercial allocations is not usually important for end users. Although in France the rule that is in general applied to calls to ported numbers is *number oriented*, some mobile operators have a specific tariff plan which include on-net calls free-of-charge at certain

⁸⁰ <http://www.opta.nl/asp/nummerloket/nummerporteringen/>

⁸¹ <http://www.anacom.pt/template25.jsp?categoryId=38970> (English version)

⁸² <http://www.art-telecom.fr/interactive/numeros/corps.php?bloc=>

Transparency of retail prices (with implementation of Number Portability)

hours. In this case, prices are kind of “network oriented”. Thus, these mobile operators also provide this type of service, but give information on the recipient operator in the case of ported numbers. For example, SFR⁸³ offers an Internet Service that informs end users whether a certain number is commercially allocated to its network or not. This is the only measure related to TT concerning NP taken in France. However, there has been low usage of such services.

D) On-line Announcement at start of voice calls

This section aimed to obtain an overview of implementation in Europe of on-line announcement systems aimed at promoting TT in calls to ported numbers. Also to determine why different NRAs adopted different approaches.

Table 32 summarises the information received about the implementation of the on-line announcement in different countries.

Table 32 - On-line announcement at start of voice calls

Question	Yes	No	NP not implemented	No answer
Is there any On-line Announcement at start of voice calls implemented to promote TT?	6	14	2	1
Countries	Austria, Germany, Italy, Ireland, Lithuania, Portugal	Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, The Netherlands, Norway, Sweden, Switzerland, United Kingdom	Malta ⁸⁴ , Poland,	Spain

Five of the respondents implemented on-line solutions. Reasons for not implementing them included:

- Czech Republic

⁸³ <https://aemweb.sfr.fr/aemweb/PNMAccueil>

⁸⁴ MCA indicated that discussions with operators are currently under way with respect to future measures in the context of price transparency with the implementation of NP (see section 5.2.2.3).

Transparency of retail prices (with implementation of Number Portability)

- No measures were taken to guarantee end users information in the FTS;
- Measures regarding MNOs are not applicable yet. Rules for MNP are currently the subject of negotiations between MNOs in the MNOs' association. However, CTU believes that the announcement could create dissatisfaction among users and technical problems for operators.
- Denmark
 - End user interests are considered to be satisfied by the obligation to provide the possibility to obtain information via a telephone information service.
- Finland
 - Operators can introduce an on-line announcement system if they want but so far none of them has done so.
- Greece
 - This solution was studied but it was not considered user-friendly.
- Norway
 - The NRA has not imposed any on-line announcement system for FTSPs as there is no difference in the price for calls within Norway;
 - The NRA is only evaluating the introduction of an on-line announcement system for mobile network operators;
 - A formal consideration on the topic is dependent of the outcome of the relevant market analysis and the decisions made in this regard. An evaluation is also dependent on the development of the prices to end users. If today's trend of reduced prices continues, the evaluation will become irrelevant.
- Sweden
 - The NRA has not yet decided the best way to inform about prices. Such prices only depend on which network the call is terminated.

A description of the solutions implemented in the five countries where the on-line announcement is available is given below.

Austria

Transparency of retail prices (with implementation of Number Portability)

The announcement has to be provided (mandatory⁸⁵) for any type of call as long as the call is addressed to a ported mobile number and the tariff-schema of the originating network (fixed or mobile) differentiates between the different mobile terminating networks⁸⁶. The on-line announcement is provided free of charge by the Mobile and Fixed Network originating operators, but alternatively it may also be the terminating mobile network who has to provide the on-line announcement if the originating network wishes so.

The announcement is also available for calls (pure voice calls and video calling services) originated on a 3G network. In fact the announcement has to be provided for any type of call as long as this call is addressed to a ported mobile number.

The announcement system which has been put into place consists of a voice message. RTR determined a set of rules in relation to the content of the message, namely: the terminating mobile network name must be included; the information has to be brief, non-discriminatory and shall not include advertising.

This message is available by default but it is possible for the customer to disable the announcement upon request. The possibility of not hearing the on-line announcement is also established through a legal requirement. However, the law does not specify the process for blocking the announcement.

All the rules described above are also applied to MVNOs.

Germany

An on-line announcement is being implemented for some calls originated in some FTSPs at their own initiative. A legal requirement that imposes the on-line announcement is currently under evaluation.

Ireland

An on-line announcement at the start of voice calls is implemented at least by two MNOs, by their own initiative. This announcement is being provided by the mobile network originating operator.

ComReg has not imposed the introduction of the on-line announcement. In fact, in October 2003, ComReg issued a consultation paper, ComReg 03/121, "Addressing the impact of

⁸⁵ Provisions are stipulated in the Austrian ordinance "Nummernübertragungsverordnung".

⁸⁶ This measure does not apply to "roaming in" voice calls.

Transparency of retail prices (with implementation of Number Portability)

Mobile Number Portability on user awareness of calls to other networks” which outlined the options to address the tariff transparency issue.

In ComReg 03/149, “Response to Consultation addressing the impact of Mobile Number Portability on user awareness of calls to other networks” ComReg outlined the optimum solution for MNP Tariff Transparency as the introduction of an opt-in⁸⁷ tone solution which was applicable to all off-net calls and uniform across all networks.

In responding to the consultation, all of the mobile operators supported the introduction of a common solution which would be implemented uniformly across industry. However, new information provided by the mobile operators, indicated that there are specific technical issues surrounding the implementation of the draft direction as stated in ComReg 03/149. In the responses, the mobile operators expressed confidence that the solutions currently provided meet the needs of consumers in relation to tariff transparency. This assertion is further supported by the experience of the ComReg consumer line which saw a significant reduction in the number of complaints on this issue over a few months. As such ComReg did not consider it appropriate to implement the direction at that time.

ComReg continues to monitor and review the situation with respect to the level of consumer satisfaction with the current solutions. As the volume of ports increases over time, end user issues may become more pronounced and ComReg may intervene at a later stage.

Italy

Mobile Network originating operators are providing the on-line announcement. The provision of this facility in Italy arises as a result of a joint initiative by the NRA and operators, i.e., from the work done by the monitoring unit for the MNP (as for the telephone information service). The announcement is available for calls to both mobile and fixed networks.

The unit decided that the announcement would consist of a voice message, the content of which could be freely chosen by MNOs. The facility is available to the calling customer on request. In order to listen to the message; end users must activate the announcement after which they may deactivate it if required. There is no common standardised procedure

⁸⁷ The phrase “Opt-in” in this context allows the calling party to choose whether or not to receive the on-line announcement.

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for both activation and de-activation of the on-line announcement. This solution is also available for voice calls originated on a 3G network. However, it is not available for video calling services.

Lithuania

At the moment the announcement is implemented by NRA request at the national fixed network only. A solution for mobile networks will be launched on 1st July 2005. The announcement consists in a tone alert, which is provided free of charge for any call from the fixed network to any other network.

The NRA also agreed that the facility is available by default, but with the possibility of inhibition. In order to deactivate or activate the hearing of the announcement the calling party may contact the FTSP.

Portugal

Implementation of the on-line announcement, which must be free of charge, has been imposed by the regulator. The MNOs must provide it at the start of mobile calls to ported mobile numbers. ANACOM is considering the possibility of this announcement being imposed for mobile to mobile voice calls to ported mobile numbers only, which may become more expensive because the number belongs to a new network.

The announcement is available by default in the aforementioned situations, although there is the possibility of inhibiting it, without incurring any charge. In this case calling parties should be duly informed by their operator of the procedures for activating and deactivating the message provided. In this context, two of the operators have implemented the possibility of such an inhibition upon caller customer's request. The third operator has implemented this solution only to a restricted group of clients (VPN clients) but at the end of 2005 it is foreseen that all its clients will benefit from this functionality.

Regarding the content of the announcement in wake of the Regulation on NP (approved by ANACOM in the 22nd July 2005) the operators must implement the following message within 10 working days after the regulation is published:

- "Note: You are calling a subscriber who now belongs to (...) [recipient's MNO]. Please wait."

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Prior to this Regulation, the content of the announcement was determined in wake of the ANACOM determination approved on 27th February 2003. The mentioned determination stipulated that the operators should provide one of the following alternative versions (the second one enables the identification of the very operator originating the call):

- Version A: “The number you dialled belongs to (...) [recipient’s MNO]”;
- Version B: “ [originating MNO] (...) informs you that the number you dialled belongs to (...) [recipient’s MNO]”.

The aim of the new message is to ensure that callers, contrary to the case of the message established by the 27th February 2003 Determination:

- stop confusing the respective content with the kind of messages provided by operators in situations where the “called person” is not available (and where the caller therefore tends to hang-up);
- understand that “the number you dialled”, mentioned in the still existing message, continues to belong to the subscriber meant to be contacted, and that only the respective network has changed;
- understand that despite the silent period of a few seconds following the announcement, the connection will be made. Regarding the announcement’s cost, the NRA imposed that it should be free of charge for end users.

In fact, by avoiding these type kinds of misunderstanding it is expected that the calling party will no longer be moved to hang up before the communication is established, which was happening very frequently according to several complaints received by ANACOM.

The announcement is available for voice calls originated on a 3G network, but it is not being implemented for video calling services. ANACOM will analyse in a short term the eventual extension of this obligation to video calling services

Note: In none of the above cases is the announcement provided for roaming-in voice calls.

E) Other measures

Information about other measures adopted by NRAs is summarised in the table below.

Table 33 - Itemised Billing

Are operators / providers obliged to highlight in their Itemised Bills ⁸⁸ the difference between calls to ported and calls to non-porting numbers?	Yes	No	NP not implemented
	MNOs	2 countries (Austria, Hungary)	18 countries (Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Lithuania, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK)
FTSPs	1 country (Austria)	20 countries (Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Lithuania, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK)	2 countries (Malta, Poland)

Although Switzerland answered “no” this question, there exists a general rule for price indications: these must be clear and specific. So if there is a differentiation between on-/off-net-calls, the charged price has to be indicated clearly (e.g. cents/min for service X).

In Italy, there is a general rule to specify the tariff type applied for each call.

In Ireland, although no obligation exists, both mobile and fixed service providers do provide itemised billing which indicates the network to which a called number belongs. This effectively informs the consumer of any off-net calls made.

⁸⁸ Itemised bills may identify which calls were made to ported numbers or even the network to which dialed numbers are allocated.

Table 34 - Contracts

Question	Yes	No	NP not implemented	No answer
Do contracts inform about portability's consequences in terms of TT?	4	11	2	6
Countries	Austria, Hungary, Germany, Lithuania,	Finland, France, Greece ⁸⁹ , Iceland, Ireland, Norway, Portugal, Sweden, Switzerland, Spain, United Kingdom	Malta, Poland	Cyprus, Czech Republic, Denmark, Estonia, Italy, The Netherlands,

Ireland informed that although tariffs are not listed in the consumer contract (as these are subject to change), tariff information is readily available to consumers that indicates the cost of calling different networks.

All the measures applied to MNOs in relation to contracts and Itemised Billing are also applied to MVNOs.

In relation to other measures, there were some new elements:

- Estonia
 - All service providers have the obligation to publish their tariffs on their webpage
 - The request form for the number, included ported numbers, is available from the NRA's webpage.

When responding to whether measures for promoting TT in the context of NP are also applied to "other non-geographic" services, Estonia reported that the service provider who is providing the service through a non-geographic number has an obligation to inform a subscriber of service tariffs before accessing the service. This obligation is established for

⁸⁹ In Greece there are no explicit terms about portability. General provisions are applicable regarding the transparency of each network's tariffing policy. All contract forms are submitted to EETT in order to suffice the stipulations of telecommunication and consumer protection legislation.

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all ported or non-ported service numbers intended for the provision of special charge services.

In Norway there is a similar situation: before a call is set up to a premium rate number (number series 820 xx xxx and 829 xx xxx) there is an online announcement stating the tariff. This announcement is mandatory and free of charge to the caller as set out in Regulations on premium rate numbers Section 7.

In the Netherlands there is also an on-line announcement to calls to premium rate numbers. This announcement is compulsory for all premium number providers, through a self-regulating code of practice. The obligation to announce tariff information is mandatory for all premium rate numbers, regardless of whether they have been ported or not. OPTA is considering broadening the obligation to other numbers that have deviant tariffs, such as some non-geographic or personal numbers.

In Switzerland and Greece the measures described to promote TT in the context of NP also apply to other non-geographic services.

5.2.2.3 Future Measures

Cyprus mentioned that OCECPR is planning to undertake a consultation with involved operators by mid 2005 in order to reevaluate the current portability solution and decide on the TT practice to be adopted for both MNOs and FTSPs.

Estonia referred that one of the tasks of ENCB for year 2005 include providing a service, with which the consumer can compare retail prices of various service providers and telecommunication products.

France stated that the second step of MNP will be a modification of the calls routing process (from indirect routing to direct routing), with central database for ported numbers. From this point, the tariffs will be network oriented. The customers will be able to know if a given number is ported or not, but probably not "on-line" (at the moment of the call). Thus, this solution (decision foreseen for the end of 3rd quarter 2005, and respective implementation by the end of 3rd quarter 2006) will directly introduce a "network oriented pricing". For that purpose a working group has been launched, aiming to prepare a regulatory frame to this solution, namely in relation to TT.

Germany stated that in relation to FNP, a legal request for online price announcement for call-by-call services is under consideration.

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In Iceland, PTA is considering to implement a telephone service or an SMS based information service.

As mentioned previously, there is currently an on-line announcement implemented by the national fixed network only in Lithuania. Mobile networks will launch such kind of on-line announcement will be launched as from the 1st July 2005.

In Norway, NPT will evaluate at a future point in time whether an on-line announcement at the start of a call should be implemented for MTSs as the prices charged by these operators are higher than those charged by FTSs. The NRA will then require the provision of an option for the end users to be able to inhibit the on-line announcement.

Swedish PTS has yet to decide the best way to provide pricing information..

In Greece the EETT has launched a Public Consultation on a proposed amendment to NP regulation, covering all aspects of NP. To date there is nothing to suggest that TT in relation to NP is a problem.

In the UK market MNO pricing packages include policies include pre-payment and bundled tariff packages (including free minutes, inclusive off-net calls etc). End users do not associate mobile network numbers with particular networks and therefore would not know whether a call was charged at on-net or off-net tariffs regardless of mobile portability. Few complaints are received about TT issues and the proportion of calls to ported mobile numbers remains fairly low. Therefore Ofcom does not consider TT in relation to MNP is an issue in the UK. Besides, there are no significant tariff differentials on calls to ported fixed number to warrant regulatory intervention.

Malta has already taken some action to promote TT in the context of NP, as this functionality will be implemented in a near future. MCA requires all operators to cooperate to ensure that where, as a result of NP, a voice call is more expensive than the caller would expect from a simple analysis of the called number, a suitable warning is given. Where the warning is not a self explanatory voice announcement, callers must be educated about the meaning of the warning. This requirement does not apply to SMS. It may also be waived on grounds of practicability, subject to the written agreement of MCA. Alternative arrangements to provide tariff warnings may be implemented with the written agreement of the MCA.

5.3 Complaints about tariff transparency

Table 35 summarises the number of complaints received by NRAs in relation to TT in the context of NP.

Table 35 - Complaints about tariff transparency

How many complaints per year regarding TT related to NP were sent to NRA?	Complaints related to TT in the scope of MNP ⁹⁰ (2004)	Complaints related to TT in the scope of FTS ⁹¹ (2004)
France	About 30	Almost 0
Finland	Less than 10	None
Ireland	4	<5
Portugal ⁹²	258	10
UK	22	None

Only five NRAs provided this data which suggests that it may be difficult to gather. Respondents were unable to distinguish between general complaints about TT and those which specifically related to NP. As the table above demonstrates the numbers were negligible in Finland, France, Ireland and the United Kingdom.

The highest number recorded in Portugal (258). Only Portugal recorded any complaints at all about TT in relation to FNP.

France reported around 30 complaints about MNP and Finland less than 10.

In addition to the information requested in the questionnaire, ANACOM also has complaints data in relation to the on-line announcement at the start of voice calls, covering the period from October 2003 to June 2004. During this period ANACOM received 83 complaints about this issue but complaints appear to be tailing off, from 22 received in October 2003 to 3 complaints in June 2004. Prior to the implementation of the on-line announcement, ANACOM received several complaints from end users who demanded an effective solution to promote TT in calls to ported numbers. Another issue in Portugal is the price charged to end users for the porting process. Complainants want to know

⁹⁰ Calls addressed to mobile networks

⁹¹ Calls addressed to fixed networks

⁹² ANACOM only have information about the complaints regarding NP (not possible to identify if they are related to tariff transparency).

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whether such charges are permissible. The data may not be entirely representative of problems caused by TT, as it does not include customer complaints to their operator.

As the number of ported customers increases, which in relation to FNP is associated with local loop unbundling which may impact on TT problems, complaints in this area may increase if appropriate measures have not been implemented.

6 SUMMARY OF RESPONSES TO QUESTIONNAIRE

In April 2005, European NRAs were asked by the IRG End users Group to provide information about their involvement in terms of facilitating TT both for end users who port their numbers and for end users who call ported numbers.

22 NRAs responded to the questionnaire, two of which (Malta and Poland) had yet to implement NP. Malta expects full NP to be available by March 2006. In Poland expects MNP by October 2005 with FNP likely to follow in January 2006. In the Czech Republic where there is FNP, MNP should be introduced by 1st January 2006. To date, these three countries have not taken any measures to ensure TT in relation to However, Malta and Czech Republic informed that this subject is being discussed with operators.

Of those 20 respondents where NP is already in place, there is a wide variation in the level of NRA involvement in guaranteeing tariff transparency for end users who port their numbers and/or for end users who call to ported numbers.

6.1 Tariff transparency for end users who port their numbers

Only a minority of respondent countries have introduced some sort of measure to facilitate the transparency of prices applied to the porting process: Austria, Greece, Italy, Lithuania, and Portugal.

Such measures have mainly consisted of:

- Information provided by some NRAs, for example on their websites, on the potential types of legitimate costs end users may incur when they port their numbers (e.g. charges to be paid to the recipient operator and/or the donor operator, including costs associated with termination of the existing contract);
- some NRA/legal requirements regarding the specific means by which operators provide information on end user charges for porting numbers to provide (e.g. each operator's website, contracts);
- Publication of a pamphlet informing end users about NP, with information in relation to TT for those who port their numbers (this action was taken in Portugal).

Many of those respondents who have not introduced such measures, mentioned own initiatives by MNOs and FTSPs to inform end users about the porting prices. Those countries include Norway, Estonia, Switzerland, Germany and France. This demonstrates

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the important role played by self regulation. Tariffs for porting are also self-regulated in Denmark and in the Czech Republic MNOs are currently discussing this approach for MNP.

In the UK, a small number of mobile service providers charge their subscribers an administrative fee to port but most operators do not impose any charge. For that reason, Ofcom has not intervened with regard to transparency of porting charges

The information gathered in the context of the project leads to the conclusion that none of the respondent countries has imposed a condition that the porting process would be completely free of charge for end users. However, in some countries namely Cyprus, Finland, France, Italy and Sweden, operators are not applying any charges. Thus, in this group of countries with a “no charge” common practice between operators, end users who port their numbers are not facing problems of TT.

Sweden and Cyprus advised that they may consider implementing measures to promote TT in relation to NP in the near future.

6.2 Tariff transparency for end users who call to ported numbers

6.2.1 Adequate knowledge of the tariffing rules applied.

Most respondents had not taken specific measures to inform end users about pricing rules applied by operators to calls to ported numbers⁹³ (*network oriented*⁹⁴ or *number oriented*⁹⁵ prices).

In summary, those measures that did exist basically consisted of information in the following forms:

- a charge advice facility offered by providers (Denmark) ;

⁹³ Different NRAs did not use an uniform criteria for considering such informative services as a measure which specifically inform (or also inform) on tariffing rules applied to calls to ported numbers. In fact, some NRAs have answered “Yes” in the question related to the provision of information about the tariffing rule and mentioned that such services will in principle, aim to mainly inform end users on the values to pay for a call and/or the network to which numbers are commercially allocated. In order to harmonize the received answers, the answers of those NRAs were changed to “No”, as this type of information is not directly related to the tariffing rule.

⁹⁴ Originating operator applies to calls to ported numbers the some tariff defined for calls addressed to the new operator/network to which the number is now allocated.

⁹⁵ Tariff applied by the originating operator when the end user calls to a ported number the does not change because it remains equal to the one applied before the number was ported.

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- the providers' terms and conditions of contract (Hungary);
- operators website (Iceland);
- information about the juridic, economic and technical modalities of the services, which is complemented by an IVR service (Italy);
- tariffing plans (Finland).

In Portugal, the Portability Regulation establishes that the customer should be clearly informed if for a given call configuration the solution is “number oriented pricing”.

According to the information received from NRAs, the general tendency is to implement “network oriented pricing”, 17 countries are using this tariffing rule⁹⁶ for calls to mobile ported numbers. 13 countries use “network oriented pricing” solutions for calls addressed to fixed networks.

It is important to stress that the routing solution may have an impact of the tariffing rules applied. Direct routing may facilitate “network oriented pricing” and indirect routing may facilitate the introduction of “number oriented pricing”.

The present report has found that direct routing solutions are the most common. France is considering migrating to this type of routing, which is expected to impact on the tariffing rule applied, as it will facilitate “network oriented pricing.”

It may be considered that in countries that have different tariffing rules according to the type of calls or where there is no common practice among operators (see table below), are the ones in which measures to provide information about tariffing rules are potentially more needed, especially when the differentials depending on the terminating networks are significant.

None of the NRAs listed below have implemented such measures. However, this only becomes necessary if operators fail to take such initiatives themselves.

⁹⁶ UK and Germany are only using this “network oriented solution” in mobile to mobile voice calls. Fixed to mobile voice calls have a different tariffing rule.

Table 36 - Countries with no uniform tariffing rules for calls to ported numbers

	Tariffing rules Fixed to Mobile calls	Tariffing rules Mobile to Mobile calls	Tariffing rules – Fixed to fixed calls	Tariffing rules – Mobile to Fixed calls
Austria	Network oriented	Network oriented	Number oriented	Number oriented
Cyprus	No common practice	No common practice	No common practice	No common practice
Germany	No common practice	Network oriented	Network oriented	Network oriented
Ireland	Network oriented	Network oriented	No common practice	No common practice
Italy	Network oriented	Network oriented	Number oriented	Number oriented
Spain	No common practice	No common practice	No common practice	No common practice
United Kingdom	Number oriented	Network oriented	Number oriented	Number oriented

6.2.2 Adequate knowledge of the price to pay for a call to a ported number

NRAs were asked about the measures implemented in their countries (with or without regulatory imposition/involvement) to avoid end users being misled about the actual cost of a call to a ported number because they cannot associate the number dialled with a particular network following the porting process.

The responses from NRAs were diverse, which may be explained by the diversity of the framework factors. The different ways in which the information is made available is summarised below:

Group 1: In Cyprus, Czech Republic, France, Spain and Sweden no measures designed to promote TT for end users calling porting numbers have been implemented by law, by the NRA, nor by operator own initiative.

- In Cyprus, prices of calls to mobile or fixed ported numbers are the same irrespective of mobile or fixed terminating network. Cyprus intends to consult in mid 2005 to re-evaluate the current situation on portability solution and decide which practices should be adopted on TT practice for both MNOs and FTSPs;

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- In the Czech Republic, where only FNP is already available, no association is established between numbers and the respective operators to which they are allocated before being ported. Prices are “number oriented”.
- In France, there is end user low/medium association between “number-operator” and prices are “number oriented”, for both mobile and fixed calls. However, ARCEP advised that there are plans to move towards “network oriented” pricing, which is being considered as current indirect routing is substituted by direct routing in future.
- In Spain there is no common practice in relation to tariffing rules. Besides, there is a high association between numbers and the respective MNOs and FTSPs. There are also price differences for mobile or fixed calls dependent on the mobile or fixed terminating network.
- Finally, in Sweden, prices are “network oriented” and differences in tariffs for mobile or fixed calls dependent on the mobile or fixed terminating network exist, together with low/medium end user number-operator” association. Although, no measures have yet been taken to promote TT for end users who call ported numbers, the issue is a relevant one and analysis of the best way to provide price information continues.

Table 37 sets out the various measures taken to facilitate the provision of information to end users about prices of calls to ported numbers with the framing factors in countries that belong to the Group 1. Information on the date of implementation of NP and on the quantity of ported numbers is provided in Chapter 4 (Facts and Figures) of the report.

Table 37 – Framing Factors and Measures to promote Tariff Transparency in voice calls (Group 1)

	Tariffing Rules (calls to mobile numbers)	Tariffing Rules (calls to fixed numbers)	Highest Price difference depending on mobile terminating network – Fixed to Mobile calls	Highest Price difference between on-net calls and off-net calls – Mobile to Mobile calls	Highest price difference depending on mobile terminating network– Mobile to Fixed calls	Highest price difference between on-net calls and off-net calls– Fixed to fixed calls	Association between dialling codes and MNOs	Association between dialling codes and FTSPs	Telephone Information Service	Information Service by SMS	Information Service by Internet	On-line announcement at the beginning of voice calls	Other
Cyprus	No common practice	No common practice	0%	0%	0%	0%	High	None	No	No	No	No	
Czech Republic	MNP Not implemented	Number Oriented	Not available	Not available	Not available	Not available	High	None	No	No	No	No	
France (Group 1)	Number oriented	Number oriented	Not available	Do exist. ⁹⁷	Not available	Not available	Low / Medium	Low / Medium	No	No	No	No	
Spain	No common practice	No common practice	0%	60,25%	0%	60%	High	High	No	No	No	No	
Sweden	Network oriented	Network oriented	Do exist. But not known	Do exist. But not known	Do exist. But not known	Do exist. But not known	Low / Medium	None	No	No	No	No	

⁹⁷ In some cases, on-net mobile to mobile calls are free of charge.

Group 2: In 6 of the respondent countries (Austria, Germany, Italy, Ireland, Lithuania and Portugal) on-line announcements at start of voice calls addressed to ported numbers have been implemented, even though other information services are available, (with the exception of Lithuania). Information on these countries as well on the ones included in Group 3 and in Group 4 is summarised in table 38. These announcements identify:

- the new operator to which the dialled mobile ported number is allocated (e.g., Austria, Portugal);
- off-net calls originated at fixed networks (in Lithuania, a beep tone is displayed and this announcement will be extended to calls originated in mobile networks from July 2005).

The announcement is a result of a legal/NRA imposition in Austria. It is mandatory for mobile to mobile and fixed to mobile calls that might be more expensive if the dialled number had been ported.

In Portugal it is mandatory for mobile to mobile calls at risk of being more expensive when the dialled number is ported.

In Lithuania it is already mandatory for calls originated at fixed networks, with the launch for mobile networks foreseen to 1st July 2005.

In Italy the announcement was introduced as a result of a joint action by AGCOM and MNOs, within the scope of a monitoring unit created for the MNP.

The four countries in which NRAs have been involved in the decision to implement on-line announcements share the following factors in relation to the type of calls to which the same announcement is applied, namely:

- significant price differences according to the mobile and/or fixed terminating network;
- “network oriented pricing”⁹⁸;
- a high level of end user association between the number of destination and the operator to which it was originally allocated (prior to any portability process).

⁹⁸ Italy also has “number oriented pricing” for mobile to fixed calls.

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In Germany the announcement is provided by some FTSPs at their own initiative, although the NRA is analysing the possibility of a legal requirement for such an announcement concerning call-by-call services for FTSP. In Germany, the end user number-operator" association only exists for mobile networks (low / medium association).

In Ireland, at least two mobile network operators are providing an on-line announcement by their own initiative.

In Norway, NPT will evaluate at some future point whether an on-line announcement at the start of a call should be implemented for MNOs, as these prices are higher than for FTSPs.

Any formal approach depends on the outcome of relevant market analysis and the associated decisions. An evaluation also depends on the development of the prices to end users. If the current trend of falling prices continue the evaluation will become irrelevant.

In relation to 3G services, in those countries where the on-line announcement was introduced for call origination at the mobile networks (Austria, Portugal and Italy) the announcement is also available at the beginning of voice calls. However, only in Austria is there an announcement at the beginning of a video-calling service.

Group 3: In most countries (see table 38) information services provided by telephone have been introduced (Denmark, Estonia, Finland, Greece, Hungary, Italy, The Netherlands, Norway, Portugal, Switzerland, United Kingdom and Germany), by SMS (provided through MNO initiatives in Germany, Hungary, Ireland, Italy and Switzerland) or by Internet (Austria, Denmark, Estonia, Finland, Germany, Iceland, Italy, The Netherlands). Dependent on the country concerned, end users may access these services to identify the following:

- the actual network to which numbers (or some kinds of numbers) are allocated;
- or the price of a call (or some types of calls) to a certain number or, in some cases, if a call is on-net or off-net;
- or if a certain number is ported.

In most cases, the aforementioned telephone services are provided by MNOs and/or FTSPs or even by the incumbent (in The Netherlands). In Finland there is an independent entity responsible for the service. In 7 of the 11 countries where such services exist (Denmark, UK, Hungary, Finland, Greece, Portugal and The Netherlands) their implementation was imposed or recommended through the legal process or the NRA. In

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Portugal, ANACOM's website provides a list of the access numbers to the telephone information services which have been implemented by MNOs and FTSPs.

Iceland is the only country to have imposed information services by Internet. These are mandatory for all active MNOs and free of charge for end users. In the remaining respondent countries such services are usually provided by MNOs and in some cases also by FTSP (Denmark), but of their own accord. In Estonia and The Netherlands the respective NRAs provide similar services.

It is possible to identify three categories of countries where these "not on-line" information services provided by telephone, SMS or Internet were implemented:

- Austria, Ireland, Italy, Portugal and Germany: in these countries, in particular the first three, on-line information services have been implemented in addition to "not on-line" services. In these countries, TT as part of NP is considered potentially quite relevant, due to a combination of factors as identified under "Group 2".
- In Hungary and Iceland, only "not on-line" information services have been introduced and the existing framing factors (e.g., price differentials dependent on the mobile terminating network, combined with *network oriented* prices, and a high association "mobile number – mobile operator") indicate that TT in relation to NP is an important area of concern. In Hungary, where NP was introduced in May of 2004 (with, respectively, 0,50% and 1,3% of mobile and geographical ported numbers at the end of the year, calculated in relation to the total numbers of mobile subscribers and of main fixed accesses), the actual level of "price differences" was not available. In Iceland, MNP was only introduced in October 2004 and at the end of that year around 1,1% of mobile numbers were ported.
- Finland, Greece, The Netherlands, Estonia, Switzerland, Denmark, Norway, United Kingdom: in all these countries only "not on-line" information services have been introduced and the existing framing factors (e.g. price differentials dependent on the mobile and/or fixed terminating network combined with medium/low, or even non-existent, end user "number-operator" association, as well as "network oriented" prices⁹⁹) makes TT a significant issue, although not solely in relation to NP. Taking the example of Finland, where mobile-to-mobile price differences between in-net and off-net calls may reach 500%, the difficulty for most end users in identifying the network called by number dialled, and subsequently the price to pay, existed before

⁹⁹ In UK *network oriented prices* only apply to mobile-to-mobile calls to ported numbers.

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the introduction of NP. However, after NP was implemented, as elsewhere, the tariffing rules applied to calls to ported numbers is “network oriented”. Any service providing information about the operator to which individual numbers are allocated must have the additional capacity to identify such networks in the case of ported numbers.

Estonia referred to one of the future tasks for ENCB during 2005 would be to provide a service which allows end users to compare retail prices of various service providers and telecommunication products.

In Iceland, PTA is considering implementing a telephone service or SMS based information service.

Ofcom (UK) and EETT (Greece) do not consider TT in relation to MNP to be a significant problem. This is because only fixed to mobile call prices depend on the terminating network (reaching a maximum of 71% and 28%, respectively, in these two countries). The end user association between numbers and the respective operators is medium/low. Ofcom’s believe that any measures should be proportionate to the size of the problem and at present TT in relation to NP is not a significant problem. TT does not relate specifically to NP because even prior to the introduction of this functionality, end users would not generally be able to identify the operator through the number dialled. However it is recognised that should TT become a significant issue in the future, implementation of further, proportionate TT measures may be required.

Group 4: In Austria, Hungary, Germany and Lithuania (table 38) other measures have been implemented to promote TT in the scope of NP. As mentioned in relation to Groups 2 and 3, TT in relation to NP may be a relevant concern due to a combination of factors. In these four only Hungary does not have on-line announcements at the start of voice calls to ported numbers. The “other measures” comprise the provision of information about portability’s consequences in terms of TT within the customer contract. In Austria both MNOs and FTSP are obliged to highlight the difference between calls to ported numbers and calls to non-porting numbers. The provision of that information in the itemised bills is also mandatory in Hungary, but only for MNOs.

In conclusion, the evaluation and monitoring of the framing factors (i.e. the end user association between the dialling code and the respective operators, calling price differentials according to terminating network, and tariffing rules applied to calls to ported numbers) is important in order to decide which measures may be appropriate at a given point in time to promote TT in the context of NP.

Table 38 summarises the measures taken to promote TT for those calling ported numbers in Group 2, Group 3 and Group 4 (provision of information to end users about prices of calls to ported numbers) countries, together with the respective framing factors. Information on the date of implementation of NP and on the quantity of ported numbers is provided in Chapter 4 (Facts and Figures) of the report.

Note: In all countries where MVNOs are operational, NRAs advised that all measures which apply to MNOs also apply to virtual operators. However the responses received suggest that in some cases TT in relation to MVNOs may raise some additional concerns. Where end users calling a ported numbers are informed about the recipient operator, which is a MVNO, and prices are *network oriented* (prices equal to the ones applied to calls to the network in which MVNO is supported), information about the recipient network may not suffice.

Table 38 - Framing Factors and Measures to promote Tariff Transparency in voice calls (Group 2, 3 and 4)

	Tariffing Rules (calls to mobile numbers)	Tariffing Rules (calls to fixed numbers)	Highest Price difference depending on mobile terminating network – Fixed to Mobile calls	Highest Price difference between on-net calls and off-net calls – Mobile to Mobile calls	Highest price difference depending on mobile terminating network– Mobile to Fixed calls	Highest price difference between on-net calls and off-net calls– Fixed to fixed calls	Association between dialling codes and MNOs	Association between dialling codes and FTSPs	Telephone Information Service	Information Service by SMS	Information Service by Internet	On-line announcement at the beginning of voice calls	Other
Lithuania (Group 2, 3 and 4)	Network Oriented	Network oriented	400%	150%	150%	150%	High	High	No	No	No	Yes (imposed to FTSPs in calls to mobile and fixed numbers)	contracts
Portugal (Group 2 and 3)	Network oriented	Network oriented	46%	1635%	233%	140%	High	Low / Medium	Yes (imposed)	No	No	Yes (imposed to MNOs in calls to mobile ported numbers)	
Austria (Group 2 and 3)	Network oriented	Number oriented	30%	Do exist. But not known	0%	0%	High	None	No	No	Yes (MNOs initiative)	Yes (imposed to MNOs and FTSP in calls to mobile ported numbers)	Bills, contracts
Ireland (Group 2 and 3)	Network oriented	No common practice	32%	900%	0%	0%	High	None	No	Yes (initiative of one MNO)	No	Yes (MNOs initiative)	
Italy (Group 2 and 3)	Network oriented	Number oriented	40%	69%	Not available	0%	High	None	Yes (imposed / MNO's initiative)	Yes (MNOs initiative)	Yes (MNO's initiative)	Yes (imposed / MNO's initiative in calls to both mobile and fixed ported numbers)	

Transparency of retail prices (with implementation of Number Portability)

	Tariffing Rules (calls to mobile numbers)	Tariffing Rules (calls to fixed numbers)	Highest Price difference depending on mobile terminating network – Fixed to Mobile calls	Highest Price difference between on-net calls and off-net calls – Mobile to Mobile calls	Highest price difference depending on mobile terminating network– Mobile to Fixed calls	Highest price difference between on-net calls and off-net calls– Fixed to fixed calls	Association between dialling codes and MNOs	Association between dialling codes and FTSPs	Telephone Information Service	Information Service by SMS	Information Service by Internet	On-line announcement at the beginning of voice calls	Other
Hungary (Group 3 and 4)	Network oriented	Network oriented	Not available	Not available	0%	Not available	High	None	Yes (imposed)	Yes (MNOs initiative)	No	No	Bills, contracts
Iceland (Group 3)	Network oriented	Network oriented	43%	100%	43%	16%	High	None	No	No	Yes (imposed)	No	
Finland (Group 3)	Network oriented	Network oriented	0%	500%	0%	0%	Low / Medium	Low / Medium	Yes (imposed)	No	Yes (MNO and FTSP's initiative)	No	
Greece (Group 3)	Network oriented	Network oriented	28%	0%	0%	0%	Low / Medium	Low / Medium	Yes (imposed)	No	No	No	
The Netherlands (Group 3)	Network oriented	Network oriented	10%	0%	0%	20%	Low / Medium	Low / Medium	Yes (imposed)	No	Yes (service provided by NRA)	No	
Germany (Group 2, 3 and 4)	Network oriented (mobile to ported mobile); No common practice (fixed to ported mobile)	Network oriented	20%	200%	0%	Do exist. But not known	Low / Medium	None	Yes (MNO's initiative)	Yes (MNOs initiative)	Yes (MNOs initiative)	Yes (FTSP's initiative in some calls)	contracts
Estonia (Group 3)	Network oriented	Network oriented	25%	25%	20%	0%	Low / Medium	None	Yes (MNO's and FTSP's initiative)	No	Yes (service provided by NRA)	No	
Switzerland (Group 3)	Network oriented	Network oriented	40%	216%	0%	0%	Low / Medium	None	Yes (MNOs initiative)	Yes (MNOs initiative)	No	No	

Transparency of retail prices (with implementation of Number Portability)

	Tariffing Rules (calls to mobile numbers)	Tariffing Rules (calls to fixed numbers)	Highest Price difference depending on mobile terminating network – Fixed to Mobile calls	Highest Price difference between on-net calls and off-net calls – Mobile to Mobile calls	Highest price difference depending on mobile terminating network– Mobile to Fixed calls	Highest price difference between on-net calls and off-net calls– Fixed to fixed calls	Association between dialling codes and MNOs	Association between dialling codes and FTSPs	Telephone Information Service	Information Service by SMS	Information Service by Internet	On-line announcement at the beginning of voice calls	Other
Denmark (Group 3)	Network oriented	Network oriented	45%	0%	0%	0%	None	None	Yes (imposed)	No	Yes (MNO and FTSP initiative)	No	
Norway (Group 3)	Network oriented	Network oriented	35%	30%	0%	0%	None	None	Yes (MNO's initiative)	No	No	No	
United Kingdom (Group 3)	Network oriented (mobile to ported mobile); Number oriented (fixed to ported mobile)	Number oriented	71%	0%	0%	0%	None	None	Yes (by agreement with MNOs)	No	No	No	

Complaints

There is little specific information available about TT complaints in relation to NP (only five NRA's provided these elements). The complaints recorded by France, Ireland, UK and Finland were negligible in relation to total complaints received.

The most complaints recorded were in Portugal. Here there were a number of complaints about on-line announcements at the start of voice calls in the first few months after its implementation, but those complaints tended to fall off with time. Portugal also found that prior to the implementation of on-line announcements, several end users had complained about the lack of measures to promote TT in relation to NP. Some end users had also complained about the charges introduced by some FTSPs for the porting process.

It may be useful to take note of the most common complaints in this regard so that the most effective measures may be taken.

7 CONCLUSIONS

The implementation of NP may lead to some problems in terms of tariff transparency for end users porting their numbers, or for end users calling to ported numbers, if adequate measures are not taken to avoid them.

This report summarises the responses to a questionnaire issued by IRG EU WG received, from 23 European NRAs regarding the measures implemented in their respective countries.

This information should be useful both for NRAs which are implementing or have recently implemented this functionality and are now defining the rules for TT. Also for those NRAs that are interested in improving the measures to promote number portability and tariff transparency even where the functionality is well established.

The survey shows that the main concern for most NRAs has been TT for end users who call ported numbers, although some NRAs have implemented certain measures to facilitate TT for end users who port their numbers.

The extent of the problem or potential problem depends on several framing factors, which are particular to each country, such as:

- For end users who port their numbers: the existence of prices to be paid by end-users to donor or reception operators when porting a number; if such charging is allowed by the regulator, NRAs may evaluate the need to also specify the means considered adequate (e.g., contracts, websites) so that operators provide such information to end-users, in case of applying this kind of tariffs; NRAs may also consider appropriate to make available, for example in its own site, information on the rules defined towards the possibility of such charging and its eventual limits.
- For end users who call ported numbers, there are a number of factors and the way in which they are combined which may necessitate specific solutions to ensure end users are adequately informed: end user number-operator association; significant price differences for calls, dependent upon the terminating network; rules applied by the operators when defining the prices of calls to ported numbers (these rules are related to the technical routing solution which, depends on whether the call is being directly or indirectly routed, and which may mean prices of calls to ported

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numbers are equivalent to those to the new network, or calls terminated at the network to which it was originally allocated). Such solutions may include, for example, the implementation of an announcement at start of mobile voice calls to ported numbers, informing the end user the mobile terminating network, or indicating him if the call is an off-net call. These type of solution may be evaluated when:

- there is “network oriented prices”;
- calling parties are used to identify the terminating mobile operator by means of the dialled number;
- and the price to pay for calling is highly dependent on the same terminating network.

When there is no strong end user association between numbers and the respective operators or where the price differentials are not as relevant, there may be no case for on-line information, particularly is TT was an issue before NP implementation, rather than as a consequence of it. Although TT problems in general are extremely important, the present project focuses specifically on TT as a result of the introduction of NP functionality. However, some NRAs provided some examples of measures that apply to TT in general.

On the other hand, it may be that the need for measures in relation to NP is an issue that may increase as volumes of ported numbers increases. Although numbers remain low in several countries, for instance in Finland and Spain, (as at the end 2004) mobile ported numbers accounted for around 30% and 10,92% respectively of the total number of mobile subscribers. In the Czech Republic the ratio of fixed ported numbers to main accesses¹⁰⁰ reached 35%. With the expected increase in the use of NP functionality, it is possible that an increasing number of end users may experience difficulties when porting numbers or calling ported numbers (as there is a higher probability of end users porting their numbers and also a higher probability of end users calling to ported numbers) and if so, appropriate measures may be needed to avert this.

¹⁰⁰ "Main telephone accesses" refers to the sum of the number of simultaneous communications allowed by each telephone access (analogue or digital) installed. A single access may support several communications simultaneously: for each analogue telephone access it is not possible to establish more than a single communication at the same time; in the case of basic ISDN accesses the number of communications allowed simultaneously is two and for primary ISDN accesses this number is raised to 30.

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Thus, NRAs may wish to consider all these aspects when evaluating or re-evaluating the need and extent of regulator involvement in facilitating TT in relation to NP. It would be pragmatic to continue to monitor the situation as circumstances may change over time (with or without NRA's intervention).

NRAs may find that an analysis of their complaints data may prove helpful at two points of the implementation process:

- In the moment of the implementation of the initial measures, complaints may help to prioritise the actions to be taken;
- When re-evaluating the existing measures in the light of current market conditions with the proviso that some measures take time to be fully understood (e.g. on line announcements). Complaints data may also provide useful intelligence regarding the relevance end users attach to the price of calls to ported numbers.

NRAs should also bear in mind that their involvement may comprise direct measures (e.g. regulatory requirement for information services) or indirect measures (e.g. changes to numbering allocation criteria, reduction/elimination of wholesale price differentials between mobile and fixed terminating networks).

NRAs and operators should be also aware of the potential impact technical solutions for call routing to ported numbers may have on the tariff rules applied (i.e. direct routing facilitates the implementation of "network oriented pricing" whereas indirect routing facilitates the "number oriented pricing"). When evaluating the benefits and disadvantages of each routing solution, NRAs may also wish to take into account the TT measures that might be implemented in each case.

Some additional factors, like price elasticity of demand should also be considered. In fact, in countries where there is a combination of "high risk" factors in terms of TT related to NP, if consumers are not particularly concerned about the prices to pay for calls ported numbers, NRAs should evaluate the need / degree of measures to implement. To this end, complaints are also a good indicator to evaluate the relevance that end users attribute to the price of calls to ported numbers.

NRAs may also wish to take account of additional factors, such as price elasticity of demand. In fact, in countries where there is a combination of "high risk" factors in terms of TT related to NP, if consumers are not particularly concerned about the prices to pay for calls to ported numbers, NRAs should evaluate the need/degree of measures to implement. As mentioned, complaints are also a good indicator to evaluate the relevance that end-users attribute to the price of calls to ported numbers.

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With specific reference to NP, NRAs may prefer to leave it to operators to implement measures. The responses to the survey show that in some countries where there are a number of risk factors in relation to TT, measures were imposed by law or by the regulator or the regulator has been involved in negotiating their implementation with the operators.

In most of the countries where such risks were identified, on-line announcements had been introduced. The survey found that when implementing on line announcements it is important to ensure that that callers have the facility to disable them (or request they be disabled) if they prefer.

Such announcements may need to be advised and explained properly to callers to avoid any misunderstanding. The content of the on-line message must be displayed clearly to avoid confusion on the part of the calling parties which may encourage them to ring off. An on-line beep tone may be another option, combined with for example, a “not on-line” service which identifies the terminating network. However, a beep-tone may also be misunderstood by end users if there are an insignificant amount of ported numbers as end users are unlikely to encounter the beep tone.

Where NP is at the early stages of development clear and self-explanatory content is advisable to avoid future misunderstandings and subsequent complaints. Where there is a high volume of ported numbers it will be easier to implement an effective information campaign and thus on line beep tones and/or short messages will be easier for end users to understand. In certain circumstances, on line solutions may be adequate provide the content is clearly defined either by the operator and/or by the NRA, thereby minimising the number of complaints as end users get used to the service. NRAs may wish to consider whether the content of such announcements should be uniform.

NRAs should also bear in mind that services to promote TT in the context of NP (e.g. telephone information service, internet information service) may need to be monitored in certain cases to make sure they are working properly and that any database on which they are based is accurate and fully up to date. In fact, if the service is provided by a call centre, the operator should be properly trained in relation to NP and its implications for the prices charged to a given ported number.

Looking ahead, it is possible that the complexity of TT in relation to NP may increase, for example:

- With the introduction of 3G networks and new services, e.g. video-calling services TT measures in relation to NP have yet to be applied in many cases. For example, in those countries where there are on-line announcements for voice calls, these

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are not currently displayed for mobile originating video-calls. The evaluation of the framing factors as described in the present report may also be relevant for the implementation of efficient measures for these types of calls.

- In countries where MVNOs are about to be introduced, it may be necessary to apply the current analysis on TT to MVNOs. Where MVNOs already operate, the same measures are in general being applied.
- The introduction of VoIP may also impact on NP and therefore TT. For example, numbering plans for VoIP services has yet to be agreed (e.g. VoIP services may have their own access prefix or use existing access prefixes, or maybe both).

ANNEX 1 – Acronyms

Terms	Acronyms
Fixed Number Portability / Number Portability for Fixed Telephone Service	FNP
Fixed Telephone Service	FTS
Fixed Telephone Service Provider	FTSP
Independent Regulators Group	IRG
Interactive voice response	IVR
Mobile Network Operator	MNO
Mobile Number Portability / Number Portability for Mobile Telephone Service	MNP
Mobile Telephone Service	MTS
Not Applicable	N/A
Number Portability	NP
National Regulatory Authority	NRA
Tariff Transparency	TT
Third Generation	3G
Universal Service	US
Working Group	WG

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Countries	NRA's acronyms
Austria	RTR
Cyprus	OCTPR
Czech Republic	CTU
Denmark	NITA
Estonia	ENCB
Finland	FICORA
France	ARCEP
Germany	BNetzA
Greece	EETT
The Netherlands	OPTA
Hungary	NHH
Island	PTA
Ireland	ComReg
Italy	AGCOM
Lithuania	RRT
Malta	MCA
Norway	NPT
Poland	URTIP
Portugal	ANACOM
Spain	CMT
Sweden	PTS
Switzerland	BAKOM
United Kingdom	Ofcom

ANNEX 2 – COUNTRIES WITH POTENTIAL COMBINATION OF “HIGH RISK” OR “MEDIUM RISK” IN TERMS OF TARIFF TRANSPARENCY PROBLEMS RESULTING FROM THE IMPLEMENTATION OF NP

Table 3 (page 14 of the report) is based on the information presented in the charts below. These relate to MTS and FTS respectively), in accordance with the specific framing factors which apply. “Significant price differentials according to terminating fixed and mobile network”, “Association established by end users between the dialling codes and the respective MNOs and FTSPs” and the “Tariffing rule applied in calls ported numbers”, countries are classified in three main groups:

- Countries that have a potential “high risk” of having TT problems as a result of the implementation of NP (quadrant 4);
- Countries that have a potential “medium risk” of having TT problems as a result of the implementation of NP (quadrant 5);
- Countries that have a potential “no risk” of having TT problems as a result of the implementation of NP (quadrants 1, 2, 3 and 6).

It is important to remember that TT in relation to NP is only a problem if the tariff rule applied to ported numbers is “network oriented”. In countries where there are no “no common practices” between operators “network oriented pricing” is also likely to be implemented. As such these countries may have TT in the context of NP.

Mobile Telephone Service

High association between dialling codes and MNOs	<p>Quadrant 1 (potential “no risk” combination)</p> <p>Cyprus</p>	<p>Quadrant 4 (potential “high risk” combination)</p> <p>Spain, Lithuania, Austria, Portugal, Iceland, Italy, Ireland</p>
Low / Medium association between dialling codes and MNOs	<p>Quadrant 2 (potential “no risk” combination)</p>	<p>Quadrant 5 (potential “Medium risk” combination)</p> <p>Sweden, Finland, Greece, The Netherlands, Germany, Estonia, Switzerland</p>
No association between dialling codes and MNOs	<p>Quadrant 3 (potential “no risk” combination)</p>	<p>Quadrant 6 (potential “no risk” combination)</p> <p>Denmark, Norway, UK</p>
Price differences according to the mobile terminating network are not significant		Price differences according to the mobile terminating network are significant

- France has “number oriented pricing” and for that reason was not included in the chart above. France is a “no risk” country, because “number oriented pricing” is implemented.
- Spain has “no common practice”, and for that reason it is likely that some operators are implementing “network oriented pricing”. Thus, Spain has a combination of “high risk” factors.
- Austria has significant price differentials between fixed to mobile voice calls.
- The percentage of countries which belong to each of the three groups identified (no risk, medium risk and high risk combination) is calculated based on the number of countries which responded to this specific question of the questionnaire related to the framing factors and where MNP was implemented.

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- The percentage of countries which belong to each of the three groups identified (no risk, medium risk and high risk combination) is calculated based on the number of countries which responded to this specific question in relation to the framing factors and where MNP had been implemented.
- In this case the number of countries falling within this subgroup is 19 countries: France, Italy, Cyprus, Spain, Lithuania, Austria, Portugal, Iceland, Ireland, Sweden, Finland, Greece, The Netherlands, Germany, Estonia, Switzerland, Denmark, Norway and the UK.

Fixed Telephone Service

High association between dialling codes and FTSPs	<p>Quadrant 1 (potential “no risk” combination)</p>	<p>Quadrant 4 (potential “high risk” combination)</p> <p>Spain, Lithuania</p>
Low / Medium association between dialling codes and FTSPs	<p>Quadrant 2 (potential “no risk” combination)</p> <p>Finland, Greece</p>	<p>Quadrant 5 (potential “Medium risk” combination)</p> <p>Portugal, The Netherlands</p>
No association between dialling codes and FTSPs	<p>Quadrant 3 (potential “no risk” combination)</p> <p>Cyprus, Switzerland, Denmark, Norway, Ireland</p>	<p>Quadrant 6 (potential “no risk” combination)</p> <p>Sweden, Iceland, Germany, Estonia</p>
Price differences according to the fixed terminating network are not significant		Price differences according to the fixed terminating network are significant

- Austria, Czech Republic, Italy and the UK have “number oriented pricing” and for that reason were not included in the chart above. These countries are “no risk” countries, because “number oriented pricing” is implemented.
- The percentage of countries which belong to each of the three groups identified (no risk, medium risk and high risk combination) is calculated based on the number of

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countries which responded to this specific question in relation to the framing factors and where FNP had been implemented.

- In this case the number of countries falling within this subgroup is 19 (Czech Republic, Italy, Cyprus, Spain, Lithuania, Austria, Portugal, Iceland, Ireland, Sweden, Finland, Greece, The Netherlands, Germany, Estonia, Switzerland, Denmark, Norway and the UK).

ANNEX 3 – Questionnaire

ANNEX 4 – Additional question