Electronic Communications Committee (ECC)
within the European Conference of Postal and Telecommunications Administrations (CEPT)

NUMBER ASSIGNMENT PRACTICES IN CEPT COUNTRIES

Malta, May 2005

EXECUTIVE SUMMARY

This report examines how number assignment practices have evolved in CEPT countries, with the purpose of identifying alternative approaches to assignment of numbers, and current developments and future trends in number assignment.

The report examines 5 main aspects of number assignment practices:

- Assignment of numbers in blocks, compared with assignment of numbers individually
- Assignment of numbers to end users via assignment to network operators or service providers, compared with direct assignment to end users
- Assignment of numbers via administrative procedures, lotteries and auctions
- Costs of assigning numbers, and charges and fees for numbers
- Rights of end users over numbers.

Individual number assignment and 1-step assignment are considered to be most appropriate for number ranges where:

- Certain individual numbers are of greater value to end users than others, or the number range as a whole is regarded as valuable
- The numbers are subject to portability; in particular, implementations of portability that rely on the use of a central reference database may facilitate the implementation of individual number assignment.

These methods of number assignment have the potential to provide significant benefits to end users, but may involve additional costs for numbering plan administrators and network operators. Additionally, any transition from an existing system of 2-step assignment of numbers to 1-step assignment requires careful preparation and management.

Assignment of numbers via administrative procedure is most appropriate for numbers that are assigned in blocks. Competitive methods of assignment, such as lotteries and auctions, are best suited to numbers that are assigned individually and in 1 step.

The level of human resources required for number assignment in a given country increases as the telephone penetration rate increases, the number of network operators and service providers that require numbers increases, and if numbers are assigned individually. These factors may influence the application of administrative charges for numbers. Nevertheless, the variation among CEPT countries regarding whether administrative charges and fees for rights of use are applied, the level of those charges and fees, and how they are applied, is considerable. Variations in administrative charges may be attributable to more or less intensive procedures for number assignment, or to higher or lower costs (e.g. staff or IT costs). Variations with respect to fees for rights of use may be expected between countries where there are differences in the emphasis on or need for number efficiency.

1-step assignment of numbers is associated with, and enables, a greater level of rights by end users over the numbers they are allocated. In some cases, 1-step assignment frees end users from any restrictions on their use of numbers which would otherwise be imposed by the network operator or service provider in their contract or conditions of supply of service. With the trend towards use of a single number for multiple services – including some that may be closely related to Internet applications, for example as facilitated by ENUM – these rights are likely to become more important. Consequently, the benefits of 1-step assignment for numbers which are likely to be used in connection with more than one service deserve further investigation.

The report ends with a series of five recommendations for further activities by NNA Working Group with respect to issues identified in the body of the report.

INDEX TABLE

1 INTRODUCTION

This report takes an updated look at the practices followed in assigning numbers in CEPT countries. A report by the European Telecommunications Office in 1997, entitled "Harmonised National Numbering Conventions", addressed topics related to those in the present report. This report examines how number assignment practices have evolved in CEPT countries, with the purpose of identifying:

- Alternative approaches to assignment of numbers; and
- Current developments and future trends in number assignment.

Data in this report is based on a survey of numbering plan administrators conducted in late 2002 and 2003, and updated in the first half of 2004.

2 WHAT ENTITY IS RESPONSIBLE FOR NUMBER ASSIGNMENT?

In all CEPT countries in which the telecommunications market is liberalised, National Regulatory Authorities are solely responsible for assignment of almost all types of telecommunications numbers. In a small number of countries, the incumbent operator may retain responsibility for assignment of special types of numbers, such as national signalling point codes, but this situation is not expected to continue.

3 ARE NUMBERS ASSIGNED IN BLOCKS OR INDIVIDUALLY; ARE NUMBERS ASSIGNED IN 1 STEP OR IN 2?

Assignment of number blocks refers to assignment of numbers in contiguous series; the quantity of numbers in a block is usually a power of 10. *Individual assignment of numbers* refers to assignment on a number by number basis and, where more than one number is required by an applicant, it may be necessary to make a separate application for each number.

2-step assignment of numbers refers to an initial assignment of numbers by the national numbering plan administrator to a network operator or service provider, followed by the allocation of a number by the network operator or service provider to an end user. *1-step assignment of numbers* refers to the assignment of a number directly by the national numbering plan administrator to an end user. This distinction is illustrated in Figure 1 below.

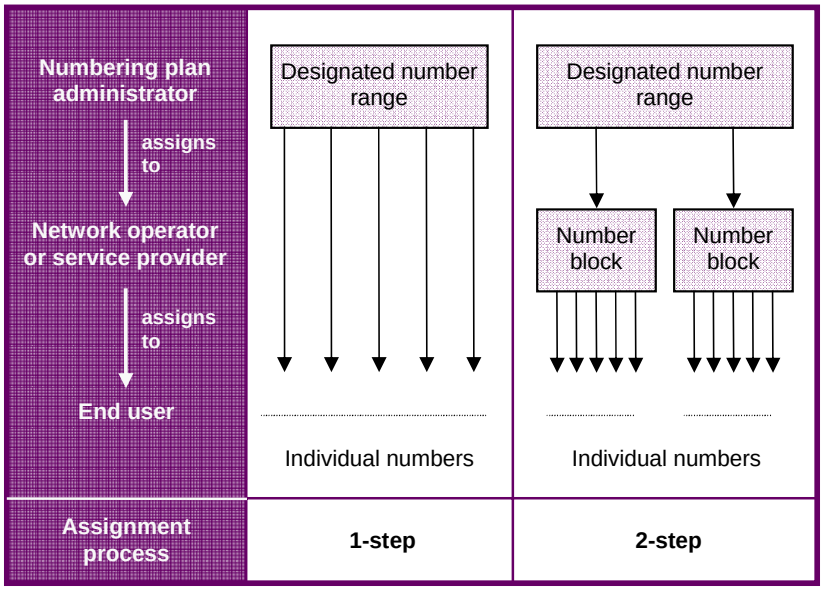

Figure 1: 2-step & 1-step assignment of numbers

In CEPT countries, individual assignment of subscriber numbers, where it exists, is usually implemented with assignment of numbers directly to end users, although it is also possible to assign these numbers individually to network operators or service providers that subsequently assign them to their customers. For other types of numbers that are assigned individually, such as directory enquiries codes, there is generally no purpose in assigning them directly to end users. It is also feasible to assign blocks of subscriber numbers directly to end users.

3.1 Geographic numbers

In all CEPT countries, geographic numbers are assigned in blocks. The most common size of geographic number blocks is 10 000 numbers. In Sweden, geographic numbers may also be assigned in very small blocks of 100 numbers.

Geographic numbers are, in all countries, assigned in 2 steps; that is, to network operators or service providers in the first step and to end users in the second step.

3.2 Mobile numbers

In all CEPT countries, mobile numbers are assigned in blocks, with the block size ranging from 1000 numbers in Croatia and Sweden to 10 million numbers in Portugal.

As with geographic numbers, mobile numbers are assigned in 2 steps in all countries.

3.3 Service numbers

At least some service numbers are assigned individually in 12 CEPT countries. The countries in which individual number assignment is practised, and the types of service numbers which are subject to this practice, are listed in Table 1:

	Freephone	Shared cost	Premium rate	Personal	Internet dialup	Voice over IP	Mass traffic	Calling card	"Innovative"	Location-independent	SMS and MMS
AUSTRIA	✓	✓	✓		✓						
CZECH REPUBLIC	✓	✓			✓			✓			
FINLAND										✓	
GERMANY	✓	✓	✓	✓	✓						
GREECE								✓			
IRELAND					✓						✓
LUXEMBOURG	✓	✓	✓								
NETHERLANDS	✓	✓	✓		✓		✓				
NORWAY										✓	
SLOVENIA					✓	✓					
SWITZERLAND	✓	✓	✓	✓							

Table 1: Individual assignment of service numbers

Where service numbers are assigned in blocks, the minimum block size ranges from 10 numbers in Slovenia to 10,000 numbers in most other countries.

At least some service numbers are assigned directly to end users in 6 CEPT countries. The countries in which 1-step assignment is practised, and the types of service numbers which are subject to this practice, are listed in Table 2.

	Freephone	Shared cost	Premium rate	Personal	Internet dialup	Mass traffic	"Innovative"	Location-independent
AUSTRIA	✓	✓	✓		✓			
FINLAND								✓
GERMANY	✓	✓	✓	✓	✓			
NETHERLANDS	✓	✓	✓	✓	✓	✓		
NORWAY								✓
SWITZERLAND	✓	✓	✓	✓				

Table 2: 1-step assignment of service numbers

It may be allowable for the same type of service number to be assigned either in 1 step or in 2; that is, some countries may assign certain types of service numbers both directly to end users, and via network operators or service providers.

3.4 Short numbers and short codes

Short numbers and short codes are generally assigned individually, but are assigned in 1 step in some countries and in 2 steps in other countries. Short codes such as carrier selection codes and directory enquiry codes are assigned in 1 step to the relevant network operator or service provider. Other types of short numbers may be assigned in either 1 or 2 steps; Table 3 indicates the other types of short numbers other than carrier selection codes and directory enquiry codes which are assigned in 1 step in certain countries.

	Mass traffic	Operator information	Internet dialup	Data network	Pubic interest
AUSTRIA					✓
LUXEMBOURG	✓				
SLOVAK REPUBLIC		✓	✓	✓	
SLOVENIA					✓

Table 3: 1-step assignment of short numbers

3.5 Benefits and disadvantages of individual number assignment and 1-step assignment

The benefits of individual number assignment and 1-step assignment are:

- The national numbering plan administrator may have direct access to data regarding assigned numbers and more control over whether numbers are being used effectively
- Individual number assignment procedures can be considerably simpler than those for assignment of numbers in blocks – due to ease of verifying that the quantity of numbers requested reflects the actual need for numbers – with the consequence that the workload is not onerous
- Demand for numbers that are easy to advertise for business purposes can readily be met, and the market for content providers, which rely on access to individual "golden" numbers, is fostered
- Efficiency in the use of numbers is promoted
- Discrimination in the assignment of numbers and opportunities for gaining an unfair competitive advantage are minimised and transparency of the number assignment process is promoted
- Better management of available number capacity in circumstances where the quantity of available numbers does not make it practical to assign numbers in blocks
- Enabling problems relating to numbers, such as misuse, to be more readily addressed.

The disadvantages of individual number assignment and 1-step assignment are:

- It is less cost-effective than assignment of numbers in blocks, especially when large quantities of numbers are involved, given that the cost of assigning an individual number is usually identical to that of assigning a block of numbers
- The national numbering plan administrator is more likely to be required to handle complaints regarding "golden" numbers
- The workload, administrative burden and costs of the national numbering plan administrator increase, and the workload may be subject to sudden changes when new number ranges are opened or promotional campaigns are conducted
- Updating and maintaining data related to individual number assignments is more complex and creates an additional overhead for the national numbering plan administrator
- It is impractical for certain types of numbers
- It is more difficult to maintain a connection between an end user and the national numbering plan administrator
- Invoicing numbering fees and charges is more complex
- Establishing databases required by network operators for routing and, in respect of premium rate numbers, charging, involves considerable cost
- Activating individual numbers is more costly for network operators
- Call routing is more complicated and addressing these complications is expensive
- Network operators and service providers no longer have a pool of free numbers which they can readily use in offering services and products
- In cases where there is little demand for individual numbers, the effort and costs of moving to individual number assignment is not justified.

3.6 Transition from 2-step to 1-step assignment

In some countries, 1-step assignment was introduced at the same that a new number range for a particular type of service was introduced. This approach avoided "legacy" problems; that is, the need to change the status of numbers that were already allocated to end users under the previous method of assignment.

In other countries, the 1-step method of assignment replaced an existing 2-step assignment system for the same number range. Legacy problems could not be avoided in these cases, and some of the issues faced during the move from one system to another are described below:

- *Number blocks reclaimed and individual numbers considered as assigned to end users*
  Blocks of numbers that were previously assigned to network operators or service providers needed to be reclaimed by the national numbering plan administrator. Numbers from these reclaimed blocks, which were allocated by the operators or service providers to end users at the time of the move to a 1-step assignment system, were automatically considered as assigned by the national numbering plan administrator to the end user.

- *Status of quarantined numbers preserved*
  Numbers which were subject to quarantine by a network operator or service provider – that is, unavailable for re-allocation for a specified period after de-activation – remained unavailable for assignment by the national numbering plan administrator for the remainder of the quarantine period.
- *Details of activated numbers loaded into national numbering plan administrator assignment database*
  Network operators or service providers that had allocated numbers to end users provided details of those numbers that were activated at the time of the move to a 1-step assignment system to the national numbering plan administrator, including the names and addresses of the end users to which the numbers were allocated.
  The database used by the national numbering plan administrator to record assignments was populated with these details.
- *Details of activated numbers loaded into operators' routing database(s)*
  The database or databases used by network operators for routing of calls to ported numbers were populated with details of all activated numbers.

3.7 Conclusions

1. Individual number assignment and 1-step assignment are most appropriate for number ranges where:
   - Certain individual numbers are of greater value to end users than others, or the number range as a whole is regarded as valuable (for example, because all the numbers are short)
   - The numbers are subject to portability; in particular, implementations of portability that rely on the use of a central reference database may facilitate the implementation of individual number assignment.

2. Individual number assignment and 1-step assignment have the potential to provide significant benefits to end users, but may involve additional costs for numbering plan administrators and network operators.

3. The transition from a system of 2-step assignment of numbers to 1-step assignment requires careful preparation and management.

3.8 Recommendation

A. NNA Working Group should investigate the operational implications of the assignment of geographic numbers in small blocks, and the extent to which it is beneficial and feasible to make such assignments.

4 WHAT METHODS ARE USED TO ASSIGN NUMBERS?

4.1 Assignment of numbers via administrative procedure

In most CEPT countries, all types of numbers are assigned via an administrative assignment procedure, where – all other considerations being equal – the first applicant to request a particular number is assigned that number.

4.2 Assignment of numbers via lottery

Lotteries have been used, or the possibility of using lotteries allowed, in 8 CEPT countries. The use of lotteries is generally limited to assignment of numbers immediately after the opening of a new number range, but is also used in cases where more than one application for the same number is submitted at the same time. The countries in which numbers are or have been assigned via lottery, and the types of numbers subject to this practice, are listed in Table 4.

		Geographic	Mobile	Service	Carrier selection	Directory enquiry	SMS and MMS
Relating to newly-opened number ranges	FINLAND						✓
	GERMANY				✓	✓	
	IRELAND					✓	✓
	PORTUGAL				✓		
	SWITZERLAND				✓		
	UNITED KINGDOM					✓	
Relating to numbers subject to multiple, simultaneous applications	AUSTRIA		✓	✓	✓	✓	✓
	GERMANY				✓	✓	
	NETHERLANDS			✓			
	SLOVAK REPUBLIC	✓	✓	✓	✓	✓	

Table 4: Assignment of numbers via lottery

4.3 Assignment of numbers via auction

Auctions are not currently used for assignment of numbers in any CEPT country, but their introduction is scheduled in the Netherlands for the third quarter of 2004. Auctions in that country will, for a limited period, apply to a new corporate number range and possibly to some new short codes, because such new numbers are considered to be of exceptional economic value.

4.4 Numbers of exceptional economic value

Article 5 of Directive 2002/20/EC of the European Parliament and of the Council of 7 March 2002 (Authorisation Directive) recognises that numbers of exceptional economic value may be assigned through competitive or comparative selection procedures; that is, lotteries and auctions.

There are different views among CEPT countries regarding which numbers or types of numbers could be characterised as “numbers of exceptional value”. These views are summarised in Table 5.

	Directory enquiry codes	Carrier selection codes	Internet dialup codes	Private network codes	Corporate numbers	Non-geographic numbers	Short numbers	"Golden" numbers	Easily remembered numbers	Special sequences of digits	Scarce numbers
AUSTRIA	✓	✓		✓				✓			
BELGIUM							✓	✓	✓		
BULGARIA								✓	✓		
CROATIA		✓					✓				
DENMARK							✓				
FINLAND							✓				
FRANCE	✓	✓[1]									✓[2]
GERMANY							✓			✓	
GREECE							✓	✓	✓		✓
HUNGARY							✓				
IRELAND									✓	✓	
LUXEMBOURG							✓				
NETHERLANDS					✓		✓				
NORWAY							✓				
POLAND		✓	✓								
ROMANIA							✓				
SLOVAK REPUBLIC							✓		✓		
SLOVENIA		✓					✓				
SPAIN						✓					
SWEDEN							✓		✓		
SWITZERLAND							✓	✓	✓		
UNITED KINGDOM								✓	✓	✓	

Table 5: What are numbers of exceptional value?

Note 1: 1-digit Carrier Selection codes only (4-digit CS codes also exist)
Note 2: to precise on a case-by-case basis

From this summary, it is evident that the most common view of what are numbers of exceptional economic value is that they are short. This view clearly relates to the inherent scarcity of short numbers. "Golden" numbers and numbers that are easily remembered are also commonly perceived as numbers of exceptional economic value. "Golden" numbers are generally regarded as numbers which provide additional value to commercial end users because the sequence of digits is easily remembered or corresponds to a meaningful name on an alphanumeric keypad.

It is necessary for national numbering plan administrators in EU countries that wish to employ lotteries or auctions to assign numbers to assure themselves that the numbers to which these selection methods will apply are, indeed, numbers of exceptional economic value.

Article 5.4 of the Authorisation Directive offers a means by which national numbering plan administrators may obtain such an assurance, by indicating that these competitive and comparative selection methods are expected to be employed only after consultation with interested parties has occurred. Such consultation could be used to determine both:

- What types of numbers are, or are not, regarded as numbers of exceptional economic value
- Whether it is appropriate to apply a particular competitive or comparative selection method – auctions, lotteries or "beauty contests" – to the assignment of these numbers.

4.5 Benefits and disadvantages of different methods of assigning numbers

The benefits of assigning numbers via administrative procedures are:

- Simplicity
- Efficiency
- Transparency
- Lower cost compared to alternative methods
- The lack of any scarcity of numbers.

The benefits of assigning numbers via lottery are perceived as:

- Objectivity
- Transparency
- Non-discrimination and fairness, especially in relation to "golden" numbers.

However, lotteries may be expensive to use for routine assignment of numbers.

The principal benefit of assigning numbers via auction is promoting efficiency in the allocation of numbers with exceptional economic value.

A possible disadvantage of assigning numbers via lottery is the unfair advance knowledge of a planned lottery which certain network operators may obtain, such as through membership of an advisory committee to the national numbering plan administrator on numbering matters.

It should be noted that both lotteries and auctions may require special rules to address the situation where an organisation or individual may have rights to a number based on prior use or copyright considerations.

4.6 Conclusions

4. Assignment of numbers via administrative procedure is most appropriate for numbers that are assigned in blocks.

5. Competitive methods of assignment, such as lotteries and auctions, are best suited to numbers that are assigned individually and in 1 step.

4.7 Recommendation

B. NNA Working Group should further investigate the scope for use of auctions for assignments of numbers.

5 WHAT ARE THE COSTS OF MANAGING NUMBER ASSIGNMENTS?

5.1 Costs of numbering database

The costs of installation and maintenance of the numbering database used for assignment of numbers varies considerably, depending to some extent on whether the database is integrated with other information systems operated by a National Regulatory Authority, and on whether the database is used for assignment of numbers individually.

Where the numbering database is integrated with other information systems and individual number assignment is not practised, the cost of installation can be quite low; for example, €3000 in Greece. Installation of a separate information system for numbering which is also used in connection with individual number assignment may involve costs in the order of hundreds of thousands of Euros (Netherlands, Switzerland), but this may be less when the quantity of numbers assigned individually is small.

The human resources required for assignment of numbers also vary widely, from 1 person in several CEPT countries up to 10 in the United Kingdom. The level of resources is closely related to the number of market players in a given country which require assignments of numbers.

5.2 Administrative charges and fees for rights of use

Articles 12 and 13 of the Authorisation Directive specify requirements which National Regulatory Authorities must meet in levying charges and fees related to granting rights of use of numbers. The Authorisation Directive envisages two types of charges and fees:

- Charges, both one-off and recurrent, which correspond to the actual administrative costs of managing the system for granting rights of use of numbers and the on-going costs of management of a national numbering plan
- Fees for rights of use, in all cases recurrent, which correspond to the need to promote efficient use of numbers, and may also correspond to the value of particular numbers or number ranges.

Cost allocation and cost accounting systems are being introduced by some National Regulatory Authorities in order to make accurate assessments of their administrative costs. Charges which are calculated via cost allocation and cost accounting systems for charges are typically based on the estimated expenses for specific cost areas within a National Regulatory Authority for a future period – for example, the next 1 to 3 years. These expenses are usually divided into:

- Direct costs, which are those directly related to the effort of assigning numbers, of which the largest part is usually the labour costs of people involved in assignment activities
- Indirect costs, which are those associated with managing the national numbering plan, legal and general administrative costs, international coordination, and fixed costs (rent, etc.).

Tables 6 and 7 summarise the levels of administrative charges and fees for rights of use in CEPT countries.

	Geographic	Mobile	Freephone	Shared cost	Premium rate	Personal	Corporate	Internet	Carrier selection	Directory enquiries	NSPCs, ISPCs, MNCs,
BELGIUM	412 See note 1	1 373 See note 1	1 373 See note 1	1 373 See note 1	1 373 See note 1	1 373 See note 1			1 373 See note 1	1 373 See note 1	412 See note 1
BULGARIA									3750 See note 2		
CYPRUS	0.017	0.017	0.85		0.85	0.17	0.17	170	8 503		
CZECH REPUBLIC	158.35 See note 1	158.35 See note 1	158.35 See note 1	158.35 See note 1	158.35 See note 1	158.35 See note 1		158.35 See note 1	158.35 See note 1	158.35 See note 1	158.35 See note 1
GERMANY	10 digits: 0.50 11 digits: 0.05		62.5	62.5	62.5	62.5	0.05		500	2 600	NSPCs: 187.50 ISPCs: 375 MNCs: 750
GREECE	0.03	0.03	1.50	1.50	1.50	0.15	0.30	0.03	4 digits: 15 000 5 digits: 1 500	300	0
HUNGARY	0.09	0.09	0.09	0.09	0.09						
LITHUANIA	0.111	0.111	0.111	0.111	0.111	0.111	0.111	0.111	79		79
LUXEMBOURG	0.125	0.125	0.125, 63	0.125, 63	0.125, 63	0.125			1 250	1 250	1 000
NETHERLANDS	0.017	0.017	8 digits: 75 11 digits: 20	8 digits: 75 11 digits: 20	8 digits: 75 11 digits: 20	0.017		500	500	500	NSPCs: 62.50 ISPCs: 500 MNCs: 500
SLOVAKIA	40	40	40	40	40			40	40	40	40
SWITZERLAND	0.034	0.034	38.99	38.99	38.99	38.99	0.034		337.93	See note 3	

Table 6: Administrative charges imposed on one-off basis

General note: Figures are in Euros. The charge is per number unless otherwise indicated. Additional charge components may be applicable under certain conditions. Underlined figures represent charges for numbers that are directly assigned to end users.

Note 1: Administrative charges in Belgium and the Czech Republic are applied on a per-application basis.

Note 2: A charge is applied to the assignment of a carrier selection code in Bulgaria if the network operator wishes to choose the code.

Note 3: The administrative charge for directory enquiries codes in Switzerland is dependent on the time required to process an application.

	Geographic	Mobile	Freephone	Shared cost	Premium rate	Personal	Corporate	Internet	Carrier selection	Directory enquiries	NSPCs, ISPCs, MNCs,
BELGIUM	0.0138	0.0138	0.6862	0.6862	0.06862	0.0138			13 724	13 724	NSPCs: 0 ISPCs: 13 724 MNCs: 0
BULGARIA	0.01	0.07 See also note 1	0.50		0.50	0.25			1 000		NSPCs: 25 ISPCs: 500 MNCs: 500
CROATIA	0.25	0.046		0.25	4 digits: 25 6 digits: 2.5			0.25	2 500	250	130
CYPRUS	0.0136	0.0136	0.68		0.68	0.136	0.136	136	6 802		
CZECH REPUBLIC	0.03	0.03	15.01	22.52	300.30 See also note 2	3		30.03	4 digits: 6 342 5 digits: 3 171	900.90	NSPCs: 300.03 ISPCs: 3 167 MNCs: 3 167
DENMARK	0.236	0.236	0.236		0.236	0.236	0.236		2360	2360	NSPCs: 0.236 ISPCs: 23 600 MNCs: 2 360
ESTONIA	1.53	1.53	153		153				3 digits: 16 000 4 digits: 11 500 5 digits: 3 900	4 digits: 1 530	192
FINLAND	0.20 See also note 3	0.20 See also note 4	See note 5	See note 5	See note 5	0	See note 5		2 400 See also note 6		ISPCs: 1 600 NSPCs: 0.80 MNCs: 340
FRANCE	0.02	0.02	0.02	0.02	0.02	0.02	0.02				
GREECE	0.025	0.025	1.30	1.30	1.30	0.15	0.25	0.025	4 digits: 15 000 5 digits: 1 500	250	0
HUNGARY	0.26	0.26	0.26	0.26	0.26				5 280		NSPCs: 264 ISPCs: 2 640
ITALY	0.0108 ***reserv'n:*** 0.0125	0.0108 ***reserv'n:*** 0.0125							4 digits: 107 903 5 digits: 53 951 ***reserv'n:*** 4 digits: 53 951 5 digits: 26 976		

	Geographic	Mobile	Freephone	Shared cost	Premium rate	Personal	Corporate	Internet	Carrier selection	Directory enquiries	NSPCs, ISPCs, MNCs,
LITHUANIA	0.05	0.05	4.90	4.90	4.90	0.10	0.10	4.90	1 227		0
LUXEMBOURG	0.125	0.125	0.125, 63	0.125, 63	0.125, 63	0.125, 63			1 250	1250	500
NETHERLANDS	0.015	0.015	70, 20	70, 20	70, 20	0.015		250	250	250	NSPCs: 31.25 ISPCs: 250 MNCs: 250
NORWAY	0.01	0.01	0.10	0.1	0.1	0.06	0.06		6 900	1 400	
POLAND	0.07	0.07	0.60	0.60	0.60		0.60	120	4 digits: 13 000 5 digits: 1 300	115	NSPCs: 26 ISPCs: 2 600 MNCs: 260
SLOVAKIA	0.0005	0.0005	0.005 See also note 7	0.005	0.005			500	500	0	500
SLOVENIA	0.16	0.16	16	16	16			16	3 digits: 16 400 4 digits: 3 200 5 digits: 660	4 digits: 550 5 digits: 55	NSPCs: 55 ISPCs: 275 MNCs: 55
SPAIN	0.03	0.03	0.03	0.03	0.03	0.03		0.03	0.03 for amount of numbers equivalent to 1 9-digit number	0.03 for amount of numbers equivalent to 1 9-digit number	
SWEDEN	0.015	0.015	0.015	0.015	0.015	0.015			3 500	1 000	NSPCs: 0 ISPCs: 1 000 MNCs: 1 000
SWITZERLAND	0.013	0.013	5.85 See also note 8	5.85 See also note 8	5.85 See also note 8	5.85 See also note 8	0.013		487.39		NSPCs: 0 ISPCs: 1 000 MNCs: 1 000

Table 7: Fees for rights of use imposed on annual basis

General note: Figures are in Euros. The fee is per number. Additional fee components may be applicable under certain conditions. Underlined figures represent fees for numbers that are directly assigned to end users.

Note 1: Network operators in Bulgaria pay a discounted fee of €0.06 for each mobile number if half or less of an assigned block of mobile numbers is actually in use.

Note 2: The fee for premium rate numbers for adult services in the Czech Republic is €1501.50.

Note 3: Network operators in Finland pay a fee of €0.20 for each geographic number that is actually in use.

Note 4: Mobile numbers in Finland may be 6, 7 or 8 digits in length. Network operators pay a fee that is calculated based on the length of the prefix which defines the block of mobile numbers they are assigned. Hence, the fees are as follows -

3-digit prefix — €10 000
4-digit prefix — €2 000
5-digit prefix — €400.

Additionally, network operators pay a fee of €0.20 for each mobile number that is actually in use.

Note 5: The fee for freephone, shared cost and premium rate numbers in Finland cannot be represented as a fee per individual number because the length of these numbers can vary. The fee is calculated based on the length of the prefix which defines the block of freephone, shared cost or premium rate numbers they are assigned. Hence, the fees are as follows -

numbers available for nationwide use, 3-digit prefix — €30 000
numbers available for nationwide use, 4-digit prefix — €6 000
numbers available for nationwide use, 5-digit prefix — €1 200
numbers available for nationwide use, 6-digit prefix or longer — €240
numbers available for use only in a specific numbering area, 4-digit prefix — €1 000
numbers available for use only in a specific numbering area, 5-digit prefix or longer — €200.

Note 6: Carrier selection codes in Finland are also available specifically for international calls or national calls only. The fees for these codes are as follows -

3-digit carrier selection code for international calls only — €40 000
4-digit carrier selection code for international calls only — €8 000
5-digit carrier selection code for international calls only — €1 600
3-digit carrier selection code for national calls only — €20 000
4-digit carrier selection code for national calls only — €4 000
5-digit carrier selection code for national calls only — €800.

Note 7: When assigned individually, the fee for a freephone number in Slovakia is €2.50.

Note 8: An additional “basic fee” of €27.29 is applied in respect of freephone, shared cost and premium rate numbers in Switzerland, which includes costs associated with billing and maintenance of data.

5.3 Conclusions

6. The level of human resources required for number assignment in a given country increases:
   As the telephone penetration rate increases
   As the number of network operators and service providers that require numbers increases
   If numbers are assigned individually.

7. There is considerable variation among CEPT countries regarding whether administrative charges and fees for rights of use are applied, the level of the charges and fees, and how they are applied. Variations in administrative charges may be attributable to more or less intensive procedures for number assignment, or to higher or lower costs (e.g. staff or IT costs). Variations with respect to fees for rights of use may be expected between countries where there are differences in the emphasis on or need for number efficiency.

5.4 Recommendations

C. NNA Working Group should examine how lotteries and auctions have been used in certain countries to assign numbers which are perceived as possessing exceptional value.

D. NNA Working Group should invite National Regulatory Authorities to contribute information regarding:
   The reasons for the divergence in levels of charges and fees for numbers across CEPT countries
   The methods used to calculate administrative charges and fees for rights of use relating to number, the elements are included in these calculations, how simple it is to introduce and use these methods for calculating charges and fees, and the difficulties experienced in using them
   How direct and indirect administrative costs are assessed, and how administrative costs are published
   Whether the value of numbers can be reflected in fees for rights of use and, if so, how
   How fees for rights of use may be set in order to encourage the optimal use of numbers.

6 WHAT RIGHTS DO END USERS HAVE OVER NUMBERS THEY ARE ASSIGNED

6.1 Numbers assigned in 2 steps

A general right of use of the number (or right to keep the number) that an end user is assigned by a network operator or service provider is commonly established. In some cases, however, an end user's rights are essentially determined by the service contract between the end user and a network operator or service provider, or by the conditions of supply of a service (Finland, Greece). Some other specific rights include an end user's ability to change number if it is subject to nuisance calls, and an entitlement to have a number not published in a directory (Greece, Portugal).

Restrictions may be placed on the use of a number assigned by a network operator or service provider to an end user, and these are usually specified in a service contract or in the conditions of supply of service. A prohibition on transferring numbers is very common, although sub-assignment of numbers is permitted in the United Kingdom.

More generally, restrictions derived from the rules governing the initial assignment of numbers to the network operator or service provider are extended in Bulgaria, Germany and Switzerland to the allocation of the number to an end user. In respect of premium rate numbers, there are much more specific constraints on their use in some countries, including in relation to advice of call charges and content.

6.2 Numbers assigned in 1 step

The rights and restrictions described above may take on different characteristics when numbers are assigned in 1 step and end users are assigned their numbers directly.

In most countries, end users who are assigned numbers directly are assured of a general right of use of their number. This generally means that, under normal circumstances, they are able to keep the number. In some countries (Austria, Germany), they are also assured of the right to choose any network operator with which to activate their number.

Restrictions are placed on the use of directly-assigned numbers by end users in some countries. The most common restriction is that end users may not transfer numbers they have been assigned to a third party, especially where such a transfer involves a financial transaction (Austria, Germany, Luxembourg, Slovak Republic and Slovenia). The exceptions to this are the Netherlands and Switzerland where transfer of number is possible with the permission of the national numbering plan manager.

Other restrictions include a requirement on end users to activate a number within a specified time period and an obligation to use numbers in accordance with their corresponding assignment rules (Germany). In Switzerland, it is also expected that end users perform check that they are entitled to the use of an alphanumeric designation of a "golden" number. The same comment made in relation to premium rate numbers that are assigned in 2 steps – that quite specific constraints on their use exist in certain countries – applies also to premium rate numbers that are assigned directly to users.

In some countries, the restrictions on the use of directly-assigned numbers by end users are matched by restrictions on a national numbering plan administrator's actions with respect to the assigned numbers. The most common such restriction is that the national numbering plan manager has limited ability to withdraw a number from an end user. In the Netherlands, the national numbering plan manager also has limited scope to refuse the transfer of a number.

End users who are assigned numbers directly generally receive a formal document that can be used as proof of the assignment. This may take the form of a letter, official notification, certificate or order that reflects the assignment decision. This document may refer to any conditions of assignment.

6.3 Portability

One of the most important rights associated with use of numbers is the ability to port a number. This right exists in all the liberalised markets for geographic numbers, service numbers and mobile numbers. Porting is generally initiated by the end user making a porting request to the recipient network operator or service provider.

6.4 Conclusions

8. 1-step assignment of numbers appears to be associated with, and enables, a greater level of rights by end users over the numbers they are allocated. In some cases, 1-step assignment frees end users from any restrictions on their use of numbers which would otherwise be imposed by the network operator or service provider in their contract or conditions of supply of service.

9. With the trend towards use of a single number for multiple services – including some that may be closely related to Internet applications, for example as facilitated by ENUM – these rights are likely to become more important. Consequently, the benefits of 1-step assignment for numbers which are likely to be used in connection with more than one service deserve further investigation.

6.5 Recommendation

E. NNA Working Group should develop a minimum set of rights for end users, addressing the following matters in relation to use of numbers:
   - The continued use of numbers by end users
   - The circumstances in which numbers may be withdrawn from end users
   - The actions which should occur before and at the time a number is withdrawn from an end user
   - Proof of assignment of a number to an end user
   - Choice of network operator or service provider with which a number assigned to an end user is connected
   - Transferring a number assigned to an end user
   - Changing a number assigned to an end user that is subject to nuisance calls or frequent misdialling
   - Non-listing of a number assigned to an end user in a directory
   - Use of a number assigned to an end user for multiple services.

7 LIST OF CONCLUSIONS

1. Individual number assignment and 1-step assignment are most appropriate for number ranges where:
    - Certain individual numbers are of greater value to end users than others, or the number range as a whole is regarded as valuable (for example, because all the numbers are short)
    - The numbers are subject to portability; in particular, implementations of portability that rely on the use of a central reference database may facilitate the implementation of individual number assignment.

2. Individual number assignment and 1-step assignment have the potential to provide significant benefits to end users, but may involve additional costs for numbering plan administrators and network operators.

3. The transition from a system of 2-step assignment of numbers to 1-step assignment requires careful preparation and management.

4. Assignment of numbers via administrative procedure is most appropriate for numbers that are assigned in blocks.

5. Competitive methods of assignment, such as lotteries and auctions, are best suited to numbers that are assigned individually and in 1 step.

6. The level of human resources required for number assignment in a given country increases:
    - As the telephone penetration rate increases
    - As the number of network operators and service providers that require numbers increases
    - If numbers are assigned individually.

7. There is considerable variation among CEPT countries regarding whether administrative charges and fees for rights of use are applied, the level of the charges and fees, and how they are applied. Variations in administrative charges may be attributable to more or less intensive procedures for number assignment, or to higher or lower costs (e.g. staff or IT costs). Variations with respect to fees for rights of use may be expected between countries where there are differences in the emphasis on or need for number efficiency.

8. 1-step assignment of numbers appears to be associated with, and enables, a greater level of rights by end users over the numbers they are allocated. In some cases, 1-step assignment frees end users from any restrictions on their use of numbers which would otherwise be imposed by the network operator or service provider in their contract or conditions of supply of service.

9. With the trend towards use of a single number for multiple services – including some that may be closely related to Internet applications, for example as facilitated by ENUM – these rights are likely to become more important. Consequently, the benefits of 1-step assignment for numbers which are likely to be used in connection with more than one service deserve further investigation.

8 LIST OF RECOMMENDATIONS

A. NNA Working Group should investigate the operational implications of the assignment of geographic numbers in small blocks, and the extent to which it is beneficial and feasible to make such assignments.

B. NNA Working Group should further investigate the scope for use of auctions for assignments of numbers.

C. NNA Working Group should examine how lotteries and auctions have been used in certain countries to assign numbers which are perceived as possessing exceptional value.

D. NNA Working Group should invite National Regulatory Authorities to contribute information regarding:
   - The reasons for the divergence in levels of charges and fees for numbers across CEPT countries
   - The methods used to calculate administrative charges and fees for rights of use relating to number, the elements are included in these calculations, how simple it is to introduce and use these methods for calculating charges and fees, and the difficulties experienced in using them
   - How direct and indirect administrative costs are assessed, and how administrative costs are published
   - Whether the value of numbers can be reflected in fees for rights of use and, if so, how
   - How fees for rights of use may be set in order to encourage the optimal use of numbers.

E. NNA Working Group should develop a minimum set of rights for end users, addressing the following matters in relation to use of numbers:
   - The continued use of numbers by end users
   - The circumstances in which numbers may be withdrawn from end users
   - The actions which should occur before and at the time a number is withdrawn from an end user
   - Proof of assignment of a number to an end user
   - Choice of network operator or service provider with which a number assigned to an end user is connected
   - Transferring a number assigned to an end user
   - Changing a number assigned to an end user that is subject to nuisance calls or frequent misdialling
   - Non-listing of a number assigned to an end user in a directory
   - Use of a number assigned to an end user for multiple services.