

**INTERIM REPORT
ON
Project Management, Administration,
and Registrar Functions
for the ETNS Field Trial, Phase 2**



6 August 1999

ETO, on behalf of ECTRA, has prepared this study for the Commission of the European Union.

At this stage, the report does not necessarily reflect the views of ECTRA or the Commission, nor do ECTRA members or the Commission accept responsibility for the accuracy of the information contained herein.

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Steve Roberts from ETO has prepared this report. He has received the kind assistance of the other experts from ETO and Bassam Almoussa from Arcome who was a subcontractor on the project. You should note, however, that the report does not necessarily reflect the official opinions of the said organisations.

EXECUTIVE SUMMARY

The ETNS¹ is a numbering space intended for the implementation of pan-European services. The objective is that ITU will allocate a three-digit CC² to the ETNS to overlay the existing European CCs.

Based on the application to ITU³ signed by 24 European countries, it reserved, in May 1997, the CC 388 for ETNS testing. ITU made this reservation with three conditions:

- the code was to be used only for a field trial during the reservation period
- the reservation would terminate at the closing of the first ITU-T⁴ Study Group 2 meeting in 1999
- the applicant would provide twelve points of information requested by ITU

The field trial comprises two phases:

- phase 1, to prepare a business plan to assess the feasibility of the trial and a work plan for the trial, and to identify necessary actions and time-schedules needed for the implementation of the trial
- phase 2, to carry out the necessary actions needed to implement the trial

This work order covers only phase 2. ETO⁵ carried out phase 1 under a separate mandate from the CEC⁶.

According to the phase 1 conclusions, the European Access Number (EAN) service was implemented in phase 2. This service is generic and can support several applications.

¹ ETNS – European Telephony Numbering Space

² CC – Country Code

³ ITU – International Telecommunication Union

⁴ ITU-T – ITU Standardisation Sector

⁵ ETO – European Telecommunications Office

⁶ CEC – Commission of the European Communities

Two pan-European networks (Interoute and Tele2) participated to implement the ETNS translation capabilities. Several originating networks participated in the trial. Terminating networks can potentially be any network inside or outside Europe.

The following four originating networks implemented ETNS facilities for the trial:

- Tele Danmark
- Telecom Eireann
- Tango
- Comviq

The trial used a simplified charging scheme.

In principle, the SPs should charge the ETNS subscriber for the ETNS service according to a contractual agreement established during the subscription phase. However, during the trial, the subscribers receive no charges for incoming calls.

During the trial, the participants tested number portability by porting one of the numbers allocated to Tele2 (a CEC EAN) to Interoute.

The originating networks involved enabled potentially several million subscribers to make calls towards ETNS numbers during the trial. In addition, Interoute implemented the routing of ETNS number from its networks in the USA and Canada via indirect access.

ETO acted as Administrator and Registrar for ETNS during the trial. Accordingly, ETO implemented some simple facilities in order to be able to manage and allocate ETNS numbers. It allocated an ESI⁷ for the EAN service and defined a simplified procedure for EAN number allocation based on the ETO report for the management of ETNS.

⁷ ESI – European Service Identity

The information collected in the trial enabled ETO to establish the responses to the ITU points. ETO produced the contribution a May 1999 on behalf of 24 European countries and presented it to ITU after approval from the CEC, ECTRA⁸, and the ENF⁹. The Q1/2 Rapporteur Group¹⁰ discussed the contribution in Geneva on 13 May 1999.

The discussion resulted in these agreements:

- the assignment of CC 388 for ETNS was not made at the meeting
- the conditional reservation of 388 was extended to March 2000 for use during an ongoing ETNS trial
- the ITU would afford Europe the opportunity to address the concerns expressed at the meeting regarding their application and presentation
- there would be no assignment of a regional CC until Project 27 had completed the “Criteria for the Assignment of Regional Country Codes”

⁸ ECTRA – European Committee of Telecommunication Regulatory Authorities

⁹ ENF – European Numbering Forum

¹⁰ Q1/2 Rapporteur Group – the group in SG2 responsible for numbering issues

1. PRESENTATION OF THE STUDY

In reading this document, you should have in mind that it provides a report on the status of phase 2 of the ETNS field trial in the third quarter of 1999. The trial will continue until at least the first quarter of 2000.

The CEC and ETO decided to proceed with phase 2 of the trial following the positive results from phase 1.

ETO would take all appropriate steps to secure permanent allocation of CC 388 for Europe; in particular it would:

- manage the phase 2 implementation of the trial in order to achieve the objectives of the business and work plans generated during phase 1
- continue the work of the Steering Committee and the Working Group established in phase 1
- administer the ETNS, including the allocation of ESIs, in accordance with the trial conditions set out by ITU
- fulfil the functions of the ETNS Registrar for the purposes of the trial
- present the case for permanent allocation of CC 388 to Europe, responding, as appropriate, to the points of information requested by ITU in its reservation of CC 388
- promote the concept of the ETNS

A draft response to ITU was delivered in February 1999 to the CEC for approval. This was then be forwarded to the ECTRA/PT N¹¹ meeting in March 1999 for approval and presented at the ITU-T SG2¹² meeting in May 1999.

Chapter 2 of this report describes the ETNS implementation undertaken by the trial participants in phase 2. It provides a detailed description of the service, the network architecture, and the technical and operational options that the participants are using in phase 2.

¹¹ ECTRA/PT N – ECTRA Project Team on Numbering

Chapter 3 reports on the discussion, concerns, and conclusions of the Q1/2 Rapporteur Group¹³ meeting and proposes the necessary future action.

Chapter 4 presents the conclusions and proposals from the study.

The ETNS trial project involved the following parties:

- The operators and SPs who participated in the trial (Interoute, Eurofone, Tele2).
- European local loop operators who acted as originating networks such as Telecom Eireann and Tele Danmark. Tele2 Europe represented the mobile originating networks.
- Arcome as project manager and co-ordinator of the implementation of the trial.
- ETO as supervisor of the trial and as Administrator and Registrar for the ETNS.
- The CEC.
- ECTRA
- ENF

The management was organised in the same way as in the first phase: a Working Group and a Steering Committee. Arcome chaired the Working Group where the field trial participants attended. ETO chaired the Steering Committee, which was composed of Arcome, the CEC, the ENF, and ECTRA.

The CEC gave a clarification in 1998 about the funding policy of TEN-Telecom projects. It was clear that the funding procedures for these projects were not compatible with the project period.

¹² ITU-T SG2 – ITU-T Study Group 2

¹³ Q1/2 Rapporteur's Group – the ITU-T SG2 group responsible for numbering issues

The CEC gave the formal decision to start phase 2 of the ETNS trial at the end of 1998. However, the Working Group kept working on the project without interruption from June to December 1998. The participants achieved the major parts of the implementation in the ETNS backbone by December 1998. They introduced the other originating networks in early 1999.

The trial participants have, in addition, started working on the preparation of a framework for the commercial phase of ETNS in order to clarify some concepts related to ETNS such as charging, billing, and interconnection fees.

ETO plans the following timetable:

- | | |
|---|-------|
| - this interim report | 8/99 |
| - agreed interim response on Project 27 | 7/99 |
| - response on Project 27 to ITU | 9/99 |
| - draft response on SG2 concerns | 10/99 |
| - European preparatory meeting for ITU | 1/99 |
| - revised response on Project 27 | 2/99 |
| - response on SG2 concerns to ITU | 2/99 |

The final report, including a report of progress against the business and work plans and a report on the perceived viability of the ETNS will be delivered to the CEC in fifteen bound copies, one unbound copy and one copy on floppy disk in Microsoft Word 97 in April 2000.

2. PROGRESS REPORT ON PHASE 2 OF THE TRIAL

On the basis of phase 1 of the ETNS¹⁴ trial, the CEC and ETO decided to proceed with phase 2 of the trial.

This chapter describes the system established to implement phase 2 of the ETNS field trial.

The chapter provides a detailed description of the service, the network architecture, and the technical and operational options that the participants in phase 2 have been using.

2.1 ETNS Service for the Field Trial

In accordance with the phase 1 conclusions, the European Access Number (EAN) service was implemented in phase 2. This service is generic and can support several applications.

2.1.1 Service Description of the European Access Number

The EAN service enables subscribers to have an ETNS number allocated to them independently of their geographic location. Applications of the EAN service may be attractive for the following classes of subscribers:

- European organisations which can have a range of EANs to enable callers to contact them through a harmonised ETNS range of numbers. We foresee the CEC¹⁵, the European Parliament, the European bank, ETSI¹⁶, ETO¹⁷, and similar European organisations as strong potential users of this service. At present, these organisations are located in different European countries with different CCs¹⁸. A homogeneous numbering scheme will facilitate access to these organisations. This will make it easier for international callers to reach European organisations.

¹⁴ ETNS – European Telephony Numbering Space

¹⁵ CEC – Commission of the European Communities

¹⁶ ETSI – European telecommunication Standardisation Institute

¹⁷ ETO – European Telecommunication Office

¹⁸ CC – Country Code

- European information centres providing up-to-date information about European topics such as the Euro, European laws, and directives.
- The commercial and customer support services of major European corporations.
- Small companies with significant activities at the European level. The EAN would give these companies a European “label”.

Pan-European applications such as remote learning, tele banking, and so on would also be candidates for the EAN service.

The EAN is a non-geographic number that can route to different locations. The networks can handle calls towards an EAN differently according to time of day, day of week, the Calling Line Identity (CLI), and the country where the caller originated the call.

2.1.2 Service Subscription

The users who wish to have an EAN will ask an ETNS SP¹⁹ to allocate the number. The ETNS SP will undertake the appropriate technical and administrative procedures to set up and activate the required service. It will be possible for the ETNS subscriber to specify routing dependent on time, CLI, and call origination.

2.1.3 Service Utilisation

During the trial, the users were able to dial the EAN of the called organisation with the format +388 388 abcdefg where:

- “+” indicates the international access code (such as 00)
- “388” is the ETNS country code
- “388” is the ESI²⁰ allocated by ETO to the EAN service for the trial
- “abcdefg” is the subscriber number allocated by ETO

¹⁹ SP – Service Provider

²⁰ ESI – European Service Identity

In principle, the user can request different routing depending on the geographic area (such as country) where the call originated. For example, networks can route a call originating in Spain to a Terminating Number (TN) in France while a call from the Netherlands can be routed towards a TN in Germany. However, the trial has not tested this facility because of the small number of originating networks and the location of the subscribers.

2.1.4 Subscribers for the Trial

The table in annex B shows the subscribers and the numbers allocated during the trial.

2.2 Architecture and Interworking Functions

2.2.1 ETNS Trial Network Architecture

Figure 1 shows the network architecture that the participants have implemented to provide the EAN service during the trial. Two pan-European networks (Interoute and Tele2) participated to implement the ETNS translation capabilities. Several originating networks participated in the trial. Terminating networks can potentially be any network in Europe or outside Europe.

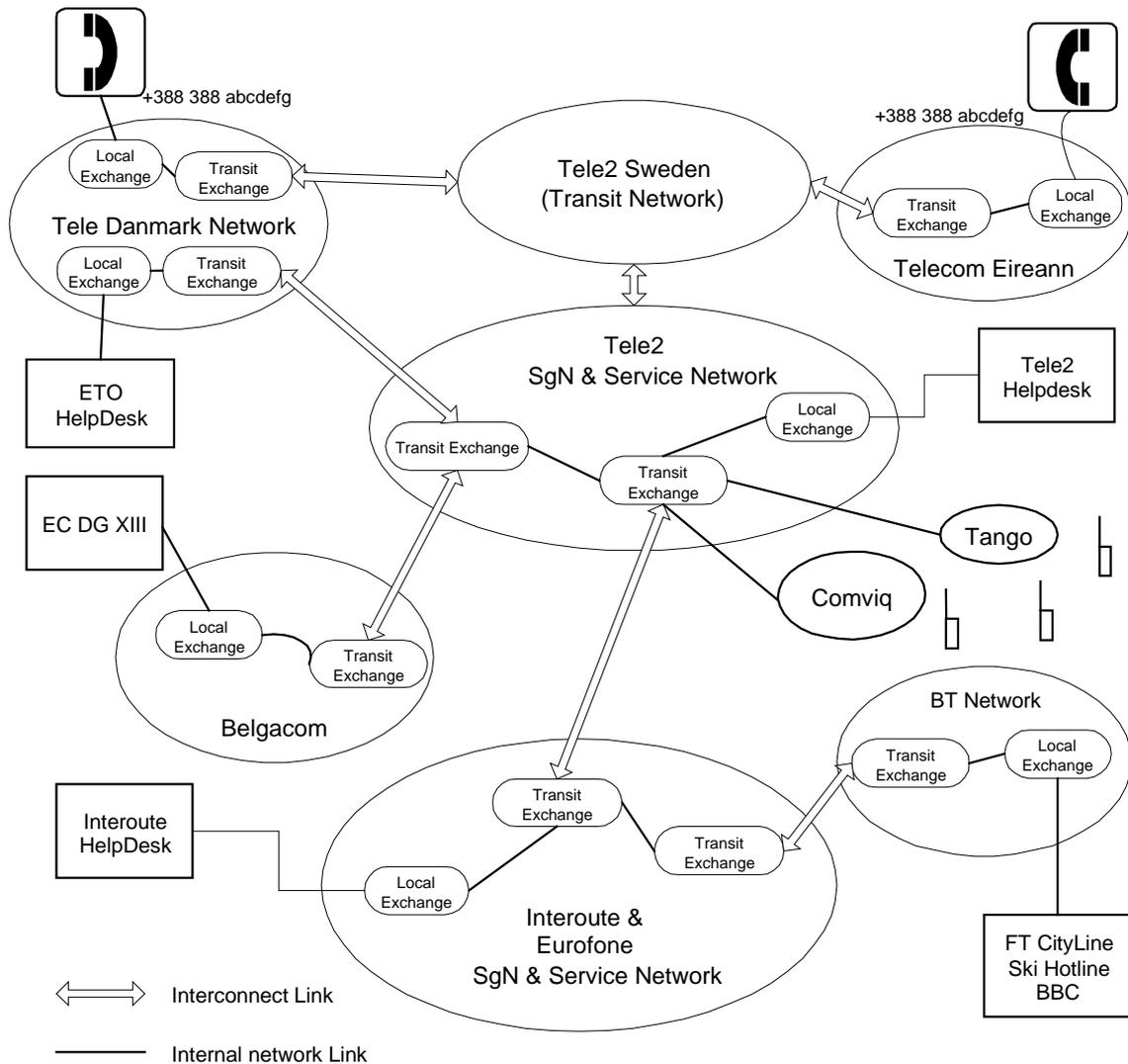


Figure 1: Network Architecture for EAN Service

As a maximum, an ETNS call from a calling party to the ETNS subscriber (the called party) will route through four networks: originating network, Serving Network (SgN), service network and terminating network.

2.2.2 Originating Network

The following four originating networks have implemented ETNS facilities for the trial:

- Tele Danmark
- Telecom Eireann
- Tango

- Comviq

These originating networks recognise the ETNS CC "388" and route the call, as it is without any translation, towards one of the two networks with ETNS translation capabilities. The originating network operators have signed interconnection agreements with Interoute or Tele2. Callers using one of these originating networks can dial the EAN in a consistent way, that is, +388 388 abcdefg. In addition, indirect access customers of Tele2 and Interoute are able to call ETNS numbers.

The following table shows the number of users that can call ETNS numbers directly (from one of the originating networks) or indirectly (using carrier selection):

Network	Number of subscribers (millions)
Comviq	1.3
Tele2 Europe	1.0
Tele2 Danmark	0.3
Tele2 Sverige	0.7 (indirect)
Tango	0.04
Tele Danmark	3,4 million
Interoute Europe (France, Holland, Germany, UK, Switzerland, Denmark)	0.1 (indirect)
Telecom Eireann	1.0

2.2.3 Serving Network, Service Network and SP

For the ETNS trial, two operators and two SPs have implemented the ETNS translation capabilities. This has allowed testing of the interconnection between a SgN and a service network.

Two pan-European operators (Tele2 Europe and Interoute with Eurofone) have implemented ETNS translation capabilities. Tele2 Europe has provided both SP and service network functions. In the Interoute Eurofone consortium, Eurofone has acted as SP while Interoute has acted as service network.

During the ETNS trial, the participants have used a two step translation process. The originating network delivers the ETNS call to an ETNS-capable network which does not necessarily relate to the SP for that number. The first translation enables the first network to route the call to the network that will achieve the final translation unless the first network is the SP for the called ETNS subscriber.

Both the Tele2 and Interoute networks have acted as SgNs as well as service networks. Each network is able to handle incoming calls in one of the following ways

- translation of the ETNS number to a TN and routing the call directly to the appropriate ETNS subscriber: for instance, a call originating from Tango (see Figure 1) is directly routed to the Tango help desk by Tele2
- translation of the ETNS number to a TN and routing the call to the appropriate ETNS subscriber through a terminating network: for instance, a call originating from the Telecom Eireann network to ETO is routed by Tele2 to ETO via the Tele Danmark network
- translation of the ETNS number to a Routing Number (RN) and delivery to the other network: for instance, calls originating from the Tele Danmark network and destined to the BBC²¹ are recognised by the Tele2 network as belonging to Interoute and are routed to Interoute using an agreed RN
- translation of the RN to a TN and routing the call to the appropriate ETNS subscriber through a terminating network: for instance, Interoute receiving a call from Tele2 destined to the BBC using the appropriate RN translates the RN to the actual BBC number and routes the call through the BT network

²¹ BBC – British Broadcasting Corporation

2.2.4 Terminating Network

There is no special requirement on the terminating network for ETNS call processing. In fact, when entering the terminating network, the ETNS calls are identical to ordinary calls. It is impossible for the terminating network to recognise these calls.

2.2.5 Transit Networks

A transit network (Tele2 Sweden) is involved in the trial between Telecom Eirean as originating network and the serving network (Tele2 Europe). In this case, the Telecom Eirean network has used the existing link with Tele2 Sweden to deliver ETNS calls to the SgN (Tele2 Europe). From the technical point of view, the Telecom Eireann network implements classical routing capabilities to deliver the ETNS calls to the Tele2 Sweden network. Tele2 Sweden, as a transit network, implements classical routing capabilities to deliver the call to Tele2 Europe as SgN.

2.3 Call Scenarios

Several call scenarios are possible depending on the location of the called and calling parties concerning the service networks and SgNs. With scenario 1, four networks are involved. We have based the other scenarios on the fact that the same network is playing more than one role at a time.

2.3.1 Scenario 1 (Four Different Networks are Involved)

Scenario 1 is applicable for calls originated, for example, by Telecom Eireann subscribers towards FT CityLine. This scenario is characterised by the following points:

- the originating network does not have ETNS translation capabilities (Telecom Eireann)
- the serving network (Tele2 Europe) is different from the service network (Interoute)
- the terminating network is different from the service network (BT)

With this scenario, four different networks handle the call as follows:

- The calling party, who belongs to a network without ETNS translation capabilities (Telecom Eireann), dials an EAN (FT CityLine).
- Telecom Eireann has an agreement with Tele2 to transit ETNS numbers. Therefore, Telecom Eireann routes the call to the Tele2 network for further call processing.
- Tele2 is not the SP for FT CityLine. The Tele2 network partially translates the number to determine that the SP for the called ETNS number is Interoute. Therefore, the translation process produces a RN enabling the Tele2 network to deliver the call to the Interoute network.
- Interoute (in relation with Eurofone) is the SP for FT City Line. The translation process produces a TN for the call.
- The TN belongs to the BT network. The Interoute network delivers the call with the TN to the BT network.
- The BT network handles the call as usual, terminates the call processing, and delivers the call to the subscriber equipment.

2.3.2 Scenario 2 (Three Different Networks are Involved)

Scenario 2 is applicable for calls originated, for example, by Telecom Eireann subscribers towards EC DGXIII. This scenario is characterised by the following points:

- the originating network does not have ETNS translation capabilities (Telecom Eireann)
- the serving network is the same network as the service network (Tele2 Europe)
- the terminating network (Belgacom) is different from the service network and SgN

This scenario uses a single translation procedure as:

- The calling party dials the EAN of EC DGXIII.
- Telecom Eireann has an agreement with Tele2 to transit ETNS numbers. Therefore, Telecom Eireann routes the call to the Tele2 network for further call processing.
- Tele2 is the SP for EC DGXIII. The Tele2 network translates the entire number to find out the TN.
- The TN belongs to Belgacom. The Tele2 network delivers the call to Belgacom as an ordinary call.
- Belgacom handles the call as usual, terminates the call processing, and delivers the call to the subscriber equipment.

2.3.3 Scenario 3 (Two Networks are Involved)

Scenario 3 is applicable for calls originated, for example, by Tele Danmark subscribers towards the Tele2 Europe Helpdesk. This scenario is characterised by the following points:

- the originating network does not have ETNS translation capabilities (Tele Danmark)
- the SgN is the same network as the service network (Tele2 Europe)
- the service network (Tele2 Europe) is also the terminating network

In this scenario, the networks process the call in the following way:

- The calling party dials the EAN of the Tele2 Europe Helpdesk.
- Tele Danmark has an agreement with Tele2 regarding EANs. Therefore, the Tele Danmark network routes the call to the Tele2 network for further call processing.
- Tele2 is the SP for the called EAN subscriber. The Tele2 network translates the entire number to find out the TN.

- The TN belongs to the Tele2 network; therefore, the network can deliver the call to the terminating called number (Tele2 switchboard) that is directly connected to the Tele2 network.

2.3.4 Scenario 4 (Only One Network is Involved)

This is the minimum scenario where the same network is the originating, ETNS translation (serving and service) and terminating networks. This is the situation for those calling parties who connect directly to the Tele2 network when they call the Tele2 Europe Helpdesk.

- The calling party dials the EAN number of Tele2 Europe Helpdesk.
- Tele2 is the SP for the EAN subscriber. The translation process of the dialled number produces a TN for the call.
- The network routes the call internally to the Tele2 Europe Helpdesk.

2.4 Charging scheme

The trial used a simplified charging scheme, based on a call scenario with four (maximum) networks involved in the handling of the call: originating network, first translation network, second (final) translation network and terminating network.

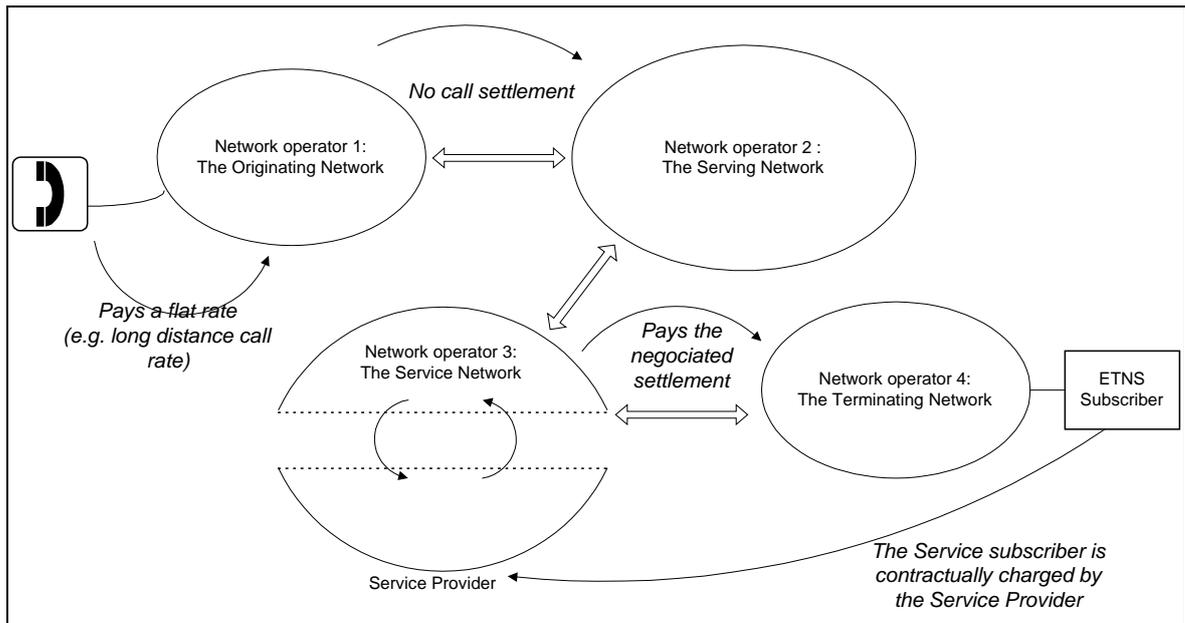


Figure 2: Charging Scheme for the Trial

The originating network charges the calling party using a flat rate, possibly with a time element. As a maximum, the rate used does not exceed a national long distance call rate. This principle was used to facilitate the introduction of the ETNS service very quickly in the billing systems of the networks involved.

There has been no settlement between the originating network and the SgN. The originating networks deliver the ETNS calls free of charge to the serving network.

In principle, the SPs should charge the ETNS subscriber for the ETNS service according to a contractual agreement established during the subscription phase. However, during the trial, the subscribers received no charges for the incoming calls.

In principle, the SP was required to achieve the following settlement:

- To pay the service network according to the agreed rate.
 - To pay the terminating network using the existing settlement rate agreed between the service network and the terminating network.
- This settlement operation could be achieved through the service network that has an interconnection agreement with the terminating network.

- To reimburse money to the SgN using a negotiated settlement rate agreed between the service network and the SgN. This settlement operation could be achieved through the service network that has an interconnection agreement with the SgN.
- In cases where the SgNs and service networks are the same, this settlement is irrelevant.

Technically all these settlement operations were possible during the trial. However, to keep the administrative costs as low as possible, no settlement has been applied between the participants. Only terminating networks have received payment, according to the existing inter-operator rates negotiated between the service network and the terminating networks.

2.5 Operational aspects

Phase 2 used the ETO report on “Management, Routing and Portability Aspects of the European Telephony Numbering Space (ETNS)”, dated 23 April 1998, as the basis for the operational procedures during the trial. However, the participants have established a simplified procedure.

2.5.1 Number allocation

ETO has acted as the Administrator and the Registrar for the ETNS during the trial. As such ETO allocated a three-digit ESC²² for the EAN service. As a first service, an easy-to-remember code was allocated by ETO, “388”. ETO has established the rules described in the following paragraphs.

Figure 3 describes the structure of a generic EN²³.



Figure 3: EN Structure

The ESC is a one to three-digit code used to identity a specific pan-European service. The ESN²⁴ contains the number of the ETNS subscriber. The EN consists of a maximum of fifteen digits.

²² ESC – European Service Code

²³ EN – European Number

²⁴ ESN – European Subscriber Number

For the EAN service, the ESC is a three-digit code and its value is 388. The EN is seven digits long.

In order to make routing simpler, assuming that there would only be two ETNS SPs for the EAN trial, the ESN range was split between the two SPs: first digit 0-5 for Interoute and first digit 6-9 for Tele2.

The Registrar assigns individual ENs based on requests by the SPs on behalf of subscribers. The assignment is an immediate allocation without a preceding reservation.

In the field trial, the ETO staff has acted as Registrar and their functions have included the assignment of ENs from the designated ESI, surveillance of conditions of use and withdrawal of assigned ENs. The Registrar does not publish the assigned ESNs.

The SP should inform the Registrar about any change in the information provided with the application for an EN.

For each subscriber the participating SPs asked ETO to allocate an EAN according to the following simplified assignment procedure established by ETO:

- ETO assigns ENs to ETNS subscribers following the principle of “first come, first served”
- SPs apply to ETO for the assignment of specific ENs on behalf of their customers

In order to apply for an EN, a SP has to send an application form by facsimile to ETO. The ETO facsimile number is +45 35 43 60 05. In the application submitted by the SPs, the following information has to be supplied:

- EN requested (indication of the EN requested)
- ETNS SP (indication of the SP submitting the request)
- ETNS service (indication of the pan-European service for which the number is requested)
- ETNS subscriber (name and details of the ETNS subscriber)

- TN (indication of the geographic number used to terminate the ETNS call)
- ported number (indication of whether the number has been ported or not)
- contact person (name and details of the person representing the SP)

As an example, the following table shows the information required for the assignment of an EN to ETO for the provision of the CEPT help desk service:

ETNS Number	ETNS Service Provider	ETNS Service	ETNS Subscriber	Terminating Number	Ported number	Contact person
388 388 9388388	Tele 2	EAN	ETO Strand- boulevard n 92 DK 1201 Copenha- gen	45 12345678	No	Alan Smith Smith@xx. com Tel +44123456 7 Fax +44123456 8

On the basis of the information contained in the application form and the current situation of the assigned ENs, ETO replies to the SP. ETO then either confirms the assignment of the EN requested, or explains the reasons for a refusal.

The reasons for refusal can be one or more of the following:

1. the information provided by the SP is not complete
2. the EN indicated has already been assigned
3. the request does not comply with the agreed rules of the field trial

The trial has used the distributed approach to exchange RNs. For instance, when ETO allocates an EAN to a SP, the SP provides the SgNs participating in the trial with the RN associated with the EAN.

2.5.2 Number Portability

During the trial, the participants tested number portability by porting one of the numbers allocated to Tele2 (an EC DGXIII EAN) to Interoute.

A call-forwarding mechanism was used to achieve number portability.

2.6 Work Plan

ETO established a work plan during the first phase of the trial.

2.6.1 Project Organisation

The ETNS trial project involved the following parties:

- The operators and SPs who participated in the trial (Interoute, Eurofone, Tele2).
- European local loop operators who acted as originating networks, such as Telecom Eireann and Tele Danmark. Tele2 Europe represented the mobile originating networks.
- Arcome as project manager and co-ordinator of the implementation of the trial.
- ETO as supervisor of the trial and as Administrator and Registrar for the ETNS.
- The CEC.
- ECTRA
- ENF

The management was organised in the same way as in the first phase: a Working Group and a Steering Committee. Arcome chaired the Working Group where the field trial participants attended. ETO chaired the Steering Committee, which was composed of Arcome, the CEC, the ENF, and ECTRA.

2.6.2 Major tasks

Task identification was carried out as part of phase 1 of the field trial (see the following table).

Tasks	Description
Task 1	final list of participants and their respective roles
Task 2	application for TEN-Telecom funding
Task 3	network architecture for the trial
Task 4	implementation of ETNS functionality and testing
Task 5	configuration of originating networks to route 388 calls to one ETNS network
Task 6	establishment of ETO infra-structure as Registrar and Administrator
Task 7	collection of information and response to ITU ²⁵

Some of these tasks were carried out partially or completely during phase 1. However, they are still included in this report for completeness.

2.6.3 Task 1: Final List of Participants and the Respective Roles

The Steering Committee gave qualified status to two operators and SPs (Tele2, Interoute Eurofone), through the Working Group participants, to implement the ETNS translation capabilities. Four other operators were qualified to act as originating networks.

Through the NRAs²⁶, the CEC invited operators to act as originating networks. However, no European operators with significant market power accepted the invitation.

2.6.4 Task 2: Application for TEN-Telecom Funding

The CEC gave a clarification in 1998 about the funding policy of TEN-Telecom projects. It was clear that the funding procedures for these projects were not compatible with the project period. Therefore, no further action was necessary concerning this task.

²⁵ ITU – International Telecommunication Union

2.6.5 Task 3: Network Architecture for the Trial

On the basis of the architecture identified during the first phase, the working group finalised the architecture for the trial. The Steering Committee approved this architecture. Section 2.2 provides an extensive description of the architecture. However, for confidentiality reasons information on actual interconnection points is not included in this report.

2.6.6 Task 4: Implementation of ETNS Functionality and Testing

The CEC did not give the formal decision to start phase 2 of the ETNS trial until the end of 1998. However, the Working Group kept working on the project without interruption from June to December 1998. The participants completed major parts of the implementation of the basic structure for the ETNS by December 1998. The other originating networks were introduced in early 1999.

More precisely the participants achieved the following operations:

- introduction of the necessary translation software in the network
- negotiation with originating network operator to have an extension of the interconnection agreement to route the ETNS calls to the participant networks
- introduction of the necessary modifications in the service provisioning and billing equipment
- identification of several subscribers who participated in the trial in addition to the CEC and ETO
- carrying out of extensive testing activity to ensure that ETNS calls routed correctly for all the possible scenarios between all the originating networks and subscribers
- making of several hundred calls to validate all call scenarios across the participating networks

²⁶ NRAs – National Regulatory Authorities

2.6.7 Task 5: Configuration of Originating Networks

As expected, not all of the local loop operators implemented the necessary routing mechanisms at the same time. First, Telecom Eireann and Tango implemented ETNS routing to Tele2; then some weeks later Tele Danmark and Comviq joined the trial.

The originating networks involved enabled potentially several million subscribers to make calls towards ETNS numbers during the trial (see section 2.2.3).

In addition, Interoute implemented the routing of ETNS numbers from its networks in the USA and Canada via indirect access.

2.6.8 Task 6: Set-up of ETO Infra-Structure

ETO has acted as Administrator and Registrar for ETNS during the trial. ETO has therefore implemented some simple facilities in order to be able to manage and allocate ETNS numbers. An ESI was allocated for the EAN service and a simplified procedure was defined for EAN number allocation, based on the ETO report on the management of ETNS.

2.6.9 Task 7: Collection of Information and Response to ITU

Collection of information was not technically possible for some of the participants. However, the information collected was sufficient to establish the responses to the ITU points. Arcome prepared a draft response and forwarded it to the Steering Committee. ETO prepared the final draft and ECTRA approved it.

2.6.10 Project Planning

The previous tasks and actions were organised in order to have the trial up and running by 1 January 1999. Some technical difficulties delayed the activation of ETNS in some originating networks. However, all originating networks were able to route ETNS calls within the first quarter of 1999.

We tested number portability, as required, before the May 1999 ITU meeting.

3. POSITION AT ITU

3.1 Background

The ITU-T had reserved CC 388 in May 1997 under three conditions:

- the code should be used only for a field trial during the reservation period
- the reservation was to terminate at the closing of the first ITU-T²⁷ SG2²⁸ meeting of ITU-T in 1999 (which was the meeting in May 1999)
- the applicant was to provide twelve points of information requested by ITU-T

ETO fulfilled the last condition by contributing a document to the May 1999 SG2 meeting. The contribution answered twelve questions previously asked by SG2 and proposed that, on the basis of the information provided in the contribution, the ITU permanently assigned “388” to ETNS. ETO introduced the contribution and answered questions during the following discussion on the requested assignment. In addition, ETO had presented information, as far as available at that time, in the preceding SG2 meeting in November 1998.

The contribution to the May 1999 meeting was prepared by ETO on behalf of 24 European countries and sent it to ITU-T after approval from the CEC, ECTRA, and the ENF.

ETO presented the contribution, and the meeting of the Q1/2 Rapporteur Group²⁹ discussed it in Geneva on 13 May 1999. Between 50 and 100 participants were present. Participants from the USA dominated the discussion, but also other non-European countries such as Canada, Tanzania, Kenya, Japan, and Israel participated in the discussion. All these countries were objecting to the allocation. Regulators of several European countries were present together with many other delegates from the European telecommunication industry, but, with a few exceptions (in particular the UK), they were hardly active in the discussion.

²⁷ ITU-T – ITU Standardisation Sector

²⁸ SG2 – Study Group 2

²⁹ Q1/2 Rapporteur Group – the group in SG2 responsible for numbering issues

The following sections report the results of the Q1/2 Rapporteur Group sessions.

3.2 Conclusion of the Meeting

The discussion resulted in these agreements:

- the assignment of CC 388 for ETNS was not made at this meeting
- the conditional reservation of 388 was extended to March 2000 for use during the ongoing ETNS trial
- the ITU would afford the resource applicants the opportunity to address the concerns expressed at this meeting regarding their application and presentation
- there would be no assignment of a regional CC until Project 27 has completed the “Criteria for the Assignment of Regional Country Codes”

The last item above is a new condition in addition to the conditions originally agreed in May 1997 when the ITU reserved CC 388.

France, Portugal, and Spain reiterated that the trial for ETNS should not include any VoIP or IP Telephony trial.

3.3 Discussion and ITU “Concerns”

3.3.1 Point 1 – International Routing

A detailed description of the international routing of calls into and out of Europe for ETNS-based services

ETO noted that ETSI had prepared a description of routing of calls³⁰. From outside Europe, calls would route as for any geographic CC. The meeting noted:

- that the ETSI document had not been circulated
- that an examination of this document was desirable
- that an explanation on routing of incoming calls was needed

³⁰ ETSI EN 301 160, Routing of Calls to ETNS Services

As to outgoing calls, ETO noted that the ETSI document contained details of the routing. ETO further noted that ETO and ETSI had given a presentation of the routing details to ITU in November 1998. The same principles apply to calls originating within and outside Europe. One delegate remarked that this sounded as if 388 were like a Global Service Code (GSC).

Another delegate questioned whether there were any restrictions on where calls could originate and how a European “identity” manifested itself. ETO replied that Europe was looking to provide characteristically European services on 388. Whether, for example, a North American SP was providing the service was irrelevant. Another question was whether there was anything in the current regulatory framework in respect of SPs in Europe that would prevent IP³¹ routing for ETNS calls. ETO replied that there was not, as far as was known.

One participant asked what would happen if someone originated a call in the US. For example, what carrier would get the call? ETO replied that it would be dealt with by the usual, routine procedure. Routing to 388 would be no different from routing to other country codes. The fact of the call being a 388 call made no difference. Operators would have arrangements for where the call would route. Operators and SPs would need to put the necessary bilateral arrangements into place.

Another participant asked if it was necessary to analyse additional digits after the 388 code. What would happen if the next digits identified the carriers? Would carriers outside Europe need agreements with multiple ETNS carriers? The principle was that ETNS numbers should be portable and so should not contain any SP identity. It might be necessary to analyse digits after the country code. It was not a question of identification of SP as such, but to identify where to route the call.

Another question was whether the trial had tested the Internet service with roaming. ETO replied that it had not, for the reason that the costs of trials were borne by the trial participants and this test would have been too costly.

³¹ IP – Internet Protocol

A question related to the prospects for the future participation of other networks in the trial. ETO replied that other networks had expressed interest. The intention was, if the ETNS did secure 388, to offer commercial services right away. ETO would continue the field trial until September 1999 (extended to March 2000 at the conclusion of the discussion) on a non-commercial basis.

3.3.2 Point 2 – Use of Global Service Codes

An explanation of why Global Service Codes cannot be more appropriately utilised for the services proposed for ETNS

All non-Europeans participating in the discussion found it hard to distinguish between global services and ETNS services, in particular because calls could also take place between two non-European countries and ETNS capabilities could also be located outside Europe. ETO believes the main reason for objections from non-Europeans in general is that Europe might have an economical and political advantage with an ETNS. ETO understands that the distinction between global services and ETNS services will be difficult for the ITU community to accept, as regional political identity has not been a differentiating factor applied by ITU so far.

ETO stated that there is a need for regional, in addition to global, services. For example, regionally, flexibility was necessary in charging and billing which was not available in global services.

Will ETNS services not fall into other categories and cross over into global codes? ETO responded that the requesting countries had already given commitments not to accord the code for purposes already agreed at the global level.

Another delegate questioned the commitment from large SPs to use of the code. ETO replied that large SPs had expressed interest in ETNS. ETO noted that a chicken and egg situation existed whereby SPs and operators were unwilling to make commitments to invest in the ETNS until the ITU had committed to allocate the CC (and vice versa).

MCI saw a conflict between global and regional services and asked if Europe could prevent this. Would conflict indeed be inevitable if ITU allocated the regional code? ETO responded with a reference to Personal European Numbers (PEN). The view in ITU was that perhaps UPT was too complex and costly to implement so that there could be a role for a PEN, which could be simpler and more flexible.

3.3.3 Point 3 – Use of Shared Country Codes

An explanation of why ETNS can not more appropriately utilise an adequate portion of a shared Country Code(s) for Regional Services. Such a Country Code would be available to all regions of the world and would precede an Identification Code (IC) identifying the specific region of the world to which the ITU made an assignment.

The non-Europeans participating in the discussions were not convinced that a full CC would be required and were of the opinion that a shared CC with one fourth digit to identify the ETNS would be sufficient. Some delegates considered that allocation of a complete three-digit CC was a waste of resources that were becoming scarce. The USA participants requested estimates about the number of ETNS SPs and customers expected for the years to come. Reliable estimates, however, were not available. The USA expressed some scepticism with respect to real market demand.

The Senior Associate Rapporteur (from Telenor) commented that there was a huge number of SPs in Europe, which were ready to offer services once they knew the result on the code. The UK commented that SPs were unwilling to commit unless the platform was there. ITU needed to encourage the establishment platforms to ensure that services come about. Another delegate commented that operators have never implemented the Universal Personal Telecommunication (UPT) codes despite the same arguments.

ETO believes that the option of a shared CC is worth considering. It would help to meet the objections from other regions in the world against Europe's "elitist" position and against waste of scarce resources. In principle, all regions could then have their share of a regional CC without wasting more resources.

In the meeting, ETO noted that ITU had never received a proposal for a shared regional code. Furthermore, the statistics of the European situation (a CC for 43 countries with more than 700 million people) made a shared CC inappropriate. The comment to this was that international numbers could have up to fifteen digits so no number squeeze issue is really at stake.

CEPT is looking for a CC that would ultimately develop a European identity. There was an issue of the capabilities of digital analysis. The obstacle to the use of a shared code was that it would require operators to exceed the seven-digit analysis specified in E.164³².

Several interventions questioned the uniqueness of Europe to justify a code. ETO replied that the Europe represented by CEPT and ETO constituted 43 countries including Russia. It was not unique but might simply be first region to consider a regional code. Would not Africa, Arabia, and Asia also want regional codes? ETO replied that Europe had identified a real requirement for a regional code. If others identified a similar requirement, there would be no reason to contest their request.

A North American comment was supportive of Europe but with a twist. Why not use 388 for all the European countries and have them surrender their individual CCs? The Rapporteur said that Europe had already discussed that.

3.3.4 Point 4 – Service Description

A more detailed description of the services to be offered within the “388” code for ETNS

The first question on this point was how many services had Europe tested. Is the reference to European Internet Service with roaming the same as voice telephony over the Internet (VoIP³³)? ETO replied that it had only tested the EAN service due to the costs associated with running the trial. ETO did not conceive the European Internet Service with roaming as relating to VoIP specifically. It intended the service to provide access to pan-European Internet Service Providers (ISPs) irrespective of the services that they offered. If an ISP wanted a European identity, ETNS could be a useful solution.

³² E.164 – ITU-T Recommendation E.164, The International Public Telecommunication Numbering Plan

³³ VoIP – Voice over IP

During the earlier part of the meeting there had been extensive discussion on numbering for VoIP. Some delegations saw VoIP as a form of “bypass”, potentially eroding their national revenues. This concern coloured their attitude to the ETNS debate.

Regarding corporate networks, which connect to the public networks, the idea is if a corporation operates in several European countries, access via the 388 code would give a European identity, and could streamline their numbering plan.

The US noted that the services would be pan-European services as a distinguishing factor. Nevertheless, what are these services? Are they European? For example, Internet service is a global service, not a regional service. ETO replied that the intention is that ETNS services will have a European element. ETO will administer the system. If, as an example, a European SP wished to offer a service defined at the global level, ETO would not grant the request. Then again, if a French SP wished to offer a weather forecast for Mexico, the request would probably be turned down for the reason that the service was not characteristically European.

What if a US SP wanted to offer pan-European Internet service, would the 388 code be available? ETO replied that the nationality of the SP would be irrelevant. The idea is to create a European branding of services and of corporations, and to create a pan-European resource for whomever provides services.

3.3.5 Point 5 – Billing and Charging

The details of the billing and charging arrangements for the ETNS services, particularly with regard to those calls originating and terminating outside the ETNS serving area

A question from one SP was; how was he going to know how to charge for calls? ETO replied that, for routing and charging, as in cases other than the ETNS, it would be necessary to analyse more than three digits.

Participants from the USA expressed confusion about routing and charging of calls originating or terminating outside Europe. ETO explained the routing and charging principles, which are the same for calls inside and outside Europe. They might require digit analysis of from three to seven digits, in line with E.164. ETO believes there are two reasons for these objections from the USA. First, the capabilities to analyse the first digits of the called party number for routing and charging purposes is limited in many networks in the USA and not in line with E.164. Second, there might be fears that European carriers have a competitive advantage over USA carriers in using ETNS resources.

Tanzania made the point that it is important for developing countries to know how ETNS calls can be controlled, for example if call back services (illegal in many countries) were offered. Loss of revenues from international calls caused by alternative calling procedures is a sensitive point, particularly for developing countries.

3.3.6 Point 6 – Evolution to European Integrated Numbering Space

Information regarding the potential evolution of “388” towards a European integrated numbering space served by a single Rec.E.164 country code

ETO stated that it foresaw no such evolution.

3.3.7 Point 7 – Trial Details

The details of the ETNS trial including, but not limited to, the trial method, components, services, results and conclusions.

The USA participants considered the description of the trial to be too vague and were of the opinion that detailed information was missing. They wondered why the trial tested only one service and how number portability was tested. There was also some doubt about whether the trial was non-commercial, as calling parties had to pay for the calls. ETO explained that the trial was kept as simple and cheap as possible as the participating service providers did not receive any funding for the trial. ETO is of the opinion that a more comprehensive trial in full conformance with ETSI standards would have been more satisfactory. However, this was not possible in the absence of funding from the CEC or other sponsors.

SG2 questions and comments included:

- How was portability tested?
- Can callers reach a subscriber via national numbers?

The view was that the results presented were not very conclusive, only rather descriptive.

3.3.8 Point 8 – Testing Outside Europe

The results of any testing done with network operators from outside of Europe as a part of the ETNS trial. Such testing is encouraged by ITU-Q1/2.

There was a question on whether the trial had tested calls into and out of Europe. ETO replied that it had tested calls originating in Europe and originating in North America, with both terminating in Europe. Another question was whether the trial terminated calls in North America. The answer was no.

3.3.9 Point 9 – Impact on other Networks

Further details to support the statement made during the ETNS tutorial [presented in November 1998] that “... there will be no impact of ETNS on other networks”, e.g. the necessity for technical modifications or unusual operational procedures in network not part of the ETNS

ETO noted that the ITU would add the code to the E.164 list in a straightforward manner.

The US remarked that the introduction of portability introduces a different issue. Portability could require originating SPs to access an international database. The Senior Associate Rapporteur agreed and noted that, if different charges applied, the call would need to be analysed in the originating network.

3.3.10 Point 10 – Not to be Used for Global Services

A written confirmation that the ETNS country code “388” will not ever be used for Global Services, e.g., IFS, to which E.164 resources are already assigned or currently being study for the appropriateness of an assignment

Europe had already done this and the meeting did not discuss it.

One comment under this point was that VoIP is a service which is “currently being studied” for the appropriateness of an assignment.

3.3.11 Point 11 – Migration to Global Services

A written confirmation that if a service being offered by the ETNS country code “388” becomes a Global Service, that the European service providers will evolve their pan-European service into the Global Service and its Global Service code. This confirmation should include a description by which such an evolution occur

Europe had already done this and the meeting did not discuss it.

3.3.12 Point 12 – Assignment of E.212 Resources

A determination of whether the ETNS requires the assignment of Rec.E.212 International Mobile Station Identities (IMSI) resources.

ETO noted that, for mobility services, ETNS would require the assignment of ITU-T Recommendation E.212 resources in the usual way.

3.4 Summary of SG2 Concerns

This section summarises some of the main concerns from the meeting. This list will form the basis for the work in constructing the future approach to ITU.

1. Regarding the ETSI document (EN 301 160) on “Routing of Calls to ETNS Services”, the meeting noted that:
 - the document had not been circulated
 - an examination of this document was desirable
2. Participants from the USA expressed confusion about routing and charging of calls originating or terminating outside Europe. Delegates needed an explanation on routing of incoming calls.
3. Was anything in the current regulatory framework in respect of a SPs³⁴ in Europe, which would prevent IP³⁵ routing for ETNS calls?

³⁴ SPs – Service Providers

³⁵ IP – Internet Protocol

4. Had the trial tested the Internet service with roaming?
5. The US noted that the services would be pan-European services as a distinguishing factor. Nevertheless, what are these services? Are they European? All non-Europeans participating in the discussion found it hard to distinguish between global services and ETNS services, in particular because calls could also take place between two non-European countries and ETNS capabilities could also be located outside Europe. MCI saw a conflict between global and regional services and asked if Europe could prevent this.
6. The non-Europeans participating in the discussions were not convinced that a full CC would be required and were of the opinion that a shared CC with one fourth digit to identify the ETNS would be sufficient. Some delegates considered that allocation of a complete three-digit CC was a waste of resources that were becoming scarce.
7. The USA expressed some scepticism with respect to real market demand. However, there were fears that European carriers would have a competitive advantage over USA carriers in using ETNS resources.
8. Several interventions questioned the uniqueness of Europe to justify a code. Would not Africa, Arabia, and Asia also want regional codes?
9. During the earlier part of the meeting there had been extensive discussion on numbering for VoIP. Some delegations saw VoIP as a form of "bypass", potentially eroding their national revenues.
10. The capabilities to analyse the first digits of the called party number for routing and charging purposes is limited in many networks in the USA and not in line with E.164.
11. The USA participants considered the description of the trial to be too vague and were of the opinion that detailed information was missing. The view was that the results presented were not very conclusive, only rather descriptive. Delegates wondered why the trial tested only one service and how number portability was tested.
12. Can callers reach a subscriber via national numbers?

13. There was some doubt about whether the trial was non-commercial, as calling parties had to pay for the calls.

14. The US remarked that the introduction of portability introduces a different issue. Portability could require originating SPs to access an international database. The Senior Associate Rapporteur agreed and noted that, if different charges applied, the call would need to be analysed in the originating network.

3.5 Future Activity

ETO concludes that non-European opposition to the allocation of CC 388 to the ETNS is significant. To meet the objections, we need to take the following actions:

- consider a shared CC
- prepare a contribution for the March 2000 meeting of SG2 which provides clarity and addresses the concerns expressed, taking the interests of the different participants in SG2 into account
- prepare a contribution for the Q1/2 Rapporteur's Group meeting in September 1999 on the criteria for the assignment of regional CCs (Project 27, see annex D)
- improve active participation of European countries in obtaining CC 388
- actively contact non-European participants to gain their co-operation and support

The trial participants would in addition start working on the preparation of a framework for the commercial phase of ETNS in order to clarify some concepts related to ETNS such as charging, billing, and interconnection fees.

ETO plans the following timetable:

- | | |
|---|-------|
| - this interim report | 8/99 |
| - agreed interim response on Project 27 | 7/99 |
| - response on Project 27 to ITU | 9/99 |
| - draft response on SG2 concerns | 10/99 |

- European preparatory meeting for ITU 1/99
- revised response on Project 27 2/99
- response on SG2 concerns to ITU 2/99

4. CONCLUSIONS AND PROPOSALS

SG2 concluded in its May 1999 meeting to extend the reservation period of CC 388 for an ETNS trial until March 2000. The ETNS Working Group and Steering Committee decided to keep the trial up and running throughout that period.

ETO believes that the option of a shared CC is worth considering. It would help to meet the objections from other regions in the world against Europe's "elitist" position and against waste of scarce resources. In principle, all regions could then have their share of a regional CC without wasting more resources.

ETO is of the opinion that a more comprehensive trial in full conformance with ETSI standards would have been more satisfactory. However, this was not possible in the absence of funding from the CEC or other sponsors.

ETO concludes that non-European opposition to the allocation of CC 388 to the ETNS is significant. To meet the objections, we need to take the following actions:

- consider a shared CC
- prepare a contribution for the March 2000 meeting of SG2 which provides clarity and addresses the concerns expressed, taking the interests of the different participants in SG2 into account
- prepare a contribution for the Q1/2 Rapporteur's Group meeting in September 1999 on the criteria for the assignment of regional CCs (Project 27, see annex D)
- improve active participation of European countries in obtaining CC 388
- actively contact non-European participants to gain their cooperation and support

The trial participants would in addition start working on the preparation of a framework for the commercial phase of ETNS in order to clarify some concepts related to ETNS such as charging, billing, and interconnection fees.

5. ANNEXES

Annex A WORK REQUIREMENTS

1. Subject: Project Management, Administration and Registrar Functions for the ETNS Field Trial, Phase 2

2. Purpose

The Resolutions of the Council of the European Union (November 1992 and September 1997) call on member states and the Commission to take the necessary steps to ensure:

- co-operation within CEPT (Conference of European Posts and Telecommunications), the European Numbering Forum (ENF) and the ITU (International Telecommunication Union) in order to achieve the common objective of establishing an ETNS (European Telephony Numbering Space) by 1 January 1999 on the basis of the 388 Country Code (CC)
- that an ETNS allows a broad spectrum of specifically pan-European services to be covered and enables users to easily distinguish between various types of services and types of tariffs

Based on the application to ITU-T (ITU Standardisation Sector) signed by EC-TRA (European Committee of Telecommunication Regulatory Authorities) on behalf of 24 European countries, ITU-T reserved, in May 1997, the CC 388 for ETNS testing. This reservation was made with three conditions:

- the code is to be used only for a field trial during the reservation period
- the reservation will terminate at the closing of the first Study Group 2 meeting of ITU-T in 1999
- the applicant will provide twelve points of information requested by ITU-T

The field trial has been divided into two phases:

- phase 1, called "feasibility of the field trial", to prepare a business plan to assess the feasibility of the trial and a work plan for the trial to identify necessary actions and time-schedules needed for the implementation of the trial
- phase 2, called "implementation of the field trial", to carry out necessary actions needed to implement the trial

This work order covers only phase 2. Phase 1 has been carried out under a separate mandate from the Commission.

3. Considering

- that phase 1 has concluded positively regarding the feasibility of the field trial
- that a number of operators and service providers have agreed to participate in field trial phase 2
- that services tested during the trial should be consistent with the European regulatory framework, the trial conditions set by the ITU, and not in conflict with each other

ETO presents work requirements below for phase 2 of the ETNS field trial.

4. Work Requirement

ETO shall take all appropriate steps in its power to secure permanent allocation of CC 388 for Europe; in particular:

- to manage the phase 2 implementation of the field trial in order to achieve the objectives of the business and work plans generated during phase 1;
- to continue the work of the Steering Committee and the Working Group established in phase 1;
- to administer the ETNS, including the allocation of European Service Identifiers (ESIs), in accordance with the trial conditions set out by ITU;

- to fulfil the functions of the ETNS Registrar for the purposes of the trial;
- to present the case for permanent allocation of CC 388 to Europe, responding, as appropriate, to the points of information requested by ITU in its reservation of CC 388;
- to promote the concept of the ETNS.

6. Detailed Account of the Work Requirements

ETO will take all appropriate steps in its power to secure permanent allocation of CC 388 for Europe.

- ETO, assisted as appropriate by the sub-contractor, will do its utmost to ensure a successful outcome at the ITU-T Study Group 2 meeting in May.
- This shall include two primary tasks: managing the implementation of phase 2 of the trial effectively; and producing a draft response to the ITU request for certain points of information. The work requirements implied by these tasks are set out below.

To manage the phase 2 implementation of the field trial in order to achieve the objectives of the business and work plans generated during phase 1

- ETO will manage phase 2 of the ETNS trial in order to achieve the objectives of the business and work plans generated during phase 1.

To continue the work of the Steering Committee and the Working Group, established under phase 1

- ETO will continue the work of the Steering Committee and the Working Group, ensuring that all meetings are effectively prepared, chaired and minuted.

To administer the ETNS, including the allocation of European Service Identifiers (ESIs), in accordance with the trial conditions set out by ITU

- ETO will administer the ETNS according to the terms as set out in the final ETO report on phase 1. All services offered in the ETNS trial shall comply with the ITU's conditions. No services should be allocated numbering resources which would be likely to jeopardise the permanent allocation of CC 388.

To fulfil the functions of the ETNS registrar for the purposes of the trial

- ETO will fulfil the ETNS Registrar functions according to the terms set out in the final ETO report on phase 1.

To present the case for permanent allocation of CC 388 to Europe, responding, as appropriate, to the points of information requested by ITU in its reservation of CC 388

- ETO will ensure that all necessary information from the trial is defined and collated to complete and finalise the responses to the ITU's requests for information. This should include inter alia: technical information related e.g. to routing, billing and charging, testing, etc; and information about implemented services and applications. A draft will be submitted to the working group and to the Steering Committee for discussion. Once the Commission is satisfied with its content, the draft will then be submitted to the ECTRA PT/N meeting in March 1999, and thence to the ITU-T Study Group 2 meeting in May 1999.

To promote the concept of an ETNS

- ETO will take the necessary steps to promote the concept of an ETNS in order to build momentum behind it and attract the broadest possible participation in the trial by originating networks and service providers.

7. Deliverables

A draft response to ITU-T shall be delivered by the end of February 1999 to the CEC for approval. (This should then be forwarded to the ECTRA/PT N meeting in March 1999 for approval and presented at the ITU-T Study Group 2 meeting in May 1999). An interim report will be delivered in May 1999. The final report, including a report of progress against the business and work plans and a report on the perceived viability of the ETNS will be delivered to the CEC in fifteen bound copies, one unbound copy and one copy on floppy disk in Microsoft Word 97 in September 1999.

8. Manpower

It is expected that this task can be accomplished in nine man-months at expert level (to be expended between February 1999 and September 1999).

9. Sub-Contracts

Up to seven man-months of this will be sub-contracted to a consultant who will be the project manager for phase 2 and chair the trial Working Group.

Annex B SUBSCRIBERS FOR THE TRIAL

The following table shows the subscribers and the allocated numbers during the trial:

ETNS Number	ETNS Service Provider	ETNS Service	ETNS Subscriber	Terminating country
+388 388 0 123456	Europhone (Interoute)	Cityline	Financial Times	UK
+388 388 0 123457	Europhone (Interoute)	"The sky at night"	BCC	UK
+388 388 0 123458	Europhone (Interoute)	Ski hot line	Newstel	UK
+388 388 6 606060	Tele2 Europe	Number for information about telecommunications committee meeting	EC, DG XIII	Belgium
+388 388 6 616161	Tele2 Europe	Facsimile for ONP committee	EC, DG XIII	Belgium
+388 388 6 626262	Tele2 Europe	Facsimile for licensing committee	EC, DG XIII	Belgium
+388 388 7 272272	Tele2 Europe	Message welcoming callers to ETNS trial (only for test)	Tele 2 Europe	Luxembourg
+388 388 7 700777	Tele2 Europe	Tango help desk	Tango	Luxembourg
+388 388 8 282282	Tele2 Europe	Tele2 Europe Helpdesk	Tele2 Europe	Luxembourg
+388 388 8 808080	Tele2 Europe	Number for information about Community telecommunication legislation	EC, DG XIII	Belgium
+388 388 8 818181	Tele2 Europe	Facsimile for information about Community telecommunication legislation	EC, DG XIII	Belgium
+388 388 9 388388	Tele2 Europe	CEPT help desk	ETO	Denmark

Annex C SUBMISSION TO ITU IN MAY 1999

Source: Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, the Netherlands, Norway, Portugal, the Republic of Croatia, the Republic of Slovenia, the Slovak Republic, Spain, Sweden, Switzerland and the United Kingdom

Title: THE CASE FOR DEFINITIVE ALLOCATION OF CC (COUNTRY CODE) 388 TO EUROPE

ABSTRACT

The preliminary results of the field trial confirm the conclusions of earlier studies that there is substantial interest in an ETNS from European business. As the level of political and economic integration within Europe increases, a European numbering resource will allow companies to offer pan-European services in a more attractive way, or to brand their activities as truly “European”.

Europe’s liberalised telecommunications market is increasingly homogeneous, as interconnection and other tariffs fall. In the near future, there will increasingly be no substantial difference between tariffs within and between European countries. This will facilitate interconnection agreements between ETNS originating, serving and service networks across Europe, ensuring that callers will increasingly be able to access ETNS throughout Europe.

This contribution makes the case for definitive allocation of CC 388 to the European region. It sets out the background to the temporary allocation of CC 388 made in May 1997, and in particular responds to the 12 points raised by ITU-T. In the following paragraphs, the ITU-T questions are in bold italic followed by CEPT response in normal text.

BACKGROUND

Based on the application to ITU-T (ITU Standardisation Sector) signed by EC-TRA on behalf of 24 European countries, ITU-T reserved, in May 1997, the CC 388 for ETNS testing. The ITU made this reservation with three conditions:

- the code is to be used only for a field trial during the reservation period

- the reservation will terminate at the closing of the first Study Group 2 meeting of ITU-T in 1999
- the applicant will provide twelve points of information requested by ITU-T

We have divided the field trial into two independent phases:

- phase 1, called “feasibility of the field trial”, to prepare a business plan to assess the feasibility of the trial and a work plan for the trial to identify necessary actions and time-schedules needed for the implementation of the trial
- phase 2, called “implementation of the field trial”, to carry out necessary actions needed to implement the trial

Having finalised its report on management, routing and portability for the ETNS the European Telecommunications Office (ETO, www.eto.dk) selected ARCOME as sub-contractor for phase 1. ARCOME would carry out the study of the feasibility of the field trial in co-operation with ETO, the European Commission and the participants of the ETNS working group. We achieved phase 1 successfully and it concluded positively regarding the feasibility of the field trial. In phase 1, ARCOME undertook a large consultation of the major European actors in the telecommunication sector. It defined the scope and objectives of the trial in addition to a work plan and a business plan. Two Service Providers (SPs, Tele2 Europe, and Interoute) and four originating network operators (Tele Danmark, Telecom Eireann, Tango, and Comviq) agreed to participate in phase 2 of the trial. In addition, the indirect access customers of Tele2 Europe and Interoute are also able to access ETNS services during the trial. Other networks will participate as the trial progresses.

When the ITU-T reserved the CC 388 to provide value-added services for the European region, it requested additional detailed information to justify the definitive allocation of this CC.

Point 1: A detailed description of the international routing of calls into and out of Europe for ETNS-based services

ETSI (The European Telecommunication Standardisation Institute, www.etsi.org) elaborated a technical standard and a technical report specifying the routing mechanisms for ETNS calls (EN 301 160 and TR NA-021410). We have designed the routing mechanisms in order to minimise the impact on the networks outside Europe:

- Outgoing calls from Europe to another country (in the case where the CPE (Customer Premises Equipment) of the ETNS subscriber is outside Europe) will route after translation. Therefore, when the call crosses the international boundary it will look like any other call toward a geographic number in that country.
- For incoming calls towards an ETNS number, the originating network needs to have an agreement with one of the networks in Europe with ETNS capabilities.

Point 2: An explanation of why Global Service Codes can not be more appropriately utilised for the services proposed for ETNS

The European region is now a very strong economical and political entity. The market is increasingly approached as a European Market and not as a set of national markets and identifies the majority of companies and organisation as European entities in addition to their national identities. These organisations are very keen to use the ETNS to have a recognisable and memorable single access number throughout Europe (and beyond) and to reinforce their European image. This interest is strong for not only major corporations and European institutions but also for small and medium-sized enterprises.

The ETNS is complementary to the national numbering spaces as well as the global numbering resources. In fact, these three numbering resources are useful for different needs. European organisations may use global resources for some applications and European and national resources for European and national applications respectively.

Europe will use the ETNS numbering resources, for example, to provide:

- mobility and portability for those organisations and persons whose activities necessitate them to move throughout Europe;

- a single European number for business purposes such as for airlines and hotel chains
- access to information centres regarding European regulation, standardisation, and monetary aspects;

The charging and billing aspects of the ETNS services are important aspects (see point 5). The structure of the ETNS will certainly differ from the structure which is being chosen by ITU-T for the global plans for IPRS (International Premium Rate Service) and ISCS (International Shared Cost Service). We anticipate that ETNS SPs will offer a variety of different services charged at a variety of different rates.

Point 3: An explanation of why ETNS can not more appropriately utilise an adequate portion of a shared country code(s) for Regional Services. Such a country code would be available to all regions of the world and would be followed by an Identification Code (IC) identifying the specific region of the world to which an assignment is made

It is our contention that the size of the European market (700 million inhabitants in the ETNS area that includes 43 countries) requires the allocation of a full CC. The allocation of a smaller range of numbers in a single CC would not be sufficient to meet the probable demand for ETNS numbers within Europe.

Furthermore, we see the ETNS as a regional service for Europe; therefore, ETNS will have a unique European identity. We believe the 388 code will quickly become recognisable to calling parties as the ETNS access code when they call an ETNS subscriber. We believe that a shared CC would be far less transparent for calling parties, and potentially very confusing, especially for those calling from outside Europe. A shared CC for regional services would make a European number much more difficult to recognise and memorise, requiring analysis by calling parties of up to five digits.

Point 4: A more detailed description of the services to be offered within the “388” code for ETNS

The ETNS will potentially support several value-added telephony services. The following paragraphs provide an overview of some of the foreseen services and applications for ETNS. As the market develops there are likely to be many more. Market research in Europe has demonstrated the potential demand for pan European services based on the ETNS.

European Access Number (EAN)

Using the 388 CC, callers can reach any subscriber to this service with the same number, throughout Europe and from outside Europe.

If we assume that the subscriber of the EAN service has one single location where callers can reach him, then the networks will route any call to this destination. We either expect this kind of subscriber would be seeking to establish a European identity, or because of his business would be expecting calls from different European countries (or both).

Another kind of possible subscriber would be someone with several sites in various European countries. This would typically be a company interested in a service featuring an EAN in order that its customers throughout Europe could easily reach it.

One of the most promising applications for the EAN is a European Internet service with roaming.

Electronic mail via the Internet has become a new way to communicate. Simplified and low cost European access would be of great value to European Internet users.

The user would thus be able to dial up a unique ETNS Internet access number, wherever he is. The network will route the call to the nearest Internet Service Provider's (ISP's) point of presence, providing a guaranteed quality of service, with optimised call routing.

The flexibility needed for this kind of implementation requires the provisioning, maintenance, and management of databases containing information about service users as well as SPs. Indeed, an optimised routing, in order to limit the number of networks to cross should occur.

Other potential applications for the EAN include European paging and a European Portable GSM Number (EPGN).

The European paging service would allow callers to page people all over Europe. In fact, any subscriber to that service would get an ETNS number associated with his pager.

The user aspects in case of this service are twofold. On the one hand, the calling party is calling up a pager with an ETNS number, and on the other hand, the subscriber is receiving a notification, ideally Europe-wide.

The idea of a dedicated European numbering resource is certainly of interest for GSM networks. This service is a real opportunity for travelling customers. We could usefully link this with other concepts, like prepaid cards for instance.

Nowadays, this flexibility only exists on a national level. It would be useful to dedicate an ETNS numbering resource for generalising this feature, using the fact that mobile communications are largely harmonised within the European area.

This service implementation requires a negotiation between SPs, as most resources and software developments already exist on a national level.

Personal European Number (PEN)

A customer to whom mobility within Europe is important might want to receive calls on a single dialled number, independently of his geographical location or actual residence. The subscriber would simply transmit to his SP his new location and the networks would route all telephone calls to that number, whether the number is associated with a fixed, mobile, or paging service.

ETNS requires one general feature, that is, portability. This means that the service subscriber has the possibility to change location across borders and the possibility to change his SP while retaining the use of the same ETNS number.

European Mass Calling Number, (such as tele-voting) (EMCN)

Tele voting is one example of explosive mass traffic. Broadcasting companies, more and more of whom now operate in more than one European country, use temporary numbers to enable their audiences to react to questions in television programmes and the like. The EMCN will have a single ESC (European Service Code) for all explosive mass traffic, including tele voting, to enable special routing to handle this traffic.

Pan European Corporate Networks

The purpose of this service is to provide corporations with sites located in different countries with unique access codes for their numbering plans.

SPs may meet corporate network requirements concerning the European numbering scheme using some of the above services. However, discussions are ongoing with ECMA/TC32 and ETSI CN projects to find out whether other services need to be added specifically for these applications or not.

Point 5: The details of the billing and charging arrangements for the ETNS services, particularly with regard to those calls originating and terminating outside the ETNS serving area

As a general principle, bilateral agreements between operators will be the base for billing and charging arrangements for ETNS calls. The business relationship between operators shall apply.

The aim in relation to the ETNS services would be to structure the numbering space in order to allow different rates for different applications or contents, or on a per-service basis. For example, we should define the price within the number, possibly through digits 4, 5, and 6 of the ESC. This means that Europe would define several categories of charging rates for ETNS services (such as 0,2 Euro for some services, 0,5 Euro for other services, 1 Euro for other services, and so on)

The structure of the ETNS will certainly differ from the structure which is being chosen by ITU-T for the global plans for IPRS (International Premium Rate Service) and ISCS (International Shared Cost Service). We anticipate that ETNS SPs will offer a variety of different services charged at a variety of different rates.

In order for Europe to implement this, there will need to be rules established for ETNS. This would need to include some flexibility to cope with national regulation. For instance, these European rules would not require all of the specified services (especially concerning charging) to be implemented in each network. The operators should be free to choose whether to implement an ETNS service or application or not, leaving it up to the market demand to adapt the latter if necessary.

The homogeneous culture of Europe will provide the possibilities for the ETNS to set specific requirements regarding charging and other service aspects that will not occur at a global level.

Point 6: Information regarding the potential evolution of “388” towards a European integrated numbering space served by a single Rec.E.164 country code

There will be no evolution towards a European integrated numbering space.

Point 7: The details of the ETNS trial including, but not limited to, the trial method, components, services, results and conclusions.

We have based the ETNS trial on two approved ETSI standards (on management and on routing) and an ECTRA approved ETO final report (on management, routing, and portability).

We undertook the ETNS field trial as follows:

We identified several services as candidates for the ETNS (see response to point 4). However, the European Access Number (EAN) service was adopted as the most promising service for the field trial as it is simple to implement. This service enables telecommunications users to have an EAN allocated to them that they can advertise throughout Europe. This service provides European organisations and corporations with a new tool to promote a European image and to simplify the access to these organisations for European and non-European calling-parties.

The users from Europe or outside Europe can dial the EAN of the called organisation. The dialled numbers have the following format:

+388 388 abcdefg

Subscribers for the trial:

The following subscribers are active in the trial:

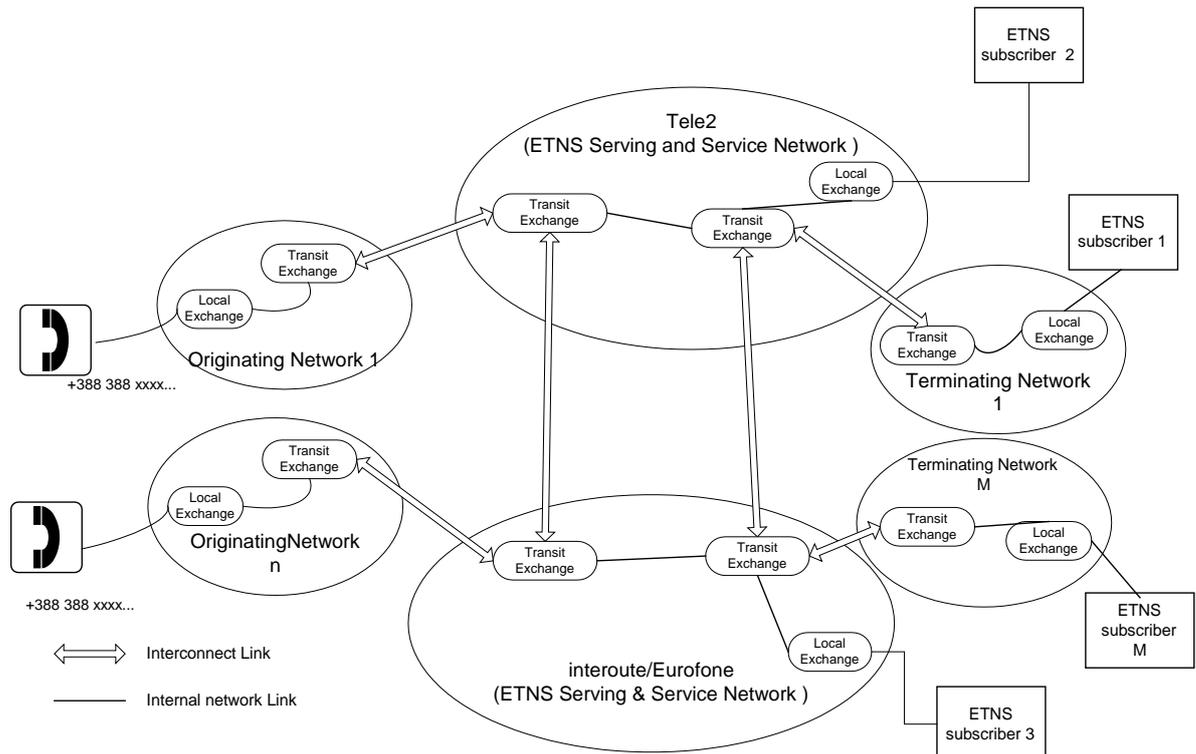
- Financial Times Cityline
- BCC Audio call
- Newstel
- CEC, DG XIII
- Tele 2 Europe
- Tango
- CEPT

Architecture and inter-working functions

We defined the following architecture to provide the EAN service during the trial.

It comprises the following types of networks:

- four originating networks (where the calling party is connected)
Tele Danmark, Telecom Eireann, Tango and Comviq
- two serving and service networks have implemented the ETNS translation capabilities (Tele2 Europe, Interoute), (which also act as originating networks in respect of their indirect access customers)
- several terminating networks where the ETNS subscriber is the called party



Network architecture for ETNS trial service

Two operators (Interoute and Tele2) have implemented the serving and service network functions. The two networks are pan-European long-distance carriers with several Points of Presence (PoPs). The originating networks can be any local loop operators in Europe (or in the world).

The terminating networks are not directly aware of the trial as calls route to them transparently.

Originating networks (involved in the trial) have implemented in their routing table the CC 388 and have routed ETNS calls (+00 388 calls) to either Tele2 or Interoute.

Operational aspects were defined as follows for the trial

ETO has acted as administrator, registrar, and project manager for the trial. ETO has achieved number allocation through usual communication tools and managed it with usual office tools according to a simplified procedure that it has developed.

A charging scheme was defined for the trial where the calling party pays a flat rate in order for the originating network to recover its costs.

We implemented number portability between SPs during the trial.

Point 8: The results of any testing done with network operators from outside of Europe as a part of the ETNS trial. Such testing is encouraged by ITU-Q1/2.

As mentioned in the response to point 2, Interoute UK and Interoute USA have conducted several specific tests during the field trial about incoming calls towards ETNS and about outgoing calls (to terminate an ETNS number outside Europe).

Test about “Incoming calls towards ETNS number”:

In early February 1999, Interoute configured a network test in which they enabled access to the ETNS trial from a selected audience within their own North American network. Under the ETNS trial requirements, Interoute immediately routed any telephone calls prefixed with 388 CC without any further action by Interoute UK.

In conclusion, Interoute USA managed to make ETNS calls to both serving networks test numbers (Tele2 and Interoute). This was not only from their switch test telephone lines, but also from some of their own USA calling card customers (that is three-stage dialling). Echo and PDD (Post Dialling Delay) were also tested under this scenario and proved to be within acceptable limits. Interoute USA proved that all +388 388 XXXX codes all worked to their respective services

Test about “Outgoing calls” (where ETNS subscriber is not located in Europe):

In the opposite direction (that is Europe to USA), Interoute UK reversed the programming of the +388 388 0000 code for a period of one day in which we terminated this number to the Interoute USA network itself. Thus, when Interoute routed any ETNS +388 number from Interoute UK to the USA, the ETNS number would terminate at their North American office switchboard.

In conclusion, Interoute UK was able to test calls to the ETNS test numbers of both serving networks from outside the Europe.

Point 9: Further details support the statement made during the ETNS tutorial that “... there will be no impact of ETNS on other networks”, e.g. the necessity for technical modifications or unusual operational procedures in network not part of the ETNS

The only modification for these other networks is equivalent to the addition of any new international country code.

Point 10: A written confirmation that the ETNS country code “388” will not ever be used for Global Services, e.g., IFS, to which E.164 resources are already assigned or currently being study for the appropriateness of an assignment

Done

Point 11: A written confirmation that if a service being offered by the ETNS country code “388” becomes a Global Service, that the European service providers will evolve their pan-European service into the Global Service and its Global Service code. This confirmation should include a description by which such an evolution occur

Done

Point 12: A determination of whether the ETNS requires the assignment of Rec.E.212 International Mobile Station Identities (IMSI) resources.

For mobility services ETNS will require the assignment of ITU-T Recommendation E.212 resources in the usual way.

CONCLUSION

The source countries request that ITU-T now assigns ITU-T Recommendation E.164 Country Code 388 for the provision of the ETNS and makes an appropriate entry in the list of E.164 Country Codes and in the ITU-T Operational Bulletin.

Annex D CONTRIBUTION TO ITU ON PROJECT 27

UIT - Secteur de la normalisation des télécommunications
 ITU - Telecommunication Standardization Sector
 UIT - Sector de Normalización de las Telecomunicaciones

Commission d'études ,Study Group, Comisión de Estudio} 2
 Contribution tardive, Delayed Contribution ,Contribución tardía} D.xxx

Texte disponible seulement en ,Text available only in, Texto disponible solamente en} E

Source: Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, the Republic of Croatia, the Republic of Slovenia, the Slovak Republic, Spain, Sweden, Switzerland and the United Kingdom (this is a provisional list using the source list for Delayed Document D.253 on CC 388 to the SG2 meeting in May 1999)³⁶

**Title: CRITERIA FOR THE ASSIGNMENT OF
 REGIONAL GEOGRAPHIC COUNTRY CODES (CCs)**

Introduction

At the meeting in May 1999, ITU-T SG2 decided to extend the conditional reservation of Country Code (CC) 388 for the European Telephony Numbering Space (ETNS) until the SG2 meeting in March 2000. SG2 also decided that it would make no assignment of a regional CC until it had achieved agreement on the criteria for such assignment. The criteria for such assignment are the objective of project 27 of the Q1/2 work programme. Project 27 was created at the SG2 meeting in May 1997 following the Delayed Contribution D.77 of that meeting with proposals for revision of E.164.1 with respect to regional geographic CCs. The source of D.77 consisted of 16 European countries.

Rationale of regional geographic CCs

Internationalisation of economic and political activities brings internationalisation of telecommunication services and their applications. This internationalisation is reflected in numbering for telecommunication services: a development of use from national numbering schemes to global numbering schemes has started and will continue. Similarly, the trend towards regional groupings with varying levels of economic and political integration (such as ASEAN, MERCOSUR, the EU and so on) demonstrates that there is an increasing demand for regional services for which numbering resources will be required. The regional numbering schemes thus act as facilitators of internationalisation.

³⁶ Contact: Steve Roberts, Deputy Director, ETO, Strandboulevarden 92, 2100 København Ø, Denmark, Telephone: +45 35 43 80 05, Facsimile: +45 35 43 60 05, Electronic Mail: Steve@ETO.DK

Definition of a (shared) regional geographic CC

A (shared) regional geographic CC is a (shared) CC assigned to a group of at least four ITU or UN recognised countries that is not identified by one integrated numbering plan. The regional numbering plan based on the (shared) regional geographic CC coexists in parallel to national numbering plans or integrated numbering plans of those countries.

The choice between full and shared regional geographic CCs

A full regional geographic CC is applicable if both of the following conditions are met:

- a) the group of countries have at least 200 million inhabitants
- b) the intention is to use the CC for at least five different service access codes identifying different types of public correspondence services.

If one of the conditions, a or b, is not met then a shared regional geographic CC, consisting of a CC and one additional digit, is applicable.

If both conditions, a and b, are not met then a shared regional geographic CC, consisting of a CC and two additional digits, is applicable.

Criteria for reservation

A group of ITU or UN recognised countries has a (shared) regional geographic CC reserved if the following criteria are met:

1. The same group of countries, possibly together with one or more other countries, is not already identified by one integrated numbering plan.
2. None of the countries of the group is participating in more than one other group of countries that have a (shared) regional geographic CC reserved or assigned.
3. The TSB has received the application for the reservation of the (shared) regional geographic CC.
4. Activation of numbers in the range of the (shared) regional geographic CC will start within three years.
5. The (shared) regional geographic CC will not be used for global services for which (shared) CCs have been reserved or assigned.
6. The (shared) regional geographic CC will facilitate access to public correspondence services in principle from all the countries of the group and in exceptional cases from at least two of the countries of the group.
7. The use of the (shared) regional geographic CC enables an appropriate, efficient and effective provision of public correspondence services.
8. There is evidence of demand for these public correspondence services.

9. The administration of the regional numbering plan will reside with one body in which all countries of the group co-operate.

Criteria for assignment

A group of ITU or UN recognised countries is assigned a (shared) regional geographic CC, which the ITU has previously reserved, if the following criteria are met:

1. The criteria for reservation are still being met.
2. A written statement signed by all participating countries that activation of regional numbers in the range of the (shared) regional geographic CC will start within half a year.

Procedures for migration from regional to global services

After assignment of the (shared) regional geographic CC, a (shared) CC may be assigned to a new global service. In that case, if a regional service being offered by using the (shared) regional CC fits the global service definition, migration will have to take place from the regional service to the global service. The procedures for migration shall fulfil the following conditions:

1. Regional numbers for the regional service concerned will no longer be assigned once the (shared) CC for the global service has been assigned.
2. ITU will be sent a confirmation and a description of the migration within half a year after assignment of the (shared) CC for the global service.
3. Migration shall be completed in principle within three years after assignment of the (shared) CC for the global service and in exceptional cases within five years.

Criteria for reclamation

A reserved or assigned (shared) regional geographic CC may be reclaimed from a group of ITU or UN recognised countries, if at least one of the following conditions apply:

1. The criteria for reservation are no longer met.
2. During the period from half a year after assignment of the (shared) regional geographic CC, no numbers in the range of the (shared) CC are active.
3. In case of migration from regional to global services, the conditions for the migration procedures are not fulfilled.

Annex E DEFINITIONS

Administration of the ETNS: establishment of the ETNS conventions (and changes to them).

Assisted Network: a public or corporate network that routes all the calls to ENs towards a SgN it has agreement with in order to complete the call.

Called party: a party that terminates a call to an EN. The Called party may be the ETNS subscriber to the EN, an entity delegated by the ETNS subscriber or terminating equipment of the SP (such as recorded announcement equipment).

Calling party: a party that dials an EN.

ESI designations: the ESIs, the specific structure of the associated ENs and the specific conditions attached to each of the ESIs.

ETNS conventions: set of rules needed for management of the ETNS. They are composed of three elements: the ETNS definition, the ESI designations, and the rules for management of the ETNS.

ETNS country: a CEPT country participating in the ETNS.

ETNS registrar database: the database managed by the Registrar where all data, both administrative and operational, for each European number are registered.

ETNS translation database: a database, which, in the call process, translates the EN into a RN.

European Number (EN): a number from the ETNS.

Management of the ETNS: the whole of the administration, registration, and advisory function for the ETNS.

Originating network: a network, either assisted or serving, to which the calling party is connected.

Registration: the assignment of the ENs from designated ESIs, surveillance of the usage conditions and withdrawal of assigned ENs

Routing Number (RN): an E.164 number used to route to the service exchange.

It can also identify the called party or the ETNS SP for routing purposes.

Service exchange: an exchange of the Service Network that triggers the provision of the service on reception of the RN, and then forwards the call.

Service network: a network that operates one or more service exchange(s).

ETNS Service Provider (SP): an entity that provides one or more ETNS service(s) to its ETNS subscribers on a contractual basis. In addition, during the process of an ETNS call to a CN, it provides translation of the RN into the TN.

Serving exchange: an exchange, in the SgN, that can interrogate directly or indirectly an ETNS translation database to get a RN related to the EN, and then forward the call.

Serving Network (SgN): a network with one or several serving exchange(s). A SgN, contrary to an Assisted Network, can analyse the whole EN through database dip.

Annex F LIST OF ABBREVIATIONS

CC	Country Code
CEPT	European Conference of Postal and Telecommunications Administrations
CERP	European Committee on Postal Regulation
CEU	Commission of the European Union
CLI	Calling Line Identification
CN	Corporate Network
DDI	Direct Dialling In
DI	Domain Identity
DSN	Domain Specific Number
DTMF	Dual Tone Multi-Frequency
EAC	European Application of CN access
EAN	European Access Number
ECC	European Country Code
ECMA	Association for Standardising Information and Communication Systems
ECTEL	The European Telecommunications and Professional Electronic Industry
ECTRA	European Committee for Telecommunications Regulatory Affairs
ECTRA/PT N	ECTRA Project Team on Numbering
ECTUA	European Council of Telecommunications Users Association
EIG	European Interest Group

EIIA	European Information Industry Association
EN	European Number
EIRN:	European Internet Roaming Number
EMCN:	European Mass Calling Number
ENF	European Numbering Forum
ENTF	ETSI Numbering Task Force
EPGN	European Portable GSM Number
EPN	European Paging Number
ERC	European Radio-communications Committee
ESC	European Service Code
ESI	European Service Identity
ESN	European Subscriber Number
ERMES	European Radio Message System
ESatN	European Satellite Number
ESI	European Service Identifier
ETNO	European Public Telecommunications Network Operators' Association
ETNS	European Telephony Numbering Space
ETO	European Telecommunications Office
ETR	European Technical Report
ETS	European Telecommunication Standard
ETSI	European Telecommunications Standards Institute
ETSI STC NA2	ETSI Sub Technical Committee Network Aspects 2

EU	European Union
EVN:	European VoIP Number
GSM	Groupe Speciale Mobile
IN	Intelligent Network
INTUG	International Telecommunications Users Group
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ISP	Internet Service Provider
ISUP	ISDN Signalling User Part
ITU	International Telecommunication Union
ITU-T	Telecommunication Standardisation Sector of ITU
IVR	Interactive Voice Response unit
MoU	Memorandum of Understanding
N(S)N	National (Significant) Number
NANP	North American Numbering Plan
NDC	National Destination Code
NMT	Nordic Mobile Telephone
NRA	National Regulatory Authority
PEN	Personal European Number
PISN	Private Integrated Services Networks
PNP	Private Numbering Plan
PSTN	Public Switched Telephone Network
QoS	Quality of Service

R	Registrar
RN	Routing Number
SAC	Service Access Code
SgN	Serving Network
SCP	Service Control Point
SN	Subscriber Number
SP	Service Provider
SPC	Stored Program Control
TN	Terminating Number
UAN	Universal Access Number
UIFN	Universal International Freephone Number
SSP	Service Switching Point
VoIP	Voice Over IP
VPN	Virtual Private Network
