REPORT

ON

**European Telephony
Numbering Space (ETNS)
Field Trial – Phase 1**

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20 November 1998

This study has been prepared by ETO and Arcome on behalf of ECTRA for the Commission of the European Communities.

Tthe 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.

FOREWORD

BACKGROUND

The ECTRA (European Committee of Telecommunication Regulatory Authorities) Decisions calls on member countries 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 ECTRA (European Committee of Telecommunication Regulatory Authorities) 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

ETO has divided the field trial into two independent phases:

- phase 1, called "feasibility of the field trial", to prepare a business plan assessing the feasibility of the trial and a work plan for the trial identifying 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 for implementation of the trial

The European Commission signed a work order with ETO for phase 1 (appendix 1). ETO selected ARCOME as sub-contractor for this phase to carry out the study of the feasibility of the field trial in co-operation with ETO, the European Commission, and the participants in the ETNS working group. ETO completed Phase 1 successfully with positive conclusions 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. A number of operators and service providers agreed to participate in field trial phase 2 (implementation phase).

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.

ARCOME's report on phase 2 (appendix 2) provides a draft response to points 2, 4, and 7 raised by ITU-T as described in the scope of phase 1 of the ETNS field trial. As far as these are concerned, CEPT has to provide the following information:

- Point 2: an explanation of why CCs for global services can not be more appropriately utilised for the services proposed for the ETNS

- Point 4: a more detailed description of the services to be offered within the "388" code for ETNS

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

RESPONSE TO POINT 2

The European region and more specifically the European Union is now a very strong political entity, where the majority of companies and organisations are more and more clearly identified as European entities in addition to their national identities. These organisations are very keen to use the ETNS to reinforce their European image. This interest is very strong for not only major corporations and European institutions but also for small and medium 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. The European organisations may use global resources for some applications and may use European and national resources for European and national applications respectively. Europe will use the ETNS numbering resources, for example, to provide:

- access to information centres regarding European regulation, standardisation, and monetary aspects

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

- a single number for business purposes such as airlines and hotel chains

The charging aspect of the ETNS services is one of the important aspects. 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 (the European Service Code - such as the xxx in the following number "388 xxx yyyyyy"). 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).

To achieve this, a harmonised regulation at the European level for the charging aspects (especially for the high level rates) of ETNS services and applications at the European level will be necessary. We consider that the existing European legal and regulatory framework will make it relatively easier and quicker to set-up the necessary legal structure in comparison with possibilities for reaching and finalising such structures at a global level.

Even if this European policy would be applicable to all the European countries, it would include some flexibility to cope with national regulation. For instance, this European regulation will not require all of the specified services (especially concerning charging) to be implemented in each network. The operators should be free to implement or not an ETNS service or application in accordance with the national regulation, leaving it up to the market demand to ensure adaptation of the latter if necessary.

In addition, this policy will deal with legal aspects when callers from outside Europe dial the ETNS numbers. The intention of the European bodies concerned is clearly to comply with international agreements regarding free trade and consumer protection.

RESPONSE TO POINT 4

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.

European Access Number (EAN)

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

In fact, the calling party will dial a number similar to + 388-xxx yyyyyyy. Here + stands for the prefix, 388 indicates that this is an ETNS call, and then we have an ESC, followed by a subscriber's number.

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. This kind of subscriber may either be looking for a European image, or may, because of the nature of his activity 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, for instance.

Personal European Number (PEN)

A customer whose mobility within Europe (or possibly worldwide) is important, might want to be reached on a single dialled number, independently of his geographical location or actual residence. This service is the PEN. The subscriber would simply transmit to his Service Provider (SP) his new location, and the networks would properly route all the telephone calls. This would provide European portability of the number.

ETNS requires one general feature, that is, portability. Any ETNS number should be portable by definition. 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.

Satellite Services

This service allows the attribution of ETNS numbers to satellite network subscribers.

A European Satellite Number (ESatN) should be accessible from other networks (such as the fixed PSTN) in order to reach a subscriber using the ETNS number allocated to the customer.

European Mass Calling Number, Including Tele-voting (EMCN)

Tele voting is one example of explosive mass traffic. Broadcasting companies, for instance, use temporary numbers to enable their public to react to questions in television programmes. The EMCN will have a single ESC for all explosive mass traffic, including tele voting, to enable special routing to handle this traffic.

European citizens should have the opportunity to state their opinions upon various open questions of general concern. Now, the complexity of such a consultation in terms of paperwork is important. It would definitely be appropriate to implement an interactive tele-voting system, allowing citizens to vote using their telephone. It would be worth dedicating an ETNS numbering resource for this application.

European Paging

This service would allow callers to page people all over the European territory. In fact, ETO would allocate any subscriber to that service an ETNS number associated with his pager.

The subscribers may be required to own a specific pager, achieving European reception coverage.

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.

European Internet Services with Roaming

Electronic mail via the Internet has become a new way to communicate. People travel more and more with their laptops, and simplified and low cost international access would be of great value to them.

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 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.

European Portable GSM Number (EPGN)

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, such as 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.

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.

Even if corporate networks use the services defined above, ETO could allocate a separate numbering "sub-space" of the ETNS for these applications.

RESPONSE TO POINT 7

We have largely 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).

The ETNS field trial project is as follows:

Service for the Trial

ETO 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 will enable telecommunications users to have an EAN (an ETNS number) allocated to them that they could advertise throughout Europe. This service will provide 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.

Users from Europe or outside Europe will be able to dial the EAN of the called organisation. The dialled number will have the following format:

+388 388 abcdefg

Potential subscribers for the trial include the EC, ETO, and other European institutions.

Architecture and inter-working functions

 We have based the architecture of the field trial the following types of networks:

− originating networks (where the calling party is connected)

− ETNS serving, and ETNS service networks that will implement the ETNS translation capabilities

− terminating networks where the ETNS subscriber is the called party
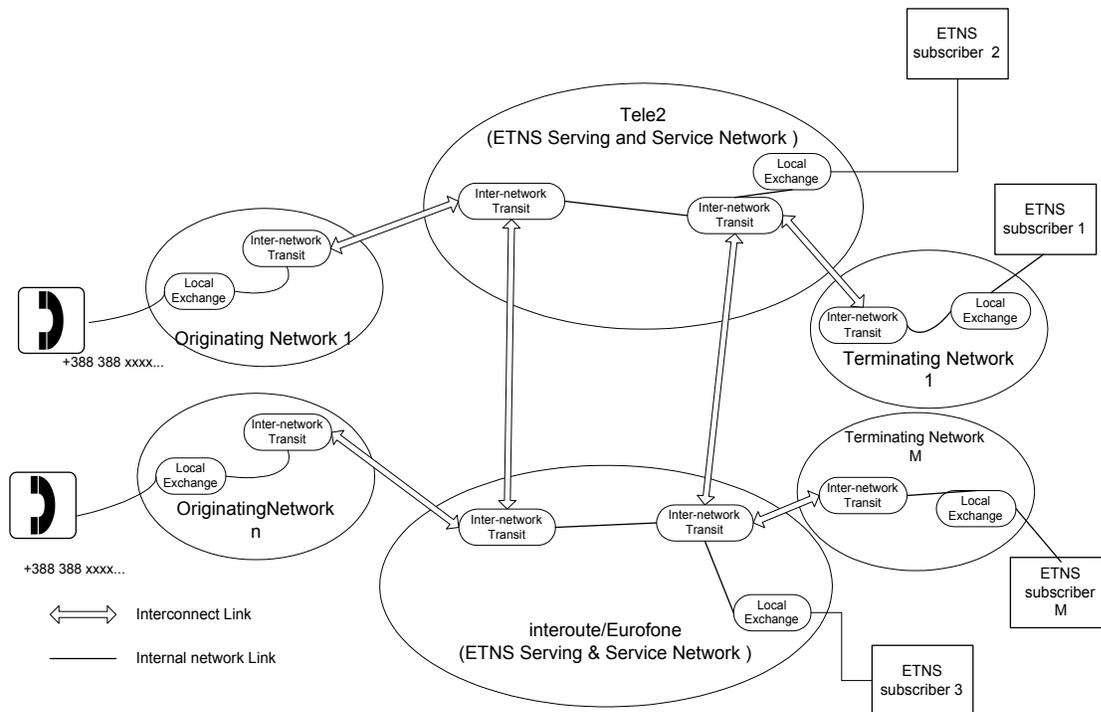
Figure 1: Network architecture for ETNS trial service

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

The terminating networks need not to be involved in the trial. To have the co-operation of a number of originating networks, we have requested the network operators of all ECTRA countries to support the trial by implementing CC 388 in their routing tables.

Envisaged users will at least be the European Commission, ETO and subscribers of Tele 2.

Operational aspects were defined as follows for the trial: ETO will act as administrator, registrar, and project manger for the trial. ETO suggested an ESC for the suggested service (that is, 388). ETO will achieve number allocation through usual communication tools and manage it with usual office tools according to a simplified procedure that it will elaborate.

A charging scheme was defined for the trial where the calling party pays a flat rate in order for the originating network to recover the costs. The ETNS subscriber shall pay a subscription in order that the networks involved (serving, service, and terminating) can recover their costs.

Number portability between SPs will be in the scope of the trial.

Commission's work order to ETO on the ETNS trial phase 1

1. **Subject:**
   Business plan and work plan for ETNS field trial

2. **Purpose:**
   The Resolution of the Council of the European Union (xx xx) calls on member states and the Commission to take the necessary steps to ensure
   – Co-operation within CEPT, the European Numbering Forum and the ITU in order to achieve the common objective of establishing an ETNS by 1 January 1999 on the basis of the '388' Country Code;
   – 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 signed by ECTRA on behalf of 24 European countries, ITU-T reserved in May 1997 the Country Code 388 for ETNS testing. This reservation was made with three conditions: 1) the code is to be used only for testing during the reservation period, 2) the reservation will terminate at the closing of the first Study Group 2 meeting of ITU-T in 1999 and 3) the applicant will provide 12 points of information requested by ITU-T.

   Following the ITU-T resource reservation, the ETNS field trial has been discussed in the European Numbering Forum, which proposed that the trial should be carried out through an ETO work order by establishing a Steering Committee to monitor the field trial and a Working Group to manage the practical field trial. The purpose of this work order is to create a framework for carrying out the field trial and for ensuring that CC 388 will be assigned for pan-European services. The field trial is divided 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 field trial and Phase 2, called "implementation of the field trial", to carry out necessary actions needed to implement the trial.

   This work order covers only phase 1. Phase 2 will be commenced by a separate mandate from the Commission after a successful conclusion of phase 1.

3. **Work requirement**
   1. To prepare a business plan to assess the feasibilty of the field trial. This business plan should identify the scope and objectives of the field trial, identify and define potential services, identify costs and benefits and any other necessary measures to assess the feasibility of the trial.
   2. To prepare a work plan for the implementation of the field trial.
   3. In order to carry out the tasks mentioned in points 1 and 2,
      To establish
         – a Steering Committee, chaired by ETO, open to all interested parties, to monitor the work of the Working Group, and make a final proposal for the business plan and work plan.
         – a Working Group, consisting of potential service providers and network operators participating in the field trial, drafting the definition of the scope and content of the field trial, carrying out preparatory work for the business plan and work plan and reporting its work to the Steering Committee.
      To hire a consultant
         – To identify potential trial participants.
         – To animate the work of the working group.
         – To draft a business plan and work plan for discussions in the Working Group.
         – To collate information in response to the points 2,4 and 7 raised by ITU-T.
         – To chair the Working Group.
         – To represent the Working Group in the Steering Committee.
      Tasks of different parties and potential participants for the Steering Committee are presented in Annex 2 of this work order.

4. **Deliverables**

The final report, including the business plan and work plan shall be delivered to the CEC by the end of April 1998 in 15 bound copies, one unbound copy and one copy on floppy disk in Microsoft Word 97.

5. **Manpower**

It is expected that this task can be accomplished in seven man-months at expert level, including the man-power of a hired consultant.

ARCOME *SA*

LES COMPETENCES TELECOM

12, rue Delerue

92120 MONTROUGE

FRANCE

Tel: +33 1 42 53 89 97 — Fax: +33 1 46 54 05 27

E-mail: arcome@arcome.remcomp.fr

ETNS Field Trial - Phase 1
Final report
Scope, Architecture, Work Plan and business plan

Authors

Bassam Almoussa
Christian Pellé
François Paulus

Table of Contents

List of Figures

Disclaimer

This document describes the ETNS implementation in the trial phase. To clarify some concepts, we give further explanations about the long-term implementation of the ETNS. However, this does not prejudge in any way the future content and architecture for the ETNS. You should consider the ETSI and ETO documents to provide the official specification of the ETNS.

1. EXECUTIVE SUMMARY

The EC (European Commission), ECTRA (European Committee of Telecommunication Regulatory Authorities) and ETO (European Telecommunications Office) are preparing for the implementation of the European Telecommunications Numbering Space (ETNS). This will offer new opportunities to market new telecommunication products and services across the entire European region.

This study focuses on the results of the preparation of the implementation of the ETNS trial required by the ITU. This is one of the conditions for the final allocation of the 388 Country Code (CC) to support pan-European value added services.

This study has been carried out in accordance with the first work order issued by the EC to ETO requesting the establishment of a working group including European operators and Service Providers (SPs). This working group would operate under the control of a steering committee to define the scope, the content, the architecture, the cost, and the planning of the field trial.

After two meetings of the ETNS working group followed by two meetings of the steering committee and the preparatory work, we have defined the ETNS field trial project as follows:

- **Service for the trial**

  We identified several services as candidates for the ETNS (see annexe 1). However, the European Access Number (EAN) service was adopted by the participants as the most promising service for the field trial. This service will enable telecommunications users to have an EAN (an ETNS number) allocated to them, which they will be able to use in advertising throughout Europe. This service will provide 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.

  Users from Europe or outside Europe will dial the EAN of the called organisation. The dialled number will have the following format:

+388 388 abcdefg

  Potential subscribers for the trial are the EC, ETO, and other European institutions.

- **Architecture and inter-working functions**

  We defined an architecture to provide the EAN service during the trial. We based this on the following types of networks:

  - originating networks (where the calling party is connected)

  - serving, and service networks that will implement the ETNS translation capabilities

  - terminating networks where the ETNS subscriber is the called party

  Through the working group, two candidates (Interoute and Tele2) were volunteers to implement the serving and service network functions. The two networks are pan-European long distance carriers with several Points of Presence (PoPs). The originating network can be any local loop in Europe (or even in the world). It was not possible to identify any candidate among the incumbent operators through the working group. As the participation of originating networks is very important for the implementation of the trial, we decided to request that the European Commission and ECTRA send an invitation to the NRAs on this issue.

- **Operational aspects were defined as follows for the trial**: ETO will act as administrator, registrar, and project manager for the trial. We suggested a European Service Identity (ESI) for the suggested service (that is, 388). ETO will achieve number allocation through usual communication tools and manage it with usual office tools according to a simplified procedure that ETO will elaborate. A charging scheme was defined for the trial where the calling party pays a flat rate in order for the originating network to recover the costs. The ETNS subscriber will pay for ETNS calls in order that the involved networks (serving, service, and terminating) can recover their costs.

- We have defined **Routing procedures** with several call scenarios.

- **Number portability** between SPs will be in the scope of the trial according to ETSI and ETO procedures.

- We devised a **work plan** to implement the project before the end of 1998. The adopted planning makes it possible to have enough time to collect the appropriate information through the trial to respond to the ITU points. Precise actions were identified for the coming weeks in order to start the implementation as soon as possible. The two major actions which are considered as prerequisites by the working group are the participation of incumbent operators as originating networks, and the participation of the EC as an ETNS subscriber. Action at a high level is necessary from the EC, ECTRA and NRAs to request the incumbent operators to route ETNS calls to one of the participating networks.

- We prepared a **business plan and project budget** for the trial. Where the cost of the trial as per the envisaged implementation is about 719 K ECU, ETO needs 180,000 ECU to ensure the role of project manager, ETNS administrator and Registrar. ECU539,000 are needed by the participants to set-up their networks to operate and maintain their systems, and to route ETNS calls.

- The study proposes **draft responses** to some of the points raised by the ITU.

- Finally, this study includes a detailed **service description** for the potential ETNS services in the long term. We have provided the service description according to the ITU and ETSI methodologies of service description in three stages. These services include the EAN, Personal number, Satellite, GSM (Groupe Speciale Mobile), Internet, paging systems.

2. SCOPE OF THIS DOCUMENT

The EC, ECTRA, and ETO are preparing for the implementation of the ETNS in order to offer new opportunities to market new telecommunication products and services across the entire European region.

This document specifies the scope and the objectives of the ETNS field trial. It provides a detailed description of the service, the network architecture, and the technical and operational options that the ETNS field trial working group has adopted for the ETNS field trial.

This version of the document contains the options that the working group has agreed. The working group has submitted this document to the steering committee.

3. INTRODUCTION

3.1. What is ETNS?

The ETNS aims at developing **pan-European services**, based on a **European CC '388'.**

Such a scheme would eventually allow European operators, SPs, and other users to promote Europe-wide numbers for telephone-based services. We anticipate that several services will be candidates for this numbering space.

The ITU has reserved CC 388 for ETNS testing. **ETO is now launching a field trial** on behalf of the EC.

The ETNS field trial's purpose is to associate diverse participants in an experiment relating to one or several potential services. The field trial will focus on one of the potential services that is of particular interest to parties involved in European telecommunications. The ETNS working group (set-up by ETO and the EC for this purpose, and approved by the steering committee) has identified and agreed these pan-European services.

3.2. Objectives of this study

3.2.1. Context of the study

WE undertook this study in the framework of the ETNS trial phase 1 related to preparation for the implementation of the ETNS field trial.

It falls within the scope of the first work order issued by the EC to ETO requesting:

- **A business plan** identifying :
    - The scope and objectives of the field trial,
    - The potential services, and defining them,
    - The costs and benefits for the trial,
    - Any other necessary measures to assess the feasibility of the trial,
- **A work plan** for the implementation of the trial.

We refer to this as field trial phase 1. A second phase will address the real implementation of the trial, with completion planned for the end of 1998.

3.2.2. The task force for the Field Trial phase 1

The task force for the project consists of three levels:

- A steering committee that comprises representatives from ENF (European Numbering Forum), ECTRA-PT N Project Team on Numbering, and the EC, chaired by ETO to :
    - Report to ETO,
    - Monitor the work of the working group,
    - Make a final proposal for the business plan and the working plan.
- A Working Group that comprises representatives of European operators and SPs to :
    - Report to the steering committee,
    - Draft a definition of the scope and the content of the field trial,
    - Prepare a business plan and a working plan for the steering committee to discuss.
- A hired consultant to :
    - Identify potential trial participants,

    – Animate the work of the working group,

    – Identify potential services in co-operation with market participants,

    – Draft a business plan and a working plan for discussing in the Working Group,

    – Collate information in response to the points 2, 4 and 7 raised by ITU-T,

    – Chair the working group meetings,

    – Represent the working group in the steering Committee.

ETO selected **ARCOME** to fulfil the functions of the "hired consultant".

3.3. Approach of this study

ARCOME identified three major tasks to be realised within the working group meetings. For each one of these tasks, ARCOME provided the initial input, submitted it to the participants, promoted and guided the discussions, collated the comments of the participants, and finalised the documents.

3.3.1. Working Group task 1

The first task of the working group was to identify the potential services that participants will offer during this field trial. Thus, we evaluated the different services in terms of market opportunities, costs, and technical feasibility. The outcome of this task was the identification of one promising service for the trial.
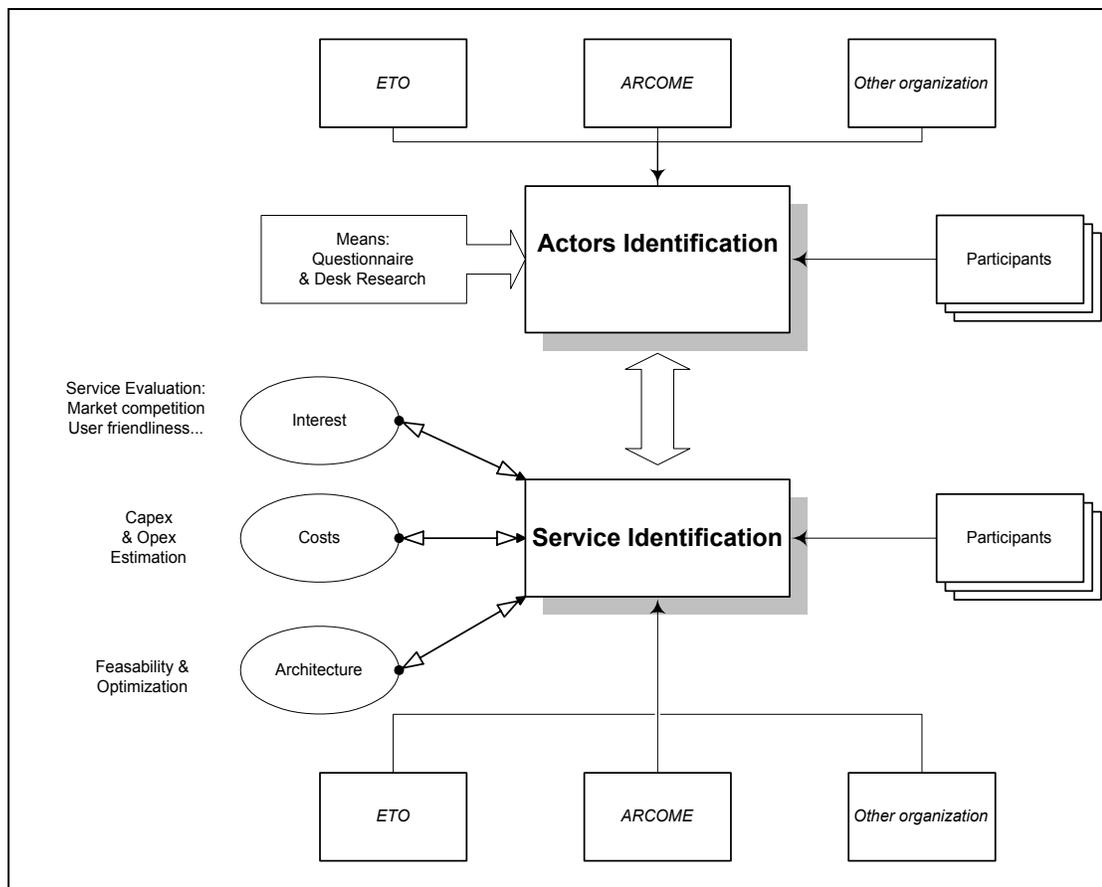
Figure 2: Working group task 1

3.3.2. Working Group task 2

Task 2 dealt with the detailed architectural specification, in order to establish a work plan for implementation. ARCOME proposed a generic architecture to provide the selected service. The participants provided the appropriate input regarding the implementation of the trial. This task included the definition of the operational aspects such as charging for and management of the service.
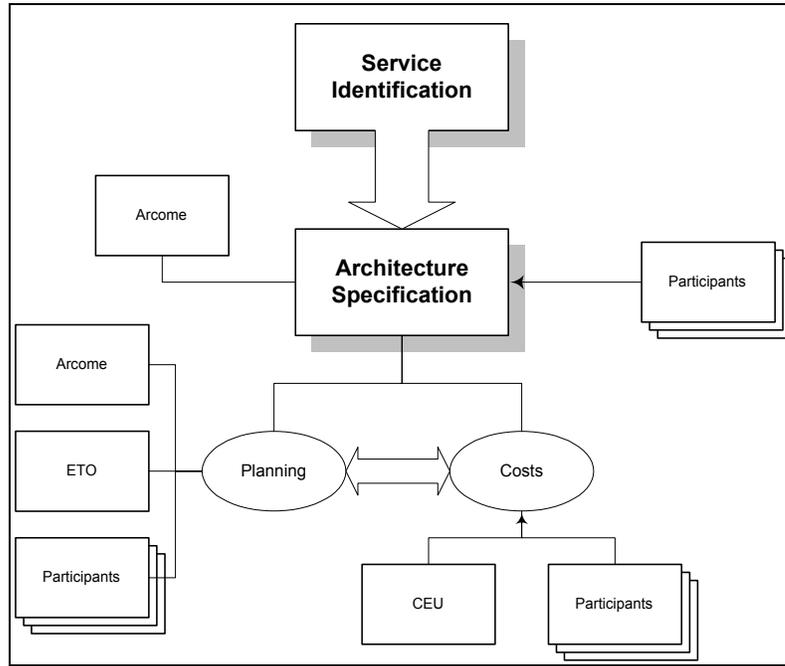
Figure 3: Working group task 2

3.3.3. Working Group task 3

The task 3 objective was to finalise the first phase of the trial with the definition of a business plan and a work plan concerning the identified service that the field trial would implement and test.
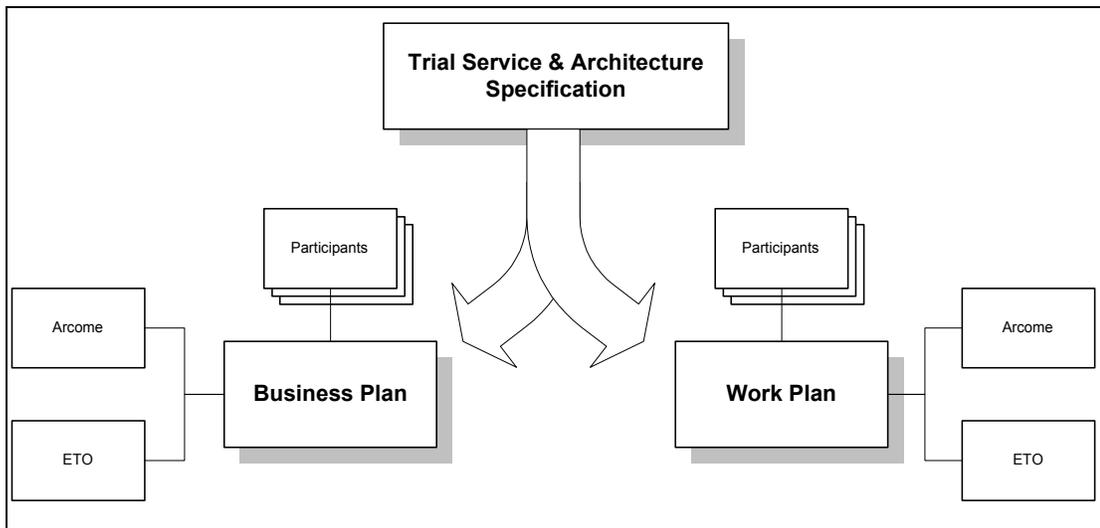
Figure 4: Working group task 3

4. ETNS SERVICES FOR THE FIELD TRIAL

4.1. Introduction

We identified several services as candidates for the ETNS (see annexe 1). However, the following paragraphs provide a description of the EAN (European Access Number) service as the most promising service for the field trial. This service is generic and can support several applications. The working group has selected this service as the most appropriate for the trial.

4.2. European Access Number (EAN)

4.2.1. Service description

This service will enable telecommunications users to have an EAN (an ETNS number) allocated to them. This service will be very useful for the following applications:

- European Organisations who can have a range of EANs to enable European citizens to call these organisations through a harmonised ETNS range of numbers. We foresee the EC, the European parliament, the European bank, ETSI and ETO as strong potential users of this service. At present, these organisations are located in different European countries with different CCs. A homogeneous numbering scheme will facilitate the access to these organisations. This will make it easier for international users to reach the European organisations. In addition, we anticipate that European information centres providing up to date information about European topics such as the Euro, the European laws and directives, and so on could use EANs.

- European Corporations who wish to have EANs allocated to their major entities that ensure the contacts with the outside world. This is mainly the commercial and customer support services of major European corporations who callers could access using this service. This unique number will allow people to call up the related entity in whatever country they are.

- Even small companies with significant activities at the European level could be interested in having an EAN that their European and international customers can use. This will give these companies a European "label".

- Pan-European applications such as remote learning, tele banking, and so on.

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 party identity, and the country where the caller originated the call.

This service is not suitable for explosive mass traffic as this traffic requires special provisions in networks and normally requires assignment of numbers for a short period of time.

See Annex A for a more detailed description of the service.

4.2.2. Service subscription

The users who wish to have an EAN will ask an ETNS SP 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 the routing timetable as well as the routing depending on the originating country.

4.2.3. Service utilisation

Users from Europe or outside Europe will be able to dial the EAN of the called organisation. The dialled number will have the following format:

+388 388 abcdefg

Where:

- "+" indicates the international access codes (such as 00),

- "388" is the ETNS country code,

- "388" is the ESI allocated by ETO to the EAN service for the trial,

- "abcdefg" is the subscriber number allocated by ETO.

The user can expect different routing depending on the geographic area (such as country) where the call originated. For example, networks can route a call originated in Spain to a terminating number in France while a call from the Netherlands can be routed towards a terminating number in Germany.

4.2.4. Foreseen subscribers for the trial

Potential subscribers for the trial are:

- The EC,

- ETO,

- Other European institutions,

- Tele2 Group Companies,

- Other participant companies,

- Arcome,

- Other Companies with European scope.

In addition, ETO will allocate some ETNS numbers to an information help desk. The help desk will terminate at a call centre, switch board, or an IVR (Interactive Voice Response) system.

Some further contacts are under discussion to involve other volunteers in the trial.

5. ARCHITECTURE AND INTERWORKING FUNCTIONS

5.1. ETNS trial networks architecture

Figure 5 shows the networks architecture to provide the EAN service during the trial. Two pan-European networks (Interoute and Tele2) will implement the ETNS translation capabilities. The originating networks can be any local loop network in Europe (or even in the world). Terminating networks can be any network in Europe or outside Europe.
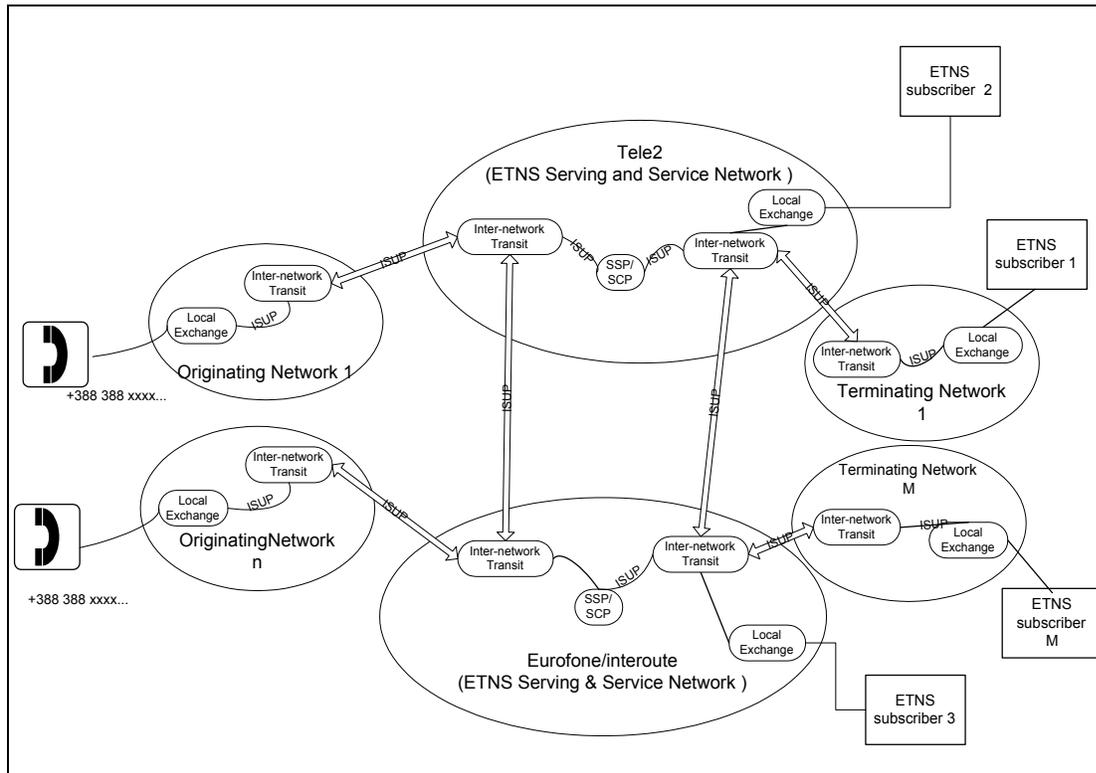
Figure 5: Network architecture for EAN service

Note 1: the figure provides <u>an example only</u> of the internal structure of each network. We do not consider that this will be the actual implementation that the participants will achieve.

Note 2: it should be noted that a signalling protocol other than ISUP (ISDN Signalling User Part) can be used when two of these networks are located in the same country. Operators may also find it more appropriate to use a different protocol.

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, service network and terminating network. Furthermore, in some other cases, the call will need to cross transit networks between two of these networks.

The following paragraphs describe the technical requirements for these networks and give the preferred options for the trial.

Note: We describe a simplified architecture for the ETNS trial in annex C.

5.2. Originating network

In order for the trial to have significant results, it is preferable that a maximum of the European local-loop networks (if not all) be involved as originating networks. Thus, the majority of European citizens will be able to call the ETNS subscribers during the trial.

However, it may not be realistic to achieve all the interconnection agreements within the available period. We envisage that the trial will start with four or five originating networks in four or five different countries.

The originating networks can deal with ETNS calls in two ways:

1) The originating networks act as assisted networks concerning ETNS calls. In this case, the originating network needs only to recognise the ETNS CC "388" and to route the call, as it is without any translation, towards one of the two networks with ETNS translation capabilities. The originating network operators of this type need to have interconnection agreements with at least one operator with translation capabilities (Interoute or Tele2). This interconnection agreement will be a commercial agreement.

> **You should note that <u>ALL European networks</u> are able to achieve this function <u>very easily</u> by configuring appropriately their exchange routing tables and billing equipment and to connect their international transit switch to one of the ETNS networks.**

2) The originating network also acts as a serving network. In this case, the originating network recognises the ETNS number and is able to identify the service network and deliver the call to that network. The originating network of this type needs to implement the translation mechanisms as required for a serving network. In this case, we expect that the originating network connects to both ETNS networks. This type of implementation may not be possible in every European local-loop network and therefore should not be required but left to each operator to decide.

In these two cases, the users connected to one of these originating networks will have to dial the EAN in an easy way, that is, +388 388 abcdefg.

5.3.   Serving, Service network and SP

For the ETNS trial, it is preferable that at least two operators and SPs implement the ETNS translation capabilities. This will allow experimentation with interconnection between a serving and service network.

At present, we have identified two candidates (Tele2 and Interoute with Eurofone) as volunteers to implement ETNS translation capabilities.

The SP as an independent entity is appropriate for the long term ETNS implementation. In the context of the field trial, we do not consider the SP as a separate entity from the service network operator. The identified candidates fulfil these requirements. The first candidate (Tele2) ensures both SP and service network operator functions. The other candidate is a consortium of two different companies (Eurofone with Interoute).

For the ETNS trial, a two step translation process will be used as the originating network may deliver the ETNS call to an ETNS capable network which is not related to the SP for that number. These first translation capabilities should enable the network to route the call to the network that will achieve the final translation unless the network is the SP for the called ETNS subscriber.

Tele2 and Interoute networks shall act as serving as well as service networks. Each network shall handle incoming calls in one of the following ways

•   translation of the ETNS number to a terminating number and routing the call directly to the appropriate ETNS subscriber :

  -   *For instance a call originating from Network 1 (see Figure 5) will directly be routed to ETNS subscriber 1 by Tele2,*

  -   *Alternatively, more generally, Network n will directly route a call originating from Network n to ETNS subscriber 3 to ETNS subscriber 3 by Interoute.*

•   translation of the ETNS number to a terminating number and routing the call to the appropriate ETNS subscriber through a terminating network :

- *For instance a call originating from Network 1 to ETNS subscriber 2 will be routed by Tele2 to Terminating Network 1,*

- *Alternatively, Interoute will route a call originating from Network n to ETNS subscriber M to Terminating Network M.*

- translation of the ETNS number to a routing number and delivery to the other network :

  - *For instance, regarding calls originating from Network 1 and destined to ETNS subscriber 3 or M, the Tele2 network will route the calls to Interoute,*

  - *Or, Interoute as a typical ETNS serving & service network will route calls originating from Network n and destined to ETNS subscriber 1 or 2, to Tele2.*

- translation of the routing number to a terminating number and routing the call directly to the appropriate ETNS subscriber :

  - *For instance, Interoute receiving a call from Tele2 destined to ETNS subscriber 3 will route this call to ETNS subscriber 3,*

  - *Or, Tele2 receiving a call from Interoute destined to ETNS subscriber 2 will route this call to ETNS subscriber 2*

- translation of the routing number to a terminating number and routing the call to the appropriate ETNS subscriber through a terminating network :

  - *For instance Interoute receiving a call from Tele2 destined to ETNS subscriber M will route this call to Terminating Network M,*

  - *Alternatively, Tele2 receiving a call from Interoute destined to ETNS subscriber 1 will route this call to Terminating Network 1.*

You should note that these translation capabilities could use one of the following technologies:

- **switch translation capabilities** can be used in some cases to translate the ETNS number into a routing or even a terminating number,

- **Service Node** (SN) : in this case the call will be routed to the SN with translation capabilities based on data bases,

- **IN (Intelligent Network) equipment** (such as SCP, Service Control Point): Some networks may already have IN equipment to provide current services (such as 800 services). This equipment can provide ETNS translation.

There is no requirement though about how to achieve the translation by the participants.

In any case, we expect that the necessary modifications for the trial are compatible with the project period, that is three to four months.

5.4.   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.

5.5.   Transit networks

We expect that some of the networks involved in processing an ETNS call will not connect directly. Therefore, transit networks may be involved in ETNS call processing. Transit networks can be involved in several ways:

- Transit network between the originating network and the serving network. In this case, the originating network needs to have an agreement with the transit network to deliver the call to a serving network. From the technical point of view, the originating network will implement classical routing capabilities to deliver the ETNS calls to the transit network. The transit network needs to implement classical routing capabilities to deliver the call to a serving network.

- Transit network between the serving network and the service network. In this case, the serving network needs to have an agreement with a transit network to deliver the calls to the service network. Note that the call between the serving network and the service network is destined to a routing number that belongs to a national numbering scheme. In this case, it may not be possible for the service network to recognise the serving network, as existing signalling protocols do not provide this information.

- Transit network between the service network and the terminating network. In this case, the network can process the call as a classical call without any additional requirements.

We recommend that, for the ETNS trial, we limit transit network situations, as they are more complex to set up and may not be compatible with the project period. However, for those countries where neither Tele2 nor Interoute have a PoP a transit situation may occur.

6. CALL SCENARIOS

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

6.1. Scenario 1 (four different networks are involved)

This scenario is characterised by the following points (see Figure 5):

- the originating network does not have ETNS capabilities (Originating Network 1),

- the serving network (Tele2) is different from the service network (Interoute 1),

- The terminating network is different from the service network (Terminating Network 1).

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

1) the calling party, who belongs to a network without ETNS translation capabilities (originating network 1), dials an EAN,

2) The operator providing Originating Network 1 has an agreement with Tele2 to transit ETNS numbers. Therefore, originating network 1 will route the call to the Tele2 network for further call processing.

3) Tele2 is not the SP for the called ETNS subscriber. Tele2 network will partially translate the number to determine that the SP for the called ETNS number is Interoute. Therefore, the translation process will produce a routing number enabling the Tele2 network to deliver the call to the Interoute network.

4) Interoute is the SP for the ETNS subscriber. The translation process will produce a termination number for the call.

5) The termination number belongs to Terminating Network M. The Interoute network delivers the call with the terminating called number to the Terminating Network M.

6) Terminating Network M handles the call as a usual call, terminates the call processing, and delivers the call to the subscriber equipment.

6.2. Scenario 2 (three different networks are involved)

This scenario is characterised by the following points (see Figure 5):

- the originating network does not have ETNS capabilities (Originating Network 1),

- the serving network is the same network as the service network (Tele2),

- The terminating network (Terminating Network 1) is different from the service and serving network.

This scenario uses a single translation procedure as:

1) the calling party, who belongs to a network without translation capabilities (Originating Network 1), dials an EAN,

2) The operator of the Originating Network 1 has an agreement with Tele2 to transit EANs. Therefore, Originating Network 1 will route the call to the Tele2 network for further call processing.

3) Tele2 is the SP for the called ETNS subscriber. Tele2 network will translate the number completely to find out the terminating number.

4) The termination number belongs to Terminating Network 1. Tele2 network delivers the call with the terminating called number to the Terminating Network 1.

5)   Terminating Network 1 handles the call as a usual call, terminates the call processing, and delivers the call to the subscriber equipment.

Note: This scenario is the one that the trial would use with the simplified ETNS architecture (that is, only one network with ETNS capabilities) as shown in Annex C.

6.3.   Scenario 3 (two networks are involved)

This scenario is characterised by the following points:

- the originating network does not have ETNS capabilities (Originating Network 1),

- the serving network is the same network as the service network (Tele2),

- the service network (Tele2) is also the terminating network (EAN Subscriber 2)

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

1)   the calling party, who belongs to a network without translation capabilities (Originating Network 1), dials an EAN,

2)   The operator of the Originating Network 1 has an agreement with Tele2 to transit EANs. Therefore, Originating Network 1 will route the call to Tele2 network for further call processing.

3)   Tele2 is the SP for the called EAN subscriber. The Tele2 network will translate completely the number to find out the terminating number.

4)   The termination number belongs to Tele2 network; therefore, the network can deliver the call to the terminating called number (EAN subscriber 1) that is directly connected to the Tele2 network.

6.4.   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 network. We have not shown this scenario in Figure 4. This would be the situation for the Tele2 (or Interoute) network for those calling parties who directly connect to the network and ETNS subscriber 2 (or 3).

1)   the calling party, who belongs to a network with translation capabilities, dials an ETNS number,

2)   The operator of the network is the SP for the ETNS subscriber. The translation process of the dialled number will produce a terminating number for the call.

7. CHARGING SCHEME

The trial could use a simplified charging scheme. It is based on a call scenario where four (maximum) networks are involved in the handling of the call: originating network, first translation network, second (final) translation network and terminating network.
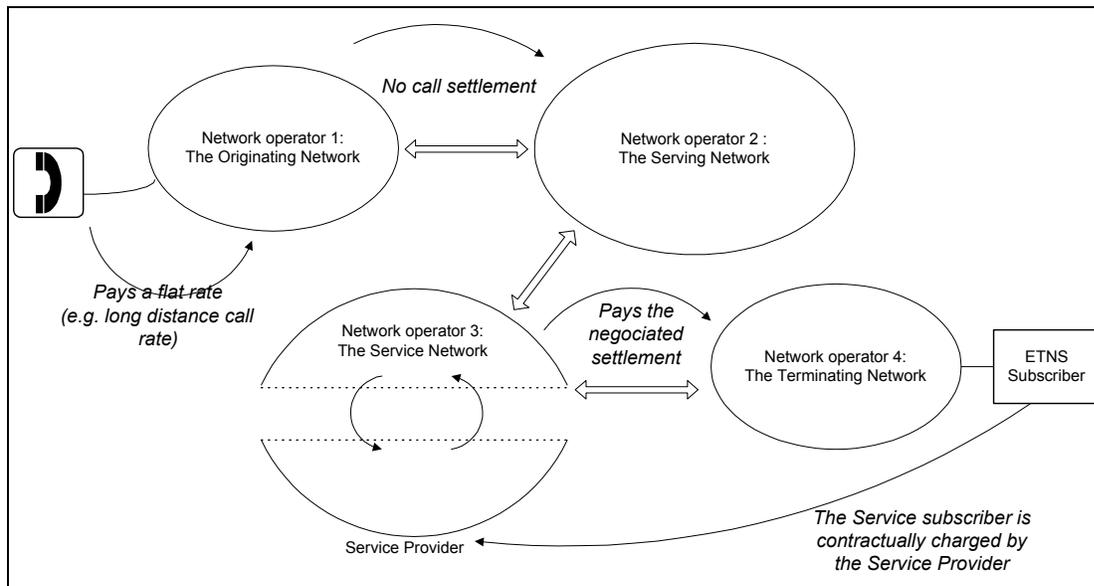
Figure 6: Charging scheme for the trial

The originating network will charge the calling party using a flat rate with possibly a time modulation. The rate should be as low as possible to encourage calling users to call EANs. As a maximum, this rate shall not exceed a national long distance call rate. This will facilitate the introduction of the EAN service very quickly for a maximum of the European networks.

The originating network will not have any settlement with the serving network. The originating network will deliver the ETNS calls free of charge to the serving network.

The SP will charge the ETNS subscriber for the ETNS service according to the contractual agreement established during the subscription phase. For the trial project, it is up to the participating SPs and operators to select relevant EAN subscribers for the field trial.

The SP will have to achieve the following settlement:

- the SP will pay the service network according to the agreed rate,

- The SP will pay the terminating network using the existing settlement rate agreed between the service network and the terminating network. This settlement operation may occur through the service network that has an interconnection agreement with the terminating network.

- The SP will reverse money to the serving network using a negotiated settlement rate agreed between the service network and the serving network. This settlement operation may occur through the service network that has an interconnection agreement with the serving network.

- In the event that, the serving and service network are the same, this settlement is irrelevant.

8. OPERATIONAL ASPECTS

We have based the following paragraphs on the ETO report on "Management, Routing and Portability Aspects of the European Telephony Numbering Space (ETNS)" dated 23 April 1998. For a full description of ETNS management, you should refer to that document. We intend the following paragraphs to provide details about those points that need some additional specifications for the trial.

8.1. Number allocation

ETO will act as the administrator and the registrar for the ETNS during the trial. As such ETO will allocate an ESI for the EAN service. The ESI for the EAN will be of three digits. As a first service, ETO has allocated an easy to remember code: "388".

For each subscriber the participating SPs will ask ETO to allocate an EAN. The interface that the SP uses to apply for an EAN from ETO will be a human operator. Conventional communications tools such as facsimile or electronic mail could achieve this.

The trial will use the distributed approach. When ETO allocates an EAN to a SP, the SP must provide all the serving networks participating in the trial with the routing number associated with the EAN.

8.2. Number Portability

During the trial, subscribers will port some of the numbers allocated by Tele2 to Interoute, and, vice versa, they will port some of the numbers allocated by Interoute to Tele2. In this case, the recipient SP will inform the donor SP about the EAN that it has received and provide the other serving networks with the new routing number for this EAN. Both the donor and the recipient networks will inform ETO about the porting.

This process will be synchronised between the donor and the recipient SP as well as the serving networks in order to ensure the minimum service interruptions.

9. WORK PLAN

9.1. Project organisation

The ETNS trial project will involve the following parties:

- The operators and SPs who are candidates to implement ETNS translation capabilities.

- The other European local loop operators (mainly incumbent operators) who will act as originating networks,

- ETO as supervisor of the trial and as administrator and registrar for the ETNS,

- The EC.

The following paragraphs describe the major tasks we need to perform to achieve the ETNS trial project.

9.2. Major tasks

We performed task identification during phase 1 of the field trial. We achieved some of the tasks partially or completely during this phase. However, they are still included in this report for completeness. For the first tasks, a subparagraph describes the work achieved.

We identified the following tasks as major action domains:

Tasks	Description
Task 1	Final list of participants and the respective roles
Task 2	Application for TEN-Telecom funding
Task 3	Network Architecture for the trial
Task 4	Implementation of the networks functionality and testing
Task 5	Configuration of national networks to route 388 call to one ETNS network
Task 6	Set up ETO infra-structure as registrar and administrator
Task 7	Collection of information about the trial for evaluation

9.3. Task 1

9.3.1. Actions definition

Today, two operators and SPs (Tele2, Interoute) have been identified through the working group participants are candidates to implement the ETNS translation capabilities. Other candidates may apply for this in the coming weeks.

It is necessary that we verify the following points for each participant in order to make sure that the trial will proceed according to the required planning and quality of service by these candidates:

- Status of the existing network (up and running equipment, future deployment plan, and so on)

- Implementation in the European countries (point of presence, interconnection agreements with historical operators, and so on)

- types, capabilities and capacities of switching equipment,

- types, capabilities and capacities of IN equipment,

- types, capabilities and capacities of the billing systems and other information systems,

- how they intend to provide the ETNS service,

- what is the expected budget for the project,

- what is the project plan,

- what is the required funding from the commission,

- Other points.

Action 1.1	candidates will have to provide the above-mentioned information. Candidates therefore need to submit an official application for the trial.
Action 1.2	Arcome will include a synthesis based on information provided by the candidates in the final deliverable.
Action 1.3	The EC and ETO will accept the list of participants

For the ETNS project, it is important that the maximum of European users be able to call ETNS numbers during the trial. At present, the two candidates to implement ETNS are both alternative long distance operators with no or few users connected directly to the network. Therefore, it is necessary that the European local-loop operators participate in the trial at least as originating networks. Otherwise, no ETNS calls, or very few, will be made to ETNS numbers.

At present, the incumbent operators provide most of the local loop access in European countries. Therefore, the incumbent operators in all European countries should receive an invitation to participate in the ETNS trial as originating network.

Action 1.4:	The European Commission shall invite directly or through the NRA the incumbent operators to implement routing mechanisms for ETNS calls to enable their subscribers to originate calls towards ETNS subscribers.

9.3.2. Achieved work

The two candidates (Tele2 and Interoute) have submitted their proposals to ETO and the EC. Currently, the two candidates are preparing common proposals that would include further details about the interconnection aspects between their networks. Actually, the two candidates are reviewing their proposals after the clarification given by TEN-Telecom team that we can expect no funding for the trial.

The European Commission and ETO are drafting a letter to the European regulators directly and through ECTRA.

9.4.   Task 2

The Commission gave a clarification about the funding policy of TEN-Telecom projects. It was clear that the funding procedures for these projects are not compatible with the project period. Therefore, no further actions are necessary for this task.

9.5.   Task 3

9.5.1. Actions definition

In the beginning of phase 1, Arcome proposed a generic architecture for the trial. We discussed this architecture within the working group and the steering committee. This architecture needs to be adapted as necessary by each participant to cope with his own network and existing equipment. The final architecture will take into account the existing infrastructure of the participants.

Action 3.1	**The participants** shall provide technical information about their networks and provide detailed specifications about the ETNS implementation they intend to undertake,
Action 3.2	finalise the architecture for the trial (**participants with ARCOME**)

9.5.2. Achieved work

Based on the architecture proposed by Arcome and discussed within the working group and the steering committee, the participants submitted their proposals to participate in the trial. We have actually based the architecture defined in this document on the proposals of the candidates. However, for confidentiality reasons information on the proposals is not included in this report.

9.6. Task 4

9.6.1. Actions definition

We consider the SP and the service and serving network operators to be the same entity in this document (even if they are representing a consortium).

Upon the decision of the EC and ETO to start the ETNS trial phase 2, the participants will start the implementation of the necessary software and hardware to support the EAN service.

Action 4.1   the following list of actions are identified for each participant as serving and service network:

- install the switching extensions if needed,

- In those countries where the serving network has a POP, negotiate with the historical operator an extension of the interconnection agreement to route the ETNS calls to the participant network.

- Introduce the necessary translation software in the network. This can be achieved either by the switching equipment or by IN equipment (such as SCPs or service nodes). We anticipate that the existing equipment can support the ETNS translation features.

- Introduce the necessary modification in the service provisioning and billing equipment.

At the same time, volunteers are necessary to be EAN.

Action 4.2   the participants shall conclude an agreement with several subscribers who accept to be volunteers for the trial.

The potential participants require that the EC and other European organisation be involved in the ETNS trial. We expect that the EC and some other European organisations will be volunteers for the trial.

Actions 4.3   the EC and ETO shall investigate the possibility of being ETNS subscribers.

Before launching, the trial the working group will undertake testing activities to ensure that the implementation of the ETNS is correct.

Actions 4.4   the participant and selected users as calling parties shall test the service.

9.7. Task 5

This task relates to local loop operators who will implement ETNS routing mechanisms for calls to networks with ETNS translation capabilities.

We anticipate that not all of the local loop operators will implement the necessary routing mechanisms at the same time. Therefore, interconnection agreements and activation will be necessary during the whole period of the project.

Actions 5.1   local-loop operators shall implement ETNS routing mechanisms in their networks.

9.8. Task 6

ETO will act as administrator and registrar for ETNS in the future and of course during the trial. Therefore, ETO shall implement some facilities in order to be able to manage and allocate ETNS numbers. We expect that for the trial phase, these facilities will be simple and will use ordinary office packages.

Action 6.1	ETO will allocate an ESI for the EAN service
Action 6.2	ETO will define a simplified procedure based on the ETO report for the management of ETNS.
Action 6.3	ETO shall set-up the necessary equipment and software for the allocation of ETNS number

9.9. Task 7

The ETO shall ensure the project management for phase 2 of the trial. In addition, ETO will define the information that it needs to collect through the trial in order to prepare the responses to the ITU. We need to further define this task in Phase 2.

9.10. Project planning

The above mentioned tasks and actions will be organised in order to set-up and start the trial by 1 January 1999. The following chart provides the planning for the ETNS trial project phase 2 in addition to the remaining tasks of phase 1.
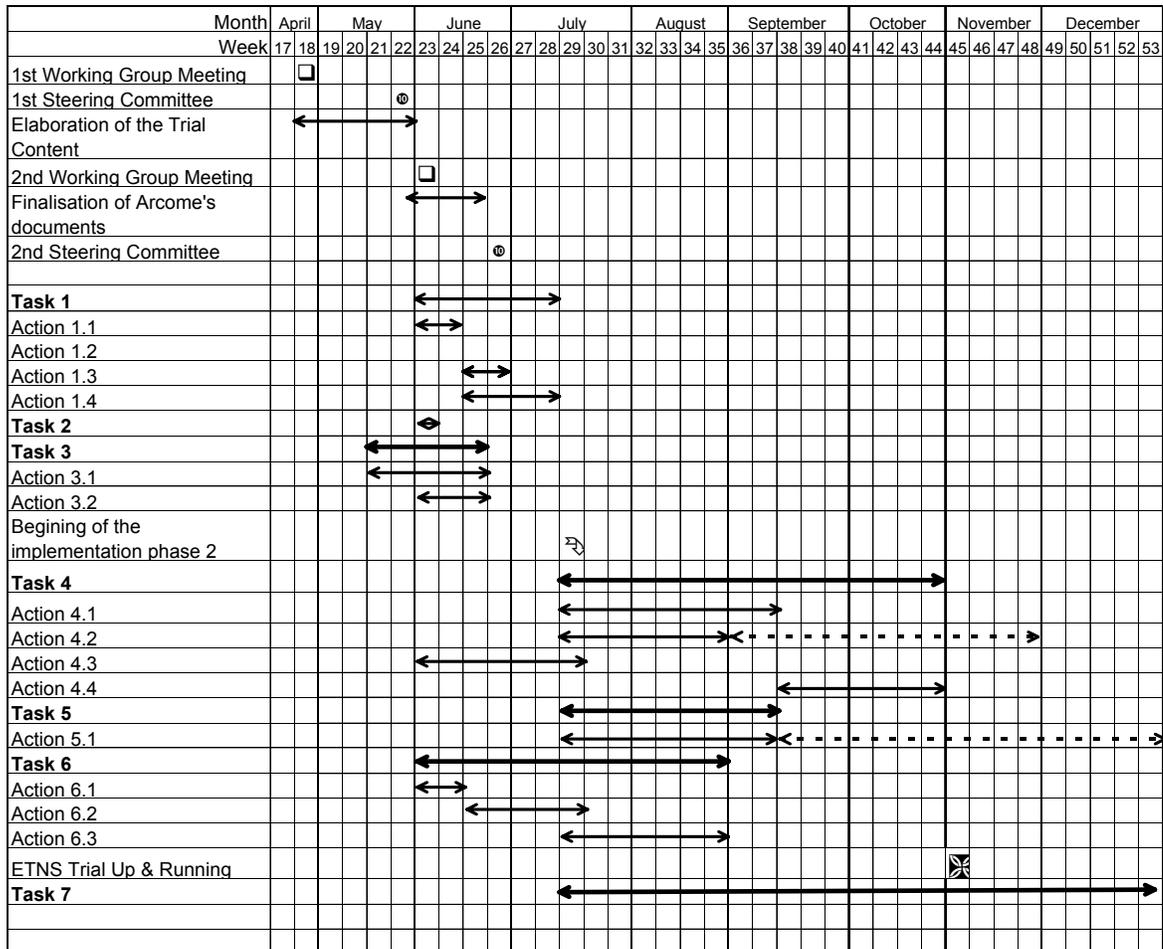
10. BUSINESS PLAN-ETNS PROJECT BUDGET

10.1. Introduction

This paragraph contains the business plan for the ETNS trial project. We have based it on the participation of two operators and SPs: Interoute, and Tele2 to implement the ETNS translation capabilities. This budget does not include the cost for local loop operators as they are supposed to recover their cost through the call charges that will be paid by the calling parties.

We have based the implementation cost of the ETNS trial on the figures provided by the candidates (Tele2 and Interoute/Eurofone). The details for each participant are not included in this report for confidentiality reasons.

10.2. Scope of the implementations

The trial will include the following ETNS subscribers:

- European Institutions (The European Commission, ETO, others)

- Information centres providing European information (operated by the participants)

- Other volunteers (not identified yet but the participants will contact some potential subscribers when the scope of the project will be defined).

The potential subscribers can be located in any of the following countries: (UK, Ireland Denmark, Germany, the Netherlands, Belgium, Norway, Portugal, Spain, and Sweden),

Calls towards ETNS numbers can be originated from the countries where the participants have interconnect agreements that need to be re-negotiated to have 388 calls delivered at the appropriate point of interconnection. At present, these countries are UK, Denmark, Germany, the Netherlands, Sweden, and Luxembourg.

10.3. Types of Costs

We identify the following types of costs:

- **Network set-up cost**: This includes the price of the translation equipment and the IVRs that the participants have to introduce in their networks. In addition, these costs include the engineering, the installation, and the commissioning of this equipment.

- **Operational costs**: this includes the running costs to operate, provision, install, and maintain equipment to provide the EAN services. We have estimated this cost based on a fixed amount per month for each participant for the duration of the project (that is nine months: July 1998 - March 1999).

- **Calls delivery Costs**: Actually, ETNS calls delivery will take into account the infrastructures of the involved networks. In addition, the participants will have to pay interconnection fees at least at the terminating network level. This cost is variable and depends on the numbers and duration of the calls towards ETNS subscribers.

- **Project management costs**: ETO (and probably some subcontractors) will manage and supervise the implementation of the ETNS trial. In addition, ETO will have to collect the appropriate information from the trial phase to elaborate the responses to the ITU points.

10.4. Costs for the participants

The following table provides the cost for Eurofone as proposed by the company. We give the operational cost for project duration of 9 months (July until March):

	Operators and services providers	ETO
Duration of the trial (Months)	9	12
Capital costing (ECU)	**143 000**	**0**
Installation of Value Added Platform	73 000	
Installation of an IVR system	70 000	
	0	
Operation cost (ECU/month)	**30 000**	**15 000**
Infrastructure Support	14 000	
388 Help Line	7 000	
Project Management	9 000	15 000
Cost for call delivery (ECU/month)	**14 000**	**0**
Total ECU	539 000	180 000

Total Project budget ECU	**719 000**

11. ANNEX A - POTENTIAL SERVICE DESCRIPTIONS FOR THE ETNS

We describe the services in this section using ITU-T and ETSI methodology. You should consider these descriptions as drafts for Stage 1 definitions. A Stage 1 description is an overall description from the user's point of view (see ITU-T Recommendation I.130), but it does not deal with details of the human interface itself.

For information, Stage 2 of this methodology identifies the functional capabilities and information flows needed to support the service described in Stage 1. In addition, Stage 3 defines the signalling protocols and switching functions needed to implement the service described in Stage 1.

11.1. EAN

11.1.1. Definition and applicability

11.1.1.1. Scope of the service

The purpose of this service is simple. Using the 388 prefix, callers can reach any subscriber to this service with the same number, throughout Europe.

In fact, the calling party will dial a number similar to 00 388-xxxx yyyy. Here 00 stands for the selection of an international code, 388 indicates that this is an ETNS call, and then we have an ESI, followed by the subscriber's number.

Now, the international selection does not mean that this is going to be an international call. The call can very well terminate within the country's borders. It all depends on the subscriber's location and requirements. Thus, the charging of the call is one of the major issues of the project. It has to be simple enough to facilitate easy implementation, it has to be user-friendly, and it should be coherent with existing charging structures.

If we assume that the subscriber has one single location where callers can reach him, then the networks will route any call to this destination. This kind of subscriber either can be looking for a European image, or is through his activity 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 customers throughout Europe could easily reach it, for instance.

These kinds of situations can lead to several applications.

11.1.1.2. Examples of applications

Some examples of applications are quite straightforward for us to foresee:

- European organisations who can have a range of European numbers to enable European citizens to call these organisations through a harmonised ETNS range of number. We foresee the EC, the European Parliament, the European bank, ETSI, the ETO and so on as strong potential users of this service. Actually, these organisations are located in different European countries with different CC. A homogeneous numbering scheme will facilitate access to these organisations. This will make it easier for international users to reach the European organisations. In addition, we anticipate that European information centres will develop to provide up to date information about European topics such as the Euro, European laws and directives, and so on.

- European corporations who wish to have EANs allocated to their major entities that ensure contacts with the outside world. These are mainly their commercial and customer support services. This EAN will allow people to call up the related entity in whatever country they are.

- Even small companies with significant activities at the European level could find it interesting to have an EAN that their European and international customers can use. This will give these companies a European "label".

- Pan-European applications such as remote learning, tele banking, and so on.

The EAN is a non-geographic number that networks can route to different locations across multiple networks. The calls towards an EAN can be handled differently according to time of day, day of week, the calling party identity, the country where the call is originated etc.

11.1.2. Description

11.1.2.1. Core requirements

Access

This service shall be available to users who attach to the networks via a PSTN (Public Switched Telephone Network) line, or ISDN, Integrated Services Digital Network (basic access or a primary rate access).

Basic service

The basic service would only be the telephone connection through to the served user.

11.1.2.2. Optional requirements

The optional requirements customise the service according to specific subscriber needs. These additional parts may either be offered to all customers of an SP, or to a group or even to a single customer.

We list some possible SP options hereafter, but the SP may offer other additional options.

Time dependent control

The served user is able to modify the handling of the call according to the time interval (such as time of day, day of week) in which the call is placed.

Time dependent routing

The served user is able to specify the routing destination(s), such as access arrangement(s) or announcement(s), according to the originating date and time of the call. The served user may specify the time interval.

Origin dependent control

The served user is enabled to select the origination (such as calling line identity, geographic area) from which the service may be used.

Origin dependent routing

If the served user has several PoPs through Europe, an optimisation of the access is possible. This will balance the amount of calls between the different call centres for instance, and achieve a minimum cost for the call.

Application dependent routing

Depending on the type of access and the basic application (the served user may for instance differentiate voice access, and a computer based connection), operators might route the calls differently. Furthermore, in case of a computer access, the call requires a transparent connection established (such as no compression).

Call limited

The served user is enabled to specify the maximum number of simultaneous calls to a given access arrangement. Networks will take alternative action on calls exceeding the call limit, such as rejection.

Call distribution

The served user is able to specify the distribution mechanism for different access arrangements to share calls.

Alternative destination on busy or no reply

The served user is able to re-route to an alternative access arrangement EAN calls meeting busy condition or no positive response at the scheduled destination.

Call queuing

The served user is able to place in queue calls meeting a busy condition, and to connect them as soon as a free condition arrives. The network informs the calling user that the call is queued. The queuing mechanism is outside the scope of this document.

Customer service profile management

The served user may customise one or several handling service profiles (or records) either in operation or not in operation. The management mechanism is outside the scope of this document.

Access code

Beyond the EAN, the calling user, in order to identify and authenticate his user profile, may dial a personal access code.

A detailed procedure is outside the scope of this document.

Statistical information

The served user is able to obtain, from the network, statistical information on EAN incoming calls, which may include itemised billing. The procedures for the generation and reporting of such information are outside the scope of this document.

11.1.3. Procedures

11.1.3.1.   Provision and withdrawal

This service is by prior arrangement with the SP. On subscription to the service, ETO will allocate an EAN to the served user.

11.1.3.2.   Normal procedures

Registration and erasure

Core requirements

Following the arrangement between the SP and the subscriber, the SP provides for the initial registration of the served user service profile in the network.

The served user profile consists of parameters stored in a record used by the network to handle EAN calls (running record).

Activation and deactivation

Core requirements

The SP activates the service on provision and deactivates it on withdrawal.

Invocation and operation

Core requirements

In accordance with basic call procedures, the calling user can originate a call indicating the service access code and the EAN identifying the served user.

The SP shall invoke the EAN service and process the call according to the served user's requirements contained in the running record.

The calling user shall receive indications about the success or failure of the request.

Optional requirements

As a SP option, the user can receive an indication that the call is a result of the invocation of an EAN.

As a further option, the SP can give the service access code and the number used to the served user.

Furthermore, the SP can give an indication of the cost of the call to the user.

Interrogation

Core requirements

Not applicable

11.1.3.3.   Exceptional procedures

<u>Registration and erasure</u>

Not applicable

<u>Activation and deactivation</u>

Not applicable

<u>Invocation and operation</u>

If for any reason the EAN service cannot be invoked on a call (nor be re-routed through the telephone network to an alternative number), the call shall be rejected and the calling user shall be informed.

<u>Interrogation.</u>

Not applicable

11.2. Personal European Number (PEN)

11.2.1. Definition and applicability

ETSI and ETO have designed the ETNS to support this kind of service, either dynamically, or at least statically:

- A customer whose mobility within Europe (or possibly worldwide) is important, might want to be reached on a single dialled number, independently of his geographical location or actual residence. This service is the PEN. The subscriber would simply transmit to his SP his new location, and the networks would properly route all the telephone calls. This would provide European portability of the number.

- It should be borne in mind that ETNS requires one general feature, that is, portability. Any ETNS number should be portable by definition. This means that the service subscriber has also the possibility to change the SP, although he retains the use of the same ETNS number.

11.2.2. Description

11.2.2.1. Core requirements

Basic service

This service shall be available to users who attach to the networks via a PSTN line, or ISDN (basic access or a primary rate access).

11.2.2.2. Optional requirements

The optional requirements customise the service according to specific subscriber's needs. These additional parts may either be offered to all SP's customers, or to a group or even to a single customer.

We list some possible SP options hereafter, but the SP may offer other additional options.

Time dependent control

The served user is able to modify the handling of the call according to the time interval (such as time of day, day of week) in which the call is placed (voice-mail).

Time dependent routing

The served user is able to specify the routing destination(s), such as access arrangement(s) or announcement(s), according to the originating date and time of the call. The served user may specify the time interval.

Dynamic location registration

Any subscriber should be able to register his new location through an appropriate procedure. The SP shall provide the customers with a proper interface (IVR, or call centre) in order to ensure a user-friendly interface. The resulting update of the database should be immediate.

Alternative routing

The served user is able to specify the distribution mechanism for different access arrangements (different locations) to share calls.

11.2.3. Procedures

11.2.3.1. Provision and withdrawal

This service will be by prior arrangement with the SP. On subscription to the service, ETO will allocate a PEN to the served user.

11.2.3.2. Normal procedures

Registration and erasure

Core requirements

Following the arrangement between the SP and the subscriber, the SP provides for the initial registration of the served user service profile in the network.

The served user profile consists of parameters stored in a record used by the network to handle PEN calls (running record).

Activation and deactivation

Core requirements

The SP activates the service on provision and deactivates it on withdrawal.

Invocation and operation

Core requirements

In accordance with basic call procedures, the calling user can originate a call indicating the service access code and the PEN identifying the served user.

The SP shall invoke the PEN service and process the call according to the served user's requirements contained in the running record.

The calling user shall receive indications about the success or the failure of the request.

Optional requirements

As an SP option, the user can receive an indication that the call is a result of the invocation of a PEN. As a further option, the service can give the service access code and the number used to the user.

Interrogation

Core requirements

Not applicable

11.2.3.3.   Exceptional procedures

Registration and erasure

Not applicable

Activation and deactivation

Not applicable

Invocation and operation

If for any reason the SP cannot invoke the PEN service on a call, it will reject the call and inform the calling user.

Interrogation.

Not applicable

11.3. Satellite services

11.3.1. Definition and applicability

The satellite market is an emerging market, with operators launching constellations all over the world (Iridium, Globalstar, Orbcom, and so on). Some of these services will use global numbering resources for those users who need worldwide mobility. The satellite network is a network without boundaries. These services could also receive resources in the ETNS for European regional services.

New satellite services will be voice transport, paging, but also fast data transfer. Eventually, real-time interactive multimedia services will be possible (video-conferencing). These projects focus on frequent business travellers, who are willing to pay a premium for the ability to communicate anywhere. Providers say their voice service will cost between US$1 to US$3 a minute.

Satellites provide a secure communication technology (centralised architecture, and high redundancy). The emerging celestial competition centres on low orbit satellites, with low delay times, and higher bit-rates. Still, this technology needs further development, and adequate terminals need to be established.

As satellite systems are not effective in buildings, travellers will use cellular telephones in urban areas where available, and switch to satellite elsewhere.

11.3.2. Description

11.3.2.1. Core requirements

Access

This class of services shall be available to users owning a specific satellite receptor. Indeed, administrators should dedicate this satellite numbering resource to a group of services, within which the ETNS management entity should organise a structure based on the type of application.

The satellite communication system itself is outside the scope of this document.

Basic service

This service allows the attribution of ETNS numbers to subscribers of a satellite network.

A European Satellite Number (ESatN) should be accessible from other networks (such as fixed PSTN); to reach a subscriber using the ETNS number allocated to the served user.

Any subscriber should therefore be able to communicate through the satellite(s) with the serving network. Calls will be in duplex mode. This implies that in case of a call placed by the served user (using E.164 numbers), the Calling Line Identification (CLI) will be the ETNS number. Thus, the SP shall provide complete interconnection with global networks.

11.3.2.2. Optional requirements

The optional requirements customise the service according to specific subscriber's needs. These additional parts may either be offered to all SP's customers, or to a group or even to a single customer.

We list some possible SP options hereafter, but the SP may offer other additional options.

Bit rate

Bit streams can be of various rates, depending on the direction of the stream (upstream or downstream) and on the application.

Call distribution

The served user is able to specify the distribution mechanism for call sharing between different access-arrangements (different locations).

For instance, if the mobile is simultaneously accessible to the satellite and to the mobile network, the served user may specify his preference between the two systems.

Data communication

We can consider data communication as a vast field of optional services, depending on the bit rates allowed by the technology.

A detailed description is outside the scope of this document.

11.3.3. Procedures

11.3.3.1. Provision and withdrawal

This service will be by prior arrangement with the SP. On subscription to the service, ETO will allocate an ESatN to the served user.

11.3.3.2. Normal procedures

Registration and erasure

Core requirements

Following the arrangement between the SP and the subscriber, the SP provides for the initial registration of the served user service profile in the network.

The served user profile consists of parameters stored in a record used by the network to handle ESatN calls (running record).

Activation and deactivation

Core requirements

The SP activates the service on provision and deactivates it on withdrawal.

Invocation and operation

Core requirements

In accordance with basic call procedures, the calling user can originate a call indicating the ESatN identifying the served user.

The SP shall invoke the ESatN service and process the call according to the served user's requirements contained in the running record.

The calling user shall receive indications about the success or failure of the request.

Optional requirements

As an SP option, the user can receive an indication that the call is a result of the invocation of a European Satellite Number. As a further option, the service can give the service access code and the number used to the user.

Interrogation

Core requirements

Not applicable

11.3.3.3. Exceptional procedures

Registration and erasure

Not applicable

Activation and deactivation

Not applicable

Invocation and operation

If for any reason the SP cannot invoke the ESatN service on a call, it will reject the call and inform the calling user.

Interrogation.

Not applicable

11.3.3.4. *Inter-working requirements*

11.3.3.5. *Interaction with other services*

11.4. Voice over Internet Protocol (VoIP) services

The VoIP issue is an emerging application area, with promising outcomes. The addressed market is important with a worldwide budget of US$741 million in research and development for 1997 (US$63 billion expected for 2002). VoIP should be worth US$2 billion by 2002.

This could lead to a significant loss for the major telecommunication operators if they are not involved in this technology. For instance, some figures show that AT&T will lose US$97 million, by 2001, for traffic taken over by IP (Internet Protocol). Thus, major International long distance carriers (MCI, Sprint, ATT, and NTT) are preparing themselves to announce VoIP offers. Major European operators (such as DT, FT, and BT) are also studying VoIP projects.

11.4.1. Definition and applicability

One VoIP configuration is inter-operation between a caller using a telephone, and a service customer behind a multimedia computer, connected to the Internet. Now, the caller should be able to call up the latter dialling a specific telephone number. The implementation requires a translation facility of IP addresses to traditional telephone numbers and vice versa.

In order for this service to provide a highly user friendly interface it is important to allocate telephony numbers to VoIP users.

The Internet is a network without boundaries. It is therefore necessary that administrators allocate regional or global numbering resources to this service. This could be the ETNS for European regional services.

11.4.2. Description

11.4.2.1. Core requirements

Access

This class of services shall be available to users connected to the Internet by any means (analogue modem, ISDN adapter, and leased line).

Basic service

Any subscriber should be reachable over a so-called Gateway. In fact, the European VoIP Number EVN would simply be a numbering resource allowing the gateway to map the call from the telephone network to the Internet.

11.4.2.2. Optional requirements

The optional requirements customise the service according to specific subscribers' needs. These additional parts may either be offered to all SP customers, or to a group or even to a single customer.

We list some possible SP options hereafter, but the SP may offer other additional options.

Quality of Service

We can consider QoS (Quality of Service) on the Internet as a service provision. This is because ISPs (Internet Service Providers) do not provide it as a basic subscription on the one hand (because of the no-connection-oriented nature of IP). It is also because of the real-time requirement of voice communication on the other hand.

Various QoS may also be considered, with accordingly different charging schemes. Indeed, depending on the calling party, the served user may prefer different QoS requirements.

Call distribution

The served user is able to specify the distribution mechanism for call sharing between different access-arrangements.

For instance, if the subscriber is not currently available on the Internet, the call may be re-routed to a classical E.164 physical telephone location, as indicated by the subscriber.

Outgoing calls

The SP may also propose to its subscriber a mapping by the gateway from the Internet to the real telephone networks.

This application is outside the scope of this document, however.

Origin Dependent Routing

Depending on the origin of the call, the VoIP number may be routed to different gateways, in order to optimise the costs for the calling party.

11.4.3. Procedures

11.4.3.1. Provision and withdrawal

This service shall be by prior arrangement with the SP. On subscription to the service, ETO will allocate an EVN to the served user.

11.4.3.2. Normal procedures

Registration and erasure

Core requirements

Following the arrangement between the SP and the subscriber, the SP provides for the initial registration of the served user service profile in the network.

The served user profile consists of parameters stored in a record used by the network to handle EVN calls (running record).

Activation and deactivation

Core requirements

The SP activates the service on provision and deactivates it on withdrawal.

Invocation and operation

Core requirements

In accordance with basic call procedures, the calling user can originate a call indicating the EVN identifying the served user.

The SP shall invoke the EVN service and shall process the call according to the served user's requirements contained in the running record.

The calling user shall receive indications about the success or failure of the request.

Interrogation

Core requirements

Not applicable

11.4.3.3. Exceptional procedures

Registration and erasure

Not applicable

Activation and deactivation

Not applicable

Invocation and operation

If for any reason the VoIP Number service cannot be invoked on a call (nor be re-routed through the telephone network to an alternative number), the call will be rejected and the calling user will be informed.

Interrogation.

Not applicable

11.5. European Mass Calling Number, including Tele-voting (EMCN)

11.5.1. Definition and applicability

Tele voting is one example of explosive mass traffic. Broadcasting companies use temporary numbers to enable their public to react to questions in television programmes and the like. The EMCN will have a single ESI for all explosive mass traffic, including tele voting, to enable special routing to handle this traffic.

European Citizens should have the opportunity to state their opinions upon various open questions of generic concern. Now, the complexity of such a consultation in terms of paperwork is important. It would definitely be appropriate to implement an interactive tele-voting system, allowing citizens to vote using their telephone. It would be worth dedicating an ETNS numbering resource for this application.

This service would be possible using an IN infrastructure or by means of an IVR connected to a call centre. Thus, premises and specific developments need to be available.

11.5.2. Description

See ETS 300 713 Tele-voting Service Stage 1 description over ISDN/PSTN.

11.6. European paging

11.6.1. Definition and applicability

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

For information, today, the recognised European standard is ERMES.

11.6.2. Description

11.6.2.1. Core requirements

Access

The served users may be required to own a specific pager, achieving European reception coverage. The technical standard is outside the scope of this document, however.

Basic service

The user aspects in the 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.

11.6.2.2. Optional requirements

The optional requirements customise the service according to specific subscribers' needs. These additional parts may either be offered to all SP customers, or to a group or even to a single customer.

We list some possible SP options hereafter, but the SP may offer other additional options.

Time dependent control

The served user is enabled to modify the handling of the call according to the time interval (such as time of day, day of week) in which the call is placed (see Call distribution below).

Origin dependent routing

Optimisation of access is possible. This would balance the amount of calls between the different call centres and achieve a minimum cost for the call.

Call distribution

The served user is able to specify the distribution mechanism for call sharing between different access-arrangements.

For instance, one could consider that the served user may choose between several means of notification. In case of failure of the paging, he might require another option, like electronic mail or voice-mail notification.

Customer service profile management

The served user may customise one or several handling service profiles (or records) either in operation or not in operation. The management mechanism is outside the scope of this document.

11.6.3. Procedures

11.6.3.1. Provision and withdrawal

This service shall be by prior arrangement with the SP. On subscription to the service, ETO shall allocate a European Paging Number (EPN) to the served user.

11.6.3.2. Normal procedures

Registration and erasure

Core requirements

Following the arrangement between the SP and the subscriber, the SP provides for the initial registration of the served user service profile in the network.

The served user profile consists of parameters stored in a record used by the network to handle EPN calls (running record).

Activation and deactivation

Core requirements

The SP activates the service on provision and deactivates it on withdrawal.

Invocation and operation

Core requirements

In accordance with basic call procedures, the calling user can originate a call indicating the EPN identifying the served user.

The SP will invoke the EPN service and process the call according to the served user's requirements contained in the running record.

The calling user will receive indications about the success or failure of the request.

Interrogation

Core requirements

Not applicable

11.6.3.3.   Exceptional procedures

Registration and erasure

Not applicable

Activation and deactivation

Not applicable

Invocation and operation

If for any reason the SP cannot invoke the EPN service on a call, it will reject the call and inform the calling user.

Interrogation.

Not applicable

11.7. Internet issues - European Internet Roaming

Internet is the main medium in terms of traffic and application growth. The global Internet market has generated US$4.7 billion revenues resulting from a 98% growth rate. In addition, in 1998, a growth rate of 30% is expected (100% in the US).

11.7.1. Definition and applicability

Electronic mail via the Internet has become a new way to communicate. People travel more and more with their laptops, and simplified and low cost international access would be of great value to them.

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 ISP's point of presence, providing a guaranteed quality of service, with optimised call routing.

The flexibility needed by 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.

11.7.2. Description

11.7.2.1.   Core requirements

Access

This service will be available to users using analogue modems with their computers over PSTN lines or ISDN adapters.

Basic service

The user is calling up one single number in order to connect his computer to the Internet.

11.7.2.2.   Optional requirements

The optional requirements customise the service according to specific subscribers' needs. These additional parts may either be offered to all SP's customers, or to a group or even to a single customer.

We list some possible SP options hereafter, but the SP may offer other additional options.

Origin dependent routing

This is a major option, as optimised routing should allow secure, improved and cheap access through local calls rather than long distance ones, to reach points of presence of the Internet SP. Nevertheless, this cannot be compulsory, as it depends on the coverage the SP may propose. Hence, it is up to the customer to make his choice.

Quality of service

The SPs can propose different qualities of service. This is actually a serious issue, as multiple access through various countries may lead to very different bit rates for the Internet connection. Therefore, a guaranteed QoS (bit rate, delay, packet loss) is of great value to the travelling customer.

The SPs can also take into account different network access modes. For instance, ISDN access may be proposed.

Intranet access

The served user is able to enter different networks, for instance, a specific corporate Intranet.

Customer profile

The user may have his personal working environment stored in his profile. Meaning that although he connects from a non-personal platform or computer, he retrieves upon connection his familiar environment (shortcuts, bookmarks, address book, and electronic mail account).

Customer service profile management

The served user may customise one or several handling service profiles (or records) either in operation or not in operation. The management mechanism is outside the scope of this document.

11.7.3. Procedures

11.7.3.1. Provision and withdrawal

This service shall be by prior arrangement with the SP. On subscription to the service, ETO will allocate a European Internet Roaming Number (EIRN) to the served user.

11.7.3.2. Normal procedures

Registration and erasure

Core requirements

Following the arrangement between the SP and the subscriber, the SP provides for the initial registration of the served user service profile in the network.

The served user profile consists of parameters stored in a record used by the network to handle EIRN calls (running record).

Activation and deactivation

Core requirements

The SP activates the service on provision and deactivates it on withdrawal.

Invocation and operation

Core requirements

In accordance with basic call procedures, the calling user can originate a call indicating the ESI and the EIRN identifying the served user.

The SP shall invoke the European Internet Roaming Number service and process the call according to the served user's requirements contained in the running record.

The calling user shall receive indications about the success or failure of the request.

Interrogation

Core requirements

Not applicable

11.7.3.3. Exceptional procedures

Registration and erasure

Not applicable

Activation and deactivation

Not applicable

Invocation and operation

If for any reason the SP cannot invoke the EIRN service on a call, it will reject the call and inform the calling user.

Interrogation.

Not applicable

11.8. European Portable GSM Number (EPGN)

11.8.1. Definition and applicability

The mobile market has been very successful over the last years. The growth rate is impressive, and operators propose new marketing packages nearly every other week.

The idea of a dedicated European numbering resource is certainly of interest, and we must compare it with other international coverage offers.

It should be borne in mind that this opportunity primarily addresses travelling customers. We could usefully link this with other concepts, such as 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.

11.8.2. Description

11.8.2.1.   Core requirements

Access

This service will be available to users using GSM mobiles in Europe.

Basic service

The user may receive calls whatever their location may be, called by his EPGN.

Charging

Operators may split charges for the call between the calling party, and the called subscriber, who may for instance support the international networking costs.

11.8.2.2.   Optional requirements

The optional requirements customise the service according to specific subscribers' needs. These additional parts may either be offered to all SP customers, or to a group or even to a single customer.

We list some possible SP options hereafter, but the SP may offer other additional options.

Time dependent control

The served user is enabled to modify the handling of the call according to the time interval (such as time of day, day of week) in which the call is placed (see Call distribution below).

Time dependent routing

The served user is able to specify the routing destination(s), such as access arrangement(s) or announcement(s), according to the originating date and time of the call. The served user may specify the time interval.

Call distribution

The served user is able to specify the distribution mechanism for call sharing between different access-arrangements.

For instance, the call may be re-routed to a voice-mail or to a fixed line on busy or unreachable condition (following the concept of Unified Messaging).

GSM prepaid card

A prepaid card system enables the served user to access the GSM network in each country, without having to subscribe to an international coverage offer. Simply for the duration of a journey for instance, he may buy a prepaid card, and thus, be able to use a cellular Europe-wide.

GSM Prepaid card systems are in fact becoming popular. For those users with European-wide mobility, it could be useful to provide them with an ETNS for this service. Thus, they can move from one country to another and get locally prepaid cards, although they keep on using the same ETNS number in each country.

<u>Customer service profile management</u>

The served user may customise one or several handling service profiles (or records) either in operation or not in operation. The management mechanism is outside the scope of this document.

11.8.3. Procedures

11.8.3.1. Provision and withdrawal

This service shall be by prior arrangement with the SP. On subscription to the service, ETO shall allocate an EPGN to the served user.

11.8.3.2. Normal procedures

<u>Registration and erasure</u>

Core requirements

Following the arrangement between the SP and the subscriber, the SP provides for the initial registration of the served user service profile in the network.

The served user profile consists of parameters stored in a record used by the network to handle EPGN calls (running record).

<u>Activation and deactivation</u>

Core requirements

The SP activates the service on provision and deactivates it on withdrawal.

<u>Invocation and operation</u>

Core requirements

In accordance with basic call procedures, the calling user can originate a call indicating the ESI and the EPGN identifying the served user.

The SP will invoke the EPGN service and process the call according to the served user's requirements contained in the running record.

The calling user will receive indications about the success or failure of the request.

<u>Interrogation</u>

Core requirements

Not applicable

11.8.3.3. Exceptional procedures

<u>Registration and erasure</u>

Not applicable

<u>Activation and deactivation</u>

Not applicable

<u>Invocation and operation</u>

If for any reason the SP cannot invoke the EPGN service on a call, it will reject the call and inform the calling user.

<u>Interrogation.</u>

Not applicable

11.9. Pan European Corporate Networks

11.9.1. Definition and applicability

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.

Even if corporate networks use the services defined above, ETO could allocate a separate numbering "sub-space" of the ETNS for these applications.

12. ANNEX B - RESPONSE TO ITU POINTS

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.

This paragraph provides a draft response to points 2, 4, and 7 raised by ITU-T as described in the scope of phase 1 of the ETNS field trial. As far as these are concerned, the CEPT has to provide the following additional information:

Point 2: An explanation of why CCs for global services cannot more appropriately be utilised for the services proposed for the ETNS.

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

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

12.1. Response to point 2

The European Region and more specifically the European Union is now a very strong political entity, where the majority of companies and organisations are more and more identified as European entities in addition to their national identities. These organisations are very keen to use the ETNS to reinforce their European image. This interest is very strong for not only major corporations and European institutions but also for small and medium 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. The European organisations may use global resources for some applications and may use European and national resources for European and national applications respectively. Europe will use the ETNS numbering resources, for example, to provide:

- access to information centres regarding European regulation, standardisation, monetary aspects

- mobility and portability for those organisations and persons whose activities necessitate moving throughout the Europe

The charging aspects of the ETNS services is one the important aspects. The aim in relation to the ETNS services would be to structure the numbering space in order to allow different rates for different applications (that is, contents) or on a per-service basis. For example, the price should be defined within the number, possibly through digits 4, 5 and 6 of the ESI (such as the xyz in the following number "388 xyz ZZZZZZ"). This means that Europe would define several categories for 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)

To achieve this, a harmonised regulation at the European level for the charging aspects (especially for the high level rates) of ETNS services and applications at the European level will be necessary. We consider that the existing European legal and regulatory framework will make it easier and quicker to set-up the necessary legal policy in comparison with the possibility to reach and finalise such a policy at the international level.

Even if this European policy would be applicable to all European countries, it would include some flexibility to cope with national regulation. For instance, this European regulation will not require all of the specified services (especially concerning charging) to be implemented in each network. The operators should be free to implement or not an ETNS service or application in accordance with the national regulation, leaving it up to the market demand to adapt the latter if necessary.

In addition, this policy will deal with legal aspects when callers from outside Europe dial the ETNS numbers. Europe's intention is clearly to comply with international agreements regarding free trade and consumer protection.

12.2. Response to point 4

See annex A

12.3. Response to point 7

See the first chapter of this document. You should note that ETO will add the architecture of the trial, the results and conclusions to this document.

13. ANNEX C - SIMPLIFIED ARCHITECTURE FOR THE TRIAL

For the trial, it is possible to have only one network with translation capabilities. This network will act as a serving network as well as a service network for all the ETNS calls. In this case, the trial will use the one step translation procedure for call handling.

Figure 7 shows a simplified network architecture to provide the EAN service.
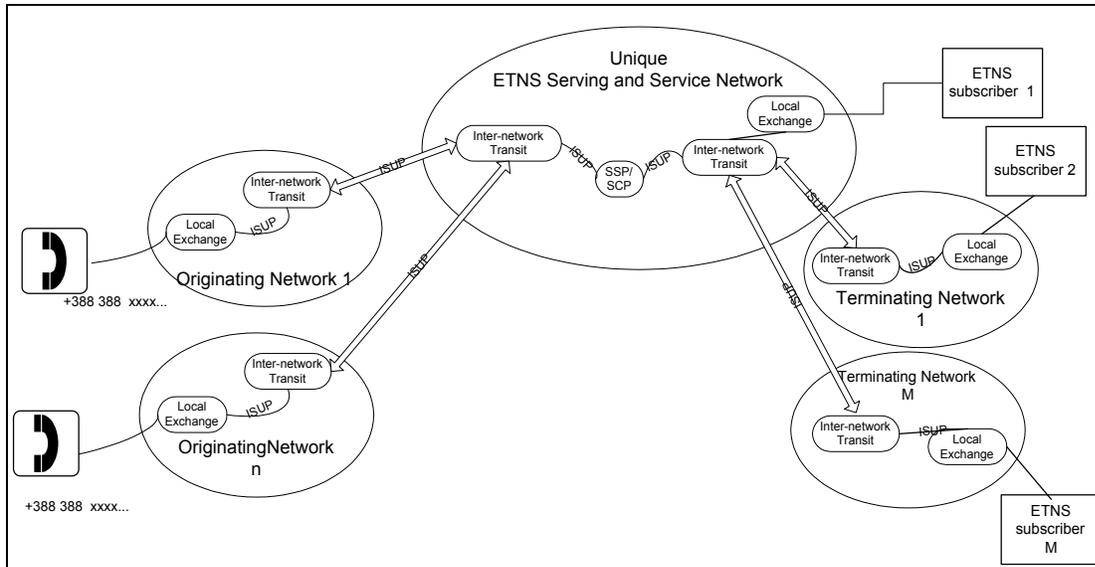
Figure 7: Simplified network architecture for the trial

The serving-and service network can be located in one country or spread throughout several countries. In the first case, the interconnection with the originating and terminating networks would be compliant with the international interconnection agreement between the two operators. In the second case, the networks could achieve interconnection through the national regulation in each country where the serving-service network has established a PoP.

It is up to each candidate for the ETNS trial to set up the appropriate interconnection agreement in each country to be able to receive and terminate ETNS calls.

This option would not allow us to validate the concept of the inter-working of separate serving and service networks.

14. GLOSSARY

- CEPT : Conférence Européenne des Postes et Telecommunications
- CLI: Calling Line Identification
- CN : Corporate Networks
- EAN: European Access Number
- ECMA : European Computer Manufacturer Association
- ECTRA : European Committee for Regulatory Telecommunications Affairs
- EIRN: European Internet Roaming Number
- EMCN: European Mass Calling Number
- EN : European Number
- ENF : European Numbering Forum
- EPGN: European Portable GSM Number
- EPN: European Paging Number
- ERMES : European Radio Message System
- ESatN: European Satellite Number
- ESI : European Service Identifier
- ETNS : European Telecommunication Numbering Space
- ETO : European Telecommunication Office
- ETSI : European Telecommunications Standards Institute
- EVN: European VoIP Number
- GSM : Groupe Speciale Mobile
- IN : Intelligent Network
- IP : Internet Protocol
- ISDN : Integrated Services Digital Network
- ISP: Internet Service Provider
- ISUP : ISDN Signalling User Part
- ITU : International Telecommunication Union
- IVR : Interactive Voice Response unit
- PEN: Personal European Number
- PSTN : Public Switched Telephone Network
- QoS: Quality of Service
- SCP : Service Control Point
- SP : SP
- SSP : Service Switching Point
- EAN : EAN
- VoIP : Voice Over IP