SOTIP

UPDATED

THE SWEDISH GOVERNMENT OPEN TELECOMMUNICATION SYSTEMS INTERCONNECTION PROFILE

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Updated SOTIP

SOTIP version 1 is now updated and is available in PDF-format and can be loaded down locally for interested people.

The extent of the updateing will not motivate a new version number so we only use the expression ”SOTIP Updated”. The updated version of SOTIP will not be publicated in printed version and is only available from the Web.

The most essential differences against SOTIP version 1 are listed below:

Consequently "authorities" has been replaced with "agencies-" and "access methods" has been removed for the group (end-user).

Chapter 0

0.1 - 0.11 is to large extent rewritten and there are some news

Chapter 1

1.1 is generally the some. The concept PSD (Privat Switching Device) is added.

1.2 GSM och TCP/IP (Internet) has been added

1.3 TCP/IP och GSM 1800 in AO has been added

1.3.1 unchanged

1.3.2.1 PI1 unchanged

1.3.2.2 P12 "alarm functions for persons working isolate" has been added

1.3.2.3 P13 unchanged

1.3 .2.4 PFl unchanged

1.3.2.5 PF2 unchanged

1.3.2.6 PF3 unchanged

1.3.2.7 PF4 unchanged

1.3.3.1 TE1 unchanged

1.3.3.2 TE2 unchanged

1.3.3.3 TE3 unchanged

1.3.3.4 TE4 a change has been made from ”video” to ”video equipment” as the only change

1.3.3.5 TE5 a change has been made from ”multimedia” to ”network depending computer” as the only change

1.3.3.6 TE6 unchanged

1.4 unchanged

1.5 SS39 has been added. In SS A.7 and SS A.19 ”ECMA standard available June 1996” has been replaced with ”No standardisation activity” as the only change

1.6 MWI Message Waiting Indication has been added. Standard for RPM, VOT, UAN and VCChas been added. Also standard for ANF-CMN (former ANF-C) has been added.

2.1 - 2.3 unchanged

2.4.1 OF61 (Encryption of Speech) has been added as the only change

2.4.2 OF59 (Personal FAX Letterbox) and OF61 (Encryption of Speeech) has been added as the only change

2.4.3 - 2.4.7 unchanged

2.5.1 - 2.5.8 ”Video” replaced with ”Video equipment” and ”Multimedia” replaced with ”Network Depending Computer” as the only changes.

2.6 OF60 (Call/recall Procedure) and OF61 (Encryption of speech) has been added as the only change.

2.7 OF4 ”ECMA standards expected during 1996” changed to ”1998”.
OF6 ”In progress. ETS expected 1996” changed to ”No standard activity”.
OF11 ”Global System for Mobility (GSM); ETS 300 536” has been added.
OF18 ”ETS expected 1996” changed to ”ECMA standard expected June 1998”.
OF28 ”ETSs for Message Waiting are expected 1996” changed to ”Message Waiting in ECMA 241 & ECMA 242”.
OF33 has been added ”Local procedure. No standardised”.
OF42 ”ETSs expected 1996” changed to ”ETSs expected 1998”.
OF48 ”No standardisation activity” changed to ”PUM services will offer this function. ETSs expected 1998”.
OF52 ”No standard likely before 1998” changed to ” Local procedure. No standardisatin activity”.
OF60 and
OF61 has been added.

3.1 - 3.2 unchanged

3.3 In ”Electronic Mail” X.400 has been deleted and in ”Online Data Transmission” X.25 has been deleted.

3.3.1 - 3.3.3 unchanged

3.3.4 In MS14 X.400 has been deleted

3.3.5 unchanged

ANNEX A unchanged

ANNEX B

B.2.2 ECMA 250 and 251 has been added

B.2.3 unchanged

B.2.4 ETS 300 092 and ETS 300 097 has been added ”plus Ammend (1994)”.
ETS 300 102 has been added ”plus Ammend (1993)”.
ETS 300 139 has been added ”plus Ammend (1996)”.

ETS 300 185 has been aded ”plus Ammend (1995).
ETS 300 201 and 202 has been added ”plus Ammend (1996).
ETS 300 209 has been deleted.
ETS 300 267 and 506 has been added ”plus Ammend (1996).
ETS 300 536, 710, 711, 712 0ch 713 has been added. Reference to a number of standars has been updated concerning the referenced version (year).

B.2.5 ETR 209, 235 and 285 has been added.

B.2.6 is new and the former B.2.6 has become B.2.7

Summary

The largest changes are in chapter 0, 2.7 and in ANNEX B. In the other parts the changes are mariginal.

CONTENTS PAGE

INTRODUCTION

0.1 Background

For some time now Sweden has had an open market for telecommunications. Soon most countries within the European Union will be required to de-monopolise the provision of telecommunications services and to be well on the way towards opening their own telecommunications market. Other countries, such as the US, the UK, Canada and Australia have enjoyed the benefits of such an open market for several years.

In this competitive environment, the STATTEL-commission has developed an open telecommunication systerns interconnection procurement profile (SOTIP).

Information and telecommunications technologies are amongst the most important tools for today's businesses. The globalisation and deregulation of the telecommunications market and ICTs (Information Communication Technologies) and its increasing importance in Business Transformation activities is a new challenge for buyers. It requires that they have knowledge of technical developments and, especially, the needs of the overall business and its future direction. SOTIP has been developed as a tool to help buyers to choose appropriate telecommunications services and functions in a competitive market.

In order to choose freely among suppliers, types of equipment and services the user must have easy access to open and supplier independent system solutions. Well thought out and established standards - based on user needs - are absolutely necessary.

During the de facto monopoly, PTTs such as Televerket (now Telia) were the bodies that, in reality, decided which demands had to be met by the suppliers of telecommunications equipment, both for networks and customer based equipment such as PABXs. It is important that the new emerging technologies used for telecommunications purpose are not going to produce new islands in the telecommunications map.

This document is intended as an aid to the analysis of telecommunications requirements and to the subsequent purchasing of telecommunication equipment and services for the Swedish Government Administration. SOTIP is a living document. The aim is to develop and adapt it to reflect ongoing technical developments, standardisation activities and new patterns of working and the ever-changing needs of individuals and organisations.

The STATTEL Commission and Statskontoret have already used SOTIP as the basis for specifying the procurements of telecommunications services and telecommunication equipment such as PABXs.The experience shows that SOTIP performs the function of being a tool for analyses of needs as well as specifications not only for Government Administration Agencies but all types of organisations including private enterprises.

This document has been written at the STATTEL Commission in collaboration with Statskontoret (SAFAD), The City of Stockholm and the Stockholm County.

Since the expiration of the STATTEL-delegation mandate in October 1996 the work is now continued by Statskontoret (SAFAD) and has thus concluded the version 2 of SOTIP

Over the years many persons has participated in the development of SOTIP version 0, 1 and 2:

- Consultant companies; Vertex Tele (Bo Näslund), PQM Consultamts (Stephen Randall), Logica and others.
- The management team of the STATTEL-delegation and professionals from Statskontoret.

Chief architect and technical Director has been Helena Lindskog.

0.2 Purpose

SOTIP (the Swedish Government Open Telecommunication system Interconnection Profile) is the profile for open systems in telecommunications for the Swedish Government administration. SOTIP is to be applied by Government Administration Agencies when analysing telecommunications needs and purchasing telecommunication equipment and services.

By the application of SOTIP which is based more on functional requirements than specific technical solutions, the prerequisites will be created for rationalising and improving efficiency in the use of telecommunications by Agencies, by focusing on the activities' requirements. The purpose of SOTIP is mainly to support good solutions for person-to-person communication i.e. provide maximum service level to the public and meet the requirements put by the public on Government Administration to allow communication independent of time, place and means.

The objectives of SOTIP are:

- To achieve supplier independent communications based on open system solutions with standardised interfaces between system components;
- To simplify the requirement specification of services and equipment with the aid of a generalised model for describing functional user requirements for telecommunications in Government Administration.
- To simplify the requirement specification of services provided to the public in contact with Government Administration.
- To create priorities for the standardisation process based on a user and the public perspective, and the possibility to influence product development and the competitive situation.

The SOTIP model identifies a small number of functional groupings of telecommunications users and these groupings are valid in any business organisation. The SOTIP model also includes the public in contact with the users within the organisations i.e. the customers. Using the model, the communications needs of each user or group of users is analysed based upon their role in the business rather than their position in the hierarchy. A range of telecommunications services can then be selected to satisfy cost effectively the productivity needs of each type of user. Within any organisation, the decision makers with prime responsibility for communications should use SOTIP as an instrument for evaluating the benefits that may be derived from investments in telecommunications services and equipment.

The end-user's requirements will however be the same, irrespective of whether the user has private, procured, or leased equipment, or uses a service. SOTIP will thus facilitate the procurement of equipment and services from various suppliers and operators and still retain the same functionality.

It is essential that a government administration provides service to all citizens and business independent of technical skills and access capabilities to telecommunication services. The SOTIP model combines the communication needs of the users within the administration with the requirements to provide service to the citizens and business by including the customers in contact with the Government Administration. In addition to the functional service requirements SOTIP defines general requirements to be fulfilled by the service providers:

- The functionality and quality in telecommunication solutions obtained for the existing services should not deteriorate following the introduction of new techniques.
- The services should be accessible regardless of which network the service resides in and which network the customer is connected to.
- All services should be accessible using relevant standard terminal equipment.
- Use of services should be based on standardised, simple procedures and support the ”plug and play” concept.
- The user should be supported by features in the network to access the services and not rely on specific terminal features.
- Service user procedures should not be changed for commonly used and accepted services. User procedures for new services should be intuitive, easy to use and common across terminal types and across services.
- All services must have a defined level of performance.
- Interconnect must be provided for service transparency and the end-to-end quality of service.

It is important to understand that some of the services defined in SOTIP are different even if they might have the same name. A number of supplementary services are specified differently in e.g. ISDN and GSM. One of the purposes of SOTIP is to support a uniform service definition.

SOTIP states which basic standards are to be used and how they are to be used. At the same time SOTIP serves as guidelines for potential suppliers as to which standards must be met to fulfil Government Administration requirements. It also points out where relevant standards are needed or where there are none. The work of SOTIP thus identifies areas where international standardisation work should be intensified, but the Government Administration has no intention of creating their own standards. It is intended that the development of SOTIP should be harmonised with similar projects taking place within the government bodies of other countries and within commercial user groups.

0.3 Long Term Goals For Telecommunications In Government Administration

A public administration should aim to fulfil the following long term goals:

- A high service level both to the public and internally in each Agency
- Improved business efficiency through the carefully planned use of telecommunications
- The same service level for the public irrespective of geographical location
- Co-ordination of all the telecommunications services of an Agency
- The same functionality for users with similar assignments
- Free choice of equipment and services
- An overall reduction in the price of telecommunications equipment and services
- Savings with the aid of cost accounting.

0.4 Requirement Situation

The intention of SOTIP is to specify only demands on standards with generally available products in the market, and those which will be specified within the near future, and which presumably will soon be realised in products. It is also to define the strategic aim of future standards as an addition to or a substitute for existing standards and de facto standards. This will give suppliers information about the planned activities of the Agencies and will thus encourage product development.

SOTIP is based on the standardisation status in 1996, i.e. the standards available in that year, new planned standards and work in progress on standards, and when they will be available. Existing needs are also shown where there still are no standards and none are planned.

New services will be introduced successively into SOTIP as and when new requirements are identified.

0.5 From Cost to Business Development

The benefits that telecommunications can bring to a business organisation are not always obvious and it is often tempting to see communications costs as a pure expense rather than as an investment. Figure 1 shows the various levels of costs related to telecommunications within an organisation.

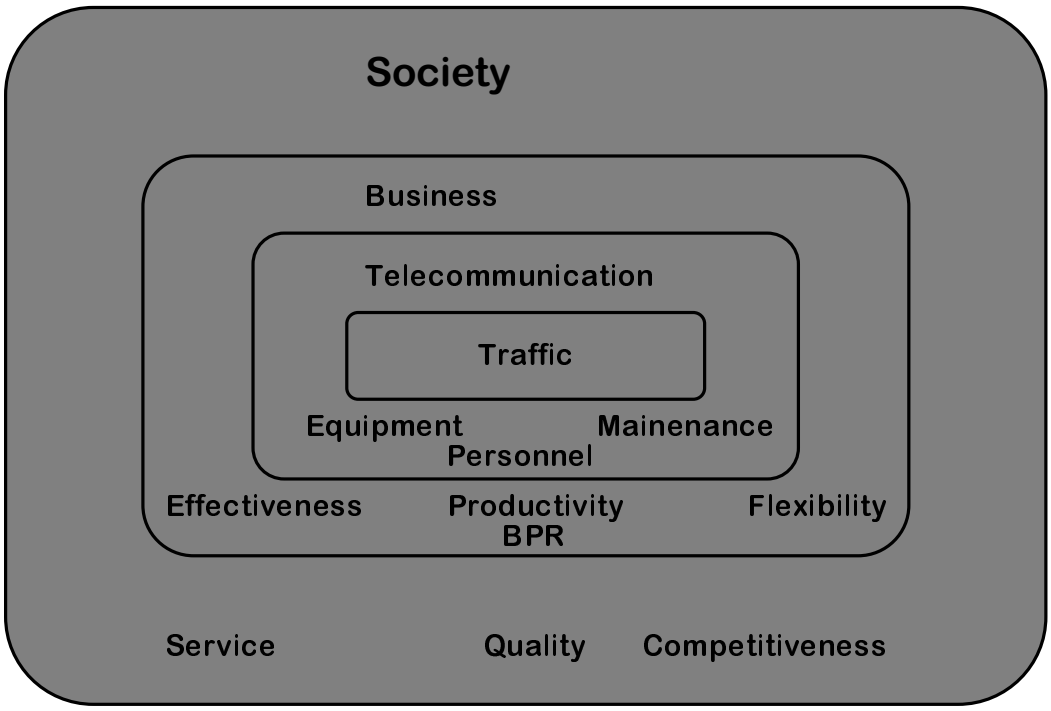

Figure 1: From cost to value model

The inner circle represents the cost of traffic. Traditionally seen as the telecom costs, these costs can be reduced by restricting usage, e.g., the barring of international calls, least cost routing and the combination of different traffic types into a single transmission medium.

The next circle represents overall telecommunication costs. There are several ways to reduce this cost such as paying less for equipment, using centralised attendants and through better administration. The cost of telecommunications for government agencies is between 1.5% and 3% of their overall business.

The third circle represents the overall cost of business. Whereas it has been ascertained that large savings on the present costs of telecommunications can be made, it is important not to have a static view of the use of telecommunication services. Telecommunications is, in fact, an excellent tool for business process re-engineering to increase the efficiency and productivity of agencies' or other organisations' activities as well as to maintain flexibility during changes to organisational structures. In view of the agencies' combined requirements, increased use of telecommunications may be justified. In fact, the total cost of telecommunications may even increase if the required savings are to be achieved, for example:

If by using telecommunications services, every government employee could save 15 minutes of their working time each day, the savings in their salaries alone would be close to the total cost of telecommunications.

The outer border represents the cost for customers to make contact with an organisation. For an agency it means giving the right service level to the public and for a business enterprise it is to be competitive.

0.6 Telecommunications Model For Government Administration Agencies

The SOTIP policy is to support the establishment of person-to-person contact solutions where the citizen or business can contact an Agency whenever they like, in any way they like and from whatever place they like. The implementation of the policy into services is based on two cornerstones; the design of the services and the access capabilities to the services. To support these fundamental objectives SOTIP is based on two telecommunication models; The Customer Service (CS) model and the Corporate Telecommunication Network (CTN) model. The CS model defines the relationship between the customers i.e. the public in contact with the government administration, the means

of contact including the terminal equipment used and the users within the government administration. The CTN model defines the network interfaces, interaction between networks and the requirements to support the usage of the services.

0.6.1 The Customer Service Model

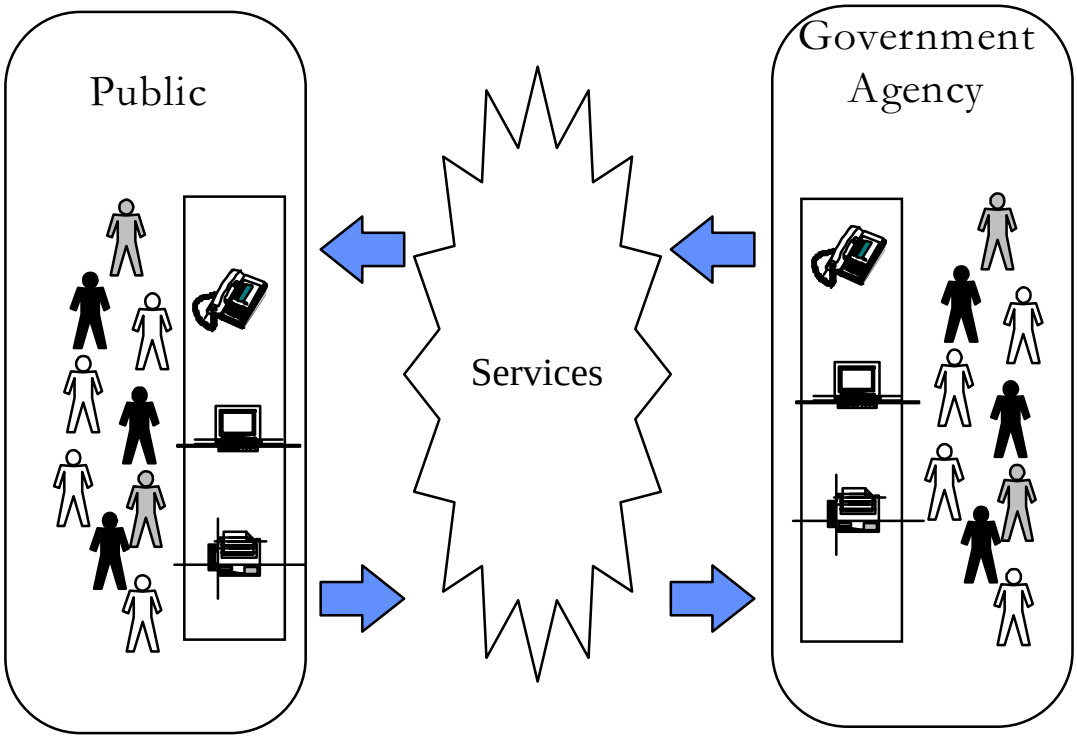

Figure 2 The Customer Service (CS) Model

The CS model is divided into four major parts:

- the end user within an agency;
- the customer;
- the equipment;
- the services used to communicate.

The purpose of the CS model is to describe the co-operation needed between the employees of a government agency and the public to achieve telecommunications solutions which provide a level of service acceptable to both the agency and the public. The model first identifies the End User Types that are likely to be found within government agencies and their telecommunication functional requirements. There are different demands for services and skill levels among members of the public and, thus, a classification of the public is needed to reflect this situation when defining telecommunication services. The CS model identifies the Customer Type (CT) in terms of the status of the caller and the purpose of their call. Finally, the possible means of establishing contact between the customers and users, i.e. the terminals used, has been identified for each type of service. The Terminal Type (TE) identifies the range of terminals available for each defined service.

0.6.1.1 Classification of End-Users

The main problem of person-to-person communication is establishing contact with a person who is not immediately available. A prerequisite in a person-to-person contact is that both parties are available at the same time. Many surveys show that a great number of telephone calls, often more than half of them, fail for this particular reason. The accumulated loss of time alone, both for the calling and the called party, may be considerable. The loss of quality in the form of impaired service to the general public is of even greater importance.

SOTIP offers a model that can be used to analyse the telecommunications needs of organisations as well as employees both as individuals and as groups. The model employs a classification of users

that is based upon job function rather than hierarchical position within the organisation. In this way it enables those managers with total business responsibility to assess the needs of each user group and, by means of predefined selection criteria, simplifies the selection and provision of the communications services with the greatest potential for improving productivity and reducing costs.

Agencies that are going to procure a certain type of telecommunications equipment or service, and adapt it to the needs of their particular organisation have a difficult task ahead of them. The needs are often complex, with varying types of contacts, methods of working, and procedures for the various types of activities within the Agency. Suppliers today offer a great number of telecommunications services, particularly in the area of telephony. Each supplier, however, presents their own service package. Moreover, there is a lack of a simple, unambiguous, and generally accepted description of what each should include. The procedures for handling telecommunications and, in particular, telephony services are usually proprietary.

If the telecommunications services, especially those supporting person-to-person contacts, are to be used effectively, the interaction between them must seem natural and logical. Historically, the use of such services has always been low, even when there are significant productivity gains to be made. The reason for this may, at least in part, be the lack of a generally accepted ”standard” for the relationship between services and the method of activating them.

Those responsible for the procurement of telecommunications equipment and services for an Agency often have good knowledge only of the needs that organisation. However, there has not been, any systematic method for structuring these needs, nor is there a general model for formulating these needs as requirements on telecommunications services. The work of interpreting the users' need into a requirement specification can be, thus, both difficult and uncertain. With the aid of End-user Types the specification and categorisation can be done in a simple and unambiguous way as seen from the users' points of view.

0.6.1.2 SOTIP End-User Types

A limited number of end-user types are defined within the framework of SOTIP. These are to cover most job situations within Public Administration. To satisfy the requirements of their jobs, some employees may be expected to function as different end-user types at different times of the day or week.

End-user types may be directly connected to a PABX, Centrex or any other switching devices such as a server, or indirectly via a public network.

Services for End-user types which are defined in the person/equipment interface. Note that it is not always sufficient to describe the needs of a certain person by a set of services which characterise one end-user type. An individual may change ”identities” and be different end-user types at different times. The End-user types that fall into this category are as follows:

Individual:

PI1 Individual, Self Determined Availability

People taking part in meetings or carrying out complicated work that requires a high level of concentration. They are in a position to decide when they are available to answer calls and from whom (filtering). They require services that enable them to receive messages regarding incoming calls when they, themselves, are unavailable and a means of co-ordination between different messaging systems.

PI2 Individual, Permanent Availability

Service personnel or others whose work keeps them on the move and who must be reachable by telephone at all times. These users require access to telecommunication services so that they can receive and respond to, for example, new orders or changes of plan.

PI3 Individual, Shared

Personnel such as teachers or laboratory scientists who are not dependent on telecommunication services in their current work situation. They require services that enable them to receive incoming call messages so that return calls can be made at a convenient time.

Function

PF1 Function, Group

Staff whose primary function is to give information to the general public in a rapid and efficient manner. They require services that support queue management, automatic and

semi-automatic call handling and co-ordination between telecommunications and computerised information processing. Fully automated services without human interaction is a possibility within this Function.

PF2 Function, Local Answering Service

Secretarial staff who provide local ”first-answer” and filtering services to other users. They require communications services that allow them to answer and process incoming calls even when they are at the photocopier or in the filing room.

PF3 Telemarketing

Personnel who systematically make calls to the general public where the selection of the called party is based upon a predefined list. These callers require automatic call sequencing and generating services and close co-ordination with computerised information processing.

PF4 Function, Central Switchboard Operator/Attendant

The traditional role of the switchboard operator is well known. Modern practices require that calls can be handled from any point within a network, that operator services can be bought-in from an external Agency and even that operators can work from home.

The concept of end-user types is not new. One example is ”Class Of Service”, traditionally used by manufacturers in connection with the installation of PABXs in order to describe the set of properties to be given to a certain telephone extension. The benefit of the SOTIP model is that it is independent of technical implementations.

The concept of the end-user type is useful when specifying both equipment and services for telecommunications. It is also natural to use this concept in tenders, especially when procuring services.

The End User Types cover the most common job situations within Government Administrations. End User Type definitions describe functionality available to assist different users to carry out the requirements of their jobs. The End User Type definitions do not include information about the customers in contact with the Government Administration.

0.6.1.3 Classification of Customers

The Customer Type defines the customer in contact with the Government Administration by means of telecommunication. The Customer Type is the combination of who the caller is and the nature of the call.

0.6.1.4 SOTIP Customer Types

The handling of each call is defined by the destination of the call and the services used to handle the call. The first step in defining the Customer Type is to define the Customer Status and the Subject Type and to combine these values. Customer Status may be classified as follows:

CS1 Private citizens/Residential

All contacts between public agencies and the private citizens

CS2 Large organisation

National or multinational organisations interacting with a number of public administration agencies at all levels or with a limited number of public administration agencies at expert levels.

CS3 Small organisation

National organisations interacting with a limited numbers of public administration agencies.

CS4 Supplier

Organisations supplying agencies with equipment and/or services on a contractual basis.

CS5 Public administration

Other agencies within the public administration.

CS6 Own public administration

Internal contacts within the same administration.

Subject types are unique for each Public Administration although the subject can be expressed in general terms as one of the following:

ER1 Request for general information

ER2 Request for information related to identified matter

ER3 Delivery of general information

ER4 Delivery of information related to identified matter

ER5 Personnel related business matter

ER6 Personnel related private matter

ER7 Requirements

ER8 Alarms

The Subject Type might include subtypes appropriate to each Public Agency. For example, in a specific agency, ER1/Subtype 1 might be interpreted as "*Request for general information/Location of offices*". Each CT is then described by the End User Type handling the call, the Equipment Category used and the fulfilment of the general service requirements. Usually more than one CT is handled by the same End User Type. (The application of Customer Types to the SOTIP model will be elaborated in a future release of SOTIP).

0.6.1.5 Equipment Types

Terminal Equipment for the support of SOTIP services are defined in the interface between the equipment and its connection to the telecommunication network or any switching device. SOTIP does not discuss the requirements for these types of terminal equipment but it does specify the special requirements that they place on the rest of the communications system. SOTIP equipment categories are as follows:

TE1 Telephone set;

TE2 Facsimile equipment;

TE3 Data Communication Equipment/Modems;

TE4 Video equipment;

TE5 Network Dependant Computer;

TE6 Video Conferencing Equipment

TE7 Television set

TE8 Personal Computer

For cases where terminal equipment is used by unknown user types or customer types, SOTIP also specifies service requirements for these "end user types".

0.6.1.6 Services and Service Terminology

Services defined in SOTIP support the functionality for direct or indirect person-to-person communication. Traditionally this type of services has been realised by telephony services in public networks and PABX´s. The appearance of new technologies creates new opportunities for services based on other types of networks and user terminals. The services defined in SOTIP may reside in all types of networks and be accessible from all types of networks. End-user services should also be available from all types of standard terminal equipment appropriate to the particular service.

Voice communication is not restricted to traditional telephony networks. Non circuit switched networks are possible carriers of voice and the co-operation of services residing in different networks is a reality. Also, different types of terminals are capable of supporting the same service. One example is a customer with the PC connected to Internet (TCP/IP) requiring a piece of information to be sent by fax from an Agency. The request is sent via internet to a facsimile pool. The reply is returned in facsimile format to the PC.

Broad band networks such as cable TV provide a capability to display video information that can co-operate with voice connections on the same network or in another one. There are already services available where the customer uses DTMF signalling to provide information to an application that displays the result on TV. In this case the bandwidth used is just a fraction of the total video signal

but, nevertheless, it shows that services can be created by co-ordinating different terminals and networks.

Another aspect of service provision is the routing and handling of calls based on additional information. The use of individual profiles associated with the callers own telephone number is one example. When a customer calls a service, the individual profile determines where the call should terminate and the way the call should be handled. The information can also be used in filtering functions. The call is routed to the appropriate person based on information stored in the network or is diverted to its ultimate destination by the caller using PIN codes or other types of control mechanism. The callers geographical position in the network can also be used for routing and handling of calls. For example, in emergency telephony this information can be used to determine the position of the caller and to connect the caller to the most convenient answering station.

The means of presentation can be used to create an easy to use service. A voice mail box might as an option present recorded voice messages in the form of text. The text messages might be automatically distributed to the voice mailbox subscribers in different formats to support different terminal types.

The Services defined in SOTIP are divided into four groups; Individual Services (Supplementary Services (SS) and Non-standardised Service (NS)), Organisational Features (OF), Management Services (MS) and Translation Services (TS).

- Supplementary Services (SS): The specific telecommunications functions that characterise what can be made available to a user, by means of protocols conforming to international standards. These functions were originally specified for telephony (voice) applications but are now used in conjunction with services such as Facsimile and Video equipment.
- Non-standardised Service (NS): The specific telecommunications functions that characterise what can be made available to a node or a user, by means of protocols and procedures that have not been specified as international standards.
- Organisational Feature (OF): The specific telecommunications functions that can be used to support the users as functional groups within an organisation as a whole rather than as individuals.
- Management Services (MS): The specific functions within a telecommunications network that provide the network operator, the Agency or a combination of them with the capability of configuring the network and controlling its use.
- Translation Services (TS): The specific functions within a telecommunications network that provide the customers with translation support to access the services provided by the telecommunications operator or equipment to support communication between customers and organisations when specific translation and adaptation is required. Examples of translation services are text to speech translation and facsimile to electronic mail. (The specification and application of Translation Services will be developed in a later release of SOTIP).

0.6.2 Corporate Telecommunications Network (CTN) Model

In the context of SOTIP, person-to-person services are based on communication networks that support the communication between persons within the agencies and the general public. Networks can be any of the following:

circuit switched:

- PSTN;
- ISDN
- GSM;

non circuit switched:

- TCP/IP (Internet);

broad band:

- Cable TV;
- ATM.

The objective of SOTIP is to make supplier independent telecommunications possible within public administrations and to permit services to be accessible from several service providers. Figure 3 shows a Corporate Telecommunications Network (CTN) in generalised form.

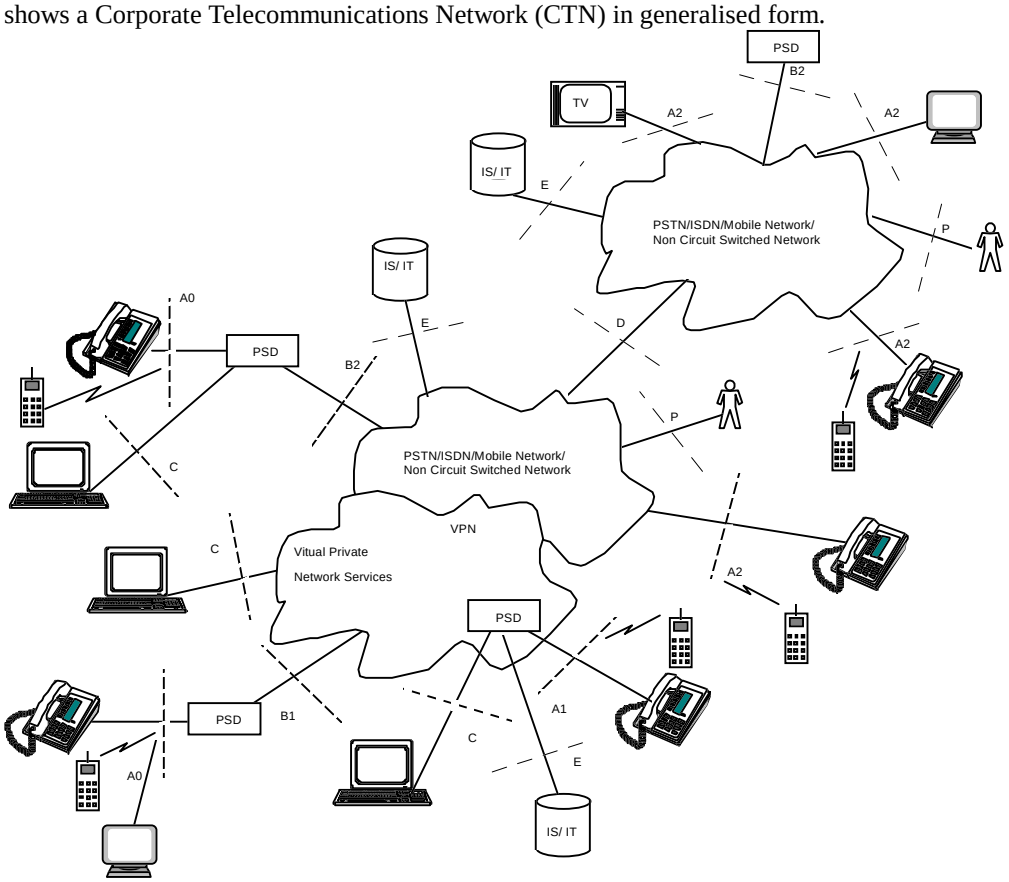

Figure 3 Simplified picture of CTN model

Figure 3 identifies the networks, switching devices and interfaces that can be used in the specification of communications networks for government and commercial organisations:

PSTN Public Switched Telephone Network - Circuit switched network

ISDN Integrated Services Digital Network - Circuit switched network

Mobile Any public telecommunications network where all subscribers use radio Network technology to access the network services. Examples of such technologies are NMT and GSM - Circuit switched network

PDTN Public Data Transfer Network - Non circuit switched network
A network with the capability to transfer data and voice e.g. TCP/IP (Internet).

Broadband A network with the capability of transferring video signals, data and voice. Examples are Cable TV Network (CATV) or ATM.

VPN Virtual Private Network – in the public network
A VPN is the part of a CTN that provides corporate networking using shared network infrastructures. This is sub-divided into VPN architecture and VPN services. VPN can be implemented by circuit switched networks such as PSTN and ISDN or non circuit switched network such as TCP/IP (Internet). Intranet may be considered to be a good example of an Internet-based VPN

PSD Private Switching Device
Locally used switching device e.g. PABX, server, Centrex realised as a virtual PABX or server, or any other type of locally used switching devices.

In addition, figure 3 identifies the following interfaces between telecommunication networks and users or equipment:

A0 Direct connection of end-users to own PSD

A1 Direct connection of a end-user to a Centrex

A2	Indirect connection of end-users via a public network
B1	Connection of a PSD or a group of PSDs to VPN-services
B2	Indirect connection of a PSD or a group of PSDs via public networks to VPN- services
C	Management services information and control
D	Interface between networks operated by different operators
E	Connection of IS/IT applications
P	Public customer interface

The connection of IS/IT applications via the E interface is relevant when the IS/IT application has an influence on the handling of telecommunications services. SOTIP does not specify the application or the IS/IT technique or standards used to implement the application.

The demand for a standardised interface between network operators is vital for the capability to allow full access to services in adjacent networks. A non circuit switched network e.g. TCP/IP (Internet) is a possible access network for services and has to co-operate with the traditional circuit switched telecommunication networks. The networks defined are all possible carriers of voice, data, video etc.

The choice of network is a technical decision that must be based on the requirements for services. Also the telecommunications and IT equipment used must work together to provide access to the available services. For example, a PSD device must work with a Centrex or a TCP/IP (Internet) device. The QSig standards and other similar specifications are vital to achieving interworking between networks.

Interworking between telecommunications services and IS/IT applications depends upon the availability of standardised interfaces and the mutual development of services. SOTIP does not define any standards or technical solutions for IS/IT but defines requirements for interworking. IS/IT applications can be seen as service nodes connected to CTN model. An IS/IT application can be connected to any of the defined networks and act as a service node for the specific network.

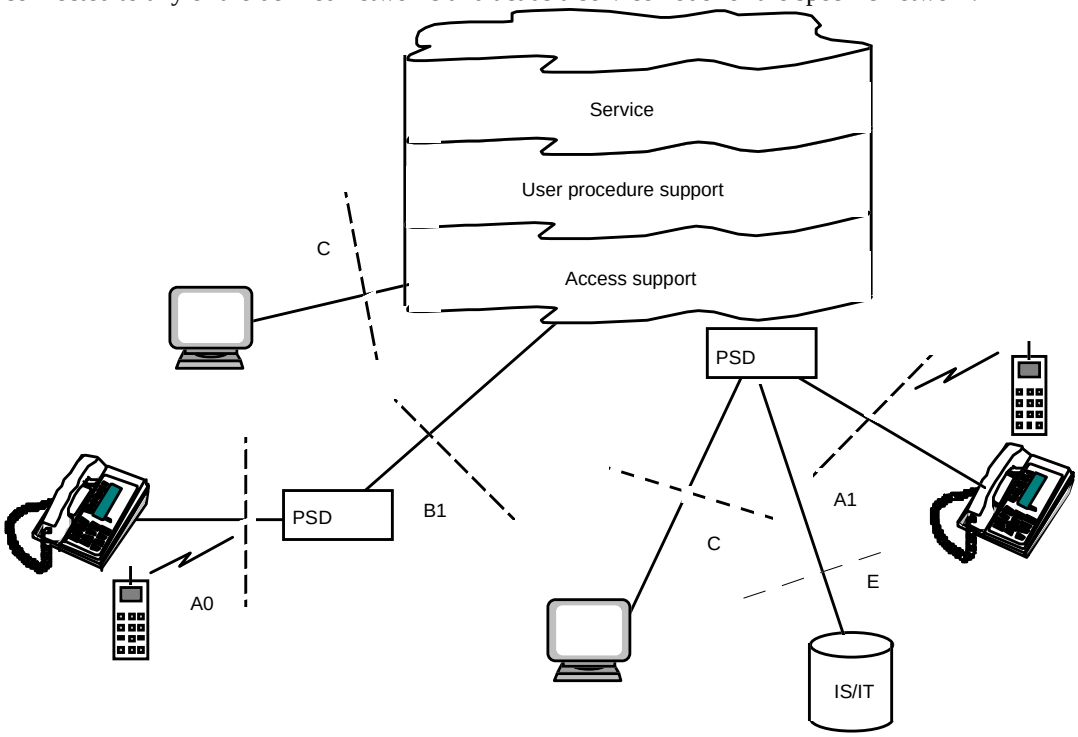

Figure 4 CTN access and user procedure support

The CTN model is not only a description of connectivity in terms of access capabilities. Transparency in user procedures and services are also a part of the model. The user procedures should be independent of the terminals used and differences in access interfaces. Services should, whenever possible, be accessible from different terminal types with the support of the appropriate user procedure. An example of the interaction between access networks, user procedures and services is the switching from one access to another during a service dialogue. The first part of service interaction

might be carried out as a data transaction via TCP/IP (Internet) from a Personal Computer. At some point the user then changes to a telephony call to continue the service interaction.

0.6.3 CTN Service Requirements

The definitions of telecommunication services puts a number of requirements on the CTN. To fulfil the general service requirements the network operator has to take the following factors into account:

- Service Transparency
- Service Versatility
- Service Dependency
- User Procedures
- Service Performance

In the following chapters each of the factors will be explained in more detail.

0.6.3.1 Service Transparency

The service transparency requirement means that a specific service should be accessible from different terminal types. Each type of terminal has its own characteristics but access to a service from different terminal types is essential in order to be able to establish communication without imposing artificial limitations due to inconsistencies in the terminals.

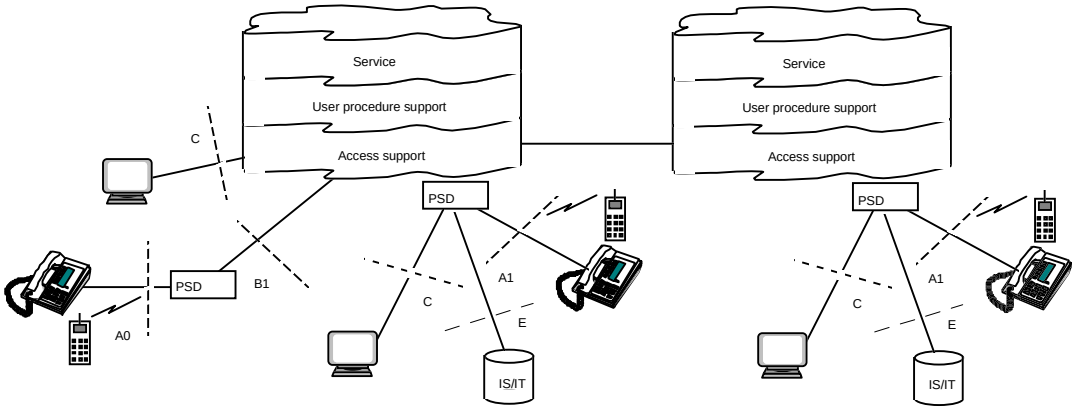

Figure 5 CTN service transparency

The demand for service transparency is valid when more than one network or operator is involved in the provision of a service.

0.6.3.2 Service Versatility

Special requirements for different types of customers are traditionally met by the provision of special terminal equipment having, for instance, larger keys, amplified sound and synthesised voice guidance. To enable all customers to make use of services, adjustments should be made in the network such that it can support the use of several types of standard terminal equipment. In some extreme situations customer specific tailoring of terminal equipment might be necessary.

Some examples of service versatility are:

- The adjustment of received loudness level for users with hearing difficulties;
- The use of voice to control calls. For example:
  ⇒ dialling;
  ⇒ outgoing call authorisation;
  ⇒ control of the telephone or terminal.

Soon, speech-to-text, text-to-speech, translation and sign language translations will extend the usability of many services. The use of alternative standardised terminals as well as traditional telephone sets opens up new possibilities for service versatility. By providing a service via a new kind of network or media new customer categories will be able to use a service

0.6.3.3 Service Dependencies

For each of the services provided to a customer the service dependency has to be defined. The definition is expressed by:

- which services can be used together
- which services must be used together
- which services are mutually exclusive.

An example of services that can be used together is in the presentation of data to a called party. A customer accessing the databases of an agency using a TCP/IP (Internet) connection from a PC may wish to switch to a voice call to discuss the data with an employee of the agency. When the call is established, it should be possible for the information retrieved by the customer to be presented to the receiver of the call.

An example of services that must be used together can be found in the faxback service where a customer calls the fax service and by pressing the buttons on the telephone, the customer's own fax number is transmitted to the fax service. This is then able to send the required fax to the customer's facsimile equipment or personal computer.

An example of mutually exclusive services is the case where a user activates Call Back When Busy and then attempts to divert all incoming calls to his/her voice mailbox. To prevent the Call Back recall from being connected to the voice mailbox, the Diversion attempt either will cause the Call Back request to be cancelled or will be rejected altogether.

0.6.3.4 User Procedures

Individual agencies within the Public Administration should present their services in a similar fashion in terms of how to access and use them. A common user procedure definition is a vital tool to create easy-to-use services. Each user type should find a satisfactory method of operation or a specific service. Skilled users should not be prevented from using a quick, short-cut dialogue and beginners should have all the guidance necessary for full use of the service. This requirement is not only related to terminal types but also to general rules for availability to services.

0.6.3.5 Service Performance

The functionality and quality in telecommunication solutions obtained for the existing services should not be adversely affected by the introduction of new techniques. The performance level might be defined for normal conditions as well as for extraordinary conditions. The purpose of a defined performance level is to ensure that a specific service is available not only in terms of functionality but also in terms of performance parameters such as traffic load, answering time and sound quality. This is especially important when changing access method or terminal type during the use of a service. As an example, the quality of a voice service is likely to be significantly better when accessed via PSTN as compared with access over a TCP/IP (Internet) connection. Even though in strictly technical terms the voice service is available over the Internet, the sound quality might be too poor to define the status as *"available"*.

Performance requirements are defined for normal operations and for the extreme situations that may occur. A typical example is a voice mailbox supported by CTI functionality where a specified percentage of calls should be handled within a specified period of time under normal conditions but, under extreme traffic conditions, a different percentage might be permitted. Other performance parameters are the quality of sound and successful usage of the service.

0.7 Teleworking

Having employees of all end-user types working from home or other places outside the usual office is becoming an increasingly attractive option for many organisations. SOTIP identifies teleworking as one of the standard connections to a telecommunications network for all identified user types. A teleworking connection is provided with the same functionality as any of the other standard connection types.

Teleworking is described in the SOTIP model as indirect connection "A2". The telecommunications terminal is connected directly to a public network which then provides a service to the user as

if connected to their own organisation's network. Users can have one of two different methods of indirect access:

- Where the user's location is fixed and known prior to connection. e.g. at home or at another office
- Where the user's location is not known before the connection is made. e.g. in a hotel room, public call-box or client's office

0.8 Economic Model

The definitions so far have focused on the services themselves. To evaluate the effect of the services on the organisation and the service provided to the customers it is essential to consider the financial aspects as well. The potential for saving users' time within the agencies while continuing to provide good service to the public is a key economic issue. The provision of telecommunication services to users that change user type during a typical day and achieving an appropriate mix of local and centralised answering services are examples of important parameters to be considered in an economic model.

The cost of introducing a telecommunication service compared with the savings that could be realised by its use is the basis for evaluating the investment. Its important to stress that such a comparison must include the whole business transaction flow. The telecommunication service is simply a link in a sequence of activities and the influence of the service must be judged in the context of the whole sequence. The economic model will be elaborated in a future release of SOTIP.

0.9 Standardisation of Telecommunications

Formal standards are one of the first steps towards open communications systems. A formal standard must be correct and fully define the services that are included in the standardised objects. They must, however, also specify all the possible options. This means that, in many cases formal standards define alternative services and are thus ambiguous. Furthermore, these standards may be updated at any time with revisions, amendments or technical corrigenda.

The development of formal standards is carried out within the framework of the established international standardisation organisations. Examples of these are:

ETSI (European Telecommunications Standards Institute);

ISO (International Organisation for Standardization);

ITU-T (International Telecommunication Union - Telecommunication Standardization Sector);

ECMA (The European Organisation for the Standardization of Information and Communication Systems);

CEN (European Committee for Standardization);

CENELEC (European Committee for Electrotechnical Standardization).

In parallel, de facto standards are developed by product providers or other types of organisations. Microsoft Windows and Internet (TCP/IP) are examples of de facto standards. Functions specified in SOTIP use existing formal and de facto standards when relevant.

The standards can normally be bought from the national standards bodies or directly from the developing organisations. See Web sites of the organisations:

ETSI: http://www.etsi.fr

ITU: http://www.itu.ch

ECMA: http://www.ecma.ch

CEN and CENELEC standards are only available through the national channels.

0.10 Description of The SOTIP Structure

SOTIP, version 2, consists of a definition of user types and four other parts specifying telecommunications services:

Definition of End-User Types and Customer Types

- The definition of each end-user type is based on a particular work situation or a specific item of connected equipment. In addition to an identified range of appropriate telecommunications services, the specification of an end-user type also describes user procedures for services, the interaction of services and the relationship between voice-based services, message handling services, video services etc. Descriptions of end-user types are based on needs which may not necessarily correspond to the present status of standardisation. When there is a difference between existing needs and the present status of standardisation, this is an indication from the en-users that the standardisation should be prioritised.

  The difference between various end-user types comes mainly from the telecommunications services needed to handle incoming calls. For certain jobs it is, for example, essential for the user to be available at all times to receive telephone calls, even not always in the same place. For other situations, efficient telephone answering position services or services based on transaction dialogue are needed.

  In practice, a person may have a job that corresponds to more than one type of end-user, or they may need extra services as described below. Most of the jobs in an Agency may be covered by a limited number of end-user types.

  The definition of Customer Types is based on the fact that different customers of an Agency have different objectives and service requirements. The Agency must define who their customers are and the service level acceptable for each customer type. The matching of end-user functions with the availability of services to the customers is essential in achieving an optimal solution. Customer types and the distribution of these types are different for each Agency as well as the subject matters handled by the Agency. The SOTIP model defines a structure for defining customer types and subject areas for an Agency.

Part 1. End-User Services for End-user Types

- The telecommunications services which should be considered for each individual user, based on their End-User Type, to enable them to function as required by the Agency

  The purpose of this part of SOTIP is to identify and describe those services that help individuals to operate in their defined roles both efficiently and effectively

  Examples of such services for voice telephony are call completion (call-back), Call forward unconditional (follow-me diversion), and call transfer.

Part 2. Network Services for Groups of End-User Types

- The telecommunications services which should be used to support the end-users as functional groups within the overall organisation rather than as individuals.

  The purpose of this part of SOTIP is to identify and describe services that help the organisation in providing a complete service to its customers or the general public

  Examples of such functions are Geographical Independent Numbers, Voice Messaging Services, Call Distribution and Computer Supported User Information.

Part 3. Management Services

- A range of communications management services that deal with the configuration, accounting, security, performance and fault management aspects of a corporate network. Management services provide a means of controlling communications while also enabling improvements in business efficiency. Individual users do not, normally, have access to the management services.

0.11 Future Development of SOTIP

In later editions of SOTIP the following areas will be covered:

- Definition of services for users with specific needs, such as the physically disabled. The objective here is to:

  ⇒ ensure access to communication services for customers with specific needs;

  ⇒ support the usage of standard terminals;

  ⇒ promote the capability of adapting services to individual needs;

  ⇒ provide service solutions for users with specific needs;

- Specifications of Translation Services.
  ⇒ Services to make it easy for all types of customers, independent of their skills and the availability of special terminals, to make use of the services provided by agencies. Translation services make it possible to open the world of telecommunication to all citizens
- Specification of Supplementary Services, not necessarily associated with voice communication, for example:
  ⇒ Messaging services
  ⇒ Computer telephony integration
- Definition of Terminal Types in relation to End User Types, particularly for Teleworking.
  ⇒ Specification of new functions for End Users
  ⇒ Detailed specification of Customer Types and their application to the SOTIP model
  ⇒ Elaboration of the Economic Model

PART 1
END-USER SERVICES FOR END-USER TYPES

1.1 Background

Modern telecommunications systems such as PABXs, Centrex, PSD`s (Private Switching Device) or any other public networks offer a great number of services that should make person-to-person communication easier. In many organisations, end-users are granted access to these services on the basis of their position within the hierarchy rather than on their functional needs. This is not the most effective use of a telecommunications system. Part 1 of SOTIP describes a full range of telecommunications services which can be used to improve the productivity of individual end-users. It also indicates which services should be considered for each of the end user types identified in the SOTIP Model. Examples of such services are:

- call diversion (forwarding)
- call completion (call-back)
- conference calls
- call transfer

NOTE: Detailed selection criteria for each service are not included in this edition of SOTIP.

The purpose of SOTIP is to ensure supplier independence for the use of telecommunications services and, in particular, telephony, i.e. they may be used not only within one system but also when communicating between systems of different types and from different suppliers. The following types of communication may be involved and it is important to note that the requirements of end-users are independent of the configuration used:

- PSD to PSD e.g. PABX to PABX in a network group, PABX to Centrex equipment PABX to Server or other combinations
- Between a PSD (e.g. PABX, Server or Centrex) and an extension in one or more public networks

End users should be able to receive the same functions whether connected to a PSD (e.g. PABX or a Centrex) or directly to the public network.

1.2 Supplementary Services

Section 1.4 comprises a list supplementary services that may be of interest for applications in Public administration.

In section 1.5 the standardisation status of supplementary services for shown and references are made to the relevant standards from ETSI/ECMA. The section also shows a Comparison of Supplementary Services for public and private networks.

SOTIP supports the use of international standards such as IS_0, Ia, DECT, GSM, TCP/IP (Internet) and GSM 1800 for interfaces of type A (see section 0.5).

In interfaces of type B, SOTIP supports the use of the signalling protocol QSig or similar for all supplementary services. QSig is a digital signalling system standardised by ETSI and ECMA for the provision of telecommunications services within private networks.

1.3 End-User Services

The following tables identify the supplementary services which should be considered for all users and for each individual End-User type. Throughout the tables, these specific terms are used:

SS Standardised in accordance with ETSI/ECMA

NS Not standardised

Code Abbreviations of English names of supplementary services

In all the selection tables, the following key is used in the M/S column:

M Must, corresponds to a strong need for that feature or option to be implemented if the specified criteria prevail

S Should, corresponds to a lesser need where alternative operating methods could be used to achieve a similar effect.

The Range column indicates the extent to which the service is effective. The following terms are used:

Local The range of the service is limited to a single PSD

Private The range of the service is limited to a private network i.e a number of PSD`s connected by leased lines, VPN or virtual leased lines.

Priv-Pub The range of the service is limited to or dependent on the public network.

In cases where the availability is indicated as Private, the service is also to include Local.

Following each table of supplementary services, the options for each of the user interfaces shown in figure 2 are identified. All the User Types can be connected via all the interfaces with the exception of P12 which is limited to the mobile interfaces such as DECT, GSM and GSM 1800. The interfaces considered are:

Directly via interface A0

Ia a two wire analogue interface for approved equipment at an extension.

IS_0 a four wire digital interface for approved ISDN equipment

Is an acoustic interface at a feature telephone (A telephone terminal that is not approved in accordance with the standard SS 63 63 41, is regarded as a feature telephone).

DECT Digital European Cordless Telecommunications system.

GSM 1800 Digital Cellular System at 1800 MHz, a mobile telephony network based upon GSM but operating at 1800 MHz

TCP/IP Non circuit switched interface

Directly via interface A1

Ia a two wire analogue interface for approved equipment at an extension.

IS_0 a four wire digital interface for approved ISDN equipment

Is an acoustic interface at a feature telephone (A telephone terminal that is not approved in accordance with a standard i.e. SS 63 63 41, is regarded as a feature telephone).

DECT Digital European Cordless Telecommunications system.

GSM Global System for Mobile communications, a digital mobile telephony network operating at 900MHz

GSM 1800 Digital Cellular System at 1800 MHz, a mobile telephony network based upon GSM but operating at 1800 Mhz.

TCP/IP Non circuit switched interface

Indirectly via interface A2

PSTN Public Switched Telephone Network. The public telephone network, previously called the general telephone network

ISDN Integrated Services Digital Network

GSM Global System for Mobile communications

GSM 1800 Digital Cellular System at 1800 MHz

NMT Nordic Mobile Telephone Network, an analogue mobile telephony network

TCP/IP Non circuit switched interface

1.3.1 Basic Functionality

All end-user types of the type Person, except PF4 Switchboard Operator, have the same basic functionality. These will hereinafter be called the basic functionality and comprises the telephony supplementary service shown in table 1:

Table 1: Basic Functionality For All End-Users

Service	Code	Explanation	M/S	Range
SS0		Identification of called number	Must	Priv-Pub
SS9	CFU	Call Forwarding Unconditional	Must	Priv-Pub
SS20	CCBS	Completion of Call to Busy Subscriber	Must	Priv-Pub
SS21	CCNR	Completion of Call on no reply	Should	Private
SS26	HOLD	Call Hold	Must	Priv-Pub
SS27	CT	Call transfer	Must	Private
SS28	CONF	Add-On Conference	Must	Priv-Pub
SS32	AOC	Advice of Charge	Must	Priv-Pub
SS33	UUS	User-to-User Signalling	Should	Priv-Pub
NS1		Last External Number Redial	Must	Priv-Pub
NS2		Abbreviated dialling	Must	Local
NS4		DTMF signalling	Must	Priv-Pub

1.3.2 End-user type ”Person”

1.3.2.1 PI1: Individual, Self-determined Availability

End-user type PI1 - Individual, Self-determined Availability is a person whose main work is to provide an indirect service to the public, e.g. staff dealing with specific queries, investigators, specialists, managers, etc. Incoming telephone communications are mainly related to a person, i.e. concern a person in a certain position or a specialist with specific knowledge. These telephone calls cannot normally be handled by any other person. This category usually needs special reference material, computer support, etc. in order to process the requests. Their temporary unavailability would not adversely affect the service offered by the Agency. It may not even be very suitable to disturb such people when they are absent at meetings. Instead, efficient answering and messaging services become imperative.

It may be preferable to contact this group of people by alternative means of communication – messaging services like electronic mail, fax, or voice mail. They may also be paged.

PI1 users are likely to need a call filtering function to enable them to deal with only those calls that require their attention.

The co-ordination between telephony, paging and other message services systems is becoming one of the most significant requirements of business telecommunications users. Co-ordination is also applicable to outgoing traffic. PI1 users are also likely to require co-ordination between voice services, imaging and data (multi- media).

1.3.2.1.1 Services For PI1 Users

End-user type PI1 has access to the basic functionality and the services listed in table 2 should also be considered.

Table 2: Supplementary Services For End-Users Type PI1

Service	Code	Explanation	M/S	Range
SS1	CLIP	Calling Line Identification Presentation	Should	Priv-Pub
SS2	COLP	Connected Line Identification Presentation	Should	Priv-Pub
SS3	CLIR	Calling/Connected Line Identification Restriction	Must	Priv-Pub
SS4	MSN	Multiple Subscriber Number	Should	Local
SS5	CNIP	Calling Name Identification Presentation	Should	Private
SS6	CONP	Connected Name Identification Presentation	Should	Private
SS7	CNIR	Calling/Connected Name Identification Restriction	Must	Private
SS8	MCID	Malicious call Identification	Must	Priv-Pub
SS10	CFB	Call forward on busy	Must	Private
SS11	CFNR	Call forward on no reply	Must	Private
SS12	CD	Call Deflection	Must	Private
SS22	CW	Call waiting	Must	Local
SS30	CPU	Call pick-up	Must	Local
SS39	MSW	Message Waiting Indication	Should	Priv-Pub
NS3		Abbreviated dialling	Must	Local
NS7	DISA	Direct Inward System Access	Must	Priv-Pub
NS9		Message waiting, light or signal	Should	Private
NS10		Paging	Should	Private
NS13		Automatic Call Filtering	Should	Priv-Pub
NS18		Calling Diary	Should	Private
NS19		Secure Transmission	Should	Private

1.3.2.2 PI2: Individual, Permanent Availability

End-user type PI2 - Individual, Permanent Availability is a person who must be available immediately irrespective of where they are. People of this type carry their own terminal equipment, e.g. a hand set, or have a mobile place of work. PI2 users may be redirected to more urgent duties at any time. Most staff providing an emergency or call-out function would be classified as PI2 end-users.

Examples of End-users type PI2 are:

- Security officers
- Service technicians
- Police officers
- Traffic wardens
- Land surveyors
- MOT/construction supervisors
- Grounds maintenance staff
- Property management personnel

Incoming telephone traffic is normally related to an individual and can thus not be handled by anyone else. Many matters are comparatively urgent and may also usually be dealt with directly without the person responsible having to return to his or her ”normal” place of work. The demand for immediate availability is very important, i.e. there is a great need for mobile voice communications. There is also a need for alarm functions specially for persons working isolated.

1.3.2.2.1 Services For PI2 Users

End-user type PI2 has access to the basic functionality and the services listed in table 3 should also be considered.

Table 3: Supplementary Services For End-Users Type PI2

Service	Code	Explanation	M/S	Range
SS1	CLIP	Calling Line Identification Presentation	Should	Priv-Pub
SS2	COLP	Connected Line Identification Presentation	Should	Priv-Pub
SS3	CLIR	Calling/Connected Line Identification Restriction	Must	Priv-Pub
SS8	MCID	Malicious call Identification	Must	Priv-Pub
SS10	CFB	Call forward on busy	Must	Private
SS11	CFNR	Call forwarding on no reply	Must	Private
SS12	CD	Call deflection	Must	Private
SS22	CW	Call waiting	Must	Local
NS3		Abbreviated dialling	Must	Local
NS8		Account Code	Should	Private-Pub
NS10		Paging	Should	Private
NS14		Waiting Calls Display	Should	Priv-Pub
NS15		Priority Call	Should	Priv-Pub

1.3.2.3 PI3: Individual, Shared

It must be possible from time to time to reach people, that do not have direct access to their own phone and that do not require one in their work. Examples in this group are teachers and factory operators . The incoming traffic is individual and the group can be conveniently reached by alternative ways of communication – message services of the type electronic mail, fax or voice messages. If such alternatives are not used, all calls to PI3 users would be routed to a local or centralised attendant, thus causing an unnecessarily heavy workload.

1.3.2.3.1 Services For PI3 Users

End-user type PI3 has access to the basic functionality and the services listed in table 4 should also be considered.

Table 4: Supplementary Services For End-Users Type PI3

Service	Code	Explanation	M/S	Range
SS1	CLIP	Calling Line Identification Presentation	Should	Priv-Pub
SS2	COLP	Connected Line Identification Presentation	Should	Priv-Pub
SS3	CLIR	Calling/Connected Line Identification Restriction	Must	Priv-Pub
SS4	MSN	Multiple Subscriber Number	Should	Local
SS5	CNIP	Calling Name Identification Presentation	Should	Private
SS6	CONP	Connected Name Identification Presentation	Should	Private
SS7	CNIR	Calling/Connected Name Identification Restriction	Must	Private
SS8	MCID	Malicious Call Identification	Must	Priv-Pub
SS10	CFB	Call Forward on Busy	Must	Private
SS11	CFNR	Call Forward on No Reply	Must	Private
SS12	CD	Call Deflection	Must	Private
SS22	CW	Call waiting	Must	Local
SS30	CPU	Call pick-up	Must	Local
NS3		Abbreviated dialling	Must	Local
NS7	DISA	Direct Inward System Access	Must	Priv-Pub
NS9		Message waiting, light or signal	Should	Private
NS10		Paging	Should	Private

1.3.2.4 PF1: Function, Group

Staff working in information/customer services, telephone orders clerks (e.g. at the motor vehicle registration office) who are part of a large group of people with similar types of work. It is assumed that the information services are always manned with a varying number of attendants. The incoming telephony traffic is not personal, i.e. all calls can be handled by any agent and can be partly or completely automated using voice response or automated transaction systems.

PF1 uses computer aided telephony and voice reply. Calls may be moved together with the information it contains.

There are three main groups:

PF1a: Supervisor
End-user type PF1a controls and supervises the attendants of one or more groups. This end-user type has access to information on both the present situation and statistics.

PF1b: Active attendant – many services
End-user type PF1b handles incoming calls. This end-user type has access to information on queuing status and to a certain amount of control.

PF1c: Passive attendant – fewer services
End-user type PF1c handles incoming calls without any access to information on present status or any means of control.

1.3.2.4.1 Services For PF1 Users

End-user type PF1 has access to the basic functionality and the services listed in table 4 should also be considered.

Table 5: Supplementary Services For End-Users Type PF1

Service	Code	Explanation	M/S	Range
SS1	CLIP	Calling Line Identification Presentation	Should	Priv-Pub
SS3	CLIR	Calling/Connected Line Identification Restriction	Must	Priv-Pub
SS5	CNIP	Calling Name Identification Presentation	Should	Private
SS6	CONP	Connected Name Identification Presentation	Should	Private
SS7	CNIR	Calling/Connected Name Identification Restriction	Must	Private
SS8	MCID	Malicious call Identification	Must	Priv-Pub
NS3		Abbreviated dialling	Must	Local
NS8		Account Code	Should	Priv-Pub
NS11		Automatic Call Acceptance	Should	Private

End-user type PF1 has access to the basic functionality and the services listed in table 6 should also be considered.

Table 6: Additional Supplementary Services for End-User Type PF1a

Service	Code	Explanation	M/S	Range
SS24	CI	Call Intrusion	Must	Local
NS17		Listen-in	Must	Local
NS19		Locate Mobile Agent	Should	Public

PF1a users must be able to:

- obtain information and statistics for:
- Number of connected attendants
- Number of engaged attendants
- Traffic intensity
- Reply times
- Redirect queues
- Prioritise attendants
- Move attendants between various groups

PF1b users must be able to:

- Obtain information on:
- Number of calls in a queue
- Number of attendants in the group
- Log in and out
- Be present or absent

PF1c users may be logged in by the supervisor.

1.3.2.5 PF2: Function, Answering Service

End-user type Function, answering service is one or a few people in a group. This may be a secretary who is responsible for minding the telephone or receiving messages for one or several managers, perhaps even for a larger group of people. These people must be very easy to get in touch with, but these people often move around a lot within a limited area. This means that it should be possible to forward the calls to a mobile access such as DECT or CT1 if the end-user type is not directly connected via a DECT.

1.3.2.5.1 Services For PF2 Users

End-user type PF2 has access to the basic functionality and the services listed in table 7 should also be considered.

Table 7: Supplementary Services For End-User Type PF2

Service	Code	Explanation	M/S	Range
SS1	CLIP	Calling Line Identification Presentation	Should	Priv-Pub
SS2	COLP	Connected Line Identification Presentation	Should	Priv-Pub
SS3	CLIR	Calling/Connected Line Identification Restriction	Must	Priv-Pub
SS4	MSN	Multiple Subscriber Number	Should	Local
SS5	CNIP	Calling Name Identification Presentation	Should	Private
SS6	CONP	Connected Name Identification Presentation	Should	Private
SS7	CNIR	Calling/Connected Name Identification Restriction	Must	Private
SS8	MCID	Malicious Call Identification	Must	Priv-Pub
SS11	CFNR	Call Forward on No Reply	Must	Private
SS12	CD	Call Deflection	Must	Private
SS13	CDIVI	Controlled Diversion Immediate	Must	Private
SS22	CW	Call Waiting	Must	Local
SS24	CI	Call Intrusion	Should	Local
SS30	CPU	Call Pick-Up	Must	Local
SS31	CPK	Call Parking	Must	Local
NS3		Abbreviated dialling	Must	Local
NS6		Boss/secretary switch	Must	Local
NS10		Paging	Should	Private
NS16		Cordless Headset/Handset	Should	Private

1.3.2.6 PF3: Telemarketing

Certain types of staff are required to systematically contact lists of clients, or other people (e.g. those seeking employment, or insurance) who the Agency is meant to serve.

These telemarketing end-users require computer aided telephony services primarily to provide the automatic capability of calling a sequence of destination numbers from a pre-defined list (power dialling).

1.3.2.6.1 Services For PF3 Users

End model-user PF3 has access to the basic functionality, and the services listed in table 8 should also be considered.

Table 8: Supplementary Services For End-User Type PF3

Service	Code	Explanation	M/S	Range
NS3		Personal abbreviated number	Should	Local
NS8		Charging code	Should	Priv-Pub

1.3.2.7 PF4: Function, Attendant/Operator

An attendant operator must have efficient and easily used aids for:

- identifying a paged person/extension based on the caller's subject,
- transferring calls and supervise unanswered calls,
- paging people when their calls are not answered,

- referring the caller to another person, secretaries or to a voice mail box when the caller cannot be reached,
- registering and passing on telephone messages.

1.3.2.7.1 Services For PF4 Users

The services listed in table 9 should be considered for End-User Type PF4.

Table 9: Supplementary Services For End-User Type PF4

Service	Code	Explanation	M/S	Range
SS A.1a	CLIP	Calling Line Identification Presentation	Must	Priv-Pub
SS A.1b	COLP	Connected Line Identification Presentation	Should	Private
SS A.2	CFU	Call Forward Unconditional	Must	Priv-Pub
SS A.6	CDIVI	Controlled Diversion Immediate	Must	Private
SS A.7	NS	Night Service	Must	Private
SS A.8	CINT	Call Interception	Should	
SS A.11	SE	Serial call	Must	Private
SS A.12	CCBS	Completion of Call to Busy Subscriber	Must	Private
SS A.13	CCNR	Completion of Call on No Reply	Must	Private
SS A.16	CI	Call Intrusion	Must	Private
SS A.17	HOLD	Call Hold	Must	Priv-Pub
SS A.18	CT	Call transfer	Must	Private
SS A.19	CONF	Add-On Conference	Should	Priv-Pub
SS A.20	CPK	Call Park	Must	Local
SS A.21	UST	User Status	Must	Private
SS A.22	CDA	Call Distribution to the Attendant	Must	Private
SS.A.23	RE	Recall	Must	
NS12.		Operator initiated call charging	Must	Priv-Pub
NS A.1		Assistance	Must	Private
NS A.3		Call announcing	Should	Private
NS A.6		Prioritising of incoming calls	Should	Private
NS A.7		Display of call in queues	Must	Private

1.3.3 End-user type ”Terminal Equipment”

1.3.3.1 TE1: Equipment, Public Telephone

These are telephones in public places, pay telephones, etc. which are mainly used for outgoing calls. They are not connected to a certain individual and there is thus no need for answering positions, messaging services or other person-related services.

1.3.3.1.1 Services For TE1 Users

End user type TE 1 has access to basic functionality and supplementary services for telephony as in Table 1.

1.3.3.2 TE2: Facsimile

1.3.3.2.1 Services For TE2 Users

End-user type TE2 has access to the telephone supplementary services listed in table 10

Table 10: Supplementary Services For End-User Type TE2

Service	Code	Explanation	M/S	Range
SS9	CFU	Call Forward Unconditional	Must	Priv-Pub
SS10	CFB	Call Forward on Busy	Should	Private
SS11	CFNR	Call Forward on No Reply	Should	Private
SS20	CCBS	Completion of Call to Busy Subscriber	Must	Priv-Pub
SS29	CUG	Closed User Group	Should	Private
NS2		Abbreviated Dialling	Must	Local

1.3.3.3 TE3: Data Communication Equipment/Modems

1.3.3.3.1 Services For TE3 Users

End-user type TE3 has access to the telephone supplementary services listed in table 11

Table 11: Supplementary Services For End-User Type TE3

Service	Code	Explanation	M/S	Range
SS9	CFU	Call Forward Unconditional	Must	Priv-Pub
SS10	CFB	Call Forward on Busy	Should	Private
SS11	CFNR	Call Forward on No Reply	Should	Private
SS20	CCBS	Completion of Call to Busy Subscriber	Must	Priv-Pub
SS29	CUG	Closed User Group	Should	Private
NS2		Abbreviated Dialling	Must	Local

1.3.3.4 TE4: Video equipment

Several voice channels n x 64 kbps per channel (128, 258, 384, or 2048).

1.3.3.4.1 Services For TE4 Users

End-user type TE4 has access to the telephone supplementary services listed in table 12.

Table 12: Supplementary Services For End-User Type TE4

Service	Code	Explanation	M/S	Range
SS9	CFU	Call Forwarding Unconditional	Must	Priv-Pub
SS20	CCBS	Completion of Call to Busy Subscriber	Must	Priv-Pub
NS2		Abbreviated Dialling	Must	Local

1.3.3.5 TE5: Network Depending Computer

Requirements for speeds and interfaces are not defined. However, it is possible to identify at least three types of telecommunications service that need to be supported and closely co-ordinated within a Network Depending Terminal. These are:

- Voice
- Video
- Data

1.3.3.5.1 Services For TE5 Users

End-user type TE5 has access to the telephone supplementary services listed in table 13.

Table 13: Supplementary Services For End-User Type TE5

Service	Code	Explanation	M/S	Range
SS9	CFU	Call Forwarding Unconditional	Must	Priv-Pub
SS20	CCBS	Completion of Call to Busy Subscriber	Must	Priv-Pub
NS2		Abbreviated Dialling	Must	Local

1.3.3.6 TE6: Video Conferencing Equipment

Requirements for speeds and interfaces are not defined.

1.3.3.6.1 Services For TE6 Users

End-user type TE6 has access to the telephone supplementary services listed in table 14.

Table 14: Supplementary Services for End-User Type TE6

Service	Code	Explanation	M/S	Range
SS17	DND	Do Not Disturb	Should	Private
NS2		Abbreviated Dialling	Must	Local
NS11		Automatic Call Acceptance	Should	Local

1.4 List of Supplementary Services for telephony

Table 15: Supplementary services for general use

SOTIP	Acronyms	Description
SS1	Calling Line Identification Presentation, SS-CLIP	SS-CLIP is a service offered to the called user and provides that user with the calling user's number and, if applicable, the calling user's subaddress.
SS2	Connected Line Identification Presentation, SS-COLP	SS-COLP is a service offered to the calling user and provides that user with the connected user's number and, if applicable, the connected user's subaddress.
SS3	Calling/Connected Line Identification Restriction, SS-CLIR and SS-COLR	SS-CLIR is a service which prevents the served user's number being presented to another user. It can apply to all calls or can be invoked on a per call basis. It can restrict the presentation of the served user's number not only during normal call establishment but also when the possibility of number presentation arises during the operation of other supplementary services, e.g., Call Forwarding and Call Transfer.
SS4	Multiple Subscriber Number, SS-MSN	SS-MSN is a supplementary service which permits more than one number (PTN number or ISDN number) to be associated with a PTN access. The standards for basic services in PTNs will include SS-MSN aspects, so that separate Standards for this supplementary service will not be necessary. The number handling aspects of the service are specified in Standard ECMA-155.
SS5	Calling Name Identification Presentation, SS-CNIP	SS-CNIP is a service offered to the called user and provides that user with the calling user's name.
SS6	Connected Name Identification Presentation, SS-CONP	SS-CONP is a service offered to the calling user and provides that user with the connected user's name.
SS7	Calling/Connected Name Identification Restriction, SS-CNIR	SS-CNIR is a service which prevents the served user's name being presented to another user. It can apply to all calls or can be invoked on a per call basis. It can restrict the presentation of the served user's name not only during normal call establishment but also when the possibility of name presentation arises during the operation of other supplementary services, e.g., Call Forwarding and Call Transfer.
SS8	Malicious Call Identification, SS-MCID	This supplementary service enables a user to request that the source of an incoming call be identified and registered in the network. Registration is not affected by SS-CLIR. The main interest for PTNs in this supplementary service is to be able to invoke the corresponding service in a public ISDN.
SS9	Call Forwarding Unconditional, SS-CFU	All incoming calls to the served user, or just those relating to a specific basic service, are diverted to another destination defined by a number, and optionally a subaddress, specified at the time of activation of the service. Incoming calls are diverted immediately, independently of whether the served user is busy or free. A diversion according to SS-CFU may be concatenated with one or more other diversions according to SS-CFU and/or according to other call forwarding or call deflection services. Activation, deactivation and interrogation of this service can be performed by the served user or by another authorised user, e.g., the user who is already the diverted-to user may be able to deactivate forwarding or activate forwarding to a different diverted-to user.

Table 15: Supplementary services for general use (cont.)

SOTIP	Acronyms	Description
SS10	Call Forwarding on Busy, SS-CFB	All incoming calls to the served user, or just those relating to a specific basic service are diverted to another destination defined by a number, and optionally a subaddress, specified at the time of activation of the service, subject to the served user being busy at the time of call arrival. A diversion according to SS-CFB may be concatenated with one or more other diversions according to SS-CFB and/or according Activation, deactivation and interrogation of this service can be performed by the service user or by another authorised user, e.g., the user who is already the diverted-to user may be able to deactivate forwarding or activate forwarding to a different diverted-to user.
SS11	Call Forwarding on No Reply, CFNR	All incoming calls to the served user, or just those relating to a specific basic service, are diverted to another destination defined by a number, and optionally a subaddress, specified at the time of activation of the service, subject to the served user falling to answer within a predefined period of time. A diversion according to SS-CFNR may be concatenated with one or more other diversions according to SS-CFNR and/or according to other call forwarding or call deflection services. Activation, deactivation and interrogation of this service can be performed by the served user or by another authorised user, e.g., the user who already the diverted-to user be able to deactivate forwarding or activate forwarding to a different diverted-to user.
SS12	Call Deflection, SS-CD	This service permits the served user, on arrival of an incoming call, to request that the PTN divert the call to another destination. The request can be generated automatically by terminal immediately the call arrives or after remaining unanswered for a certain period of time, or the request can be generated as a result of user action on being alerted. A call deflection may be concatenated with one or more other call deflections and/call forwardings.
SS13	Controlled Diversion Immediate, SS-CDIVI	SS-CDIVI is offered to the calling PTN user and grants that user the possibility of immediately overriding all diversions (call forwarding or call deflection) encountered.
SS14	Controlled Diversion Consult, CDIVC	SS-CDIVC is offered to the calling PTN user and grants that user the possibility of being consulted on encountering division (call forwarding or call deflection). On consultation, the served user can elect to proceed whit the division, override the division, or clear the call.
SS15	Night Service, SS-NS	This supplementary service is particularly applicable to attendants (see clause 7). When night mode is activated, all incoming calls to the served user are given one of the following treatments, depending on implementation and/or user requirements: • reject the call, with an indication to the calling user that night mode has been encountered; • attempt to forward the call to a night answer point, indicating to the calling user and the forwarded to user that night mode bas been encountered. The above actions can apply also to any calls already waiting to be answered by the served user when night mode is activated.

Table 15: Supplementary services for general use (cont.)

SOTIP	Acronyms	Description
SS16	Call Interception, SS-CINT	This supplementary service is particularly applicable to attendants. This service enables calls which cannot be completed due to certain conditions to be directed to a pre-defined network user. Examples of the factors which are considered in the invocation of this service are the basic service(s), the source of the call (e.g., intra-PTN, incoming calls from public ISDNs, calls transferred by the served user, the particular organisation to which the call relates), the particular interception cause, the call destination and the time of day. The particular failure conditions that lead to invocation of this service are network and implementation dependent, but examples include: • destination number unobtainable; • no reply; • called user has Do Not Disturb enabled; • called user's access is out of service.
SS17	Do Not Disturb, SS-DND	All incoming calls to the served user, or just those relating to a specific basic service, are rejected by the PTN. The calling user is given an appropriate indication. Users may be awarded different levels of protection against override of SS-DND by SS-DNDO. Activation, deactivation and interrogation of this service can be performed by the served user or by another authorised user.
SS18	Do Not Disturb Override, SS-DNDO	The served user may override the Do Not Disturb condition and cause the called user to be alerted. Various levels of override capability can be awarded to served user, allowing the override of different levels of protection associated with users of SS-DND.
SS19	Serial Call, SS-SC	This supplementary service is particularly applicable to attendants (see clause 7). The served user, prior to or at the time of invoking call transfer, can indicate that the call about to be transferred is to be presented again to the served user when the user to which the call is transferred clears.
SS20	Completion of Call to Busy Subscriber, SS-CCBS	This supplementary service allows a calling user encountering a busy destination to have the call completed when the busy destination becomes not busy, without having to make another call attempt.
SS21	Completion of Call on No Reply, SS-CCNR	This supplementary service allows a calling user encountering a destination which fails to answer to have the call completed after that destination is next used and has become free again, without having to make another call attempt.
SS22	Call Waiting, SS-CW	This service permits the served user to be notified of an incoming call with an indication that no access information channel is available, and to then have the choice of accepting, rejecting or ignoring the waiting call.
SS23	Call Offer, SS-CO	This service permits a calling user to request that the call be offered to the user at a busy destination and that the called user be given the choice of accepting, rejecting or ignoring the waiting call. This service can be used in conjunction with SS-CT to transfer another user into a state of waiting at the busy destination.

Table 15: Supplementary services for general use (cont.)

SOTIP	Acronyms	Description
SS24	Call Intrusion, SS-CI	This service permits a calling user to request immediate connection to a busy destination. This may involve joining the new call in conference with the existing call, or alternatively may cause the existing call to be placed on hold. The original call is restored on withdrawal of the served user. Certain users may be given protection against their calls being intruded upon. Different levels of intrusion protection can protect against different levels of Agency to intrude. Once intrusion has occurred, the calling user may optionally have the Agency to request that the unwanted user be released from the connection.
SS25	Terminal Portability, SS-TP	This supplementary service allows a user to move a terminal from one socket to another within one given basic access during the active state of the call.
SS26	Call Hold, HOLD	This supplementary service allows a user to interrupt communications on an existing call and then subsequently, if desired, to re-establish communications. As a result of invoking this service, the user information channel at the served user's access becomes available for use by another call, if required.
SS27	Call Transfer, SS-CT	This supplementary service enables a user who has two calls of the same basic service to connect together as a new call the other two users. One of the calls must be in the active state. The other call can either be active or alerting the non-served user. ***Note: SS-RE can be used to retrieve transferred calls which fail to be answered.***
SS28	Add-On Conference, SS-CONF	This supplementary service permits a user to have simultaneous communication with two or more other users. For each of the other users, the served user first establishes two-way communication with that user and then adds that user on to the conference by connecting the user to the conference bridge. In addition to adding other users, the served user can remove users from the conference, hold a private conversation with an individual member of the conference, and terminate the conference. it should be possible for another member of the conference to take over control of the conference (i.e., become the served user), particularly if the served user leaves the conference.
SS29	Closed User Group, SS-CUG	This supplementary service enables users to from groups to and from which access is restricted. A specific user may be a member of one or more closed user groups. Members of a closed user group can communicate among themselves but not, in general, with users outside the group.
SS30	Call Pick-Up, SS-CPU	This supplementary service allows a call which is alerting or parked at a user to be answered by a different, authorised, user. Various methods of providing security are possible.
SS31	Call Park, SS-CPK	This supplementary service allows the served user to place a call on hold such that it can be picked up by another authorised user, e.g., a paged user. The call will also be retrievable by the served user. The call may be parked either: • locally against the served user's number, or • remotely against another user's number, nominated by the served user. The call will be identifiable either by the number against which it is parked or by some other identifier assigned by the served user at the time of parking.

Table 15: Supplementary services for general use (cont.)

SOTIP	Acronyms	Description
SS32	Advice of Charge, SS-AOC	This service allows the served user to receive information concerning charges for a call. Three versions of the service provide information on: 1. charging rates at call establishment time and changes to charging rates during a call; 2. cumulative charge information automatically or on request during a call; 3. final charge information when a call is released. Initially the main interest in this service is the provision of charging information for calls incurring charges in public networks.
SS33	User-to-User Signalling, SS-USS	This supplementary service allows a user to send/receive a limited amount of information to/from another user over the signalling channel in association with a call to the other user. Three versions of the service permit user-to-user signalling in call control messages during call establishment and call clearing, user-to-user signalling while the called user is being alerted, and user-to-user signalling during the active phase of the call.
SS34	In-Call Modification, SS-IM	This service enables a user to change within an active call from one set of characterised by bearer capability, low layer compatibility and high layer compatibility information, to another set of capabilities without releasing the end-to-end connection. Further in-call modification back to the original set of capabilities or to another set of capabilities can be performed.
SS35	User Status, SS-UST	This supplementary service allows the served user to interrogate the status (e.g., free, busy, unassigned, do not disturb activated, call forwarding activated) of a PTN number without establishing a connection to that number.
SS36	Multi-Level Precedence and Preemption, SS-MLPP	This supplementary service permits users to assign precedence levels to calls, such that in order to establish a call of a precedence level which is not the network will pre-empt (clear) existing calls of lower precedence level if occupying network resources or destination resources required by the new call. Precedence levels are selected by users on a per call basis, up to the maximum level authorised. Calls to and from users who do not subscribe to the service, including such users of other networks, will not be pre-empted.
SS37	Call Distribution to the Attendant, SS-CDA	This supplementary service allows the formation of distribution groups, whereby calls addressed to a distribution group are distributed between the individual users of that group according to some algorithm. The service may also provide for the queuing of calls when all individual users are busy.
SS38	Recall, SS-RE	This supplementary service provides for the redirection of a call transferred by a network user back to the same user if the call is unanswered.

Table 16: Supplementary Services (SS) applicable to attendants

SOTIP	Acronyms	Description
SS A.1a	Calling Line Identification Presentation, SS-CLIP	SS-CLIP is a service offered to the called user and provides that user with the calling user's number and, if applicable, the calling user's subaddress.
SS A.1b	Connected Line Identification Presentation, SS-COLP	SS-COLP is a service offered to the calling user and provides that user with the connected user's number and, if applicable, the connected user's subaddress.
SS A.1c	Calling Name Identification Presentation, SS-CNIP	An attendant may be granted the ability to override any restriction on the presentation of the number or name.
SS A.1d	Connected Name Identification Presentation, SS-CONP	An attendant may be granted the ability to override any restriction on the presentation of the number or name.
SS A.2	Call Forwarding Unconditional, SS-CFU	Although this supplementary service can be applied to attendants, supplementary service Night Service may be more appropriate.
SS A.3	Call Forwarding on Busy, SS-CFB	Calls originated by attendants can be subject to call forwarding. Calls can be forwarded to attendants. Attendants can be authorised to perform activation, deactivation and interrogation on behalf of served users. It is anticipated that this supplementary service will not normally be applied to attendants, which normally use call queuing techniques when busy. Calls originated by attendants can be subject to call forwarding. Calls can be forwarded to attendants. Attendants can be authorised to perform activation, deactivation and interrogation on behalf of served users.
SS A.4	Call Forwarding on No Reply, SS-CFNR	Although this supplementary service can be applied to attendants, supplementary service Night Service may be more appropriate. Calls originated by attendants can be subject to call forwarding. Calls can be forwarded to attendants. Attendants can be authorised to perform activation, deactivation and interrogation on behalf of served users.
SS A.5	Call Deflection, SS-CD	An attendant is unlikely to be granted the ability to use this supplementary service. Calls originated by attendants can be subject to call deflection. Calls can be deflected to attendants.
SS A.6	Controlled Diversion Immediate, SS-CDIVI	This service is particularly useful for attendants, but can also be granted to ordinary PTN users.

Table 16: Supplementary Services (SS) applicable to attendants (cont.)

SOTIP	Acronyms	Description
SS A.7	Night Service, SS-NS	This service is particularly aimed at attendants having the ability to switch to night mode. Calls originated by attendants can be subject to SS-NS at destinations able to activate night mode, e.g., other attendants. Calls can be forwarded to attendants as a result of SS-NS.
SS A.8	Call Interception, SS-CINT	This service is particularly useful for attendants, but can also apply to ordinary PTN users. Various categories of failed calls can be intercepted to attendants. SS-NI can also provide the recall of attendants when transferred calls fail to be answered.
SS A.9	Do Not Disturb, SS-DND	An attendant is unlikely to be granted the ability to use this supplementary service. Calls originated by attendants may encounter a do not disturb condition. Attendants may be authorised to activate, deactivate and interrogate the service on behalf of ordinary PTN users.
SS A.10	Do Not Disturb Override, SS-DNDO	This supplementary service will typically be used by attendants, although it can also be used by ordinary PTN users.
SS A.11	Serial Call, SS-SC	The service is typically used by attendants when a caller asks to speak to a number of PTN users in turn.
SS A.12	Completion of Call to Busy Subscriber, SS-CCBS	This service can be used by attendants as well as ordinary PTN users. It is anticipated that this service will not normally be applicable to calls to attendants, which normally use call queuing techniques when busy.
SS A.13	Completion of Call on No Reply, SS-CCNR	This service can be used by attendants as well as ordinary PTN users. Applicability to calls to attendants needs further investigation during stage 1.
SS A.14	Call Waiting, SS-CW	Although, in principle, SS-CW can apply to attendants, in practice more sophisticated queuing arrangements are likely to be required in some situations, e.g., a greater number of queued calls, distribution of queued calls between attendants in a group, prioritisation of calls, attendant control over order of answering .
SS A.15	Call Offer, SS-CO	As well as applying to ordinary PTN users, this supplementary service is of fundamental importance to attendants, particularly in conjunction with SS-CT. It is anticipated that this service will not normally be applicable to calls to attendants, which normally use call queuing techniques when busy.
SS A.16	Call Intrusion, SS-CI	This service is particularly useful for attendants, but can also be granted to ordinary PTN users. It is anticipated that this service will not normally be applicable to calls to attendants, which normally use call queuing techniques when busy.
SS A.17	Call Hold, SS-HOLD	As well as applying to ordinary PTN users, this supplementary service is of fundamental importance to attendants.

Table 16: Supplementary Services (SS) applicable to attendants (cont.)

SOTIP	Acronyms	Description
SS A.18	Call Transfer, SS-CT	As well as applying to ordinary PTN users, this supplementary service of fundamental importance to attendants. Calls can be transferred to an attendant.
SS A.19	Add-On Conference, SS-CONF	This service can be used by attendants as well as ordinary PTN users, e.g., to converse with two users simultaneously prior to transfer or to establish multi-party conference on behalf of the participating users.
SS A.20	Call Park, SS-CPK	As well as applying to ordinary PTN users, this supplementary service is particularly useful for attendants.
SS A.21	User Status, SS-UST	This service is particularly useful for attendants, e.g., to investigate reports of problems.
SS A.22	Call Distribution to the Attendant, SS-CDA	This supplementary service can be used to distribute calls between members of an attendant group.
SS A.23	Recall, SS-RE	This supplementary service provides for the redirection of a call transferred by a network user back to the same user if the call is unanswered.

Table 17: Services not specified by ECMA

SOTIP	Acronyms	Description
NS1	Last External Number Redial	Dialled external number are automatically stored and can be retransmitted by the extension using a simple code.
NS2	Abbreviated dialling, Common Numbers	Possibility for extensions and operators to make calls by dialling an abbreviated code, which is automatically translated to a full number and sent out by the exchange.
NS3	Abbreviated dialling, Individual Number	Possibility for extensions and operators to make calls by dialling an abbreviated code, which is automatically translated to a full number and sent out by the exchange.
NS4	DTMF Signalling	The ability to send DTMF tones during an established call to the public network in order to be able to control peripheral equipment (such as recording devices) attached to the network
NS5	Group Hunting	A group of extensions can be called with a common number.
NS6	Boss/Secretary	The use of a special telephone by a secretary to monitor the status of the manager's line and control the passing of calls to the manager.
NS7	Direct Inward System Access (DISA)	DISA is a facility allowing external users (voice calls) to call in to a PBX and get access to the PBX's features
NS8	Charging Code	To provide the extension user an alternative to charge a call to an account code, which may represent a particular project, department or client, instead of charging to the calling extension number.

Table 17: Services not specified by ECMA (cont.)

SOTIP	Acronyms	Description
NS9	Computer Assisted Telephony	The use of a human operator to enter messages for individual users on a computer based messaging system. An indication that the message exists is provided to the users by means of an audible or visual indication on their telephone terminals.
NS10	Local Paging	The use of a radio paging system connected to a PTNX to provide paging coverage within the organisation's site or premises
NS11	Automatic Call Acceptance	Possibility to answer incoming calls without having to press the answer key.
NS12	Attendant Initiated Call Accounting	The ability to have the cost of individual public network calls reported by the attendant or public network operator at the end of the call.
NS13	Automatic Call Filtering	The ability of a user to specify a list of calling numbers (internal or external) which will override Do Not Disturb, if set by the user or which will activate Call Intrusion if the user is already busy at the time of the call. This list can be changed at any time to suit the user and may be based on a predefined permanent list (for example, a major client or senior government official could be identified as a caller who can always be accepted) or a temporary list of specific numbers that are only applicable for a fixed period.
NS14	Waiting Calls Display	The ability of a user to be made aware (either by visual or aural means) of the identities of callers waiting to speak to the user. The user may then select which call to answer next instead of allowing the telecommunications network to offer calls in chronological order of arrival
NS15	Priority Call	The ability to identify that a call has a high priority and for this to be indicated to the called user.
NS16	Cordless Headset/Handset	The user's telephone terminal is a "hands-free" headset or handset using a radio interface to the network. This leaves the user free to answer calls and to process them while active at a location away from their own office area. As an example, a secretary who regularly uses a photocopying machine would benefit from this service. The service includes co-ordination between the simple cordless terminal and the complex fixed secretarial station often used by PF2 users
NS17	Listen In	The ability for a suitably authorised user to be connected to an established call such that the conversation can be heard but the original callers remain unaware of the connection. This service is used for training purposes and for monitoring malicious calls and would normally be available only to senior employees.
NS18	Calling Diary	The ability to set up a list of calls that must be made at specific times of the day. Access to such a service will be through a linked IT system.
NS19	Locate Mobile Agent	The ability to request the system to indicate the current geographic location of a specific mobile user.
NS20	Secure Transmission	The use of public key algorithms to encrypt the speech in a call between two users. Encryption can be applied on request, on all calls using a specific link or on all calls between two specific users.

Table 18: Services not specified by ECMA with applicability to attendants

SOTIP	Acronyms	Description
NS A.1	Remote Help Function	The ability of a user to request assistance and direction from an attendant when entering personal data (such as speed call numbers) at the user's terminal
NS A.2	Last Number Redial	The ability to dial a short code (one or two digits) or a special key to cause the most recent number dialled by the user to be transmitted again
NS A.3	Call Announcing	Possibility for the operator to announce incoming calls.
NS A.4	Category of Service Presentation	An indication at a telephone terminal of the category or class of service available to users of the terminal
NS A.5	Route Presentation	An indication at a telephone terminal of the trunk route taken by the current outgoing call.
NS A.6	Incoming Call Priority	Calls to the attendant from outside the network are always presented before calls from within the network regardless of the order of arrival.
NS A.7	Simultaneous Queue Presentation	The ability of an attendant to see simultaneously the status of all call queues serviced by the attendant
NS A.8	Visually disabled Operator's Console	A special terminal that allows a visually disabled attendant to answer and process calls. Output information is usually provided as synthesized speech or on a Braille Terminal or other tactile device.

1.5 QSIG DEFINED SERVICES, STANDARDISATION STATUS

	Service Name	Status of Standardisation	
		PTN (QSig) Services	**Public Network Services***
Simple Telephony call		ETS 300 171 ETS 300 172	ETS 300 102
SS1	Calling Line Identification Presentation, CLIP	ETS 300 171 ETS 300 172	ETS 300 089 ETS 300 091 ETS 300 092
SS2	Connected Line Identification Presentation, COLP	ETS 300 171 ETS 300 172	ETS 300 094 ETS 300 096 ETS 300 097
SS3	Calling/Connected Line Identification Restriction, CLIR (and COLR)	ETS 300 171 ETS 300 172	ETS 300 090 ETS 300 095 ETS 300 091 ETS 300 096 ETS 300 093 ETS 300 098
SS4	Multiple Subscriber Number, MSN	ETS 300 171 ETS 300 172	ETS 300 050 ETS 300 051 ETS 300 052
SS5	Calling Name Identification Presentation, CNIP	ETS 300 237 ETS 300 238	Not available
SS6	Connected Name Identification Presentation, CONP	ETS 300 237 ETS 300 238	Not available
SS7	Calling/Connected Name Identification Restriction, CNIR	ETS 300 237 ETS 300 238	Not available
SS8	Malicious Call Identification, MCID	Not available	ETS 300 128 ETS 300 129 ETS 300 130
SS9	Call Forwarding Unconditional, CFU	ETS 300 256 ETS 300 257	ETS 300 200 ETS 300 204 ETS 300 207
SS10	Call Forwarding on Busy, CFB	ETS 300 256 ETS 300 257	ETS 300 199 ETS 300 203 ETS 300 207
SS11	Call Forwarding on No Reply, CFNR	ETS 300 256 ETS 300 257	ETS 300 201 ETS 300 205 ETS 300 207
SS12	Call Deflection, CD	ETS 300 256 ETS 300 257	ETS 300 202 ETS 300 206 ETS 300 207

* The services standardised for Public Networks are not always identical to those standardised for PTNs

	Service Name	Status of Standardisation	
		PTN (QSig) Services	Public Network Services*
SS13	Controlled Diversion Immediate, CDIVI	ETS 300 256 ETS 300 257	No equivalent service
SS14	Controlled Diversion Consult, CDIVC	ETS 300 256 ETS 300 257	No equivalent service
SS15	Night Service, NS	No standardisation activity	No equivalent service
SS16	Call Interception, CINT	ECMA-220 ECMA-221	No equivalent service
SS17	Do Not Disturb, DND	ETS 300 363 ETS 300 364	No equivalent service
SS18	Do Not Disturb Override, DNDO	ETS 300 363 ETS 300 364	No equivalent service
SS19	Serial Call, SE	No standardisation activity	
SS20	Completion of Call to Busy Subscriber, CCBS	ETS 300 365 ETS 300 366	ETS 300 357 ETS 300 358 ETS 300 359
SS21	Completion of Call on No Reply, CCNR	ETS 300 365 ETS 300 366	No equivalent service
SS22	Call Waiting, CW	ETS 300 239	ETS 300 056 ETS 300 057 ETS 300 058
SS23	Call Offer, CO	ETS 300 361 ETS 300 362	No equivalent service
SS24	Call Intrusion, CI	ETS 300 425 ETS 300 426	No equivalent service
SS25	Terminal Portability, TP	ETS 300 171 ETS 300 239	ETS 300 053 ETS 300 054 ETS 300 055
SS26	Call Hold, HOLD	ETS 300 239	ETS 300 139 ETS 300 140 ETS 300 141
SS27	Call Transfer, CT	ETS 300 260 ETS 300 261	ETS 300 367 ETS 300 368 ETS 300 369
SS28	Add-On Conference, CONF	No standardisation activity	ETS 300 183 ETS 300 184 ETS 300 185
SS29	Closed User Group, CUG	No standardisation activity	ETS 300 136 ETS 300 137 ETS 300 138
SS30	Call Pick-Up, CPU	No standardisation activity	No equivalent service
SS31	Call Park, CPK	No standardisation activity	No equivalent service

* The services standardised for Public Networks are not always identical to those standardised for PTNs

	Service Name	Status of Standardisation	
		PTN (QSig) Services	Public Network Services*
SS32	Advice of Charge, AOC	ECMA-211 ECMA-212	ETS 300 179 ETS 300 181 ETS 300 182
SS33	User-to-User Signalling, USS	No standardisation activity	ETS 300 284 ETS 300 285 ETS 300 286
SS34	In-Call Modification, IM	No standardisation activity	Not available
SS35	User Status, USS	No standardisation activity	No equivalent service
SS36	Multi-Level Precedence and Preemption, MLPP	No standardisation activity	No equivalent service
SS37	Call Distribution, CDA	ECMA standard available January 1996	No equivalent service
SS38	Recall, RE	ECMA-213 ECMA-214	No equivalent service
SS39	Message Waiting Indication	ECMA 241	ETS 300 650

* The services standardised for Public Networks are not always identical to those standardised for PTNs

	Service Name	Status of Standardisation	
		PTN (QSig) Services	**Public Network Services***
SS A.1	Calling Line Identification Presentation, CLIP	ETS 300 171 ETS 300 172	ETS 300 089 ETS 300 091 ETS 300 092
SS A.1	Connected Line Identification Presentation, COLP	ETS 300 171 ETS 300 172	ETS 300 094 ETS 300 096 ETS 300 097
SS A.1	Calling Name Identification Presentation, CNIP	ETS 300 237 ETS 300 238	No equivalent service
SS A.1	Connected Name Identification Presentation, CONP	ETS 300 237 ETS 300 238	No equivalent service
SS A.2	Call Forwarding Unconditional, CFU	ETS 300 256 ETS 300 257	ETS 300 200 ETS 300 204 ETS 300 207
SS A.3	Call Forwarding on Busy, CFB	ETS 300 256 ETS 300 257	ETS 300 199 ETS 300 203 ETS 300 207
SS A.4	Call Forwarding on No Reply, CFNR	ETS 300 256 ETS 300 257	ETS 300 201 ETS 300 205 ETS 300 207
SS A.5	Call Deflection, CD	ETS 300 256 ETS 300 257	ETS 300 202 ETS 300 206 ETS 300 207
SS A.6	Controlled Diversion Immediate, CDIVI	ETS 300 256 ETS 300 257	No equivalent service
SS A.7	Night Service, NS	No standardisation activity	No equivalent service
SS A.8	Call Interception, CINT	ECMA-220 ECMA-221	No equivalent service
SS A.9	Do Not Disturb, DND	ETS 300 363 ETS 300 364	No equivalent service
SS A.10	Do Not Disturb Override, DNDO	ETS 300 363 ETS 300 364	No equivalent service
SS A.11	Serial Call, SC	No standardisation activity	No equivalent service
SS A.12	Completion of Call to Busy Subscriber, CCBS	ETS 300 365 ETS 300 366	ETS 300 357 ETS 300 358 ETS 300 359
SS A.13	Completion of Call on No Reply, CCNR	ETS 300 365 ETS 300 366	No equivalent service

* The services standardised for Public Networks are not always identical to those standardised for PTNs

	Service Name	Status of Standardisation	
		PTN (QSig) Services	**Public Network Services***
SS A.14	Call Waiting, CW	ETS 300 239	ETS 300 056 ETS 300 057 ETS 300 058
SS A.15	Call Offer, CO	ETS 300 361 ETS 300 362	No equivalent service
SS A.16	Call Intrusion, CI	ETS 300 425 ETS 300 426	No equivalent service
SS A.17	Call Hold, HOLD	ETS 300 239	ETS 300 139 ETS 300 140 ETS 300 141
SS A.18	Call Transfer, CT	ETS 300 260 ETS 300 261	ETS 300 367 ETS 300 368 ETS 300 369
SS A.19	Add-On Conference, CONF	No standardisation activity	ETS 300 183 ETS 300 184 ETS 300 185
SS A.20	Call Park, CPK	No standardisation activity	No equivalent service
SS A.21	User Status, USS	No standardisation activity	No equivalent service
SS A.22	Call Distribution, CDA	ECMA standard available January 1996	No equivalent service
SS A.23	Recall, RE	ECMA-213 ECMA-214	No equivalent service

* The services standardised for Public Networks are not always identical to those standardised for PTNs

1.6 Comparison of Supplementary Services for public and private networks

Supplementary Services for Public Networks, Studied by ETSI NA1

Acronym	Supplementary service	Standard	Equivalent standardised for private networks
AOC-S	Advice of Charge (call set-up)	ETS 300 178	Y
AOC-E	Advice of Charge (end of call)	ETS 300 179	Y
AOC-D	Advice of Charge during call)	ETS 300 180	Y
CD	Call Deflection	ETS 300 202	Y
CFB	Call Forwarding Busy	ETS 300 199	Y
CFNR	Call Forwarding No-Reply	ETS 300 201	Y
CFU	Call Forwarding Unconditional	ETS 300 200	Y
HOLD	Call Hold	ETS 300 139	Y
CW	Call Waiting	ETS 300 056	Y
CLIP	Calling Line Identity Presentation	ETS 300 089	Y
CLIR	Calling Line Identity Restriction	ETS 300 090	Y
CCC	Charge Card Calling	Not available	N
CUG	Closed User Group	ETS 300 136	N
CCBS	Completion of Calls to Busy Subscriber	ETS 300 357	Y
CONF	Conference Call Add On	ETS 300 183	Y
COLP	Connected Line Identity Presentation	ETS 300 094	Y
COLR	Connected Line Identity Restriction	ETS 300 095	Y
DDI	Direct Dialling In	ETS 300 062	N
ECT	Explicit Call Transfer	ETS 300 367	Y
FPH	FreePhone	ETS 300 208	N
IM	In-Call Modification	Not available	Y
LHTH	Line Hunting/Trunk Hunting	Not available	N
MCID	Malicious Call Identification	ETS 300 128	N
MMC	Meet Me Conference	ETS 300 164	N
MSN	Multiple Subscriber Number	ETS 300 050	Y
MWI	Message Waiting Indication	ETS 300 650	Y
OCB	Outgoing Call Barring	Not available	N
RPM	Premium Rate	ETS 300 712	N
RCSS	Remote Control of Supplementary Services	Not available	N
REV-S	Reverse Charging (call set-up)	Not available	N
SCFB	Selective Call Forwarding Busy	Not available	N
SCFNR	Selective Call Forwarding No-Reply	Not available	N
SCFU	Selective Call Forwarding Unconditional	Not available	N
SUB	Subaddressing	Not available	Y
SPNP	Support of Private Number Plan	Not available	Y
VOT	Televoting	ETS 300 713	N
TP	Terminal Portability	ETS 300 053	N
3PTY	Three Party	ETS 300 186	N
REV-U	Unconditional Reverse Charging	Not available	N
UAN	Universal Access Number	ETS 300 710	N
UUS	User-to-User Signalling	ETS 300 284	Y
VCC	Virtual Card	ETS 300 711	N

Supplementary Services for Private Networks, Studied by ECMA TC32

Acro-nym	Supplementary service	Standard	Equivalent stan-dardised for public networks
AIP	Additional Information Presentation	Not available	N
AOC-S	Advice of Charge (call set-up)	ECMA-211	Y
AOC-E	Advice of Charge (end of call)	ECMA-211	Y
AOC-D	Advice of Charge (during call)	ECMA-211	Y
CD	Call Deflection	ETS 300 256	Y
CDA	Call Distribution to Attendant	Not available	N
CFB	Call Forwarding Busy	ETS 300 256	Y
CFNR	Call Forwarding No-Reply	ETS 300 256	Y
CFU	Call Forwarding Unconditional	ETS 300 256	Y
HOLD	Call Hold	ETS 300 239	Y
CO	Call Offer	ETS 300 361	N
CW	Call Waiting	ETS 300 239	Y
CLIP	Calling Line Identity Presentation	ETS 300 171	Y
CLIR	Calling/Connected Line Identity Restriction	ETS 300 171	Y
CNIP	Calling Name Identity Presentation	ETS 300 237	N
CNIR	Calling/Connected Name Identity Restriction	ETS 300 237	N
CCNR	Completion of Calls on No-Reply	ETS 300 365	N
CCBS	Completion of Calls to Busy Subscriber	ETS 300 365	Y
CONF	Conference Call Add On	Not available	Y
COLP	Connected Line Identity Presentation	ETS 300 171	Y
CONP	Connected Name Identity Presentation	ETS 300 237	N
CDIVI	Controlled Diversion Immediate	ETS 300 256	N
CDIVC	Controlled Diversion Consult	ETS 300 256	N
DND	Do Not Disturb	ETS 300 363	N
DNDO	Do Not Disturb Override	ETS 300 363	N
CT	(Explicit) Call Transfer	ETS 300 260	Y
IM	In-call Modification	Not available	Y
CI	Call Intrusion	ETS 300 425	N
MPA	Multi Private ISDN Attendant	Not available	N
MSN	Multiple Subscriber Number	ETS 300 171	Y
MSW	Message Waiting Indication	ECMA-241	Y
CINT	Call Interception	ECMA-220	N
NS	Night Service	Not available	N
OCB	Outgoing Call Barring	Not available	Y
RE	Recall	ECMA-213	N
SC	Serial Call	Not available	N
SUB	Subaddressing	ETS 300 189	Y
SIP	Supervisory Information Presentation	Not available	N
SPNP	Support of Private Number Plan	ETS 300 189	Y
TP	Terminal Portability	ETS 300 171	Y
UUS	User-to user Signalling	Not available	Y
ANF-ARI	ANF Alternate Routing Indication	Not available	N
ANF-CMN	ANF Common Information	ECMA-250	N
ANF-PR	ANF Path Replacement	ETS 300 258	N
ANF-RR	ANF Route Restriction	Not available	N

PART 2
NETWORK SERVICES FOR GROUPS OF END-USER TYPES

2.1 Introduction

The purpose of this chapter of the SOTIP document is to provide a basis for the selection of network services that should be considered for groups of SOTIP Model User Types.

In any organisation, whether a government Agency or a private company, there is a mix of some or all of the SOTIP user types and each group requires a different combination of telecommunications features in order to provide the service required of them.

This chapter of SOTIP identifies the features which can be used to support the users as functional groups within the overall organisation rather than as individuals. Its main emphasis is on services for the effective handling of incoming calls.

Section 2.3 identifies a range of features which could apply to all user types while section 2.4 highlights the features which should be considered for functional groups of each of the SOTIP Model User Types. The tables in these two sections also offer some criteria which can be used to assist in the selection of specific features for specific organisations. The features, themselves, are described in section 2.6 and the status of international standardisation is summarised in section 2.7.

Traditionally, the features described in Part 2 of SOTIP have been provided by equipment owned or rented by the user-organisation and situated at each of their offices. The equipment at these sites is interconnected in a private network by means of dedicated leased lines. Recent developments in technology as well as policy are causing this situation to change. Public network operators are now, or will shortly be, able to offer private network functions using their own communications infrastructure. Such an arrangement is referred to as a 'Virtual Private Network' or VPN.

Depending on a number of parameters such as the volume of calls made or received, the numbers of different end-user types and the established methods of working, business organisations can choose to make use of VPN services in the following ways:

- to provide all of their telecommunications needs;
- in conjunction with their own PABX equipment; or
- not at all.

Many of the benefits of a VPN approach to corporate telecommunications are dependent on the tariff and pricing policies of the service providers. Nevertheless, there are two aspects which can be considered in almost all cases. Firstly, as fewer, if any, own switching equipments are required, investment in capital equipment, floor space and ancillary services can be significantly reduced. Secondly, as the VPN service provider takes responsibility for maintenance and upgrades, the need for technical support staff is also reduced.

To use this part of the profile it is first necessary to analyse the organisation in question to determine which of the SOTIP Model User Types exist and require communications service as functional groupings. Then, by reference to the appropriate tables in sections 2.3 and 2.4 and the detailed descriptions, the features necessary for providing an effective service can be selected.

2.2 Access To An Organisation's Communications Network

Part 1 of SOTIP identifies the various physical access interfaces which are available for connecting individual users to a network. In this part, consideration is given to the organisational characteristics of connection types rather than the physical aspects. Connections for all user types can be classified as follows:

Direct connection

The telecommunications terminal equipment is connected solely to the organisation's network. This connection could be wired or cordless.

Indirect connection

The telecommunications terminal is connected directly to a public network which then provides a service to the user as if connected to their own organisation's network. Users can have one of two different methods of indirect access:

- Where the user's location is fixed and known prior to connection.
  e.g. at home or at another office
- Where the user's location is not known before the connection is made.
  e.g. in a hotel room or public call-box

Mixed

Within a functional group, some users may be connected directly and others indirectly

Full-time

The user's connection to the network, whether direct or indirect, is permanently available

Part-time

The user's connection to the network is available only when it is needed for work. Availability may be controlled on a time-of-day basis where the user's location is known or by the user logging-in and logging-out in cases where the user's location is not known.

2.3 Selection Criteria For General Organisational Features

Some organisational features can apply equally well to all types of model user. The selection of any of these features will be based upon general management issues rather than user functional aspects. Table 19 identifies some of the criteria which should be considered when selecting from these general features. In all the selection tables the following key is used in the M/S column:

M Must, corresponds to a strong need for that feature or option to be implemented if the specified criteria prevail

S Should, corresponds to a lesser need where alternative operating methods could be used to achieve a similar effect.

Table 19: Selection Criteria For General Organisational Features

IDENT	SERVICE NAME*	M/S	CRITERIA
OF5	Geographically Independent Number	M	In agencies offering specific services to the general public where the answering group may: • be teleworking • be dispersed throughout the organisation • change from time to time
		S	In agencies offering services to all callers on an equal cost basis
OF45	Dual Identity Numbers (Virtual On-Net Calling)	S	Where employees work from their own home rather than a central office.
OF46	Number Conversion (Forced On-Net Calling)	M	This is a basic requirement for any private network
OF47	Fixed Off-Net Access	S	Where employees work from their own home rather than a central office.
		S	Where PI1 users occasionally work at the offices of other agencies (e.g. Inspectors and Auditors).
		M	Where PI2 users are provided with public mobile network telephones.
OF48	Authorisation Codes and Passwords	M	Where access to sensitive information is available through the voice telephone network
		M	Where DISA is used to allow employees to call into the network from outside and to make use of features which incur costs (e.g. access to public network trunk lines).
OF49	Full Public Network Access	M	This is a basic requirement for any private network offering a service to the general public.
OF50	Breakout	M	This is a basic requirement for any multi-site private network with access to a public network.
OF51	Multi-Operator Access (Equal Access)	M	Where more than one public telephone operator is able to provide a service to a private network.
OF52	Call Barring	M	This is a basic requirement for any private network where the number of users, the organisational structure or the type of activity make it difficult to control the making of unauthorised outgoing (charged) calls.
OF53	Abbreviated dialling	S	Where certain external telephone numbers are called frequently by a number of users within a network.
OF54	Secure Transmission	M	For any group of users likely to take part in conversations of a sensitive nature.

* Services are fully described in Table 32

2.4 Features For SOTIP Model User Types

The services and features described in Section 2.6 are not appropriate for all of the 'Person' End-user types in the SOTIP model. The following tables identify which services are likely to be useful to each of the user types and offer some criteria which could be used in making a selection.

2.4.1 Model User Type PI1 (Individual, Self Determined Availability)

2.4.1.1 Selection Criteria

In government agencies and other organisations where it is important for PI1 users to be able to provide a comprehensive service to incoming calls from outside the organisation, the services and functions identified in Table 20 should be considered.

Table 20: Organisational Features For User Type PI1

IDENT	SERVICE NAME*	M/S	CRITERIA
OF1	Individual number	M	A basic requirement for a PI1 user. The use of UPT would be useful for a user who needs to be available at home out of office hours.
OF6	In Call Service Modification	M	Where the sending of confidential FAXs to non-secure equipment is common practice. (A voice call is used to establish that the recipient is available to monitor the incoming FAX, the call is switched to send the FAX and then switched back to voice to confirm receipt)
		S	As an alternative to Multi-media terminals where work practices often involve the trans-mission and subsequent discussion of visual information
OF7	Announcement of Service Access Number	M	As a basic minimum service to PI1 users having voice communication and at least one other service such as FAX
OF8	Pre-defined Alternative Service	M	Where Voice-Mail is the primary alternative to normal voice communication
		S	Where FAX, E-Mail or other other visual communication service is the primary alterna-tive to normal voice.
OF9	Caller Directed Alternative Service	S	Where a range of alternative services is avail-able for unsuccessful voice calls
OF10	System Defined Messaging	M	Where paging is used to inform PI1 users of incoming calls which have not been answered
		S	Where paging is not necessary for PI1 users but the user needs to be aware of calls that have been made while they are unavailable to answer them. In these cases, FAX, E-Mail or Voice-Mail can be used as the message me-dium.

* Services are fully described in Table 32

Table 20: Organisational Features For User Type PI1 (cont)

IDENT	SERVICE NAME*	M/S	CRITERIA
OF11	Short Message	S	For PI1 users whose work requires that they are not always available to answer incoming calls and who would benefit from having more information than the caller's identity in order to prioritise return calls
OF12	Universal Messages Passing	S	As a more flexible alternative to the Short Messages service (OF11)
OF13	Co-ordinated Message Reporting	S	For PI1 users having more than one message service available to them.
OF14	Computer Supported User Information	M	Where unanswered calls to a PI1 user are normally redirected to an Attendant.
		S	Where a number of PI1 users share a single PF2 user for secretarial support.
OF16	Attendant Services	M	Where PI1 users do not have Direct Dialling Inward (DDI) numbers **Note:** *DDI is a service provided by public network operators. A range of public numbers are allocated to a single organisation which itself allocates individual numbers from the range to employees or departments. Incoming calls from the public network can then be routed directly tothe appropriate individual or department without processing by an operator*
		M	In agencies that do not wish to publish the DDI numbers of their PI1 users.
		M	In agencies that use geographically independent numbers for all incoming access.
OF20	Paging	M	For PI1 users with the Telepoint (OF21) service.
		S	Where PI1 users need and an indication the user that a message (e.g. E-Mail) has arrived.
OF21	Telepoint	S	For mobile PI1 users who make many outgoing calls but receive few incoming. At least one of the Call Filtering services must be provided
OF33	Call Filtering (Boss/Secretary)	M	This is a basic requirement in organisations where PI1 users are provided with secretarial support
OF34	Key Line Appearance	M	Where PI1 users and the PF2 users serving them are physically remote and cannot, therefore, co-ordinate answering
		S	Where only a small number of PI1 users (up to 5) is supported by each PF2 user.
		S	Where PF2 users have no other duties than to provide secretarial support to a small group of PI1 users and are likely to be available to answer most incoming calls

* Services are fully described in Table 32

Table 20: Organisational Features For User Type PI1 (cont)

IDENT	SERVICE NAME*	M/S	CRITERIA
	Call Filtering (continued)		
OF35	Ringing Group	S	Where PI1 users and the PF2 users serving them are located close to each other.
		S	Where only a small number of PI1 users (up to 5) is supported by each PF2 user.
		S	Where the supporting PF2 users have additional duties and may not be available to answer every incoming call
OF36	Diversion	S	Where PI1 users and the PF2 users serving them are physically remote and cannot, therefore, co-ordinate answering.
		S	Where a large number of PI1 users is supported by each PF2 user.
OF37	Group Pickup	S	Where PI1 users and the PF2 users serving them are located close to each other.
		S	Where only a small number of PI1 users (up to 5) is supported by each PF2 user.
		S	Where the supporting PF2 users have additional duties and may not be available to answer every incoming call
OF61	Encryption of Speech	M	Where PI1 users are expected to use the telephone to discuss issues related to national or international security.
		S	Where PI1 users are likely to use the telephone to discuss departmental issues of a sensitive nature. These might include: • Personnel • Commercial; • Policy; • Financial;

2.4.2 Model User Type PI2 (Individual, Permanent Availability)

2.4.2.1 Selection Criteria

In government agencies and other organisations where it is important for PI2 users to be able to provide a comprehensive service to incoming calls from outside the network, the services and functions identified in Table 21 should be considered. A PI2 user's mobility may be achieved by using a cordless or cellular telephone.

* Services are fully described in Table 32

Table 21: Organisational Features For User Type PI2

IDENT	SERVICE NAME*	M/S	CRITERIA
OF1	Individual number	M	A basic requirement for a PI2 user. The use of UPT would be particularly useful for PI2 users.
OF7	Announcement of Service Access Number	M	As a basic minimum service to PI2 users having voice communication and at least one other service such as FAX
OF8	Pre-defined Alternative Service	M S	Where Voice-Mail is the primary alternative to normal voice communication Where FAX, E-Mail or other other visual communication service is the primary alternative to normal voice.
OF9	Caller Directed Alternative Service	S	Where a range of alternative services is available for unsuccessful voice calls
OF11	Short Message	M	For PI2 users whose work requires that they are not always available to answer incoming calls. Having more information than the caller's identity helps the PI2 user to prioritise return calls
OF16	Attendant Services	M M M M	A basic requirement for PI2 users whose work requires that, from time to time, they are unavailable for answering calls. Where PI2 users do not have Direct Dialling Inward (DDI) numbers (refer to Table 20 for a description of DDI). In agencies that do not wish to publish the DDI numbers of their PI2 users. In agencies that use geographically independent numbers for all incoming access.
OF19	Voice Message Service	S	As an alternative to Attendant Services for PI2 users who are not always available for answering their calls. It would be particularly useful for PI2 users needing to respond directly and in person to incoming callers.
OF20	Paging	M S	For PI2 users with neither Attendant Services (OF16) nor Voice Messaging (OF19) Where PI2 users needan indication that an incoming message has arrived.
OF30	Emergency Call-In	S S	For PI2 users who spend much of their time alone and at locations remote from the Agency's own offices For PI2 users who are required to work in hazardous locations
OF41	Roving Off-Net Access	S	Where PI2 users need, from time to time, to change the data associated with certain end-user services such as Call Diversion and Personal Speed Call.
OF42	Remote Login and Logout	M	Where PI2 users need to be able to indicate to the network that they are unavailable for calls while working with a client.

* Services are fully described in Table 32

Table 21: Organisational Features For User Type PI2 (Cont)

IDENT	SERVICE NAME*	M/S	CRITERIA
OF59	Personal FAX Letterbox	S	Where PI2 users depend upon up-to-date textual and graphic information in order to carry out their tasks effectively
OF61	Encryption of Speech	M	Where PI2 users are expected to use the telephone to discuss issues related to national or international security.
		M	Where PI2 users are likely to use the telephone to discuss departmental issues of a sensitive nature. These might include: • Personnel; • Commercial; • Policy; • Financial;

2.4.3 Model User Type PI3 (Individual, Shared)

2.4.3.1 Selection Criteria

In government agencies and other organisations where individual users are not normally required to use a telephone to carry out their work (for example, teachers or laboratory scientists) and who, consequently, often share telephony equipment with other similar users, the services and functions identified in Table 22 should be considered.

* Services are fully described in Table 32

Table 22: Organisational Features For User Type PI3

IDENT	SERVICE NAME*	M/S	CRITERIA
OF1	Individual number	M	A basic requirement for a PI3 user. Use of multiple numbers is necessary where more than one user shares a single telephone in the immediate place of work (for example, in a laboratory).
OF7	Announcement of Service Access Number	M	A basic minimum service. Callers to PI3 users must receive an indication of which alternative services can be used if the user is busy or otherwise not available.
OF8	Pre-defined Alternative Service	M S	Where Voice-Mail is the primary alternative to normal voice communication Where FAX, E-Mail or other other visual communication service is the primary alternative to normal voice.
OF9	Caller Directed Alternative Service	S	Where a range of alternative services is available for unsuccessful voice calls
OF10	System Defined Messaging	M S	Where paging is used to inform PI3 users of incoming calls which have not been answered Where paging is not necessary for PI3 users but the user needs to be aware of calls that have been made while they are unavailable to answer them. In these cases, FAX, E-Mail or Voice-Mail can be used as the message medium.
OF14	Computer Supported User Information	M S	Where unanswered calls to a PI3 user are normally redirected to an Attendant. Where a number of PI3 users share a single PF2 user for secretarial support.
OF16	Attendant Services	M	A basic requirement if secretarial service (OF17) or other message handling service is not provided
OF17	Secretarial Services	M	Where secretarial support is provided to PI3 users
OF20	Paging	S	Where PI3 users need an indication that a message has been received or that an emergency call is waiting to be answered
OF43	Account Codes	S M	For PI3 users who are expected to account for their time and telephony expenditure on a multi-project or multi-client basis Where the use of the shared telephone terminal needs to be accounted for on user-by-user basis

* Services are fully described in Table 32

2.4.4 Model User Type PF1 (Function, Group)

2.4.4.1 Selection Criteria

In government agencies or other organisations where incoming calls are answered by groups of users and each user is capable of providing a consistent service to the caller (i.e. where a number of type PF1 users exist), the services and functions identified in Table 23 should be considered.

Table 23: Organisational Features For User Type PF1

IDENT	SERVICE NAME*	M/S	CRITERIA
OF1	Individual number	M	Where business practice requires that some or all of the PF1 users can be contacted individually
OF2	Group Number	M	A basic requirement for a PF1 user.
OF15	Co-ordination Between Voice and Other User Information	M	In agencies where calls must be answered rapidly and where a response is normally expected within the call
OF18	Call Distribution	M	A basic requirement for PF1 users.
OF22	Flexible Response	M	In organisations responding to major emergency incidents (e.g. Fire Service)
		S	Where public response is prompted on a predefined basis (e.g. taking orders for information packs)
OF23	Simple Announcement	M	In organisations taking high volumes of incoming calls, particularly where peak demands exceed the answering capabilities
		M	A basic requirement in organisations with limited or no Attendant Service
		S	In organisations that prefer the caller to call back at a later stage, thus reducing the requirement for incoming trunk capacity.
OF24	Queue Status Announcement	M	In organisations taking high volumes of incoming calls where peak demands exceed the answering capabilities. Calls must be of a consistent length so that waiting time predictions can be reasonably accurate.
		S	In organisations with limited or no Attendant Service
		S	In organisations that prefer to encourage callers to stay on the line to keep their place in the queue
OF25	Simple Announcement plus Voice Messaging	S	In organisations taking high volumes of incoming calls, particularly where peak demands exceed the answering capabilities and where call lengths are unpredictable
		S	In organisations with limited or no Attendant Service
		S	In organisations that prefer the caller to be called back at a later stage, thus reducing the requirement for incoming trunk capacity.
		S	Where FreePhone numbers are used to call the organisation. Calling back will be more cost effective than keeping the caller on the line or having the caller make repeated attempts at completing the call.

Table 23: Organisational Features For User Type PF1 (cont.)

IDENT	SERVICE NAME*	M/S	CRITERIA
OF26	Automated Attendant	S	In organisations offering more than one call centre service
		S	In organisations where incoming calls are classified using a fixed set of criteria and are answered according to the classification
OF27	Information-Based Routing	S	In organisations having dispersed or flexible call answering points
		S	In organisations where individual offices deal with enquiries from callers in specific geographical regions but the office is not local to that region
OF31	Automated Transaction	S	In organisations where access by an individual to information relating to the individual is open and encouraged
		S	For organisations holding information relating to individuals where the requested information can easily be expressed vocally
		S	Where transactions require only a simple confirmation to the caller that the transaction has been successful or unsuccessful.
OF32	Return Call Control	M	In agencies offering a 24-hour enquiry or reporting service but staff work only daytime hours
		S	In agencies employing large numbers of part-time staff to deal with enquiries from the general public.
OF43	Account Codes	M	Where it is important, for management and accounting purposes, to be able to determine the amount of time spent by each PF1 user or group on each of a variety of enquiry types.

2.4.5 Model User Type PF2 (Function, Answering Service)

2.4.5.1 Selection Criteria

In government agencies and other organisations where individual users are provided with secretarial support by type PF2 users, the services and functions identified in Table 24 should be considered.

* Services are fully described in Table 32

Table 24: Organisational Features For User Type PF2

IDENT	SERVICE NAME*	M/S	CRITERIA
OF3	Multiple Number	M	This is a basic requirement for PF2 users as they must be reached as part of each group that they support
OF14	Computer Supported User Information	M	Where single PF2 users provide support to many PI1 users. **Note:** *This facility is used for retrieving information on the location or availability of supported PI1 users rather than for providing details of their own status.*
OF33	Call Filtering (Boss/Secretary)	M	At least one of the Call Filtering services must be considered to be a basic requirement for a PF2 user.
OF34	Key Line Appearance	M	Where PF2 users and the PI1 users served by them are physically remote and cannot, therefore, co-ordinate answering
		S	Where each PF2 user supports only a small number of PI1 users (up to 5)
		S	Where PF2 users have no other duties than to provide secretarial support to a small group of PI1 users and are likely to be available to answer most incoming calls
OF35	Ringing Group	S	Where the PF2 user and the supported PI1 users are located close to each other.
		S	Where each PF2 user supports only a small number of PI1 users (up to 5)
		S	Where PF2 users have additional duties and may not be available to answer every incoming call
OF37	Group Pickup	S	Where the PF2 user and the supported PI1 users are located close to each other.
		S	Where each PF2 user supports only a small number of PI1 users (less than 5)
		S	Where PF2 users have additional duties and may not be available to answer every incoming call
OF38	Called Party Identification	M	Where a single PF2 user is required to provide support to a large number of PI1 users and, therefore, needs to know which of these users was called.

* Services are fully described in Table 32

2.4.6 Model User Type PF3 (Telemarketing)

2.4.6.1 Selection Criteria

In government agencies and other organisations supporting users whose primary function is to make outgoing calls to prepared lists of individuals outside the network, the services and features identified in Table 25 should be considered.

Table 25: Organisational Features For User Type PF3

IDENT	SERVICE NAME*	M/S	CRITERIA
OF15	Co-ordination Between Voice and Other User Information	S	Where PF3 users require information on the called individual to be available during the call.
OF32	Return Call Control	M	Where the role of PF3 users is to respond to reports and enquiries from callers to the Agency. **Note:** *If OF32 is used as part of or in place of the service provided by a PF1 user-group for the collection of enquiries, it is essential that there is a coordination between this function and Call Sequencing (OF39).*
OF39	Call Sequencing	M	This is a basic requirement for PF3 users.
OF43	Account Codes	M S	Where the cost of processing an enquiry and calling back with an answer is passed on to the original caller Where an account is kept of the time and/or cost spent on a range of projects or other classifications by PF3 users.

2.4.7 Model User Type PF4 (Function, Switchboard Operator/Attendant)

2.4.7.1 Selection Criteria

In government agencies and other organisations that have users dedicated to answering and directing incoming calls either on a full-time or a part-time basis, the services and functions identified in Table 26 should be considered. Attendant services can be provided by an agencies own staff, as a bought-in service or as a combination of the two. These possibilities are discussed further in Annex A.

* Services are fully described in Table 32

Table 26: Organisational Features For User Type PF4

IDENT	SERVICE NAME*	M/S	CRITERIA
OF2	Group Number	M	This a basic requirement for PF4 users.
OF14	Computer Supported User Information	M	Where single PF4 users provide a call filtering service to PI1 users. **Note:** *A PF4 user would utilize this facility primarily for retrieving information regarding the location or availability of supported PI1 users rather than for providing information on their own status*
OF18	Call Distribution	M	This is a basic requirement in organisations offering more than one Attendant Positions
OF26	Automated Attendant	S S	In organisations offering more than one principle service to the public. In organisations where incoming calls are classified using a fixed set of criteria and are answered according to the classification
OF29	Diversion to Answering Service	S	Where incoming call traffic can exceed the answering capacity of the PF4 user groups for short periods. **Note:** *This service should not be considered to be a reasonable substitute for providing additional Attendants where the incoming traffic continuously exceeds the available answering capacity.*

2.5 End-user Type ”Equipment”

SOTIP recognises the need to define some specific categories of telecommunications terminal equipment – generally shared by a department or the whole organisation – as non-personal end-user types. This section of SOTIP identifies the telecommunications services that are applicable to these user types when considered as functional groups rather than as individual terminals.

2.5.1 Services Applicable To All Non-Personal User Types

In government agencies and other organisations providing employee access to telecommunications equipment falling into any of the SOTIP Model ”TE” categories, the services and functions identified in Table 27 should be considered.

Table 27: Organisational Features For All Non-Personal User Types

IDENT	SERVICE NAME*	M/S	CRITERIA
OF55	Authentication of the Calling User	S	Where access to equipment is not restricted or controlled by physical means and where the use of the equipment could incur costs to the organisation
OF43	Account Codes	S	Where the distribution of call costs of shared equipment is based on actual departmental usage

* Services are fully described in Table 32

2.5.2 Model User Type TE1 (Public Telephone)

In government agencies and other organisations that provide telephone equipment for general use, the services and functions identified in Table 28 should be considered.

Table 28: Organisational Features For User Type TE1

IDENT	SERVICE NAME*	M/S	CRITERIA
OF4	Private User Mobility	M	Where the telephone terminal is located in a conference room or other common use area.

2.5.3 Model User Type TE2 (Facsimile)

In government agencies and other organisations that provide facsimile equipment as a general facility, the services and functions identified in Table 29 should be considered.

Table 29: Organisational Features For User Type TE2

IDENT	SERVICE NAME*	M/S	CRITERIA
OF6	In Call Service Modification	M	Where the service (OF6) is offered to individual users.
OF8	Pre-defined Alternative Service	M	Where alternative services such as X.400 E-Mail are offered at times when all FAX equipment is busy or otherwise unavailable.
OF10	System Defined Messaging	M	Where this feature is offered to individual users
OF11	Short Message	M	Where this feature is offered to individual users
OF12	Universal Messages Passing	M	Where this feature is offered to individual users
OF58	Transmit FAX to Distribution List	S	Where the volume of outgoing FAX calls is high and multiple destinations for a single FAX message are commonplace.

2.5.4 Model User Type TE3 (Data Communications Equipment)

In government agencies and other organisations that provide data communications equipment as a general facility, the services and functions identified in Table 30 should be considered.

* Services are fully described in Table 32

Table 30: Organisational Features For User Type TE3

IDENT	SERVICE NAME *	M/S	CRITERIA
OF6	In Call Service Modification	M	Where the service (OF6) is offered to individual users.
OF59	Call/recall Procedure	M	Where access to data which is available over dial-up links must be controlled due to the sensitive nature of the data available
		S	This service should be considered in all cases where dial-up access is available to proprietary data either from inside the Agency to an outside source or from outside the Agency to an internal source

2.5.5 Model User Type TE4 (Video equipment)

There are currently no specific organisational functions that apply to video terminals.

2.5.6 Model User Type TE5 (Network Depending Computer)

There are currently no specific organisational functions that apply to Network Depending Computer terminals. However, although the presentation of information from the selected multiple media is consolidated on to a single terminal, it must remain possible to have the individual calls established and cleared individually. This is to accommodate, for instance, the brief transmission of data or an image as part of a much longer voice call.

2.5.7 Model user TE6 (Video Conferencing Equipment)

In government agencies and other organisations that provide studio-based video conferencing facilities to their staff, the services and functions identified in table 31 should be considered:

Table 31: Organisational Features For User Type TE6

IDENT	SERVICE NAME *	M/S	CRITERIA
OF56	High Definition Television	M	A basic requirement for video conferencing so that a clear image can be seen by all participants.
OF57	Multi-Party Video Conference	M	A basic requirement

2.5.8 Future Non-Personal User Services

With the high speed at which telecommunications technology advances, new services are being introduced quite frequently. Most of these services have no significant impact on the requirements expressed in Part 2 of SOTIP or are too early in their development phase for realistic user requirements to be expressed with any certainty. Some of these services are listed below:

- 7KHz audio – High quality audio
- Digital Audio Broadcasting (DAB)
- Very Small Aperture Terminals (VSAT) – data distribution and reception via satellite

* Services are fully described in Table 32

2.6 List of Organisational Features (OF)

Table 32 describes each of the Organisational Features identified for the various SOTIP Model User-Types in the tables above.

Table 32: Description of SOTIP Organisational Features

SOTIP	Service Name	Description
OF1	Individual number	A single number that uniquely identifies the individual user. This could be: • An extension number • A DDI number (based on the extension number) • A UPT number More than one individual number can be assigned to a single telephone terminal
OF2	Group Number	The numbering plan allows a PF1 user to be a member of a group (or a number of groups) where the group itself has a number in the numbering plan.
OF3	Multiple Number	The numbering plan allows a user to be a member of one or more groups where each group has a number in the numbering plan.
OF4	Private User Mobility	Network users are able to identify themselves at compatible terminals within the network so that calls to their individual number arrive at the visited terminal. Calls may also be made from the visited terminal with the level of service allocated to the 'Mobile' user.
OF5	Geographically Independent Number	A published directory number that has the same cost for any caller, regardless of their geographical location. There are three types of number in this category: • FreePhone (Calls paid for by the called organisation) • Local Calling (Costs are shared between calling and called party) • Premium Call (Calls are paid for by the caller and a surcharge is added. A proportion of this surcharge is passed to the called organisation by the network operator) This topic is discussed further in Annex A
OF6	In-Call Service Modification	A service that enables a user to change from one set of telecommunications service capabilities to another during an established call either: • without releasing the end-to-end connection. An established voice call could then be reconfigured for FAX at the request of the calling user; or • by associating separate terminal equipment (such as FAX) with a voice terminal. A FAX or data call could then be set up in parallel with a voice call at the request of the calling user.

Table 32: Description of SOTIP Organisational Features (cont.)

SOTIP	Service Name	Description
Co-ordination With Other Communications Services		In some circumstances it is useful to be able to provide some co-ordination between communications services so that callers to an unavailable user can be offered an alternative means of communicating with the called user. The co-ordination features are divided into two groups: 1. Those which specifically involve the calling user (OF7 to OF9) 2. Those which specifically involve the called user (OF10 to OF13) When linked with the Computer Supported User Information service (OF14) this can provide a powerful and flexible communication facility.
OF7	Announcement of Service Access Number	As a basic minimum service, callers to an individual user must receive an announcement of which alternative services can be used if the called user is busy or otherwise not available. The caller is then required to release the call and to call back to the number indicated for the alternative service.
OF8	Pre-defined Alternative Service	Callers to an unavailable individual user are automatically switched to a pre-defined alternative service. The alternative service can be specified: • by the called user as and when a change is required (e.g. when leaving the office) • by the called user on a call-by-call basis • on a time-of-day or other programmed basis
OF9	Caller Directed Alternative Service	Callers to an unavailable individual user are offered the ability to select which alternative service to use by pressing a an indicated key (e.g. "*Press '1' to switch to FAX, '2' to send X.400 E-Mail, '3' to speak to Secretary*"). The call is then switched immediately to the alternative service.
OF10	System Defined Messaging	A simple message is sent to the called user to indicate that an incoming call was unsuccessful. The message is compiled within the network and includes little more than the caller's identity (name and/or number) and the time and date of the call. Messages can be sent in the appropriate format to: • A pager • A FAX terminal • An E-Mail account • A Voice-Mail box • Other standardised messaging format
OF11	Short Message	A short message is sent to the called user to indicate that an incoming call was unsuccessful. The message is compiled within the network using information supplied by the user. It would includes caller's identity (name and/or number) and the time and date of the call as well as a call-specific message of limited length (for example, *"Please call Head-Office with last month's expense figures"*). Messages can be sent in the appropriate format to: • A pager • A FAX terminal • An E-Mail account • A Voice-Mail box • Other standardised messaging format As a simplification of this service, the caller can be offered a range of fixed messages to be sent rather than free format text. Some could still require limited input from the caller (for example, " I have been delayed and expect to arrive at <<time>>.

Table 32: Description of SOTIP Organisational Features (cont.)

SOTIP	Service Name	Description
Co-ordination With Other Communications Services (cont.)		
OF12	Universal Messages Passing	In the event that a call to an individual user is unsuccessful, the caller can send a free form message to the called user. Messages can be sent and received as voice, FAX, X.400 E-Mail or other standardised format and the communications network will handle any conversion that may be necessary between message formats.
OF13	Co-ordinated Message Reporting	An individual user who is able to receive messages in more than one format (Voice-Mail, X.400 E-Mail, FAX etc.) can have indications of all incoming messages on a single system.
OF14	Computer Supported User Information	Access to computer-based user information for interaction with a Message Centre, attendant or secretarial service. The user is able to select predefined messages (for example, "*In A Meeting Until 3pm*", "*On Vacation Until 27 June*") which are used to cause calls to be diverted to an alternative answering point and to provide useful information to the answering user. The interface between the communications network and the computer should be an internationally recognised standard (such as ECMA's CSTA) so that a wide choice of computers and applications is available.

OF15	Co-ordination Between Voice Service and Other User Information	A service that enables an employee to quickly retrieve data for local presentation (computer display) based upon the identity of the other user in a call. This identity can be entered
		• manually by the employee
		• automatically by the telecommunications network using:
		  • the Calling Line Identification service or some other identifying service if the call is incoming
		  • The dialled number if the call is outgoing (e.g., as part of the Call Sequencing feature, OF39)
		If the identification is automatic, the data is displayed immediately upon making or answering the call.
		Transferring an established call with associated data will cause the data to be transferred with the call. Also, if a conference call is established involving a call with associated data, the data will be available to all other employees taking part in the call.

OF16	Attendant Services	A comprehensive range of services provided by Attendants (Type PF4) to ensure that the appropriate level of service can be given to callers to all other users. The individual supplementary services which might be offered by PF4 Attendants is covered in Section 1 of SOTIP and the provision of Attendant services generally is discussed further in Annex B. The co-ordination of Attendant Services with other answering services (OF14) is essential in ensuring that callers to users within the organisation always receive the most appropriate and most effective service available if the called user cannot be immediately contacted.

Table 32: Description of SOTIP Organisational Features (cont.)

SOTIP	Service Name	Description
OF17	Secretarial Services	A range of services to ensure that calls to users are answered by a secretary or group of secretaries (Type PF2) whenever possible or necessary. These services include: • Call Interception • Call Diversion • Ringing Group • Group Pickup In smaller organisations, many of the functions performed by Attendants would be carried out by secretarial staff
OF18	Call Distribution	The automatic distribution of queued incoming calls to the members of a call centre group. Distribution methods differ but each has the main purpose of ensuring that incoming calls are answered in the most efficient way. The algorithms used for selecting the destination of the next call can be based on a number of parameters but, typically, would involve one of the following: • A fixed pattern (circular or linear) • Member with the longest waiting time • Member with lowest active time • Mobile member located closest to the caller or other specified location Different mechanisms can also be used for indicating that a member is available to receive a new call. These are: • Immediately on clearing the previous call • After a fixed 'Wrap-up' period at the end of the previous call to allow the necessary clerical activities to be completed • After a manual indication from the agent that data processing for the previous call is complete • After an automatic indication from the associated computer system that data entry for the previous call is complete Features should exist for routing queued incoming calls to alternative answering positions if waiting times become excessive, if queues are full or for any other operational reason (such as out of normal office hours). Members of a call distribution group may be required to log in and log out by entering a password or other personal authorisation code to indicate to the network that they are or are not available for receiving calls. As an extra security measure to prevent unauthorised access to the network, group members can be forced to enter an additional personal identification number (PIN) on logging in. They may also be required to provide their PIN at other times, not only at login.

Table 32: Description of SOTIP Organisational Features (cont.)

SOTIP	Service Name	Description
Messaging Services		Services which can be used to alert users who are unable to answer an incoming call as a result of being logged out, busy or otherwise unavailable. **Note 1:** ***Incoming calls that can terminate at a non-human messaging system should provide an option for the call to be processed by a human user.*** **Note 2:** ***The Call Diversion services should not permit incoming calls to reach the Messaging Service of a user other than the one originally called.***
OF19	Voice Message Service	A service allowing callers to leave simple voice messages for an unavailable user. The called user is then able to retrieve these messages using any telephone terminal in the private network or in a public network.
OF20	Paging	The ability to provide indications to a logged-out or otherwise unavailable user that a caller is waiting to be called back or that a message has been taken for them at a paging centre. More sophisticated paging equipment is able to display short textual messages on a small screen
OF21	Telepoint	The use of a mobile telephone for outgoing calls only. When combined with paging to indicate that a response is required to an incoming call attempt, this can provide a cost-effective alternative to full mobility, particularly for those users who do not need to operate outside the private network
OF22	Flexible Response	In the event of an emergency or some other situation causing a temporary sharp increase in incoming call traffic, priority is given to answering these particular calls. This can involve the suppression of all other incoming calls (by providing a 'Busy' indication or a recorded announcement to callers) and, in those cases where the increase in traffic is known in advance, the provision of large numbers of additional staff and equipment to answer the calls.
Announcement Features		Under certain circumstances it is desirable to provide an incoming caller with a pre-recorded message or announcement so that they are able to take appropriate action (for example, wait for the call to be answered or hang up and try again later). The following three sections describe alternative announcement services.
OF23	Simple	An incoming call is diverted to a fixed announcement with no interaction or intelligence. The message played, such as "*All agents are busy, please try later*", may vary depending upon the criteria for diversion but all callers encountering a specific set of conditions will hear the same announcement
OF24	Queue Status	An informative announcement is played to incoming callers without removing the call from the queue. The contents of the announcement are modified with each call according to the status of the call queues. Information provided in the message can include the number of calls queued ahead of the caller or an estimate of the length of time the caller is likely to wait before answer.
OF25	Simple plus Voice Messaging	An incoming call is diverted to a fixed announcement. The caller is prompted to leave a voice message containing specific information that can be acted upon before a return call is made.

Table 32: Description of SOTIP Organisational Features (cont.)

SOTIP	Service Name	Description
Caller-Directed Routing		To ensure that a caller is routed to a user who can most effectively deal with their query, the caller is prompted by recorded or synthesised voice to provide information that is used to direct the call to the appropriate queue. There are two very similar services used for this purpose and these are described below.
OF26	Automated Attendant	Callers are prompted to indicate the department they wish to speak to by pressing one of the telephone keypad keys (for example; "*Press 1 to speak to Finance; press 2 to speak to Personnel* etc."). This service works well in organisations operating a number of call centres each dealing with distinct sections of the business. It depends on the caller having a push-button telephone and having some knowledge of which service is required. Normal practice is that if no key is pressed within a defined period, the call is routed to a human attendant.
OF27	Information-Based Routing	Callers are prompted to provide some information relating to their call. This information is entered on the caller's telephone keypad and so must be restricted to numerical data only. The following are examples of information items that could be used: • Personal identity • Social security number • Tax reference number • Reference number allocated during a previous call • Location • Region identifier • Postal code Once the information has been collected, the call is routed to the office best suited to dealing with the enquiry.
OF28	Message Centre	A service that enables callers to leave messages for an unavailable user and for that user to be able to receive an indication that a message has been taken and to collect the message at a convenient time.
OF29	Diversion to Answering Service	The ability to divert incoming calls to an Attendant service or to a simple announcement with recording if the called telephone terminal is busy or is not answered This service could have value in organisations where PI1 users are not supported by PF2 users.
OF30	Emergency Call In	A service which enables individual users to identify their current location to a central reporting point (for example, a Security Office) and to request assistance in an emergency situation. Activation of the service is achieved by a single keystroke or by a short sequence of keys.
OF31	Automated Transaction	A service primarily intended for the interchange of structured data. The caller is prompted to provide some form of identification (password or PIN) using the telephone keypad. Then, by keying in the necessary additional items of information, the caller can complete the transaction without the assistance of a human operator. Such a system can be used to query the balance in a tax account or to book a maintenance visit from the regional government office.

Table 32: Description of SOTIP Organisational Features (cont.)

SOTIP	Service Name	Description

OF32	Return Call Control	Queued calls are diverted to a voice messaging service after a predefined waiting period or as a result of some specific action by the caller. The caller is prompted to provide identification, telephone number and a time of day at which it would be convenient for the call to be returned. A list is prepared of all the return calls to be made categorised by the time of day and this list is used as a guideline for those employees returning the calls. The service can be enhanced further by linking the return call list with a predictive or power dialling service. The incoming call need not be answered by a human agent or operator and different types of call require different handling of the return call:
		• No Reply Necessary
		  • The caller is routed to an Automated Transaction service and is able to extract the required information directly.
		• Reply Necessary
		  • The call is registered and a response is scheduled to be sent. As examples, this may be:
		  • Messaging
		  • FAX
		  • Standard Post
		  • E-Mail
		  • Synthesised/pre-recorded Voice
		  • Human Response
		  • Model User Type PF3 operators make the return call when all the information to answer the original call has been collected.

OF33	Call Filtering (Boss/Secretary)	In a traditional 'Boss/Secretary' arrangement it can be important to have calls that were originally directed towards a PI1 user answered by a supporting PF2 user. There are a number or ways in which this can be achieved and the following sections describe a few of them.
OF34	Key Line Appearance	The use of a special telephone terminal that indicates the status (Busy/Ringing/Free) of other specific users and which enables the PF2 user to answer an incoming call to any of the indicated lines with a single key depression. The call can subsequently be transferred to the called PI1 user.
OF35	Ringing Group	The indication of an incoming call on the telephone terminals of all the users in a predefined group. The call is answered by the first user to go 'off-hook'. In this secretarial support application, the group can be arranged so that incoming calls are indicated first on the PF2 user's telephone terminal and are only indicated on the PI1 users' terminals if not answered within a predefined period.
OF36	Diversion	The re-routing of incoming calls for a PI1 user to an associated PF2 user. Diversion of calls can occur under any combination of the following circumstances: • If the PI1 user is busy • If the PI1 user does not answer • All calls

Table 32: Description of SOTIP Organisational Features (cont.)

SOTIP	Service Name	Description
	Call Filtering (continued)	
OF37	Group Pickup	The use of a short code (one or two digits) on a telephone terminal to answer an incoming call ringing at another user's terminal. Both users must be members of the same predefined group.
OF38	Called Party Identification	An indication of the identity of the called user when an incoming call is answered by another user. This service is used to enable a PF2 user to respond correctly to each incoming call when providing secretarial support to more than one PI1 user. **Note:** *This could also be considered to be an Individual Service (SOTIP Part 1)*
OF39	Call Sequencing	The automatic calling of individuals outside the network from a stored list such that each call is set up as the previous one is cleared. Waiting times between calls can be reduced if predictive algorithms are used to control the sequence of calls. The selection of the next call to be made can be made on a wide range of different criteria but the parameters considered might include: • Time of Day specified by the called party in their initial call to the Agency • Status of the original enquiry or report from the person to be called • A financial value (such as the amount owed to the Agency) • An Agency specific priority rating The stored sequence of calls can be applied to a group of users or to an individual. In the group application, similar algorithms to those used for Call Distribution (OF18) are used to select the next available group member. Different mechanisms can also be used for indicating that an employee is available to process a new outgoing call. These are: • Immediately on clearing the previous call • After a fixed 'Wrap-up' period at the end of the previous call to allow the necessary clerical activities to be completed • After a manual indication from the agent that data processing for the previous call is complete • After an automatic indication from the associated computer system that data entry for the previous call is complete
OF40	Backup Answering Function	A PI1 user is able to answer incoming calls if all normal answering stations are either busy or vacant. Examples of services which could be used to provide this function are: • Terminal hunting with the PI1 user at the end of the Hunt Group • Group Pickup • Call Diversion from the answering user or group on Busy and No Reply The operation of these services is described in detail in Section 1 of SOTIP.

Table 32: Description of SOTIP Organisational Features (cont.)

SOTIP	Service Name	Description
OF41	Roving Off-Net Access	Agency staff who spend much of their time travelling away from their home office generally have a direct connection to the public network but not to the Agency's own network. They can be given the same network capabilities as those staff who are directly connected through a PTNX to the private network in two different ways: • Access to DISA by means of a FreePhone number (see separate annex on Low Cost and Premium Cost Calls) • Access to DISA or work-related public network numbers by using an Agency calling card. Credit card access can be limited by restricting use by individuals to a daily or weekly credit amount. General access to a DISA service can be controlled by requiring a password or other authorisation code to be entered before the features of the service are made available to the caller.
OF42	Remote Login and Logout	The ability of users to indicate to the network that they are or are not available for receiving calls by entering a password or other personal authorisation code. For users who do not have a mobile telephone, logging in has the additional effect of identifying the user's location (i.e., the telephone number on which they can be called) so that incoming calls can be diverted to them directly.
OF43	Account Codes	The ability of a called user to enter a numeric identifier on making an outgoing call or after answering an incoming call. This identifier can then be used for cost and time accounting and for the segmentation and analysis of telephone charge accounts.
OF44	Integrated Numbering Plan	The numbering plan is defined by the Agency, not the service provider, and this can have any number of digits. This numbering plan overlays and, thus, masks any underlying public network numbering scheme.
OF45	Dual Identity Numbers (Virtual On-Net Calling)	Users can have a private numbering plan number which has been assigned by the Agency and an unrelated public network number. It should be clear to the user which method was used to call their telephone (ringing patterns or some other visual indication) *Example:* *An employee of a particular Agency works from home and has only one telephone line to the house. Dialling 4156 from within the Agency's network will cause the employee's telephone to ring. Dialling 08 715 1839 on a public network line will have the same effect.* Call barring services can be used to give priority to business calls during working hours. This can be achieved either on a predetermined time-of-day basis or on when the user is logged into the network.
OF46	Number Conversion (Forced On-Net Calling)	Under normal conditions (not overflow), public network numbers dialled from within an Agency's private network which would cause another user on the network to be called are converted to internal numbers so that public network tariffs are not applied to the call.

Table 32: Description of SOTIP Organisational Features (cont.)

SOTIP	Service Name	Description
OF47	Fixed Off-Net Access	Agency staff working at remote sites or working permanently at home (Teleworking) have dedicated access to the Agency's private network via the public network (i.e. their public network telephone appears to be directly connected to the private network). Access arrangements can be as follows: • Permanently enabled • Periodically enabled : • At predefined times of day where working hours are predictable • While the user is logged in
OF48	Authorisation Codes and Passwords	Multi-digit codes which can be entered by specific users to override restrictions and to provide access security to Agency calls originating off the network. Passwords can also be used by mobile staff establishing their location for receiving further incoming calls and for overriding call barring restrictions. As an alternative, voice recognition techniques can be used to provide authorisation of a specific user.
Access To Public Networks		
OF49	Full Public Network Access	All sites within the private network are capable of accessing any national and international directly dialled location using the public switched network or the public ISDN.
OF50	Breakout	Calls to the public network from within the private network are carried through the network as far as possible before being converted to a public network call
OF51	Multi-Operator Access (Equal Access)	It is now quite common for private networks to have access to more than one public network. The selection of which to use can either be made by the caller on a call-by-call basis or it can be programmed within the private network based upon a range of tariff related parameters, such as: • The time of day • The destination of the call • Traffic volumes
OF52	Call Barring	On a user-by-user basis, restrictions can be made on the destinations (either specific or general) called from within the private network. These restrictions can be modified by time of day and/or day of the week or other calendar-based criteria, by call charge accumulation or by the total length of time in use.
OF53	Abbreviated Dialling	A range of numbers which are commonly called from throughout the organisation are stored within the private network and are dialled out when the shorter access code is entered. It is possible to have abbreviated dialling numbers retained for a specific time period such that when this period has elapsed, the short code no longer has any effect.
OF54	Secure Transmission	The use of public key encryption algorithms to encode speech in a call between two CTN users. Such encoding makes all forms of illicit listening extremely difficult.

Table 32: Description of SOTIP Organisational Features (cont.)

SOTIP	Service Name	Description
OF55	Authentication of calling user	The ability of the CTN to request that a user provides some form of positive identification before proceeding with a call or service. Examples of authentication methods are: • Insertion of a personal identity card if the telephone is capable of accepting it; • Voice recognition; • Use of a PIN code by the caller.
OF56	High Definition Television	A television imaging system that provides very clear moving and still pictures
OF57	Multi-Party Video Conference	The ability to link two or more video conference studios into a single conference call providing both voice and image to all parties.
OF58	Transmit FAX to Distribution List	A function that enables a single FAX to be sent automatically to a number of different destinations. The list destination addresses can be created and managed 'off-line' or can be entered on a case-by-case basis. This function may include the following: • identification of main and copy recipients • delivery at a specified time-of-day or after a defined delay • Least cost distribution (for example, where multiple recipients share the same destination number, only one copy is transmitted) • FAX to postal mail conversion for recipients without access to FAX • FAX to e-mail conversion for recipients without access to FAX
OF59	Personal FAX Letterbox	A service intended primarily for mobile users. Instead of being printed immediately upon receipt, incoming FAXs are stored centrally until the user to whom the FAX was addressed calls the central system and indicates the number of the equipment where any stored FAXs are to be sent. The telephone number of the FAX equipment can be indicated to the central system in one of the following ways: • The calling user´s CLIP or CNIP identifier • Additional information entered by the user after the initial call has been established
OF60	Call/recall Procedure	A security service normally associated with data transmission. A call from a user to a remote computer or other data service is cleared as soon as the caller has been identified. A caller may be identified in one of the following ways: • The original number dialled by the user • The calling user's CLIP or CNIP identifier • Additional information entered by the user after the initial call has been established Following successful identification, a secondary call is established to a destination number permanently associated with the identified user. The purpose of this service is to prevent unauthorised access to the remote equipment.
OF61	Encryption of speech	A security service that uses algorithmic processing to encode the speech from a telephone in such a way that only the receiving telephone is able to interpret it as intelligible speech

2.7 Standardisation of Organisational Features

Table 33: Status of Standardisation of SOTIP Organisational Features

SOTIP	Service Name	Status of Standardisation
OF1	Individual number	ETS 300 189
OF2	Group Number	ETS 300 189
OF3	Multiple Number	ETS 300 189
OF4	Private User Mobility	In progress. ECMA Standards expected during 1998. The feature is described in the ETSI technical report, TCRTR-011
OF5	Geographically Independent Number	ETS 300 208, ETS 300 209 & ETS 300 210
OF6	In-Call Service Modification	No standardisation activity
OF7	Announcement of Service Access Number	Call Diversion is published in ETS 300 256 & ETS 300 257 ECMA 179 & ECMA 180
OF8	Pre-defined Alternative Service	Call Diversion is published in ETS 300 256 & ETS 300 257 ECMA 179 & ECMA 180
OF9	Caller Directed Alternative Service	ECMA 179 & ECMA 180
OF10	System Defined Messaging	European Radio Message System (ERMES); ETS 300 133
OF11	Short Message	European Radio Message System (ERMES); ETS 300 133 Digital European Cordless Telephony (DECT); ETS 300 175 Global System for Mobility (GSM); ETS 300 536
OF12	Universal Message Passing	No standardisation activity
OF13	Co-ordinated Message Reporting	No standardisation activity
OF14	Computer Supported User Information	ECMA 179 & ECMA 180
OF15	Co-ordination Between Voice Service and Other User Information	ECMA 179 & ECMA 180
OF16	Attendant Services	See SOTIP section 1 for details
OF17	Secretarial Services	Call Interception is published in ECMA-220 & ECMA-221 Call Diversion is published in ETS 300 256 & ETS 300 257 Call Pickup is identified as a service to be standardised but there is no planned standardisation activity Ringing Group is a local procedure and not standardised

Table 33: Status of Standardisation of SOTIP Organisational Features (cont.)

SOTIP	Service Name	Status of Standardisation
OF18	Call Distribution	In Progress. ECMA standard expected June 1998
OF19	Voice Message Service	Local service. Not standardised
OF20	Paging	European Radio Message System (ERMES); ETS 300 133
OF21	Telepoint	Digital European Cordless Telephony (DECT); ETS 300 175 Cordless Telephony 2nd Generation (CT2); ETS 300 131
OF22	Flexible Response	No standardisation activity
OF23	Simple Announcement	No standardisation activity
OF24	Queue Status Announcement	No standardisation activity
OF25	Simple Announcement plus Voice Messaging	No standardisation activity
OF26	Automated Attendant	No standardisation activity
OF27	Information-Based Routing	ECMA 179 & ECMA 180
OF28	Message Centre	Message Waiting in ECMA 241 & ECMA 242
OF29	Diversion to Answering Service	ETS 300 256 & ETS 300 257
OF30	Emergency Call In	No standardisation activity
OF31	Automated Transaction	No standardisation activity
OF32	Return Call Control	No standardisation activity
OF33	Call Filtering	Local procedure. Not standardised
OF34	Key Line Appearance	Local procedure. Not standardised
OF35	Ringing Group	Local procedure. Not standardised
OF36	Diversion	ETS 300 256 & ETS 300 257
OF37	Group Pickup	Local procedure. Not standardised
OF38	Called Party Identification	QSig basic call function - ETS 300 171 & ETS 300 172
OF39	Call Sequencing	No standardisation activity

Table 33: Status of Standardisation of SOTIP Organisational Features (cont.)

SOTIP	Service Name	Status of Standardisation
OF40	Backup Answering Function	Terminal Hunting is a local procedure which can be achieved using the existing QSig basic call protocol (ETS 300 171 and ETS 300 172) Call Pickup is identified as a service to be standardised but there is no planned standardisation activity Call Diversion is published in ETS 300 256 & ETS 300 257
OF41	Roving Off-Net Access	Free-Phone service is published in ETS 300 208, ETS 300 209 and ETS 300 210 No activity to standardise DISA
OF42	Remote Login and Logout	Services (Call Distribution and PUM) being standardised. ETSs expected 1998
OF43	Account Codes	No standardisation activity
OF44	Integrated Numbering Plan	ETS 300 189 ITU-T Recommendation E.164
OF45	Dual Identity Numbers (Virtual On-Net Calling)	ETS 300 100, ETS 300 334 & ETS 300 189
OF46	Number Conversion (Forced On-Net Calling)	No standardisation activity
OF47	Fixed Off-Net Access	No standardisation activity
OF48	Authorisation Codes and Passwords	PUM services will offer this function. ETSs expected 1998
OF49	Full Public Network Access	ETS 300 189
OF50	Breakout	Local procedure. No standardisation activity
OF51	Multi-Operator Access (Equal Access)	No standardisation activity
OF52	Call Barring	Local procedure. No standardisation activity
OF53	Abbreviated dialling	Local procedure. No standardisation activity
OF54	Secure Transmission	ETS 300 175 & ETS 300 331 for DECT ETS 300 506 & ETS 300 534 for GSM
OF55	Authentication of calling user	No standardisation activity
OF56	High Definition Television	ETS 300 421
OF57	Multi-Party Video Conference	ETS 300 264, ETS 300 266 & ETS 300 267
OF58	Transmit FAX to Distribution List	Local procedure. No standardisation activity
OF59	Personal FAX Letterbox	No standardisation activity
OF60	Call/Recall Procedure	Local procedure. No standardisation activity
OF61	Encryption of speech	ETR 235 & ISO/IEC 10116 (ISDN) ETS 300 175-7 (DECT) ETS 300 506 & ETS 300 534 (GSM)

PART 3
MANAGEMENT SERVICES

3.1 Introduction

In order that an organisation's telecommunications services can be operated efficiently and cost-effectively, a range of communications management services must be provided. These services deal with the configuration, accounting, security, performance and fault management aspects of a corporate network. Management services provide a means of controlling communications while also enabling improvements in business efficiency. These services are specified outgoing from requirements for interaction between internal or external service provider and own organisation. They can be categorised into two groups, those that are available directly to individual users and those that remain under the control of the overall organisation. The former are generally used to select between pre-assigned options or are services that have little or no additional cost impact. Responsibility for the aspects covered by the latter set of management services should be held by one member of staff or a small group who either make any necessary changes directly or order the changes from the network provider if communications services are "bought-in". It will not necessarily be the case that the same person or group has responsibility for all sets of management services.

The purpose of this section of the SOTIP profile is to identify the management services available and to provide some general criteria for selection. It is certain that all organisations will require many, if not all, of the defined management services.

3.2 Selection Criteria For Management Services

Because not all management services are available for individual or group users, the criteria for selecting these services cannot be based directly on the SOTIP model user types. Instead, each management service must be considered in terms of the overall communications service provided. Table 34 identifies a wide range of services which should be considered in order to provide effective management and control of a telecommunications network. Full descriptions of each of these services can be found in Tables 35 to . The actual selection of specific services will depend upon the size and complexity of the telecommunications network of the Agency. It will also depend on the nature of the business of the particular government Agency and its size and organisational structure. For example, organisations that manage their communications centrally will have different requirements from those that operate a regional management policy. Also, those that have traditionally made extensive use of telecommunications features will need different management services to those that use only simple voice calling functions.

In the selection table the following key is used in the M/S column:

M Must, corresponds to a strong need for that management service to be implemented if the specified criteria prevail.

S Should, corresponds to a lesser need where alternative management methods could be used to achieve a similar effect.

Table 34: Selection Criteria For SOTIP Management Services

IDENT	SERVICE NAME	M/S	CRITERIA
MS1	Add a new user	M	A basic requirement for any network
MS2	Modify User's Service Profile	M	A basic requirement for any network
MS3	Relocate Existing User	M	A basic requirement for any network
MS4	Remove Existing User	M	A basic requirement for any network
MS5	Numbering Plan Management	M	A basic requirement for any network
MS6	Service Table Management	M	In organisations making extensive use of Call Barring (OF52), Common Use Abbreviated Dialling (OF53) or other table based service
MS7	Multi-Profile Selection	S	In organisations where individual users are required to alternate between functions as part of their normal duties. This may include: • Front Office/Back Office operations; • Teleworking where the user may be required to provide call centre and telemarketing services. • Individual users providing support to Call Centre group during periods of high traffic;
MS8	Password and Authorisation Code Management	M S	In organisations offering protected or powerful features to authorised personnel only. In organisations having a large number of off-site employees (PI2) or making extensive use of teleworking (PF1, PF3, PF4)
MS9	Secure Transmission Management	M	In organisations that need to support secure transmission for voice or data calls.
MS10	Call Tracing	M	A basic requirement for any network
MS11	Traffic Measurement and Reporting	S	In organisations that have flexibility to respond to long-term changes and trends in the patterns of use of telecommunications services
MS12	Performance Monitoring	M	In organisations that need to respond rapidly to fault and traffic overload conditions to continue to provide the best possible service to callers
MS13	Quality of Service Observations	M	A basic requirement for an organisation making use of call centre facilities (PF1) for incoming calls
MS14	Alarm Surveillance	M	A basic requirement for any network
MS15	Fault Reporting and Logging	M	A basic requirement for any network
MS16	Restoration and Recovery	M	A basic requirement for any network
MS17	Account Code Management	M	In organisations using Account Codes (OF45) to segregate the costs of different types of call.
MS18	Tariff Management	S	In organisations using a number of different network operators to interconnect offices.
MS19	Call Charge Data Collection	M	In organisations using a public network operator to provide corporate network facilities (VPN).

Table 34: Selection Criteria For SOTIP Management Services (continued)

IDENT	SERVICE NAME	M/S	CRITERIA
MS20	Billing	M	In organisations using a public network operator to provide corporate network facilities (VPN).
		M	In organisations offering spare capacity on their communications links for the use of other businesses or agencies.
		M	In organisations where communications services are outsourced or provided by the public network operator using Centrex.
		S	In organisations where communications costs are cross charged on a departmental basis

3.3 Description of Management Services

The SOTIP Management Services are described in tables 35 to 41.

In those cases where communications services are bought in from public network operators, management services that involve changes to the configuration or operational parameters should include a process of confirmation and authorisation between the operator and the user organisation before any changes are implemented.

Many of the management services specify the collection and recording of operational data. These are also able to provide detailed and summary reports and statistics that are useful in optimising the overall service and minimising costs. It is necessary here to identify an interface, 'C', that can be used for the passing of control and information between the user organisation and the network management function. Those organisations operating their own networks are likely to have differing requirements for the physical characteristics of the C interface to those organisations buying network services from an external supplier.

C Interface Options

- Post;
- Fax;
- Electronic Mail:
  ⇒ TCP/IP (Internet);
- Telephone:
  ⇒ Voice;
  ⇒ Key Sequence;
- Voice Mail;
- EDI;
- Online Data Transmission:
  ⇒ SNMP;
  ⇒ TCP/IP;
  ⇒ Proprietary Protocol;
- Magnetic Media:
  ⇒ Tape;
  ⇒ Disk.

In the tables identifying the options for the C Interface (tables 36, 38, 40, 42 and 44) the 'Information Flow' column indicates the primary direction of the flow of data within the particular service. The following key applies:

O→N The primary direction of information flow is from the user organisation to the network operator

O←N The primary direction of information flow is from the network operator to the user organisation

O↔N Information flows in both directions between the user organisation and the network operator

3.3.1 Configuration Management Services

3.3.1.1 User Service Profile

If a corporate network is to provide a consistent service to all users, it is essential that details of each user's identity and permitted capabilities are accurately maintained within the network. This information is most commonly referred to as a user's Service Profile.

For each user there must exist a profile which characterises the overall service to be provided. The profile will include information that is common to all user types and information that is dependent upon user type and selected options.

The configuration management services make provision for:

- The addition of new users;

Adding a new user to the network will require that all the information specific to that user is passed to the network.

- The removal of users no longer working within the organisation;

The removal of an existing user should only require the identity of the user to be passed to the network which will then delete all details of the user's service profile.

- Changes to the service profile of users;

Changes to any part of the service profile can take place at any time but require authorisation at an appropriate level.

- The relocation of existing users to new locations.

Any additions, changes or deletions of user service profile information should be confirmed by the network before the changes take place. In this way the user organisation is able to maintain full control of the operating configuration of the network and, thus, the costs.

Paragraphs 3.3.1.1.1, 3.3.1.1.2 and 3.3.1.1.3 list the information that must be stored in each user's service profile. An item introduced by a solid bullet • indicates that the parameter applies in all cases and an item introduced by a hollow bullet ❍ indicates that the parameter only apples if the appropriate service or option has been selected.

3.3.1.1.1 Service Profile Parameters For All Users

The following parameters must be defined in each user's service profile:

- SOTIP Model user type;
- The physical access where the user is located (or details of the public network address if the user is external to the CTN. This applies to users with GSM or NMT mobile telephones or users who are teleworking);
- Connection type;
- CTN number;
- ❍ Call accounting group identifier
  - ❍ Department;
  - ❍ Project;
  - ❍ Function;
  - ❍ Location;
- ❍ Passwords and authorisation codes;
- Available basic services (FAX, voice etc.);
- Call routing plan;
- Call barring plan.

3.3.1.1.2 Service Profile Parameters For Individual Users

The following parameters must be defined for each Individual user in the SOTIP model (PIn users):

- Which optional services are enabled for the user;
- User's name;
- Pick-up group identifier;
- Pager address;
- Authorised account codes;
- Calling priority level;
- Intrusion and override capability levels;
- Intrusion and override protection levels;
- Alternative service details;
  - Pre-defined service;
  - Range of caller directed services;
- Identification of attendant group(s) serving user;
- Identification of secretarial group or user providing support;
- Hunt group or other distribution group identifier(s);
- Identification of alerting point(s) for Emergency Call-In service;
- Address of Voice Messaging Service.

3.3.1.1.3 Service Profile Parameters For Functional Users

The following parameters must be defined for each Functional user in the SOTIP model (PFn users):

- Which optional services are enabled for the user;
- Call distribution group identifier(s)
  - Incoming calls – ACD groups;
  - Outgoing calls – Telemarketing groups;
  - Attendant groups;
- Announcement criteria and identifiers (indicating which messages should be used under particular pre-defined conditions);
- Authorised account codes;
- Identifiers of Individual users supported;
- Call group identifiers
  - Hunt groups;
  - Ringing groups;
  - Pick-up groups.

3.3.1.1.4 The Use Of CTN Numbers And Other User Identifiers

Traditionally, the allocation of a user's identity to a particular terminal or access has been a two stage process. First, a CTN number is assigned to an access port and then a user's profile is linked with the CTN number. A more effective approach is to consider the user's profile as linked with an access port and that the CTN number is one of the parameters in the user's service profile. This has a number of effects which might be considered to be beneficial to an organisation or Agency:

- The relocation of an existing user to a new access port is a simple procedure;
- A telephone terminal cannot be used (other than for emergency calls) unless a user is assigned to it;
- It is easy to manage the re-use of CTN numbers when individual users leave an organisation. When the user's profile is removed, the CTN number is also removed and need not be re-allocated to a new user until a sufficient time has passed for the number to become disassociated from the original user. An unassigned CTN number can be intercepted by an attendant who is better able to provide a co-ordinated re-routing service to callers unaware of the change in the organisation.

3.3.1.2 Description of Configuration Management Services

Table 35 describes the management services that are used for maintaining a valid configuration of users and services. Options for the selection of a suitable C Interface are shown in table 36.

Table 35: Description of SOTIP Configuration Management Services

SOTIP	Service Name	Description
MS1	Add a new user	Indication to the network that a new user exists and the provision of the following information to establish a service profile for the new user: • SOTIP model user type; • optional services to be provided; • options to be selected within services; • additional service parameters A user may be assigned more than one model user type and service profile.

MS2	Modify User's Service Profile	Requesting specific changes to any of the parameters held in the user's service profile. Changes can be classified as:
		• With organisational changes. For example:
		  • New secretary;
		  • New network access;
		• Without organisational changes. For example:
		  • Change of SOTIP Model user type;
		  • Modifications to service options.

MS3	Relocate Existing User	Re-specification of the physical access associated with a particular user whenever the user is required to move to a new location within the organisation. This operation has no effect on the user's service profile.
MS4	Remove Existing User	Indication to the network that an existing user is no longer to be considered a member of the organisation. This operation will cause the removal of the user's service profile from the network's data base and the deletion of any CTN numbers associated with the user. These numbers can then be made unavailable for re-use for a predetermined period.

MS5	Numbering Plan Management	Maintenance of a Corporate network Numbering Plan and the allocation of individual number values to addressable entities such as terminal ports and line ports. This service also includes:
		• The management of the relationships between external (public network) numbers and destinations within the organisation:
		  • The identification of attendant groups to receive calls to general numbers;
		  • The identification of answering points for geographically independent numbers;
		  • The mapping of DDI numbers to CTN numbers;
		• The allocation of identifying numbers to wider addressable entities:
		  • Departments or units;
		  • Localities;
		  • ACD and attendant groups;
		  • Project groups (virtual company).

Table 35: Description of SOTIP Configuration Management Services (cont.)

SOTIP	Service Name	Description

MS6	Service Table Management	The management of service related database tables. These tables include:
		• common abbreviated dialling (speed call) numbers. Information includes:
		  • Full number to be dialled on entry of a specified short code
		  • The corresponding short code
		  • Call barring tables. Information includes:
		  • Partial or complete destination codes that are to be barred or allowed
		  • Specific exceptions to the general barring rules
		  • Grouping of tables into barring plans for specific user groups
		  • alternative routing tables. Information includes:
		  • Partial or complete destination codes that can be re-reouted
		  • One or more alternative route (with selection priorities) that can be used to reach selected destinations

MS7	Multi-Profile Selection	The ability to select between two or more service profiles for a single user. Requests to switch from one profile to another may be made, for example, by: • The user (if suitably authorised) • The user's supervisor or other authorised user • Time of day

Table 36: C Interface Options for Configuration Management Services

SOTIP	Service Name	Possible C Interface Implementations		Information Flow
		Own Network	External Network	
MS1	Add a new user	Post Fax Electronic Mail Telephone • Voice Voice Mail On-Line Data Trans-mission	Post Fax Electronic Mail Telephone • Voice Voice Mail On-Line Data Trans-mission Magnetic Media	O→N
MS2	Modify User's Service Profile	Post Fax Electronic Mail Telephone • Voice Voice Mail On-Line Data Trans-mission	Post Fax Electronic Mail Telephone • Voice Voice Mail On-Line Data Trans-mission Magnetic Media	O→N
MS3	Relocate Existing User	Post Fax Electronic Mail Telephone • Voice Voice Mail On-Line Data Trans-mission	Post Fax Electronic Mail Telephone • Voice Voice Mail On-Line Data Trans-mission Magnetic Media	O→N
MS4	Remove Existing User	Post Fax Electronic Mail Telephone • Voice Voice Mail On-Line Data Trans-mission	Post Fax Electronic Mail Telephone • Voice Voice Mail On-Line Data Trans-mission Magnetic Media	O→N
MS5	Numbering Plan Management	Post Fax Electronic Mail On-Line Data Trans-mission	Post Fax Electronic Mail On-Line Data Trans-mission Magnetic Media	O→N
MS6	Service Table Management	Post Fax Electronic Mail On-Line Data Trans-mission	Post Fax Electronic Mail On-Line Data Trans-mission Magnetic Media	O→N
MS7	Multi-Profile Selection	Telephone • Key Sequence On-Line Data Trans-mission	Telephone • Key Sequence On-Line Data Trans-mission	O→N

3.3.2 Security Management Services

Table 37 describes the management services which are necessary to ensure that the security of the communications network can be maintained at the level required by the user organisation. Options for the selection of a suitable C Interface are shown in table 38.

Table 37: Description of SOTIP Security Management Services

SOTIP	Service Name	Description

MS8	Password and Authorisation Code Management	Maintenance of lists of passwords and other authorisation codes and the allocation of them to users for access to equipment and services. Passwords and authorisation codes can identify the user, a particular service or a combination giving Agency to the user to access the service This management service also includes the checking of passwords and the processing of authentication keys where required in a call. Passwords may need to be allocated for the following services:
		• PI1 Users
		  • Remote Activation of Call Diversion Services;
		  • Privacy Override;
		  • Login if Fixed Off-Net Access is available;
		  • DISA;
		  • Secure Transmission;
		• PI2 Users
		  • Remote Activation of Call Diversion Services;
		  • Priority Call;
		  • Remote Login;
		  • Roving Off-Net Access;
		• PI3 Users
		  • Remote Activation of Call Diversion Services;
		  • DISA;
		• PF1 Users
		  • Distribution group login and logout;
		• PF2 Users
		  • Remote activation of Call Diversion Services;
		• PF3 Users
		  • Sequencing/Distribution group login and logout;
		• PF4 Users
		  • Attendant group login and logout;

MS9	Secure Transmission Management	Identification of users and/or called numbers that should have encryption applied to any calls. PI1 users can request secure transmission on a call-by-call basis. Also included is the routing of calls which have been identified as 'secure' through appropriate encryption processors
MS10	Call Tracing	Recording and reporting details of incoming calls to one or more CTN number for the purpose of identifying malicious calls.

Table 38: C Interface Options for Security Management Services

SOTIP	Service Name	Possible C Interface Implementations		Information Flow
		Own Network	External Network	
MS8	Password and Authorisation Code Management	Telephone • Key Sequence	Telephone • Key Sequence	O→N
MS9	Secure Transmission Management	Post Fax Electronic Mail On-Line Data Transmission	Post Fax Electronic Mail On-Line Data Transmission Magnetic Media	O→N
MS10	Call Tracing	Post Electronic Mail On-Line Data Transmission	Post Electronic Mail On-Line Data Transmission	O←N

3.3.3 Performance Management Services

Table 39 describes the management services that can be used to provide information on the use and performance of the communications services. The reports and statistics produced by these services can be of particular value to organisations buying in their communications services as charges are normally based on contracted levels of performance within the network. Options for the selection of a suitable C Interface are shown in table 40.

Table 39: Description of SOTIP Performance Management Services

SOTIP	Service Name	Description
MS11	Traffic Measurement and Reporting	Collecting and reporting data regarding the usage of network equipment and services. This includes counts and timings where appropriate.

MS12	Performance Monitoring	Continuous collection of data concerning the performance of a communication network. It is intended to measure the overall quality on the monitored parameters in order to detect deterioration in service due to the interaction of low-rate or intermittent fault conditions in multiple equipment units. Parameters measured include the availability† at each of the direct connection interfaces (A0, A1, B1) of:
		• Terminal equipment:
		  • For incoming calls;
		  • For outgoing calls;
		• Service:
		  • Incoming;
		  • Outgoing;
		  • Bought-in services not terminating in the Agency's network, such as Attendant and Telemarketing services.
		• Network route.
		Summary reports can be provided on request or on a pre-programmed basis.
		†*In this context, the term 'Availability' refers to any time that a service or equipment is serviceable regardless of whether attempts are being made to use it or not.*

Table 39: Description of SOTIP Performance Management Services (cont.)

SOTIP	Service Name	Description

MS13	Quality of Service Observations	Continual measurement of Quality Of Service (QOS) parameters within a network on a scheduled or threshold basis. This information can then be used to direct improvements in overall QOS. This service includes the monitoring and recording of parameters relating to:
		• connection establishment. For example:
		  • dial-tone delay;
		  • call set-up delays;
		  • incoming and outgoing call request success rates (Grade of Service);
		  • call waiting times;
		• connection retention (call hold times);
		• connection quality. For example:
		  • crosstalk;
		  • distortion;
		  • transmission delay;
		  • errored seconds ratio (the number of seconds in a given period in which bit errors occur);
		• billing integrity.
		Summary reports can be provided on request or on a pre-programmed basis.

Table 40: C Interface Options for Performance Management Services

SOTIP	Service Name	Possible C Interface Implementations		Information Flow
		Own Network	External Network	
MS11	Traffic Measurement and Reporting	Post Fax Electronic Mail On-Line Data Transmission	Post Fax Electronic Mail On-Line Data Transmission Magnetic Media	O←N
MS12	Performance Monitoring	Post Fax Electronic Mail On-Line Data Transmission	Post Fax Electronic Mail On-Line Data Transmission Magnetic Media	O←N
MS13	Quality of Service Observations	Post Fax Electronic Mail On-Line Data Transmission	Post Fax Electronic Mail On-Line Data Transmission Magnetic Media	O←N

3.3.4 Fault Management Services

Table 41 describes the management services that can be used to detect and process equipment faults and service failures within the communications network. Options for the selection of a suitable C Interface are shown in table 42.

Table 41: Description of SOTIP Fault Management Services

SOTIP	Service Name	Description
MS14	Alarm Surveillance	Monitoring network equipment in real-time and reporting fault conditions as they occur. Faults are reported to a central network management point and are analysed to determine their nature and severity. In the event that the service to a user or group of users is affected by the fault condition, facilities should exist for informing the users that the level of telephony available has been temporarily service is reduced or is non-existent. This information (terminals affected, nature of the service reduction) can be transmitted to a single point in the user organisation for distribution to those affected. If suitable interfaces exist, this information can be transmitted to each affected user directly using, for example: • E-Mail; • Data broadcast (if the network is operated directly by the government Agency); • Visual indication on the telephone.
MS15	Fault Reporting and Logging	Reporting and logging of fault conditions after they have been analysed. Reports can be produced on demand, at pre-scheduled times of day or on the basis of exceeded thresholds. Reports will identify the faulty equipment, the nature of the fault and its severity. In networks that use equipment and services from more than one vendor, it is essential that fault location and analysis procedures are able to function across interfaces so that the most accurate information can be reported. This is particularly relevant to agencies that operate their own networks. Fault reports may also include statistical summary information such as Mean Time Between Failures, Mean Time To respond and Mean Time To Repair. In cases where a fault is likely to cause extensive or lengthy disruption to communications services, it should be possible to receive reports estimating the time necessary to repair the fault and indications of progress towards completion of the repair.
MS16	Restoration and Recovery	Returning to service part or all of a communications network following a failure. Recovery actions would include: setting equipment into a known (idle) state re-establishment of links in use prior to the service interruption (this does not include the restoration of calls that were in progress at the time of the interruption) re-building of databases of user and system control information indication to the affected users that recovery is complete

Table 42: C Interface Options for Fault Management Services

SOTIP	Service Name	Possible C Interface Implementations		Information Flow
		Own Network	External Network	
MS14	Alarm Surveillance	Electronic Mail Telephone On-Line Data Trans-mission	Electronic Mail Telephone On-Line Data Trans-mission	O↔N
MS15	Fault Reporting and Logging	Post Fax Electronic Mail On-Line Data Trans-mission	Post Fax Electronic Mail On-Line Data Trans-mission Magnetic Media	O←N
MS16	Restoration and Recovery	Electronic Mail Telephone On-Line Data Trans-mission	Electronic Mail Telephone On-Line Data Trans-mission	O←N

3.3.5 Accounting Management Services

Table 43 describes the management services that are used to collect and process the accounting information available within the network. Information on the cost of calls and services is provided by the public network. These services use the information to provide analyses and reports on the use of communications services based on a number of different criteria. For example:

- Customer account codes;
- Department;
- Project.

Options for the selection of a suitable C Interface are shown in table 44.

Table 43: Description of SOTIP Accounting Management Services

SOTIP	Service Name	Description
MS17	Account Code Management	Allocation of specific account code identifiers to particular partitions within the billing structure so that costs can be accounted against individual projects, functions or employee groupings. It also includes the control of access to the account codes by employees.
MS18	Tariff Management	The allocation and application of internal tariffs to service and equipment usage so that accurate cross-charging or telecommunications cost sharing can be achieved.
MS19	Call Charge Data Collection	Collecting call and service charge data from throughout a network and reporting it to defined points for further processing and analysis. All connections to public networks are likely to incur call charges. Charging data can be collected on a bulk basis for a complete organisation or on an itemised basis for each call and service.

Table 43: Description of SOTIP Accounting Management Services (cont.)

SOTIP	Service Name	Description
MS20	Billing	Reporting accumulated call and service charging information at regular intervals. The following list identifies some examples of the information on which a bill could be structured • account codes; • departments; • service usage; • incoming call destinations; • outgoing call destinations; • routes used. These are only a few examples of ways of structuring billing reports. They can be structured in many different ways depending on the preferences and requirements of the customer organisation. Billing reports should also include details of any configuration changes and performance and equipment failures which have been taken into consideration in the charges.

Table 44: C Interface Options for Accounting Management Services

SOTIP	Service Name	Possible C Interface Implementations		Information Flow
		Own Network	External Network	
MS17	Account Code Management	Electronic Mail Telephone On-Line Data Transmission	Electronic Mail Telephone On-Line Data Transmission Magnetic Media	O→N
MS18	Tariff Management	Post Fax Electronic Mail Telephone On-Line Data Transmission	Post Fax Electronic Mail Telephone On-Line Data Transmission Magnetic Media	O→N
MS19	Call Charge Data Collection	Post Fax Electronic Mail On-Line Data Transmission	Post Fax Electronic Mail On-Line Data Transmission Magnetic Media	O←N
MS20	Billing	Post Fax Electronic Mail On-Line Data Transmission	Post Fax Electronic Mail On-Line Data Transmission Magnetic Media	O←N

ANNEX A
ATTENDANT SERVICES WITHIN PRIVATE NETWORKS

Most organisations depend upon a single user or group of users to answer general telephony calls to the organisation and to route these calls to the appropriate member of staff or department. Traditionally, this service has been performed by human users generally referred to as 'Operators' or 'Attendants'.

New technology and new services now mean that there are a number of alternatives to be considered in the provision of Attendant functions within the private network serving a large organisation.

A.1 ATTENDANT SERVICES

The following options exist for providing attendant services within an organisation using more than one PTNX linked by leased line or incorporated into a Virtual Private Network:

- Internal

Individually at each PTNX within the network
Centrally at one or two major sites within the network
Distributed throughout the network

- Externally
  Provided by the Public Network Operator
  Provided by the VPN operator
  Provided as a value added service by a third party supplier

A.1.1 Internal

A.1.1.1 Individual

Each office within the organisation provides local attendants who deal only with calls to that particular office.

This has been the generally accepted method of providing Attendant services for many years and could be considered in the following circumstances:

- Where each office is an autonomous unit within the overall organisation, providing no support to any other office.
- Where offices receive very few incoming calls such that these can be handled by staff involved in additional duties.

A.1.1.2 Centralised

One or two offices within an organisation provide Attendant services on behalf of the whole organisation. All incoming calls arrive at one of these offices and are routed across the private network to the requested answering point.

This method requires co-operation between the switching nodes in the network and should be considered in the following circumstances:

- Where the organisation provides a single level of service to all callers regardless of their geographical location.
- Where a large number of calls are received and these need to be handled by specialist attendant staff.
- Where incoming call traffic levels are such that a dedicated attendant function cannot be economically justified at each office but can be justified for a combination of offices.

A.1.1.3 Distributed

The attendants are located at a number of locations throughout the organisation and all are able to deal with any incoming call. Attendants can be dedicated to the task or involved with other additional duties. When combined with a Scenario 4 VPN, this method would allow attendants to work from locations outside the main organisation (such as, at home). The distributed arrangement is very flexible and should be considered in the following circumstances:

- Where the organisation provides a single level of service to all callers regardless of their geographical location.
- Where incoming call traffic levels vary (predictably or unpredictably) such that the rapid assignment and deassignment of staff to attendant duties is necessary to handle the loads.
- Where attendant cover for peak periods could be provided by part-time staff working from home.

A.1.2 External

A.1.2.1 Within The Public Network

The public network operator provides attendant services by answering incoming calls before they reach the private network. This method is based upon Centrex technology and can be a useful alternative to the Internal-Centralised approach, particularly in the following circumstances:

- Where incoming call traffic levels are quite low or have long troughs between high peak periods.
- Where network telephony service is provided primarily by Centrex rather than PABX.

A.1.2.2 Within The VPN

The VPN operator provides attendant service within the VPN but at a location or locations outside the customer organisation. This is an attractive alternative to any of the Internal approaches particularly in the following circumstances:

- Where incoming call traffic levels are low or very variable such that the provision of attendant staff is uneconomic.
- Where ”out-of-hours” personal cover is important to the service provided to callers.

A.1.2.3 Third Party

Attendant services are bought from a third party supplier (not the VPN operator or the public network operator) and are provided on the same basis as if within the VPN. The technical considerations are the same as those expressed in section A.1.2.2 but with the following additional aspects:

- The cost of the service.
- The ability of the third party supplier to provide a sector-specific specialist service.

A.1.2.3.1 Service Level Contracts

When contracting for Attendant services from a third party it is necessary to consider not only the technical features which are to be provided but also the operational aspects of the service provision. Such aspects can have a significant impact on the service offered by the government Agency itself and include:

- Mean time to answer

the time that callers spend in queues waiting for an initial response

- Mean call processing time

the time between answer and release or between answer and tranfer to the called user

- Average call success rate

how often calls are routed to the correct user or group

- Percentage availability

the proportion of contracted time that the service is available for use

- Grade of Service

the probability that an incoming call will be lost due to the shortage of equipment or circuits

- Caller complaints

A.1.3 Alternative Solutions

In most organisations it is not possible to remove the need for human intervention in the handling of some incoming calls. It is, however, possible in certain circumstances to reduce this need by using one of the following:

- Direct Inward Dialling (DID)
- Automated Attendant

A.1.3.1 Direct Inward Dialling (DID)

Specific users or user groups within a network are addressed directly by the public network number. When this number is dialled, the attendant is bypassed and the caller is connected with the user inside the private network. An attendant would only become involved if, for some reason, the call failed.

The DID service is not appropriate in organisations which provide a ”single-number” service to incoming callers but it could be considered in the following circumstances:

- For any individual within an organisation who is normally accessed explicitly rather than as a group member (SOTIP Model Users PI1 & PI2).
- Where an organisation provides a range of services to callers and it is considered beneficial to publish a different telephone number for each service.

A.1.3.2 Automated Attendant

An intelligent answering device provides a recorded or synthesised message to an incoming caller. The caller is invited to use the keys on their own telephone set (it must be DTMF dialling) to identify which department they wish to be connected with. As an example, when calling a Social Security number, dialling ‘1’ might put the caller through to the Benefits Enquiry office, dialling ‘2’ might connect to the Accounts office and so on.

Once again, this service can reduce the number of attendants required by an organisation as the caller only receives human assistance if unsure of which office they wish to speak to or if they are not using a DTMF telephone set. The Automated Attendant service cannot easily be used in organisations which have large numbers of groups or individuals who are regularly called from outside the network but it should be considered in the following circumstances:

- Where the organisation has a small number (less than 7) of information service groups (SOTIP Model Users PF1).
- Where the calling users are likely to be equipped with DTMF telephone sets and informed enough to be comfortable in using the service.

ANNEX B
STANDARDS BIBLIOGRAPHY

B.1 Introduction

This annex lists all those international standards, recommendations and technical reports that have been used as reference material in preparing SOTIP and which can provide additional detailed descriptions of services if required.

B.2 Bibliography

B.2.1 Key to standard identifiers

ECMA nnn	Technical standard for PTN service published by ECMA. Within a year of publication, most ECMA PTN standards are republished by ETSI as European Telecommunications Standards
ECMA TR/nn	Technical report published by ECMA
ETS 300 nnn	European Telecommunications Standard published by ETSI
ETR nnn	ETSI Technical Report. Published and available to the general public
TCRTR nnn	ETSI Technical Committee Reference Technical Report. Available only to ETSI members
ITU-T Rec a.nnn	Telecommunications recommendation published by the ITU

B.2.2 ECMA Standards

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ECMA 180 (1992):	Protocol for Computer Supported Telecommunications Applications (CSTA)
ECMA 211 (1995):	Private Telecommunication Network (PTN); Specification, functional model and information flows; Advice of charge supplementary service
ECMA 212 (1995):	Private Telecommunication Network (PTN); Inter-exchange signalling protocol; Advice of charge supplementary service
ECMA 213 (1995):	Private Telecommunication Network (PTN); Specification, functional model and information flows; Recall supplementary service
ECMA 214 (1995):	Private Telecommunication Network (PTN); Inter-exchange signalling protocol; Recall supplementary service
ECMA 220 (1995):	Private Telecommunication Network (PTN); Specification, functional model and information flows; Call Interception (CINT) supplementary service
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B.2.3 ECMA Technical Reports

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B.2.4 ETSI Standards

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ETS 300 051 (1991): Integrated Services Digital Network (ISDN); Multiple Subscriber Number (MSN) supplementary service; Functional capabilities and information flows

ETS 300 052 (1991): Integrated Services Digital Network (ISDN); Multiple Subscriber Number (MSN) supplementary service; DSS1 protocol specification

ETS 300 053 (1991): Integrated Services Digital Network (ISDN); Terminal Portability (TP) supplementary service; Service description

ETS 300 054 (1991): Integrated Services Digital Network (ISDN); Terminal Portability (TP) supplementary service; Functional capabilities and information flows

ETS 300 055 (1991) plus Ammend (1996): Integrated Services Digital Network (ISDN); Terminal Portability (TP) supplementary service; DSS1 protocol specification

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ETS 300 092 (1992) plus Ammend (1994): Integrated Services Digital Network (ISDN); Calling Line Identification Presentation (CLIP) supplementary service; DSS1 protocol specification

ETS 300 093 (1992): Integrated Services Digital Network (ISDN); Calling Line Identification Restriction (CLIR) supplementary service; DSS1 protocol specification

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ETS 300 096 (1992): Integrated Services Digital Network (ISDN); Connected Line Identification Presentation (COLP) and Connected Line Identification Restriction (COLR) supplementary service; Functional capabilities and information flows

ETS 300 097 (1992) plus Ammend (1994): Integrated Services Digital Network (ISDN); Connected Line Identification Presentation (COLP) supplementary service; DSS1 protocol specification

ETS 300 098 (1992):	Integrated Services Digital Network (ISDN); Connected Line Identification Restriction (COLR) supplementary service; DSS1 protocol specification
ETS 300 100 (1992):	Integrated Services Digital Network (ISDN); Routing in support of ISUP Version 1 services
ETS 300 102 (1990) plus Ammend (1993):	Integrated Services Digital Network (ISDN); User-network interface layer 3 Specifications for basic call control
ETS 300 128 (1992):	Integrated Services Digital Network (ISDN); Malicious Call Identification (MCID) supplementary service; Service description
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ETS 300 133 (1992):	Paging Systems (PS); European Radio Messaging System (ERMES) - 7 Parts
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ETS 300 137 (1992):	Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service; Functional capabilities and information flows
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ETS 300 139 (1992) plus Ammend (1996):	Integrated Services Digital Network (ISDN); Call Hold (HOLD) supplementary service; Service description
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ETS 300 171 (1992):	Private Telecommunication Network (PTN); Specification, functional models and information flows; Control aspects of circuit mode basic services
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ETS 300 182 (1993):	Integrated Services Digital Network (ISDN); Advice Of Charge (AOC) supplementary service; DSS1 protocol specification
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