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**General on Supplementary Services**

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**1. Reason for changes**

Only pagenumbers/layout has been changed since the previously distributed version.

Note that although references are given to Supplementary Services others than Call Forwarding (GSM 02.82) and Call Barring (GSM 02.88), these (GSM 02.81 and 02.83-87) are for Further Study.



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## CHAPTER 2

### DEFINITIONS

#### 2.1 SUPPLEMENTARY SERVICE

A supplementary service modifies or supplements a basic Telecommunication service.

Note 1: Provision of supplementary services by PLMN operators may be considered as essential (E) or additional (A). E-supplementary services shall be made available in all GSM PLMNs. A-supplementary services may be offered by GSM PLMN operators for national service and can be made available internationally on the basis of bilateral agreement.

Note 2: Offered supplementary services may be used by subscribers/users at their discretion.

#### 2.2 CONCEPTS ASSOCIATED WITH SUPPLEMENTARY SERVICES

For the purpose of this Recommendation the following terms are defined:

##### Provision

An action to make a service available to a subscriber. The provision may be

- general: where the service is made available to all subscribers (subject to compatibility restrictions enforced) without prior arrangements being made with the service provider.
- pre-arranged: where the service is made available to an individual subscriber only after the necessary arrangements have been made with the service provider.

##### Withdrawal

An action taken by the service provider to remove an available service from a subscriber's access. The withdrawal may be

- general: where the service is removed from all subscribers provided with the service.
- specific: where the service is removed on an individual basis from subscribers provided with the service.

##### Registration

The programming by the service provider or subscriber of information to enable subsequent operation of a service. The programming action involves input of specific supplementary information. For certain services the registration procedure may cause activation whilst for others the service may already be in the action phase.

## CHAPTER 1

### SCOPE

The purpose of this Recommendation is to define a recommended set of supplementary services to the Teleservices and Bearer services which will be supported by a GSM PLMN in connection with other networks as a basis for the definition of the network capabilities required.

The descriptions of the different supplementary services are contained in recommendations GSM 02.81 - GSM 02.88.

Supplementary services not covered in GSM 02.04 or GSM 02.81 - GSM 02.88 cannot be introduced unilaterally in any GSM PLMN if they require modification of the GSM signalling Recommendations.

Technical realization of supplementary services is described in Recommendation GSM 03.11.

### Erasure

The deletion by the service provider, the subscriber or the system of information stored against a particular service by a previous registration(s).

### Activation

An action taken by either the service provider, the subscriber or the system to enable a process to run as and when required by the service concerned. The time during which the process is activated is defined as the active phase. During activation the service will be either "operative" or "not operative" according to whether or not the system is actually using the service, e.g. to forward a call or to apply call waiting indication.

### Deactivation

An action taken by either the service provider, the subscriber or the system to terminate the process started at the activation.

### Invocation

An action to invoke the service required, taken by the subscriber (e.g. pressing a specific button) or automatically by the network or terminal as a result of a particular condition (e.g. calling number identification for each incoming call).

### Normal operation with successful outcome

Description of the normal operation of the service, the normal served subscriber's actions and the system response. Decision points, timing and call progress signals would be some of the aspects defined for the service if they can be perceived by the subscriber.

### Testing

The test procedure allows the subscriber to check whether or not the service is operating as she desires. In some cases the use of the service is sufficient, for others a method of testing is included in the control procedure.

### Interrogation

The request by the subscriber to the PLMN to provide information about a specific supplementary service. This information can be requested by a

#### - status check;

The following values can be returned by the PLMN:

- not supported
- activated
- deactivated

Not all values are applicable to all supplementary services.

#### - data check;

This interrogation function compares the data input by the subscriber during an interrogation procedure with the information stored in the PLMN. The PLMN signals

an appropriate indication (e.g. "check is positive" or "check is negative").

- data request;

This interrogation function enables the subscriber to obtain confirmation of her input data. The PLMN signals an appropriate indication (e.g. "the forwarded-to number is etc.").

Exceptional operation or unsuccessful outcome

Abnormal situations not described in "normal operation with successful outcome". Procedures on time-out, unexpected signalling response and other such events would be defined.

Interaction with other supplementary services

When more than one supplementary service is active, new logical situations, decisions, priorities, etc., may arise. This section would identify and define the resolution of such situations as they affect subscriber perception of the service. Special procedures may therefore be required, e.g. to allow, where possible, the simultaneous use of different supplementary services by one mobile subscriber.

Interworking considerations

Identification of subscriber perceptions when a call exits from an ISDN/PLMN to another CEPT specified network or enters an ISDN/PLMN from another CEPT specified network.

Note 1: This Recommendation does not distinguish between subscriber, user and customer, since all three do not fully cover the textual needs. Generally the term "subscriber" is used, even if this person is not having the subscription.

Note 2: The terms "she" and "her" are used as abbreviation of "she/he" and "her/his, her/him" respectively.



## CHAPTER 3

## GENERAL

**3.1 FRAMEWORK FOR THE DESCRIPTION OF SUPPLEMENTARY SERVICES**

Recommendation GSM 02.01 describes the principles of the Telecommunication services provided in a GSM PLMN. It also defines the concepts of Telecommunication services and describes their characterization by appropriate attributes. Bearer services and Teleservices, which are offered by a GSM PLMN in connection with other networks, are respectively defined in Recommendation GSM 02.02 and 02.03. Besides these basic Telecommunication services, their enhancement or modification by supplementary services need also to be offered.

A supplementary service modifies or enhances a basic Telecommunication service and, hence, cannot be offered to a subscriber on a stand alone basis. It must be offered together with or in association with a basic Telecommunication service. The same supplementary service may be offered with a number of different Telecommunication services.

Table 3.1/GSM 02.04 (identical to table 1/GSM 02.01 and to table 1 of Recommendation CCITT I.210) illustrates the description of Telecommunication services.

TELECOMMUNICATION SERVICE			
BEARER SERVICE		TELESERVICE	
Basic Bearer Service	Basic Bearer Service + Supplementary Services	Basic Teleservice	Basic Teleservice + Supplementary Services

Table 3.1/GSM 02.04:  
Categorization of Telecommunication services

**3.2 CATEGORIES OF SUPPLEMENTARY SERVICES**

Below follows a list of the possible categories of supplementary services related to provision, withdrawal, registration, erasure, activation, deactivation, invocation and interrogation.

**Provision** of a supplementary service can be made on a subscription basis, i.e. after pre-arrangement with the service provider, or the supplementary service can be made generally available to all mobile subscribers having access to GSM PLMNs.

Withdrawal of a supplementary service can be as a result of a subscriber's request or for administrative reasons. Both withdrawal actions are performed by the service provider.

Registration of a supplementary service is only applicable to those supplementary services in which specific data is required to enable subsequent operation of the service. This registration can be the result of provision or it can be a subscriber controlled procedure. Registration of a supplementary service may mean simultaneous activation of that service

Erasure of a supplementary service is only applicable to those supplementary services for which registration is necessary. It can be the result of withdrawal, it can be the result of a new registration overruling, and thus effectively erasing the previous registration, or it can be a subscriber controlled procedure. Erasure of a Supplementary Service may mean simultaneous deactivation of that service.

Activation of a supplementary service can be the result of provision. In some cases the supplementary service is only activated if the conditions in the subscription options are met. A supplementary service can also be activated by means of a procedure controlled either by the mobile subscriber or the service provider. Some supplementary services may also be activated as a result of registration.

Deactivation of a supplementary service can be the result of withdrawal or erasure of the service. In some cases the supplementary service is deactivated if the conditions in the subscription options are not met. A supplementary service can also be deactivated by means of a procedure controlled either by the mobile subscriber or the service provider. A supplementary service can be automatically deactivated at the end of a call if the supplementary service was specifically activated for that call. Finally, a supplementary service may be automatically deactivated by the network as a consequence of activation of another supplementary service if it conflicts with the other activated supplementary service.

Invocation of a supplementary service can take place by means of a subscriber controlled procedure or automatically by the network as a result of a particular condition.

Interrogation of a supplementary service is only applicable for a few supplementary services for which it is useful to get information from the network about the status or relevant data concerning the supplementary service.

## CHAPTER 4

### SUPPORTED SUPPLEMENTARY SERVICES

Table 4.1/GSM 02.04 gives a list of possible supplementary services implemented in the GSM PLMN, the definitions of which are given in recommendations GSM 02.81 - GSM 02.88.

The table also shows the recommended provision of services classified as Additional or Essential (E1, E2, or E3), see recommendation GSM 01.06.

**Editorial note:**

It is assumed that encryption (on the radio path) is part of several basic telecommunication services, e.g. speech. Depending on the result of SEG studies on implementation aspects, this position may be reconsidered.

**Note:** All supplementary services in this table are implemented in the PLMN. Subscribers can use these supplementary services for calls within the PLMN, but also in interworking situations with the PSTN (if supported) and the ISDN. In interworking situations with CSPDN and PSPDN these supplementary services can only be used during call set up (e.g. call forwarding services). When a call is established between an MS and a PDN, the MS acts as a data network terminal and can consequently only use the supplementary services that are supported by the relevant PDN. The PDN supplementary services are not described in this Recommendation; they can be found in the relevant PDN Recommendations. However, the interworking situations with PDNs still require further study.

**Editorial note:**

Further study is required; e.g. attributes, detailed definitions, applicability with regard to the various telecommunication services, service implementation phases,...

It has been identified as a requirement that the man-machine interface in GSM PLMNs regarding supplementary services should be compatible as much as possible with the man-machine interface in the fixed networks as defined in other CEPT groups, e.g. the same use of keypad information or function keys.

Table 4.1/GSM 02.04 lists the categories for all supported supplementary services. Below the abbreviations used are listed.

**Provision:**

- g = generally available
- p = pre-arrangement (subscription basis)

**Withdrawal:**

- s = subscriber's request or for administrative reasons
- = not applicable

**Registration:**

- p = as a result of provision
- a = service provider controlled procedure
- s = subscriber controlled procedure
- = not applicable

**Erasure:**

- w = as a result of withdrawal
- s = subscriber controlled procedure
- r = due to new registration
- = not applicable

**Activation:**

- p = as a result of provision
- r = as a result of registration
- s = subscriber controlled procedure
- a = service provider controlled procedure
- c = when the conditions in the subscription options are met
- = not applicable

**Deactivation:**

- w = as a result of withdrawal
- s = subscriber controlled procedure
- a = service provider controlled procedure
- e = as a result of erasure
- n = when the conditions in the subscr. options are not met
- c = at the end of a per call basis activation
- = not applicable

**Invocation:**

- n = automatic invocation by the network as a result of a particular condition
- u = user invocation, by means of a control procedure
- = not applicable

**Interrogation:**

- s = status check
- dr = data request
- = not applicable

**SUPPLEMENTARY SERVICE**

<u>GSM Rec/Chapter</u>		<u>Pro</u>	<u>Wit</u>	<u>Req</u>	<u>Eras</u>	<u>Act</u>	<u>Deact</u>	<u>Inv</u>	<u>Int</u>	<u>Class</u>
<b>02.81. Number Identification SS</b>										
1.	CNIP	p/g	s	-	-	p	w	n	-	A
2.	CNIR	p/g	s	-	-	p/s	w/c	n	s	A
3.	CoNP	p	s	-	-	p	w	n	-	A
4.	CoNR	p	s	-	-	p/s	w/c	n	s	A
5.	MCI	p	s	-	-	a	a	u/n	s	A
<b>02.82. Call Offering SS</b>										
1.	CFU	p	s	a/s	w/r/s	r	e	n	dr	E1
2.	CFB	p	s	a/s	w/r/s	r	e	n	dr	E1
3.	CFNRY	p	s	a/s	w/r/s	r	e	n	dr	E1
4.	CFNRc	p	s	a/s	w/r/s	r	e	n	dr	E1
5.	CT	p	s	-	-	p	w	u	-	A
6.	MAH	p	s	-	-	p	w	n	-	A
<b>02.83. Call Completion SS</b>										
1.	CW	p/g	s	-	-	s	s	n	s	E3
2.	HOLD	p	s	-	-	p	w	u	-	E2
3.	CCBS	p	s	-	-	s	s	n	s/dr	A
<b>02.84. Multi Party SS</b>										
1.	3PTY	p	s	-	-	p	w	u	-	E2
2.	CONF	p	s	-	-	p	w	u	-	E3
<b>02.85. Community of Interest SS</b>										
1.	CUG	p	s	-	-	p	w	u	-	A
<b>02.86. Charging SS</b>										
1.	AoC	p	s	-	-	p	w	n	-	E2
2.	FPH	p	s	p/s	w/s	s	s	n	dr	A
3.	REVC (called)	p	s	-	-	p	w	-	s	A
	(calling)	g	-	-	-	-	-	u	-	A
<b>02.87. Add. Information Transfer SS</b>										
1.	UUS	p	s	-	-	s	c	u	-	A
<b>02.88. Call Restriction SS</b>										
1.	BAOC	p	s	a/s	w/r	a/s	s/a	n	dr	E1
2.	BOIC	p	s	a/s	w/r	a/s	s/a	n	dr	E1
4.	BOIC-exHC	p	s	a/s	w/r	a/s	s/a	n	dr	A
6.	BAIC	p	s	a/s	w/r	a/s	s/a	n	dr	E1
7.	BAIC-Roam	p	s	a/s	w/r	a/s	s/a	n	dr	A

Table 4.1/GSM 02.04: Supported Supplementary Services

Abbreviations used for the Supplementary Services:

CNIP - Calling Number Identification Presentation  
CNIR - Calling Number Identification Restriction  
CoNP - Connected Number Identification Presentation  
CoNR - Connected Number Identification Restriction  
MCI - Malicious Call Identification

CFU - Call Forwarding Unconditional  
CFB - Call Forwarding on Mobile Subscriber Busy  
CFNRy - Call Forwarding on No Reply  
CFNRc - Call Forwarding on Mobile Subscriber Not Reachable  
CT - Call Transfer  
MAH - Mobile Access Hunting

CW - Call Waiting  
HOLD - Call Hold  
CCBS - Completion of Call to Busy Subscriber

3PTY - Three Party Service  
CONF - Conference Calling

CUG - Closed User Group

AoC - Advice of Charge  
FPH - Freephone Service  
REVC - Reverse Charging (called or calling MS)

UUS - User-to-User Signalling

BAOC - Barring of All Outgoing Calls  
BOIC - Barring of Outgoing International Calls  
BOIC-exHC - Barring of Outgoing International Calls  
except those directed to the Home PLMN Country  
BAIC - Barring of All Incoming Calls  
BIC-Roam - Barring of Incoming Calls when Roaming  
Outside the Home PLMN Country

## CHAPTER 5

### USE OF A PASSWORD OPTION IN RELATION TO SUPPLEMENTARY SERVICES

#### 5.1. DEFINITION

Some Supplementary Services (e.g. Call Barring) can be offered to a subscriber with the subscription option of using a password to control the service. When this option is selected every action (related to that Supplementary Service), such as registration, erasure, activation or deactivation is performed by the mobile subscriber with the concurrent entry of the password.

#### 5.2. DESCRIPTION

When the subscription option 'Control of a Supplementary Service by the subscriber using a password' is provided, password handling is supported by the network.

The password will consist of four digits in the range 0000 to 9999.

#### 5.3. MANAGEMENT - NORMAL PROCEDURES AND SUCCESSFUL OUTCOME

##### 5.3.1. Provision of password option

Each Supplementary Service for which the control by the subscriber usage of a password is relevant may be offered with the subscription option "Control of the Supplementary Service". The values of this option will be:

- by the subscriber using a password
- by the service provider

Note: A service provider needs not to offer this option to its subscribers. However, the support of the password facility is mandatory in the networks for visiting subscribers.

##### 5.3.2. Withdrawal of the password option

The password option may be withdrawn for administrative reasons or due to subscription modification.

### 5.3.3. Registration of password

If a mobile subscriber selects at provision time the option of using a password for any given Supplementary Service, the password have to be registered at the same time.

Furthermore, the subscriber can change the password by an appropriate control procedure at any time. The control procedure is described in rec GSM 02.30.

### 5.3.4. Erasure of password

A password can be erased in two ways:

- (1) Registration of a new password erases the previous one, or
- (2) Withdrawal of the password option.

### 5.3.5. PASSWORD CHECKING

If the mobile subscriber in an attempt to control a Supplementary Service requiering a password enters a correct password, the corresponding request is then considered by the network.

### 5.4. MANAGEMENT - EXCEPTIONAL PROCEDURES OR UNSUCCESSFUL OUTCOME

If the mobile subscriber in an attempt to control a Supplementary Service requiering a password, or in an attempt to register a new password, enters an incorrect password, the corresponding request will be rejected by the network and the subscriber will be notified.

If the mobile subscriber enters incorrect password more than three consecutive times, all control procedures related to the use of the password are made impossible until the service provider instructs the network to again accept password-related requests from this subscriber.



## CHAPTER 6

Processing of operations containing basic service information Pro

The network shall process a registration/erasure/activation/deactivation request indicating basic service information independent of the previous registration/activation status. As a result the network will process these requests for the indicated basic service information only, whereas other registration/activation status information remains unchanged.

Basic service information received by the network within the above supplementary service operations is defined in the GSM 04.80 series. According to this definition the network may receive a combined basic service indication, e.g. for all basic services. As a result the combined basic service indication may be dissolved (Note 1). This has to be taken into account when an interrogation procedure is performed.

In case the operation contains a combined basic service indication (e.g. for all bearer services) the interactions specified in the GSM 02.80 series have to be checked subsequently for each member of the combined service indication. As a result a supplementary service request may be partly rejected due to the interaction requirements (Note 2). This has to be taken into account in the acknowledgement to the supplementary service request from the mobile station (e.g. reflecting all the accepted forwarded-to members).

Note 1: Explanatory example

1. Operation :

Registration of CFU for 'all basic services' to number 1.

2. Operation :

Registration of CFU for 'Speech transmission' to number 2.

Result :

Registration status for

Speech transmission: CFU active to number 2

Remaining 12 basic service groups: CFU active to number 1

Note 2: Explanatory example

1. Operation :

Registration of CFB for 'Speech transmission' to number 1.

2. Operation :

Activation of BAOC for 'Facsimile'.

3. Operation :

Registration of CFU for 'all basic services' to number 2.

Result :

Registration status for

Speech transmission: CFB "quiescent" to number 1

Facsimile: BAOC Active, CFU rejected

Remaining (incl. speech) 12 basic service groups: CFU active to number 2

CHAPTER 7

FORMAT OF DESCRIPTION

The supplementary services are described according to the following format:

- 0. GENERAL
  - x.1 DEFINITION
  - x.2 DESCRIPTION
    - x.2.1 Description
    - x.2.2 Applicability to telecommunication services
    - x.2.3 Terminology
  - x.3 NORMAL PROCEDURES WITH SUCCESSFUL OUTCOME
    - x.3.1 Provision
    - x.3.2 Withdrawal
    - x.3.3 Registration
    - x.3.4 Erasure
    - x.3.5 Activation
    - x.3.6 Deactivation
    - x.3.7 Invocation
    - x.3.8 Normal operation with successful outcome
    - x.3.9 Quality of service
    - x.3.10 Testing
    - x.3.11 Interrogation
    - x.3.12 Charging requirements
  - x.4 EXCEPTIONAL PROCEDURES OR UNSUCCESSFUL OUTCOME
    - x.4.1 Exceptional operation or unsuccessful outcome
    - x.4.2 Registration
    - x.4.3 Erasure
    - x.4.4 Activation
    - x.4.5 Deactivation
    - x.4.6 Invocation
    - x.4.7 Testing
    - x.4.8 Interrogation
    - x.4.9 Charging requirements
  - x.5 ALTERNATE PROCEDURES
  - x.6.y.z INTERACTIONS WITH OTHER SUPPLEMENTARY SERVICES
  - x.7 INTERWORKING CONSIDERATIONS
  - x.8 DYNAMIC DESCRIPTION OF SERVICE
  - x.9 OUTSTANDING ISSUES

The letter "x" denominates the supplementary service described in chapter "x" of the recommendations GSM 02.81-02.88. The letter "y" denominates the recommendation (GSM 02.81-02.88) in which the supplementary service denominated by the letter "z" is

described and which interacts with the supplementary service that is described in chapter "x".

Every supplementary service is described according to this format. If a subheading is not included in the text, it means

- not applicable (e.g. in cases where "registration", "erasure", "activation", etc., do not apply);
- none identified (e.g. no exceptional procedure for "invocation");
- no interaction (in cases where no interaction appears between two supplementary services in sections 6).

The appendix shows a matrix of the interactions between all supplementary services.

APPENDIX

SUPPLEMENTARY SERVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1 Calling number identification presentation	X	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N
2 Calling number identification restriction	Y	X	N	N	Y	Y	Y	Y	Y	N	Y	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
3 Connected number identification presentation	N	N	X	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
4 Connected number identification restriction	N	N	Y	X	N	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
5 Malicious call identification	N	Y	N	N	X	Y	Y	Y	Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y
6 Call forwarding unconditional	Y	Y	Y	Y	Y	X	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7 Call forwarding on mobile subscriber busy	Y	Y	Y	Y	Y	Y	X	N	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
8 Call forwarding on no reply	Y	Y	Y	Y	Y	Y	N	X	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9 Call forw. on mob. subscr. not reachable	Y	Y	Y	Y	Y	Y	N	N	X	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
10 Call transfer	Y	Y	Y	Y	N	Y	Y	Y	Y	X	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N
11 Mobile access hunting	Y	N	Y	N	N	Y	Y	N	Y	N	X	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	Y
12 Call waiting	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	X	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
13 Call hold	N	N	N	N	N	N	N	N	N	Y	N	Y	X	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y
14 Completion of calls to busy subscribers	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	X	Y	Y	N	N	Y	F	Y	Y	Y	Y	Y	Y	Y	Y
15 Three party service	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y	Y	Y	X	Y	Y	N	N	F	Y	Y	Y	Y	Y	Y	Y	Y
16 Conference calling	Y	N	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	X	Y	Y	N	N	F	Y	Y	Y	Y	Y	Y	Y
17 Closed user group	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	Y	Y	X	N	N	F	N	Y	Y	Y	Y	Y	Y	Y
18 Advice of charge	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	X	N	F	Y	N	N	N	N	N	N
19 Freephone service	N	N	Y	N	N	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	N	X	N	Y	Y	N	N	N	N	N	N
20 Reverse charging	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	X	F	F	F	F	F	F	F	F
21 User-to-user signalling	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Y	X	Y	Y	Y	Y	Y	Y	Y
22 Barring of outgoing calls	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	X	Y	Y	Y	Y	N
23 Barring of outgoing international calls	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	X	Y	Y	Y	N	N
24 .. 1/c calls directed to non-CEPT countries	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	X	Y	Y	N	N
25 .. exc. those directed to the HPLMN country	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	X	Y	N
26 .. o/g calls when roaming outside the HPLMN	N	N	N	N	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	X	N
27 Barring of incoming calls	N	N	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	N	X
28 .. 1/c calls when roaming outside the HPLMN	N	N	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	N	Y

Table of interactions between two supplementary services: Y = Yes N = No F = For further study