SECTION 3 - ISDN supplementary services

<u>Recommendation Q.730</u>

ISDN SUPPLEMENTARY SERVICES

2.   User-to-user signalling service

2.1   General description of user-to-user service

The User-to-user Signalling Supplementary Service(s) provide(s) a means of communication between two users by using the ISDN User Part or SCCP protocols defined in Recommendations Q.711-714 and Q.761-764, 766. In order for the services to be usable, the services also have to be provided in the access protocol.

User-to-user signalling is used to exchange I.257 information between two users to provide the User-to-user Services described in   Recommendation I.257. This section is specific to Signalling System No. 7 and the general description for services 1-3 may be found in the last mentioned Recommendation and the functional description in Recommendation Q.87.

2.1.1   User-to-user services

Three user-to-user signalling services associated with circuit-switched calls that may be provided by the network users are:

1.   Service 1:

user-to-user signalling exchanged during the set-up and clearing phases of a call, within ISDN User Part call set-up and release messages as defined in Recommendation Q.763;

2.   Service 2:

user-to-user signalling exchanged during call set-up between the Address Complete or Call Progress Messages and the Answer or Connect Messages, within User-to-user Information Messages; and

3.   Service 3:

user-to-user signalling exchanged while a call is in the active state, within User-to-user Information Messages.

All three services may be used separately or in any combination within a single call. As an option at call set-up, users may be able to specify whether the requested User-to-user signalling service(s) is(are) essential or non-essential for the call (i.e. whether the call should be completed or not if user-to-user information cannot be passed). Up to 128 octets of user information may be transferred in a message in each of the three services 1. The 128 octets does not include the user-to-user information parameter name, the protocol control indicator or the length octets.

2.1.2   Service request

Service 1 may be requested implicitly by the presence of the user-to-user information parameter in the Initial Address Message. An implicit request is "non-essential" by default.

Explicit requests of Service 1 and 2 must be in the Initial Address Message. Service 3 may be explicitly requested in the Initial Address Message during call set-up. When there is an explicit request a single user-to-user indicators parameter will be used with one of the following indications for each of the three services:

-        no information;

-         requested, non-essential;
-         requested, essential.

2.1.3   Response (Confirmation)

If explicit requests are used there should, in general, be explicit responses in a user-to-user indicators parameter with one of the following indications for each of the three services:

-         no information;
-         provided;
-         not provided.

Implicit "not provided" responses occur when:

-         Service 1 has been implicitly requested and no user-to-user information is received in call set-up or release messages; or

-         Service 1, 2 or 3 has been explicitly requested and there is no indication of acceptance or rejection from call control.

2.1.4   Flow control

The exchange of user-to-user signalling is limited by flow control procedures provided on the access by either the user or network. The need for interexchange flow control procedures by the ISDN User Part for user-to-user signalling should be evaluated.

2.2   Procedures for user-to-user signalling associated with circuit-switched   calls

The following sections only specify the signalling procedure used to implicitly invoke the Service 1. Signalling procedures defined to support the other services are specified in Annex A.

2.2.1   User-to-user signalling, Service 1

2.2.1.1   General characteristics

Service 1 allows users to communicate with user-to-user signalling by transferring user-to-user information within ISDN User Part messages during the call set-up and clearing phases. The user-to-user signalling service provided is not a guaranteed service. If for any reason the combination of the basic plus supplementary service information causes the overall maximum length of the message to be exceeded then if the User-to-user Signalling Service 1 is included, then the service should be rejected.

2.2.1.2 User-to-user signalling in the call set-up phase - implicit service request
Procedures for call set-up are as described in Recommendation Q.764, Section 2, with the following changes:
Service 1 may be invoked by sending the user-to-user information parameter of variable length that is specified in Recommendation Q.763,
Section 3.34 in an Initial Address Message that is requested in a call set-up request from call control. This information parameter is transported across the network and delivered unchanged to the terminating call control for the called user. The user-to-user indicators parameter will not be sent.

The reception of a user-to-user information parameter in a call set-up or release request from the

terminating call control is an implicit indication of the acceptance of Service 1.

The user or network may not be able to interpret incoming user-to-user information. In such situations, the user should discard this information without disrupting normal call handling. No specific signalling is provided by the network to accommodate this situation.

2.2.1.3   Interworking

In the case of interworking with a non-ISDN network, the "interworking" protocol control information will be returned to the originating exchange in the first appropriate message, e.g. an Address Complete Message. Two ISDN networks that interwork may have to retain knowledge of the service request until it is clear whether both can support the service.

2.2.1.4   Rejection of implicit service requests

Networks that cannot provide the service requested may not return a rejection indication.

2.2.1.5   User-to-user signalling in the call clearing phase

A user-to-user information parameter may be included in the Release Message. The user-to-user information parameter received at the distant exchange in the Release Message is passed to the call control for the remote user. In the case of simultaneous clearing of the call, the Release Message may not reach the distant local exchange and the user-to-user information will be lost.

2.2.1.6   Message flow diagrams

The message flow diagrams are shown in Figure 1/Q.730. Figure 1/Q.730 shows the use of User-to-user Signalling Service 1 when implicitly requested in a point-to-point configuration.

Abbrev. Parameter Name
UUI   user-to-user information
Abbrev. Message Name
ACM   Address Complete ANM   Answer IAM   Initial Address REL   Release RLC   Release Complete

The messages shown with dashed lines are not part of the ISDN User Part protocol and are for information only. For detailed information on the access protocol user-to-user procedures the ISDN access protocol Recommendation should be examined.

FIGURE 1/Q.730

UUS Service 1 (implicit request, called user is point-to-point)

Note 1 - In case that an ALERTING indication is carried by a Call Progress Message, the user-to-user information parameter may also be transported in the Call Progress Message.

Note 2 - In case that the called user is an automatic answering terminal user- to-user information parameter may be transported in a Connect Message.

2.2.2   Interaction with other supplementary services

2.2.2.1   Call forwarding services

Interactions with the call forwarding services are shown in the call forwarding protocol sections.

2.2.2.2   Call waiting service

Interactions with the call waiting service are shown in the call waiting protocol sections. (Call waiting is for further study.)

2.2.2.3   Other services

There are no known interactions with services other than those listed.

2.2.2.4   State transition diagrams

The state transition diagrams may be found in Stage 2 descriptions of the User-to-user Service.

3.   Closed user group (CUG)

3.1   General

The Closed User Group (CUG) supplementary service enables a group of users to intercommunicate only among themselves or, as required, one or more users may be provided with incoming/outgoing access to users outside the group.

The stage I definition of the CUG service is given in the Recommendation I.255 and its stage II service definition including network functions are given in the Recommendation Q.85.

The realization of the CUG facilities is done by the provision of interlock codes and is based on various validation checks as defined in Q.85 at call set-up, determining whether or not a requested call to or from a user having a CUG facility is allowed. In particular, a validation check is performed by verifying that both the calling and called parties belong to the CUG indicated by the interlock code.

The data for each CUG that a user belongs to can either be stored at the local exchange to which the user is connected (decentralized administration of CUG data), or at dedicated point(s) in the network (centralized administration of CUG data).

In section 3.2 the call set-up procedure based on decentralized administration of CUG data is specified making use of the ISDN User Part as defined in Recommendations Q.761-764 and Q.766.

In section 3.3 the call set-up procedure based on centralized administration of CUG data is specified making use of the ISDN User Part as defined in Recommendations Q.761-764 and Q.766 and the Transaction Capabilities Application Part as defined in Recommendations Q.771-775.

In section 3.4 the application service element (ASE) on top of Transaction Capabilities Application Part for CUG validation check with centralized administration of CUG data is specified.

4.   General description of the Calling Line Identity Presentation and Restriction service

Calling Line Identification Presentation (CLIP) is a supplementary service offered to the called party which provides the calling party's ISDN number, possibly with additional address information (i.e. sub-address), to the called party.

Calling Line Identification Restriction (CLIR) is a supplementary service offered to the calling party to restrict presentation of the calling party's ISDN number, possibly with additional address information (i.e. sub-address), to the called party.

The stage 1 definitions for the CLIP and CLIR services are given in the Recommendation I.254 and the stage 2 service definitions including network functions, are given in Recommendation Q.84. This stage 3 description of CLIP and CLIR use the ISDN User Part protocol as defined in Recommendations Q.761-764 and Q.766.

4.1   Description of the Calling Line Identity Presentation (CLIP) service

Calling Line Identity Presentation (CLIP) is a user facility that enables a user to be informed on incoming calls, of the address of the calling party. When provided the facility applies to all incoming calls except for when the calling party has the Calling Line Identity Restriction (CLIR) facility active [see section 4.2 below] or the complete number of the calling party is not available at the destination exchange.

The Calling Line Identity (CLI) is generally the ISDN number of the calling party (with possible additional address information, i.e. sub-address) which may be provided by the network or partly by the calling party.

In the case where a national network does not always provide the CLIP facility, the included CLI may be the known part of the ISDN number at the interworking point (e.g. Trunk Code).

In the case where a calling party is an ISPBX, the network may send the ISDN number of the PABX attendant operator or, if provided by the calling party, the DDI number of the extension as the CLI.

When the CLI is provided by the user or ISPBX it is verified or screened for validity by the network, i.e. the CLI provided by the user is within the known number range for that user.

i)   If the user provided CLI is valid the Calling Number Parameter field contains the CLI in the Address Signal with the Screening indicator set to "user provided verified and passed".

ii)   If the user provided CLI is not valid or screened the originating exchange defaults to the network provided CLI for the Address Signals of the Calling Party Number parameter field with the Screening indicator set to "network provided".

When the CLI is provided by the network the originating exchange includes the stored CLI set against the calling party and sets the screening indicator to "network provided".

The CLI sent to the called user should contain all the necessary digits to enable a call to be established in the reverse direction.

Note - This may not always be possible if, for example, the DDI extension of an ISPBX is not provided by the calling party.

Information indicating that a subscriber has the user access to the CLIP facility is available in the exchange to which the subscriber is connected.

4.1.1   Call set-up procedure

The call control procedure and the information included in Call Control Messages vary depending on whether the CLI is included in the Initial Address Message and also whether the calling party has indicated a request to use the CLIR facility for this call.

Two different call control procedures can be used to provide the CLIP facility. Both procedures are specified for international use, however, the first method is to be preferred.

4.1.1.1   The Calling Line Identity is included in the Initial Address Message

When the CLI is available for insertion in the IAM the systematic inclusion of this parameter, in the IAM, is recommended. However, it is realized that under certain interworking conditions the CLI may only be available subsequent to the transmission of the IAM.

In this situation, to avoid unnecessary unsuccessful requests for the CLI the following procedures are recommended:

a)   If the CLI cannot be included in the IAM (for any reason) but is available and may be requested with a good chance of receiving it, then the optional field "calling party number parameter" should not be included in the IAM.

b)   If the CLI cannot be transferred (because it is not allowed to be passed or because the national network cannot provide the number), then the optional field "calling party number parameter" should be included in the IAM with the indication "presentation restricted" or "address not available" set as appropriate in the Address Presentation Restricted Indicator.

The CLI is sent to the called party in accordance with the user-network interface protocol.

For calls between networks (e.g. an outgoing ISC as referred to in b) above) the outgoing gateway exchange may remove any CLI digits from the IAM and indicate in the calling party number parameter that presentation is restricted.

Interworking exchanges may generate only part of the CLI for inclusion in the IAM (e.g. trunk code). This will be indicated in the number incomplete indicator in the Calling Party Number Parameter field.

In the case where the destination exchange receives only part of the CLI, (it is assumed to be the most significant part), the CLI is forwarded to the called party with the appropriate indications set.

4.1.1.2   The Calling Line Identity is not included in the Initial Address   Message

In the case where the CLIP facility is applied, and the IAM has indicated that the CLI may be available, an Information Request Message is sent towards the originating exchange with the Information Request Indicator Parameter field bit set to calling party address requested.

When receiving the request for Calling Party Address and the CLI is available, the originating/interworking exchange sends an information message containing the Calling Party Number Parameter field with the appropriate indications and CLI included.

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ANNEX A

(to Signalling System No. 7)

Signalling procedure for the explicit invocation of
user-to-user signalling services 1, 2 and 3

A.1   User-to-user signalling service

A.1.1   General description of user-to-user service

See Recommendation Q.730, sections 2.1-2.2.

A.2   Procedures for user-to-user signalling associated with circuit switched   calls

A.2.1   User-to-user signalling, Service 1

A.2.1.1   General characteristics

Service 1 allows users to communicate with user-to-user signalling by transferring user-to-user information within ISDN user part messages during the call setup and clearing phases. The user-to-user signalling service provided is not a guaranteed service. If for any reason the combination of the basic plus supplementary service information causes the overall maximum length of the message to be exceeded then if the User-to-user Signalling Service 1 is included the service should be rejected.

A.2.1.2   User-to-user signalling, Service 1 - explicit service request

Procedures for call setup are as described in Recommendation Q.764, section 2 with the following changes:

On call setup the Initial Address Message will contain the user-to-user indicators parameter with Service 1 indicated as "requested essential/not essential" and Services 2 and 3 indicated as "no information". The service request will be received from call control at the originating exchange and will be passed to the call control at the terminating exchange.

If the called user or network can support the transfer of user-to-user, a Service 1 acceptance will be returned to the originating exchange in an Address Complete or Call Progress Message for the point-to-point case or the Answer or Connect Message in the point-to-multipoint case with the indication "Service 1 provided" in the user-to-user indicators parameter. Services 2 and 3 will be indicated as "no information" in the user-to-user indicators parameter. These explicit indications shall be forwarded to the call control at the originating exchange.

User-to-user information may be contained in any of the messages that may be transferred in the call setup phase.

A.2.1.3   Interworking

In the case of interworking with a non-ISDN network, the "interworking" protocol control information will be returned to the originating exchange in the first appropriate message, e.g., and Address Complete Message. Two ISDN networks that interwork may have to retain knowledge of the service request until it is clear whether both can support the service.

A.2.1.4   Rejection of explicit service requests

If the called user or network does not understand the Service 1 request then the Address Complete or Call Progress Message returned to the originating exchange shall not include either a Service 1 acceptance or rejection. This type of response will be taken as an implicit rejection of Service 1. (Note - The Study Group XVIII service description does not allow this implicit rejection.)

If the network or called user cannot support Service 1, and it was requested with a non-essential indication, a Service 1 rejection indication is returned in the Address Complete or Call Progress Message with the indication "Service 1 not provided" in the user-to-user indicators parameter.

If the Service 1 request is indicated as essential and the called user or network cannot support it a Release Message is sent with cause code 50, "requested facility not subscribed", cause code 29, "facility rejected by the network" or cause code 69, "requested facility not implemented" and the diagnostic containing the user-to-user indicators parameter.

A.2.1.5   User-to-user signalling in the call clearing phase

A user-to-user information parameter may be included in the Release Message. The user-to-user information parameter received at the distant exchange in the Release Message is passed to the call control for the remote user. In the case of simultaneous clearing of the call the Release Message may not reach the distant local exchange and the user-to-user information will be lost.

A.2.2   User-to-user signalling, Service 2
A.2.2.1   General characteristics

Service 2 allows the users to communicate with user-to-user signalling by transferring up to two user-to-user information messages in each direction during the call setup phase. As a network option, user-to-user information may be delivered to the called party after the call is answered to accommodate situations where the information was sent at approximately the same time as the call was answered. This service allows either an implicit or explicit rejection.

Service 2 is only applicable when a point-to-point configuration exists at the user-network interface at the terminating exchange.

A.2.2.2   Call setup

Procedures for call setup are as described in Recommendation Q.764, section 2 with the following changes:

On call setup the Initial Address Message will contain the user-to-user indicators parameter with Service 2 indicated as "requested essential/not essential" and Services 1 and 2 indicated as "to information" 2. The service request will be received from call control. The service request will be passed to call control at the terminating exchange.

If the called user or network can support the transfer of user-to-user information, a Service 2 acceptance will be returned to the originating exchange in an Address Complete or Call Progress Message with the indication "Service 2 provided" in the user-to-user indicators parameter 3. Services 1 and 3 will be indicated as "no information" in the user-to-user indicators parameter. These explicit indications shall be forwarded to the call control at the originating exchange.

A.2.2.3   Service rejection

A.2.2.3.1 Point-to-point calls

If the called user or network does not understand the Service 2 request then the Address Complete or Call Progress Message returned to the originating exchange shall not include either a Service 2 acceptance or rejection. This type of response will be taken as an implicit rejection of Service 2.

If the network or called user cannot support Service 2, and it was requested with a non-essential indication, a Service 2 rejection indication is returned in the Address Complete or Call Progress Message with the indication "Service 2 not provided" in the user-to-user indicators parameter 4. (Note - The Study Group XVIII service description does not allow this implicit rejection.)

If the Service 2 request is indicated as essential and the called user or network cannot support it a Release Message is sent with cause code 50, "requested facility not subscribed" cause code 29, "facility rejected by the network" or cause code 69, "requested facility not implemented" and the diagnostic containing the user-to-user indicators parameter.

A.2.2.3.2 Point-to-multipoint calls

If the call is point-to-multipoint then Service 2 cannot be provided at the called party because the user is not identified until the user is connected. Consequently, Service 2 must be rejected using the point-to-point procedures. The cause value in this case is code 88, "incompatible destination".

A.2.2.4   Interworking

In the case of interworking with a non-ISDN network. The "interworking" protocol control information will be returned to the originating exchange in the appropriate message, e.g., an Address Complete Message. Two ISDN networks that interwork may have to retain knowledge of the service request until it is clear whether both can support the service.

A.2.2.5   Transfer of messages containing user-to-user information

Once acceptance of Service 2 has been transmitted across the network, both of the involved users can transfer user-to-user information between themselves. Within the network the user-to-user information parameter will be carried in a User-to-user Information Message. The network provides for the transfer of these messages from the calling to the called side and vice versa.

The User-to-user Information Message format can be found in Recommendation Q.763, Table 20/Q.763.

If Service 2 is provided, no more than two User-to-user Information Messages carrying user-to-user information parameters may be transmitted in each direction during the call setup phase. If more than two messages are received during call setup, the additional messages are discarded. If only Service 2 has been requested, one of the messages may also be received and passed after the answer state has been reached.

No transfer of user-to-user information can occur until the service is acknowledged.

A.2.3   User-to-user signalling, Service 3

A.2.3.1   General characteristics

Service 3 allows the users to communicate with user-to-user signalling by transferring User-to-user Information Messages in each direction during the active phase of the call. This service allows either an implicit or explicit rejection.

Service 3 allows the service to be requested either during call setup or after call setup. However, Service 3 should not be requested after call setup if it has been rejected during the call setup phase.

A.2.3.2   Service 3 requested during call setup

Procedures for call setup are as described in Recommendation Q.764, Section 2 with the following changes:

On call setup the Initial Address Message will contain the user-to-user indicators parameter with Service 3 indicated as "requested essential/not essential" and Services 1 and 2 indicated as "no information 5". The service request will be received from call control at the originating exchange. The service request will be passed to the call control at the terminating exchange.

If the called user or network can support the transfer of user-to-user information, a Service 3 Acceptance will be returned to the originating exchange in an Answer or Connect Message with the indication "Service 3 provided" in the user-to-user indicators parameter 6. Services 1 and 2 will be indicated as "no information" in the user-to-user indicators parameter. These explicit indications shall be forwarded to the call control at the originating exchange.

A.2.3.3   Rejection of Service 3 when requested during call setup

If the called user or network does not understand the Service 3 request then the Address Complete Call Progress Message, Answer or Connect Message, returned to the originating exchange shall not include either a Service 3 acceptance or rejection. This type of response will be taken as an implicit rejection of Service 3.

If the network or called user cannot support Service 3, and it was requested with a non-essential indication, a Service 3 rejection indication is returned in the Address Complete, Call Progress Message, Answer or Connect with the indication "Service 3 not provided" in the user-to-user indicators parameter 7. (Note - The Study Group XVIII service description does not allow this implicit rejection.)

If the Service 3 request is indicated as essential and the called user or network cannot support it a Release Message is sent with cause code 50, "requested facility not subscribed", cause code 29, "facility rejected by the network" or cause code 69, "requested facility not implemented" and the diagnostic containing the user-to-user indicators parameter.

A.2.3.4   Service 3 requested after call setup

After call setup has been completed either the calling or called party may request to transfer Service 3 information. On reception of the request from call control the ISDN User Part sends a Facility Request Message containing the facility indicator parameter indicating user-to-user service and a user-to-user indicators parameter requesting Service 3 to the distant local exchange using the appropriate transport method. The facility request will contain the user-to-user indicators parameter with Service 3 indicated as "requested essential/not essential" and Services 1 and 2 indicated as "no information" 8. On receipt of the Facility Message at the distant exchange call control will be notified which will then notify the remote user. If the user wishes to support Service 3 during the active phase, a Service 3 acceptance will be returned to call control. On notification of the acceptance by call control the ISDN User Part will generate a Facility Accepted Message with the indication "Service 3 provided" in the user-to-user indicators parameter[1]. Services 1 and 2 will be indicated as "no information" in the user-to-user indicators parameter. On the receipt of the message this explicit acceptance indication shall be forwarded to call control which will then notify the requesting user.

A.2.3.5   Rejection of Service 3 when requested after call setup

If the requested user or network does not understand the Service 3 request then no message is returned. This response shall be taken as an implicit rejection of the service request.

If the network or requested user cannot support Service 3, and it was requested with a non-essential indication, a Service 3 rejection indication is returned in the Facility Reject Message with the indication "Service 3 not provided" in the user-to-user indicators parameter 9.

If the call control does not indicate acceptance or rejection the network shall not return any explicit rejection to the exchange.

Note 1 - The Stage 1 service description does not allow this implicit rejection.
Note 2 - The handling of essential/non essential Service 3 request is not yet consistent with the Stage 1 service description.

A.2.3.6   Interworking

In the case of interworking with a non-ISDN network an "interworking" protocol control indicator will be returned to the originating exchange in the first appropriate message[1]. If Service 3 was requested after call setup, a Facility Reject Message is returned[1]. Two ISDN networks that interwork may have to retain knowledge of the service request until it is clear whether both can support the service.

A.2.3.7   Transfer of messages containing user-to-user information

Once acceptance of Service 3 has been transmitted across the network, both of the involved users can transfer user-to-user information between themselves. Within the network the user-to-user information parameter will be carried in a User-to-user Information Message. The network provides for the transfer of these messages from the calling to the called side and vice versa.

The User-to-user Information Message format can be found in Recommendation Q.763, Table 20/Q.763.

A.2.4   Requesting user-to-user signalling Services 1, 2 and 3

This section describes procedures for requesting Services 1, 2 and 3.

Note - User-to-user Service 1 implicit request/response procedures are also found in Section 2.2.1. Only explicit Service 1 requests may follow the procedure in this section.

A.2.4.1   Call establishment

Procedures for call establishment are described in sections A.2.1.2, A.2.2 and A.2.3.2 with the following modifications:

On service request one user-to-user indicators parameter will be sent with each service being indicated as "requested, essential/non essential".

If the called user can support the indicated services, then all three services will be indicated as "provided" in the user-to-user indicators parameter in the Address Complete or Call Progress Message. Alternatively, the Address Complete or Call Progress Message may indicate "Service 3, no information" and "Service 3 provided" in the Answer or Connect Message as provided in section A.2.3.2. In the case that the call is to multi-point users, the acknowledgement of Services 1 and 3 shall be delayed until the Answer or Connect Message is sent.

A.2.4.2   Service Rejection

If the called user or network does not understand the service requested, then the Address Complete, Call Progress, Answer or Connect Messages returned will not include either service(s) acceptance or rejection. This type of response will be taken as an implicit rejection of all services.

If the called user or network does not understand a specific service request, that specific service is implicitly rejected following the procedures of sections 2.2.1.6, 2.2.2.3 and 2.2.3.3. Alternatively, if the network or called user cannot support one or more service requests and the service requests were indicated as non-essential, then the rejection may be provided in the Address Complete or Call Progress Messages. (In the case of a call to multi- point users only Service 2 may be rejected in this way, Services 1 and 3 must be rejected in the Answer or Connect Message if the called user is furnishing the rejection.) The services may also be rejected following the procedures of sections A.2.1.4, I.2.2.3 and A.2.3.3.

If any or all of the services requested is indicated as essential and the called user or network cannot support one or more of the services, a Release Message is sent with cause code 29, "facility rejected by the network", cause code 50, "requested facility not subscribed", or cause code 69,"requested facility not implemented" and the diagnostic containing the user-to-user indicators parameter.

If the call control does not indicate Service 1, 2 or 3 acceptance or rejection prior to the sending of the Address Complete, Call Progress, Answer or Connect Message, then no indication of service acceptance or rejection shall be returned for the specific service(s).

A.2.4.3   Interworking

In the case of interworking with a non-ISDN network, the "interworking" protocol control information will be returned to the originating exchange in the first appropriate message, e.g., an Address Complete Message. Two ISDN networks that interwork may have to retain knowledge of the service request until it is clear whether both can support the services.

A.2.4.4   Transfer of User-to-user information messages

The procedures for the transfer of User-to-user Information Messages is covered in sections A.2.2.5 and A.2.3.7.

A.2.5   User-to-user information transport methods for Services 2 and 3

The transport methods for Services 2 and 3 may be found in § 3 of Recommendation Q.764.

A.2.6   Message flow diagrams

The message flow diagrams are shown in Figures A-1 to A-7.

For User-to-user Signalling Service 2 and 3 the figures only show ISDN user part messages required for basic call control and user-to-user signalling and are not meant to imply any particular transfer method. The parameters and indicators shown are for the User-to-user Signalling Service only, i.e. any parameters or message associated with the various transport methods are not
shown.

The following notes apply to Figures 1 to 7:

Note 1 - In case that an ALERTING indication is carried by a Call Progress Message the user-to-user indicators parameter and/or the user-to-user information parameter may also be transported in the Call Progress Message.

Note 2 - In case that the called user is an automatic answering terminal
user-to-user indicators parameter and/or user-to-user information parameter may be transported in a Connect Message.

Figure A-1 shows a successful use of user-to-user Signalling Service 1 when explicitly requested in a point-to-point configuration.

Figure A-2 shows both the successful and unsuccessful use of
user-to-user Signalling Service 2 in a point-to-point configuration.
Figure A-3 shows an unsuccessful use of user-to-user Signalling
Service 2 in a point-to-multipoint configuration. This unsuccessful case is shown because the network reactions will be the same in all similar cases.

Figure A-4 shows both successful and unsuccessful cases for user-to- user Signalling Service 3 when the service is non-essential in a point-to-point configuration.

Figure A-5 shows a successful use of user-to-user Signalling Service 3 after the call is active in a point-to-point configuration.

Figure A-6 shows a successful use of user-to-user signalling
Services 1, 2 and 3 and where all services are non-essential in a point-to-point configuration.

Figure A-7 shows successful use of user-to-user signalling
Services 1 and 3 and unsuccessful use of Service 2 in a point-to-multipoint configuration. It should be noted again that Service 2 will not work in a point-to-multipoint configuration.

 Note - During an interim period of time, networks may support a lesser   number (e.g. 32 octets) due to protocol restrictions; 32 octets will   always be supported. Restrictions may apply to calls requesting   user-to-user information more than 32 octets.

The connection request parameter will be included if CO-SCCP method is   selected, or the call reference parameter will be included if CL-SCCP   method is selected.

The SCCP connection confirm message will be returned if CO-SCCP method is   selected.

The SCCP connection refused message will be returned if CO-SCCP method is   selected.

The connection request parameter will be included if CL-SCCP method is   selected or the call reference parameter will be included if CL-SCCP method   is selected.

The SCCP connection confirm message will be returned if CO-SCCP method is   selected.

The SCCP connection refused message will be returned if CO-SCCP method is   selected.

The Connection Request parameter will be included if CO-SCCP method is selected, or the Call Reference parameter will be included if CL-SCCP method is selected.

The SCCP connection refused message will be returned if CO-SCCP method is selected.