

User Requirements V2.0.6 (2004-06)

Technical Specification

Push-to-talk over Cellular (PoC); User Requirements; PoC Release 2.0

Comneon, Ericsson, Motorola, Nokia, Siemens

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Push-to-talk over Cellular (PoC), User requirements

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Foreword

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Introduction

The requirements in this document have been created from discussions among the contributing companies; operators and other vendors.

This document contains user specific service requirements.

The document is structured in the following parts:

Clause 4: “Summary of basic features” provides a high level informative description of the different type of talk sessions the users can participate in.

Clause 5: “General user service requirements” describes the identification of the users and mechanisms for the administration of the talk sessions with contact lists.

Clause 6: “User services” describes the user procedures to establish instant talk sessions.

Clause 7: “Feature interaction” provides the requirements related to the interaction of the PoC and other features.

Clause 8: “Operability Issues” describes the provisioning and charging requirements.

1 Scope

The present document describes the user requirements for a Push to Talk over Cellular system and for Push to Talk over Cellular features. This document contains also operator requirements for a Push to Talk over Cellular system. For the Push to Talk over Cellular system, the system requirements in the documents [1] through [7] shall be followed.

Push to Talk over Cellular is applicable for GSM/GPRS/EGPRS packet switched networks, but the solutions chosen should not exclude extension to be available on UMTS and CDMA packet switched networks. The same user requirements shall apply in all these networks.

This specification is part of PoC release 2.0.

2 References

The following documents contain provisions, which through reference in this text constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a PoC document, a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document.

- [1] PoC; Architecture; PoC Release 2.0
- [2] PoC; Signaling Flows over UE-to-Network (UNI); PoC Release 2.0
- [3] PoC; User Plane; Transport Protocols; PoC Release 2.0
- [4] PoC; User Plane; (E)GPRS/UMTS Specification; PoC Release 2.0
- [5] PoC; List Management and Do-not-Disturb; PoC Release 2.0
- [6] PoC; Signalling Flows over Network-to-Network (NNI); PoC Release 2.0
- [7] PoC; Presence; PoC Release 2.0

3 Definitions and abbreviations

3.1 Definitions

For the purpose of the present document, the following terms and definitions apply.

Contact list: A list available to the end user containing the addresses of other users.

Floor denial: An action from the network to inform the **requesting participant** that the **floor request** is denied.

Floor grant: An action from the network to inform **requesting participant** that she has the floor

Floor idle: An action from the network to inform **participants** about the **idle floor**.

Floor release: An action from the **granted participant** to release her permission to talk.

Floor request: A request from a **requesting participant** to get a permission to talk and to become a **granted participant**.

Floor revoke: An action from the network to remove the permission to talk from the **granted participant**.

Floor taken: : An action from the network to inform **listening participants** who is the **granted participant** and that the floor is active

Granted floor: A state in a **talk session** where one of the **participants** is **granted participant**.

Granted participant: A **participant** having a permission to talk.

Idle floor: A state in **talk session** where there is no **granted participant**.

Invited user: This is the PoC user who has been invited to an instant talk session.

Inviting user: This is the PoC user inviting other PoC user(s) to an instant talk session.

Open group: A group that can be joined by any user.

Participant: A PoC user in a **talk session**.

PoC presence information: PoC service specific **presence information**.

Presence information: A set of attributes characterising current properties of presentities such as status, an optional communication address and other optional attributes.

Presentity: A user publishing his **presence information**.

Requesting participant: A participant initiating a floor request.

Restricted group: A group that can be joined only by predefined user(s).

Talk session: This is an established connection between PoC users where the users can communicate using voice one at a time.

Talk-burst: The voice of the **granted participant** from the time the user is granted until the user releases the permission to talk.

Transient ad-hoc group identity: An identity generated by the PoC server at establishment of the talk session and valid until talk session termination.

User: A human using the described features through a terminal device.

Watcher: A user requesting presence information of presentity.

3.2 Abbreviations

For the purpose of the present document, the following abbreviations apply.

BER	Bit Error Rate
CS	Circuit Switched
EGPRS	Enhanced GPRS
MOS	Mean Opinion Score
MSISDN	Mobile Station ISDN Number
PoC	Push to Talk over Cellular
SIP	Session Initiation Protocol
UMTS	Universal Mobile Telecommunications Service
URI	Uniform Resource Identifier

3.3 Requirement vocabulary

Shall	Indicates a mandatory requirement.
Should	Indicates a recommendation.
May	Indicates an optional requirement.

4 Summary of basic features

This section gives an informative overview of the basic features included in this PoC release.

4.1 1-to-1 communication feature

1-to-1 communication feature is the basic capability for setting up voice communication between two users. This functionality has two subclasses depending on the called parties acceptance mode: if the call is accepted automatically, then communication mode is instant talk and if the call needs manual answer, then the communication mode is request to talk.

4.1.1 Instant personal talk

This enables a user to have a voice communication with another user, where the users talk one at a time. Instant personal talk applies to autoanswer case.

For example an inviting user selects an invited user from a contact list or by typing the address of the invited user and initiates an instant personal talk. After a short period of time a user gets indication that it is possible to talk. In order to talk to the other user, a user uses floor control for starting and ending of the talk-burst.

4.1.2 Request to talk (RTT)

This enables a called party to have a manual answering capability to the PoC communication request. During the connection, both parties can speak one at a time, just like during any other PoC communication. The call is kept on until disconnected by either party or network.

The originating user will get connection establishment indications

- when the terminating user is reached and alerted of the RTT
- when the terminating user has accepted the RTT and the RTT is established.

After the RTT establishment indication either user can start talking. In principle it is possible that a RTT is started either so that the originating user talks first or that the terminating user talks first. This specification leaves the choice to the users.

4.2 Group talk features

This enables a user to have a voice communication with a multiple number of other users, where the users speak one at a time. Depending on the group communication set-up, there are three types of group communication:

- Chat group talk
- Instant group talk
- Ad-hoc instant group talk

For all group talk features a user can be aware of the participating users during a session. A user can also see from the display, which user is talking. In order to talk to the other users, a user uses floor control for starting and ending of the talk-burst.

4.2.1 Chat group talk

A user joins the group in order to participate in the chat group talk. There are two types of chat groups:

- An open chat group is a group that can be joined by any user. A user who has joined the group can invite other users to the group. An open chat group can be used as an open discussion place of a specific interest.
- A restricted group is a group with a member list. The creator of the group can add and remove members to the group, and only these users who are members can join the group. A member who has joined the group can invite other talk session members to the group talk session. A chat group could be used as a private discussion place for instance for a family or a hunting club.

A joined user in the group can invite another member to the chat group talk, when it is necessary to have a certain user in a discussion.

A user joins the chat group by selecting the group from the group list or by typing the address of the group and initiating a chat group talk.

4.2.2 Instant group talk

In instant group talk one of the members of the group invite other user group members in the group to establish an instant group talk session. Each invited member can either accept or reject the invitation, depending on the user's preference.

During an ongoing instant group talk session, a group member can join the group in order to participate in the instant group communication. This way the users who initially rejected the invitation or who dropped out from the group session can join the group at a later point in time.

During an ongoing instant group talk session a participant can also invite other members to the group session.

An instant group talk can be used as a professional discussion forum. For instance a manager of the marketing team can invite the team to discuss about marketing issues.

4.2.3 Ad-hoc instant group talk

In ad-hoc instant group talk, a user invites selected users to establish an ad-hoc instant group talk session. An inviting user selects invited users from a contact list or by typing the addresses of the invited users and initiates an ad-hoc instant group talk. Only transient ad-hoc group identity is created in the network for this feature. Each invited user can either accept or reject the invitation, depending on the user's preference.

During an ongoing ad-hoc talk session a participant can also invite other users to the group session.

An ad-hoc instant group talk can be used when a group discussion is needed without planning it in advance.

4.3 Instant personal alert

This enables a user to alert another user. The alert expresses the user's wish to communicate and is a way to politely request the other user to "call back" using instant personal talk features. An instant personal alert may carry a text message.

5 General user service requirements

This section defines requirements applicable across the instant talk features.

5.1 User identification and addressing

An inviting user shall be able to address the invited user by using either

1. Email style (Alphanumeric format), or;
2. Telephone number (MSISDN or other)

The user may define a display name as a means to personalize what should be displayed as his "nickname" to the other users during the talk session.

5.1.1 Alphanumeric format

Each PoC user can be identified and addressed by an alphanumeric format that contains the following information:

1. Domain of the operator
2. User name that may contain one or more of the following:
 - The personal name of the user
 - The work/function related identity
 - The name of the company/department the user belongs to

All this information can be conveniently expressed in the format of a SIP URI.

Examples:

Personal URI of a consumer user: <sip:John.Smith@operator.net>

Personal URI of a professional user: <sip:John.Smith.AcmeCorp@operator.net>

Functional URI of a professional user: <sip:Bus122.Helsinki@operator.net>

5.1.2 MSISDN format

Each PoC user can also be addressed by a telephone number (MSISDN). All this information can be conveniently expressed in the format of a TEL URL.

5.1.3 Group identification and addressing

Chat groups and instant talk groups need a unique alphanumeric identifier (SIP URI). The group identity shall contain

- Domain of the operator
- Group name. The group name may contain name of the company/department (for professional use).

5.2 Contact list management

A user should have means to store the addresses of other users and groups in order to use that information to contact them using PoC features. For this purpose a user should have at least one contact list. The user may be given the possibility to have more than one contact list, in which case the user should be able to set one of the contact lists to be the default one.

A user should be able to create a contact list and give it a display name. A user should be able to delete a contact list. A user should be able to add and remove user and group addresses in the contact list. A user may also insert other information for a user or a group, for example a display name of the user, a display name of the group.

A user should be able to browse the contact list(s) and select one or more users from the list(s), or one group from the list, with the purpose of initiating a talk session. In case of instant personal talk, the user shall select one entry with a user address. In case of instant group talk, the user shall select a group address. In case of ad-hoc instant group talk, the user shall select more than one user with user address.

It shall be possible to store and retrieve the contact lists in the system.

NOTE: The ability to store the contact list in the network is needed in order to provide the user a possibility to get information back when the terminal has lost the contacts or user wants to use a new terminal for the instant talk features.

5.3 Registration

A user shall register to the network in order to use Push to Talk over Cellular features.

A user should be able to configure the terminal to do the registration to the network automatically when user turns on the power in the terminal.

The terminal should de-register automatically when user turns off the power in the terminal.

5.4 Roaming

Users shall be able to use PoC features when visiting non-home access networks with which the home PoC operator has a GPRS roaming agreement.

5.5 Communication bounds

Users shall be able to use the PoC features with other users belonging to both the same or the other PoC operator.

A PoC users shall be able to create and manage groups only hosted by their own PoC operator. Members of the PoC group may also be PoC users from other PoC operators networks.

5.6 Floor control and talk burst handling

5.6.1 Idle floor

All participants shall be informed when the floor is idle.

5.6.2 Floor request

A participant who wishes to take the floor shall initiate a floor request, by pressing the Push to Talk button.

If the user's floor request is granted the user shall be notified with floor grant.

If the user's floor request is granted, all the other participants shall be informed that the floor has been taken and who has taken it.

A granted participant shall get a start-talking indication and upon which the participant may start talking.

If the user's floor request is denied, the user shall be notified with floor deny.

Only one participant in the talk session shall be a granted participant at a time.

The granted participant may keep the floor as long as needed by keeping the Push to Talk button depressed. That is, it shall not be necessary to speak continuously in order to keep the floor. However, the system shall be able to enforce a maximum duration for granted floor. If the duration of a granted floor exceeds the maximum (operator specified) time, the network will revoke the floor from the granted participant and the terminal shall stop transmitting talk-burst.

When the floor is revoked by the system, the participant shall be notified with floor revoke.

A granted participant who wishes to release the floor shall initiate a floor release, by releasing the Push to Talk button.

5.6.3 Floor request collision

When the floor is idle and two or more participants try to request the floor nearly simultaneously, one of the requesting participants shall become the granted participant and the other requesting participants shall be notified of the result of their respective requests as in 5.6.2.

5.6.4 Reception of talk-burst

When the talk session has been established, the reception of talk-bursts shall be automatic that is without any action on the part of the receiving participant.

5.7 User identification presentation to the other users

5.7.1 Identity of the inviting user and group

When a user receives the incoming PoC session request, the user shall also receive the identity of the inviting user, in the form of user identity and, if provided, the display name. The display name may be provided either by the inviting user or by the system. The system may replace display name provided by the user.

If the invitation is related to Chat Group Talk or the instant group talk, the invited user shall also be informed about the identity of the group the user is being invited to. The identity of the group shall be in the form of group identity and, if provided, the display name. The display name of the group may be provided by the system.

It shall be at the discretion of the invited terminal to present to the user the inviting user's identity information. It is however recommended that if the display name is available the terminal should display it.

5.7.2 Identities of other participants in the talk session

Talk session participant information can be delivered two ways. The mode is selectable by end user, depending on whether the user wants to

- a) request information on who is participating in the group just now
- b) request continues information on who is participating in the group now. In this case there is an indication while:
 - a participant leaves the talk session.
 - a participant joins or is added to the talk session

The selection shall lead to a clearly different user interface in the two cases. The end user may also choose not to use any group participant information.

The end user should be able make a subscription to the talk session participant information even if she is not herself participating in the session currently. The system may decline the request based on local policy information.

The system may use the same authorization policy rules for participant information subscription as for joining and rejoining a talk session. The system may also limit the number of subscriptions.

Note: depending on the choice of the operator, reception of group membership information may be charged. Continuous updating will therefore lead to charging for information that the user is not interested in.

5.7.3 Granted user identity

The identity of the user who has been granted the floor shall be distributed to all the other participants in the talk session. The granted participant shall be identified with the user identity and/or the display name depending on the system setting.

5.7.4 Anonymous chat group talk

A group owner may define that the participants in the chat group talk shall participate anonymously.

In this case the PoC system inserts system defined anonymous identity in to the participant information notifications and granted user identity notifications.

If a new user is invited to the ongoing anonymous chat group talk, the system may either

1. not allow the use of add function;
2. show the real identity of the inviting user to the invited user or;
3. not show the real identity of the inviting user to the invited user.

5.8 Do-not-disturb

The user shall be able to activate a setting to reject all incoming Talk session requests.

The setting shall apply to incoming PoC session requests. However the Do-not-disturb (DnD) functionality shall not apply to an instant personal alert.

If the invited user has DnD active, the inviting or adding user shall receive an indication that the invited user is busy.

A user shall be able to easily activate and deactivate the DnD function. It shall be possible for the user to check from the terminal whether the DnD is active or not.

The user's DnD setting shall survive de-registration from the system.

5.9 Multisession operation

PoC system may enable usage of several simultaneous sessions for a user. Sessions have to be handled such way that the radio resources utilization limitations are fulfilled.

This includes cases such as

- a) participating in multiple groups at the same time
- b) making and receiving 1-to-1 calls while in a group session

5.10 Group list management

Group list management shall allow the user equipment to reliably store and retrieve the groups located in the Group List Management Server (GLMS) as well as to add and modify groups and change their attributes.

The end user uses a group as a means to establish talk sessions where the group attributes control the session type and who may participate in the talk session. A group identity shall be used to address the group and initiate talk sessions.

The GLMS is specified in [5].

5.11 Access list management

A user shall be able to use access lists in order to control how the incoming instant talk sessions are treated.

Access lists shall be able to use also for authorization of the presence information of the user.

A user shall be able to maintain following lists:

- PoC Reject list
- PoC Accept list
- Presence Reject list
- Presence Accept List

On the PoC reject list the user maintains users and/or groups from whom the user does not accept to receive instant talk session requests. The PoC reject list can be checked while delivering instant personal alerts. The users on the PoC reject list are not authorized to get the PoC presence information of the user.

On the PoC accept list the user maintains users and/or groups from whom the user accepts to receive instant talk session requests. In addition to the accept list there is an additional auto answer mode flag. If the user sets auto answer mode flag on, the sessions from the accept list users are utilizing auto answer mode. If the auto answer mode flag is off, then the manual answer mode is applied. The users on the PoC accept list are authorized to get the PoC presence information of the user.

A user shall have the ability to either accept or reject requests from "all other users" that is users not specifically listed in either on the PoC reject list or PoC accept list. For these "all other users" manual answer mode is used.

On the Presence reject list the user maintains users who are not allowed to get any presence information of the user.

On the Presence accept list the user maintains users who are allowed to get at least basic presence information of the user.

A user shall be able to:

- Add user/group identity to an accept list
- Remove user/group identity from an accept list
- Get an accept list
- Add user/group identity to a reject list
- Remove user/group identity from a reject list
- Get a reject list

Specifically for the PoC accept list a user shall be able to:

- Set auto answer mode flag
- Reset auto answer mode flag

5.12 Access control policy on incoming instant talk session request

If the inviting user is found in the accept list of the invited user, the incoming talk session request shall be forwarded by the system to the invited user's terminal.

If the inviting user falls under the setting of "all other users" in the accept list of the invited user, the incoming talk session request shall be forwarded by the system to the invited user's terminal.

If the inviting user is found or falls under the setting of "all other users" in the reject list of the invited user, the incoming talk session request shall be rejected with "unavailable" indication to the inviting user. The request shall not be forwarded by the system to the invited user's terminal.

If the inviting user is not represented on any list of the invited user, the incoming talk session request shall be rejected with "unavailable" indication to the inviting user. The request shall not be forwarded by the system to the invited user's terminal.

5.13 Answering mode settings

A user shall be able to set auto answer mode flag which is applicable for all inviting user on the PoC accept list. This setting is stored in the network and must be obeyed by the terminal (regardless of the local settings) when receiving talk session invitation.

Note: Even though the terminal answers automatically, in some cases it cannot play the voice immediately to the user because an other application is currently using the audio output capabilities of the terminal.

5.14 Communications performance expectations

This section describes performance requirements for the instant talk features. The performance requirements within this section has to be fulfilled up to 10% BLER conditions.

NOTE: The values stated in the following sections are not absolute maximum values, but represent values that are expected by users in a vast majority of cases in a well-designed network.

NOTE: The values stated in the following sections do not take into account delays caused by inter-operator interfaces.

5.14.1 Delays in communication

A requesting participant should receive the response (floor granted or floor denied) to the floor request no later than 1.6 seconds after the initiation of the floor request during talk session.

A participant should be aware of the floor state changes within 0.8 seconds after the floor state changed in the network.

All the participants should be notified of the floor state change nearly at the same time.

5.14.2 Delays in communication setup

If a network uses early session or early media, the inviting user should receive floor idle or floor granted indication no later than 2 seconds from the initiation of the talk session. If a network uses late media and the invited user uses automatic answer, the inviting user should receive floor idle or floor granted indication no later than 4 seconds from the initiation of the talk session.

If a network uses late media and the invited user uses manual answer, the inviting user should receive floor idle or floor granted indication no later than 1.6 seconds after the invited user has answered.

The invited user should receive floor state indication no later than 1.6 seconds after answering the request.

5.14.3 Failure indication delay in instant personal talk setup

The operator should be able to specify the time when the failure indication is given to the inviting user if the invited user is not reachable (e.g. because of radio shadow or ongoing CS call).

Failure indication if network is unreachable – terminal specified.

5.14.4 Result notification for the invitation

An inviting user should be informed of the start to talk, or be rejected, within 1.6 seconds of initiating the instant talk session.

5.14.5 Group join and leave delay

The user should be able to join ongoing Group communication i.e. hear an ongoing talk-burst (if any) or to initiate a talk-burst within 4 seconds after having initiated a join procedure for a Group Communication.

When the user leaves a joined-in group, the operation should be fully carried out within 4 seconds.

5.14.6 Instant personal alert acknowledgement delay

The user should receive an indication about successful delivery of an instant personal alert within 5 seconds after initiation.

The user should receive an indication about unsuccessful delivery of an instant personal alert within 5 seconds after initiation if the user is not registered.

NOTE: If the terminating terminal is not reachable by the radio network, the indication of the unsuccessful delivery will not be provided to the user in this time.

5.14.7 Voice delay

The voice delay time (from when it is spoken until it is heard by the receiving user) should typically be no more than 1.6 seconds during the session.

The above delay is a general requirement for the talk-bursts, however for the first talk-burst in the instant personal talk setup the voice delay is acceptable to be 4 s in case of the automatic answer.

In case of early media is used and invited user answers manually, the voice delay depends how long it takes for the invited user to accept.

The round trip time experienced by a user, after the user ends a talk-burst, up to when the user hears the beginning of the reply, assuming that the other party was ready to answer immediately, should not be more than 4 seconds.

5.14.8 Voice quality

The voice quality should meet the following limit: MOS \geq 3 at BER \leq 2 %.

5.15 Performance requirements

5.15.1 Group management

The user who is making group management operations should receive, within 10 seconds from making the operation, response that group management has been performed successfully or unsuccessfully in the system.

5.15.2 Access list management

The user who is making access list management operations should receive, within 10 seconds from making the operation, response that the management operation has been performed successfully or unsuccessfully.

Access list mode selection shall be effective, including response to the user, within 10 seconds from the selection.

5.15.3 Do-not-disturb

A do-not-disturb setting shall be effective in the system, including response to the user, within 10 seconds from the setting.

5.15.4 Auto answer mode setting

An auto answer mode setting shall be effective in the system, including response to the user, within 10 seconds from the setting.

5.16 Presence

A presentity shall be able to publish basic presence information about his general availability and willingness for communication.

In addition a presentity shall be able to publish following PoC presence information:

- PoC Available: A presentity is willing and available for PoC talk session.
- PoC Unavailable: A presentity is not willing and/or available for PoC talk session.

A presentity shall be able to authorize subscriptions from watchers by maintaining authorized watchers list for PoC presence information and for basic presence information.

A watcher shall be able to subscribe to the PoC and basic presence information of the presentity.

A presentity may be able to subscribe to information of the unknown watchers i.e. the watchers who are neither on the Presence reject list nor on the Presence accept list.

A watcher shall be able to use a contact list to subscribe to the PoC presence information and basic presence information of multiple presentities.

6 User services

6.1 Common services

The user shall have the ability to configure the terminal for different behavior like

- a) Answering the incoming call automatic or manual
- b) How to be prompted to get user attention

6.2 Instant personal talk

An instant personal talk consists of the following three phases:

1. The establishment phase;
2. The communication phase; and
3. The termination phase.

6.2.1 Establishment phase

6.2.1.1 Inviting user

An inviting user shall be able to initiate an instant personal talk session with another single user. For instance a user selects the invited user from the contact list and presses a button to trigger the session establishment.

An inviting user shall be able to request the floor the same time when initiating an instant personal talk session by pressing and holding the Push to Talk button. An inviting user requests the floor with the initiation of the session and the user shall get start talking indication. The user that requested the floor, shall be able to release the floor at any time by releasing the Push to Talk button.

There are two options depending on the operator setting when the floor idle or start talking indication is given to the inviting user:

- **Early media:** In this case the floor idle or start talking indication is given to the inviting user before the invited user is reached. The system shall before giving the indication, check that the invited user is registered, incoming sessions are not blocked, Do-not-disturb is not active and that the invited user uses automatic answer mode. When the idle-state indication is given to the inviting user, the user shall be able to request a permission to send early talk-burst. When the start talking indication is given to the inviting user, the user can start sending early talk-burst. The inviting user shall also be aware that the invited user has not yet accepted the session. If the early talk-burst could not be delivered for any reason (for example when the invited user was not reachable because of the ongoing CS call or the invited user rejected the session) the inviting user shall be aware that the talk-burst was not delivered same time when the session is released. Early media is an optional mode.
- **Late media:** In this case the floor idle or start talking indication is given to the inviting user same time when the user is informed that the invited user accepted the instant personal talk session. If invited user rejects the call, the session is terminated and the inviting user shall receive indication that the invited user rejected the call.
- **Early session:** Early session is a system concept not visible for the user. In early session case both early media and late media cases are applicable. Note that early session is not applicable with manual answer case for the invited user. The system shall be able to either accept or reject the request for the early session.

An inviting user shall be able to terminate the session any time during the setup.

6.2.1.2 Invited user

The invited user shall be able to define whether the incoming instant talk sessions are rejected or granted by the system as described in the chapter 5.11.

If automatic answer mode is used, the invited user shall receive an indication of the incoming instant personal talk session and the terminal accepts the session without any action from the user.

When an invited terminal receives the instant personal talk session request and the manual answer mode is used, the invited user shall be alerted of the incoming talk session. The user shall have a choice to accept or reject the talk session request.

After the session is accepted the invited user shall receive either floor idle indication or floor granted indication and starts to receive talk-burst from the inviting user.

If the session is terminated during the setup the invited user shall get a clear indication.

6.2.2 Communication phase

During a communication phase users can communicate in a manner described in the chapter 5.6.

6.2.3 Add user to the instant personal talk

A participating user of the instant personal talk shall be able add new user(s) in to the session. The inviting user shall receive notification of the result of the invitation per invited user. The result can be for example:

- A user accepted invitation
- A user rejected invitation
- A user was not reachable

After the session is accepted the invited user shall receive 'ready state' indication or indication of the granted user.

Adding of user shall not affect the ongoing communication.

The added users are included in the list of participants, which is distributed to those sessions participants who have requested the participant information updates.

There is maximum number of added users, which is operator configurable.

6.2.4 Termination

At any time during the instant personal talk session, either of the users can release the instant personal talk session.

The PoC system shall be able to release an instant personal talk session. The PoC system should release the instant personal talk session when there have been no talk-bursts sent within a time period as pre-configured by the operator.

A user shall get an indication when the instant personal talk session is terminated. If a user is added to the instant personal talk, the session shall be terminated following the same rules as the ad-hoc instant group talk session.

The instant talk session is terminated when the inactivity timer expires or, depending on policy. The policy for talk session termination includes terminating the talk session when the initiator disconnects or terminating the talk session when only one party is left.

6.3 Instant personal alert

A user shall use an instant personal alert feature in order to request another user to initiate instant personal talk session back to the user. The other user's terminal shall be able to recognize an instant personal alert and present it to the user with the possibility for the user to initiate an instant personal talk session to the alerting user.

The sending user shall receive an acknowledgement whether the instant personal alert was successfully delivered or not. Instant personal alerts are delivered only to the users who are currently registered in the system and are reachable. An alerting user should be able to insert a reason text to the alerted user in the instant personal alert.

6.4 Chat group talk

6.4.1 Introduction to group types

There are different types of chat groups as regards to which users are allowed to join or to be invited:

- An open chat group is a group that can be joined-in by any user.
- A restricted chat group is a group with a member list and only the user who owns the group shall be able to add and remove group members. Only the group members shall be able to join the group talk session.

6.4.2 Join a group

A user shall be able to join a chat group talk by selecting the group identity for instance from the contact list. A user shall be able to join a restricted group and an open group.

A user shall get a floor idle, floor granted or start talking indication after the user has successfully joined the chat group.

If floor is granted user shall receive a granted user identity and starts to receive talk-burst from the granted user.

The system shall accept the join procedure to a restricted chat group if the user is a member of the particular group.

The system shall accept the join procedure to an open chat group.

The system shall be able to reject the joining user because of the following reasons:

- The user is not a member of the restricted group.
- The maximum number of users has already joined the group.
- The requested group does not exist.

In this case user shall get a reject indication and the reason.

6.4.3 Add user to the chat group talk

A participant in restricted and open chat group shall be able to invite other users to the group. If the group is restricted group, a participant shall be able to invite only users who are members of the group. An inviting user shall receive notification of the result of the invitation per invited user. The result can be:

- An invited user accepted invitation
- An invited user rejected invitation
- An invited user was not reachable

The added users are included in the list of participants, which is distributed to those sessions participants who have requested the participant information updates.

There is maximum number of added users, which is operator configurable.

6.4.4 Communications phase

During a communications phase participants in the group can talk in a manner described in the chapter 5.6.

6.4.5 Leaving the group

A participant shall be able to disconnect from restricted or open group.

A participant shall get a disconnection indication after the user has successfully left the group.

The PoC system shall be able to disconnect participants from the chat group. In case there have been no talk-bursts sent within a time period as pre-configured by the operator, the system may disconnect all the participants in the chat group.

The chat group talk session is terminated when the inactivity timer expires or when last party disconnects from the talk session.

6.5 Instant group talk

A group has to be created and the members have to be defined before the Instant Group Talk can be established. In instant talk group communication one of the members then invites the other members to the group communication.

As long as the instant talk group communication session exists, a member of group can also join in order to participate in the instant talk group communication. This way users who initially rejected the invitation or who were dropped out from the group can join the group later when they want or can.

An Instant talk group is a group with a member list. Only a member of the group can establish the Instant Group Talk session.

6.5.1 Establishment of instant group talk session

A member of the Instant talk group shall be able to invite all the members of the group to the group communication. In case there is Instant group talk session ongoing, the invitations to the group members are not sent but the user shall be joined to the ongoing session.

An inviting user shall receive notification of the result of the invitation per invited user. The result can be for example:

- A user accepted invitation
- A user rejected invitation
- A user was not reachable

An invited user shall get a clear indication of the invitation and the group identity and group display name and who is the inviting user.

The invited user shall be able to configure the terminal so that it either automatically accepts an incoming Instant Group Talk session or the terminal asks the user to either accept or reject the incoming Instant Group Talk session.

When at least one user has accepted the invitation, the inviting user and the user who accepted the invitation shall be able to start the communication. This is expected behavior there may be other rules applied as well.

6.5.2 Add user to the instant group talk

A user in the group shall be able to invite the other members of the group to the Instant Group Talk session. An inviting user shall receive notification of the result of the invitation per invited user. The result can be:

- A user accepted invitation
- A user rejected invitation
- A user was not reachable

There is maximum number of added users, which is operator configurable.

6.5.3 Talk phase

During a communication phase participants in the group can talk in a manner described in the subclause 5.6.

6.5.4 Disconnecting from the group

A participant shall be able to disconnect from the group.

A user shall get a disconnection indication after leaving the group.

6.5.5 Termination of instant group talk

The instant talk session is terminated when the inactivity timer expires or, depending on policy. The policy for talk session termination includes terminating the talk session when the initiator disconnects or terminating the talk session when only one party is left (depending on the operator policy).

A system shall be able to terminate an Instant group talk session depending on the operator setting. For example in following cases:

1. There is only one participant left in the group: The system may in this case terminate the session with this participant.
2. There have been no talk-bursts sent within a time period pre-configured by the operator.
3. Initiator of the talk session disconnects from the group: The system shall in this case terminate the sessions with other users. (Optional).

6.6 Group management

This chapter specifies the group management requirements for the groups used in Chat Group Talk and in the Instant Group Talk.

6.6.1 Group creation and attributes

It shall be possible for a user and for a system administrator to create groups.

The creator shall define the following information when a group is created.

- Group display name
- Group type; open chat group, restricted chat group or instant talk group
- Member list (applicable for restricted chat groups and for Instant talk groups, can be left empty to begin with, list may be modified later)
- Reject list (can be empty)
- Maximum number of users allowed in the group (changeable, may be forced by the operator, applicable for the chat groups)
- Anonymous chat group indication (changeable, applicable for the chat groups)
- Right to invite members (changeable, may be forced by the operator, applicable for the Instant talk groups)
 - Right can be given to all members or only to group owner
- Right to add users in to the talk session (changeable, may be forced by the operator, applicable for all groups)
 - Right can be given to none, to group owner, to all group members

NOTE: the operator may restrict the number of the member for a group.

6.6.2 Group management operations

A user who has created a group shall be able to

- Add member(s) to the group
- Remove member(s) from the group
- Fetch the member list of the group

Any user shall be able to fetch a list of the groups the user has created. All new members to a group are added to the group member list immediately.

A user shall be able to query information about the groups that the user has created. The user shall also be able to modify the group information that is not non-changeable (e.g. add and remove members). The user shall also be able to delete the group.

When a group is deleted, all subsequent set ups of the Group Talk session for this group will be denied with an indication that the group does not exist. A user, who is making group management operations, shall receive response from the system whether the operation was successful or not.

6.7 Ad-hoc instant group talk

In order to initiate Ad-hoc Group Communication a user does not have to create a group for that. A user simply selects users whom the user wants to invite to the Ad-hoc Group Communication.

6.7.1 Setting up ad-hoc instant group talk

A user shall be able to invite selected users to the Ad-hoc group communication.

The inviting user shall receive notification of the result of the invitation per invited user. The result can be:

- A user accepted invitation
- A user rejected invitation
- A user was not reachable

The invited user shall get an indication that this is an ad-hoc group talk session request also an identity of the invited user.

The invited user shall be able to configure her terminal so that it either automatically accepts an incoming Ad-hoc Group session or the terminal asks the user to either accept or reject the incoming ad-hoc instant group talk session.

When at least one user has accepted the invitation the inviting user and the accepting user shall be able to start to communicate.

If no one accepts the invitation, the inviting user shall receive indication of the failed establishment.

There is maximum number of invited users, which is operator configurable.

6.7.2 Add users to the ad-hoc instant talk group

To participate to an ad-hoc group talk session shall be able to invite other users to the group. The inviting user shall receive notification of the result of the invitation per invited user. The result can be:

- A user accepted invitation
- A user rejected invitation
- A user was not reachable

The inviting user can only be the same user who setup the Ad-hoc Group communication.

There is maximum number of added users, which is operator configurable.

6.7.3 Communications phase

During a communications phase users in the group can talk in a manner described in the subclause 5.6.

6.7.4 Disconnecting from the group

A user shall be able to disconnect him/herself from the group.

A user shall get an (disconnection) indication after that the user has successfully left the group.

6.7.5 Re-join the group

A user who has been disconnected from the ad-hoc instant group talk session shall be able to re-join the session if it is still ongoing. Otherwise the re-join procedure shall be rejected.

6.7.6 Termination of the ad-hoc instant group talk

A system shall be able to terminate an ad-hoc instant group talk session depending on the operator setting. For example in following cases:

1. Initiator disconnects from the group: The system shall in this case terminate the sessions with other users.
2. There is only one user left in the group: The system shall in this case terminate the session with this user.
3. There have been no talk-bursts sent within a time period pre-configured by the operator.

After the termination of the ad-hoc group talk session, it is not possible to re-join.

The instant talk session is terminated when the inactivity timer expires or, depending on policy. The policy for talk session termination includes terminating the talk session when the initiator disconnects or terminating the talk session when only one party is left.

7 Feature interaction

7.1 Invited while engaged in other session

A user shall be offered a new session manually while the user is engaged in a talk session. The user or terminal shall be able to accept or reject the incoming session. If the user or terminal rejects the new talk session it will not affect the ongoing session.

If the user or terminal accepts the new talk session the ongoing session shall be disconnected.

If the user does not answer to the incoming talk session it will not affect the ongoing session.

If the terminal and the network are capable of handling more than one active session then the new incoming session may be also accepted without terminating the ongoing session.

The expected behavior from the terminal is to use manual answer mode for the incoming talk session if a user is engaged in other talk session even if the terminal is configured to answer automatically.

7.2 Outgoing session while engaged in other session

A user shall not be able to initiate any new talk session while the user is engaged in other talk session. A terminal may implement a behavior of disconnecting automatically the ongoing session when the user initiates a new talk session.

7.3 Instant personal alert versus instant talk session

A user, who is engaged in any type of talk session, shall be able to receive instant personal alerts.

A user, who is engaged in any type of talk session, shall be able to send instant personal alerts.

7.4 Instant personal alert versus do-not-disturb

It shall be possible to receive instant personal alert while do-not-disturb is active.

It shall be possible to send instant personal alert while do-not-disturb is active. It should be recognized, though, that in this case the alerted user will receive a busy indication when the user tries to originate a talk session to answer.

7.5 Instant talk versus other packet data applications

A user should be able to use other packet data applications simultaneously with the instant talk features. The terminal could restrict this.

Data packet delivery should not decrease audio quality when other data services should be restricted.

Restricted to the terminal, A user shall be able to use other data service PoC features.

7.6 Do-not-disturb versus outgoing instant talk session

It shall be possible to originate outgoing Instant talk sessions while having Do-not-Disturb active.

7.7 Incoming instant talk session during CS call

In case the invited user has Class B terminal where parallel CS and PS communication is not possible, the inviting user shall experience that the invited user is not reachable if there is an ongoing CS call.

In case the invited user has Class A terminal where parallel CS and PS communication is possible, the terminal may allow the invited user to manually or automatically accept or reject the incoming Instant Talk session. Also it should be possible to put the CS call on hold or disconnect it.

7.8 Incoming CS call during the instant talk session

A user shall be able to receive CS calls while engaged in the talk session.

If class B terminal receives a CS call, the user cannot use talk during the CS call. Also the other user does not realize that the other user is not receiving the talk-bursts. The user only realizes that the other does not reply.

If class A terminal receives a CS call, the terminal may allow the user to continue the talk session and reject the CS call, or disconnect the talk session and accept the CS call.

8 Operability Issues

8.1 Provisioning

The user shall be provisioned with the PoC service in order to use PoC features. When and after the PoC service is provisioned, the client configuration information should be possible to receive from service provider network. This enables minimal user intervention to configure the terminal in order to use the PoC service.

The network shall have the possibility to deny a user any operation, service or setting that the user is requesting. In this case a clear indication shall be given to the user. At a minimum the operator shall be able to enable and disable users basic features including instant personal talk, chat group talk, instant group talk, ad-hoc group talk and instant personal alert.

8.2 Charging

8.2.1 Charging of PoC features

A participant of the session shall be able to be charged according to the charging model of the participant's home PoC operator. The PoC specifications shall not preclude charging models based on the following information:

- Sent talk-bursts: Amount of talk-bursts sent by the participant. Amount of talk-bursts shall be measured as a number of talk-bursts and/or as a length of talk-bursts.
- Received talk-bursts: Amount of talk-bursts received by the participant. Amount of talk-bursts shall be measured as a number of talk-bursts and/or as a length of talk-bursts.
- PoC session time: Time spent by the PoC participant in a PoC session.
- Subscription time to the participant information
- Amount of participant information sent to the user
- Talk session type
- Successful requests to add users to the talk session. (The request is considered successful when the request to add the users is accepted by the system)
- Initiation of the talk session

The owner of the session shall be able to be charged according to the charging model of the owner's home PoC operator. The PoC specifications shall not preclude charging models based on the following information:

- Total PoC session time: Total time PoC session is up, i.e. the time that there is at least one PoC participant in a PoC session.
- Amount of PoC participants as function of time: In order to do this following need to be measured, times when PoC participants join and leave the PoC session.
- Talk-bursts distributed to the PoC participants: When one of the PoC participants sends talk-burst in a session, then this talk-burst needs to be distributed to all PoC participants in a PoC session. The amount of distributed talk-bursts shall be measured as a number of talk-bursts and/or as a length of talk-bursts.
- Number of participant information subscriptions.
- Number of participant information sent to the PoC participants.
- Talk session type.

In the case of the instant personal talk and ad-hoc group talk, the initiator of the talk session is the owner of the talk session.

In the case of chat group talk and instant group talk, the owner/creator of the group is the owner of the talk session (i.e. not necessarily the initiator).

The PoC specifications shall not preclude that the PoC operator can charge its own users based on the following information:

- Successfully sent and delivered instant personal alerts
- Successfully received instant personal alerts
- Group management actions

8.2.2 Requirements

It is not acceptable to charge for traffic that is not delivered, e.g. because of;

- The invited user is in do-not-disturb mode
- The invited user is outside network coverage
- The invited user is in a CS call

ANNEX A (informative): Change history

Change history			
Date	Subject/Comment	Old	New
2004-05-12	Agreed by Comneon, Ericsson, Motorola, Nokia, Siemens		2.0.5
2004-06-07	Removed "confidential" and "proprietary" notes and updated change history	2.0.5	2.0.6