Source: Nokia (Rapporteur), Siemens
Title: Revised WI description for CS and PS Call Setup Delay Improvement
Document for: Decision

---

1. Introduction and Background

The work started for the CS and PS call setup delay improvement in RAN2 #46bis meeting, as expressed in WI status report.

During the presentation of the TR skeleton and overall discussion on organisation of the work in RAN2, it was noted that WI description is not most adequate and not reflecting best possible way the work to be done.

The rapporteur was assigned a task to revise the WI description according the discussion held in RAN2 #47.

The revised WI description was submitted first time to RAN2 reflector after RAN2 #46bis and submitted to RAN2 #47, where RAN2 reviewed proposed modifications.

During that time only one comment was received from RAN2 chairman concerning the time scale of the work. It was agreed to postpone TR presentations both for information and for approval by one TSG-RAN meeting to #30 and #31 respectively. The proposed modifications were found to be according the discussion in RAN2 #46bis.

After RAN2 #47 during the offline discussion between supporting companies following modifications were seen necessary:
>   1) The WI name originally proposed by Rapporteur was found somewhat unclear, and thus new naming " *Delay optimisation for procedures applicable to CS and PS connections*" is proposed.
>   2) To prioritise the work first more on improvements for service scenarios deployed based on R99, without restricting improvements also for Rel5/6 service scenarios.
>   3) The wording "dormant" state was found inaccurate without proper definition. Thus this objective is modified to *"To highlight the improvements to the existing RRC state transitions."*
>   4) The wording on objective "To review current RRM mechanisms" was found potentially misleading and thus it is change to "*To review network RRM strategies"*.

These additions are highlighted by yellow.

2. Proposal

It is proposed that TSG-RAN reviews and agrees on the proposed modifications to WI-sheet and time scale.

Work Item Description

Title: **Delay optimisation for procedures applicable to** CS and PS **Connections** ~~Call~~ ~~Setup Delay Improvement~~

1   3GPP Work Area

X	Radio Access
X	Core Network
	Services

2   Linked work items

   None

3   Justification

In a modern telecommunication network such as UMTS, the aim of the operator is to offer high quality of service to users. The Quality of Service is the collective effect of service performances, which determine the degree of satisfaction of a user of a service. ~~. The average user is not interested in the technical aspects of the network and it can only sense the end-to-end performance.~~

Under the general heading of quality of experience (QoE) one of the more noticeable points faced by the user is the apparent delay in ~~voice call~~ set up or channel allocation times for different connections. The ~~call~~ set up and channel allocation delay can be defined as the time interval from the instant the user initiate a connection request until the complete message indicating call disposition is received by the calling terminal or the by application server. When establishing a connection the user, due to this delay, may think that the ~~call~~ connection has not gone through or the network is not responding which may prompt the user to re-dial, reconnect or even in some cases to abandon the connection attempt. ~~Users can experience similar delays during the establishment of packet-based services such as Internet browsing.~~ From the service provider's perspective improving the quality of service is very important giving their users a good perception of the network performance and efficiency.

This work item is intended to investigate mechanisms to improve the connection establishment times and implement those changes into the relevant specifications.

~~In summary, the call setup delay is to be improved.~~

The delay in ~~call~~ set up or channel allocation times can be attributed to:
- Processing time in the UTRAN
- Processing time in the Core network
- Processing time in UE
- Call setup and alerting phase in the core network
- UTRAN and CN Protocols and associated overhead including protocol conversion
- Signalling delay on the air interface
- Signalling delay on UTRAN interfaces and towards CN
- NAS procedures

~~Furthermore, it could be due to the following factors:~~
- ~~Complex protocols in UTRAN and Core Network side~~

This work item shall not delay the finalization of the already ongoing work for release 6 targeting faster channel setup times.

4   Objective

The objectives of this work item are:

- o   To review the CS and PS Call and session Setup and channel allocation procedures in UMTS
- o   To highlight the improvements where call and session setup process can be improved and consider impacts the relevant specifications
- o   To highlight the improvements to the existing RRC state transitions reactivation of a data session that was in a "dormant" state, i.e. a data session that had not been generating user traffic in the recent past
- o   To identify possible ways to enhance call and session setup performance whilst keeping in mind R99 backwards compatibility
- o   To put forward change request relevant to specifications
- o   To focus on the reduction of delay caused by RAN related aspects
- o   To review performance requirements for e.g. RRC procedures
- o   To review network RRM strategies
- o   To provide modifications for CS and PS service scenarios deployed based on R99

This investigation should determine possible enhancements, which will be documented in a technical report. The report should also propose in the conclusion suggested changes to existing specifications.

Priorities should be given to decrease the latency, which is caused by the different factors.
Solutions with limited impact on the UE development should be preferred in order to ensure a fast delivery.

The relevant specifications should be enhanced as soon as a solution can be agreed in the technical working groups. Change Requests should be approved for the earliest possible release of the 3GPP specifications.

Solutions with limited impact on the UE development should be preferred in order to ensure a fast delivery.

This work item should prioritise on providing modifications and improvements to service scenarios deployed based on R99 by operators to date, in order to enhance the quality of service and experience of UMTS.

5   Service Aspects

None

6   MMI-Aspects

None.

7   Charging Aspects

TBDNone

8   Security Aspects

TBDNone

9   Impacts

Affects:	UICC apps	ME	AN	CN	Others
Yes		X	X	X	
No	X				
Don't know					

10 Expected Output and Time scale (to be updated at each plenary)

New specifications						
Spec No.	Title	Prime rsp. WG	2ndary rsp. WG(s)	Presented for information at plenary#	Approved at plenary#	Comments
TR 25.XXX	Signalling Enhancements for CS and PS Connections; Analyses and RecommendationsCS and PS Call Set Up Delay Improvement	RAN2	RAN3 RAN1 CN1	2930	310	

Affected existing specifications				
Spec No.	CR	Subject	Approved at plenary#	Comments
25.331				
25.321				
25.322				

11 Work item rapporteur(s)

Juho Pirskanen – Nokia (juho.pirskanen@nokia.com)

12 Work item leadership

TSG RAN WG2

13 Supporting Companies

3, Ericsson, LG, Motorola, NEC, Nokia, Nortel, Qualcomm, Samsung, Siemens, Telia-Sonera, T-Mobile (before revision)

14 Classification of the WI (if known)

X	Feature (go to 14a)
	Building Block (go to 14b)
X	Work Task (go to 14c)

form change history:
v1.11.0: includes those changes from v1.8.0 agreed at SP-25.
v1.10.0: full circle
v1.9.0: a clean sheet
v1.8.0: includes comments from SA#24
v1.7.0: includes comments from RAN, CN and T #24; also includes "early implementation" data
v1.6.0: includes comments made during review period prior to TSGs#24
v1.5.0: includes comments made at TSGs#23 (Phoenix)
v1.4.0: offered to SA#23 for approval
v1.3.0: offered to CN#23, RAN#23 and T#23 for comments
DRAFT4 v1.3.0: 2004-03-09: Incorporation of comments from Leaders list
DRAFT3 v1.3.0: 2004-02-19: Incorporation of comments from MCC members
DRAFT2 v1.3.0: 2004-01-29: Complete redraft:
v1.2.0: 2002-07-04: "USIM" box changed to "UICC apps"
2003-05-28: spelling of "rapporteur" corrected
2002-07-04: "USIM" box changed to "UICC apps"