Technical Specification Group Services and System Aspects
Meeting #10, Bangkok, Thailand, 11-14 December 2000

TSGS#10(00) 0683
revision of SP-000535

Source: **Ad hoc group**

Title: **CRs to 22.105 on Alignment of delay definition (R99/Rel-4)**

Document for: **Approval**

Agenda Item: **7.1.3**

Spec	CR	Rev	Phase	Cat	Subject	Vers	New Vers
22.105	028	1	R99	F	Alignment of delay definition	3.9.0	3.10.0
22.105	029		Rel-4	A	Alignment of delay definition	4.0.0	4.1.0

CR-Form-v3

CHANGE REQUEST

TS 22 105	CR	028	rev	1	Current version:	3.9.0

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ✍ symbols.*

Proposed change affects: ✍	(U)SIM ☐	ME/UE ☐	Radio Access Network ☐	Core Network ☐

Title: ✍	Alignment of delay definition		
Source: ✍	Ad hoc group		
Work item code: ✍		**Date:** ✍	13/12/2000
Category: ✍	F	**Release:** ✍	R99

Use one of the following categories:
- ***F*** *(essential correction)*
- ***A*** *(corresponds to a correction in an earlier release)*
- ***B*** *(Addition of feature),*
- ***C*** *(Functional modification of feature)*
- ***D*** *(Editorial modification)*

Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:

2	*(GSM Phase 2)*
R96	*(Release 1996)*
R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
REL-4	*(Release 4)*
REL-5	*(Release 5)*

Reason for change: ✍	Correction of feature.
Summary of change: ✍	Addition of note to section 5.5
Consequences if not approved: ✍	Less clarity; requested by SA plenary

Clauses affected: ✍	5.5		
Other specs affected: ✍	☐ Other core specifications ☐ Test specifications ☐ O&M Specifications	✍	
Other comments: ✍			

5.5 Supported End User QoS

This section outlines the QoS requirements that shall be provided to the end user / applications and describes them as requirements between communicating entities (i.e. end to end). The QoS values in the tables represent end to end performance, including mobile to mobile calls and satellite components. Delay values represent one -way delay (i.e. from originating entity to terminating entity). The values included in the following tables are commonly accepted values from an end-user viewpoint [12]. The delay contribution within the mobile network should be kept to minimumsince there may be additional delay contributions from external networks.

Figure 2 below summarises the major groups of application in terms of QoS requirements. Applications and new applications may be applicable to one more groups.

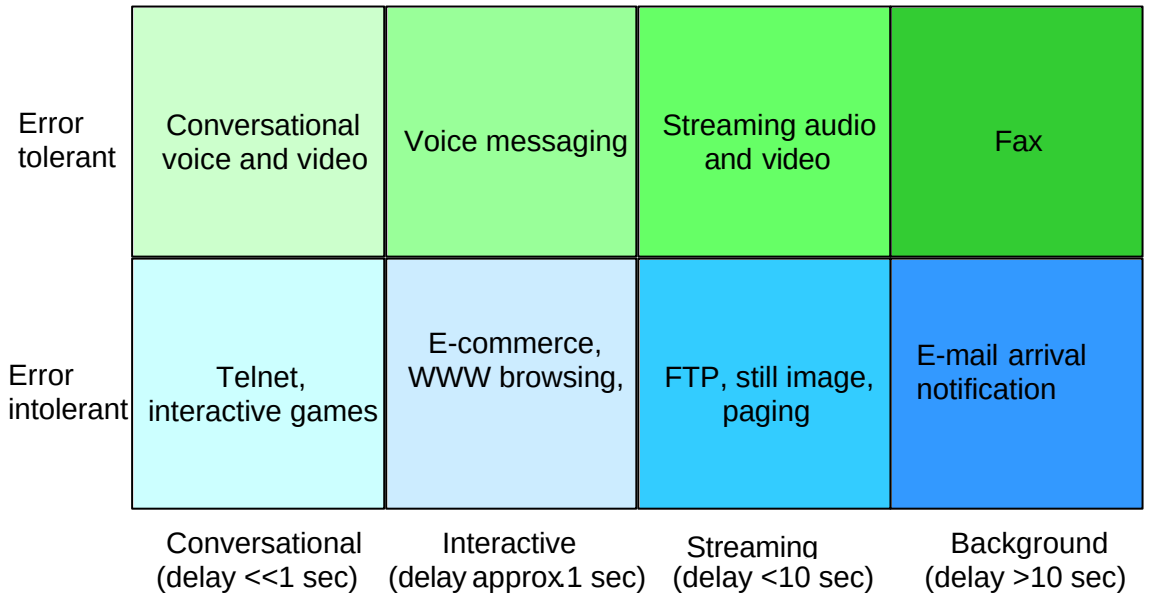

Figure 2: Summary of applications in terms of QoS requirements

The following tables further elaborate end user / application QoS requirements.

Table 1: End-user Performance Expectations - Conversational / Real-time Services

Medium	Application	Degree of symmetry	Data rate	Key performance parameters and target values		
				End-to-end One-way Delay	Delay Variation within a call	Information loss
Audio	Conversational voice	Two-way	4-25 kb/s	<150 msec preferred <400 msec limit Note 1.	< 1 msec	< 3% FER

Video	Videophone	Two-way	32-384 kb/s	< 150 msec preferred <400 msec limit Lip-synch : < 100 msec		< 1% FER
Data	Telemetry - two-way control	Two-way	<28.8 kb/s	< 250 msec	N.A	Zero
Data	Interactive games	Two-way	< 1 KB	< 250 msec	N.A	Zero
Data	Telnet	Two-way (asymmetric)	< 1 KB	< 250 msec	N.A	Zero

Note 1: The overall one way delay in the mobile network ~~(e.g. from~~ (from UE to PLMN border) is approximately 100msec.

Table 2: End-user Performance Expectations - Interactive Services

Medium	Application	Degree of symmetry	Data rate	Key performance parameters and target values		
				One-way Delay	Delay Variation	Information loss
Audio	Voice messaging	Primarily one-way	4-13 kb/s	< 1 sec for playback < 2 sec for record	< 1 msec	< 3% FER
Data	Web-browsing - HTML	Primarily one-way		< 4 sec /page	N.A	Zero
Data	Transaction services – high priority e.g. e-commerce, ATM	Two-way		< 4 sec	N.A	Zero
Data	E-mail (server access)	Primarily One-way		< 4 sec	N.A	Zero

Table 3: End-user Performance Expectations - Streaming Services

Medium	Application	Degree of symmetry	Data rate	Key performance parameters and target values		
				One-way Delay	Delay Variation	Information loss
Audio	High quality streaming audio	Primarily one-way	32-128 kb/s	< 10 sec	< 1 msec	< 1% FER
Video	One-way	One-way	32-384 kb/s	< 10 sec		< 1% FER
Data	Bulk data transfer/retrieval	Primarily one-way		< 10 sec	N.A	Zero
Data	Still image	One-way		< 10 sec	N.A	Zero
Data	Telemetry - monitoring	One-way	<28.8 kb/s	< 10 sec	N.A	Zero

CR-Form-v3

CHANGE REQUEST

TS 22 105	CR	029	rev		Current version:	4.0.0

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Title: ✍	Alignment of delay definition	
Source: ✍	Ad hoc group	
Work item code: ✍		***Date:*** ✍ 13/12/00
Category: ✍	**A**	***Release:*** ✍ Rel-4

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Reason for change: ✍	Correction of feature. Result of CR to earlier release (22.105-028r1).
Summary of change: ✍	Addition of note to section 5.5
Consequences if not approved: ✍	Less clarity; requested by SA plenary

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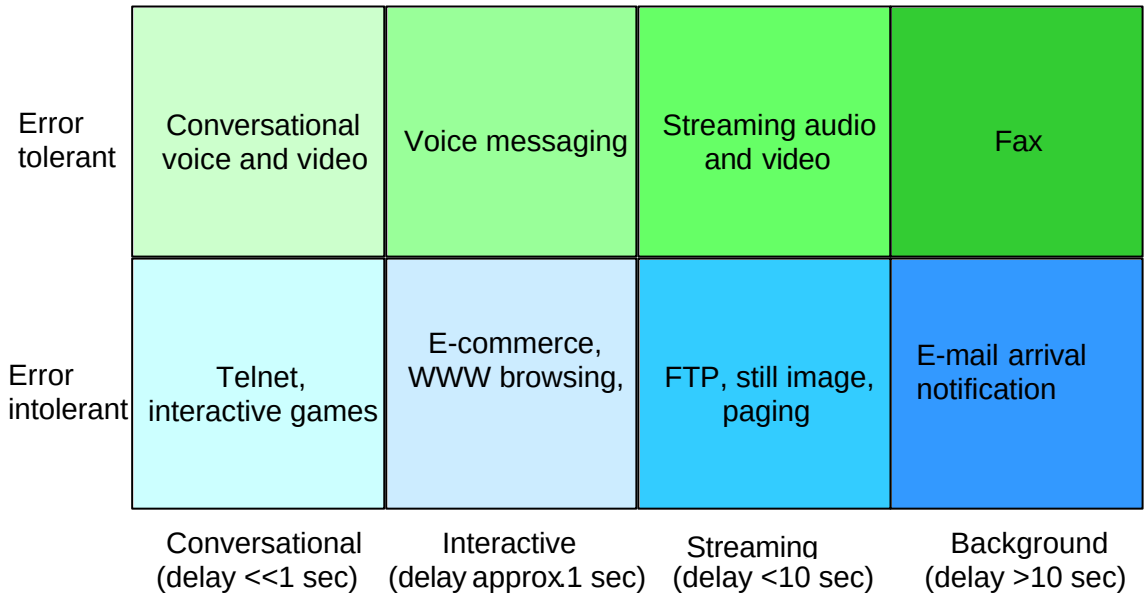

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5.6 Radio Interface optimisation

The following requirements shall lead the radio interface optimisation process;

- support of high bit rate (around the Peak Bit Rate), bursty, asymmetric, non-real time bearer capabilities;
- support of high bit rate (around the Peak Bit Rate), bursty, asymmetric, real time bearer capabilities;
- the ability to extend or reduce the bandwidth associated with a bearer capability in order to adapt to bit rate or radio condition variations, and to add or drop service components.

However, the services provided by existing systems (speech in particular) shall be supported in a spectrally efficient manner (at least as efficiently as in GSM) for the same quality of service.
In order to allow the support of flexible, bandwidth on demand services, bearer services should be provided with the finest possible granularity that can be efficiently supported.