Source: **SA1**

Title: **CRs to 22.246 on MBMS (Rel-6)**

Document for: **Approval**

Agenda Item: **7.1.3**

Meeting	SA Doc	TS No.	CR No	Rev	Rel	Cat	Subject	Vers. Current	Vers New	SA1 Doc
SP-23	SP-040096	22.246	001	-	Rel-6	B	CR on advertising of capabilities required to receive a particular transmission	6.0.0	6.1.0	S1-040183
SP-23	SP-040096	22.246	002	-	Rel-6	F	Addition of “MBMS transport service” definition	6.0.0	6.1.0	S1-040226
SP-23	SP-040096	22.246	003	-	Rel-6	F	Clarification on delivery verification for MBMS user services	6.0.0	6.1.0	S1-040227
SP-23	SP-040096	22.246	004	-	Rel-6	C	Using a single MBMS transport service for multiple MBMS user services	6.0.0	6.1.0	S1-040228

TSG-SA WG1 #23 **S1-040183**
Innsbruck, Austria, 12 - 16 Jan 2004 **Agenda Item: 10.3**

CR-Form-v7

CHANGE REQUEST

⌘ **22.246** **CR** **001** ⌘**rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Proposed change affects: UICC apps⌘ [ ] ME [X] Radio Access Network [X] Core Network [X]

Title:	⌘	CR on advertising of capabilities required to receive a particular transmission
Source:	⌘	SA1 (T-Mobile)
Work item code:	⌘	MBMS
Date:	⌘	14/01/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Currently there is no requirement to signal the capabilities required for reception of MBMS content before the transmission of the MBMS content. The UE can, depending on the capabilities either accept the MBMS content or reject it. In all cases the user convenience will be increased.
Summary of change:	⌘	Addition of requirement to advertise the required capabilities to receive a particular transmission in advance.
Consequences if not approved:	⌘	Massive user dissatisfaction for not delivered content due to missing capability to receive the content and additional charging complexity will lead to a slow down in take up of the service.

Clauses affected:	⌘	5.1			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	23.246
		X /	Other core specifications		
		/ **X**	Test specifications		
		/ **X**	O&M Specifications		
Other comments:	⌘				

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

First Modified section

5.1 Common requirements to broadcast and multicast

The following list describes requirements on an application level:

Service classes
A user subscribed to a service class in the HPLMN shall be able to enjoy equivalent services in the same service class as provided by a visited PLMN without explicit subscription in the VPLMN.

Note : This requirement enables roaming capabilities to be provided without the need for the user to resubscribe to the same or equivalent services in a VPLMN. The details of how MBMS User Services are offered to roaming users are beyond the scope of this specification.

Service Interworking
The user shall be able to manipulate content delivered over MBMS and forward it using other services (e.g. MMS, Speech Call- and IMS signalling, Hyperlinks, ….). Care should be taken in order to fulfil requirements concerning DRM and respective barring and charging capabilities.

When interacting with user profiles, MBMS User Services shall use the mechanisms described in [5] TS 22.240 (Generic User Profile).

Content storage in the UE
It shall be possible for the UE to store content delivered to it over MBMS and provide it to the user at a later time. Care should be taken in order to fulfil requirements concerning DRM and respective charging capabilities.

Data formats and types
Media types shall be supported independent of specific data types and formats behind..

As a minimum MBMS User Services shall support the following media types:

- Text

  It shall be possible to embed hyperlinks and to decorate text within content provided by MBMS User Services.

- Still Images

- Video

- Speech

- Mono/Stereo Audio

Data format and data types as being used by other multimedia services shall be supported for interoperability reasons.

Note : It is not intended to constrain MBMS to existing codec technologies. The intention is to maintain consistency with other multimedia services whilst also allowing for adoption of new codec technologies as appropriate.

Digital Rights Management
The MBMS User Service shall be able to control content distribution as defined in 3GPP TS 22.242 [6]. MBMS content providers shall be able to invoke DRM to prevent unauthorized copying and forwarding of content.

Advertisement of required capabilities
The capabilities (e.g. memory size) required to receive a particular transmission shall be advertised in advance by the network.
NOTE: In this way the UE could potentially reject the reception of the message if it cannot meet the advertised requirements or notify the user of the missing capability.

End of changes

CR-Form-v7

CHANGE REQUEST

⌘ **22.246** **CR** **002** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☒ Core Network ☐

Title:	⌘	Addition of "MBMS transport service" definition
Source:	⌘	SA1 (Samsung Electronics Co., Siemens AG)
Work item code:	⌘	MBMS
Date:	⌘	15/01/2004
Category:	⌘	***F***
Release:	⌘	Rel-6

Use one of the following categories:
F *(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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	1. Section 5 describing "MBMS user services" introduces "MBMS transport service" and the figure also contains the term for showing its compositions. However, 3.1 Definitions section of TS 22.246 does not have "MBMS transport service", and section 5 also misses the definition. This causes a confusion between MBMS terms. Based on TS 22.146 "MBMS transport service" is broadcast/multicast services in functional aspects. "MBMS transport service" is point-to-multipoint service and consists of multiple successive sessions. Thus, we propose a simple definition of MBMS transport service. 2. "MBMS multicast/broadcast service" used in TS 22.246 means multicast/broadcast service described in TS 22.146. To avoid a confusion and clear up the definition, "MBMS" of the term "MBMS multicast/broadcast service", should be deleted.
Summary of change:	⌘	Addition of "MBMS transport service" definition like the following: A MBMS transport service is either a broadcast service or a multicast service as defined in TS 22.146 [2].
Consequences if not approved:	⌘	Missing definition

Clauses affected:	⌘	Section 3.1			
Other specs Affected:	⌘	**Y**	**N**		
			X	Other core specifications	⌘
			X	Test specifications	
				O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

********** First Amended Section **********

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the definitions in 3GPP TR 21.905 [1] as well as the following definitions apply.

Broadcast service area: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Local Broadcast Area: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Broadcast mode: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Broadcast service: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Broadcast session: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

MBMS transport service: A MBMS transport service is either a broadcast service or a multicast service as defined in TS 22.146 [2].

MBMS User Services: Services that are intended to be delivered to multiple users simultaneously. MBMS User Services use the capabilities of the MBMS application independent transport.

Media types: a media type refers to one form of presenting information to a user, e.g. voice or fax.

Mobile Station (MS): see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Multicast transmission activation: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Multicast service area: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Local multicast area: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Multicast mode: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Multicast joining: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Multicast session: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Multimedia Broadcast/Multicast Service (MBMS): see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Multicast group: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Multicast service: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Multicast subscription: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

Multicast Subscription Group: see TS 22.146: "Multimedia Broadcast/Multicast Service" [2].

User Equipment: defined in TS 21.905. An occurrence of a User Equipment is an MS for GSM as defined in TS 24.002.

********** Second Amended Section **********

5 High level requirements

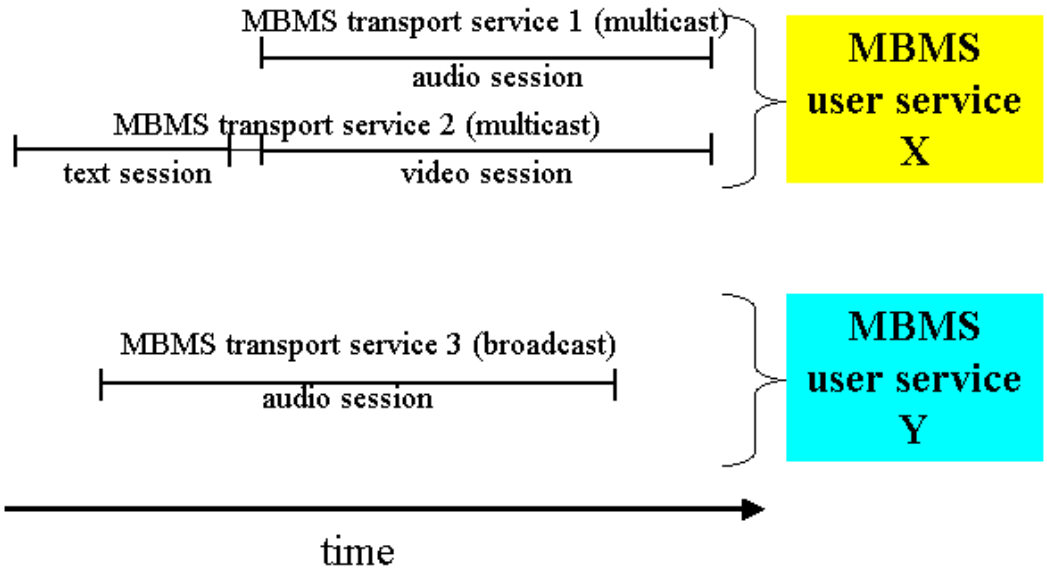
MBMS user services are services an operator may provide to subscribers. MBMS user services use the capabilities of MBMS. The operator may provide such services on his own or in collaboration with third party service providers. In addition, an MBMS user service may be provided to the operator's own subscribers and/or to inbound roaming subscribers from other operators.

MBMS User Services

MBMS user services are based on ~~MBMS~~ broadcast- or multicast services, which are defined in TS 22.146 [2].
An MBMS user service may use one or more ~~MBMS~~ broadcast- or multicast services at a time.

Note 1: A single ~~MBMS~~ broadcast- or multicast service can only have one broadcast- or multicast session at any time. A ~~MBMS~~ broadcast- or multicast service may consist of multiple successive broadcast- or multicast sessions. (see TS 22.146 [2])

Note 2: As part of the same multicast service, it should be possible for the operator to provide the UEs with multiple successive sessions with different quality-of-service for each session. (see TS 22.146 [2])



It shall be possible for an MBMS user service to make use of different application independent MBMS transport services at different times or in parallel. The MBMS transport services used may vary for instance in QoS parameters or target broadcast or multicast area.

If an MBMS user service makes use of several application independent MBMS transport services then these may only consist of either ~~MBMS~~ broadcast- or multicast services, but not of a combination of both.

Editor's note: the combination of ~~MBMS~~ broadcast- or multicast services in future releases is FFS

When necessary, within a single MBMS user service, it shall be possible to synchronize the media sessions.

NOTE: For different application independent MBMS transport services to support a single MBMS user service it may be necessary to logically link the transport services to each other, as illustrated in the figure for the audio- and video session of MBMS user service X.

The UTRAN and GERAN shall provide protection against normal transmission errors (eg interference not related to cell changes and handovers).

The BM-SC is responsible for providing protection e.g. FEC, long interleaving and/or point to point repairing the transmission, against errors (eg those caused by cell changes and longer breaks in transmission).

Service examples

MBMS user services may be classified according to table XXX into several service examples, which are characterized by

- Their predominant ~~MBMS~~ broadcast- or multicast service, that constitutes this MBMS user service together with its reliability (QoS) and data transfer rate requirements
- Media types that are transmitted via this ~~MBMS~~ broadcast- or multicast service
- Type of the service, which implies handling of the distributed media by the UE (e.g. download for subsequent presentation, streaming for instant presentation or carousel downloading)
- Charging characteristics
- A potential requirement for point-to-point delivery verification for delivered content.

To express the requirements for standardised service types are one objective of the present specification.

Service classes

MBMS user services may be provided for many purposes to the user and may convey information of various kinds. E.g. some services may be used for traffic information, others for entertainment or for news services. Service classes denote a classification of MBMS user services according to their usage. However, service classes are not in the scope of 3GPP standardisation but may be subject of inter-operator service arrangements.

CR-Form-v7

CHANGE REQUEST

⌘ **22.246** **CR** **003** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Proposed change affects: UICC apps⌘ [X] ME [X] Radio Access Network [ ] Core Network [X]

Title:	⌘	Clarification on delivery verification for MBMS user services
Source:	⌘	SA1 (Siemens AG)
Work item code:	⌘	MBMS
Date:	⌘	12/01/2004
Category:	⌘	**F**
Release:	⌘	Rel-6

Use one of the following categories:
F *(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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	Currently section 5.3 requires the capability for delivery verification of MBMS user services. Delivery verification shall be transmitted over a point-to-point connection to the operator or service provider. If delivery verification is transmitted point-to-point to the service provider only, it might bypass the (home) network completely. This would be undesirable, as the network is the entity, being responsible to the service provider, to deliver MBMS content.
Summary of change:	⌘	The current CR proposes, that delivery verification shall be transmitted to the home network. This delivery verification may be relayed to the service provider. Thus the home network will not be bypassed.
Consequences if not approved:	⌘	Potentially unsatisfactory implementation of delivery verification requirements.

Clauses affected:	⌘	5.3

		Y	N		
Other specs affected:	⌘		X	Other core specifications	⌘
				Test specifications	
				O&M Specifications	

Other comments: ⌘

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.3 Delivery verification

For some MBMS user services it is required that the operator can verify that the content conveyed by the service has been received by the UE.

The UE shall provide a secure means to provide such delivery verification transmitted over a point-to-point connection to the home/visited network. ~~operator or~~ This delivery verification may be relayed to the service provider.

Note: Delivery verification by point-to-point mechanisms partially reduces the resource-efficiency of the underlying broadcast services. Sacrificing resource-efficiency due to requirements of UE reporting may be necessary but should be kept as minimal as possible to minimize congestion.

CR-Form-v7

CHANGE REQUEST

⌘ **22.246** **CR** **004** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Using a single MBMS transport service for multiple MBMS user services
Source:	⌘	SA1 (Siemens AG)
Work item code:	⌘	MBMS
Date:	⌘	12/01/2004
Category:	⌘	**C**
Release:	⌘	Rel-6

Use one of the following categories:
F *(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)*
Rel-6	*(Release 6)*

Reason for change:	⌘	A MBMS user service is composed of one ore more MBMS transport services. By using the same MBMS transport services for more than one MBMS user service an operator is able to extend the range of offered MBMS user services without sacrificing additional resources over the air.
Summary of change:	⌘	The requirement is introduced to be able to make use of one MBMS transport service in several MBMS user services.
Consequences if not approved:	⌘	
Clauses affected:	⌘	5

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
			Test specifications	
			O&M Specifications	

Other comments: ⌘

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5 High level requirements

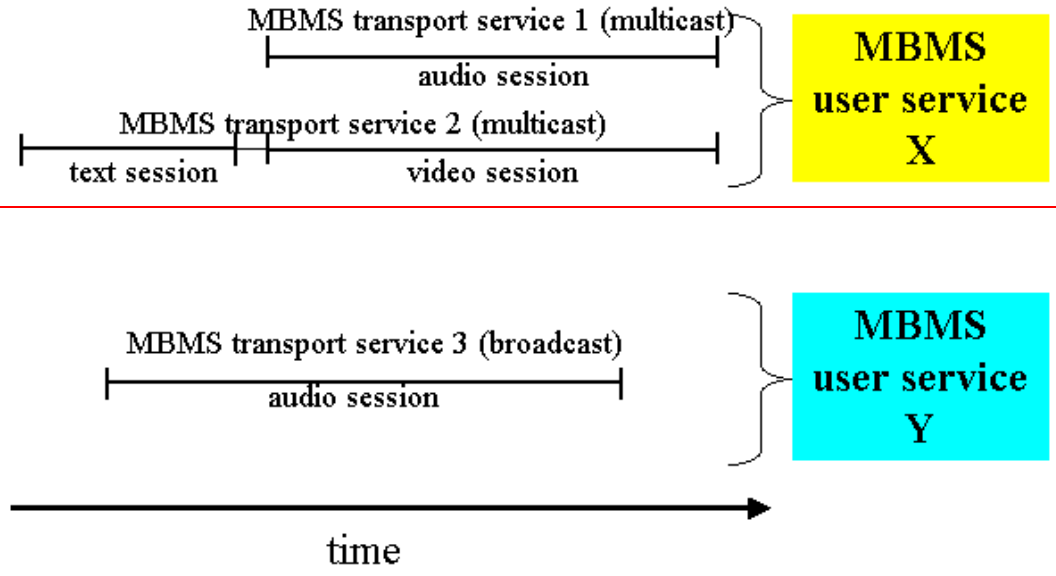
MBMS user services are services an operator may provide to subscribers. MBMS user services use the capabilities of MBMS. The operator may provide such services on his own or in collaboration with third party service providers. In addition, an MBMS user service may be provided to the operator's own subscribers and/or to inbound roaming subscribers from other operators.

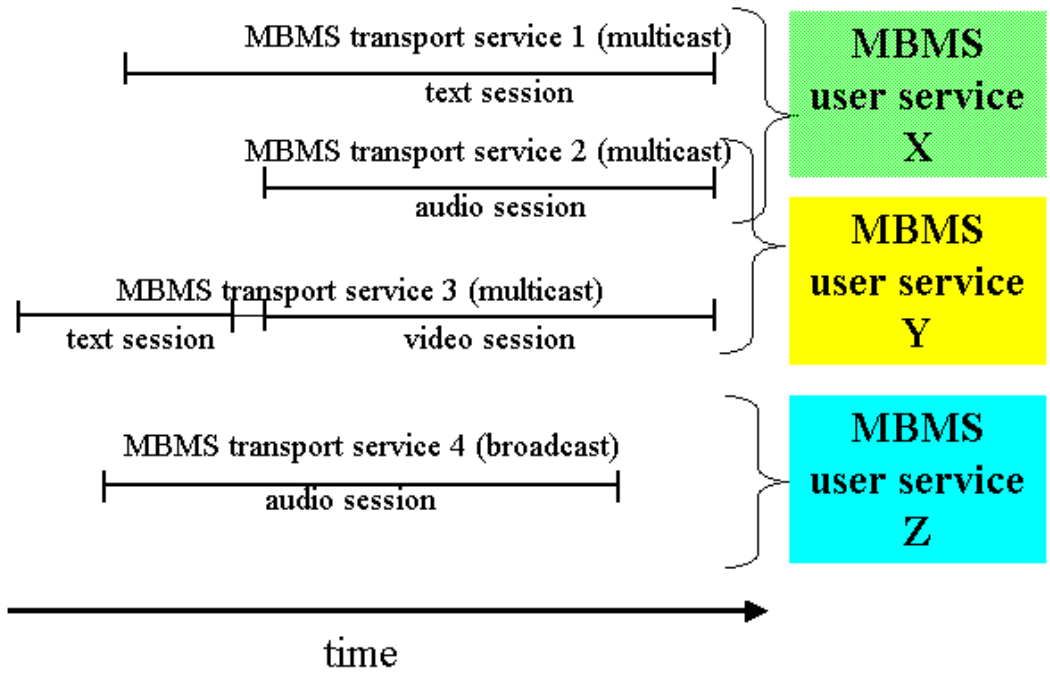
MBMS User Services

MBMS user services are based on MBMS broadcast- or multicast services, which are defined in TS 22.146 [2].
An MBMS user service may use one or more MBMS broadcast- or multicast services at a time.

Note 1: A single MBMS broadcast- or multicast service can only have one broadcast- or multicast session at any time. A MBMS broadcast- or multicast may consist of multiple successive broadcast- or multicast sessions. (see TS 22.146 [2])

Note 2: As part of the same multicast service, it should be possible for the operator to provide the UEs with multiple successive sessions with different quality-of-service for each session. (see TS 22.146 [2])


MBMS transport service 1 (multicast)
audio session
MBMS transport service 2 (multicast)
text session
video session
MBMS user service X
MBMS transport service 3 (broadcast)
audio session
MBMS user service Y
time



It shall be possible for an MBMS user service to make use of different application independent MBMS transport services at different times or in parallel. The MBMS transport services used may vary for instance in QoS parameters or target broadcast or multicast area.

It shall be possible for one application independent MBMS transport service to simultaneously be used by more than one MBMS user service at a time.

If an MBMS user service makes use of several application independent MBMS transport services then these may only consist of either MBMS broadcast- or multicast services, but not of a combination of both.

Note: The combination of MBMS broadcast- or multicast services in future releases is FFS

When necessary, within a single MBMS user service, it shall be possible to synchronize the media sessions.

NOTE: For different application independent MBMS transport services to support a single MBMS user service it may be necessary to logically link the transport services to each other, as illustrated in the figure for the audio- and video session of MBMS user service X.

The UTRAN and GERAN shall provide protection against normal transmission errors (eg interference not related to cell changes and handovers).

The BMSC is responsible for providing protection e.g. FEC, long interleaving and/or point to point repairing the transmission, against errors (eg those caused by cell changes and longer breaks in transmission).

Service examples

MBMS user services may be classified according to table XXX into several service examples, which are characterized by

- Their predominant MBMS broadcast- or multicast service, that constitutes this MBMS user service together with its reliability (QoS) and data transfer rate requirements
- Media types that are transmitted via this MBMS broadcast- or multicast service
- Type of the service, which implies handling of the distributed media by the UE (e.g. download for subsequent presentation, streaming for instant presentation or carousel downloading)
- Charging characteristics
- A potential requirement for point-to-point delivery verification for delivered content.

To express the requirements for standardised service types are one objective of the present specification.

Service classes

MBMS user services may be provided for many purposes to the user and may convey information of various kinds. E.g. some services may be used for traffic information, others for entertainment or for news services. Service classes denote a classification of MBMS user services according to their usage. However, service classes are not in the scope of 3GPP standardisation but may be subject of inter-operator service arrangements.