Status Report for WI to TSG

Work Item Name: Introduction of Multimedia Broadcast/Multicast Service (MBMS) in RAN

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Ref. to WI sheet: RAN_Work_Items.doc

Progress Report since the last TSG (for all involved WGs):

RAN1
After the RAN#22, the MBMS discussion RAN1 took place in Rel6 Ad Hoc meeting on 27th of January in Korpilampi Finland and in RAN1 #36 in Malaga Spain. The progress in RAN1 has been following:

- Gains of the selective combining has been concluded, analyses of UE complexity is ongoing. Bitrate of 256 kbit/s is seen maximum MBMS bitrate from BTS power consumption point of view. UE complexity with bitrate of 64kbits not seen as problem, higher bitrates are under study.

- Link performance of outer coding compared to link performance when long TTI (40ms-80ms) is used, has been concluded. Link gains over long TTI and/or selective combining were not felt large enough to require the use of outer coding.

- Working assumption that L1 coding will cover the data loss caused by the inter RAT/frequency measurement occasions.

RAN2
Since RAN#22, MBMS discussions in RAN2 took place in RAN2#40 and in RAN2#41. During RAN2#41 a joint meeting with RAN1was organized. In these meetings several agreements were made, which are summarized as.

- MBMS notification scheme and scheduling of MCCH
  Short repetition period called "access info period" introduced so that counting controlled in MBMS session start (and in re-counting)
  MCCH information transmitted periodically ("repetition period") to support mobility (This has been agreed earlier).
  The information in MCCH cannot be changed inside one "modification period" which is longer than DRX cycle used by UEs. Reflects the decision that UEs will have only one DRx cycle defined in Rel99

- The MICH was selected to be only notification solution after RAN1 confirmed that new MBMS specific PICH can be used for low and high load scenarios and no code limitation problem was seen by operators

- MBMS Scheduling information introduced and based on that the UE can use DRX when coming S-CCPCH transmission is something, which is not in the interest of the UE.
  The scheduling information coming either in band on MTCH or on MCCH (See open issues)

- Agreed that no outer coding (FEC) is done on L2
  No new protocol layer introduced

- Selective combining was agreed for FDD and TDD
  Performed by RLC numbering so that synchronization requirements are looser than reported by RAN1.
  UM-RLC requires re-ordering capability based on PDU numbering. Required synchronization in the network is depending on RLC re-ordering capability in the UE.
  In case of selective combining the Neighbouring cell information to be transmitted in cell so that UE can start receiving MTCH of the neighbouring cell without reading MCCH of that cell.

- Simulcast maximum ratio combining was agreed for TDD only.

- Other L1 and L2 enhancements (RLC quick repeat) were agreed to be out of scope of Release 6

- The minimum capabilities of MBMS capable UE were extended to support selective combining as a mandatory feature.

RAN3

Since RAN#22, MBMS discussions in RAN3 took place in RAN3#40 and in RAN3#41, where following agreements were found

- Iur linking solution was agreed

- SGSN filtering was approved as optional feature so that RNC is made aware of RAs, where at least one PMM-IDLE UE is located. RNC may use that information so that MBMS notifications are not sent in the RAs, where CN has knowledge that there is no joined PMM-IDLE UEs. Consulted with SA2, so that the TS 23.246 is inline with this agreement.

- New solution to handle UEs in PMM-idle/RRC connected state was agreed. The new solution optimises the radio interface and RNC uses the network to gather information what services UE has joined. Consulted with SA2, so that the TS23.246 is inline with this agreement.

- Agreed that no changes required in Rel-6 for transport bearers in Iub.

- CN and RNC De-registration were agreed.

List of Completed elements (for complex work items):
TSG SA1: Stage-1 (TS-22.146) has been completed.
TSG SA1: Stage-1 (TS-22.246) has been completed.
TSG SA2: Stage-2 (TS 23.246) has been completed.

List of open issues:

In RAN1
- Minimum bitrate supported by all MBMS capable UEs

In RAN2
- Handling of URA_PCH state UEs in counting
- Indication to read MCCH when UE is receiving MTCH, either in band on MTCH or on MICH, including MBMS scheduling information
- Neighbouring cell information to accelerate the reception of MTCH after cell reselection when selective combining is not available
- Physical channel for MBMS notification indicators for HCR & LCR TDD
- Usage of multiple MBMS transport bearers for delivering one MBMS user service to the UE, see also LS in RP-040049

In RAN3
- Handling URA_PCH state UE in counting, related to open issue in RAN2

Estimates of the level of completion (when possible):
It can be concluded that the level of completion is 80%. Even though some open issues still remain, the effect of these to the current version of the TS is limited. Thus it was concluded in RAN WG2 #41 that the TS25.346 is to be presented for approval.

WI completion date review resulting from the discussion at the working group:
It is estimated that WI completion date is TSG RAN #25, September 2004.

References to WG's internal documentation and/or TRs: