Status Report for WI to TSG

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

SOURCE: Rapporteur, Nokia, Juho Pirskanen   **TSG:** RAN   **WG:** 2

E-mail address rapporteur: juho.pirskanen@nokia.com

Ref. to WI sheet: RAN_Work_Items.doc

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

RAN1
After the RAN#24, the MBMS discussion RAN1 took place in Release 6 Ad Hoc in Cannes France and RAN1 #38 in Prague Czech. The agreements in RAN1 during these meetings are following:
- General agreement with the approach of describing MICH
- Notification indicator mapping formula, working assumption was found future simulations until RAN1#38bis to confirm the performance.

Moreover, following issues were discussed without agreement
- Different soft combining solutions
- UE capability, including mandatory support of soft combining

Furthermore, during RAN1#38 a RAN1 and RAN4 joint Ad-hoc session was organised (see status of RAN4).

RAN2
Since RAN#24, MBMS discussions in RAN2 took place in Release 6 Ad Hoc in Cannes France and RAN2 #43 in Prague Czech.
In Release 6 Ad Hoc two days were allocated for MBMS and short joint session with RAN1 was organised.
During RAN2 discussion in Release 6 Ad Hoc following agreements were found for Stage-2:
- Removal of secondary notification and introduction of MBMS Change information
    - UE already receiving MTCH shall periodically read the MBMS Change information from begin of the MBMS modification period
- MBMS neighbouring cell information is used only in case of selective combining (possible soft combining) not in normal cell reselection case

These agreements are captured in CR#3 for TS25.346

- Frequency Layer Convergence
    - Will be indicated per MBMS service
    - UE will take FLC into account when signalled on MCCH, i.e. possible to signal FLC from session start to session stop
    - Applicable for Idle mode as well as URA_PCH, CELL_PCH and CELL_FACH states.
    - It is considered to be RRM issue whether MBMS service is provided (ptp or ptm) in non preferred layer or not
    - One offset value used for all services
    - Sintersearch parameter is ignored in non preferred layer when FLC is indicated
- UE behaviour when returning to coverage from out of service
    - UE acquires the MCCH information

These agreements are captured in CR#4 for TS25.346

In RAN2#43 a separate two-day MBMS session for Stage-3 discussion were organised. However, no time was allocated to stage-2 corrections and thus RAN2 where not able to conclude the remaining Stage-2 open issues.

During the separate MBMS Stage-3 session, progress was made on following areas to introduce Stage-3 CRs:
- Working assumptions on e.g. NAS and AS interactions
- RRC messages
    - Requirements

o Design choices
- Counting
- Frequency layer convergence

In RAN2#43 a separate joint session was organised with SA4 where following issues where discussed
- Repair functionality was clarified that the point-to-point repair functionality was transparent to the RAN
- It was clarified that service announcement may simply be a another MBMS bearer
- SDU sizes can be made fairly constant from application allowing the optimisation of radio interface

RAN3
Since RAN#23, MBMS discussions in RAN3 took place in RAN3#43 in Prague Czech, where following enhancements were found to TS25.346 scope
- Session start is delivered to all RNCs under the SGSN
- Counting is RAN internal functionality and decision whether it is done is RAN internal
- UE Linking via Iur is only for the MBMS Notification, not for the counting
- Earlier working assumption that ptm indication in channel type indication via Iur is not needed, was revised. Ptm indication is needed in SRNC, because it has to inform UE if ptp (UE in Cell_DCH) is changed to ptm.

These agreements are captured in CR#5 for TS25.346

For the RAN3 Stage-3 scope, it was agreed that
- RAB-ID is not needed and in session start there is only one TMGI
- Iu transport association IE (TEID) is not needed in Session start request from SGSN, thus it is allowed to use "0000" in the mandatory TEID field
- SRNS Relocation and MBMS: Agreement to have MBMS service list in the RANAP relocation transparent container.
- The first draft Stage-3 CRs to most of the RAN3 specifications were presented and preliminary comments were given to CR editors. The CR editing continues offline.

RAN4
In RAN4 the MBMS discussions started in RAN4 and RAN1 ad hoc session #32 in Prague Czech, where performance issues related to measurements and MBMS reception were discussed. No conclusion was found and RAN4 continues this work.

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
- Whether soft combining should be mandatory or optional
- UE capability - Memory requirement and the set of combinations of (Bit rate, Number of radio links, TTI length)

In RAN2
- The delivery method of the scheduling information
- Effects of possible soft combining

In RAN3
- Effects of possible soft combining
- The delivery of the MICH information to Node B. Whether this is done once until the MICH information changes or whether this is done continuously from the RNC even the information remains the same. This issue was reopened and more pain versus gain analysis (Node B implementation aspects and the Iub transmission capacity savings) will be needed to make final decision.

In RAN4
- Conclusion of performance related to measurements and MBMS reception (Related to RAN1 and discussion in joint ad hoc session in Prague)

Estimates of the level of completion (when possible):

It can be concluded that the level of completion of WI is 80%. The major open issue of the WI is the mandatory support of soft combining, including UE capability and architecture definitions in RAN2 and RAN3. However, stage-3 work has started to progress in RAN2, and RAN3.

WI completion date review resulting from the discussion at the working group:

It is estimated that WI completion date is TSG RAN #26, December 2004.

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