TSG-RAN meeting #23 RP-040012
Phoenix, USA, 10 - 12 March 2004

Agenda item: 8.3.1 UE positioning enhancements

Status Report for WI to TSG

Work Item Name: UE Positioning Enhancements - other methods (LCS2-UEpos-enh)

SOURCE: Siemens **TSG:** RAN **WG:** 2

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Ref. to WI sheet: RAN_Work_Items.doc

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

Status at RAN #22 in Dec. 2003: see former status report RP-030652

Since RAN #22, the following work has been done with respect to UE positioning proposal “IPDL enhancement using advanced blanking methods”:

RAN1 #36:
R1-040209 "Simulation Results for IPDL Enhancement" [1]
This paper presented the results of detailed performance simulations based on the agreed parameters.
It includes also a description of the Simulator.
Results are comparing IPDL (-35dB) with the proposed Time-aligned IPDL for 5 CPICH symbol and 10 CPICH symbol idle period lengths and for integration over 1 and 10 idle periods. In addition results are presented for OTDOA (without IPDL) and IPDL with -45dB DL attenuation for the purposes of comparison, and for Time-aligned IPDL assuming that the terminal incorporates a CPICH cancellation algorithm, all of the latter using integration over a single idle period.
Furthermore, R1-040209 summarizes:
Given that Time-aligned IPDL yields approximately equivalent performance to standard IPDL under fully loaded network conditions and that its performance remains essentially constant irrespective of network load, legacy UEs and those implementing only the most basic measurement capability will yield similar performance with both approaches.
Time-aligned IPDL, however, provides a basis for significantly improved performance depending on the manufacturer’s implementation. These improvements could adopt either or both of two strategies: a) integration across multiple idle periods or b) implementation of CPICH cancellation algorithms.
Additional benefits:
- Time-aligned IPDL does not require real-time power control of the Node B downlink during the idle period.
- Only a single measurement needs to be scheduled in the UE, compared with two measurements for conventional IPDL.
Finally, R1-040209 proposed that RAN1 now asks RAN2 and RAN3 to consider the messaging and signalling implications of implementing Time-aligned Idle Periods.

Status in RAN1: Due to the large amount of data, RAN1 delegates were asked to review the results which would be discussed again at the next meeting RAN1 #37. The document was noted. Further feedback from RAN2 and RAN3 was expected (which were meeting in parallel to RAN1).

RAN2 #41:
R2-040535: "Description of proposed IPDL Enhancement" [2]
Explained the proposal & benefits in RAN2 which involves two changes to IPDL:
1. Modification of the downlink signal transmitted during the Idle Period
2. Time Alignment of Idle Periods transmitted by different Node Bs.
and also discussed
- The performance when CPICH cancellation is implemented can be significantly better than IPDL.
- The impact on RAN specifications:
  RAN1: 25.214 V5.5.0
  RAN2: 25.305 V5.6.0, 25.331 V5.5.0
  RAN4: 25.104 V6.2.0, 25.133 V6.2.0

RAN3: 25.423 V5.6.0, 25.433 V5.5.0
- open issues (see list below)
Status in RAN2: The Tdoc was presented and noted in RAN2 #41. Delegates were asked to report comments directly back to the editor.

RAN3 #41:
R3-040386 "Description of proposed IPDL Enhancement" [3]
Status in RAN3: This Tdoc which has the same contents as R2-040535 [2] was provided to RAN3 #41 but it was not presented there due to a lack of time. However, delegates were asked to check the contribution.

List of Completed elements (for complex work items):

?? RAN1 work was presented to RAN2 and RAN3 (feedback is pending).
?? Detailled simulation results for performance analysis were presented in RAN1.

List of open issues:

?? Signalling support for Time aligning Idle Periods
?? Performance comparison with standard IPDL. This is currently being studied in RAN1.

Estimates of the level of completion (when possible):

Status at RAN #22 in Dec. 2003: not available as just started
Status at RAN #23 in March 2004: 25%

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

Status at RAN #22 in Dec. 2003: not provided
Status at RAN #23 in March 2004: September 2004

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

[1] R1-040209, "Simulation Results for IPDL Enhancement", Cambridge Positioning Systems, RAN1 #36, Malaga (Spain), 16-20.02.2004
[2] R2-040535, "Description of proposed IPDL Enhancement", Cambridge Positioning Systems, RAN2 #41, Malaga (Spain), 16-20.02.2004
[3] R3-040386, "Description of proposed IPDL Enhancement", Cambridge Positioning Systems, RAN3 #41, Malaga (Spain), 16-20.02.2004