TSG-RAN Working Group 3, meeting # 6 *TSGR3#6(99)A05*

Sophia Antipolis, 23-27 August 1999

Agenda Item:	13.2
Source:	Nokia
Title:	**Use of the Propagation Delay for the Uplink synchronisation**
Document for:	Approval

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1 Introduction

This paper proposes to use the information about the propagation delay during the achievement of the UL synchronization of one RL in the Node B. Doing this, the L1 synchronization process is faster and more efficient.

2 Discussion

In the achievement of the uplink synchronisation, the Node B, that is not aware of the position of the mobile, may need to scan several times all the cell radius in order to find the match with the UL synchronisation pattern transmitted by the mobile. The knowledge of the propagation delay from the UE to the Node B will avoid the situation making the achievement of the UL synchronisation faster and consuming less resources .

In case the radio link of one UE is setup in the same cell used for a previous RACH access of the same UE, Node B can easily measure the propagation delay (PD) on the RACH channel and use this information during the initial synchronisation at RL setup.

Since the L2 termination of the RACH (that contains the UE identifier) is in CRNC, then the PD shall be included by Node B in the RACH frame protocol PDU, and sent back by the CRNC to the Node B in the correspondent NBAP RL SETUP message.

Note that the PD parameter in the NBAP message is optional, i.e. the CRNC is not mandate to associate a PD from the RACH message with the correspondent RL SETUP message (the association is done via D-RNTI/S-RNTI). The Node B may also ignore the PD parameter in the RL SETUP message.

3 Proposals

- To include the PD parameters in the payload of the Iub RACH FP frames in [25.435].

- To include the PD as optional RL parameter in the NBAP RL SETUP message in [25.433].

- In both cases the following definition of PD shall be added:

  Propagation delay (PD): It is the round trip propagation delay of the radio signal from the BS to the MS and back to the BS in one chip resolution.

4 References

[25.433]	NBAP specification

[25.435]	Iub User plane frame protocol for Common transport channel data stream