TSG-RAN meeting #6
Nice, France, Dec. 13-15, 1999

Agenda Item:

Source: **CWTS WG1**

Title: **The Framework for TDD harmonization**

Document for: Approval

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1. Introduction

Among the Recommendations approved at the Heidelberg meeting [3], the OHG considered the harmonization of the CDMA TDD proposals. The OHG recommends: the chip rate of 3.84Mcps for CDMA TDD mode is required; and the only lower chip rate of 1.28Mcps for CDMA TDD is an option to enable services flexibility through beamforming techniques and DCA. Among the outputs of ITU-R TG8/1 meeting [1][2], the new ITU-R Recommendation [IMT.RSPC] is drafted. In the section of CDMA TDD, two TDD modes (UTRA TDD and TD-SCDMA) share the same higher layer (L2 and L3) but with different physical specification. And also in the output of the 3GPP TSG-RAN meeting #5 [4], the proposed structure for IMT.RSPC has the same architecture.
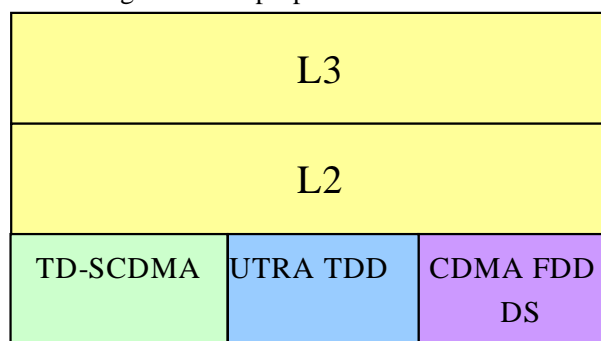
Following the requirements by operators, ITU and other standard organization, CWTS propose the following harmonization framework for IMT-2000 CDMA TDD modes. The harmonization should remain the advantages of two options to meet operator's requirements.

2. Harmonization framework

The harmonization process for TD-SCDMA and UTRA-TDD has already harmonized many essential parameters (a number of TDD harmonization meetings in Beijing, OHG, 3GPP and ITU) in physical layer. Many parameters of TD-SCDMA has been changed to be the same as UTRA TDD or similar. There are still some differences in physical layer due to the different schemes in two TDD options in TSG RAN#5 and TG8/1 18th meeting. It was also agreed two TDD options use same system architecture and common L2 and L3 protocol. There are only some minor differences on the higher layers of the radio interface. Most of the parameters for physical layer have already reached similarity during harmonization procedure.

The basic consideration on CDMA TDD mode harmonization should be that shown in Figure 1 below:

Figure 1. The proposed CDMA TDD harmonization

The CDMA TDD will have two modes with some remaining differences. The target of the harmonization is to minimize the difference and maximize the commonality.

3. Harmonization procedures

Considering the present situation (very limited schedule) and the commonality/difference of the two TDD modes, the harmonization procedure is proposed as follows in coming release 2000:

1. The important activity is to extend the functionality of the higher layers in order to accommodate for the features specific for TD-SCDMA. The goal of this activity is to reach common L2 and L3 documents as soon as possible.
2. Plentiful and active reviewing and discussions should be done on other documents.
3. To increase necessary similarities as much as possible in physical layer.

The scenario shown in Figure 1 should be reached in the harmonization procedure in the limited schedule. The

improvement and continuous harmonization of the two TDD modes will be a long procedure in 3GPP.

4. Conclusion

As a conclusion, it is proposed to harmonize the two TDD modes into the scenario that TD-SCDMA and UTRA TDD have the same higher layer with the minimum modification on the current higher layers and to obtain the similarities as much as possible for physical layer. The TDD harmonization should be finalized in release 2000.

Reference

[1] ITU R8-1/244E, 'Liaison Statement to ITU-R Study Group 8 regarding RECOMMEN-DATION ITU-R [IMT.RSPC]

[2] ITU R8-1/275E, 'Draft New Recommendation ITU-R[IMT.RSPC] – Detailed Specifications of the Radio Interfaces of IMT-2000'

[3] ITU R8-1/439E, 'OHG Response to ITU-R TG8/1 Liaison Statement'

[4] ITU R8-1/463E, 'contribution on section 5.x.2 (TDD component)'