TSG-RAN WORKING GROUP 1 MEETING NO. 7 **TSG R1#7 (99) d80**
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**Agenda Item:**

**Source:** CWTS

**Title:** Importance of TDD mode

**Document for:** Discussion, consideration

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## Introduction

There is some discussions ongoing on the different application scenarios for TDD and the impact on the standard. This contribution gives an overview of the importance of TDD for third generation mobile radio systems. Furthermore, it discusses some items raised in Tdoc 99C59 "Operator requirements for UMTS TDD mode" by Vodafone.

## Importance of TDD

The basic technical characteristics of TDD ease data transmission in future mobile telecommunication networks in general and asymmetric data transmission in particular and hence cause increasing international attention for TDD. The importance of TDD in order to meet the increasing demands for data traffic in 3G networks was first recognized in China and more and more countries and operators share the same opinion as can be seen also in ITU and OHG meetings. TDD utilizes per definition unpaired frequency bands in the spectrum. This eases the spectrum allocation and the minimum available spectrum for operating a system, since all sorts of frequency sources can be used. Also a deployment of TDD in paired bands is thinkable. The demand for asymmetric traffic will increase in the future. Because the separation between uplink and downlink transmission of TDD mode is done in the time domain, not in the frequency domain, it can be handled very flexible. This provides the possibility for TDD systems to adapt to asymmetric traffic, i.e. to utilize the given spectrum more economically. Since the uplink and downlink transmission is done in the same frequency band, the reciprocity of the channel can easily be utilized for performance improving features like smart antennas. TDD is well suited for operating in all kinds of environments such as micro- and macro-cell cellular networks, etc.

## Detailed comments

In this section, we discuss some of the items raised in Tdoc 99C59 "Operator requirements for UMTS TDD mode".

- We think that the TDD standard should not be designed for one application scenario only, but should be flexible enough to enable all possible application scenarios like micro, macro and pico cells.

- We have to distinguish between requirements on TDD influencing the standard and influencing the implementation. E.g. the "dynamic resource assignment" and "escape mechanisms to avoid interference" will not be standardized. Instead, the standard has to be open enough to allow for optimizing algorithms for different deployment and application scenarios.

- Some of the requirements given in Tdoc 99C59 are intended only for particular applications like uncoordinated operation and such features can easily be added later to the standard.

## Conclusion

In this paper, we have given some comments on Tdoc 99C59. Also, we have shown the importance of TDD from which follows it is essential that TDD will be part of Release 99 of the standard according to the agreed milestones of 3GPP.