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Title:	**Requirements for the evaluation of techniques for High Speed Downlink Packet Access (HSDPA)**
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1   Introduction

During the Joint R1/2 meeting on HSDPA some requirements have been included in [1].

Notably, the following requirements have been agreed:

- The techniques should take into account the impact on R99 networks both from a protocol and hardware perspective.

- The UE complexity shall be minimised for a given level of system performance.

- An evolutionary philosophy shall be adopted as opposed to a revolutionary one in adopting new techniques and architecture.

These requirements should especially be analysed and taken into account when defining the details of the HSDPA feature.

This paper lists further aspects with respect to the design of HSDPA for both FDD and TDD mode.

2   Discussion

Alignments between the TDD mode and the FDD mode HSDPA solution are desirable. Although, these should not take precedence if it leads to major performance degradations in one mode.
In this context one important issue is the protocol architecture. An aligned protocol architecture will help to minimise the impacts on the Iur- and Iub-interface. Especially, the distribution of functionality between network nodes should therefore be the same in FDD and TDD. It should furthermore be evaluated how harmonisation between FDD and TDD can be achieved in terms of physical layer model and usage of transport and physical channels.

HSDPA should be specified in parallel for FDD and TDD with the goal to be complete at the same time.

3   Aspects to be considered

A comparison between TDD and FDD concepts may help to align the specification of both modes. The three tables below are the initial results of trying to identify aspects that may help when comparing the initial concepts. It should be noted that essentially the details of all aspects are ffs. FFS is used in the tabular to identify aspects that have not been considered at all until now.

The following table contains a list of the physical channels and transport channels that have been considered for HSDPA for FDD and TDD so far. (see [1]).

Channels involved in HSDPA process		
	TDD	FDD
Involved transport channel:		
HS-DSCH	yes	yes
HICH	yes	yes
HS-FACH	yes	no
Associated physical channel either:		
DPCH	ffs	yes
or New physical channel or on SCCPCH	yes	no

A detailed analysis and comparison of different approaches for the physical layer model is given in [2].

The following table identifies a number of additional aspects in the UE:

UE side		
	TDD	FDD
MAC-hs: Hybrid ARQ functionality	yes	yes
MAC-hs: Reporting of measurement results	yes	yes
MAC-hs: Usage of shared uplink resources (PUSCH)	yes	no
MAC-c/sh: Evaluation of UE Id	ffs	ffs

The following table identifies a number of additional aspects in the UTRAN:

UTRAN side		
	TDD	FDD
Node B: MAC-hs: Hybrid ARQ functionality per user	yes	yes
Node B: MAC-hs: Evaluation of ACK/NACK for HARQ	yes	yes
Node B: MAC-hs: Evaluation of measurement results	yes	yes
Node B: MAC-hs: Scheduling of downlink resources	yes	yes
Node B: MAC-hs: Priority handling	yes	yes
Node B: MAC-hs: Management of uplink resources	yes	no
Node B: MAC-hs: Flow control	yes	yes
Node B: MAC-hs: TFC selection (includes MCS selection)	yes	yes
C-RNC: MAC-c/sh: Inclusion of UE Id	ffs	ffs

4   References

1. 3GPP TR 25.855: High Speed Downlink Packet Access: Overall UTRAN Description
2. R2-011105: Investigation of FDD/TDD alignment possibilities for HSDPA