TSG-RAN Working Group 1 meeting #6
Hannover, Germany
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Agenda item:

Source: Ericsson

Title: DTX insertion in case of multicode

Document for: Decision

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1 Introduction

The current assumption is that DTX indication bits are inserted after physical channel segmentation when flexible positions of the TrCHs in the radio frame are used [1]. When more than one code is used, this means that the DTX occurs simultaneously on all codes. An example is given in Figure 1.

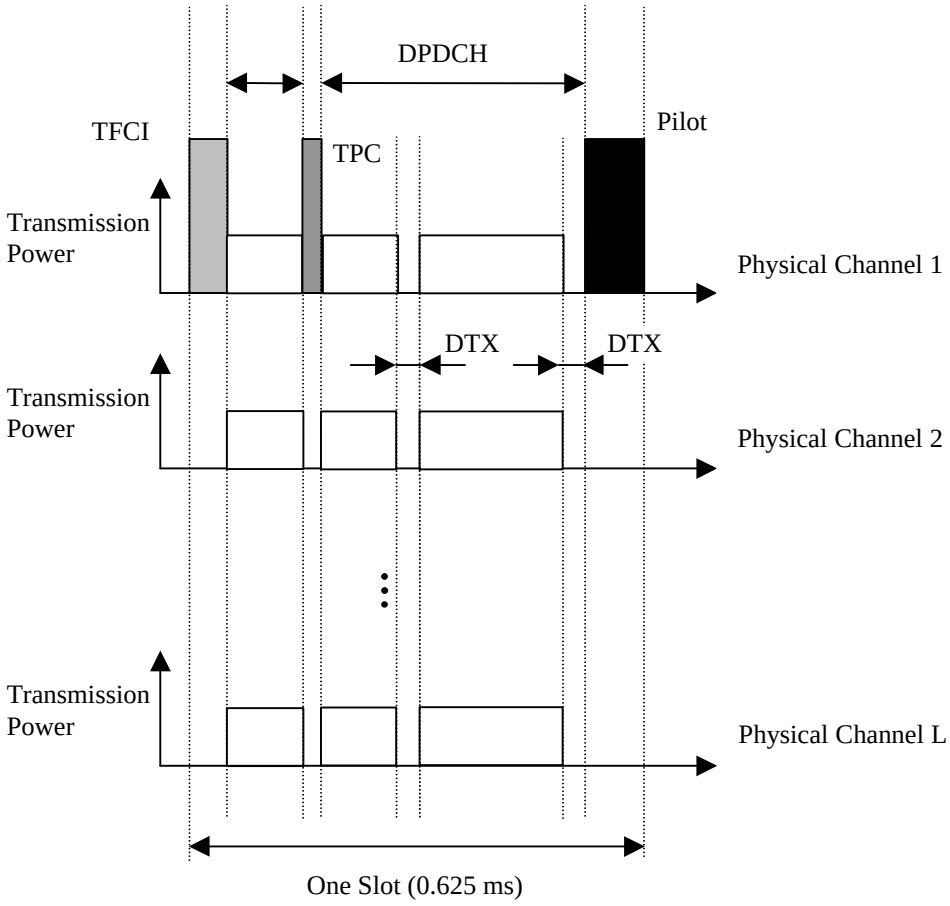

Figure 1: DTX when several DPDCHs are used.

It is proposed that the DTX instead is placed on the last code(s) as illustrated in Figure 2.

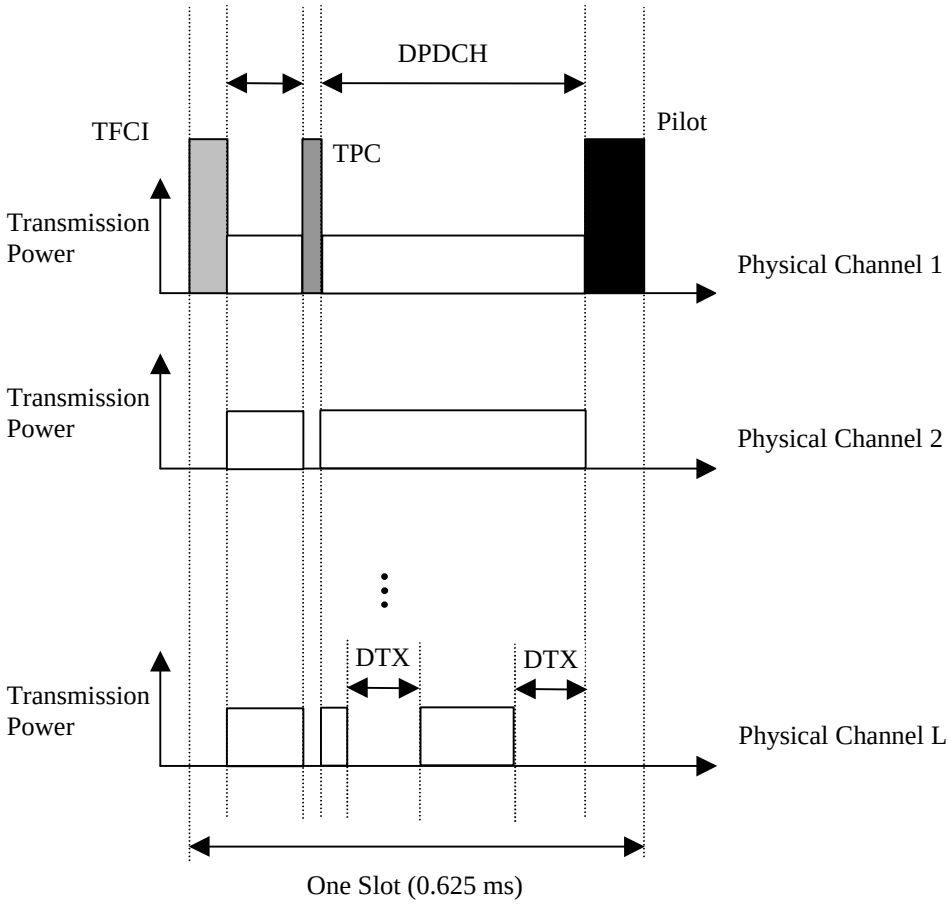

Figure 2: Proposed DTX placement when several DPDCHs are used.

This means that the DTX insertion in case of flexible positions of the TrCHs is moved as illustrated in Figure 3.

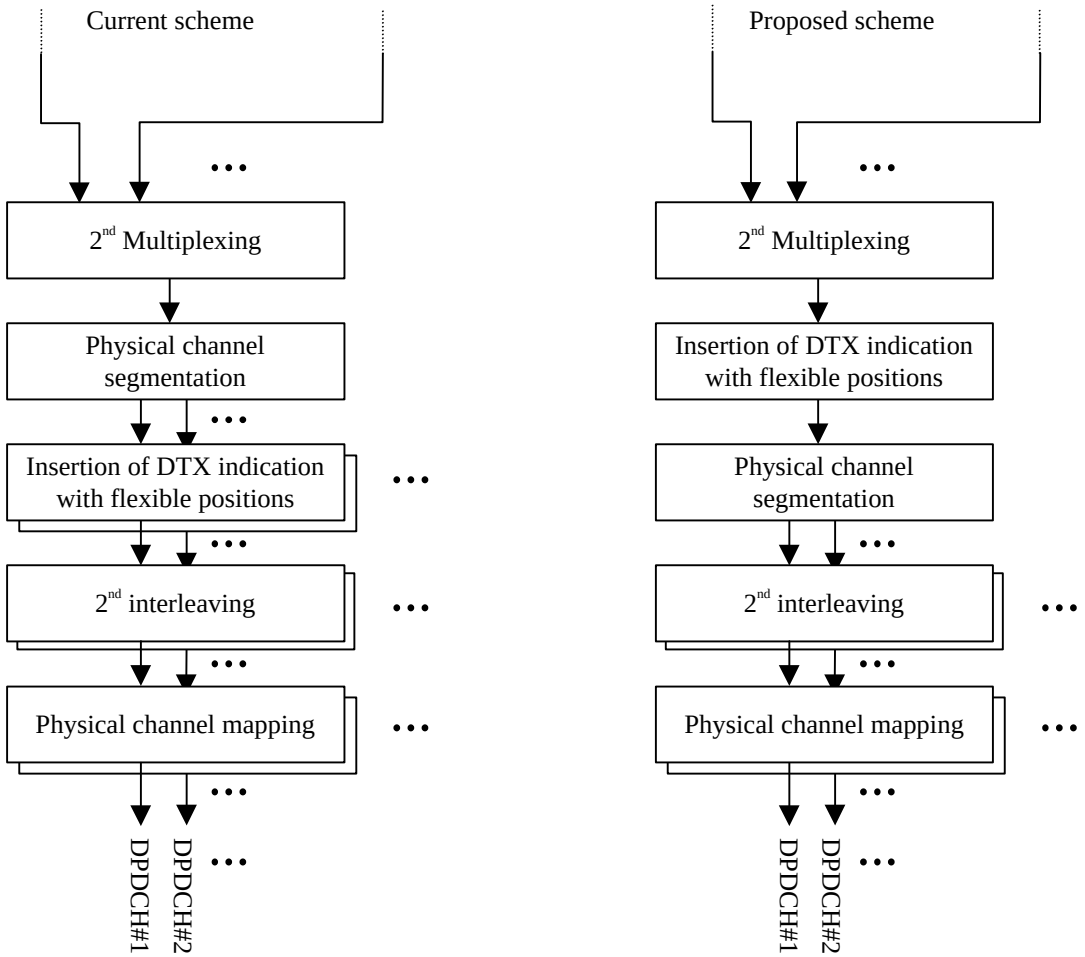

Figure 3: Proposed changes in the multiplexing chain.

The proposed modification has the following advantages:

- Less ramping of the power in the basestation is needed. Instead of having the DTX on all codes simultaneously, it is put on the last code(s).
- The physical channel segmentation becomes simple. The case when the number of bits in the CCTrCH is not a multiple of the number of physical channels is currently not covered in [1] (Section 4.2.9 when P/M is not an integer). If DTX is inserted prior to physical channel segmentation, this case can not occur.

2 References

[1] TSG RAN WG1, “TS 25.212 Multiplexing and channel coding (FDD)”

3 Text proposal for 25.212

[Figure 2 of section 4.2 should be modified as illustrated in Figure 3 above.]

4.2.9 Physical channel segmentation

<Editor's note: for physical channel segmentation, it is assumed that the segmented physical channels use the same SF>

Data after multiplexing of transport channels with different QoS can get segmented into multiple physical channels which are transmitted in parallel during 10ms interval.

Figure B-1 and B-2 illustrate data flow from 1st interleaver down to 2nd interleaver in both uplink and downlink channel coding and multiplexing chains. In the figures, it is assumed that there are *N* different channel coding and multiplexing chains, and *M* physical channels. The following subsection describes input-output relationship of physical channel segmentation in bit-wise manner, referring to the notations in Figure B-1 and B-2, where the notation in each data block, for examples L_1, R_1, K_1, P/M, etc., indicate number of bits of the data block.

The bits before physical channel segmentation are described as follows:
Bits input to physical channel segmentation ~~from second multiplexing~~: $d_1, d_2, \ldots, d_P$

M is the number of physical channel

The bits after physical channel segmentation are defined by the following relationship:

The first physical channel bits after physical channel segmentation:
$e_{1j} = d_j \qquad j=1,2,\ldots,P/M$

The second physical channel bits after physical channel segmentation:
$e_{2j} = d_{(j+P/M)} \qquad j=1,2,\ldots,P/M$
…

The M^{th} physical channel bits after physical channel segmentation:
$e_{Mj} = d_{(j+(M-1)P/M)} \qquad j=1,2,\ldots,P/M$