

[A-MAP relevance and HARQ timing for long TTI transmission (Section 15.3.9.2.2)]

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Base Contribution:

This is a contribution

Purpose:

Discuss and adopt the proposed text

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A-MAP Relevance and HARQ Timing for Long TTI Transmission (Section 15.3.9.2.2)

2009. 8. 29

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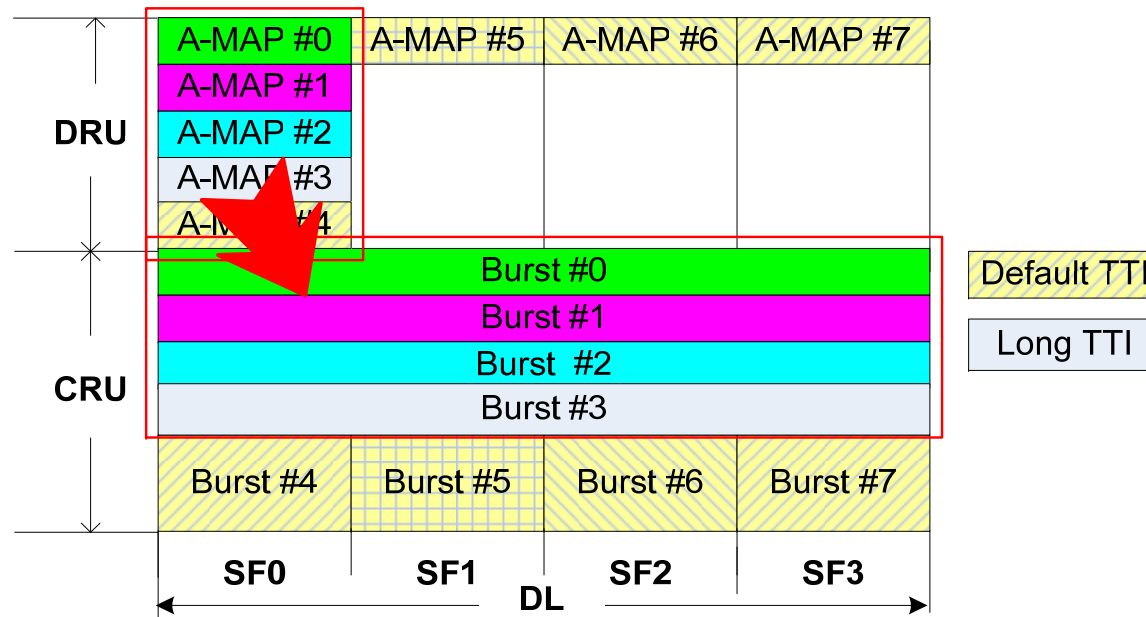
Samsung Electronics

Long TTI Transmission

- A data burst occupies contiguous multiple subframe
 - 4 in FDD DL/UL
 - D in TDD DL, U in TDD UL
- Purpose of long TTI transmission
 - UL Coverage Enhancement
 - Signaling Overhead Reduction

Current A-MAP Relevance

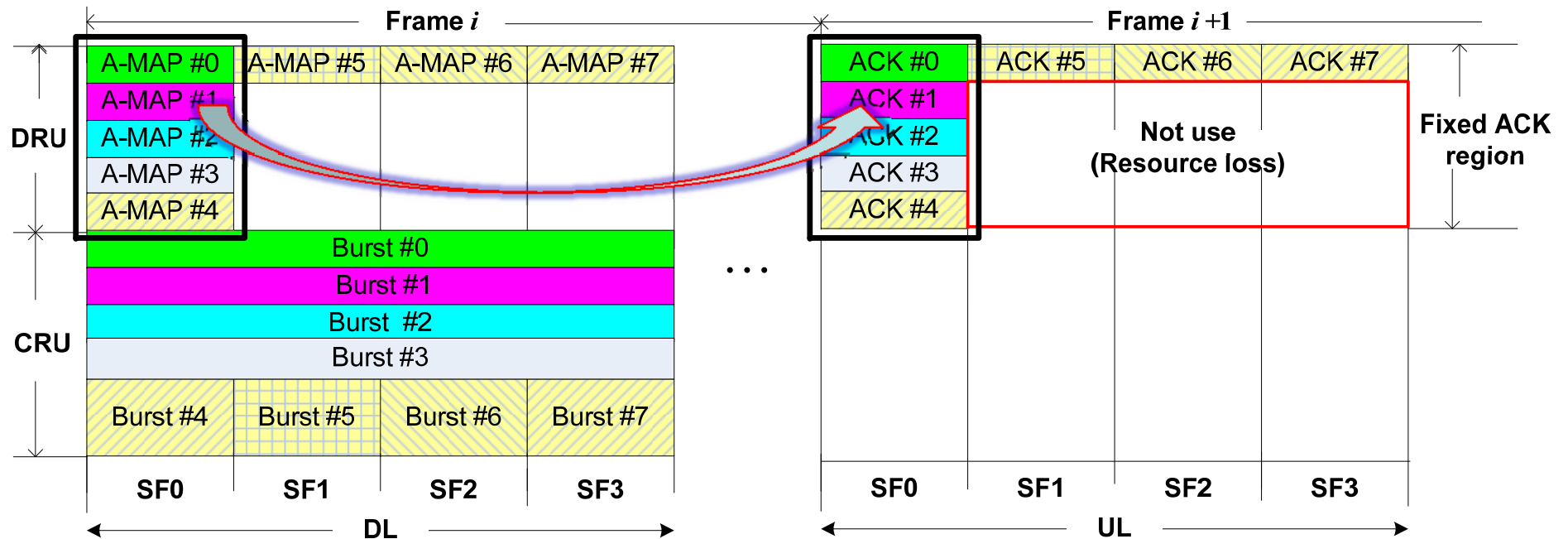
- The transmission of the A-MAPs for long TTI burst are concentrated in a certain subframe as 0th subframe (SF0)



- A-MAP region in 0th subframe become larger and larger according to number of long TTI bursts → large DRU regions are needed for A-MAP → limit to CRU region

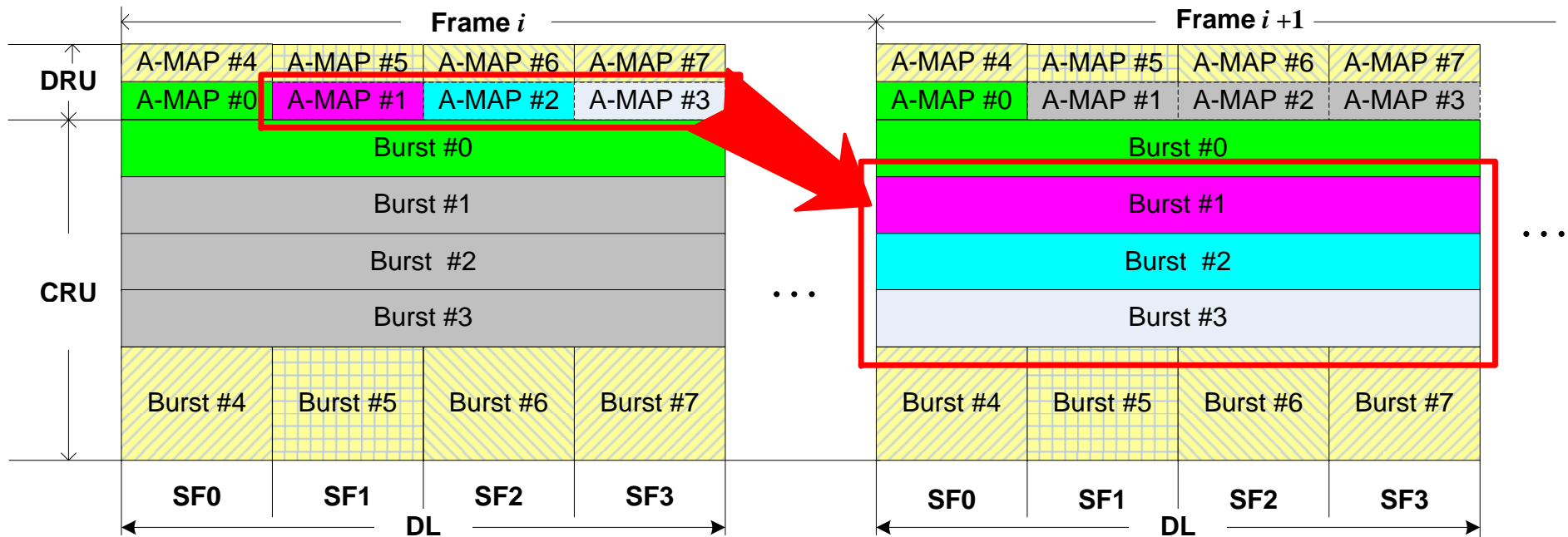
Current HARQ Feedback Timing

- HARQ feedback corresponding long TTI burst shall be transmitted in 0th UL subframe



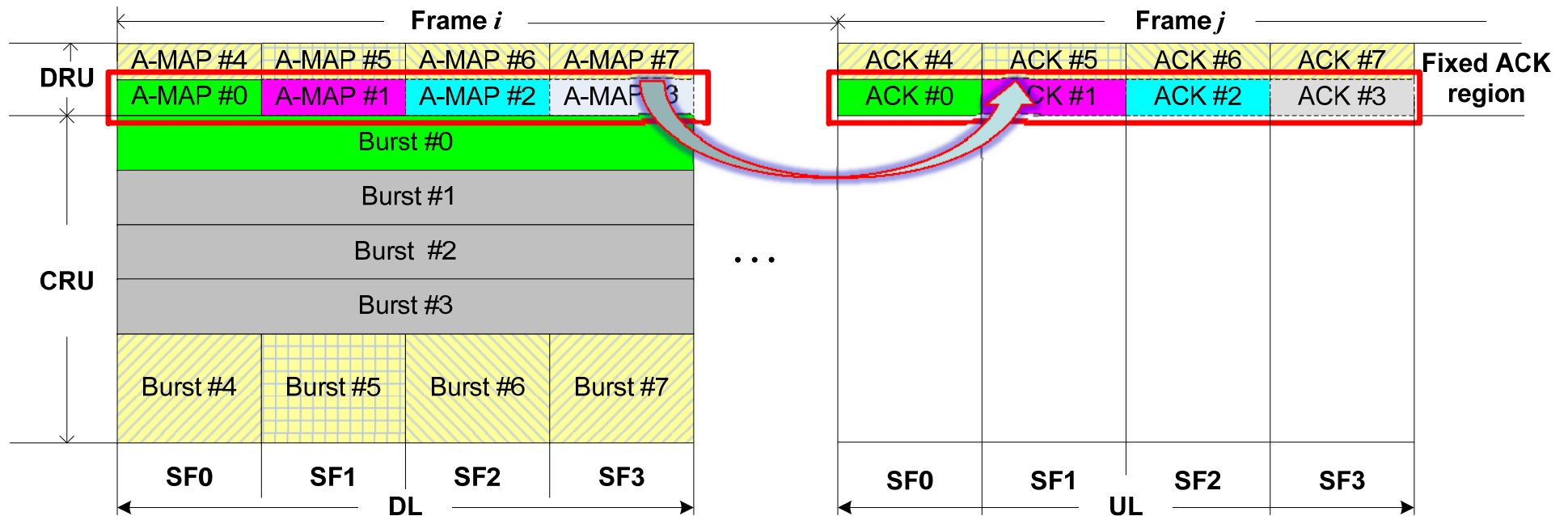
Proposed A-MAP Relevance

- Long TTI transmission begins in 0th subframe of next frame when DL subframes (except 0th) contains the A-MAPs indicating long TTI



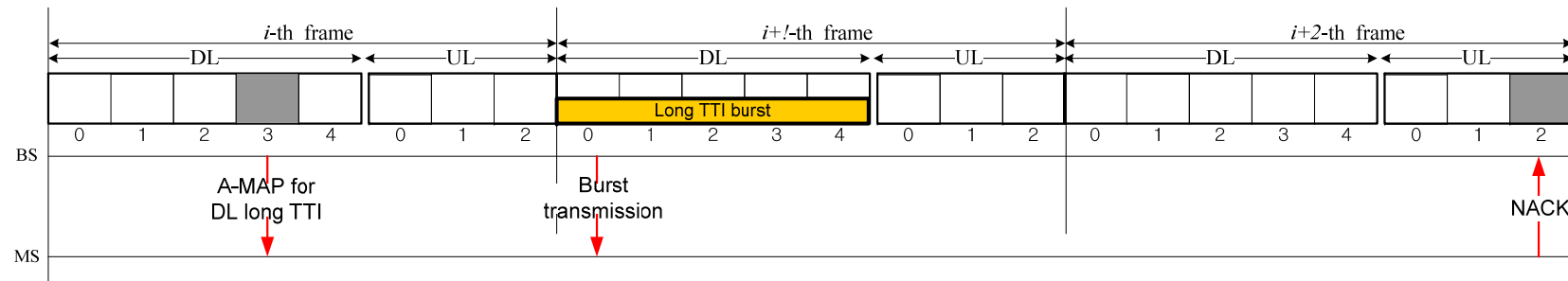
Proposed HARQ Feedback Timing

- HARQ feedback corresponding long TTI burst is transmitted in the UL subframe corresponding DL subframe index contains the burst's A-MAP

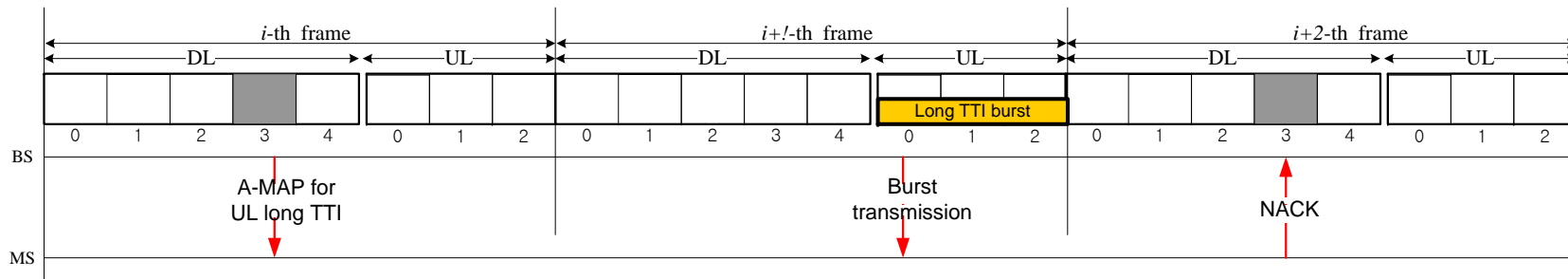


Examples of Proposed Timing

- DL long TTI (e.g. $T_{proc} = 3$ subframes)



- UL long TTI (e.g. $T_{proc} = 3$ subframes)



Proposed Remedy #1 (TDD DL HARQ)

Add the following text in line 29, page 176, section 15.3.9.2.2.2.1

Note that when a DL Basic Assignment A-MAP IE in the l -th subframe of the i -th frame indicates the long TTI transmission and l is 0, the subframe index m and frame index j shall be calculated as shown in Table 725.

When a DL Basic Assignment A-MAP IE in the l -th subframe of the i -th frame indicates the long TTI transmission and l is not 0, the long TTI transmission of the DL HARQ subpacket shall begin in the 0-th DL subframe of the $(i+1)$ -th frame. A HARQ feedback for this long TTI transmission shall be transmitted in the n -th subframe of the j -th frame. The subframe index n and the frame index j shall be calculated according to equations in Table 725, with replacing the subframe index m and frame index i by l and $i+1$, respectively.

Proposed Remedy #2 (TDD UL HARQ)

Add the following text in line 60, page 177, section 15.3.9.2.2.2.2

When an UL Basic Assignment A-MAP IE in the l -th subframe of the i -th frame indicates the long TTI transmission, the UL HARQ subpacket transmission shall begin in the 0-th UL subframe of the j -th frame. A HARQ feedback for this long TTI transmission shall be transmitted in the l -th DL subframe of the k -th frame. When the UL HARQ feedback indicates a negative acknowledgement, retransmission of the UL HARQ subpacket shall begin in the 0-th UL subframe of the p -th frame. The frame index j , k , p shall be calculated according to equations in Table 726, with replacing the subframe index m by 0.