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Junichi Suga, Michiharu Nakamura
Fujitsu Laboratories Ltd.
Kamikodanaka 4-1-1,
Kawasaki, 211-8588, Japan
Voice: +81 44 754 2811
Fax: +81 44 754 2786
E-mail: suga.junichi@jp.fujitsu.com
michi@labs.fujitsu.com

Haihong Zheng, Yousuf Saifullah, Shashikant Maheshwari
Nokia
6000 Connection Drive, Irving, TX
Voice: 972 894 5000
E-mail: haihong.1.zheng@nokia.com
shashikant.maheshwari@nokia.com,
Yousuf.saifullah@nokia.com

Aik Chindapol, Yishen Sun, Jimmy Chui
Siemens Corporate Research
Princeton, NJ, USA
Voice: +1 609 734 3364
Fax: +1 609 734 6565
E-mail: aik.chindapol@siemens.com

Kyu Ha Lee
Samsung Thales
San 14, Nongseo-Dong, Giheung-Gu,
Yongin, Gyeonggi-Do, Korea 449-712
Voice: +82-31-280-9917
Fax: +82-31-280-1562
E-mail: kyuha.lee@samsung.com

Young-il Kim
ETRI
161, Gajeong-Dong, Yuseong-Gu, Daejeon, Korea 305-350
Voice: +82-42-860-5399
Fax: +82-42-861-1966
E-mail: yikim@etri.re.kr

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Purpose:

This contribution proposes downlink HARQ procedure for relay.

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Introduction

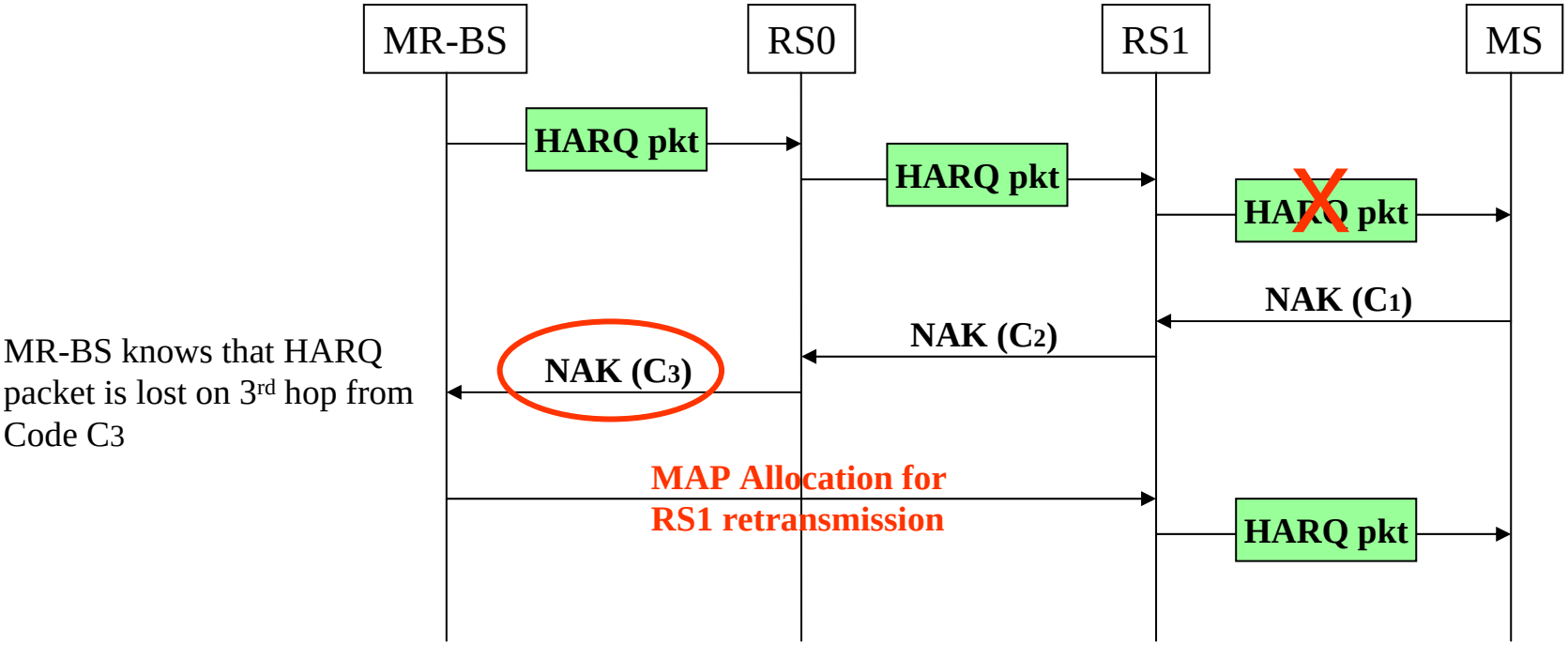
- This contribution proposes downlink HARQ for non-transparent/two-hop transparent RS in centralized scheduling
- The concept is that RS retransmits HARQ data instead of MR-BS to reduce bandwidth and latency for retransmission

DL HARQ Problem in centralized scheduling

- In centralized scheduling, MR-BS does all the MAP allocation and scheduling
- In order to retransmit HARQ data from RS, MR-BS must know where the error is occurred in previous transmission

Solution for non-transparent RS

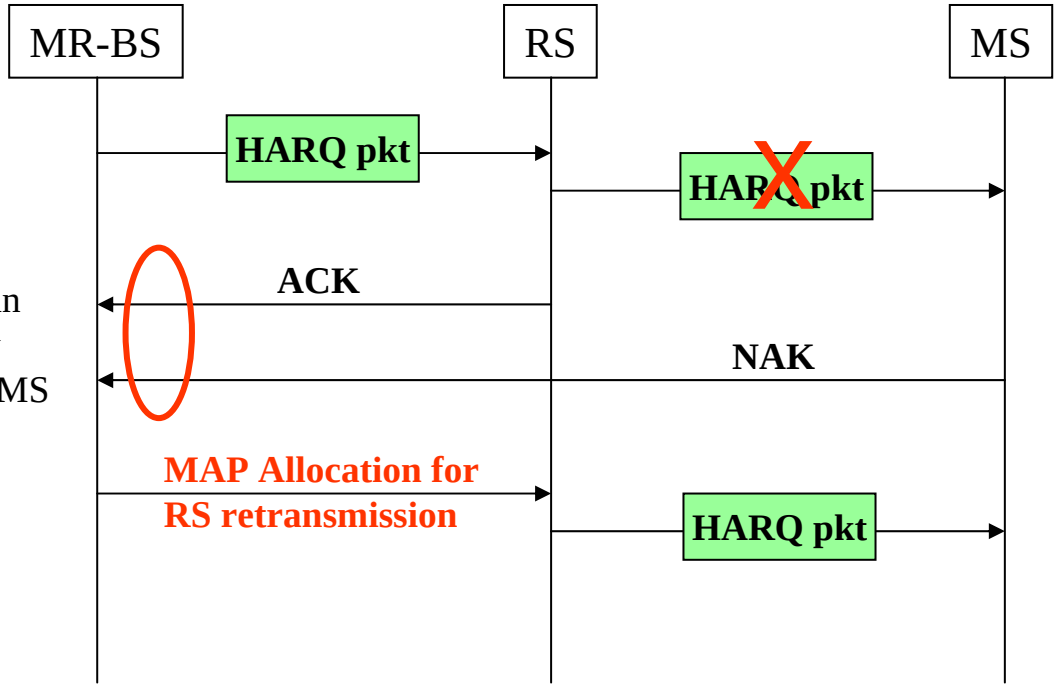
- DL transmission failure is indicated by the new orthogonal code on the UL ACK Channel
- The RS sends Code C_{k+1} to next RS, when the RS receives Code C_k from previous RS ($k \neq 0$)
- MR-BS knows where HARQ packet is lost from receipt Code



Solution for two-hop transparent RS

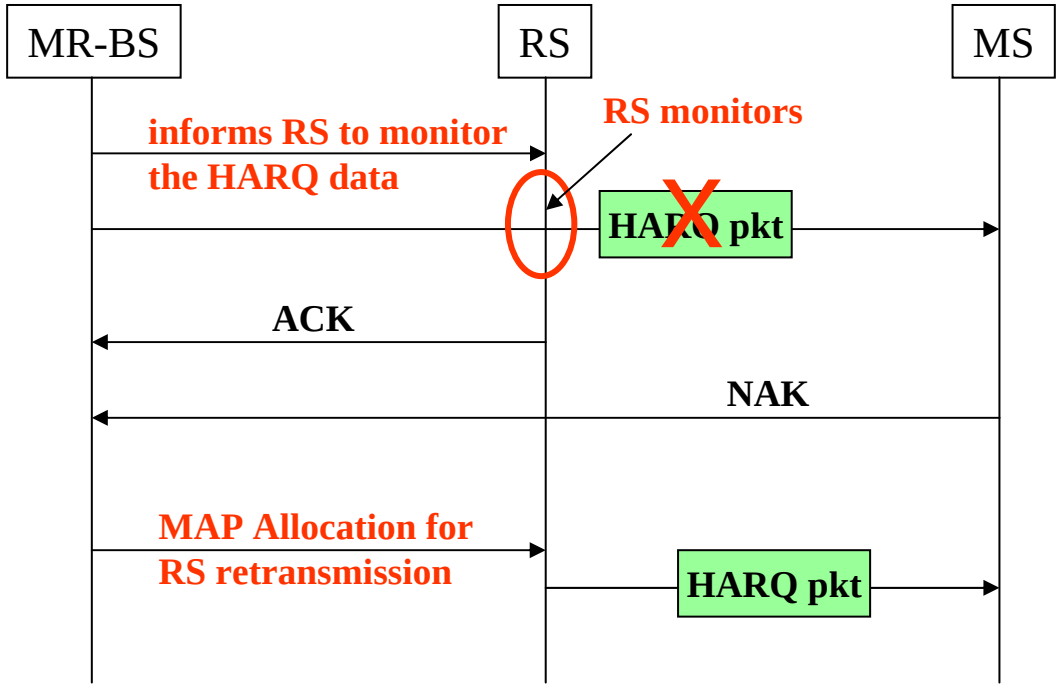
- In two-hop transparent RS, MS-BS sends preamble and DL/UL MAP to MS directly, and MR-BS receives ACK/NAK from MS directly
- RS also sends ACK/NAK to MR-BS when RS receives HARQ data

MR-BS knows that RS can retransmit HARQ data by ACK/NAK from RS and MS



Alternative proposal for transparent RS

- In first transmission, MR-BS transmits HARQ data to MS directly and informs RS to monitor the transmission
- RS retransmits the HARQ data that RS captures in first transmission



Conclusion

- Described a problem for retransmission scheduling from a RS in the case of centralized scheduling
- Proposed a solution by sending new orthogonal code sequence in the UL ACK Channel for non-transparent case
- Proposed a solution by receiving ACK/NAK from MS and RS separately for two-hop transparent case
- Proposed a solution by RS monitoring HARQ data to support retransmission for two-hop transparent case
- Doesn’t modify MS behavior
- Provides corresponding spec changes in C80216j-07_002r1.pdf