**3GPP TSG-RAN WG1 Meeting #114 R1-23xxxxx**

**Toulouse, France, 21-25 August, 2023**

**Agenda Item: 9.17**

**Source: Moderator (Huawei)**

**Title: Summary of email discussion [Post114-38.212-NR\_SL\_enh2-Core]**

**Document for: Discussion and Decision**

# Introduction

This document summarizes the discussions on the 38.212 draft CR on NR sidelink evolution, and aims to stabilize the 38.212 draft CR.

[Post114-38.212-NR\_SL\_enh2-Core] Email discussion on Rel-18 draft CRs by September 7 – Editors

# First round discussions

This section summarize the first round email discussions on draft CR v00. Companies are encouraged to provide the first round views by 09/05 (Tuesday), 6:00am UTC, then we can update the draft CR accordingly for the next step discussions.

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| *Company* | *View* |
| Editor | The changes are marked with author “Yan Cheng\_post RAN1#114” on top of the version R1-2306323 endorsed in RAN1#113, which are to reflect the agreements RAN1#114. |
| LGE | There is no explicit agreement that the existing SCI format 2-A always include the COT-SI related fields. We do not have any discussion on which combinations of 2nd SCI formats will be supported in NR SL-U. To be specific, there could be separated 2nd SCI formats: one is for PSCCH/PSSCH transmission allocation only, the other is for PSCCH/PSSCH transmission allocation and COT-SI. TX UE does not always share its own channel occupancy, and then it is not necessary to use 2nd SCI format with high overhead due to COT-SI. In our understanding, it will be discussed whether the new format or which format will be used to convey COT-SI during the maintenance phase. In those points of views, all the COT-SI related field in SCI format 2-A need to be removed, or at least brackets needs to be added. [Chengyan]: Regarding whether to introduce new SCI format or update SCI format 2-A/2-B/2-C, looking at the comments from companies here, it seems better to do some further discussions in RAN1 first. Note that the CR needs to be submitted to RAN this time, for CRs submitted to RAN we usually don’t leave any bracket there. Let me add the editor’s note below in the draft CR to make it open for further update. Editor’s note: Further update can be done depending on further discussions in RAN1 on whether to introduce new SCI format or update SCI format 2-A/2-B/2-C. [LGE2]We have another comment on 2nd SCI mapping. Following agreement also needs to be captured. **Agreement**If a resource pool includes slots with 2 candidate starting symbols for a PSCCH/PSSCH transmission, for TBS determination and 2nd SCI overhead, in TS 38.214 Clause 8.1.3.2:* *L\_ref* replaces *sl-LengthSymbols*
	+ Value range of *L\_ref* is {7, 8, 9, 10, 11, 12, 13, 14} symbols
* $N\_{symb}^{PSFCH}$ is determined in the same way as in legacy NR SL

On the section 8.4.4, - $M\_{sc}^{SCI2}(l)$ is the number of resource elements that can be used for transmission of the 2nd-stage SCI in OFDM symbol $l$, for $l=0,1,2\cdots ,N\_{symbol}^{PSSCH}-1$ and for $N\_{symbol}^{PSSCH}=N\_{symb}^{sh}-N\_{symb}^{PSFCH}$, in PSSCH transmission, where $N\_{symb}^{sh}$$N\_{symb}^{slot}$ = *sl-lengthSymbols* - 2, where *sl-lengthSymbols* is the number of sidelink symbols within the slot provided by higher layers as defined in [6, TS 38.214]. If *startingSymbolFirst* and *startingSymbolSecond* are provided for a sidelink resource pool, the number of sidelink symbols assumed in transport block size determination is determined by a reference number of symbols, *numRefSymbolLength*, provided by higher layers. If higher layer parameter *sl-PSFCH-Period* = 2 or 4, $N\_{symb}^{PSFCH}$ = 3 if "PSFCH overhead indication" field of SCI format 1-A indicates "1", and $N\_{symb}^{PSFCH}$ = 0 otherwise. If higher layer parameter *sl-PSFCH-Period* = 0, $N\_{symb}^{PSFCH}=0$. If higher layer parameter *sl-PSFCH-Period* is 1, $N\_{symb}^{PSFCH}=3$.[Chengyan]: Good catching. I will update as below in the next update. |
| **CATT/GH** | Thanks the editor for the great efforts on drafting the CR! Please find our comments below.* **Comment 1 (Clause 8.4.1.1):**
	+ Considering the detailed usage of remaining COT duration is defined in TS 37.213, we propose adding the reference as follows:

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| If higher layer parameter *transmissionStructureForPSCCHandPSSCH* in *SL-BWP-Config* is configured, all the remaining fields are set as follows:- CAPC – 2 bits. Value '00' of CAPC field corresponds to CAPC value '1', value '01' of CAPC field corresponds to priority value '2', and so on.- COT sharing cast type – 2 bits as defined in Table 8.4.1.1-1.- COT sharing additional ID – 24 bits. The 16 LSBs provide layer 1 destination ID and the 8 MSBs provide layer 1 source ID, as defined in [6, TS 38.214]. The 8 MSBs are reserved when value of COT sharing cast type field is set to '00' or '01'. - Remaining COT duration – $\left⌈log\_{2}(10∙2^{μ})\right⌉$ bits as defined in clause 4.5.3 of [X, TS 37.213], where $μ$ is defined in Table 4.2-1 of Clause 4.2 of [4, TS 38.211]. |

[Chengyan]: Ok, will reflect in the next update. * **Comment 2 (for LGE’s first comment):**
	+ We think the current description of COT-SI should be kept. For SL-U, no matter whether COT is shared or not by a PSCCH/PSSCH transmission, the total bits of SCI should be the same. Otherwise, decoding complexity may be increased. A COT initiating UE can choose not to share a COT by setting a zero value for the field of remaining COT duration.

[Chengyan]: Please check my reply to LGE above.  |
| **Vivo** | 1. In the CR, the COT-SI is added for SCI format 2-A only, the COT-SI should be applied to other 2nd SCI format as well

[Chengyan]: Please check my reply to LGE above.1. In COT-SI, the COT sharing cast type should only indicate three states, i.e., unicast, groupcast and broadcast. There should be no distinguishment between groupcast option1 and option2.

[Chengyan]: It seems based on RAN1 discussions, “11’’ is not supported for Rel-18 SL-U. Therefore, the groupcast here can only be ‘01’. Of course, if ‘11’ is agreed to support in the future, we can update accordingly. 1. In COT-SI, the remaining COT duration has the following bitsize

[Chengyan]: I think the current description reflect the agreement. Any error here?Agreement“Remaining COT duration” is expressed in physical slots and it is carried in the 2nd stage SCI. The payload size is 4 bits in 15kHz, 5 bits in 30kHz and 6 bits in 60kHz |
| **OPPO** | In our understanding, COT-SI can be also carried in SCI format 2B and 2C.For SCI format 2B, * although the cast type is not indicated (which means the SCI format is only intended for cast type “11”), but it can also be used for the case when there is no feedback of HARQ-ACK information as it is currently described.
* The SCI format 2B supports a use case of SL communication based on a communication range. Although groupcast option 1 (NACK-only) feedback is not well supported in SL-U, but the usage of a communication range can still be useful in SL-U (with setting the HARQ feedback enabled/disabled indicator to disabled).

For SCI format 2C, it is intended for providing inter-UE coordination information or requesting inter-UE coordination information in SL unicast.* According to the WID (in the next two sub-bullets), in our understanding, the IUC feature is still supported in SL-U (with no specific enhancement)
	+ No specific enhancements for existing NR SL feature
	+ No specific enhancements for Rel-17 resource allocation mechanisms
* Is there any specific reason why the COT-SI is not included in SCI format 2C (e.g., too many bits)?

[Chengyan]: Please check my reply to LGE above. |
| **QC** | We thank the editor for the draft CR.On the discussion on COT-SI and SCI-2 formats, we are also unsure on whether COT-SI fields should be provisioned for in every existing SCI-2 format, or if a new SCI-2 format is needed.We propose to add the fields in all the existing formats in square brackets for now, until this discussion is resolved in RAN1 maintenance.[Chengyan]: Please check my reply to LGE above. |
| **DCM** | There is no clear agreement on which SCI-2 format conveys COT-SI. Adding them only in SCI 2-A is not valid at least in the current status.[Chengyan]: Please check my reply to LGE above. |
| **Nokia, NSB** | Regarding which SCI-2 formats can include COT sharing fields – we agree with others that it is not clear at the moment. The draft CR for 38.214 assumed that SCI format 2-A, 2-B, 2-C all can include them.[Chengyan]: Please check my reply to LGE above. |

# Second round discussions

Please find the updated [draft CR v2](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Inbox/drafts/9.17%28Other%29/38.212%20draft%20CRs/%5BPost114-38.212-NR_SL_enh2-Core%5D/R1-23xxxxx%20Introduction%20of%20Rel-18%20NR%20sidelink%20evolution%20v2.docx) based on inputs from the first round. Companies are encouraged to provide the second round views by 09/06 (Wednesday), 16:00pm UTC if any.

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| *Company* | *View* |
| **DCM** | For SCI 2-A/2-B/2-C, we do not accept only adding the note. If RAN1 do not have consensus on which 2nd stage SCI conveys COT-SI, it means that the current CR is automatically agreed for R18 spec. We do not support the situation. If the point should be an open issue, we suggest removing the text from SCI 2-A while keeping the editor’s note.[Chengyan]: Although I really don’t see what the problem to go with the editor’s note, I am fine to remove it for now since you have strong concern.  |
| **Vivo** | Comment 1We share view as DCM, if RAN1 will further discuss COT-SI for SCI-2A/SCI 2-B/2-C, the current spec. for SCI-2A should be removed [Chengyan]: See my reply to DCM. Comment 2In COT-SI, the COT sharing cast type should only indicate three states, i.e., unicast, groupcast and broadcast. There should be no distinguishment between groupcast option1 and option2. [Chengyan]: It seems based on RAN1 discussions, “11’’ is not supported for Rel-18 SL-U. Therefore, the groupcast here can only be ‘01’. Of course, if ‘11’ is agreed to support in the future, we can update accordingly. [vivo]: the cast type indication for COT-SI is simplified compared with Rel-16 cast type. We think a dedicated table is more straightforward, In table 8.4.1.1-1, the description for ‘01’ and ‘11’ distinguishes the NACK-only based groupcast and ACK/NACK based groupcast, which is not agreed for COT-SI[Chengyan]: As also explained by CATT below, adding another table is really unnecessary, we need to make the spec concise as much as possible. Anyway, per the comment from DCM and vivo, I decided to remove the changes for SCI-2A, let’s see what the situation is next meeting.  |
| **CATT/GH** | Thanks to the editor for updating the CR!* For the container of COT-SI, it is clear that further discussion is required. With the editor’s note, we think the current version should be ok at this stage.
* Regarding the COT sharing cast type, we have some different views with vivo. According to the previous RAN1 discussion, groupcast option 1 (NACK-only) cannot be supported in SL-U. Thus, it should not be implied in any way that groupcast option 1 can be supported, not matter for CW adjustment or COT-SI. Redefine another table also seems unnecessary. We think current Table 8.4.1.1-1 is clear enough.

[Chengyan]: Thank you very much.  |
| **O**PPO | Regarding which existing or new 2nd stage SCI format(s) that can/should contain the COT-SI, it does seem now necessary for RAN1 to discuss this point in the next meeting. For now, at least I think everyone agrees that at least format-2A should carry the COT-SI. When RAN1 reaches a new agreement in the next meeting, we can have a new CR to update 38.212. Therefore, from our view at least for now, we are OK to have the COT-SI in format-2A without square brackets. For us it is not critical to have the editor’s note, but we are OK to have it if makes it clear to everyone.[Chengyan]: Thank you very much. |
| **Editor** | @allPer the comment from DCM and vivo, I removed the whole changes for SCI format 2-A, please find the corresponding updated CR [draft CR v3](https://www.3gpp.org/ftp/tsg_ran/WG1_RL1/TSGR1_114/Inbox/drafts/9.17%28Other%29/38.212%20draft%20CRs/%5BPost114-38.212-NR_SL_enh2-Core%5D/R1-23xxxxx%20Introduction%20of%20Rel-18%20NR%20sidelink%20evolution%20v3.docx). If you have any further comments, please share as soon as possible, since the deadline is coming.  |
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