**3GPP TSG RAN WG1 Meeting #108-e R1-220xxxx**

**e-Meeting, February 21st – March 3rd, 2022**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Agenda item:** 8.11.1.2

**Source:** Moderator (LG Electronics)

**Title:** Feature lead summary #3 for AI 8.11.1.2 Inter-UE coordination for Mode 2 enhancements

**Document for:** Discussion and information

1. **Draft proposals for 3rd discussion (Due:** **February 24th 11:59pm UTC)**
	1. **Scheme 2**

Q3-1: FL understands that the agreement of “m\_CS for a resource conflict indication for the next reserved resource indicated by the corresponding UE-B’s SCI for either current TB transmission or next TB transmission is 0” was made in Wednesday’s GTW session, so **further clarification is necessary on UE-B’s behaviour when UE-B receives a conflict indication for reserved resource for next TB transmission**. It is understood that the intention of the agreement is that UE-A can transmit a conflict indication for next TB transmission after the last PSSCH transmission indicated by UE-B’s SCI for current TB. Do you agree the following draft proposal?

|  |
| --- |
| *Agreement**For Scheme 2,* * + *m\_CS for a resource conflict indication for the next reserved resource indicated by the corresponding UE-B’s SCI for either current TB transmission or next TB transmission is 0*

*Agreement** + *Alt 2-1*
		- *For Scheme 2,*
			* *The PHY layer reports S\_A after Step 7) of TS 38.214 Section 8.1.4 to higher layer.*
			* *When UE-B receives a conflict indicator for resource(s) indicated by its SCI,*
				+ *PHY layer at UE-B reports resources overlapping with the next reserved resource indicated by the corresponding UE-B’s SCI for current TB transmission to higher layer.*

*If (pre)configured, the PHY layer reports resources in a slot including the next reserved resource indicated by the corresponding UE-B’s SCI for current TB transmission to higher layer.** + - * + *Higher layer at UE-B re-selects the resource(s) indicated by the conflict indicator among the S\_A excluding the reported resources.*
			* *FFS: Whether/How the conflict in periodic transmission is indicated by UE-A and handled by UE-B*
 |

Draft Proposal 3-1:

* For Scheme 2,
	+ When PSFCH occasion is derived by a slot where UE-B’s SCI is transmitted,
		- When UE-B receives a conflict indicator in a PSFCH occasion derived by UE-B’s latest SCI for current TB transmission before next reserved resource for next TB transmission,
			* PHY layer at UE-B reports resources overlapping with the next reserved resource for next TB transmission to higher layer.
				+ If (pre)configured, the PHY layer reports resources in a slot including the next reserved resource for next TB transmission to higher layer.
			* Higher layer at UE-B re-selects the resource(s) indicated by the conflict indicator among the S\_A excluding the reported resources.
	+ When PSFCH occasion is derived by a slot where expected/potential resource conflict occurs on PSSCH resource indicated by UE-B’s SCI,
		- When UE-B receives a conflict indicator in a PSFCH occasion derived by the earliest reserved resource for next TB transmission,
			* PHY layer at UE-B reports resources overlapping with the earliest reserved resource for next TB transmission to higher layer.
				+ If (pre)configured, the PHY layer reports resources in a slot including the earliest reserved resource for next TB transmission to higher layer.
			* Higher layer at UE-B re-selects the resource(s) indicated by the conflict indicator among the S\_A excluding the reported resources.

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO |  | For the 1st sub-bullet, is it correct understanding that UE-B reports to higher layer “collision” for both aperiodic resource and periodic resource? Then we are fine with it.For the 2nd sub-bullet, why “earliest” is there? This option of PSFCH determination is just derived by a resource with collision. That’s all. “earliest” should be removed.  |
| ZTE, Sanechips | comment | For this case, it is one-to -one mapping b/w the reserved resource and PSFCH occasion, so ‘earliest’ is not needed here, and the current proposal only covered the Tx for next TB, we prefer a unified procedure for both reTx of current TB and next TB. We propose to change the second bullet as following:* + When PSFCH occasion is derived by a slot where expected/potential resource conflict occurs on PSSCH resource indicated by UE-B’s SCI,
		- When UE-B receives a conflict indicator in a PSFCH occasion derived by ~~the earliest~~ a reserved resource ~~for next TB transmission~~,
			* PHY layer at UE-B reports resources overlapping with the ~~earliest~~ reserved resource ~~for next TB transmission~~ to higher layer.
				+ If (pre)configured, the PHY layer reports resources in a slot including the ~~earliest~~ reserved resource ~~for next TB transmission~~ to higher layer.
			* Higher layer at UE-B re-selects the resource(s) indicated by the conflict indicator among the S\_A excluding the reported resources.
 |
| Vivo |  | For 1st bullet, it is not clear whether the resource reselection is triggered at current period or at next period, e.g., when TB transmission on next period is ready. Our preference is that the reselection is triggered at next period.For 2nd bullet, the agreement made in prior meeting can be applied as well. So we think 2nd bullet is not needed. |
| LGE | Yes | In our understanding, the intention of the agreement for m\_CS setting is to protect initial transmission of next TB. Meanwhile, retransmission of next TB will be protected by UE-B’s behavior for current TB transmission. In this case, for option 1 timing (Based on slot where SCI is transmitted), the last SCI for current TB transmission is no longer have aperiodic reserved resources. When UE-B receives a conflict indication in a PSFCH occasion derived by this last SCI time location, UE-B will find the first reserved resources for next TB transmission based on UE-B’s first SCI in the current TB transmission. In short, in this time, UE-B will report only the first reserved resource for the next TB transmission as collided resources. For the second bullet, we also need to have “earliest”. We think that reserved resources other than the earliest one is already covered by UE-B’s behavior for current TB transmission case. We also fine to have duplicated agreement if majority companies want. Anyway, at least, we need to have new agreement for this earliest reserved resource for next TB since it is not covered by the previous agreement (UE-B’s behavior for current TB transmission). We share similar view with the timing when UE-B knows the next TB is available or not. For simplicity, it can be considered to add that UE-B use the received conflict indication for next TB transmission if the next TB is available at UE-B side.  |
| OPPO | Comment | We are fine with the 2nd sub-bullet (PSFCH occasion is derived by conflicting resource). For the first sub-bullet, if it was agreed, it contradicts with the agreement below, where only resource reserved for the current TB is reported. The agreement below is made based on the assumption that only conflict indication for next reserved resource for current TB is transmitted, under the new agreement made on Wed. GTW, we are wondering whether the agreement below is applicable any more. So maybe we should expand the proposal to cover PSFCH occasion derived by UE-B’s any SCI, and override the agreement below. To the end following modifications for the first sub-bullet are suggested:*Agreement** + *Alt 2-1*
		- *For Scheme 2,*
			* *The PHY layer reports S\_A after Step 7) of TS 38.214 Section 8.1.4 to higher layer.*
			* *When UE-B receives a conflict indicator for resource(s) indicated by its SCI,*
				+ *PHY layer at UE-B reports resources overlapping with the next reserved resource indicated by the corresponding UE-B’s SCI for current TB transmission to higher layer.*

*<omitted>*Draft Proposal 3-1:* For Scheme 2,
	+ When PSFCH occasion is derived by a slot where UE-B’s SCI is transmitted,
		- When UE-B receives a conflict indicator in a PSFCH occasion derived by UE-B’s ~~latest~~ SCI ~~for current TB transmission before next reserved resource for next TB transmission,~~
			* PHY layer at UE-B reports resources overlapping with the next earliest reserved resource for either current TB or the next TB transmission to higher layer.
				+ If (pre)configured, the PHY layer reports resources in a slot including the next earliest reserved resource for either current TB or next TB transmission to higher layer.
			* Higher layer at UE-B re-selects the resource(s) indicated by the conflict indicator among the S\_A excluding the reported resources.
 |
| Fujitsu | Yes | Since there is no difference between “next reserved resource for next TB transmission” in the 1st sub-bullet and “the earliest reserved resource for next TB transmission” in the 2nd sub-bullet, it is suggested to use “the earliest reserved resource for next TB transmission” for consistency.  |
| Spreadtrum | comment | We think the purpose of this draft proposal should be clarified, i.e., whether it is only targeting the UE-B’s behavior when it receives a conflict indicator of next TB rather than current TB. If yes, we agree with 2nd sub-bullet in this draft proposal. Otherwise, the modification of ZTE looks better.For the 1st sub-bullet, we share the same concerns as OPPO. Besides, we still has a concern that how UE-B know whether the conflict is current TB transmission or next TB transmission in the 1st sub-bullet.  |
| NEC |  | From our reading, the proposal has an assumption that when the conflict indication is for next TB transmission, it only could be the initial transmission of next TB. That’s the reason the proposal captures “latest SCI” “earliest reserved resource” in our understanding. However, we have doubt this, do we have common understanding or agreement saying that the next TB should be the initial transmission of next TB? From our perspective, regardless of the PSFCH is derived by SCI or potential conflicted resource, the resource conflict indication is targeting for the next reserved resource which could be either a resources for current TB or next TB as the agreement said. *Agreement**For Scheme 2,* * + *m\_CS for a resource conflict indication for the next reserved resource indicated by the corresponding UE-B’s SCI for either current TB transmission or next TB transmission is 0*

Given that, may be a simple way is to revise the previous agreement by *Agreement** + *Alt 2-1*
		- *For Scheme 2,*
			* *The PHY layer reports S\_A after Step 7) of TS 38.214 Section 8.1.4 to higher layer.*
			* *When UE-B receives a conflict indicator for resource(s) indicated by its SCI,*
				+ *PHY layer at UE-B reports resources overlapping with the next reserved resource indicated by the corresponding UE-B’s SCI to higher layer.*

*If (pre)configured, the PHY layer reports resources in a slot including the next reserved resource indicated by the corresponding UE-B’s SCI to higher layer.** + - * + *Higher layer at UE-B re-selects the resource(s) indicated by the conflict indicator among the S\_A excluding the reported resources.*

*FFS: Whether/How the conflict in periodic transmission is indicated by UE-A and handled by UE-B* |
| Xiaomi | Comment | We share the similar view with vivo, for the first bullet, the PSFCH occasion conveys the resource conflict for next TB in the current period, so it is not clear that resource reselection is triggered in the current period or in the next period, this issue needs to be clarified. |
| Fraunhofer | Yes | We are fine with the proposal, with the understanding that this is an extension to include the case for the next TB transmission (periodic transmissions), since the case for current TB transmission was already agreed. |

Q3-2: Do you agree for following draft proposal for UE-B determination?

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Support: DCM, Panasonic, InterDigital, ETRI, LGE, Qualcomm, Futurewei, Spreadtrum, ZTE, Fujitsu, NEC, OPPO, xiaomi, Ericsson, CATT, Fraunhofer, Nokia, Intel, MediaTek (19)
* Not support: Samsung, vivo, Huawei, (3)
	+ No additional change on the WA: Samsung, (1)
	+ Vivo, Huawei: Remove last note.
* Comments:
	+ Apple: Replace “(i.e., minimum time gap between PSFCH and SCI(s) scheduling conflicting TBs, minimum time gap between PSFCH and a slot where expected/potential resource conflict occurs)” with “(i.e., sl-MinTimeGapPSFCH, T\_3)”

**FL’s observation of 2nd email discussion:** * Additional enhancement for UE-B determination in addition to draft proposal 4: Apple, Futurewei, Spreadtrum, (3)
	+ Apple: Further consider a case where both UEs, scheduling the conflict TB, do not have the capability of receiving IUC scheme 2
	+ Futurewei: If at least one of UEs scheduling conflicting TBs is not capable of receiving the conflict indication, except the UEs not capable of receiving the conflict indication, all other UEs scheduling the conflicting TBs whose PSFCH occasions for resource conflict indication are not yet passed are UE-B
	+ Spreadtrum: Clarification on “Capable of receiving the conflict indication”.
* No additional enhancement for UE-B determination in addition to draft proposal 4: DCM, Panasonic, ETRI, LGE, Qualcomm, Sharp, ZTE, Fujitsu, OPPO, Samsung, xiaomi, Ericsson, CATT, Fraunhofer, Huawei, Intel, (16)
 |

Draft proposal 3-2:

* Confirm the following working assumption with modification in RED. Note that the terminology of “indicationUEB flag” means the indication of whether UE scheduling a conflict TB can be UE-B or not.
	+ Working Assumption:
		- For Condition 2-A-1 in Scheme 2, when “a non-destination UE of a TB transmitted by UE-B can be UE-A” is enabled or when “a non-destination UE of a TB transmitted by UE-B can be UE-A” is disabled and the destination UE of the conflicting TBs is UE-A,
			* for each pair of UEs scheduling the conflicting TBs whose PSFCH occasions for resource conflict indication are not yet passed and indicationUEB flag is set to 1 if the higher parameter of indicationUEBScheme2 is (pre)configured to ‘Enabled’, a UE with the higher priority value is UE-B.
				+ Note: if there is only one UE scheduling the conflicting TB whose PSFCH occasion for resource conflict indication is not yet passed and indicationUEB flag is set to 1 if the higher parameter of indicationUEBScheme2 is (pre)configured to ‘Enabled’, that UE is UE-B.
			* Note: A UE not satisfying the timeline (i.e., minimum time gap between PSFCH and a slot where a SCI is transmitted of sl-MinTimeGapPSFCH, minimum time gap between PSFCH and a slot where expected/potential resource conflict occurs on PSSCH resource indicated by a SCI of T\_3) is not considered as UE-B.

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| ZTE, Sanechips | Yes |  |
| vivo | See comment | For the last bullet, we are going to define the minimum time gap between PSFCH and a slot where expected/potential resource conflict as T3. Basically, T\_3 is used for PSSCH resource selection preparation, but now we also need to define PSFCH decoding time, T\_3 may be not enough, is it correct understanding. |
| LGE | Yes | In our understanding, T\_3 part is a part of agreement. We do not need to discuss for other value for this purposes. * *Agreement:*
	+ *A resource pool level (pre-)configuration uses either of the following options*
		- *Option 1: PSFCH occasion is derived by a slot where UE-B’s SCI is transmitted*
			* *Reuse PSSCH-to-PSFCH timing as specified in TS 38.213 Section 16.3 to determine the PSFCH occasion for resource conflict indication*
			* *Time gap between the PSFCH and a slot where expected/potential resource conflict occurs is larger than or equal to T\_3*
		- *Option 2: PSFCH occasion is derived by a slot where expected/potential resource conflict occurs on PSSCH resource indicated by UE-B’s SCI*
			* *UE-A transmits the PSFCH in a latest slot that includes PSFCH resources for inter-UE coordination information and is at least T\_3 slots of the resource pool before the PSSCH resource indicated by UE-B’s SCI in which expected/potential resource conflict occurs*
			* *FFS: How to account for processing timeline*
		- *Note that it is possible not to configure either option1 or option 2.*
 |
| OPPO | yes |  |
| Fujitsu | Yes | From our understanding, the last Note about the timeline clarifies the follows. If UE1 satisfies the timeline but UE2 does not, then UE1 is UE-B. |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| xiaomi | Yes with comment | We think the part of note has been agreed in the last meeting, so the note is not necessary. |
| Fraunhofer | Yes |  |

Q3-3-1: Do you agree following draft conclusion for PSFCH TX/TX or TX/RX prioritization for a conflict indication?

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Same understanding: DCM, Panasonic, ETRI, InterDigital, LGE, Qualcomm, Futurewei, Sharp, Spreadtrum, Fujitsu, NEC, vivo, OPPO, xiaomi, Huawei, Intel, MediaTek (17)
* Different understanding: Apple, Ericsson, (2)
	+ Add an additional step to prioritize PSFCH with SL HARQ-ACK information over PSFCH with a conflict indication in a specification after prioritization with LTE SL TX/RX or UL: Apple, (1)
* Comments:
	+ For prioritization between Rel-17 PSFCH and UL with SL-HARQ, UL with SL-HARQ is always prioritized to protect the SL HARQ. This point should be clarified: vivo, (1)
 |

Draft conclusion 3-3:

RAN1 understands that a UE performs PSFCH TX/RX or TX/TX prioritization between SL HARQ-ACK feedback(s) and resource conflict indication(s) first, and then the UE performs prioritization between prioritized PSFCH TX(s) or RX(s) and LTE SL TX/RX or UL by reusing prioritization rule as specified in TS 38.213 Section 16.2.4.1 and 16.2.4.3.1.

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| ZTE,Sanechips | Yes |  |
| Vivo | Yes |  |
| LGE | Yes | The current specification is already clear. Even for PSFCH of SL HARQ-ACK information, LTE SL TX/RX or UL prioritization is performed after UE decide whether PSFCH TX or RX is prioritized and which PSFCH TX(s) are prioritized.  |
| OPPO | yes |  |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| xiaomi | Yes |  |

Q3-3-2: There was a comment that RAN1 needs to discuss whether UL with SL-HARQ-ACK information is always prioritized over PSFCH for a conflict indication to protect the SL HARQ. However, FL understands that SL HARQ-ACK reporting on UL is supported only for Mode 1 RA UE, so this issue is not necessary to be considered in Rel-17 inter-UE coordination operation (i.e., only Mode RA 2 UE can transmit or receive PSFCH for a conflict indication). Do you have the same understanding?

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| ZTE,Sanechips | Same understanding |  |
| vivo | Do not agree with FL guidance | For a given UE, mode 1 and mode 2 may coexist, so even we only enhance mode 2, the mode 1 SL-HARQ on UL will appear. Actually, mode 1 operation is the same as operation in another RAT, e.g., LTE SL. We did not say we are going to enhance LTE SL, but the prioritization rule also involves LTE SL.  |
| LGE | Yes | Since UE-A will perform sensing-like operation for determining a resource conflict, this UE-A is in Mode 2 RA. Then, we do not need to consider the case when UL containing SL HARQ-ACK feedback is overlapping with PSFCH of a conflict indication.  |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| xiaomi | Yes |  |

Q3-4: Do you agree following draft conclusion for clarification on “next reserved resource indicated by the corresponding UE-B’s SCI for current TB transmission”? FL understands that as per RAN1 agreement, a UE will not transmit the conflict indicator or receive the conflict indicator if the timeline is not satisfied.

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Same understanding: InterDigital, LGE, Qualcomm, Futurewei, Sharp, ZTE, NEC, vivo, Fujitsu, Samsung, xiaomi, Ericsson, CATT, Fraunhofer, Huawei, MediaTek (16)
* Different understanding: DCM, ETRI, Spreadtrum, OPPO, Nokia, Intel, (6)
	+ When PSFCH occasion is derived by a slot where UE-B’s SCI is transmitted, the earliest reserved resource indicated by the SCI and at least T\_3 after the PSFCH occasion: DCM, Spreadtrum, OPPO, Nokia, (4)
 |

Draft conclusion 3-4:

RAN1 understands that the meaning of “next reserved resource indicated by the corresponding UE-B’s SCI for current TB transmission” is as follows:

* When PSFCH occasion is derived by a slot where UE-B’s SCI is transmitted, the earliest reserved resource indicated by the SCI for current TB transmission
* When PSFCH occasion is derived by a slot where expected/potential resource conflict occurs on PSSCH resource indicated by UE-B’s SCI, the reserved resource indicated by UE-B’s SCI for current TB transmission associated with PSFCH occasion for receiving a conflict indicator for resource(s) indicated by the SCI

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | No | For 1st bullet, we guess FL has some misunderstanding. In the following figure, still UE-A transmits collision indication and UE-B receives collision indication since required time gap is between PSFCH and **slot where resource conflict will occur**. NOT with the earliest slot among reserved slots. Please see the agreement at 107-e meeting.For 2nd bullet, OK. |
| ZTE,Sanechips | Yes |  |
| vivo | Yes |  |
| LGE | Yes |  |
| OPPO |  | This proposal is related to Draft Proposal 3-1, it should be deferred. |
| Fujitsu | Yes with comments | Agree in principle. To avoid any ambiguity on the T\_3 timeline, the following is suggested for the 1st sub-bullet. It has a similar format with that of 2nd sub-bullet.When PSFCH occasion is derived by a slot where UE-B’s SCI is transmitted, the ~~earliest~~ reserved resource indicated by the SCI for current TB transmission associated with PSFCH for deriving the timeline |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| xiaomi | Yes |  |
| Fraunhofer | Yes |  |

Q3-5: Do you agree following draft conclusion for additional enhancement on Mode 2 resource selection procedure to ensure the timeline in Rel-17 inter-UE coordination operation?

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Additional enhancement on Mode 2 RA to ensure the timeline
	+ Support: Apple, InterDigital, Futurewei, Sharp, NEC, Ericsson, CATT, (7)
	+ Not support: DCM, ETRI, LGE, Qualcomm, Spreadtrum, Fujitsu, vivo, OPPO, Samsung, xiaomi, Huawei, Intel, MediaTek (13)
 |

Draft conclusion 3-5:

No consensus on any specific enhancement in Rel-17 on Mode 2 resource selection procedure to ensure the timeline (i.e., minimum time gap between PSFCH and a slot where a SCI is transmitted of sl-MinTimeGapPSFCH, minimum time gap between PSFCH and a slot where expected/potential resource conflict occurs on PSSCH resource indicated by a SCI of T\_3) for a conflict indication.

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| ZTE,Sanechips | Yes |  |
| Vivo | Yes |  |
| LGE | Yes |  |
| OPPO | yes |  |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| xiaomi | Yes |  |

* 1. **Scheme 1**

Q3-6: Do you agree following draft conclusion for (pre)configuration of parameters related to n+T\_1 and n+T\_2 for determining the set of preferred resources in inter-UE coordination information triggered by a condition other than explicit request reception?

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Support: DCM, Apple, Panasonic, ETRI, InterDigital, LGE, Qualcomm, CMCC, ZTE, Fujitsu, NEC, OPPO, Samsung, vivo, xiaomi, CATT, Fraunhofer, Huawei, Nokia, MediaTek (20)
* Not support: Ericsson, Intel, (2)
	+ Intel: As a compromise, T\_2,min is satisfied for feedback generation
 |

Draft conclusion 3-6:

Not support (pre)configuration of parameters related to n+T\_1 and n+T\_2 for determining the set of preferred resources in inter-UE coordination information triggered by a condition other than explicit request reception.

* Note that T\_2 – T\_1 for determining the set of preferred resources is no smaller than T\_2,min as specified in TS 38.214 section 8.1.4.

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| ZTE,Sanechips | Yes |  |
| Vivo | Yes |  |
| LGE | Yes |  |
| OPPO | Yes |  |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| Xiaomi | Yes | We think resource selection window is determined by UE-A’s implementation is enough. |
| Fraunhofer | Yes |  |

Q3-7: Do you agree following draft proposal for confirming the WA?

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Support: DCM, Apple, Panasonic, ETRI, InterDigital, LGE, Qualcomm, Futurewei, CMCC, ZTE, Fujitsu, NEC, OPPO, Samsung, xiaomi, Ericsson, CATT, Fraunhofer, Huawei, Nokia, Intel, MediaTek (22)
* Not support: vivo, (1)
	+ Slot offset for first TRIV is always 0: vivo, (1)
 |

Draft proposal 3-7:

Confirm the following working assumption with modification in RED

* *Working assumption made in RAN1#107bis-e:*
	+ *First resource location of each TRIV is a slot offset with respect to a reference slot*
		- *Alt 2:*
			* *The slot offset is the number of logical slots from the reference slot*
				+ *The value range of slot offsets is from 0 to maximum value that is (pre)configurable up to ~~[~~8000~~256]~~*

*~~FFS: The detailed value range including granularity~~*

* + - * + *Slot offset for each TRIV to indicate the set of resources is separately indicated by inter-UE coordination information*
		- *For the reference slot,*
			* *The reference slot is the slot indicated by the inter-UE coordination information in a form of combination of DFN index and slot index*

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| ZTE,Sanechips | Yes |  |
| Vivo | Yes for compromise | If majority prefer no optimization, we are fine. |
| LGE | Yes |  |
| OPPO | yes |  |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| xiaomi | Yes |  |
| Fraunhofer | Yes |  |

Q3-8: Do you agree following draft proposal for the maximum value of N for a SCI format 2-C?

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Support: DCM, Panasonic, ETRI, InterDigital, LGE, Sharp, Spreadtrum, Fujitsu, NEC, OPPO, Samsung, vivo, xiaomi, Ericsson, CATT, Huawei, Intel, MediaTek (18)
* Not support: Qualcomm, Futurewei, ZTE, Fraunhofer, Nokia, (5)
	+ Allowing N=3 depending on (pre)configurations: Qualcomm, Futurewei, Fraunhofer, Nokia, (4)
	+ First resource location value for first TRIV is always 0: ZTE, (1)
 |

Draft proposal 3-8:

* For following agreement,
	+ Replace “[N<=3]” with “N<=2”
	+ Replace “[N>3]” with “N>2”
	+ Replace “[N=3]” with “N=2”

|  |
| --- |
| ***Agreement made in RAN1#107bis-e:****The following working assumption is confirmed with modification in RED.** *MAC CE or 2nd SCI are used as the container of inter-UE coordination information transmission from UE A to UE B.*
	+ - * *For the indication of resource set, the following is supported:*
				+ *N combinations of TRIV, FRIV, resource reservation period as specified in Rel-16 TS 38.214 Section 8.1.5 with following modification. The value of resource reservation period is omitted at least when the transmission of preferred resource set is triggered by UE-B’s explicit request.*

*First resource location of each TRIV is separately indicated by the inter-UE coordination information** + - * + *If [N <= 3], MAC CE is used and it is up to UE implementation to additionally use 2nd SCI. When 2nd SCI and MAC CE are both used, the same resource set is indicated in the 2nd SCI and the MAC CE. If [N > 3], only MAC CE is used.*

*FFS: UE capability details**2nd SCI is UE RX optional**The field size of the indication of resource set in a SCI format 2-C is determined by [N=3]* |

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| vivo | No | I note that the following comment for proposal 3-9:0 bit for First resource location for first TRIV: Qualcomm, Samsung, vivo, Fraunhofer, MediaTek (5)Based on that, we can modify the WA: First resource location value for first TRIV is always 0 |
| LGE | Yes |  |
| OPPO | yes | If companies still want to support N=3 when number of sub-channels is small, we are fine with following changes:* + Replace “[N<=3]” with “N<=~~2~~ Y”
	+ Replace “[N>3]” with “N>~~2~~ Y”
	+ Replace “[N=3]” with “N=~~2~~ Y”
	+ Replace “[N=3]” with “N=~~2~~ Y”
	+ Y is the maximum integer that ensures the size of SCI 2-C(not including the CRC) not larger than 140.
 |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| xiaomi | Yes | If the proposal on information field of IUC and request can be agreed first, we support this proposal. |
| Fraunhofer | Comment | As stated in the previous round, we would still prefer N=3 if feasible, else we can support this proposal.We are also fine with OPPO’s suggestion. |

Q3-9: Do you agree following draft proposal for bit field sizes of a SCI format 2-C for inter-UE coordination information? **There was a comment that when the lowest subchannel indices for first resource location for each TRIV is separately indicated, defining additional field or mechanism is necessary to indicate unused resource combination(s). However, FL understands that this issue can be simply resolved by UE implementation without having further specification work, e.g., different resource combinations indicate the same set of resources.** I would like to emphasize that there is no officially approved CR which includes the bit field sizes of the SCI format 2-C. In other words, by making the relevant agreement, we can avoid unnecessary discussion in RAN1 CR phase and also give RAN2 sufficient time to proceed their related work in the next week or in RAN2 CR phase.

|  |
| --- |
| **FL’s observation of 2nd email discussion (bit field sizes of a SCI format 2-C for inter-UE coordination information except for the indication of the lowest subchannel index for the first resource location):** * Support: DCM, Panasonic, ETRI, InterDigital, LGE, Qualcomm, Futurewei, Sharp, Spreadtrum, ZTE, Fujitsu, NEC, OPPO, Samsung, vivo, xiaomi, Ericsson, CATT, Fraunhofer, Huawei, Nokia, Intel, (22)
* Not support: Apple, (1)
* Comments:
	+ 0 bit for First resource location for first TRIV: Qualcomm, Samsung, vivo, Fraunhofer, MediaTek (5)
	+ 0 bit for resource reservation period if periodic reservation is disabled in the pool: Qualcomm, Nokia, (2)

**FL’s observation of 2nd email discussion (indicating the lowest subchannel index for the first resource location of each TRIV):** * Support: DCM, Apple, Panasonic, ETRI, ZTE, Fujitsu, NEC, OPPO, vivo, xiaomi, Ericsson, CATT, Fraunhofer, Nokia, Intel, MediaTek (16)
* Not support: LGE, Qualcomm, Futurewei, CMCC, Sharp, Samsung, (6)
* Discuss it after deciding the condition of using a SCI format 2-C: Huawei, (1)
 |

Draft proposal 3-9:

* For Scheme 1, each bit field size of a SCI format 2-C for inter-UE coordination information is given by following table:
	+ Note that lowest subchannel index for the first resource location of each TRIV is separately indicated by inter-UE coordination information

|  |  |  |
| --- | --- | --- |
| Row | Field name | Field size (in bits) |
| 0 | Providing/requesting indicator  | 1 |
| 1 | Resource combination(s) | Where is provided by the higher layer parameter sl-NumSubchannel, with that is the number of entries in the higher layer parameter sl-ResourceReservePeriodList, if higher layer parameter sl-MultiReserveResoure is configured; otherwise. |
| 2 | First resource location(s)  |  |
| 4 | Reference slot location | Where is 0, 1, 2, 3 for SCS of 15kHz, 30kHz, 60kHz, 120kHz, respectively.  |
| 5 | Resource set type | 1 |
| 6 | Lowest subchannel indices for the first resource location of each TRIV | where is provided by the higher layer parameter sl-NumSubchannel |

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| Vivo | See comment | The size for first resource location is  |
| LGE | Yes | For progress, we can accept it if no additional field will be introduced.  |
| OPPO | OK |  |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| xiaomi | Yes |  |
| Fraunhofer | Yes, with comment | We agree with the content of the SCI format 2-C. For “Lowest subchannel indices for the first resource location of each TRIV”, it can be , where N is dependent on proposal 3-8. |

Q3-10: Do you agree following draft proposal for bit field sizes of a SCI format 2-C for an explicit request?

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Support: DCM, Panasonic, ETRI, InterDigital, LGE, Qualcomm, Futurewei, Sharp, Spreadtrum, ZTE, Fujitsu, NEC, Samsung, xiaomi, Ericsson, CATT, Fraunhofer, Huawei, Intel, MediaTek (20)
* Not support: Apple, vivo, Nokia, (3)
	+ Latency bound is indicated by an explicit request: Apple,
	+ Modify the definition of ending time of a resource selection window: vivo, Nokia,
 |

Draft proposal 3-10:

* For Scheme 1, each bit field size of a SCI format 2-C for an explicit request for inter-UE coordination information is given by following table:

|  |  |  |
| --- | --- | --- |
| Row | Field name | Field size (in bits) |
| 0 | Providing/requesting indicator | 1 |
| 1 | Priority | 3 |
| 2 | Number of subchannels | Where is provided by the higher layer parameter sl-NumSubchannel |
| 3 | Resource reservation period | Where with that is the number of entries in the higher layer parameter sl-ResourceReservePeriodList, if higher layer parameter sl-MultiReserveResoure is configured; otherwise. |
| 4 | Resource selection window location | Where is 0, 1, 2, 3 for SCS of 15kHz, 30kHz, 60kHz, 120kHz, respectively. |
| 5 | Resource set type | 1 bit if determineResourceSetTypeScheme1 is set to ‘UE-B’s request’, otherwise, 0 bit |

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| Vivo | See comment | We are not sure whether it has been agreed or not, both starting and ending time of selection window are indicated by DFN/slot index. The prior agreement is not clear.We understand only one of starting or ending time is indicated by DFN/slot index. While the other is indicated in the form of offset, e.g., 10 bits offset to indicate from 0-800 logical slots (i.e., 100ms) |
| LGE | Yes | We have explicit agreement that the ending time of a resource selection window location is provided by DFN index and slot index. Violating the existing agreement should be avoided. * *Agreement:*
	+ *For Scheme 1, when the inter-UE coordination information transmission is triggered by UE-B’s explicit request,*
		- *Starting/Ending time locations of resource selection window is provided by UE-B’s explicit request*
			* *Starting/Ending time locations of resource selection window is a form of combination of DFN index and slot index*
 |
| OPPO | yes |  |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| xiaomi | Yes |  |
| Fraunhofer | Yes |  |

Q3-11: Do you agree following draft proposal for bit field sizes of a MAC CE for inter-UE coordination information when both MAC CE and a SCI format 2-C are used? **Please the proponents of 1st sub-bullet clarify the technical reason why it is needed**.

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Support: Panasonic, ETRI, InterDigital, LGE, Futurewei, CMCC, Spreadtrum, ZTE, Fujitsu, Samsung, xiaomi, Ericsson, CATT, Fraunhofer, MediaTek (15)
* Not support: DCM, Apple, OPPO, vivo, Huawei, (5)
	+ Remove exception part: DCM, Apple, OPPO, Huawei, (4)
	+ Remove first resource location for first TRIV: vivo, (1)
 |

Draft proposal 3-11:

* For Scheme 1, when both SCI format 2-C and MAC CE are used as the container of inter-UE coordination information, the same bit field size for inter-UE coordination information in a SCI format 2-C is applied to MAC CE except for first resource location(s)
	+ Bit field size of the first resource location(s) on MAC CE is where X is provided by the (pre)configured maximum value of slot offset for the case when MAC CE only is used as a container of inter-UE coordination information

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes | We understand the intention: for the case when MAC CE only is used. Then we are fine with the proposal. |
| vivo | See comment | The size for first resource location is  |
| LGE | Yes |  |
| OPPO | NO | The sub-bullet should be removed, we did not see the benefit to use different X for MAC CE, moreover it is conflict with following agreement.**Agreement**For a slot offset that is (pre)configured to indicate the first resource location of each TRIV with respect to a reference slot,* Granularity of the slot offset is 1 logical slot
* (Pre)configured maximum value of the slot offset is up to 8000
	+ When both SCI format 2-C and MAC CE are used as the container of inter-UE coordination information, the maximum value of the slot offset is 255
 |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| xiaomi | Yes with comment | The subbullet seems to be contrary to the main bullet. In main bullet it is said “when both SCI format 2-C and MAC CE are used as the container”, but in subbullet it is said “when MAC CE only is used as a container”. The subbulet should be at the same level of main bullet. |

|  |
| --- |
|  |

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Q3-13: Do you agree following draft proposal for bit field sizes of a MAC CE for inter-UE coordination information when only MAC CE is used?

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Support: DCM, Apple, Panasonic, ETRI, InterDigital, LGE, Qualcomm, Spreadtrum, ZTE, Fujitsu, NEC, OPPO, vivo, xiaomi, CATT, Fraunhofer, Huawei, Nokia, Intel, MediaTek (20)
* Not support: Futurewei, Samsung, Ericsson, (3)
	+ Add indicator to indicate N value: Futurewei, (1)
	+ RAN2 check is needed to have variable size MAC CE: Samsung, (1)
	+ 0 bit for First resource location for first TRIV: Samsung, (1)
	+ Up to RAN2 decision: Ericsson, (1)
* Comments:
	+ 0 bit for resource reservation period if periodic reservation is disabled in the pool: Qualcomm, Nokia,
 |

Draft proposal 3-13:

* For Scheme 1, when MAC CE only is used as the container of inter-UE coordination information, each bit field size for inter-UE coordination information is given by following table from RAN1’s perspective, and RAN1 understands that the maximum value of N resource combinations to be conveyed in inter-UE coordination information is bounded so that the total payload size of inter-UE coordination information leads not to exceed the size of TB including the MAC CE
	+ Details (e.g., whether/how to separately indicate the value of N in the inter-UE coordination information, how to put the following fields into MAC CE and the related field sizes in MAC CE) are up to RAN2

|  |  |  |
| --- | --- | --- |
| Row | Field name | Field size (in bits) |
| 0 | Providing/requesting indicator  | 1 |
| 1 | Resource combination(s) | Where is provided by the higher layer parameter sl-NumSubchannel, with that is the number of entries in the higher layer parameter sl-ResourceReservePeriodList, if higher layer parameter sl-MultiReserveResoure is configured; otherwise. |
| 2 | First resource location(s)  | Where X is provided by the (pre)configured maximum value of slot offset for the case when MAC CE only is used as a container of inter-UE coordination information  |
| 4 | Reference slot location | Where is 0, 1, 2, 3 for SCS of 15kHz, 30kHz, 60kHz, 120kHz, respectively.  |
| 5 | Resource set type | 1 |
| 6 | Lowest subchannel indices for first resource location(s) | Where is provided by the higher layer parameter sl-NumSubchannel. |

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| Vivo | Yes |  |
| LGE | Yes |  |
| OPPO | yes |  |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| xiaomi | Yes |  |
| Fraunhofer | Yes |  |

|  |
| --- |
|  |

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Q3-15: Do you agree following draft proposal for cast type of inter-UE coordination information when a SCI format 2-C is used?

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Unicast: DCM, Panasonic, ETRI, InterDigital, LGE, Qualcomm, CMCC, Sharp, Spreadtrum, ZTE, Fujitsu, NEC, OPPO, Samsung, vivo, CATT, Fraunhofer, Huawei, Intel, MediaTek (20)
* Unicast and groupcast by using ID setting: Futurewei, (1)
* All cast type: Ericsson, Nokia, (2)
 |

Draft proposal 3-15:

* For inter-UE coordination information transmission, a SCI format 2-C can be used only when its cast type is unicast regardless of whether it is multiplexed with other data or not

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| Vivo | Yes |  |
| LGE | Yes | In our understanding, cast type indicator is made based RAN2’s decision. If the cast type indicator is not present, it would be necessary to tie with a certain cast type as if a SCI format 2-B is tied with groupcast only.  |
| OPPO | yes |  |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| Fraunhofer | No | As mentioned by Nokia and Futurewei in the previous round, if the destination ID can be a groupcast ID, we do not see the need to restrict the use of SCI 2-C to unicast alone. |

Q3-16: Do you agree following draft proposal for latency bound of inter-UE coordination information? **On the other hand, considering a few companies continue insisting this issue should be handled by RAN1,** **FL asks these proponents to provide complete proposals in the column of “Comments” in order for other companies to check whether those can be easily agreeable or there is a thing that cannot be covered by RAN2 decision/discussion.**

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Support: DCM, Panasonic, InterDigital, LGE, CMCC, ZTE, Fujitsu, NEC, OPPO, Samsung, Ericsson, Huawei, MediaTek (13)
* Not support: Apple, Futurewei, vivo, xiaomi, CATT, Intel, (6)
 |

Draft conclusion 3-16:

* For latency bound of inter-UE coordination information transmission, RAN1 relies on RAN2’s decision as per LS R1-2200880 from RAN2

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| LGE  | Yes |  |
| OPPO | yes |  |
| Fujitsu | Yes |  |
| NEC | Yes  |  |
| xiaomi | no | From our understanding, RAN2 would only define the timer for the delay bound. Issues on how the bound would have impact on resource (re)selection and how the bound is determined can only be discussed in RAN1. |

Q3-17: Which alternative is supported for defining sensing window for determining the set of resources?

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Support: DCM, Apple, Panasonic, ETRI, InterDigital, LGE, Sharp, Spreadtrum, ZTE, Fujitsu, NEC, OPPO, Samsung, xiaomi, Ericsson, CATT, Nokia, (17)
* Not support: Qualcomm, Futurewei, CMCC, vivo, Huawei, Intel, MediaTek (7)
	+ n is the slot where inter-UE coordination information is transmitted: Qualcomm, CMCC, Intel, MediaTek (4)
	+ Additional margin is needed to ensure inter-UE coordination information transmission before n+T\_1-1: Futurewei, (1)
	+ n and remaining PDB are determined by UE-A’s implementation: vivo, (1)
* Comments:
	+ Ericsson: Skipping inter-UE coordination information transmission based on sensing status with respect to SL DRX operation.
	+ Huawei: Re-evaluation for the set of resources is supported as per Rel-16 procedures.
	+ Intel: Define restriction on a resource selection window for transmission.
 |

Draft conclusion 3-17:

Alt 1:

For sensing window for determining the set of resources in Scheme 1,

* No further change is supported. Note that the sensing window for determining the set of resources is already derived based on the location n+T\_1 and n+T\_2 used for determining the set of resources in TS38.214 section 8.1.4, i.e., sensing window is defined by the range of slots [ (n+T\_1) - T\_0 - T\_1 determined by UE-A, (n+T\_1) - T\_proc,0 - T\_1 determined by UE-A ).
	+ For inter-UE coordination information triggered by UE-B’s explicit request, n+T\_1 and n+T\_2 are provided by the request
	+ For inter-UE coordination information triggered by a condition other than explicit request reception, n+T\_1 and n+T\_2 are determined by UE-A’s implementation

Alt 2:

For sensing window for determining the set of resources in Scheme 1,

* Sensing window for determining the set of resources is derived based on the location n’+T’\_1 and n’+T’\_2 where n’ is the slot in which inter-UE coordination information generation is triggered and T’\_1/T’\_2 are determined by UE-A, i.e., sensing window is defined by the range of slots [ n’ - T\_0, n’ - T\_proc,0 ).
	+ (n’+T1’) and (n’+T2’) are determined by UE-A subject to the following conditions:
		- If inter-UE coordination information is triggered by an explicit request,
			* (n+T\_1) ≤ (n'+T’\_1)
			* (n'+T’\_2) ≤ (n+T\_2)
		- If inter-UE coordination information is triggered by a condition other than explicit request reception,
			* n = n’
		- T2,min ≤ (T’\_2-T’\_1)

where

* + - (n+T\_1) – Start slot of resource selection window for determining the set of resources
		- (n+T\_2) – End slot of resource selection window for determining the set of resources
		- (n’+T’\_1) – Start slot of resource selection window used for inter-UE coordination information transmission
		- (n’+T’\_2) – End slot of resource selection window used for inter-UE coordination information transmission

|  |  |  |
| --- | --- | --- |
| Company | Alt | Comments |
| NTT DOCOMO | Alt 1 |  |
| Vivo | Alt.1 |  |
| LGE | Alt 1 or Alt 2 | For Alt 2, it might be difficult to specify the association between a resource selection window for determining the set of resources and a source selection window for its transmission in the specification.  |
| OPPO | Alt 1 | Firstly, it should be clarified that the value of T\_1 is up to UE-A implementation. Given that, it seems Alt 1 and Alt 2 are fundamentally the same, i.e., the meaning of n in Alt 1 is where UE-A starts generating the information based on sensing results.For Alt 2, the sensing window is derived from [n’+T’\_1 and n’+T’\_2], this may no exist if inter-UE coordination information is transmitted with other data. Furthermore, RAN1 had following agreement last meeting, we do not think more discussion on [n’+T’\_1 and n’+T’\_2] is necessary.**Agreement*** For sidelink transmission carrying inter-UE coordination information in Scheme 1,
	+ UE-A performs its resource (re)selection according to the same procedure in TS 38.214 Section 8.1.4 to transmit the inter-UE coordination information to UE-B.
* For sidelink transmission carrying request in Scheme 1,
	+ UE-B performs its resource (re)selection according to the same procedure in TS 38.214 Section 8.1.4 to transmit the request for the inter-UE coordination information to UE-A if UE-B performs sensing/resource exclusion. Otherwise, at least UE-B can perform random selection
* Note: RAN1 does not pursue specific enhancement of Rel-17 resource (re)selection for the transmission of inter-UE coordination information and its request.
 |
| Fujitsu | Alt 1 |  |
| Spreadtrum | Alt 1 |  |
| NEC | Alt.1 |  |
| xiaomi | Alt1 |  |
| Fraunhofer | Alt 1 | At this stage, we prefer to not to carry out any further changes. |

Q3-18: Do you agree following draft conclusion for UE-A’s behavior of determining a priority value of inter-UE coordination information transmission triggered by a condition other than explicit request reception if the priority value is not (pre)configured?

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Support: DCM, Apple, Panasonic, ETRI, InterDigital, LGE, Qualcomm, CMCC, Sharp, Spreadtrum, ZTE, NEC, OPPO, Samsung, vivo, xiaomi, Ericsson, CATT, Intel, MediaTek (20)
* Not support: Futurewei, Fraunhofer, Huawei, Nokia, (4)
	+ Up to UE-A’s implementation: Futurewei, Fraunhofer, Huawei, (3)
	+ The priority value is the same as the priority value indicated by other UE’s SCI that is used to determine the non-preferred resource set: Nokia, (1)
 |

Draft conclusion 3-18:

No further decision is necessary for UE-A’s behavior of determining a priority value of inter-UE coordination information transmission triggered by a condition other than explicit request reception if the priority value is not (pre)configured

* It is up to RAN2 whether/how to additionally handle this case

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO |  | The sub-bullet is unnecessary. (Pre-)configuration shall be provided for the feature. For the case where (pre-)configuration is not provided, the behavior is undefined, which is the original intention in our understanding. |
| vivo | Yes |  |
| LGE | Yes |  |
| OPPO | yes |  |
| Fujitsu | Yes | We can accept the proposal. |
| Spreadtrum | Yes |   |
| NEC | Yes  |  |
| xiaomi | Yes |  |
| Fraunhofer |  | We are fine with the main bullet, and prefer that the priority value be left up to UE implementation.  |

Q3-19: Do you agree following draft conclusion for cast type(s) of inter-UE coordination information triggered by a condition other than explicit request reception? **FL observed that companies views are still divergent, so it is suggested that the cast type is determined by UE-A’s implementation.**

|  |
| --- |
| **FL’s observation of 2nd email discussion:** Draft conclusion:* Only cast type(s) available at UE-A for other data transmission can be used for cast type(s) for the inter-UE coordination information transmission triggered by a condition other than explicit request reception
	+ Note: it is applied to both when the inter-UE coordination information is multiplexed with other data and when the inter-UE coordination information is not multiplexed with other data
	+ Note: UE-A determines the cast type(s) of inter-UE coordination information by its implementation among the available cast type(s)
* Support: Panasonic, InterDigital, LGE, Sharp, Spreadtrum, ZTE, Fujitsu, NEC, OPPO, xiaomi, Ericsson, CATT, (12)
* Not support: Apple, Qualcomm, Futurewei, CMCC, Samsung, vivo, Fraunhofer, Huawei, Intel, Nokia, (10)
	+ No need to have a conclusion: Apple, Qualcomm, Futurewei, Fraunhofer, Huawei, (5)
	+ Tie with Condition for determining non-preferred resource set: CMCC, vivo, Nokia, (3)
	+ Based on (pre)configuration: Samsung, (1)
	+ Based on data multiplexing: Intel, (1)
 |

Draft conclusion 3-19:

* For inter-UE coordination information transmission triggered by a condition other than explicit request reception, UE-A determines its cast type by implementation

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| vivo | See comment | For broadcast IUC, no need to convey non-preferred resource determined based on Condition 1-B-2, i.e., HD issue |
| LGE | Yes | For progress, we can accept it.  |
| OPPO | Yes with comments | Only for non-preferred resource, preferred resource can only be transmitted with unicast. |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |   |
| NEC | Yes  |  |
| xiaomi | Yes |  |
| Fraunhofer | Yes |  |

Q3-20: Which alternative is supported for UE-B’s behaviors when UE-B receives multiple resource sets from the same UE-A? **FL observed that even proponents of Alt 1 have slight different details, so if it is difficult to make a consensus for Alt 1, Alt 2 could be a way to move forward this issue.**

|  |
| --- |
| **FL’s observation of 2nd email discussion (for UE-B’s behavior when UE-B receives multiple preferred resource sets from the same UE-A):** > Option 1: UE-B uses the latest received preferred resource set from the same UE-A for its resource selection for a TB to be transmitted to the UE-A.> Option 3: UE-B does not expect to receive more than one preferred resource sets from the same UE-A for its resource selection for the same TB transmission to be transmitted to the UE-A. * Option 1: DCM, Panasonic, InterDigital, Qualcomm, Futurewei, Sharp, Spreadtrum, Fujitsu, NEC, OPPO, Samsung, Ericsson, Fraunhofer, Nokia, (14)
* Option 3: Apple, CMCC, NEC, xiaomi, (4)
* Option 1 and 3: Futurewei, CATT, MediaTek (3)
* Others: Intel, Huawei, (2)
* Comments:
	+ vivo: Clarification on clear rule to associate a given TB with corresponding inter-UE coordination information
	+ Huawei: Option 1 and 3 may have technical issues when UE-A sends a subset of preferred resource set in a time

**FL’s observation of 2nd email discussion (for UE-B’s behavior when UE-B receives multiple non-preferred resource sets from the same UE-A):** > Option 1: UE-B uses the latest received non-preferred resource set from the same UE-A for its resource selection for a TB to be transmitted to the UE-A.> Option 3: UE-B determines a final non-preferred resource set by combining all the received non-preferred resource sets from the same UE-A. UE-B uses the final non-preferred resource set for its resource selection for a TB to be transmitted to the UE-A.* Option 1: InterDigital, Futurewei, Spreadtrum, Fujitsu, Samsung, Nokia, MediaTek (7)
* Option 3: DCM, Apple, Panasonic, LGE, Qualcomm, CMCC, Sharp, NEC, OPPO, vivo, Ericsson, Fraunhofer, (12)
* Option 1 and 3: CATT, (1)
* Others: Intel, Huawei, (2)
* Comments:
	+ Huawei: Option 1 and 3 may have technical issues when UE-A sends a subset of non-preferred resource set in a time

**FL’s observation of 2nd email discussion (for UE-B’s behavior when UE-B receives both a single preferred resource set and a single non-preferred resource set from the same UE-A):** > Option 3: UE-B uses both the received preferred resource set and non-preferred resource set from the same UE-A for its resource selection for a TB to be transmitted to the UE-A.> Option 4: UE-B does not expect to receive both preferred resource set and non-preferred resource set from the same UE-A for its resource selection for the same TB transmission to be transmitted to the UE-A.* Option 3: DCM, Panasonic, InterDigital, LGE, Futurewei, Spreadtrum, Fujitsu, NEC, OPPO, xiaomi, Ericsson, Fraunhofer, Nokia, Intel, (14)
* Option 4: Apple, Qualcomm, CMCC, Sharp, xiaomi, CATT, (6)
* Others: Samsung, vivo, Huawei, MediaTek (4)
* Comments:
	+ Huawei: Option 1 and 3 may have technical issues when UE-A sends a subset of resource set in a time
 |

Draft proposal 3-20:

Alt 1:

* For UE-B’s behavior when UE-B receives multiple preferred resource sets from the same UE-A,
	+ Option 1: UE-B uses the latest received preferred resource set from the same UE-A for its resource selection for a TB to be transmitted to the UE-A.
* For UE-B’s behavior when UE-B receives multiple non-preferred resource sets from the same UE-A,
	+ Option 3: UE-B determines a final non-preferred resource set by making union of all the received non-preferred resource sets from the same UE-A. UE-B uses the final non-preferred resource set for its resource selection for a TB to be transmitted to the UE-A.
* For UE-B’s behavior when UE-B receives both a single preferred resource set and a single non-preferred resource set from the same UE-A,
	+ Option 3: UE-B uses both the received preferred resource set and non-preferred resource set from the same UE-A for its resource selection for a TB to be transmitted to the UE-A.

Alt 2:

* When UE-B receives multiple inter-UE coordination information from the same UE-A, it is up to UE-B implementation to use one or multiple of them in its resource (re)selection.

|  |  |  |
| --- | --- | --- |
| Company | Alt | Comments |
| NTT DOCOMO | Alt 1 | If we go with Alt 2, UE-B might not work as intended at UE-A. Then it becomes difficult for UE-A to decide which/what/whether should be transmitted to UE-B. To have same understanding between UE-A and UE-B, certain rule should be defined. |
| vivo | Direction of Alt1 is fine. | For 1st bullet, FFS How to guarantee that the latest IUC can match UE-B’s current TB.For 3rd bullet, UE-B should have flexibility to use either of preferred or non-preferred resource set or both. Especially when UE-B does not performs sensing, UE-B only use the preferred resource set.  |
| LGE | Alt 2 | It would be useful to resolve the over-exclusion problem in UE-B’s resource selection procedure considering the received non-preferred resource set(s).  |
| OPPO | Alt 1 | Our understanding is that all the received resource sets are within the latency budget to be defined by RAN2.We are also fine with Alt 2 is Alt 1 cannot be agreed. |
| Fujitsu | Alt 2 |  |
| Spreadtrum | Alt 1 | We are also fine with Alt 2. |
| NEC | Alt.1 | Multiple resource set is for better performance at UE-B. Up to UE implementation is a waste of singling exchange. |
| xiaomi | Alt1 |  |
| Fraunhofer | Alt 1 | Agree with DCM that both UE-A and UE-B would need these rules defined for mutual understanding of the IUCs being transmitted/received. |

Q3-21: Which alternative is supported for UE-B’s behaviors when UE-B receives multiple resource sets from the different UE-As? **FL observed that even proponents of Alt 1 have slight different details, so if it is difficult to make a consensus for Alt 1, Alt 2 could be a way to move forward this issue.**

|  |
| --- |
| **FL’s observation of 2nd email discussion (for UE-B’s behavior when UE-B receives multiple preferred resource sets from the different UE-As):** > Draft proposal:* For UE-B’s behavior when UE-B receives multiple preferred resource sets from the different UE-As,
	+ Option 1: UE-B uses each received preferred resource set for its resource selection for a TB to be transmitted to each UE-A providing the preferred resource set.
* Support: DCM, Panasonic, InterDigital, LGE, Qualcomm, Futurewei, Sharp, Spreadtrum, Fujitsu, NEC, OPPO, vivo, xiaomi, CATT, MediaTek (15)
* Not support: Apple, CMCC, Samsung, Ericsson, Nokia, Fraunhofer, Huawei, Intel, (8)
	+ UE-B uses all received preferred resource set for its resource selection for a TB to be transmitted to any UE: Apple, Samsung, Ericsson, (3)
	+ UE-B uses all received preferred resource set from target RX UEs for its resource selection for a TB to be transmitted to the target RX UEs: CMCC, Nokia, (2)
	+ When UE-B receives multiple inter-UE coordination information from the same UE-A or different UE-As, it is up to UE-B implementation to use one or multiple of them in its resource (re)selection: Huawei, (1)
	+ Subject to aging condition UE-B uses each valid received preferred resource set for its resource selection for a TB to be transmitted: Intel, (1)

**FL’s observation of 2nd email discussion (for UE-B’s behavior when UE-B receives multiple non-preferred resource sets from the different UE-As):** > Draft proposal:* For UE-B’s behavior when UE-B receives multiple non-preferred resource sets from the different UE-As.
	+ Option 1: UE-B determines a final non-preferred resource set by combining all the received non-preferred resource sets from different UE-As. UE-B uses the final non-preferred resource set for its resource selection for TB(s) to be transmitted to these different UE-As providing the non-preferred resource sets.
* Support: DCM, Apple, Panasonic, InterDigital, LGE, Futurewei, CMCC, Sharp, Spreadtrum, Fujitsu, NEC, OPPO, Samsung, xiaomi, Ericsson, Intel, Ericsson, vivo, MediaTek (19)
* Not support: Qualcomm, CATT, Fraunhofer, Huawei, (4)
	+ UE-B determines a final non-preferred resource set by combining all the received non-preferred resource sets from different UE-As. UE-B uses the final non-preferred resource set for its resource selection for TB(s) to be transmitted to any UE(s): Qualcomm, (1)
	+ Different behaviour across different cast type of inter-UE coordination information transmission: CATT, (1)
	+ When UE-B receives multiple inter-UE coordination information from the same UE-A or different UE-As, it is up to UE-B implementation to use one or multiple of them in its resource (re)selection: Huawei, (1)

**FL’s observation of 2nd email discussion (for UE-B’s behavior when UE-B receives both a single preferred resource set and a single non-preferred resource set from the different UE-As):** > Option 1: UE-B uses the received preferred resource set for its resource selection for a TB to be transmitted to the UE-A providing the preferred resource set. UE-B uses the received non-preferred resource set for its resource selection for a TB to be transmitted to the UE-A providing the non-preferred resource set.> Option 2: UE-B uses both the received preferred resource set and non-preferred resource set from different UE-As for its resource selection for a TB to be transmitted to the UE-A providing the preferred resource set. UE-B uses the received non-preferred resource set for its resource selection for a TB to be transmitted to the UE-A providing the non-preferred resource set.> Option 3: UE-B uses both the received preferred resource set and non-preferred resource set from different UE-As for its resource selection for a TB to be transmitted to any UE> Option 4: UE-B uses all or a subset of the received preferred resource set and non-preferred resource set from different UE-As by its implementation for its resource selection for TB(s) to be transmitted to UE-A(s) providing the preferred resource set or non-preferred resource set* Option 1: InterDigital, LGE, Spreadtrum, NEC, xiaomi, Fraunhofer, (6)
* Option 2: DCM, Panasonic, LGE, Qualcomm, Futurewei, OPPO, CATT, Intel, Nokia, MediaTek (10)
* Option 3: CMCC, NEC, Samsung, (3)
* Option 4: Apple, Sharp, ZTE, Fujitsu, Huawei, (5)
* Other: vivo, Ericsson, (2)
 |

Draft proposal 3-21:

Alt 1:

* For UE-B’s behaviour when UE-B receives multiple preferred resource sets from the different UE-As,
	+ Option 1: UE-B uses each received preferred resource set for its resource selection for each TB to be transmitted to each UE-A providing the preferred resource set.
* For UE-B’s behaviour when UE-B receives multiple non-preferred resource sets from the different UE-As.
	+ Option 1: UE-B determines a final non-preferred resource set by making union of all the received non-preferred resource sets from different UE-As. UE-B uses the final non-preferred resource set for its resource selection for TB(s) to be transmitted to these different UE-As providing the non-preferred resource sets.
* For UE-B’s behaviour when UE-B receives both a single preferred resource set and a single non-preferred resource set from the different UE-As,
	+ Option 2: UE-B uses both the received preferred resource set and non-preferred resource set from different UE-As for its resource selection for a TB to be transmitted to the UE-A providing the preferred resource set. UE-B uses the received non-preferred resource set for its resource selection for a TB to be transmitted to the UE-A providing the non-preferred resource set.

Alt 2:

* When UE-B receives multiple inter-UE coordination information from the different UE-As, it is up to UE-B implementation to use one or multiple of them in its resource (re)selection.

|  |  |  |
| --- | --- | --- |
| Company | Alt | Comments |
| NTT DOCOMO | Alt 1 | Same comment as for proposal 3-20. |
| vivo | Direction of Alt1 is fine. | For 3rd bullet, UE-B should have flexibility to use either of preferred or non-preferred resource set or both. Especially when UE-B does not performs sensing, UE-B only use the preferred resource set.  |
| LGE | Alt 2 | It would be useful to resolve the over-exclusion problem in UE-B’s resource selection procedure considering the received non-preferred resource set(s).  |
| OPPO |  | Preferred resource set is transmitted by unicast, it does not make sense to use preferred resource set from another UE-A, Alt 1 should be adopted for this case.For other cases we are fine to leave them to UE-B implementation. |
| Fujitsu | Alt 2 |  |
| Spreadtrum | Alt 1 |  |
| NEC | Alt.1  |  |
| xiaomi | Alt1 |  |
| Fraunhofer | Alt 1, with comments | For the second bullet, we do not agree. It is unclear why non-preferred resources from UE-A1 that is diagonally located to UE-A2 would be relevant for the selection of resources for a transmission by UE-B to both UE-As. |

Q3-22: There was a comment that defining additional criteria on which received preferred or non-preferred resource set(s) can be actually taken into account in UE-B’s resource selection is necessary. Which option is supported for this issue?

* Option 1: Up to UE-B’s implementation.
* Option 2: Only if a gap between the reception time of the resource set and the time when UE-B triggers a resource selection procedure for its data transmission is smaller than (pre)configured value, UE-B uses the received resource set in its resource selection.
* Option 3: Others (please specify it)

|  |  |  |
| --- | --- | --- |
| Company | Option(s) | Comments |
| NTT DOCOMO | Option 1 | No criteria other than those discussed above would be necessary.In our understanding. Gap-based rule like Option 2 is unnecessary since UE-B does not know when IUC message is received. If UE-B receives/decodes IUC message at timing X, then the information is used for data TX after timing X. That’s all. |
| LGE | Option 1 |  |
| OPPO | Option 1 | We think it could be up to UE-B implementation. |
| Fujitsu | Option 1 |  |
| Spreadtrum | Option 1 |  |
| NEC | Option 1 | Agree with DCM |
| xiaomi | Option1 |  |
| Fraunhofer | Option 1 |  |

Q3-23: There were comments that it is necessary to define additional UE-B behavior to handle the case when it is not possible that the number of candidate single-slot resources after applying the received non-preferred resource set as per the existing agreement meets the requirement of X\*M\_total. Which option is supported for this issue?

* Option 1: Up to UE-B’s implementation, e.g., UE-B does not use the received non-preferred resource sets in its resource selection.
* Option 2: Others (please specify it)

|  |  |  |
| --- | --- | --- |
| Company | Option(s) | Comments |
| NTT DOCOMO |  | From technical perspective, there is no reason to use non-preferred resource for transmission to UE-A, so some rule can be considered. But considering the late stage, currently we are fine with either way. |
| vivo | Option 1 | Clarify which implementation is allowed, e.g., UE can give up the non-preferred resources, or selects part of the non-preferred resource, to meet the requirement. |
| LGE | Option 1 |  |
| OPPO | Comments | Option 1 or specify that “UE-B does not use the received non-preferred resource sets in its resource selection.” |
| Fujitsu |  | Our first preference is that some non-preferred sources can be brought back until meeting the requirement. If not convergent, Option1 is the second preference. |
| Spreadtrum | Option 1 |  |
| NEC | Option 1 |  |
| xiaomi | Option 1  |  |
| Fraunhofer | Option 2 | We do not think UE-B discarding the non-preferred resource set is ideal because UE-B would be then including resources where collisions are possible to its candidate resource set. We are fine with UE-B increasing the threshold and repeating the process, as described in the current specifications (step 7).If the group cannot converge, Option 1 is our second preference. |

Q3-24: There was a comment that further clarification is necessary on which 2nd SCI format can be used for retransmission of inter-UE coordination information MAC CE initially scheduled by a SCI format 2-C. Do you agree following conclusion for this issue?

Draft conclusion 3-24:

* Any 2nd SCI formats can be used for retransmission of inter-UE coordination information MAC CE initially scheduled by a SCI format 2-C.

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes | And no spec impact is assumed. |
| Vivo | Yes |  |
| LGE | Yes | It might not need to have specification change.  |
| OPPO | yes |  |
| Fujitsu | Yes |  |
| Spreadtrum | Yes |  |
| NEC | Yes  |  |
| Xiaomi | Yes |  |
| Fraunhofer | Yes |  |

Q3-25: There was a comment that further clarification is necessary on the condition when Option B can be used for preferred resource set (including clarifying the meaning of “when UE-B does not support sensing/resource exclusion”). Which option is supported for this issue?

* Option 1: UE-B does not have a capability of performing sensing/resource exclusion.
* Option 2: UE-B performs random resource selection.
* Option 3: UE-B has a capability of performing sensing/resource exclusion, but UE-B determines not to perform sensing/resource exclusion by its implementation.
* Option 4: Others (please specify it)

|  |  |  |
| --- | --- | --- |
| Company | Option(s) | Comments |
| NTT DOCOMO | 1 only; or 1+2 | If UE-B ignores reservation from its surrounding UEs, collision increase at the surrounding UEs is assumed. This is not aligned with purpose of IUC.In other words, Option 3 means even in resource pool with full-sensing only, UE-B can perform random selection-like behavior from its surrounding UE’s perspective. |
| vivo | Option 1/2/3 |  |
| LGE | Option 2 | At least UE-B needs to have SL RX capability to receive inter-UE coordination information from UE-A.  |
| OPPO | Option 1,Option 2 and Option 3 | All option 1, 2 and 3 can lead to a result that UE-B has not sensing results to combine with the preferred resource set, Option B can be applied. |
| Fujitsu | Option 1 |  |
| Spreadtrum | At least Option 1 | We are fine with option 1 or 2 or 3. |
| NEC | 1/2/3 | Agree with OPPO |
| Xiaomi | Option 1/2/3 | we are fine with either one at this stage. |
| Fraunhofer | Option 1, 2, 3 | All the 3 cases should be considered in the case where UE-B does not have its own sensing results. For Option 2, as mentioned by LG, the UE should be capable of receiving the IUCs. |

Q3-26: There was a comment that further enhancement on UE-B’s behavior to consider “the slot(s) overlapped with UE-A’s reserved resource(s) by 1st stage SCI” as non-preferred resource(s) in its resource selection. Company provide their view on following draft proposal.

Draft proposal 3-26:

For unicast/groupcast TB transmission of UE-B, it is up to UE-B’s implementation to use the slot(s) overlapped with UE-A’s reserved resource(s) by 1st stage SCI as non-preferred resource(s) in its resource selection

* Note that UE-A sends 1st stage SCI only when UE-A has TB transmission

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO |  | This is not related to IUC, right? We think this proposal is unnecessary. |
| Vivo | Yes | As discussed in previous meeting, legacy resource reservation information is interpreted as coordination information. Thus, even there is no MAC CE multiplexed with TB transmission, the non-preferred resource determined based on condition 1-B-2 can be informed, which can save plenty of redundant MAC CE signaling overhead. |
| LGE | Comment | At least, we do not support the case when only a SCI format 1-A is transmitted without PSSCH.  |
| OPPO | yes | It should be supported to reduce half duplex between UE-A and UE-B |
| Fujitsu | Comment | Similar issues exist in Rel-16 mode 2. Not sure whether it should be solved in Rel-17. |
| Spreadtrum | Yes | The half-duplex issue should be considered. |
| NEC |  | Same view as DCM |
| xiaomi | Yes with comment | We think that there have agreement that the resource used by UE-A for its transmission is the non-preferred resource.**Agreement*** For Condition 1-A-2 of Scheme 1, the set of resources preferred for UE-B’s transmission is a form of candidate single-slot resource as specified in Rel-16 TS 38.214 Section 8.1.4
	+ UE-A excludes candidate single-slot candidate(s) belonging to “slot(s) where UE-A, when it is intended receiver of UE-B, does not expect to perform SL reception from UE-B due to half duplex operation” after Step 6) of TS 38.214 Section 8.1.4
 |

Q3-27: There was a comment that considering RAN2 agreed that “IUC in SL DRX is deprioritized in Rel-17 from RAN2 point of view”, RAN1 should include the restrictions to the IUC mechanism to address the power saving operation. Do you agree following draft proposal for this issue?

Draft proposal 3-27:

When the amount of sensing performed by UE-A is below a (pre)configured threshold, inter-UE coordination information is not transmitted by UE-A

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO |  | We are fine to have discussions, but sufficient discussions are preferred since there would be other solutions. |
| Vivo |  | UE-A’s behavior is clearly defined including the sensing result acquisition, thus no need to have such discussion  |
| LGE | No | Regarding the following RAN2 agreement, our understanding is that RAN2 will not optimize inter-UE coordination operation considering SL DRX operation. IUC in SL DRX is deprioritized in Rel-17 from RAN2 point of viewMoreover, it is possible that UE-A determines whether or not to transmit inter-UE coordination information by its implementation. No further condition seems necessary.  |
| OPPO | NO | Our understanding is that UE-A is performing full sensing, the issue may not happen. Furthermore, whether to transmit inter-UE coordination information is up to UE-A implementation, there is no need to define further restrictions. |
| Fujitsu | No | The issue only occurs in DRX? Maybe we first discuss whether inter-UE coordination is specified for DRX. |
| Spreadtrum | No | Similar view with Fujitsu. We should first discuss whether this question will exist or not. |
| NEC | No  |  |
| Xiaomi | no | Further optimization is not necessary. |
| Fraunhofer | No | Our understanding is that UE-A is a full sensing UE, not sure how this scenario would present itself. |

* 1. **Others**

|  |
| --- |
|  |

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Q3-29: Do you agree following draft conclusion for the reply LS to RAN2?

|  |
| --- |
| **FL’s observation of 2nd email discussion:** * Support: DCM, InterDigital, LGE, Qualcomm, Futurewei, Sharp, Fujitsu, NEC, OPPO, Samsung, Ericsson, Huawei, Nokia, (13)
* Not support: Intel, (1)
 |

Draft conclusion 3-29:

* No consensus for RAN1 to send a reply LS of R1-2200880 to RAN2.

|  |  |  |
| --- | --- | --- |
| Company | Yes or no | Comments |
| NTT DOCOMO | Yes |  |
| LGE | Yes |  |
| OPPO | yes |  |
| Fujitsu | Yes |  |
| NEC | No  |  |
| xiaomi | Yes |  |

1. **Summary of contributions**
	1. **Scheme 1**
* Finalization of contents and containers of UE-A’s inter-UE coordination information and UE-B’s explicit request, including determination of destination UE(s) for UE-A’s inter-UE coordination information and UE-B’s explicit request
	+ Remaining details on determining preferred resource set
		- If inter-UE coordination information is triggered by a condition rather than request reception
			* Setting of resource selection window
				+ T\_1 and T\_2 are (pre)configured and slot n is a slot when UE-A start to process the sensing and resource selection [Futurewei,3] (1)
				+ T\_2-T\_1 is (pre)configured [Intel,14] (1)
			* Minimum number of candidate single-slot resources for feedback [Intel,14] (1)
			* No further change is supported [OPPO,6] [CMCC,17] [ZTE,29] (3)
		- Further consideration on modification of T\_scal [Sharp,23] (1)
	+ Remaining details on bit field size of contents of inter-UE coordination information
		- Reference slot indication
			* 10+ ceil( log2(10\*2^u)) where u is 0, 1, 2, 3 for SCS of 15, 30, 60, 120, respectively
				+ Supported by [Huawei,1] [CATT,7] [Apple,15] [Samsung,20] [LGE,26] [ZTE,29] (6)
		- Slot offset for first resource location
			* Ceil(log2(N\_slot\_offset)) where N\_slot\_offset is the number of entries in the (pre)configured values set from [0, 255]
				+ Supported by [Huawei,1] (1)
			* Ceil(log2(maximum value of slot offset))
				+ Supported by [DCM,9] [Apple,15] (2)
			* 8 bits
				+ Supported by [Samsung,20](for TRIV other than first TRIV) [ZTE,29](for TRIV other than first TRIV in a SCI format 2-C) (2)
			* 0 bit
				+ Supported by [Samsung,20](for first TRIV) [ZTE,29](for first TRIV) (2)
			* Ceil(log2(maximum value of slot offset/31))
				+ Supported by [LGE,26] (1)
		- Resource set indication for each combination
			* Up to 26 bits [Huawei,1] [Panasonic,5] [CATT,7] [DCM,9] [Apple,15] [Samsung,20](for non-preferred resource set) [LGE,26] (7)
			* Up to 22 bits [Samsung,20](for preferred resource set) [ZTE,29] (2)
		- Resource set type
			* Always 1 bit
				+ Supported by [Huawei,1] [CATT,7] [LGE,26] (3)
			* 0 bit if request contains “resource set type indication” and if condition-based IUC is disabled. Otherwise, 1 bit.
				+ Supported by [Apple,15] (1)
	+ Remaining details on first resource location indication of each TRIV
		- Maximum value of slot offset for the first resource location indication
			* 16
				+ Supported by [Apple,15](for SCI format 2-A as a baseline) (1)
			* 32
				+ Supported by [Qualcomm,22](when SCI format 2-C is used) (1)
			* 256
				+ Supported by [Huawei,1] [CATT,7](for 2nd SCI) [DCM,9] [Apple,15](for SCI format 2-A as a baseline) (4)
			* 1023
				+ Supported by [ZTE,29] (1)
			* 4092
				+ Supported by [OPPO,6] (1)
			* 8000
				+ Supported by [CATT,7](for MAC CE) [LGE,26] (2)
			* 8192
				+ Supported by [Futurewei,3] [Samsung,20] (2)

Possible values of (pre)configured maximum value is form of 2^k -1 [Futurewei,3] [Samsung,20]

* + - * Maximum reservation periodicity configured in the pool \* 2^u
				+ Supported by [Qualcomm,22](when MAC CE only is used) (1)
		- Granularity of slot offset
			* 1
				+ Supported by [CATT,7] [DCM,9] [Apple,15] [Qualcomm,22] (4)
			* 31
				+ Supported by [LGE,26] (1)
			* Candidates themselves are (pre)configured
				+ Supported by [Huawei,1] (1)
			* Determined by the bit field size for indicating slot offset and SCS (e.g., 1, 2, 4, 8, 16, 32)
				+ Supported by [Samsung,20] (1)
		- Whether or not UE-A provide preferred or non-preferred resources for each first resource location
			* Supported with additional indicating the lowest subchannel index of each first resource
				+ [OPPO,6] [ETRI,13] [Apple,15] (3)
			* Supported with additional indicating the lowest subchannel index of first resource of a first combination
				+ Supported by [Intel,14] (1)
			* Not support
				+ [Huawei,1] (1)
		- Further consideration on modifying the definition of reference slot [ETRI,13] [Intel,14] (2)
	+ Remaining details on bit field size of contents of an explicit request
		- Starting and ending time locations of a resource selection window
			* 2\*{10+ ceil( log2(10\*2^u))} where u is 0, 1, 2, 3 for SCS of 15, 30, 60, 120, respectively
				+ Supported by [Huawei,1] [CATT,7] (2)
		- Resource set type
			* 0 or 1 bit as per (pre)configuration
				+ Supported by [Apple,15] (1)
	+ Details on a SCI format 2-C
		- SCI fields design
			* SCI fields for a SCI format 2-A
				+ Supported by [Huawei,1] [DCM,9] [Apple,15] [Xiaomi,19] [ITL,25] [LGE,26] [Ericsson,27] [ZTE,29] (8)

[vivo,4] [Panasonic,5]: Cast type is not included for an explicit request

* + - * SCI fields for both a SCI format 2-A and 2-B
				+ Supported by [Panasonic,5] [CATT,7] [Intel,14] [Samsung,20] (4)
		- Condition of that a SCI format 2-C can be used as container of inter-UE coordination information
			* Keep N<=3 (i.e., remove square brackets)
				+ Supported by [LGE,26] [Ericsson,27] (2)

[LGE,26]: Add “UE does not expect that the total payload size of a SCI format 2-C with N=3 exceeds 140 bits” as a note

* + - * N<=2
				+ Supported by [CATT,7] [DCM,9] [Apple,15] (3)
			* Remove N parts
				+ Supported by [Intel,14] (1)
			* Both N<=3 and N<=2
				+ Supported by [Samsung,20] (1)
			* Further consideration on additional condition of that a SCI format 2-C can be used [Intle,14] [Qualcomm,22]
				+ [Intel,14]: a SCI format 2-C can be used for preferred resource set
				+ [Qualcomm,22]: a SCI format 2-C can be used for the case when other data is not multiplexed with inter-UE coordination information
	+ Cast type(s) of inter-UE coordination information transmission with preferred resource set triggered by a condition other than explicit request reception on top of unicast
		- Neither groupcast nor broadcast
			* Supported by [vivo,4] [Panasonic,5] [OPPO,6] [DCM,9] [Spreadtrum,11] [CMCC,17] [Samsung,20] [LGE,26] [Ericsson,27] [Mitsubishi,28] [ZTE,29] (11)
		- Groupcast
			* Supported by [Futurewei,3] [Fraunhofer,30] (2)
		- Groupcast and broadcast
			* Supported by [Intel,14] (1)
		- Up to RAN2/SA2 decision
			* Supported by [Huawei,1] (1)
	+ Latency bound of inter-UE coordination information transmission triggered by UE-B’s explicit request
		- Supported by [vivo,4] [CATT,7] [Intel,14] [Apple,15] [Xiaomi,19] [Qualcomm,22] [Sharp,23] [ITL,25] [Fraunhofer,30] (9)
			* PC5-RRC configured
				+ Supported by [vivo,4] (1)
			* (pre)configured
				+ Supported by [CATT,7] [Intel,14] [Xiaomi,19] (3)
			* Indicated by UE-B’s request
				+ Supported by [CATT,7] [Apple,15] [Sharp,23] [ITL,25] [Fraunhofer,30] (5)
			* 8 slots
				+ Supported by [Qualcomm,22](for standalone inter-UE coordination information) (1)
			* Derived based on the starting time of resource selection window provided by UE-B’s request
				+ Supported by [Sharp,23] (1)
	+ Further consideration on modifying UE-A’s procedure for determining a set of resources [Nokia,2] [vivo,4] [CATT,7] [Intel,14] [ASUSTeK,16] [Fraunhofer,30] (6)
	+ Further consideration on additional contents of the inter-UE coordination information in Scheme 1 [InterDigital,10] [Intel,14] [ASUSTeK,16] (3)
	+ Further consideration on differentiating supported cast type for each condition of non-preferred resource set [OPPO,6] [CMCC,17] [Mitsubishi,28] (3)
		- Up to UE-A’s implementation [DCM,9] (1)
	+ Further consideration on additional contents of the request for the inter-UE coordination information in Scheme 1 [Nokia,2] [Fujitsu,8] (2)
	+ Further consideration on specifying additional details on Condition 1-A-2/1-B-2/2-A-2 [vivo,4] [Intel,14] (2)
	+ Further consideration on additional condition for determining a set of resources [Nokia,2]
	+ Further consideration on parameter setting for determining the non-preferred resource set [Futurewei,3]
	+ Further consideration on modifying re-evaluation/pre-emption operation considering the received non-preferred resource set [vivo,4]
	+ Further consideration on using UE-A’s resource reservation period as coordination information [vivo,4]
	+ Further consideration on modifying the cast type of request signaling [Intel,14]
	+ Further consideration on modifying the cast type of inter-UE coordination information transmission triggered by an explicit request [Intel,14]
	+ Further consideration on modifying the cast type of inter-UE coordination information transmission triggered by a condition other than explicit request reception [Xiaomi,19]
	+ Further consideration on the case when only a SCI format 2-C is used as a container of inter-UE coordination information and/or its request [Samsung,20]
	+ Further consideration on the possibility of that different parameters of the request are transmitted by a SCI format 2-C and MAC CE [Intel,14]
	+ Further consideration on modifying interpretation rule for TRIV [ASUSTeK,16]
* Finalization of behavior of UE-B receiving resource set(s) from UE-A(s)
	+ UE-B’s behavior when UE-B receives multiple inter-UE coordination information from the same UE-A
		- UE-B uses the latest inter-UE coordination information in its resource selection
			* Supported by [Panasonic,5] [LGE,26](for preferred resource set) (2)
		- UE-B determines one of them by implementation to use in its resource selection
			* Supported by [LGE,26] (1)
	+ UE-B’s behavior when UE-B receives multiple inter-UE coordination information from the different UE-As
		- For preferred resource set,
			* UE-B uses one inter-UE coordination information for each UE-A
				+ Supported by [Panasonic,5] [DCM,9] (2)
			* UE-B uses multiple inter-UE coordination information in its resource selection
				+ Supported by [Apple,15] [Samsung,20] (2)
			* UE-B determines one of them by implementation to use in its resource selection
				+ Supported by [LGE,26] (1)
		- For non-preferred resource set,
			* UE-B uses multiple inter-UE coordination information in its resource selection
				+ Supported by [Panasonic,5] [DCM,9] [Apple,15] [Samsung,20] [Qualcomm,22] (5)
			* UE-B determines one of them by implementation to use in its resource selection
				+ Supported by [LGE,26] (1)
		- For preferred resource set and non-preferred resource set,
			* UE-B uses preferred resource later
				+ Supported by [DCM,9] (1)
			* UE-B determines one of them by implementation to use in its resource selection
				+ Supported by [LGE,26] (1)
			* Not supported by [Samsung,20] (1)
	+ Further consideration on modifying UE-B’s resource selection procedure based on the received set of resources [Nokia,2] [vivo,4] [CATT,7] [Fujitsu,8] [ITL,25] (5)
		- [Nokia,2]: Overlapping portion dependent resource exclusion
		- [vivo,4]: Restrict maximum number of resource exclusion, change the definition of M\_total
		- [CATT,7]: Additional candidate single-slot resource ratio
		- [Fujitsu,8] [ITL,25]: Canceling a subset of resource exclusion
	+ Further clarification on the condition for using Option B [DCM,9] [Qualcomm,22] [Ericsson,27] (3)
		- [DCM,9]: UE that does not support sensing/resource exclusion, UE that supports sensing/resource exclusion but performs random selection for the corresponding transmission
		- [Qualcomm,22]: UE that supports sensing/resource exclusion but does not perform sensing/resource exclusion
		- [Ericsson,27]: UE that does not support sensing
	+ Further consideration on specifying cast type(s) of UE-B’s transmission that can use inter-UE coordination information [CATT,7] [Qualcomm,22] [Mitsubishi,28] (3)
	+ Further considering on specifying a condition of skipping the received inter-UE coordination information [Intel,14] [Sharp,23]
	+ Further consideration on specifying format translation from the received set of resources to candidate single-slot resources [Intel,14]
* Finalization of when and with which information UE-A generates and/or transmits an inter-UE coordination information, including triggering based on condition(s) other than an explicit request
	+ Sensing window for determining the set of resources
		- Sensing window prior to the transmission time (slot n) of UE-A’s inter-UE coordination information
			* Supported by [Huawei,1] [OPPO,6] [CATT,7] [Xiaomi,19] (4)
				+ [n-T\_0-T\_proc,1, n-T\_proc,0-T\_proc,1]: [Huawei,1] [CATT,7] [Xiaomi,19] (3)
				+ [n-T\_0-T\_ 3, n-T\_proc,0-T\_ 3]: [OPPO,6] (1)
		- Sensing window prior to the resource selection window for transmitting UE-A’s inter-UE coordination information
			* Supported by [Intel,14]
				+ [?, n-T\_proc,0-T\_proc1] where n is the beginning of the resource selection window: [Intel,14]
		- No additional spec change is needed for sensing window for determining the set of resources
			* Supported by [LGE,26]
	+ Further consideration on additional condition triggering inter-UE coordination information [Nokia,2] [Intle,14] [Samsung,20] [Ericsson,27] [Fraunhofer,30] (5)
* Finalization of when UE-B generates and/or transmits an explicit request
	+ Further consideration on additional condition triggering an explicit request for inter-UE coordination information [vivo,4] [Intel,14] [NEC,18] [Ericsson,27] (4)
* Finalization of resource selection and/or multiplexing with sidelink transmissions for UE-A’s inter-UE coordination information and UE-B’s explicit request
	+ Further consideration on additional restriction on inter-UE coordination information transmission [Intel,14] [Qualcomm,22] [Lenovo,24] [Ericsson,27] (4)
		- [Intel,14]: Resource selection window for inter-UE coordination information transmission is inside of a resource selection window for determining the set of resources
		- [Qualcomm,22] [Ericsson,27]: For inter-UE coordination information transmission without multiplexing with other data, retransmission is not supported
		- [Qualcomm,22]: For inter-UE coordination information transmission without multiplexing with other data, the number of subchanel is 1 and a remaining PDB is 8 slots
		- [Lenovo,24]: The ending time of a resource selection window for inter-UE coordination information transmission is not after the starting time of a resource selection window for determining the set of resources
	+ Further consideration on multiplexing inter-UE coordination information, an explicit request, and data in a PSSCH [Intel,14]
	+ Further consideration on updating UE-A’s resource (re)selection procedure for its transmission based on UE-A’s inter-UE coordination information [ASUSTeK,16]
	+ Further consideration on dedicated resources for inter-UE coordination information transmission [ITL,25]
* Finalization of prioritization of inter-UE coordination information and explicit request
	+ Further consideration on default priority value for inter-UE coordination information triggered by a condition rather than request reception [Huawei,1] [Futurewei,3] [DCM,9] [Intel,14] [CMCC,17] (5)
		- Up to UE-A’s implementation [Huawei,1] [Futurewei,3] [CMCC,17](for preferred resource set) (3)
		- Up to UE-A’s implementation with (pre)configured lower limit of priority value [Panasonic,5] (1)
		- Fixed to 8 [DCM,9] (1)
		- Same as priority value of indicated by other UE’s SCI [CMCC,17](for non-preferred resource set) (1)
		- Not supported by [OPPO,6] (1)
	1. **Scheme 2**
* Finalization of determination of PSFCH resource/index for conflict indication
	+ Frequency and code domain resources derived by
		- m\_CS
			* 0
				+ Supported by [Futurewei,3] [OPPO,6] [DCM,9] [Intel,14] [Samsung,20] [Qualcomm,22] [LGE,26] [Ericsson,27] [ZTE,29] (9)

[Intel,14]: it up to UE implementations whether/how to set the reservation period in the re-selected resource

[Qualcomm,22]: UE A sends PSFCH conflict indicator to UE B if a resource conflict is detected in the next SPS period

* + - * Based on target TB (0 for current TB, 6 for next TB(s))
				+ Supported by [Huawei,1] [Nokia,2] [CATT,7] [InterDigital,10] [Spreadtrum,11] [Apple,15] (6)
		- m\_0 determination based on PSFCH resource index
			* In the same way as specified in TS 38.213 Section 16.3
				+ Supported by [Huawei,1] [Panasonic,5](when different PRB is used) [CATT,7] [DCM,9] [Spreadtrum,11] [Intel,14] [Apple,15] [Samsung,20](when the different PRB is used) [Qualcomm,22] [LGE,26] [Ericsson,27] [ZTE,29] (12)
			* A value of m\_0 is (pre)configured
				+ Supported by [Panasonic,5](when the same PRB is used) (1)
			* Circular offset is additionally applied to values of m\_0 as specified in TS38.213 Section 16.3
				+ Supported by [Samsung,20](when the same PRB is used) (1)
		- Case when the same PRB is used for both SL HARQ-ACK feedback and a resource conflict indication
			* Supported by [Futurewei,3] [Samsung,20] (2)
			* UE does not expect it [Huawei,1] [CATT,7] [Qualcomm,22] [ZTE,29] (4)
* Finalization of behavior of UE-B receiving a conflict indication from UE-A
	+ Further consideration on UE-B’s behavior for handling a resource conflict in periodic reserved resources [Huawei,1] [Nokia,2] [CATT,7] [InterDigital,10] [Spreadtrum,11] [Apple,15] (6)
		- Not supported by [Futurewei,3] [OPPO,6] [DCM,9] [Intel,14] [Samsung,20] [LGE,26] [Ericsson,27] (7)
	+ Further consideration on skipping the received resource conflict indication [Nokia,2] [OPPO,6] [Fujitsu,8] [Ericsson,27] (4)
	+ Further consideration on specifying conditions to skip a transmission of a resource conflict indication [Nokia,2] [Fujitsu,8] [Intel,14] (3)
	+ Further clarification on the next reserved resources subject to processing time budget [DCM,9] (1)
* Finalization of prioritization of conflict indication
	+ Further consideration on modifying executing order of prioritization of PSFCH for a resource conflict [ETRI,13] [Apple,15] [Xiaomi,19] (3)
		- [ETRI,13] [Xiaomi,19]: PSFCH TX/TX or TX/RX prioritization is performed first
		- [Apple,15]: prioritization between PSFCH TX or RX and other channel(s) is performed first
	+ Further consideration on modifying prioritization rule for PSFCH TX of SL HARQ-ACK feedback and a resource conflict indication [ETRI,13] (1)
	+ Further consideration on the issue due to imbalanced prioritization between PSFCH TX and RX for a resource conflict indication [Apple,15] (1)
* Finalization of how to determine UE-B among UEs scheduling conflicting TBs, including whether/how to handle, or differently handle, the case when at least one of UEs scheduling conflicting TBs doesn’t support Scheme 2
	+ Based on a second UE flag (i.e., whether UE scheduling a conflict TB can be UE-B or not) indicated by UE-B’s SCI format 1-A: [Huawei,1] [Futurewei,3] [Panasonic,5] [OPPO,6] [CATT,7] [DCM,9] [InterDigital,10] [Apple,15] [Sharp,23] [LGE,26] (10)
		- UE pairing for selecting UE-B considers only UEs transmitting SCI format 1-A with Second UE flag of 1
			* Supported by [Huawei,1] [Panasonic,5] [OPPO,6] [CATT,7] [DCM,9] [LGE,26] (6)
		- Drop PSFCH TX when the selected UE-B does not support Scheme 2 after applying the existing WA for selecting UE-B
			* Supported by [Nokia,2] [Sharp,23] [Ericsson,27] (3)
		- At least one of UEs scheduling conflicting TBs does not support scheme 2, all other UEs transmitting SCI format 1-A with a second flag of 1 are UE-Bs
			* Supported by [Futurewei,3] [Apple,15] (2)
	+ Based on whether PSFCH occasion(s) for resource conflict indication is passed or not: [Huawei,1] [OPPO,6] [Fujitsu,7] [LGE,26] (4)
		- UE pairing for selecting UE-B considers only UEs whose PSFCH occasions for a resource conflict indication are not yet passed
			* Supported by [Huawei,1] [OPPO,6] [Fujitsu,7] [LGE,26] (4)
	+ Based on priority value of UE-B’s transmission [InterDigital,10] (1)
	+ Further consideration on specifying cast type of UE-B’s transmission that can receive a resource conflict indication [Futurewei,3] [CATT,7] [Fujitsu,8] (3)
	+ Further consideration on tie-breaking for the case when conflicting TBs have the same priority [Futurewei,3] [Fujitsu,8] (2)
		- Up to UE implementation [Intel,14]
* Others
	+ Further restrict or expand on the condition to be UE-A and/or UE-B [Nokia,2] [vivo,4] [Intel,14] [Ericsson,27] [Mitsubishi,28] (5)
	+ Further consideration on modifying condition for determining a resource conflict [Nokia,2] [Fujitsu,8] [Intel,14] [Lenovo,24] (4)
	+ Further consideration on ID sharing mechanism between UE-A and UE-B [Nokia,2]
	+ Further consideration on modifying signaling granularity of enabling/disabling/controlling inter-UE coordination scheme [vivo,4]
	+ Further consideration on specifying executing order for the case when multiple UE-B’s reserved resources are collided [vivo,4]
	+ Further consideration on ensuring the time difference between successive UE-B’s reserved resources fulfil the processing time budget [CATT,7]
	+ Further clarification on UE-A’s behavior when the case when one of SCI(s) scheduling the same reserved resources does not fulfill the processing time budget [Fujitsu,8]
	+ Further consideration on modifying re-evaluation/pre-emption procedure without using inter-UE coordination information [Intel,14]
	+ Further consideration on modifying UE-B’s resource (re)selection procedure based on a SCI format 1-A [Qualcomm,22]
	+ Further consideration on inter-UE coordination with mode 1 operation [Lenovo,24]
	+ Further consideration on power-saving UE with inter-UE coordination information [Ericsson,27]
1. **Reference**
2. R1-2200964 Inter-UE coordination in sidelink resource allocation Huawei, HiSilicon
3. R1-2200981 Inter-UE coordination for Mode 2 enhancements Nokia, Nokia Shanghai Bell
4. R1-2200983 Discussion on techniques for inter-UE coordination FUTUREWEI
5. R1-2201112 Remaining issues on mode-2 enhancements vivo
6. R1-2201182 Inter-UE coordination for Mode 2 enhancements Panasonic Corporation
7. R1-2201255 Inter-UE coordination in mode 2 of NR sidelink OPPO
8. R1-2201336 Remaining issues on Inter-UE coordination for Mode 2 enhancements CATT, GOHIGH
9. R1-2201438 Discussion on inter-UE coordination for Mode 2 enhancements Fujitsu
10. R1-2201495 Remaining issues on sidelink resource allocation for reliability and latency NTT DOCOMO, INC.
11. R1-2201531 Discussions on remaining issues for Mode 2 inter-UE coordination InterDigital, Inc.
12. R1-2201558 Discussion on inter-UE coordination in sidelink resource allocation Spreadtrum Communications
13. R1-2201585 Discussion on inter-UE coordination for Mode 2 enhancements Sony
14. R1-2201617 Discussion on inter-UE coordination for Mode 2 enhancements ETRI
15. R1-2201716 Remaining opens of sidelink inter-UE coordination schemes Intel Corporation
16. R1-2201785 Remaining Issues of Inter-UE Coordination Apple
17. R1-2201820 Remaining issues on V2X mode 2 enhancements ASUSTeK
18. R1-2201874 Remaining issues on inter-UE coordination for mode 2 enhancement CMCC
19. R1-2201907 Discussion on mode 2 enhancements NEC
20. R1-2201920 Discussion on inter-UE coordination Xiaomi
21. R1-2202032 On Inter-UE Coordination for Mode2 Enhancements Samsung
22. R1-2202086 Discussion on Mode 2 enhancements MediaTek Inc.
23. R1-2202159 Reliability and Latency Enhancements for Mode 2 Qualcomm Incorporated
24. R1-2202202 Discussion on inter-UE coordination for mode 2 enhancements Sharp
25. R1-2202231 Inter-UE coordination for Mode 2 enhancements Lenovo, Motorola Mobility
26. R1-2202245 Inter-UE coordination for mode 2 enhancements ITL
27. R1-2202253 Discussion on inter-UE coordination for Mode 2 enhancements LG Electronics
28. R1-2202263 Details on mode 2 enhancements for inter-UE coordination Ericsson
29. R1-2202356 Inter-UE coordination for enhanced resource allocation Mitsubishi Electric RCE
30. R1-2202377 Remaining issues on the inter-UE coordination ZTE, Sanechips
31. R1-2202483 Inter-UE coordination for Mode 2 enhancements Fraunhofer HHI
32. **Appendix**
	1. **Conclusions made in RAN1#103-e meeting**
* ***Conclusion****:*
	+ *The schemes of inter-UE coordination in Mode 2 are categorized as being based on the following types of “A set of resources” sent by UE-A to UE-B:*
		- *UE-A sends to UE-B the set of resources preferred for UE-B’s transmission*
			* + *e.g., based on its sensing result*
		- *UE-A sends to UE-B the set of resources not preferred for UE-B’s transmission*
			* + *e.g., based on its sensing result and/or expected/potential resource conflict*
		- *UE-A sends to UE-B the set of resource where the resource conflict is detected*
		- *FFS: details of resource conflict, e.g., including type of resource conflict*
		- *FFS: details of sensing operation at UE-A side*
		- *FFS: which type(s) of resource set information is(are) beneficial/feasible to which cast type(s)*
		- *Note: these different types may be used in combination with each other*
	+ *From RAN1 perspective, further study on the feasibility/benefit of inter-UE coordination is required*
	+ *Send an LS to RAN plenary*
		- *Final LS in R1-2009841*
* ***Conclusion****:*
	+ *For the schemes of inter-UE coordination identified as feasible/beneficial, at least the following aspects are further discussed.*
		- *How/when UE-A determines the contents of ”A set of resources”, including consideration of UL scheduling*
		- *When UE-A sends ”A set of resources” to UE-B, including which UE(s) sends it*
		- *How UE-A and UE-B are determined*
		- *How UE-A sends ”A set of resources” to UE-B, including container used for carrying it, implicitly or explicitly or both*
		- *How/when/whether UE-B receives “A set of resources” and takes it into account in the resource selection for its own transmission*
		- *How/whether to define the relationship between support/signaling of inter-UE coordination and cast type*
	1. **Conclusions made in RAN1#104-e meeting**
* ***Conclusion****:*
	+ *RAN1 concludes that the inter-UE coordination in Mode 2 is feasible, and is beneficial (e.g., reliability, etc.) compared to Rel-16 Mode 2 RA, and thus recommends specification of the feature.*
		- *The detailed observations can be found in the attachment of the LS*
* *Draft LS in R1-2102165, along with the attachment R1-2102166, is approved (with a typo fix)*
	+ *Final LS in R1-2102168*
	1. **Agreements made in RAN1#104bis-e meeting**
* *Agreement:*
	+ *Support the following schemes of inter-UE coordination in Mode 2:*
		- *Inter-UE Coordination Scheme 1:*
			* *The coordination information sent from UE-A to UE-B is the set of resources preferred and/or non-preferred for UE-B’s transmission*
				+ *FFS details including a possibility of down-selection between the preferred resource set and the non-preferred resource set, whether or not to include any additional information other than indicating time/frequency of the resources within the set in the coordination information*
			* *FFS condition(s) in which Scheme 1 is used*
		- *Inter-UE Coordination Scheme 2:*
			* *The coordination information sent from UE-A to UE-B is the presence of expected/potential and/or detected resource conflict on the resources indicated by UE-B’s SCI*
				+ *FFS details including a possibility of down-selection between the expected/potential conflict and the detected resource conflict*
			* *FFS condition(s) in which Scheme 2 is used*
* *Agreement:*
	+ *Study further to determine the conditions for UEs to be UE-A(s)/UE-B(s) for inter-UE coordination:*
		- *Details include applicable scenario(s)/inter-UE coordination scheme(s)*
		- *E.g., only UE(s) among the intended receiver(s) of UE-B can be a UE-A, any UE can be a UE-A, high-layer configured, etc.*
			* *Including the possibility of being subject to certain conditions and/or capability*
* *Agreement:*
	+ *When UE-B receives the inter-UE coordination information from UE-A, consider at least one of the following options (with details FFS including possibly down-selecting/merging one or more of the options below, applicable scenario(s)/condition(s) for each option, UE behavior) for UE-B’s to take it into account in the resource (re)-selection for its own transmission*
		- *For scheme 1:*
			* *Option 1-1: UE-B’s resource(s) to be used for its transmission resource (re)-selection is based on both UE-B’s sensing result (if available) and the received coordination information*
			* *Option 1-2: UE-B’s resource(s) to be used for its transmission resource (re)-selection is based only on the received coordination information*
			* *Option 1-3: UE-B’s resource(s) to be re-selected based on the received coordination information*
			* *Option 1-4: UE-B’s resource(s) to be used for its transmission resource (re)-selection is based on the received coordination information*
		- *For scheme 2:*
			* *Option 2-1: UE-B can determine resource(s) to be re-selected based on the received coordination information*
			* *Option 2-2: UE-B can determine a necessity of retransmission based on the received coordination information*
	1. **Agreements made in RAN1#106-e meeting**
* *Agreement:*
	+ *For scheme 1, the following inter-UE coordination information signalling from UE-A is supported. FFS details including condition(s)/scenario(s) under which each information is enabled to be sent by UE-A and used by UE-B.*
		- *Set of resources preferred for UE-B’s transmission*
		- *Set of resources non-preferred for UE-B’s transmission*
* *Agreement:*
	+ *For scheme 2, the following inter-UE coordination information signalling from UE-A is supported. FFS details including condition(s)/scenario(s) under which each information is enabled to be sent by UE-A and used by UE-B*
		- *Presence of expected/potential resource conflict on the resources indicated by UE-B’s SCI*
			* *FFS: UE behaviour when the presence of expected/potential resource conflict is detected by the transmitter*
		- *FFS: Whether to additionally support the presence of detected resource conflict on the resources indicated by UE-B’s SCI*
* *Agreement:*
	+ *In scheme 1, the following is supported for UE(s) to be UE-A(s)/UE-B(s) in the inter-UE coordination information transmission triggered by an explicit request in Mode 2:*
		- *A UE that sends an explicit request for inter-UE coordination information can be UE-B*
		- *A UE that received an explicit request from UE-B and sends inter-UE coordination information to the UE-B can be UE-A*
		- *(Working assumption) At least a destination UE of a TB transmitted by UE-B can be UE A*
		- *The above feature can be enabled or disabled or controlled by (pre-)configuration*
			* *FFS: Details on how to support this, including (pre-)configuration signaling granularity*
		- *FFS: Additional details and conditions on UE-A and UE-B*
	+ *(Working Assumption) In scheme 1, the following is supported for UE(s) to be UE-A(s)/UE-B(s) in the inter-UE coordination information transmission triggered by a condition other than explicit request reception in Mode 2:*
		- *A UE that satisfies the condition mentioned in the main bullet and sends inter-UE coordination information is UE-A*
		- *A UE that received inter-UE coordination information from UE-A and uses it for resource (re-)selection is UE-B*
		- *The above feature can be enabled or disabled or controlled by (pre-)configuration*
			* *FFS: Details on how to support this, including (pre-)configuration signaling granularity*
		- *FFS: Additional details and conditions on UE-A and UE-B*
* *Agreement:*
	+ *In scheme 2, at least the following is supported for UE(s) to be UE-A(s)/UE-B(s) in the inter-UE coordination transmission triggered by a detection of expected/potential resource conflict(s) in Mode 2:*
		- *A UE that transmitted PSCCH/PSSCH with SCI indicating reserved resource(s) to be used for its transmission, received inter-UE coordination information from UE-A indicating expected/potential resource conflict(s) for the reserved resource(s), and uses it to determine resource re-selection is UE-B*
		- *A UE that detects expected/potential resource conflict(s) on resource(s) indicated by UE-B’s SCI sends inter-UE coordination information to UE-B, subject to satisfy one of the following conditions, is UE-A*
			* *(Working assumption) At least a destination UE of one of the conflicting TBs, i.e., TBs to be transmitted in the expected/potential conflicting resource(s)*
				+ *Whether a non-destination UE of a TB transmitted by UE-B can be UE-A is (pre-)configured*
			* *FFS: Additional details and condition(s) on UE-A and UE-B*
		- *The above feature can be enabled or disabled or controlled by (pre-)configuration*
			* *FFS: Details on how to support this, including (pre-)configuration signaling granularity*
		- *FFS: Definition of expected/potential resource conflict(s) and other details (if any)*
* *Agreement:*
	+ *In scheme 2, the following UE-B’s behavior in its resource (re)selection is supported when it receives inter-UE coordination information from UE-A:*
		- *UE-B can determine resource(s) to be re-selected based on the received coordination information*
			* *UE-B can reselect resource(s) reserved for its transmission when expected/potential resource conflict on the resource(s) is indicated*
				+ *FFS: Other details (if any)*
* *Agreement:*
	+ *In scheme 1, at least following UE-B’s behavior in its resource (re-)selection is supported when it receives inter-UE coordination information from UE-A:*
		- *For preferred resource set, the following two options are supported:*
			* *Option A): UE-B’s resource(s) to be used for its transmission resource (re-)selection is based on both UE-B’s sensing result (if available) and the received coordination information*
				+ *UE-B uses in its resource (re-)selection, resource(s) belonging to the preferred resource set in combination with its own sensing result*

*UE-B uses in its resource (re-)selection, resource(s) not belonging to the preferred resource set when condition(s) are met*

*FFS: Details of condition(s)*

*This option is supported when UE-B performs sensing/resource exclusion*

*FFS: Other details (if any)*

* + - * *Option B): UE-B’s resource(s) to be used for its transmission resource (re-)selection is based only on the received coordination information*
				+ *UE-B uses in its resource (re-)selection, resource(s) belonging to the preferred resource set*

*This option is supported at least when UE-B does not support sensing/resource exclusion*

*FFS: Whether the support is conditional or UE capability*

*FFS: Other details (if any)*

* + - * *FFS: Other option(s), and other details (if any)*
		- *For non-preferred resource set,*
			* *UE-B’s resource(s) to be used for its transmission resource (re-)selection is based on both UE-B’s sensing result (if available) and the received coordination information*
				+ *UE-B excludes in its resource (re-)selection, resource(s) overlapping with the non-preferred resource set*

*FFS: Details including*

*Whether/how UE-B can use in its resource (re-)selection, resource(s) overlapping with the non-preferred resource set, definition of the overlap, and other details (if any)*

*When UE-B excludes in its resource (re-)selection, resource(s) overlapping with the non-preferred resource set*

* + - * + *FFS: UE-B reselects in its resource (re-)selection, resource(s) to be used for its transmission when the resource(s) are fully/partially overlapping with the non-preferred resource set*
			* *FFS: Other option(s), and other details (if any)*
* *Agreement:*
	+ *In scheme 2, at least the following is supported to determine inter-UE coordination information:*
		- *Among resource(s) indicated by UE-B’s SCI, UE-A considers that expected/potential resource conflict occurs on the resource(s) satisfying at least one of the following condition(s):*
			* *Condition 2-A-1:*
				+ *Other UE’s reserved resource(s) identified by UE-A are fully/partially overlapping with resource(s) indicated by UE-B’s SCI in time-and-frequency*
				+ *FFS: Other details (if any)*
				+ *FFS: Whether/how to specify additional criteria and other details (if any) including signaling details of conflict indication*
			* *(Working Assumption) Condition 2-A-2:*
				+ *Resource(s) (e.g., slot(s)) where UE-A, when it is intended receiver of UE-B, does not expect to perform SL reception from UE-B due to half duplex operation*

*FFS: Other details (if any)*

* + - * *FFS: Other condition(s)*
		- *FFS: Other details (if any)*
* *Agreement:*
	+ *In scheme 1, at least the following is supported to determine inter-UE coordination information of preferred resource set:*
		- *UE-A considers any resource(s) satisfying all the following condition(s) as set of resource(s) preferred for UE-B’s transmission*
			* *Condition 1-A-1:*
				+ *Resource(s) excluding those overlapping with reserved resource(s) of other UE identified by UE-A whose RSRP measurement is larger than a RSRP threshold*

*FFS: Other details (if any)*

* + - * *FFS: Condition 1-A-2:*
				+ *Resource(s) excluding slot(s) where UE-A, when it is intended receiver of UE-B, does not expect to perform SL reception from UE-B*

*FFS: Other details (if any)*

* + - * *FFS: Condition 1-A-3:*
				+ *Resource(s) satisfying UE-B’s traffic requirement (if available)*

*FFS: Other details (if any)*

* + - * *FFS: Other condition(s)*
		- *FFS: Other details (if any)*
* *Agreement:*
	+ *In scheme 1, at least the following is supported to determine inter-UE coordination information of non-preferred resource set:*
		- *UE-A considers any resource(s) satisfying at least one of the following condition(s) as set of resource(s) non-preferred for UE-B’s transmission*
			* *Condition 1-B-1:*
				+ *Reserved resource(s) of other UE identified by UE-A from other UEs’ SCI (including priority field) and RSRP measurement*

*FFS: Other details (if any)*

* + - * *FFS: Condition 1-B-2:*
				+ *Resource(s) (e.g., slot(s)) where UE-A, when it is intended receiver of UE-B, does not expect to perform SL reception from UE-B*

*FFS: Other details (if any)*

* + - * *FFS: Other condition(s)*
		- *FFS: Other details (if any)*
	1. **Agreements made in RAN1#106bis-e meeting**
* *Agreement:*
	+ *For Scheme 2, PSFCH format 0 is used to convey the presence of expected/potential resource conflict on reserved resource(s) indicated by UE-B’s SCI*
* *Agreement:*
	+ *For Condition 2-A-1 of Scheme 2, down-select one or more of following additional criteria to determine resource(s) where expected/potential resource conflict occurs*
		- *Option 1: The resource(s) are fully/partially overlapping in time-and-frequency with other UE’s reserved resource(s) whose RSRP measurement is larger than a RSRP threshold according to the priorities included in the SCI:*
			* *prio\_TX and prio\_RX are the priorities indicated in the SCI making the overlapping reservations*
			* *Strive to reuse Rel-16 specification wherever possible*
		- *Option 2: The resource(s) are fully/partially overlapping in time-and-frequency with other UE’s reserved resource(s) whose RSRP measurement is within a (pre)configured RSRP threshold compared to the RSRP measurement of UE-B’s reserved resource.*
			* *FFS: Whether the threshold depends on priority*
		- *Option 3: The resource(s) are fully/partially overlapping in time-and-frequency with other UE’s reserved resource(s) and the other UE is within a distance threshold of UE-B as determined by both UEs’ SCIs.*
		- *Option 4: The resource(s) are fully/partially overlapping in time-and-frequency with other UE’s reserved resource(s) whose RSRP measurement is larger a (pre)configured RSRP threshold compared to the RSRP measurement of UE-B’s reserved resource.*
			* *FFS: Whether the threshold depends on priority*
		- *FFS: In case of collisions of resources for two UEs having TBs with UE A as destination UE, if needed*
* *Working Assumption*
	+ *For Condition 1-B-1 of Scheme 1, the following two options are supported*
		- *Option 1: Reserved resource(s) of other UE(s) identified by UE-A whose RSRP measurement is larger than a (pre)configured RSRP threshold which is determined by at least priority value indicated by SCI of the UE(s)*
		- *Option 2: Reserved resource(s) of other UE identified by UE-A whose RSRP measurement is smaller than a (pre)configured RSRP threshold which is determined by at least priority value indicated by SCI of the UE(s) when UE-A is a destination of a TB transmitted by the UE(s)*
* *Working Assumption*
	+ *For Scheme 1 with non-preferred resource set, support following condition:*
		- *Condition 1-B-2:*
			* *Resource(s) (e.g., slot(s)) where UE-A, when it is intended receiver of UE-B, does not expect to perform SL reception from UE-B due to half duplex operation*
* *Agreement:*
	+ *For Condition 1-A-1 of Scheme 1, the set of resources preferred for UE-B’s transmission is a form of candidate single-slot resource as specified in Rel-16 TS 38.214 Section 8.1.4*
		- *When the inter-UE coordination information transmission is triggered by UE-B’s explicit request, the candidate single-slot resource(s) are determined in the same way according to Rel-16 TS 38.214 Section 8.1.4 with at least following parameters provided by signaling from UE-B. FFS whether or not to apply RSRP threshold increase in Step 7) of Rel-16 TS 38.214 Section 8.1.4.*
			* *Priority value to be used for PSCCH/PSSCH transmission*
				+ *It replaces prio\_TX*
			* *Number of sub-channels to be used for PSSCH/PSCCH transmission in a slot*
				+ *It replaces L\_subCH*
			* *Resource reservation interval*
				+ *It replaces P\_rsvp\_TX*
			* *FFS: Starting/ending time location of resource selection window*
		- *FFS : In addition to Rel-16 procedure, use inter-UE coordination information from other UEs*
			* *If there is no consensus in RAN1#106bis-e, no further discussions for Rel-17*
* ***Conclusion****:*
	+ *No consensus that UE-A uses inter-UE coordination information from other UEs when it determines the preferred resource set for Condition 1-A-1 of Scheme 1.*
* *Working Assumption*
	+ *For Scheme 1 with preferred resource set, support following condition:*
		- *Condition 1-A-2:*
			* *Resource(s) excluding slot(s) where UE-A, when it is intended receiver of UE-B, does not expect to perform SL reception from UE-B due to half duplex operation*
			* *This can be disabled by RRC (pre-)configuration*
* *Agreement:*
	+ *For allocating PSFCH resources in Scheme 2, at least following can be (pre)configured separately from those for SL HARQ-ACK feedback.*
		- *Set of PRBs for PSFCH transmission/reception (sl-PSFCH-RB-Set)*
* *Agreement:*
	+ *For Scheme 2,*
		- *Index of a PSFCH resource for inter-UE coordination information transmission is determined in the same way according to Rel-16 TS 38.213 Section 16.3 with at least following modification*
			* *P\_ID is L1-Source ID indicated by UE-B’s SCI*
			* *M\_ID is 0*
		- *FFS: How to set m\_CS*
		- *FFS: How to set m\_0*
		- *FFS: Whether M\_ID can be (pre)configured*
	1. **Agreements made in RAN1#107-e meeting**
* *Agreement:*
	+ *A resource pool level (pre-)configuration uses either of the following options*
		- *Option 1: PSFCH occasion is derived by a slot where UE-B’s SCI is transmitted*
			* *Reuse PSSCH-to-PSFCH timing as specified in TS 38.213 Section 16.3 to determine the PSFCH occasion for resource conflict indication*
			* *Time gap between the PSFCH and a slot where expected/potential resource conflict occurs is larger than or equal to T\_3*
		- *Option 2: PSFCH occasion is derived by a slot where expected/potential resource conflict occurs on PSSCH resource indicated by UE-B’s SCI*
			* *UE-A transmits the PSFCH in a latest slot that includes PSFCH resources for inter-UE coordination information and is at least T\_3 slots of the resource pool before the PSSCH resource indicated by UE-B’s SCI in which expected/potential resource conflict occurs*
			* *FFS: How to account for processing timeline*
		- *Note that it is possible not to configure either option1 or option 2.*
* *Agreement:*
	+ *For Condition 1-A-2 of Scheme 1, the set of resources preferred for UE-B’s transmission is a form of candidate single-slot resource as specified in Rel-16 TS 38.214 Section 8.1.4*
		- *UE-A excludes candidate single-slot candidate(s) belonging to “slot(s) where UE-A, when it is intended receiver of UE-B, does not expect to perform SL reception from UE-B due to half duplex operation” after Step 6) of TS 38.214 Section 8.1.4*
* *Agreement:*
	+ *When PSFCH TX/RX for Scheme 2 is overlapping with LTE SL TX/RX and/or UL in a UE, reuse prioritization rule as specified in TS 38.213 Section 16.2.4.1 and 16.2.4.3.1.*
* ***Conclusion****:*
	+ *For Scheme 2, the values of the following parameters are the same as those for SL HARQ-ACK feedback in the same resource pool*
		- *Period of PSFCH resources (sl-PSFCH-Period)*
		- *Number of cyclic shift pairs used for a PSFCH transmission that can be multiplexed in a PRB (sl-NumMuxCS-Pair)*
		- *Number of PSFCH resources available for multiplexing information in a PSFCH transmission (sl-PSFCH-CandidateResourceType)*
* *Agreement:*
	+ *For Scheme 1, a resource pool level (pre-)configuration can enable one of the following alternatives:*
		- *Alt 1 (Working Assumption): MAC CE or 2nd SCI are used as the container of inter-UE coordination information transmission from UE A to UE B.*
			* *For the indication of resource set, the following is supported:*
				+ *N combinations of TRIV, FRIV, resource reservation period as specified in Rel-16 TS 38.214 Section 8.1.5 with following modification. The value of resource reservation period is omitted at least when the transmission of preferred resource set is triggered by UE-B’s explicit request.*

*First resource location of each TRIV is separately indicated by the inter-UE coordination information*

* + - * + *If [N <= 3], MAC CE is used and it is up to UE implementation to additionally use 2nd SCI. When 2nd SCI and MAC CE are both used, the same resource set is indicated in the 2nd SCI and the MAC CE. If [N > 3], only MAC CE is used.*

*FFS: UE capability details*

*2nd SCI is UE RX optional*

* + - *Alt 2: MAC CE is used as the container of inter-UE coordination information transmission from UE A to UE B.*
			* *For the indication of resource set, the following is supported:*
				+ *N combinations of TRIV, FRIV, resource reservation period as specified in Rel-16 TS 38.214 Section 8.1.5 with following modification. The value of resource reservation period is omitted at least when the transmission of preferred resource set is triggered by UE-B’s explicit request.*

*First resource location of each TRIV is separately indicated by the inter-UE coordination information*

* + - *FFS: Whether/How to use resource reservation information as coordination information*
* *Working Assumption:*
	+ *A resource pool level (pre-)configuration can enable one of the following options:*
		- *Option 1:*
			* *For Condition 2-A-1 of Scheme 2, support following additional criteria to determine resource(s) where expected/potential resource conflict occurs*
				+ *For the case when UE-A is a destination UE of a TB transmitted by UE-B*

*The resource(s) are fully/partially overlapping in time-and-frequency with other UE’s reserved resource(s) whose RSRP measurement is larger than a RSRP threshold according to the priorities included in the SCI:*

*prio\_TX and prio\_RX are the priorities indicated in the SCI making the overlapping reservations for UE-B and other UE respectively*

* + - * + *For the case when UE-A is a destination UE of a TB transmitted by another UE*

*The resource(s) are fully/partially overlapping in time-and-frequency with other UE’s reserved resource(s) when RSRP measurement of UE-B’s reserved resource is larger than a RSRP threshold according to the priorities included in the SCI:*

*prio\_TX and prio\_RX are the priorities indicated in the SCI making the overlapping reservations for other UE and UE-B respectively*

* + - *Option 4:*
			* *For Condition 2-A-1 of Scheme 2, support following additional criteria to determine resource(s) where expected/potential resource conflict occurs*
				+ *For the case when UE-A is a destination UE of a TB transmitted by UE-B*

*The resource(s) are fully/partially overlapping in time-and-frequency with other UE’s reserved resource(s) whose RSRP measurement is larger than a (pre)configured RSRP threshold compared to the RSRP measurement of UE-B’s reserved resource.*

* + - * + *For the case when UE-A is a destination UE of a TB transmitted by another UE*

*The resource(s) are fully/partially overlapping in time-and-frequency with other UE’s reserved resource(s) when RSRP measurement of UE-B’s reserved resource is larger than a (pre)configured RSRP threshold compared to the RSRP measurement of the resource(s).*

* + - * *Support of Option 4 is subject to UE capability*
		- *FFS: Whether/how RSRP threshold depends on priority, MCS, overlap*
* *Agreement:*
	+ *For Scheme 1 with non-preferred resource set,*
		- *Physical layer at UE-B excludes in its resource (re-)selection, candidate single-slot resource(s) obtained after Step 6) of Rel-16 TS 38.214 Section 8.1.4 overlapping with the non-preferred resource set*
* *Agreement:*
	+ *For Condition 1-A-1 of Scheme 1, when UE-A determines the set of resources preferred for UE-B’s transmission, apply RSRP threshold increase in the same way according to Rel-16 TS 38.214 Section 8.1.4.*
		- *FFS: Whether/how to introduce the maximum limit of RSRP threshold increase*
* *Agreement:*
	+ *For Scheme 1, at least following parameters are provided by UE-B’s request:*
		- *Priority value to be used for PSCCH/PSSCH transmission*
		- *Number of sub-channels to be used for PSSCH/PSCCH transmission in a slot*
		- *Resource reservation interval*
* *Agreement:*
	+ *For Scheme 2, when PSFCH occasion is derived by a slot where expected/potential resource conflict occurs on PSSCH resource indicated by UE-B’s SCI,*
		- *Time gap between the PSFCH and SCI(s) scheduling conflicting TBs is larger than or equal to X value.*
			* *FFS: Details of X*
* *Working Assumption:*
	+ *For Condition 2-A-1 in Scheme 2, when “a non-destination UE of a TB transmitted by UE-B can be UE-A” is enabled or when “a non-destination UE of a TB transmitted by UE-B can be UE-A” is disabled and the destination UE of the conflicting TBs is UE-A, for each pair of UEs scheduling the conflicting TBs, a UE with the higher priority value is UE-B.*
		- *FFS whether/how to set additional condition for UE-A to send PSFCH.*
		- *Conclude on whether/how to handle, or differently handle, the case when at least one of UEs scheduling conflicting TBs doesn’t support Scheme 2 at the subsequent meetings*
* *Agreement:*
	+ *For inter-UE coordination information triggered by an explicit request in Scheme 1,*
		- *UE-A uses a TX resource pool used for UE-B’s request transmission to determine the set of resources and to transmit the set of resources to UE-B*
* *Agreement:*
	+ *For inter-UE coordination information triggered by a condition rather than request reception in Scheme 1,*
		- *UE-A transmitting in a resource pool provides inter-UE coordination information associated with the same resource pool*
	1. **Agreements made in RAN#94-e meeting**
* *Agreement:*
	+ *RAN1 is tasked to complete the remaining normative work for Rel-17 NR sidelink enhancement by Q1 of 2022*
		- *All RAN1 decisions that impact other WGs should be finalized in RAN1#107bis-e*
	+ *Use the list of open issues provided RP-212880 (status report of WI: NR sidelink enhancement) as a starting point for technical discussions in RAN1.*
		- *This does not mean that all the issues included in the list are considered essential or the list is complete*
		- *RAN1 should not spend additional effort to further refine the list*
	1. **Agreements made in RAN1#107bis-e meeting**
* *Agreement:*
	+ *For Scheme 1, when the inter-UE coordination information transmission is triggered by UE-B’s explicit request,*
		- *Starting/Ending time locations of resource selection window is provided by UE-B’s explicit request*
			* *Starting/Ending time locations of resource selection window is a form of combination of DFN index and slot index*
* *Agreement:*
	+ *When PSFCH occasion is derived by a slot where expected/potential resource conflict occurs on PSSCH resource indicated by UE-B’s SCI, time gap between the PSFCH and SCI(s) scheduling conflicting TBs is larger than or equal to X value*
		- *X = sl-MinTimeGapPSFCH*
	+ *UE does not transmit the conflict indicator or receive the conflict indicator if the timeline is not satisfied*
* *Agreement:*
	+ *For Scheme 1, a resource pool level (pre-)configuration can enable one of the following alternatives:*
		- *(Working assumption) Alt1: MAC CE and 2nd SCI are used as the container of an explicit request transmission from UE-B to UE-A*
			* *A single format SCI 2-C is used for inter-UE coordination information and request*
				+ *1 bit in format 2-C is used to indicate whether the SCI is used for request to coordination information or for conveying coordination information*
			* *SCI 2-C is UE RX optional*
			* *It is up to UE implementation to additionally use 2nd SCI (for UE-B).*
		- *Alt2: MAC CE is used as the container of an explicit request transmission from UE-B to UE-A*
* ***Conclusion****:*
	+ *For Scheme 2, there is no consensus to support indication of the following*
		- *Condition type of a resource conflict*
		- *Time location of a resource conflict*
* *Agreement:*
	+ *Alt 2-1*
		- *For Scheme 2,*
			* *The PHY layer reports S\_A after Step 7) of TS 38.214 Section 8.1.4 to higher layer.*
			* *When UE-B receives a conflict indicator for resource(s) indicated by its SCI,*
				+ *PHY layer at UE-B reports resources overlapping with the next reserved resource indicated by the corresponding UE-B’s SCI for current TB transmission to higher layer.*

*If (pre)configured, the PHY layer reports resources in a slot including the next reserved resource indicated by the corresponding UE-B’s SCI for current TB transmission to higher layer.*

* + - * + *Higher layer at UE-B re-selects the resource(s) indicated by the conflict indicator among the S\_A excluding the reported resources.*
			* *FFS: Whether/How the conflict in periodic transmission is indicated by UE-A and handled by UE-B*
* *Agreement:*
	+ *For PSFCH TX/RX or TX/TX prioritization in Scheme 2,*
		- *Priority value of PSFCH TX for a resource conflict indication is the smallest priority value of the conflicting TBs*
		- *Priority value of PSFCH RX for a resource conflict indication is priority value indicated by UE-B’s SCI*
		- *For PSFCH TX/RX or TX/TX prioritization between SL HARQ-ACK feedback(s) and resource conflict indication(s), PSFCH TX/RX for SL HARQ-ACK feedback is always prioritized over PSFCH TX/RX for a resource conflict indication*
* *Agreement:*
	+ *For Scheme 1, unicast is supported for an explicit request transmission for inter-UE coordination information*
		- *Unicast is used for the inter-UE coordination information transmission triggered by the explicit request*
* *Working Assumption:*
	+ *For Scheme 1, following cast type(s) are supported for inter-UE coordination information transmission triggered by a condition other than explicit request reception*
		- *Groupcast/Broadcast for non-preferred resource set, FFS for preferred resource set*
			* *FFS: Under which conditions groupcast/broadcast can be supported*
		- *Unicast*
			* *FFS: Under which conditions unicast can be supported*
* *Agreement:*
	+ *For determining preferred resource set in Scheme 1, the value of Cresel is determined by UE-A according to Rel-16 procedure.*
		- *This information is not conveyed to/from UE-B*
		- *When inter-UE coordination information is triggered by UE-B’s request, P\_rsvp\_TX used for determining SL\_RESOURCE\_RESELECTION\_COUNTER according to Rel-16 procedure is provided by resource reservation interval indicated by UE-B’s request*
* *Agreement:*
	+ *For the indication of resource set in Scheme 1, the value of Sl-MaxNumPerReserve is fixed to 3.*
* *Agreement:*
	+ *The following working assumption is confirmed with modification in RED.*
		- *MAC CE or 2nd SCI are used as the container of inter-UE coordination information transmission from UE A to UE B.*
			* *For the indication of resource set, the following is supported:*
				+ *N combinations of TRIV, FRIV, resource reservation period as specified in Rel-16 TS 38.214 Section 8.1.5 with following modification. The value of resource reservation period is omitted at least when the transmission of preferred resource set is triggered by UE-B’s explicit request.*

*First resource location of each TRIV is separately indicated by the inter-UE coordination information*

* + - * + *If [N <= 3], MAC CE is used and it is up to UE implementation to additionally use 2nd SCI. When 2nd SCI and MAC CE are both used, the same resource set is indicated in the 2nd SCI and the MAC CE. If [N > 3], only MAC CE is used.*

*FFS: UE capability details*

*2nd SCI is UE RX optional*

*The field size of the indication of resource set in a SCI format 2-C is determined by [N=3]*

* *Agreement:*
	+ *For inter-UE coordination information transmission in Scheme 1,*
		- *Inter-UE coordination information can be multiplexed with other data only if the source/destination ID pair is the same*
			* *Retransmission of the TB carrying inter-UE coordination information is supported*
	+ *For explicit request transmission in Scheme 1,*
		- *Explicit request can be multiplexed with other data only if the source/destination ID pair is the same*
			* *Retransmission of the TB carrying request is supported*
* *Agreement:*
	+ *For inter-UE coordination triggered by an explicit request in Scheme 1, whether or not to transmit the inter-UE coordination information upon the request reception is determined by UE-A’s implementation subject to the following procedures.*
		- *Rel-16 procedure of UL/SL prioritization, LTE SL/NR SL prioritization, and congestion control*
* *Agreement:*
	+ *For inter-UE coordination triggered by a condition rather than request reception in Scheme 1,*
		- *A resource pool level (pre-)configuration can enable one of the following alternatives:*
			* *Alt 1: it is up to UE-A’s implementation whether or not to trigger the inter-UE coordination information generation.*
			* *Alt 2: the inter-UE coordination information generation can be triggered only when UE-A has data to be transmitted together with the inter-UE coordination information to UE-B*
		- *Note: Rel-16 procedure of UL/SL prioritization, LTE SL/NR SL prioritization, and congestion control is applied to the transmission of the inter-UE coordination information triggered by a condition.*
* *Agreement:*
	+ *For inter-UE coordination triggered by UE-B’s explicit request in Scheme 1,*
		- *A resource pool level (pre-)configuration can enable one of the following alternatives:*
			* *Alt 1: it is up to UE-B’s implementation whether or not to trigger the request generation*
			* *Alt 2: the request generation can be triggered only when UE-B has data to be transmitted to UE-A*
		- *Note: Rel-16 procedure of UL/SL prioritization, LTE SL/NR SL prioritization, and congestion control is applied to the transmission of the request transmission.*
* *Agreement:*
	+ *For Scheme 1 with preferred resource set Option A,*
		- *MAC layer selects resources using S\_A and the received preferred resource set*
			* *MAC layer firstly selects resources for transmissions within the intersection of S\_A and the preferred resource set until it becomes impossible to select a resource within the intersection under the constraint defined in Rel-16.*
				+ *It is up to the UE whether to use the preferred resource set from SCI format 2-C and/or MAC CE*
			* *After this, if the number of selected resources is smaller than the required number of transmissions for a TB, MAC layer selects resources for the remaining transmissions outside the intersection but inside S\_A under the constraint defined in Rel-16.*
* *Agreement:*
	+ *For Scheme 1 with preferred resource set Option B,*
		- *MAC layer selects resources belonging to the received preferred resource set under the constraint defined in Rel-16*
			* *It is up to the UE whether to use the preferred resource set from SCI format 2-C and/or MAC CE*
* *Agreement:*
	+ *For inter-UE coordination information triggered by an explicit request in Scheme 1, the priority value of the inter-UE coordination information is (pre)configured priority value if it is provided by (pre)configuration. Otherwise, the priority value is the same as indicated by UE-B’s explicit request.*
		- *For the case when inter-UE coordination information is transmitted together with other data, the priority value of the multiplexed sidelink transmission is determined by the smallest priority value between the inter-UE coordination information and data*
* *Agreement:*
	+ *For inter-UE coordination information triggered by an explicit request in Scheme 1, the priority value of explicit request is (pre)configured priority value if it is provided by (pre)configuration. Otherwise, the priority value is the same as that of a TB to be transmitted by UE-B.*
		- *For the case when the explicit request is transmitted together with other data, the priority value of the multiplexed sidelink transmission is determined by the smallest priority value between the explicit request and data*
* *Agreement:*
	+ *For inter-UE coordination information triggered by a condition other than explicit request reception in Scheme 1, the priority value of the inter-UE coordination information is (pre)configured priority value if it is provided by (pre)configuration.*
		- *FFS: Otherwise, the priority value is determined by UE-A’s implementation.*
		- *For the case when inter-UE coordination information is transmitted together with other data, the priority value of the multiplexed sidelink transmission is determined by the smallest priority value between the inter-UE coordination information and data*
* *Agreement:*
	+ *For sidelink transmission carrying inter-UE coordination information in Scheme 1,*
		- *UE-A performs its resource (re)selection according to the same procedure in TS 38.214 Section 8.1.4 to transmit the inter-UE coordination information to UE-B.*
	+ *For sidelink transmission carrying request in Scheme 1,*
		- *UE-B performs its resource (re)selection according to the same procedure in TS 38.214 Section 8.1.4 to transmit the request for the inter-UE coordination information to UE-A if UE-B performs sensing/resource exclusion. Otherwise, at least UE-B can perform random selection*
	+ *Note: RAN1 does not pursue specific enhancement of Rel-17 resource (re)selection for the transmission of inter-UE coordination information and its request.*
* *Working assumption:*
	+ *First resource location of each TRIV is a slot offset with respect to a reference slot*
		- *Alt 2:*
			* *The slot offset is the number of logical slots from the reference slot*
				+ *The value range of slot offsets is from 0 to maximum value that is (pre)configurable up to [256]*

*FFS: The detailed value range including granularity*

* + - * + *Slot offset for each TRIV to indicate the set of resources is separately indicated by inter-UE coordination information*
		- *For the reference slot,*
			* *The reference slot is the slot indicated by the inter-UE coordination information in a form of combination of DFN index and slot index*
* *Agreement:*
	+ *For determining preferred resource set in Scheme 1, when inter-UE coordination information transmission is triggered by a condition other than explicit request reception,*
		- *Values of following parameters are (pre)configured for a resource pool. If there is no (pre)configuration, UE-A determines by its implementation the values of the following parameters*
			* *prio\_TX*
			* *L\_subCH*
			* *P\_rsvp\_TX*
		- *UE-A determines by its implementation values of following parameters*
			* *n+T\_1, n+T\_2*
		- *FFS: Whether/how to support (pre)configuration of n+T\_1 and n+T\_2*
		- *Note that it is up to RAN2 decision whether/how the values of these parameters are provided by PC5-RRC signaling from UE-B to UE-A and UE-A uses the received information to determine the preferred resource set*
* *Agreement:*
	+ *For inter-UE coordination information is triggered by UE-B’s request,*
		- *A resource pool level (pre-)configuration can enable one of the following alternatives:*
			* *Alt 1:*
				+ *Resource set type to be provided by inter-UE coordination information transmission is determined by UE-A’s implementation and its information is indicated by UE-A’s inter-UE coordination information*

*UE-A’s inter-UE coordination information indicates either preferred resource set or non-preferred resource set*

* + - * *Alt 2:*
				+ *Resource set type to be provided by inter-UE coordination information transmission is indicated by UE-B’s request*

*UE-B’s request indicates either preferred resource set or non-preferred resource set*

* + - *Note that it is up to RAN2 decision whether/how UE-B provides its support of sensing/resource exclusion to UE-A via PC5-RRC signaling and UE-A uses the received information to determine the type of resource set to be transmitted to UE-B*
* *Agreement:*
	+ *For inter-UE coordination information is triggered by a condition other than explicit request reception,*
		- *Resource set type to be provided by inter-UE coordination information transmission is determined by UE-A’s implementation and its information is indicated by UE-A’s inter-UE coordination information*
			* *UE-A’s inter-UE coordination information indicates either preferred resource set or non-preferred resource set*
* *Working assumption:*
	+ *For Scheme 2, (pre)configuration is supported to enable or disable that 1 LSB of reserved bits of a SCI format 1-A is used to indicate of whether UE scheduling a conflict TB can be UE-B or not.*
		- *FFS: UE-A's behavior for the case when at least one of UEs scheduling conflicting TBs is not capable of receiving the conflict indication*
	1. **Agreements made in RAN1#108-e meeting**
* *Agreement:*
	+ *For a slot offset that is (pre)configured to indicate the first resource location of each TRIV with respect to a reference slot,*
		- *Granularity of the slot offset is 1 logical slot*
		- *(Pre)configured maximum value of the slot offset is up to 8000*
			* *When both SCI format 2-C and MAC CE are used as the container of inter-UE coordination information, the maximum value of the slot offset is 255*
			* *When MAC CE only is used as the container of inter-UE coordination information, the maximum value of the slot offset is the (pre)configured maximum value*
* *Agreement:*
	+ *A SCI format 2-C includes all the fields present in SCI format 2-A except cast type indicator*
* ***Conclusion****:*
	+ *For cast type(s) of inter-UE coordination information with preferred resource set triggered by a condition other than explicit request reception*
		- *There is no consensus in RAN1 on the support of groupcast or broadcast for preferred resource set*
* *Agreement*
	+ *For Scheme 2,*
		- *m\_CS for a resource conflict indication for the next reserved resource indicated by the corresponding UE-B’s SCI for either current TB transmission or next TB transmission is 0*
* *Agreement*
	+ *For Scheme 2, when UE-B receives a conflict indicator for resource(s) indicated by its SCI, it up to UE-B’s implementation whether/how to set the reservation periodicity in the re-selected resource.*
* *Agreement*
	+ *For Scheme 2,*
		- *m\_0 for a resource conflict indication is derived in the same way as specified for HARQ-ACK information in TS 38.213 Section 16.3*
		- *A UE expects that different PRBs are (pre)configured between conflict indication and HARQ-ACK information*
* *Agreement:*
	+ *For Scheme 1, when both SCI format 2-C and MAC CE are used as the container of an explicit request for inter-UE coordination information, the same bit field size for the request in a SCI format 2-C is applied to MAC CE*
* *Agreement:*
	+ *For Scheme 1, when MAC CE only is used as the container of an explicit request for inter-UE coordination information, the same bit field size for the request in a SCI format 2-C is applied to MAC CE*
* ***Conclusion****:*
	+ *For inter-UE coordination operation in Rel-17, RAN1 understands that only UE(s) in mode 2 can be UE-A*
		- *Note that RAN1 does not pursue specific enhancement of Rel-17 inter-UE coordination operation for handling the case where UE(s) in mode 1 can be UE-A*