3GPP TSG-RAN WG2 #116-e R2-21xxxxx

Electronic, 1st – 12th Nov, 2021

Agenda Item: 5.4.1

Source: ZTE Corporation

Title: [AT116-e][001][NR15] Connection Control (ZTE)

Document for: Discussion, Decision

# Introduction

This document is to kick off the following email discussion:

* [AT116-e][001][NR15] Connection Control (ZTE)

 Scope: Determine agreeable parts in a first phase, for agreeable parts agree on CRs. Treat [R2-2110454](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110454.zip), [R2-2110455](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110455.zip), [R2-2110458](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110458.zip), [R2-2110459](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110459.zip), [R2-2109791](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109791.zip), R2-2110456, R2-2110457, [R2-2110783](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110783.zip), [R2-2110784](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110784.zip), [R2-2110785](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110785.zip), [R2-2110786](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110786.zip), [R2-2109404](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109404.zip), [R2-2109405](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109405.zip), [R2-2109406](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109406.zip)

 Intended outcome: Report, agreed CRs if applicable

 Deadline: Schedule 1

Discussions with Deadline **Schedule 1**:

A **first round** with **Deadline for comments Thursday W1 Nov 4 1200 UTC** to settle scope what is agreeable etc.

A **Final round** with **Final deadline Thursday W2 Nov 11 1200 UTC** to settle details / agree CRs etc.

# Contact Information

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# Discussion

Companies are requested to add their comments on each of the CRs of this email discussion in the questionnaires below.

## L1 Parameters

[R2-2110454](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110454.zip) Correction on BWP switch for TDD ZTE Corporation, Sanechips, Ericsson CR Rel-15 38.300 15.13.0 0393 - F NR\_newRAT-Core

[R2-2110455](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110455.zip) Correction on BWP switch for TDD(R16) ZTE Corporation, Sanechips, Ericsson CR Rel-16 38.300 16.7.0 0394 - A NR\_newRAT-Core

The reason for changes is:

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| In the last e-meeting, We discussed the papers [R2-2108369](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_115-e%5CDocs%5CR2-2108369.zip)/[R2-210837](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_115-e%5CDocs%5CR2-2108369.zip)0, and the following conclusions were captured in chairman notes.----------------------=> [012] For TDD, when NW wants to switch the DL BWP and/or UL BWP by RRC, NW shall include the fields firstActiveDownlinkBWP-Id and firstActiveUplinkBWP-Id simultaneously (with the same BWP-Id) in same RRC message.=> [012] not clear whether TS need to updated. Both postponed------------------------In order to clearly constrain the network configurations and avoid IOT issues, we suggest to add the following description in spec 38300 section 7.8.------------------------In paired spectrum, DL and UL can switch BWP independently. In unpaired spectrum, DL and UL switch BWP simultaneously. Switching between configured BWPs happens by means of RRC signalling, DCI, inactivity timer or upon initiation of random access. When RRC is used to switch DL and UL BWP simultaneously, the network performs the switch using the same RRC message. When an inactivity timer is configured for a serving cell, the expiry of the inactivity timer associated to that cell switches the active BWP to a default BWP configured by the network. There can be at most one active BWP per cell, except when the serving cell is configured with SUL, in which case there can be at most one on each UL carrier. |

**Q1: Do companies agree with the two CRs R2-2110454 and** **R2-2110455?**

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| Company | Agree?(Yes or No) | Comments |
| Nokia | No | This is stage-3 configuration detail and was not agreed to be added to RRC. It basically just means that for TDD, network has to ensure both UL and DL BWPs switch at the same time. This is more network clarification than anything else, so chairman's notes would be just fine.The behavior is already clear from RAN1 perspective of how the UE should behave. |
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[R2-2110458](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110458.zip) Correction on vrb-ToPRB-Interleaver ZTE Corporation, Sanechips CR Rel-15 38.331 15.15.0 2832 - F NR\_newRAT-Core

[R2-2110459](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110459.zip) Correction on vrb-ToPRB-Interleaver(R16) ZTE Corporation, Sanechips CR Rel-16 38.331 16.6.0 2833 - A NR\_newRAT-Core

For Rel-15, the reason for changes is:

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| In the field description of *vrb-ToPRB-Interleaver*, it says ‘When the field is absent, the UE performs non-interleaved VRB-to-PRB mapping’, but for PDSCH transmissions scheduled with DCI format 1\_0 in common search space the bundle size is 2, not using the parameter *vrb-ToPRB-Interleaver*. In this case the UE performs interleaved or non-interleaved VRB-to-PRB mapping not depending on whether the parameter *vrb-ToPRB-Interleaver* is configured or not. So we suggest to add the field description of *vrb-ToPRB-Interleaver* as below:

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| ***vrb-ToPRB-Interleaver***Interleaving unit configurable between 2 and 4 PRBs (see TS 38.211 [16], clause 7.3.1.6). When the field is absent, the UE performs non-interleaved VRB-to-PRB mapping. The field only applies to DCI format 1\_1 and DCI format 1\_0 in UE specific search space (see TS 38.211 [16], clause 7.3.1.6).  |

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For Rel-16, the reason for changes is:

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| In the field description of *vrb-ToPRB-Interleaver*, it says ‘The field *vrb-ToPRB-Interleaver* applies to DCI format 1\_1’, but in fact the field *vrb-ToPRB-Interleaver* also applies to DCI format 1\_0 in UE specific search space. So we suggest to modify the field description of *vrb-ToPRB-Interleaver* as below:

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| ***vrb-ToPRB-Interleaver, vrb-ToPRB-InterleaverDCI-1-2***Interleaving unit configurable between 2 and 4 PRBs (see TS 38.211 [16], clause 7.3.1.6). When the field is absent, the UE performs non-interleaved VRB-to-PRB mapping. The field *vrb-ToPRB-Interleaver* applies to DCI format 1\_1 and DCI format 1\_0 in UE specific search space, and the field *vrb-ToPRB-InterleaverDCI-1-2* applies to DCI format 1\_2 (see TS 38.211 [16], clause 7.3.1.6). |

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**Q2: Do companies agree with the problem identified and the changes in R2-2110458,** **R2-2110459?**

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| Company | Agree?(Yes or No) | Comments |
| Nokia | Not yet | We see the changes as somewhat editorial, not really changing or enabling anything. From our RAN1 delegate, the RAN1 specs define the exact conditions where the parameter applies unambiguously already.Then, this is incorrect on the R-16 CR: In addition, the field description says ‘the field *vrb-ToPRB-InterleaverDCI-1-2* applies to DCI format 1\_2 (see TS 38.211 [16], clause 7.3.1.6)’, but there are no statements related to the field *vrb-ToPRB-InterleaverDCI-1-2*in spec 38211clause 7.3.1.6. Here a RAN1 CR is required.The parameter is referred in 212 at least:VRB-to-PRB mapping – 0 or 1 bit:-     0 bit if the higher layer parameter *vrb-ToPRB-InterleaverDCI-1-2* is not configured;-     1 bit according to Table 7.3.1.2.2-5 otherwise, only applicable to resource allocation type 1, as defined in Clause 7.3.1.6 of [4, TS 38.211].So before proceeding in RAN2, we would first check this with RAN1 and ask them to make the alignment and then RAN2 can make the corresponding changes. The interop statements are also quite confusing in the CR. For an editorial CR the changes should not impact either UE or network. |
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[R2-2109791](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109791.zip) Delta signalling of dedicated channel bandwidth Nokia, Nokia Shanghai Bell discussion Rel-15 NR\_newRAT-Core

The following proposals are proposed in the paper:

**Proposal 1**: RAN2 to clarify the common understanding of UE behaviour with regards to dedicated channel bandwidth when 1) dedicated channel bandwidth has been configured and 2) UE receives *ServingCellConfig* where either the extension group or the field itself is not configured. The following options are considered:

- **Option 1:** UE releases the dedicated CBW field if either the extension group or the field itself is not configured (i.e. Need R-like behaviour), and falls back to the SIB1 CBW configuration (based on the Need S-behaviour of the field)

- **Option 2:** UE maintains the currently configured dedicated CBW field even if either the extension group or the field itself is not configured (i.e. Need M-like behaviour).

**Proposal 2**: If dedicated CBW configuration is the same as previously configured value, the reconfiguration shall not cause UP interruption (i.e. 16ms as defined in TS38.133).

**Q3: For proposal1, do companies agree with option 1 or option 2?**

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| Company | Agree with option 1 or option 2? | Comments |
| Nokia | Option 1 | Proponent: We try to list additional points to the proposals we made in our paper.**On P1:** This related to a field issue, and when resolving that we spotted one ambiguity in specification regarding the handling of the dedicated channel bandwidth in *ServingCellConfig*: **It’s not clear if the UE treats the dedicated channel BW configuration (a Need S-field) as “Need R” or “Need M” for delta signalling purposes.**  Based on our reading, it seems like (unfortunately) RRC implies “Need R”-interpretation for the field, but we want to check if this is the common understanding. Then whether we need to make that clear via CR is something we can discuss once the common understanding is reached. |
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**Q4: Do companies agree with proposal 2?**

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| Company | Agree?(Yes or No) | Comments |
| Nokia | Yes | Proponent: We try to list additional points to the proposals we made in our paper.**On P2:** Regarding RAN4 aspect on UP interruption, our interpretation is that re-signalling the same value in RRC (even for Need M, network can always signal the same value for the field) and this does not classify as “Parameter change” in RAN4 spec (delta configuration and ability to avoid signalling the same value is a RAN2 concept and should not impact RAN4 spec) and hence would not result in the interruption. We welcome companies to share their interpretation. |
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**Q5: For this paper, do companies have other comments?**

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| Company | Comments |
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## Full Configuration

[R2-2110456](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110456.zip) Correction on srb-ToAddModList ZTE Corporation, Sanechips CR Rel-15 38.331 15.15.0 2830 - F NR\_newRAT-Core

[R2-2110457](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110457.zip) Correction on srb-ToAddModList(R16) ZTE Corporation, Sanechips CR Rel-16 38.331 16.6.0 2831 - A NR\_newRAT-Core

The reason for changes is:

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| According to the current spec 38331, the field *srb-ToAddModList* is mandatory present when the *fullConfig* is included in the *RRCReconfiguration* message and NE-DC/NR-DC is not configured.But in the RAN2#114-e meeting, we added the following NOTE in spec 38331 section 5.3.5.11:------------------NOTE 1a: To establish the RLC bearer of SRB(s) after release due to *fullConfig*, the network can include the *srb-Identity* within *srb-ToAddModList* (i.e. the UE applies RLC default configuration) and/or provide *rlc-BearerToAddModList* of concerned SRB(s) explicitly.--------------------That is, for the *RRCReconfiguration* message with *fullConfig*, the field *srb-ToAddModList* is optionally present, and the network can only include the field *rlc-BearerToAddModList* in this *RRCReconfiguration* message to establish an RLC entity. So we suggest to delete the mandatory presence condition ‘or when the *fullConfig* is included in the *RRCReconfiguration* message and NE-DC/NR-DC is not configured’ for the field *srb-ToAddModList*. |

**Q6: Do companies agree with the problem identified and the changes in R2-2110456,** **R2-2110457?**

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| Company | Agree?(Yes or No) | Comments |
| Nokia | Yes | OK, this is a valid catch but instead of deleting we would propose to modify that statement to take into account the note. The normative behavior removal seems too drastic when the other part is just a NOTE which can be easily forgotten by implementation to read. |
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## UE Assistance Indication

[R2-2110785](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110785.zip) UAI retransmission upon RRC reconfiguration (38.331) Ericsson CR Rel-16 38.331 16.6.0 2847 - A NR\_newRAT-Core

[R2-2110786](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110786.zip) UAI retransmission upon RRC reconfiguration (38.331) Ericsson CR Rel-15 38.331 15.15.0 2848 - F NR\_newRAT-Core

[R2-2110783](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110783.zip) UAI retransmission upon RRC reconfiguration (36.331) Ericsson CR Rel-16 36.331 16.6.0 4738 - A NR\_newRAT-Core

[R2-2110784](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2110784.zip) UAI retransmission upon RRC reconfiguration (36.331) Ericsson CR Rel-15 36.331 15.15.0 4739 - F NR\_newRAT-Core

The reason for changes is:

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| In RAN2#112-e, it was agreed to clarify TS 36.331 (R2-2011258) with the following sentence:“NOTE: **In case overheating assistance for NR SCG is released** while the regular overheating assistance remains configured, a UE that included SCG overheating parameters in the last reported overheating assistance considers overheating assistance information to be different regardless whether or not its preferences for the regular overheating assistance changed.”While the note covers NR SCG release case, there are other scenarios where the UE may need to consider its last report reported overheating assistance to be different regardless of the preferences previously sent. Some examples are provided below:* When the UE is configured only with MCG, the UE first sends an overheating report containing *reducedCCsDL* set to 4, such information concerns only the MCG SCells. If the network configures the SCG, the UE last report may be interpreted as *reducedCCsDL* set to 4 to concern both MCG SCells and SCG PSCell/SCells, but this may not always be the UE intention when sending the first report. The UE can always send a new report with *reducedCCsDL* set to a value different than 4 (if the prohibit timer is not running). But if the UE would like to indicate that also with SCG configuration, reducedCCsDL should be 4, it could not repeat such report.
* Particularly for NR configuration, the UE may send *reducedMaxBW-FR2* set to mhz40 (either for NR-DC or embedded within overheatingAssistanceForSCG for EN-DC) considering the current UE configuration. But after reconfiguration, (e.g. adding/releasing SCells or reconfiguring SCells), it is unclear whether the UE report still reflects the current UE configuration.

Overall, the procedural text of TS 38.331 limit the cases for UEAssistanceInformation reporting to be always different than previous UEAssistanceInformation with overheatingAssistance or power saving. This limitation ignores the cases of UE configuration changes for other reasons than UEAssistanceInformation. For these cases, it is ambiguous to decide which UE preferences to apply for this new configuration. Therefore, it seems safer to adopt a general sentence applicable to both Rel-16 power saving and overheating to cover all cases where the UE may need to consider the last UAI sent as a different report, i.e. upon UE reconfiguration. |

**Q7: For 38331, do companies agree with the problem identified and the changes in R2-2110786, R2-2110785?**

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| Company | Agree?(Yes or No) | Comments |
| Nokia | Not essential | It is not essential change. The procedural text (not a NOTE) says: 2> if the current overheating assistance information is different from the one indicated, which implies the change should be detectable by the UE. The NOTE seems to suggest there is different meaning of the "change" detection. |
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**Q8: For 36331, do companies agree with the problem identified and the changes in R2-2110784, R2-2110783?**

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| Company | Agree?(Yes or No) | Comments |
| Nokia | Not essential | The CR is not essential. This may be an interesting case to analyse, but proposed resolution may be not helpful. In general RRC Reconfiguraton is expected after overheating assistance information sent by the UE, thus the UE is expected to send an updated overheating information. Also the procedural text (not a NOTE) says: 2> if the current overheating assistance information is different from the one indicated, which implies the change should be detectable by the UE. The NOTE seems to suggest there is different meaning of the "change" detection.Furthermore, it maybe very rare or treted as inefficient network reconfiguration (i.e. wrong network reaction) if the UE wishes to repeat the same IEs after reconfiguration (it should get released from the overheating with proper NW Reconfiguration).The proposed NOTE update is also removing SCG, which makes the "regular" overheating assistance unclear. |
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## RRC Inactive

[R2-2109404](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109404.zip) Discussion on T302 OPPO discussion NR\_newRAT-Core

[R2-2109405](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109405.zip) Corrections on T302 OPPO CR Rel-15 38.331 15.15.0 2812 - A NR\_newRAT-Core

[R2-2109406](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109406.zip) Corrections on T302(R16) OPPO CR Rel-16 38.331 16.6.0 2813 - F NR\_newRAT-Core

The reason for changes is:

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| Based on current RRC spec, the UE will always stop T302 upon entering RRC\_IDLE, which is not correct when entering RRC\_IDLE is triggered by receiving CN paging for UE in RRC\_INACTIVE. |

**Q9: Do companies agree with the problem identified and the changes in R2-2109405,** **R2-2109406?**

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| Company | Agree?(Yes or No) | Comments |
| OPPO | Yes | Before giving our conclusion, we’d like to give some background info for this change, In the RAN2 Ad hoc #1807 meeting, some details of the wait timer T302 have been discussed and agreements reached as follows:*3 The UE shall respond to RAN paging and CN paging when T302 is running.* *4 The UE is allowed to access for emergency when T302 is running.* *5 At T302 expiry or T302 stopped, if NAS was informed that access was barred (due to T302 running) , then AS informs upper layers about barring alleviation (due to T302)**FFS Whether T302 is stopped on reception of RAN paging, CN paging, emergency call or reception of e.g. Resume or Setup or Release, etc messages.*And in RAN2#113bis meeting, R2-1814187 was treated online, two options were listed in the paper:1. Option 1: T302 is stopped upon reception of RAN paging, CN paging, emergency call.
2. Option 2: T302 is stopped upon reception of MSG4 (e.g. RRC Resume or Setup or Release, etc messages.)

After hot discussion online, option2 was agreed finally:Agreement1 The wait timer T302 (if running) is stopped when UE receives RRC Resume or RRC Setup message to enter RRC CONNECTED. but the above agreement was not correctly captured into RRC spec, according to current RRC spec, the UE will always stop T302 upon entering RRC\_IDLE, which is not correct when entering RRC\_IDLE is triggered by receiving CN paging for UE in RRC\_INACTIVE. More details are given in discussion paper [R2-2109404](file:///D%3A%5CDocuments%5C3GPP%5Ctsg_ran%5CWG2%5CTSGR2_116-e%5CDocs%5CR2-2109404.zip). |
| Nokia | Yes, but | We think this is not so essential to correct as this is corner scenario.In case where the UE goes to IDLE T302 is stopped. In case the INACTIVE UE paged with CN id the goes to IDLE. But in case the IDLE UE is paged with CN id the UE is not able to respond because T302 is still running. So it seems that there is confusion in the spec, but maybe not very critical to correct, becaus CN paging is used only in error scenario when the UE is INACTIVE. |
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# Conclusion

TBD

# References

[1]