**Sub-thread 1 (Other + L12XCM M/R)**

**Proposal 1.4**: On Rel.17 unified TCI framework,

* Any DL RS that is a valid target DL RS of a Rel-15/16 TCI state based on the Rel-15/16 QCL rules can be configured as a target DL RS of Rel-17 DL TCI (hence the Rel-17 DL TCI state pool)
  + Note: This does not imply that all such DL RSs necessarily share a same TCI state
  + The DL RS includes CSI-RS and DMRS for PDSCH or PDCCH
* FFS: Whether some SRS resources or resource sets for BM can be configured as a target signal/channel of Rel-17 UL TCI (hence the Rel-17 UL TCI state pool)
* Note: This does not imply that DL and UL TCI state pools are separate or shared for separate DL/UL TCI (this issue is still TBD)

**Proposal 1.5**: On Rel.17 unified TCI framework, discuss and decide by RAN1#106-e (August 2021)

* Whether each of the following DL RSs can share the same indicated Rel-17 TCI state as UE-dedicated reception on PDSCH and for UE-dedicated reception on all or subset of CORESETs in a CC
  + CSI-RS resources for CSI
  + Some CSI-RS resources for BM, if so, which ones (e.g. aperiodic, repetition ‘ON’)
  + CSI-RS for tracking
  + DMRS(s) associated with non-UE-dedicated reception on PDSCH and all/subset of CORESETs
* Whether some SRS resources or resource sets for BM can share the same indicated Rel-17 TCI state as dynamic-grant/configured-grant based PUSCH, all or subset of dedicated PUCCH resources in a CC

**Proposal 1.6**: On Rel.17 unified TCI framework, for any DL RS that does not share the same indicated Rel-17 TCI state(s) as UE-dedicated reception on PDSCH and for UE-dedicated reception on all or subset of CORESETs in a CC, but can be configured as a target DL RS of a Rel-17 DL TCI (hence the Rel-17 DL TCI state pool), discuss and down-select by RAN1#106-e (August 2021) between the following two alternatives:

* Alt1. Rel-15/16 TCI state update signaling/configuration mechanism(s) are reused to update/configure the Rel-17 TCI state
* Alt2. Rel-17 TCI state update signaling/configuration mechanism(s) are used, e.g. with Rel-17 MAC-CE/DCI-based beam indication for Rel-17 joint/separate TCI

Note: The DL RS includes CSI-RS and DMRS for PDSCH or PDCCH

Note: For some channels/signals, only one of the above two alternatives may apply (to be discussed).

**Proposal 2.3**: On Rel.17 L1-RSRP multi-beam measurement/reporting enhancements for L1/L2-centric inter-cell mobility and inter-cell mTRP,

* Support at least K=4, where K is defined as the number of beams associated at least with non-serving cell(s) reported in a single CSI reporting instance
  + The maximum value of supported K is a UE capability
  + K is configured by NW based on the UE capability
  + FFS: The support of K=8 and 16
    - For K>4, the maximum number of beams associated with one cell is 4
* FFS: Support L1-based event-driven reporting based on Rel-16 SCell BFR framework or analogous to L3-based event-driven reporting, including the definition of L1-based event, if needed

Note: If another beam metric other than L1-RSRP is supported (e.g. L3-RSRP is still FFS), the above also applies

**Sub-thread 2 (PC + L12XCM BI)**

**Proposal 1.1B:** On the setting of UL PC parameters except for PL-RS (P0, alpha, closed loop index) for Rel.17 unified TCI framework,

* For each of PUSCH, PUCCH, and SRS, the setting of (P0, alpha, closed loop index) can be associated with UL or (if applicable) joint TCI state.
  + In this case, multiple settings are configured where each setting is associated with at least one TCI state
  + Details of the association (including the manner it is performed and the signaling) is up to RAN2
* If not associated, for each of the PUSCH, PUCCH, and SRS, only one configured setting of (P0, alpha, closed loop index) per channel/signal is applied to all the UL or (if applicable) joint TCI states

**Proposal 1.2**: On path-loss measurement for Rel.17 unified TCI framework, a PL-RS (configured for path-loss calculation) is either included in UL TCI state or (if applicable) joint TCI state or associated with UL TCI state or (if applicable) joint TCI state.

* Whether a UE supports “beam misalignment” (detailed definition FFS) between  the DL source RS in the UL or (if applicable) joint TCI state to provide spatial relation indication and the PL-RS is a UE capability
* Whether it is ‘included in’ or ‘associated with’ (including the manner it is performed and the signaling) is up to RAN2
* The UE maintains the PL-RS of the activated UL TCI state or (if applicable) joint TCI state
* The maximum number of activated UL TCI states or (if applicable) joint TCI states per band per cell is a UE capability
* FFS: detailed aspects of PL-RS, e.g. CSI-RS type(s), time-domain behavior(s), restriction on configuration

**Proposal 2.1**: On Rel.17 beam indication enhancements for L1/L2-centric inter-cell mobility, support the following:

* At least for UE reception (on PDSCH and PDCCH) and transmission (on PUSCH and PUCCH) associated with UE-dedicated CORESETs, Rel-17 MAC-CE-based and DCI-based beam indication (at least using DCI formats 1\_1/1\_2 with and without DL assignment including the associated MAC-CE-based TCI state activation)
  + FFS: Whether the above is supported only for joint TCI, or both joint TCI and separate DL/UL TCI (including that, if separate DL/UL TCI is supported, the DL TCI and UL TCI associated with a same cell)
  + FFS: Whether to support activation of TCI states for more than one cells simultaneously
* The DL QCL and UL spatial relation rules already agreed for intra-cell scenario
* The use of SSB associated with a physical cell ID different from that of the serving cell as an indirect QCL reference for UE-dedicated PDCCH/PDSCH
  + Note: When RS X is an indirect QCL reference of a target channel, there exists at least one other source signal on the QCL chain between RS X and the target channel
  + FFS (to be decided in RAN1#106-e): Whether SSB associated with a physical cell ID different from that of the serving cell can also be used as a direct QCL reference (source RS) for UE-dedicated PDCCH/PDSCH
* Note: It is assumed that serving cell and/or RNTI(s) are not mandated to change when L1/L2-centric inter-cell mobility is configured and utilized

**Sub-thread 3 (CA)**

**Proposal 1.3A**: On Rel.17 unified TCI framework, for common TCI state ID update and activation to provide common QCL information and/or common UL TX spatial filter(s) across a set of configured CCs/BWPs

* The determined source RSs to provide QCL Type-D indication and to determine UL TX spatial filter for the set of configured CCs/BWPs are further associated with a same QCL-TypeD RS

**Proposal 1.3X:** ‘A single RRC pool of TCI states’ for common TCI state ID update and activation to provide common QCL information and/or common UL TX spatial filter(s) across a set of configured CCs/BWPs is supported. This implies that the single RRC TCI state pool can be configured in a reference BWP of a reference CC and can be shared among the set of configured CCs.

* The reference BWP and reference CC can/shall be configured per target BWP per target CC by a RRC parameter
  + Note: in the target BWP in the target CC, the UE would use the TCI states configured in the reference BWP in the reference CC.
  + FFS: whether it is mandatorily configured or not, if not, FFS default behavior
* For QCL Type-A/D, the BWP /CC ID for QCL -Type A/D source RS can be absent in a TCI state
* When the BWP /CC ID for QCL -Type A/D source RS is absent in the TCI state, it implies that the target CC of the TCI state and the corresponding active BWP should be used to determine the source RS
  + Note: In such case, UE uses the corresponding BWP ID + target CC ID + QCL TypeA/D RS source ID of the TCI state configured in the reference BWP in the reference CC to locate the corresponding QCL Type-A/D source RS
* Note that cross-CC UL power control indication is FFS as a separate issue
* FFS: inter-band CA, e.g. two or more sets of configured CCs in a UE