* 1. Issue 1 (unified TCI framework)

**Proposal 1.A**: On Rel.17 unified TCI framework, support 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:

* The above applies to intra-band CA
* The above applies to joint DL/UL and separate DL/UL beam indications
* FFS: Just as Rel.16, the UE will find the corresponding TCI state in the corresponding CC and apply the corresponding TypeA and TypeD QCL assumption from the TCI state ID
* FFS: The above also applies to inter-band CA
* FFS: sharing a single RRC TCI state pool for the set of configured CCs

**Proposal 1.B**: On Rel.17 unified TCI framework, to accommodate the case of separate beam indication for UL and DL:

* Utilize two separate TCI states, one for DL and one for UL.
  + FFS: Contents of separate UL TCI state
  + Note: For FR1, UE does not expect UL TCI to provide a reference for determining common UL TX spatial filter(s), if UL TCI is supported for FR1
* For the separate DL TCI:
  + The source reference signal(s) in M TCIs provide QCL information at least for UE-dedicated reception on PDSCH and for UE-dedicated reception on all or subset of CORESETs in a CC
    - FFS: decide between “all”, “subset”, or “all or subset”
* For the separate UL TCI:
  + The source reference signal(s) in N TCIs provide a reference for determining common UL TX spatial filter(s) at least for dynamic-grant/configured-grant based PUSCH, all or subset of dedicated PUCCH resources in a CC
    - FFS: decide between “all”, “subset”, or “all or subset”
  + Optionally, this UL TX spatial filter can also apply to all SRS resources in resource set(s) configured for antenna switching/codebook-based/non-codebook-based UL transmissions
* FFS: Whether the UL TCI state is taken from a common/same or separate TCI state pool from DL TCI state
  + e.g., common/same pool in both RRC and MAC, separate pools in RRC and MAC, separate pools in RRC but single combined TCI pool in MAC, or common/same pool in RRC but separate pools in MAC
  + Note that TCI state pool for joint DL and UL beam indication is still FFS
* FFS: Whether Rel.17 supports TCI configured for single channel (e.g. PDSCH only, single CORESET)
* Note: This does not preclude the type of UE supporting only 1 beam tracking loop, i.e. UE reports value of 1 in UE FG 2-62.

**Conclusion 1**: On Rel.17 unified TCI framework, in RAN1#103-e, there is no consensus on supporting:

* that the source reference signal(s) in M TCIs can also provide common QCL information for CSI-RS
  1. Issue 2 (L1/L2-centric inter-cell mobility)

**Proposal 2.A**: On Rel.17 enhancements to enable L1/L2-centric inter-cell mobility:

* The following use cases are assumed:
  + Network architecture:
    - NSA, i.e. LTE PCell and NR-PSCell
    - SA
  + Intra-band CA
    - FFS: If inter-band CA is also included
  + Intra- RAT (excluding inter-RAT)
  + Intra-frequency scenario:
    - The SSBs of non-serving cells have the same center frequency and SCS as the SSBs of the serving cell
    - An SSB of a non-serving cell is associated with a PCI different from the PCI of the serving cell
    - FFS: Support for inter-frequency scenario
  + FFS: Whether to support intra-DU only operation, or whether inter-DU is also allowed
* The following enhancement scope is assumed:
  + Facilitating measurement and reporting of non-serving RSs via incorporating non-serving cell info with some TCI(s), along with the necessary measurement and reporting scheme(s)
    - FFS: Detailed/exact method(s)
    - FFS: Whether this also implies the support of beam indication (TCI state update along with the necessary TCI state activation) for TCI(s) associated with non-serving cell RS(s)
    - FFS: Metric for the measurement and reporting, e.g. L1-RSRP or L3-RSRP or time- or spatial-domain-filtered L1-RSRP
    - FFS: Beam-level event-driven mechanism, using serving cell RS and/or non-serving cell RS
  + Facilitate serving cell to provide configurations for non-serving cell SSBs via RRC
    - FFS: details for the configurations, e.g. time/frequency location, transmission power, etc.
    - FFS: other information needed for inter-cell mobility
  + Note: In RAN1's understanding, non-serving cell SSB and non-serving cell RS can be part of the serving cell configuration
  1. Issue 3 (beam indication signaling medium)

**Proposal 3.A:** On the three yellow parts of the issue 3 agreement in the 1st GTW session:

* Yellow 3.1: “for joint beam indication” text. This can be addressed as follows:
  + The existing DCI formats 1\_1 and 1\_2 are reused for joint DL/UL beam indication
    - ~~FFS: If additional DCI format(s) are supported, e.g. existing DCI formats 0\_0, 0\_1, 0\_2, 1\_0 as well as new DCI format(s) dedicated for beam indication~~
    - FFS: support of DCI format 1\_0 for joint DL/UL or separate DL/UL beam indication
    - FFS: support new DCI format(s) dedicated for beam indication for joint or separate DL/UL beam indication
    - FFS: support for reusing the existing UL-related DCI format(s) (e.g. 0\_0, 0\_1, 0\_2) for joint or separate DL/UL beam indication
    - FFS: support for reusing DCI format 1\_1, and 1\_2 for separate DL/UL beam indication
* Yellow 3.2: vivo FFS
  + **Conclusion**: There is no consensus in including the two FFS points proposed by vivo in the agreement made in the 1st GTW session
* {For later discussion} Yellow 3.3: UE capability text, revised as follows (per inputs from interested companies, based on where we left off during the GTW discussion):
  + Application time of the beam indication: if beam indication is received, down-select from the following:
    - Alt1: the first slot that is at least X ms or Y symbols after the DCI with the joint or separate DL/UL beam indication
    - Alt2: the first slot that is at least X ms or Y symbols after the acknowledgment of the joint or separate DL/UL beam indication
  + FFS: When and how to apply the minimum beam indication delay
  + Support a UE capability for the minimum value of X or Y
    - FFS: the beam application time X or Y is configured by the gNB via higher-layer (RRC) signaling based the UE capability
    - FFS: the exact minimum values of X (e.g., 0.5ms, 2ms, 3ms) or Y supported by UE
  1. Issue 4 (MP-UE)

**Proposal 4.A**: In Rel.17 enhancement for facilitating fast uplink panel selection, the following use cases are assumed:

* MPE mitigation
* UE power saving
* UL interference management
* Support different configurations across panels
* UL mTRP

**Proposal 4.B**: In Rel.17 enhancement on MP-UE to facilitate fast UL panel selection and MPE mitigation, UL Tx panel(s) are assumed to be a same set or subset of DL Rx panel(s)

**Proposal 4.C**: In Rel.17 enhancement for facilitating fast uplink panel selection, UE-initiated UL panel selection/activation are supported:

* FFS: Whether NW-initiated panel selection/activation is also supported
* FFS specification impact” – UE initiated panel selection/activation does not necessarily have specification impact
  1. Issue 5 (MPE mitigation)

**Proposal 5.A**: On UE reporting for MPE mitigation for Rel.17, investigate and, if needed, specify the following:

* Reporting of P-MPR report based on Rel.16 framework.
  + FFS: Maximum reported number of panels, e.g. single or multiple
* Reporting SSBRI(s)/CRI(s) and/or indication of panel selection for the purpose of indicating:
  + Alt1: alternative UE panel(s) or TX beam(s) for UL transmission
  + Alt2: feasible UE panel(s) or TX beam(s) for UL transmission taking the MPE effect into account
  + FFS: indication of panel selection details (e.g. explicit/implicit)
* Any additional reporting: down-select from the following in RAN1#104-e
  + Alt0: no additional reporting content
  + Alt1: P-MPR + L1-RSRP
  + Alt2: virtual PHR + L1-RSRP
  + Alt3: L1-RSRP/SINR with and without MPE effect
  + Alt4: virtual PHR
  + Alt5: P-MPR or virtual PHR + CRI/SSBRI
  + Other options are not precluded
  + Note that PHR including PH and Pcmax is calculated based on P-MPR and the L1-RSRP
  1. Issue 6 (beam refinement/tracking)

**{For later discussion} Proposal 6.A**: Investigate and, if needed, specify *at least* the following enhancements for beam refinement/tracking in Rel.17:

* Beam measurement and reporting enhancement via RACH (e.g. RO for measurement and MSG3 for reporting)
* Improving efficiency (latency and/or overhead) of beam refinement assuming the unified TCI framework (issue 1):
  + Enabling joint DL TX and RX beam refinement/tracking (P2+P3)
  + Additional UE report to aid P1/P2/P3 related measurement/report configuration (triggering frequency or periodicity)
* Beam management with reduced DL signaling assuming the unified TCI framework (issue 1):
  + Dynamic beam update based on beam report (without beam indication)
  + Dynamic beam measurement and report triggered by beam indication (without CSI-RS/CSI triggering)
  + Configuring/indicating to UE multiple SSBs for beam tracking
  + Semi-static/pre-planned (RRC based) beam transition (for, e.g. isolated HST deployment)
  + Reducing activation delay of TCI states (e.g. via storing QCL properties of a subset of source RSs for a time period)