3GPP TSG-RAN WG1#83 **R1-157208**
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Virtual Cell ID for SRS

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Agenda Item: 6.2.4.2.2

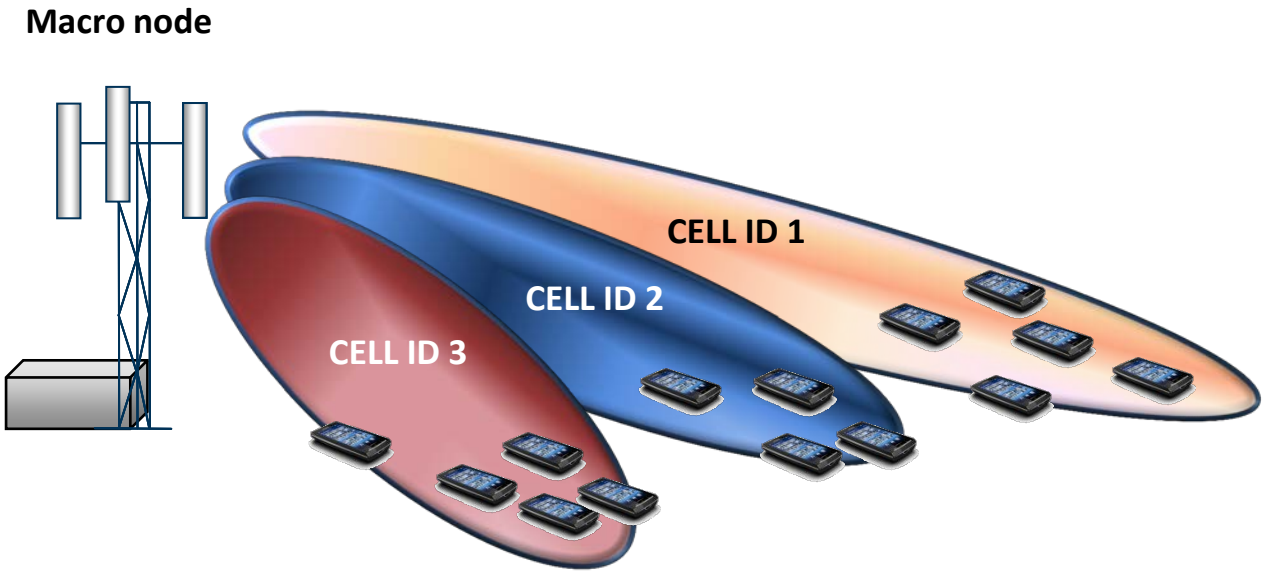
Document for: Discussion and Decision

Background

- Current Rel.13 SRS enhancements are targeting TDD or small cells
  - Extended SRS in UpPTS -> Reduced GP
  - Increased RPF and CS -> smaller delay spread

- **Capacity and interference reducing SRS enhancement for macro cells is needed in Rel.13**

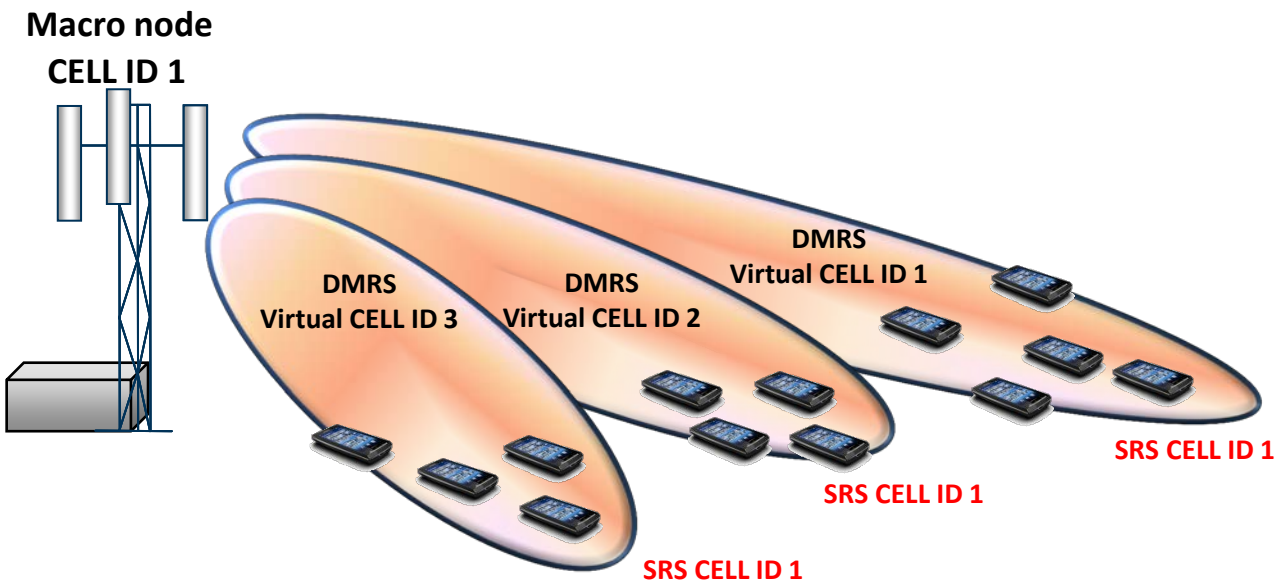
Background



- (V/H/2D) Sectorisation (Category 1 enhancement in TR 36.897)
  - Problems with mobility if CRS are overlapping
  - Problems with CQI estimation with colliding CRS
  - Problems with CRS to PDSCH interference if CRS are shifted

- Solution -> Introduce shared cell by beamforming (Cat.2 baseline)
  - Same CRS in all sectors
    - CSI measurements measure actual traffic load
    - Solves mobility issue when moving across sectors
    - Lower CRS to PDSCH interference

Background



- (V/H/2D) Virtual sectorisation (Category 2 enhancement in TR 36.897)
  - Different sectors may have different Virtual Cell ID for PUCCH,PUSCH and PDSCH DMRS
    - DCI format 2C,2D can select from two VCID for PDSCH DMRS
    - Reduces DMRS interference across sectors
  - But, different sectors have same Cell ID for SRS
    - Problems with SRS capacity since RPF=2, CS=8 is limiting
    - Problems with SRS interference in case spatial re-use of SRS is introduced in an attempt to increase SRS capacity

- Solution -> Introduce Virtual Cell ID for SRS
  - Increases SRS capacity
  - Reduces SRS interference

Proposal

- Introduce VCID for SRS in Rel.13
  - The same VCID as used for PUCCH DMRS is used for SRS VCID
  - Hence, VCID for PUCCH and SRS is enabled simultaneously