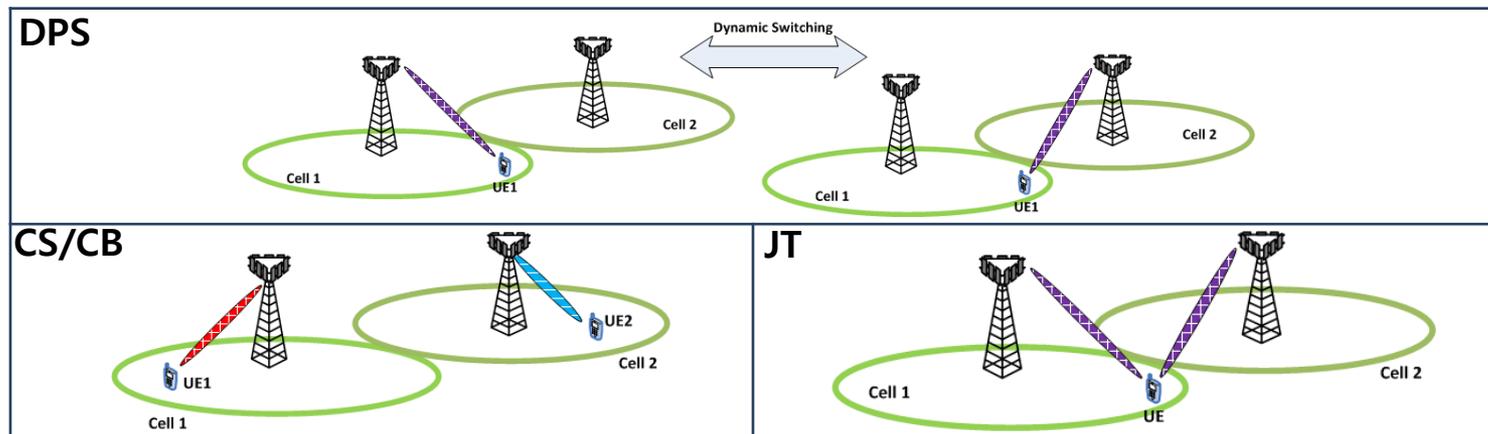


Motivation for Inter-eNB CoMP for LTE

Samsung, KT, LG Uplus, SK Telecom

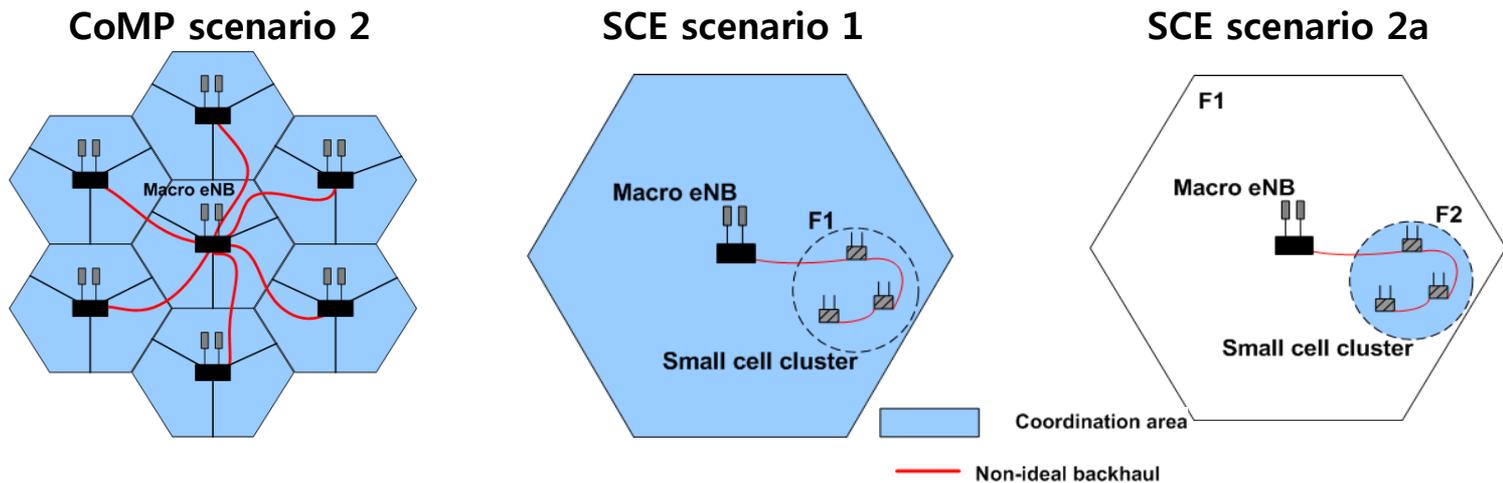
CoMP in Rel-11

- Rel-11 CoMP focused on air-interface between UE and network
 - No network interface was specified (ideal backhaul was assumed)
- CoMP techniques considered in Rel-11
 - Coordinated scheduling/beamforming (CS/CB)
 - Dynamic point selection (DPS)
 - Joint transmission (JT)



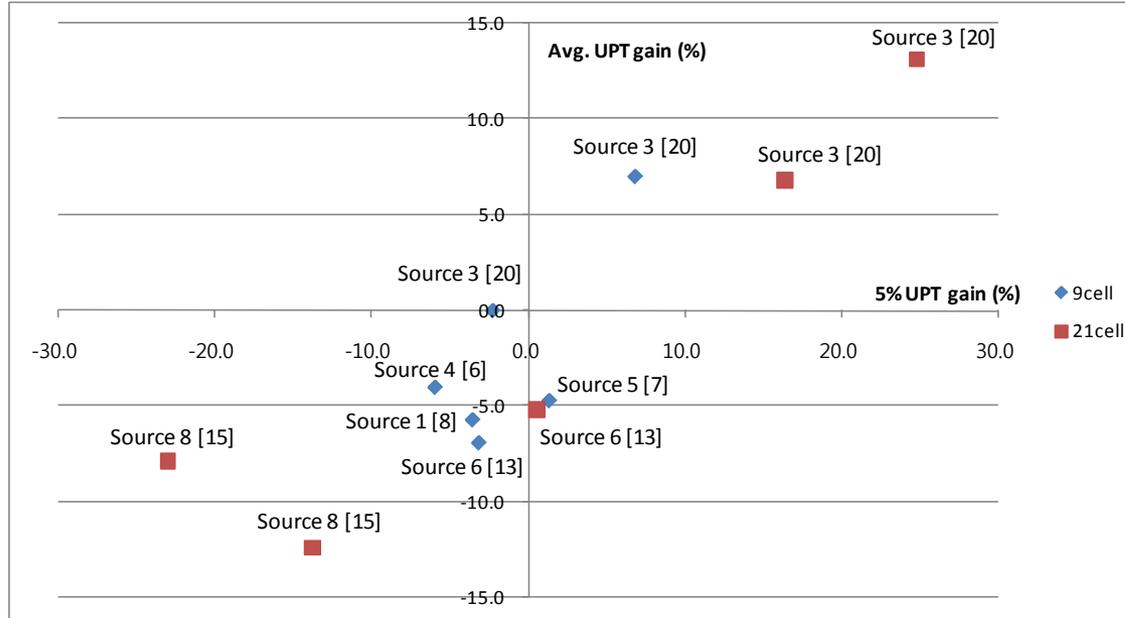
Outcome of SI CoMP-NIB

- Performance gain of Inter-eNB CoMP varies as a factor of
 - deployment scenario
 - backhaul delay
 - coordination scheme (centralized vs distributed)
 - scheduling approach
 - resource utilization factor
 - coordination size



Performance Results (CoMP scenario 2)

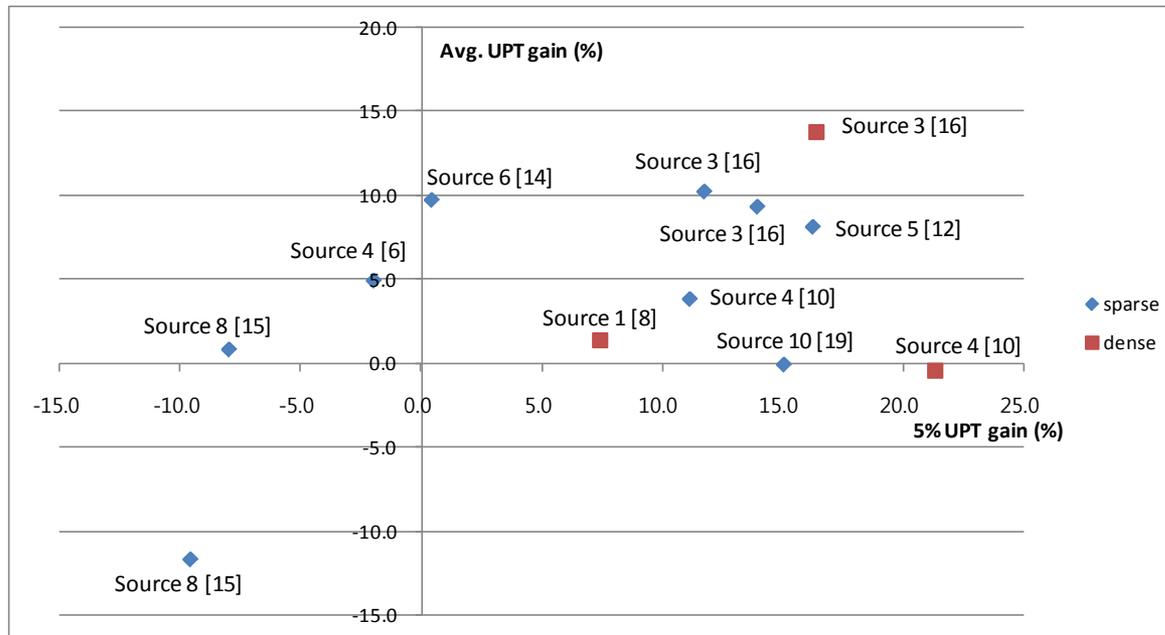
- In case of 5ms backhaul delay and high RU (0.5-0.8)
 - For coordination size of 9, it is observed that
 - 5% UPT gain has a median of -3.2% and a range of -6.0% ~ 6.8%
 - Mean UPT gain has a median of -4.7% and a range of -6.9% ~ 7.0%
 - For coordination size of 21, it is observed that
 - 5% UPT gain has a median of 0.5% and a range of -23.0% ~ 24.7%
 - Mean UPT gain has a median of -5.2% and a range of -12.4% ~ 13.1%



References are from TR 36.874

Performance Results (SCE scenario 1)

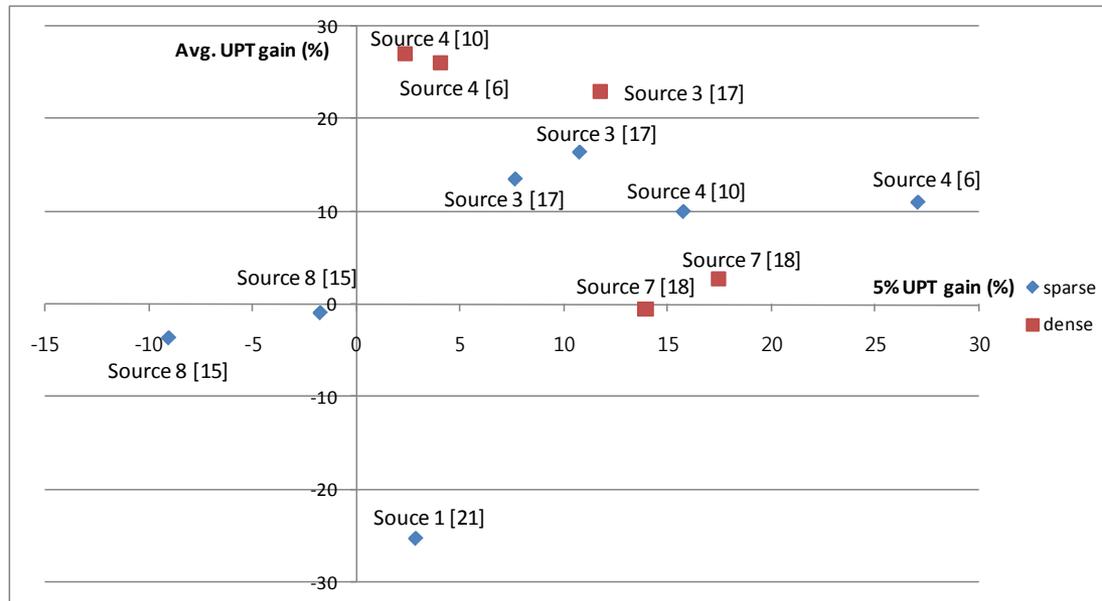
- In case of 5ms backhaul delay and high RU (0.5-0.8)
 - (Sparse) For 4 small cells within one macro area, it is observed that
 - 5% UPT gain has a median of 11.4% and a range of -9.6% ~ 16.2%
 - Mean UPT gain has a median of 6.1% and a range of -11.6% ~ 10.3%
 - (Dense) For 10 small cells within one macro area, it is observed that
 - 5% UPT gain has a median of 16.4% and a range of 7.4% ~ 21.3%
 - Mean UPT gain has a median of 1.4% and a range of -0.4% ~ 13.8%



References are from TR 36.874

Performance Results (SCE scenario 2a)

- In case of 5ms backhaul delay and high RU (0.5-0.8)
 - (Sparse) For 4 small cells within one macro area, it is observed that
 - 5% UPT gain has a median of 6.8% and a range of -9.1% ~ 27.0%
 - Mean UPT gain has a median of 5.1% and a range of -25.2% ~ 16.4%
 - (Dense) For 10 small cells within one macro area, it is observed that
 - 5% UPT gain has a median of 11.7% and a range of 4.0% ~ 17.4%
 - Mean UPT gain has a median of 22.9% and a range of -0.5% ~ 27.0%



References are from TR 36.874

Conclusion

• Observation

- Centralized coordinator is essential to achieve meaningful performance improvement
- X2 interface doesn't fit well with the centralized coordinator

• Proposal

- Start RAN3 WI to specify a new interface (C1) between eNodeBs and a centralized coordinator for support of Inter-eNB CoMP in Rel-12

Rel-11 CoMP

- Focuses on air-interface aspect only
 - ✓ Not designed for robust performance in networks with non-ideal backhaul
 - ✓ Inter-eNB CoMP should rely on proprietary network interface



Rel-12 Inter-eNB CoMP

- Aims to support network interface for inter-eNB CoMP with non-ideal backhaul
 - ✓ Design to provide robust performance even in networks with non-ideal backhaul
 - ✓ Inter-eNB CoMP based on standardized network interface

