LICENSED-ASSISTED ACCESS

(LTE FOR UNLICENSED SPECTRUM)

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BACKGROUND

Licensed spectrum is superior…
  - Reliability, quality, …

…but existing unlicensed spectrum can further boost performance
  - Fundamentally not new – WiFi offloading common today
  - LTE-based access can provide benefits

Licensed-Assisted Access
Unlicensed spectrum used as *performance booster* in *operator-deployed small cells*
- Always accompanied by a licensed carrier – no focus on stand-alone operation

Primary carrier uses *licensed* spectrum (FDD or TDD)
- Control signaling, mobility, user data

Secondary carrier(s) use *unlicensed* spectrum
- Best-effort user data (DL and potentially UL)
BENEFITS

› Spectral efficiency and data rates
  - LTE can provide higher spectral efficiency than WiFi

› Reliability and Quality
  - Mobility, QoS, robust fallback etc. as in existing LTE

› Network management
  - Management of one network
REQUIREMENTS

› Friendly and fair coexistence
  – With other technologies
  – With other operators

› Fulfill regulatory requirements
  – may differ between regions and bands
REQUIRED FUNCTIONALITY

› Modest amount of new functionality foreseen – many building blocks already in 3GPP

› Carrier aggregation (incl FDD-TDD aggregation)

› “Courtesy mechanism” (e.g. listen-before-talk)
  – Regulatory requirements
  – Coexistence with other operators and technologies

› New frequency bands
  – Including relevant band combinations
Desired Functionality

- Cross carrier scheduling for FDD-TDD CA
- Dynamic DTX (on subframe basis)
- Dynamic duplex
POSSIBLE 3GPP TIMELINE

› Complete solution addressing global situation in Rel-13
SUMMARY

› Licensed-Assisted Access
  - Unlicensed spectrum to boost LTE performance
  - Carrier Aggregation
    › Primary Cell on licensed spectrum
    › Secondary Cell on unlicensed spectrum

› 3GPP to study potential and define solutions
  - Complete global solution in Rel-13