

LICENSED-ASSISTED ACCESS

(LTE FOR UNLICENSED SPECTRUM)

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BACKGROUND

Licensed spectrum is superior...

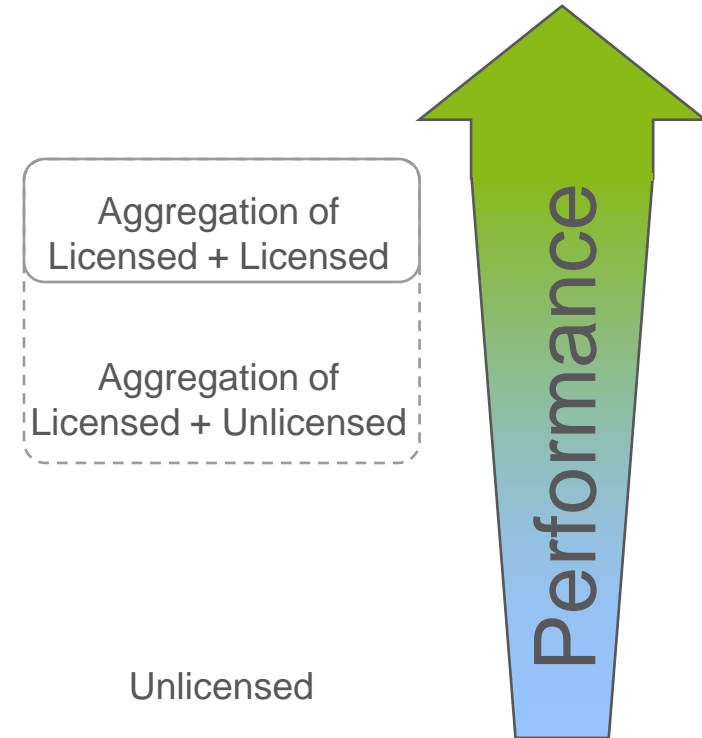
- Reliability, quality, ...

...but existing unlicensed spectrum can further boost performance

- Fundamentally not new – WiFi offloading common today
- LTE-based access can provide benefits



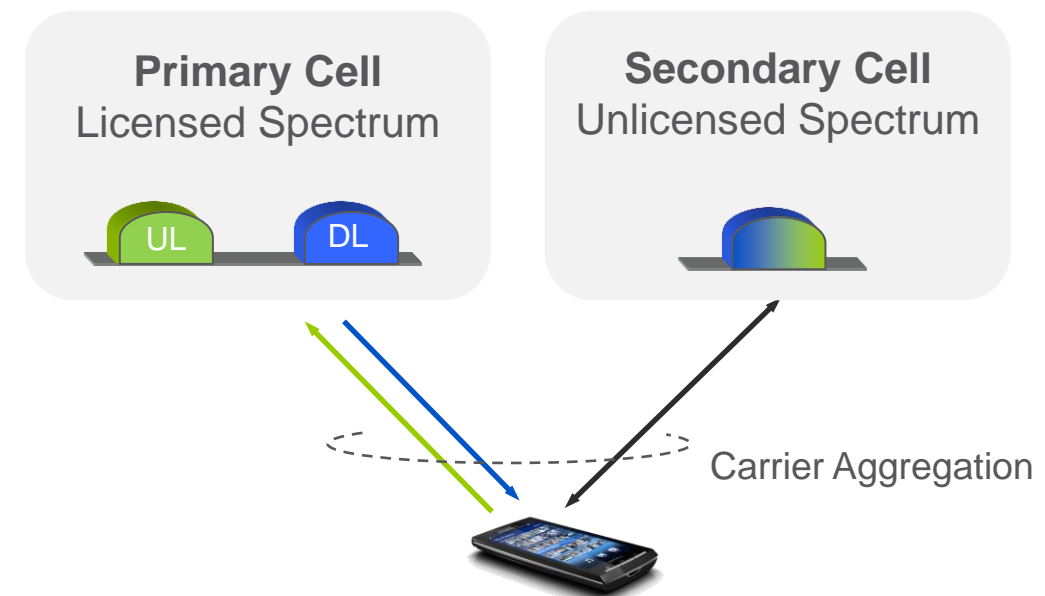
Licensed-Assisted Access



LICENSED-ASSISTED ACCESS



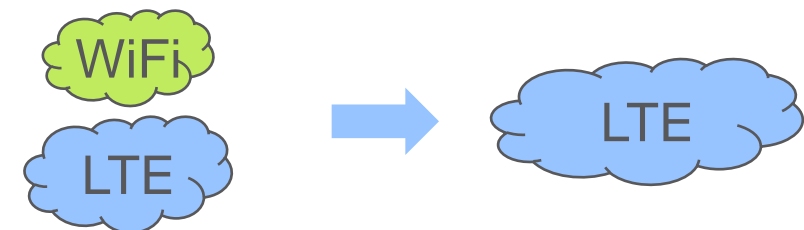
- › Unlicensed spectrum used as *performance booster* in *operator-deployed small cells*
 - Always accompanied by a licensed carrier – no focus on stand-alone operation
- › Primary carrier uses *licensed* spectrum (FDD or TDD)
 - Control signaling, mobility, user data
- › Secondary carrier(s) use *unlicensed* 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

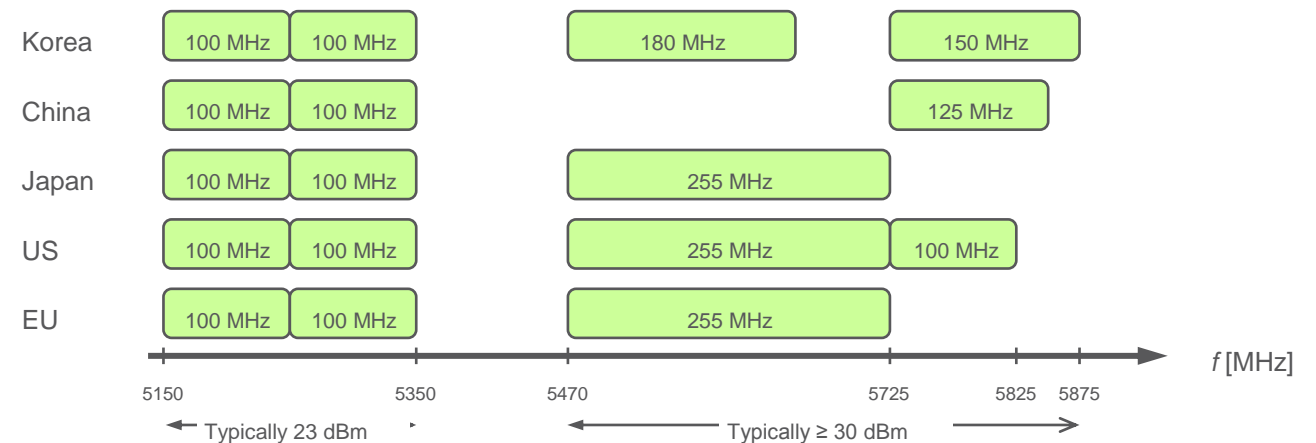
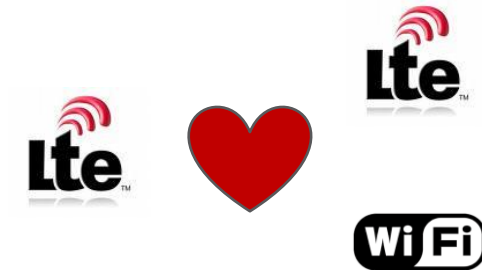


REQUIREMENTS



- › 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

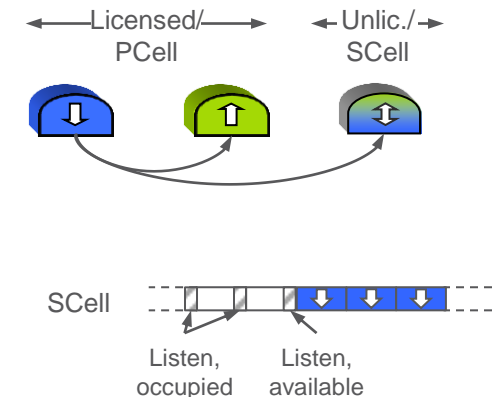
› Carrier aggregation (incl FDD-TDD aggregation)

› “Courtesy mechanism” (e.g. listen-before-talk)

- Regulatory requirements
- Coexistence with other operators and technologies

› New frequency bands

- Including relevant band combinations



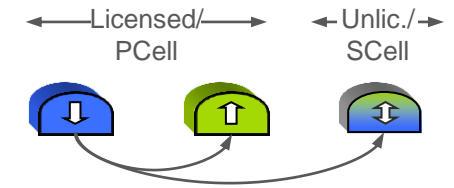
DESIRED FUNCTIONALITY



› Cross carrier scheduling for FDD-TDD CA

› Dynamic DTX (on subframe basis)

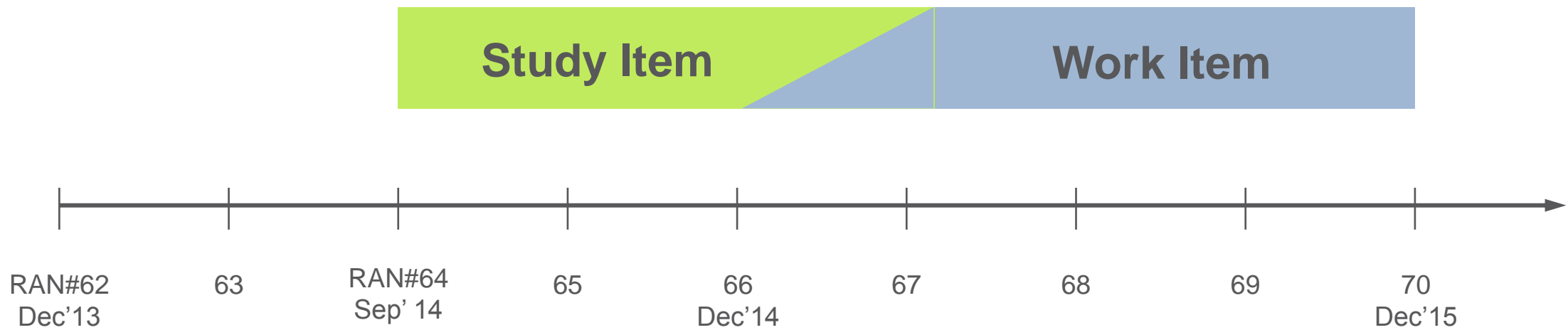
› Dynamic duplex



POSSIBLE 3GPP TIMELINE



- › Complete solution addressing global situation in Rel-13



SUMMARY

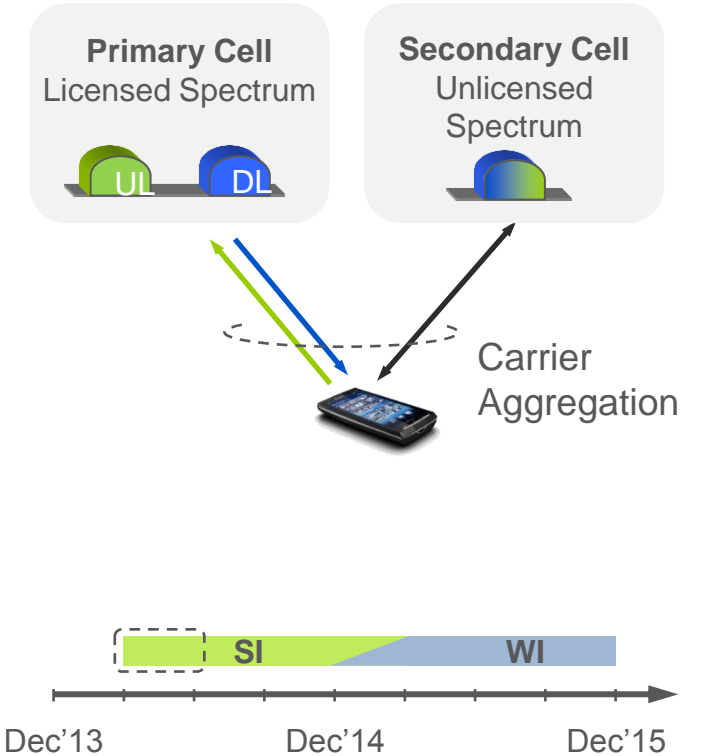


> Licensed-Assisted Access

- 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





ERICSSON