

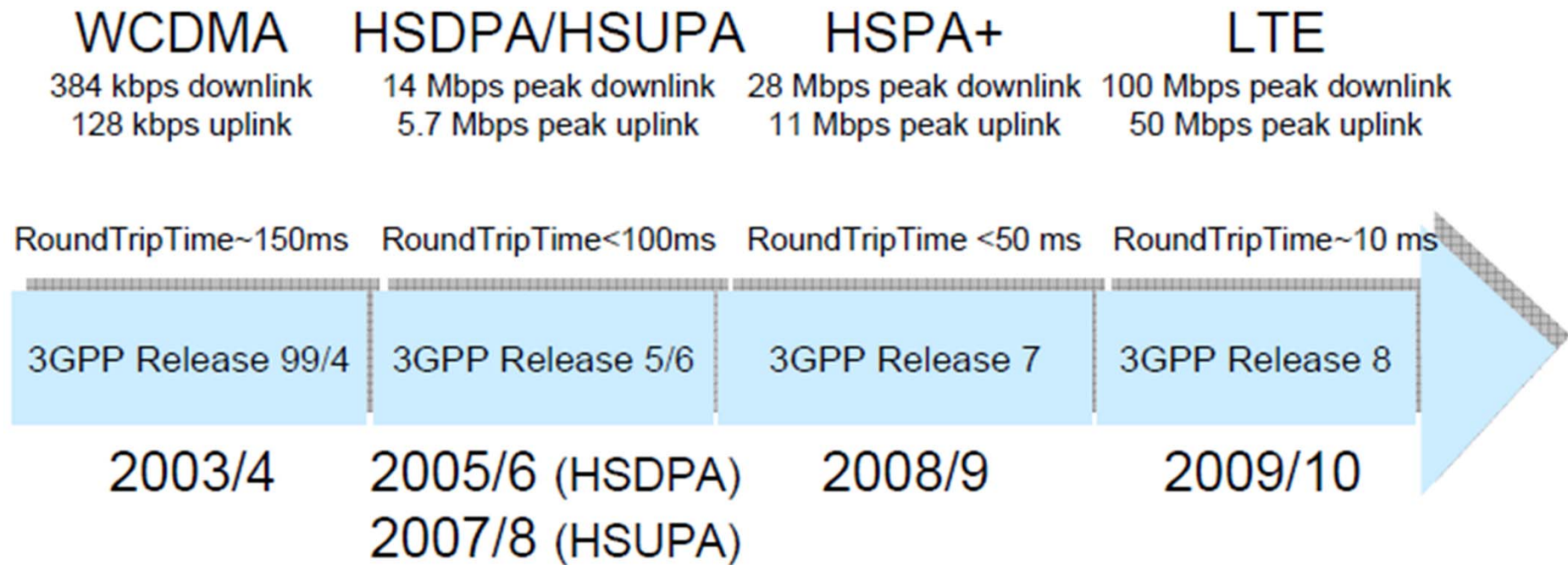
OPASTCO Winter - 3GPP LTE Release 8 and Beyond

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3GPP Standards Evolution



Note – 100 Mbps is in 20 MHz

LTE Release 8 – What it means to OPASTCO

- Ideal combination of broadband, and 700 MHz rural coverage advantages
 - Coverage typically ~10 miles in rural areas
 - Throughputs – DL 36 Mbps peak, ~8 Mbps average
 - UL 18 Mbps peak, ~4 Mbps average
 - Double in 10 + 10 MHz
- Mobile / portable service in towns, fixed in extended rural coverage
 - Fixed outdoor UE's extend coverage and throughputs
- Partnering opportunities with major mobile carriers

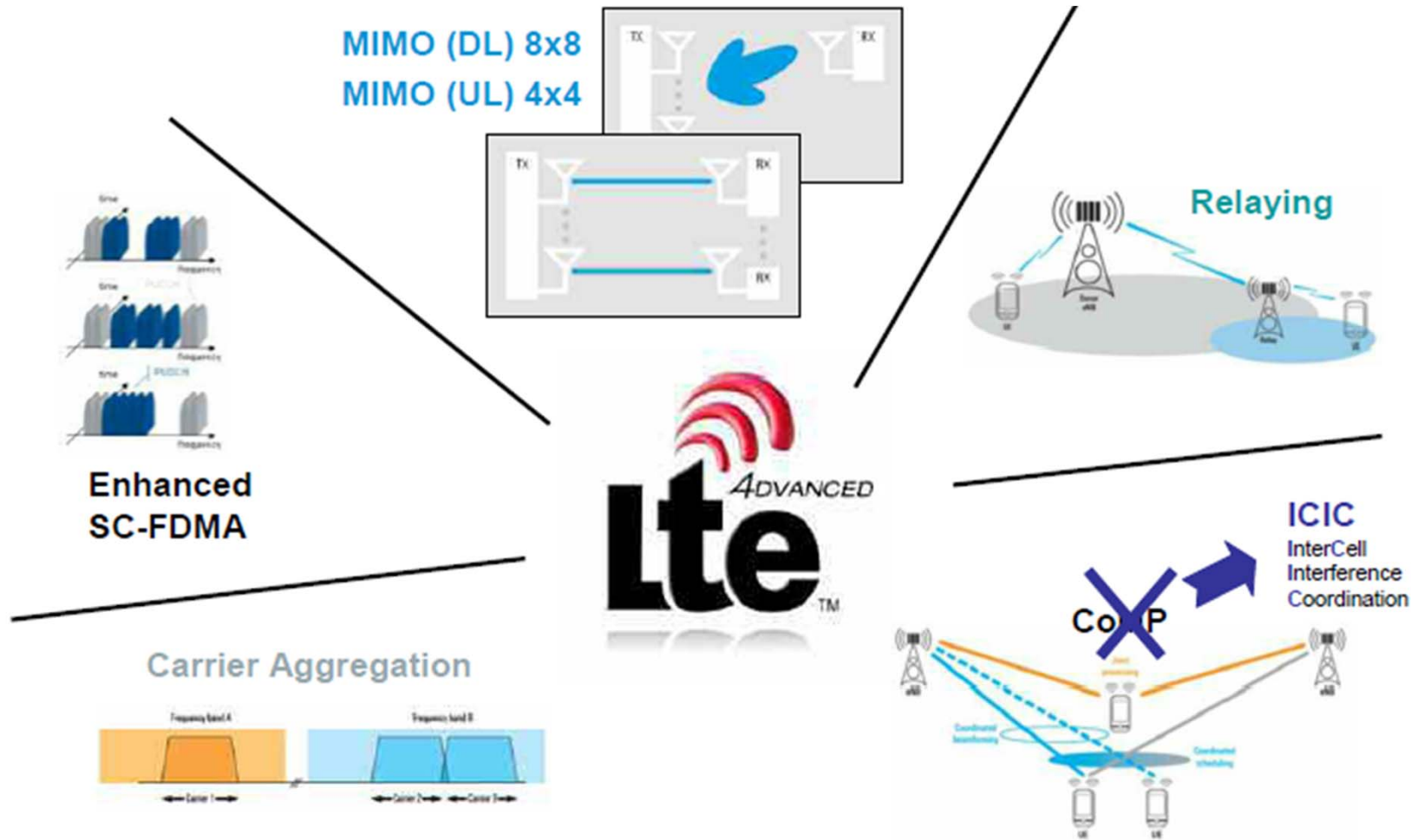
Release 8 Realism

- LTE Infrastructure products becoming available
 - Some limitations in bands covered (vendor dependent)
 - Still in “Beta”
- Pilot networks performing well (e.g. Sweden)
- Interoperability testing (IOT) underway
- Limited UE availability
 - IPWireless is one of the first with commercial product
- GCF / PTCRB certification not yet started
- No 3GPP standard voice support (IMS / VOIP)
 - But has QOS to support “proprietary” voice
- No roaming implemented as yet

Release 9

- Standards frozen in 2010
- Includes features such as:
 - *MIMO enhancements,*
 - *Femtocells,*
 - *Self Organizing Network (SON)*
 - *Public Warning System,*
 - *IMS features,*
 - *eMBMS (Broadcast)*
 - *End User Identity (EUI),*
 - *Personal Area Networks*
 - *Security enhancements*
- Timing of upgrade very dependent on IOT
- SDR eNodeB and UE supports software upgrade

LTE Advanced (Release 10 /11 Onward)



LTE Advanced– What it means to OPASTCO

- *Enhancements, not quantum leap*
- Some features not applicable unless multiple spectrum assets - e.g. carrier aggregation
- ICIC (and other forms of interference mitigation) improve performance
- Relay capability valuable where wide coverage is required, but relatively light load
- Not likely to be in product until 2012 - 2014
- Support requires both hardware and software upgrades, depending on features

Thank you !

Questions?