INTERLLIGENT UK
RF & Microwave Solutions

Towards 5G – where do millimetre waves fit in?

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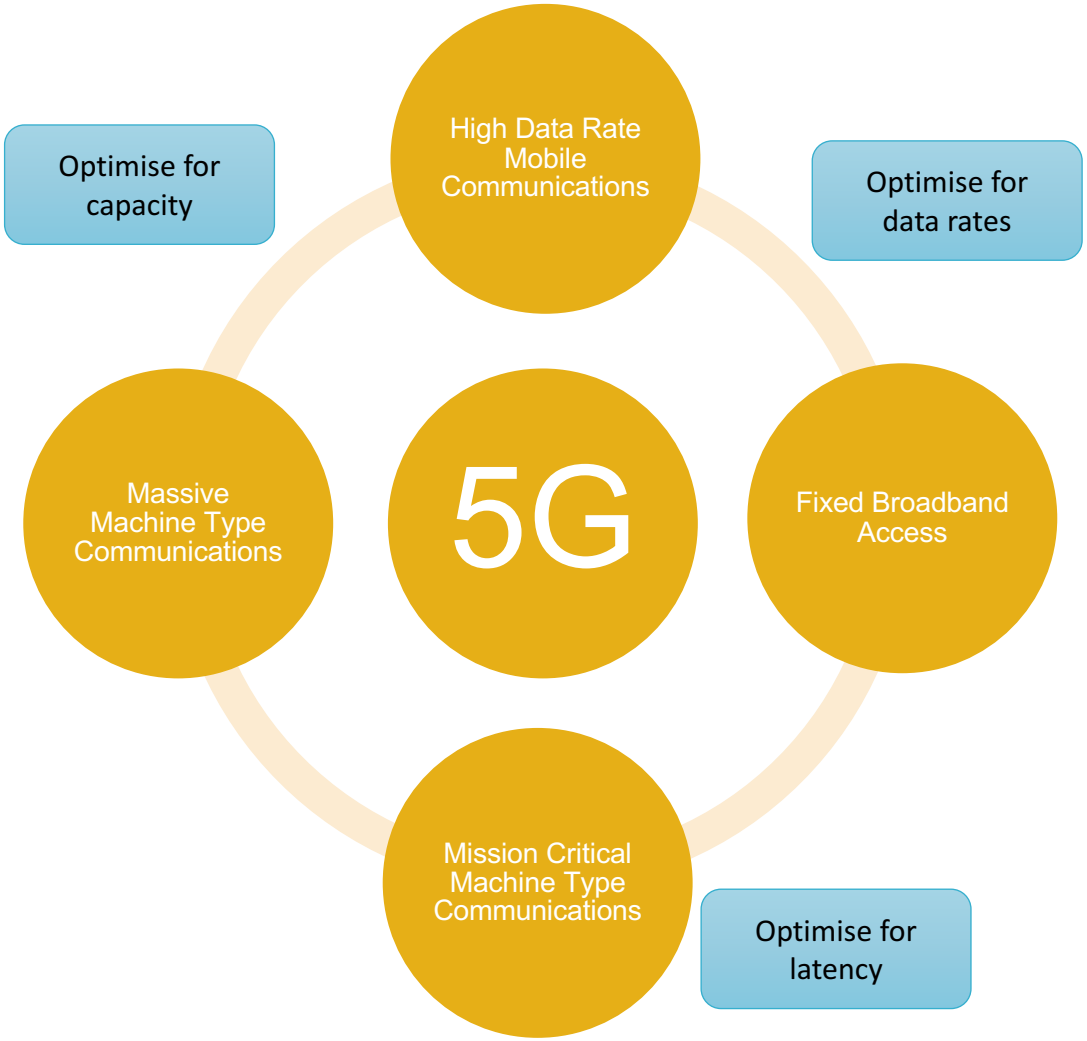
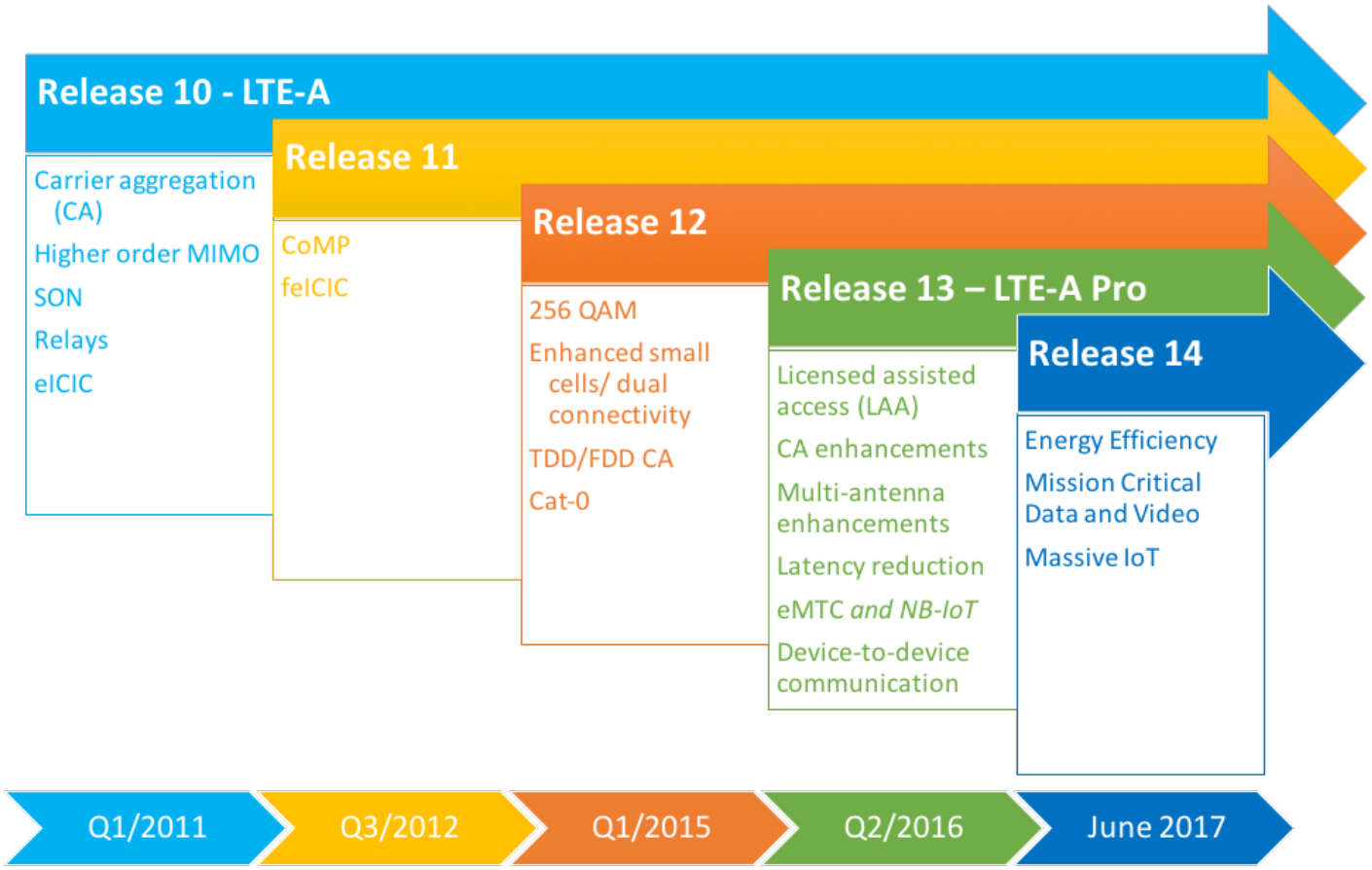
5G use cases



- Data rates > 10GBps
- Latency < 1ms
- Capacity expansion x 1000
- Energy efficiency per transported bit x 1000

LTE is still evolving



Towards 5G

Release 15

Next generation architecture (NextGen)

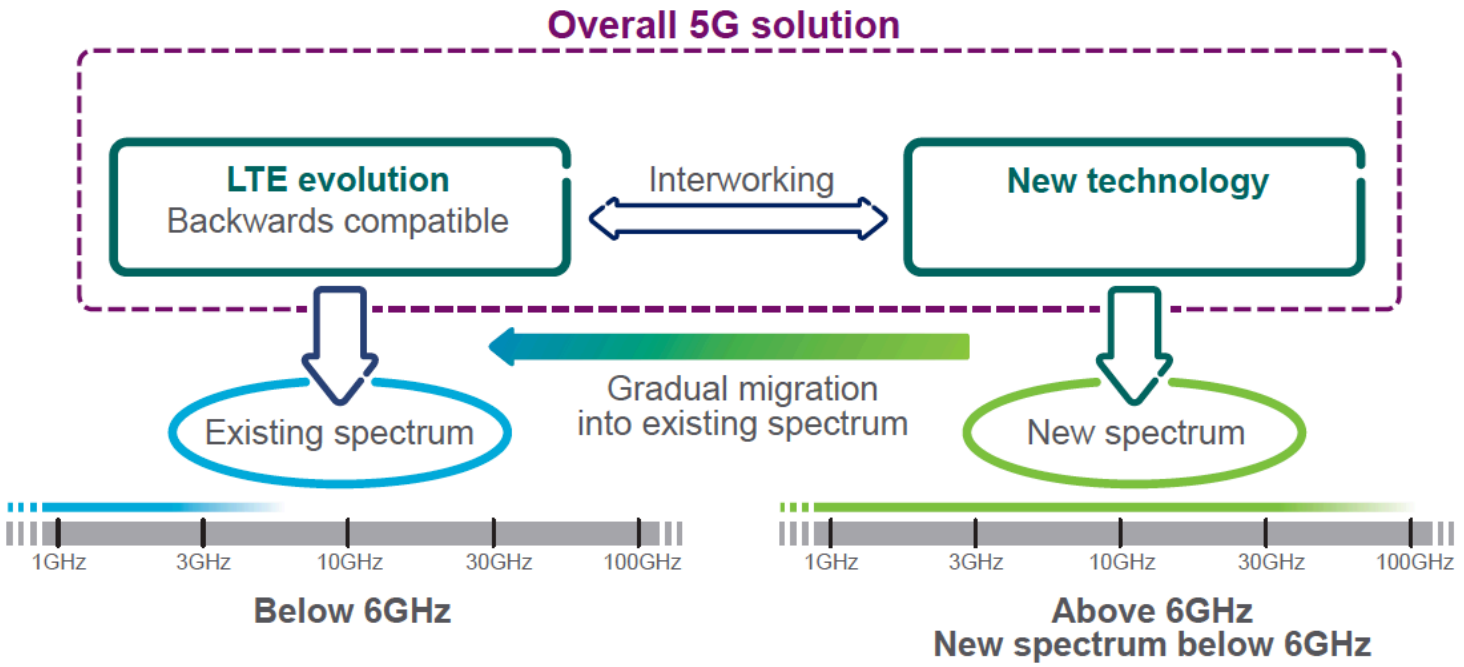
5G New Radio (NR)

- **Non-Standalone (NSA)**
- **Standalone (SA)**

March 2017

Sept 2018

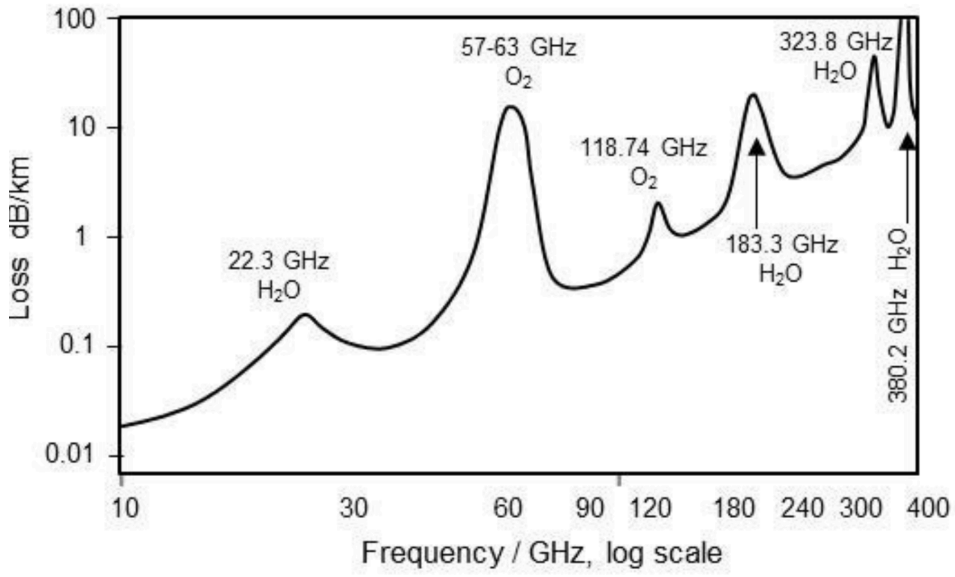
Introducing new spectrum



Source: Ericsson

mmWave propagation challenges

- Atmospheric gas attenuation
  - Water vapour
  - Oxygen
- Rain attenuation
- Non-line-of-sight
  - Foliage blocking
  - Diffraction/fading
  - Scattering



Why mmWave?

Everything gets more difficult above 24GHz:

- Semiconductor process capabilities decline
- Design difficulty increases
- Propagation losses increase and non-line-of-sight communications becomes a real challenge
- System designs to address the above become more challenging

So why choose to use mmWave frequencies?

- **Bandwidth:** the best way to achieve the peak data rates of up to 10Gbps and wider channel bandwidths to increase the channel capacity

How can Interlligent UK help?

A flexible RF and microwave support service

- Training
  - Not only basic RF and microwave training, but also targeted courses on migrating to mmWave
- Rental
  - We help you to select the right equipment and provide you with all the accessories and adapters that you need
  - If required we can set it up for you and give your staff product training to get you up to speed quickly
- Purchase
  - When you are ready to purchase, our access to quality ex-rental equipment lets us provide competitive quotes that help you to stretch your budget further