Liquid Net

Powered by:
Nokia Siemens Networks

Mobile Broadband

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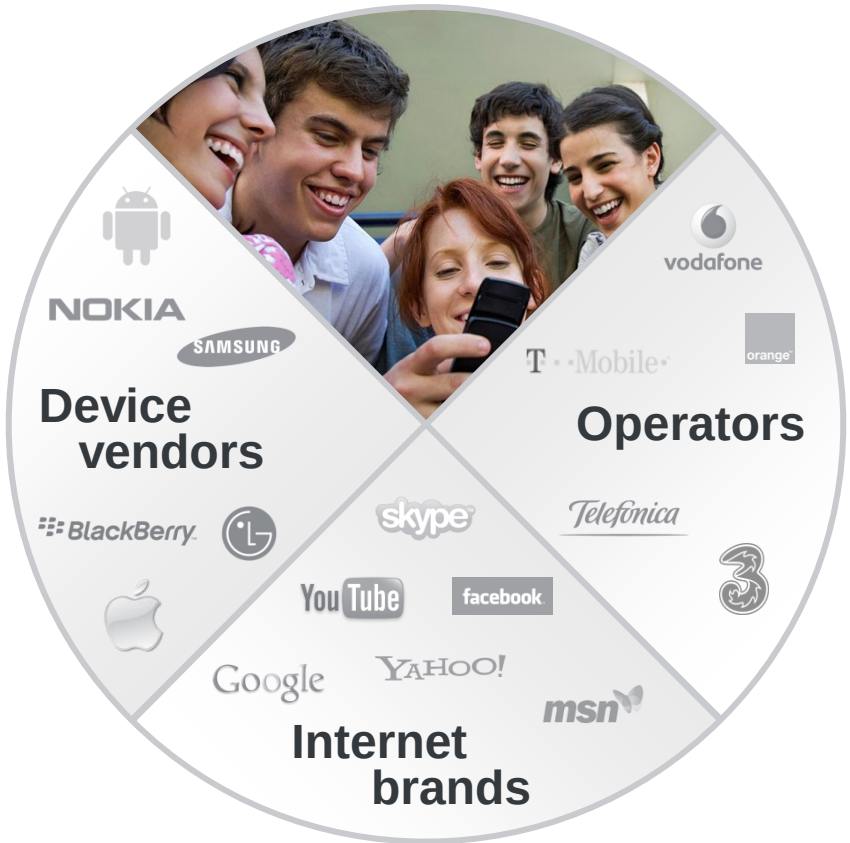
The IET, Savoy Place,

London, UK

Nokia Siemens Networks

The Mobile Internet is growing fast

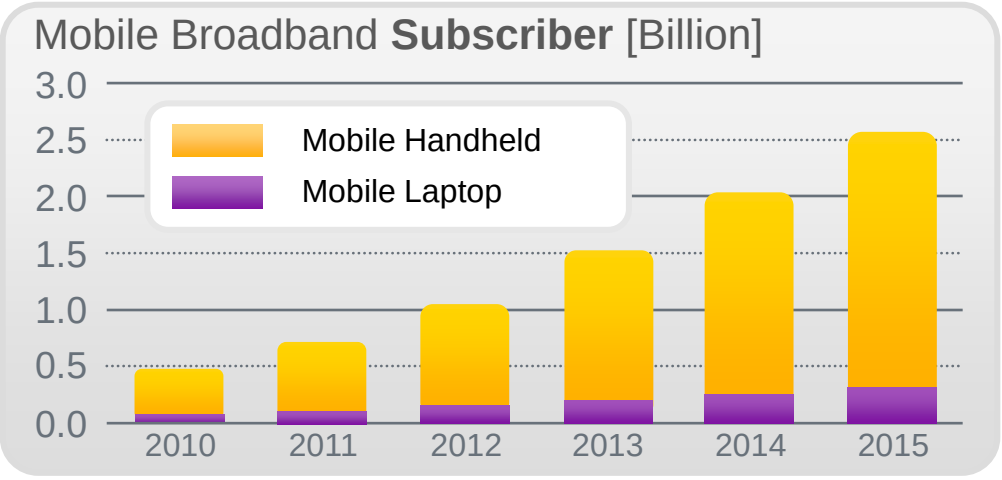


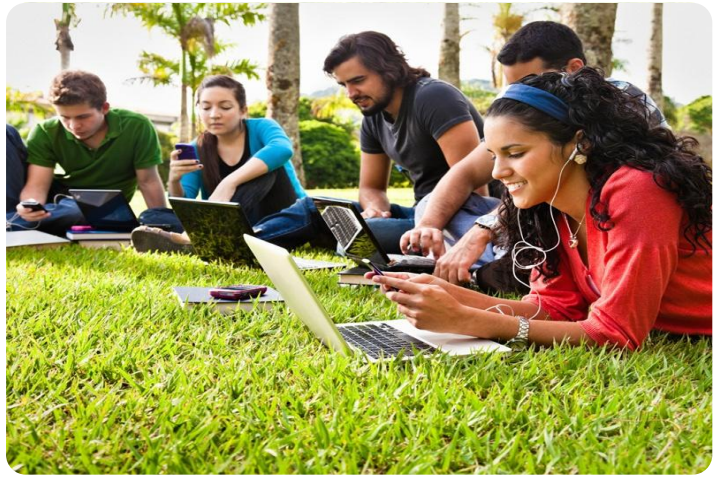
Everyone wants to get a share

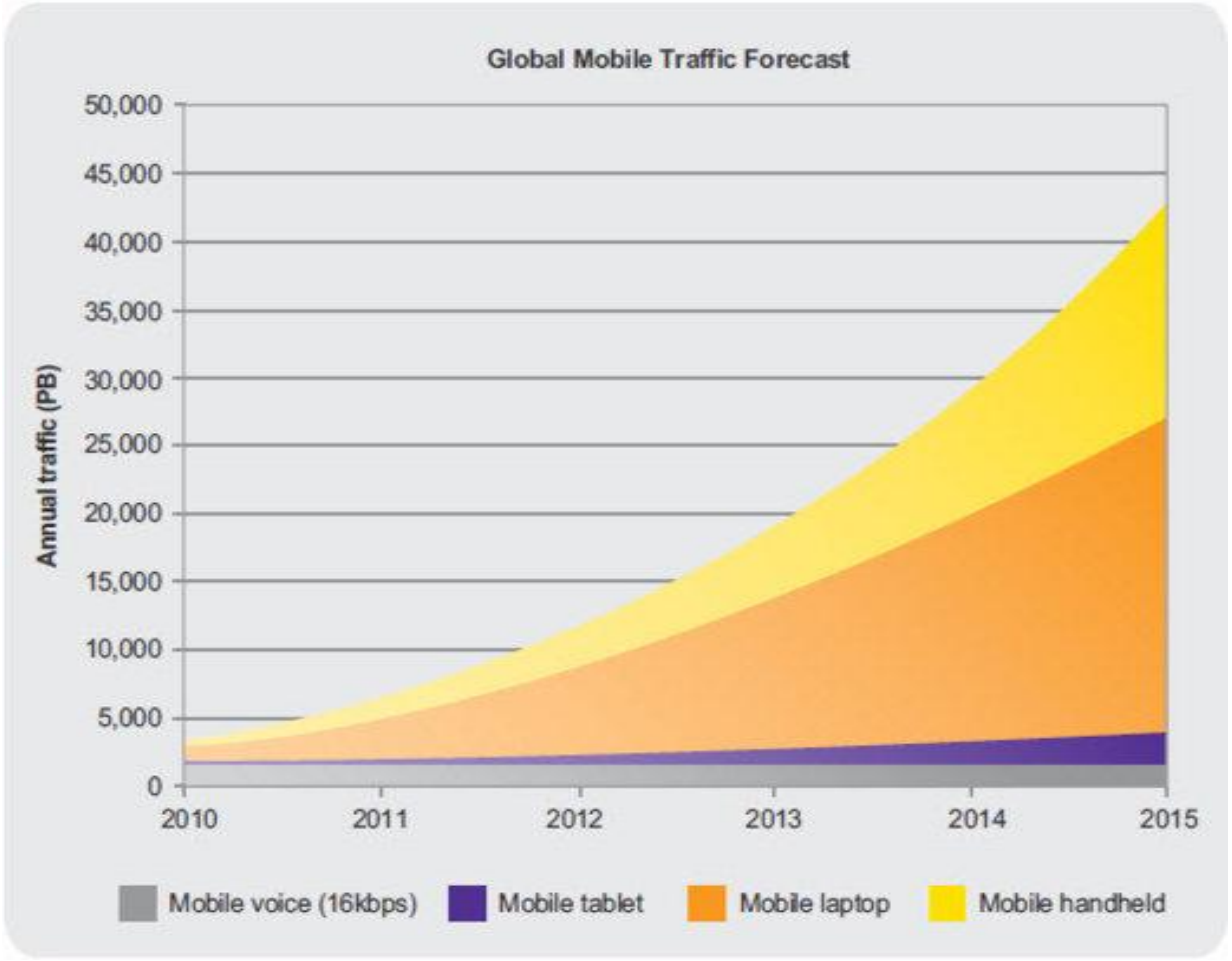
Over 5 billion mobile subscriptions

- 1.54 billion mobile devices shipped in 2010
  - 21% of these were smartphones
  - 57% of these were GSM only
  - 48% of UK sales were smartphones
- 350 million mobile Facebook users, 44% of total
- YouTube mobile gets over 400 M views a day (up 3x year/year), representing 13% of their daily views
- By 2020, 70-80% of mobile terminals will be smart devices
- Globally, 80% of web access will be mobile by 2020

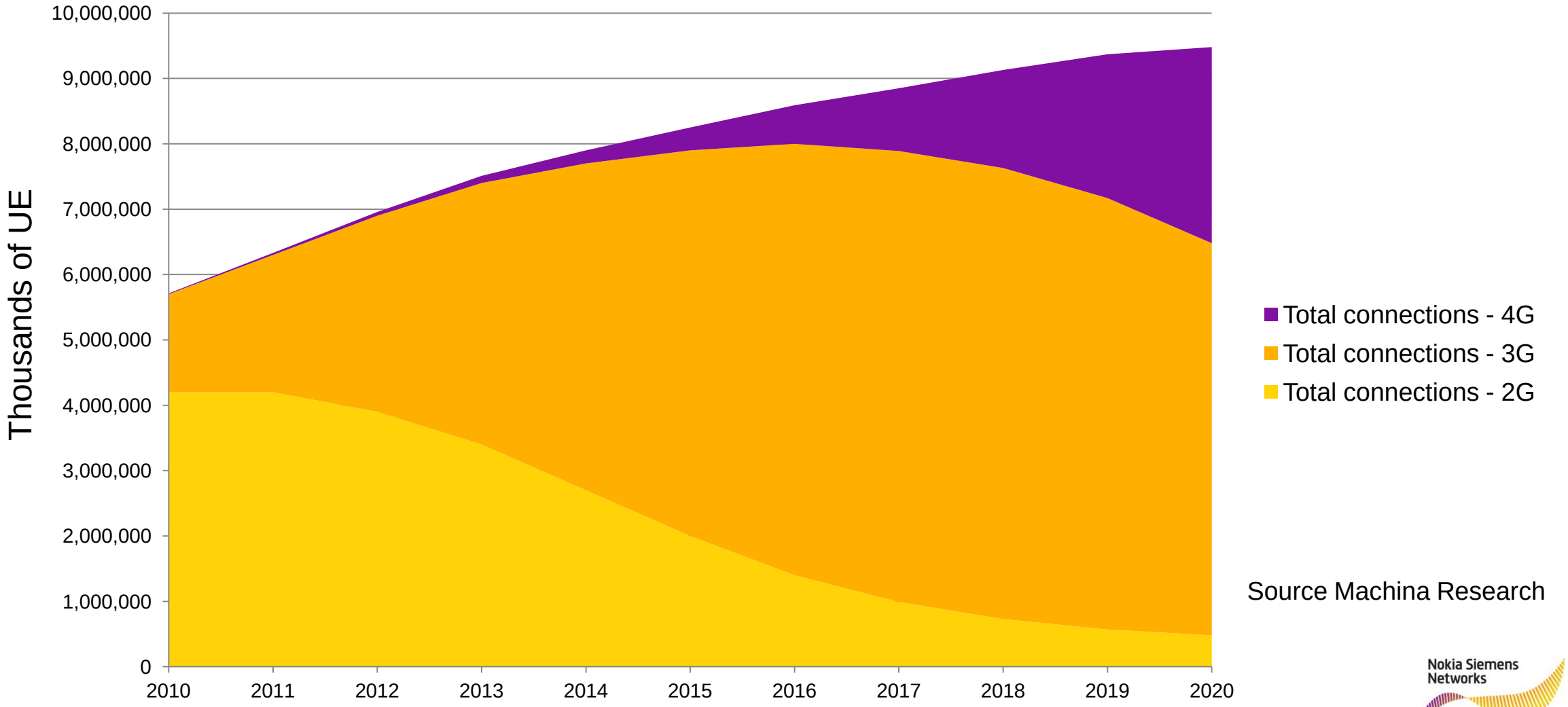
Strong growth in mobile broadband subscribers and data consumption







Mobile Connections by Technology Type

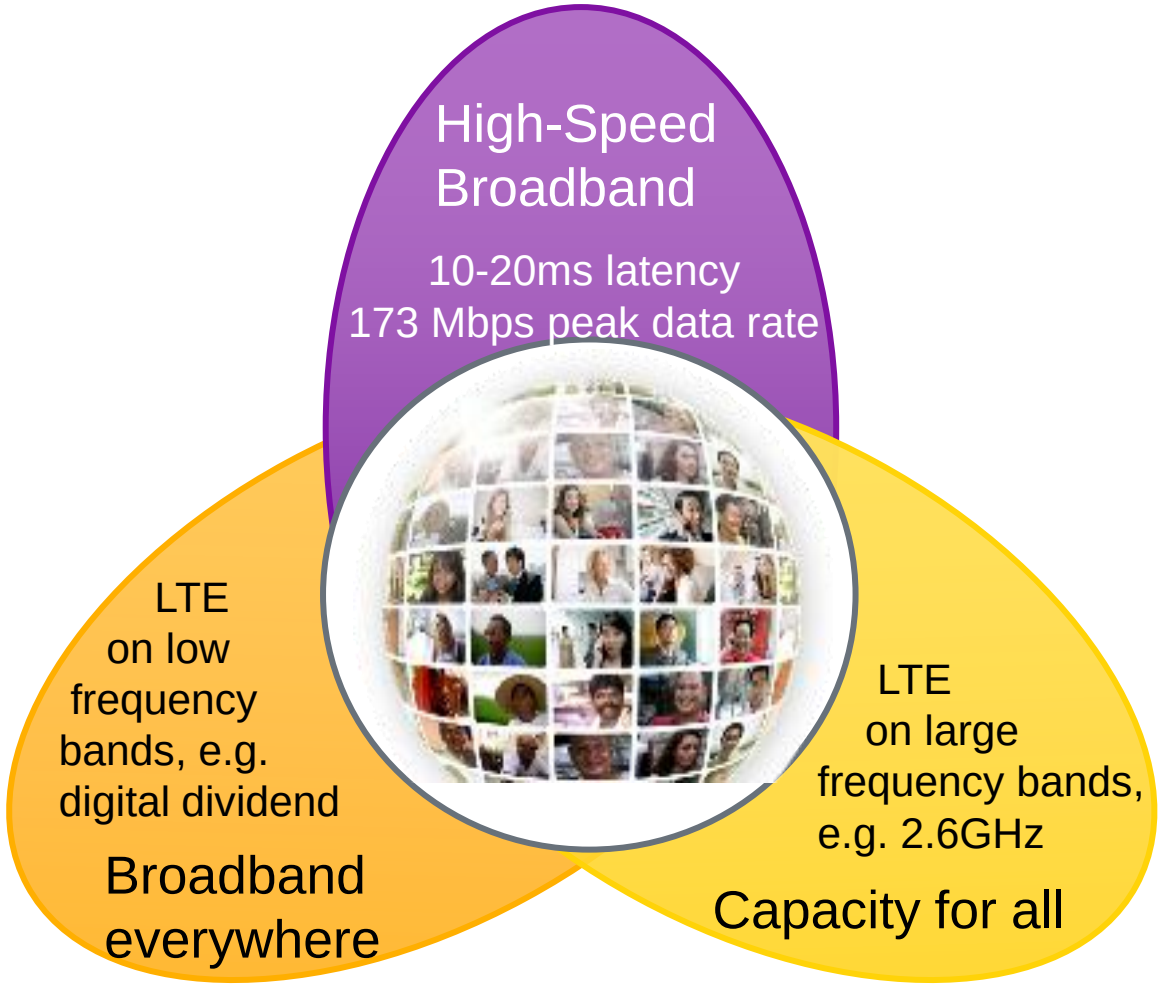


Source Machina Research

The rise of the smartphone...

...changes everything

LTE for Smart Devices



Downlink: OFDMA

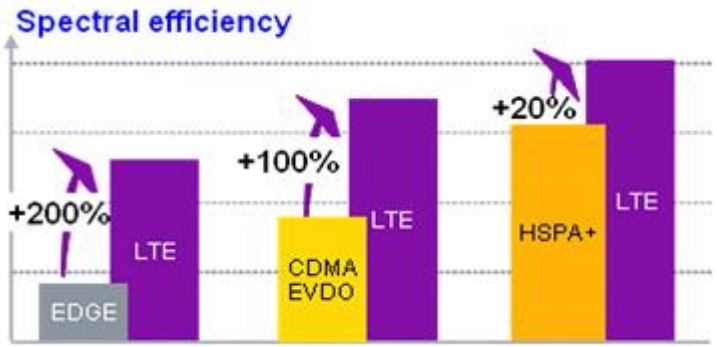
- Improved spectral efficiency
- Reduced interference
- Very well suited for MIMO

Uplink: SC-FDMA

- Power efficient uplink increasing battery lifetime
- Improved cell edge performance by low peak to average ratio
- Reduced Terminal complexity

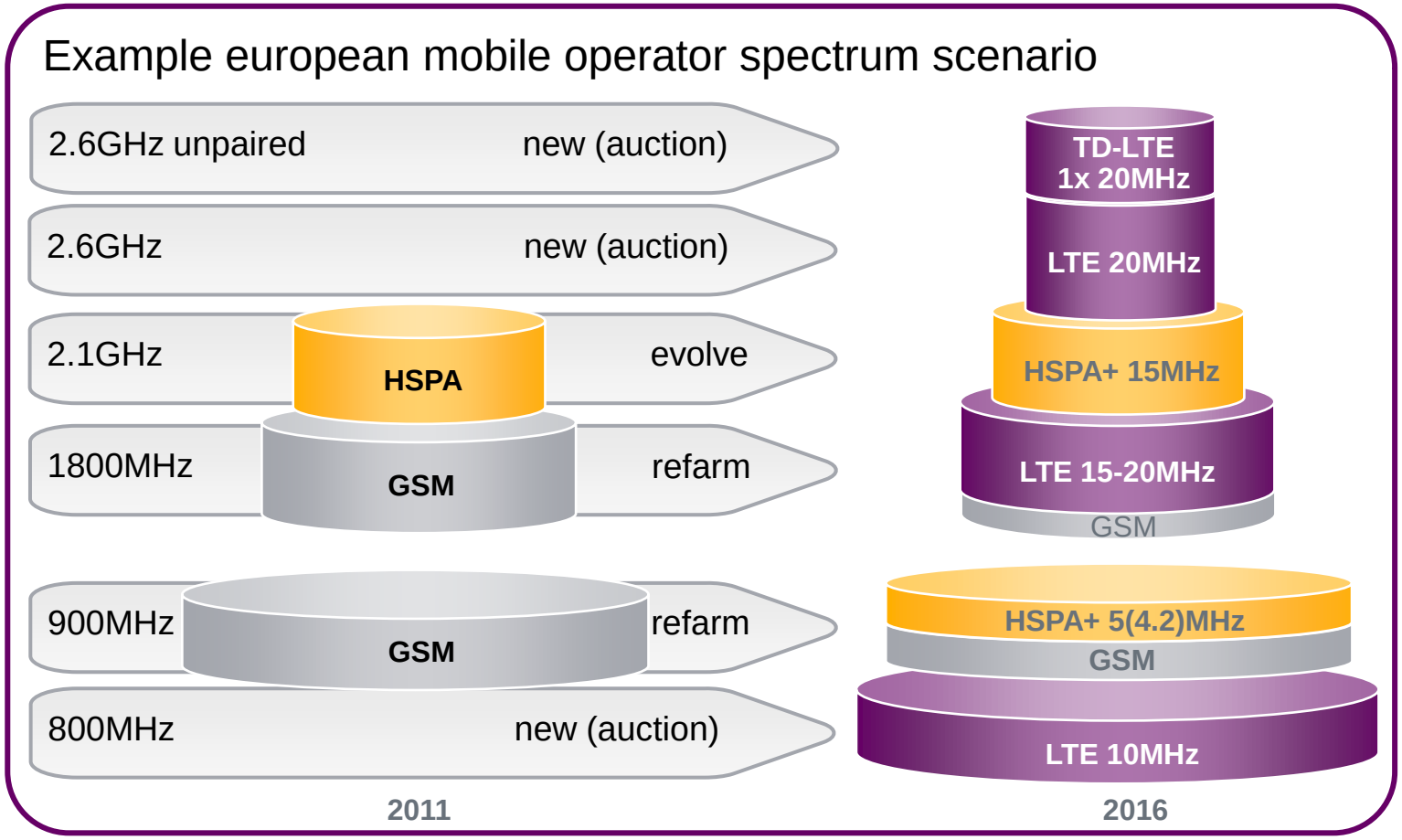
Simple to adapt to different bands

How to support legacy while benefiting from the new?

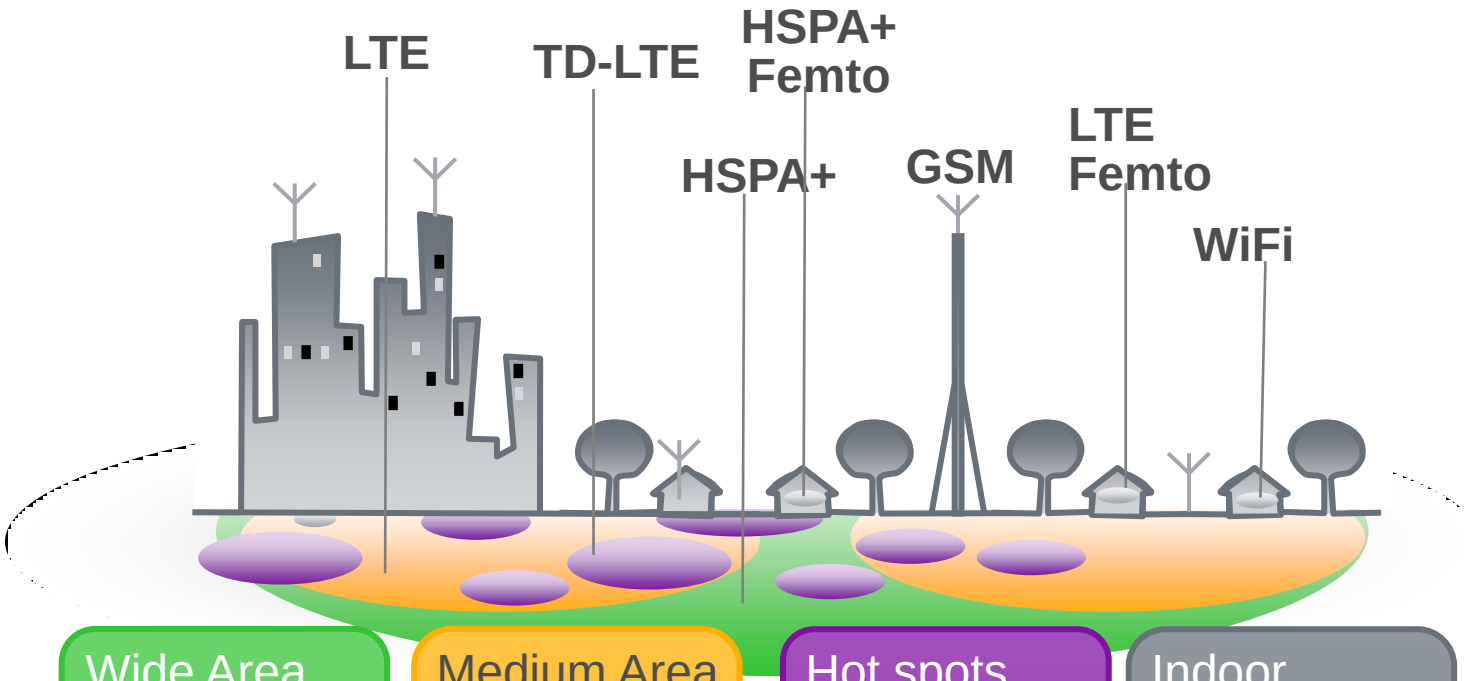


LTE deployment:

- new bands or refarming
- Ideally, large contiguous spectrum blocks
- “coverage” spectrum < 1 GHz
- “capacity” spectrum 2 GHz and higher



Heterogeneous Networks – more cells, technologies, bands



Wide Area
- Majority of cells
- Beyond 300 m

Medium Area
- Share growing
- 100-300m

Hot spots
- Share growing
- 10-100m

Indoor
- Emerging
- < 10m

LTE networks will coexist in parallel with existing 2G & 3G networks for many more years

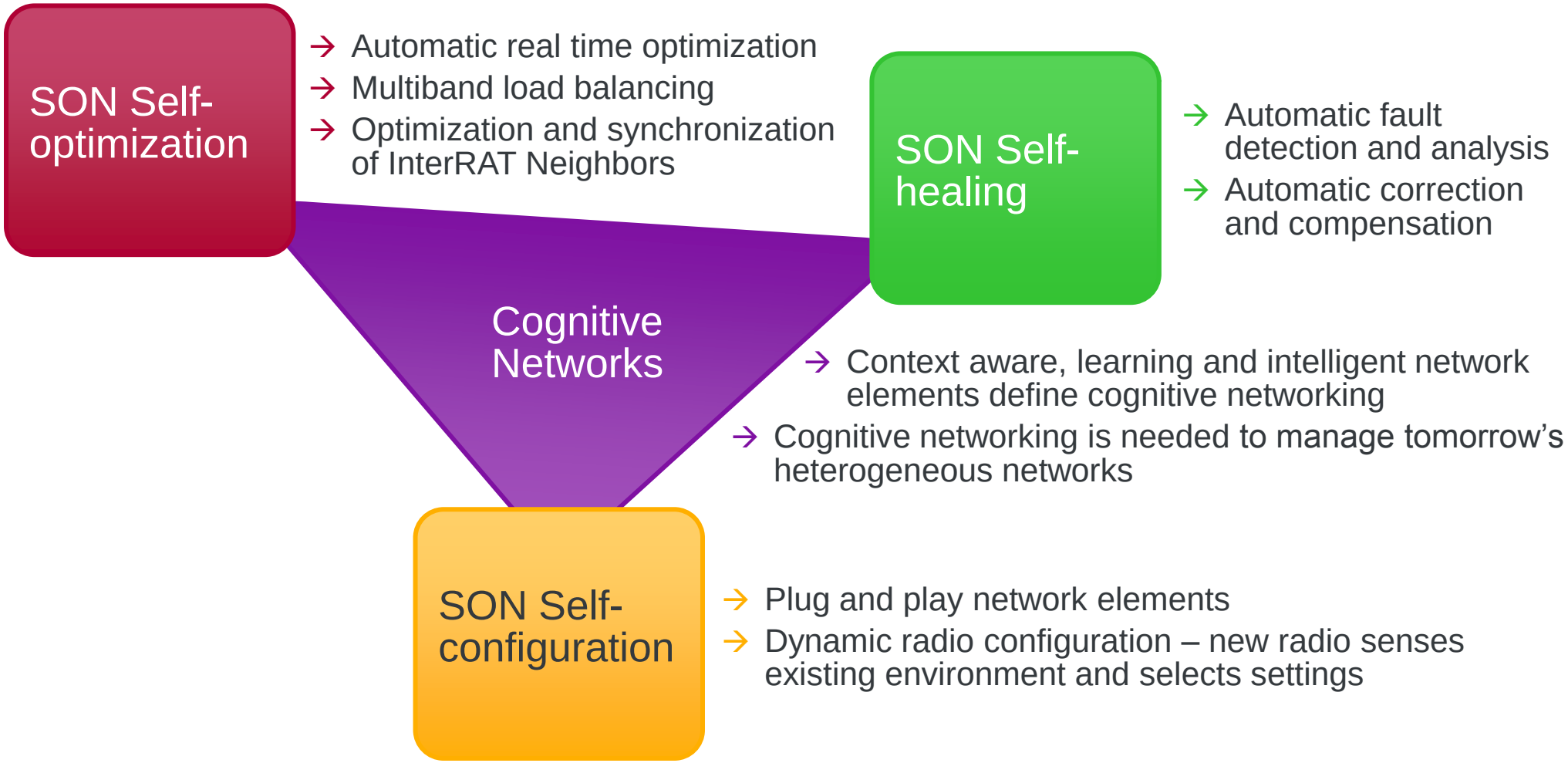
Multi-radio traffic and interference management are needed to manage traffic growth

Smaller cells will enable offload of local high capacity traffic from wide area network

The myriad of cells and layers requires smart optimization and network management solutions

Heterogeneous Networks cannot be handled in the traditional way

Automation for Heterogeneous Networks



How to deliver the future capacity demands?

10x
Performance

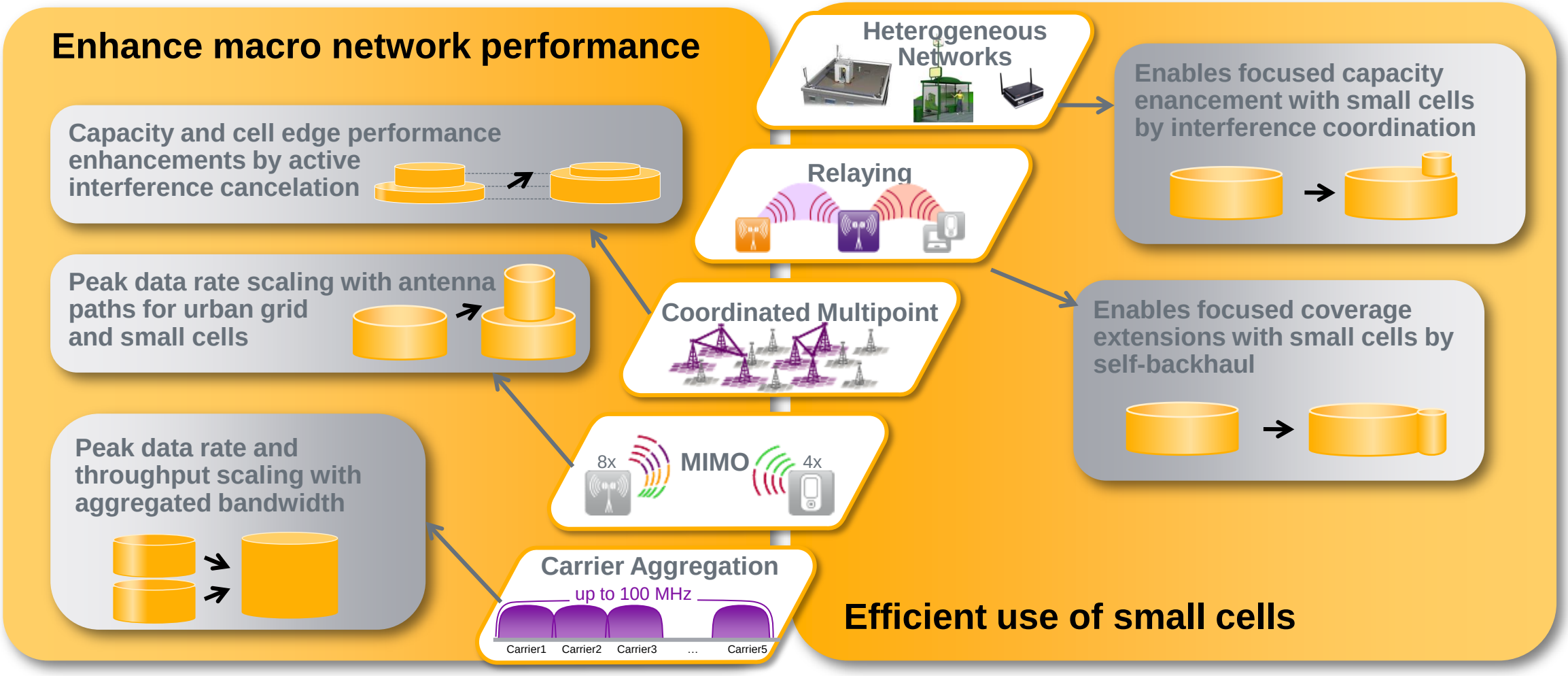
10x
Spectrum

10x
Base stations

=

1000x
capacity

Smooth Evolution to LTE - Advanced



Liquid Radio

- High Capacity
- Heterogeneous
- Adaptive
- Multi Technology
- Multi Band