Quortus

Is Private LTE Disruptive?

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Cambridge Wireless: Small Cell SIG event

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Quortus

Corporate summary

- Private UK co.: 10 yr & >2,000 licences sold
- Offices: UK, India and Japan
- Public 5G collaborations:
  - UK 5G ‘AutoAir’; EU H20:20 ‘SaT5G’

Markets

- Enterprise, MVNx, Government and 5G.
  - Exploit lower barriers → new actors
- Sell through Systems Integrators & SPs
  - Transitioning to SaaS and PaaS models
- @ MWC ’19: > 15 partners used Quortus core

Cornerstone drivers of Private LTE

- Spectrum
  - Worldwide re-regulation → New actors
  - Neutral Host → ‘Radio coverage as a service’
  - MNOs → innovative hybrid
- ‘Productisation of infrastructure’
- Adoption of 5G innovations
- Clear business cases

Current industry snapshots

AT&T MEC service

- Onsite traffic controller for local data. Identifies high-priority and low-priority data based on settings
- Partnership with Intel & Smart-Edge
- e.g. robot data identified as high-priority & locally off-loaded

Nokia Utility IoT Offering

- AT&T Nokia IoT solution uses MNO dedicated spectrum
- Dual SIM cards – one works in private spectrum band and another on AT&T's commercial network.

Industry Connect, Ericsson

- Analyst: 'technology for private LTE has existed for some time'
- Now productized to deliver real business cases
- Launched @ Hanover Messe, not MWC

Spectrum

- Re-regulation / light regulation
  - UK DECT Guard Band (2006) & Netherlands
  - USA CBRS (2018)
  - Japan sXGP (2016) & others
  - UK (2019) consultation on shared spectrum
- Neutral Host
  - DenseAir licences in Ireland, Portugal, Belgium ……..
  - Innovative business models for direct supply or enable new SIs to compete
- Existing MNOs
  - MOCN public / private deployment in Spain
  - AT&T announced for USA / worldwide

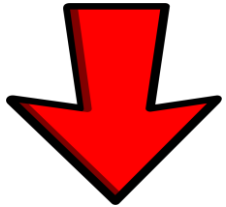
Productisation

- Adopt IT technologies to make as deployable as WiFi
- Lower skillset and TCO of operation – treats core as an opaque IT app
- Standard functionality –
  - Increased monitoring, data sources, meeting new demands
  - “So much data, so little time”
  - Virtualisation
- Edge computing
  - Security
  - Time
  - Volume / avoid backhaul
- **Evolution, not revolution**

Key 5G technologies: Virtualisation

Then…

- Historically, core has been monolithic elements.
- Proprietary hardware, vertically integrated.
- ‘Last main-frames on Earth’

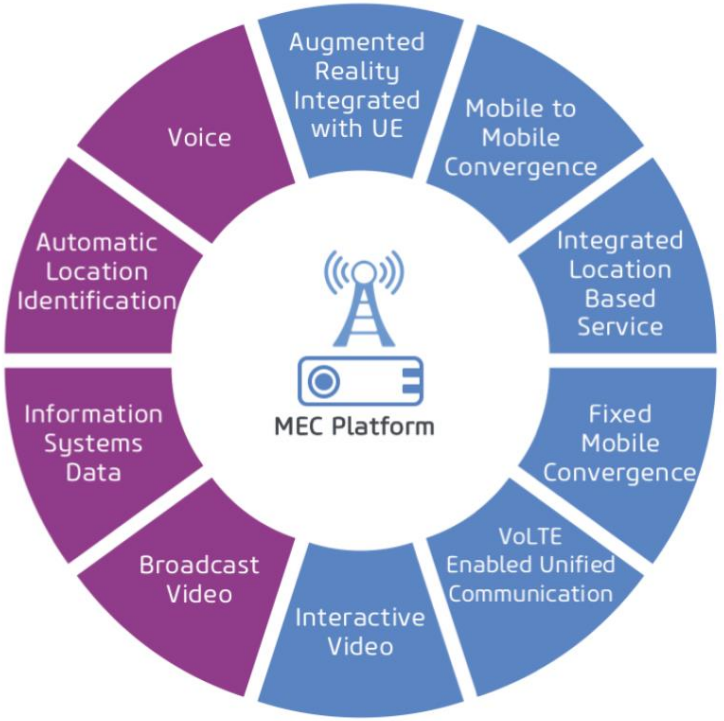


Now…

- Leverage IT technologies, merging of industries.
- NFV concepts: Virtualisation -> cloud native
- 5G core is a distributed IT service.

Key 5G technologies: Edge computing

- Enabling and Driven by New Use Cases
  - Location & context aware
  - Enabling direct access to local resources
  - Real-time access to context information
- Improves Quality of Experience
  - Ultra-low latency
  - High Bandwidth / No backhaul
- OPEX Benefits
  - Lower latency / improved performance
  - Reducing backhaul load / demand
  - Security / compliance

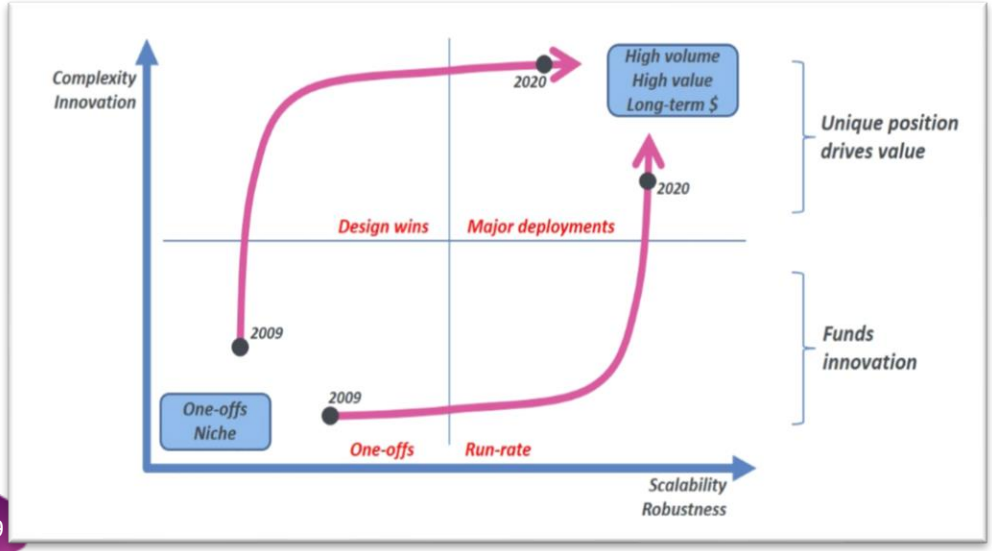


Quortus as an Industry Player

Technologies

2G, 3G, LTE, features of 5G

Throughput / scale

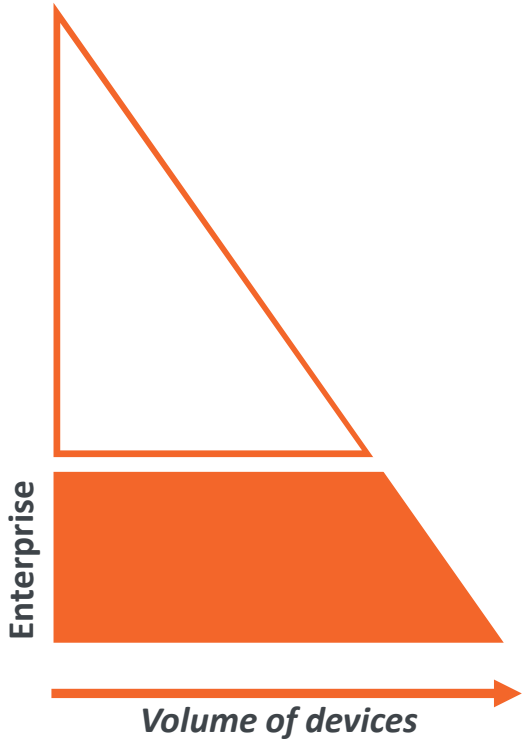


Comprehensive portfolio

- MSC / MME
- HLR / HSS
- SGSN/GGSN, PGW, SGW
- SMSC
- PCRF
- IMS (lite)

Provided host core for Small Cell Forum ‘Plugfest’ for >15 radio vendors

Virtualised app hierarchy



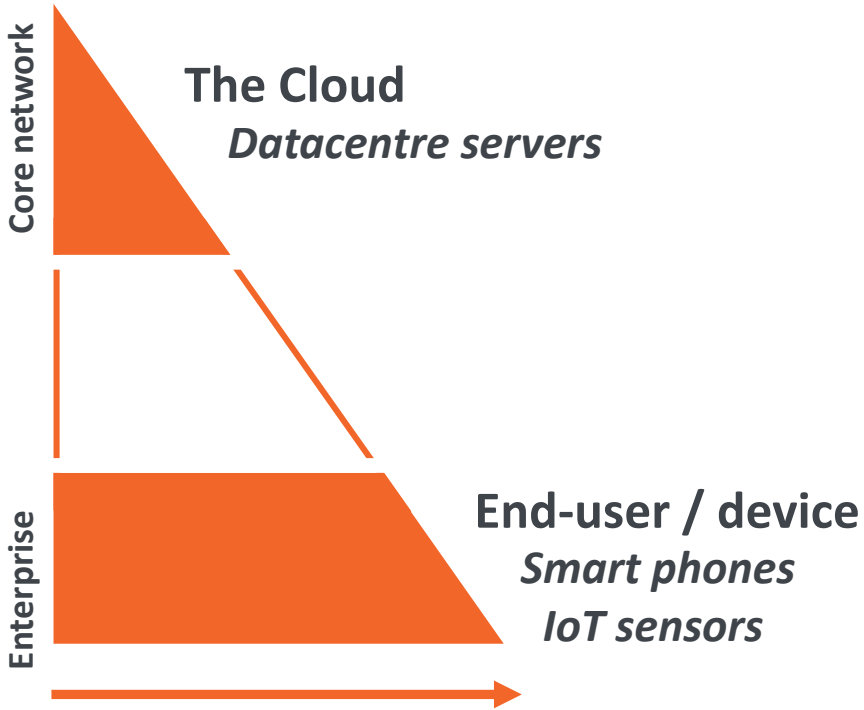
End-user / device

Smart phones

IoT sensors

- Sensors
- Robotics
- User-centric

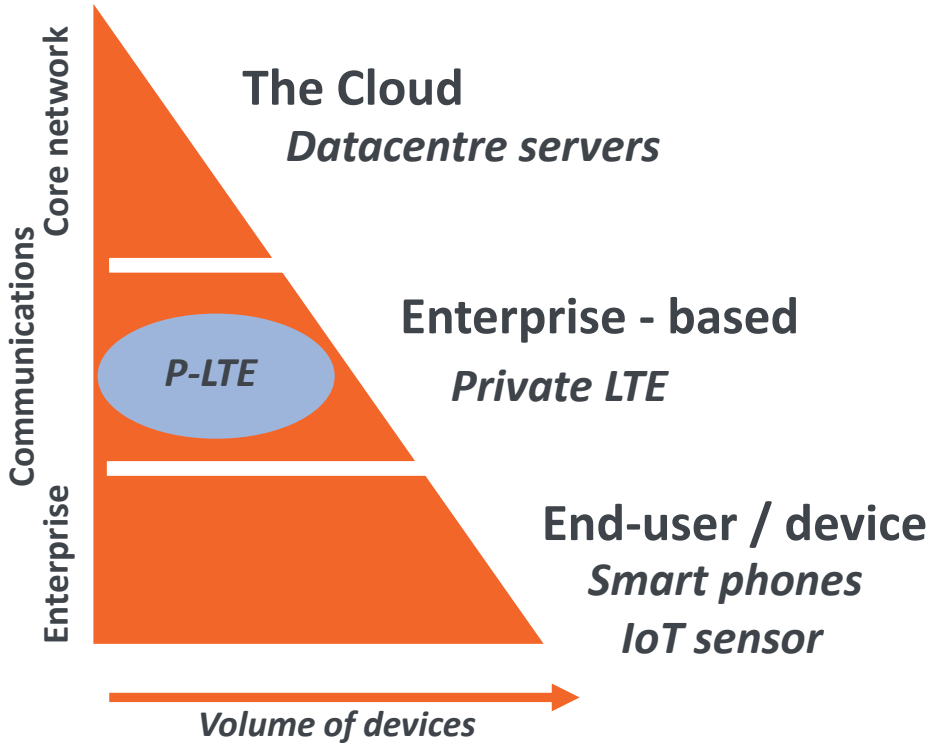
Virtualised app hierarchy



- Large scale, high throughput apps
- Storage, media streaming, big data
- Global reach

- Sensors
- Robotics
- User-centric

Virtualised app hierarchy



- Large scale, high throughput apps
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- MEC applications and services
- Voice, data, positioning, media
- Community-centric (network edge)

- Sensors
- Robotics
- User-centric

Disruptive players

- Almost every IoT vendor has a p-LTE strategy
- Industrial IoT is key driver for p-LTE
- Past the ‘tipping point’ for high volume deployment
- Cloud computing further reduces entry barriers

Who will WIN?

Fig 2. What benefits are you seeing as a result of implementing IoT?

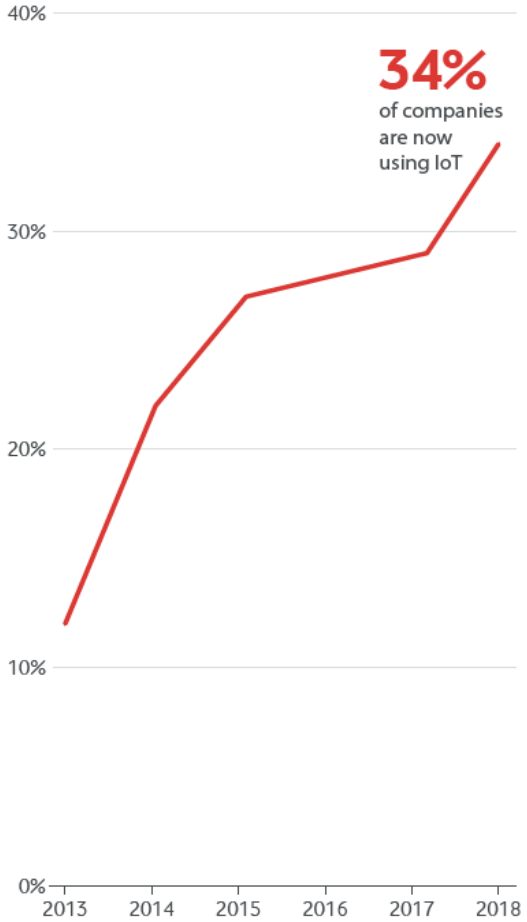

Fig 1. IoT adoption figures between 2013 and 2018

Vodafone_IoT Barometer 2019

Thank you

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