

# The Route to 5G

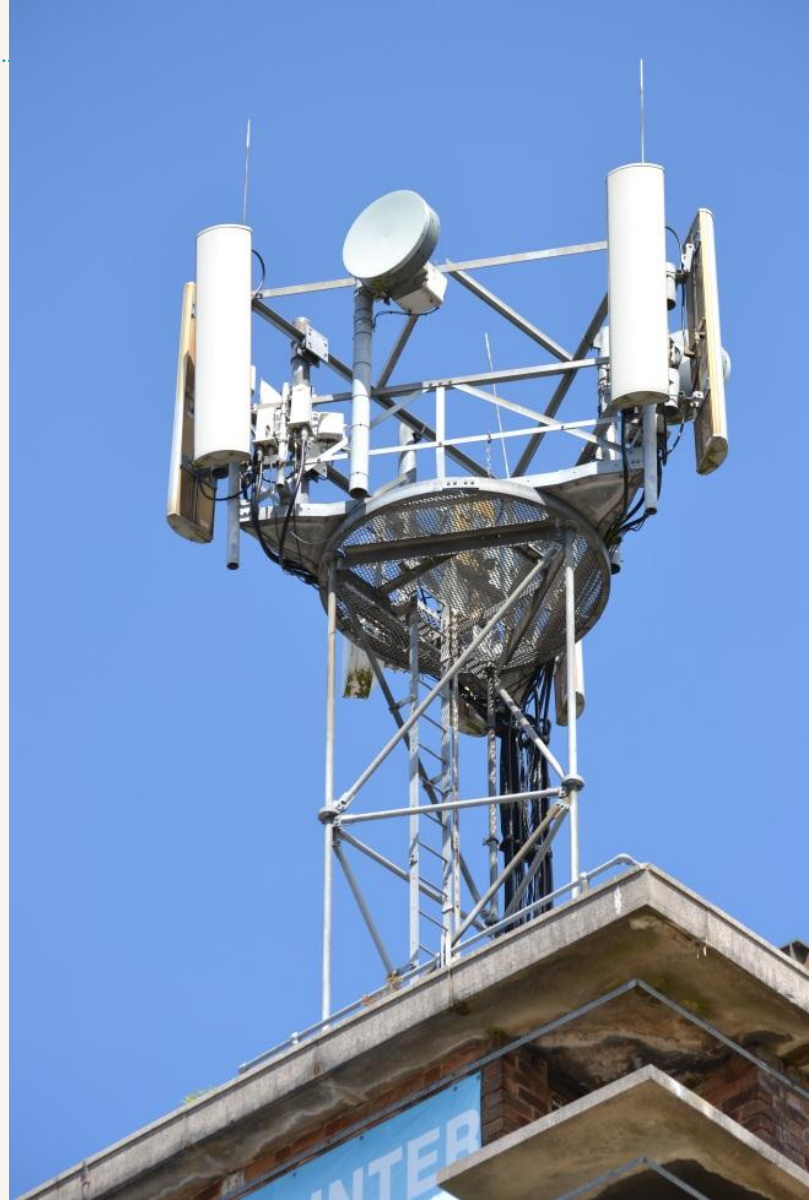


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Network Strategy  
4<sup>th</sup> November 2014

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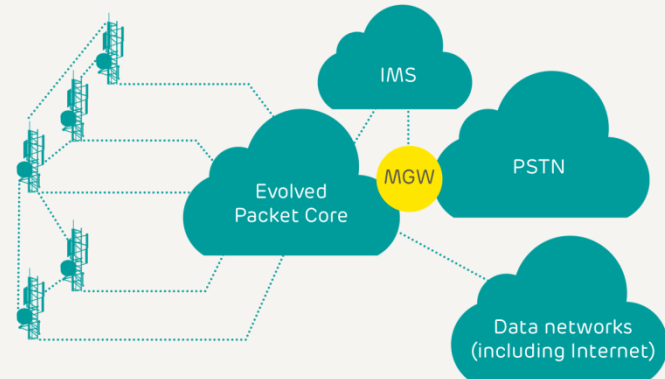
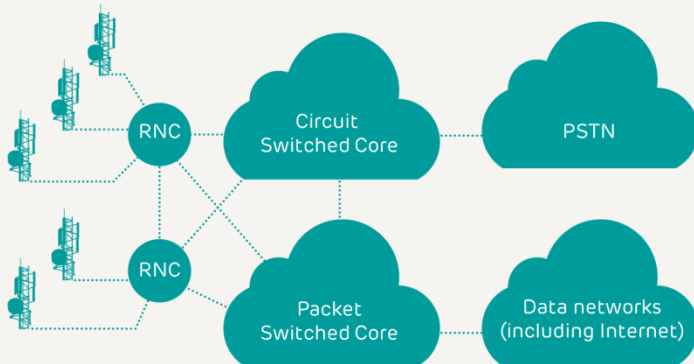
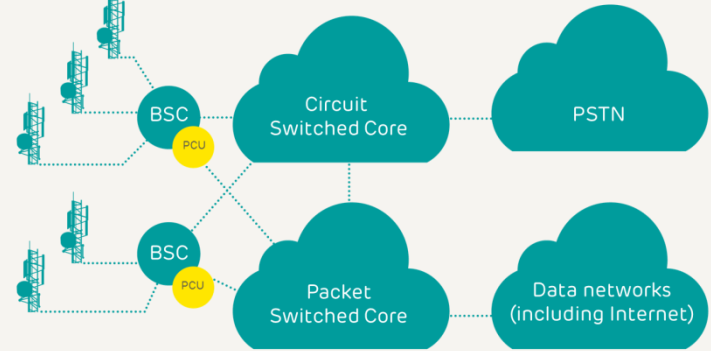
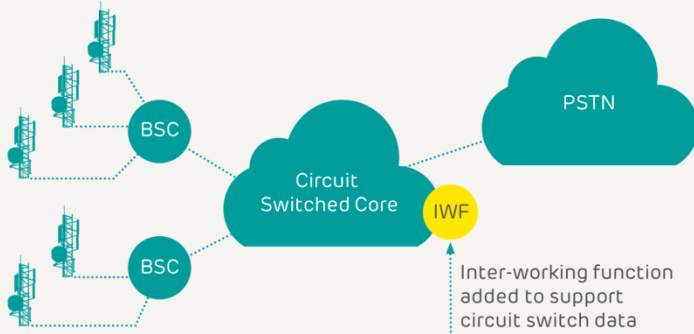
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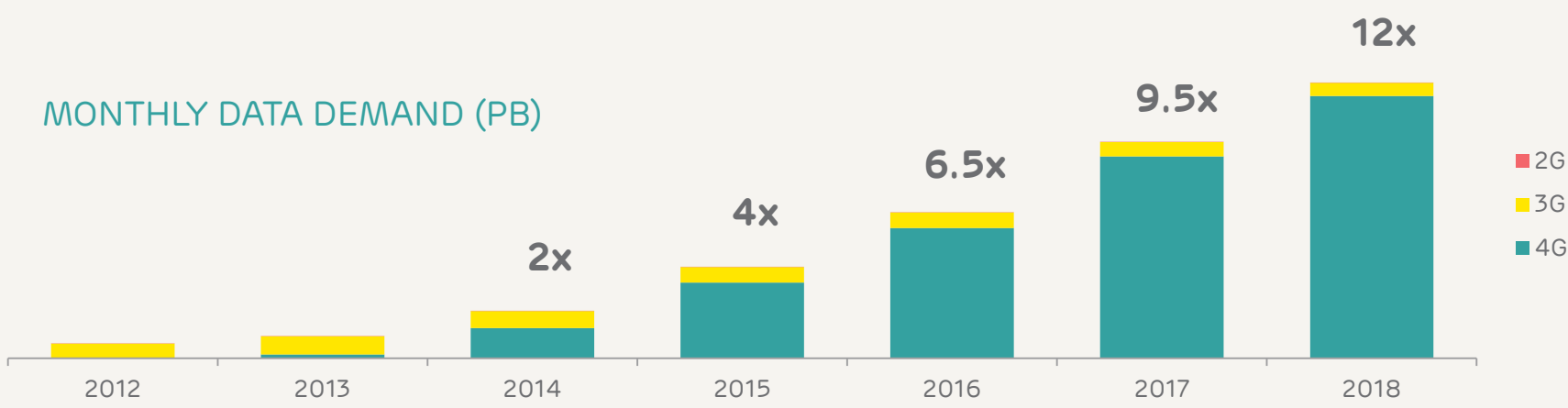


# We've come a long way since GSM voice...

GSM – GPRS (incl. EDGE) – UMTS (incl. HSDPA/HSUPA/HSPA+) – LTE (incl. VoLTE & LTE-A)



# Data Demand is set for considerable growth over the next 5 years as the UK becomes increasingly mobile-centric

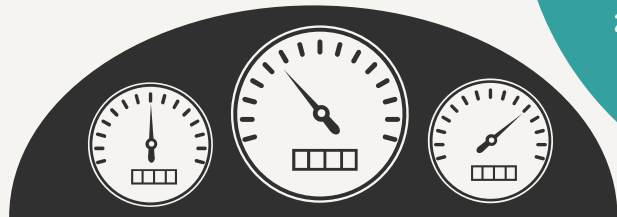


Smartphone penetration grows	Device capability drives usage	Mature data adoption
Early 4G adoption	LTE Device portfolio diversifies	LTE devices dominate
Limited LTE Device portfolio	Strong growth in 4G adoption	4G becomes default technology
Diversification and increase in available content drives usage	High-bandwidth services proliferate	Behavioural shifts in usage

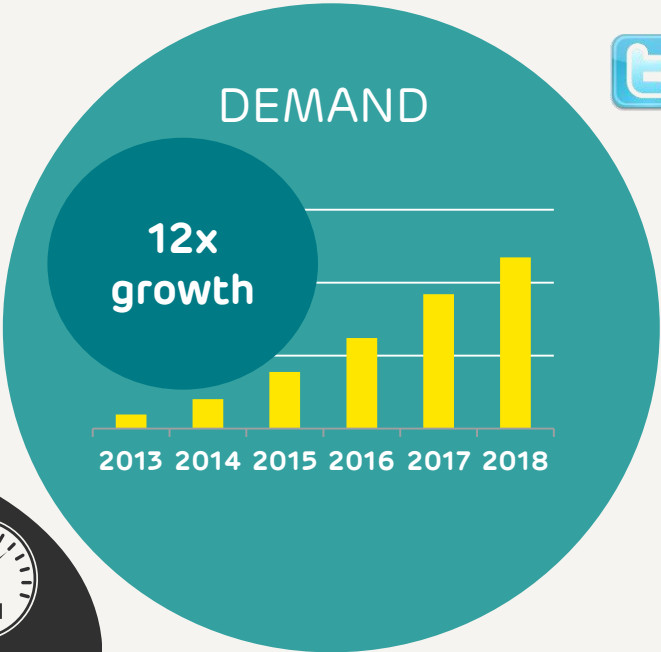
# Key growth drivers



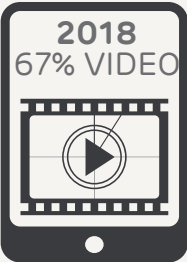
DEVICES



PERFORMANCE

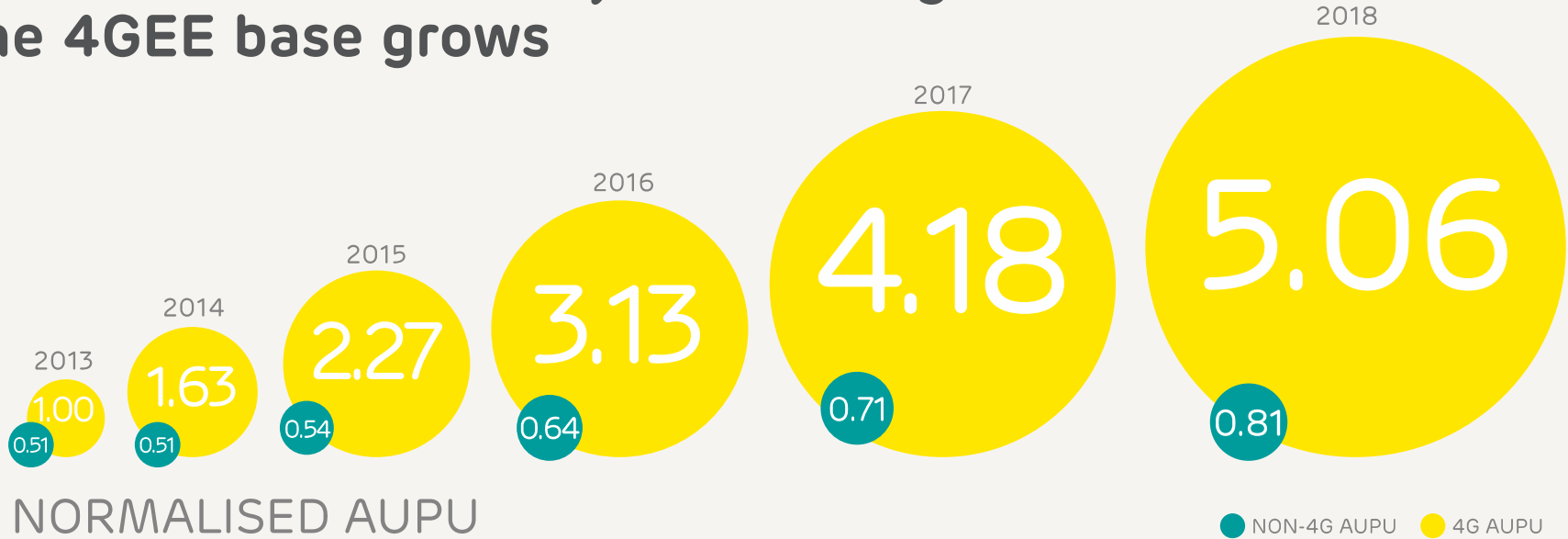


SERVICES/APPS



COVERAGE

# The increase in AUPU seen on devices using the 4G network is a key driver for growth as the 4GEE base grows



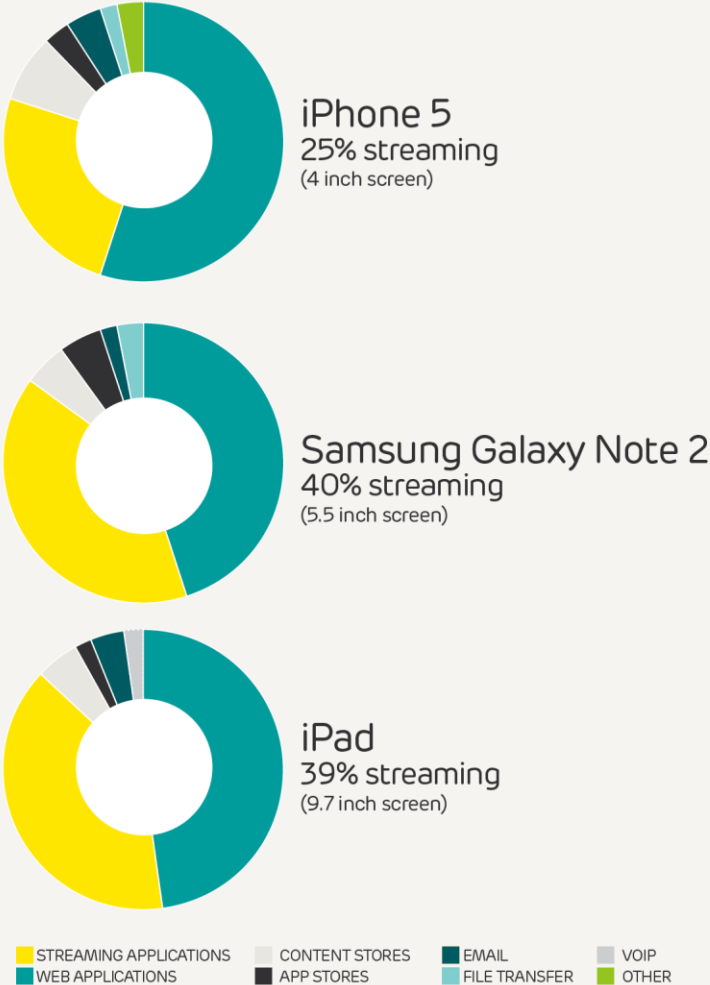
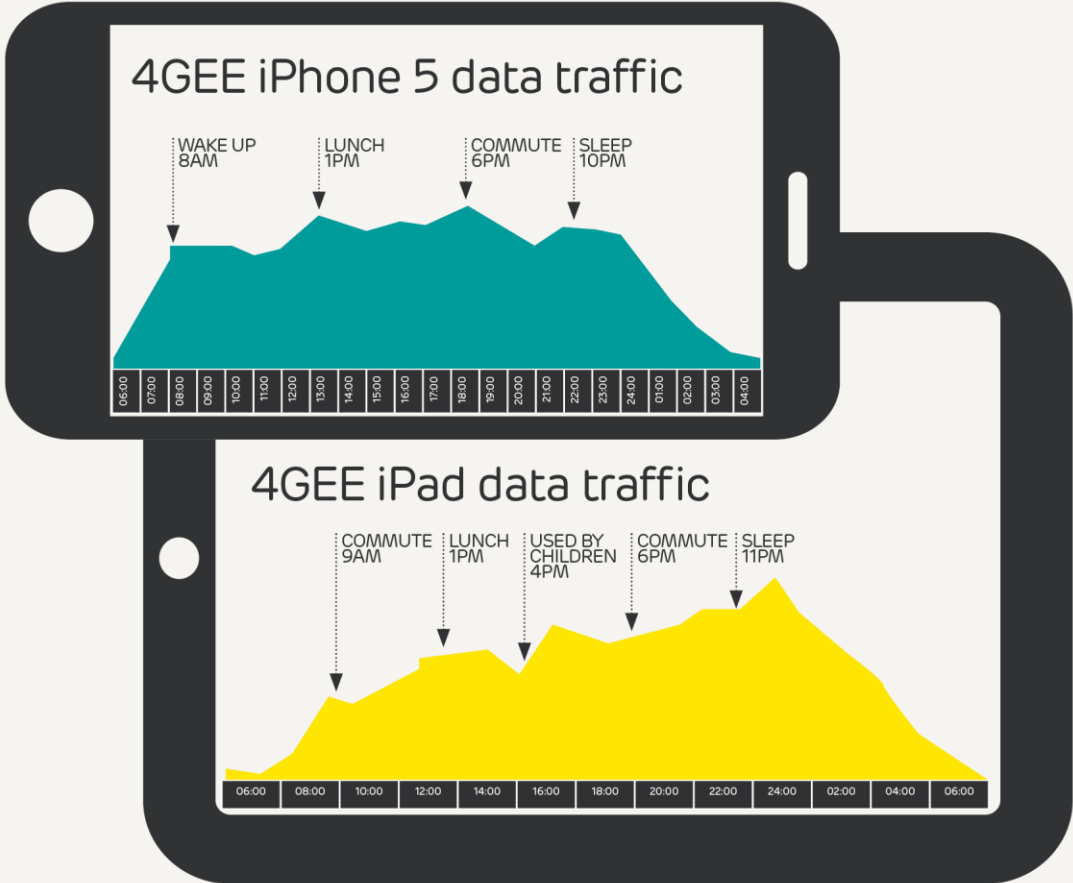
Non-4G AUPU  
set to double  
over next 5 years

**5 x** increase  
in 4G AUPU

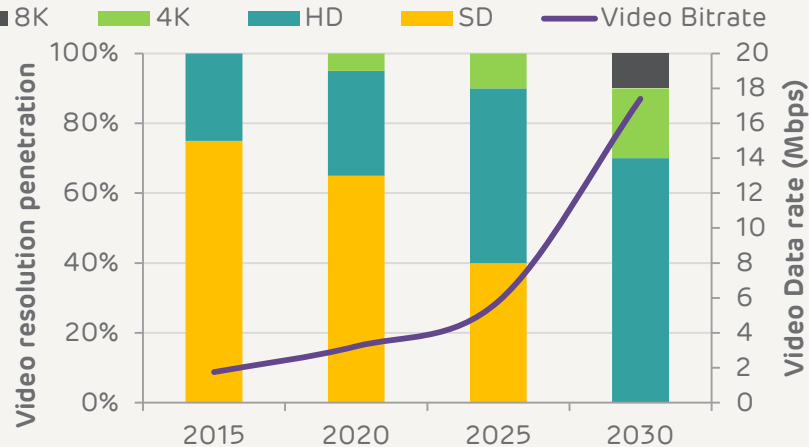
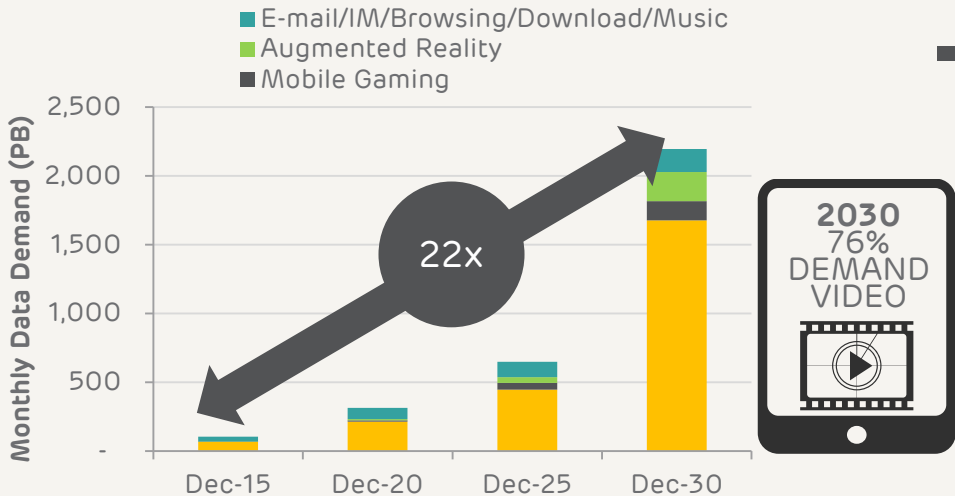
**2013** – 4G device  
AUPU was 50%  
higher than 3G  
device AUPU

**2018** – 4G  
device AUPU  
will be **6.3 x**  
non-4G device

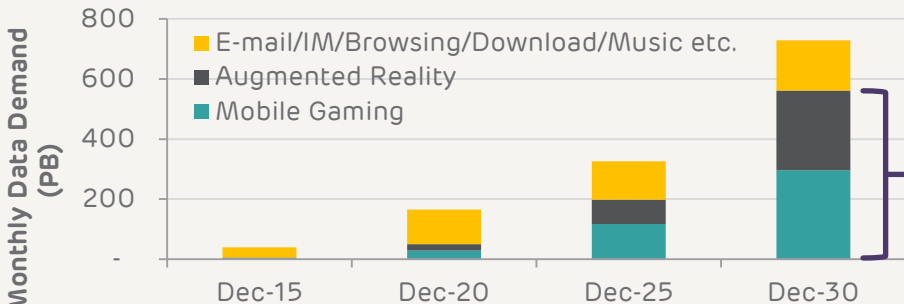
# Device type and performance both impact usage



# Long-term UK market forecast



Non-Video Data Demand



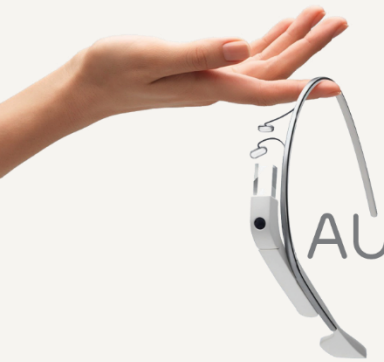
Streaming and video resolution are key drivers of long-term growth

Other services will emerge and drive new revenue opportunities and capacity challenges

68% non-video demand



# The latest hype?



internet of things

**CONNECTED DEVICES**

"social web of things"

**INTEGRATED DEVICES**

customisation

AUGMENTED REALITY


**LOCATION**

real-time data analytics

**HEALTH**

**FORM FACTORS**

connected home





**2020**  
50BN  
CONNECTED  
DEVICES  
WORLDWIDE



**UK 27**  
DEVICES  
PER PERSON

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## EE is pro-actively contributing to the 5G eco-system

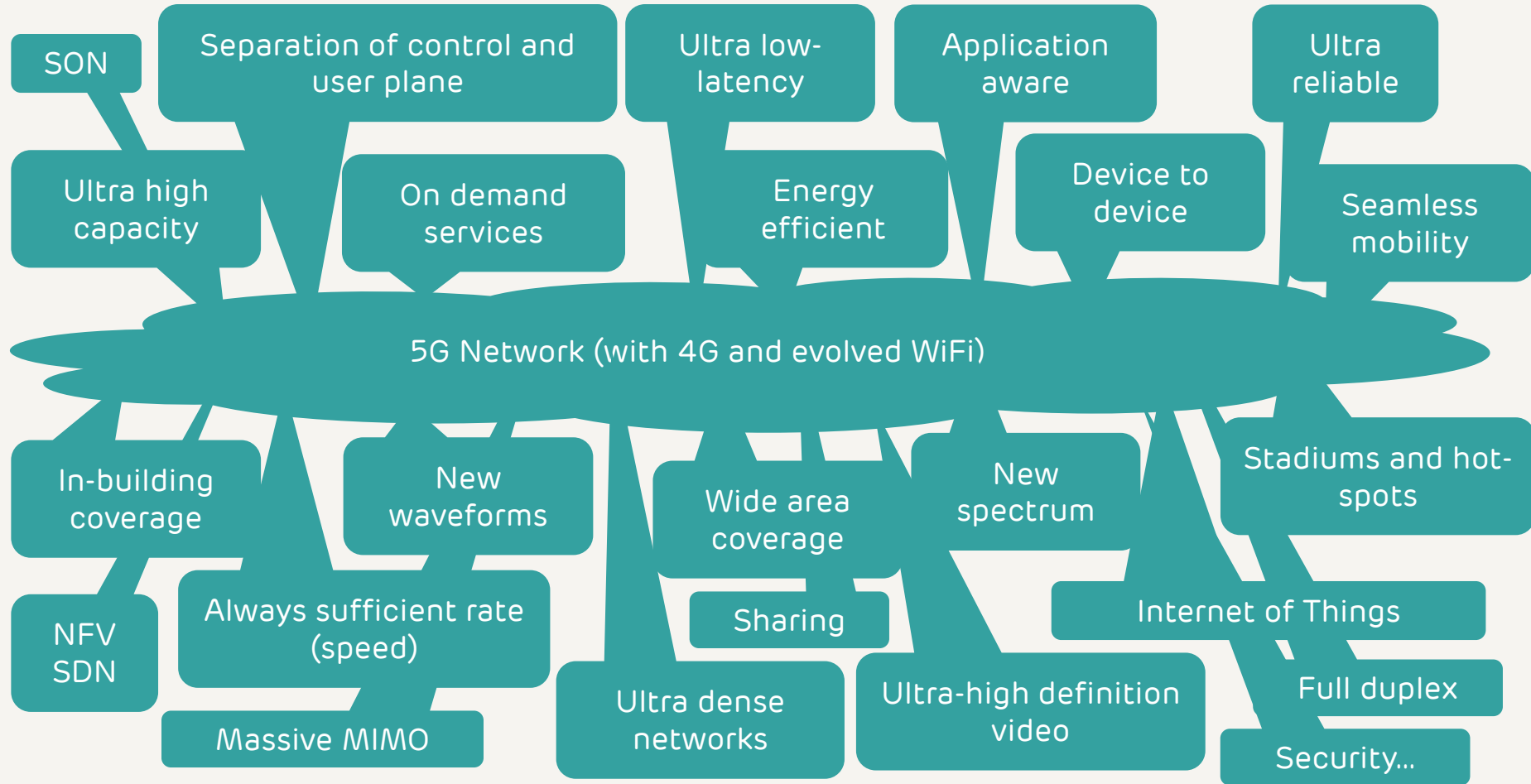
- Platinum Founding Member of the 5G Innovations Centre at the University of Surrey
- Supporting UK Government's objective to ensure the UK is a major player in 5G networks and services research and development - knowledge economy
- Supporting EU Horizon 2020 bids on behalf of UK academic organisations; financing leading edge research in the UK
- Working within International industry fora to develop 5G research and further understanding
- Engagements with global partners to influence the development of the 5G eco-system

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## Our 5G strategy?

*"The same as our 4G strategy – always stay one step ahead of demand for capacity, peak & average speeds, low-latency and innovative services."*

# And what does 5G look like....



# Summary

- 4G is the start of true mobile broadband – an IP based multi-media communications system
- Demand is huge, and will keep growing
- We will continue to evolve 4G to increase capacity, increase speeds and enhance the experience
- 5G is at the fundamental research stage, but will complement 4G networks
- 5G will support ultra dense networks with even higher peak and average data rates, with ultra low-latency to enable the tactile web and immersive real-time video
- 4G can take us to 1Gbps; 5G is everything beyond that...



# THANK YOU

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