The Road to 5G

Supportive or Disruptive to Broadband Fibre Access?

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Fibre To The Home Council

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5G


1G
1981
2G
1992
3G
2001
4G
2011
5G
2020


5G
4G
3G
384 Kbps
100 Mbps
10 Gbps


HOME
BROADBAND
Superfast


VIABILITY
GUARANTEED
SUCCESS!
EXCELLENT
VERY GOOD
GOOD
FAIR


40
50
70
80
30
Mbps
20
10
0

1. Retail price of services across the two platforms.
2. Availability of broadband mediums to the delivery point.
3. Transient or fixed nature of the consumer market.
4. Demand of ultra-high definition and low-latency applications (e.g. 8k-Video and Gaming, VR/AR).
5. Quality of Service (QoS) factors.

The Case for FIBRE

STRENGTHS	WEAKNESSES
1. Long lifespan.	1. High cost of 'last-mile' installation
2.Low latency.	2. Physical vulnerability of infrastructure
3.High bandwidth capacity.	3. Repair time can be long and cost can be high.
4. Easy to upgrade.	4. Regulatory issues i.r.o rights of way and access to property
5. Good Quality of Service.	5. Access to ducts (in property)
6. Immune to lightning damage (excluding the power connection)	6. Operator reluctance to share infrastructure
OPPORTUNITIES	**THREATS**
1. Low fibre penetration	1. Substitute products (5G / Satellite systems).
2. Delays in allocation of spectrum will buy time for fibre	2. No national building standards for duct and fibre reticulation
3. Streaming 4k / 8k Video and virtual reality gaming.	3. Duplication of infrastructure diminishing business case viability
4. Smart Homes / Cities / IoT /	
5. 5G will require fibre to be brought into the building	

Technology Drivers for Fibre

NG-PON2
FORUM

SDN
+
NFV

The case against fibre

HARDWIRED

WF

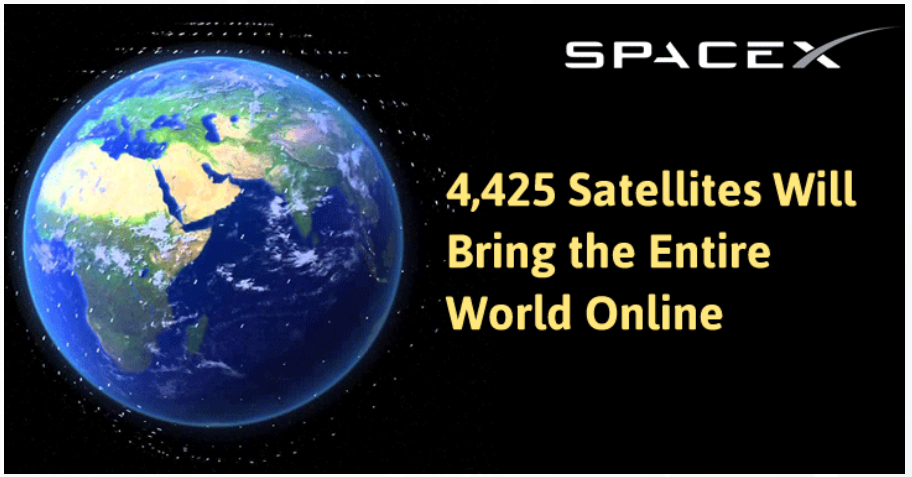
Wayleave & Permits

Bicsi MIDDLE EAST & AFRICA

Substitutes For Fibre

Webpass

Google fiber



verizon wireless
Authorized Retailer

DOCSIS® 3.1
Up to 6Gbps[4]
Ultra-Fast Cable Internet Speed

Bicsi MIDDLE EAST & AFRICA

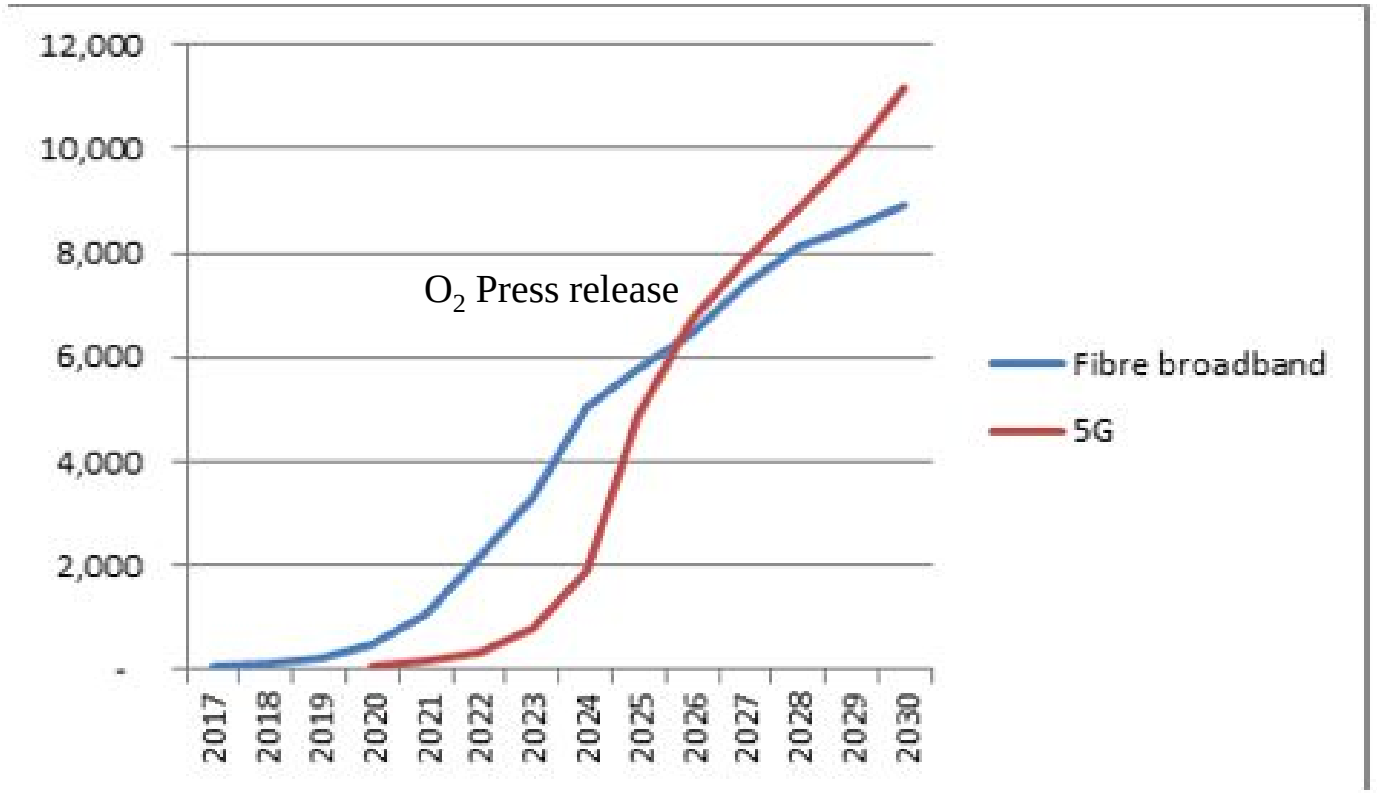

5G

The Case for 5G

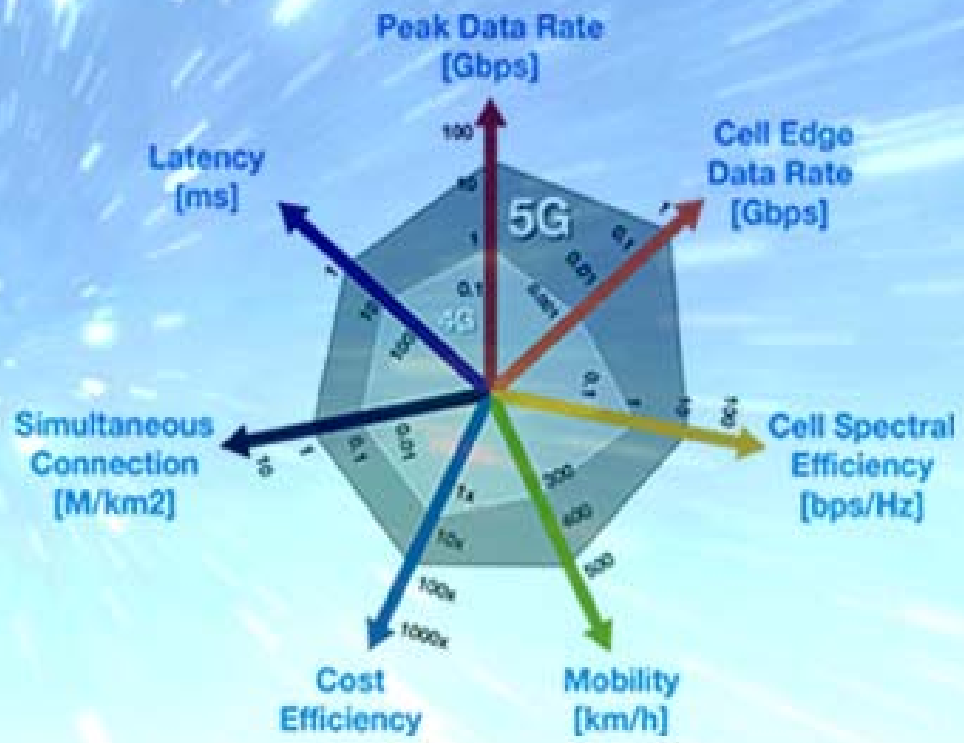
STRENGTHS	WEAKNESS
1. No access required, quick to fulfil a service. (unless base-station is in or on the building).	1. Commercial mass market viability (10 to 15 years away)
2. Quick repair time (depending on what is wrong)	2. No mass-market achievable without device standards
3. Ability to support peak rates quickly.	3. Cost to repair equipment, including stockholding
4. Low Latency (lower than fibre)	4. QoS Challenges
	5. Cost of equipment
	6. Cost of spectrum
	7. Environmental effects causing path loss
	8. Cost of smart devices
	9. Viability in low density environments
	10. Requires synchronisation
OPPORTUNITIES	**THREATS**
1. Smart homes / Cities / IoT	1. Regulatory inefficiency - delayed access to spectrum
	2. Fibre enabled Wi-Fi offload (more Wi-Fi devices available)
	3. Bio-effect of radio (micro) waves (perceived or real) will create some resistance

Telefonica - O_2 Press release

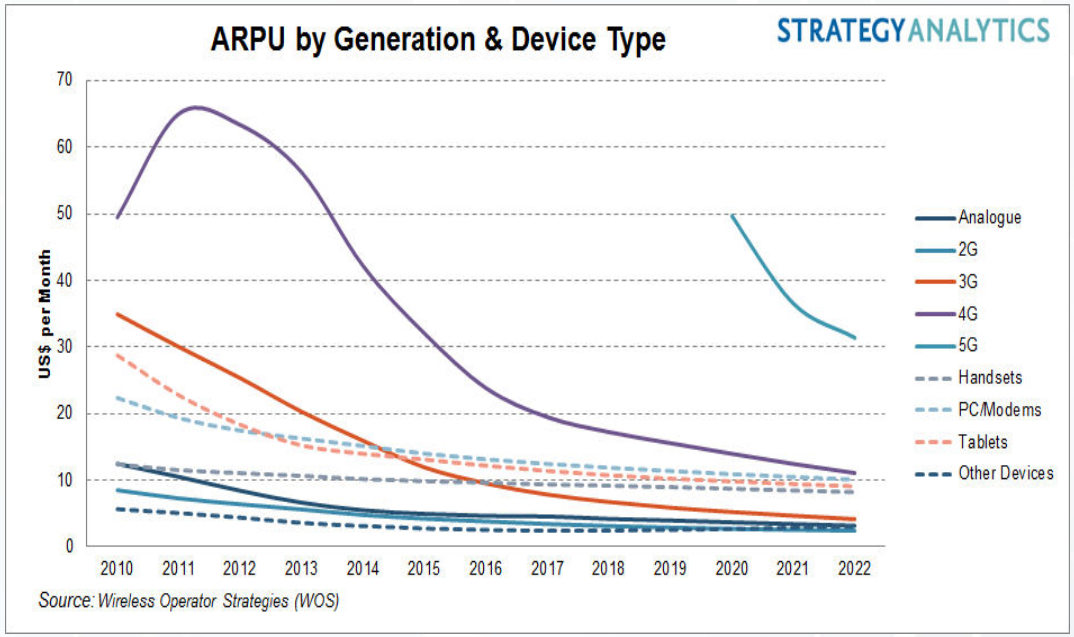
Gross Value Added
(economic impact, £ millions)



5G VISION


Peak Data Rate
[Gbps]
Cell Edge
Data Rate
[Gbps]
Cell Spectral
Efficiency
[bps/Hz]
Mobility
[km/h]
Cost
Efficiency
Simultaneous
Connection
[M/km2]
Latency
[ms]
5G

The case against 5G



1. Revenue opportunity
2. Spectrum cost
3. mm Wave Coverage
4. Cost of rollout
5. Household density

Conclusion

Choice

FIBRE TO THE HOME