5G RECORDS

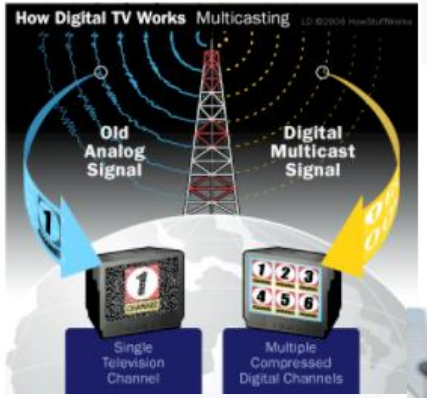
5G in content production

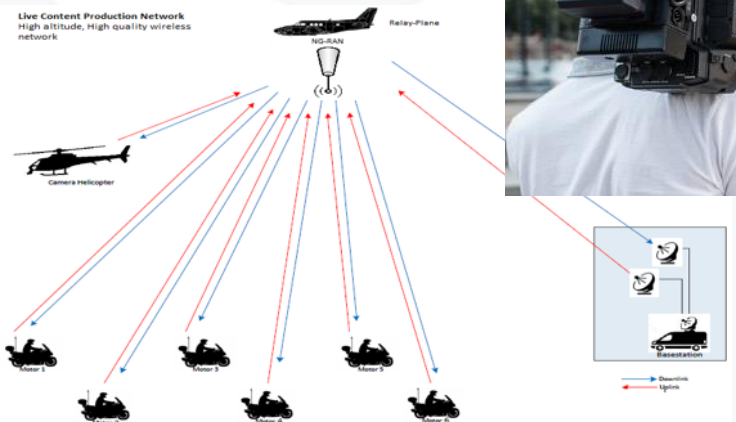
The European perspective

Ian Wagdin
BBC

In the beginning, it was analogue.

And then we went digital.....

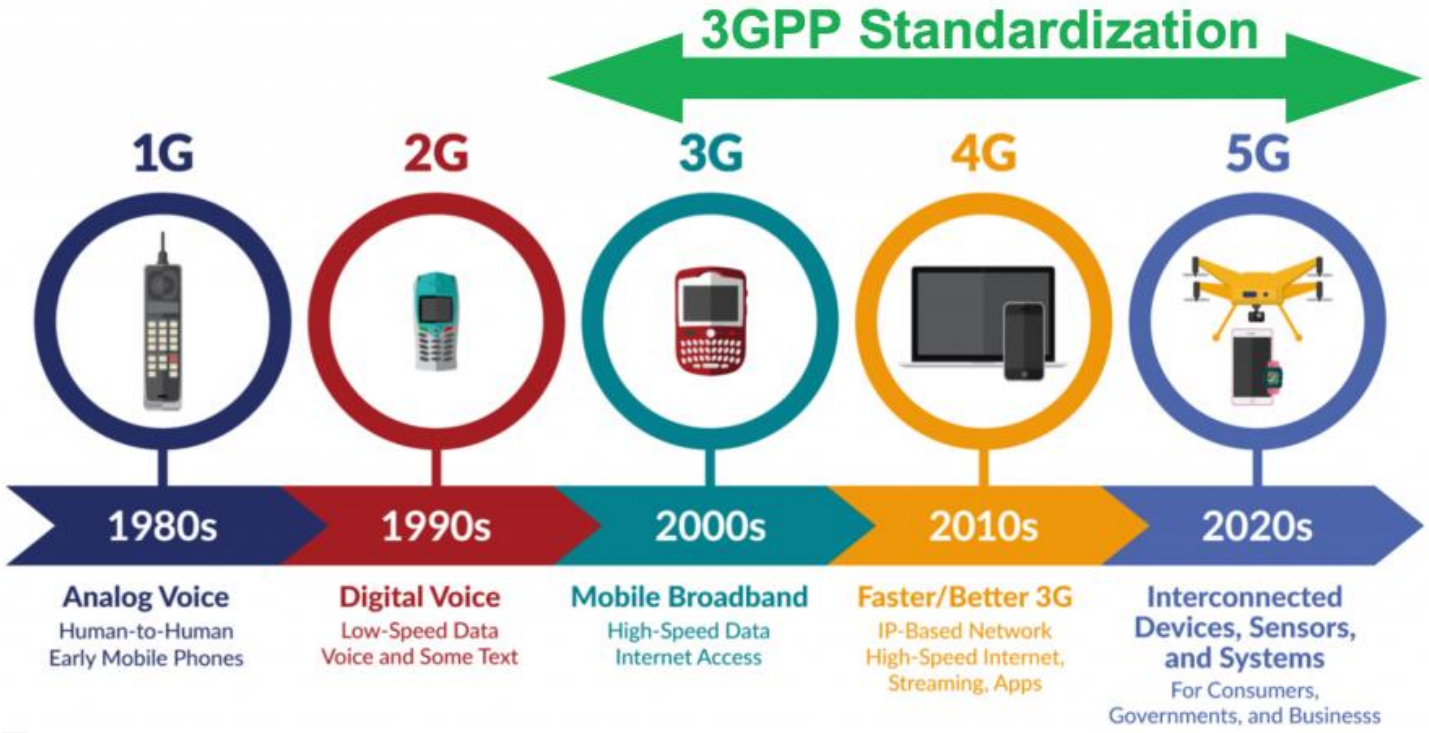




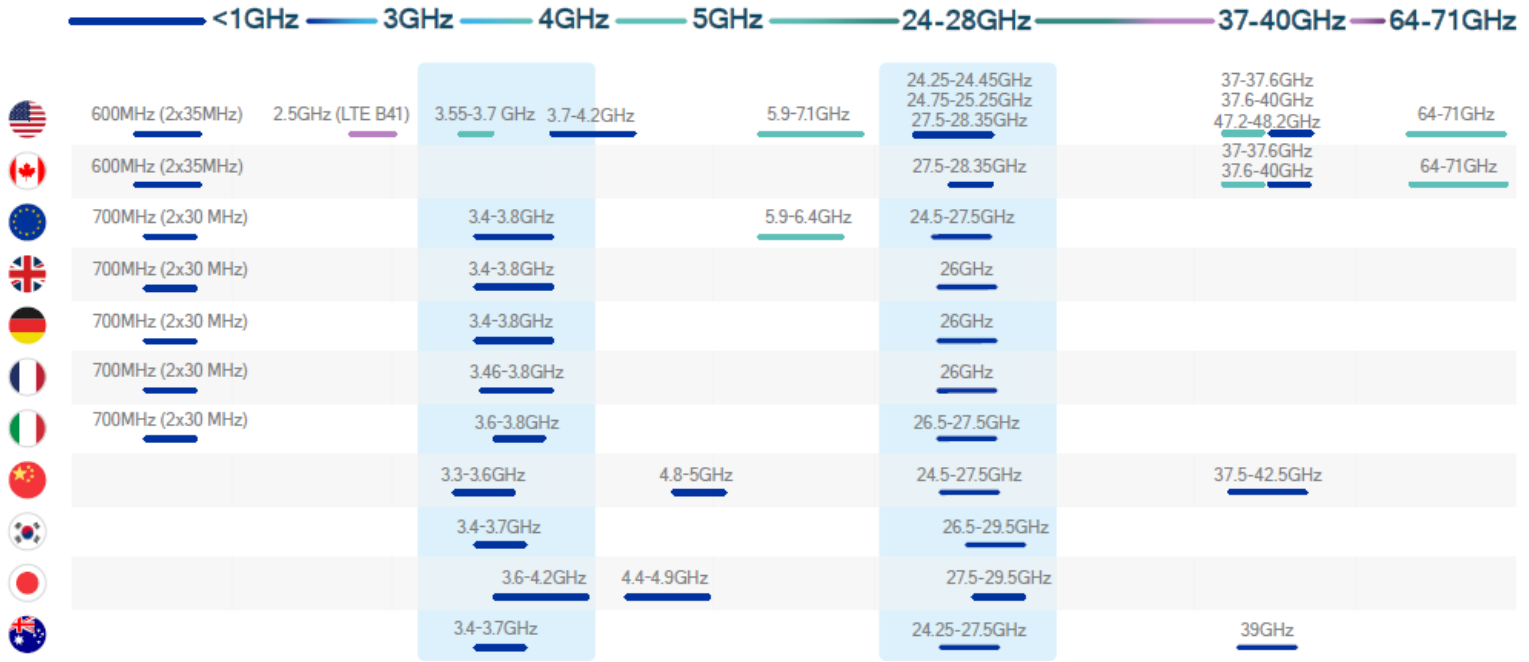
And now we have IP

And it’s not just us

And it’s not just us



Spectrum



Global snapshot of 5G spectrum

Around the world, these bands have been allocated or targeted

New 5G band
Licensed
Unlicensed/shared
Existing band

Spectrum (in Europe)

BBC Design + Engineering

3

ERC RECOMMENDATION 25-10

Bands				
A1:	29.7	MHz	47	MHz
A2:	174	MHz	216	MHz
A3:	470	MHz	694	MHz
A4:	694	MHz	790	MHz
A5:	823	MHz	832	MHz
A6:	863	MHz	865	MHz
A7:	1350	MHz	1400	MHz
A8:	1518	MHz	1525	MHz
A9:	1785	MHz	1805	MHz
B1:	174	MHz	216	MHz
B2:	470	MHz	694	MHz
B3:	694	MHz	790	MHz
C1:	2010	MHz	2025	MHz
C2:	2025	MHz	2110	MHz
C3:	2200	MHz	2300	MHz
C4:	2300	MHz	2400	MHz
C5:	2400	MHz	2500	MHz
C6:	2700	MHz	2900	MHz
C7:	7	GHz	8.5	GHz
C8:	10	GHz	10.68	GHz
C9:	21.2	GHz	24.5	GHz
C10:	47.2	GHz	50.2	GHz

Audio PMSE

Video PMSE

Spectrum (in Europe)

BBC Design + Engineering

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C9:	21.2	GHz	24.5	GHz
C10:	47.2	GHz	50.2	GHz

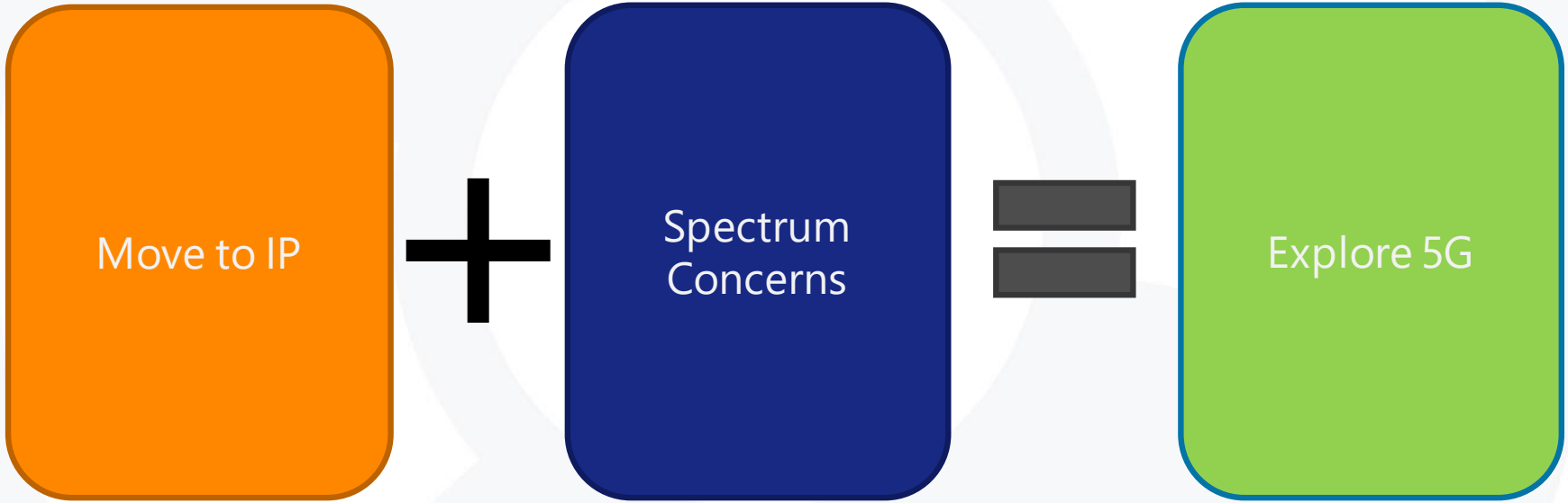
Audio PMSE

Video PMSE

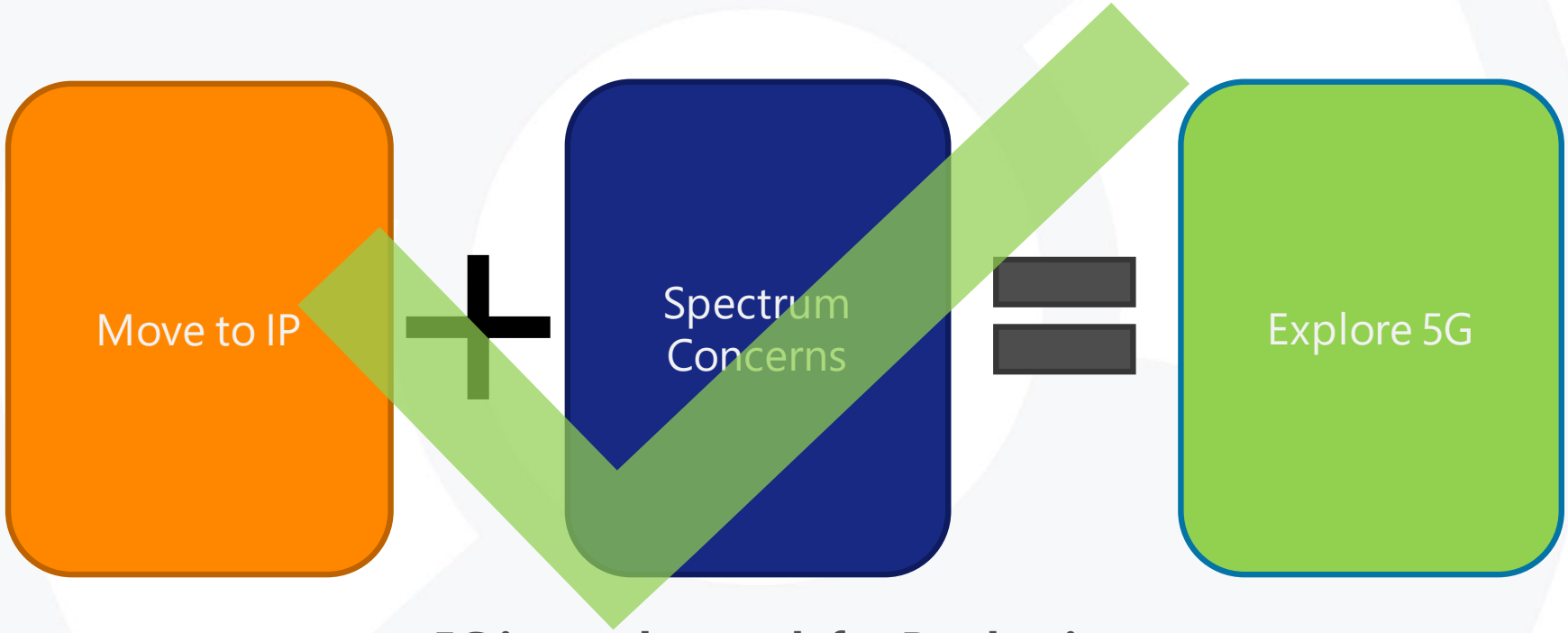
3GPP NR BANDS

NR FR1/2	Uplink (UL) Operating Band (MHz) BS Receive / UE Transmit F^{UL_low} – F^{UL_high}		Downlink (DL) Operating Band (MHz) BS Transmit / UE Receive F^{DL_low} – F^{DL_high}		Bandwidth (MHz)	Duplex Mode
n1	1920	1980	2110	2170	60	FDD
n2	1850	1910	1930	1990	60	FDD
n3	1710	1785	1805	1880	75	FDD
n5	824	849	869	894	25	FDD
n7	2500	2570	2620	2690	70	FDD
n8	880	915	925	960	35	FDD
n20	832	862	791	821	30	FDD
n28	703	748	758	803	45	FDD
n38	2570	2620	2570	2620	50	TDD
n41	2496	2690	2496	2690	194	TDD
n50	1432	1517	1432	1517	85	TDD
n51	1427	1432	1427	1432	5	TDD
n66	1710	1780	2110	2200	70/90	FDD
n70	1695	1710	1995	2020	15/25	FDD
n71	663	698	617	652	35	FDD
n74	1427	1470	1475	1518	43	FDD
n75	N/A	N/A	1432	1517	85	SDL
n76	N/A	N/A	1427	1432	5	SDL
n77	3300	4200	3300	4200	900	TDD
n78	3300	3800	3300	3800	500	TDD
n79	4400	5000	4400	5000	600	TDD
n80	1710	1785	N/A	N/A	75	SUL
n81	880	915	N/A	N/A	35	SUL
n82	832	862	N/A	N/A	30	SUL
n83	703	748	N/A	N/A	45	SUL
n84	1920	1980	N/A	N/A	60	SUL
n257	26500	29500	26500	29500	3000	TDD
n258	24250	27500	24250	27500	3250	TDD
n260	37000	40000	37000	40000	3000	TDD

Why 5G?

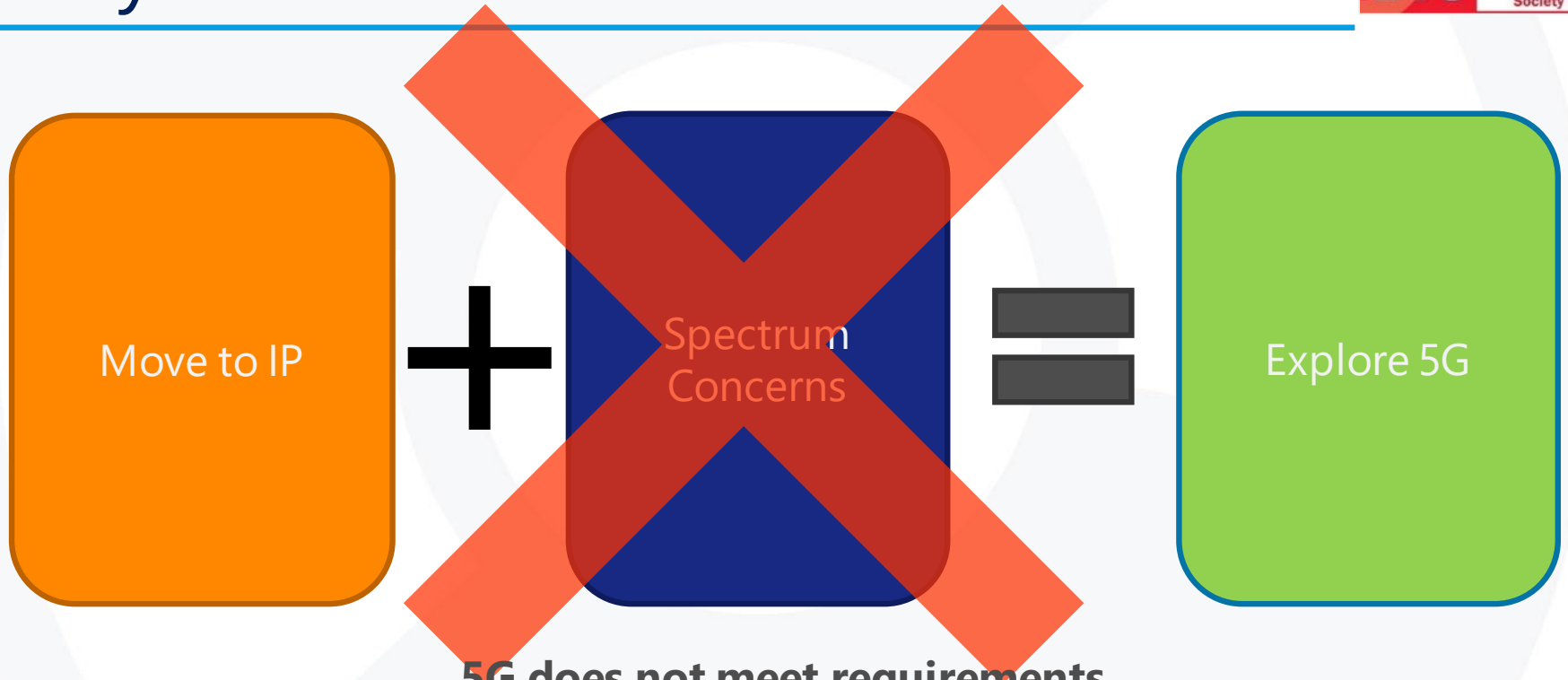


Why 5G? Answer 1



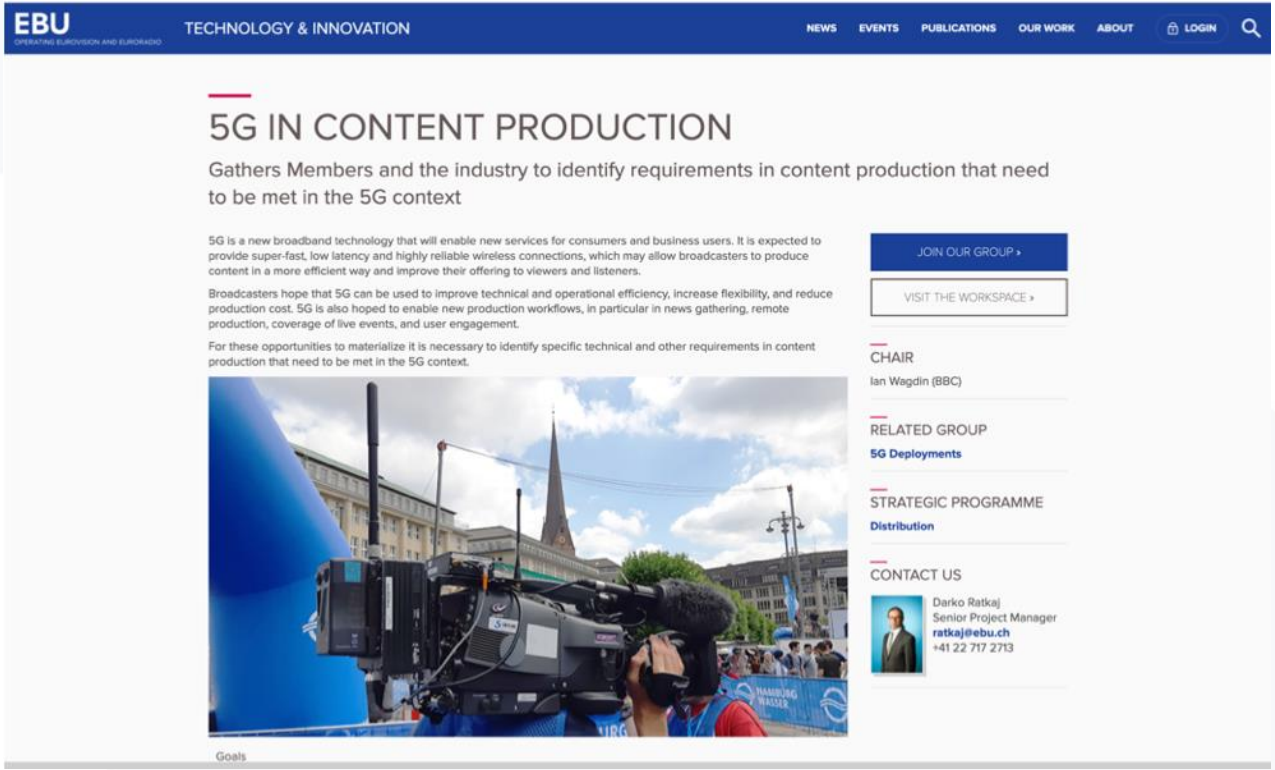
5G is good enough for Production
Adopt technologies

Why 5G? Answer 2



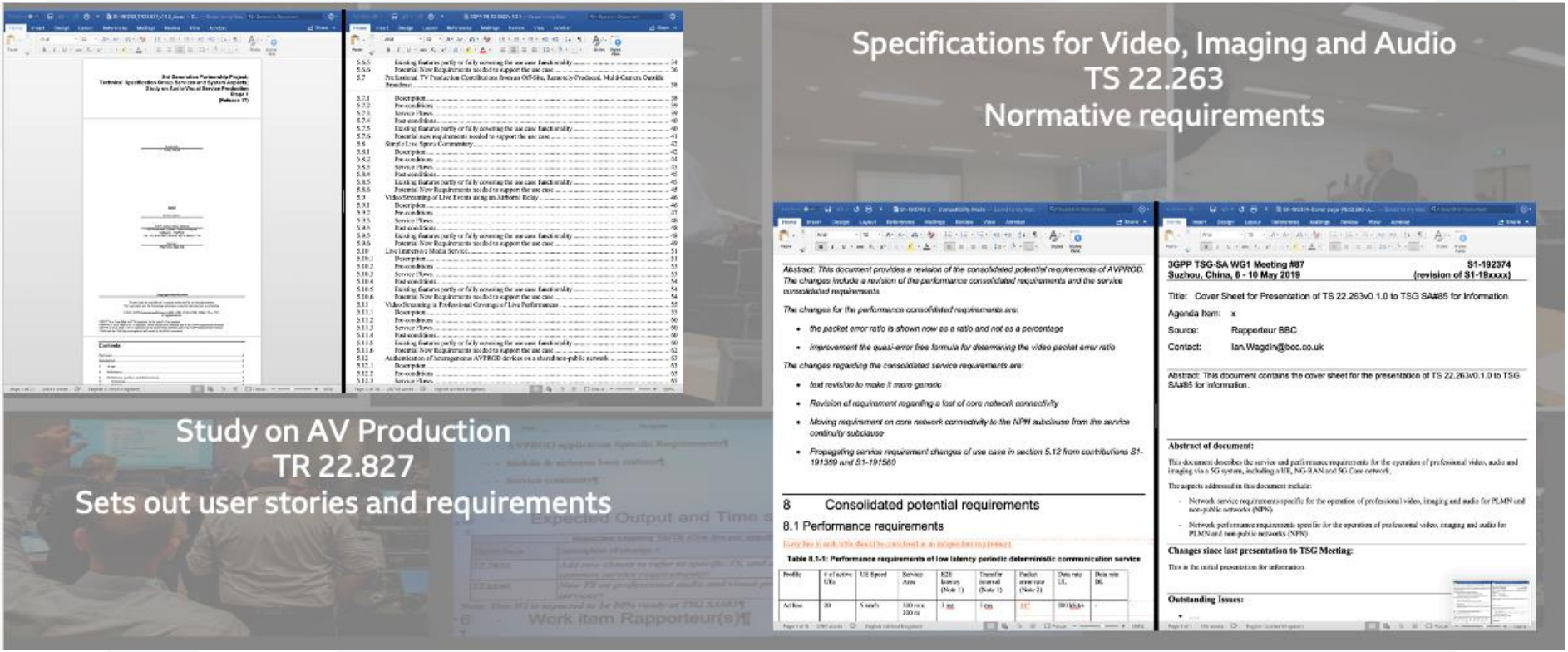
5G does not meet requirements
Explore other options

What we are doing

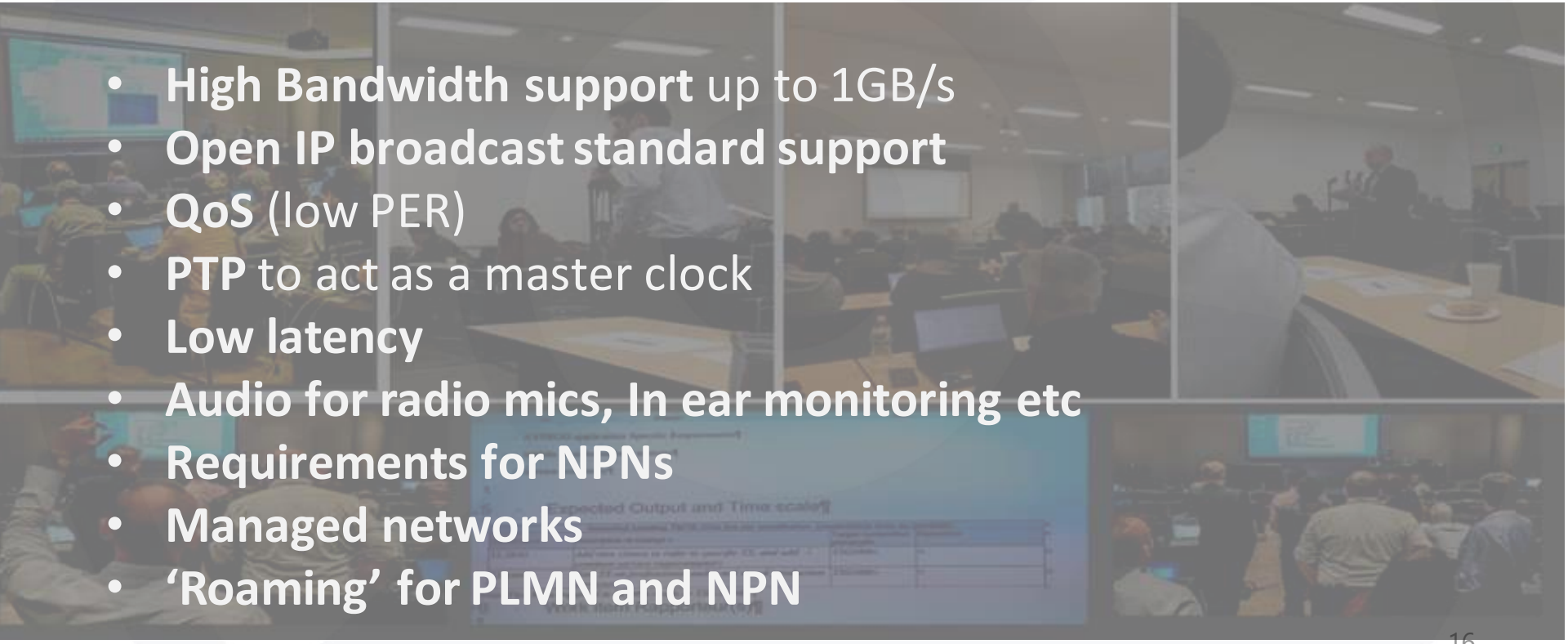


What we are doing

What we are doing

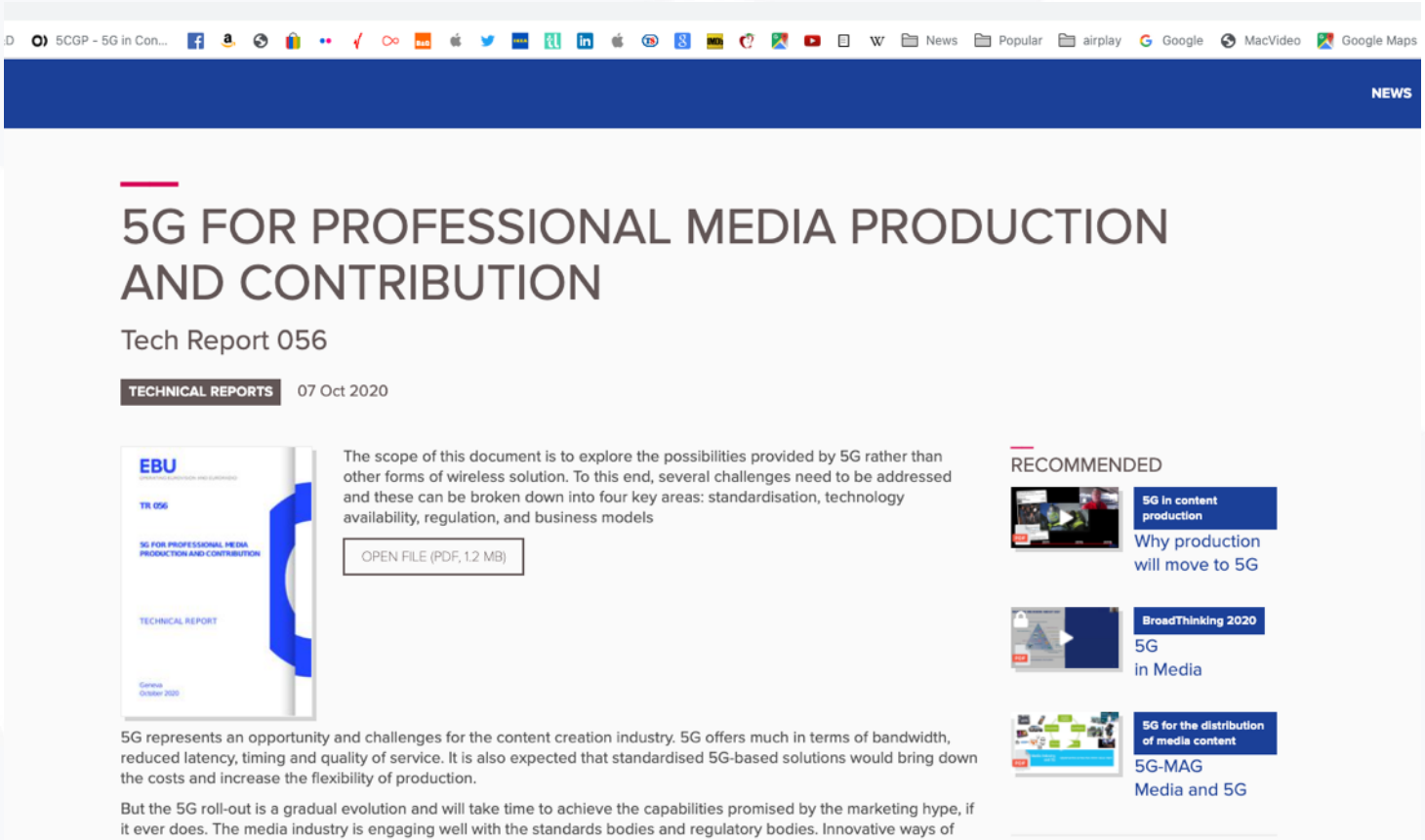


Key Themes



- **High Bandwidth support** up to 1GB/s
- **Open IP broadcast standard support**
- **QoS** (low PER)
- **PTP** to act as a master clock
- **Low latency**
- **Audio for radio mics, In ear monitoring etc**
- **Requirements for NPNs**
- **Managed networks**
- **‘Roaming’ for PLMN and NPN**

Key Themes



5CGP - 5G in Con... News Popular airplay Google MacVideo Google Maps

NEWS

5G FOR PROFESSIONAL MEDIA PRODUCTION AND CONTRIBUTION

Tech Report 056

TECHNICAL REPORTS 07 Oct 2020

The scope of this document is to explore the possibilities provided by 5G rather than other forms of wireless solution. To this end, several challenges need to be addressed and these can be broken down into four key areas: standardisation, technology availability, regulation, and business models

OPEN FILE (PDF, 1.2 MB)

5G represents an opportunity and challenges for the content creation industry. 5G offers much in terms of bandwidth, reduced latency, timing and quality of service. It is also expected that standardised 5G-based solutions would bring down the costs and increase the flexibility of production.

But the 5G roll-out is a gradual evolution and will take time to achieve the capabilities promised by the marketing hype, if it ever does. The media industry is engaging well with the standards bodies and regulatory bodies. Innovative ways of

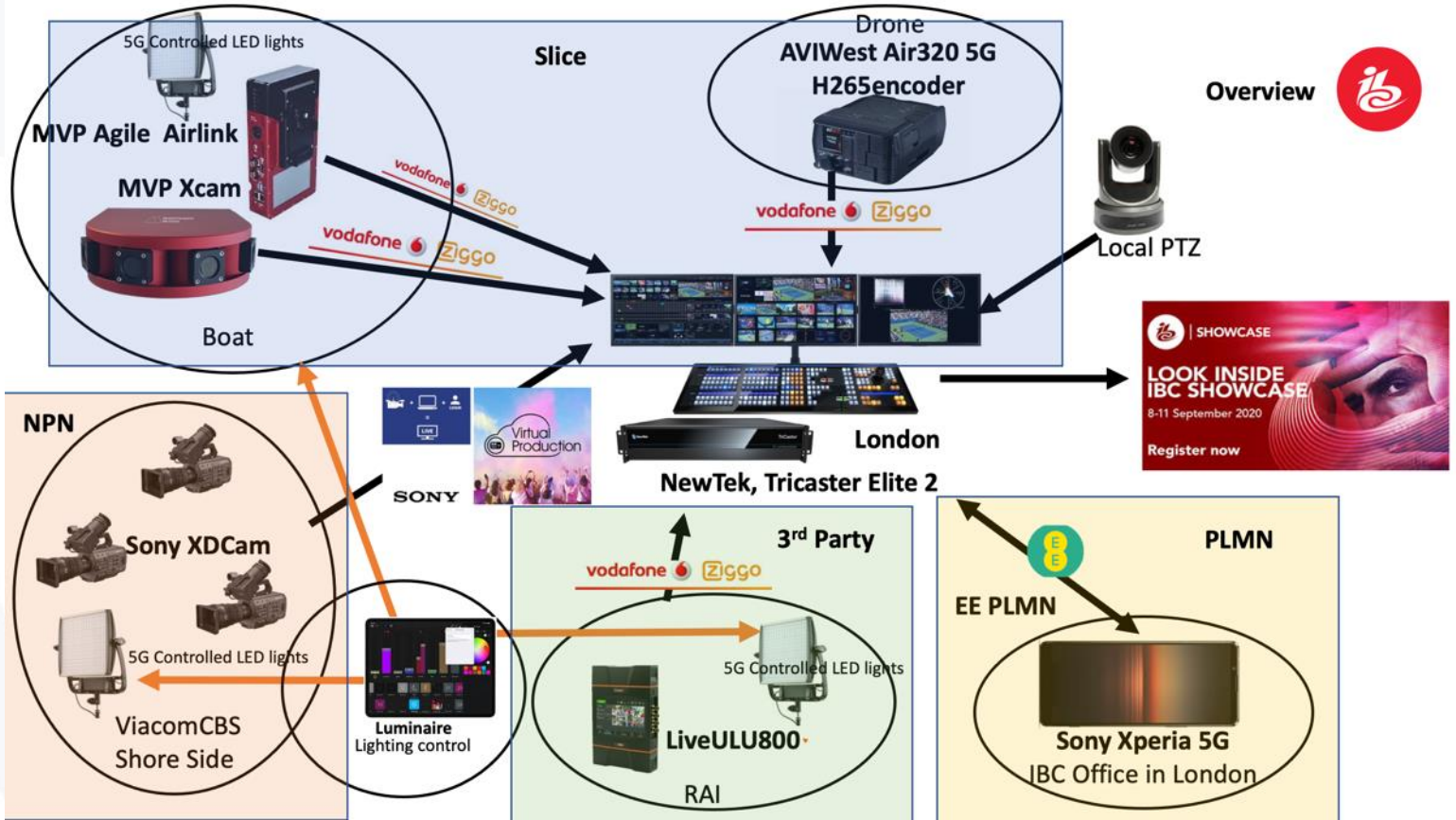
RECOMMENDED

5G in content production
Why production will move to 5G

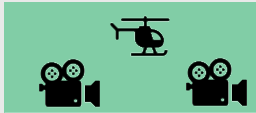
BroadThinking 2020
5G in Media

5G for the distribution of media content
5G-MAG Media and 5G

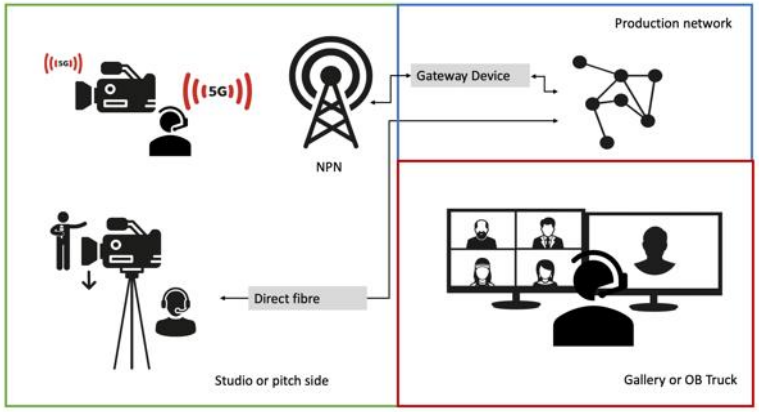
What we are doing

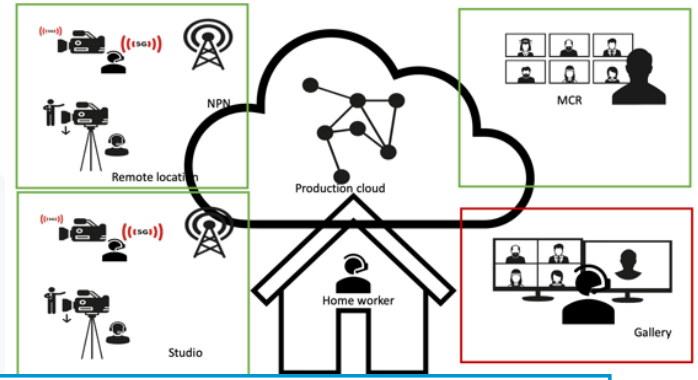


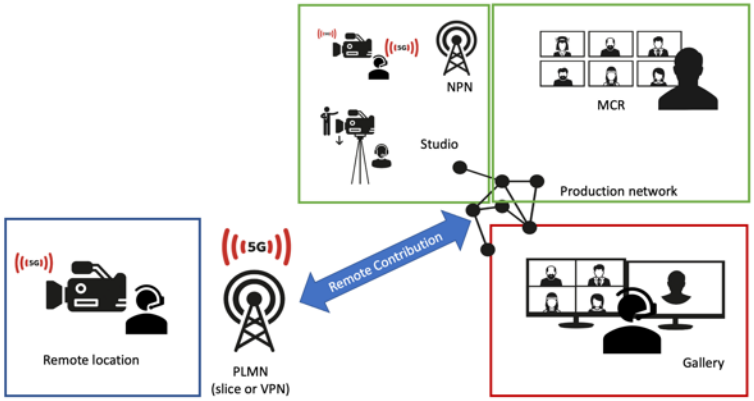
It will take time

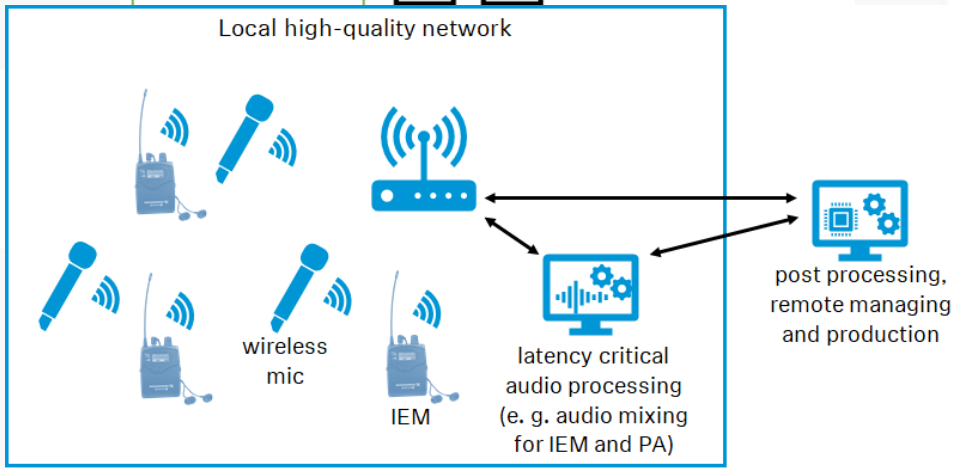
	Crawl	Walk	Run
	✗	✗	✗
	✗	✗	✗
	✓	✗	✗
	✓	✗	✗
	✓	✓	✗

It won't be one size fits all









It won’t be one size fits all

PLMN

Traffic Prioritisation

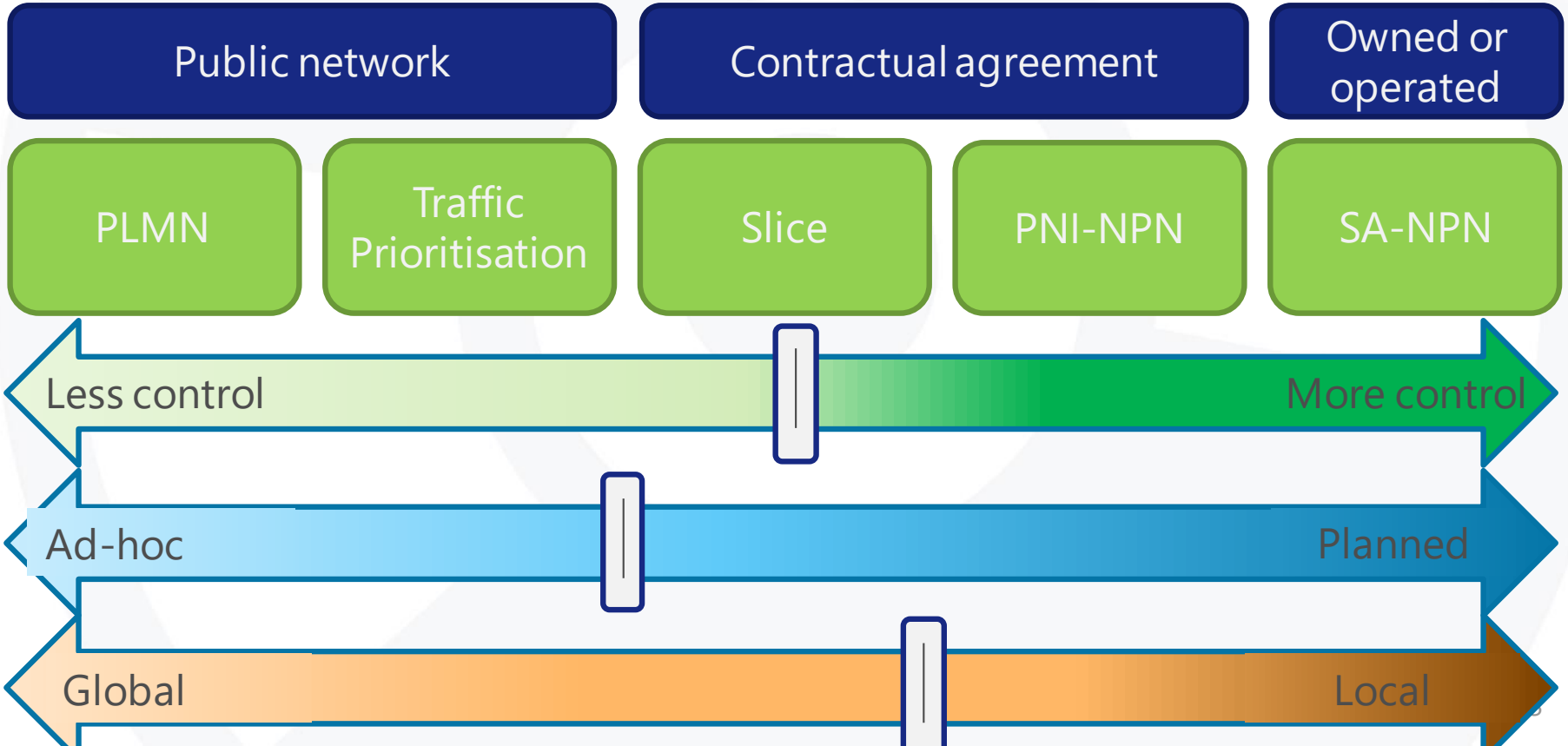
Slice

PNI-NPN

SA-NPN

It won't be one size fits all

It won't be one size fits all



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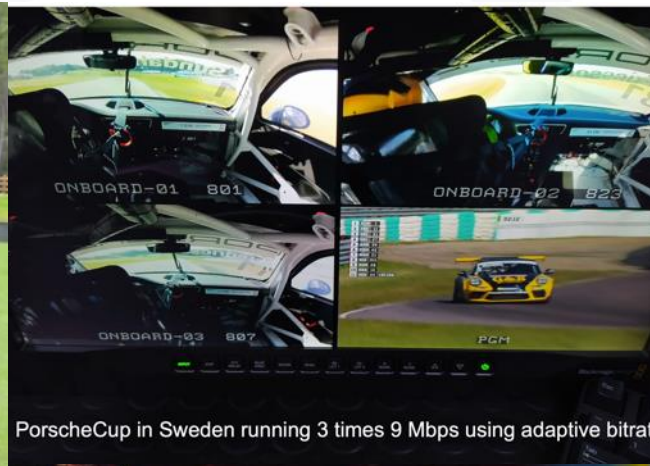

PorscheCup in Sweden running 3 times 9 Mbps using adaptive bitra

Conclusion

Mobility

Flexibility

Reliability

www.5g-records.eu

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5G RECORDS

5G-RECORDS Group

5G-RECORDS Channel

Thanks for your attention
Any questions?

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