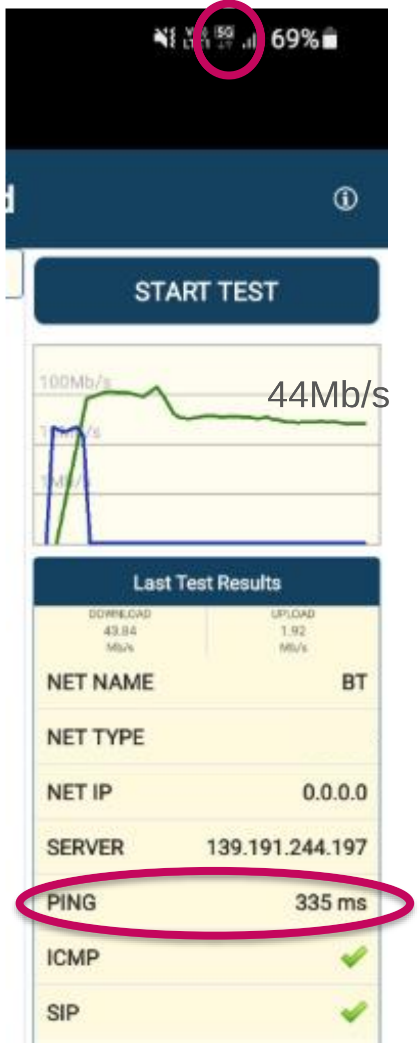
The shaping up of the European 6G vision…
Towards "Internet for all"?

SPF Plenary

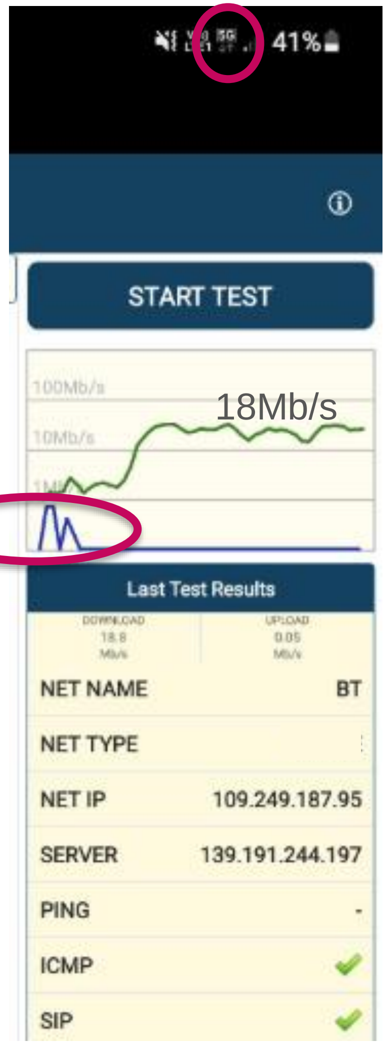
2021.10.21

Simon Fletcher, CTO Real Wireless, UK5G AB Member and International Working Group co-Chair

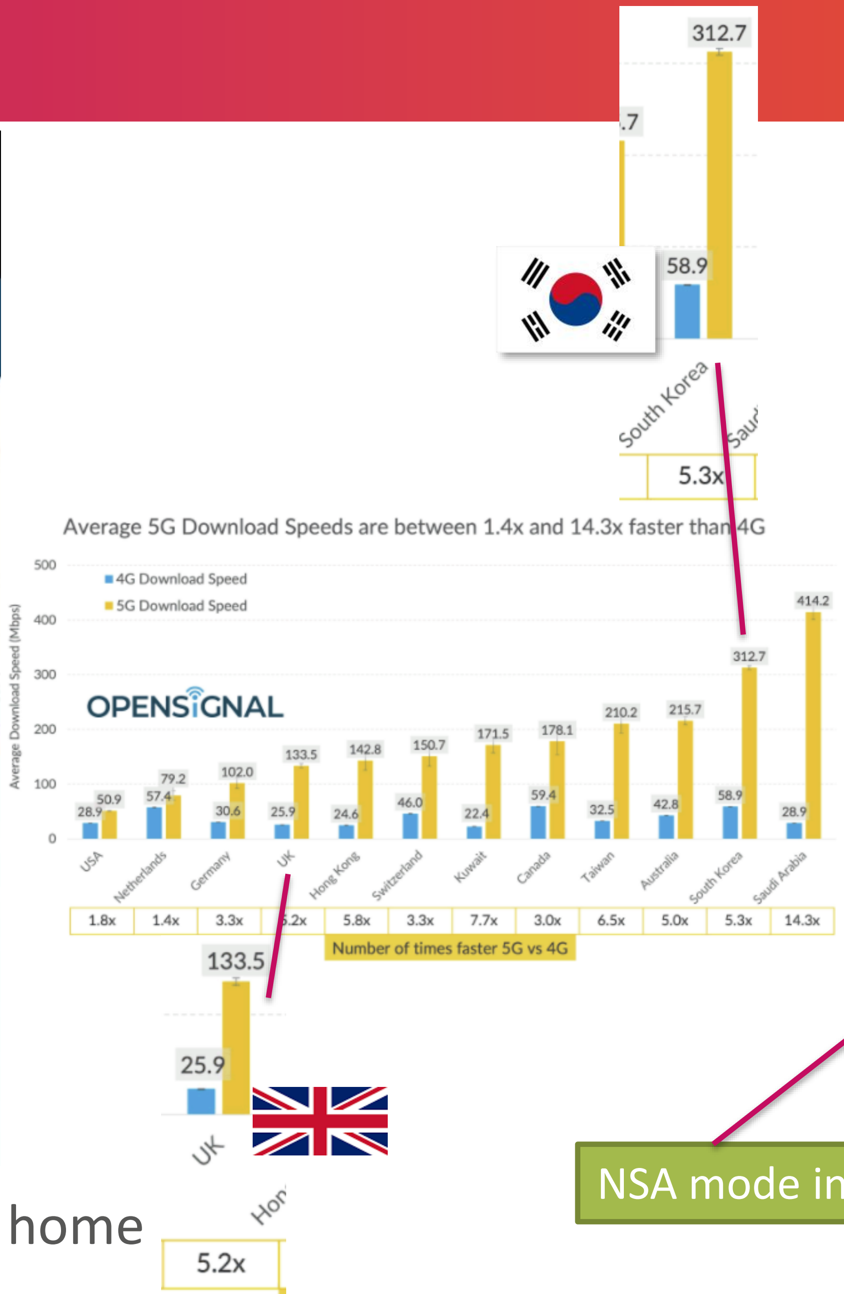
5G Available – investment in performance is needed but what performance….

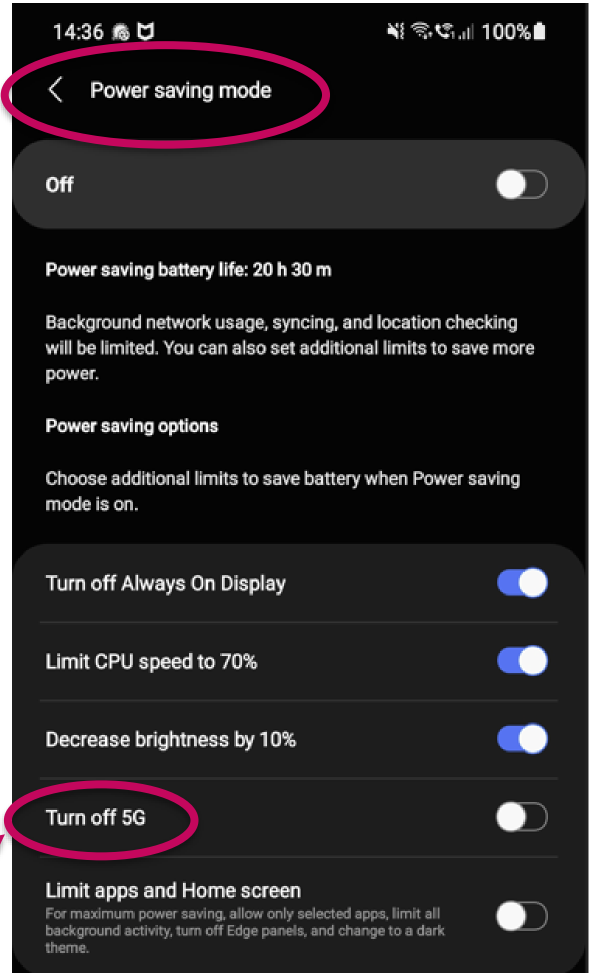


- Indoors in London



- Indoors at home





NSA mode in networks = 2 bearers needed

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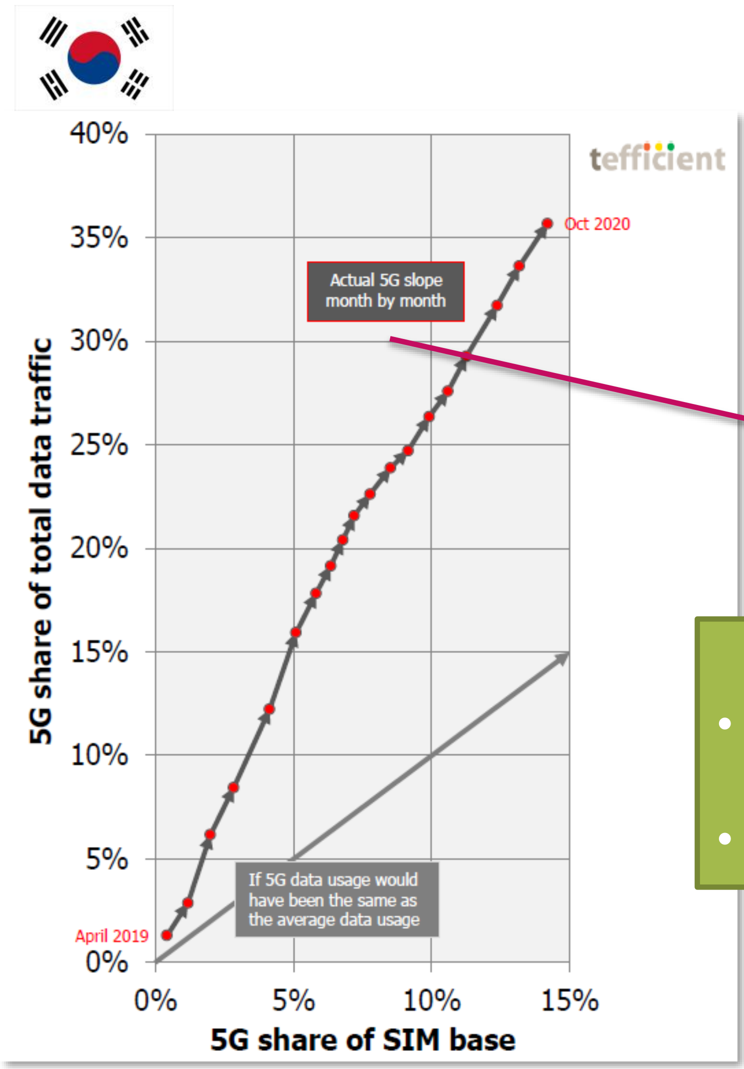
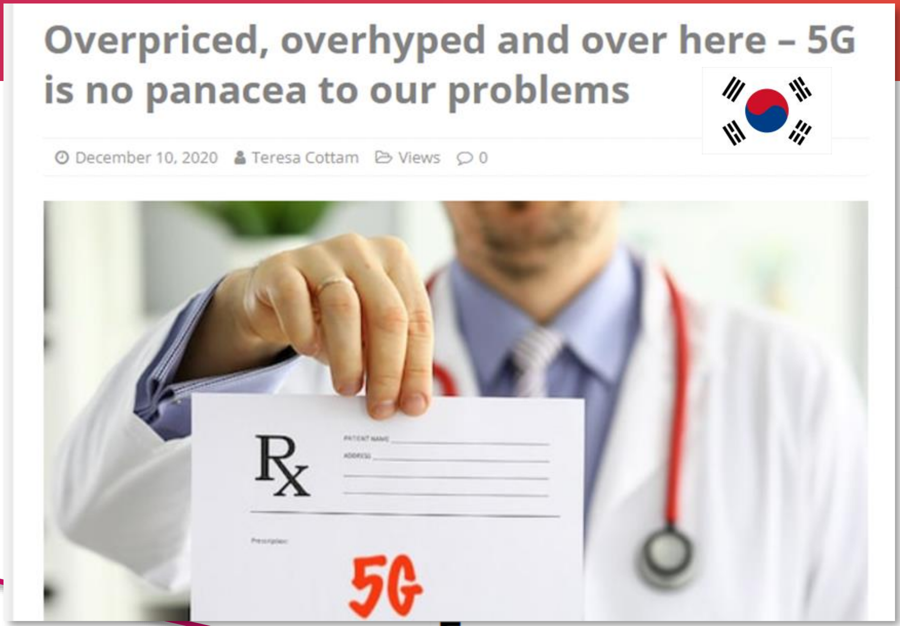
The Data grows but the revenue doesn't





Overpriced, overhyped and over here – 5G is no panacea to our problems

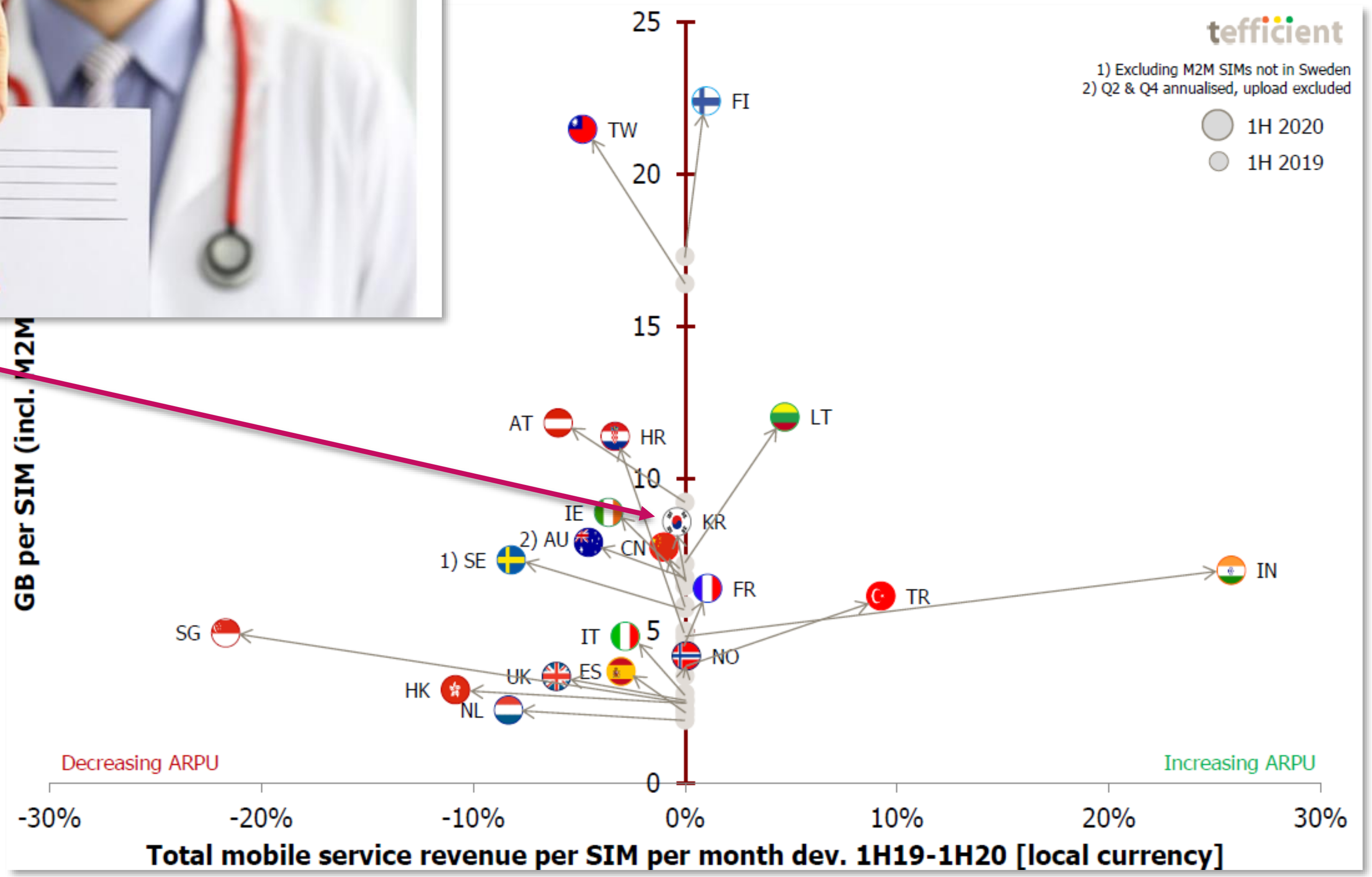
December 10, 2020 Teresa Cottam Views 0

https://disruptive.asia/overpriced-overhyped-5g-no-panacea-to-our-problems/

Group performance

- 44% mobile traffic increase during FY'20
- 4% decline in revenue

"Remove duplicate infra" …… "honest debate on spectrum policy" Chief Economist, Vodafone Group



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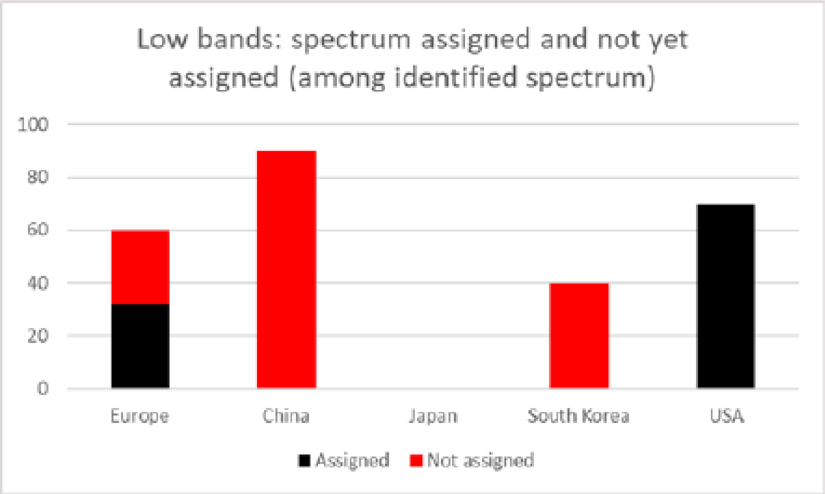
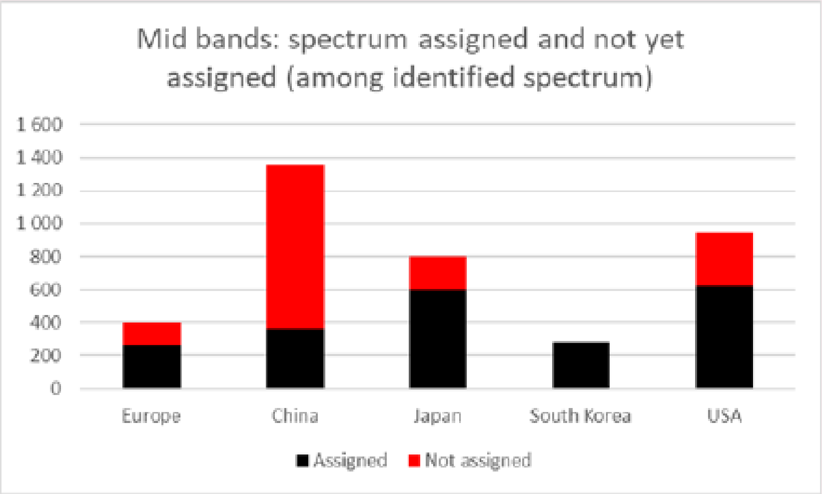
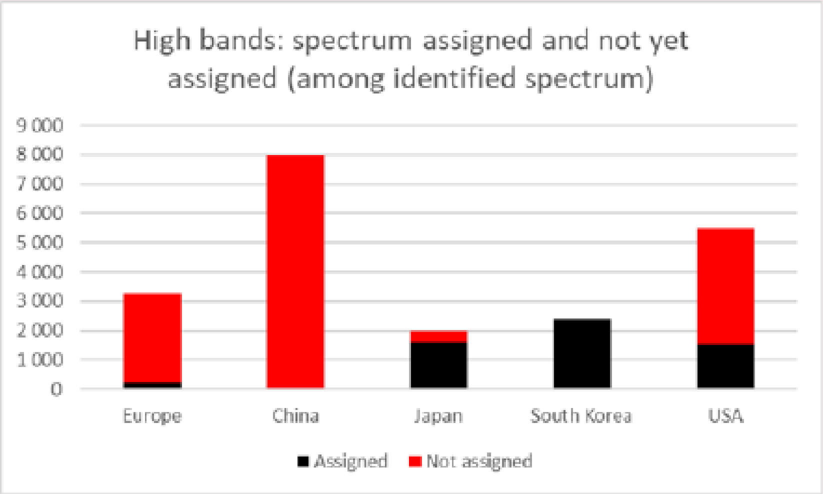
5G Spectrum – more choice of spectrum more regional differences







5G NETWORKS	China	South Korea	Japan	USA
5G mode (NSA/SA[1])	NSA	NSA	NSA	NSA
Number of 5G base stations	700,000+	150,000+	~50,000	~40,000
Use of DSS[2]	Limited	Limited	Limited	Yes
Use of mmWave bands	No	No	Planned in 2021	Yes

[1]: Non Stand Alone / Standalone
[2]: Dynamic Spectrum Sharing

[5G Observatory, June'21]

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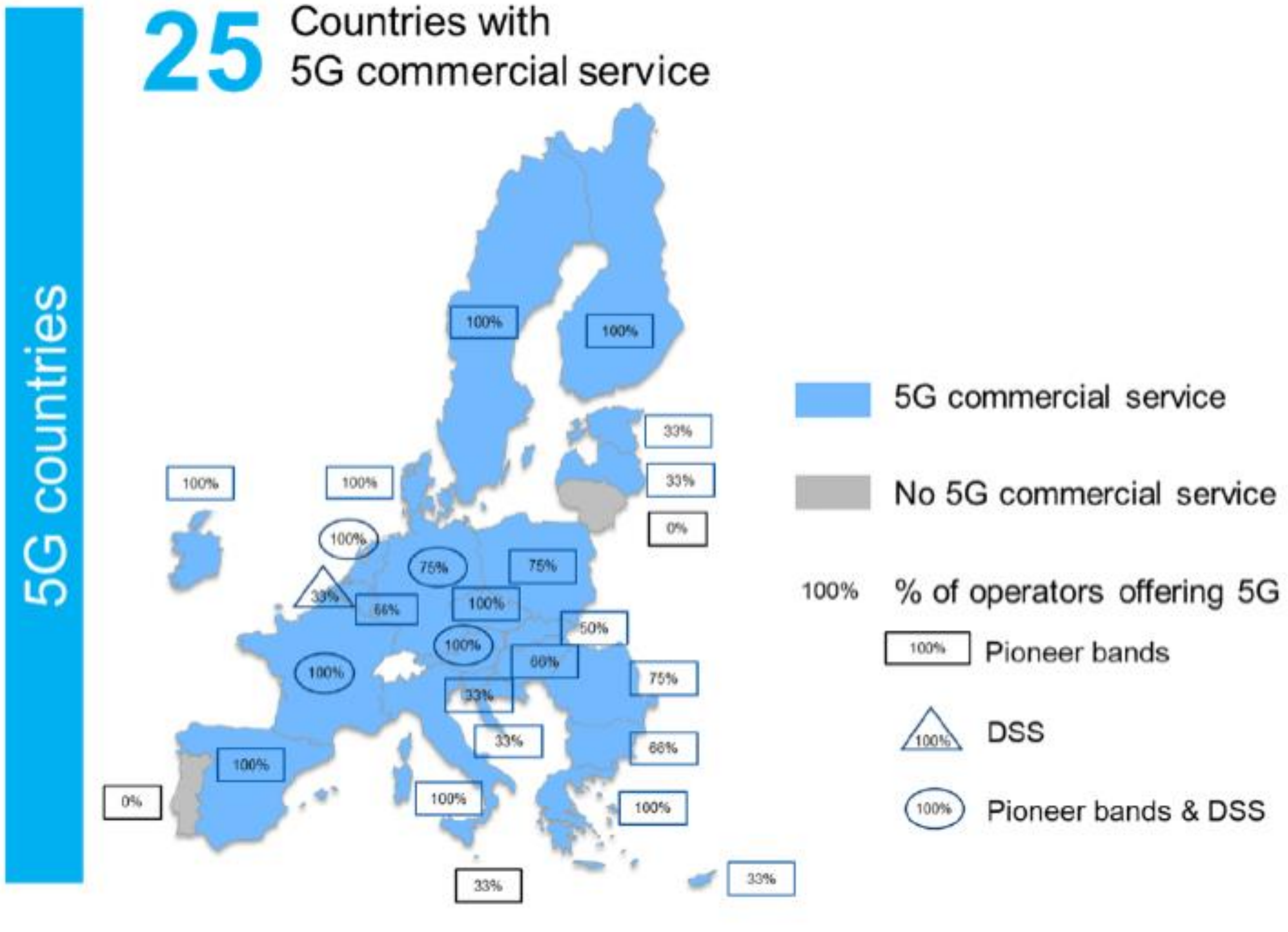
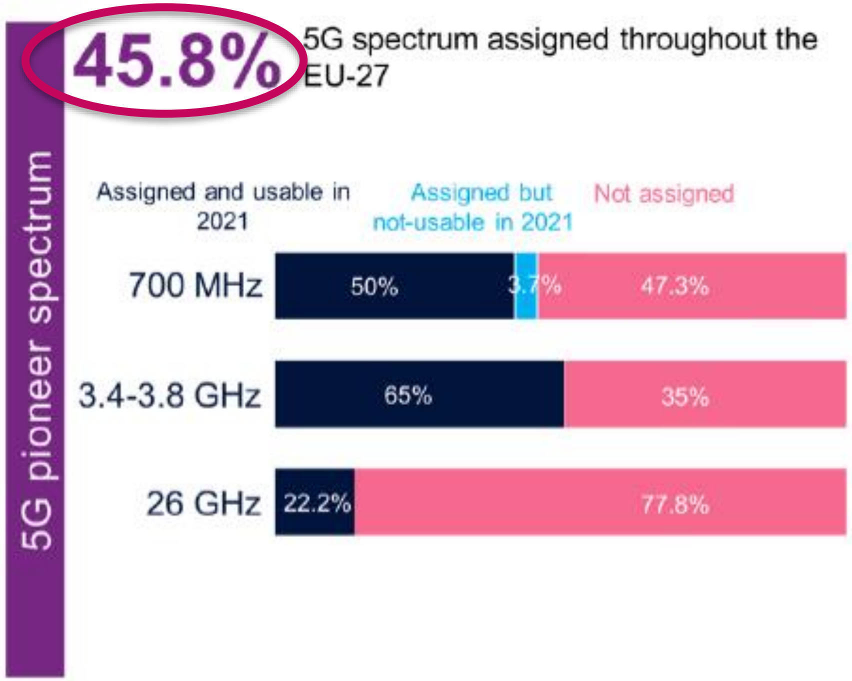
Europe

June 2021





[5G Observatory, June'21]

European Stage – Politics in consensus structures

NetWorld 2020

Sep 2020

Strategic Research and Innovation Agenda 2021-27

European Technology Platform NetWorld2020

"Smart Networks in the context of NGI"

2020

June2020

- Consultation response from mVCE

mobile VCE : research innovation application :

- **NGI – Next Generation Internet**
- 6G not in the headline

5G IA

The 5G Infrastructure Association

European Vision for the 6G Network Ecosystem

Date:	2021-06-07		Version:	1.0

DOI: 10.5281/zenodo.5007671

June2021

- RW contributes to the 5G-IA "6G Europe" paper

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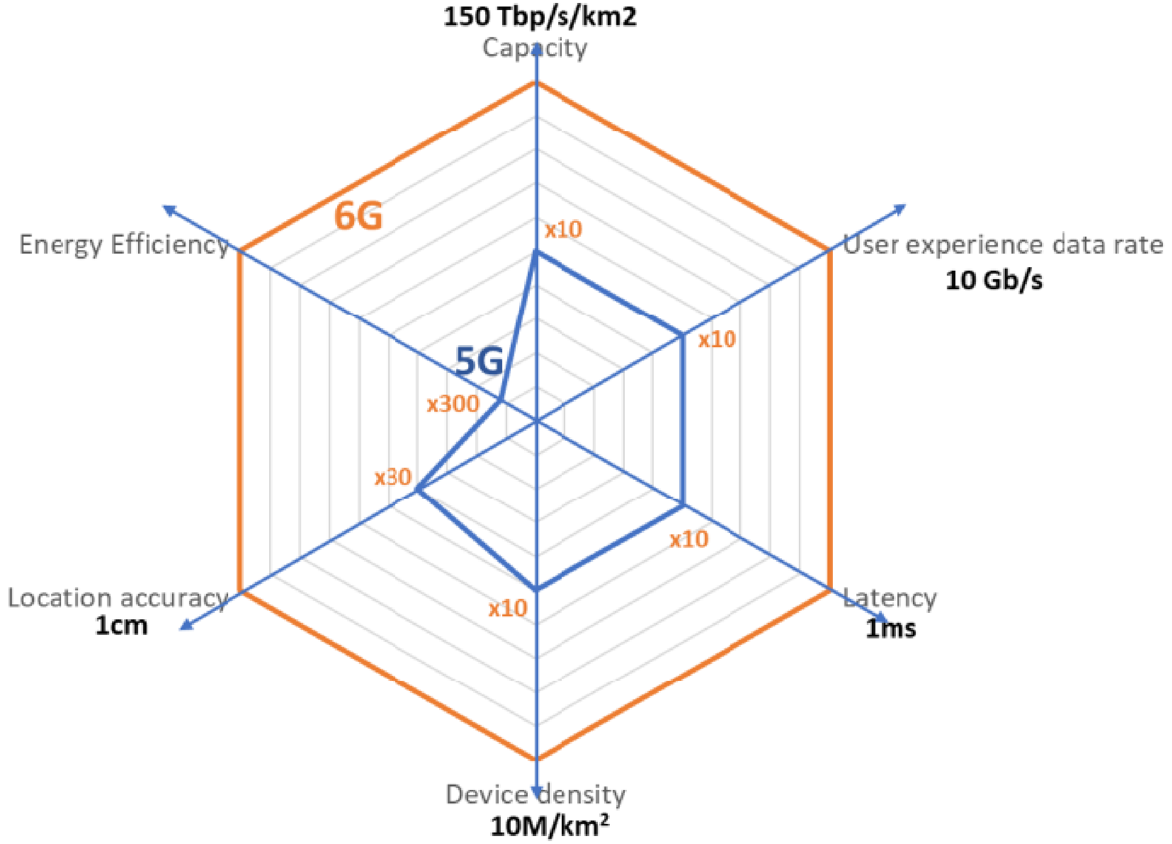
There are some old friends.....

Main 6G Goals

- Connecting intelligence
- Programmable
- Determinism
- Integrated sensing
- Sustainable
- Trustworthiness
- Affordable and Scalable

Improving 5G



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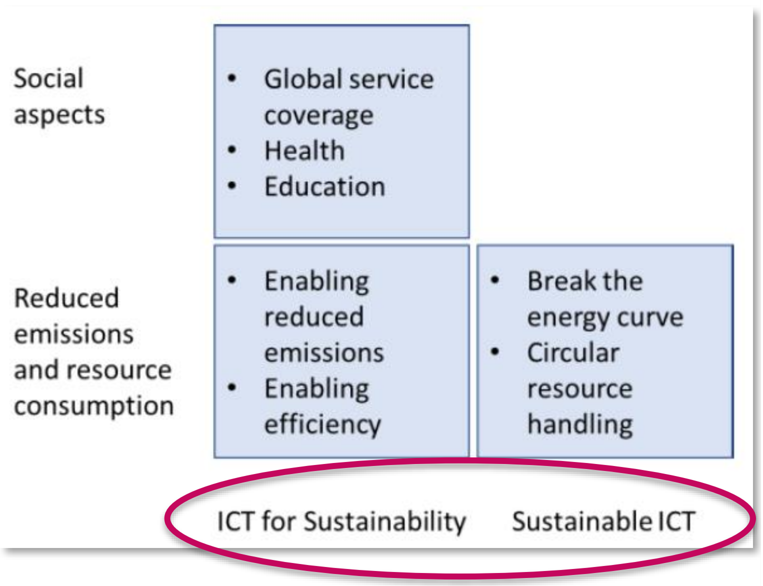
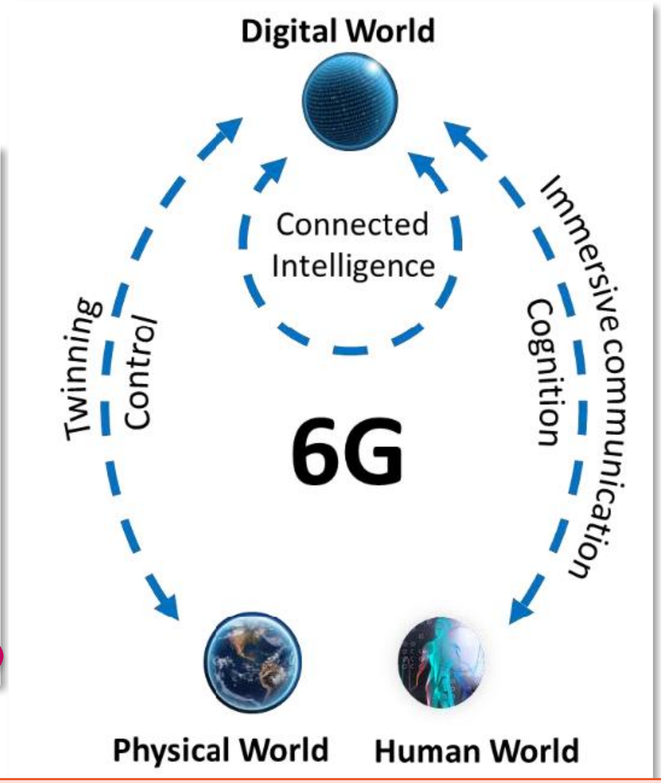
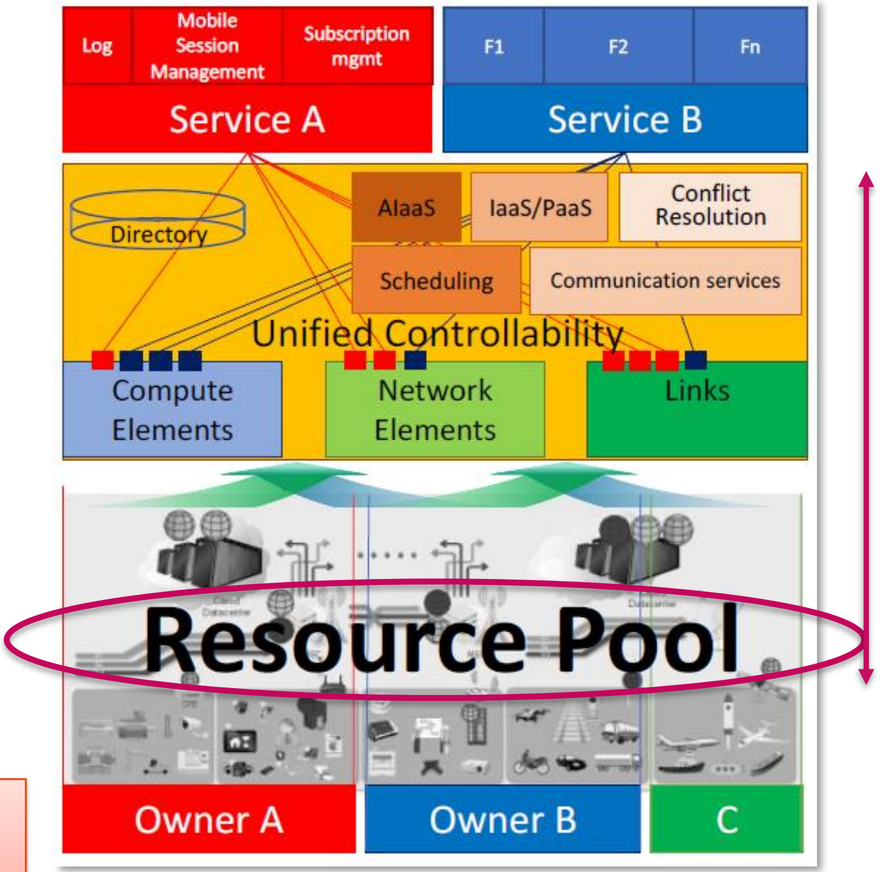
Logical Architecture
Are there enough coherent elements to guard against fragmentation?



Everyone agrees this is important



Looks like Meta-verse?
“Me too” behind Facebook?



Sometimes called “Fabric”

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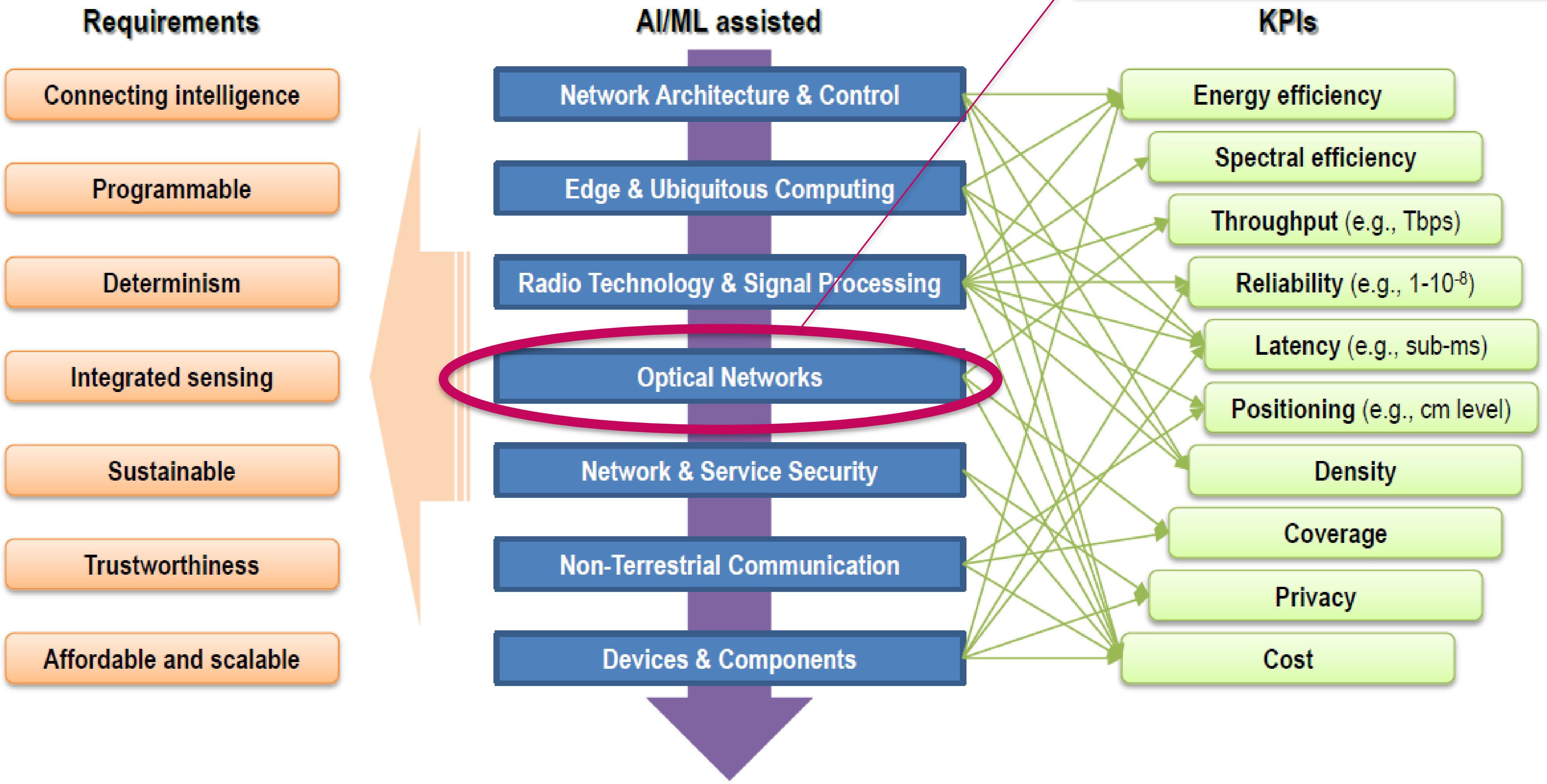
Some new concepts that are hard to convey…
Spectrum or fiber is a dominant architectural force?

The placement of this in the centre is **not** an accident. Internet Infra + Cloud



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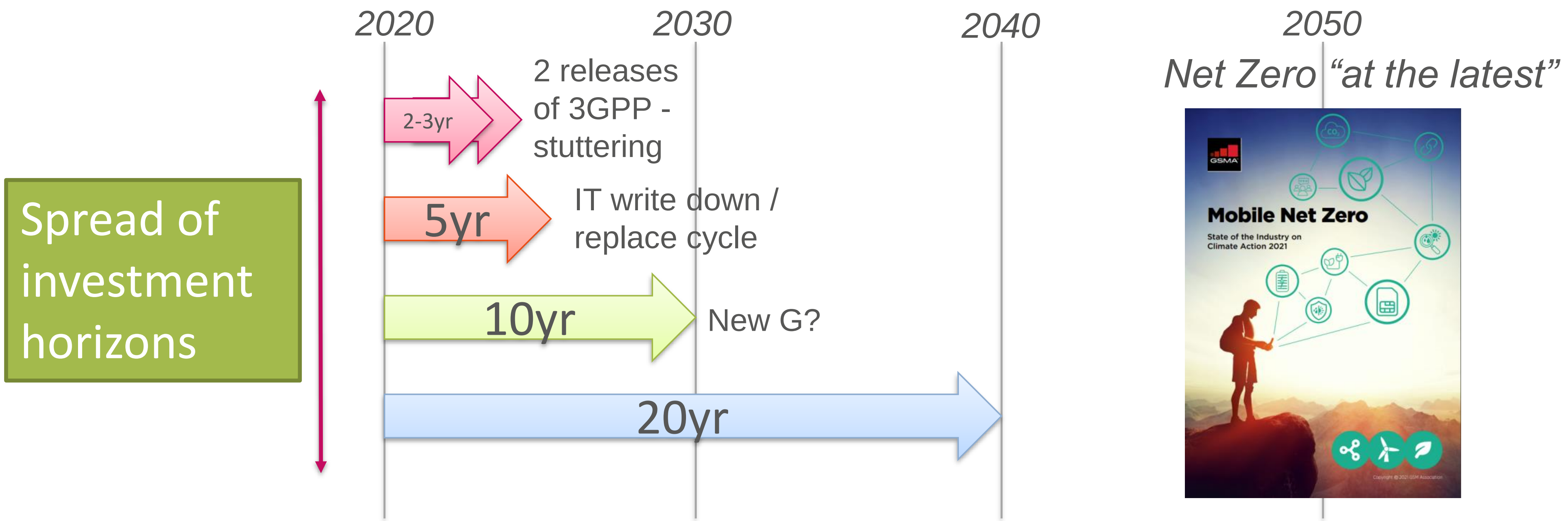
Investment Horizons
Techno-Economic Platforms Maturing

- How to deploy resource (time and money) for beneficial future outcomes?
- Received wisdom is “each 10years we need to refresh the macro network and we use the G label to signify the change” … but now many technologies and drivers are not anchored to macro outdoor ROI cycles



Architectural Generations

1st Gen = Digital Global (GSM), **2nd Gen** = Packet (HSPA to LTE), **3rd Gen** (E2E Slicing?)

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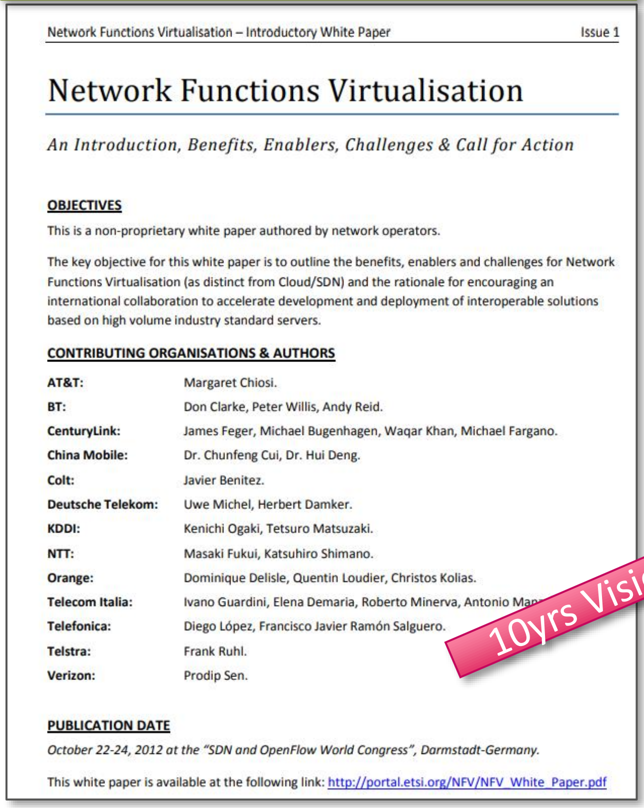
Trends and Forces: what will endure and what is shorter term

2010/12 **SDN/NFV**

Increased IT productivity, efficiency, agility and responsiveness, faster provisioning of applications and resources



Network Functions Virtualisation – Introductory White Paper | Issue 1

Network Functions Virtualisation

An Introduction, Benefits, Enablers, Challenges & Call for Action

OBJECTIVES

This is a non-proprietary white paper authored by network operators.

The key objective for this white paper is to outline the benefits, enablers and challenges for Network Functions Virtualisation (as distinct from Cloud/SDN) and the rationale for encouraging an international collaboration to accelerate development and deployment of interoperable solutions based on high volume industry standard servers.

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Telefonica:	Diego López, Francisco Javier Ramón Salguero.
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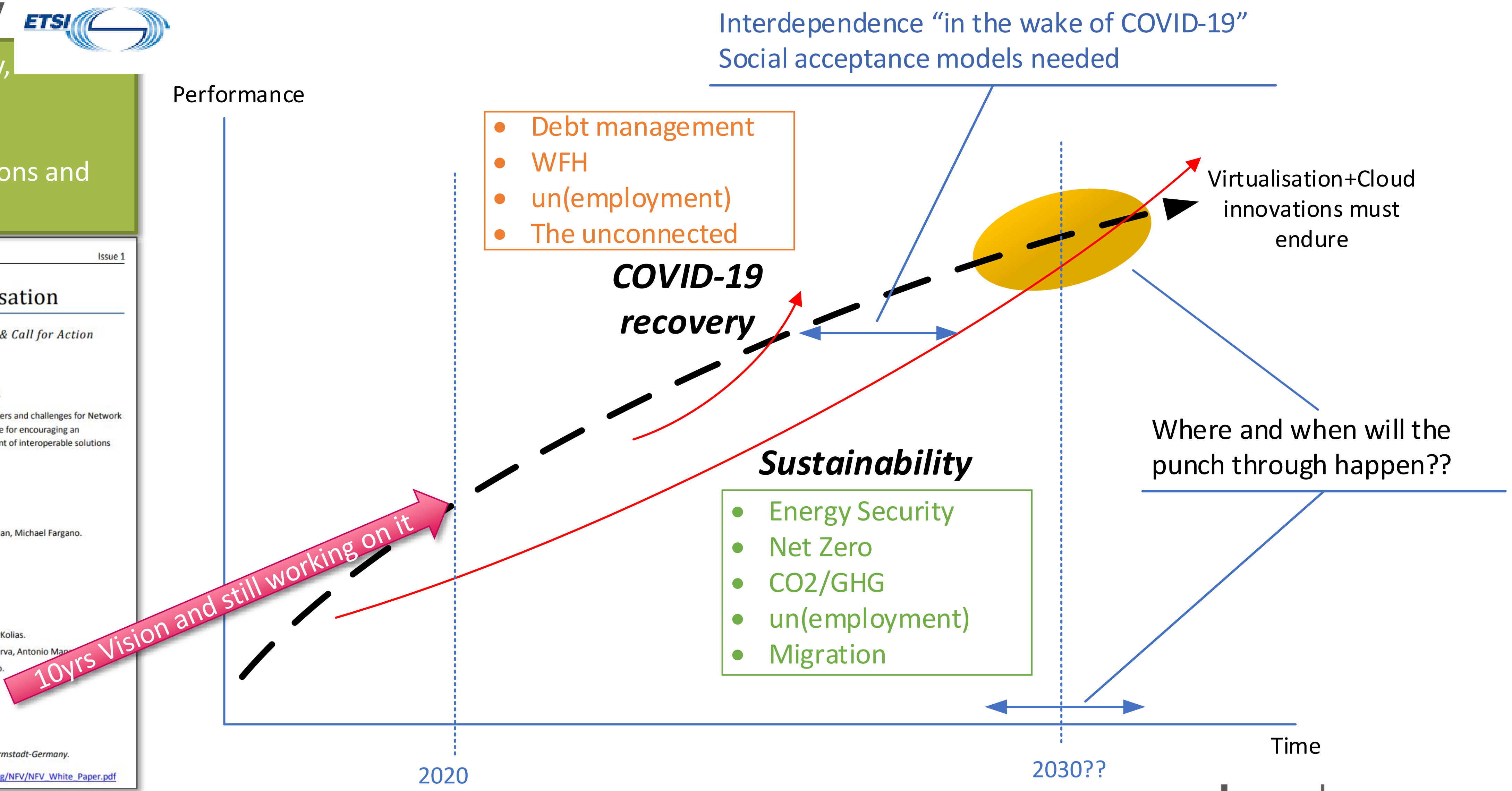
Verizon:	Prodip Sen.

PUBLICATION DATE

October 22-24, 2012 at the "SDN and OpenFlow World Congress", Darmstadt-Germany.

This white paper is available at the following link: http://portal.etsi.org/NFV/NFV_White_Paper.pdf



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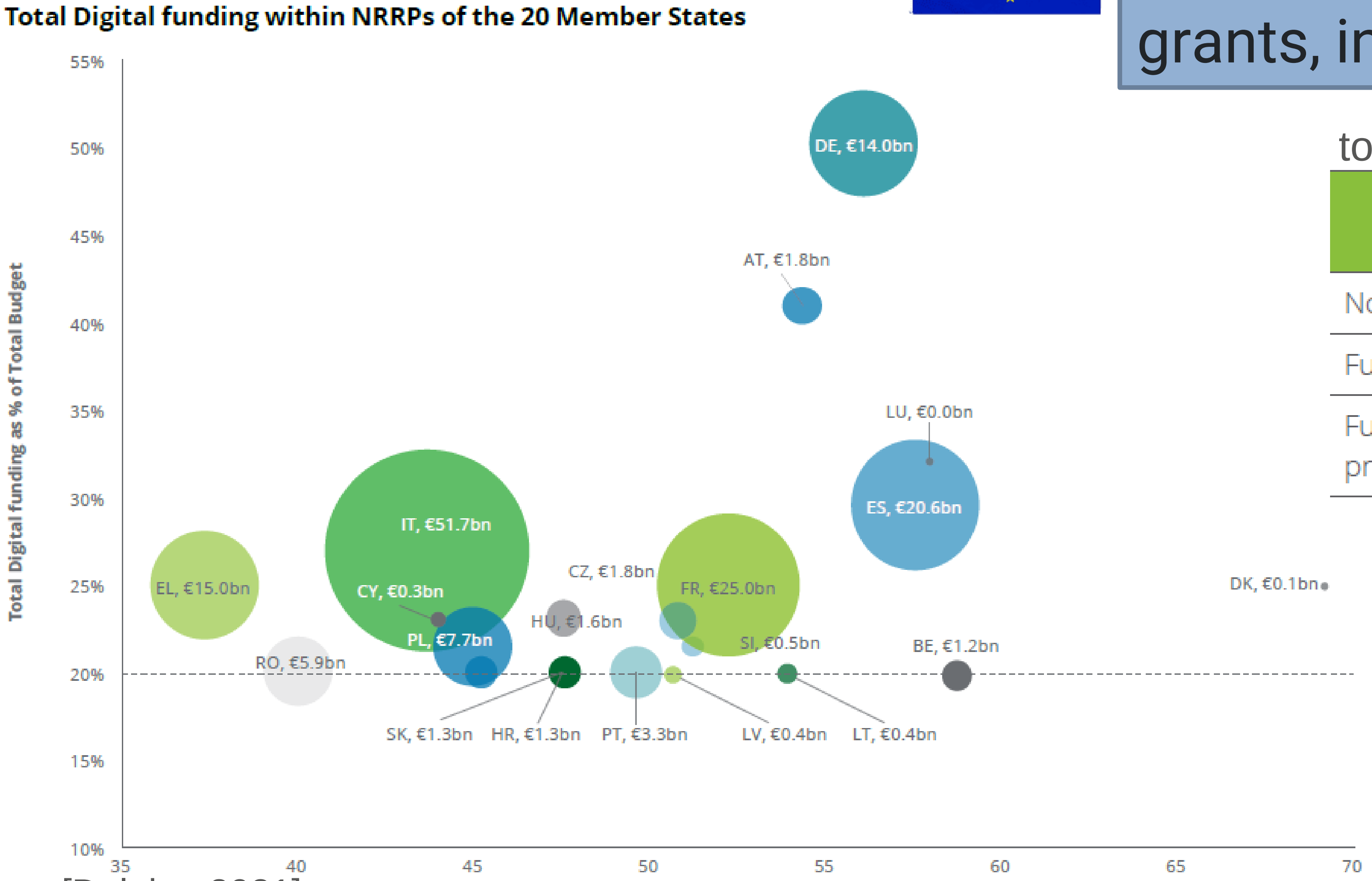
Europe - National Recovery and Resilience Plans (NRRP)



[Deloitte 2021]

€ 750 billion package, half is in the form of grants, includes low-interest loans

to support Very High Capacity Networks

	Proposals to support VHCN Household Coverage
No. of plans with funding linked to target	16/20
Funding linked to the target	Up to €16.9bn[a]
Funding linked to the target as a proportion of total funding (NRRP)	3%

to support 5G

	Proposals to support 5G coverage
No. of plans with funding linked to target	13/20
Funding linked to the target	Up to €15.2bn[a]
Funding linked to the target as a proportion of total funding (NRRP)	3%

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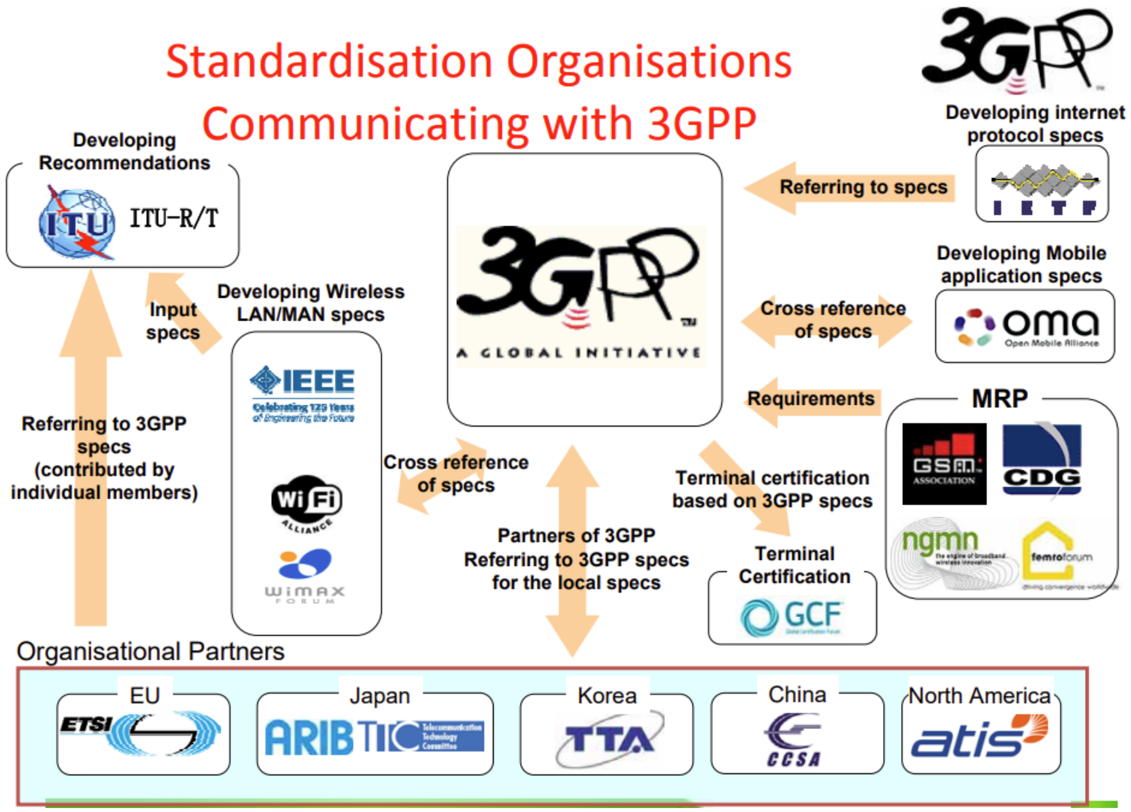
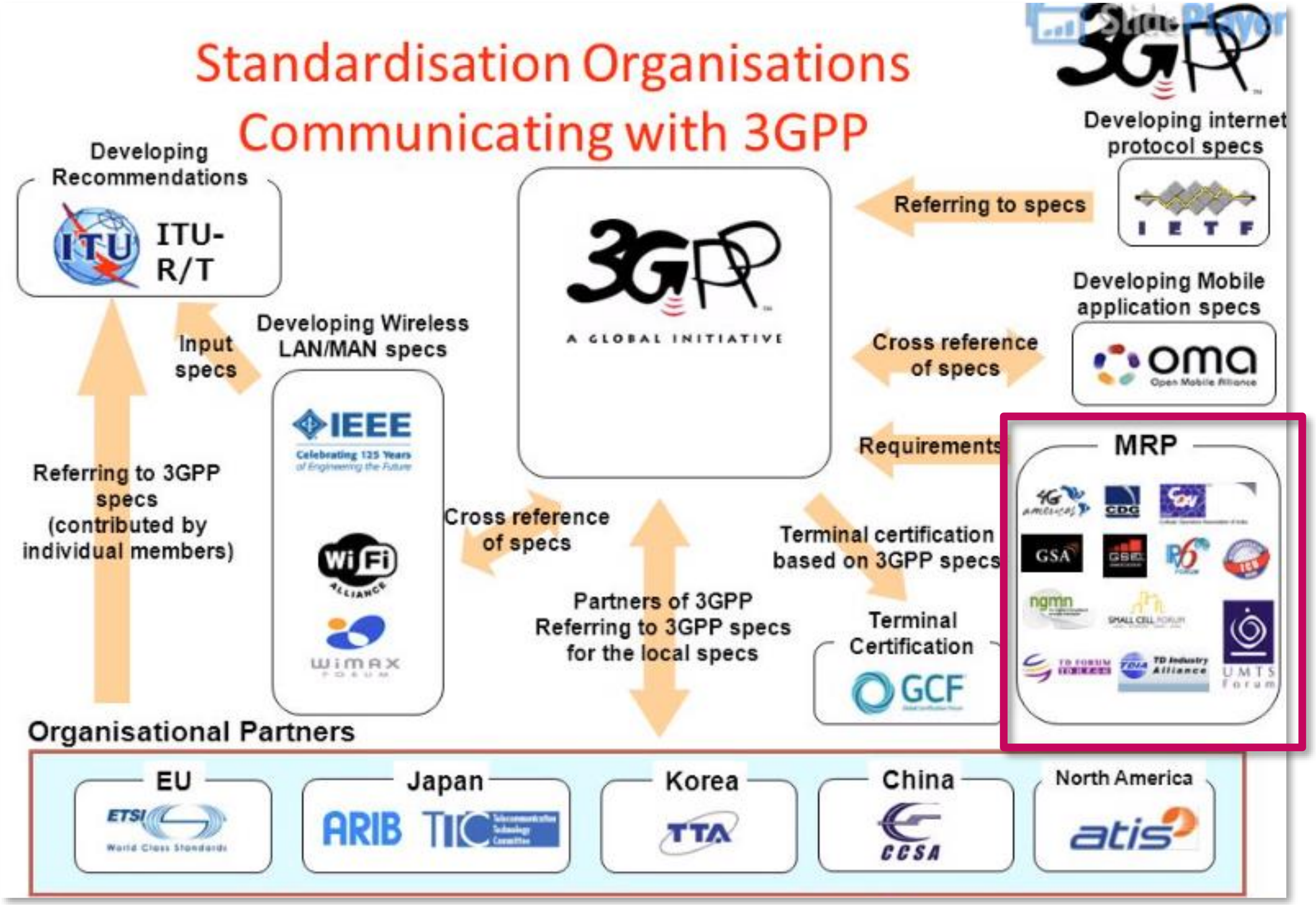
“Controlling” Ecosystems from within the technical Standards is challenging

- 2009 to ……………………………………………………………………………now (Market Partner growth)





https://www.3gpp.org/IMG/pdf/2009_10_3gpp_IMT.pdf

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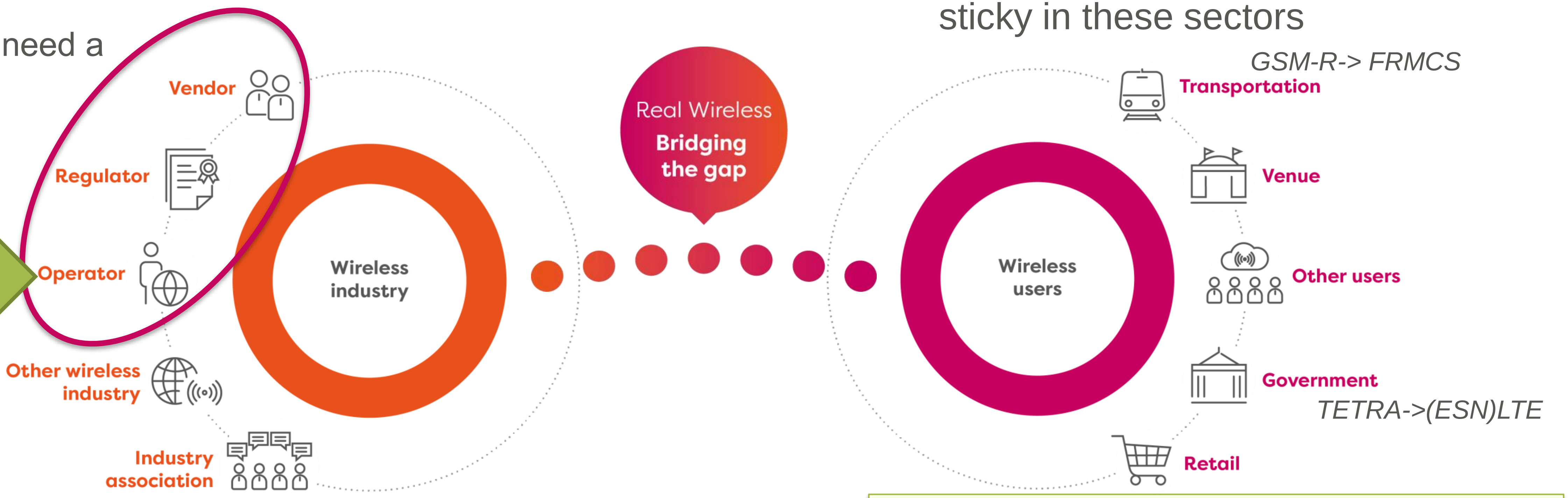
Real Wireless view of supply and demand segments for Wireless Systems G-Gs in the market vs G-Gs in the R&D domain

Dominant 5G supply force is cultural default
“every 10 years we need a new G”

- Different types of Technical Debt
- Architectures and Systems are sticky in these sectors

MNO/ASP/CSP/DSP/etc..
Segmenting



Real Wireless view
- Our fears about B2C Techno-economic value prop are emerging
- 5G market proposition is poor – is it addressing a problem?
- We said we hope **5G is the last G** in 2016/17

Real Wireless view
- Professional buyers see MNO B2C issues
- Professional buyers not impressed with “5G”
- “Indoor” performance of systems is a big factor
- Must consider market for “G”s , is it really helping?

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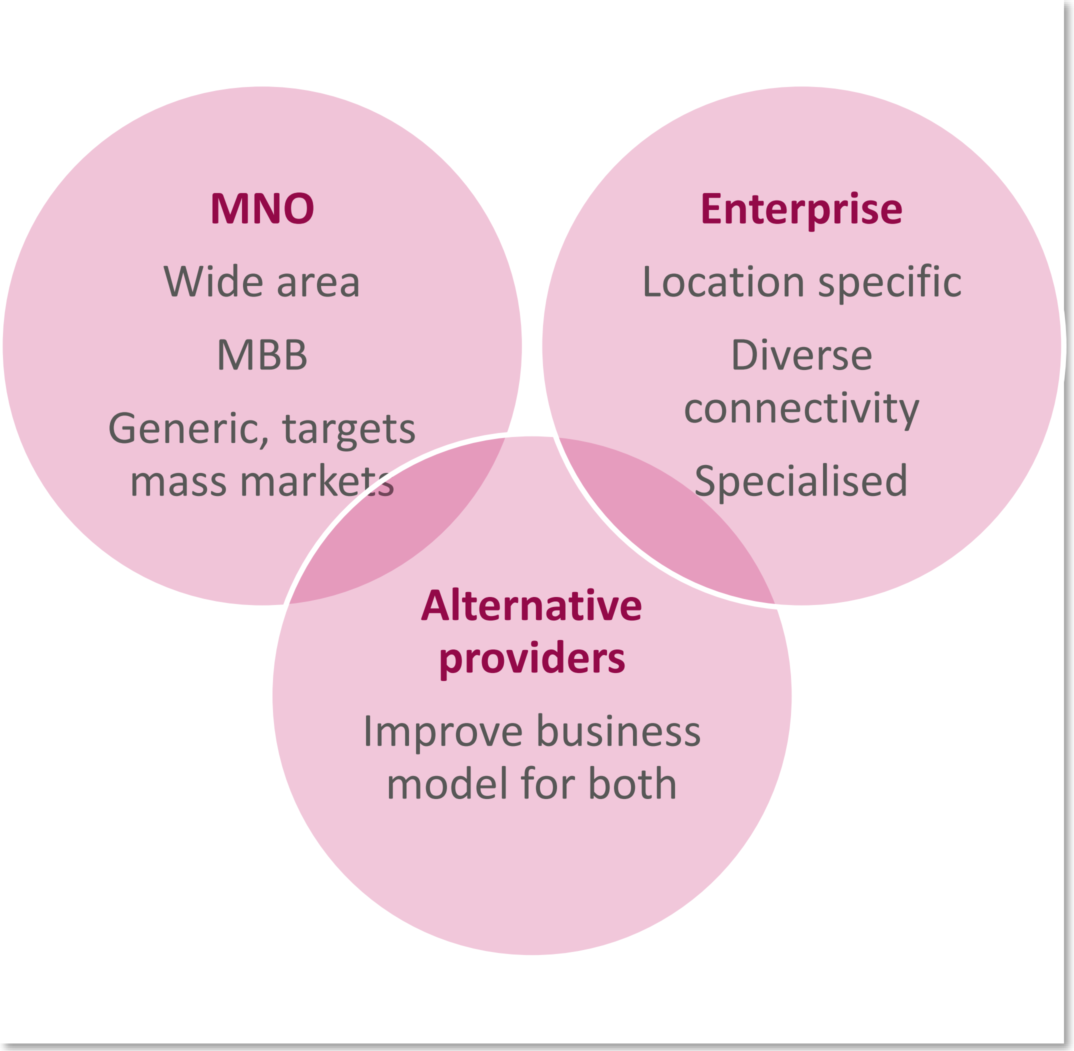
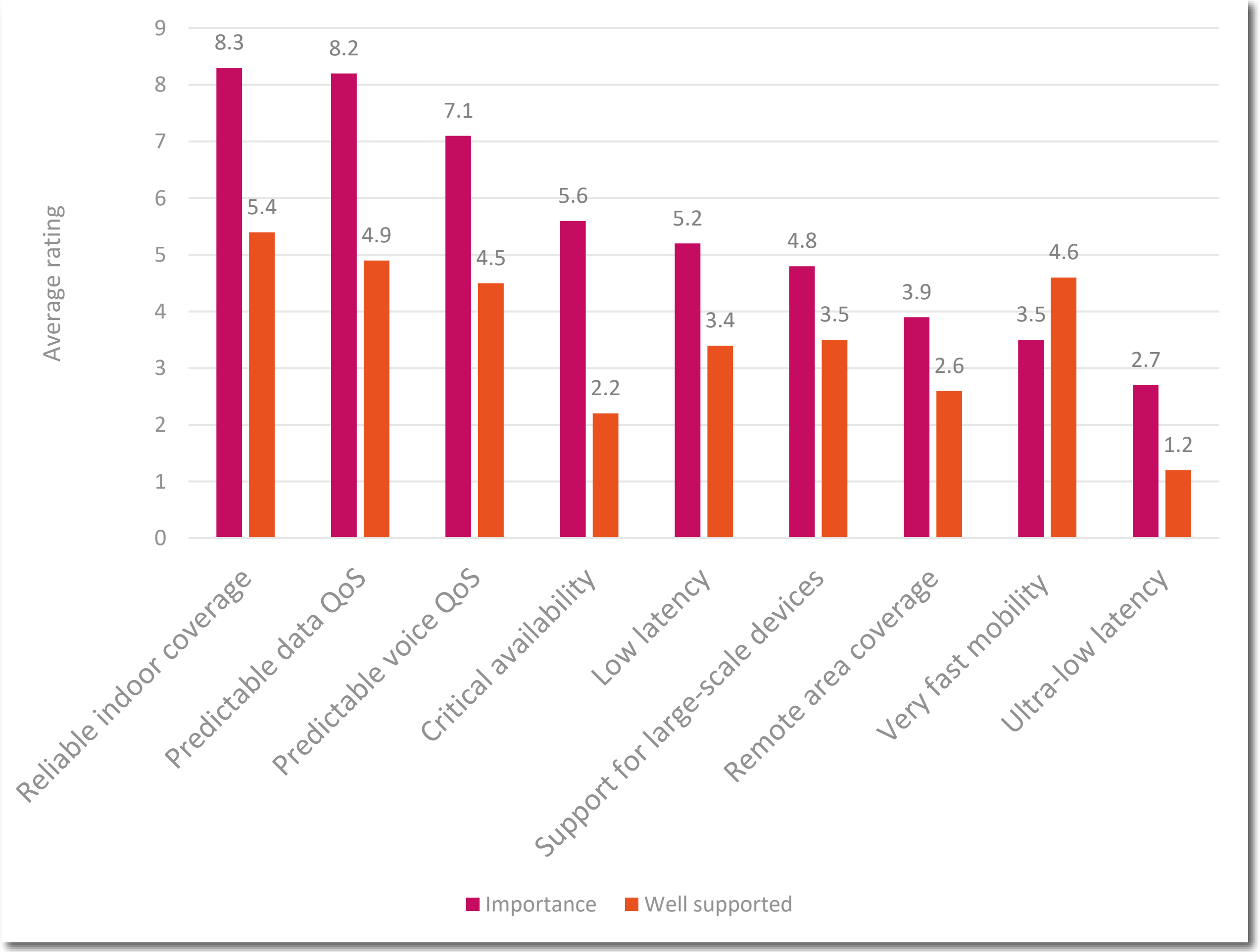
New enterprise 5G requirements drive the need for service provider diversification



Enterprise levels of satisfaction with current cellular networks are low *(Source: Rethink enterprise survey)*



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Real Wireless view from Spectrum Policy Forum March 2013
Still stands...

Monitor and incentivise spectrum efficiency

Encourage sharing and overlays

Recycle

Reduce

Sector spectrum needs

A dynamic Needs Cycle can be implemented through **automation of Systems** or **evidence backed rapid decisions** by Government and Regulatory policy makers

Seek thought leadership on the European stage

Reuse

Accelerate process from “fallow” to “fertile”

- Gradual blurring of lines between industry sectors and ownership of discrete allocations of the spectrum

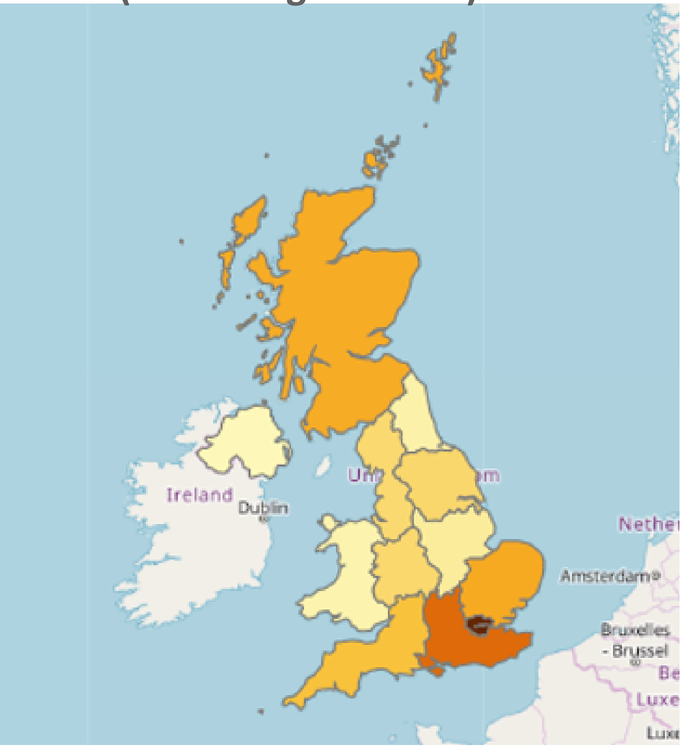
Engagement with R&D in Europe is important
Horizon 2020 evolving to Horizon Europe (95.5Bn)

UK 5G Innovation Network | UKRI Innovate UK | Department for International Trade

UK Performance for Horizon 2020

14.75% success rate → 16,303 participations → 9,802 signed grants → €7,41B EU contribution

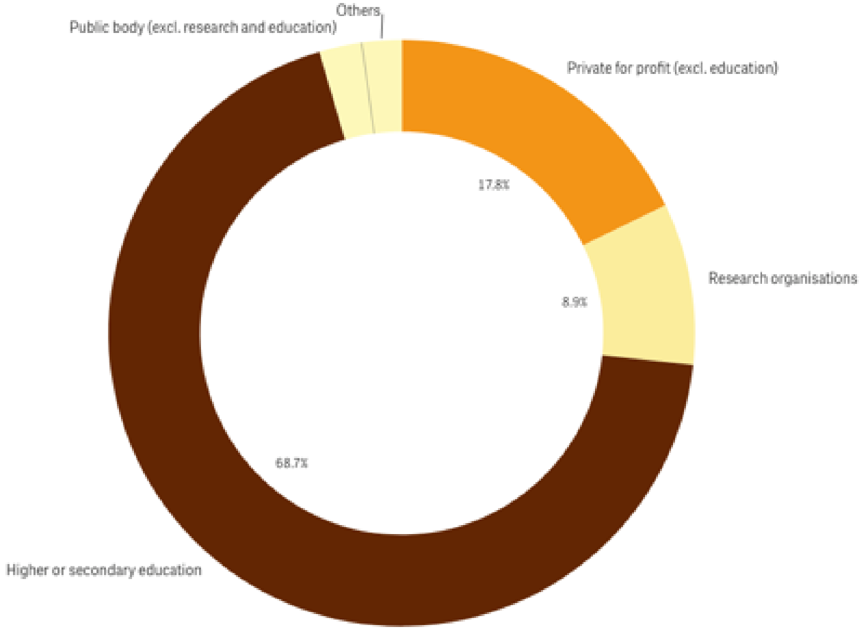
(EU average 11.91%)



2,845 SME participations

↓

€933M EU contribution



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