



## **Implications of 5G Deployment on Future Business Models**

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Presentation of the study prepared by Axon  
Partners Group and DotEcon for the BEREC

ITU Regional Economic Dialogue of Telecommunications/  
ICTs for Latin America and the Caribbean (RED)

Mexico City, 6 September 2018

# About Axon Partners Group and DotEcon

- ▶ **Axon Consulting**, the consulting arm of Axon Partners Group ([www.axonpartnersgroup.com](http://www.axonpartnersgroup.com)), is an international consulting firm providing advisory services in the ICT industries, with focus on public policy & regulation, strategy & operations, and costing & profitability.
- ▶ **DotEcon** ([www.dotecon.com](http://www.dotecon.com)) is an economic consultancy, specialized in public policy and business strategy, regulation and competition, spectrum auction design, and bidding strategies.
- ▶ Worked to-date with international **top-class clients in +50 countries.**

## International footprint and reference clients



### Reference clients:

- ▶ **International Institutions:** European Commission, ITU, BEREC, FTTH Council
- ▶ **Regulatory authorities:** IFT (Mexico), CRC (Colombia), SUTEL (Costa Rica), ENACOM (Argentina), OFCOM (UK), ComReg (Ireland), PTS (Sweden), NKOM (Norway), AGCOM (Italy), CNMC (Spain), ANACOM (Portugal), EETT (Greece), IBPT (Belgium), OCECPR (Cyprus), CITC (KSA), TRA (Oman), TRA (UAE), CRA (Qatar), TRC (Jordan)
- ▶ **Telecom operators:** Telefonica Group, British Telecom, Vodafone Group, Microsoft Group, Telenor Group, Etisalat Group, Viva, Turkcell, Telecom Italia, Digicel Group, STC

# Introduction

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Study on Implications  
of 5G Deployment on  
Future Business Models

No BEREC/2017/02/NP3

A report by DotEcon Ltd and  
Axon Partners Group

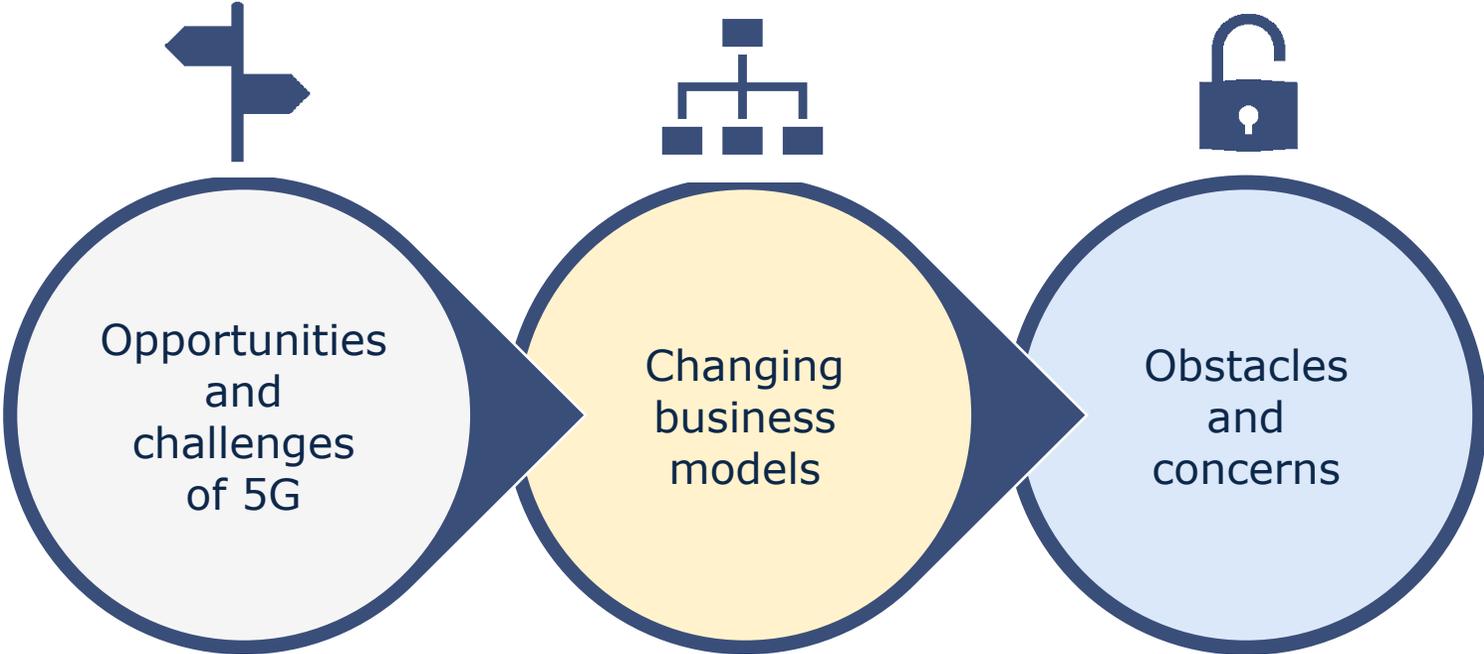
14 March 2018



- ▶ On November 2017, the **Body of European Regulators for Electronic Communications (BEREC)** commissioned Axon Partners Group and DotEcon to conduct a “Study on Implications of 5G Deployment on Future Business Models”\*.
- ▶ This study aimed to help BEREC improve its understanding of 5G in terms of the key technologies and services that may emerge, the obstacles and enablers for success, and the **implications for market structure, market dynamics and competition in the telecommunications market and other adjacent markets** (e.g. automotive, manufacturing, logistics, energy and utilities, agriculture, etc.).
- ▶ On March 2018, in the context of BEREC’s plenary meetings, Axon Partners Group and DotEcon **conducted a workshop** in Bratislava to present the findings of the study to **representatives from BEREC and EU’s NRAs**.

(\*) The study can be downloaded here: <https://goo.gl/CBmRqj>

# Scope and objectives



**REGULATORY IMPLICATIONS**





## Families of use case scenarios

### ENHANCED MOBILE BROADBAND (eMBB)

- ▶ Extension of the existing 4G value proposition
- ▶ Extending cellular coverage, improving network capacity

### MASSIVE MACHINE-TYPE COMMUNICATIONS (mMTC)

- ▶ Adoption and utilization across different sectors on a massive scale
- ▶ Uptake of mobile technologies to address MIIoT applications

### ULTRA-RELIABLE, LOW-LATENCY COMMUNICATIONS (UR-LLC)

- ▶ Applications that require high reliability and ultra-low latency connectivity
- ▶ Strong security and availability requirements

- ▶ **5G brings enhancements over 4G:** higher speeds, lower latencies, enhanced reliability, lower power consumption, greater terminal device densities, etc.
- ▶ **Enable innovative use cases** both in the telecoms industry and other adjacent industries (verticals), which may generate **new revenue streams** for a wide range of players.
- ▶ However, we are somewhat sceptical that there are certain verticals that, by themselves, can provide **significant additional new revenues** within a reasonable timeframe to drive 5G roll-out.
- ▶ We expect that early 5G deployments will be focused on **improving existing mobile broadband propositions (eMBB)**, helping operators control the **costs of growing data traffic** and maintain **service quality** at competitive levels.

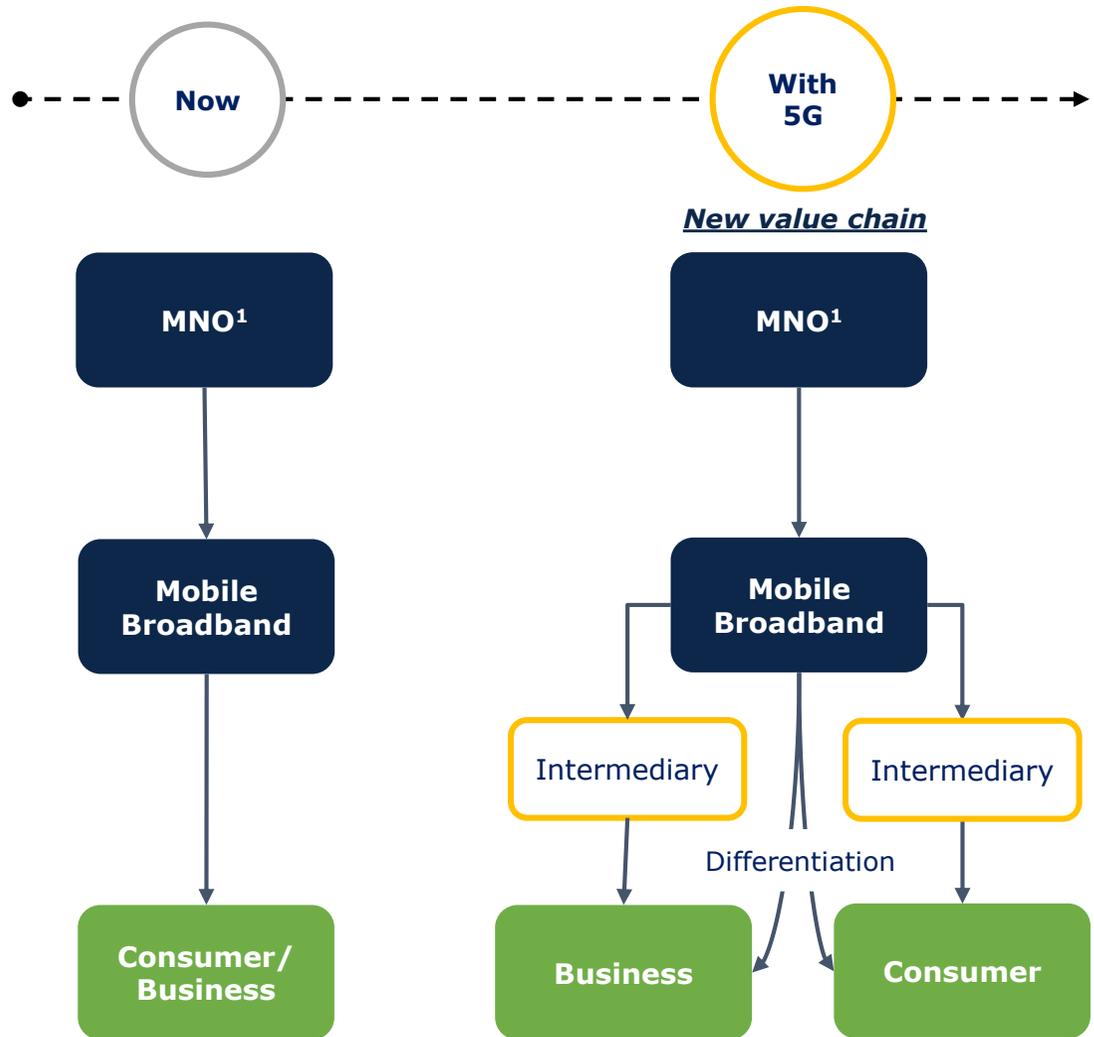


- ▶ 5G's potential to serve a wide range of use cases and requirements comes from the **increased flexibility 5G will allow**.
- ▶ 5G offers new network management possibilities that could enable a **single physical network sliced into a number of virtual networks** with different performance characteristics (network slicing).
- ▶ This network slicing creates, for the first time, the possibility of **tailoring mobile data services** to the particular characteristics of specific users.
- ▶ The emergence of 5G could lead to **significant changes within the value chain for mobile data connectivity**, both modifying traditional business models of telecoms operators and opening opportunities for intermediaries of various types.



### Example 1

- ▶ The capabilities of 5G open the possibilities for a larger number of **“differentiated services”**.
- ▶ Service providers could offer **differentiated mobile broadband services** by identifying relevant niches or by developing a range of standardised tariffs.
- ▶ Given the number of specialised requirements, there may be a **role for intermediaries** in identifying new applications for 5G and facilitating agreements between the connectivity providers and end users (including trans-national connectivity packages).



(1) Mobile Network Operator

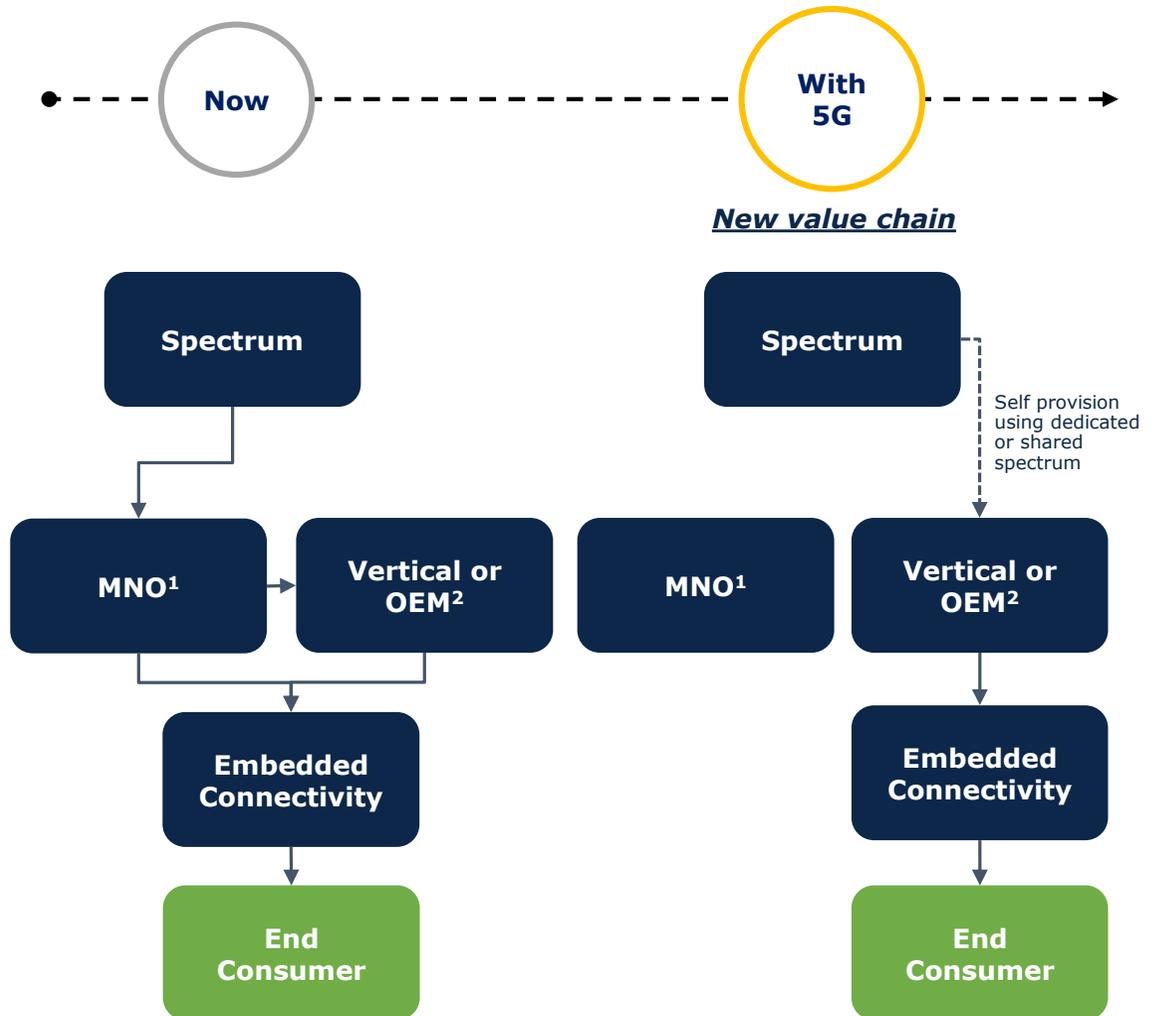


► **Self-provisioning using dedicated or shared spectrum**

might be an alternative to “connectivity-outsourcing” traditional model.

- In some cases it might be that a **private 5G network solution**, characterized by spectrum self-provisioning, is preferred by the vertical where the requirements are relatively well-defined by area and/or where there may be concerns associated with relying on a public network (e.g. coverage requirements).

**Example 2**

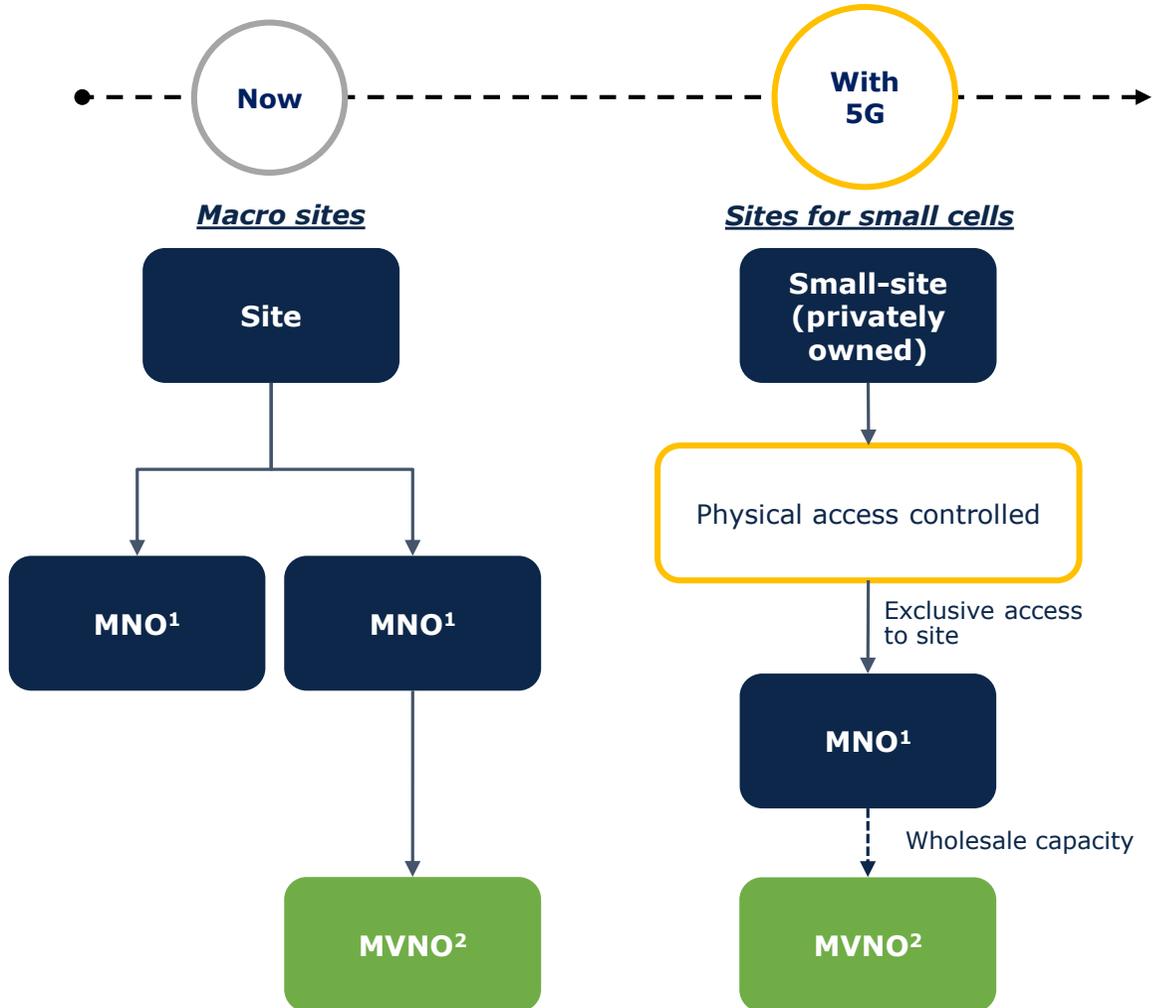


(1) Mobile Network Operator (2) Original Equipment Manufacturer



### Example 3

- ▶ **Site owners may gain power** within the overall value chain due to the difficulties of finding appropriate sites for **small cells**.
- ▶ The likelihood of multiple operators deploying in a single site might be challenging given the practical difficulties of providing power and backhaul.
- ▶ There may be scope for a **single operator** to gain access (or the site owner may only offer exclusive access). There may also be opportunities for **new intermediaries** upstream of traditional mobile networks.



(1) Mobile Network Operator (2) Mobile Virtual Network Operator

Obstacles  
and  
concerns



- ▶ There is a danger that **pricing structures** might impede take-up if they excessively focus on per-connection or per-device charging models.
- ▶ Private networks should be pro-competitive and help to drive coverage of 5G networks. Clarity about which **spectrum bands** to use for private networks would be helpful.
- ▶ **Small cells** put power into the hands of site owners, which may be able to extract rents. Lack of alternatives may give site owners significant bargaining power relative to network operators.
- ▶ Rural 5G deployments need **backhaul** and, in some cases, the necessary fibre infrastructure may be lacking.
- ▶ 5G is likely to lead to much more **infrastructure sharing**. Regulators need to be alert to excessive concentration at the network level due to infrastructure sharing.

# Given the likely trends that 5G may bring, a number of regulatory implications need to be properly addressed

Topic (non-exhaustive)	Regulatory implications
<b>Pivotal site owners</b>	<ul style="list-style-type: none"> <li>▶ Exclusive site access arrangements</li> <li>▶ Site availability: planning and public sites</li> </ul>
<b>Access to spectrum</b>	<ul style="list-style-type: none"> <li>▶ Timely availability of spectrum for public networks and private 5G networks</li> <li>▶ Spectrum awards to allow entry of non-traditional operators</li> </ul>
<b>Coverage</b>	<ul style="list-style-type: none"> <li>▶ Redefinition of the 'coverage' concept</li> <li>▶ Mixed connectivity environment</li> </ul>
<b>Competition</b>	<ul style="list-style-type: none"> <li>▶ Encouraging private networks and non-traditional entry</li> <li>▶ Infrastructure sharing and upstream competition</li> </ul>
<b>Backhaul</b>	<ul style="list-style-type: none"> <li>▶ Rural backhaul – synergies with national broadband interventions</li> <li>▶ Physical infrastructure access to assist in deployment of fibre backhaul</li> </ul>
<b>Net neutrality</b>	<ul style="list-style-type: none"> <li>▶ Alignment of network slicing with net neutrality regimes</li> </ul>
<b>Sectoral regulation</b>	<ul style="list-style-type: none"> <li>▶ New uses subject to sectoral regulation (e.g. aviation, health)</li> <li>▶ Assessing network reliability and security</li> </ul>

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