

OUR “5G BRAVE NEW WORLD” SERIES:

THE IMPACT ON BUSINESS MODELS

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5G – MULTI-PARTNER BUSINESS MODELS

Around the world 5th Generation Mobile Network (5G) is expected to act as one of the main tools for economic recovery. By using shorter and higher frequency bands 5G promises lower latency, faster speeds, and greater carrying capacity, which will be especially relevant for accelerating transformation processes at the industry level and benefiting businesses and consumers.

As an evolution in the lineage of cellular mobile network, 5G upgrades its predecessor facilitating the remote control of machines by other machines and of countless day-to-day devices.

The advantages underlying the introduction of 5G vis-à-vis its predecessors include:

- Higher-speed mobile internet access (around 100 times faster than 4G);
- Remote control of machines and devices (IoT);
- Enhanced possibility of network management for providers; and
- Lower power consumption compared to earlier mobile technologies.

Although Portugal also shares these expectations, only in the beginning of 2022, ANACOM, the Portuguese regulatory authority, issued the rights to use the frequencies allocated to the winning bidders of the [5G Auction](#). Right now, the commercial exploitation of 5G is still at an embryonic stage.

Therefore, most market questions outstanding after the end of the auction, such as the role of the new players and new services to be implemented, remain unanswered.

In this context, while the technological advantages of 5G seem promising, it is not so clear how operators will be able to recuperate on their investments and, above all, how and when other industries will benefit from the technology.

For operators to both recover investments already made to acquire spectrum rights, as well as to deliver on the commitments that the licences require, they will need to develop collaborative, multi-partner business models with specific legal and regulatory challenges to overcome.

To be able to address these challenges, we will make a brief overview on some of the fields in which the boundaries between the communications sector and other undertakings will mostly fade.

5G OPERATORS' BUSINESS MODELS OPPORTUNITIES

From a regulatory perspective, until now, operators have essentially two options, which naturally will branch out almost endlessly. In the first junction operators will basically position themselves either at retail or wholesale level, with large operators, particularly legacy operators with widespread networks, operating in both levels.

In any case, they will be either (i) offering the network services they design to retail customers – either B2B or B2C – or, (ii) sublet network components to other network operators who, in turn, will offer them to their retail customers.

Simplistically it may be said that until the 1990's explosion of commercially available IP based communications, in general, retail customers were users of networks focused on content, while operators focused on hard telecommunication engineering skills.

With personal computers exploding and broadband IP based services becoming ubiquitous, in the early 2000's, the first over the top providers appeared, first in fixed services and a few years later, with the popularization of pocket computers, also known as smartphones using 2,5G and 3G, these services became fully mobile.

As discussed below, the technical possibilities offered by 5G, will not only speed up communications but allow retail customers to become value-added services themselves, further blurring the lines between users and providers.

Faster Internet speeds, increased traffic, and technology integration are the benefits commonly attributed to 5G. Some of the major benefits are:

Smart IoT devices - The number of Internet of Things (IoT) devices is expected to increase with the rollout of 5G speeds. Thus, IoT-focused companies may expect this technology to leverage their capabilities. From evolving infrastructure diagnostic systems, to providing better data insights and to reducing device vulnerability.

Network Slicing - The multitude of emerging technology uses and new services by businesses and consumers will require a flexible network that provides a better user experience. With 5G, users will be able to create multiple virtual networks with just one physical system. This network slicing may help enterprises provide an end-to-end virtual system, encompassing not only the network, but also the compute and storage functions.

Multi-Access Edge Computing - Through 5G technology, multi-access edge computing will help to relieve crowded enterprise networks, even while supporting hundreds of devices simultaneously. This cloud-based network architecture can also boost the overall performance of enterprise networks. In addition to handling large data loads and delivering real-time results, multi-access edge computing will also protect user data.

Therefore, we will highlight some of the main sectors (industries) that are usually credited with more immediate benefits from 5G and what could be the relationship between companies operating in the respective sectors and the operators.

AUTOMOTIVE SECTOR

Among the various sectors, despite being one of the sectors that tends to benefit most from the implementation of 5G based networks, the automotive sector will be face some of the major challenges in implementing the “5G transformation”.

When talking about autonomous vehicles used in closed circuits, e.g. in logistics facilities such as warehouses, factories or even ports and airports, the improvements may be immediate since many vehicles may be connected to a network with very low latency and very high speed, which, connected to an intelligent system, will allow internal displacements to be increasingly efficient, fast, controlled and safer.

However, despite being one of the most promising sectors, many questions may emerge, such as: who will be responsible for possible accidents in case there is a failure in the network supply to the company that in turn indirectly affects the final consumer; who will be held liable for compensation if a product fails due to a connection fault; and who will be held liable for compensation in the event of a data leak, the company providing the service, or the operator?

MANUFACTURING AND FARMING

5G is set to enable large scale “machine to machine” communications, allowing for a reduction in human error and an increase in automated processes. Also, using 5G real time communications to the operators of machinery is growingly possible, making the process faster and safer, with sensors that can reveal exactly when and where a tool needs changing or updating.

As well, in this emerging technological world, scientific farming techniques are being used to boost productivity in farms. These include use of Agri-IoT sensors for soil monitoring, water management, smart irrigation, crop health monitoring, drone-based farm management etc.

Deployment of 5G networks will provide added benefit to manage these drones and obtain real time data from the sensors and conveying it directly to farming operators.

HEALTHCARE SECTOR

In the healthcare sector app-based services are seen as a major tool to provide better services, thus it could benefit greatly from the introduction of 5G. Long-distance monitoring and care services which, although not being exactly novel, with the recent pandemic, we are getting a first glimpse of the possibilities.

5G will also allow for faster and more reliable real-time access to health data from wearable technology and even bring closer the reality of remote treatments. The possibility of using augmented and virtual reality (VR) tools will certainly assist with the provision of remote medical services.

Despite the countless benefits, this is one of the sectors that may raise more complicated situations to deal with, as: e.g., in case of an error due to a network collapse, who will be held responsible? Who bought the system that will serve as the base for the infrastructure, or the telecom operator?

The truth is that although the introduction of 5G will raise several legal and regulatory questions super-fast connectivity will allow futile things that we still do today, such as pushing the grocery cart, to disappear.

THE IMPORTANCE OF OPERATORS IN CONNECTING 5G WITH THESE SECTORS

With the 5G journey just beginning, disruption and innovation is already happening in the B2B segment.

The telecom operator of the future will not just be a broadband/communication provider but will be a partner to jointly develop digitization and automation solutions.

Telecoms are collaborating with a growing number of customers in the transport and industrial sectors, and more are to come. Such customers include railways, utilities, and companies in sectors such as energy, utilities, transportation and logistics, healthcare, as well as companies offering traffic management and drone operations.

INDUSTRIAL CAMPUSES ARE WHERE DIGITALIZATION AND AUTOMATION ARE HAPPENING

Communication between machines and personnel/staff equipment (e.g., laptops, tablets, etc.) is traditionally implemented through local area networks (LAN) using Ethernet and Wi-Fi-based solutions. While LAN can provide high-speed communication, it is limited to fixed devices and cannot be used in extreme environments such as high temperature areas (e.g., factories producing steel, glass, etc.) and environments with a large number of moving elements (e.g., packaging and shipping warehouses).

While Wi-Fi is easy to install and use, it has a number of limitations. Typically, only a few dozen devices can be connected to a Wi-Fi network and the quality of Wi-Fi is unreliable, vulnerable to external factors (including interference from nearby Wi-Fi networks) and is a "best effort" network. This implies that Wi-Fi is not suitable for machine or mission-critical data flows.

5G FIELD NETWORKS CAN SUPPLY THE BASIS FOR INDUSTRIAL AUTOMATION

Technology enabled by telcos can open radically new ways of doing business. For the first time, telcos have a valid justification to talk directly to business unit heads and offer them tailored potential innovative solutions based on the field network to further expand industrial productivity.

In such a role, the telecom operator not solely be the provider of the network but become an active partner in digitization and automation solutions with greater synergies with the underlying telecom infrastructure, resulting in lower costs for the industrial partner. In this way, the telecom provider will further move away from its typical role as an external cost centre to become a partnership-based "value creator" for the industrial customer.

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