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TELECOMS SERIES

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TELECOMS INFRASTRUCTURE I

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The interconnection of users with the global network, over long distances, occurs through transport and access networks, which have the general function of transferring and providing access to information, voice and video through services provided by operators of telecommunications services to users. The high demand for the speedy propagation of content, as well as communications with lower costs for data transmission and reception, generated the need for massive delivery of broadband through the use of different types of optical fiber, enabling greater efficiency to telecommunications and global economy.

According to article 19, item XIV of the Brazilian General Telecommunications Law (Law No. 9,472/1997 - LGT), the National Telecommunications Agency - ANATEL is responsible for adopting the necessary measures to serve the public interest and for the development of Brazilian telecommunications, acting with independence, impartiality, legality, impersonality and publicity, and especially issuing norms and standards that ensure compatibility, integrated operation and **interconnection between networks**, including terminal equipment.

These infrastructure interconnections can occur in several ways. Some examples are the interconnection between the access networks and the backbone of an operator, through a network infrastructure supporting the Fixed Switched Telephone Service (FSTS) for broadband connection, called "backhaul" (transport network); and the technology of access to the Multimedia Communications Service (MCS), through the interconnection of the user's home to the provider's network using optical fiber, is called "Fiber To The Home - FTTH".

ANATEL's Act No. 2,222/2020 approved the update of the Reference List of Telecommunications Products, in accordance with the Regulations for Conformity Assessment and Homologation of Telecommunications Products, approved by ANATEL's Resolution No. 715/2019. Said act determines that optical cables and optical fibers have their conformity assessed through certification, which can be based on Type Test or based on Type Test with Periodic Evaluation of the Product and the Factory Management System every one (1) year.

In addition, Act No. 948/2018 presents the

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Annex I, which sets out the minimum technical requirements to be demonstrated in the conformity assessment of optical fiber cables for the purpose of homologation with ANATEL, recognizing the document that certifies the conformity assessment.

Regarding the installation of optical fiber cables in the federal highways domain strips by telecommunications companies, although there was great controversy about the need for the right-of-passage in this case - as the obligation of this right for telecommunications companies could hurt the functional division of federative entities in the case of roads owned by states and municipalities - , Resolution No. 09/2020 of the National Department of Transport Infrastructure (DNIT) regulated the use of these strips free of charge, which was reinforced in Decree No. 10,480/2020, that regulated Law No. 13,116/2015 (Law of Antennas).

Regarding broadband access through optical fiber, ANATEL's Telecommunications Network Structural Plan (PERT), provided for in article 22, IX of LGT, brings a diagnosis of broadband service in Brazil, in order to identify whether the infrastructures installed in each region are sufficient to meet the demands of users of telecommunications networks, allowing the adoption of effective quality actions, expanding access to broadband, providing spectrum and stimulating competition.

PERT, which must be updated annually and revised every five (5) years, also demonstrates the gaps in the telecommunications transport and access networks throughout the national territory, presenting a list of investment projects capable of addressing these deficiencies and possible sources of financing to be used by the Government for the execution of projects that fill these gaps.

In this sense, regarding to fiber transport infrastructure and IP radio, the most recent PERT found that 93% of the population concentrated in 72% of the Brazilian municipalities is served with optical fiber backhaul. In addition, 47.8% of the municipalities with fiber have two (2) or more providers. The challenges of this front are related to the fact that 53.3% of those without fiber are in the North and Northeast regions; and the fact that 26.7% of the municipalities without fiber are in the State of Minas Gerais.

Therefore, it is necessary to expand the high capacity transport network (backhaul) with optical fiber arriving in municipalities that do not have this infrastructure yet; or, for municipalities without economic viability for the implementation of optical fiber, the expansion of the high-capacity transport network (backhaul) with radio, IP, satellite or other high capacity technology.

Furthermore, with regard to infrastructure

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for access to mobile broadband, 3G currently dominates the country (99.9% of the inhabitants) and mobile coverage with 4G technology is available in 4,854 municipalities, corresponding to 97.3% of the Brazilian population. The obligations already established by ANATEL were the implementation of 3G in all municipality seats by 2019 and 4G technology in the municipality seats with more than thirty thousand (30,000) inhabitants, by 2017.

It remains pending the expansion of the Personal Mobile Service (PMS) with 3G technology or higher in the non-seat districts, still without service; and SMP with 4G technology or higher in the seats of Brazilian municipalities with less than thirty thousand (30,000) inhabitants, still without service.

Regarding the infrastructure for access to fixed broadband, the density of this band is above the world average (15.5% against 14.9%), however, it is still far from developed countries (33.6%). MCS's main technology is xDSL (Digital Subscriber Line), with 31.6% of accesses, with optical fiber accesses already having a great participation (30.7% of accesses).

However, the challenges faced by the access to fixed broadband are the fact that 2,082 municipalities - out of a total of 5,562 Brazilian municipalities, according to an analysis carried out with data from the largest companies providing MCS in Brazil, which represented 98.9% of internet

accesses in December 2019 - have an average speed of MCS of up to 5 Mbps (the national average is 51.1 Mbps), showing that few municipalities achieve high average speed without a robust transport infrastructure; and the high concentration in the MCS market, which has more than fourteen thousand (14,000) granted companies, however, only five (5) large groups account for more than 69% of the subscribers.

Finally, on broadband access via satellite, there are 16 Brazilian satellites and 37 foreign satellites, which operated with a total capacity of 129.4 GHz in 2019. The challenge is the effective adoption of public policies to encourage demand in remote areas that are difficult to access via satellites, given the finding that Brazil has enough satellite capacity to offer broadband.

In 2019, the expansion of the optical fiber infrastructure was the main factor that generated an escalation of fixed broadband accesses by small providers ("PPPs"), which ended the year as the largest segment force in Brazil. The reaction of the big Brazilian telecommunications operators since then focuses efforts on promoting the expansion of optical infrastructure and alternatives to increase fiber distribution, strengthening the competition scenario in the national territory, through franchise models with regional providers and infrastructure sharing, for example.

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With the recent pandemic of COVID-19 (new coronavirus), the role of optical fiber as a basic demand to the Brazilian population became even clearer, since the addressing of the crisis is based, primarily, on the use of digital solutions to maintain the quality of the services provided, even with the increase in data traffic.

Also, it is possible to verify that the expansion of the infrastructure for broadband internet access has been one of the most prominent investment commitments adopted in several recent normative rules and regulatory movements of technologies.

Decree No. 10,402/2020, for example, which provides for the adaptation of the concession instrument to authorization of telecommunications service (as discussed in a previous article), establishes in the §5 of its article 7 that, among the commitments to be reached, it must be included the provision of services with high-capacity transport infrastructure for Municipalities not equipped with such infrastructure and the increase in the coverage of the mobile network on federal highways and in locations without service.

In addition, ANATEL has signaled and stressed, whenever possible, that the 5G auction will not have a collection nature, but rather an “auction of commitments”, signaling for the conversion of the gain achieved into investment commitments. Also, according to the auction public notice, the winning operators in the 3.5GHz band will be required to invest the eventual remaining amounts in service projects with mobile broadband, coverage of federal highways with mobile broadband and implementation of high-speed transport networks, preferably in optical fiber, for municipalities not yet served.

Finally, as discussed in a previous article, the Conduct Adjustment Terms (TACs) applied by ANATEL have two essential aspects, namely: (i) the termination of the offending conduct; and (ii) the conversion of the amount of fines into development of the Brazilian infrastructure, replacing penalties with additional commitments, which involve, for example, the expansion of the mobile telephony network, bringing broadband to municipalities not yet served by technologies like 3G or 4G; the construction and maintenance, for a period of time, of high-capacity fiber optic backhaul; among others.

The advantages of optical fiber infrastructure in networks are varied and they all converge towards a common point, sought nationally and internationally, which is the expansion of broadband infrastructure. In Brazil, it must be considered, in relation to this expansion: the investment commitments adopted, the impact of investments on socioeconomic development, the execution time, the use of satellite capacity, the performance of local and international providers, the infrastructure sharing, stimulus to competition and the fair pay of investments.

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