Nemzeti Média- és Hírközlési Hatóság

THE STATE OF OPEN INTERNET IN HUNGARY IN 2020

Annual report on net neutrality for the period from 1 May 2019 to 30 April 2020

30 June 2020

Table of Contents

1 HUNGARIAN OPEN INTERNET REGULATIONS

Regulation of the open internet in Hungary consists of a number of components:

1. As Hungary is an EU Member State, *Regulation (EU) No. 2015/2120* (hereinafter: **EU Regulation**) *on laying down measures concerning open internet access and amending Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services and Regulation (EU) No 531/2012 on roaming on public mobile communications networks within the Union* is directly effective and applicable.

2. Besides the EU Regulation, national legislation, *NMHH Decree 2/2015. (III. 30.) on the Detailed Rules of Electronic Communications Subscriber Agreements* (hereinafter: **Electronic Communications Decree**) has already contained provisions on the open internet since its entry into force in the interest of ensuring transparency.
   Considering that the material content of the EU Regulation's rules on open internet has already become common knowledge and included in the domestic legislation as net neutrality during the debates before its creation, this report uses the term net neutrality also as a reference to rules on open internet in several cases without the intention to explicitly differentiate between the two.
   The provisions of the Electronic Communications Decree require operators supplying internet access services to provide access to their internet services for subscribers and users in the quality specified in their general terms and conditions and specific subscriber agreements.

3. Additional national legislation is contained in *NMHH Decree 13/2011 (XII.27.) on the requirements for electronic communications service quality relating to the protection of subscribers and users, and on the authenticity of billing* (hereinafter: **Quality of Service Decree**) that requires all fixed and mobile internet access operators to specify in their subscriber agreements certain quality indicators undertaken by the operator[1] such as offered bandwidth as well as guaranteed download and upload speeds.

The purpose of the national legislation (transparency, protection of end-user rights) currently in force is similar to those incorporated in the Regulation, but it regulates not only internet service but also the quality of other electronic communications services.

[1] Guaranteed download and upload speeds: the lowest data rate that is specified in the subscriber agreement to be made available for downloading and uploading at the subscriber access point concerned.

Although there has been no change in national legislation as compared to the 2019 annual report, but the Quality of Service Decree's provisions that regulate internet access services are under the process of harmonisation with the EU Regulation.

(Planned modifications are presented in detail in Section 2.5 of this report)

2 MONITORING THE IMPLEMENTATION OF THE EU REGULATION

Internet use and internet-based digital economy have become decisive factors in our lives. Therefore, the National Media and Infocommunications Authority (hereinafter: **NMHH** or **Authority**) monitors the development of the open internet in Hungary as well as compliance with the relevant rules as a priority issue. NMHH performs its related activities as listed under the supervisory powers stipulated in Act C of 2003 on Electronic Communications (hereinafter: **Electronic Communications Act**).

Resulting from its supervisory authority, NMHH monitors and enforces compliance with net neutrality rules by operators during its annual planned and, in justified cases, its unplanned monitoring activities. In addition, the NMHH may also initiate proceedings if subscribers of electronic communications services or operators themselves submit requests or reports concerning infringement of open internet rules.

The NMHH summarises its monitoring and enforcement activity in an annual report in accordance with the provisions of the EU Regulation, with the content outlined[2] in the BEREC Guidelines. The NMHH complies with its obligations under the EU Regulation by publishing the report and transmitting it to the Commission and to BEREC.

The Authority continued to monitor the implementation of the requirements of the EU Regulation during this reporting period. In order to monitor market processes, it checked the websites and advertisements of the service providers, and conducted random inspections examining the General Terms and Conditions and their amendments (hereinafter referred to as: **GTC**) of the mobile and fixed internet access service providers with the largest number of subscribers, and acted upon actual cases it became aware of through reports.

The Authority did not launch a comprehensive market surveillance control similar to that carried out a year ago because last year's action did not reveal serious systemic problems that would have justified it.

The results of the Authority's monitoring activity have been summarised in the chapters below.

2.1 Contractual and commercial conditions

The NMHH inspected the net neutrality aspects of contractual and commercial terms primarily in terms of the zero tariff plans most favoured by mobile operators as well as plans with unlimited data. The common feature of the zero tariff plans was that the data traffic generated by accessing services and content specified by the operator did not reduce the data quota of the mobile internet subscription.

[2] BoR (16) 127 BEREC Guidelines on the Implementation by National Regulators of European Net Neutrality Rules

2.1.1 First generation zero tariff plans

In case of the first zero tariff plans introduced on the Hungarian market, the zero-rated services still remained available to subscribers under the original terms even after their general data allowance has been used up. The NMHH initiated several procedures in this regard, and concluded that the commercial practices investigated also qualify as prohibited discriminatory traffic management measures and as such violate the rules for net neutrality. Accordingly, NMHH banned such unlawful behaviours and ordered the operators to discontinue the unlawful differentiation between various types of internet traffic.

Currently, there are two such cases before the court, as the operator in question challenged the authority's decisions. For these cases, the Hungarian court requested a preliminary ruling at the Court of Justice of the European Union on the interpretation of Section 3 of the EU Regulation. The joint preliminary ruling procedure is under way before the Court of Justice of the European Union under case numbers C-807/18 and C-39/19, and no decision has been made yet.

2.1.2 Modified zero tariff plans

The operators introduced new types of thematic zero tariff plans on the market in 2017 and 2018. Their common feature was the unlimited use of the thematic content and applications included in the package until the general data allowance included in the package ran out. Once the user exceeded the allowance, the thematic content, like any other content or application not listed in the zero tariff, was slowed down or restricted.

The NMHH inspected said tariff plans on a case-by-case basis when the plans were introduced, and since the Authority did not reveal any circumstance substantiating the application of negative discrimination by the service providers with respect to specific contents, services or applications or their specific categories, closed the inspections. The Authority did not initiate any new proceedings in relation to such tariff plans in 2019.

2.1.3 Unlimited tariff plans

Besides the zero tariff plans, the NMHH initiated an inspection concerning an offer, different from the above in that it provides unlimited domestic quota, meaning that it is no longer significant that some applications and content are not included in the quota of the tariff plan.

Telekom "Net Korlátlan" (Net Unlimited) tariff plan:

The service provider Magyar Telekom, a subsidiary of Deutsche Telekom launched its "Net Korlátlan" (Net Unlimited) tariff plan for subscribers in 2017. In addition to unlimited

domestic internet use, the plan also provides a 15 GB data traffic allowance for roaming use in the EU. The “Net Korlátlan” plan is only available for personal use, and the SIM card associated with the tariff plan may only be inserted into mobile phones. (Pursuant to the contractual terms and conditions, it constitutes a breach of contract if the SIM card is used by the subscriber in a device that is not suitable for making mobile voice calls).

Furthermore, for the purpose of maintaining network integrity and service security, the operator reduces the mobile internet speed of certain types of traffic (P2P[3], VPN[4]) and certain modes of use (Bittorent) significantly compared to the speed offered by the tariff plan, i.e. it applies limitations.

Although the service provider discontinued the sale of the aforementioned tariff plan in the meantime, **a new tariff plan called Unlimited Net has been launched with unaltered conditions**, while continuing to offer the old tariff plan with unaltered conditions to those who contracted it before. **NMHH has inspected the old and new tariff plans in a joint administrative procedure.**

In the course of the procedure, NMHH has established that by applying traffic management measures in relation to P2P and VPN types of traffic, the service provider has failed to comply with Article 3 (3) of the EU Regulation; furthermore, by imposing restrictions on the type of end devices utilised by the subscribers, it has failed to comply with Article 3 (1) of the EU Regulation; and by reserving the right to unilaterally amend the range of traffic management measures, it has failed to comply with Article 3 (3) of the EU Regulation.

NMHH has ordered the service provider to amend its practices and the relevant items of its GTC within 30 days by applying traffic management measures only at the time and for the period when the conditions stipulated in Article 3 (3) of the EU Regulation are met, by allowing subscribers to insert the SIM card into terminal equipment of their choice and by removing the clause according to which it reserves the right to unilaterally amend at any time the range of traffic management measures it applies.

The service provider lodged an appeal against the decision. From the list of prescribed obligations, in its appeal, the service provider only contested the obligation pertaining to P2P traffic management.

According to the ruling of the authority of second instance, NMHH established the infringement in a correct and well-founded way and only amended the resolution of the first instance concerning the deadline of the execution of its obligation, providing a deadline of 90 days instead of the 30 days originally imposed by NMHH.

[3] P2P: Peer-to-peer traffic: traffic in which endpoints of the IT network communicate with each other directly, without a dedicated central node.

[4] VPN: Virtual Private Network: it enables users to send or receive data on a shared or public network as if their computers were connecting directly to the local network.

2.1.4 Temporary commercial offers

Hungarian mobile operators, Magyar Telekom Nyrt., Telenor Zrt. and Vodafone Zrt. introduced temporary zero tariff offers at the request of the government for the time of the COVID-19 state of danger.

The priority goal with the introduction of these offers was to allow access to digital education resources to everybody during the lockdown of educational institutions in such a way that differences originating from social inequalities do not affect the efficiency of education. Service providers complemented the free accessibility of the educational contents specified by the government with a free increase of the general data allowance given to both pre-paid and post-paid users.

Given the termination of the state of danger prescribed, the service providers ended their temporary offers on 1 July 2020.

2.2 Restricting end-user rights

NMHH monitors restrictions on end-user rights as a priority issue. The Hungarian legislation provides legislative guarantees in the Electronic Communications Act for end user rights while the Electronic Communications Decree specifies the compulsory content elements of the subscriber agreements.

Over the years, the NMHH monitored compliance with the rules on end user rights pertaining to net neutrality mainly focusing on checking the terms and conditions in the operators' GTCs and using the data requested from the operators. During the reporting period, besides checking the GTCs on an ad-hoc basis, the Authority mainly concentrated on market monitoring and followed up on individual cases.

2.2.1 Restricting the use of the subscriber's terminal equipment

During the reporting period, the NMHH inspected the practice of the internet service providers regarding the subscriber's terminal equipment mainly by reviewing the GTCs, in particular the conditions concerning the connection of subscriber's terminal equipment that were not provided by the operator.

Given that based on Preamble 5 of the EU Regulation, internet service providers should not impose restrictions on the use of terminal equipment connecting to the network in addition to those imposed by manufacturers or distributors of the terminal equipment, any possible limitation imposed by the service provider is inconsistent with the requirements of the EU Regulation.

In relation to fixed internet access services, the inspections did not reveal any limitation by the service providers that would expressly ban subscribers from using the terminal equipment of their choice, however, in case of mobile internet access services, the Authority investigated several cases where service providers limited the set of terminal equipment that can be used by the subscribers.

- **Telekom "Net Korlátlan" (Net Unlimited) tariff plan:**

  The Authority revealed in its procedure that according to the GTC of the service provider the "Net Korlátlan" plan was only available for personal use, and the SIM card associated with the tariff plan could only be inserted into mobile phones. Details can be found in Chapter 2.1.3.

- **"Telenor XS", "Telenor S" and "Hiper" tariff plans:**

  The Authority's assessment revealed that the service provider's GTC, in the case of the "Telenor XS", "Telenor S" and "Hiper" tariff plans, specified the types of devices the SIM card can be used with and furthermore, it stipulated that the tariff plans cannot be used for Machine to Machine communication (e.g. remote monitoring), thus placing limitations on the free use of the tariff plans.

  For the above-mentioned reasons, the NMHH launched an official investigation into the compliance of the "Telenor XS", "Telenor S" and "Hiper" tariff plans with net neutrality rules, and **it established that the service provider, by restricting the type of terminal equipment utilised by subscribers, has failed to comply with the provisions of Article 3 (1) of the EU Regulation, and by stipulating in Section 1.1 of Annex 1/A to the GTC that the tariff plans cannot be used for Machine to Machine communication (e.g. remote monitoring), has failed to comply with the provisions of Article 3 (1) and (3) of the EU Regulation.**

  The Authority called on the service provider to amend its practices by allowing "Telenor XS", "Telenor S" and "Hiper" tariff plan subscribers to insert the SIM card into terminal equipment of their choice and to delete "The tariff plans cannot be used for Machine to Machine communication (e.g. remote monitoring)" condition from the GTC.

  Pursuant to the notice, the service provider amended certain provisions of its GTC by stipulating only the type of device the SIM card can be inserted into for the voice call and messaging services of the tariff plan instead of the whole tariff service.

  The evaluation of the fulfilment of the notice is currently underway.

- **Vodafone "HomeNet+" tariff plan:**

  The Authority's assessment revealed that pursuant to the terms and conditions of the service provider's "HomeNet+" tariff plan, the service provided by the tariff plan could only be used with the device supplied by the service provider and the SIM card supplied for the service cannot be inserted into other devices. The device was available for purchase from the service provider.

  In its assessment, the Authority inspected the compliance of the service provider's "HomeNet+" tariff plan with net neutrality rules.

The Authority concluded its assessment with a notice in which it established that by stipulating in item 2.3.2.1 of Annex No. 1 of the GTC that the SIM card belonging to the tariff plan can solely be used in the terminal equipment designated by the service provider, the service provider has failed to comply with the provisions of Article 3 (1) of the EU Regulation.

The Authority called upon the service provider to **amend** item 2.3.2.1 of Annex No. 1 of the GTC and **its related practices** within 45 days of the receipt of the notice by allowing "HomeNet+" tariff plan subscribers to insert the SIM card into freely chosen end devices.

The service provider has complied with the contents of the notice.

In connection with the usage of subscriber's terminal equipment, we have not found any serious cases related to landline services, however, the Authority identified several infringing GTC terms and conditions for mobile internet services. Given that choice of the terminal equipment freely is a significant subscriber right, the Authority will continue to monitor the enforcement of this right.

2.2.2 Prohibition[5] of tethering

In close connection with the previous point examining free usage of terminal equipment, the NMHH saw fit to closely monitor whether service providers limit internet sharing in itself or through limitation of the right to select the terminal equipment.

After reviewing related GTCs, the Authority determined that they do not contain express prohibition of tethering, and based on the information available on their websites, the service providers have no tariff plans that would prohibit the connection of a device without internet access to another device capable of connecting.

However, some operators' GTCs still includes a section providing that the datalink and the amount of data downloaded may not jeopardize the proper functioning of their network and that operators may take preventive or recovery measures resulting in slower or restricted traffic to prevent network overloads or network crashes, or to ensure service quality of other subscribers' services.

For the above reasons, the NMHH does not plan a comprehensive inspection related to tethering, but it will continue to monitor the implementation of the aforementioned preventive or corrective measures resulting in reduced traffic speed or limited traffic.

[5] Tethering: connection of a device without internet access to another device suitable for internet connection (e.g. mobile phone or tablet), and sharing internet access this way.

2.3 Performance of the internet access service

NMHH used a number of different methods to assess the quality parameters of the internet access services offered by internet service providers. Given that last year's comprehensive inspection did not reveal significant and general irregularities, **the Authority focused on market monitoring in this reporting period, complemented by investigating the complaints received from consumers. Additionally, in its broadband measurement system, the NMHH used the results of the measurements initiated by subscribers** to examine whether the actual service quality experienced by subscribers corresponds with the speed values listed in the offers of service providers.

2.3.1 The traffic management tools employed

Based on Preamble (8) of the EU Regulation, when providing internet access services, providers of those services should treat all traffic equally, without discrimination, restriction or interference, independently of its starting or endpoint, content, application or service, or terminal equipment.

A pivotal point of the enforcement of the right granted by the EU Regulation is how the traffic management practices of the service providers adhere to the regulation, whether the "reasonable measures" permitted by the EU Regulation are applied, and whether the actual measures meet the conditions mentioned in the regulation[6].

The examination of traffic management is summarised below, broken down to several sub-sections:

2.3.1.1 Different levels of priority in terms of data traffic

In connection with the traffic management measures, the NMHH first examined on an ad-hoc basis the possible application of priority levels by the service providers. The objective was to clarify whether the operator applies any discrimination among users when accessing various services, applications or contents, and if so, what is the objective reason for this.

GTCs of **landline operators** confirmed the results of previous years' surveys, that is, **in networks with sufficient capacity, priority levels are not necessarily required to manage congestions.** Accordingly, GTCs do not contain rules implying prioritisation, supposedly because the quality commitment offered to subscribers can be complied with without this.

[6] The conditions are listed in the second subparagraph of Section 3 (3) of the EU Regulation. Reasonable measures must be: transparent, proportionate, non-discriminatory, shall not monitor the specific content and shall not be maintained for longer than necessary.

Mobile operators used different practices in relation to the application of priority levels, based on previous years' studies. **Some** among them **did not apply priority levels at all**; **others only applied them to mobile services substituting fixed-access services** (in order to protect the mobile network, protecting the system from high data usage entailing greater volumes of data) while **there were other service providers who classified subscribers of a particular service into a lower priority level upon overloading (congestion) of the network.**

Traffic management measures taken in relation to the latter cannot be regarded as reasonable traffic management measures due to the element of discrimination. At the same time, since these discriminations are **applied by the given service provider in situations with a risk of network congestion, they may qualify as other measures beyond the extent of reasonable traffic management measures,** provided the service provider adheres to the principle of temporariness and proportionality, as specified in the EU Regulation.

The Authority investigates and evaluates these cases individually when it becomes aware of them.

Although the practice of prioritisation by service providers did not show any application violating the provisions of the EU Regulation, the Authority will continue to monitor it.

2.3.1.2 Management of traffic congestions

Given that in case of traffic congestion, service providers are entitled to temporarily take other measures besides reasonable traffic management measures, the NMHH specifically addressed service providers' congestion management practices.

In recent years' the Authority carried out extensive inspections regarding service providers' traffic congestion practices on several occasions. Several of these inspections ended with the same result, that is:

- **the service providers do not use any preventive or restrictive measures in the event of actual or potential traffic congestion** in subscriber traffic;
- **they design their networks to be congestion-free**, continuously monitor them, and **only intervene if necessary** to mitigate the situation;
- **none of the service providers have any protocol regarding the term of traffic management measures** that would regulate this issue in detail.

The Authority did not carry out a comprehensive inspection on this topic in the current reporting period because of previous years' findings. However, the correct operation of the networks has been demonstrated by the performance of the networks and by observing the service providers' practices during the state of danger related to COVID-19.

The NMHH, similarly to other EU member states' authorities, ordered that internet service providers should provide information so the Authority can monitor internet traffic during the state of danger and see if there are congestions when providing services.
According to the answers received, none of the operators reported congestions, however, internet traffic increased significantly (by almost 30%) at the beginning of this period. Moreover, several of them reacted by expanding their capacity instead of degrading the quality of their services. The adequacy of this operator practice is supported by the fact that the Authority did not receive any reports on congestions from subscribers in the same period.

Although the traffic congestion management practice of service providers did not show any application violating the provisions of the EU Regulation, the Authority shall continue to monitor it.

2.3.1.3 Application independent traffic management tools

Application independent traffic management tools are those that manage traffic without deep content inspection or analysis of data traffic. From a certain perspective, a significant part of the measures applied in the course of managing the congestions examined in the previous chapter are also considered application independent, but the case of congestion was analysed separately by the NMHH, due to its exceptional position and therefore, significance.

The Authority's inspections in previous years did not reveal "other" independent traffic management measures applied by the service providers, and given that the Authority has not become aware of any of such practices this time, initiating an administrative procedure was not necessary.

Based on the information found in GTCs, the operators do not violate the provisions of the EU Regulation, therefore, an extensive inspection by the Authority is not necessary, but occasional control may be justified.

2.3.1.4 Application dependent traffic management tools

Application dependent traffic management tools and technological solutions like DPI[7] can detect specific content, application or service within the data traffic investigated, so they may be especially suitable for intervention by the service provider violating the open internet rules.

After last year's detailed inspection revealed that although both mobile and landline service providers use DPI technology, they do not use it for traffic control purposes, the

[7] DPI: Deep Packet Inspection

Authority mainly focused on market monitoring and investigating incoming notifications in this year's reporting period.

Considering that the Authority has not found any problematic cases with this activity, it does not consider further detailed investigation necessary in this regard.

2.3.1.5 The bandwidth regulation tools applied by the operators

With the inspection of the bandwidth regulation methods, the Authority tried to assess whether the internet access service providers apply measures concerning specific contents and/or services. If a provider employs such measures, that may indicate different handling of certain contents/services.

The result of last year's detailed survey revealed that most of the operators apply bandwidth regulation, but do so in order to protect network integrity and service security (e.g. limiting traffic generated by viruses, preventing spam activity). In addition, mobile operators use blocking and slowing down of traffic in case the data allowance specified in the contract is exhausted.

Since these measures of the operators did not violate the provisions of the EU Regulation, the Authority did not carry out further general inspection in this year's reporting period, but initiated administrative proceedings in relation to one specific case:

- In connection with Telekom's "Net Korlátlan" tariff plan, regarding the bandwidth regulation (mostly speed limiting) applied by the operator in relation to P2P and VPN traffic. (Detailed description is included in Section 2.1.3.)

The Authority does not consider any further comprehensive inspection justified at this time, however, monitoring of practices applied by service providers as well as detailed investigation of individual cases when necessary are recommended.

2.3.2 Presentation and evaluation of NMHH's measurement results

In 2012, NMHH launched its "SZÉP"[8] project to gain an accurate picture of the real-world quality of **domestic** broadband services and thereby facilitate the performance of its regulatory tasks. The project objectives expanded over time to include, for instance, facilitating conscious selection of operators and services by consumers.

In 2015, NMHH deployed, as part of the project, an interactive system publishing the results of its measurements of certain quality indicators of internet access services and net neutrality parameters at https://szelessav.net.

[8] SZÉP = SZÉlessáv Projekt (Project Broadband)

Structured display of measurement results according to the TSM regulation was introduced last year. As a result, after the relevant national legislation had entered into force, the system became capable of showing the users the maximum and minimum speed of their internet access as well as the normally available speed. In the remaining part of this year, the “Mobile net neutrality” measurement system will be developed. Thanks to the technology expansion, from this year, the system is able to show results not only for the different tariff plans of the operators but also for various access technologies applied.

The NMHH examines the fulfilment of the open internet requirements both on the mobile network and the wired access:

Most of the measurements in connection with mobile networks are carried out by the Authority’s own measurement vehicles, which check the coverage, the signal strength and the download and upload speeds of the networks separately by technology within the whole country. In addition, the “Mobile net neutrality” measurement system scans the various tariffs of the operators for port openness and service quality according to a preset program.

Measurements related to landline networks are carried out by measurement boxes installed at fixed access points, which measure the effective quality of fixed internet access services and different plans hourly.

Given that the EU Regulation prescribes significantly stricter requirements regarding different speeds for fixed internet access services, and that measurement results related to landline networks are, by their nature (same metering point, constant conditions, measurement results related to specific plans), more suitable to be used as a basis for comprehensive analyses, the NMHH will henceforth use these results to make statements about service quality below.

Over the past year, the NMHH performed long-term measurements (for a number of months, at hourly intervals) using measuring instruments installed at 281 measurement points of fixed access points at the following geographical locations (see figure 1), where the size of the circles indicates the number of measurements at the specific metering point.

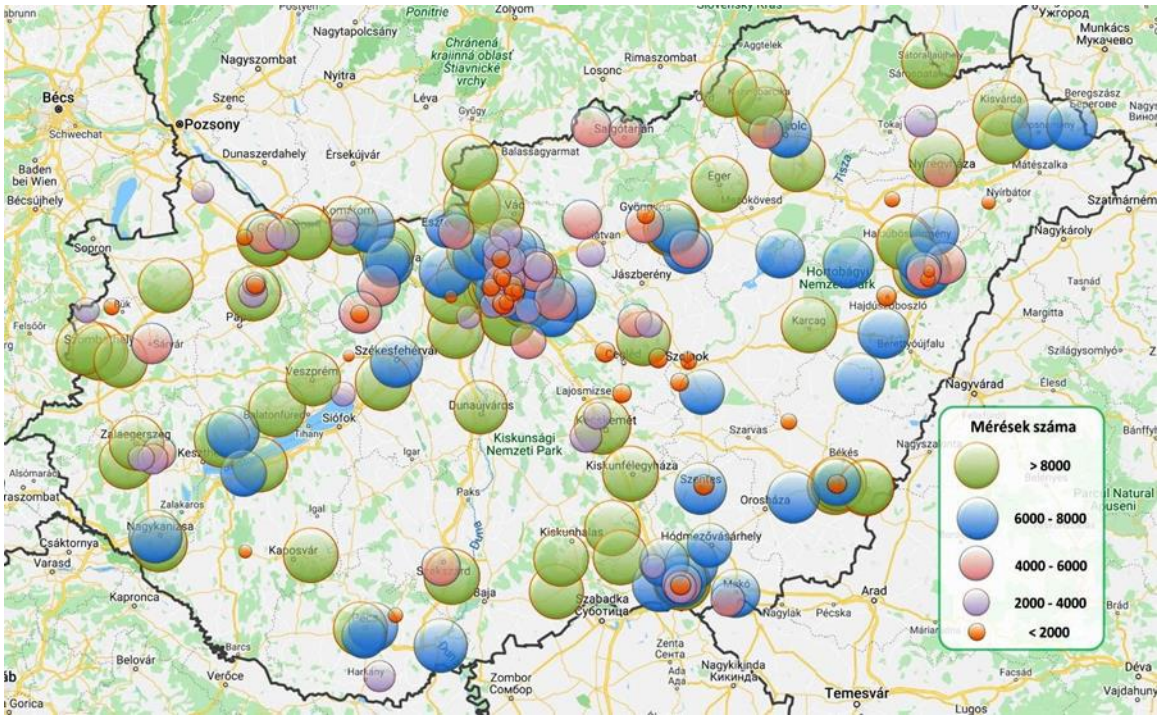

Figure 1: Spatial distribution of fixed measuring points and the number of measurements

The Electronic Communications Decree requires all internet access operators to **specify in their subscriber agreements** the quality indicators listed in the regulation such as **the offered (advertised) bandwidth as well as guaranteed download and upload speeds.**

The measurements involved 133 service plans of 38 operators. During the long-term measurements, a total of 1,301,736 measurements on a total of 56,680 days were made.

After analyzing the results of the **measurements,** it became apparent that the offered and guaranteed speeds specified by operators in their plans vary widely, often with significant differences between plans using the same technology. Based on the comparison of the number of operators, technologies and plans with the number and distribution of the measurement points, **the measurement results can not be considered representative**. Taking this into account, the NMHH arrived to the following general conclusions:

- Similar to last year's report, the NMHH, based on the results of this year's hardware measurements, modelled how the actual download and upload speeds of fixed internet access services compare against some of the possible requirements for the "normally available speed" as specified in Article 4(1)(d) of the EU Regulation. (These measurement results proved to be of significant help in defining the ratio that sets the relationship between maximum speed and normally available speed in the national legislation to be amended.)
  The Authority carried out the inspections in several speed ranges (see Table 1) to be able to make well-grounded decisions.

Offered (advertised) download speed range	Of the offered download speed, meeting								
	90% at least in the following percentage of the measurements			80% at least in the following percentage of the measurements			70% at least in the following percentage of the measurements		
	90%	80%	70%	90%	80%	70%	90%	80%	70%
Up to 10 Mbps	72.41	75.86	82.76	82.76	82.76	86.21	82.76	82.76	86.21
11–30 Mbps	80.77	86.54	90.38	80.77	88.46	92.31	86.54	92.31	92.31
31–100 Mbps	63.64	69.09	70.91	76.36	80.00	81.82	85.45	90.91	92.73
over 100 Mbps	41.32	47.11	56.20	47.11	61.16	71.90	58.68	75.21	79.34

Table 1: Percentage of meeting the offered download speed (percentage of the number of monitoring locations)

The results show that the previous years' positive tendency continued, and there is an improvement in each download speed range.

In the 0–100 Mbps speed ranges, it can be established that 70% of the download speed offered could be achieved at the majority of the measurements performed at the measurement points, and the compliance ratio was high even at the 80% rate. Naturally, it must be noted that these results cannot be considered representative on a national scale and for all service providers, but the providers are seemingly able to ensure a stable service on the measured network sections.

In the speed category above 100 Mbps, the download speeds offered are met less frequently than in other speed categories. However, in practice user needs do not always necessitate such high download speeds, so this gap may be less noticeable by the subscribers.

- **Although the performance difference between fixed internet access services during off-peak and peak periods continued to decrease** (less than 10%) in comparison to last year's results, download speeds continue to fluctuate within the day (see Figure 2).

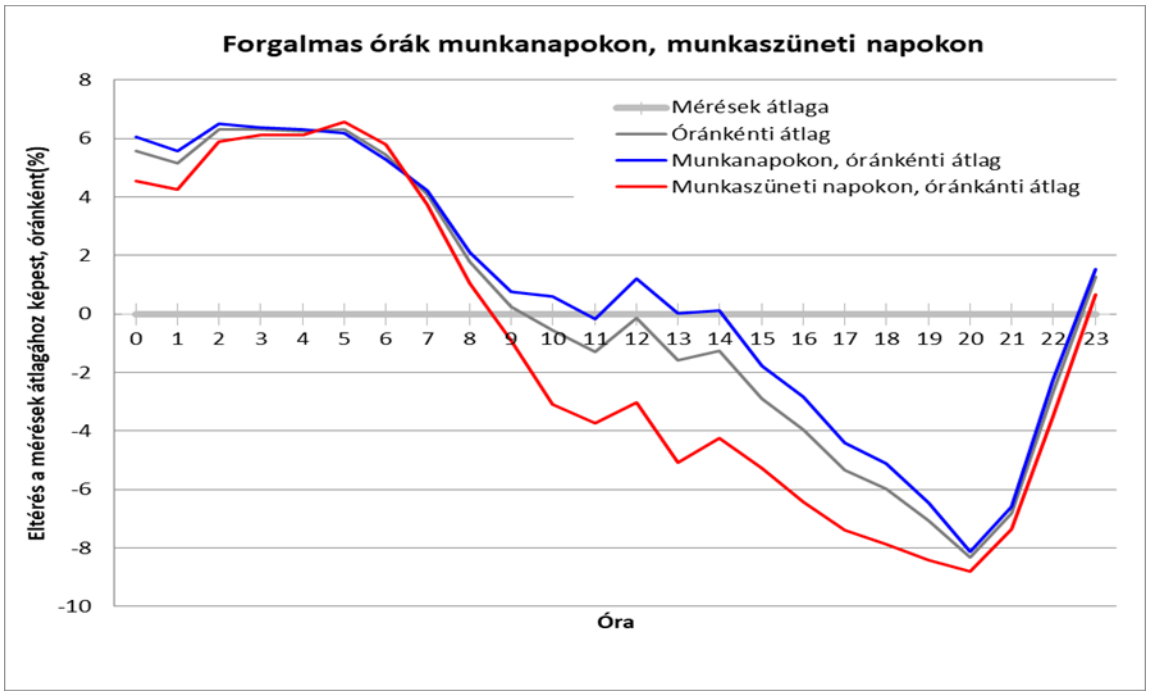

Figure 2: Daily distribution of fixed internet access speeds in relation to average download speeds (based on 2019-2020-as data)

- Figure 3 details the fulfilment ratio of the measured download speeds to those offered in a breakdown by technologies.

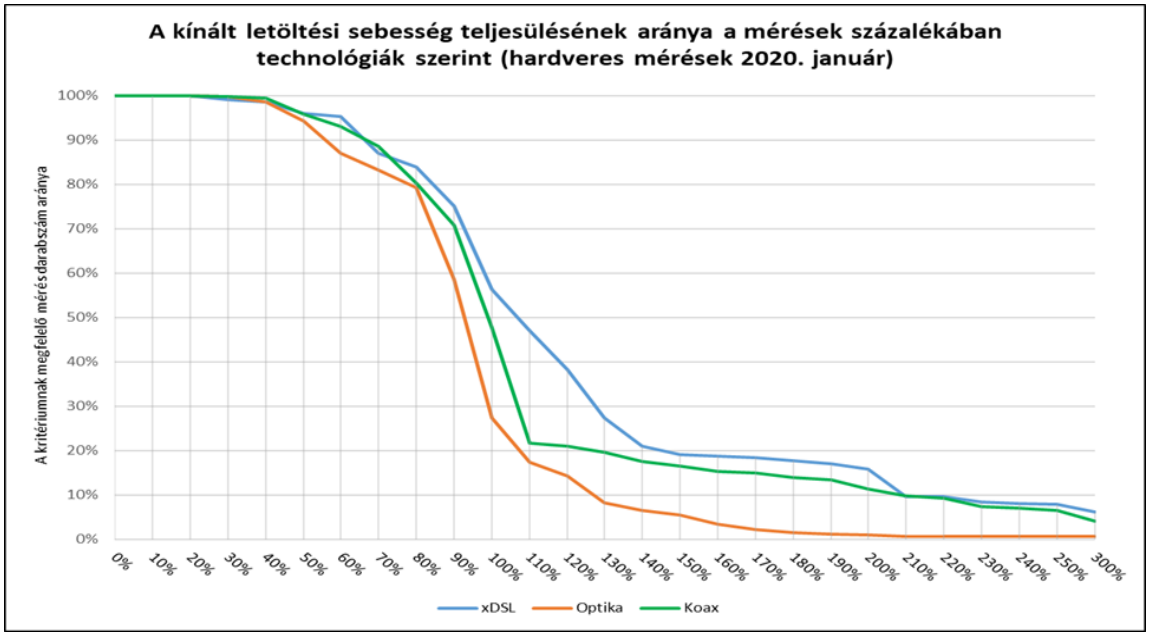

Figure 3: Download speeds met by technology (January 2020)

Based on the figure, **it can be established that 50% of the offered speed can be consistently achieved by the various technologies in case of more than 90% of the measurements, which indicates the reliability of the services in practice.** (The above measurement results proved to be of significant help in defining the ratio that sets the relationship between maximum speed and minimum speed in the national legislation to be amended.)

- Figure 4 illustrates the fulfilment ratios of the measured download speeds to those offered for fixed location measurements.

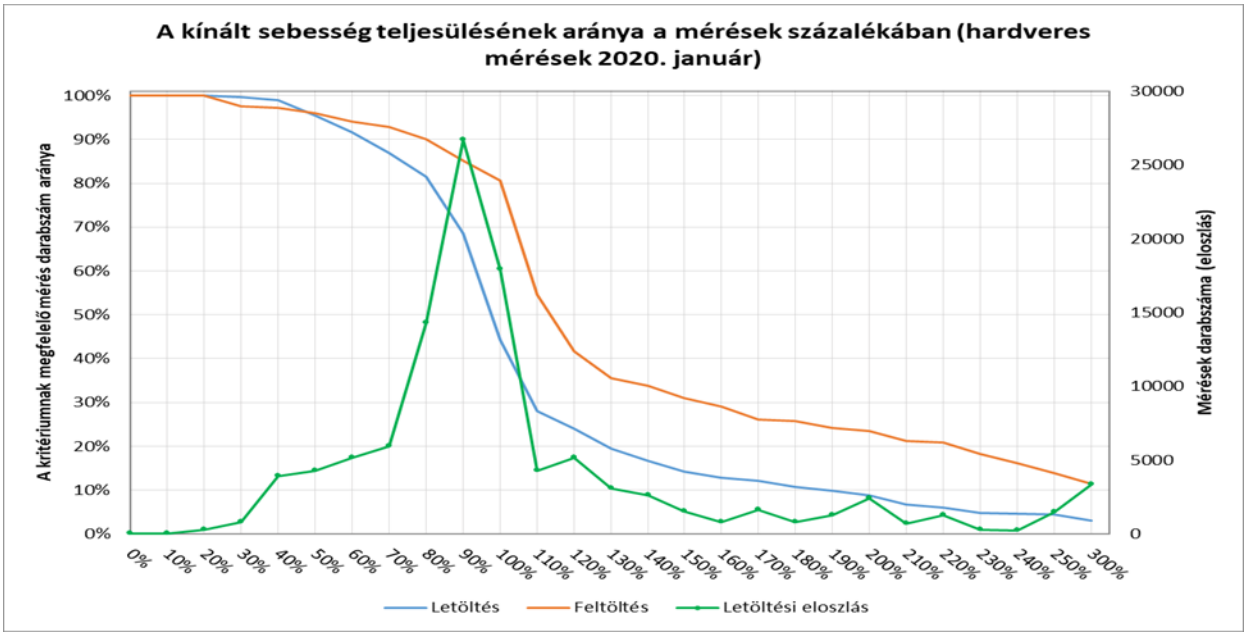

Figure 4: The ratio of speed fulfilled compared to the offered speed and download speed distribution for fixed measurements (January 2019)

- Based on the figure, it can be established that **80% of the download speeds offered are fulfilled in at least 80% of the measurements, therefore, on average, users can count on stable and good quality internet services in practice.** (These measurement results, together with the data in Table 1, proved to be of significant help in defining the ratio that sets the relationship between maximum speed and normally available speed in the national legislation to be amended.)

- The above experiences are slightly overshadowed by the fact that the Authority did encounter, in some of the measurements, service provider practices that give rise to the assumption that **in some plans, operators artificially limit upload and download speeds, either in certain time periods or permanently**, below the value of the speed offered by them (“quasi maximum speed”).
  Therefore, in this case the limitation is not due to network capacity but more likely to the application of some dynamic regulating tools resulting in significantly reduced

fluctuations in measured speeds. NMHH will hereinafter monitor the practice of limiting package speed from above.

The NMHH uses the analyses of fixed measurements to continuously monitor the quality of the internet access service, with a view to informing subscribers as well as to implement the requirements facilitating the enforcement of subscriber rights as stipulated in Article 4(1)(d)–(e) of the EU Regulation.
Measurement results in the reporting period confirm that the domestic fixed internet access services are reliable, stable and of good quality.

2.4 Special services[9]

In the reporting period, the NMHH continued its monitoring activity related to special services, primarily by reviewing the GTCs containing the conditions of installation and handling subscribers' complaints received.

After reviewing the GTCs, it can be established that there is still a limited range of special services made available by the internet access service providers. A landline operator offers VoIP and IPTV[10] services, and a mobile operator offers VoLTE services.

Landline service providers **ensure a higher priority for the aforementioned special services than for the internet access service in terms of bandwidth, but provide guaranteed download and upload speed for the internet access service even when used together.**

The mobile operator considers the VoLTE service offered by them an extension of the voice service, not a separate service. The VoLTE service technology may be provided in case of any tariff plan/service. **The only requirement for use is the VoLTE capability of the terminal equipment used by the subscriber.**

Given that no complaint was received in relation to special services from the users by the Authority in the reporting period, no proceedings were initiated.

Based on the above, there was no need for a detailed inspection in this reporting period, however, the Authority will continue to monitor the service providers' practice related to special services.

[9] Special services: services which are not internet access services and which are optimised for specific content, applications or services, or a combination thereof, where the optimisation is necessary for the content, application or service to meet the requirements of a specific level of quality.

[10] VoLTE: Voice over LTE

2.5 Assessment of how the transparency requirements governing ISPs have been implemented

NMHH continuously monitors the contractual terms and conditions of internet access services. In the course of monitoring, it checks, among others, **how operators incorporate** in their **contractual terms and conditions and procedures the mandatory requirements stipulated in Section 4 of the EU Regulation**, and **what steps they take to implement them.**

The purpose of this continuous monitoring is to ensure that the contracts related to internet access services include all information relevant to subscribers in a non-ambiguous, understandable and comprehensive manner to facilitate subscribers' decision-making process.

In this reporting period, the Authority did not carry out a comprehensive inspection related to service providers' practices relating to transparency. The main conclusions of last year's inspection still prevail. The comprehensive amendment of the quality-related decree mentioned in Chapter 1 is currently in progress. NMHH expects a significant improvement of the current situation thanks to this decree, therefore, it will carry out a detailed inspection affecting a wide range of the operators only after the amended decree enters into force.

In the following, we will briefly present the current situation regarding transparency requirements as well as the Authority's expectations about the amended decree.

2.5.1 Disclosure of the information mandated to be made public by the EU Regulation

For reasons of transparency, the EU Regulation considers it a matter of key importance that the quality of service information specified be clear, transparent and understandably structured, and easily accessible. Only well informed subscribers are in a position to select the optimal package, best suited to their requirements and consumer habits.

In general:

- the **GTCs and subscriber agreements** of internet service providers **have a wealth of relevant information**, **but these are not in the clear and easy-to-understand form required by the EU Regulation**;
- **the factors influencing the quality of the internet access service are not discussed in detail** either in the GTCs or in the contracts;

- although the **standard service description table**[11] required by the Authority **is published by each operator on its website, its content has still not been harmonised with the provisions of the EU Regulation;**
- **with regard to the comparability of services, the operators only display their own packages on their websites, and although all operators are aware of the Authority's application szelessav.net, links to it cannot be found on any of the operators' websites;**

To remedy the previously mentioned problems, NMHH wishes to amend the following points of the national legislation:

- **The standard service description table** that contains the most important elements of the contracts **will become simpler and completely harmonised with the provisions of the EU Regulation;**
- GTCs will be completed **with factors affecting the quality (especially their speed) of internet access services;**
- **the Authority's application (szelessav.net) will become easily accessible from each operator's website.**

2.5.2 The service providers' practice of applying speed values

Concerning internet access services, the speed values specified in subscriber tariff plans can be considered one of the most important factors. This is the quality parameter that is understandable even for a layman subscriber, and is therefore comparable.

The current situation concerning the inclusion of speed values can be summarised as follows:

- **Although internet access service providers include up and download speeds of their services in the contracts, they are not harmonised with the requirements in Article 4 (1) (d) of the EU Regulation.**
- Each operator **lists** in their GTCs **only the up and download speeds required by the currently effective national legislation.**
- **The operators do not make information on speed parameters easily accessible, and also fail to provide clear and easily comprehensible explanation as to how quality parameters may in practice have an impact on the use of internet access services, and in particular on the use of contents, applications and services.**

[11] The NMHH prescribes the standard service description table in Article 30 of NMHH Decree 2/2015. (III. 30.) on the Detailed Rules of Electronic Communications Subscriber Agreements in order to facilitate the comparison of different packages.

To remedy the previously mentioned problems, NMHH wishes to amend the national legislation as follows:

- **Speed definitions** in the national legislation **will be completely harmonised with the requirements of the EU Regulation**;
- **maximum speeds will become practical speed** instead of the theoretical speed it used to be;
- **minimum and normally available speeds will become derivative values of the maximum speed** (given in percentage);
- **the speed value given in the advertisement will be connected to the relevant maximum speed value (it shall be unlawful to advertise a speed higher than the maximum speed specified by the provider)**;
- **clear and unambiguous list must be included in the GTC on factors affecting the speed of the internet access service**;
- **new operator coverage map will be required for landline services**, which includes expected bandwidth on a street level and by technology, and needs to be adequately updated.

2.5.3 The service providers' practice of specifying other quality indicators beyond speed values

The significance of quality indicators besides speed values will greatly increase in the future as services and applications whose use requires the fulfillment of other quality parameters besides speed (e.g. special services) grow more popular. As a consequence of this, the service providers will be forced to apply further quality indicators in order to be able to diversify their tariff plans to remain competitive.

The current situation of other quality indicators can be summarised as follows:

- In general, **operators currently exclusively** indicate the target quality values set forth by the current national regulation in their GTCs. In practice, this means that they only **indicate the speed values**.
- **Some service providers indicated during the previous comprehensive authority inspection that they monitor the values of packet loss, latency and jitter, but do not disclose them** as they consider them internal technical parameters.
- **The service providers continue to fail to provide clear and comprehensible summaries** on their websites as to how **other service quality parameters besides speed may in practice have an impact on internet access services, in particular on the use of content, applications and services.**

To remedy the previously mentioned problems, NMHH wishes to amend the national legislation as follows:

- **Latency, jitter and packet loss values will be introduced in the GTCs**, near speed values, to increase transparency and facilitate the selection between different packages.

Although non-compliance with the mentioned quality indicators has no legal consequence, the Authority plans to prescribe them in a later step.

The GTCs of the operators are still incomplete, and do not fully include the EU Regulation's mandatory substantive elements related to contracts. The Authority expects a significant improvement of the current situation thanks to the amendment of the national legislation. The operators will hopefully begin to provide clear and transparent information to their subscribers.

2.6 Complaint handling related to the open internet

In accordance with point (e) of Section 4(1) of the EU Regulation, the service providers must make legal remedies available to the consumer in the event of any continuous or regularly recurring discrepancy between the actual performance of the internet access service regarding speed or other quality of service parameters and the performance indicated in the subscriber contract.

End users can make complaints about net neutrality as per the general complaint management rules. Operators are required to have compliant and established complaint management procedures incorporated in the GTC, so they are easy to access for subscribers.

Under national legislation currently in force, the operator is required to respond on the merits of the written complaint within 30 days from the date the complaint is received.

The operator's practice and intervention relevant to the enforcement of the open internet may be detected by end users also in the form of a network or service quality error. Troubleshooting is governed by separate rules from complaint handling. Thus, the operator is required to investigate the fault report within 48 hours. In addition, a confirmation message about the receipt of the fault report has to be sent to the subscriber and the issue must be registered. The period from reporting the fault to its correction shall not exceed 72 hours. Immediately but within 24 hours after resolving the fault, the Operator shall notify the subscriber about the fault resolution, and register the means and time of notification.

Thus, the subscriber can report the issue (including the complaint resulting from the error referenced above) to the operator, which then investigates the issue. If the subscriber does not agree with the response received or he believes the operator does not perform as per the subscriber agreement, the subscriber may submit his case to a court as per the dispute resolution procedure specified in the agreement, or, in the case of subscribers who qualify as consumers, can seek assistance from an arbitration board. If the operator fails to investigate the complaint or violates the laws pertaining to subscriber legal

relationship, the party filing the complaint may submit his case to NMHH.

2.6.1 Complaints received by the service providers

According to previous inspections, the internet access service providers comply with their obligation to indicate the rules of legal remedies in the GTC, therefore, legal remedy is available to subscribers.

To assess the operation of available options of legal remedy in practice, the Authority asked the operators to fill out a short survey on the subscriber complaints received by the operators regarding net neutrality and their handling.

The practice of handling complaints related to the open internet cannot be determined based on the service providers' answers because only a small part of the service providers collect and categorise these complaints separately. However, several service providers indicated that they plan to introduce the mentioned categorisation within 1 year.

2.6.2 Complaints submitted to NMHH

In the period under inspection, NMHH received complaints from end users only about mobile operators' violations of the rules of the EU Regulation, based on which, the Authority initiated proceedings.

It is important to note that for a complaint to be filed, the complainant has to suggest that the operator's practice violated the rules of electronic communications, however, these complaints are not meant to address specific problems or disputes concerning the subscriber's contractual relationship, they are indications to the Authority that the service provider may be infringing the regulations. By contrast, requests to initiate proceedings may be filed in relation to specific breaches of law connected to individual subscriber's legal relationships, however, none was received previously or in the current period, and there were only a few complaints as well.

Based on the above, it can be concluded that there is no systemic problem with respect to the enforcement of the open internet rules and the regulations in force can cope with the issues encountered. However, complaints proved to be a useful tool for the Authority since they turned the focus on service provider offers that raised questions about the violation of net neutrality rules.

2.7 Other NMHH activities related to net neutrality

NMHH has also conducted some other activities related to net neutrality and not listed in the BEREC guidelines, which complement NMHH's monitoring activity and make it more complete.

On the one hand, NMHH collected the relevant results of the annual internet market research conducted among subscribers and users, and on the other hand, also had a social listening research conducted about the opinion of the general public on the open internet.

2.7.1 Results of NMHH's annual market research

Each year, NMHH prepares nationally representative large-scale surveys on the domestic internet usage among internet users living in Hungary and aged 16 and older. The research is carried out on the internet using online surveys and involves 4,000 respondents.[12]

The results of this year's surveys are from the period before 11 March, which means they do not include developments since the COVID-19 outbreak and users' related opinions.

Open internet-related results of the 2019 internet surveys:

- **Similarly to the results of market research conducted in previous years, the opinion of the vast majority of Hungarian internet users has not changed in that the internet should be free and without any restrictions, open to all by default and with equal opportunities.**
- Still only a small fraction of internet users are sufficiently patient or motivated enough to thoroughly study the subscriber agreement and the relevant parts of the GTC. At the same time, **nearly one quarter have already attempted to find some information that they were interested in either in the GTC or in the subscriber agreement, and even though they were mostly able to find them** (87–92%), **it did cause them trouble in nearly half of the cases.**
- **The majority of consumers are satisfied with the internet service they use, the ratio of those specifically dissatisfied is extremely low.** Comparing internet connections, users are more satisfied with the mobile internet service than they are with the fixed service, let it be a mobile internet service used on a smartphone or a computer. **The weakest factors are data allowance size and price in the case of mobile internet, and also price in the case of fixed internet.**

[12] NMHH research, Analysis of the consumers on the electronic communications market. Internet and Household Survey, 2019. http://nmhh.hu/kutatasok

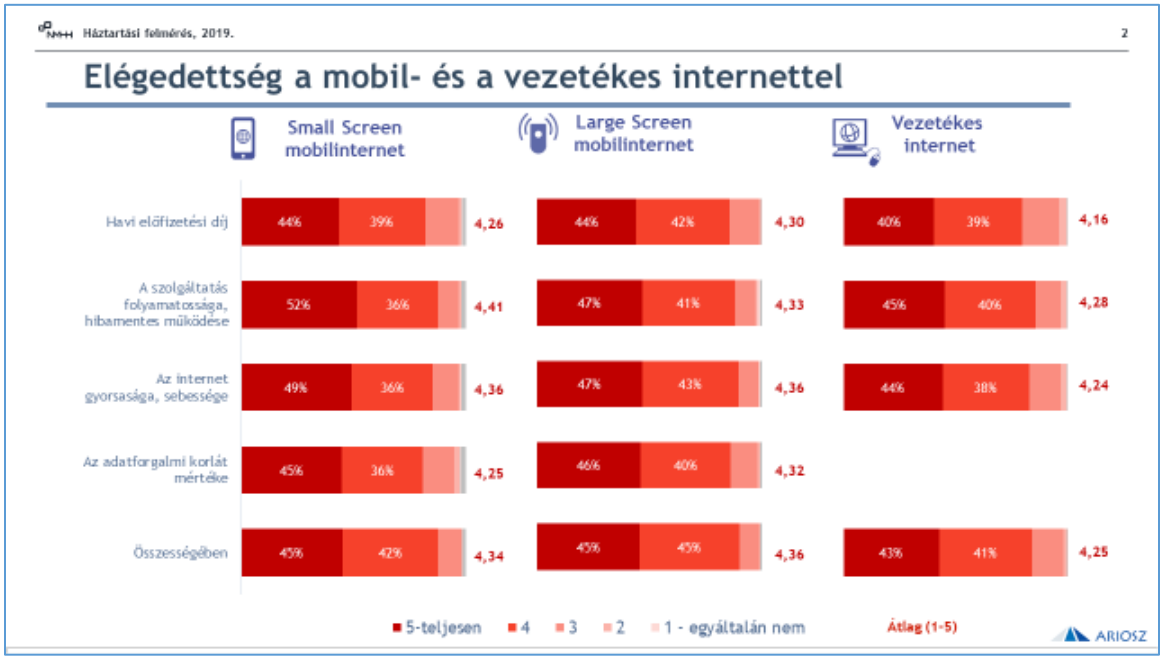

Figure 5: Satisfaction with mobile and fixed internet /Household survey, 2019/

- The proportion of people who measured the speed of the internet connection using software has not changed substantially in the last two years. (See Figure 6)

  Half of the internet users with a fixed internet subscription and a third of those with a mobile internet subscription have measured the speed of their connection at least once. **Reasons for measurements conducted with specific purposes have been given by respondents as slow internet connections and pure curiosity.** Examining the background of speed measurements, we can conclude that measurements are carried out primarily by male subscribers who are experienced internet users and evaluate the service negatively.

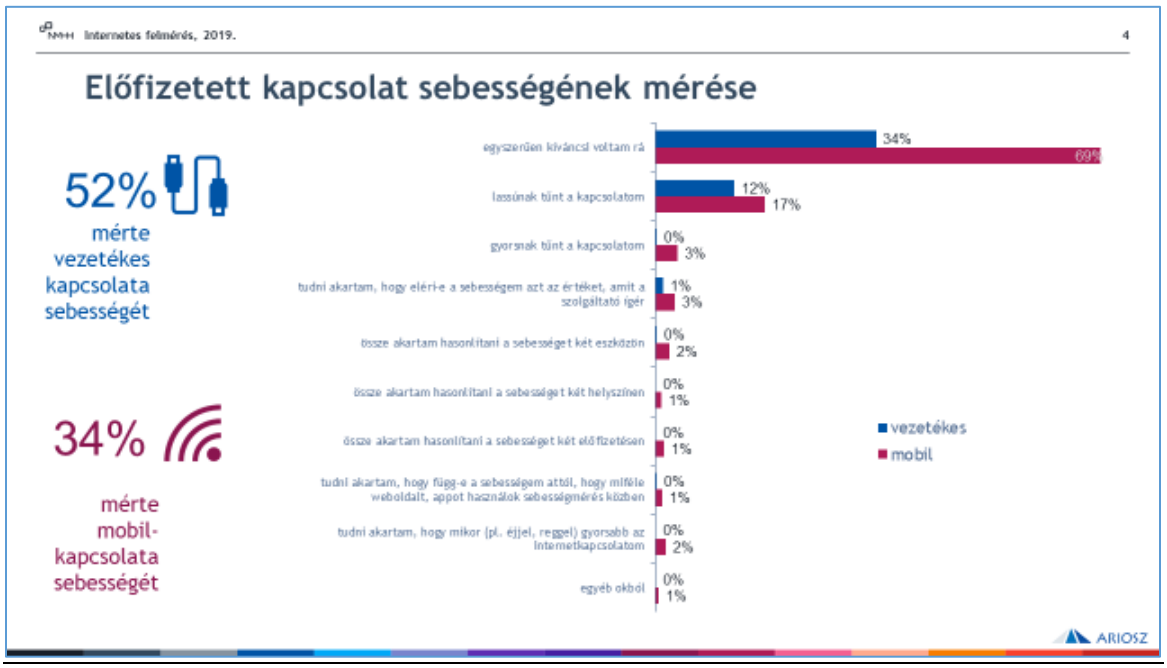

Figure 6: Measuring the speed of the subscribed connection /Internet survey, 2019./

- **From the perspective of download speed, last year was the first one since surveys are prepared when the ratio of mobile internet clients satisfied with their service providers** (81%) **exceeded the ratio of clients satisfied with their fixed access service providers** (76%). This result shows a significant progress in the evolution of the interchangeability of mobile and fixed systems.

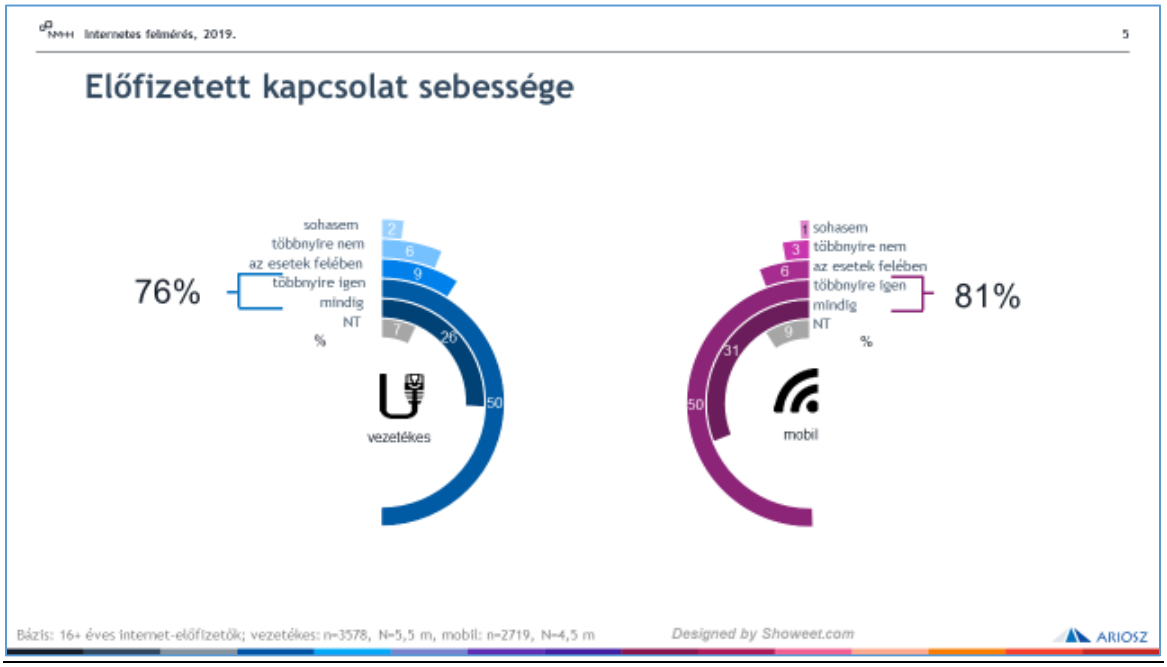

Figure 7: The speed of the subscribed internet connection /Internet survey, 2019/

- **Most of the users use electronic communications service providers' information channels to get information** when they would like to subscribe to a new plan or service. **23% are aware of independent comparison sites**.

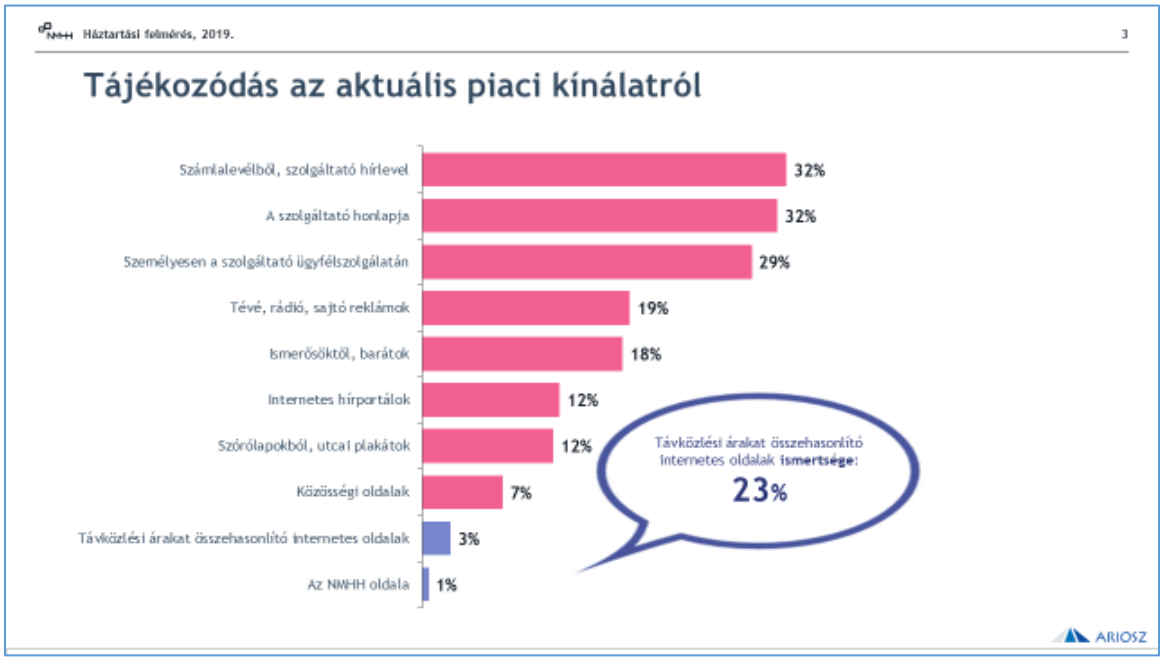

Figure 8: Collecting information about current market offers /Household survey, 2019/

- Tariff plans with a limited allowance are still the most popular ones among mobile internet subscribers (37%), hence it is not surprising that **the ratio of zero rated plan[13] subscribers increased further in 2019. Zero rated plans are still primarily attractive among the young.**

2.7.2 Results of the social listening research[14]

The NMHH continued its social listening research on net neutrality, and examined the period between 1 May 2019 and 30 April 2020 aligned with previous years' practice. The main findings of the research are as follows:

- **In comparison to the previous year, the topic of open internet generated less user activity: the number of mentions decreased to less than half**. This is due to the fact that **there has been no significant event in Hungary or globally** on this topic.

[13] In case of zero tariff plans, the services of certain participants of the social media or certain applications are not included in the quota by the service provider.
[14] Social listening is a procedure that identifies, collects, analyses and evaluates what has been published about the specific topic on the internet.

- There is no considerable activity in the topic on pages with high number of visits. A significant proportion of the appearances is related to **specialised portals** – these, however, generate **relatively low potential reach**. **A significant part of the number of** Hungarian **mentions are connected to NMHH publications.**

- In the examined period, **similarly to the experiences of the recent years, the numbers of mentions in connection with NMHH were also small (~5%)**, dealing with steps the Authority took to protect principles of neutrality mainly in a neutral context.

- **Regarding user attitudes, no significant change has taken place in comparison to the previous years.** Opinions in support of unlimited access to specific contents by ignoring net neutrality continue to be present. Comments **supporting net neutrality** appeared mostly **on specialised portals**, while comments **criticising it** appeared mostly **on social networking sites**.

- **Violation of the net neutrality principle may be detrimental to consumers on the long run**, but **most users only consider short term advantages** when using the services concerned. The **COVID-19-related lockdown period** confirmed the emphasised importance of short-term advantages since **the number of mentions demanding the enforcement of net neutrality decreased significantly** during this period, and the **importance of the availability of the internet itself (eg. continued access after using up all of the contractual data allowance) became more relevant** even at the expense of waiving certain subscribers' rights.

- During the COVID-19 lockdown period, **the development of the number of mentions** and the opinions **about the operators were determined mostly by their reactions and measures related to the coronavirus** (extra free data allowance, additional services, etc.) rather than the importance of the enforcement of the open internet.

- **After the state of danger is lifted, the Authority may have a key role in raising awareness about the enforcement of net neutrality principles again by informing and educating the consumers in a more intensive way.**

3 SUMMARY OF THE SITUATION OF OPEN INTERNET IN HUNGARY FOR THE REPORTING PERIOD

The internet has become one of the most important infrastructures of society and the economy and its key role is unquestionable in virtually all segments of our lives. **Most EU Member States consider it a priority issue to avoid situations where ownership of the network infrastructure leads to exclusive control over the content and services transferred over the network.**

The monitoring, measurement and legal tools of the NMHH are available and appropriate for monitoring the deviations from the provisions of the EU Regulation, and to take the necessary actions and eliminate the infringements in the event of any discrepancies detected.

NMHH continued its monitoring activity during the reporting period, the key experiences of which have been summarised in the following:

- **An intense competition can be observed on the internet access market.** The market is characterised by a high number of service providers, several new services tailored to the continuously changing consumer needs, and sophisticated measures applied by the service providers.
- **No systemic problem can be observed concerning the observing of open internet rules.** The number of consumer complaints brought to the knowledge of the Authority is marginal, the experiences of subscribers in connection with the quality of service have shifted in a positive direction, the market is characterised by services of improving quality.
- However, there were several cases where the Authority became aware of service providers' practices the clarification of which necessitates further detailed examination. **The Authority issued several notices during the reporting period to service providers to discontinue certain practices and change certain GTC terms found to be in violation of net neutrality rules.**
- The **state of danger related to COVID-19** was an exceptional challenge for domestic networks and operators since network data traffic increased drastically during the state of danger. The fact that even the **significantly increased data traffic did not cause considerable blockage or congestions** in the domestic networks **confirmed the preparedness of domestic operators and network reliability.**
- The result of the Authority's social listening research confirmed previous years' experiences that **although consumer awareness related to net neutrality strengthened, consumer education is still of high priority. The NMHH may play an important role in raising awareness based on the knowledge and experience it accumulated.**