Body of European Regulators for Electronic Communications

BEREC

BoR (20) 234

Overview of the Member State experiences related to the regulatory and other measures in light of the COVID-19 crisis

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Introduction

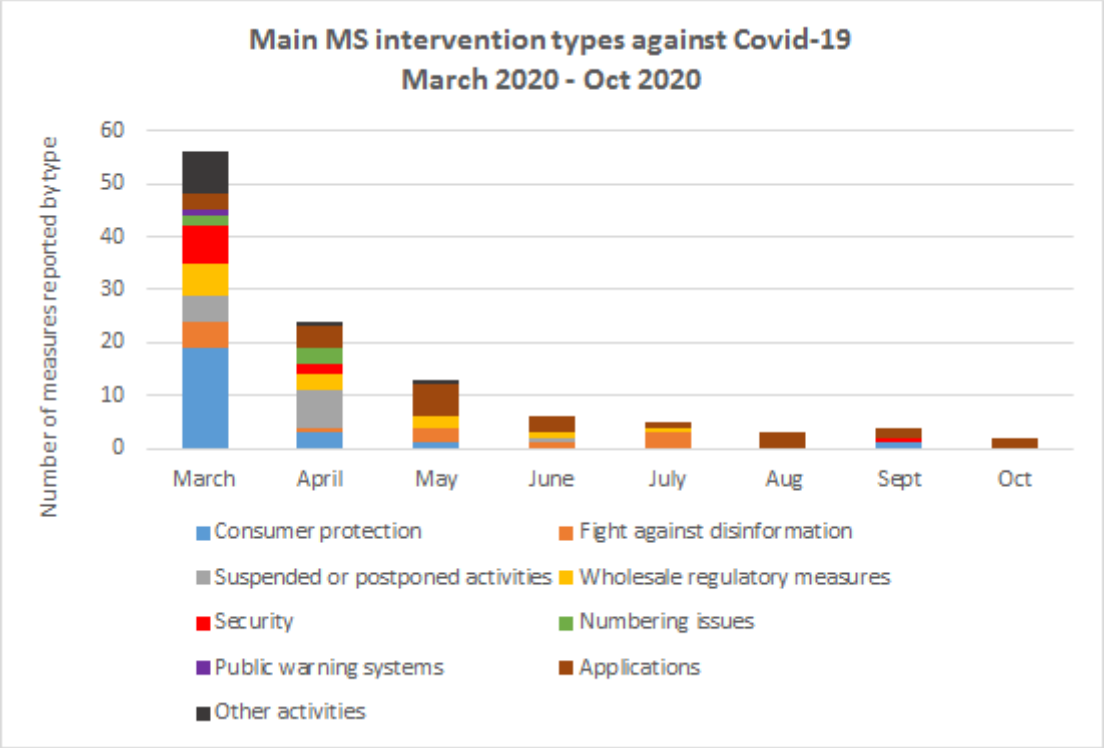
After the COVID-19 pandemic reached Europe on 13 March 2020[1], BEREC and the European Commission issued a joint statement on 19 March 2020 on coping with the increased demand for network connectivity due to the COVID-19 pandemic[2]. In this statement BEREC and the European Commission set up a special reporting mechanism to ensure regular monitoring of the Internet traffic situation in each Member State. The first Summary Report was issued on 24 March 2020 and since then 21 reports have been published. From 7 May 2020, as the initial effect of the emergency on the networks stabilized, the twice-weekly BEREC reporting shifted to a once a week release. However, the scope of the reporting was extended to the regulatory and other measures related to the crisis. From 1 July 2020 the weekly reporting period was changed into a monthly reporting period.

This report intends to summarize the experiences related to the regulatory and other measures in the European electronic communications' market since the breakout of the COVID-19 crisis.

Below you can find the visual representation of the type of measures European countries applied during the first wave of the pandemic based on reports of NRAs to BEREC. The exhibit describes only the trends about when certain types of measures were implemented during the pandemic and it does not provide an exact situation in each country. This is due to the quality of data the graph is based on.

[1] WHO Director-General announced that Europe is the epicentre of the pandemic, https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-mission-briefing-on-covid-19---13-march-2020

[2] https://berec.europa.eu/eng/document_register/subject_matter/berec/others/9236-joint-statement-from-the-commission-and-the-body-of-european-regulators-for-electronic-communications-berec-on-coping-with-the-increased-demand-for-network-connectivity-due-to-the-covid-19-pandemic



1 Consumer protection

In March and April many national regulatory authorities initiated information campaigns for consumers about the responsible use of services in order to avoid network congestion. Consumers were provided with practical recommendations on the ways they could contribute to avoiding congestion issues and supporting access to essential information, teleworking and distance learning applications by abstaining from downloading large files or streaming high-definition videos during peak hours.

Several consumer protection measures have also been implemented, including asking operators not to take any actions against consumers who cannot (given current circumstances) settle their bills, information gathering about consumer care and retail operation, and tracking service outages at essential services sites (e.g. doctors' premises).

1.1. AT

Measures taken by the NRA

During the first wave of the pandemic, RTR, shortly after the announcement of the confinement measures informed various stakeholders that Art. 3(3) third subparagraph point (c) of the TSM Regulation allows for a deviation from equal treatment, in order to "prevent impending network congestion and mitigate the effects of exceptional or temporary network congestion, provided

that equivalent categories of traffic are treated equally". Where under such exceptional circumstances a higher capacity utilisation of the overall network makes it appear necessary to give higher priority for instance to video conferencing applications, based on the text of the Regulation such higher priority should be similarly given to all providers and not only to individual application providers.[3]

In the event that such measures were to be implemented by ISPs, RTR was to promptly, and in any case on the same day, inform them by appropriate means, including a specific description of the technical measures for traffic management, the expected impacts on services in general as well as the expected duration.

No ISP in Austria instigated such traffic management measures in accordance with this process. Despite huge network overload (see below), the infrastructure was able to withstand the changed and increased use, also due to the quick reaction of the ISPs and the creation of additional capacities on short notice.

During the confinement period, several mechanisms were used to provide the regulatory authority and also the general public with an overview of internet status and the application of any traffic management measures. With reference to usage in Austria, RTR received regular updates on the utilisation of Austrian networks.

To support consumers in the best possible manner in the event of problems arising due to increased use of their own internet access, RTR published a guideline with tips for internet and telephone use during the corona crisis.[4] This informed consumers of the ability of Austrian networks to withstand the overload during the corona crisis, and of potential steps for improving the stability of users' internet access, for instance by a better positioning of the WLAN router and optimised timing of internet use. Consumers were also notified of the RTR-NetTest[5] as a means of evaluating IAS during the corona crisis.

After the confinement measures came into force, a change in usage patterns in Austrian networks was observed. In the first few weeks the use of voice telephony rose sharply, in some instances tripling the normal level. An increase in data consumption during the day was also observed – in addition to the continued peak in data use in the evening.

During the entire period of the confinement measures there were no network outages due to overloading. According to the statistics from VIX, after the considerable rises in the first weeks, at least in the recorded traffic, the situation again stabilised.

[3] Press release issued on 18 March 2020, https://www.rtr.at/de/pr/pinfo18032020 (in German)
[4] RTR 2020: Tips for internet and telephone during the corona crisis (https://www.rtr.at/de/tk/TippsfrInternetundTelefonwhrendderCoronakrise; in German)
[5] https://www.netztest.at

The measurements recorded using the RTR-NetTest also show a temporarily higher capacity utilisation during the confinement measures. Average download speed dropped by more than 10 per cent during the day in this period, whereas transmission rates measured in the usual 'busy hours' returned values similar to those prior to the confinement measures.

A fall in download speed was also observed in measurements performed for mobile telecommunications networks (2G, 3G, 4G) after the confinement measures came into force after 15 June. A marginal drop was also recorded for stationary products (WLAN, browser measurements), yet less significantly pronounced. With the first relaxation of confinement measures, and after ISPs reinforced bottleneck capacities, the figures recorded corresponded to those before the crisis. With a view to the internet, the regulatory authority considers the crisis to have been well managed (to date) overall. This can also be attributed in particular to the good communications between the authorities involved and the ISPs, and to their prompt response to the changed usage patterns as well as the creation of additional capacities on short notice. An in-depth look at Austria's internet during the corona crisis is also provided in RTR's 2020 net neutrality report[6].

1.2. BE

Measures taken by the operators

Given the increased use of the Internet during periods of confinement (e.g. for e-learning, teleworking and entertainment) major ISPs took the initiative to expand the volume of data given in tariff plans with a data cap or to suspend the application of data limits in these tariff plans.

1.3. BG

Measures taken by the NRA

The Communications Regulation Commission (CRC) enacted a Coordination Center for Operational Interaction to support the measures of the Bulgarian Government and the National Crisis Headquarters facing the spread of COVID-19 and to provide additional opportunities for citizens to use mobile services. The Coordination Center comprised representatives of the Regulator, Mobile Operators and Licensed Postal Operators.

The objectives of the Coordination Centre included the provisions of:

- Timely information on the measures and actions taken by the Mobile Service for the benefit of consumers and prompt exchange of information in case of any change in the situation in the country;

[6] https://www.rtr.at/en/inf/NNBericht2020

- Coordinating actions to inform consumers for more responsible use of the additional services provided to ensure the infrastructure to withstand the loads (e.g. the distribution of Internet usage, recommending streaming and downloading of bulk content in no peak hours) and coordinate single actions concerning the problems with the services provided by the operators and opportunities for regulatory assistance in the event of technical difficulties;

CRC encouraged the citizens to use the ensured electronic portals via its website. All payments could be made online by bank transfer, via the electronic payment system, without the need for on-site visit.

Measures taken by the operators

All mobile operators have increased, at no extra cost, mobile data allowances and/or minutes for customers, and/or offer access to additional media services free of charge. One mobile operator cooperated with Ministry of Internal Affairs with an initiative of raising awareness of telephone fraud and its prevention.

Referring to the public information, the leading Bulgarian operators established traffic increase (e.g. around of 40% increase of voice traffic and 30% increase of fixed internet traffic) to the measures taken by the National Crisis Headquarters in terms of coronavirus escalation. Despite the increased consumption of mobile and fixed services by consumers (e.g. due to the home-office work, online education and homestay initiative), the Operators' Networks are still operating normally and take the current traffic.

In line with the crisis, the leading Bulgarian operators took several actions to protect their employees and consumers and to provide additional services for the benefit of their customers:

- Fixed Network Operators provided a sheer scope of TV programmes, and the Mobile Operators additionally delivered 10,000 MB high-speed data pack for the duration of measures taken by the National Crisis Headquarters;
- Operators provided and encouraged the use of remote forms of customer services (e.g. online payments and consultations and remote sales through online video services) and suspended sending of paper invoices and contracts within the period of the COVID-19 measures;
- Keeping with the decision of the National Crisis Headquarters to restrict access to big shopping centres, access is ensured to other small operators' shops under strict conditions to prevent large numbers of visitors.

One mobile operator zero rated the traffic to a specific website used for distance learning for the period 20.03-20.04.2020. Once the data cap was reached the traffic was slowed for all websites and applications including the distance learning website.

1.4. CY

Measures taken by the NRA

OCECPR monitored the market via weekly information requested from the providers regarding the volume of traffic (GB) for fixed and mobile networks compared to the pre-COVID era (average of last 3 months vs every new week and weekly average of the last three months vs each new week), and cellular areas (cells) and parts of the fixed network that are congested. Based on the data received an internal assessment was taking place in order to determine whether any measures are required.

Measures taken by the operators

Providers proceeded with upgrades on speeds (download or upload, or both) in order to support the stay at home movement. No actions were reported for traffic management. Some mobile providers increased the mobile internet data cap volumes (eg. doubled the data cap available).

1.5. CZ

Measures taken by the NRA

There were no regulatory measures adopted towards operators. Only clarifications and advice were given by CTU on requests of operators.

Regarding zero-rating, in the early phase of the pandemic, CTU expressed positive attitude towards the proposed zero-rating of access to government website and sites officially dedicated to COVID-19 (by all MNOs). CTU advised the MNOs that they should agree on clear rules on which websites this would be applied and under which conditions. CTU also declared that the practice should be only temporary (during the time of crisis) and consumers should be well informed about it. In autumn, CTU was informed that one operator applies zero-rating to the tracing app (eRouska). No issues were observed (nor complaints registered) regarding QoS or availability of services.

Concerning the interpretation of reasonable traffic management with regard to potential increase of traffic, CTU gave similar advice as expressed by BEREC in the EC-BEREC statement and proposed ad hoc consultations on particular measures.

CTU collects information from operators on weekly basis. The main monitored indicators are security, confidentiality and operational integrity. During the regarded period, networks in the Czech Republic remained stable, no significant incidents or cases of congestion were observed. All the monitored indicators are at a required level.

Measures taken by the operators

In general operators aimed to facilitate communication for their customers, enable access to relevant web sites, TV broadcasting and remote working. They also cooperated well with the government e.g. by enabling bulk SMS etc. Operators also offered free of charge data to their customers.(details can be share on request)

Operators have established procedures how to handle installations or reparatory works in compliance with social distancing requirements.

1.6. DE

Measures taken by the NRA / by the operators

In March 2020 the BNetzA has published a "Report on utilisation of telecommunications networks" illustrating that the telecom networks are stable. The BNetzA is not aware of any network overload in Germany as a result of the COVID-19 pandemic. Network operators have taken all preparatory steps to keep their networks running as well as possible during the crisis.

The BNetzA worked closely with the telecoms industry, and companies are providing the BNetzA with daily (later weekly) reports on the situation in their networks

In order to be prepared yet for any eventuality of networks becoming overloaded due to further increases in the use of telephony, video conferencing and streaming services the BNetzA has published "Guidelines on traffic management measures". These set out permissible measures in line with the European net neutrality Regulation.

For example, Internet access providers may also reduce the bandwidth of tariffs or individual tariffs, provided that this is done for all applications equally within the tariff.

Furthermore it is possible to reduce the traffic load of data-intensive services (such as, in particular, video streaming). Internet access providers can apply traffic management measures (such as throttling) to certain categories of data traffic (for example video streaming) for the period a network is overloaded. If traffic is throttled, the entire data traffic category –and not just individual providers – should be throttled equally. Throttling video streaming could enable video conferencing services to be prioritised. And content providers (in particular streaming providers) can voluntarily lower the quality of their applications and content, for instance by switching from UHD to SD/HD, and thereby reduce the bit rates needed for their services.

The Federal Ministry for Economic Affairs and Energy held talks with streaming providers focusing on the possibility of reducing video quality to reduce the load on the network should problems for the network become likely. Major content providers such as Netflix, Youtube, Amazon and Facebook took proactive measures by modifying the transmission quality of their

streaming services across Europe to ease the strain on the networks while still providing high-quality content.

1.7. DK

Measures taken by the operators

The primary and prioritised task by the operators was to ensure stable operation of networks as a basis for the continued functioning of the society. The Danish operator were monitoring network capacity and following the developments closely in order to adapt and make the necessary adjustments. The operators also planned upgrades of different parts of the network, if necessary, to ensure that the operators could maintain a strong and capable infrastructure in DK under these exceptional circumstances.

In order to be able to get in contact with family in Denmark and the authorities – both the Danish and the local – some of the major Danish mobile operators made it possible for its customers to make calls and send SMS' from abroad to Denmark free of charge One major mobile operator also offered extra data free of charge.

1.8. EE

Measures taken by the operators

Some mobile operators raised the amount of internet data in month and shared routers free of charges to some clients like school children. Some fix operators raised speed of internet for schools and doctors.

1.9. EL

Measures taken by the operators

Operators offered discounts on mobile broadband services, as well as zero-rated apps concerning tele-education.

1.10. FR

Measures taken by the NRA and other public institution

ARCEP along with the government was monitoring networks load through daily reports from French carriers during the peak of the crisis in Q2 2020. Currently those reports are updated on a regular basis. The government is associated to the monitoring of the networks. Government publications encouraged reasonable uses of internet access services at home (downloading at off-peak hours, use of Wi-Fi…) and initiated discussions with CAPs to adapt their services during the confinement period. Most of the bandwidth limitation efforts of the CAPs ceased during the summer period and nothing has been changed so far, even though

the country was experiencing a curfew in several regions this summer and now a second lockdown..

Measures taken by the operators

ISPs closely monitored the traffic evolution in their own network during the crisis and reported to the Government and Arcep about the networks' evolution.

During the first lockdown in France, they also implemented measures to support customers during this period such as:

- offering TV content on fixed access free of charge
- increasing the amount of mobile data and minutes for free
- increasing bandwidth once the data cap is reached on mobile services
- offering some prepaid mobile internet and voice for people without internet access
- increasing the amount of mobile data for customers stuck in a foreign country
- increasing the speed on internet access without any additional charge

1.11. HU

Measures taken by the NRA and other public institution

In line with the BEREC – European Commission Joint Statement issued on 19 March 2020, NMHH regularly monitor internet traffic to respond to network capacity problems in the wake of national measures dealing with the COVID-19 virus. NMHH collected information from the operators regarding the status of their networks twice a week.

NMHH also issued the following statements related to the extraordinary situation:

- NMHH advises the general public how to use the online telecommunications services efficiently and how to avoid heavy burden on the telecommunications networks.
- NMHH also adviced on how to achieve faster internet connection at home. In addition to the website operated by NMHH which helps parents to support their children in the digital environment (gyerekaneten.hu) dealt with digital education in April.

During the second wave of the pandemic, the Hungarian government issued a government decree[7] which allows free internet services at fixed location for 30 days for secondary and vocational school students and teachers taking part in digital education.

[7] Government Decree 501/2020 (XI.14.) on measures which helps families affected by the digital education during the state of emergency

Measures taken by the operators

Operators offered extra data to the residential and business customers; temporarily zero-rating additional services or offering services free of charge, such as educational content and platforms; and some TV content free of charge during the first wave of the pandemic.

1.12. IE

Measures taken by the NRA

ComReg has established a process whereby critical or vulnerable users can be escalated for resolution. A related process has been established between ComReg and the USP operator to respond to such cases on an exceptional basis. ComReg monitored experience of retail operators in relation to how they are addressing customers consumer care and retail store operations. ComReg is also aware of ECAS trends. ComReg consumer care operations started tracking issues in relation to fixed service outages for individual consumers for which the service may be critical or for vulnerable users so as to escalate as appropriate. ComReg also placed useful information on its website including regarding remote top-us etc.

Measures taken by the operatorsiThe main electronic communications providers signed up to a minimum set of commitments to assist and help their customers in the use of electronic communications during the COVID-19 Pandemic. Service providers introduced their own specific measures to meet these commitments and they may also go beyond this common set of commitments.

The commitments are designed to give consumers reassurance about communications usage while maintaining the overall stability of the electronic communications networks. These measures were also to help ensure that consumers, who are financially vulnerable as a result of the COVID-19 crisis, will get assistance from their service provider to agree an affordable solution for their voice and data service.

The COVID-19 Consumer Commitments were as follows:

- Any fixed broadband customers who do not have unlimited usage already as standard will be given the opportunity, if they require, to upgrade their package (which may be on a temporary basis), with their current service provider.
- Any customer who does not have fixed broadband and who relies solely on mobile access to the Internet will have the opportunity to avail of affordable unlimited mobile data access/package from their service provider.
- Fair usage policies will not be automatically applied to unlimited fixed and mobile data packages.
- Service providers may implement appropriate permitted traffic management measures to avoid network congestion.
- Access to healthcare and educational resource websites identified by the Government will be zero-rated for all customers where technically feasible.

- So that customers can remain connected during the crisis, service providers will engage with any customer that contacts them who is in financial difficulty as a result of COVID-19 and has difficulty paying their bills to agree the best way of keeping them connected to voice and data.
- Service Providers worked with ComReg in the event of complaints raised to ComReg by consumers, who consider they were not being treated in accordance with these commitments.

These commitments were implemented by operators. Each service provider provided details and implementation updates on their own website. The commitments were available to consumers until 31 August 2020.

1.13. IT

Measures taken by the operators

Upon input by the Government, most major operators have voluntarily put in place a number of actions aimed at supporting their customer base during the COVID-19 crisis. In particular, the majority of providers of mobile services has given free additional data and voice traffic to their users (both residential and business). Similar actions were in place by fixed operators toward their pay-per-use offers' subscribers.

Since the beginning of the COVID-19 crisis, electronic service providers have restrained from taking any actions aimed at collecting debts or interrupting services to bad or late payers living in the municipalities of Lombardia and Veneto where the disease initially broke out in IT. This measure was extended by most operators at least to disabled users, elderly users and users with social needs living throughout IT. Some operators are progressively restarting their debt collection activities, but are granting deferments of payments and are agreeing instalments plans with their users.

In addition, several operators joined the initiative of the Ministry for Innovation and Digitalization mainly aiming at supporting students involved in distance learning activities and at supporting smart workers. Some operators gave free tablets and smartphones to prison inmates and hospital patients to help them to keep in contact with their families.

The main mobile operators gave free SIMs and devices to schools and offered unlimited data traffic plans to students. One operator launched a 12 moths zero rating offer which allowed students to browse freely on the main e-learning platforms.

Starting from 18 November 2020 Tim, Vodafone and Wind Tre have accepted the government's invitation to identify solutions to ease students in following lessons remotely. Operators will exclude distance learning platforms from the gigabyte consumption foreseen in the subscriptions.

1.14. LV

Measures taken by the NRA

SPRK published a press release calling for rational use of internet service, that included practical recommendations for internet users.

Measures taken by the operators

Internet service providers were monitoring their network and when necessary and possible increase their network capacity. As well as part of them carry out informational campaigns for end-users. Some mobile operators gave an extra amount of data or unlimited data for internet users.

1.15. LT

Measures taken by the NRA

The increase of traffic was quite significant in the first weeks of the quarantine (as of 16 March 2020). No operator reported the use of traffic management measures due to quarantine, also there were no signs of growth in cyber incidents. In order to test the impact of COVID-19 on mobile Internet quality, RRT performed regular QoS measurements; till April 14, these measurements covered two major Lithuanian cities, and showed that quality of e-communications services remained high (Internet speed rate varies from 40 to 100 Mb/s). Thus, quarantine caused by COVID-19 did in general not downgraded Internet service quality.

RRT issued 4 recommendations which should assist and guide operators, consumers, special user groups on provision and use of electronic communication services. RRT recommendations included guidelines for operators on key service provision issues such as collection of payments for services, change of plans, porting of telephone number and services remotely, breakdown of user's connectivity, etc. Furthermore as all official schooling was transferred on the Internet, RRT drafted and published two sets of recommendations – one for teachers, and one for parents – how to ensure children's safety during on-line learning process.

Measures taken by the operators

All operators were closely monitoring the situation in their networks and expanding their networks' resources and applying all other measures, as needed, in order to ensure continuity and quality of their services. Additionally, operators implement new, special tariff plans (e.g. in order to honour the importance of the duties of medicine professionals, operators introduced new tariff plans for them with special favourable conditions).

Mobile network operators were requested to send SMS to Lithuanian citizens who came back from foreign country, with instructions to stay at home in isolation for at least 14 days.

1.16. MT

Measures taken by the NRA

MCA held discussions and urged operators to postpone taking actions against subscribers who usually pay their bills in retail outlets and might not be able to settle their bills in time, ending up being charged for late payment and possibly having their service suspended. All operators consented to this request.

Measures taken by the operators

A number of service providers were providing their TV subscribers with free Premium channels. Additionally, a number of service providers were also providing free benefits to those working in the public sector who are actively fighting COVID-19 outbreak on the front line and are also providing free benefits to their customers who are caught abroad. These benefits include free mobile data and minutes or extra credit depending on the personal situation. Finally, one particular service provider is opening access to its TV app to anyone (even to those customers not subscribed to this particular service provider).

1.17. MK

Measures taken by the NRA

After the request of two operators, AEC stated that operators have the right to implement internet traffic shaping measures only in cases where protection for overload of network connection or for mitigation of the consequences of overload of network connection is needed. All measures for shaping of internet traffic should be exceptions and should be transparent, non-discriminatory and proportionate to the purpose for which they exist. In conclusion this situation was considered as exceptional and operators are allowed to practice traffic shaping. AEC informed the operators that it would welcome activities from the operators such as:

- extension of the maturity of the issued invoices,
- refrain from disconnecting electronic communications services in case of unpaid obligations and claims,
- to notify the subscribers of such measures in order to avoid congestion in their shops.

1.18. NO

Measures taken by the NRA

Nkom reported in spring of 2020 that it increased its preparedness with daily reporting from all major fixed and mobile ISPs due to the pandemic. Furthermore, based on operators' reporting Nkom provided a daily governmental report.

Measures taken by the operators

Major ISPs followed traffic development closely and increasing network capacity when needed. This applied in particular to access networks, including base stations in mobile networks. The main transport networks have not reported any challenges with regard to traffic capacity .

Some ISPs were increasing the amount of mobile data in the subscriptions for a limited period without any additional charge. One mobile ISP introduced temporary zero-rating of official websites dedicated to information related to COVID-19.

1.19. PL

Measures taken by the NRA and other public institution

There was no significant network load resulting in limited capacity. Office of Electronic Communications (market regulator) constantly monitored the situation. In the event of excessive network congestion, suppliers were required to use traffic management measures to limit the volume of network traffic.

The President of UKE has decided to limit in-person customer service in the scope of performing UKE's tasks related to receiving complaints and applications on the functioning of UKE's organizational units and proceedings related to out-of-court resolution of consumer disputes.

Moreover, the President of UKE together with the Minister of Digital Affairs, NASK and Orange Polska, Polkomtel, P4 and T-Mobile Polska have entered into an agreement on cooperation in the special protection of internet users against data phishing sites, including for personal data, during the states of emergency, such as an epidemic.

1.20. PT

Measures taken by the NRA

Along the past months, ANACOM has taken several measures regarding consumer protection and proposed others to the Government and the Parliament in response to COVID-19.

In order to prevent possible disruptions to communications services, ANACOM has published information about good practices regarding the usage of electronic communications networks

and services. ANACOM has also published, in a regular basis, useful information for consumers, in particular regarding the exceptional measures approved by the Government, Parliament or service providers, on its websites.ANACOM has proposed, to the Portuguese Government, exceptional measures to protect consumers of electronic communications services, for instance i) flexibility in termination or contract change, ii) prevention of interruption of electronic communications services due to non-payment, and iii) exemption from interests and other penalties and relief debt settlement.

On May 11, ANACOM launched a practical guide[8] to answer the main doubts of communications consumers, in the current exceptional situation resulting from the COVID-19 pandemic. The objective was to help users to know their rights, supporting them in the current situation. Later on September 3, ANACOM updated its practical guide. This new version of the guide includes information regarding the new deadlines foreseen for consumer support measures and how they can demonstrate the drop in household income in order to benefit from temporary suspension options or even cancellation of the contract without penalty.

ANACOM has published statistics regarding the use of its measurement tool (NET.mede). The statistics revealed a significant increase in the number of tests on the speed of the Internet access service, both fixed and mobile, during the pandemic.

ANACOM continues to publish statistics regarding the number of complaints of the electronic communications sector[9]. The number of complaints decreased in October in comparison to September, but it is still very high when compared to the number of complaints in the same period last year (+65% complaints in the electronic complaints book).

Measures taken by the operators

In March 2020, the network , operators more representative in the market launched a joint plan to minimize the impacts of COVID-19 with 6 areas of action:

1. Maintain the quality of service of communications networks
   Operators were reinforcing the capacity of their networks. The networks were already dimensioned to withstand peak hours and were also prepared to respond to an increase in traffic, namely residential, but it was essential to make responsible use of the Internet and in accordance with best practices, in order to prevent possible traffic congestion, networks and disruption of electronic communications

[8] Practical guide available at: https://www.anacom.pt/render.jsp?contentId=1533561&languageId=1.
[9] Detailed information available at: https://www.anacom-consumidor.pt/destaques?p_p_id=101_INSTANCE_uy7CWCHn8Tth&p_p_lifecycle=0&p_p_state=normal&p_p_mode=view&p_p_col_id=column-1&p_p_col_pos=1&p_p_col_count=2&p_r_p_564233524_tag=comunica%C3%A7%C3%B5es+em+portugal+-+reclama%C3%A7%C3%B5es.

services essential for interpersonal communications (voice and SMS), for teaching and working at a distance.

Operators also took several measures to ensure that their teams are available, remotely whenever possible, and physically when strictly essential and feasible, to ensure continuity of operations and any technical assistance that is required.

2. Ensure the necessary network capacity for critical State functions
   The operators ensured that the critical functions of the State maintain total connectivity, promoting a reinforcement of the network where it is most needed, and maintaining a close dialogue with the Government, in the sense of maintaining and reinforcing this connectivity within the existing constraints in real time.

3. Promote the containment of virus expansion

Operators were adopting measures that aim to contain the expansion of the virus, with special emphasis on the promotion of teleworking but also with regard to customer relations activities.

The operators strongly recommended:

- Suspension of all commercial activities in person;
- Restrictions on the opening hours of public service points;
- Promotion of a greater rationalization of the chain of stores subject to the mandatory opening, by means of permanent assessment in terms of demand levels, availability of resources and geographical coverage;
- Rotation of service resources in the commercial spaces in operation, within the existing conditions;
- Promotion and communication of information and recommendations, with its employees and customers, in alignment with the syllabus contents of the General Health Directorate and other competent authorities, regarding good practices for the prevention of contagion, with special attention to ensuring the maintenance of distances from safety;
- Disclosure to your employees and customers of rules for the good use of the services provided in order to ensure their continuity in the current emergency situation (e.g. privileging digital channels over those in person).

4. Alert to anti-fraud procedures

5. Contribute to the incentive to telework in companies

   In addition to encouraging teleworking within their organizations, and in order to minimize the impacts that COVID-19 was having, the operators offered for a period of 30 days, 10GB of data to their private and business customers of mobile telephone service.

6. Support the community

Aware of the radical impact of the change in the way of life, work and education, resulting from the exceptional crisis that we are experiencing, the operators, in order to mitigate the consequences of isolation, made the decision, together with Sport TV, BTV and Eleven Sports, from not charging monthly fees to customers.

In efforts to support the school community, operators also devoted special attention to the use of the internet that enables online and distance learning solutions.

Operators had also informed and sensitized customers, through digital contact channels, such as SMS and email, to privilege the use of digital channels over live channels. Some operators also reported that they had reinforced their network capacity.

A collaboration agreement was signed between the government and operators for the allocation of communication benefits to professionals from the National Health Service dedicated to the treatment of patients with COVID-19.

1.21. RO

Measures taken by the NRA and other public institution

ANCOM requested electronic communications providers not to suspend or disconnect their subscribers in case of non-payment of the invoices during state of emergency. This was done in the context in which more and more people work and stay at home (teleworking), the movement of the population begins to be restricted and access to voice and data services becomes essential.

The government issued recommendations and orders regarding the protection measures to be taken by the employees of the utility companies in Romania and also the necessity to keep their services on. ANCOM has started a dialogue with the competent authorities to align the treatment of telecom companies' personnel and activities to the measures issues for utility companies.

Regarding the possibility of increasing data traffic (due to remote work, increasing the consumption of online entertainment, etc.), most providers at the beginning of the pandemic were expecting significant increase of traffic, the figure mentioned being more than 50% increases in traffic compared to normal circumstances. However, it should be stressed that this was a rare and uncommon situation and there was a significant lack of knowledge on possible future evolutions.

No congestions were reported, but in order to ensure a continuous provision of services, providers were monitoring the main network indicators (e.g. network load, traffic level) and were prepared to take the necessary measures to mitigate any congestions and to ensure the

provision of services at best possible parameters. In a few cases, measures regarding capacity building were adopted in the core network and in some specific points in the radio network.

In order to prevent the problems that would have occured along the supply chain and which could impact the purchase, operation, maintenance of equipment or services, the ISPs took measures like monitoring the stock of reserve components and maintaining a close connection with partners / vendors in order to maintain the necessary stock.

1.22. RS

Measures taken by the NRA

After the first COVID-19 case had been confirmed and the state of emergency declared in Serbia, RATEL has been proactive in producing information, advice and recommendations for consumers on relevant topics. A number of suggestions on responsible use of the Internet and tips for optimal network configuration and connection made from home have been provided. The recommendation to citizens on the Internet usage during the period of increased traffic was published on RATEL's website promptly after the announcement of the confinement measures, suggesting when and how to use specific applications in order to ensure optimal utilisation of available resources. In addition to information provided on the official website, RATEL was rather active in the media, as well as on the social media platforms Facebook and LinkedIn, by promoting responsible use of the Internet and by warning about possible misuse.

To express gratitude to telecom operators for additional efforts made during the state of emergency, a campaign has been launched on LinkedIn entitled 'Invisible yet Indispensable', since the increased usage of networks and services during the lockdown has highlighted the importance of the sector and the key role played by people employed in this industry.

There were no regulatory measures adopted towards operators. Only instructions were released and they concerned the procedure for obtaining lockdown exemption permits for operators' employees in order to be able to carry out essential repairs and maintenance during lockdown.

Consumers were also informed about the manner of postal and courier service delivery during the state of emergency and about the emergency measures applied to postal delivery in this period.

Measures taken by the operators

Operators have provided higher network capacity due to increase in traffic in order to make sure that consumers would not be left without service during the state of emergency, and what's more, access to specific content has been made available free of charge and also payment deadlines have been extended.

During the entire period of the confinement measures there were no network outages due to overloading or network congestions and operators infrastructure was able to handle increased use of internet and voice traffic. RATEL received from operators regular daily updates on the utilisation of networks and services.

1.23. SI

Measures taken by public institution

Most of electronic communication services across the country worked as expected, without any major disruption. Increased level of data traffic was experienced (at SIX: 50 % from before the crisis), but it was under control. The timeframe of overloaded data traffic was from 19:00 to 21:00. According to the needs and after they have been informed by the operator of SIX (NREN - Arnes), three operators have reacted immediately and have upgrade congested links (communication equipment with higher throughput, +110 Gb/s).

TLD .si register and DNS system is operated by NREN Arnes. DNS system consist of 3 root servers in Slovenia, in addition, high availability is assured with the use of Anycast DNS commercial services. The whole system worked without any problems. Key national internet functions operated well and in line with expectations. SI were experiencing 1000 times increase in usage of the digital service infrastructure of the NREN Arnes, thus it has been immediately upgraded with additional hardware. Now they successfully support the whole educational sphere with online learning services.

It can be concluded that national public and commercial digital infrastructure was functioning properly even in times of viral crisis, although this has led to an unprecedented increase in its use. However, we constantly monitor its performance and the development of the situation.

1.24. SK

Measures taken by operators

One ISP launched a "subscriber help package" which consist of unlimited (FUP cap of 1 TERA bytes/month) data for B2B and B2C postpay customers. A credit equal to 50% of every top-up is given to prepaid customers. They also offer increased number of TV channels and 10 free movies in mobile PayTV offer, free fixed and mobile calls to 50 virus info hotlines and other crisis-related numbers, and sign-language translation service for persons with impaired hearing has also been made free for the time being. For B2B customers they were offering free MS Teams software for 6 months.

1.25. ES

Measures taken by public institution

During the pandemic several restrictions were taken such as suspension of periods and timelines for completing the procedures of public sector entities; prohibition to suspend the provision of ECS except for ensuring integrity and security of the network; or closing of the CNMC's on-site registry. However on 21/07/2020 restrictions were lifted and these measures were also lifted.

1.26. SE

Measures taken by the NRA

PTS had continuous cooperation with the largest operators and PTS´s assessment was that core networks and functions were able to handle an increased traffic volume. Where reinforcements were in need wass connections to companies and organizations that provide functions for teleworking and distance learning. The traffic in the networks increased, and the traffic pattern had changed to normal. The operators´ activities, their networks and services were all on a normal satisfying level.

1.27. TR

Measures taken by the NRA

Operators were asked by BTK to provide discount services to their subscribers and also to provide flexibility and convenience to subscribers in terms of line restriction, closing, enforcement follow-up and bill payment. Considering the effects of printed invoice sending in the paper environment on the epidemic, a decision was made to allow invoices to be sent by e-mail and SMS. In order to reduce the physical contact during the epidemic, subscribers were given the opportunity to receive subscription applications via operators' web pages without need for to go to dealers. It will be possible to make a subscription after the signing and sending the related contract via email to the operator. Taking into account the current conditions, the duration of the obligation regarding displaying a contract in the online transaction center within 3 months following its signing has been extended to 4 months. The duration of the obligation regarding transferring a contract from the dealer to the operator archive within 2 months following its signing has been extended to 3 months. As a recent development in this context, application for cancellation of the subscriptions is now possible through e-government portal in Turkey.

Measures taken by operators

Some operators provide voluntarily free internet capacity for e-education (zero-rating or free additional data packages). Free Communication Campaigns were organized for healthcare professionals and for distance education applications. In this context; upon the request of the

Ministry of Health, free voice and data campaigns were provided to healthcare professionals and family physicians for 5GB and 500 minutes per month, and to field work teams for 15GB and 15,000 minutes per month. In order to support the primary level distance education, 8 GB free internet package was defined by one operator, and 6 GB by other two operators. For the Courses Platform of Council of Higher Education, which is offered to university students, made accessible within the scope of the 6-month "Support to Distance Education" quota, which is defined free of charge on mobile lines by operators. During the month of Ramadan, free 1 GB internet package was defined to 81 million subscribers due to the increasing internet needs during the pandemic.

2 Disinformation and electronic communications

Some national regulatory authorities and governments stepped up their efforts against misinformation, in particular concerning the alleged links between 5G and COVID-19. In a broader perspective, some national regulatory authorities as well as governments have launched initiatives around disinformation, especially online, covering matters relating to COVID-19. A national regulatory authority reported that since the end of April, the percentage of coronavirus posts/tweets out of the total appears was higher for sources of disinformation than for sources of information.

2.1. BE

Measures taken by public institution

The federal police ordered by the Ministry of Justice to search for online websites that distribute fake news about COVID-19 and ways to prevent or treat infections. Internet patrols were also conducted to online web shops offering counterfeit and worthless medicines or medical supplies for sale that are said to provide protection against the COVID-19 pandemic.

2.2. HR

Measures taken by the NRA

HAKOM has informed the public about fake news regarding connection between 5G network and COVID-19 pandemic on its website. HAKOM published other relevant documents including Commission's documents ("5G Deployments and the Protection of Public Health" and "Implementing Act – 5G Light Deployment Regime and EMF Matters") and asked media regulator to join the campaign.

In addition, HAKOM expanded its website[10] by creating a special subpage with the content dedicated exclusively to 5G in order to intensify activities aimed at raising public awareness.

2.3. CZ

Measures taken by the NRA

CTU runs an e-mail address 5Ghoax@ctu.cz where citizens can send the information they encounter. CTU representatives have also participated in several fora to explain the real impact of 5G. These explanations included that 5G networks did not affect at the origin and spread of COVID-19. No attacks on the physical infrastructure of mobile network operators occurred.

2.4. DE

Measures taken by public institutions

There are several "initiatives" e.g. by the Federal Government and the governments of the German States in order to fight against disinformation. Among others, national warning apps and the national contact tracing app include information about the coronavirus and the current situation as well as links to trustworthy institutions. As another example, public authorities keep the citizens informed using all kinds of media, such as TV, but also social media platforms.

2.5. IE

Measures taken by the NRA

ComReg has issued public statements, gave interviews on national TV and published information on its website to urge people to ignore misinformation linking coronavirus to 5G mobile networks following an increase in the spread of the conspiracy theory in Ireland earlier in 2020.

This followed after two mobile phone masts were set on fire in northwest Ireland and police suspect the fires were set deliberately by arsonists who believe the technology is linked to the virus.

While condemning the incident to set fire to mobile phone masts, ComReg urged everyone to ignore misinformation circulating on social media and to rely on reputable sources of information about 5G. ComReg published information on its website about its own role and that of other competent bodies in overseeing any health-related aspects of radio transmissions.

2.6. IT

[10] The site can be accessed: https://www.hakom.hr/default.aspx?id=10321

Measures taken by the NRA

In the light of its convergent remit, on March 18 AGCOM launched a Roundtable "Online Platforms and Big Data"focused on the implementation of initiatives aimed at contrasting online disinformation on medical and health issues related to COVID-19The Roundtable fostered discussion between online platforms, stakeholders and other Italian institutions regarding the use of big data with the purpose of identifying any measure to counter the spreading of the contagion.

In this context, AGCOM opened a dialogue with the main online platforms, including Facebook, Google and TikTok, and with the most important Italian fact-checkers. In particular, thanks to the exchange of good practices explored within the Roundtable, Facebook has launched a project aimed at tackling disinformation on Whatsapp, in partnership with Facta, the new branch of the Italian fact-checker Pagella Politica.

Furthermore, AGCOM published three special issues of its Online Disinformation Observatory specifically dedicated to Coronavirus, reporting the fact-checks, provided by independent fact-checkers, regarding some of the most widespread COVID-19 fake news in Italy and Europe.

The analysis conducted since the beginning of the emergency in Italy revealed a growing trend of circulation of news and disinformation on the Coronavirus. According to the Observatory, the attention given to the Coronavirus by the sources of disinformation (websites, pages and social account) remained high, despite settling in the average day on lower values than those registered in the first lockdown week in March. In particular, while for information sources, there was a continuous decrease in the space allocated on their social pages and accounts to Coronavirus news, for social sources of disinformation, at least in the last 3 weeks of May, the focus on the topic remained almost constant. As a result, since the end of April, the percentage of Coronavirus posts/tweets of the total has been higher for sources of disinformation than for sources of information. Furthermore, compared to the most critical period of the medical-health emergency, in which the attention of the information players to the issue was at its peak, the weight of disinformation on the total amount of Coronavirus-related news circulated online increased again, exceeding 5% earlier and rising to 6% at the end of May.

As far as the area of electronic communication and information is concerned, within the mentioned Observatory, AGCOM detected COVID-linked cybersecurity challenges, thanks to the partnership with SOGEI: cyberattacks in the world increased indeed by 16% in the first two months of 2020 compared to the same period back in 2019, as cyber threats are designed around COVID-related fears and leverage on users' psychological status.

Furthermore, AGCOM also released a table comparing the main facts on 5G to the most relevant information on 5G and COVID-19, along with the web-links to the related fact-checks carried out by independent organizations.

Within such context, AGCOM set up a Data Science Task Force on online disinformation, in partnership with prestigious research as well as academic institutions, whose goal is to develop

research on Coronavirus-related disinformation and its social and economic impact in view of further developing AGCOM's analysis and monitoring tools on online information. Data produced by this Task Force are progressively shared and updated online. AGCOM, in order to strengthen the systems of analysis of the consumption of information and disinformation, was experimenting innovative methods of study on how users react to news of different quality and assess its reliability, and on how the perceptions of different phenomena fit in these processes. With specific reference to perceptions of news about the Coronavirus, AGCOM carried out a specific survey aimed at citizens, the results being published within the end of this year.

2.7. LT

Measures taken by the NRA

To handle disinformation about the link between 5G and COVID-19, RRT issued a press release explaining in detail 5G technology and its environmental impact, incl. denial of 5G relation to COVID-19. Press release was announced on RRT website (https://www.rrt.lt/en/rrt-provides-clarifications-on-5g/), national media and RRT Facebook account which is followed by many regional and local authorities. Also, RRT translated the EC announcements into the Lithuanian language and shared them with the responsible ministries.

2.8. PT

Measures taken by the NRA

ANACOM published a "Mobile networks and health - facts, data and challenges" guide[11], where it presents information on the possible effects of mobile networks, especially the fifth mobile generation (5G), on health.

2.9. RO

Measures taken by operators

In case of propagating false information in the media and in the online environment regarding the evolution of COVID-19, the hosting service providers and the content providers are obliged to immediately inform the users and to stop the propagation or storage of the content, by eliminating it at source. If the elimination of the content at the source is not feasible, the providers of electronic communications networks are obliged to immediately block access to that content and inform the users.

[11] Guide available at: https://www.anacom.pt/render.jsp?contentId=1549501.

2.10. RS

Measures taken by the NRA

As numerous comments, false information and posts in the social media emerged, connecting the causes of the COVID-19 pandemic with the 5G network deployment, RATEL responded promptly by providing a detailed analysis of proofs, opinions and guidelines of the relevant international organizations and institutions, in order to clearly demonstrate to the public that there is no scientifically justifiable connection between the 5G technology and Coronavirus and that the 5G technology deployment is focused on the economic development and on enabling the provision of modern services to the citizens.

Furthermore, being entrusted with the responsibilities of the National CERT, RATEL has also been involved in the activities within the scope of information security. The main tasks in this period consisted in coordinating the prevention and the protection from the security risks in ICT systems. Based on the collected data, the reported incidents and risks have been analysed for the purpose of raising awareness, among the population, industry and public authority bodies, about the importance of information security, while placing particular attention on potential challenges arising from remote work during this period. In order to advise the users of the identified risks that work during the COVID-19 pandemic involves, adequate brochures and infographics have been prepared and published on the National CERT website and social networks.

Through the National CERT activities in cooperation with international CERT teams, RATEL has been following closely the situation in cyber space. A detailed analysis of the reported phishing and ransomware incidents related to COVID-19 pandemic has been made and relevant communications have been immediately issued to the public.

2.11. ES

Measures taken by public institutions

There are several initiatives to tackle disinformation. The Ministry of Health maintains a dedicated website with verified information about COVID-19. The National Police has published a guide addressed to citizens to combat fake news. The Civil Guard has launched a citizen communication channel to receive information about online frauds.

Other initiatives, such as the launching of the ICONEM's Digital Observatory, handled by the Madrid College of Physicians (ICONEM), with the participation of other stakeholders such as fact-checkers and media agencies. In this platform users can denounce false information to prevent and raise awareness on informative malpractice that can entail a health risk. It operates as a fact-checking platform aimed both at patients and physicians.

3 Suspended or postponed activities/temporary licensing

Several national regulatory authorities suspended or postponed some planned or ongoing procedures mainly related to spectrum tenders. In some cases, the suspension of auction of the 700 MHz band is related to delays in DVBT2 transition, partly due to the need to ensure continuous DTT reception during the crisis, but also due to restrictions regarding movement and field operations in some Member States. Other actions relating to spectrum include the temporary assignment of radio spectrum to enable mobile operators to increase capacity.

Furthermore, some national regulatory authorities also issued licensing framework for the temporary assignment of additional spectrum rights of use for a period of three months, which can be extended for further period. Besides spectrum, there were other areas where slight delays were also experienced.

3.1. AT

Measures taken by the NRA

The multiband spectrum auction for the 700 MHz, 1500 MHz and 2.1 GHz bands was planned for April 2020, but it was suspended and it was hold on 19 October 2020.

The 2nd COVID-19-law brought also some changes in the procedural law: for ongoing proceedings and new applications, the deadlines and time-limits were generally interrupted until 30 April.

3.2. CZ

Measures taken by the NRA and other public institution

The Government suspended the process of transition from DVB-T to DVB-T2 broadcasting due to the need to ensure uninterrupted TV reception for all citizens during the crisis (cca 50% of population use the terrestrial platform) and also due to constrained purchases of the necessary new equipment during the lock down. This lead to delay in the release of spectrum in the 700MHz band, but in October 2020 the transition was completed.

In relation to COVID-19, CTU has prolonged the public consultation on draft conditions for the tender for rights to use radio frequencies in 700 MHz and 3,5 GHz bands. After acceptance of number of comments CTU repeated the public consultation in June to allow broad participation of all stakeholders. The tender was then launched on 7 August 2020 and the application letters were opened on 1 October. The auction phase of the tender followed and ended on 13 November 2020.

3.3. FR

Measures taken by the NRA

Spectrum auction for the band 3,4 to 3,8 GHz was postponed. It was supposed to take place in April, but finally it took place at the end of September, and the internet service providers were not physically represented (bids were sent electronically).

3.4. IE

Measures taken by the NRA

The MNOs outlined that extra bandwidth was necessary so as to provide extra capacity for mobile phone voice and broadband provision given the significantly increased traffic demands arising from the Irish Government's measures to tackle COVID-19. In line with the request ComReg proposed to release additional spectrum in the 700 MHz and 2.6 GHz bands and to temporarily liberalise the 2.1 GHz Band, which was licensed for 3G use only.

After taking into account the remarks received during the consultation period, ComReg decided to temporarily release additional spectrum rights of use in the 700 MHz Duplex and 2.6 GHz bands; and to make the 2.1 GHz Band available on a liberalised basis (which will allow operators to add additional capacity for data services).

Operators were able to apply for temporary licences that run for a maximum of three months. ComReg also decided that should the current situation continue for longer, holders of temporary licences may apply for a renewal for up to a further three months. A nominal fee of €100 per licence applied. Mobile operators could apply for licences immediately so they can utilise this spectrum as quickly as possible. On 9 April, The Minister for Communications and ComReg signed the regulations enabling ComReg to release these additional rights of use for radio spectrum on a temporary basis.

Following applications from each of the three MNOs, these temporary licences were extended for a further three months until October 2020, without prejudice to the award of long-term rights of use in these spectrum bands in its proposed multi-band spectrum award.

On 29 September 2020 ComReg published its Response to Consultation and Decision for the award of further temporary rights of use in the 700 MHz, 2.1 GHz and 2.6 GHz bands. Each of the MNOs submitted applications for a Further Temporary ECS Licence and after assessing each of these applications, ComReg has issued licences, which effectively extends the expiry date to 7 January 2021.

3.5. LT

Measures taken by the NRA

Regarding market analysis, due to pandemic situation, RRT decided to delay the launch of analysis of the Market of broadcasting transmission services, to deliver content to end user and Market of the facilities to deliver broadcasting transmission services by the end of national quarantine. Ongoing market analyses of three markets (Market of retail access to the public network at a fixed location for residential and non-residential customers and the Market of wholesale voice call termination on individual mobile networks and Wholesale high-quality access provided at a fixed location) were planned to be completed without any significant delays.

3.6. PL

Measures taken by the NRA

The legal act on protection measures related to spreading of SARS-CoV-2 virus issues was adopted on 14 May 2020. It imposed obligations on regulatory authority to annul auction procedure, redesign it and relaunch auction procedure under new terms and conditions. On 20 May 2020 the President of UKE opened proceeding for an annulment of auction for frequency reservations in the 3480-3800 MHz band. By issuing first-instance decision of the President of UKE the auction was annulled on 10 June 2020.

On 20 May 2020 the President of UKE issued decisions on amendments to reservations for multiplexes in 700 MHz band (700 MHz band was allocated for digital TV broadcasting services). This allowed for launching a process of broadcasters' migration to lower frequency bands. First stage of migration was finished on 3 June 2020. It allows seamless development of broadband services in 700 MHz band without harmful interferences on the territory of neighbouring EU countries ."

3.7. PT

Measures taken by the NRA

In March 2020, ANACOM has suspended two important processes that were underway and that consumed operators' resources:

- the digital terrestrial television transmitter network migration process, which was suspended, when the COVID-19 pandemic was declared by the World Health Organization. The restart of the migration process of the DTT network , was postponed to 12 August.
- the suspension of the spectrum allocation process for 5G and other relevant bands (700 MHz, 900 MHz, 1800 MHz, 2.1 GHz, 2.6 GHz and 3.6 GHz).

The public consultation procedure on the draft regulation of the auction proceeded later on and it ended on the 3rd of July.

3.8. ES

Measures taken by public institution

On 17/03/2020, the Ministry issued a press release informing that the changes of radio channels were suspended until further notice. The rationale behind this decision was twofold: ensuring that DTT reception was not affected during this period and avoid unnecessary visits to the users' homes. On March 30, the Spanish government informed the European Commission its decision concerning the postponement of the date to accomplish the second digital divide, freeing the 700 MHz band. In the same vein, the tendering process for the assignment of said frequency band was delayed as well.The Ministry informed of the new proposed date on June 26, stating that the deadline was planned for October 31.

Moreover, in the adaptation actions of collective reception facilities that were carried out during the period of the state of alarm, the need for retuning on televisions had to be avoided, so as not to cause unnecessary movements of people visiting the homes. For this reason, headers of collective TV reception facilities to be replaced by new ones could not be removed; both ought to be in service so that the reception of the television service by citizens was not affected. This required the performance of a second action, to be carried out once the situation returned to normal. Technicians who carry out adaptation actions during this period must abide with the necessary prevention and containment measures to avoid the spread of COVID-19, both for personal hygiene and for maintaining minimum distances from other people, following the instructions given by the health authorities.

3.9. TR

Measures taken by the NRA

It was decided by BTK to allocate the R/L frequencies at 13-80 GHz band to the operators who provided minimum set of information and to require additional information later in order to meet the increasing demand of the operators

4 Security

National regulatory authorities, other competent authorities and operators were jointly working towards ensuring the continuous availability of essential electronic communications services such as voice and internet access, especially for critical infrastructures, national services and systems. Some national regulatory authorities prompted operators to adopt contingency plans and to continually assess and mitigate risks regarding service continuity, integrity and security.

Based on the information received from the national regulatory authorities, several attacks were identified against electronic communications infrastructures (e.g. masts and Wi-Fi equipment). Details on the exact cases can be read in the country specific descriptions below. NRAs responded by raising awareness on the dire consequences of such actions for the perpetrators and society at large. Furthermore, some national regulatory authorities have also issued warnings in response to an increase in fraud and cyber-attacks related to COVID-19.

Number of attacks against electronic communications infrastructures

Where?	How many?	When?
Belgium	3	18.04.2020
		14.07.2020
		31.10.2020
Germany	2	May 2020
Ireland	3	April 2020
Italy	6	March/April 2020
Croatia	1	15.04.2020

4.1. BE

A base station was set ablaze on 18/04/2020, a second case occurred on 14/07/2020. and a third one on 31/10/2020. BIPT warns the consequences of such attacks on its website.

4.2. DE

In May 2020 there were some attacks against electronic communication infrastructures e.g. in Berlin and Bonn. However the background of these attacks is still not clear, investigations of the causes and motives are still ongoing, in particular it is not yet clear whether these can be considered comparable to those that occurred in other countries.

4.3. HR

On 15th of April few locals heavily damaged the site in one small coastal settlement. The equipment was financed by WiFi4EU project. In order to prevent such attacks in the future, HAKOM made additional efforts towards raising public awareness.

4.4. IE

3 separate attacks happened in April 2020. In response to one of the attacks, where a mobile base station/mast had been set on fire, Jeremy Godfrey ComReg's Commissioner did a brief TV interview pointing out that there was no 5G equipment on the mast (it was 3/4G) and the mast was providing service to a nearby hospital, which increased the severity of the impact of the attack.

4.5. IT

From March to April, 6 events were reported in different areas of IT.

4.6. NO

The public cyber security information site provided specific guidance regarding security during the pandemic.

4.7. PT

ANACOM warned against the increase in fraud and cyberattacks related to COVID-19.

4.8. RO

ANCOM sent a questionnaire to the most important electronic communications providers regarding the security measures implemented in context of COVID-19. According to the answers, the providers carried out a risk management and identified a number of possible threats and risks, which refer to at least the following: the security of the services and networks, the safety of the employees, the supply of commercial equipment needed for the electronic communications services etc. The providers took actions in order to avoid or to mitigate these risks.

4.9. SI

National cyber security resources paid special attention to the abuse of the viral crisis for cyber abuse and crime. National CERT published a lot of warnings for the end users on their web sites.

4.10. TR

National Computer Emergency Response Team (USOM (TR-CERT)) continued to combat virus-threatening elements, including malware regarding COVID-19, on a 24/7 basis in coordination with over 1300 CERTs.

5 Wholesale regulatory measures

At the beginning of the crisis a few national regulatory authorities adopted extraordinary wholesale measures in response to the crisis. Examples of specific measures adopted to improve conditions of service provision are:

- reduction in unit wholesale cost of the incumbent's copper and fibre Ethernet bandwidth,
- early opening of the incumbent's new fibre cabinet,
- fast provision of transport kits and VLAN,
- request to the incumbent to make its infrastructure available in the whole territory of the country,
- request to operators to increase bandwidth per consumer or voice interconnection capacity,
- postponement of earlier adopted measures on margin squeeze tests which would result in changes to the contracted prices during the crisis.

5.1. HR

Measures taken by the NRA

On 31 March 2020 HAKOM's Council adopted an amendment of the Margin Squeeze Test Methodology (MSTM), initially adopted on 22 November 2019. In the MSTM initially adopted on 22 November 2019, HAKOM defined new rules for conducting MS test compared to the previous one. Also, HAKOM defined that existing packages and promotional benefits that do not pass the new MS test should be revoked from the market by 1 April 2020. Therefore, by applying the MSTM, certain existing packages of operators of the HT group (Croatian incumbent operator - HT and the companies under its control, Iskon and Optima), do not pass the MS test and consequently some end users would not be able to use the packages with contracted prices and/or benefits after 1 April 2020. Due to the occurrence of COVID-19 epidemic and limitations as adopted measures aim to prevent the spread of the epidemic of the disease, HAKOM's Council postponed the date for the application of the MSTM, from 1 April 2020 to 1 January 2021, with the possibility of a further extension of that deadline depending on the further development of the situation (if the HAKOM's Council decides to prolong this date, it would be defined in the new decision). The reasoning for the postponement was based on the fact that change of the contracted prices can produce a negative effect on end users at the time of economic stagnation, while the government is adopting measures in order to facilitate business and aiming at liabilities settling. Also, since customers were not able to go to operators′ sales offices nor make an appointment with a sales representatives, they were restricted in their ability to choose and make decisions about changing packages. HAKOM decided that this postponement should be applied in general for all users – existing and potential new ones, meaning that these products could be offered and sold by 1 January 2021 under unchanged conditions and prices. However, new MSTM was applied to all new

packages/benefits introduced by the HT group since 1 January 2020, meaning that new MS test was applied without exception to the new packages and benefits that HT group wants to market from 1 January 2020).

5.2. EL

Measures taken by the NRA

EETT allowed extra time for the operators on specific regulatory obligations (mainly reporting, or tools implementation).

5.3. IT

Measures taken by the NRA

On 18 March 2020, AGCOM's Board has approved a first package of measures addressed to electronic communications networks and services providers, in relation to the objectives of article 82 of the "Cura Italia decree", aimed at coping with the increase in the consumption of electronic communications services and of the traffic on the network, as well as at meeting the needs of the different sectors, mainly the health sector, considered as a priority by the national and regional Crisis Units.

In order to manage the emergency period and derogating from the regulatory rules, AGCOM provided measures to improve the offer conditions of network services by Telecom Italia (TIM), such as:

- a reduction in the unit wholesale costs of TIM copper and fiber Ethernet bandwidth;
- a major commitment to allow bandwidth increase for the early opening of new NGA Cabinets;
- the fast provision of transport kit and VLAN (eg. KIT 10Gb NGA).

TIM had to make its infrastructures available throughout the national territory, taking into account consumers' requests, without discriminating in relation to technologies and geographic areas. To this end, for the period of the emergency, transparency on the infrastructures was ensured via the publication on TIM's wholesale website and the time of notice for marketing new access infrastructure was reduced.

The Authority supervised TIM's actions and monitored its compliance with the regulation in force, in view of suggesting possible measures to foster the development of very high-speed networks, as requested by the European Commission.

AGCOM also required operators to make every needed effort to contribute to manage and overcome the state of emergency. To this end, AGCOM pointed out some actions deemed as relevant, such as:

- to ensure an increase in the average bandwidth per customer, on fixed network, by at least 30% in the shortest possible time, where technically possible;

- to make every effort to activate every possible access solution, in case of lack of coverage of NGA fixed network and on request by the Building Manager or the responsible legal entity;
- to advise final consumers to use mainly fixed access at home (also wi-fi) so as not to overload the mobile network.

A permanent forum for discussion and monitoring was launched for any further initiatives, including around how to manage assurance and provisioning on field operations according to national rules to reduce the possibility of contagion.

In particular, AGCOM established 4 permanent roundtables focusing on the following matters, in order to share proposals with the stakeholders on how managing urgencies stemming from the emergency:

- electronic communication services and consumer protection;
- postal services;
- media services;
- digital platforms and big data.

The first Table, launched on 25 March, focused on implementing measures as envisaged in "Cura Italia" decree and addressed proposals from interested stakehholders around network management and relevant consumer protection issues. The table acted as the interface between AGCOM and the interested parties, and a dedicated e-mail address was made available to operators and qualified subjects, exclusively to demonstrate their interest in the transmission of documents, proposals or reports relating to the topics covered (tavoloTLC-emergenzaCOVID@agcom.it).

AGCOM shared a list of topics with the participants, in order to prepare a document collecting the contributions of all interested parties. Participants were requested to provide information and data on the initiatives taken and to update them in a timely manner. On such a basis, AGCOM aimed at verifing the state of the art of the supply chain involved in the offer of electronic communications services and assessing the necessary measures to be taken. On the basis of the first replies, AGCOM consulted the market on likely easing procedures for MNP.

The first summary of all the inputs received by stakeholders was published on 6 May on AGCOM website, highlighting the topics already covered by AGCOM measures, the ones that will be further analysed, those that may be under the remit of other competent institutions and those that will not be examined.

On 3 April 2020, operators were also invited to provide weekly information concerning the monitoring of data and voice traffic on the fixed and mobile network, as well as reports on i) any congestion related to elements of the operator's network and the actions taken to mitigate them and ii) initiatives taken to support the user. Since 24th April, reports have been updated

on AGCOM website on a weekly basis. Percentage increase of volumes and intensity (peak) in traffic data and voice minutes compared to a pre-COVID week stabilized after some weeks of growth and overall, the figures for intensity growth were well below the overall volume increase. From May the 4th (when the general lockdown ended and a so-called phase 2 started), with a partial opening of economic activities, volumes of traffic substantially decreased, especially on fixed networks.

On 7 April, AGCOM also adopted a second set of measures concerning broadband and ultra-broadband services, valid, until 30 June 2020, In particular, AGCOM approved TIM's proposals on the reduction of the one-shot contributions for migration from copper to fiber and on the advance announcement timing for new ROE, as well as Open Fiber's proposal on the reduction in the one-shot FTTH activation costs.

In May 2020 TIM, in order to extend the use of broadband services, functional to enable smart work and e-learning, proposed to freely enact to broadband access (ADSL) the lines of customers which subscribed the TIM's offer defined as Universal Service Obligations (USO). The ADSL access will become actual only when the customer plugs a (self-provided) modem in.

Since the costs of such a 2-play service (voice and data) would not be covered by the USO voice offer revenues, in order to ensure non-discrimination and allow alternative operators to replicate that offer, AGCOM proposed to adopt several wholesale promotions.

Such proposal was firstly subject to market consultation (within the COVID-19 working group established in AGCOM) by the communication of 30 June 2020. After the reception of market comments, in August 2020 AGCOM adopted the decision No. 384/20/CONS which approved TIM's proposal. However, AGCOM clarified that USO customers can activate a broadband service with any operator (not only TIM) and, for such scope, wholesale cost reductions – with respect to prices approved in the market analysis – have been required.

Last September, AGCOM specified the amount of wholesale price reductions (both set-up fees and monthly rentals) for the services LLU, WLR, shared and naked bitstream, with decision No. 472/20/CONS.

5.4. TR

Measures taken by the NRA

As a result of the market analysis on Market 3a (Wholesale local access provided at a fixed location), the incumbent operator was obliged to provide virtual unbundled local access, being effective as of June 1, 2020. Due to the pandemic, this effective date was postponed. Upon the request of the relevant operators, for corporate services such as rental circuit and metro ethernet internet, it has been made possible to freeze service at a wholesale level without any monthly fee.

6 Numbering issues

In some Member States, specific numbers have been assigned to COVID-19 hotlines for medical purposes and to facilitate registrations for tests in order to avoid 112 congestion.

In addition, some Member States adopted temporary restrictions on number portability. Most of the mobile number porting not sold in a fixed mobile convergent bundle was carried out, however only a limited amount of fixed number porting was allowed as this required physical interventions at clients' homes.

In one Member State, additional measures have been adopted to complement the restrictions on number portability; therefore operators were not allowed to issue extraordinary advertising campaigns on services that required number portability and mobile and fixed portability caps were set to achieve the right balance between the regulation and the State of Alarm situation.

6.1. CZ

In CZ a dedicated nation-wide line 1212 (accessible free of charge) was established for the provision of information on COVID-19. Now the line 1221 serves the same purpose.

6.2. IT

The public utility number 1500 was activated by the Health Ministry on 27 January: it provided an info service 7/24 on COVID-19. Each Italian Region has then activated their own dedicated emergency numbers.

6.3. LV

Specific numbers were assigned for the information purposes and for those registering to take testing for virus COVID-19.

6.4. LT

In LT a dedicated Hotline for medical consultations on COVID-19 was established (free of charge) 1808.

6.5. ES

Fixed and mobile number portability was suspended till 21/07/2020.

7 Public warning systems

Since March 2020, public warning systems were also used by several Member States in order to inform the public about the current crises.

7.1. AT

AT introduced measures, which included, inter alia, using SMS or mobile applications for public warning systems and the usage, on a temporary basis, of master data and location data of mobile users to send push-SMS to users in certain regions (e.g. users within a village under quarantine), or to users with specific master data (e.g. users above a certain age).

These measures are limited until December 31, 2020.

7.2. DK

In close dialogue with the authorities regarding the critical national services and systems, prioritising calls over data was introduced – emergency calls (112) had the highest priority.

Further measures involved the following:

- Assisting the Ministry of Foreign Affairs in issuing warnings about risks and instructions through text messages (SMS) to Danish citizens abroad.
- Sending SMS to all Danish subscribers with notifications from the police.

7.3. NO

There was an increased local use of public warning system with SMS in mobile networks during the pandemic.

7.4. PL

The public warning system (RCB) has been used to inform about the current epidemic situation in selected regions, encouraged to cover mouth and nose, keep distance from others, stay at home, obey restrictions in force or use the app ProteGO Safe.

8 Contact tracing applications[12]

In some Member States, new legislation was introduced requiring operators to share location data so that the relevant authorities can monitor compliance with restrictions on movement during quarantine or to enforce quarantine orders or, in other cases, to understand movements of the population and asses the health resources needed in every region. Another MS reported the adoption of a dedicated app to trace tested positive citizens based on the prior consent of the individuals. Most of these apps use anonymised or pseudonymised data for tracking and recording the spread of the virus based on questionnaires, but some more recent apps (in use or in development) also use Bluetooth-based solutions to record contacts and warn users if they get close to a tested positive person.

As of 12 May, 13 out of 19 respondents national regulatory authorities indicated that there was indeed at least one of such application/solution in place in the Member State. Three national regulatory authorities reported that plans are in place to launch such applications/solutions in their Member State.

By the end of October 19 Member States have introduced contact tracing applications[13].

In order to ensure the interoperability of the contact tracing applications, Member States agreed on a set of technical specifications to secure the exchange of information between national contact tracing apps based on a decentralised architecture. Currently Member States are working on the interoperability of the existing solutions.

8.1. European gateway

On 19 October the EU interoperability gateway went live in order to exploit the full potential of contact tracing and warning apps to break the chain of COVID-19 infections across borders and save lives. Using the new European gateway, the Austrian, German, Irish, Italian, Spanish national contact tracing apps can exchange contact tracing data with each other. Apps of other Member States, which also use a decentralised approach, are likely to follow.

8.2. AT

Number of app: 1
Launch date: 23/03/2020
Number of downloads: 1.2 million (as of 17/11/2020)

[12] Following the publication of the European Commission's Recommendation on 8.4.2020 and of the Common EU Toolbox for Member States on 16.4.2020, BEREC extended its monitoring exercise also to tracing apps.
[13] https://ec.europa.eu/info/live-work-travel-eu/health/coronavirus-response/travel-during-coronavirus-pandemic/mobile-contact-tracing-apps-eu-member-states_en

Description of the application:

The Austrian Red Cross offers an application (for Android and Apple devices) to manage contacts and by such stopping the chain of infections. Core element is a diary of contacts, in which every personal encounter is anonymously saved via "digital handshakes" (manual and automatic). It uses Bluetooth, ultrasound and WLAN. If Corona-symptoms are diagnosed, the user can update the app and all last contacts are anonymously informed and asked to isolate themselves. The use of the app is on voluntary basis. It's open-source software ant the source codes for the Android and iOS version is openly available.

A civil society platform was created to decide on the further development of the app. It included representatives from the health sector and politics, religious communities as well as data protection and other civil society initiatives. In addition the participating organisations promoted the app to reach as many people as possible and increase its take-up-rate.

8.3. BE

Number of app: 1
Launch date: 30/09/2020
Number of downloads: 1M+ in play store

Description of the application:

Coronalert App is the main COVID-19 application for Belgium, where it is interconnected with the national healthcare system (Sciensano). It is intended for anyone living or working in Belgium, being on holiday in the country or visiting Belgium regularly or for a long period of time.

Coronalert aims at breaking the infection chains: the app tells you when you may have come into contact with someone who has subsequently received a positive COVID-19 diagnosis. The application serves as a digital complement to social distance, hygiene and mask wearing. It uses Bluetooth technology and Apple/Google exposure notification APIs. However, it does not collect personal information at any time. Who you are and where you are remains secret - and your privacy is well protected.

A ‘Data Against Corona Taskforce’ (TF) was set up by the federal government to use telecommunications and epidemiological data to analyse information about the spread of the virus. Telecommunications data is used to determine the impact of quarantine (mobility). The three major telecom operators provide data on the movement behaviour of their customers via the antennas that the smartphones connect to. The data team processes the location data in real time, with a time lap of one day, and calculates a 'mobility index'. The data analysis is limited to the municipal level and only provides insights into which parts of the country there are still movements between municipalities. The TF operates under the strict supervision of the data protection authority. The data cannot be traced back to an individual in any way.

8.4. HR

Number of app: 2
Launch date:
1) Andrija - 14 April 2020
2) Stop COVID-19 – 27 July 2020
Number of downloads
1) Andrija – no data available
2) Stop COVID-19 – more than 50.000 (as of November 2020)

Description of the application:

- Andrija

On April 14th 2020, a new application called 'Andrija' was introduced. The purpose of the application is not to track or monitor individuals, but to offer self-assessment guidance. The application works on the What'sApp platform and enables a registered customer (on voluntary basis) to check correct information about the COVID-19 pandemic and also provides a questionnaire for self-assessment and guidance to individuals (symptom checker functionality).

- Stop COVID-19

The purpose of the Application is to inform users that its application (i.e. a user with a mobile device) has been in epidemiologically relevant contact with the application of a person confirmed to have COVID-19 disease and to give him/her instructions and recommendations for further action. Installation and use of applications on mobile devices (phone, tablet, etc.) is completely voluntary and free. Users independently decide whether to download the installation to their mobile device, how to use it and when to remove the Application from their mobile device.

On 19th November 2020 cross-border data exchange between the Croatian Stop COVID-19 application and official applications of other EU member states has been established. This is the result of decisions and recommendations of the European Commission and the technical and safety requirements of the eHealth Network and other European bodies. By installing the application, in addition to enabling the setting for cross-border data exchange, it will be ensured that notification of exposure in case of travel abroad or interaction with users of other authorized COVID-19 mobile applications in Croatia is received.

8.5. CZ

Number of app: 2
Launch date:
1) eRouska - 20 April 2020
2) eRouska 2.0 - 17 September 2020

Number of downloads
1) eRouska - 270.000
2) eRouska 2.0 more than 500.000 (as of September 2020), more than 1 million (as of 23/11/2020)

Description of the application:

The government approved tracing the infected persons based on the technology prepared by the COVID19cz group/community (https://covid19cz.cz) and all 3 MNOs. After an informed consent of an infected person, MNOs will use geolocation data to check the geographical presence of the infected person in relevant timeframe with the aim to address/contact other possibly infected persons. The system is accompanied with a tracing call-centre.

An application called eMask (eRouska) was created for citizens who can voluntarily install it on their mobile phone and allow the application to collect data about proximity of other eMask apps (via Bluetooth). The app users are anonymously informed in case that they met an infected person (for more than 15 minutes and with proximity closer than 2 meters). No location data are used here. First version helped mainly the authorities with tracing, version 2.0 is more citizen-oriented and informs about potentially dangerous contacts.

Furthermore, Czech maps portal Mapy.cz developed a "smart quarantene" function as an independent project. In the Mapy.cz mobile app citizens can activate a COVID-19 tracing function and be informed about risk in a given location. The app uses geolocation data.

8.6. DK

Description of the application/questionnaire:

- COVIDmeter

COVIDmeter was a standardised questionnaire based on the user's consent obtained in accordance with the GDPR. The questionnaire contained questions regarding general health and infection status. The data was encompassed of user identification and health data. There was no obligation to provide data and the questionnaire was purely voluntary. The data was pseudonymised, only used in aggregated form and stored for two years at the Danish Health Authority. The Danish Health Authority used the data to monitor the evolution of symptoms among Danish citizens.

- SmittelSTOP

Smitte|stop is an app designed to help Danish public health authorities contain the spread of COVID-19. The app is to monitor contacts based on proximity and time in order to establish an overview of patterns and notify citizens of potential exposure to COVID-19.

The data encompassed is twofold; i) for general use, the app requires app-identification. However, a user is able to voluntarily identify themselves within the app, and thus ii) user

identification and appertained personal data. In the latter app-usage, infection status of users are provided by the Danish Health Authorities responsible for the application. The Danish Health Authorities are able to see data and monitor contact patterns.

The use is based on a user's consent with regards to collection and storage of data, the Danish Health Act with regards to collection of personal and health data and the E-privacy directive with regards to storage on the local device.

8.7. FI

Number of app: 1
Launch date: 31/08/2020
Number of downloads: 2.5 million (as of 04/11/2020)

Description of the application:

Finland launched an app called "Koronavilkku" on 31 August 2020. The Koronavilkku app transmits information that the app is working to a server. It also forwards information about whether you have been potentially exposed to infection. All communication between Koronavilkku and the server is encrypted. The information is stored anonymously on a server in Finland. The server is managed by public administration actors. The information is deleted when no longer required. The usage of the app is voluntary based.

More information: https://koronavilkku.fi/en/

8.8. FR

Number of app: 1
Launch date: 02/06/2020
Number of downloads: 9.831.933 (as of 27/11/2020)

Description of the application:

France launched a mobile application called "Stop Covid" on June 2nd; it uses Bluetooth for proximity detection, but its architecture does not involve the API provided by Google and Apple. The installation of the app is completely voluntary and it processes as few personal data as possible (i.e. the listing of the Bluetooth contacts).

An update of the app was launched on October 22nd ; the core principle of the app is the same, but additionally it features information on the local lockdown obligations (including application for potential derogations), on the nearby testing centers (including waiting time) and other useful advice for people with symptoms.

8.9. DE

Number of app: 1
Launch date: 16/06/2020
Number of downloads: 22.8 million (as of 20/11/2020)

Description of the application:

The official contact tracing app “Corona-Warn-App”, released by the RKI (Robert Koch Institut - Federal institution for safeguarding public health) by direction of the German Federal Government, depends on voluntary data provision and is based on the decentralised software architecture using the APIs provided by Apple and Google. Almost 4 million test results have been transmitted using the app, and the users have shared around 75.000 positive test results with other users.

As an additional measure, the RKI published the mobile application “Corona-Datenspende” which depends on the voluntary donation of data by end-users using fitness trackers and smartwatches. It uses pseudonymised health data for the purpose of symptom detection and checking and recording the geographical spread of the virus. The data may be deleted on request of the end-user within 24 hours. The RKI may only retain anonymised data for scientific purposes. Regularly, statistical data and other insights gained by the data is published on the RKI's blog. More than 530,000 end-users regularly provide their data (as of 20/11/2020).

In parallel the ECS-providers are sharing anonymised and aggregated location data with the RKI in order to monitor shifts and directions of mobility and check the extent of compliance of the population with the obligations imposed by the federal states.

The national data protection authority is involved in safeguarding the data protection standards with regard to all three initiatives.

8.10. EL

Description of the platform:

Covid19.gov.gr is a new platform made available by the government, which presents areas of Greece (on district level detail) rated according to the different number of COVID-19 incidents and split into four categories (Readiness/Surveillance/Increased Surveillance/Increased Risk). Depending on the category different protection measures are displayed. The platform is updated – at least – on a daily basis.

8.11. HU

Number of app: 1
Launch date: 13/05/2020
Number of downloads: More than 100.000 in Google Play Store (as of 23/11/2020)

Description of the application:

The Hungarian application can be downloaded on a voluntary basis and – by using Bluetooth technology – the app records and stores data on the user's device. The app makes a log entry of the ID number of the other person's device who uses the same app, and who was in contact with him or her in the last 14 days within 2 metres, but it does not contain the location data. If the user has a positive COVID-19 test result, the user can indicate this through the application and data is validated by the public health authority. If the authority confirms the fact of the contamination, the app forwards the logged entries to the data management organization (Governmental IT Development Agency), which translates the phone IDs into phone numbers and forwards the phone numbers of the contacts to the medical officer. After that, the competent authority shall, in accordance with normal administrative procedures, notify the potentially infected persons of further actions, which are need to be taken.

8.12. IE

Number of app: 1
Launch date: 06/07/2020
Number of downloads: 2.2 million (as of 27/11/2020)

Description of the application:

The application based on Bluetooth technology based on the decentralised software architecture using the APIs provided by Apple and Google and is aimed at enhancing the "track & trace" process. It is a voluntary process, whereby individuals are asked/encouraged to download the app and asked if they wish to provide their mobile phone number in case the authorities wish to speak with them because they have been in close contact with a person who has tested positive for COVID-19. It is not obligatory to provide a phone number and those that do not will still receive an alert to their phone if they have been in close contact with a person who subsequently tests positive

8.13. IT

Number of app: 1
Launch date: 15/06/2020
Number of downloads: 9.860.000 million (as of 18/11/2020)

Description of the application:

Immuni, a Bluetooth-based app for contact tracing, was selected on 16 April 2020 as a result of a tender launched by the Ministry for Technological Innovation and Digitisation and the Ministry of Health Joint Task Force. The tender was launched with the support of a COVID-19 Task Force established by the Ministry for Technological Innovation. AGCOM took part in the Task Force with two representatives.

On 30 April 2020, Italy issued a law decree allowing contact tracing for COVID-19 with the app Immuni. It works on anonymised or pseudo-anomysed data (no geolocalisation). Data retention lasts until the end of the COVID-19 emergency.

On 29 April 2020 the Italian Data Protection Authority (DPA) issued a positive opinion on the provisions of law regarding contact tracing (article 6 of Legislative Decree no. 111, adopted on 30 April 2020). In particular, DPA has made it clear that the app should be: voluntary; enacted through time-limited legislation; transparent; collecting data that are anonymised and using identification data limited to COVID-19 infections; and not collecting geolocalisation data.

Aiming at making contact tracing more effective, Decree of the President of the Council of Ministers of 18 October 2020 established that health workers in force at the local Health Authority Prevention Department should upload the key code of every positive tested case, by accessing the central system of Immuni.

8.14. LT

Number of app: 1
Launch date: April 2020

Description of the application and the maps:

There are two coronavirus tracing maps in LT.

1. One map of COVID-19 cases with real time tracking was developed by the State Enterprise Centre of Registers and was constantly updated and complemented by the Department of Statistics of Lithuania and other partners (Vilnius municipality and Vilnius University) to show accurate data of the COVID-19 pandemic outbreak. It included 5 maps dedicated for different statistical data: demographic and social status of the Lithuanian population before COVID-19, infrastructure situation in LT counties (the number of medical staff, hospital beds, number of medical staff for 10.000 inhabitants), a picture of businesses impacted by coronavirus, a map of the demographic, social and infrastructure situation in Vilnius municipality, a map developed by the University of Vilnius indicating the number of the infected, recovered and tested of COVID-19.
2. The other COVID-19 map was designed as an open source application: Both solutions use metadata.

A new mobile app „Karantinas“ was developed, intended for people who have to stay in strict isolation at home. By user’s consent, it fixates person’s place of isolation and helps to ensure that isolation requirements are followed; collects user’s location data, information about his/her health, provides useful advises, daily tasks and newest information; performs risk groups evaluations.

The official website koronastop.lt was also established where all the relevant information is provided.

8.15. ME

Description of the application and the maps:

National Coordination Body of Montenegro for contagious diseases (NKT), with previous consent of Agency for Personal Data Protection and Free Access to Information, published names of citizens with obligation for personal isolations for the period of 14 days till May 2020.

8.16. MT

Number of app: 1
Launch date: September 2020
Number of downloads: more than 74,000 people (as of mid-October).

Description of the application:

Since mid-September, the “COVID Alert Malta” App has been operational in MT. The app aims to notify users at risk of having been exposed to the virus as early as possible and subsequently recommending actions such as contacting the Covid-19 helpline. The system is based on Bluetooth Low Energy technology and doesn’t collect any geolocation data, including GPS data. If an app user test positive for the COVID-19 virus, the concerned user will be given a code to be entered voluntarily into the app. This will send secret codes to the mobile phone of another app user that was less than 2 metres close for at least 15 minutes to notify about a potential exposure.

8.17. PL

Number of app: 2
Launch date:

1) Home Quarantine: 19.03.2020
2) STOP COVID - ProteGO Safe: 17.04.2020

Number of downloads:

1) Home Quarantine: over 1 million
2) STOP COVID - ProteGO Safe: 1 009 840 downloads (as of 14/10/2020)

Description of the applications:

1. The Ministry of Digital Affairs has created and made available the ""Home Quarantine"" application. It is an application that facilitates and improves conducting compulsory quarantine at home. The program allows confirmation of the place where the quarantined person stays. It also allows medical service to make a basic assessment of one’s health and gives the opportunity to directly report the threat. It also makes it easier to supply the most needed items to people who cannot do this themselves.

The app has been obligatory to use since 01/04/2020, unless the concerned person makes a statement they are not subscriber of telecommunication service or their device does not support it.

2. Ministry of Digital Affairs also published a second app - ""STOP COVID – ProteGo Safe"" - thanks to which users can self-diagnose, as well as be informed about infected people around via Bluetooth technology.

A dedicated number for coronavirus information has been launched by the Ministry of Health.

8.18. PT

Number of app: 1
Launch date: 01/09/2020
Number of downloads: more than 1 million (as of 23/10/2020)

Description of the application:

On 01/09/2020, the contact tracing app STAYAWAY COVID, that is endorsed by the Government, was officially launched. The STAYAWAY COVID app is voluntary.

The STAYAWAY COVID is a contact tracing app for COVID-19, that uses Bluetooth Low Energy, not including nor requiring any form of location. The STAYAWAY COVID notifies people who, over the previous 14 days, have been in close contact with someone infected with COVID-19, so they can seek support by the National Health System. Only after the National Health Service confirms the infection will the user who tested positive for COVID-19 obtain a numeric code – which, after being inserted in the app, will notify all the people he/she had contact with over the previous 14 days, alerting them for a potential high-risk exposure.

The STAYAWAY COVID system adopts the solution recommended by the DP^3T initiative, which is ruled by the principles of protection of individual privacy. The system does not ask for and does not know any personal data stored on the mobile phone. The only data handled by the system are the random identifiers generated, which are stored exclusively on the user's mobile phone.

8.19. SI

Number of app: 1
Launch date: 17/8/2020 (Android), 1/9/2020 (iOS)
Number of downloads: 180.625 (Android) and 18.421 (IOS) (as of 25/11/2020)

Description of the application:

Application #OstaniZdrav is managed by the Ministry of Public Administration and National Institute of Public Health. The application is not treated as a zero rating app by any operator. The #OstaniZdrav application helps contain and manage the spread of novel coronavirus infection and reduces the burden on the healthcare system, thus enabling the state to control the virus using less coercive measures. Furthermore, the application warns users if they have

been in contact with an infected person and that there is thus a greater risk that they have also been infected. The installation of the #OstaniZdrav application on a smartphone is completely voluntary and free-of-charge. The application does not reveal the location or the identity of the infected person, it only indicates that two persons have met. The application's functions may be disabled at any time or the application may be removed in full. The person with a confirmed infection may voluntarily share this information with other users (they obtain a special ten-digit code that is entered in the application). Their responsible conduct is thus enhanced. The data collected by the application are completely anonymous. Only contacts encountered in the last 14 days are recorded, and this is done without revealing personal data or a person's identity. The application does not involve geolocation data, but merely functions via the Bluetooth Low Energy (BLE) technology. Once a day, the application will check if user have been in contact with a person with a confirmed novel coronavirus infection. This verification takes place on its smartphone alone. If the verification result is positive, user will receive a warning.

8.20. SK

Description of the application:

On 15/05/2020 the SK parliament approved a law, which allows citizens coming to Slovakia to go to "home quarantine" by using mobile application. Application checks position and in case of violating "home position", notification is sent Application also uses face recognition functionality. All data is stored only in the smart phone. The Act of April 2020 approved for the Office of Public Health to receive and process localization and particular personal data of positively tested person from mobile operators. In order to use the application prior consent of individual person is required.

8.21. ES

Number of app: 2
Launch date: 10/08/2020 (RadarCOVID), 06/10/2020 (Catalunya app)
Number of downloads: 4.7 million (RadarCOVID)

Description of the applications:

The Spanish Government, through the Secretary of State of Digitalization and Artificial Intelligence (SEDIA), carried on the pilot deployment of the app Radar COVID, geared towards the detection and alert of potential COVID-19 infections, on July 20. The app, which complies with the principles of privacy and safety, reporting on the potentiality of contagions without disclosing unnecessary sensitive personal data, making use of geo-localisation technology.

From July 20 to August 3, the post-pilot phase was run, where the goal was to analyse, evaluate and extract conclusions of the pilot. This phase was intended to gauge and measure the achievement of the four goals of the pilot: adoption of the app (download rate of the app), effectivity (quality and functioning of the app), commitment (number of reported positives) and retention (users that kept the app active during the pilot). The outcome of said evaluation was

satisfactory, achieving all the KPIs set in advanced. The app hence obtained the approval of the sanitary authorities, and was made available to the regional authorities, which have the health competences in Spain. The first version of the app was deployed in mid-August.

On October 22, heads of the major telecommunication operators in Spain (Telefónica, Vodafone and Orange) announced their shared commitment to zero rate the app. Moreover, officers from the Secretary of State for Digitalisation and Artificial Intelligence announced that the app is being tested in order to be incorporated into the interoperability framework managed by the European Commission.

On 30 October the Spanish contact tracing app was linked to the European gateway

Other than the aforementioned RadarCOVID, the regional government of Cataluña launched the 'ContacteCovid.cat' app, which works differently from the former, relying on the sending of SMS. This app is meant to cohabit with the nation-wide app, and is not interoperable.

8.22. SE

The Public Health Agency in Sweden has decided that it would not make use of any tracing application to monitor the spread of the virus between individuals (i.e. via Bluetooth), citing questions over their efficiency and concerns about personal integrity. The use of tracing applications may however be reconsidered in a situation when contagion levels are lower. Other than this, aggregated geo-location data received from mobile operators has been used by the Public Health Agency to get an understanding of how well the stay-at-home recommendations have been respected.

8.23. TR

Number of app: 1
Launch date: April 2020
Number of downloads: 10.000.000+ in Google Play Store (as of 26/11/2020)

Description of the application:

An application has been developed by Ministry of Health for smartphones that shares instantaneous risk based on the locations of the cases and the contacts being followed and warns healthy citizens against the risk of infection by location. The application is called "Hayat Eve Sığar-Life Fits Home".

9 Any other activities during the COVID-19 pandemic

As a result of the spread of the COVID-19 various measures were introduced by the governments. This had an impact on the daily operation of the national regulatory authorities. Teleworking was introduced or further supported in every Member States. In several Member States, telecommunication sector was identified as essential area of public life and special measures were introduced in order to maintain the functionality of the network infrastructures.

9.1. BE

The telecommunications sector fell under the exception for key sectors and essential services companies, for which the most restricting measures were not applicable, but telework and social distancing must have been implemented to the extent possible. Furthermore, reporting to National Crisis centre about absence of critical infrastructure staff was also introduced.

9.2. DE

Authorities were asked to highlight where certain exceptions are needed in order to maintain the functioning of essential areas of public life. BNetzA identified such exceptions for companies in the telecommunication sector. Consequently BNetzA has published a list of companies that are entrusted with maintaining the functionality of network infrastructures in the telecommunication sector.

9.3. IT

The role played by the communications sector during the COVID-19 emergency has been investigated by AGCOM in its Annual Report 2020, specifically in the ad hoc study on “The impact of coronavirus in regulated areas”. The study covers the emergency measures adopted by AGCOM in March to support the Government action in the first phase of the crisis management, and then moves on to the examination of market scenarios and a broader overview of the communication sector. In two special editions of the Communication Monitoring Markets System, with a focus on the first 5 months of the year, entitled “Covid-19 monitoring”, AGCOM has highlighted all the measures taken in the media and online platforms sectors during the COVID-19 emergency and has updated the data about the revenues in AGCOM’s areas of competence (telecommunications, media, online ones included, and postal sector), and about the fixed and mobile network traffic.

9.4. LT

The “priority services” were defined in advance, no new decisions were taken in this area so far (by the Order of the Ministry of Transport and Communications a priority list of state institutions for which provision of electronic communications services (fixed telephony, mobile communication, data transmission services) should be ensured on a priority basis, is established; the said list includes the following: Helpdesks (emergency services) and

institutions which service helpdesks (emergency services); President Office of the Republic of Lithuania; Parliament of the Republic of Lithuania; Government of the Republic of Lithuania; Commission for Emergency Situations under the Government of the Republic of Lithuania; Ministry of Interior of the Republic of Lithuania; Fire and Rescue Department; other ministries and their emergency situation management commissions and state institutions (Communications Regulatory Authority RRT, State Security Department of Lithuania, State Food and Veterinary Service, State Nuclear Power Safety Inspectorate); district and municipality administrations and district and municipality commissions for emergency situation management

Also, as all the public bodies and the majority of private sector started remote working during the quarantine, several recommendations for society were prepared in order to help smooth remote working/learning: majority of them were drafted by NRA (RRT), see below, as well by the Ministry of Health (recommendations on how to ensure workers' and clients' safety while having face-to-face interaction, which are as well applicable to e-communications operators' engineers providing services at clients' homes); Ministry of Education, Science and Sports issued recommendations for schools and teachers on remote teaching; Ministry of Economics and Innovation - recommendations on the remote meetings, etc.

9.5. LU

As of 3rd of July 2020, the ILR stopped its data collection (every 2nd day, voice, data, interconnection on mobile and fixed networks) as no major evolutions were detected anymore. As a follow-up, the ILR launched in mid-July a new data collection covering now all the operators and all the days between the 1st of March and 31st of July 2020. This new data collection provided a more detailed view not only on the traffics and availability but also on the impairments of the provision of retail and wholesale electronic communication services. The new report was expected for fall 2020.

9.6. ME

Within the measures of the Government of Montenegro for the prevention of the spread of the COVID-19 virus, the Agency for Electronic Communications and Postal Services (EKIP) has adapted its work to extraordinary conditions in order to ensure business continuity. Communications with operators, users of radio-frequencies and users are entirely by traditional post services and by e-communications. Necessary means of protection were procured, recommendations were given to employees, work is organized in such a way that most of the employees performed work from home. Operators were requested to take all measures necessary to ensure the continuity of the provision of electronic communications services. In cooperation with the electronic communications operators, traffic statistics are monitored and necessary capacity extensions are made to avoid traffic congestion or slowdown.

9.7. PT

In March 2020, the Decree-Law no. 10-D / 2020 of March 23 was approved, in order to establish exceptional and temporary measures to respond to the COVID-19 disease epidemic related to the electronic communications sector. In April 2020, additional measures were approved, by Law no. 7/2020 of 10 April 2020, in order to protect consumers. These additional measures included some of the measures proposed by ANACOM to the Government.

Later in August 2020, the Decree-Law no. 51/2020 of August 7 was approved, in order to repeal the Decree-Law no. 10-D/2020 of March 23.

9.8. SI

The government took different measures that reduced the need for face to face interaction with public administration as much as possible. Republic of Slovenia accepted a law that was going to define temporary measures regarding judicial, administrative and other public matters. Mainly in relation of prolongation of administrative and procedural time-limits. In administrative cases it was not demanded to file an application in person. It was possible to file a written application via post or in electronic manner – through e-mail or state portal eUprava. It was also possible to file an electronic application without an electronic signature (that was not possible before), if it was possible to establish a person in another way. Procedural actions (hearings) in person were possible only in urgent cases. Handing of official documents is not executed, except in urgent cases. All time limits that derive from time of handing of a document, were to be prolonged till after cessation of the law or until 02/07/2020.

9.9. TR

In the context of the measures for maintaining the current level, quality and security of the electronic communications services in Turkey due to the COVID-19 pandemic, BTK asked for the operators of public electronic communications networks and services to take all the necessary measures regarding service continuity and personnel backup, safe distance working (teleworking) rules, potential increase in traffic because of changes in social life and customer services and dealership activities. Necessary coordination with the relevant institutions was made to provide convenience for the network equipment and new facilities sealed due to license issues in order to provide uninterrupted mobile communications. It was decided that some physical reports that operators should send to BTK in accordance with the authorization legislation can be sent electronically during the COVID-19 outbreak.