

Disturbances in telecommunications services

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BACKGROUND AND LEGAL BASIS OF THE REGULATION

The Regulation is related to Chapter 29 of the Act on Electronic Communications Services (917/2014¹) laying down provisions on the quality requirements for communications networks and communications services, as well as Chapter 33 of the Act laying down provisions on the management of information security and interference and related notifications.

Under section 1 of the Act on Electronic Communications Services, the objective of the Act is to ensure that communications networks and services are technologically advanced, of high quality, reliable and safe. The Act also aims to ensure the confidentiality of electronic communication and the protection of privacy. The purpose of this Regulation is to contribute to ensuring these objectives of the Act. In this Regulation, the Finnish Transport and Communications Agency specifies the provisions of the Act on disturbances in telecommunications services. The legal basis of the Regulation and other provisions related to the subject are listed in Annex 1 to these explanatory notes.

Due to the Act on Electronic Communications Services and partly to the history of requirements, various telecommunications disturbances are divided into two types in this Regulation:

- events where services offered by a telecommunications operator are subjected to or threatened by a significant information security violation (*information security incident*), and
- events that prevent a communications service from functioning or cause significant disturbance (*functionality incident*).

The Regulation imposes obligations on telecommunications operators on the detection and management of information security and functionality incidents as well as related notifications and statistics. The Regulation repeals the previous FICORA Regulation 66/2014 M issued on the subject.

DRAFTING PROCESS

The Regulation has been drafted at the Finnish Transport and Communications Agency as a part of the Agency's ordinary official duties. The drafting process took into account the experiences of the application of the Agency's previous regulations on the subject and comments by telecommunications operators. The draft regulation was circulated for consultation from 4 October 2019 to 1 November 2019. The request for comments was sent to telecommunications operators, which are the subjects to this Regulation. Comments received through the consultation are listed in these explanatory notes.

CHANGES AND IMPACT ASSESSMENT

This chapter lists the changes made to the Regulation compared to the previous obligations and recommendations, assesses their impact and describes the version history of the Regulation.

1 Changes and impacts

The following changes have been made to this Regulation:

- The previous regulation on the subject (66/2014 M) was issued by the Finnish Communications Regulatory Authority (FICORA). Due to an agency reform in the administrative branch of the Ministry of Transport and Communications, FICORA ceased to exist on 1 January 2019 and as a result, this Regulation is issued by the new authority in communications administration, the Finnish Transport and Communications Agency Traficom. All references to FICORA have been changed to references to the Finnish Transport and Communications

¹ Act on Electronic Communications Services (917/2014):
<https://www.finlex.fi/en/laki/kaannokset/2014/en20140917.pdf>

Agency in the Regulation and in these explanatory notes. Due to the agency reform, the layout of the Regulation differs slightly from FICORA's regulations but this has no impact on the obligations. All of FICORA's contact addresses, such as e-mail addresses, have been replaced with the new agency's addresses (for example, the e-mail address for notifying functionality incidents used to be viat@ficora.fi and now it is viat@traficom.fi). Apart from the updated e-mail addresses, the agency reform does not cause any practical changes for telecommunications operators.

- The previous regulation on the subject was issued by virtue of the Information Society Code. In 2018, the title of the Act was changed to Act on Electronic Communications Services, and as a result, the legal basis of the Regulation was updated with references to the Act on Electronic Communications Services. The legal basis has not changed in any other respects, which means that the new title of the Act does not cause any practical changes for telecommunications operators.
- The application (section 2 of the Regulation) of the provisions of Chapters 4 (Notifications to the Finnish Transport and Communications Agency) and 5 (Statistics) was previously limited so that in the terrestrial television network, the obligations applied to any network or communications service involving the transfer or broadcasting of television programmes subject to a programming licence or of the Finnish Broadcasting Company as well as related ancillary and supplementary services, whereas in other than terrestrial network, i.e. in cable or IPTV networks or similar, the obligations only applied to the transfer or broadcasting of programmes and related ancillary and supplementary services that fall within the scope of the must carry obligation. In this Regulation, the scope of application has been modified so that the obligations of Chapters 4 and 5 are only applied to the transfer and broadcasting of public service television programmes of the Finnish Broadcasting Company and television programmes for several different audience groups in all mass communications services, regardless of their implementation technique. In practice, the change affects telecommunications operators providing terrestrial television networks so that, after this Regulation enters into force, the requirements concerning notifications submitted to the Agency and statistics apply to a smaller share of TV channel broadcasting, which means less regulation on terrestrial television networks. The change has no practical impact on telecommunications operators providing other television networks, such as cable TV network services. The change is considered to be justified based on the fair treatment of all operators. The change is not considered to have a negative effect on the Finnish Transport and Communications Agency's situation awareness, as even after the change, the supervisory authority receives information on the disturbances in the television programmes with the greatest coverage and availability (including accessibility) regardless of their transfer technique. It should also be noted that the other requirements in the Regulations, such as the general network management obligations in Chapter 2, continue to apply to the broadcasting of all TV channels in all TV networks.
- Section 6 of the Regulation, i.e. obligations related to notifications to the Finnish Transport and Communications Agency of a reduced management capacity, has been changed so that in addition to notifications submitted through the online notification system or by e-mail, a telecommunications operator must make the notification by telephone only when detecting the event for the first time (initial notification). In other words, the obligation to keep the Agency updated by telephone has been abandoned. The change reduces telecommunications operators' obligations and, on the other hand, it is not considered to have a significant impact on the Finnish Transport and Communications Agency's situation awareness, as cases of reduced management capacity referred to in the Regulation are rather rare and therefore, the initial notification made to the Agency by telephone is sufficient to initiate monitoring activities.

- In section 8(1) of the Regulation, i.e. the obligation concerning the management of customer notifications, the phrase 'both by phone and online' in the first sentence has been deleted because it had caused confusion in interpreting the obligation. The contents of subsection 1 have not changed due to the deletion as paragraphs 1 and 2 list the corresponding obligations to receive customer notifications by phone and online. As the change does not affect the obligations of the Regulation, it does not have practical impact.
- Sections 15 and 17 of the Regulation, i.e. obligations concerning notifications of information security incidents and functionality disturbances to the Finnish Transport and Communications Agency, have been changed so that if the incidents covered by the notification obligation are caused by a Denial-of-Service attack, the telecommunications operator may fulfil its notification obligation either by following the previously specified procedures or, as a new alternative, by using a DDoS notification interface provided by the Agency. The notification interface has been created at the request of telecommunications operators and therefore, for the sake of clarity, it is justified to allow its use in the Regulation. On the other hand, it is not reasonable to require redundant reporting. The change does not force telecommunications operators to connect to the interface. The change has technical effects on telecommunications operators (effects on telecommunications operators' notification systems) but on the other hand, it reduces the manual notification activities by the personnel if the operator decides to connect to the interface.
- Obligations on statistics in Chapter 5 of the Regulation have been reduced. Previously, the regulation required quarterly statistics on the functionality disturbances reported by customers and on the repair times of disturbances detected by the network management separately for each communications service, on the total number of information security violations managed by the telecommunications operator and the number of follow-up measures caused by information security violations separately for each type of measure, as well as annual statistics on the reasons of disturbances detected by the network management as per network or service component. The Annexes to the Regulation contained templates for compiling such statistics. The current Regulation only requires biannual statistics on the number of functionality disturbances detected by the network management in certain communications services and on the total number of information security incidents managed by the telecommunications operator. Therefore, Annexes 4, 5, 6 and 7 to the Regulation have been deleted. The recommendation to compile information security statistics as per incident type has also been removed. The change is based on the experiences of the practical application of the obligations to compile statistics and it reduces the obligations imposed on telecommunications operators. On the other hand, it is not considered to have a significant impact on the Finnish Transport and Communications Agency's situation awareness, as the earlier confusion and differences between the practices on compiling statistics between telecommunications operator have in any case affected the degree of using the data collected through statistics.
- Further explanations and examples of issues that have arisen when applying the Regulation in practice, including the severity rating of functionality disturbances and specific reporting in case of storms, have been added to these explanatory notes to the Regulation. The additions aim at encouraging all telecommunications operators to start applying the Agency's instructions and interpretations and therefore, the impact of the changes is mainly such that clarifies the application.

2 Version history

The first regulation concerning maintenance and failure management of communications networks, Regulation THK 50/1999 *on the network management of public telecommunications networks*, was issued in 1999. The regulation was

updated several times, until in 2009, it was repealed by FICORA's Regulation 57/2009 *on the maintenance of communication networks and services as well as related procedures in the event of faults or disturbances*. Obligations concerning network and service management were included in Regulation 57, while sections concerning the definition of service quality in Regulation 50 and obligations concerning performance in Regulation 29 were included in another regulation under preparation (Regulation 58 *on the quality and universal service of communications networks and services*).

The first obligations concerning reporting on functionality incidents were laid down in September 1997 in Regulation THK 41/1997 *on technical documentation of telecommunications networks and reporting of faults and disturbances* by the then Telecommunications Administration Centre. In the regulation, the functionality incidents to be reported were divided into two categories: very significant and major. The regulation was repealed in 2002 by Regulation 9/2002 *on the obligation to report information security incidents and faults and disturbances in telecommunications networks and services* by FICORA, which included, for the first time, provisions concerning the reporting of information security violations to authorities.

Regulation 9 was amended in 2003 after the entry into force of the Communications Market Act (393/2003) and again in 2004 after the entry into force of the Act on the Protection of Privacy in Electronic Communications (516/2004). In 2009, the scope of the regulation was delimited to concern only reports on information security violations, as Regulation 57 on functionality incidents was published that year.

In Regulation 57, functionality incidents were divided into four severity categories (A, B, C and D) and reporting obligations were tied to this classification: the more severe the fault, the stricter the obligations.

Provisions on notifications to subscribers related to various incidents or threats were first laid down in 1999 with the Act on the Protection of Privacy and Data Security in Telecommunications (565/1999), which obliged telecommunications operators to inform their subscribers about particular risks related to security. Since 2004, the obligation to inform subscribers of information security incidents was provided for in the Act on the Protection of Privacy in Electronic Communications, and further guidelines concerning the obligation were provided in Regulation 9. On the other hand, obligations to inform subscribers of functionality incidents were added to the Communications Market Act in 2011, and one year later, FICORA released a new version of Regulation 57 with further requirements on the content and form of such subscriber notifications.

In 2014, FICORA updated all its regulations again in connection with the drafting of the Information Society Code (917/2014), which was to repeal the Communications Market Act and the Act on the Protection of Privacy in Electronic Communications, and which was renamed in 2018 as the Act on Electronic Communications Services. At the same time, it was decided that all requirements concerning the detection and management of various disturbances and incidents and the provision of information on them should be consolidated into Regulation 66. Regulation 66 includes the following regulations previously in force:

- Regulation 9 D/2009 on the obligation to notify of violations of information security in public telecommunications;
- Regulation 13 B/2011 M on information security of internet access services;
- Regulation 47 C/2009 M on information security management of telecommunications operators; and
- Regulation 57 A/2012 M on the maintenance of communication networks and communications services, procedures and notifications in the event of faults or disturbances.

As part of the complete update of FICORA's regulations in 2014, the so-called documentation regulation (Regulation 41 D/2009 *on the technical documentation of communications networks and services*) was abandoned. The documentation regulation laid down general obligations concerning technical documentation in telecommunications services. It was decided to discuss documentation separately in the context of each thematic regulation, providing more clear guidelines on the exact matters that need to be documented. As a result, Regulation 66 contains obligations on the preparation and maintenance of documentation on monitoring mechanisms of networks and services, procedures for managing events that disturb or threaten functionality or information security, and modification processes.

COMMENTS RECEIVED THROUGH CONSULTATION

The Finnish Transport and Communications Agency received four comments on the draft regulation and the accompanying draft explanatory notes. These comments were submitted by DNA Plc, Elisa Corporation, Länsilinkki Oy and Telia Finland Oyj.

DNA Plc noted that it had no comments to make on the changes included in the draft, but the company requested a transition period of at least three months for the entry into force of the Regulation to be able to implement the required changes in its statistics and reporting systems. The Finnish Transport and Communications Agency is of the view that the changes mentioned in the comment do not impose new obligations on telecommunications operators. Instead, the majority of previous obligations to compile statistics will be removed and the only changes to reporting concern the Agency's new addresses for services. Thus, the changes do not call for a transition period, as proposed in the comment.

Elisa Corporation proposed in its comment that the text "the disturbance prevents" in Tables 1 and 2 in section 16 of the Regulation be reworded as "an individual disturbance prevents". The reason Elisa Corporation gave for the proposal was that the proposed wording would distinguish two separate failures more clearly as separate disturbances when determining the severity rating. The Finnish Transport and Communications Agency will not change the text of the Regulation in accordance with the proposal because the Agency does not consider the proposed wording to clarify the concept of disturbance sufficiently. Instead, the Agency will add a clarification in section **Virhe. Viitteen lähde ei löytenyt.** of these explanatory notes explaining that functionality disturbances refer to single events that affect the functioning of networks and services and that a single disturbance being rated according to its severity is typically caused by events attributable to a single root cause.

Elisa Corporation also proposed that the guideline given in section 16.2 of these explanatory notes on evaluating the number of users affected by a disturbance – i.e. that 30 users may be used as the severity rating criterion for business subscriptions if the telecommunications operator does not have knowledge of the number of employees in the company or the office – should be amended by removing the weighting coefficient or changing it to four (4) because, according to Statistics Finland, the majority of Finnish companies have 0–4 employees. This means that there is only a small difference in the number of users between consumer and business subscriptions and companies may have several offices, meaning that the number of natural persons affected by a single disturbance in a business subscription is smaller than the total number of the company's employees. The Finnish Transport and Communications Agency will not implement the proposed amendment because it is of the view that telecommunications operators can – and indeed should – determine the actual number of users of each business subscription they provide and thus improve the accuracy of assessments of the actual number of users affected by different disturbances. The Agency also estimates that many companies with 0–4 employees actually use consumer subscriptions. Therefore, the users of business subscriptions are more frequently working for large companies, which means that there are no grounds for reducing the figure of 30 users used in the calculation rule.

Länsilinkki Oy proposed that the Finnish Transport and Communications Agency should prepare a single source of terminology, a sort of glossary, to ensure the harmonised and uniform use of terminology in different regulations, guidelines and recommendations. The Finnish Transport and Communications Agency notes that its regulatory and guidance documents use the definitions given in legislation as far as possible and that the Agency tries to avoid any conflicts and inconsistencies in the definitions given in different documents.

In its comment, Telia Finland Oyj welcomed the future opportunity to send the Finnish Transport and Communications Agency information about denial-of-service attacks via the Agency's DDos notification interface.

Telia Finland Oyj noted that in terms of notifications about disturbances in TV broadcasts the Finnish Transport and Communications Agency's interpretation of disturbances has, in Telia's experience, deviated from the text of the explanatory notes to the Regulation. To clarify the matter, Telia Finland Oyj suggested that an unambiguous list or table of TV channels included in the scope of the obligations laid down in Chapters 4 and 5 of the Regulation be published for example on the Agency's website to serve as a guideline for disturbance notifications. Telia Finland Oyj noted that a similar up-to-date table of radio channels included in the scope of the obligations would also clarify the situation. The Finnish Transport and Communications Agency hopes that the present, revised explanatory notes will clarify common interpretations in the future. Section **Virhe. Viitteen lähde ei löytnyt.** of the explanatory notes lists those programmes to whose transfer or broadcast the said Chapters of the Regulation apply at the time of publication of the explanatory notes. The Agency will monitor the situation and assess the need for preparing other lists to support the application of the Regulation.

Telia Finland Oyj also expressed its wish that the Agency clarify whether the obligations included in Chapters 4 and 5 of the Regulation apply to the transfer of the programmes of local radio channels considering the fact that under section 2 of the Regulation the Chapters in question do not apply to radio broadcasters who are required a population coverage of less than 95 per cent. The Finnish Transport and Communications Agency agrees with Telia on the need to clarify the provisions. Therefore, to ensure the equal treatment of all parties, the Agency takes account of the comment and amends item 4 in section 2(3) to read as follows: "Chapters 4 and 5 are applied to a mass communications service in a mass communications network in so far as it concerns the transfer or broadcasting of public service radio programmes referred to in section 7(1) of the Act on the Finnish Broadcasting Company or the transfer or broadcasting of radio programmes subject to a programming licence referred to in section 34 of the Act on Electronic Communications Services if the licence specifies a population coverage of at least 95 per cent".

DETAILED RATIONALE

This chapter contains the detailed rationale for the obligations of the Regulation and provides examples on how to apply the Regulation to fulfil the obligations.

Chapter 1 General provisions

This chapter explains Chapter 1 of the Regulation, i.e. the general provisions of the Regulation.

1 Objective of the Regulation

The purpose of the Regulation is to improve the preparedness of telecommunications operators for a variety of disturbances, including both the faults of communications networks and services and violations of information security. The Regulation serves to ensure that all telecommunications operators have in place measures that are adequate, appropriate and suitable for their own operations and that enable them to detect information security violations, threats

or other events that prevent or materially disturb the functionality of communications services, and that telecommunications operators are prepared to deal with such situations.

Another purpose is to create the clearest possible guidelines for telecommunications operators on the process and content of disturbance notifications submitted to both the Finnish Transport and Communications Agency and users to ensure that any information necessary can be routinely produced and delivered to recipients during an incident. Furthermore, the Regulation aims to improve the authority's ability to have an overview of the failure sensitivity of communications networks and services and the reasons of disturbances for the purpose of technical control. All these objectives have been set to reduce the impact of disturbances as experienced by users.

2 Scope of application

Section 2 of the Regulation describes the scope of application of the Regulation and any limitations thereof.

2.1 Public telecommunications

This Regulation applies to public telecommunications, i.e. telecommunications operators, which, under section 3(1)(27) of the Act on Electronic Communications Services¹, means a network operator or a communications service operator offering services to a set of users that is not subject to any prior restriction.

The Regulation applies to disturbances in telecommunications operations, meaning significant information security violations or threats thereof or other events that either prevent or materially disturb the performance of a communications service. In other words, the Regulation contains provisions on the detection and investigation (Chapter 2 of the Regulation), notifications (Chapters 3 and 4) and statistics (Chapter 5) of incidents that disturb the functionality and information security of public telecommunications, i.e. public communications networks and services.

Network service is defined in section 3 of the Act on Electronic Communications Services¹ as a service a telecommunications operator provides comprising a communications network in its ownership or for other reasons in its possession for the purposes of transmitting or distributing messages. In the Act, another term for a telecommunications operator providing network service is *network operator*.

Under the Act, a *communications network* means a system comprising cables and devices joined to each other for the purpose of transmitting or distributing messages by wire, radio waves, or by other electromagnetic means. Similarly, under the Act, communications networks used to provide communications services to a set of users that is not subject to any prior restriction are *public communications networks*, while communications networks primarily used for transferring or transmitting television and radio programmes or other material conveyed in identical form to all recipients are *mass communication networks*.

Therefore, communications networks may be provided for either targeted or mass communication purposes. This means that the Regulation applies to networks such as fixed and mobile telephone networks (both circuit-switched and packet-switched ones), cable television network, terrestrial digital television network and analogue radio network.

Under section 3(1)(37) of the Act on Electronic Communications Services¹, *communications service* means a service consisting either completely or primarily of transmitting messages in a communications network, and of transfer and transmission service in a mass communications network. The key element in the definition of a communications service is that a telecommunications operator

contributes technically to the transfer and transmission of messages as a service provider.

Even for mass communications networks, the Regulation applies to the provision of network services, i.e. services that enable the transmission and broadcasting of television and radio programmes. The Regulation also applies to a communications service that means the transmission service of programmes. There is no conclusive, clear line between network and communications services in mass communications networks. What is relevant here is to note that the operations of broadcasters fall within the meaning of 'communications service' and 'telecommunications' in so far as they concern technical transfer and provision. This is discussed in more detail under Definitions, in section 3.3.

2.2 General limitations to the scope

The Regulation does not apply to network or communications services or content services provided to a limited set of users. When it comes to new services, it is often left to interpretation whether the service is a communications service at all or whether the set of users is subject to a prior restriction. Interpretation decisions must be based on overall assessment and made on a case-by-case basis. Examples of content services that do not belong to the scope of the Regulation are website content, discussion forums, and the contents of television and radio programmes.

The Regulation does not apply to cases such as the management of an internal communications network of a company or organisation, because the set of users in this case is subject to a prior restriction; in other words, the Regulation does not impose any telecommunications operator obligations on corporate or association subscribers. A *corporate or association subscriber* means, under section 3(1)(41) of the Act on Electronic Communications Services¹, an undertaking or organisation which subscribes to a communications service or an added value service and which processes users' messages, traffic data or location data in its communications network. Corporate or association subscribers are also *subscribers* referred to in the Act. Even if the telecommunications operator providing the service is not responsible for the internal communications network of a company or organisation, the telecommunications operator is still responsible for the service it provides to the subscriber. Therefore, in the severity rating of functionality incidents, for example, it should be taken into account that the failure or disruption in the service provided to a corporate or association subscriber affects all users within the company or organisation. For the purpose of severity rating, section 16.2 below explaining the grounds for section 16 of the Regulation determines, consistently with the explanatory notes to the regulation on resilience of telecommunications services², how many end users one broadband subscriber connection provided to a corporate or association subscriber may be considered to correspond to and how the number of users may be estimated when providing a telephone network exchange.

Furthermore, the Regulation does not apply to other *communications providers* referred to in section 3(1) of the Act on Electronic Communications Services¹ than telecommunications operators.

2.3 Scope of application for temporary provision or capacity

The Regulation does not apply to temporary provision of communications networks or services or temporary capacity, such as mass communications network transmitters or mobile network base stations providing additional capacity that are brought to an area for the duration of a short-term event. 'Temporary' usually means a single period of a maximum of three months.

² At the time of publishing these notes, FICORA Regulation 54 B/2014 M on resilience of communications networks and services and of synchronisation of communications networks, current version: <https://www.traficom.fi/en/regulations>

2.4 Limitation of the scope of application in cases of information security incidents

Sections 10 and 15 and Chapter 5 of the Regulation, i.e. obligations concerning the notification of information security incidents to users and the Finnish Transport and Communications Agency, as well as obligations concerning statistics on information security incidents, only apply to information security incidents not falling within the scope of Regulation 611/2013 of the European Commission. The incidents addressed in the Commission Regulation are specifically *personal data breaches*, and the procedures of informing authorities and users of such breaches have been harmonised with the Commission Regulation.

In other words, this Regulation does not contain provisions on the generation and submission of information to the Finnish Transport and Communications Agency and users on personal data breaches. Obligations concerning notification and the compilation of statistics only apply to other possible information security incidents. However, it should be noted that obligations of Chapter 2 of the Regulation concerning the detection of information security incidents and threats and, if necessary, addressing them, apply to all telecommunications operations. Therefore, Chapter 2 also applies to the ability to detect personal data breaches.

The Commission Regulation and its definition of a personal data breach are discussed in more detail in Annex 1 to these explanatory notes.

2.5 Partial restrictions to the scope in mass communications

The application of the provisions of Chapters 4 and 5 of the Regulation to mass communications services is delimited so that obligations concerning compilation of statistics and notification of disturbances to the Finnish Transport and Communications Agency only apply to:

- transfer and broadcasting of television programmes when
 - transferring or broadcasting public service programmes referred to in section 7(1) of the Act on the Finnish Broadcasting Company (1380/1993); or
 - transferring or broadcasting programmes for several different audience groups by virtue of a national programming licence referred to in section 211 of the Act on Electronic Communications Services¹ or any provisions issued under it.
- transfer and broadcasting of radio programmes when
 - transferring or broadcasting public service radio programmes referred to in section 7(1) of the Act on the Finnish Broadcasting Company; or
 - transferring or broadcasting radio programmes subject to a programming licence referred to in section 34 of the Act on Electronic Communications Services.

It should be noted that the general network management obligations of Chapter 2 of this Regulation and the obligations to inform users laid down in Chapter 3 also apply to mass communications services that do not fall into the scope of Chapters 4 and 5.

The provisions on public service in section 7(1) of Act on the Finnish Broadcasting Company require that the company is responsible for the provision of versatile and comprehensive television and radio programming with the related additional and extra services for all citizens under equal conditions. These and other content services related to public service may be provided in public communications networks nationally and regionally. In other words, Chapters 4 and 5 of this Regulation are applied to all such mass communications services which are used to transfer or broadcast public service television and radio programming of the Finnish Broadcasting Company regardless of their implementation technique, for example to the broadcasting of television programmes distributed via terrestrial, cable and IPTV network. At the time of publishing these notes, the above-mentioned

obligations apply to the transfer and broadcasting of Yle TV1 (SD and HD), Yle TV2 (SD and HD), Yle Teema & Fem (SD and HD), Yle Radio1, YleX, Yle Puhe and Yle local radio programmes.

Section 211 of the Act on Electronic Communications Services¹ contains provisions on making programmes available to people with a visual or hearing disability, which means audio-subtitling and subtitling service obligations. Under the section, audio-subtitling and subtitling services shall be added to public service programme sets of the Finnish Broadcasting Company (as described in the paragraph above) and to programmes for several different audience groups broadcast by virtue of a national programming licence. The Government Decree on Television and Radio Operations (1245/2014, section 8) issued by virtue of section 211(5) of the Act defines the programmes considered to be intended to several audience groups, and the Ministry of Transport and Communications has, by virtue of section 8(2) of the Decree, confirmed in its decision LVM/9/03/2018 which programmes require audio-subtitling and subtitling services, besides the Finnish Broadcasting Company's programmes. Under the above-mentioned decision, such programmes include MTV Oy's MTV3, Sanoma Media Finland Oy's Nelonen and Brilliance Communications Oy's AlfaTV. In other words, Chapters 4 and 5 of this Regulation are applied to all such mass communications services which are used to transfer or broadcast MTV3 (SD and HD), Nelonen (SD and HD) and AlfaTV (SD and HD) television programmes regardless of their implementation technique, that is, for example via terrestrial, cable and IPTV network.

Under section 34 of the Act on Electronic Communications Services¹, a programming licence is required for radio broadcasting operations in an analogue terrestrial mass communications network. Chapters 4 and 5 of this Regulation are applied to all such mass communications services that are used to transfer or broadcast radio programmes specified in such programming licences when the population coverage specified in the licence of the programme to be transferred or broadcast is at least 95 per cent. At the time of publication of these explanatory notes, this means in practice the transfer or broadcasting of Radio Nova programming. An up-to-date list of such programmes is available on the Finnish Transport and Communications Agency's website.

However, Chapters 4 and 5 of the Regulation are not applied to radio broadcasters whose licence specifies a population coverage of less than 95 per cent. Because the number of telecommunications service users is small, the services have limited public interest, while it is also not desirable to make excessive demands for small telecommunications companies.

3 Definitions

This chapter details the definitions of the Regulation.

3.1 DVB-C network service

In this Regulation and in the Finnish Transport and Communications Agency's regulation on the quality of telecommunications services³, DVB-C network service means a digital cable television broadcasting service in accordance with DVB-C (Digital Video Broadcasting, Cable) standard ETSI EN 300 429. According to the definition, DVB-C network services include not only broadcasting networks, but also other network services, such as transmission, encoding, multiplexing and re-multiplexing, which enable the delivery of the television service to the reception point of the end user.

The figure in Annex 2 illustrates a supply chain of television services from the broadcaster to the user. In this example, the DVB-C network service follows the DVB-T network service, and the DVB-T network service extends from encoding to

³ At the time of publishing these notes, FICORA Regulation 58 B/2014 M on the quality and universal service of communications networks and services, current version: <https://www.traficom.fi/en/regulations>

the broadcasting station of the transmission area. From there, the supply chain continues as DVB-C network service until the end user reception point.

The figure in Annex 3 illustrates the television service supply chain specifically for the DVB-C network service. Television services can be received in the DVB-C network from a number of different sources.

The provider of a DVB-C network service is responsible specifically for providing the television service from the signal reception point up until the delivery interface to the user.

3.2 Internet access service

The definition of internet access service included in this Regulation is the same as in the Act on Electronic Communications Services, because the term *other communications service* (see section 3.4 below) is defined by means of other service definitions listed under Definitions.

Under section 3(1)(3) of the Act on Electronic Communications Services¹, internet access service means a communications service enabling access to services available on the internet.

According to the preparatory material of the Act (HE 221/2013), an internet access service means the connection between a subscriber terminal, such as modem, and the public internet. The definition covers data transfer from the subscriber connection to the public internet and any services that are mandatory for the connection, such as IP address management. What is relevant here is that the internet access service covers the part of a customer's internet access that a telecommunications operator providing the service is able to manage. Services provided along with the internet access, such as e-mail or internet telephone services, are not part of the internet access service, but separate communications services, whether provided by the same or a different telecommunications operator.

The Finnish Transport and Communications Agency's interpretation is that services that are compulsory for internet access and must therefore be included in the internet access service are, at least, the resolver name service and the DHCP service.

The internet access service is technology neutral and covers both fixed and wireless access technology. Examples of fixed internet access services are xDSL, cable modem and fibre-optic connections, as well as housing company subscriptions, while examples of wireless internet access services are mobile data services and WLAN networks.

3.3 Mass communications service

The definition of a mass communications service is derived from the mass communications network included in section 3 of the Act on Electronic Communications Services (see section 2.1 above).

In this Regulation, the specific purpose of the definition of a mass communications service is to determine the potential number of recipients of *television and radio programmes* and related ancillary and supplementary services provided through a mass communications network for the purpose of severity rating of functionality disturbances. For this reason, the definition does not include 'other material conveyed in identical form to all recipients' to avoid interpretation problems with respect to contents provided through the public internet. Such content services include television programme services provided by television broadcasters on the internet and VoD (Video-on-Demand) services.

In determining the severity rating of functionality disturbances of mass communications services, it is essential that the potential number of recipients of *programmes* can be estimated. However, disturbances affecting the transmission of mass communications are mainly related to the *network service* enabling the programmes to be transferred.

It is, of course, possible that disturbances relate to the *communications service*, which means the transfer or broadcasting of programmes through a network intended for the transmission of television and radio programmes, i.e. *programme transmission services*. Communications service providers in mass communications networks refer to programming licence holders. A technical communications service is strictly separated from the content of programmes that does not fall within the scope of this Regulation.

Annex 2 contains an example of the technical outlines of a mass communications service in the transmission of a television service through a DVB-T and/or DVB-C network service from a broadcaster to the viewer. Other examples of mass communications network services are DVB-T2, VHF and IPTV broadcasting services. For the purpose of technical outlining of a mass communications service, it is not relevant to consider the particular mass communications network technology through which the television or programming is conveyed from broadcasters to viewers or the number of operators involved in conveying the mass communications service. The most important aspect for technical outlining is that the mass communications service extends from the broadcaster's delivery interface to the recipient's reception interface. This is illustrated with an example in the figure in Annex 2.

3.4 Other communications service

Other communications services cover all services that are communications services as referred to in the Act on Electronic Communications Services¹ but do not belong to any other service group defined in this Regulation. The basis of the service classification is the fact that disturbances affecting the functionality of such services are not as critical for the communication ability of users as those concerning other defined service groups. A similar definition of other communications services is also used as the basis of priority rating in the regulation on resilience of telecommunications services².

Examples of other communications services are MMS, WAP, PoC and instant messaging (IM) services and push e-mail services (possibly not provided by the actual e-mail service provider and therefore not including all e-mail service functionalities listed in section 3.5) as well as voice services that do not fall into the scope of the definition of a *public telephone service* (see section 3.7) but meet the definition of a communications service, such as one-way VoIP services (that only provide the option of either making or receiving calls from the public telephone network or that do not provide access to the public telephone network at all).

In assessing whether a service is a communications service or some other service not covered by the Act on Electronic Communications Services¹ at all, the relevant fact to be considered is whether the service provider transfers⁴ messages through a communications network. It is not possible to give an exhaustive description of all possible cases in this document, since the service concepts are evolving all the time, and the applicability of legislation must often be determined on a case-by-case basis. On the basis of the Finnish Transport and Communications Agency's established interpretation practices, it is possible to determine that pure peer-to-peer services should not be interpreted as communications services, because the

⁴ It should be noted that in the case of instant messaging services and other similar services, it has to be decided on the basis of the particular implementation model whether the service is a communications service referred to in legislation or a pure peer-to-peer service with no centralised servers through which the service provider would be involved in the transmission of messages.

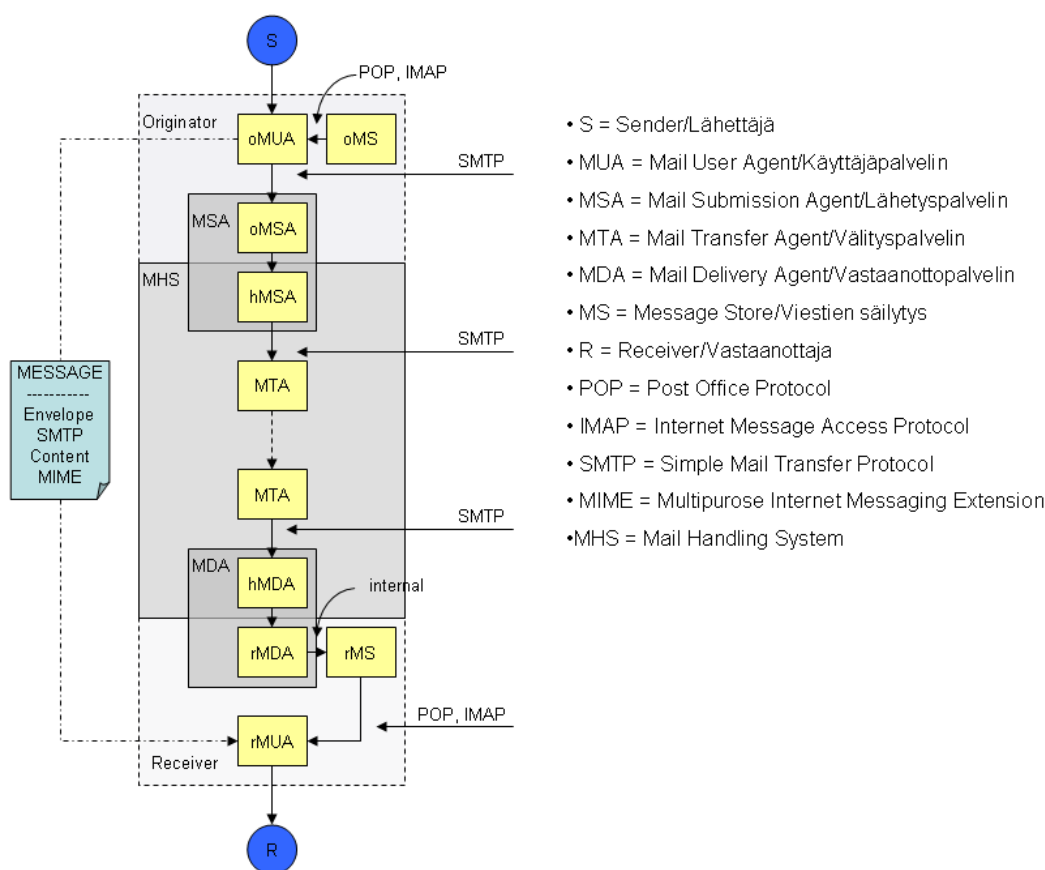
service provider is not involved in the transmission of messages (by way of signalling or server maintenance, for example).

3.5 E-mail service

E-mail service means the transfer, transmission and reception service of electronic mail messages that uses internet name services, i.e. DNS services in the transmission of messages. Figure 1 is a diagram of an e-mail service, the different functions and the protocols to be used between functions.

An e-mail submission service means a service in which a customer sends a message via the mail submission agent (MSA) of the service provider. A transmission service means a service in which an e-mail message is received, (processed) and forwarded to a destination agreed with the customer. A delivery service means a service in which the customer's e-mail messages are received by a mail delivery agent (MDA) and delivered to the customer's electronic mailbox.

Figure 1. A diagram of an e-mail service.



Outgoing e-mail traffic refers to e-mail messages sent by customers that are transferred via the mail submission agents (MSA) of the service provider to the mail transfer agents (MTA).

Incoming e-mail traffic, on the other hand, means incoming e-mail messages that are transferred via the mail delivery agents (MDA) of the service provider to the electronic mailboxes of customers (MS).

3.6 Short message service

In this Regulation, a short message service means a communications service provided in the mobile network that enables the sending and reception of short messages only containing alphanumeric characters and special characters.

Short message service (SMS) is also often called text message service. The technical implementation of the service is defined in 3GPP specification TS 23.040.

It is technically possible to send text messages also to fixed telephone network subscriptions, and this possibility has been taken into account in the Finnish Transport and Communications Agency's Numbering Regulation⁵. However, as short messaging to fixed telephone network subscriptions may be considered marginal from the perspective of this Regulation, the Regulation only concerns short message service provided solely through mobile network.

3.7 Public telephone service

The definition of a public telephone service included in this Regulation is the same as in the Act on Electronic Communications Services, because the term *other communications service* (see section 3.4 above) is defined by means of other service definitions listed under Definitions.

Under section 3(1)(42) of the Act on Electronic Communications Services¹, public telephone service means a communications service used to make and receive national and international calls using a number in a national or international numbering plan.

Technically, a public telephone service may be circuit-switched or packet-switched. What is relevant in the definition is the possibility to both make and receive calls through a telephone number based on the international E.164 standard. The word 'public' refers to the fact that the service is publicly available, i.e. provided to a set of users that is not subject to any prior restriction.

Requirements laid down for a public telephone service apply regardless of the network through which the service is provided (i.e. they are not limited to PSTN/ISDN or mobile networks). Therefore, a two-way VoIP telephone service is also considered to be public telephone service.

Some call services on the market are not based on telephone numbers. Such services provide only the possibility to either make calls with a phone number appearing as the number of the caller, or to receive calls through a public telephone network number. Such services are not public telephone services, but they may be communications services or services provided through telephone network.

Using legal terminology, the mere possibility to either receive or make calls is a *communications service*, not *public telephone service*. According to the service groups of this Regulation, *one-way voice services* are *other communications services*. Such interpretations of public telephone service and communications service are established and consistent with the Finnish Transport and Communications Agency's technical specifications and case solutions.

Chapter 2 Detection and control of disturbances

This chapter discusses the obligations laid down in Chapter 2 of the Regulation, i.e. the minimum requirements of the implementation of network and service management.

4 Monitoring functionality and information security

The section lays down more detailed provisions, some of which are for information only, on the obligation in section 243 of the Act on Electronic Communications Services¹ to maintain communications networks and services in such a manner that significant information security violations and threats against them and other

⁵ At the time of publishing these notes, FICORA Regulation 32 S/2016 M on numbering in a public telephone network, current version: <https://www.traficom.fi/en/regulations>

defects and disruptions that significantly interrupt their functionality can be detected. In practice, this means that a telecommunications operator must maintain a network or service management system.

Proactive and prompt action by the telecommunications operator to detect various disturbances plays an important role. If a telecommunications operator is well equipped to identify disturbances, the measures to detect, mitigate and eliminate disturbances can be initiated quickly, without having to wait until customers complain. The prevention of disturbances involves the detection of even the smallest signs of an emerging problem as early as possible. Through prevention, the impact on communications services can be minimised, and in best cases, there is no visible impact at all.

Constant monitoring referred to in subsection 1 means system contingency. Such systems include not only network management services, but also monitoring functionalities that are built in the network equipment as such. Subsection 1 does not refer to matters such as working time arrangements or emergency preparedness of employees. The provision does not lay down the measures that must be initiated on the basis of monitoring data.

The power supply and circumstance monitoring of the equipment facilities occupied by the telecommunications operator as required by subsection 1 are justified to enable telecommunications operators to receive advance alerts, particularly concerning functionality issues, even from other equipment facilities than those in its possession.

However, subsection 2 requires that a telecommunications operator must have appropriate systems and procedures. In practice, this means that the reception and analysis of various monitoring data requires defined procedures that are suitable to the extent and nature of the operations of the telecommunications operator, enabling it to process the monitoring data.

In addition, subsection 3 requires that the network and service monitoring mechanisms should be documented to allow, whenever necessary, the telecommunications operator to prove how it meets the set requirements.

4.1 Constant monitoring

A telecommunications operator must continuously monitor the functionality of its communications networks and services, the state of information security, and the equipment facilities available to it by using the power supply and circumstance controls provided for by the Finnish Transport and Communications Agency's regulation on resilience of telecommunications services². Such facilities include equipment facilities both owned and leased by the telecommunications operator. Subcontracting is discussed in more detail in Annex 4 to these explanatory notes. The monitoring of equipment facilities means the monitoring of power supply alarms and the alarms triggered by circumstantial factors referred to in the regulation on resilience of telecommunications services².

The telecommunications operator must have in place network and service management mechanisms that are suitable for the networks and services it provides and that enable the telecommunications operator to detect as soon as possible any problems affecting functionality or the state of information security. Examples of such events include Denial-of-Service attacks, other malicious traffic, or even a failure of the power supply of a mobile network base station and the resulting malfunction of the base station (and communications services provided by means of the base station) that both affect the availability of the services of the telecommunications operator. The telecommunications operator may detect such problems by, for example, monitoring the traffic (in terms of volume, etc.) of the network or its component or, in the above base station example, the power supply voltage level.

The telecommunications operator should also attempt to identify situations that are developing into problems as early as possible with its network and service management mechanisms. An example of an emerging disruption could be the failure of the cooling or ventilation of an equipment facility, which does not immediately affect the functioning of communications networks or services. However, if the failure is not repaired, it is likely that, before long, it will prevent the functioning of the components of the communications network in the equipment facility, because the temperature of the equipment facility rises above safe levels. Other data that help in predicting future disturbances include software alerts and service quality metrics that indicate deviations from normal operations even when an immediate disturbance is not detected. The telecommunications operator is responsible for determining appropriate software alerts and quality metrics. However, the Finnish Transport and Communications Agency's regulation on the quality of telecommunications services³ contains suggestions on how the quality of communications services can be measured. Predictive data that helps in avoiding information security problems include alerts of detected hardware or software vulnerabilities.

4.2 Data reception and analysis

The reception and analysis of internal and external disturbance notifications and various alerts, such as software alerts, hardware alerts, device status alerts and other communications network or service monitoring notifications will be implemented through appropriate systems and measures.

External disturbance notifications are those not made by the telecommunications operator itself, but by another telecommunications operator, customer, an authority, such as the National Cyber Security Centre Finland (NCSC-FI), or another external party. Therefore, the telecommunications operator must have in place suitable systems and procedures for the reception and analysis of such notifications.

Analysis refers to all the measures through which a telecommunications operator, on the basis of monitoring notifications or other received or collected data, will be able to determine as accurately as possible the reason why a functionality or information security threat has occurred or is about to occur and which component of the communications network or service is or will be affected.

Appropriate systems and measures, on the other hand, mean that it must be possible to adjust the size, volume, properties or other features of the required systems according to the number of users or geographical coverage of the communications services provided by the telecommunications operator, or to its revenues from telecommunications operations.

4.3 Documentation

Systems and procedures to be used for receiving and analysing various alerts and notifications must be documented and the documentation must be kept up to date. In other words, the telecommunications operator must have a description of the technical systems and measures it uses to process information and alerts on the state of its networks and services.

5 Management of events disturbing or threatening functionality or information security

This section discusses the internal instructions of a telecommunications operator concerning disturbances. The most important objective of the instructions is to provide the capability to find out the reason for the issue as quickly as possible and to minimise the impact of the event. The instructions also have practical importance in situations such as the training of new personnel.

In addition, the section requires that any telecommunications operator in whose networks a disturbance of severity rating A or B (see sections 16 and 17 below) may occur must be prepared, on the basis of monitoring data, to take appropriate action at any time of the day to eliminate the disturbance or minimise its impact. The purpose of this obligation is to ensure that telecommunications operators that are major in terms of the number of users and the different service types offered are able to quickly tackle problems that have a significant impact on the functionality and availability of communications networks and services, such as hardware failures or Denial-of-Service attacks.

The provider of the telecommunications service (service operator) is responsible for ensuring that the communications service is restored. If, to implement the communications service, other services are acquired from another telecommunications operator (such as a network operator), the service operator must ensure through its contracts that the requirements of legislation are met. Subcontracting is described in more detail in Annex 4 to these explanatory notes.

To apply the requirements of this Regulation in practice, the telecommunications operator must establish in advance clear procedural instructions for events that disturb or threaten the functionality or information security of communications networks and services.

The instructions must contain at least the following:

- organisation of functionality and information security management;
- definitions of responsibilities, containing at least the information necessary for reaching failure reparation personnel and the persons managing information security;
- locations of emergency units and equipment; and
- instructions for securing emergency communications through temporary arrangements.

As a matter of course, the instructions should also take into account any special instructions concerning the corrective measures in case of major disturbances. Such special instructions may concern, for example, on-call or deputy arrangements.

Typically, the organisation of information security management is described in a telecommunications operator's internal information security policy, which is a set of documents describing the measures and targets of information security that has been approved by the management of the telecommunications operator.

6 Notifying the Finnish Transport and Communications Agency of a reduced management capacity

The section lays down an obligation for telecommunications operators to inform the Finnish Transport and Communications Agency of any significant reduction in their capacity to manage functionality and information security, if the functionality and information security of the networks and services of the telecommunications operator have an impact on a substantial number of users. As the obligation is scaled according to the severity rating, it takes into account communications services with varied significance and proportions the obligation also in terms of the number of users of each service.

Significant reductions in the capability to manage networks or services are not necessarily immediately visible in the services provided to users, but reduce the ability to observe and respond to network and service disturbances, thus increasing the risk of disruptions in users' services. Therefore, network or service management by the telecommunications operator, including information security incident response, is a critical part of the monitoring of the status of networks and services provided by the telecommunications operator, management of modifications and updates, limitation, management and repair of disturbances, and coordination of field personnel. For this reason, it is reasonable that if the capability

of the telecommunications operator to manage its networks or services is significantly compromised, the Finnish Transport and Communications Agency should be informed. In addition, the section obliges the telecommunications operator to keep the Finnish Transport and Communications Agency up to date on the progress of the measures designed to eliminate the significant reduction in its capability to manage networks or services and on the eventual remedying of the situation.

The obligations of the section are delimited to apply particularly to the telecommunications operators in possession of communications networks or services in which a disturbance of severity rating A or B may occur, because a significant share of users are within the reach of networks and services provided by these operators.

In practice, a significant reduction in the management capability may be a disruption of the actual technical network monitoring system, anything that significantly threatens or disrupts the usability of network monitoring facilities or equipment (such as a long-term power failure, fire or a specific information security threat affecting the reliability of systems), or a considerable staff shortage in network management or abuse teams (examples of reasons include a pandemic or an industrial action). What is relevant in applying this provision is that the telecommunications operator must monitor the performance of its network and service management and notify the Finnish Transport and Communications Agency of any significant capacity reductions.

Under this provision, a notification must be made without undue delay, that is, as soon as the telecommunications operator detects the reduction. The notification must be made:

- either through the Finnish Transport and Communications Agency's online system (Häiriönhallintajärjestelmä/Disturbance management system) or by e-mail to viat@traficom.fi **and**
- by phone on +358 295 390 800.

The telecommunications operator must also provide regular reports to the Finnish Transport and Communications Agency on the progress of the remedial measures of the significant management capability reduction. In other words, the telecommunications operator must inform the Finnish Transport and Communications Agency of the measures that have been or will be taken in order to restore the full capability of its network or service management and how these measures are progressing. It is particularly important to make it clear in follow-up notifications if the restoration of the capability becomes more difficult or otherwise does not proceed as planned. Follow-up reports to the Finnish Transport and Communications Agency must be submitted through the Agency's online system (Häiriönhallintajärjestelmä/Disturbance management system), by e-mail (viat@traficom.fi) **or** phone (+358 295 390 800).

Once the telecommunications operator has eliminated the significant reduction of its network or service management capability, this must be reported to the Finnish Transport and Communications Agency:

- through the Finnish Transport and Communications Agency's online system (Häiriönhallintajärjestelmä/Disturbance management system) or by e-mail to viat@traficom.fi **or**
- by phone on +358 295 390 800.

7 Submitting disturbance management contact details to the Finnish Transport and Communications Agency

The telecommunications operator must give the Finnish Transport and Communications Agency the contact information of the persons responsible for incident management and the operator's control rooms so that the Agency can

quickly contact the telecommunications operator when necessary and find out the reasons and eliminate the disturbance.

Identifying the contact persons of the telecommunications operator and providing their details to the Finnish Transport and Communications Agency does not entail a personal legal liability of the contact persons for disturbances. The sole purpose here is reachability, i.e. the possibility to contact the right persons in order to find out the reasons and eliminate the disturbance. The responsibility for all operations lies with the telecommunications operator.

The contact information must be submitted either through the Finnish Transport and Communications Agency's online system (Häiriönhallintajärjestelmä/Disturbance management system) or by using the relevant form (see Annex 1 to the Regulation) and sending it by e-mail to viat@traficom.fi.

The contact information must be submitted whenever there the information has been changed.

8 Management of customer notifications

The purpose of this provision is to ensure that the customers of a telecommunications operator have uniform opportunities to notify their service providers of detected or suspected functionality or information security incidents. Another purpose of this provision is to guarantee that the disturbances notified by customers are managed systematically, efficiently and as quickly as possible.

Notifications to users are discussed in Chapter 3, sections 10–14 of the Regulation.

8.1 Notification channels

The telecommunications operator must have a customer service number through which disturbance notifications can be made at least on weekdays and during normal working hours. This means that the customer service number must answer calls from customers during standard office hours. It is recommended that the customer service number should receive notifications at least between 8.00 and 16.15.

The preparedness to receive online disturbance notifications by customers means that the telecommunications operator must provide its customers (communications service users) with an opportunity to make communications service disturbance notifications through an internet access. A notification service may be available, for example, in the telecommunications operator's customer portal, where customers may be able to manage other aspects of their subscriptions. The notification service may also be accessible through e-mail (an example address for functionality issues: failures@telecom.fi, and for information security issues: abuse@telecom.fi) or through an online form available on the website of the telecommunications operator. What is relevant here is that it must be possible to make a disturbance notification even if the public telephone service is not working, but an internet access is available. Another key requirement is that it must be relatively easy for customers to make notifications and that instructions for making a notification must be available on the website of the telecommunications operator.

8.2 Processing of notifications

A customer notification must be forwarded to the organisation responsible for remedying the incident no later than one business day after the notification was made. Therefore, if a customer (telecommunications service user) makes a notification on a Saturday or Sunday, it must be forwarded to the repair organisation **no later than** the following Monday (or, if the notification is made on Tuesday at 13.00, by Wednesday at 13.00). However, it should be noted that this limit of one (1) working day for forwarding the customer notification is the

absolute maximum limit. The reason for choosing the maximum time limit of one working day is that the requirement should be reasonable even for small operators. It must be emphasised that telecommunications operators should strive to take action sooner. Therefore, it is advisable to take into account the impact of the disturbance described in the notification on a case-by-case basis when the priority of the notification is determined: if the disturbance means unreasonable inconvenience to users (for example, personal security is compromised), the follow-up measures of the notification must be taken as promptly as possible.

8.3 Recommendation on customer instructions concerning information security

It is recommended that customer instructions concerning information security and violations thereof are published on the website of the telecommunications operator as a separate page, which also contains guidance on how customers can react to information security violations by themselves.

9 Management of modifications

This section specifies the obligation laid down in section 243 of the Act on Electronic Communications Services¹ to *maintain* the compliance of communications networks and services, which also covers the management of modifications of networks and services and the minimisation of adverse impacts.

The first subsection acknowledges the principle that disturbances arising from modifications, such as downtime, should be minimised. As downtime may sometimes be unavoidable and it should be possible to carry out planned alterations with as few errors as possible, the section emphasises the fact that in estimating the required downtime, not only the service needs but also the realistic time needed for carrying out the alteration carefully should be considered. Therefore, subsection 2 explicitly provides for a 'maintenance window' by requiring that sufficient time should be reserved for all measures.

9.1 Practical management

To keep alterations in control and minimise damage, the telecommunications operator must, before starting the actual modification, plan carefully the phases of the work and the required resources, estimate the impact and duration of work, and plan in advance the measures to be taken if the work does not turn out as planned.

For example, when the software of a network device is replaced with another or its configuration is altered, it may be a good idea to simulate the impact of such alterations in advance as far as possible to allow for the detection and repair of errors before they materialise.

Another example of practical management could be that before the field personnel starts to perform a scheduled alteration in the cabling or routing of an important transfer connection, they must confirm with the telecommunications operator's network and service management that the connection securing the altered connection is actually functioning and that performing the work does not cause an unforeseeable disruption in the communications service.

The telecommunications operator must establish and document the guiding processes and practices related to modifications to enable a systematic and predictable approach to every modification.

For each modification, maintenance or update, the telecommunications operator must, on a case-by-case basis and in accordance with its established processes and practices, estimate and reserve adequate time for completing the modification, maintenance or update.

9.2 Recommendation on setting change logs

To enable detection and tracking down of any unauthorised changes to the settings of network devices, the Finnish Transport and Communications Agency recommends that telecommunications operators keep logs of the changes made to the settings of their network devices in the course of the past six months.

The Agency also recommends that the indications of the time of events and observations to be logged include a separate entry for the time of the event and that of the observation. It is also recommended that at least the date of the observation is logged, but in system logs concerning the event, the precise time must also be reported, including the time zone (such as 'UTC+2') and the potential offset of the clock and its direction compared to the official time. The time stamps of technical system logs should preferably be indicated in an ISO 8601 compatible format.

A corresponding recommendation is given in the explanatory notes to the Regulation on information security of telecommunications services, which discusses the practical implementation of information security measures.

9.3 Impact of modifications to other telecommunications operators

Section 248 of the Act on Electronic Communications Services¹ contains provisions on the 'principle of least inconvenience'. Under the Act, any construction, maintenance, changes or information security measures made to communications networks or services by the operator shall be made in a way that causes as little inconvenience to other telecommunications operators as possible. A telecommunications operator may without the consent of another telecommunications operator temporarily interrupt or restrict the use of a network or communications service if this is necessary to implement the above-mentioned measures. Any interruption or changes shall be announced efficiently to other telecommunications operators whose networks or services they might affect.

As the Act already contains an obligation to make changes in a way that causes as little inconvenience to other telecommunications operators as possible and inform other telecommunications operators about future changes, this Regulation does not contain any further provisions on the matter. However, below is a list of cases based on practical experience, which require taking other telecommunications operators into account when performing any changes. The examples mainly concern xDSL and cable television network, but corresponding principles apply to all networks. As illustrated in the examples, even if there may be technical measures to prevent damage to the services of other telecommunications operators, this is not always the case, and often the only way to prevent unexpected damage is the timely provision of information.

ADSL-VDSL

When a copper conductor local loop is used to provide ADSL connections to a building and VDSL connections are provided to the same local loop, the ADSL may be interfered due to the internal frequency division of the conductor. The frequency range restrictions of VDSL provided for in the Finnish Transport and Communications Agency's regulation on the technical characteristics of metallic loops and network equipment connected to them⁶ aims at preventing such interference.

The explanatory notes of the regulation state that unless a local loop has any ADSL connections, it is not necessary to make any restrictions in the VDSL configuration to ensure the functionality of ADSL. Thus, the objective of the regulation is that the

⁶ At the time of publishing these notes, FICORA Regulation 38 E/2014 M on the technical characteristics of metallic local loops and network equipment connected to them, current version: <https://www.traficom.fi/en/regulations>

telecommunications operator providing services to the premises must clarify the installation situation and configure the VDSL system accordingly.

The Finnish Transport and Communications Agency considers that section 248 of the Act on Electronic Communications Services¹ also requires due care on the part of the telecommunications operator providing VDSL to a building and requires it to gather information in order to safeguard the functionality of ADSL connections.

HomePNA-VDSL

Interference described above may, judging by the information provided by telecommunications operators to the Finnish Transport and Communications Agency, occur in an access network with copper conductors between HomePNA and VDSL connections that use the same frequencies (above 5 MHz). Because of VDSL services, a HomePNA connection may encounter substantial interference.

Requirements of the regulation on the technical characteristics of metallic local loops and network equipment connected to them⁶ may not be sufficient for the purpose of making all copper conductor access technologies compatible, and compatibility is not even technically possible for all technologies. However, under section 248 of the Act on Electronic Communications Services¹, it is possible to require that a telecommunications operator providing a VDSL service to a building must find out whether there are incompatible access technologies in the building. The decision on the services to be provided in the building must be made by the housing company and/or the residents/users of the building.

Modifications of the xDSL network

It is not rare that both the operator that owns the network and other telecommunications operators that lease the network from the owner provide their services in a copper-conducted network. The functioning of xDSL services is substantially dependent on the distance of the DSLAM from the connection, but also the fact that several DSLAMs at different distances have not been connected to the same subscription. There are provisions and guidelines concerning the leasing practices of local loops, but the Finnish Transport and Communications Agency would like to point out also in this context that in DSLAM modifications, possible impact to the functioning of the services of other telecommunications operators must be taken into account.

Switching housing company operators

With respect to cable television networks, the common practice is that a housing company makes a contract with a telecommunications operator concerning the connection of the building to the cable television network and the provision of TV services to the building. Residents of the housing company usually make contracts about broadband and pay-TV services of the cable television network directly with the telecommunications operator. When the housing company decides to switch cable television operators and the building is disconnected from the old cable television network, residents' broadband and pay-TV services will stop working.

The Finnish Transport and Communications Agency is of the opinion that the new cable television operator must consider that the disconnection not only concerns the internal network of the building, but also the public network of the disconnected telecommunications operator. At least in coaxial network, the disconnection of a building may affect the functioning of the cable television network also beyond the disconnected building, and residents may still use services by the old operator. Therefore, disconnecting a building from the network of another telecommunications operator must be performed in cooperation with this operator.

Members of FiCom ry representing telecommunications operators have prepared guidelines for the procedure of switching housing company operators. The purpose

of the guidelines is to harmonise the procedures and cooperation practices in situations in which a housing company switches its telecommunications or cable television operator or enters into a network contract with a new operator. The Finnish Transport and Communications Agency recommends that the guidelines are followed whenever housing company operators are switched.

Modifications in television programme transmission chain

The entire television programme transmission chain from the television broadcaster through encoding and multiplexing to transmitters and receivers affects the quality of television services perceived by users. Modifications in the transmission chain and outages and disruptions in particular have a strong negative impact on the user experience.

In 2008, operators participating in the television programme transmission chain collaborated under the leadership of FICORA, the predecessor of the Finnish Transport and Communications Agency, to agree on the procedures to be followed when modifications are made to the transmission chain. The Finnish Transport and Communications Agency recommends following the mutually agreed policy.

Chapter 3 Notifications to users

This chapter discusses in more detail the obligations of Chapter 3 concerning disturbance notifications to subscribers and users. The requirements complement the obligations laid down in section 274 of the Act on Electronic Communications Services¹.

The Regulation defines the manner of notifying and the content of notifications in certain cases specified in the Regulation. The Regulation does not specify exhaustively all the situations in which the telecommunications operator is obliged to provide notifications under section 274 of the Act, the manner of notifying, or the content of notifications. Even if the particular incident is outside the scope of the minimum requirements of this Regulation in terms of the type of services or the impact of the incident, it is nevertheless possible to follow the procedures specified in this Regulation.

As a rule, the threshold of notifying users of disturbances should be as low as possible. In the provision of public notifications for all users, it should be kept in mind that the notifications must not jeopardise, for example, the security of buildings or individual persons. For example, it is not appropriate that a disturbance notification specifies an address or the name of a corporate customer affected by the disturbance.

In general, when providing disturbance notifications, the telecommunications operator should take into account how users experience the disturbance and what kind of role customer confidence and the quality of customer service play in the case. In practice, users are often left with a more positive impression of disturbances that are appropriately notified than those on which no information is available at all.

The telecommunications operator that users buy their services from is the one responsible for informing about disturbances. For example, in the case of functionality incidents of mobile services, the obligation to notify concerns not only the network operator, but also the MVNO (Mobile Virtual Network Operator) that has licensed the network services from a network operator. In addition, it should be noted that the obligations to notify users apply equally to communications services provided to consumers and corporate users.

During consultation rounds of previous regulations on the subject, consumer protection authorities wished to highlight the fact that one of the obligations of a commercial operator is the duty to inform about disruptions in the provided

services, which is based on the Consumer Protection Act. The provisions or recommendations of this Regulation do not mitigate the obligations laid down in the Consumer Protection Act.

Recommendation on informing about construction and maintenance

The Finnish Transport Communications Agency recommends that the telecommunications operator informs its users, where applicable and as specified in this Regulation, also of the construction and maintenance of communications networks and services if they disturb communications services (note also section 120(3) of the Act on Electronic Communications Services¹ described in Annex 1 to these explanatory notes).

10 Notifying on information security incidents

This section lays down specific provisions on notifications of information security incidents.

It should be noted that the scope of this section is delimited by section 2 of the Regulation (see section 2.4). Section 10 only applies to the provision of information on other than personal data breaches, while provisions on notifications on disturbances affecting functionality (such as Denial-of-Service attacks from the perspective of information security, if they have an effect on the functionality of services) are laid down in sections 11–14 of this Regulation. In practice, an example of an information security incident falling into the scope of this section could be an unauthorised alteration of a routing table, i.e. an information security violation affecting the integrity of a communications network.

Since it is not possible, at least for the time being, to identify many incidents falling into the scope of this section that would be relevant in terms of user notifications, it is reasonable that the practices of providing information security notifications to users are harmonised with the procedures concerning personal data breaches. Such harmonisation reduces not only the number of different procedures, but also potential problems of interpretation: the notifications of all disturbances affecting the functionality of communications services must be made in accordance with sections 11–14 of the Regulation, while the notifications of any other incidents related to information security must be made in accordance with Regulation 611/2013 of the European Commission (see Annex 1).

Article 3 of the Commission Regulation concerns notification to the subscriber or individual. The phrase 'where applicable' in the Finnish Transport and Communications Agency's Regulation means that, because the provisions of the Commission Regulation that specifically concern personal data do not, as a matter of course, apply to other information security incidents, they do not need to be considered in other incidents than personal data breaches.

10.1 Threshold of notifying

Events of which subscribers must be notified may include:

- current internet-related information security threats concerning terminals and software and protection against them
 - threats related to malware and their spreading through e-mail, websites, mobile devices and peer-to-peer networks
 - rerouting of call number information in modem-based internet traffic
- severe information security defects identified in commonly used systems and software, such as unpatched, commonly known vulnerabilities in software and systems (made known through a news release by the NCSC-FI or by the system supplier)
- current information security threats related to the use of communications services that require particular attention from communication service users
 - large-scale malware outbreaks requiring immediate action by customers

- significant increase in the volume of spam affecting the usability of e-mail services
- other communications networks that significantly compromise subscribers' information security or data protection
- specific threats arising from the international nature of communications services
 - information security threats affecting a communications service aimed at Finnish users that arise from the partial or complete implementation of the service outside Finland and that cannot be prevented by the telecommunications operator's own actions

Software vulnerabilities should be communicated especially when an unpatched vulnerability in commonly used software is particularly easy to exploit and therefore poses a threat to the general information security of networks and services.

10.2 When to notify

Notifications should be made without undue delay after the incident has been discovered.

Some of the threats affecting the service of a telecommunications operator cannot be repaired immediately, and sometimes public notifications may even jeopardise the proper investigation of the incident. In such cases, public notifications on threats would be likely to compromise the confidentiality of communications or could allow more abuse. Therefore, notifications are not only general, but also and in particular retroactive in nature. Before informing users, it is advisable to attempt to correct the security hole or other vulnerability in order to avoid additional damage to subscribers. Nevertheless, notifications on the telecommunications operator's remedial actions that are visible to users, on their possible impact on the use of the service or on any action expected from users should be as real time as possible. Retroactive dissemination of information enables the parties affected by the information security violation or threat to react in events demanding retroactive measures.

10.3 Information channels

Channels for providing information to customers include the website of the telecommunications operator, newsletters provided with invoices, and e-mail messages. Websites and newsletters are particularly suitable when the incident or threat is not critical and does not require immediate action by the user. This applies, for example, to notifications on general threats related to the use of internet and measures available to mitigate them. Website is also an appropriate information channel in case of more critical threats, such as a sudden increase of the volume of dangerous malware traffic in communication networks. On the other hand, informing customers by e-mail is appropriate if the incident only concerns a limited number of the customers of the telecommunications operator and in which notifications to others than affected parties could jeopardise the information security or data protection of users. In extensive critical situations, it may be justifiable to use even mass media as the information channel.

10.4 Content of notifications

The following information should be provided both in notifications sent directly to individual users by e-mail or other direct channel and in more general communication through websites and similar:

- name of service provider
- contact details through which more information can be obtained (for example, contact information for customer service)
- summary of the information security incident
- description of the likely consequences to users
- measures that the telecommunications operator has already taken because of the incident, and

- measures recommended by the telecommunications operator through which possible adverse effects can be mitigated, and their potential costs.

In practice, the *name of the service provider* is already indicated on the website, if the notification is made through the website of the telecommunications operator. *Measures that the telecommunications operator has already taken because of the incident* does not, as a matter of course, mean an overly detailed description of the technical repairs performed. The description could be, for example, a general statement that the vulnerable software has been patched or the number from which modems were hijacked has now been closed.

10.5 Recommendation on information on attempted scams and frauds

The Finnish Transport and Communications Agency recommends telecommunications operators to provide information to their users about the most typical scam and fraud attempts related to the use of communications services and the proper way of reacting. Such incidents include:

- requests sent by SMS from unknown numbers to call other, typically premium rate numbers;
- call-me-back ghost calls from premium rate or foreign numbers; and
- active phishing campaigns by SMS or e-mail.

11 Threshold of notifying on functionality disturbances

The obligations laid down in this section of the Regulation apply to all disturbances affecting the functionality of communications networks and services irrespective of the reason of the disturbance. In other words, a functionality incident may be caused by, for example, a Denial-of-Service attack, in which case the event falls into the scope of this section.

The telecommunications operator's threshold of notifying its customers of disturbances affecting the functionality of communications services is first and foremost a question of the quality of the service, and the telecommunications operator's standards may vary according to customer and contract. The Regulation defines the situation in which the telecommunications operator must **at the latest** inform its customers irrespective of their contract, but the purpose here, as a matter of course, is not to prevent quicker or more precise provision of information on less significant disturbances or the use of different information channels either to all customers or according to specific service level agreements.

It should also be noted that even if the limit of notifying users is defined in detail, it is always advisable to use case-by-case discretion in user notifications, including a case-by-case assessment of the significance of the disturbance. For example, customers should be informed about a functionality incident lasting less than 60 minutes but affecting, say, 50,000 users (or a considerable geographical area), if solely for customer service reasons. According to telecommunications operators, even short-term faults or disturbances are always notified if they affect a significant number of users. Section 274 of the Act on Electronic Communications Services¹ does not distinguish between them, either. Therefore, the Finnish Transport and Communications Agency has not yet found it necessary to interfere in the existing practices in its regulations. The Agency monitors the disturbance notifications of telecommunications operators, and if the user notification threshold laid down in the Regulation proves to be impractical, the established threshold will be re-assessed.

The purpose of subsection 1 is to address disturbances that are clearly visible to users in terms of their duration and affect simultaneously a number of users (250). The duration of a disturbance to be notified to users is set to 60 minutes to give telecommunications operators some time to start repairs and begin informing their users, but, as notifications of very short interruptions are not required, users do not get a distractive information overload on all disruptions experienced by the

telecommunications operator, which could also make it more difficult to get necessary information on relevant disruptions. On the other hand, simultaneous, public notifications to users are appropriate, because this way users learn when the telecommunications operator detects a disturbance and starts repairs.

The particular purpose of the subsection 2 on the notification threshold of long-term disturbances is to take into account fundamental services, such as public telephone, SMS and internet access services, which have significant importance for the basic communications needs of users due to their nature and daily use. The reason why television and radio services (such as DVB-T network service or IPTV) are not listed along with other fundamental services in this subsection is that in practice, failures of these services almost always entail exceeding the notification threshold of subsection 1.

In such cases, due to the nature of the network or service, it may not be easy to assess the number of users; for example, in mobile networks, it is difficult to estimate the number of users in the coverage area of one failed base station. On the other hand, when a fixed network element fails, the accurate number of subscriptions behind the failed network element is known. Because of ambiguous cases, it is important that the network management personnel know that they have to assess consistently every time how many users are affected and whether the notification threshold is exceeded.

In practice, the telecommunications operator must start informing its users of a functionality incident of a communications network or service at the latest when it finds that the impact of the incident has lasted more than 60 minutes and at least 250 users are affected. However, it is advisable to start informing users immediately, if the telecommunications operator estimates that the incident is likely to last more than 60 minutes.

If a disturbance prevents the use of public telephone service, an SMS service or an internet access service and it takes a continuous period of more than one week to eliminate its impact completely, the telecommunications operator must start informing users, even if the number of affected users is less than 250.

More precise provisions on the manner of informing are laid down in sections 12 (see section 12 below) and 13 (see section 13) of this Regulation. The content of user notifications has been defined in section 14 of the Regulation (see section 14).

The notification threshold will be applied when a functionality disturbance considerably affects the quality of service as experienced by users or prevents the use of the service. Therefore, if an interruption or reduction in the quality of the service is short (under the Regulation, less than 60 minutes) and does not significantly affect or prevent the use of the service, it is at the telecommunications operator's discretion to decide whether users should be informed.

For example, if calls made through a mobile network are repeatedly interrupted and/or only a fraction of calls go through, it can be considered that the disturbance affects the use of the service. If, on the other hand, a cracking noise is heard during calls, but it does not prevent speaking, and/or the share of unsuccessful calls is small, user notifications provided for in this Regulation are not essential.

In mobile networks, the threshold of 250 users may, as a rule, be considered to mean the continuous geographical coverage area of three base stations, unless the telecommunications operator has a more precise estimate of the number of users within the coverage area of its base stations, or if the telecommunications operator is not aware that the coverage area of parallel cells covers the coverage area of the failed base station, in which case the impact apparent to users is minimal or almost unnoticeable. In estimating the number of users affected by the disturbance (for

corporate subscriptions, etc.), it is possible to apply the principles laid down in section 16.2 of these explanatory notes.

12 Notifying on functionality disturbances online and by phone

Disturbance notifications should be primarily notified on the internet or by telephone. Simultaneous, alternative notification channels are necessary, because they may replace each other if only one of the channels is available to users or in normal operation. It is also possible that both the primary internet access service and the primary telephone access of the user are simultaneously disabled. However, it is likely that there is at least some kind of connection available for the user to access the internet or make a call. When information is publicly available on the telecommunications operator's website, other users or media representatives may also be informed of disturbances and can help in spreading the information. If it is not possible to use either phone or the internet for providing information, the telecommunications operator may still use other, alternative information channels (radio, e-mail, letters, etc.), the use of which in specific situations is not governed by this Regulation.

In addition to communication by telephone or via the internet provided for in the Regulation, the telecommunications operator may, as a matter of course, use any other means of communication available to it according to the communication needs arising from the functionality incident. Such means of communication may include RSS feeds that users may subscribe, SMS notifications, e-mail notifications or, in cases of severe disturbances, press releases.

Communication on the internet should be made both in text format and, at least for certain communications networks and services, as a cartographic presentation. Notifications in text format are a quick and easy way to provide a description of the disturbance. Text format notifications also increase the accessibility of website notifications.

The obligation in section 12 to keep text format notifications available to users on the telecommunications operator's website for at least one month is a justified requirement, since telecommunications operators have very variable practices on how long notifications are kept, and the purpose of the Regulation is to promote the uniformity of communication practices. Users may also browse past disturbance notifications to verify in retrospect whether their recently identified connection problems were due to the users' terminals or the telecommunications operator's network.

From the perspective of users, the form of presenting the information about disturbances is of great importance. A visual map presentation published on the internet is a quick way of identifying any disturbances affecting users' communications services based on their location, if it is possible to present the affected area as a map. For this reason, whenever appropriate, the disruptions of at least the basic communications services, i.e. public telephone services, SMS services and internet access services as well as terrestrial mass communications network services or DVB-C network services, should always be communicated by means of a map. On the other hand, a map presentation is not required in situations where the disturbance affects expressly the performance of prepaid subscriptions, but there are no other problems in the telephone traffic. Such disturbances should be communicated through a text format notification on the internet and by telephone as a notification available to users (as specified in the Regulation), while also considering whether the notification should be complemented by a map presentation.

The Regulation requires to always notify disturbances to users without delay. As the notification threshold (section 11(1) in particular) requires that users should be notified at least of any disturbances that last for a continuous period of more than 60 minutes and affect the minimum of 250 users, the telecommunications operator

must, in practice, start arranging its information activities no later than when it discovers that it will take more than 60 minutes to eliminate the impact of the disturbance in order to communicate the identified disturbance to users as quickly as possible. Information on the disturbance should be available to users no later than one hour after the fault occurred.

It is also justified that if the user impact of the disturbance changes substantially, the user notifications should be updated accordingly. Examples of such situations:

- A disruption in mobile network that first affected telephony started affecting data traffic as well.
- A mass communications network failure first prevented all TV broadcasts, but as the repairs proceeded, picture and sound were restored, even if there were still some problems in subtitling services.

12.1 Text format notifications on the internet

Under section 12(1) of the Regulation, the telecommunications operator must immediately publish online a text format notification of the disturbances affecting the functioning of its communications network or service that last for a continuous period of more than 60 minutes and affect the minimum of 250 users.

If there is a substantial change in the user impact of the disturbance, the text format notification must be updated without delay.

Under section 12(5), the text format disturbance notifications must be available on the website of the telecommunications operator for at least one (1) month after the impact of the disturbance has been eliminated.

12.2 Cartographic presentation on the internet

As a rule, the telecommunications operator must publish on its website a cartographic presentation of any disruptions of its communications network or services, if they last for a continuous period of more than 60 minutes, affect the minimum of 250 users and affect any of the following:

- public telephone service;
- SMS service;
- internet access service;
- network service in a terrestrial mass communications network; or
- DVB-C network service.

In addition, when providing a cartographic presentation, it should be evaluated whether such a presentation is relevant and easy to understand, considering the number of users, nature and significance of the communications network or service. In other words, it is not advisable to present a functionality incident as a map if it does not affect a significant number of the users of the service and if a map does not create apparent added value to communication. Examples of situations that do not require the use of a map:

- A disturbance affects the performance of prepaid subscriptions, but there are no problems in other telephone services – The disturbance should be communicated through a text format notification on the internet and by telephone as a notification available to users as specified in the Regulation, while also considering whether the notification should be complemented by a map presentation.
- If the telecommunications operator does not have a separate cartographic presentation of SMS service disturbances and there is a disturbance in the SMS centre that affects all users of the SMS service – The disturbance should be communicated through a text format notification on the internet and by telephone as a notification available to users as specified in the Regulation, while also considering whether the notification should be complemented by a map presentation (by communicating this information in the additional data fields of a mobile network map presentation).

- If there is a disturbance in the network service of a terrestrial digital mass communications network (such as DVB-T or DVB-T2 network service) preventing the broadcasting of the programme guide (EPG) information – The disturbance should be communicated through a text format notification on the internet and by telephone as a notification available to users as specified in the Regulation, while also considering whether the notification should be complemented by a map presentation (by communicating this information in the additional data fields of a mass communications network map presentation).

A cartographic presentation should illustrate the geographical area affected in a manner suitable to the selected map format.

When fault information is presented on a map, careful consideration should be used to take into account such matters as the safety of buildings and persons. For example, particular attention should be paid to the level of detail in zooming or the form in which the affected area is presented. In cases of fixed network faults, while it is not appropriate to specify the locations of the cables of the telecommunications operator on the map (in a linear or vector format), the impact affecting the end users should, as a rule, be presented as surface images. The colour and mode of a horizontal map representing the affected area should also take into account potential end users with special needs (such as irregular colour vision) and be as accessible as possible.

If there is a substantial change in the user impact of the functionality incident, the cartographic presentation must be updated without delay.

12.3 Availability of functionality incident information by phone

If a disruption affects a minimum of 250 users and lasts for a continuous period of more than 60 minutes, users must be provided with the possibility to get information by phone at least during the business hours of the telecommunications operator's helpline.

In practice, the helpline of the telecommunications operator must be able to answer customer enquiries about the disturbances specified in the Regulation during its standard office hours. In their opinions concerning previous regulations on the subject, consumer protection authorities commented that based on the Consumer Protection Act alone, it is justifiable to require that a helpline should always be able to answer consumer enquiries about disruptions. The provisions or recommendations of this Regulation do not mitigate the obligations laid down in the Consumer Protection Act.

The requirement of the Regulation can also be met by means of a recorded outgoing message about the disturbance in an answering machine, a voice message played when queuing to the helpline, or other similar recording. In addition, outside the business hours of the telecommunications operator's helpline, it should be considered carefully whether it is appropriate to provide information about disturbances as an outgoing answering machine message. If extensive or long-term disturbances occur, it may be justified for customer service reasons to use answering machine messages.

If there is a substantial change in the user impact of the disturbance, the information or notification available by phone must be updated without delay.

12.4 Recommendations concerning internet notifications

It is recommended that any (text or map format) disturbance notifications (section 12) published on the internet should be placed on the telecommunications operator's website so that users can easily locate them. This can be made, for example, by publishing a link on the front page of the telecommunications

operator's website, but it should be possible to find disturbance notifications at least by using the search function of the website, if there is one available.

The Finnish Transport and Communications Agency recommends that whenever the telecommunications operator updates its previously released text format or cartographic notification, it should be indicated on the notification when the first notification about the disturbance was published and when the notification was last updated.

If the map to be used in notifications is drawn by using a map application, the recommended plane coordinate system is ETRS-TM35FIN. In addition, it is recommended to rate disturbances according to their severity and use different colours to indicate the likelihood of the service being unavailable:

- Green: normal availability of the communications network or service
- Yellow: availability of the communications network or service is disturbed
- Red: the communications network or service is unavailable
- Purple: scheduled maintenance or repair of the communications network or service.

In addition to the recommendation to indicate the severity of the impact on the use of the service by means of colours on the cartographic presentation, it is also advisable to take special user groups into account in the provision of information. In addition to colours, the affected area should be emphasised by means of lines etc. drawn on the horizontal map to ensure that people with irregular colour vision can access all functionalities available through cartographic presentations.

13 Notifying on functionality disturbances through direct contact to customers

Long-term disturbances of public telephone service, SMS service or internet access service as specified in the Regulation tend to be very local and affect a clearly defined set of users. It is in the interest of users that they do not have to find out themselves why a communications link is not working and possibly start looking for other reasons for the unavailability of the communications service by, for example, checking their own installations. Instead, the telecommunications operator should inform users proactively about network or service problems.

The purpose of section 13 is to take into account essential basic communications services that play a part in the daily lives of users. If other communications services are disturbed, the Regulation does not require contacting customers directly, since the unavailability of these services does not make the daily lives of users significantly more difficult. The purpose of section 13 is not to increase the volume of information received by customers, but to ensure the availability of information to affected customers in exceptional problems of essential services and, on the other hand, keep down the number of customers not satisfied with the lack of information calling the telecommunications operator's helpline.

13.1 Practical implementation of direct customer notifications

When the disturbance of a public telephone service, SMS service or internet access service prevents the use of the service and lasts for a continuous period of at least one week, the telecommunications operator must, no later than one week since the beginning of the disturbance, inform the affected users by means of a direct customer contact, if the users have not yet been informed of the disturbance. For example, the local or sporadic slow-down of a mobile data connection (internet access service) does not fall into the scope of direct customer contacts.

During consultation rounds of previous regulations on the subject, consumer protection authorities stated that a telecommunications operator, as a party to a customer relationship, has a more extensive obligation to notify its customers about any service faults it is aware of. The consumer protection authorities also

commented that failures that last for more than a week always require careful case-specific consideration on whether direct customer contacts should be used, and it is not enough, at least not as a rule, if the information has only been published previously on the website of the telecommunications operator. It is important to note that the provisions or recommendations of this Regulation do not mitigate the obligations laid down in the Consumer Protection Act. For corporate customers, this Regulation determines the minimum obligations for user information.

Direct contact to customers means, for example, SMS messages, e-mail, phone calls or letters. Any message that can reasonably be expected to reach the customer constitutes an adequate direct customer notification, and the telecommunications operator does not have to verify that customers have received its notifications or to use several alternative means of contact to ensure that the information is received. What is essential here is that customers get relevant information about problems affecting their basic communications services.

If direct customer contact is made by e-mail, attention should be paid to the maintenance of up-to-date contact information.

In mobile networks, telecommunications operators do not necessarily know exactly which users are affected by the disturbance, because users can move in the network area from one base station to another. In this case, the address details of the users' fixed place of residence or business can be used to define the right set of users for the purpose of providing information.

13.2 Recommendations on direct customer notifications

If the information provided in the first customer contact changes substantially, it is recommended that the telecommunications operator contacts its customers again and provides updated information on the disturbance. Repeated contacts may be necessary if, for example, repairs take longer than estimated. If the impact of the disturbance lasts for more than two (2) weeks, it is recommended that the telecommunications operator contacts its customers again and, after that, once a week on a regular basis, until the impact of the disturbance has been eliminated.

14 Content of functionality notifications

The purpose of laying down provisions on the content of disturbance notifications is to enable users to acquire essential information that is consistent in terms of its key contents, irrespective of the telecommunications operator, network or service. When the content of disturbance notifications becomes established, it becomes easier for users to interpret notifications. Over time, they learn to expect what kind of information should be available when a disturbance is detected. Besides the actual content, it is also important to assure the users that the telecommunications operator is aware of the problem affecting the communications service and is taking steps to eliminate the disturbance as soon as possible.

14.1 Information to be communicated on all notifications

In preparing notifications, it should be ensured that the information that is the most relevant to the end user is expressed clearly and understandably. A disturbance notification should provide the users at least the following information:

- which communications service is affected by the disturbance:
 - The communications network and/or service affected and also the additional services affected, if relevant. For example, if a notification concerns mobile networks, it should be indicated whether the disturbance affects voice and/or data services or text messaging, or additional services such as call forwarding or voice mail.
- how the functionality of the communications service is affected by the disturbance:

Detailed information on how the disturbance affects the use of the above network or service. For example, whether all calls are disabled or whether some calls get through, or whether the disturbance only affects certain services, such as prepaid subscriptions, calls abroad or exchange services.

- what the geographic scope of the disturbance is:
Indication of the geographic area affected. The area can be indicated as a region, city, town or district. For certain services, a cartographic presentation is appropriate.
- when the disturbance was detected:
The time when the disturbance was found and the telecommunications operator started measures to eliminate it. Often the time when the disturbance first occurred is the same as the time when it was detected. If the two times differ and the telecommunications operator knows the onset time, it should also be indicated.
- when the impact of the disturbance is expected to be eliminated:
An estimate of when the telecommunications operator expects the disturbance to have been removed. If this information changes substantially or the disturbance has not been removed in accordance with a previous estimate, the information must be updated.

Where possible, the notification may also include other information than that required by the Regulation, complementing the basic information on the disturbance or providing instructions to users concerning the consequences of a functionality incident. Such additional information may include alternative uses of the service or recovery measures to be performed by the user (such as restarting the terminal or updating the software once the disturbance is removed). The reason of the disturbance may also be communicated as additional information (see recommendation in section 14.3 below).

14.2 Additional requirements for mass communications networks

In notifications concerning television or radio channels or their ancillary and supplementary services, in addition to the above content, it must also be stated which mass communication network (such as multiplex A of the terrestrial TV network) and which television or radio channels are affected by the disturbance.

In addition, the telecommunications operator maintaining mass communications networks must also provide notifications if the disturbance affects the EPG information of the service, i.e. programme guides, subtitling, synchronisation of image and sound, or accessibility services.

14.3 Recommendation on classification of disturbance reasons in customer notifications

If the telecommunications operator's failure notifications contain not only the details required in the Regulation, but also the reason for the disturbance, it is recommended for the purpose of creating a uniform notification policy that one of the following alternative descriptions is provided as the reason:

- information security violation
- cable break
- hardware failure
- power cut
- weather conditions
- maintenance
- reason not yet known.

Notifications to the Finnish Transport and Communications Agency

This chapter explains the obligations laid down in Chapter 4 of the Regulation. The obligations referred to in this chapter specify the obligations laid down in section 275 of the Act on Electronic Communications Services¹ on the disturbance notifications to be made to the Finnish Transport and Communications Agency.

15 Notifying on information security incidents

This section lays down specific provisions on notifications to the Finnish Transport and Communications Agency on information security incidents.

It should be noted that the scope of this section is delimited by section 2 of the Regulation (see section 2.4); this section only applies to the provision of information on other than personal data breaches, while provisions on notifications concerning disturbances that affect functionality (such as Denial-of-Service attacks from the perspective of information security, if they have an effect on the functionality of services) are laid down in sections 16–20 of this Regulation. In practice, an example of an information security incident falling into the scope of this section could be an alteration of a routing table, i.e. an information security violation affecting the integrity of a communications network.

As of this Regulation, subsection 3 on Denial-of-Service attacks affecting information security allows telecommunications operators to submit notifications either by complying with the existing notifications procedures referred to in subsection 1 or by using the Finnish Transport and Communications Agency's DDoS notification interface designed for reporting Denial-of-Service attacks. The same opportunity is provided in section 17 of the Regulation for Denial-of-Service attacks affecting functionality.

Since it is not possible, at least for the time being, to identify many incidents falling into the scope of this section, it is reasonable that the practices of providing notifications to the Finnish Transport and Communications Agency are harmonised with the procedures concerning personal data breaches. Such harmonisation reduces not only the number of different procedures, but also potential problems of interpretation: the notifications of all disturbances affecting the functionality of communications services must be made in accordance with sections 16–20 of the Regulation, while the notifications of any other incidents related to information security must be made in accordance with Regulation 611/2013 of the European Commission (see Annex 1).

Article 2 of the Commission Regulation applies to notifications to the national authority, which in Finland is the Finnish Transport and Communications Agency. The phrase 'where applicable' in the Finnish Transport and Communications Agency's Regulation means that, because the provisions of the Commission Regulation that specifically concern personal data do not, as a matter of course, apply to other information security incidents, they do not need to be considered in other incidents than personal data breaches.

15.1 Notification threshold

Under section 275 of the Act on Electronic Communications Services¹, the telecommunications operator must notify the Finnish Transport and Communications Agency without undue delay of *significant* information security violations or threats to information security in the services. The preparatory material related to Act (HE 221/2013) refers to the justifications of the previous corresponding act (Act on the Protection of Privacy in Electronic Communications, 516/2004, section 21, HE 125/2003 vp) that states that in estimating the significance of a violation or its threat, attention must be paid on the protection of the rights of subscribers and users, the operability of the service and the extent of the affected geographic area.

The following lists provides examples of various types of incidents on which the notification referred to in this section of the Regulation must be made. The list is not exhaustive, and it is intended to illustrate the severity level of the notification threshold. Information security incidents referred to in this section of the Regulation that must be notified to the Finnish Transport and Communications Agency include:

- hacking of the information systems of the telecommunications operator
- information security violations of the information systems of the telecommunications operator
 - unauthorised access to configuration data
 - unauthorised access to network documentation data or data structure descriptions
 - unauthorised access to the system as a system administrator
 - unauthorised access to the system with a login and ability to make unauthorised changes to the configurations of the information systems or communications networks of the telecommunications operator
- attacks affecting the routing of the communications network traffic
- activation of malware (such as computer viruses, remote access tools or 'backdoors', Trojan horses, spyware or network traffic monitoring software) in the information systems of the telecommunications operator
- attempts to obtain information detrimental to the information security of the telecommunications operator or its customers from the personnel of the telecommunications operator ('social engineering')
- identified wiretapping or surveillance equipment or connections and software in the communications network or in the information systems or facilities of the telecommunications operator
- identified significant hacking attempts
 - systematic attempts differing from the usual network use to find out by technical means information on the following characteristics of communications networks and services:
 - physical and logical network topology
 - hardware and software versions
 - possible vulnerabilities in the systems
 - systematic hostile logon attempts to the information systems of the telecommunications operator
 - hacking attempts to a telecommunications operator's component of priority rating 1 or 2 of the regulation on resilience of telecommunications services²
- identified abnormal network traffic
 - significant traffic to unreserved network address blocks
 - significant volumes of traffic in unknown or rare protocol types
 - sudden increase in traffic to rare country codes
- significant information security defects identified by the telecommunications operator in its information systems or software not published as a news release by the NCSC-FI or by the system supplier
 - information security holes through which it is possible to gain unauthorised system administrator access to the system
 - information security holes through which it is possible to alter the configuration of the information systems or communications network of the telecommunications operator
- large-scale spread or activation of malware in a communications network, causing significant threat to the services or customers of a telecommunications operator
- specific, acute threats arising from the international nature of communications services
 - identified information security threat affecting a communications service aimed at Finnish users that arises from the implementation of the service partially or completely outside Finland and that cannot be prevented by the telecommunications operator's own actions.

15.2 Recommendation on the notification threshold

The Finnish Transport and Communications Agency recommends that telecommunications operators notify the NCSC-FI at the Agency also of violations of information security that are not significant and the threats of such violations. The information contributes to the creation of a detailed situational picture of the national information security, helping the NCSC-FI develop their services to better meet the needs of different parties, including telecommunications operators.

15.3 Notification procedure

A detected information security incident must be reported to the Finnish Transport and Communications Agency within 24 hours. The notification must be made on the form provided in Annex 2 to the Regulation. The form must be submitted to the Finnish Transport and Communications Agency by e-mail to cert@traficom.fi. The notification may also be made as free-form text as long as the information specified in the form is included.

If not all information to be provided in the notification is yet available (see section 15.4 below) and the situation must be examined in more detail, a so-called preliminary notification must be made within 24 hours, which shall then be complemented as soon as possible, but no later than three (3) days after the preliminary notification.

If, in spite of its investigations, the telecommunications operator is not able to provide all information within three days of the preliminary notification, a report of the information that has become available before this deadline must be provided, along with reasons why the rest of the information will be submitted after the deadline.

The information already notified must be updated as necessary and as soon as possible when the information changes.

If the information security incident is caused by a Denial-of-Service attack, a telecommunications operator may also submit the related notification using the DDoS notification interface provided by the Finnish Transport and Communications Agency. In such case, the telecommunications operator does not need to comply with the other notification procedures laid down in the Regulation. Further information about the interface and how to connect to it is available at cert@traficom.fi.

15.4 Information to be notified

The following information must be provided to the Finnish Transport and Communications Agency in the notification:

- details of the telecommunications operator, i.e.:
 - name of the telecommunications operator
 - name, e-mail address and telephone number of the person who provides additional information on the incident
- when the incident occurred and when it was detected (date and, where possible, time)
- the type of the incident, i.e. whether the event concerns any of the following:
 - Denial-of-Service attack (for example, to the systems of the telecommunications operator)
 - spamming (for example, a significant increase in the volume of traffic)
 - botnet
 - malware (for example, malware in the systems of the telecommunications operator)
 - data breach or unauthorised access (for example, hacking of a database)
 - traffic rerouting or spoofing (for example, fraud cases or unauthorised tampering with traffic control)

- customer data management error (for example, unintentional leakage of customer information), or
- another event, in which case the incident must be described in words.
- a description of the affected system and the measures taken, i.e.:
 - a description of the system affected by the incident
 - observations on the progress of the events
 - details of the cause of the incident
 - measures already taken or that will be taken to eliminate or mitigate the impact, and
 - description of the involvement of any other service providers.
- details of potential impact on users, i.e.:
 - description of the potential impact
 - estimate of the number of users affected
 - indication of whether users have been informed and if yes, a description of the content of the notification, the communication channels used and, where possible, the number of users who received the notification
- other notifications to authorities, if any, i.e.:
 - indication of whether the incident has been reported to the police and if yes, report number and the name of the police officer attending to the case
 - indication of whether the authorities of other EU countries have been notified about the incident and if yes, which authorities.

All the above information to be reported is included in the form in Annex 2 to the Regulation.

16 Severity rating of functionality disturbances

The obligations laid down in this section of the Regulation apply to all disturbances affecting the functionality of communications networks and services irrespective of the reason of the disturbance. In other words, a functionality incident may be caused by, for example, a Denial-of-Service attack, in which case the event falls into the scope of this section.

The purpose of the severity rating of functionality incidents is to proportion the obligations of telecommunications operators to notify the Finnish Transport and Communications Agency with the scale of the disturbance: the more the disturbance affects the communications services, the quicker and more precise the required information. This helps in collecting information quickly and giving priority to disturbances that affect a large number of users. The purpose is to use information on the type of service and the number of users to assign a more severe rating to disturbances that, from the perspective of users, affect a more essential service. Another rating basis is the size of geographical area, which helps in taking into account the specific nature of sparsely populated areas and bringing the users in these areas on an equal footing with users in densely populated areas.

16.1 Analysis of a severity-rated functionality incident

Table 1 in this section typically applies to targeted communications services, while Table 2 typically applies to mass communications services.

In case of different communications services, severity-rated disturbances are not entirely similar. The phrase "*the disturbance prevents*" in Table 1 means a general and significant reduction in the usability of the targeted communications service. A slight reduction of the usability of the targeted communications service (for example, 10 per cent of call attempts fail) does not, in this context, mean that the communications service is prevented. Table 2 lists separately the disturbance types of mass communications services, i.e. television and radio services, and their ratings based on the number of users affected.

A functionality disturbance means individual incidents that influence the functioning of communications networks and services. A single disturbance being rated according to its severity is typically caused by events attributable to a single root

cause. Moreover, a disturbance means unforeseeable events in general. This means that a severity-rated disturbance that must be notified to the Agency does not include scheduled maintenance by the telecommunications operator unless the maintenance does not succeed as planned and causes an unforeseeable functionality incident. Providing information about maintenance to end users is provided in section 120 of the Act on Electronic Communications Services¹ (see also Annex 1 to these explanatory notes).

The definitions of different types of communications service functionality incidents are explained below with examples:

- Public telephone service

Making or receiving calls or continuing an established call is not possible because of the disturbance.

Since various implementation techniques of public telephone service (such as fixed telephone network, mobile networks or VoIP techniques) are considered to be separate services for the purposes of this rating, their disturbances are separate and independent from each other. Disturbances of mobile networks (2G, 3G, 4G and 5G) are considered to be disturbances of public telephone services, if a public telephone service is available in the network.

N.B. Disturbances of SMS services are discussed separately in this Regulation. Similarly, disturbances preventing the functioning of other mobile networks and additional terminal services (such as MMS services or other additional services using the mobile network) are not disturbances of public telephone services, but disturbances of other communications services.

- SMS service

Sending or receiving SMS is not possible or is significantly delayed because of the disturbance.

In the explanatory notes to the regulation on the quality of telecommunications services³, the Finnish Transport and Communications Agency issued a number of recommendations concerning the quality and performance measurement of SMS services. For example, the Agency recommended that the telecommunications operator should, with respect to the components of the telecommunications network and service it manages, ensure that the delivery of SMS messages from subscriber A to subscriber B takes no more than 10 seconds in normal conditions. The recommended time may be useful in estimating whether there has been a significant delay in sending or receiving SMS messages due to the disturbance.

- Internet access service

Because of the disturbance, users are not able to establish internet access to the services on the internet that are regularly made available by the service provider. A significant reduction in the usability of a customer's internet access (such as a considerable reduction in the data transfer speed) is also a severity rated disturbance within the meaning of the Regulation.

As a rule, since various implementation techniques of an internet access service (such as xDSL, cable modem, mobile network or other wireless solutions) are considered to be separate services for the purposes of this rating, their disturbances are separate and independent from each other. In other words, if a user cannot access data services in a 4G network due to a disturbance, but 2G and 3G services are still available, the disturbance is an internet access service disturbance in 4G network. In this case, 2G and 3G data services do not replace 4G data services.

In accordance with the definition of internet access service, DNS and DHCP services are also considered to belong to internet access services. Therefore, if users' physical communication interface to the internet is working, but the resolver name service is unavailable, the disturbance is an internet access service disturbance within the meaning of the Regulation, since the users' internet access is not working as it should (for example, it is not possible to translate humanly meaningful addresses to IP addresses).

N.B. If there is a problem with a service available on the internet, such as banking service, gaming service or other information society service, this is not considered to be an internet access service disturbance.

- E-mail service
Because of the disturbance, users are not able to open, send or receive e-mails due to disruptions in an e-mail server, the data link of a service provider, or similar.
- Other communications service
Functionality incidents of multimedia messaging (MMS), instant messaging or internet-only VoIP service belong to this category of disturbances.

The rating of a disturbance of other communications service may be B, C or D, but never A.

- Mass communications service: TV
Contrary to normal, the multiplex provided by a broadcaster to the network operator for transmission purposes or its service information are not available to users in an unaltered form.

If users are unable to watch the broadcast because of a missing TV picture or a Finnish or Swedish sound component, the disturbance may, according to the Regulation, be rated A, B, C or D, depending on the extent of the impact of the disturbance (in terms of the number of users or the geographical area). If the network service provider has access to the profile data of the programmes to be transferred, enabling the network service provider to ensure whether the programmes to be broadcast occupy the correct physical channel, a disturbance where the content of a TV channel is not correct is comparable to a missing TV picture.

If, on the other hand, teletext, Finnish or Swedish subtitling, voice subtitling or subtitling for people with a hearing disability is not working, the disturbance may be rated B, C or D, but not A. Disruptions of EPG or synchronisation of sound and image may be rated C or D.

In the regulation on the quality of telecommunications services³, the Finnish Transport and Communications Agency notes that unavailability refers to the period of time during which the transmission power of a DVB-T network service transmitter has dropped more than 3 dB. This decibel limit may be useful in estimating whether a disturbance of the provision of a DVB-T network service is a significant one.

- Mass communications service: Radio
Contrary to normal, users are not able to receive the radio signal provided by a broadcaster to the network operator with sufficient sound quality, or it is not possible to receive emergency alerts through the RDS system.

In a terrestrial mass communications network, unavailability refers to the period of time during which the transmission power of an analogue radio transmitter has dropped more than 6 dB.

A sufficient sound quality means that the AF signal-to-noise ratio must be at least 40 dB (ITU-R BS.704, 1990). The transmission of emergency alerts is monitored on the basis of the penetration of the PTY31 code.

16.2 Evaluation of the number of users affected by the disturbance

For all severity ratings, a general criterion for the rating of the communications network or service component is the number of users affected. Under the Act on Electronic Communications Services¹, a user means a natural person who as a subscriber or otherwise uses a communications service or an added value service. In counting the number of users, all communications service users are taken into account, be they consumer or business customers of the telecommunications operator. A consumer subscription means a communications network subscription primarily intended for consumer customers. A subscription is a consumer subscription also when the telecommunications operator has designed the type of subscription primarily for consumer customers, but the subscription in question is held by a small company or association. Business subscriptions mean subscriptions that are primarily not intended for consumer customers. For the purposes of the Regulation, the internet access service subscriptions sold by the network operator to another telecommunications operator are considered to be consumer subscriptions from the perspective of the network operator.

When counting the number of users, the number should, in principle, always reflect the actual number of users affected by the functionality disturbance in question. Depending on the communications service, partly on the implementation of the service, and also on the nature of the disturbance, counting the number of users may be challenging, and often the number is based on estimates. In some cases, the number of users affected by a disturbance may be estimated on the basis of the configuration of the failed device. In principle, this applies to services such as fixed network public telephone service and an internet access service. However, with these service implementations it should be noted that a subscription may be a consumer subscription or a business subscription, and that the subscription may actually be used by multiple natural persons. Below is a list of practices developed over the years for estimating the number of users in different situations:

- In public telephone services, SMS services and internet access services, one consumer subscription may be considered to correspond to one user referred to in the severity rating criteria.
- In e-mail services, one e-mail account may be considered to correspond to one user referred to in the severity rating criteria.
- In business subscriptions, if the service is user-specific (such as mobile phone subscriptions held by a company), one subscription may be considered to correspond to one user.
- In shared services (such as a company's telephone exchange or internet connection), calculating the actual number of users is extremely difficult. For this reason, the following two rules may be applied:
 1. For a traditional exchange interface (ISDN/R2 signalling), the number of users to be used as a severity rating criterion is the same as the number of trunks (voice channels). This principle may also be applied to IP-based exchanges when the exchange is connected to the telecommunications operator's communications network through traditional exchange interface signalling (ISDN/R2).
 2. In entirely IP-based exchange interfaces and internet connections, the applicable severity rating criterion may be 30 users, if the f. This applies to both public telephone services and the internet access services.
- In broadband connections sold to housing companies, if the telecommunications operator knows the number of apartments within the housing company, one

apartment may be considered to correspond to one user. If such information is not available, the criterion may be 30 users.

- In disturbances affecting the functionality of interconnecting telecommunications operators' networks and services (e.g. when calling from one operator's network to another network), the number of users may be estimated based on the usual volume of interconnection traffic.
- In disturbances affecting roaming services, the number of users may be estimated based on the usual volume of roaming traffic.
- In wireless communications networks (for example, WLAN base stations), the evaluation criterion may be the average number of users.
- In mass communications networks, the number of users may be evaluated based on potential recipients, i.e. the population coverage. The severity rating based on the number of users in terrestrial network is, therefore, mainly based on the number of permanent residents in the coverage area of the radio network. If the potential number of users can reliably, objectively and relatively permanently be calculated on another basis, it is possible to determine the severity rating of disturbances on the basis of actual number of users. This may be true when only access cardholders are able to view or listen to programmes transmitted via the terrestrial network.
- In fixed network mass communications services, the number of users may also be evaluated by calculating the number of subscriptions, like described above in connection with estimating the number of users for public telephone services, for example.

16.3 Number of base stations as a severity rating criterion

With respect to all severity ratings, the severity of the disturbance is determined not only on the basis of the number of users, but also the number of mobile network base stations, which is calculated separately for each network technology. For example, the limit for C rating (≤ 10 base stations) means at least ten 2G base stations, ten 3G base stations, ten 4G base stations or ten 5G base stations.

In calculating the number of affected base stations, it should be taken into account that when the severity of the disturbance is determined, the base stations must be within a continuous geographical area, i.e. the disturbance means the disruption of the actual network or service coverage.

16.4 Other guidelines

A general principle of prudence in the evaluation of the severity of a disturbance is that in borderline cases, the disturbance must be assigned to the more severe class. If several criteria (number of users, geographical coverage, number of base stations) are available for the evaluation of the severity of a disturbance, the most severe rating which the different criteria point to should be selected. In other words, if based on the available information, one criterion suggests that the disturbance belongs to rating C, but another criterion suggests rating B, the incident is treated as a B-rated disturbance. For example, during storms, the base stations affected by the disturbance may not form such a continuous geographical area that would meet the criterion for the number of mobile base stations (at least 100) for rating B. However, based on the scale of the disturbance, it may be obvious that it affects the public telephone services of at least 10,000 users (taking the estimation practices described in section 16.2 into account), which means that the disturbance belongs to rating B. Storms usually require a specific reporting procedure (see Annex 5 to the explanatory notes), which means that in practice, the final severity rating by telecommunications operators involved in the specific reporting can only be determined after the incident.

Critical infrastructure providers are not considered separately in the severity rating. The Regulation rates services solely on the basis of the communications service type, number of users or base stations, or the geographical area affected. Under the Act on Electronic Communications Services¹, it is not possible to rate users in terms of priority, which means that the Regulation cannot rate the importance of service functionality for certain users in comparison to other users.

17 Obligation to notify the Finnish Transport and Communications Agency of functionality disturbances

The obligations laid down in this section of the Regulation apply to all disturbances affecting the functionality of communications networks and services irrespective of the reason of the disturbance. In other words, a functionality incident may be caused by, for example, a Denial-of-Service attack, in which case the event falls into the scope of this section. As of this Regulation, subsection 2 on Denial-of-Service attacks allows telecommunications operators to submit notifications either by complying with the existing notifications procedures referred to in subsection 1 or by using the Finnish Transport and Communications Agency's DDoS notification interface designed for reporting Denial-of-Service attacks.

Under the notification obligation, telecommunications operators should inform the Finnish Transport and Communications Agency of issues such as the communications networks' and services' sensitivity to disturbances, failure patterns, reasons for disturbances, ability to recover and reliability. In addition, based on the collected information, the Agency is able to have almost real-time data of an event, particularly on disturbances of severity rating A or B.

The purpose of the notification obligations is to help telecommunications operators build effective and scalable systems, procedures and practices that make providing disturbance notifications a routine activity.

17.1 Notification responsibility

The communications service provider (service operator) is responsible for ensuring that if disturbances of communications networks and services occur, notifications that comply with the obligations of this Regulation are made to the Finnish Transport and Communications Agency. With respect to mass communication services, the obligation to notify lies primarily with the network operator.

A service operator responsible for notifications must ensure, when concluding contracts (with network operators, for example), that the service operator is able to meet its obligations. For example, when leasing black fibre, the service operator is responsible for taking into consideration the scale of the communications services it provides and the resulting obligations.

In addition, the service operator must ensure that the communications services are monitored and disturbances detected either by the service operator itself or through arranging the monitoring with the network operator. The network operator's duty is to ensure that it repairs the products it has leased according to the contract terms and conditions and informs the service operator about the schedule and progress of the repairs. Subcontracting is described in more detail in Annex 4 to these explanatory notes.

17.2 Submission of notifications and contact information

Disturbances belonging to severity rating A, B or C and lasting for a continuous period of at least 30 minutes must be notified to the Finnish Transport and Communications Agency by a preliminary notification (section 18), follow-up notifications (section 19) and final report (section 20).

Preliminary and follow-up notifications must be submitted either through the Finnish Transport and Communications Agency's online system

(Häiriönhallintajärjestelmä/Disturbance management system), by e-mail and/or telephone.

Final reports must be submitted either through the online system or using the form in Annex 2 to the Regulation.

The notifications must be submitted to the Finnish Transport and Communications Agency depending on the severity of the disturbance (see section-specific obligations concerning different notifications).

Disturbance management system: <https://eservices.traficom.fi/HHJ/>

E-mail for preliminary notifications, follow-up notifications and final reports: viat@traficom.fi

Telephone: +358 295 390 800

If the disturbance belonging to severity rating A, B or C is caused by a Denial-of-Service attack, a telecommunications operator may also submit the related notification using the DDoS notification interface provided by the Finnish Transport and Communications Agency. In such case, the telecommunications operator does not need to comply with the other notification procedures laid down in the Regulation. Further information about the interface and how to connect to it is available at cert@traficom.fi.

18 Preliminary notification of functionality disturbances

The importance of the availability of communications networks and services continues to grow, and one of the Finnish Transport and Communications Agency's tasks is to create a situational picture of the status of networks and services. Here, the information on disruptions provided by the telecommunications operators plays an important role. This is the reason why the Finnish Transport and Communications Agency must be notified of significant disturbances.

Section 275 of the Act on Electronic Communications Services¹ and the complementing section 18 of this Regulation describe the content of a preliminary notification. The information to be notified includes:

- the communications network or service affected by the disturbance;
- a description of how the disturbance is affecting the communications service;
- the severity rating of the disturbance (A, B or C);
- an estimate of the geographical area affected by the disturbance;
- an estimate of the impact on emergency communications;
- estimated duration, i.e. an estimate of how long the reparations will take;
- a short description of the reasons that caused the disturbance as long as they are known to the telecommunications operator and of the failed communications network and service components; and
- the contact information of the telecommunications operator for the purpose of requesting additional information on the fault or disturbance.

The information on a preliminary notification must be provided as precisely as it is known at the time of detecting the disturbance. Most importantly, the preliminary notification must be made quickly and include all the known relevant information about the matter. Once the disturbance is investigated in more detail and the information becomes more precise, it must be provided to the Finnish Transport and Communications Agency in the follow-up phase in accordance with section 19.

The preliminary notification of an A-rated disturbance must be made through the Finnish Transport and Communications Agency's online system (Häiriönhallintajärjestelmä/Disturbance management system) or by e-mail and also by telephone. The notification must be made within an hour of detecting the disturbance. The disturbance notification must first be sent through the Disturbance

management system, after which a backup telephone call must be made to check that the preliminary notification has been received. If the Disturbance management system or e-mail is not working properly, all information included in the notification must be submitted by phone.

The preliminary notification of a B-rated disturbance must be made through the Finnish Transport and Communications Agency's online system (Häiriönhallintajärjestelmä/Disturbance management system), by e-mail or by telephone within three (3) hours of detecting the disturbance.

The preliminary notification of a C-rated disturbance must be made through the Finnish Transport and Communications Agency's online system (Häiriönhallintajärjestelmä/Disturbance management system), by e-mail or by telephone within one (1) business day of detecting the disturbance. A separate preliminary notification is not necessary, if the impact of the disturbance has been eliminated before the one (1) business day deadline for the preliminary notification and the final report of the disturbance is submitted within one (1) business day of detecting the disturbance (and not until a week later, which is the final deadline laid down in section 20). For example, if a C-rated functionality incident of an internet access service is detected on Friday and its impact is eliminated on Saturday, the incident may be reported to the Finnish Transport and Communications Agency on Monday either by submitting directly the final report or by first submitting a notification of the disturbance and its elimination (preliminary and follow-up notifications) and then the final report no later than on Friday that week.

19 Follow-up notifications of functionality disturbances

Disturbances rated A, B or C have major impact, and one of the Finnish Transport and Communications Agency's tasks is to create a situational picture of such disturbances. Here, the information on disturbances provided by the telecommunications operators plays a major role. This is the reason why the Finnish Transport and Communications Agency must be notified of the progress made in eliminating the impact of the disturbances.

If the impact of an A-, B- or C-rated disturbance on a communications service changes significantly, the Finnish Transport and Communications Agency must be notified without delay. A significant change may refer to one of the following situations:

- the geographical coverage or the number of users affected by the disturbance decreases or increases by more than 15%
- the overall impact on the communications service changes or becomes more precise, including the following ways:
 - the disturbance of a public telephone service no longer affects all calls, but only incoming calls, or
 - the disturbance of an internet access service only concerns a certain group of subscribers.

Even if the impact of an A-, B- or C-rated disturbance of the communications service does not change significantly, the telecommunications operator must keep the Finnish Transport and Communications Agency updated on the progress of the repairs of the disturbance.

If the impact of an A-rated disturbance of the operation of the communications service has not been eliminated within three hours or the impact, or a B-rated disturbance has not been eliminated in 12 hours, the Finnish Transport and Communications Agency must be notified without delay of the reasons why the repairs have been delayed and when the repairs are estimated to be completed.

The elimination of the impact of disturbances rated A, B or C must be notified as quickly as possible.

For C-rated disturbances, separate follow-up notifications are not necessary, if the impact of the disturbance has been eliminated before the one (1) business day deadline for the preliminary notification (see section 18) and the final report of the disturbance is submitted within one (1) business day of detecting the disturbance (and not until a week later, which is the final deadline laid down in section 20). For example, if a C-rated functionality incident of an internet access service is detected on Friday and its impact is eliminated on Saturday, the incident may be reported to the Finnish Transport and Communications Agency on Monday either by submitting directly the final report or by first submitting a notification of the disturbance and its elimination (preliminary and follow-up notifications) and then the final report no later than on Friday that week.

The form of follow-up notifications is not specified as long as all the required information is included. Notifications are primarily made through the Finnish Transport and Communications Agency's online system (Häiriönhallintajärjestelmä/Disturbance management system) or by e-mail and by telephone, if necessary. However, the elimination of the impact of an A-rated disturbance must always be notified also by telephone.

20 Final reporting of functionality disturbances

The purpose of final reporting is to collect information on the events, reasons, consequences and repairs of the most common and severe communications service disturbances. This information is necessary for supporting the development and proper allocation of monitoring and technical control.

For all disturbances rated A, B or C, the final report must be submitted either through the Finnish Transport and Communications Agency's online system (Häiriönhallintajärjestelmä/Disturbance management system) or the relevant form (Annex 2 to the Regulation) within a week of detecting the disturbance.

Usually, one week is sufficient for collecting the information required for the final report. However, sometimes the reason for the disturbance or another detail cannot be determined within one week, possibly because a separate investigation by the equipment manufacturer is required.

To avoid unreasonable delays in final reporting of disturbances, the telecommunications operator must always submit its final report to the Finnish Transport and Communications Agency within a week, even if all information required for the report is not available yet. If information is not available, this must be indicated on the final report and the missing information is to be provided later.

For C-rated disturbances, the final reporting is, in principle, lighter than for A- and B-rated disturbances. For example, a description of the progress of events is only necessary for A- and B-rated disturbances.

For A-rated disturbances, the missing information must always be provided separately without a specific request once the investigation of the disturbance is complete. For B- and C-rated disturbances, the Finnish Transport and Communications Agency requests complementary information, if this is considered necessary. Further information may be submitted on the same form as the final report of the disturbance.

Chapter 5 Statistics

This chapter discusses the obligations in Chapter 5 of the Regulation, i.e. the requirements concerning the statistics of various disturbances. Under section 244(1)(12) of the Act on Electronic Communications Services¹, the Finnish Transport and Communications Agency's regulations may relate to, for example, statistics.

21 Functionality statistics

Obligations corresponding to the ones provided in this section were previously laid down in section 21 of FICORA Regulation 66/2014 M. Previously, the regulation required quarterly statistics on the functionality disturbances reported by customers and on the repair times of disturbances detected by the network management separately for each communications service, as well as annual statistics on the reasons of disturbances detected by the network management as per network or service component. The Annexes to the Regulation contained templates for compiling such statistics.

In this Regulation, the obligations to compile statistics are reduced significantly based on the experiences of their practical application. The current Regulation only requires statistics on the number of functionality disturbances detected by the network management in certain communications services.

As of this Regulation, statistics must be provided biannually and the Finnish Transport and Communications Agency collects the statistics from the telecommunications operators regularly. If a telecommunications operator acting as a network operator so requests, it can make an agreement with the telecommunications operator providing communications services in its network on including incidents occurring in the network service in the statistics. The relevant issue is that telecommunications operators must agree on the compilation and provision of statistics between themselves, and when providing statistics to the Agency, they indicate the telecommunications operators whose data on disturbances in network and communications services is included in the statistics.

The purpose of the statistical reporting obligations provided for in this section is to collect information on functionality incidents from telecommunications operators. This information serves as a basis for monitoring the technical quality of communications networks and services, developing, targeting and allocating technical control measures, and creating a more general picture of the current state of the reliability of communications networks and services.

A telecommunications operator must compile biannual statistics on the number of functionality disturbances detected by the network management in services listed in the Regulation.

Biannual means that the operator must prepare two statistics in one calendar year: the first covers the period 1 January to 30 June and the second 1 July to 31 December each year.

Functionality disturbances detected by the network management refer to such disturbances affecting the functionality of a communications service, which are detected by the network and service management of the telecommunications operator and which usually require corrective measures by the telecommunications operator. This means that instead of all alerts by the network management, only incidents causing apparent functionality disturbances for users need to be included in the statistics. In practice, D-, C-, B- and A-rated disturbances may be taken into account in the statistics.

The statistical reporting obligation concerns the disturbance notifications of the following essential communications services and interfaces, which means that the telecommunications operators' statistics must list the number of disturbances separately in each service category:

- Targeted communications services
 - Fixed network public telephone service (e.g. PSTN or VoIP)
 - Fixed network internet access service (e.g. xDSL, Ethernet, cable modem, FTTH and HomePNA)
 - Mobile services (voice, data, SMS)
 - E-mail

- Mass communications services
 - DVB-C network service (cable television)
 - Terrestrial television (DVB-T and DVB-T2 network service)
 - IPTV
 - Radio

No statistics are required for other services or access technologies. If the telecommunications operator does not provide a certain communications service in its network, disturbances affecting such services do not need be included in the statistics.

To enable, for example, automatic compilation of statistics on the basis of information collected from ticket systems, disturbances may be allocated to services on the basis of the detected service disturbance alert. For example, a cable outage in the cable television network affects both cable television and cable modem (internet access) services, but because the disturbance is usually detected first in television services, it is possible to count the disturbance only for cable television.

22 Information security statistics

Obligations corresponding to the ones provided in this section were previously laid down in section 22 of FICORA Regulation 66/2014 M. Previously, the regulation required quarterly statistics on the total number of information security violations managed by the telecommunications operator and the number of follow-up measures caused by information security violations separately for each type of measure. An Annex to the Regulation contained a template for compiling such statistics.

In this Regulation, the obligations to compile statistics are reduced based on the experiences of their practical application. The current Regulation only requires statistics on the total number of information security incidents managed by the telecommunications operator. The recommendation to compile information security statistics as per incident type has also been abandoned.

As of this Regulation, statistics must be provided biannually and the Finnish Transport and Communications Agency collects the statistics from the telecommunications operators regularly.

Statistical reporting facilitates the monitoring of the number of measures taken by telecommunications operators and overall monitoring of the state of cyber security, but also the internal surveillance of the telecommunications operator concerning the performance of its processes and the information security status of its network.

The telecommunications operator must compile biannual statistics on the total number of information security incidents managed by the telecommunications operator.

Biannual means that the operator must prepare two statistics in one calendar year: the first covers the period 1 January to 30 June and the second 1 July to 31 December each year.

Statistical reporting applies to situations related to the customer connections and services provided by the telecommunications operator, which typically require corrective measures or other intervening by the telecommunications operator, such as filtering malicious traffic, contacting the end customer, or finally, temporarily disconnecting the customer connection or service. Information security incidents to be included in the statistics include Denial-of-Service incidents (unless they affect the functionality of a service in which case they may have to be included in the functionality disturbance statistics), malware detected in the telecommunications operator's own systems or customer connections, fraud cases or spamming cases.

ENTRY INTO FORCE

The Regulation enters into force on 1 January 2020 and will remain in force until further notice.

As the obligations imposed on telecommunications operators in the Regulation have been reduced compared to the previous regulation on the subject, no transition period is considered to be necessary for the Regulation or any part thereof.

MONITORING

Compliance with and effectiveness of the Regulation is monitored based on disturbance notifications provided by telecommunications operators, regularly collected statistics, and if necessary, specific examinations and feedback provided by telecommunications operators.

ANNEXES

1. Legal basis of the Regulation and other related provisions
2. Example of the technical outlining of a mass communications service
3. Supply chain of a DVB-C network service
4. Subcontracting
5. Cooperation in disturbances

Legal basis of the Regulation and other related provisions

This Annex describes first the legal basis of the Regulation, including the Finnish Transport and Communications Agency's authorisation to issue regulations, and other related key provisions on the subject, including EU legislation.

Legal basis of the Regulation

Quality requirements for a communications network and service

The Regulation is related to section 243(1), paragraphs 1–5, 7, 10, 11, 13 and 14 of the Act on Electronic Communications Services, under which public communications networks and communications services and the communications networks and services connected to them shall be planned, built and maintained in such a manner that:

- 1) the technical quality of electronic communications is of a high standard and information security is ensured;
- 2) the networks and services withstand normal, foreseeable climatic, mechanical, electromagnetic and other external interference as well as information security threats;
- 3) their performance, functionality, quality and reliability can be monitored;
- 4) significant information security violations and threats against them and other defects and disruptions that significantly interrupt their functionality can be detected;
- 5) access to emergency services is secured as reliably as possible even in the event of network disruptions;
- 7) the data protection, information security and other rights of users and other persons are not endangered;
- 10) they function together and can, if necessary, be connected to another communications network;
- 11) modifications made to them will not cause any unforeseeable disruptions for other communications networks or services;
- 13) the responsible telecommunications operator is also otherwise able to meet its obligations or those imposed under this Act, and
- 14) they function as reliably as possible even in the exceptional circumstances referred to in the Emergency Powers Act (1552/2011) and in disruptive situations under normal circumstances.

Under section 243(2) of the Act on Electronic Communications Services, the quality requirements referred to in paragraphs 1–4, 10, 11 and 14 shall be commensurate with the number of users of the communications networks and services, the geographical area served, as well as their significance to the users.

The measures referred to in paragraphs 1, 2, 4 and 7 above related to information security mean, under section 243(3) of the Act on Electronic Communications Services, measures to ensure the security of operations, communications, equipment and programmes, as well as the security of information material. These measures shall be commensurate with the seriousness of threats, level of technical development to defend against the threat and costs incurred by these measures.

In addition, the quality requirements referred to in section 243(1) of the Information Society Code also apply to significant associated facilities and services related to communications networks and services⁷.

⁷Under section 3(1)(8) of the Act on Electronic Communications Services, an *associated service* means a system subject to a conditional right of use; electronic programme guide: number conversion system; identification, location
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This Regulation specifies the above technical requirements of section 243 under section 244, paragraphs 2–4, 8 and 12–15, under which regulations issued by the Finnish Transport and Communications Agency may relate to:

- 2) electronic and physical protection of a communications network and the related site;
- 3) performance capacity, information security and functionality as well as their maintenance, follow-up and network management;
- 4) procedures in the event of faults and interference, as well as maintenance of information security and functionality;
- 8) interconnection, interoperability, signalling and synchronisation;
- 12) technical documentation and statistics as well as the form of related documents and their storage;
- 13) standards to be complied with;
- 14) other comparable technical requirements set for a communications network or communications service, and
- 15) associated facilities and services to the extent that they affect the requirements for communications networks and communications services laid down in section 243.

Disturbance notifications to subscribers and users

Under section 274(1) of the Act on Electronic Communications Services, the telecommunications operator shall notify subscribers and users without undue delay of significant information security violations or threats to information security in the services and of anything else that prevents or significantly interferes communication services.

Under section 274(2), the notification must indicate the estimated duration of the violation or threat. In addition, the subscriber or user shall be informed of the measures available to them for combating the threat, of the probable costs of such measures, and inform the sources of further information available to them. The telecommunications operator shall retain the data regarding the notifications

Under section 274(3), the telecommunications operator shall also publish an appropriate notification of the measures taken in a situation referred to in subsection 1 and any effects they may have on the use of that service.

This Regulation contains further provisions on the notifications to users pursuant to section 274(4), under which the Finnish Transport and Communications Agency may issue further regulations on the content and form of the notifications and publication of information referred to in this section and on the retaining of notifications.

Disturbance notifications to the Finnish Transport and Communications Agency

Under section 275(1) of the Act on Electronic Communications Services, the telecommunications operator shall notify the Finnish Transport and Communications Agency without undue delay of significant information security violations or threats to information security in the services and of anything else that prevents or significantly interferes communication services. A telecommunications operator shall also make a notification of the estimated duration and consequences of information security violations and threats, corrective measures taken as well as measures undertaken to prevent the reoccurrence of such violations. If notifying of information security violation is in the public interest, the Finnish Transport and

and presence service as well as similar service associated with communications networks or services that allows the offering of a communications network or service or supports the provision of services through them. Under section 3(1)(9), *associated facilities* means an associated service and a building; entry to building and building cabling; cable duct; mast and other physical structure, function or element related to a communications network or service that allows the offering of a communications network or service, or supports the provision of services through them.

Communications Agency may order the telecommunications operator to provide information regarding the matter.

This Regulation contains further provisions on the notifications to the Finnish Transport and Communications Agency pursuant to section 275(2), under which the Finnish Transport and Communications Agency may issue further regulations on the significance of a violation referred to in section 275(1) as well as the content, form, and delivery of the notification.

Under section 275(3) the Finnish Transport and Communications Agency provides the European Commission and the European Network and Information Security Agency with an annual summary report of notifications referred to in subsection 1.

Other related provisions

Communications service agreement

Under section 108(2) of the Act on Electronic Communications Services, a communications service agreement between a telecommunications operator and a subscriber shall specify at least the following:

- 2) the nature and features of the services and the types of maintenance service provided; in Internet access services also the data transfer rate variation;
- 12) the telecommunications operator's right to terminate the provision of a service or to restrict the use of a service;
- 15) information on any procedures put in place by the telecommunications operator to measure and shape telecommunications traffic so as to avoid network connection overload;
- 16) information on how the procedures referred to in subsection 15 could impact service quality;
- 17) types of customer services provided;
- 18) any restrictions imposed on the use of the terminal equipment supplied;
- 21) the type of action that might be taken by the telecommunications operator in reaction to information security threats.

Defect in the delivery of a communications service

Under section 120(1) of the Act on Electronic Communications Services, the delivery of a communications service is defective if the quality or mode of delivery of the communications service does not correspond to what can be deemed to have been agreed.

Under section 120(2), the delivery of a communications service is defective, if:

- 1) the quality of the communications service does not meet the requirements of law or the Finnish Transport and Communications Agency's regulation issued by virtue of law;
- 2) the delivery of the communications service has been continuously or repeatedly interrupted for a reason other than that referred to in subsection 2 and the interruption cannot be deemed insignificant considering the reason and circumstances; or
- 3) the communications service does not match the marketing information or differs from what a subscriber can normally expect from a similar service.

Under section 120(3), a communications service is not deemed defective, if a telecommunications operator temporarily, without the consent of the subscriber interrupts the communications service or limits its use for a total of not more than 24 hours per calendar month, if the interruption is necessary due to a construction or maintenance work or for reasons of information security. Interference to the user caused by the interruption must be in terms of its manner and timing as minor as possible. There must be sufficient information available about the interruption.

The purpose of this Regulation is not to determine when an error is a defect referred to in the Act, but, under section 120(2), the compliance of a communications service is one of the factors affecting the assessment of responsibilities based on law or agreement.

With respect to section 120(3), the section of these explanatory notes concerning Chapter 3 of the Regulation contains a recommendation on informing about construction and maintenance.

Obligation to publish information on service quality

Under section 130 of the Act on Electronic Communications Services, by its decision, the Finnish Transport and Communications Agency may impose an obligation on a telecommunications operator to publish comparable and up-to-date information on the quality of the services it offers. The decision shall specify the data to be published and the publishing method.

The preparatory material of the Act (HE 221/2013) refers to section 82 of previous Communications Market Act and its explanations, as well as to the previous Universal Service Directive (HE 112/2002 vp, HE 81/2005 vp, HE 238/2010 vp, Article 22 and Annex III of the Universal Service Directive).

By a decision pursuant to the above provision, the Finnish Transport and Communications Agency may impose on a telecommunications operator an obligation to publish, as data on the quality of the service, the number of faults per subscription and the repair times of faults. So far, operator-specific obligations pursuant to this provision have been imposed concerning only the publication of customer service response times. The purpose of the provision is to provide users comparable information on communications services to assist in the selection of a service provider.

Processing traffic data

Chapter 17 of the Act on Electronic Communications Services contains provisions, for example, on the processing of traffic data. Under section 3(1)(40) of the Act, traffic data means information associated with a legal or natural person used to transmit a message and information on the call sign of a radio station and the user of the radio transmitter, and on the starting time, duration or transmission site of a radio transmission.

Section 144 of the Act lays down provisions on the processing of traffic data for the purpose of detecting a technical fault or error. Pursuant to the provision, a communications provider, i.e. a telecommunications operator or similar, may process traffic data if this is necessary for the purpose of detecting, preventing or investigating a technical fault or error in the transmission of communications.

Obligation of a communications provider to maintain information security

Under section 247(1) of the Act on Electronic Communications Services, a communications provider, such as a telecommunications operator, must maintain the information security of its services, messages, traffic data and location data when transmitting messages.

Under section 247(2), the information security measures must be commensurate with the seriousness of threats, level of technical development to defend against the threat and costs incurred by these measures.

The Finnish Transport and Communications Agency may issue further regulations on information security referred to in subsections 1 and 2.

Principle of least convenience

Under section 248(1) of the Act on Electronic Communications Services, any construction, maintenance, changes or information security measures made to communications networks or services by the operator shall be made in a way that causes as little inconvenience to other telecommunications operators as possible.

Under section 248(2), a telecommunications operator may without the consent of another telecommunications operator temporarily interrupt or restrict the use of a network or communications service if this is necessary to implement the measures referred to in section 248(1). Any interruption or changes shall be announced efficiently to other telecommunications operators whose networks or services they might affect.

Measures taken to implement information security

Under section 272(1) of the Act on Electronic Communications Services, a telecommunications operator or any party acting on its behalf has the right to undertake necessary measures referred to in subsection 2 for ensuring information security in order to detect, prevent, investigate and commit to pre-trial investigation any disruptions in information security of communications networks or related services and in order to safeguard the possibilities of the sender or recipient of the message for communications.

Measures referred to in subsection 1 above may include:

- 1) automatic analysis of message content;
- 2) automatic prevention or limitation of message transmission or reception;
- 3) automatic removal of malicious software that poses a threat to information security from messages;
- 4) any other comparable technical measures in the meaning of subsections 1–3.

Any measures referred to in the section shall be implemented with care, and they shall be commensurate with the seriousness of the disruption being combated. Such measures shall not limit freedom of speech, the confidentiality of a message or the protection of privacy any more than is necessary for the purpose of attaining the goals referred to in section 273(1). Such measures shall be discontinued if the conditions specified in this section for them no longer exist.

The Finnish Transport and Communications Agency may issue further regulations on the technical implementation of the measures referred to in this section.

Obligation to remedy a hindrance

Under section 273(1) of the Act on Electronic Communications Services, if a communications network, service or device creates serious economic or operational hindrance to other communications networks, services or connected services, device, the user or other person, the telecommunications operator or owner or holder of the communications network or device shall take immediate measures to correct the situation and, if necessary, disconnect the communications network, service or device.

In practice, the provision means that customer devices that cause disturbance may be disconnected from the network.

Under section 273(2), any measures referred to in the section shall be implemented with care, and they shall be commensurate with the seriousness of the disruption being combated. Such measures shall not limit freedom of speech, the confidentiality of a message or the protection of privacy any more than is necessary for the purpose of attaining the goals referred to in subsection 1. Such measures shall be discontinued if the conditions specified in this section for them no longer exist.

In cases referred to in subsection 1, the Finnish Transport and Communications Agency may decide on repair measures, including disconnection of a network, service or equipment.

Interference cooperation working group

Under section 276 of the Act on Electronic Communications Services, the Finnish Transport and Communications Agency may designate an interference cooperation working group, consisting of representatives from:

- 1) telecommunications operators;
- 2) network and distribution network holders referred to in the Act on Electronic Markets (588/2013);
- 3) contractors working for operators referred to in subsections 1 and 2;
- 4) operators other than those referred to in subsections 1–3, whose participation is deemed appropriate.

The working group (Häiriötilanteiden yhteistoimintaryhmä, HÄTY, see Annex 5) has been established, and its tasks under section 276(2) of the Act are to:

- 1) plan and harmonise measures required to control the exceptional circumstances referred to in the Emergency Powers Act and disruptive situations under normal circumstances;
- 2) acquire and submit information needed to control interference situations to support decision-making of the Finnish Transport and Communications Agency; and
- 3) communicate the information on interference situations collected and analysed by the group to parties who have the capability to reduce the damaging effects of interference on society.

The operations of the working group require that the Finnish Transport and Communications Agency may, notwithstanding secrecy provisions, disclose information needed to control interference situations to the cooperation work group members. Provisions to that effect are laid down in section 276(3), under which, in addition to the provisions in the Act on the Openness of Government Activities, the Finnish Transport and Communications Agency may, notwithstanding secrecy provisions, disclose information needed to control interference situations to the cooperation work group members, if the information is necessary for the group in performing its duties and does not contain confidential messages, traffic data or location data.

Under section 276(4) of the Act, the provisions on the obligation of secrecy and non-exploitation referred to in Chapter 6 of the Act on the Openness of Government Activities and criminal liability of a civil servant apply to the members of the cooperation working group in tasks complying with this section. Provisions on liability for damages are laid down in the Tort Liability Act (412/1974).

Universal emergency call number

Under section 278(2) of the Act on Electronic Communications Services, a telecommunications operator is obliged to disclose to an Emergency Response Centre, a Marine Rescue Coordination Centre, or a Marine Rescue Sub-Centre any significant defects or violations within a communications network, network service or communications service that might affect emergency call operating.

The Finnish Transport and Communications Agency has issued a recommendation to telecommunications operators on the provision of information on disruptions of emergency traffic (see 'Technical regulations and recommendations by the Finnish Transport and Communications Agency' below in these explanatory notes).

Preparedness

Under section 281(1) of the Act on Electronic Communications Services, a telecommunications operator shall ensure that its activities will continue with

minimal disruption even in the exceptional circumstances referred to in the Emergency Powers Act and in disruptive situations under normal circumstances.

Technical regulations and recommendations by the Finnish Transport and Communications Agency

The Finnish Transport and Communications Agency has issued the following technical regulations and recommendations related to the subject of this Regulation:

- The regulation *on technical implementation and ensuring emergency traffic* contains requirements to ensure that, in public communications networks, emergency calls and emergency text messages and essential emergency services information related to them are transferred from telecommunications networks to the emergency response centres. The requirements of the regulation also ensure better chances of success for emergency calls in different cases of congestion in the network and in the event of communications networks disturbance.
- The recommendation *on the routing of emergency traffic from corporate networks* contains instructions on the management of emergency calls from corporate networks. In the recommendation, corporate networks refer to IP networks, exchange networks and other similar networks that are internal to a company. The recommendation is intended for corporate network holders and telecommunications operators.
- The recommendation *on the notification of disruptions in emergency traffic* concerns the disclosure of information to emergency response authorities on any significant defects or violations within a communications network, network service or communications service that might affect emergency call operating as referred to in section 278 of the Act on Electronic Communications Services (see 'Universal emergency call number' above in these explanatory notes). In addition, the recommendation addresses the provision of information by telecommunications operators on defects or disturbances that are significant from the perspective of emergency text messages. The recommendation covers the provision of information by telecommunications operators on unforeseeable and foreseeable defects or disturbances in emergency traffic. In 2014, the recommendation was complemented with another recommendation concerning the submission of the notifications referred to in the recommendation and required by section 278 of the Act not only to emergency response authorities, but also to the Finnish Transport and Communications Agency.
- The regulation *on the technical characteristics of metallic local loops and network equipment connected to them* concerns the technical characteristics of local loops consisting of metallic, symmetric cable pairs or parts of such local loops and communications network equipment connected to them. In practice, one of the purposes of the regulation is to prevent disturbances to ADSL connections by laying down provisions on the configuration of VDSL. The regulation is related to section 248 of the Act on Electronic Communications Services (see 'Principle of least convenience' above in these explanatory notes), in relation to which section 9.3 of these explanatory notes discusses the impact of modifications made by telecommunications operators to their networks or services on other telecommunications operators.
- The regulation *on resilience of communications networks and services* imposes telecommunications operators minimum obligations on the back-up of the power supply of devices used for maintaining communications networks and services, the protection of devices and connections and the physical protection of devices.
- The recommendation *for telecommunications operators on preparedness* provides guidance for telecommunications operators on fulfilling the statutory

obligations concerning preparedness. The recommendation, which is partly secret, is not a general, extensive guidance document on preparedness, continuity and contingency planning and implementation. Instead, it describes issues which the Finnish Transport and Communications Agency recommends telecommunications operators to take into account as part of their obligation on preparedness and existing practices.

- The regulation on *the quality and universal service of communications networks and services* applies to measurement and management of the functionality, performance capacity, reliability and quality of communications networks and services. The regulation contains general obligations that apply to all general communications networks and services as well as special requirements for telephone services, internet access services and television services. In addition, the regulation specifies the meters used for quality assessment of operator services. The regulation also gives a detailed account of the measurement and verification requirements for an internet connection pertaining to the universal service obligation as well as of the technical features of universal service subscriptions provided to persons with hearing and speech impairments.
- The regulation on *information security of telecommunications services* defines the minimum requirements concerning the implementation of information security measures. The regulation is intended to make the consideration of information security issues part of the everyday operations of telecommunications operators. In other words, the regulation serves to ensure that information security factors are taken into consideration routinely and, through effective processes, as part of the implementation of communications networks and services. The regulation on information security of telecommunications services is related to this Regulation particularly because this Regulation lays down provisions on matters such as the ability to detect and manage information security incidents, which is not only one of the prerequisites of ensuring the information security of telecommunications services, but also lays a foundation for the implementation of various information security measures (such as the filtering of malicious traffic, on which provisions are laid down in regulation on information security).

The above list reflects the situation at the time of the publication of these explanatory notes. All regulations and recommendations issued by the Finnish Transport and Communications Agency that are currently in force are available on the Agency's website at www.traficom.fi.

Commission Regulation (EC) No 611/2013

In June 2013, the European Commission adopted Regulation (EC) No 611/2013 on the measures applicable to the notification of personal data breaches. The Regulation continues to be in force despite of the issuance of the EU General Data Protection Regulation ('GDPR'). The reason for this is that Regulation 611/2013 was issued pursuant to the Privacy and Electronic Communications Directive ('ePrivacy Directive') which was not repealed by the GDPR. Regulation 611/2013 harmonises the procedures concerning the notification of personal data breaches to authorities and users and the information to be provided. The Regulation is directly applicable, i.e. it concerns all telecommunications operators as such.

Personal data means any information relating to an identified or identifiable person.

Personal data breaches are defined in Article 2(i) of the ePrivacy Directive as breaches of security leading to the accidental or unlawful destruction, loss, alteration, unauthorised disclosure of, or access to, personal data transmitted, stored or otherwise processed in connection with the provision of a publicly available electronic communications service in the Union

Structure and contents of the Regulation:

- Article 1 defines the scope of the Regulation. In practice, the Regulation applies to telecommunications operators.
- Article 2 lays down provisions on notification to the national authority, which in Finland is the Finnish Transport and Communications Agency. The article contains obligations on the notification procedures, and Annex I to the Regulation contains a list of the information to be included in the notifications. The article also requires that the national authority provides to all telecommunications operators a secure electronic means for submitting the notifications. The Finnish Transport and Communications Agency provides a possibility to submit the notifications using a HTTPS-secured form⁸ or PGP encryption⁹.
- Article 3 lays down provisions on notification to the subscriber or individual. The article contains obligations on the notification procedures, and Annex II to the Regulation contains a list of the information to be included in the notifications.
- Article 4 lays down provisions on the exemption of notification to subscribers or individuals in situations where it may be established that the data concerned by the security breach was protected by adequate technical means.
- Article 5 imposes an obligation for subcontractors of a telecommunications operator to notify the telecommunications operator of any personal data breaches.

Directive 2018/1972

In December 2018, the European Parliament and the Council issued Directive (EU) 2018/1972 establishing the European Electronic Communications Code¹⁰.

Article 40 of the Directive provides, for example, that Member States shall ensure that telecommunications operators take appropriate and proportionate technical and organisational measures to appropriately manage the risks posed to the security of networks and services. Having regard to the state of the art, those measures shall ensure a level of security appropriate to the risk presented. In particular, measures, including encryption where appropriate, shall be taken to prevent and minimise the impact of security incidents on users and on other networks and services. Moreover, the article provides that Member States shall ensure that telecommunications operators notify without undue delay the competent authority, which in Finland is the Finnish Transport and Communications Agency, of a security incident that has had a significant impact on the operation of networks or services.

The article also contains provisions that where appropriate, the competent authority concerned (i.e. the Finnish Transport and Communications Agency) shall inform the competent authorities in other Member States and the European Union Agency for Network and Information Security ENISA. The competent authority concerned may inform the public or require the providers to do so, where it determines that disclosure of the security incident is in the public interest. Once a year, the Finnish Transport and Communications Agency shall submit a summary report to the Commission and to ENISA on the notifications received.

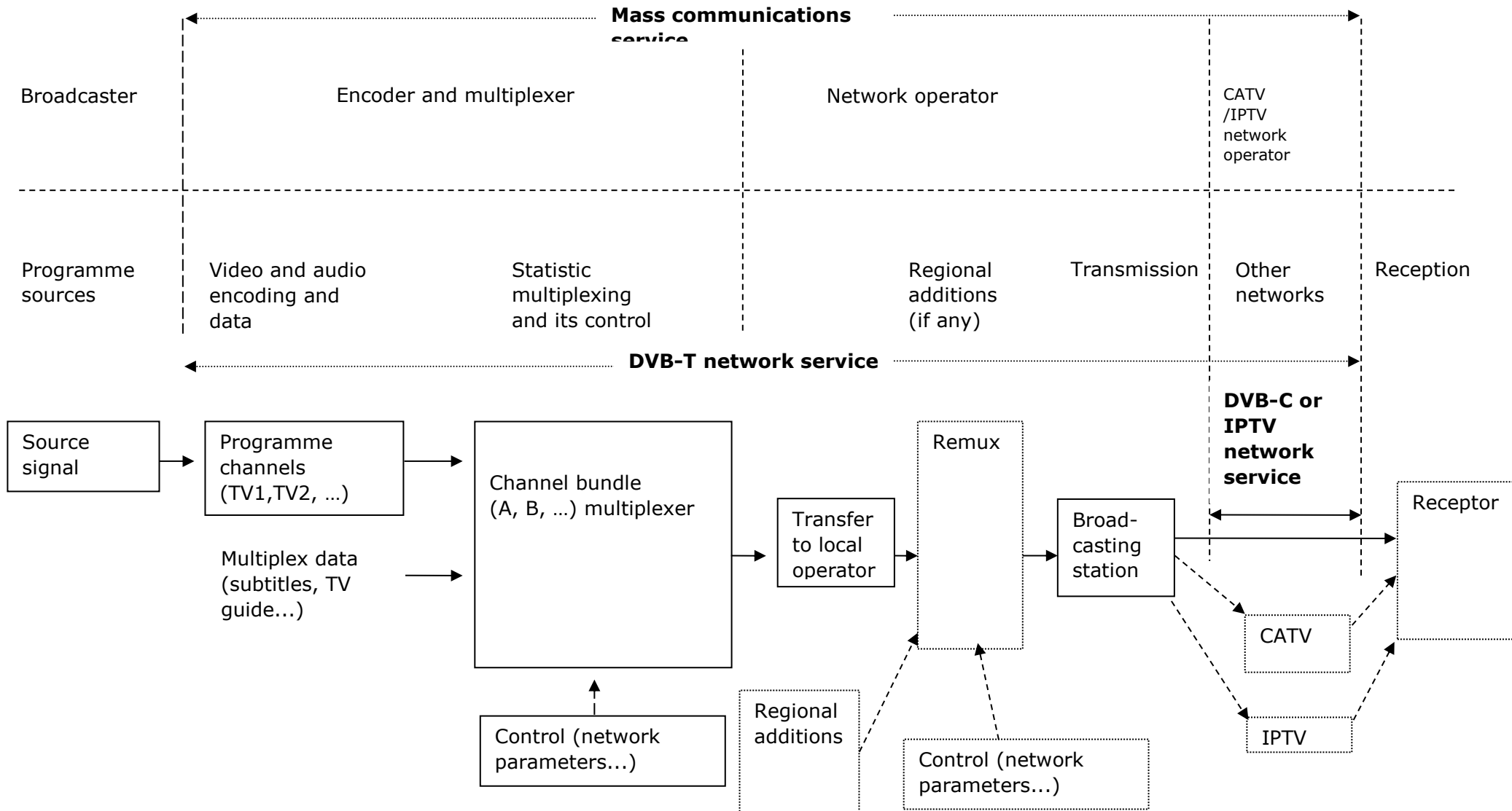
The obligations of the Directive are implemented by the provisions of the Act on Electronic Communications Services, which are further specified in this and other regulations.

⁸ <https://www.traficom.fi/en/services/notification-information-security-breach> or <https://www.kyberturvallisuuskeskus.fi/en/report>

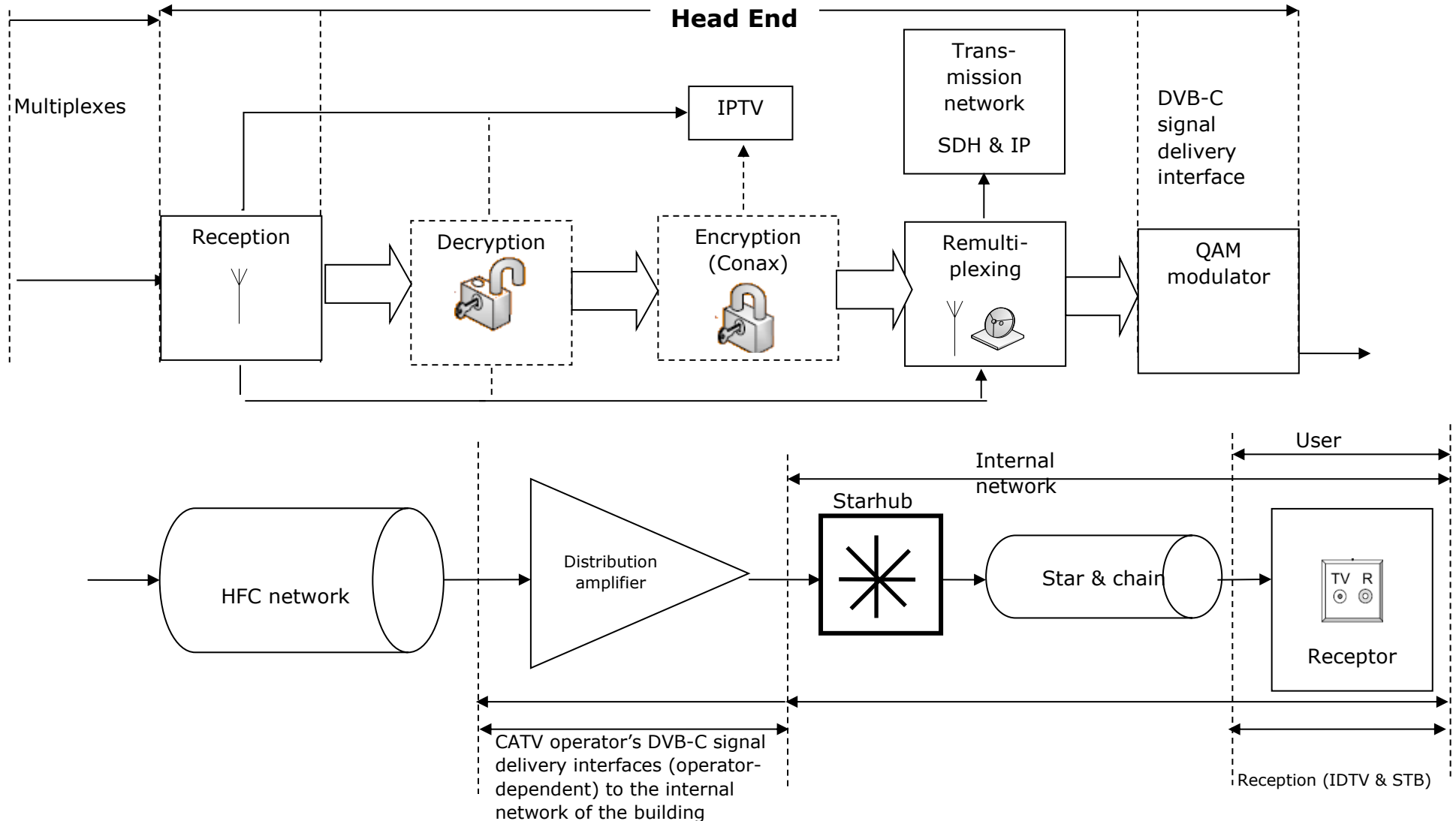
⁹ Encryption keys are available on the NCSC-FI's website: <https://www.kyberturvallisuuskeskus.fi/en/our-activities/cert>

¹⁰ <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1545208883302&uri=CELEX:32018L1972>

Example of the technical outlining of a mass communications service



2. Supply chain of DVB-C network service



Subcontracting

In the provision of communications networks and services, subcontractors are often employed to provide a part of the service. This leads to questions of interpretation as to which company is responsible for the imposed telecommunications operator obligations.

Typical subcontracted services include maintenance and repair of networks or the monitoring of equipment facilities referred to in section 4 of the Regulation (see section 4 of the explanatory notes). Other examples of outsourced services are customer service and the reception of disturbance notifications from customers discussed in section 8 of the Regulation (see section 8 of the explanatory notes). The general rule is that, in spite of outsourcing, the primary responsibility lies with the telecommunications operator providing network or communications services. For this reason, the telecommunications operator must ensure by its subcontracts the compliance of the part of network or service obtained. Naturally, the telecommunications operator may, through its contract, have a retrospective entitlement to a compensation from the subcontractor.

With respect to rented equipment facilities, the general rule is that the telecommunications operator responsible for the equipment is also primarily responsible for the functioning of the equipment of its network or communications services. Consequently, it has the responsibility for receiving and monitoring notifications on disturbances of the functioning of the equipment facility. Maintenance and repairs of the equipment facility may be defined separately in contracts.

In subcontracting, the *acquisition of network service or communications service from another telecommunications operator* is a separate issue from the perspective of legislation. The service provider again has a contractual responsibility towards the purchaser of the service, but also the provisions of the Act on Electronic Communications Services on obligations, monitoring and enforcement apply directly to the service provider. The purchaser's own service provider is, naturally, always contractually responsible to the purchaser.

Cooperation in disturbances

The mutual cooperation between telecommunications operators as well as the cooperation between telecommunications operators and authorities in various major disturbances affecting the functioning of communications services, in preparing for such major disturbances and other emergencies, and in preventing, detecting and investigating information security incidents and threats is important not only from the perspective of the individual operators, but also for the overall security in society.

Recommendation on cooperation in information security incidents

The Finnish Transport and Communications Agency recommends that telecommunications operators work in close cooperation both with each other and with the NCSC-FI at the Agency to investigate information security violations and their threats.

It is also recommended that units of the telecommunications operators responsible for network and service management as well as investigation of information security violations should provide information to other telecommunications operators on information security violations and threats that affect or could affect the communications network or service of another telecommunications operator.

Interference cooperation working group

The purpose of the interference cooperation working group (Häiriötilanteiden yhteistoimintaryhmä, HÄTY) established by the Finnish Transport and Communications Agency is to improve preparation and recovery from functionality disturbances of key communications and electricity distribution networks (see also section 276 of the Act on Electronic Communications Services). The group was established following observations of the need for the improvement of the cooperation not only between telecommunications operators, but also between telecommunications operators and electricity distributors.

The participants of the working group include key telecommunications operators and electricity distributors as well as telecommunications and electricity network contractors established in Finland. Other participants of the working group include the following authorities: the Energy Market Authority, the Finnish Meteorological Institute, the National Emergency Supply Agency, the Department for Rescue Services of the Ministry of the Interior, the Emergency Response Centre Administration and the Finnish Transport and Communications Agency.

Practices concerning the compilation of a situational picture of a major functionality disturbance

Experience shows that there is a need for specific procedures for reporting functionality incidents to the Finnish Transport and Communications Agency in cases of exceptionally large, long-term functionality disturbances that affect several telecommunications operators, such as storms.

The need for specific procedures arises from the fact that in the case of storms and other major disturbances, the social importance, the need for information and the simultaneous need to have an overview of the situation are so significant that communication procedures that follow exactly the provisions of the Regulation are not flexible and appropriate enough, considering the exceptional nature of the situation. The challenge is made greater because in storms in particular, the severity rating of the disturbance may change, firstly, because the weather front

moves gradually over a region, and secondly, because the repairs also proceed and progress gradually.

On the basis of the experience gained over the last few years, the Finnish Transport and Communications Agency has, when such major functionality incidents have occurred, contacted the affected telecommunications operators separately and agreed on exceptional information provision measures, allowing deviation from the ordinary notification procedures of the Regulation. In practice, the Agency has requested the telecommunications operators to regularly provide information specified on the basis of the current situation. Such procedure reduces the workload imposed on telecommunications operators as they do not have to prepare separate reports for different parties. Typically, the Finnish Transport and Communications Agency has requested for a daily specific report at 9.00 and daily updates at 14.00 and 21.00. It has also requested that the reports contain a description of the details that tend to change in the course of the disturbance and its management measures, such as the number of failed base stations and the geographical areas affected by the disturbance as well as possible cooperation measures with other operators.

Some telecommunications operators use the KRIVAT service platform provided by Suomen Erillisverkot Oy to coordinate collaboration in major disturbances. The Finnish Transport and Communications Agency also uses this system. Telecommunications operators are recommended to invite the Agency to collaborative groups established for managing storm-related incidents, for example, because this way the Agency obtains information on the management of the incident directly from the group. In any case, the Agency uses data provided by the service platform on the current performance of mobile networks, for example, to create a situational picture, and seeks to minimise the data collected separately from telecommunications operators.