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Chapter 17

LUXEMBOURG

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I OVERVIEW

The Luxembourg TMT sector has evolved from being predominantly a provider of voice services into a diverse, competitive and interconnected industry using terrestrial, satellite and wireless transmission systems. Today, Luxembourg has first class infrastructures and telecommunication networks, and is counted among the top locations for electronic communication services and infrastructures. In the 2015 edition of The Global Information Technology Report (GITR Report) published by the World Economic Forum, Luxembourg is listed ninth out of 143 countries with regard to leveraging information and communication technologies for social and economic impact.²

Traditionally the sector was limited to a very few players. Telecommunication and postal services were operated for several decades as a public monopoly of the state-owned *Entreprise des Postes et Télécommunications (EPT)*.³ The radio and television sector was controlled and developed from its early years by a privately owned company. Indeed, the first radio broadcasting in Luxembourg was initiated by the founders of the current broadcaster, CLT-UFA. The privately held operator was ensured a leading role in the national and international development of the radio and television sector, and today RTL Group ranks as the top television and radio broadcaster in Europe. Luxembourg has also been a pioneer in non-terrestrial communication technology. SES-Astra, a Luxembourg-based company created in 1985, was Europe's first private satellite operator, and today SES has global standing.

The presence of important market players in the TMT and TMT-related sectors in Luxembourg and the related know-how and experience have led the government to

1 Linda Funck is a partner at Elvinger, Hoss & Prussen.

2 www.luxembourgforfinance.com/Luxembourg-top-10-performing-countries-ict.

3 The new commercial name is Post Luxembourg.

make efforts to maintain, create and further develop its electronic telecommunication technologies with the aim of being among the best places in Europe and abroad to do business within the sector and being a hub for e-services in Europe. This aim has been constantly pursued and reaffirmed by the government since 2010 and to date. The GTR Report confirms the success of these efforts, as Luxembourg is ranked fourth and fifth respectively in terms of government success in ICT promotion and the importance of ICT in the government's vision.

Luxembourg combines many features that are beneficial to the development of an ICT sector, including the diversity and multilingual skills of the population and workforce, a geographical location in the centre of Europe and an important financial industry in need of high performance communication technologies. In addition, Luxembourg has gradually developed a state-of-the-art digital infrastructure, international telecommunication connections (offering fast and reliable connectivity to other European cities at very low latency rates), efficient national communication networks, performant data centres, a comprehensive, evolving and innovative legal framework, and cutting edge research, safety and security, all of which contribute to Luxembourg's increasing attractiveness to technology organisations and electronic communication services, but also to financial institutions, companies active in biotechnology and medicine, and other e-businesses. Luxembourg figures among the top locations for ICT infrastructures (data centres, high speed connectivity and internet traffic, low latency internet), and it offers specialised expertise to keep data safe.

The presence of regulated ICT 'support' professionals of the financial sector, who are subject to the same confidentiality obligation as banks, provides considerable comfort and security to clients in the financial sector in areas such as the outsourcing of IT functions.

More recently, Luxembourg is focusing strongly on the development of the FinTech industry, for which Luxembourg is very attractive as it combines a huge range and variety of financial services, performant and innovative technology, and open-minded regulators, public authorities, private players and associations who are ambitious to follow and develop a sector that is evolving rapidly and that will shortly be omnipresent in the overall global economy.

The quality of the communication infrastructure has led numerous actors in the gaming sector (online video games) and gambling sector to set up their headquarters in Luxembourg or even install their technological centre for the European area in Luxembourg.⁴ Global brands in the media and internet world such as Amazon, eBay, iTunes, PayPal, Vodafone Procurement, RTL Group, and Skype all have European headquarters or major operations in Luxembourg. The presence of Level 3 (one of the most important operators of telecommunication services at the level of the backbone internet) in Luxembourg confirms Luxembourg as a centre of excellence in the internet sector. Luxembourg is also attractive to a number of e-payment and e-money services

4 Onlive Inc, having implemented a cloud gaming platform, chose Luxembourg to locate all its servers for the European distribution of its services; Big Fish Games; Bigpoint; Kabam-Europe; Nexon Europe S.à.r.l.; Innova.

institutions, and can be considered as Europe's e-payment hub, with brands including Digicash, Amazon Payments, PayCash Europe, Microsoft, Yapital, Six Payment Services and Rakuten all based in Luxembourg. Luxembourg also has a strong reputation for service availability, security and data protection, and responsive and open-minded authorities.

From July 2014 to July 2015, four new companies active in the ICT sector – Chatwork, MTX Connect, Nexus (IT security solutions) and BitFlyer (virtual currencies) – established themselves in Luxembourg, confirming the attractiveness of Luxembourg for ICT businesses.

Luxembourg has a longstanding official policy of welcoming pan-European companies in addition to creating the appropriate framework for the development of local businesses, and offers multiple opportunities to start-ups by creating an environment that allows existing market players to come into contact with young entrepreneurs.

Employment in the ICT sector increased by 5.1 per cent from March 2014 to March 2015.⁵ Efforts are also being made in ICT research, with a focus on the security, reliability and trustworthiness of ICT systems and services.⁶ In the context of increasing the influence of digital technologies in every aspect of our lives and throughout all business areas, and with the recent development in cloud computing and e-archiving, digital security is a key element of the success of the digital economy. Important improvements are being made to the legislation to adapt the national legal framework to overcome barriers related to the use of new technologies.

Luxembourg is very present at European-level discussions and negotiations and stout in its defence of its position in the global process of harmonisation and liberalisation, while supporting the direction of European regulation. At a national level, research and development in the ICT sector is conducted by a number of government-promoted institutions.⁷ In developing its communication networks in the context of the investment realities and opportunities in the telecoms and media sector, the challenge is to direct investment in a way that ensures that the right type of network is built and that public investment works in cooperation with the private sector so as to promote a more competitive telecoms environment. The government has been very active in negotiating and defending the interests of Luxembourg in the European Telecoms Package adoption process. Similarly, the government is actively taking part in the discussions regarding the forthcoming Data Protection Reform, and is keen to push for the adoption of the Data Protection Reform under its Presidency of the European Union Council (1 July–31 December 2015).

5 www.statistiques.public.lu/fr/actualites/population/travail/2015/06/20150615/20150615.pdf.

6 Interdisciplinary Centre for Security, Reliability and Trust (SnT), Computer Science and Communication.

7 For instance, the Luxembourg Institute of Science and Technology, which is the result of the merger of the Public Research Centre Henri Tudor and the Public Research Centre Gabriel Lippmann; and the University of Luxembourg, which has a computer science and communications research unit.

The development of the information society is one of the key priorities of the government. In addition to the aforementioned policies, it has created an action plan called ‘e-Luxembourg’ with the ultimate goal that Luxembourg administrations, corporations, education personnel and individuals may efficiently use and have access to electronic communication means and to help improve their quality of life. At present, many filings, registrations and requests to public administrations (such as those of the tax, social security and energy sectors) can be made online, and the government has also adopted a GED system (electronic document management) and banned the use of paper, with the aim of streamlining the internal government structures to become more cost effective. Luxembourg has also introduced electronic identity cards.

In 2014, the Council of Government announced the launch of a new strategy called ‘Digital Luxembourg’. The objective of this strategy is to strengthen and consolidate the position of Luxembourg in the ICT sector. The Digital Luxembourg platform aims to assemble private players and public institutions federating inter-sectoral and cross-sectoral interaction. Taking into account the constant need for a workforce with strong skills in IT, Luxembourg implemented the ‘Digital (4) Education’ strategy. Luxembourg strongly encourages the development of a digital single market, as this will strengthen Luxembourg’s position within Europe.

In addition, the government is fully aware of the fact that the continuance of the success and the competitiveness of Luxembourg’s financial sector will depend, *inter alia*, on the availability of cutting edge services based on FinTech.⁸ A FinTech working group has been established with representatives from different associations active in the financial and technological sectors. Convergence has been achieved by creating rules and regulations, regulatory authorities and consulting entities at national, European and international level that embrace the diversity, interconnectivity and interrelatedness of the various industries and players. The increasing convergence between telecommunications, information technology and media has led to the adoption of the regulatory framework that was introduced into Luxembourg law by two laws of 27 February 2011: the Telecoms Package. The Telecoms Package is designed to provide for one set of rules for all electronic communication services and networks. The continuing development of the ICT sector constantly calls for adjustment of the current legislation and regulations at national and European level (see Section II.ii, *infra*).

As a result of convergence, it is extremely important that interconnectivity and free access to all operators and service providers within the TMT sector is ensured in an equal manner. The use of one infrastructure for different types of services is of particular importance, and it is crucial that the operators and owners of the infrastructure or networks make these available to the other participants in the TMT sector. This is particularly true in Luxembourg because of the small size of the market. Efforts are constantly being undertaken to ensure competitiveness among the players in the TMT sector.⁹ Ensuring Luxembourg’s international connectivity is at the top of the agenda in

8 Financial sector-related technology.

9 Activity report 2013 pp. 9–16 ILR.

future years with the aim of ensuring the lowest latency rates with major capitals, the lowest prices and the presence of the most important carriers.

Importantly, the government supports the principles of network neutrality (i.e., a free architecture, open and non-discriminatory terms, guaranteed access without unjustified conditions on electronic communication networks). Competition among incumbent operators and alternative operators remains an important element for e-industry players.

II REGULATION

‘TMT services’ cover an extremely wide scope of technology and services, with different laws and regulations applicable that entail various regulatory authorities to supervise different services and related technology. The competent ministry in Luxembourg for the telecommunication and media industry is currently the Ministry for Communication and Media.

i Regulators and regulated activities

The Law of 1997 created the Luxembourg Institute of Telecommunications (ILT), whose duty is to supervise and regulate the telecommunications sector. In 2000, the tasks of the ILT were widened to encompass the Luxembourg energy sector and postal services and, as a consequence of the Law of 1997, it was renamed the Luxembourg Institute of Regulation (ILR).¹⁰ The scope of the ILR’s tasks has been modified on several occasions, and for the last time by the Laws of 27 February 2011 and 26 July 2011. The ILR is an independent regulator and is not funded by public state funds paid for by taxpayers, but is rather financed by the operators of the sector supervised and regulated by the ILR.

The Electronic Communication Law and the Spectrum Law clarify the allocation of competences between the Minister for Communication and the ILR in different sectors. The ILR is entitled to set rules in accordance with European directives and national law. Additionally, it controls the efficient use of infrastructure for the benefit of consumers. It is entitled to determine the fees and conditions under which communication networks are operated and services rendered so as to allow the formation of a competitive market. It also has the authority to draw up reports and proposals, which it must submit to its board and the government. It gives advice, and prepares statistics and regulations.

The ILR is competent to receive notifications and to grant authorisations or licences in relation to the provision or operation of electronic communication network services, and assists the competent minister in the allocation of licences for radio spectrum. It is also in charge of establishing the plan for frequencies and updating the public registers required by law for the various TMT sectors.

10 www.ilr.lu.

The ILR has the power to issue administrative sanctions against operators that breach laws or regulations. It may also act as a dispute settler between competing operators and acts as mediator between customers and operators.¹¹

The ILR is not empowered to monitor and regulate abuses of dominance. It is, however, responsible for ensuring that dominant players do not exclude other competitors from the sector, and it may take measures and issue rules to ensure a competitive market if, in its opinion, proper competition is no longer possible.

In regard to media, the Media Law (as defined hereafter) has been amended by the Law of 27 August 2013. The governmental commissions existing under the former law (i.e., the Communication Media Service, Independent Radio Broadcasting Commission and the National Programming Council (CNP)) have been replaced by one single authority: the Luxembourg Independent Audiovisual Authority (LIAA). Its main responsibilities are to:

- a* ensure service providers' compliance with the law;
- b* grant or withdraw broadcast permits;
- c* ensure access to audiovisual programmes for persons with a visual or hearing disability;
- d* stimulate on-demand audiovisual media service providers to promote and distribute European works;
- e* encourage audiovisual media service providers to elaborate codes of conduct concerning the broadcast of inappropriate contents; and
- f* impose sanctions on non-compliant service providers, such as fines, withdrawal of permits, warnings and suspension of transmission.

The National Commission for Data Protection (CNPD), created by the Law of 2 August 2002 on the protection of individuals with regard to the processing of personal data, is the authority in charge of the supervision of the electronic communication market as far as data protection issues are concerned.

The CNPD controls the processing of personal data in Luxembourg and ensures compliance with the data protection regulations, in particular those relating to the confidentiality and security of processing operations. In addition, it has advisory competence towards the government. Although the CNPD is a public institution, it enjoys independence in carrying out its mission.

It has investigative competence that allows it direct access to data of processing operations. As an investigative body, the CNPD is allowed to issue administrative sanctions.

ii Main sources of law

The TMT sector is extremely broad and diversified. Due to the specifics of the various industries on the one hand and their interrelatedness on the other hand, it appears that laws and regulations apply to more than one specific service within the TMT sector, resulting thus in a large amount of applicable legislation and regulations.

11 ILR Regulation 11/151/ILR of 4 April 2011. Annual report 2013, available www.ilr.public.lu/publications/rapports-annuels/2013.pdf.

The main laws are:

- a* the Law of 27 July 1991 as amended by Law of 17 December 2010, and the Law of 8 April 2011 on electronic media (Media Law) as amended for the last time by a Law of 27 August 2013;
- b* the Law of 11 April 2010 on freedom of expression in electronic media, amending the Law of 8 June 2004 (as amended) on the freedom of expression in the media sector;
- c* the Law of 27 February 2011 on electronic communication services and networks (Electronic Communication Law), abrogating the Law of 30 May 2005 on electronic communication services and networks (Former Electronic Communication Law);
- d* the Law of 30 May 2005 as amended by the Law of 27 February 2011 on organisation and management of radio spectrum (Spectrum Law);
- e* the Law of 30 May 2005 regarding the organisation of the ILR as amended by the Law of 26 July 2010;
- f* the Law of 30 May 2005 on the specific provisions regarding the protection of individuals as to the processing of personal data in the electronic communication sector and amending Articles 88-2 and 88-4 of the Criminal Instruction Code as amended by the Law of 27 July 2007 and the Law of 24 July 2010 and by the Law of 28 July 2011 (Electronic Data Protection Law);
- g* the Law of 14 August 2000 on electronic commerce as amended (Electronic Commerce Law);
- h* the Law of 18 April 2001 on copyrights as amended (Copyright Law);
- i* the Law of 2 August 2002 as amended (for the last time by a law of 28 July 2011) regarding the protection of individuals as to the processing of personal data (Data Protection Law);¹²
- j* the Luxembourg Constitution;
- k* the Law of 11 August 1982 on privacy (Privacy Law);
- l* Article L222-12 to L222-23 of the Consumer Code regarding distance contracts on financial services, abrogating the Law of 18 December 2006 on distance selling of financial services, and
- m* Article L222-2 to L222-11 of the Consumer Code.
- n* general laws are applicable to all aspects not specifically regulated by specific laws or regulations, and in particular the provisions of the Luxembourg Criminal Code (LCC) (e.g., in relation to pornography, discrimination, racism, violence, theft and piracy) and the commercial code with the amended Article 567 (See Section VI.i, *infra*);
- o* the Law of 2 April 2014, amending, *inter alia*, the Consumer Code, Electronic Data Protection the Law and Electronic Commerce Law (2014 Law);
- p* the Law of 18 July 2014 on cybercrime¹³ (Cybercrime Law);

12 The European Data Protection reform proposed by the European Commission in January 2012 for the purpose of satisfying the modernisation of the data protection frameworks will entail amendments to the existing data protection laws.

13 See Section VI.iv (Cybersecurity), *infra*.

- q the Law of 25 July 2015 on electronic archiving as well as two Grand-Ducal regulations on the execution of Article 4 Section 1 of the Law and on the dematerialisation and conservation of the documents (Electronic Archiving Law);
- r Bill of Law No. 6763 modifying the Criminal Procedure Code and Electronic Data Protection Law; and
- s Bill of Law No. 6867 on measures to reduce the cost of deploying high-speed electronic communications networks.

In addition, a large number of Grand-Ducal regulations and other regulations (particularly from the ILR) have been adopted in relation to the implementation of the various laws.

iii Ownership restrictions

Luxembourg rules and regulations do not, in principle, impose ownership restrictions within the TMT sector, except for in certain specific sectors. Regarding telecommunications services, the previous authorisation regime has been replaced by a less stringent notification regime.

There are no ownership restrictions for being granted a concession to operate Luxembourg satellite systems or broadcast a Luxembourg programme via satellite or cable, except that for the latter a broadcasting licence may only be granted to a legal entity incorporated under Luxembourg law.

Because spectrum is considered a rare resource, its management and use is reserved to the state. Licences to use spectrum may, however, be granted to third parties subject to the conditions of national legislation, related regulations, or international or European agreements and treaties.

There is no specific national regulation on cross-ownership of media companies. However, general laws on competition still apply.

iv Mergers and acquisitions

There is no specific Luxembourg authority regulating mergers or acquisitions in the TMT sector. The ILR's competences are to guarantee competitiveness on the Luxembourg TMT market, and as such it will monitor acquisitions and mergers in the sector so as to evaluate their position on the market *ex post*.

The Law of 23 October 2011¹⁴ on competition, which prohibits restrictive agreements and abuses of dominant position, provides for an independent authority, the Council for Competition Matters (CCM), which is in charge of investigating cases, consultative missions and sectoral inquiries (or by types of agreement). The Investigation Division for Competition Affairs has been abolished. The CCM is also the decision-making body and exercises various powers for the execution of its mission (i.e., finding and sanctioning legal violations, drafting opinions, undertaking market studies, gaining information about companies and executing missions allotted to the national CCM). Decisions by the ILR in relation to regulation of competition must be taken in

14 Which amends and replaces the Law of 17 May 2004.

agreement with the CCM. None of the relevant authorities has *ex ante* powers, nor may they prevent mergers or acquisitions.

III INTERNET AND IP-BASED SERVICES

i Internet and internet protocol regulation

Internet services were regulated, prior to the Electronic Communication Law, by the Law of 21 March 1997 relating to telecommunication services and the operation of telecommunications networks (Law of 1997).

Even though the Law of 1997 did not provide for specific internet or internet protocol regulations, but covered telecommunications services and networks more generally, in the absence of the express exclusion of internet services and in the light of the definition of ‘telecommunication services and networks’,¹⁵ internet services were considered to be governed by this Law.

The Former Electronic Communication Law introduced certain changes and widened the scope of existing regulation to a larger range of communication technologies, and introduced the definitions of ‘electronic communication network’ and ‘electronic communication services’ as opposed to ‘telecommunication services’. The new terminology reflected the increased scope of the services and networks that are regulated. Express reference to internet services is made.

Neither the Law of 1997 nor the current Electronic Communication Law provide for any specific rules applicable to internet services or IP-based services as opposed to traditional telephony services, except that due to the specific nature of the telephony services, certain additional rules apply to the provision of telecommunication services that are offered to the public. The Electronic Communication Law provides for certain specific obligations applying to publicly available telephony services and public telephone networks.¹⁶ These specific regulations are to ensure a universal service to the resident population and apply only to traditional telephony.

As previously noted, the ILR is the competent regulator in charge of the supervision of the services rendered both in relation to internet services and traditional telephony services. With the adoption of the Former Electronic Communication Law, the operation or provision of electronic communication services or networks is no longer subject to a licence but only to notification to the ILR.¹⁷ No distinction is made between traditional telephony and internet or IP-based services.

The Electronic Communication Law provides for a global legal framework applicable to all electronic telecommunication services and networks, with certain

15 The abrogated Law of 1997 provided for a definition of ‘telecommunication services’ and ‘telecommunication networks’, with ‘telecommunication’ having been defined as ‘each transmission, issue or reception of signals, images, sounds or data of any nature, by wire, radio, by optical or by electromagnetic means’.

16 Articles 11 and 12 of the Electronic Communication Law.

17 Article 5 of the Electronic Communication Law.

specifics depending on the type of service or network, ensuring however that the whole sector is consistently governed by the same legislative and regulatory national framework.

ii Universal service

The development of communication infrastructure in Luxembourg is among the top priorities of the governmental programmes in the field of the information and communication technology. The government has been developing the broadband infrastructure services for approximately 10 years.

Since the end of 2011, Luxembourg has a 100 per cent standard (fixed) broadband coverage (DSL up to 25Mbps) available to all Luxembourg households.¹⁸ NGA¹⁹ reached close to 94 per cent (+6 per cent) of households by the end of 2014.²⁰ 4G broadband availability in Luxembourg reached around 95 per cent²¹ in urban and 90 per cent in rural areas,²² and Luxembourg residents are very connected (93 per cent weekly basis, 87 per cent daily basis, respectively).

The installation of the optical fibre has been in constant progress since 1997, and Luxconnect²³ is joining the efforts to cover the whole territory with optical fibre. FTTH, using fibre optic cable, is further progressing, and was usable by close to 40 per cent of all Luxembourg households.²⁴ In addition to work being carried out on the deployment of optical fibre throughout the country, efforts are also being made on the existing networks to increase the broadband speed.

By the end of 2014, around 64 per cent have broadband subscriptions for less than 30Mbps, 33 per cent between 30 and below 100Mbps, and 3 per cent above 100Mbps.²⁵

In Luxembourg, a notable market trend towards bundled offers (broadband mobile or fixed telephony and TV) continues. At the end of 2014, 78.5 per cent of all internet accesses are commercialised with at least one other service.²⁶ Luxembourg benefits from an extremely developed FTTH architecture.

The ultimate aim of the government was to provide households and businesses with access to ultra-high-speed broadband by 2015. In July 2015, more than 94 per cent of Luxembourg's territory has access to ultra-high-speed broadband.²⁷

Another aim of the government is to provide households and businesses with downstream speeds ranging up to 1GB/s and upstream speeds of 500Mbps in 2020. The EPT and other alternative operators offer ultra-high speed internet access.

18 Luxembourg 2011 Telecommunication Market and Regulatory Developments.

19 VDSL, DOCSIS 3 cable and FTTP.

20 <https://ec.europa.eu/digital-agenda/en/country-information-luxembourg>.

21 Digital Agenda Scoreboard 2015, Connectivity, p. 12.

22 <https://ec.europa.eu/digital-agenda/en/country-information-luxembourg>.

23 Luxconnect was created at the initiative of the government.

24 ILR Statistical Report 2014, p. 5.

25 ILR Statistical Report 2014, p. 6.

26 ILR Statistical Report 2014, p. 42.

27 <https://ec.europa.eu/digital-agenda/en/scoreboard/luxembourg>.

At the end of 2014, the ILR adopted two regulations facilitating access by alternative operations to the network of the dominant operator.

iii Restrictions on the provision of service

Pursuant to the Electronic Data Protection Law and the Data Protection Law, ISPs and operators of electronic communication services and networks are compelled to ensure the confidentiality of communications exchanged by way of electronic communication means. The general rule is that other than the user, no person is allowed to listen to, intercept or store communications and data relating to the traffic and location without the agreement of the user.

This prohibition does not apply to:

- a* communications relating to emergency calls;
- b* commercial transactions to the extent that they constitute proof of the transactions;
- c* authorities investigating and acting in relation to a *flagrante delicto* act or within the scope of criminal offences in order to ensure national and public security; and
- d* cookies.

In relation to data resulting from commercial transactions and cookies, the user or parties to the transaction must be informed that their data may be processed, the conditions (in particular the duration) and aim of the storage, and the possibility of the user opposing such data processing. Moreover, in relation to cookies, a specific consent to the storage (opt-in) is required. Under Article 29 of its Recommendation 2/2013, a working group clarified that this consent has to be free and unequivocal. Furthermore, there must be a real choice and no risk of deception or negative consequences if the user chooses not to give his or her consent.²⁸ Discussions on an exemption to the opt-in principle are taking place at a European level, but as of today a consent must still be given by the user. For the purpose of criminal law enforcement, specific conditions must be met to have recourse to intercepted communications data. In addition, for the purpose of research, monitoring and pursuit of criminal offences and with the sole aim of providing relevant information to the judicial authorities, each ISP or operator must store traffic information and locational data for a period of six months. The Law of 24 July 2010 has amended the scope of criminal offences by limiting the possibility of only consulting the data that relates to criminal offences resulting in penal sanctions of more than one year's imprisonment. Grand-Ducal Regulation of 24 July 2010 relating to traffic data and localisation data determines the category of traffic data that may be useful for the research, observation and prosecution of criminal offences, as well as the manner pursuant to which such information is made available to the authorities.

Intellectual property theft and piracy are regulated by:

- a* the Copyright Law;
- b* the LCC;²⁹
- c* the Privacy Law; and
- d* the Electronic Data Protection Law and the Data Protection Law.

28 CNPD, Annual Report 2013, p. 62.

29 Articles 309, 460, 488, 505, 509-1 et seq. of the LCC.

There is currently no public authority in Luxembourg that exercises global supervisory or monitoring power over the content and traffic data of network operators, ISPs and users, as this would violate the essential privacy principles.

Similarly, and for the same reasons, network operators may not control the content, application and services accessed by their network users.

The practice of deep packet inspection is prohibited in Luxembourg, as it infringes confidentiality rules and constitutes an invasion of privacy in complete violation of the above-mentioned legislation. The same analysis would apply to the filtering of data processed by means of electronic communication means.

However, network operators are obliged, in order to comply with the secrecy or confidentiality requirements, and to avoid invasion of privacy, piracy or intellectual property theft, to take appropriate technical and organisation measures, and to have systems and procedures (firewalls, encryption, secured and restricted access, etc.) in place that render the network and the data processing via their network secure.

iv Security

National security

The Electronic Communication Law, the Electronic Communication Data Protection Law and the Data Protection Law provide for specific applicable measures to ensure national interests.

In certain circumstances, where national security (including public health and public order) is endangered, the government may requisition the entire electronic communication network established in Luxembourg, as well as the connected equipment, or prohibit the provision of some or all electronic communication services.

The government may also, in order to maintain access to the emergency services, dictate special conditions for the use of electronic communication services and networks. Although storage of personal data is generally prohibited, the Electronic Communication Law provides for an exception in relation to storage of traffic data relating to emergency calls, or to inspection of false alerts or attacks or abusive calls.

Privacy and consumer protection

Privacy and consumer protection in the electronic communication domain is guaranteed by both the Consumer Code and the Media Law. They set guidelines and restrictions in relation to commercial advertisements and specific provisions for the protection of children.

Information about consumers must be treated confidentially and may not be rendered accessible to third parties, and the processing of consumer data is allowed only if it falls within the criteria defined by the relevant laws. Processing of data is subject to the principle of legitimacy of processing. Each data processor located or using physical means located in Luxembourg to process data is subject to a notification or prior authorisation procedure addressed to the CNPD depending on the nature of the data processed and the purpose such processing.

Sharing of consumers' personal data is strictly prohibited by law, unless the consumers give their express consent. Where locational data is being stored and processed by an operator, a user must be informed thereof and must be able to oppose any such action (the process of which must be clearly set out and communicated to the user).

Luxembourg law prohibits the addressing of advertisements or other unrequested communication to persons by electronic means without their consent. If the supplier of a product received the e-mail addresses during a previous sale, he or she can use those e-mail addresses to promote analogous products and services unless the concerned persons requests such actions to be stopped.³⁰

Protection of children

There is no specific legislation or regulation that ensures the protection of children online.

In 2011, Luxembourg ratified the United Nation Convention in relation to children's rights and the Convention of the Council of Europe concerning protection of children against exploitation and sexual abuses, and is involved in the implementation of their provisions.

Moreover, the government is issuing a number of recommendations and is supporting various projects to render children and their parents aware of the risk related to the use of the internet. The 'Bee Secure' project has been drawn up in the context of the EU Safer Internet Programme, which gives directions for the use of the internet to children, parents and educational staff.

Generally, the policy is to familiarise children with new technology rather than filtering or blocking access to various types of information (which might, however, be an alternative); the intention is to teach children how to use the internet safely and to always be aware of the risks related to such use.

Children's rights are protected by provisions of the LCC. Further to the adoption of the Law of 21 February 2013 amending Articles 372 and 377 of the LLC, the LLC provides for enhanced sanctions in relation to sexual child abuse matters. The 'BEE Secure Stopleveline' is a project operated by a national consortium that provides a structure to report illegal information transmitted over the internet anonymously. The E-commerce Law requires information service providers to withdraw or render inaccessible any illegal content that they become aware of. The Media Law includes specific children protection provisions.

The University of Luxembourg is an active member of the 'EU Kids Online' project, which is a multinational research network seeking to enhance European children's opportunities, risks and safety.³¹

In relation to the adoption of the 2014 Law, the CNP lobbied to introduce an appropriate visual warning obligation. A Grand-Ducal Regulation was adopted on 8 January 2015 for the protection of minors regarding audiovisual media services.

Cybersecurity

Cybersecurity is one of the priorities of the government.

Individuals and companies are encouraged to take appropriate technical measures to defend themselves against cyberattacks.

30 Article 11 of the Electronic Data Protection Law.

31 www.saferinternetday.org/web/eu-kids-online/home.

Similarly, as with the internet project for children, the government has created 'CASES Luxembourg', a project that is accessible by all internet users and whose purpose is to make the public aware of potential cyberattacks that are inherent in internet use, and advises on how to identify potential cyberattacks. In this context, it is worth mentioning the certification authority, Luxtrust, which manages electronic certificates with the highest level of security.

Network operators and ISPs are required by applicable law to comply with stringent security measures.

As a response to the increasing number of cyberattacks, the LCC has been amended so as to include offences in the electronic communication sector.

The government pursues efforts to prevent and fight cybercrime, and in July 2011 created two new structures: the Luxembourgish Cybersecurity Board (CSB), whose mission is to work on a strategic plan against attacks via the internet; and the governmental Computer Emergency Response Team (CERT), which is the competent body to deal with incidents of cybercrime in the public information systems. The CERT also cooperates with the High Commissioner for National Protection (HCPN) and the Technology Centre for State Information. Both HCPN and CERT have adopted a cybersecurity plan that has been submitted to the counsel of government. The CSB has determined five priorities (on both the national and international scale) on which Luxembourg shall focus.³² The CSB has asked a working group to review the national strategy regarding cybersecurity to determine whether any amendments are necessary. Furthermore, the government has signed a letter of intent with Belgium and the Netherlands to cooperate in the prevention and fight against cybercrime. Luxembourg regularly hosts conferences on cybersecurity that are mainly dedicated to experts in security matters.

The CSB acts as a central point of information and contact for users to report cybersecurity incidents, which should allow the CSB to supply businesses with this information and put them in a position to take appropriate action to fight the risk against security.

After the delay in the implementation of the European Council Convention on Cybersecurity (CCC) and the directive relating to attacks on cyber-criminality,³³ a law relating to cybercrime was adopted on 18 July 2014. Such law adapts the national substantive and procedural criminal law to the specific needs of fighting cybercrime. The law introduces certain new criminal offences into the LCC, including in particular the misuse of identity, 'phishing' and illegal interception of computer data supplementing the legal instrument of computer-related crimes, which includes the illegal access, hacking and deletion of computer data. The law also amends the Criminal Procedure Code to achieve the requirements of the CCC regarding the prompt preservation of stored computer data and traffic data.

In January 2015, ANSSI, the national agency for the security of the information systems for the public sector and critical infrastructures, was created.

32 Department of State, National strategy on cybersecurity.

33 EU Directive 2013/40 on attacks against information systems (2 September 2013).

Further, SECURITYMADEIN.LU, launched in mid 2015 by ‘security made in Lëtzebuerg’ (SMILE), is an initiative with the objectives of coordinating governmental initiatives, and supporting and making the public more aware of cybersecurity issues. In addition, SECURITYMADEIN.LU aims to develop an ecosystem for cybersecurity that will reinforce the visibility of Luxembourg information security players and services. SECURITYMADEIN.LU and the activities of SMILE are an integral part of the national strategy that intends to position Luxembourg as a trusted ICT centre.³⁴

v Emergency response networks

Traditionally, Luxembourg first responders and other emergency responders (such as police, customs and civil protection) benefit from a dedicated network. This network was still analogue (RIFO). With the adoption of the Law of 20 May 2014 for the financing of a national integrated radio communication network for Luxembourg, RIFO will be replaced by RENITA. RENITA is based on the Terrestrial Trunked Radio digital technology and, in the case of a congestion of mobile networks, the RENITA network will be less exposed to inherent risks. RENITA has been operational since July 2015.

On an international scale, the government has actively cooperated on the strengthening of emergency telecommunication and rapid response in the event of disasters. It has developed a nomadic satellite based telecommunication system, ‘emergency.lu’, which aims to assist humanitarian agencies to respond to communities affected by natural disasters, conflicts or protracted crisis.³⁵ As of 2012, this platform was available as a public global service. At the end of 2014, the emergency.lu solution has been extended for a period of six years by the government.³⁶

At an EU level, harmonisation of the digital frequency relating to these services has been achieved, permitting interoperability.

IV SPECTRUM POLICY

i Development

The increasing development of wireless communication, media and information technology also affects spectrum policy in Luxembourg.

The need for radio spectrum has increased significantly over the past few years, and Luxembourg actively participates in the elaboration of a pan-European spectrum policy and favours a more flexible and efficient use of spectrum.

In its contribution paper to the European Commission of 15 April 2010, Luxembourg indicated that it is in favour of a more flexible use of spectrum, emphasising however that it is crucial that the more flexible use will not negatively impair the current quality of services or entail harmful interferences. Luxembourg has expressed its concern that a more flexible use would need to take into consideration the characteristics of more

34 www.gouvernement.lu, 9 June 2015.

35 www.itu.int/net/pressoffice/press_releases/2011/52.aspx#.VecVX1IcQUI.

36 www.ses.com/4233325/news/2014/20469026.

specific and sensitive technology, which would be more prone to harmful interference than others.

During the negotiations that led to the adoption of the European regulatory framework, Luxembourg explained that one of its top priorities was to maintain national competence in relation to the management of the spectrum and a full subsidiarity in this area.

ii Flexible spectrum use

As a result of the Law of 27 February 2011 amending the Spectrum Law, allocated licences are no longer personal.³⁷ On that account, it is currently possible to sell, transfer or sublease allocated spectrum, thus enhancing the flexibility of spectrum use. The Spectrum Law also provides for the possibility of spectrum sharing.

The mobile use of spectrum dedicated to fixed use is possible as a matter of applicable law and regulations, and is in line with the principle of technological neutrality.

iii Broadband and next-generation mobile spectrum use

According to the 11th edition of the ‘eGovernment benchmark’ of the European Commission, fixed high speed internet is accessible for 100 per cent of the population of Luxembourg, compared with 97 per cent for the rest of the European Union. For the ‘new generation’ high speed internet (>30Mbps), 94 per cent of the population is covered compared with only 68 per cent for the other EU Member States.³⁸

In Luxembourg, the increasing need for spectrum for use by the offer of increasing broadband services is partly solved by opening additional frequencies or release of spectrum for the use of broadband and next generation mobile services.

Luxembourg completed the switch-off of analogue television broadcasting on 31 August 2006, which was replaced by DTTV. The released spectrum (referred to generally as ‘the first digital dividend’) is used for next-generation mobile services.

The ILR has adopted a new frequency plan, which came into force in June 2015. Frequency bands 900MHz and 1800MHz have been made available for various mobile communication technologies. Frequency bands 800MHz and 2.6GHz have also been opened. In that respect, in October 2011 Luxembourg concluded an agreement with its neighbouring countries regarding reducing the risks of interference due to overlapping coverage in the frequency band 790–862MHz. This agreement has become effective on 1 January 2014.³⁹ Another multilateral agreement between France, Germany, Switzerland and Luxembourg was concluded in 2014 concerning the allotment of preferential frequency blocks in the band 406.100–410.000MHz in order to ensure equal spectrum access in the respective border areas. A bilateral agreement has been signed with Germany regarding Luxembourg and Germany’s common approach on dealing with the 470–694MHz and the 694–790MHz frequency bands.

37 Article 2 of the Law of 27 February 2011 amending Law of 30 May 2005 on organisation of the management of electronic waves.

38 Digital Economy and Society Index 2015.

39 ILR Annual Report 2013, p. 36.

The licences within the 900MHz have been renewed to the existing operators and one new operator, and the use thereof has been expanded to different technologies. These licences allowed the introduction of 4G technology in Luxembourg specifically (LTE). In addition, the three operators have spectrum in the 1800MHz band, allowing flexibility for the introduction of innovative new technologies. Certain operators⁴⁰ have spread out an operational 4G network covering a large number of the Luxembourg population and offer 4G services. At the end of 2014, 96 per cent of the population in Luxembourg already had access to this network.⁴¹

In June 2015, a public consultation was launched with respect to frequency band 2.1GHz. Three operators (which already have licences in that band) have confirmed their interest in that frequency. Use of 2.6GHz is also mentioned by the operators, but new spectrum within the 2.6GHz band has not yet been allocated. In June 2015, another public consultation for frequency band 3.6GHz was launched by the ILR.⁴² Only limited interest has been shown by the relevant operators to exploit that frequency due to the characteristics of that band.

iv Spectrum auctions and fees

Given the small size of the market and the limited number of operators, the experience of the authorities shows that allocations of spectrum through auctions or ‘beauty contests’ does not produce satisfactory results. Hence, although theoretically possible as a matter of law, auctions are not currently practised.

The Spectrum Law provides for various procedures for the allocation of spectrum licences such as competitive selection, comparative selection or by a public bidding procedure for the best offeror. The competent minister will determine the applicable procedure on a case-by-case basis after having undertaken a public consultation, and publish this decision in the Luxembourg Official Gazette and in the EU Official Journal at least one month prior to the launch of the procedure.⁴³

The fees payable to the state (as owner of the national spectrum) for the allocated spectrum are determined by a Grand-Ducal Regulation of 21 February 2013 on royalties for radio frequencies. The Spectrum Law has modified the allocation and recovery of the fees payable in relation to spectrum licences in favour of the ILR. Public services and authorities are not subject to the payment duty to the extent that spectrum is used for the provision of services within the scope of national defence, public security or emergency services.

40 Orange, Tango, EPT (now Post Telecom), Join Wireless, Cegecom.

41 <https://ec.europa.eu/digital-agenda/en/country-information-luxembourg>.

42 ILR Annual Report 2014, p. 47.

43 Article 6 of the Spectrum Law.

V MEDIA⁴⁴

The Media Law has been amended several times, with the most recent amendment having taken place on 27 August 2013. The Law aims to cover all types of audiovisual and sonorous media. High importance is attributed to content regulation, protection of children, non-discriminatory content and the form and the content of commercial advertising.

i Internet-delivered video content

It is difficult to measure the importance of internet video distribution in Luxembourg given the absence of surveys or statistics on this phenomenon. The only indicator is the fact that, as in most other Western countries, people watch less traditional TV, which seems to indicate that internet video is becoming more popular, particularly with the younger public. Given the general availability of cable and satellite TV, the impact so far has been minimal. In addition, based on the high connection rates of Luxembourg residents to the internet, it should be expected that this move will not pose dramatic problems for consumers.

VI THE YEAR IN REVIEW

i Key legislation

The introduction of e-archiving in the legislative framework with the Electronic Archiving Law is further evidence of the importance that Luxembourg allocates to e-services. E-archiving will help to limit filing costs, facilitate access to filed documents and make the sharing of the information the documents contain possible. Therefore, the sustainable conformity of the copies with the original documents has to be guaranteed. Furthermore, the archived documents have to be protected from any form of manipulation that could affect the conformity of the documents.

Considering the increasing importance of transnational transactions carried out by electronic means, Luxembourg is, besides the implementation of digital single market policies, also in favour of the implementation of a uniform framework on electronic identification and electronic authentication that should help to increase security and trust in online transactions and electronic commerce. This is proposed to be achieved at EU level through EU Regulation No. 910/2014 of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market, which shall enter into force from 1 July 2016, and the adoption of a regulation of the European Parliament and of the Council laying down measures concerning the European single market for electronic communications and to achieve a Connected Continent, and amending Directives 2002/20/EC, 2002/21/EC and 2002/22/EC, and Regulations (EC) No. 1211/2009 and (EU) No. 531/2012. This is still being discussed within the Council.

⁴⁴ Information in this section has been largely drawn from the government's Annual Reports 2011 and 2012.

In the era of the development of internet payment services where one of the main challenges remains compliance with know-your-customer requirements, Luxembourg recently adopted a regulation that softens the identification requirements for transactions below certain threshold amounts.

The adoption of the EU Roaming Regulations⁴⁵ has lowered the price caps for data downloads, making it much cheaper to use maps, watch videos, check e-mails and update social networks while travelling across the EU. It allows enhanced competition among operators and the creation of attractive offers for consumers. This is of particular importance to Luxembourg residents given the small size of the Luxembourg territory. In 2015, the ILR and the Belgian Institute for Postal Services and Telecommunications announced a bilateral agreement that opens the possibility for Luxembourg and Belgian customers to use their mobile phones between those two countries without paying 'roaming' charges.

Luxembourg is cooperating with other European countries on the data protection reform.

The announcement of the government 'Digital Letzebuerg' strategy, launched in August 2014, and 'Digital (4) Education' strategy in May 2015, evidences the government's intention to pursue efforts to continue the development of the ICT sector with the aim of making Luxembourg a 'high-tech centre' of excellence.

Government policy aims at further promoting the ITC sector and related infrastructure (data centres, etc.) as one of the pillars of the Luxembourg economy. The government is continuing to invest heavily in the security of the networks and infrastructures as one of the main pillars of the development of the electronic communication systems. The creation of various structures at national level evidences the government's priority to prevent and combat cybercrime and other attacks on electronic communication services and infrastructures. The creation of the Cybersecurity Board and the CERT, and the adoption of a national strategy in cybercrime matters, demonstrated the government's absolute determination to fight and prevent cyber-criminality.

Mobile services are now included in the 2GHz frequency band. Many other decisions and policies taken in this field have been in line with European policy. Important decisions regarding the opening of additional spectrum for mobile telecommunications services and the approval of the conditions for the utilisation of the 700MHz frequency by mobile services will be on the agenda during the ITU World Radio Conference, which will take place in November 2015. However, the opening of additional frequency will be discussed in terms of technical implementation and Luxembourg's need for additional spectrum.

The continuing development of the online video games sector in Luxembourg and the establishment of internationally known companies is encouraging LU-CIX to develop its services. The government has renewed its prior efforts to establish efficient technical infrastructures and a business-friendly legal environment to assure the best development possible for these companies in Luxembourg.

45 Regulation No. 717/2007, 30 September 2007; Regulation No. 544/2009, 18 June 2009; and Regulation No.531/2012, 13 June 2012.

Through its competent organ, the government has continued its ICT promotion efforts, and visited various countries in states in 2014 and 2015. A Luxembourg delegation travelled to various countries to show the government's support for Luxembourg start-ups. There is a firm intention to pursue these efforts going forward.

Luxembourg has also attended various conferences organised in Luxembourg and throughout the world.

Since 2010, Luxembourg has hosted the annual ICT Spring Conference. In 2014, the government representative expressed his intention to further develop Luxembourg as a centre for 'big data' and for the electronic payment services. He also referred to cybersecurity as an element of trust that is essential for both citizens and the entire economy. In 2015, the ICT Spring Conference had a strong focus on FinTech, the digitalisation of financial services and Luxembourg's place of in this revolution.

In the satellite sector, SES has continued to expand its fleet of satellites, offering a global connectivity covering 99 per cent of the world's population. It is investing in new onsite infrastructures. SES is also planning to launch two more satellites in 2017 with the aim of expanding its activities in Europe, Asia and South America.⁴⁶ The broadcasting of ultra HD (UHD) content is another SES priority, and it has already started testing the first UHD diffusion architecture in the United States.⁴⁷

ii Key mergers and takeover activity

No major takeover activity has taken place over the past six months, but the actors in the ICT sector have taken the opportunity to develop their activities and services in the respective areas of predilection in the light of new technologies (cloud, e-archiving, roaming, digital payment services, etc.).

VII CONCLUSIONS AND OUTLOOK

The digital economy is an important Luxembourg pillar, and is a top priority of the government. Luxembourg is considered to be located in the middle of the 'Golden Ring'.⁴⁸ Continuing efforts are made to favour the development of new communication and information technologies. The development of international connectivity and security in the current context remain key priorities. The adoption of the 'Digital Letzebuerg' and 'Digital (4) Education' strategies show the government's commitment and awareness of the importance of the ICT sector and ICT-related services. The development of FinTech services is strongly supported by many market players and the government.

Luxembourg has become one of the European leaders in terms of broadband penetration. It has attracted and continues to attract a number of new companies active in the ICT sector. The fast development of ICT services has increased the need for additional spectrum. The radio spectrum policy programme⁴⁹ thus aimed to identify at

46 www.ses.com/4233325/news/2015/20673281.

47 www.ses.com/4233325/news/2015/21277018.

48 Luxembourg and ICT: a Snapshot.

49 Radio spectrum policy programme decision EU 243/2012.

least 1200MHz of available spectrum for the mobile services by 2015. In May 2015, additional 1452–1492MHz frequency bands were opened.⁵⁰

The rapid development of cloud computing services and the creation of a legal framework for e-archiving will continue to be a driving force in the development in data protection legislation and the internet security sector. The ultimate aim is to consolidate a feeling of trust in the online environment, which is essential to the development of this sector of the economy.

Luxembourg is keen to take advantage of the growing demand for high performance infrastructure bandwidth capacity and the connectivity needs of the e-economy. Its geographical location close to the major European cities is a clear advantage.

Luxembourg will continue to develop high standard data centre services and facilities. It has opened the first green centre worldwide, showing its commitment to research and development into new infrastructures and technologies. Many Luxembourg data centres offer Tier IV design, and most of the other centres are classified Tier III. Luxembourg is actively working on cybersecurity, and participated in the discussions and negotiations on the data protection reform that is expected to be adopted by 2016. Luxembourg is already hosting the European Commission's data processing centres. Furthermore, it has applied for the establishment of a data processing centre for Interpol in Luxembourg.

Besides the importance of developing networks and guaranteeing security, the government and its partners are aware that the long-lasting and efficient development of the digital economy requires e-skills, and it is thus active in promoting ICT business to students. Awareness of the training opportunities and carriers in the ICT sector is one of the areas of development of the digital economy in Luxembourg (e-skills project) and goes hand in hand with the new 'Digital (4) Education' strategy.

50 <http://ec.europa.eu/digital-agenda/en/news/commission-decision-opens-new-frequency-band-advanced-mobile-services>.

Appendix 1

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Linda Funck is a partner with Elvinger, Hoss & Prussen, which she joined in 2000 when she became a member of the Luxembourg Bar.

Her principal fields of activity are mergers and acquisitions, banking, financial and securities laws, corporate restructuring and IT, IP and data protection law. In the field of TMT, Ms Funck regularly advises local and international companies on all IT aspects, and is a regular adviser to clients seeking to establish, restructure or develop their TMT activities in Luxembourg.

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