

GLOBAL SYMPOZIUM FOR REGULATORS (GSR-18)
Contribution to consultation process from National Regulatory Agency for Electronic Communications and Information Technology of the Republic of Moldova

I. Emerging technologies: preparing for AI, IoT, 5G, M2M communications to improve secure and reliable ICT infrastructure and access to and delivery of digital services

The technological neutrality has been declared in the Republic of Moldova, by relevant legislation, for the purpose of development of electronic communications networks and services, thus complying with the European Commission Decisions on harmonization of the radio frequency bands, including by amending the National Table of Frequency Allocations, which establishes the radio frequency bands, the electronic communications services, the conditions of use, as well as the ITU Resolutions to be observed when operating the corresponding systems. Moldova also approved Radio Spectrum Management Program for 2013-2020, which includes radio frequency bands 800 MHz, 900 MHz, 1800 MHz; 2100 MHz; 2600 MHz and 3400-3800 MHz, for which ANRCETI, upon request, issued corresponding license.

In order to fulfill the regulatory duties provided by law, especially those aimed at ensuring effective competition and the development of networks and services, ANRCETI ensures the neutrality of its regulations in terms of the technology applied.

By means of the special licensing conditions for the use of those frequency bands, ANRCETI granted the providers the right to use the frequencies in the [800/900/1800 MHz] bands for the provision of mobile wireless networks, covered by the following technologies: GSM, UMTS, LTE, WiMAX or other technologies the use of which is not contrary to the obligations to comply with technical and operational conditions provided by the special license conditions and the National Table of Frequency Allocations:

- frequencies of [2100 MHz] band for public wireless networks based on IMT terrestrial wireless technology standards, including IMT-2000 and IMT-Advanced;
- frequencies of [2500 MHz] band for the provision of broadband mobile wireless networks based on the IMT-2000/UMTS (WCDMA) and/or LTE and/or IMT-Advanced
- frequencies of [3400-3800 MHz] for the provision of public broadband (BWA) and/or fixed wireless networks (FWA).

Thus, for the first time in Europe and for the first time within the Orange Group, Orange Moldova and Nokia, on 17.12.2018, made the first VoLTE phone call in Moldova, through a core virtualized network, unique in its kind. Orange implemented Nokia Voice over LTE technology in Moldova, in order to significantly enhance the quality of its mobile voice services. The VoLTE service will be available to Orange Moldova customers in 2018. As a result, Orange Moldova customers will benefit from almost instant call connections, much higher quality clarity, reduced battery consumption, and will be able to make concurrent calls while using mobile data at 4G speeds. For the first time in the Group, Orange Moldova uses Nokia's Cloud-based IP Multimedia

Subsystem (IMS), which includes Telecom Application Server (TAS), a native cloud application, to deliver full-featured 4G network calls.

Through this implementation, Orange is also delivering a virtualization of its core network - a key milestone for the launch of 5G. Thus, Orange-Moldova customers will benefit from an extraordinary experience, having the ability to navigate at 4G speeds even during the call. Migrating to new generations of voice technologies for all customers is an important step toward 5G. As a result, new services will be introduced, such as VoLTE, at a faster pace and significantly lower operating costs.

Also, for the implementation of the 5G networks and services in the Republic of Moldova, the National Table of Frequency Allocations provides in particular for the frequency bands, as follows:

694 – 790 MHz – National footnote RN032 applying provisions of the ECC Decision ECC/DEC/(15)01 on harmonized technical conditions for mobile/fixed communications networks (MFCN) in the band 694-790 MHz including a paired frequency arrangement (Frequency Division Duplex 2x30 MHz) and an optional unpaired frequency arrangement (Supplemental Downlink) and Recommendation ECC/REC/(15)01 on cross-border coordination for mobile/fixed communications networks (MFCN) in the frequency bands: 694-790 MHz, 1452-1492 MHz, 3400-3600 MHz and 3600-3800 MHz. Also, provisions of the Resolution 760 (WRC-15) and Resolution 224 (rev. WRC-15) are applied.

3400 – 3800 MHz – National footnote RN048B applying provisions of the ECC Decision ECC/DEC/(11)06 on harmonized frequency arrangements for mobile/fixed communications networks (MFCN) operating in the bands 3400-3600 MHz and 3600-3800 MHz and Recommendation ECC/REC/(15)01 on cross-border coordination for mobile/fixed communications networks (MFCN) in the frequency bands: 694-790 MHz, 1452-1492 MHz, 3400-3600 MHz and 3600-3800 MHz.

24,25 – 27,5 GHz – will be implemented after the final approval of the ECC Decision (18)FF on harmonized technical conditions for Mobile/Fixed Communications Networks (MFCN) in the band 24,25-27,5 GHz and provisions of the Final Acts of the ITU World Radio Communication Conference 2019.

Machine-to-machine (M2M) solutions, innovations in business process automation

Starting with 2013, Moldova mobile telephony providers Orange Moldova JSC and Moldcell JSC launched web-based communication platforms dedicated to M2M business solutions. Their corporate customers, partners, and all interested parties can access this permanently updated informative portal, in order to keep up-to-date with the latest innovations in automating data transfer, monitoring and control.

The M2M services are solutions for integrating various devices, sensors and industrial or mass devices to automate data transfer, to monitor and control various software applications. Due to the complexity of implementation, M2M solutions include tools that provide centralized management for providers and integrators, as well as end-users. The M2M solutions are implemented to provide businesses with the ability to deliver higher quality services and products and reduce operational costs. M2M-connected equipment not only provides informational data but can also

be remotely controlled, enabling automation of work processes, creating a new opportunity for business development for business development in general, as well as for customers.

The M2M solutions offered by Moldovan providers can be applied in the following areas:

1. **Transport and Logistics**, monitoring the speed, route and efficiency of vehicles.
2. **Automation of processes in Industry and Agriculture**, obtaining, during technological processes, the overall image of the production equipment condition and possibility to react quickly when a fault occurs.
3. **Monitoring and security**, simplifying and automating the process of monitoring and managing alarm systems, offering a possible reduction in installation costs.,
4. **Financial Services**, integration and provision of data transport for cash-in terminals, POS terminals, ATMs, etc.
5. **Utility services**, user control of consumption, planning costs and saving money and time.
6. **Household equipment**, self- and remote-handling of household equipment, allowing the collection of detailed information about their operation.
7. **Distribution and Trade**, improving the sales organization process and productivity gains, focusing on increasing the sales and distribution teams' efficiency
8. **Medicine and health**, diversifying the offers of these types of services and offering equal access to healthcare throughout the country.

In 2017 the number of M2M subscribers of Orange Moldova JSC and Moldcell JSC reached 34856, with revenues of these providers of about US \$ 620 million.

II. Economic and business approaches: addressing market access across the value chain, fostering innovative and sustainable business and investment models across platforms, and identifying economic incentives to support digital transformation

The medium- and long-term public policy framework for ICT in the Republic of Moldova consists of:

- i) **Strategic Program for Technological Modernization of Governance (E-Transformation)** (Government Decision no.710 of 20 September 2011);
- ii) **National Strategy for Information Society Development " Digital Moldova 2020"** (Government Decision no. 857 of 31.10.2013);
- iii) **Strategy for increasing the competitiveness of the IT industry for 2015-2021** (Government Decision No. 254 of 14.05.2015),

and offers modern and innovative solutions to overcome all the challenges existing in the sector and a horizontal approach to the priorities of the development.

Strategic Program for Technological Modernization of Governance (E-Transformation) sets out the objectives of this process and provides a unified vision of modernizing public services and streamlining IT governance through information technology (IT). At the same time, this document provides the basis for a systemic approach to smart IT investments and IT capacity building in the public sector. The overall objective is to make the Government more transparent, more efficient and responsive by 2020, thanks to intelligent IT investment and massive use in the public sector. The specific objectives of this document are the following

- a. Modernizing public services by digitizing and reengineering of operational processes. Citizens and businesses will be able to access electronic information and services offered by central public authorities via a single governmental portal. These services will be accessible through various channels: internet, mobile telephony, kiosks, interactive terminals, etc.
- b. streamlining governance by ensuring the interoperability of IT systems and by strengthening and reusing IT resources. Public institutions will overcome departmental isolation and operate and interact on a common technologic platform. Citizens will only once provide personal data to public authorities, and public institutions will reuse these data for service delivery

National Strategy for Information Society Development "Digital Moldova 2020", is designed towards creating conditions, with minimal intervention of the state, but with maximum effect for the development of the information society, concentrating the efforts on three pillars:

- 1) **Pillar I: Infrastructure and access** – improving network access and connectivity;
- 2) **Pillar II: Digital content and electronic services** – Digital content and electronic services;
- 3) **Pillar III: Capacities and use** – enhancing digital literacy and skills to enable innovation and stimulate use.

These three dimensions have a major beneficial impact on the three society components:

- a. communities/population will enjoy a better, more comfortable life;
- b. businesses will increase their competitiveness;
- c. governance will improve its performance and become a governance for citizens, providing services anytime, anywhere, and by any terminal equipment.

The Strategy for increasing the competitiveness of the IT industry for 2015-2021 envisages the creation of an ICT competitive on regional and international levels, based on knowledge and innovation, where companies create added value and offer complex products and services integrating research and development outcomes. The overall objective of the Strategy is to create the conditions for the development of the IT industry and to increase the international competitiveness of IT products and services from Moldova. In order to achieve the objectives defined in the Strategy, based on the evaluation of the situation, the proposed interventions and activities will focus on three areas of intervention, such as education and research; business environment; international markets and partnerships.

Also, by Government Decision no. 4 of 14.01.2014 the Roadmap for Improving the Competitiveness of the Republic of Moldova as approved, for the purpose of strategic preparation of the country's economy and economic processes for the qualitative and successful implementation of the Association Agreement between the Republic of Moldova and the European Union, including the Agreement establishing a Deep and Comprehensive Free Trade Area between the Republic of Moldova and the European Union, as well as to intensify trade with traditional key partners to ensure the achievement of the European integration goal.

The document also includes measures aimed at facilitating innovation and developing the value chain at company level in the country as well as adopting more sophisticated production processes and business models. Some of the components of the Roadmap are also the Information Society,

Science, Technology and Innovation, Competitiveness. Factors that influence competitiveness are classified into three broad categories, depending on the level they are influencing: the factors that affect the overall competitiveness of the country, factors that influence a particular industry and factors that affect businesses individually. The Roadmap takes this into account and starts from the hypothesis that the manner in which the Government can intervene varies between country-level, industry-wide and enterprise-level factors.

The Republic of Moldova has no deposits of oil, coal, ores, extensive forests, or other natural wealth that it could be exploited. The only valuable resources they possess are the land and the people, which should be used effectively and efficiently to ensure the prosperity of the country. From this perspective, the building of a society based on knowledge, information and technology, which requires the maximum use of human potential based on the benefits of information and communication technology - an amplifier of people's intellectual capacities - is an imminent solution for increasing the competitiveness of the economy as a whole and the ICT sector.

The Roadmap reflects this approach and recommends further actions developed jointly with the private sector: producer associations and enterprises in sectors of primary agricultural products, processed agricultural products, industrial products, information technology, transport, education, health and financial services. This collaboration aims to further identify the existing constraints and priority actions that can be implemented along the value chain in each sector, while the Roadmap will continue to be targeted at horizontal competitiveness constraints at country level. Concerning the planned collaboration with the private sector, it involves assessing the features and identifying the constraints specific to the different sectors or industries, for better intervention and prioritization of remedial measures, with special attention to sectors with higher export potential.

II. Regulatory frameworks for digital transformation: identifying new and evolving collaborative approaches, developing across- sector digital policies strategies, and defining innovative regulatory tools and sandboxes

In order to ensure the implementation of public policies in the field, especially related to digital transformation, it is important to create an effective regulatory framework on the one hand and avoid imposing unnecessary restrictions and barriers to entrepreneurial activity on the other, in particular, for the development of electronic communications networks and services and for consumer and state protection, which in fact is a specific objective and is to be achieved, including by the regulator.

With a view to streamlining and rationalizing the authorization process for the provision of electronic communications services, ANRCETI has applied, since 2008, the general authorization regime based on the notification by persons intending operate in electronic communications without any decision or any other administrative act issued by the regulatory authority. The general authorization regime mainly grants to authorized service providers the right of access and interconnection, as well as the right of access to properties for the development of electronic communications networks and services

Thus, among the most important vectors of activity of the regulatory authority for ensuring digital transformation is to facilitate the process of developing broadband electronic communications networks and to ensure the transparency of access to public properties and shared use of infrastructure, associated with electronic communications networks. In this respect, ANRCETI mainly aims to create and make publicly available a database that will include the conditions of access to public properties, including for shared use of infrastructure associated with the electronic communications networks, as well as the entities responsible for granting the right of access and/or shared use of this infrastructure, and to create the information system "Digital Infrastructure Map" (detailed inventory of public electronic communications networks and associated infrastructure elements).

Another direction of ANRCETI activity focuses on the continuation of the necessary regulatory process by transposing the provisions of the EU Commission Recommendation of 20 September 2010 on regulated access to Next Generation Access Networks (NGA), while monitoring the compliance with the obligations imposed on providers with significant market power (SMP) on relevant markets, where there is no effective competition, regarding: access to electronic communications networks and associated infrastructure; access pricing and interconnection charges, including the obligations of cost-orientation and transparency, non-discrimination and accounting separation.

Also, ANRCETI continues to issue and update the existing regulations in order to harmonize them with European and international standards in information and communication technologies, to ensure adequate security of public networks and publicly available electronic communications services and to improve the quality of services offered to end users.