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SOCIAL INCLUSION AND  
POVERTY REDUCTION  
UNIT

# Report on Digital Inclusion in the Republic of Serbia for the Period 2014–2018



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# Report on Digital Inclusion in the Republic of Serbia for the Period 2014–2018

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## List of Abbreviations

<b>AMRES</b>	Serbian Academic Network
<b>AP</b>	Autonomous Province
<b>AT</b>	Assistive Technology
<b>CAPTCHA</b>	Complete Automated Public Turing test to tell Computers and Humans Apart
<b>CLL</b>	Cellular Local Loop
<b>CSS</b>	Cascading Style Sheets
<b>DESI</b>	Digital Economy and Society Index
<b>DILS</b>	Delivery of Improved Local Services project
<b>EU</b>	European Union
<b>FTTH</b>	Fiber-to-the-home
<b>HTML</b>	Hypertext Markup Language
<b>ICT</b>	Information and Communications Technology
<b>IEP</b>	Individual Education Plan
<b>IoT</b>	Internet of Things
<b>LFES</b>	Law on the Foundations of the Education System
<b>LGAP</b>	Law on General Administrative Procedure
<b>LTA</b>	Local Tax Administration
<b>PMI</b>	Public Media Institution
<b>MI</b>	Ministry of Interior
<b>MPALSG</b>	Ministry of Public Administration and Local Self-Government
<b>NEAP</b>	National Employment Action Plan
<b>NEET</b>	Not in employment, education or training
<b>NES</b>	National Employment Service
<b>NHIF</b>	National Health Insurance Fund
<b>OGP</b>	Open Government Partnership
<b>PDI</b>	Pension and Disability Insurance Fund
<b>PWD</b>	Persons with disabilities
<b>RATEL</b>	Regulatory Agency for Electronic Communications and Postal Services
<b>REM</b>	Regulatory Body for Electronic Media
<b>RTS</b>	Radio Television Serbia
<b>SCTM</b>	Standing Conference of Towns and Municipalities
<b>SORS</b>	Statistical Office of the Republic of Serbia
<b>STB</b>	Set-top-box
<b>UNICEF</b>	United Nations International Children's Emergency Fund
<b>VR</b>	Virtual reality

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# 1. INTRODUCTION

Digital inclusion aims to bridge the digital divide between people who have ready access to and ease of use of information and communications technologies (ICT) and the vulnerable social groups, such as persons with disabilities, the rural population in remote areas, children, youth, the elderly and other groups and individuals whose full participation in the digital environment is hampered by barriers that only keep growing over time.

Digital inclusion does not merely entail having a computer, a mobile device or access to the internet, but also directly reflects on the quality of life, social and political participation, employment opportunities, and paves the way for the highest possible degree of personal autonomy of the individual in society.<sup>1</sup> It is one of the most vital elements of social inclusion, and it is essential for people's full participation in the economic, social and cultural life and the attainment of a living standard and prosperity that are considered normal in the society they live in.<sup>2</sup>

With the acquisition of the EU accession candidate country status, social inclusion and poverty reduction issues became a binding element of Serbia's European integration policy. In fact, active participation in the European social inclusion process was defined by Serbia as one of its top priorities in the EU accession process. The Government is committed to fulfilling the requirements set by the EU at the Lisbon and Copenhagen summits, and, in parallel, it is closely monitoring all decisions related to the implementation of the Europe 2020 Strategy.

A detailed evaluation of the status of social inclusion in Serbia for the period from 2008 to 2017 was presented in the three National Reports on Social Inclusion and Poverty Reduction in the Republic of Serbia prepared by the Social Inclusion and Poverty Reduction Unit. These reports provide an overview of the progress made toward improving the strategic, legislative and institutional framework in the key areas of social inclusion.

The Second Report on Digital Inclusion in Serbia that you see before you, covers the period from 2014 to 2018 and is a follow-up of the initiative for monitoring the situation in this area launched by the Social Inclusion and Poverty Reduction Unit in 2015 with the publication of the first Report on Digital Inclusion for the period from 2011 to 2014.

This Report aims to map existing initiatives that contribute to progress in this area, and it includes an overview of the legislative, strategic and institutional framework for digital inclusion, an analysis of the current situation as well as an overview of the measures and programmes implemented in the observed period. Taking into account international and regional good practices, and the constant development of ICT, the Report provides recommendations and proposals for improving the digital inclusion process in the forthcoming period.

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<sup>1</sup> Guidelines for promoting the role of ICT in education, National Education Council, 2013.

<sup>2</sup> The definition of social inclusion according to the First National Report on Social Inclusion and Poverty Reduction in Serbia, Social Inclusion and Poverty Reduction Unit of the Government of Serbia, 2011.

## 1.1 Key Findings of the Report for the Period from 2014 to 2018

Twenty-four per cent of Serbia's population reported they **have never used the internet**, while data from 2017 indicate that almost 73% of households in Serbia **have an internet connection**. While this percentage has seen an increase in the previous period, it is still below the EU average of 87% of households with Internet access.<sup>3</sup>

A significant share of Serbia's territory is rural (85%) with 55% of the population living in this area. At the same time, the 15% urban share of Serbia's territory is inhabited by 45% of the population in 59% of households. A comparative analysis of data on Serbia's rural and urban population shows that there are significant disparities between these two population groups. Across nearly all indicators, there is evidence that the living standard of the rural population is lower<sup>4</sup>.

**The digital divide** becomes particularly marked when analysing geographic areas and density of internet adoption: in metropolitan areas in Serbia, 78% of households have an internet connection, while in other inhabited areas this percentage stands at 63%. The city recording the highest internet adoption rate is Belgrade (82%).

A significant share of the global population lacks the basic skills necessary to succeed in a society in which digitalisation is on the rise. Recent surveys indicate that 44% of EU citizens still **do not have basic digital skills**<sup>5</sup>, which particularly applies to certain segments of society, including the elderly, the less well educated or low-income persons.

In the EU, the Digital Single Market is seen as the foundation for the future growth of Member States. Bearing in mind all of the benefits of e-commerce and e-business that other parts of the world are aspiring to reap, it is emerging as a global goal. Bridging the digital divide, first and foremost between the urban and rural population, will facilitate the transition to a single market. With this aim in mind, the EU is regularly conducting surveys of the Digital Economy and Society Index (DESI). The **DESI index** is a composite index that benchmarks five main indicators:

- Connectivity: access to broadband internet, connectivity speed and prices;
- Human Capital: basic digital skills and literacy;
- Use of Internet Services: online communications, transactions and content consumption;
- Integration of Digital Technology: business digitisation and e-commerce;
- Digital Public Services: public digital services and e-Government.

The latest available indicators of the DESI 2017 index for Serbia were computed based on data for 2016. According to these indicators, Serbia ranked 27th of 28 EU member states with an index of 0.36<sup>6</sup>. By comparison, Bulgaria's DESI 2017 index was 0.37<sup>7</sup> and neighbouring Croatia's 0.43.<sup>8</sup> Germany scored the highest ratings among the EU Member States, amounting to 0.70.

Serbia's poor DESI 2017 rating is primarily a consequence of the **lack of fixed broadband access**. It has been argued that the Connectivity category should be expanded to include mobile network parameters. Nevertheless, Serbia's performance in the area of Integration of Digital Technology is good, and this is

<sup>3</sup> <http://publikacije.stat.gov.rs/G2018/Pdf/G201816013.pdf>

<sup>4</sup> According to the findings of the Third National Report on Social Inclusion and Poverty Reduction and data on absolute poverty, the population in non-urban areas is significantly more vulnerable. The absolute poverty rate is 10.5% in rural areas and 4.9% in urban areas.

<sup>5</sup> Digital Single Market – European Commission Report for 2017, EC official website: [https://ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=47880](https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=47880) (accessed on: 12 June 2019)

<sup>6</sup> Strategy for the Development of Next Generation Networks by 2023, RS Official Gazette No 33 of 3 May 2018

<sup>7</sup> Digital Economy and Society Index 2017 - Bulgaria, European Commission's official website: [https://ec.europa.eu/newsroom/document.cfm?doc\\_id=42993](https://ec.europa.eu/newsroom/document.cfm?doc_id=42993) (accessed on: 10 February 2019)

<sup>8</sup> Digital Economy and Society Index 2017 - Croatia, European Commission's official website: [https://ec.europa.eu/newsroom/document.cfm?doc\\_id=42995](https://ec.europa.eu/newsroom/document.cfm?doc_id=42995) (accessed on: 10 February 2019)

a definite sign that rapid progress is possible, and with the increased penetration of broadband access, and the development of access networks, first and foremost in rural areas, Serbia could significantly enhance the development of tourism, agriculture, and other sectors of the economy.<sup>9</sup> The enactment of the Law on Broadband Internet Access and the Action Plan for the implementation of the Strategy for the Development of Next-Generation Networks by 2023 will be crucial for progress in this area, along with the allocation of funding, as well as clear and time-bound goals for the implementation of activities.

In the area of internet access, the obligation to provide universal services enabling access to the Internet and fixed telephony services at reduced rates and through alternative technologies to Serbia's socially disadvantaged population and the population living in remote rural areas of the country is still not clearly defined in Serbia. The enactment of a new Law on Electronic Communications is expected in this area, with the further involvement of the Regulatory Agency for Electronic Communications and Postal Services (RATEL).

Some progress was made in the area of **access to information** in making media content accessible to persons with disabilities, such as, for instance, subtitling. The Law on the Use of Sign Language was enacted in 2015, and funds were invested in opening Serbian sign language interpreting services accessible to the deaf and hard of hearing across Serbia. According to data from 2015, 48% of the state administration websites, 69% of the province administration websites and 54% of local government websites meet basic standards of accessibility for persons with disabilities. The Law on e-Government, adopted in 2018, along with its implementing Regulation, now governs this area, but additional efforts should be invested by all public administration bodies (both at national and local level) to fulfil their statutory obligations in this area, to have websites and run them in line with the fundamental principles of e-Accessibility.

The key development in the area of **public digital services** was the establishment of the eZUP information system, which resulted in saving an estimated 500,000 hours of the citizens' time. Furthermore, at the end of 2018, a single electronic database of Serbian citizens was established for the first time. According to the Statistical Office of the Republic of Serbia (SORS) data for 2018, 37% of the internet population uses online services instead of making contact with or visiting public institutions or administrative bodies. More than 1,500,000 citizens used public administration online services according to the latest available data from 2018. Further training of public sector employees is required to improve the functioning of the eZUP information system and other elements of the state IT infrastructure, as well as further improvement of the e-Government portal to make new online services accessible for persons with disabilities. The interconnectivity and inclusion of institutions into the eZUP information system are particularly important for smaller communities and underdeveloped areas, primarily intending to save time and resources in providing services to citizens.

Significant progress was made in the area of **education** through substantial regulatory changes in the period from 2014 to 2018. Umbrella laws were amended enabling the creation of digital and accommodated textbooks and the broader use of digital tools in teaching. Informatics and Computer Science became a mandatory subject for fifth-grade students in Serbia while schools were supplied with additional computers as well as network equipment and internet connectivity through the Serbian Academic Network (AMRES). Two thousand digital classrooms were outfitted, a Digital Competence Framework was created for teachers, and numerous pieces of training were delivered to the teaching staff. Plans in this area include important legislative changes, the regulation of the activity of resource centres for assistive technologies, the regulation of distance learning and the rigorous application of the Instructions for the development of teaching materials in line with the universal design principle.

The most important development in the **healthcare** sector is the introduction of e-Baby and e-Prescription tools. The quality and performance of these tools will be improved to a great extent through additional investments in the infrastructure and the training of healthcare professionals in the use of computers and system networks that are available to them. While there are good practice examples in the use of new technologies for improving accessibility, there is also a need to further develop and invest in new functionalities. The "Chosen Doctor" application should be revised to improve user safety and compliance with basic user data privacy standards. It is also recommended that the Rulebook on medical and technical assistive devices available to PWD that are covered by health insurance be amended and the list of these devices expanded because of rapid obsolescence and development of new technologies.

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<sup>9</sup> Strategy for the Development of Next Generation Networks by 2023, RS Official Gazette No 33 of 3 May 2018

The most important development in the area of **social protection** is the introduction of innovative software for digitised collection of information from social protection institutions in 2018. The innovative software called Aurora electronically collects data from various areas of activity of social services, such as the situation with local service providers, cases of domestic and intimate partner violence, reports of social welfare centres and residential care institutions. In addition to collecting information, the software also stores these data in a central database and combines them, facilitating the rapid retrieval of information and their in-depth analysis. This software currently connects 44 local governments with 44 social welfare centres and 25 residential facilities in the Autonomous Province of Vojvodina, but its use will be scaled up to include all municipalities in Serbia, in cooperation with the National Social Protection Institute. Decision-makers will be able to predict trends in the social protection area and design effective measures in response to the increasingly complex needs of the users of social services owing to rapid data retrieval, processing and accurate analysis.

In 2018, the Government implemented a requalification programme for 800 participants, and a National Employment Action Plan (NEAP) was adopted. According to this plan, PWDs and other hard-to-place categories are prioritised for inclusion in active labour market policy measures. In this area, procedures should be simplified for granting subsidies to employers, more pieces of training should be made available to PWDs and amendments to the Law on Vocational Rehabilitation and Employment of PWDs as the most vulnerable population group should be considered.

The IT sector in Serbia employs over 40,000 people and has a yearly revenue of over EUR 4 billion. In late 2016, the Government of Serbia established a Council for Innovative Entrepreneurship and Information Technologies that coordinates the activities of different ministries in this field. In 2015, a technology park was opened in Belgrade, and two more are under construction in Niš and Novi Sad. Support is planned for establishing regional start-up centres, while an initiative particularly relevant for digital inclusion is the SEE ICT initiative for establishing eight Startit centres, supported by numerous companies and other donors. In the forthcoming period, support to innovative female entrepreneurship within the system of business incubators, of which there are 20 across Serbia, will be of the utmost importance.

Intending to further improve **digital literacy and competences** of the entire population, in 2018 the Ministry of Trade, Tourism and Telecommunications established a Working Group for the development of the Digital Skills Strategy in Serbia for the period from 2019 to 2023. This Ministry supported numerous projects that contributed to raising the digital skills level, and there are numerous examples of international cooperation and NGO sector initiatives in the area of internet security, digital violence and support to vulnerable groups of the population with the aim of increasing digital literacy. In the future, the intensification of investments in designing digital tools should be considered, along with continued support of initiatives that have been yielding results over an extended period of years.

## 2. Overview of Digital Inclusion in Relation to Key Requirements

### 2.1 INTERNET ACCESS

#### 2.1.1 Use of Computers and the Internet

According to the survey on the Usage of Information and Communications Technologies in the Republic of Serbia in 2018, conducted by the Statistical Office of the Republic of Serbia<sup>10</sup>, 72.1% of households in Serbia have a computer, which is an increase of 4% and 6.3% relative to 2017 and 2016, respectively. Nevertheless, this is still the weakest result compared to the average in the European Union, which stood at 84% in 2017.<sup>11</sup>

The number of computer users increased by 3.3% and 4.5% relative to 2017 and 2016, respectively, and by 5.9% relative to 2015. According to the results of the survey conducted in 2018, as many as 22.8% of the population never used a computer. Differences can be observed when comparing the availability of computers in urban and other areas of Serbia, 78.2% and 61.8%, respectively. This gap has slightly increased relative to 2017, as confirmed by the growth rates of the availability of computers in urban areas relative to other areas in Serbia, which stood at 4.7% and 1.1%, respectively.

The structure of households by monthly income is expressive of the greatest gap as to the availability of computers in households. Computers are mostly available in households with a monthly income of more than 600 euro (87.9%), while the percentage of households with an income of up to 300 euro that have a computer amounted to a mere 54.8%.

The segmentation has also been observed by educational level, employment situation and age. Among computer users, 59.7% have secondary educational level, 17.7% lower than secondary, and 22.6% tertiary educational level. Persons with tertiary educational level use the computer much more frequently than a person with lower than secondary educational level (93% and 41.1%, respectively).

In 2018, 86.8% of the employed used a computer, relative to 74.6% of unemployed and 44% of others, among which, pensioners. Over 95% of youth aged 16–24 years used a computer at least once in three months, relative to around 83% of persons aged 25–54. It has been observed that a higher percentage of men aged 55–74 years uses the computer relative to women in the same age group (45.6% and 36.6%, respectively).

Data from the 2011 Census indicate that, in total, 571,780 citizens can be regarded as persons with disabilities (PWD) in Serbia, accounting for 8% of the total population. However, it should be added that the disability status is unknown for around 2% of the citizens and that the data collection methodology entails the so-called reported difficulties approach. Bearing this in mind, as well as international data on the share of persons with disabilities in the general population (10–15%), it is estimated that there are really between 700 and 800 thousand persons with disabilities living in Serbia.<sup>12</sup> Updated data on

<sup>10</sup> All statistical data for the Serbia presented in this Chapter were taken over from the survey titled: "Usage of Information and Communications Technologies in the Republic of Serbia 2018", of the Statistical Office of the Republic of Serbia 2018. The survey was published on 21 September 2018:  
<http://publikacije.stat.gov.rs/G2018/Pdf/G201816013.pdf> (Accessed: 8 October 2018)

<sup>11</sup> Eurostat: Households – availability of computers, 2017:  
[http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc\\_ci\\_cm\\_h&lang=en](http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_ci_cm_h&lang=en) (Accessed: 23 October 2018)

<sup>12</sup> Accessibility of media and media programmes for persons with disabilities during the elections for members of the Belgrade City Council on 4 March 2018, Centre for Independent Living of Persons with Disabilities of Serbia:  
[http://www.cilsrbija.org/ebib/201804171003150.pristupacnost\\_medija\\_i\\_medijskih\\_programa\\_za\\_osipdf](http://www.cilsrbija.org/ebib/201804171003150.pristupacnost_medija_i_medijskih_programa_za_osipdf)  
(Accessed on: 10 February 2019)

how PWDs use computers, the Internet and new technologies are not available, and the latest available data at the national level date back to the 2011 Population Census. According to this data, there were 25,437 computer-literate PWDs, with a greater share of men (14,380) than women (11,057).

In Serbia, 73.4% of the population used the internet in the last three months, while 24.2% of respondents claim to have never used the internet. Regardless of this, the number of internet users increased by 1.4% relative to 2017, and by as much as 6.4% relative to 2015. In Serbia, 72.9% of households have an internet connection, which is an increase of 4.9% and 8.2% relative to 2017 and 2016, respectively. Nevertheless, this is still a weaker score compared to the EU average, which stood at 87% in 2017<sup>13</sup>.

The digital divide is evident when analysing geographic areas and availability of internet connections in urban and rural areas of the country: Belgrade has the highest availability of internet connections (82.2%), followed by Vojvodina (70.7%), and Central Serbia (69.3%). In the metropolitan areas in Serbia, 78.3% of households have an internet connection, while in other areas this percentage amounts to 63.9%. Relative to 2017, the growth rate stood at 5.4% in urban areas, and 4.1% in the other areas. A breakdown by monthly income indicates that households with a monthly income over EUR 600 have the highest availability of internet connections (87.8%), while only 56.8% of households with an income of up to EUR 300 have an internet connection. According to data of the 2011 Population Census, 44,481 PWDs have used the internet, with a higher share of men (25,078) than women (19,403).

Najzastupljeniji tip internet konekcije u Srbiji u 2018. godini je putem 3G mreže kojoj posredstvom The most prevalent type of internet connection in Serbia in 2018 was the 3G network accessed by 67.5% of households through mobile phones and tablets, followed by the DSL (ADSL) technology and cable internet used by 51.2% and 42.5% of households, respectively. Mobile phone via GPRS comes last with 4.5%. A mere 0.4% of households in Serbia have a dial-up connection, as a result of the increase in the use of the broadband connection and is an indicator of progress in this area.

Besides providing high-speed internet access, the broadband also completely changed the way in which the internet is used, as it allows much faster download of information than the classic dial-up connection.<sup>14</sup> In 2018, 72.5% of households in Serbia have a broadband internet connection, which is an increase of 10.6% and 14.7% relative to 2017 and 2016, respectively. While Serbia is among the countries that have progressed in this respect, it is still far from the European average: 99.9% of households in the EU had access to fixed or mobile broadband internet connection in 2017.<sup>15</sup>

The percentage of households that have a broadband internet connection has been one of the key indicators of progress in the use of ICT in the European Union since 2005. With 57% fixed broadband subscribers, Serbia falls in the group of countries that need to develop the broadband infrastructure and, in parallel, integrate digital technologies in business.<sup>16</sup> We are far below the European average; in fact, 97.4% of households in the EU had fixed broadband internet access in 2017.<sup>17</sup> This type of internet connection is most used in Belgrade (82.1%), in Vojvodina (70.3%), and least used in Central Serbia (68.8%). Broadband internet connection is mostly available in households with a monthly income of over EUR 600 (87.6%), while only 56.7% of households with an income of up to EUR 300 have it.

Significant differences are also observed when comparing the availability of broadband in urban and rural areas in Serbia: 77.9% and 63.5%, respectively.

As regards mobile broadband access, its progress began in 2015, when the three mobile operators in Serbia (Telekom Serbia, Telenor and VIP Mobile) purchased frequency bands from the state for the introduction of the fourth mobile telephony generation (4G). This technology was designed for the transfer of big amounts of data at three times the speed of 3G services.

<sup>13</sup> EU survey on Digital Economy and Society Statistics – Households and Individuals, 2017: [https://ec.europa.eu/eurostat/statistics-explained/index.php/Digital\\_economy\\_and\\_society\\_statistics\\_-\\_households\\_and\\_individuals#Internet\\_usage](https://ec.europa.eu/eurostat/statistics-explained/index.php/Digital_economy_and_society_statistics_-_households_and_individuals#Internet_usage) (Accessed on: 22 October 2018)

<sup>14</sup> "Usage of Information and Communications Technologies in the Republic of Serbia 2018", the Statistical Office of the Republic of Serbia: <http://publikacije.stat.gov.rs/G2018/Pdf/G201816013.pdf> (accessed: 24 October 2018)

<sup>15</sup> Broadband Coverage in Europe 2017: [http://ec.europa.eu/newsroom/dae/document.cfm?doc\\_id=52968](http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=52968) (accessed: 23 October 2018)

<sup>16</sup> Strategy for the Development of Next Generation Networks by 2023, RS Official Gazette No 33 of 3 May 2018.

<sup>17</sup> Broadband Coverage in Europe 2017

According to Opensignal's yearly global report, with an average 4G connection speed of 32.3 megabytes per second, Serbia ranks 12th out of 88 countries included in the survey.<sup>18</sup> By the availability of 4G signal via an LTE connection, Serbia is in the middle of the ranking with a coverage of 75.19% and ranked higher than bigger and more developed countries such as France, Italy and Ireland.<sup>19</sup> Measurements of radio signal coverage for 2017 showed that the operator with the best quality 4G coverage was Telenor.<sup>20</sup>

In 2014, the Government adopted a Strategy for the Development of Broadband Networks and Services in Serbia for the period until 2016 which defines the key directions and goals of the successful development of broadband networks and services in Serbia.<sup>21</sup> The activities and obligations of the relevant authorities in the process of development of broadband networks and services envisaged in the accompanying Action Plan were partially fulfilled.

No study has been conducted yet to assess the exploitation of the **digital dividend**, hence, accurate data about the infrastructure owned by different electronic communications operators are unavailable so far and should be collected.<sup>22</sup> In this regard, in late 2017, the Government of Serbia adopted a bill (proposed legislation) amending the Law on Electronic Communications<sup>23</sup> that should facilitate access to data about the routes and capacities of electronic communications networks. The new law should also allow for better protection of the rights of users of electronic communications services. Its enactment was scheduled in the fall of 2018, however, at the time of writing of this report the bill is yet to be introduced into Parliament.<sup>24</sup>

At the end of 2016, the Ministry of Trade, Tourism and Telecommunications launched a project in cooperation with the European Bank for Reconstruction and Development (EBRD), titled National Programme for Broadband Access Development. As stated in the Strategy for the Development of Next Generation Networks for the period until 2023, this programme will result in the launching of pilot projects to cover several rural municipalities in Serbia.<sup>25</sup>

Internet in Europe primarily relies on the first generation of broadband access technologies, but there is growing demand by both citizens and businesses worldwide for high-speed internet using next-generation networks. One of the indicators of progress is the availability of broadband network architectures based on fiber-optic cables and Fiber to the home (FTTH) technologies, still very underdeveloped in Europe and especially in Serbia.<sup>26</sup> Fiber-optic cables enable a far better signal transmission quality and faster data transmission speed.

In 2018, the Government of Serbia adopted a **Strategy for the Development of Next-Generation Networks until 2023** which states that fiber-optic technology should be the backbone of the broadband network in Serbia. The Strategy highlights that the situation on the electronic communications market in Serbia is not conducive to progress because it consists of several mutually disconnected networks run by different operators and no network infrastructure sharing. Internet service providers intensified investments in this area, offering increasingly sophisticated fiber-optic internet access services. However, the Strategy recognises the need to define mechanisms for maximising the use of the existing infrastructure, and making modern services equally available to all users in Serbia.

<sup>18</sup> The State of LTE (February 2018). Open Signal report: <https://opensignal.com/reports/2018/02/state-of-lte> (accessed: 25 October 2018)

<sup>19</sup> Serbia has registered progress in this respect as well. Availability of 4G signal stood at around 64% in 2017.

<sup>20</sup> Radio Signal Coverage, RATEL official website: <http://benchmark.ratel.rs/pokrivenost-radio-signalom-cyr> (accessed: 25 October 2018)

<sup>21</sup> Strategy for the Development of Broadband Networks and Services in Serbia by 2016, RS Official Gazette No 81/2014-4

<sup>22</sup> This was also envisaged by the previous Strategy for the Development of Broadband Internet Access for the period until 2014.

<sup>23</sup> Electronic Communications Bill (draft law): <http://mtt.govrs/download/Nacrt%20zakona%20o%20elektronskim%20komunikacijama.pdf> (Accessed: 25 October 2018)

<sup>24</sup> "A new electronic communications law due in the fall, enhanced protection for both users and operators", Blic daily newspaper, published on: 21 July 2018: <https://wwwblicrs/biznis/moj-novcanik/na-jesen-novi-zakon-o-elektronskim-komunikacijama-zastita-i-za-korisnike-i-za/pl0qnt2> (Accessed on: 25 October 2018)

<sup>25</sup> Strategy for the Development of Next Generation Networks by 2023, RS Official Gazette No 33 of 3 May 2018

<sup>26</sup> *Ibid.*

In that regard, the key goals of the Strategy are the development of an updated map of broadband infrastructure availability and the enactment of a law on broadband access. The Law could lay down the obligation of network operators to share the use of network and related infrastructure, (as foreseen under the EU Directive), and rules on transparency in keeping records on network capacities. In practice, operators could be required to, for instance, announce the start of construction works on new capacities, so that, if there is interest by other operators, the costs of construction can be shared.

For sparsely populated rural areas, the Strategy recommends the use of alternative technologies such as xDSL, broadband over power lines (BPL) or over satellites. Such an approach would save resources, considering the currently low penetration of fiber-optic internet in Serbia and the lack of adequate infrastructure (especially in rural regions and sparsely populated areas). The Strategy envisages state aid for operators and other legal entities for constructing networks in rural areas with the poor economic viability of broadband infrastructure.

## **2.1.2. Use of Computers and the Internet in Schools**

Under a project designed to connect all schools to the Serbian Academic Network (AMRES), all mother school facilities were equipped with a good quality internet connection that directed all internet traffic through AMRES<sup>27</sup> providing active protection and online support.<sup>28</sup> Relative to a commercial internet connection, the advantage of this type of connection is the possibility of blocking websites with harmful and inappropriate content as well as any other unwanted websites.<sup>29</sup>

The Ministry of Trade, Tourism and Telecommunications implemented a project designed to expand the number of Eduroam access points in higher education and scientific institutions in 50 cities in Serbia, of which there are currently over 180.<sup>30</sup> Eduroam (education roaming) is a wireless internet access service available at access locations in Serbia, Europe and worldwide. In Serbia, this service is provided by AMRES, and it is available in 82 other countries worldwide, enabling free and safe internet access at over 19,500 locations in universities, institutes, schools, libraries, etc.<sup>31</sup>

To bridge the digital divide and improve connectivity in rural areas, a project was launched in early 2017 for the introduction of a wireless Wi-Fi network in schools in rural areas in Serbia. The project is implemented by the Ministry of Trade, Tourism and Telecommunications, the Ministry of Education, Science and Technological Development and the Microsoft company. This project started with the installation of facilities in four locations – in the Bač primary school and secondary schools in Novi Pazar, Raška and Požega. The plan envisaged the installation of equipment in the remaining schools by mid-2017, providing use of the Microsoft Office 365 service for education and the improvement of teaching for teachers and students in selected schools.<sup>32</sup>

The installation of wireless local computer networks in schools started in early 2019, in cooperation with AMRES, and 33 primary and secondary schools in Serbia were included in this pilot project. According to the plan, local computer networks and closed-circuit video surveillance systems will be delivered to

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<sup>27</sup> "Priprema za novu školsku godinu" ("Preparations for the new school year"), official website of the Ministry of Education, Science and Technological Development, published on: 30 June 2017.

<http://wwwmpn.govrs/priprema-za-novu-skolsku-godinu/> (accessed: 20 January 2019)

<sup>28</sup> "IKT u obrazovanju nauci i kulturi" (ICT in education, science and culture"), the Smart and Safe portal:

<http://www.pametnoibezbedno.gov.rs/rs-lat/projekti/ikt-u-obrazovanju-nauci-i-kulturi> (accessed: 19 January 2019)

<sup>29</sup> Project for connecting primary and secondary schools to the AMRES network, AMRES official website:

<https://www.amres.ac.rs/cp/institucije/projekat-povezivanje-osnovnih-srednjih-skola> (accessed: 19 January 2019)

<sup>30</sup> "ICT in education, science and culture", the Smart and Safe portal:

<http://www.pametnoibezbedno.govrs/rs-lat/projekti/ikt-u-obrazovanju-nauci-i-kulturi> (accessed: 19 January 2019)

<sup>31</sup> Eduroam, AMRES official website: <https://www.amres.ac.rs/cp/institucije/eduroam> (Accessed on: 19. 1. 2019)

<sup>32</sup> "Bežični vaj faj za 40 škola u Srbiji" ("WiFi for 40 schools in Serbia"), official website of the Ministry of Trade, Tourism and Telecommunications, published on: 27 March 2017: <http://mtt.govrs/slider/bezicni-vaj-faj-za-40-skola-u-srbiji/?script=lat> (accessed: 20 January 2019)

schools in Belgrade, Ub, Kikinda, Negotin, Kraljevo, Kragujevac, Valjevo, Nova Varoš, Vršac, Vlasotinci, Lešnica, Topola, Bor, Zaječar, Svilajnac and Kruševica.<sup>33</sup>

In 2017, the line ministry conducted an assessment of the condition of ICT equipment in primary schools in all locations with grade fifth to eighth, as part of preparations for the introduction of Informatics and Computer Science as a mandatory subject in primary schools.<sup>34</sup> Computer equipment was delivered to around 2,900 primary schools for digital classrooms through the Digital School Project, in the period from 2010 to 2013.<sup>35</sup> In 2017, repairs were made to computers delivered to the schools in 2010–2013 that were out of order due to lack of maintenance.

A public procurement procedure was launched for the procurement of 700 computers for schools that are least equipped for teaching computer science, and private companies donated another 240 computers. The Justice Ministry, Telekom and the Rotary Club supplied 130 schools with computers, and a European Investment Bank loan will be allocated for the procurement of 4,600 laptops, tablets and desktops.<sup>36</sup>

In 2017, the Ministry of Education, Science and Technological Development launched a pilot project called Digital Classroom designed to train teachers and outfit schools with digital classrooms. After the initial training for 80 selected programme managers, organised in May 2018, these teachers shared the knowledge and skills acquired through the project at a set of new trainings for 2,000 class and subject teachers employed in elementary school across Serbia. The Government of Serbia equipped classrooms in these schools with state-of-the-art teaching technologies, to enable them to apply digital competencies for the use of digital textbooks in working with students.<sup>37</sup> At the beginning of 2019, the line minister announced that 8,000 additional digital classrooms would be equipped, in addition to the initially planned 2,000.<sup>38</sup>

### **2.1.3. Universal Service**

The 2013 Law on Electronic Communications envisaged the provision of universal service, which covers:

1. Access to the public communications network and publicly available telephone services on a fixed location, including data transfer services enabling functional Internet access;
2. Information and public directory services;
3. Provision of public pay telephones;
4. Provision of free calls to emergency services;

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<sup>33</sup> "Počela izgradnja bežičnih računarskih mreža u 33 škole u Srbiji" ("Construction of wireless computer networks started in 33 schools in Serbia"), official website of the Government of Serbia, published on: 1 February 2019: <https://www.srbija.gov.rs/vest/362462/pocela-izgradnja-bezicnih-racunarskih-mreza-u-33-skole-u-srbiji.php> (accessed: 10 February 2019)

<sup>34</sup> "Preparations for the new school year", official website of the Ministry of Education, Science and Technological Development, published on: 30 June 2017: <http://www.mpn.gov.rs/priprema-za-novu-skolsku-godinu/> (accessed: 20 January 2019)

<sup>35</sup> Map of the installed digital classrooms, by Serbian municipality: [www.digitalnaskola.rs](http://www.digitalnaskola.rs) (accessed: 7 December 2017)

<sup>36</sup> "Preparations for the new school year", official website of the Ministry of Education, Science and Technological Development, published on: 30 July 2017: <http://www.mpn.gov.rs/priprema-za-novu-skolsku-godinu/> (accessed on: 20 January 2019)

<sup>37</sup> "Završena obuka voditelja za digitalnu učionicu" (Training of digital classroom leaders completed), official website of the Institute for Educational Quality Improvement, published on: 26 May 2018 <https://zuov.gov.rs/zavrsena-obuka-voditelja-za-digitalnu-ucionicu/> (accessed on: 20 January 2019)

<sup>38</sup> "Planovi Ministarstva prosvete za 2019" (The Education Ministry's Plans for 2019), the *Blic* daily newspaper, published on: 1 January 2019 <https://www.blic.rs/vesti/drustvo/planovi-ministarstva-prosvete-za-2019-punopravno-clanstvo-u-cem-u-licenciranje/exj52pd> (accessed on: 20 January 2019)

5. Special measures to ensure equal opportunities for access to publicly available telephone services to persons with disabilities and socially vulnerable users, including the provision of free calls to emergency services, information and public directory services.<sup>39</sup>

The application of these special measures and other services related to the provision of the universal service is regulated by the Rulebook on Universal Service from 2012.<sup>40</sup> However, in practice, the envisaged concept did not yield the desired results and, in its Work Plan for 2018, the Regulatory Agency for Electronic Communications and Postal Services (RATEL) made some changes to the universal service delivery concept.<sup>41</sup>

In practice, nothing changed except for the fact that the draft new Law on Electronic Communications (LEC) envisages some amendments concerning the delivery of these services.<sup>42</sup> In Art. 59(2), the draft proposes the following definition of "universal service": "Universal service is delivered on a technologically neutral basis, in line with set quality standards, at affordable rates and in such a way so as not to prevent socially disadvantaged end-users and persons with disabilities from using the service."<sup>43</sup> In Article 60(1) of the Draft, it is stated that RATEL "shall designate one or more operators with the obligation to provide some or all of the elements of universal service, in part or all of the territory of the Republic of Serbia, ensuring that universal service is made available to all end-users in the Republic of Serbia, regardless of the geographical location." The last segment of the paragraph concerning geographic location is important because it sets a key requirement: that users living in remote, inaccessible areas, for instance, mountain villages, should not be excluded because operators cannot reach them.

The draft new LEC prescribes a set of basic services under the universal service:<sup>44</sup>

- The availability of at least one comprehensive directory of all subscribers of the publicly available telephone services, in electronic and/or printed format, updated at regular intervals, and at least once a year;
- The availability of at least one comprehensive information service available to all end-users, including users of public pay telephones;
- The use of public pay telephones and other publicly available access points for publicly available telephone services, with the possibility to call emergency services free of charge.

In the first phase of implementation of the universal service, the RATEL plan envisaged the coverage of 712 towns in which there are no fixed connections or less than ten connections per 100 inhabitants, and that is not fully covered with mobile telephone signal. According to RATEL data, in the first phase of implementation, all operators fulfilled their obligations and ensured the use of the universal service in these 712 places across Serbia. In late 2014, as a result of these activities, there were 227 new universal service users, with fifty additional connections underway. All new connections were provided through Telekom Serbia, while Telenor and Vip Mobile did not report any requests for service delivery by users, even though they provided the technical possibilities.

From RATEL's perspective, the problems identified in the application of the universal service are lack of interest by operators in building infrastructure due to lack of economic viability combined with the poor user interests in universal service, i.e. too few households in some areas. According to the operators, the key problems are: the lack of regulations introducing mechanisms to refund any unfair burden on designated operators providing universal service have as a result of this imposed obligation, and complicated procedures, high charges and other costs related to the construction of infrastructure.<sup>45</sup>

<sup>39</sup> Law on Electronic Communications, RS Official Gazette No 44/10 and 60/13-CC

<sup>40</sup> Rulebook on Universal Service, RS Official Gazette No 24/12

<sup>41</sup> Work Plan for 2018, RATEL official website,

[www.ratel.rs/upload/documents/O\\_Ratelu/Plan\\_rada/Plan\\_rada\\_za\\_2018.\\_godinu.pdf](http://www.ratel.rs/upload/documents/O_Ratelu/Plan_rada/Plan_rada_za_2018._godinu.pdf) (accessed: 8 December 2017)

<sup>42</sup> "White Book – Proposals for the Improvement of the Business Environment in Serbia for 2018", Foreign Investors Council, 2018: <http://www.fic.org.rs/projects/white-book/white-book.html> (accessed: 10 December 2018)

<sup>43</sup> Draft Law on Electronic Communications:

<http://mtt.govrs/download/Nacrt%20zakona%20o%20elektronskim%20komunikacijama.pdf> (accessed: 8 December 2018)

<sup>44</sup> Article 59(1) of the Law on Electronic Communications was amended (items 2, 3 and 4)

<sup>45</sup> Source: RATEL

To ensure access to the public communications network and publicly available telephone services at a fixed location, including data transfer services providing functional internet access, in 2016, RATEL introduced the use of Cellular Local Loop technology (CLL) in all settlements with up to 1,500 inhabitants, enabling the use of the classic landline telephone over the mobile network.<sup>46</sup> In April 2018, RATEL adopted a decision to allow the use of this technology by public mobile communication network operators in places with up to 3,000 inhabitants, according to data from the last census of the population, households and dwellings conducted by the Statistical Office of the Republic of Serbia.<sup>47</sup>

Apart from these, there were no additional activities for the improvement of the infrastructure and quality of services for the population in areas with underdeveloped infrastructure and vulnerable categories of the population. According to RATEL data from 2017, there were 4,500 CLL technology users in total. CLL technologies are provided by all operators but are used by only around 250 VIP Mobile users and around 4,000 Telekom users.<sup>48</sup>

As regards users of the universal service, the most recent RATEL data year available is 2017 (up to and including 31 December 2017). Telecom Serbia reported 143 universal service users, VIP Mobile 157, while Telenor had no requests for the delivery of universal service and no users in places where there are less than ten telephone connections per 100 inhabitants and without complete mobile telephony signal coverage. Landline telephone connections of operators with reported universal service users were implemented with CLL technology.

The table below provides an overview of the operators' universal service rates:

Type of service/operator	Telekom Serbia	Telenor <sup>49</sup>	Vip Mobile <sup>50</sup>	Orion Telekom
Connection	/	5.999	6.000	/
Monthly subscription	/	516	516	/
Local traffic – lower rate	/	1,2	1,2	/
Local traffic – higher rate	/	1,2	1,2	/
Long-distance traffic – lower rate	/	1,2	1,2	/
Long-distance traffic – higher rate	/	1,2	1,2	/
Incoming international mobile traffic – lower rate	/	7,27	7,27	/
Incoming international mobile traffic – higher rate	/	7,27	7,27	/
National data traffic (1 kB)	/	0,06	the price is not indicated	/

Please note:

- Telenor and Vip Mobile offer universal services at a regulated tariff, through the mobile network (CLL). No information was available on universal services for Telekom Serbia and Orion Telekom operators.
- All tariffs are expressed in dinars, inclusive of VAT, as at 16 December 2018.
- All tariffs apply per minute of phone call/1 kilobyte (kB) of data transferred.

The monthly subscription includes:

- Telenor: 144 dinars of free traffic;
- Vip Mobile: 120 dinars of free traffic.

<sup>46</sup> Cellular Local Loop (CLL), source: RATEL Annual Report for 2016: [http://www.ratel.rs/upload/documents/Godisnji\\_izvestaj/Godisnji%20izvestaj%20za%202016.pdf](http://www.ratel.rs/upload/documents/Godisnji_izvestaj/Godisnji%20izvestaj%20za%202016.pdf) (accessed: 8 December 2017)

<sup>47</sup> RATEL Decision No 1-01-3491-1148/17-10 of 16 April 2018 [https://www.ratel.rs/uploads/documents/pdf\\_documents/resenje%20za%20CLL%203000%20stanovnika.pdf?fbclid=IwAR0zmU0aEUrjNDuYPa9Gkt8-B1KqNssjOLcAt8zD8ZPHf9g3UzoRqIPOcMU](https://www.ratel.rs/uploads/documents/pdf_documents/resenje%20za%20CLL%203000%20stanovnika.pdf?fbclid=IwAR0zmU0aEUrjNDuYPa9Gkt8-B1KqNssjOLcAt8zD8ZPHf9g3UzoRqIPOcMU) (accessed: 10 December 2018)

<sup>48</sup> Source: RATEL

<sup>49</sup> Universal Service, Telenor's official website, <https://www.Tenehop.rs/sr/privatni/usluge/ostale-usluge/pozivi-i-poruke/univerzalni-servis> (accessed: 16 December 2018)

<sup>50</sup> Vip Universal Service, Vip Mobile's official website, [https://www.vipmobile.rs/privatni/usluge/dodatne\\_usluge/vip\\_univerzalni\\_servis](https://www.vipmobile.rs/privatni/usluge/dodatne_usluge/vip_univerzalni_servis) (accessed: 16 December 2018)

As regards special measures for providing equal opportunities for persons with disabilities to access the publicly available telephone service, the Rulebook on Universal Service envisages the following: the introduction of terminal devices accommodated to persons with different types of disabilities (hearing, visual impairments, etc.) as part of the offer of universal service providers, as well as the accommodation of phone booths to enable access and use by PWD. RATEL, however, still did not avail itself of the statutory possibility of making the introduction of terminal devices accommodated to PWD mandatory for operators.

As regards public payphones, so far, RATEL did not insist on installing new payphones, or impose this obligation. Furthermore, RATEL did not prescribe the obligation of making accommodations to existing payphones in line with accessibility standards, to facilitate use by persons with disabilities and other users.<sup>51</sup> RATEL's most recent available Overview of the Telecommunications Market in the Republic of Serbia dates back to 2017 and states that the number of public payphones has continued to decline and stood at 2,631 in 2017.<sup>52</sup>

The current status of universal service providers' compliance with their obligation to provide equal conditions for the use of telecommunications services by persons with disabilities and socially vulnerable users is presented below:

Operator	Discounts for socially disadvantaged users	Terminal devices for persons with disabilities	Special packages for persons with disabilities
Telekom Serbia	/	/	Mobile telephony: Special post-paid packages tailored to the needs of persons with visual or hearing impairments or other types of disabilities. <sup>53</sup>
Telenor	/	/	Mobile telephony: two packages for PWDs ("Persons with Disabilities" and "Persons with Disabilities 2") designed for the blind, deaf and persons with other types of disabilities (disabled war and peacetime veterans, civilians disabled in war, persons suffering from muscular dystrophy, paraplegia, quadriplegia, cerebral palsy and polio, persons who are designated as persons with a disability category determined in line with regulations on pension and disability insurance). <sup>54</sup>
Vip Mobile	/	/	/
Orion Telekom	Fixed telephony: 50% discount on the monthly subscription and activation of services for socially disadvantaged users. <sup>55</sup>	/	Fixed telephony: 50% discount on the monthly subscription and activation of services for PWDs.

<sup>51</sup> Rulebook on technical standards for planning, designing and constructing buildings that enable unhindered mobility and access of persons with disabilities, children and the elderly, RS Official Gazette No 22/2015

<sup>52</sup> "Pregled tržišta telekomunikacija u Republici Srbiji u 2017. godini" (Overview of the Telecommunications Market in the Republic of Serbia in 2017), RATEL's website,

[https://www.ratel.rs/uploads/documents/empire\\_plugin/5bd194d2428d3.pdf](https://www.ratel.rs/uploads/documents/empire_plugin/5bd194d2428d3.pdf) (accessed: 16 December 2018)

<sup>53</sup> "Tariffs for persons with disabilities", Telekom Serbia's official website,

<https://www.mts.rs/privatni/mobilna/postpejd/invaliditet> (accessed: 22 December 2018)

<sup>54</sup> Tariff Packages, Telenor's official website, <https://www.Telenor.rs/sr/privatni/ponuda/tarifni-paketi/> accessed: 22 December 2018)

<sup>55</sup> Decision on special conditions for the use of fixed telephony services for socially disadvantaged users and persons with disabilities, Orion Telekom website, [https://oriontelekom.rs/wp-content/uploads/2016/10/Odluka\\_o\\_povlascenim\\_uslovi-ma\\_koriscenja\\_fiksne\\_telefonije\\_za\\_ugrozene\\_kategorije\\_korisnika022014.pdf](https://oriontelekom.rs/wp-content/uploads/2016/10/Odluka_o_povlascenim_uslovi-ma_koriscenja_fiksne_telefonije_za_ugrozene_kategorije_korisnika022014.pdf) (accessed: 16.12.2018).

Operators have no binding requirement to implement information campaigns on universal services. In order to inform as many potential users as possible about these services, RATEL plans to promote these services through public service broadcasters (the promotional costs could be significantly cut if the Regulatory Body for Electronic Media would circulate a recommendation to broadcasters that this is a project of public interest), and by distributing printed materials, in cooperation with the Ministry of Public Administration and Local Self-Government. The RATEL plan is to begin the campaign after the by-laws are adopted.<sup>56</sup>

#### **2.1.4. Recommendations**

- There is a need for a comprehensive state programme for the development of broadband infrastructure in areas where it is nonexistent or where the operators' capacities and offer are not sufficient. In this connection, there is a need for providing an integrated overview and increasing the transparency of information on current and future state project investments in and development of the infrastructure network, both those managed by the state independently and those implemented in cooperation with international organisations or companies.
- Adopt an Action Plan for the implementation of the Strategy for the Development of Next Generation Networks for the period until 2023 as soon as possible, to begin with preparing a Draft Law on broadband internet access.
- In its Plan for 2019, the Ministerial Council for Innovative Entrepreneurship and Information Technology has reviewed the possibilities for the construction of FTTH networks in municipalities or parts of municipalities where there is no clear economic interest for it, and consequently no plans by operators to implement this. It is stated in the plan that, among other, this project would pilot an incentives scheme for the construction of this type of networks, with possible modifications, to cover between 600 and 800 thousand households located in areas where there is no clear economic interest for the construction of FTTH networks by operators. The proposed Project would cover 3 – 7 different municipalities (fully or partially) and around 30,000 households, and the value of the investment would amount to around 20 million euro exclusive of VAT. The Government of Serbia would build a network in areas where operators are not willing to do so due to lack of economic interest, and subsequently, it would lease them to one of the operators, in a transparent manner, for long-term management and use.<sup>57</sup> This proposal should be reassessed, and a feasibility study should be conducted, considering its impact on the potential for the development of rural areas.
- Continue investing in infrastructural projects and intensify efforts by state institutions and civil society organisations to increase social inclusion of PWDs through the use of ICT.
- Enable better public access to information about the results of planned projects for the procurement and/or donation of computers and other equipment for schools in Serbia. The same need is present in the case of projects for enabling access to the internet. While information and news about planned and ongoing projects are available, no insight is provided on the results of the announced projects and initiatives.
- In the Foreign Investors Council's (FIC) White Book for 2018, it is stated that "the obligation to provide the universal service has not yet been clearly defined, therefore clear and predictable regulation needs to accompany announcements of changes to these obligations".<sup>58</sup> In the recommendations for the telecommunications sector, it is stated that the provision of the universal service should be regulated "in a clear, transparent, and predictable manner, and under economically justified principles".

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<sup>56</sup> Source: RATEL

<sup>57</sup> Plan of priority objectives and activities of the public administration and services of the Government for the improvement of the IT Sector in Serbia for 2019 with Report for 2018, official website of the Government of Serbia: [https://www.srbija.gov.rs/view\\_file.php?file\\_id=2300&cache=sr](https://www.srbija.gov.rs/view_file.php?file_id=2300&cache=sr) (accessed: 9 February 2019)

<sup>58</sup> "Foreign Investors Council's White Book – proposals for improvement of the business environment in Serbia 2018", p. 32, <http://www.fic.org.rs/projects/white-book/white-book.html> (accessed: 10 December 2018)

- RATEL and other state institutions should create the legal conditions for abolishing or significantly reducing fees payable by operators for the construction and exploitation of infrastructure in the affected areas.
- Regardless of the decline in the number of public payphones from year to year, RATEL needs to prescribe the minimum functional requirements so that at least new or replacement public payphones are easily accessible to persons with disabilities and other vulnerable categories of the population.
- Bearing in mind that the possibility to communicate has a significant impact on social inclusion, it is necessary that RATEL must lower the obligation for operators to provide a discount for the connection and basic package for telecommunication services at a fixed location for socially disadvantaged users.
- RATEL and the line ministry, in cooperation with operators and media, should implement a public information campaign to raise awareness about the opportunity of using the available options for special packages for PWDs and socially disadvantaged population categories.

## 2.2 ACCESS TO INFORMATION

### 2.2.1. Legislative Framework in the Field of Public Information

Already in its basic provisions, the **Law on Public Information and Media**<sup>59</sup> lays down the principle of the right of persons with disabilities to access information (Art. 12), stating that “the Republic of Serbia, the Autonomous Province, and local government units shall take measures to enable unhindered access to public information by persons with disabilities, in a suitable format through the use of appropriate technology, and provide part of the funding or other conditions for the activity of media outlets that publish information in the sign language, or in Braille, or that enable these persons to exercise the right to public information in other ways.” Access of PWDs and minority groups to public information is listed as one of the elements that define the public interest in public information services (Art. 15).

In addition to the general, i.e. umbrella law governing public information and media, there are special laws on electronic media and public service broadcasters in Serbia (Public Media Institution Radio-Television Serbia and PMI Radio-Television Vojvodina), which also include provisions aimed at improving the accessibility of public information for persons with disabilities.

According to the **Law on Electronic Media**,<sup>60</sup> among other, improving accessibility of media services for persons with disabilities also falls within the purview of the Regulatory Body for Electronic Media (REM). Article 52 of the same law provides for the protection of the rights of persons with disabilities, requiring media service providers to make their programme and content accessible for persons with visual or hearing impairments, in accordance with their financial and technical possibilities, and lays down the obligation of the REM to encourage them to do this. In the section on civil sector audio-visual services, the Law on Electronic Media prescribes that media services can be provided to fulfil the special interests of certain segments of society and associations of citizens, including persons with disabilities. Licenses for providing such media services are issued at no charge.

The **Law on Public Service Broadcasters**<sup>61</sup> prescribes that public service broadcasters are obliged to serve the public interest by, among other, “meeting the needs for access to information of all members of the society without discrimination, taking into account, in particular, socially vulnerable groups such as

<sup>59</sup> Law on Public Information and Media, RS Official Gazette No 83/2014, 58/2015 and 12/2016 – authentic interpretation: [https://wwwparagrafrs/propisi/zakon\\_o\\_javnom\\_informisanju\\_i\\_medijima.html](https://wwwparagrafrs/propisi/zakon_o_javnom_informisanju_i_medijima.html) (accessed: 25 December 2018)

<sup>60</sup> Law on Electronic Media, RS Official Gazette No 83/2014 and 6/2016

<sup>61</sup> Law on Public Service Broadcasters, RS Official Gazette No 83/2014, 103/2015 and 108/2016

children, youth and the elderly, minority groups, persons with disabilities, persons with social and health vulnerabilities and others". The Law also prescribes the mandatory use of sign language as a form of communication of the deaf and hard of hearing. In Art. 42, the same Law also prescribes categories of the population that are exempted from the payment of the public service broadcaster's fee, also including persons with 100% physical disability, persons with less than 100% physical disability if they were recognized the right to attendance allowance, persons with permanent loss of hearing or vision, recipients of financial, social assistance and pensioners with minimal pensions. Residential care institutions, educational institutions, medical institutions and organisations for persons with disabilities and companies for the vocational rehabilitation and employment of persons with disabilities, designated under the law regulating social protection, are also exempted from the payment of this fee.

The **Law on Prevention of Discrimination of Persons with Disabilities**<sup>62</sup> prescribes measures for ensuring access to information for persons with disabilities. Article 35 prescribes that the state administration, provincial and local government bodies tasked with cultural and media affairs are required to take measures aimed at making information and communication accessible to persons with disabilities through the use of appropriate technologies. These measures include, in particular, "the daily communication of information also intended for persons with disabilities using adequate technology for simultaneous speech-to-text conversion."

The switchover from analog to digital television broadcasting in Serbia was completed in mid-2015. The digital signal now covers 97.8% of the population that can follow, using antennas, on average 15 TV programmes, depending on the region they are in.<sup>63</sup> Pursuant to the **Government Regulation establishing support measures and detailed requirements with respect to establishing the criteria for determining vulnerable consumers in the process of granting vouchers for subsidized purchase of digital television signal receivers**, socially disadvantaged categories of the population were eligible to receive a set-top box device (STB) that allows a digital television signal to be received.<sup>64</sup> Vouchers were granted to 160,000 recipients of social welfare and attendance benefits, pensioners with minimum income living alone, and the Ministry of Trade, Tourism and Telecommunications stated that around 91% of vouchers were used for the subsidised purchase of STB devices.<sup>65</sup>

## 2.2.2. Media Content Adaptation for Persons with Disabilities

In practice, some progress was seen in media content adaptation for persons with disabilities, such as, for instance, subtitling, but there is still plenty of room for improvement. Apart from the national and provincial public service broadcasters<sup>66</sup>, some local televisions (e.g. news in sign language on TV Bečej,<sup>67</sup> and news for people with hearing loss on RTV Bor<sup>68</sup>), there were no significant examples of content adaptation to enable access for persons with disabilities. Nevertheless, according to data obtained

<sup>62</sup> Law on the Prevention of Discrimination against Persons with Disabilities, RS Official Gazette No 33/2006 and 13/2016

<sup>63</sup> "Gogić: we have exceeded European standards in the area of digitization", RTS news portal, published on: 4 January 2016: <http://www.rts.rs/page/rts/sr/Digitalizacija/story/2002/srbija/2162131/gogic-u-digitalizaciji-smo-iznad-evropskih-standarda.html> (accessed: 6 January 2019)

<sup>64</sup> Government Regulation establishing support measures and detailed requirements with respect to establishing the criteria for determining vulnerable consumers in the process of granting vouchers for subsidized purchase of digital television signal receivers, RS Official Gazette No 28/15

<sup>65</sup> "Matić: state provides free digital TV signal for the citizens", official website of the Ministry of Trade, Tourism and Telecommunications, published on 31 May 2015:

<http://mtt.gov.rs/vesti/matic-drzava-obezbedila-gradjanima-besplatni-tv-signal/?script=lat> (accessed: 2 January 2019)

<sup>66</sup> On RTV's Programme One news are broadcast for hard of hearing persons, RTV news portal, [http://rtvrs/sr\\_ci/program/prvi-program/satnica](http://rtvrs/sr_ci/program/prvi-program/satnica) (accessed: 2 January 2019)

<sup>67</sup> Bečej TV: weekly overview of news in sign language 24–28 December 2018, TV Bečej YouTube channel, published on 28 December 2018: <https://www.youtube.com/watch?v=w4ouE38fCUs> (accessed: 2 January 2019)

<sup>68</sup> On the official RTV Bor YouTube channel, the last edition of the news for persons with disabilities was published in June 2016, RTV Bor YouTube channel: [https://www.youtube.com/playlist?list=PLCdNPJ\\_fAv4EuV97nQARgu18UhhnFo32](https://www.youtube.com/playlist?list=PLCdNPJ_fAv4EuV97nQARgu18UhhnFo32) (accessed: 2 January 2019)

from REM, when it comes to electoral campaign content, such content is adapted for persons with disabilities on all national frequency televisions, and the programmes of both public service broadcasters.<sup>69</sup>

It should be noted in particular that websites of private TV stations with allocated national frequencies, specifically, i.e. Happy TV,<sup>70</sup> O2 TV,<sup>71</sup> Prva TV<sup>72</sup> and Pink TV,<sup>73</sup> at the time of writing of this Chapter (December 2018 – January 2019) have no technical possibilities for increasing text font size or for text-to-speech conversion. On RTS' website, the text-to-speech conversion is available only for some of the articles, while RTV's website supports both options.

RTV, Vojvodina's public service broadcaster, was the first in Serbia and the region to introduce the "Re@d to me!" service, which is a text-based speech synthesizer (a speech synthesizer converts text to artificial human speech), developed as part of a scientific research project by experts of the Technical Sciences Faculty in Novi Sad, and is extremely helpful both for persons with disabilities and the elderly who do not want to additionally wear themselves out reading textual news. For the needs of the blind who use specialised software, a "white page" was introduced on the RTV website [www.rtv.rs/citajmi](http://www.rtv.rs/citajmi) specifically for this type of software. This page features an overview of news divided by topics (latest news, breaking news, Vojvodina, politics, economy, sport, society, etc.) which the synthesiser reads when the appropriate topic has been selected.<sup>74</sup>

Starting in June 2017, the content of every edition of News 2 is available to the deaf and hard-of-hearing viewers using subtitles in Teletext.<sup>75</sup> It should be noted that, for more than one decade, RTS has been broadcasting news in sign language every day at 4 p.m., and in crises all news and special programmes as well. The editorial board of RTS' school programme produces programmes for the deaf and hard of hearing, while RTS2 and RTS Satellite are airing a show devoted to persons with disabilities in sign language twice a month titled "A place for us".<sup>76</sup> According to REM data, in the period from 1 April 2018 to 31 July 2018, the share of RTS broadcasts accessible for persons with disabilities in the total broadcast programme increased to 2.43% (from 0.18% in 2013). In the same period, the share of RTS2 broadcasts accessible for persons with disabilities decreased relative to 2013 (from 0.73% to 0.53%).<sup>77</sup>

RTS Planet, the digital platform of the national public service broadcaster, offers live streaming of television and radio programmes, catch-up services (deferred viewing of programmes) and the possibility of watching TV and radio shows in Videoteka (video on demand) and Slušaonica (audio on demand).<sup>78</sup> In the Videoteka of the RTS Planet platform, there is a section with content in sign language, containing documentaries, historical, travel, cultural and popular science shows.<sup>79</sup>

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<sup>69</sup> Source: REM

<sup>70</sup> Happy TV website: <http://happytv.tv/> (accessed: 2 January 2019)

<sup>71</sup> O2 TV website: <https://o2tvrs/> (accessed: 2 January 2019)

<sup>72</sup> Prva TV website: <http://www.prvar.rs/> (accessed: 2 January 2019)

<sup>73</sup> Pink TV website: <http://pink.rs/> (accessed: 2 January 2019)

<sup>74</sup> Re@d to me!, RTV website, [http://www.rtv.rs/sr\\_ci/citaj-mi/](http://www.rtv.rs/sr_ci/citaj-mi/) (accessed: 2 January 2019)

<sup>75</sup> "News 2 with subtitles starting 20 June", RTS website, published on 19 June 2017, [http://www.rts.rs/page/stories/sr\\_story/125/drustvo/2774580/od-20-juna-dnevnik-2-sa-titlom.html](http://www.rts.rs/page/stories/sr_story/125/drustvo/2774580/od-20-juna-dnevnik-2-sa-titlom.html) (accessed: 2 January 2019)

<sup>76</sup> "News 2 with subtitles starting 20 June", RTS website, published on 19 June 2017: [http://www.rts.rs/page/stories/sr\\_story/125/drustvo/2774580/od-20-juna-dnevnik-2-sa-titlom.html](http://www.rts.rs/page/stories/sr_story/125/drustvo/2774580/od-20-juna-dnevnik-2-sa-titlom.html) (accessed: 2 January 2019)

<sup>77</sup> Source: REM

<sup>78</sup> "Frequently asked questions", RTS Planet website, <https://rtsplaneta.rs/static/4> (accessed: 5 January 2019)

<sup>79</sup> "Videoteka – sign language", RTS Planet website, <https://rtsplaneta.rs/video/list/category/133/> (accessed: 5 January 2019)

### 2.2.3. Public Sector Website Accessibility

The **Website accessibility guidelines for state, provincial and local administrative bodies** were laid down for the first time in 2005 and are regularly updated from year to year. Criteria for the assessment of websites were developed to complement the Guidelines in 2012. Subsequently, in 2014, the assessment of websites of provincial and local government administrative bodies was also introduced according to the same methodology.<sup>80</sup> The e-accessibility requirements for 2015 were met by 48% of the web sites of state administrative bodies,<sup>81</sup> 69% of the websites of provincial administrative bodies<sup>82</sup> and 54% of websites of local government units.<sup>83</sup> These figures show that the e-accessibility standards have yet to be met, indicating that senior citizens, and in particular persons with disabilities are digitally marginalised in terms of availability of public administration information and services.

Websites of the state administrative bodies were designed in line with the Website accessibility guidelines for state, provincial and local administrative bodies, adopted in 2014 by the Government of Serbia.<sup>84</sup>

According to the latest available report on compliance of websites of state administrative bodies with the Guidelines (2015), 46% of websites' home pages passed the e-accessibility validation (both the CSS and HTML code were error-free), while navigation across the entire website with the help of the Tab key was supported by 77% of the web sites. The great majority of the websites (95%) provide documents for download in machine-readable format, i.e. no scanned documents in the form of an image, and 96% provide for downloading documents in multiple formats (pdf, doc, rtf, txt, odt and similar). About one third (31%) of websites of state administrative bodies have alternative text to describe images and photographs, while 45% of them feature functional scalability that allows for increasing the size of the content.<sup>85</sup>

The Report on compliance of web sites of provincial administrative bodies with accessibility guidelines for 2015 indicated that 52% of the websites' home pages passed the e-accessibility validation (both the CSS and HTML code were error-free), and all (100%) web sites featured the possibility to navigate the entire web site with the Tab key, which was made clearly visible. All analysed web sites (100%) provided for the download of machine readable documents, without any picture format scanned documents, and provided for download of documents in multiple formats. More than 70% of web sites of provincial administrative bodies also featured alternative text to describe images and photographs, while 43% of them featured functional scalability of content.<sup>86</sup>

According to the Report on compliance of web sites of local government units with accessibility guidelines for 2015, 27% of home pages of local government web sites succeeded in meeting the e-accessibility validation criteria (both the CSS and HTML code were error-free). Navigation of the entire web site using the Tab key, clearly visible, was supported by 71% of web sites. The requirement of providing documents for download in machine readable format, i.e. no scanned documents in image formats, and availability of

<sup>80</sup> Source: <http://arhiva.ite.govrs/projekti-smernice-za-izradu-web-prezentacija.php> (accessed: 8 January 2019)

<sup>81</sup> Slight increase relative to 47% in 2014. According to: Report on compliance of websites of state administrative bodies with the Guidelines, evaluation for 2015 <http://arhiva.ite.govrs/doc/projekti/smernice/Izvestaj%20o%20uskladjenosti%20veb%20sajtova%20organiza%20dravne%20uprave%20sa%20Smernicama.pdf> (accessed: 8 January 2019)

<sup>82</sup> Significant increase relative to 42% in 2014. Source: Report on compliance of websites of state administrative bodies with the Guidelines, evaluation for 2015 <http://arhiva.ite.govrs/doc/projekti/smernice/Izvestaj%20o%20uskladjenosti%20veb%20sajtova%20organiza%20teritorijalne%20autonomije%20sa%20Smernicama.pdf> (accessed: 8 January 2019)

<sup>83</sup> Significant decrease relative to 84.36% in 2014. Source: Report on compliance of websites of state administrative bodies with the Guidelines, evaluation for 2015 <http://arhiva.ite.govrs/doc/projekti/smernice/Izvestaj%20o%20uskladjenosti%20veb%20sajtova%20jedinica%20lokalne%20samouprave%20sa%20Smernicama.pdf> (accessed: 8 January 2019)

<sup>84</sup> Web site accessibility guidelines for state administrative bodies – 5.0 version, e-Government Directorate, 2014., [http://arhiva.ite.govrs/doc/Smernice\\_5\\_0.pdf](http://arhiva.ite.govrs/doc/Smernice_5_0.pdf) (accessed: 8 January 2019)

<sup>85</sup> Report on compliance of web sites of state administrative bodies with the Guidelines, evaluation for 2015, p. 31, e-Government Directorate, December 2016, <http://arhiva.ite.govrs/doc/projekti/smernice/Izvestaj%20o%20uskladjenosti%20veb%20sajtova%20organiza%20dravne%20uprave%20sa%20Smernicama.pdf> (accessed: 8 January 2019)

<sup>86</sup> Report on compliance of websites of provincial administrative bodies with the Guidelines, evaluation for 2015, p. 29, e-Government Directorate, December 2016, <http://arhiva.ite.govrs/doc/projekti/smernice/Izvestaj%20o%20uskladjenosti%20veb%20sajtova%20organiza%20teritorijalne%20autonomije%20sa%20Smernicama.pdf> (accessed: 8 January 2019)

documents for download in multiple formats, was met by 96% of web sites. Alternative text for images and photographs was available in 41% of web sites, while 71% of them provided for the scalability of content.<sup>87</sup>

The **Law on e-Government**<sup>88</sup>, enacted in 2018, provides that everyone shall have the right to use e-Government services according to this law, i.e. that all e-Government users shall have access to electronic data and documents in the same manner and on equal terms and shall equally exercise this right. Particular emphasis is placed on providing e-Government services that can be accessed and used by persons with disabilities without technical, audio-visual, semantic and language barriers.

As regards software applications, Article 16 of the same Law prescribes that the state body is required to comply with accessibility standards in designing, developing, maintaining and updating software applications, so that e-Government services are accessible for everyone, in particular persons with disabilities.

Article 28 introduces the obligation for state agencies to make the content of their websites accessible on mobile devices as well, for everyone, in particular persons with disabilities. Finally, according to Article 31 of the Law on e-Government, state agencies are required to enable access to e-Government content and services for everyone, in line with accessibility standards, to establish a functional e-Government system.

In late 2018, the Government of Serbia adopted a **Regulation on detailed conditions for the development and maintenance of websites of the authorities**, i.e. state bodies and organizations, provincial bodies and organizations, local government bodies and organizations, institutions, public enterprises, special agencies exercising the regulatory function and legal and natural entities vested with public authorities.<sup>89</sup> Article 5 of the Regulation defines in detail the accessibility criteria for public sector websites:

1. navigation of the entire website using the Tab key, which must be made visible;
2. navigation using drop-down lists that are accessible with the use of the keyboard;
3. documents for download and upload should be offered in multiple machine-readable formats (.pdf, .doc, .docx, .odt) and table formats (.xlsx, .ods);
4. adequate text as an alternative to the website's non-textual content (image, photograph and similar);
5. enabling gradual text scaling (the font size must be defined relatively), as well as in parts of the website (taking into account scalability) in proportion with the size of the screen, i.e. enabling a minimum increase in the font size of 18 points (18-point text);
6. links adjusted in line with e-accessibility standards that reflect units/sections of the website content, so that the screen reader (for the blind and visually impaired) can "read" it properly;
7. subtitles and/or transcripts offered for download should be made available as separate textual documents for all media in non-textual format, and/or there should be a description of the video contents;
8. accessibility of the documents themselves (forms, templates and similar);
9. high contrast between the website's text and background colour (from light to black);

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<sup>87</sup> Report on compliance of websites of local government units with the Guidelines, evaluation for 2015, p. 32, e-Government Directorate, December 2016, <http://arhiva.ite.govrs/doc/projekti/smernice/Izvestaj%20o%20uskladjenosti%20veb%20sajtova%20jedinica%20lokalne%20samouprave%20sa%20Smernicama.pdf> (accessed: 8 January 2019)

<sup>88</sup> Law on e-Government, RS Official Gazette No 27/2018: <http://www.pravno-informacioni-sistem.rs/SIGlasnikPortal/eli/rep/sgrs/skupstina/zakon/2018/27/4/reg> (accessed: 13 January 2019)

<sup>89</sup> Regulation of the Government of Serbia on detailed conditions for the development and maintenance of public sector websites, RS Official Gazette No 104/2018: <http://www.pravno-informacioni-sistem.rs/SIGlasnikPortal/eli/rep/sgrs/vlada/uredba/2018/104/5/reg> (accessed: 13 January 2019)

10. accessibility of the elements of a form (e.g. text boxes, check fields and similar), so that they can be filled with the help of the keyboard only, which applies to electronic services in particular;
11. a special page that lists the web accessibility-enabling elements with a contact for questions concerning the accessibility of the presentation and published documents;
12. graphs and audio elements should be easy to control, using the published control procedure;
13. the content is adjusted to the use of tools such as the text-to-speech (TTS) software, i.e. screen readers;
14. the use of the CAPTCHA<sup>90</sup> system, adjusted to the blind and visually impaired, to make speech intelligible.

Also, to check the validity of the code in the context of e-accessibility, public authorities are required to use the W3C Unicorn validator which integrates HTML and CSS validation, making sure to validate the website's entire content.

### **Online Accessibility Maps**

To assist and facilitate the mobility of persons with disabilities in the Republic of Serbia, the Association for reviewing accessibility created an interactive platform called the Accessibility Map.<sup>91</sup> that provides relevant information on the accessibility of places in the Republic of Serbia. The map provides a good overview of categories of accessibility by type of activity or PWD needs. The data for the map was collected with the help of citizens, civil society organisations, local government units, state administrative authorities and other public agencies.

A good practice example of the use of new technologies to increase the accessibility of buildings for PWDs is the Accessible Belgrade platform<sup>92</sup>, also available as an Android application.<sup>93</sup> The Centre developed this platform for the Improvement of the Society, and it contains more than 250 locations, with basic data on the facility, description and accessibility rating. The application and the website allow the user to create a route from the user's location to the desired facility, and actively participate in creating a more accessible city. After registering, users can rate the location or facility, leave a comment, and even enter a facility in the platform with basic information on its accessibility. In this case, administrators will check the information, and depending on its accuracy, enter the location in the system.

### **2.2.4. Sign Language**

In 2015, the **Law on the Use of Sign Language**<sup>94</sup> was adopted to enable equal access to information and public services in all spheres of society for persons with hearing impairments in the Republic of Serbia. The Law regulates procedures for exercising the right to qualified sign language interpreters in education, when visiting a healthcare institution, at work, in the media sphere, guaranteeing the right of every deaf person to use sign language as their first language in communication. Based on the law, the profession of "sign language interpreter" was included in the nomenclature of occupations, and 2016 saw the adoption of a **Rulebook on the sign language course curriculum**.<sup>95</sup>

<sup>90</sup> <https://www.vsk.rs/2012/01/skin02.html>

<sup>91</sup> Accessibility map, official website: <http://mapapristupacnosti.rs/> (accessed on: 10 February 2019)

<sup>92</sup> Accessible Belgrade, official website: <https://dostupnibeograd.rs/> (accessed on: 10 February 2019)

<sup>93</sup> Accessible Belgrade, Google Play Store Android app:

<https://play.google.com/store/apps/details?id=com.eukliptika.DostupniBGD> (accessed on: 10 February 2019)

<sup>94</sup> Law on the Use of Sign Language, RS Official Gazette No 38/2015-26

<sup>95</sup> Rulebook on the sign language course curriculum, Official Gazette of the Republic of Serbia – Education Gazette No 110-00-127/2016-04

**The Telecentre – sign language interpreting service** was opened in late 2015, in the City of Belgrade Deaf Organization<sup>96</sup>. The Telecentre is envisaged as an audio-visual service provided by sign language interpreters that people with loss of or impaired hearing can use with the help of a tablet whenever the need arises. The Telenor Foundation, together with the Ministry of Labour, Employment, Veteran and Social Affairs, supplied the Telecentre with an internet connection and a state-of-the-art audio-visual sign language interpreting services. Telenor delivered fifty tablets and special tariff packages to representatives of 44 organisations of the deaf and hard of hearing individuals across Serbia, to enable access to online interpretation services for an estimated 30,000 deaf people living in Serbia.<sup>97</sup> These services are accessible to everyone from 7 a.m. to 7 p.m., with the possibility of urgent interventions.

A good practice example in the use of new technologies for increasing digital inclusion is the "Serbian Sign Language Dictionary" app, developed by the City of Belgrade Organization of Deaf in 2015.<sup>98</sup> The application contains all the signs, numerous terms, video materials and information, but it needs to be further improved in line with user comments.

"SignVOICE" is an application intended for people with impaired hearing that translates speech to sign language. The application was developed by five female students of the Novi Sad Faculty of Technical Sciences, and it took third place in the Devogame international competition in developing technological solutions to facilitate the lives of persons with disabilities, in December 2018.<sup>99</sup> The advantage of the application is that it can be used on several types of devices (TV, desktop, tablet, smartphone), which can greatly facilitate communication of the deaf and hard of hearing individuals.

## **2.2.5. Recommendations**

- Private providers of audio-visual media services should adapt their contents and make them accessible to persons with disabilities, to the extent of their technical and financial capacities, as this is their obligation under the Law on Electronic Media, and the REM should encourage them to do so, as this certainly falls within the purview of this regulatory body. The websites of providers of audio-visual media services should also be adjusted to support text-to-speech conversion and font size scalability. This adjustment also applies to the RTS website, where text-to-speech ("Read Me") conversion is enabled only for some of the texts.
- The RTS Planet platform should also be accommodated so that the sign language section provides access to all contents on the portal.
- Considering that access to information by persons with disabilities and other minority groups, among others, is a public interest under the Law on Public Information and Media, public authorities inviting applications for public funding should ensure that a criterion for the allocation of part of the funds should be that the produced media content be accommodated to and thematically designed for persons with disabilities. The Ministry of Culture and Information should take special care of this.
- Amendments to the Law on General Administrative Procedure and other regulations should introduce the statutory obligation of public authorities to communicate with the general public using electronic media and in electronic format.
- Amendments to relevant laws should prescribe the statutory obligation of all public administrative bodies (at a national and local level) to have their website and authorise the line ministry to regulate

<sup>96</sup> Sign language interpreting services, official website of the City of Belgrade Deaf Organization: <http://gqb.org.rs/kontakt/prevodilacki-servis/> (accessed on: 7 February 2019)

<sup>97</sup> "Online sign language interpreting services becomes available to 30,000 persons with hearing impairments in Serbia", Telenor Foundation's official website: [https://www.Telenor.rs/sr/o\\_Теленору/Теленор/novosti/onlajn-prevodilacki-servis-za-znakovni-jezik-sada-dostupan-za-30000-lica-sa-ostecenim-sluhom-u-srbiji/](https://www.Telenor.rs/sr/o_Теленору/Теленор/novosti/onlajn-prevodilacki-servis-za-znakovni-jezik-sada-dostupan-za-30000-lica-sa-ostecenim-sluhom-u-srbiji/) (accessed on: 7 February 2019)

<sup>98</sup> The Serbian sign language app, Google Play Store Android application: <https://play.google.com/store/apps/details?id=rs.diamondcode.cod&hl=en> (accessed: 8 February 2019)

<sup>99</sup> "FTN students design application for people with hearing impairments and take third place at the contest in Paris". Radio 021, published on 23 December 2018, <https://www.021.rs/story/Novi-Sad/Vesti/204574/Studentkinje-FTN-a-osmisile-za-aplikaciju-za-ljude-ostecenog-sluha-i-osvojile-3-mesto-u-Parizu.html> (accessed: 2 January 2019)

the minimum content accessibility standards for public authorities' websites through a by-law (including the minimum requirements concerning ensuring accessibility).

- The e-Government portal ([www.euprava.gov.rs](http://www.euprava.gov.rs)) should be improved to maximise accessibility for persons with disabilities. In this manner, each new service on the portal will be accessible to persons with disabilities as soon as it is uploaded, thus cutting the costs of ensuring accessibility to e-Government services and increasing their availability.
- Considering that all Serbian citizens have the right not only to be informed about issues of public interest but also actively seek information, persons with disabilities, socially disadvantaged citizens, as well as citizens in geographically remote areas should be able to exercise their right of access to information of public interest, in the most convenient way for them, or take any other steps to realize this right (e.g. file a complaint with the Ombudsman).
- A possible solution is the improvement of electronic communications with citizens, in the manner envisaged by the Law on General Administrative Procedure.<sup>100</sup> Article 57 of the Law prescribes that public authorities are required to publish information about the clients' option to communicate with the public authority by electronic means and to have electronic documents delivered to them, and about how this is done. If the information about the option of communicating electronically could be adapted to persons with disabilities, hence, the two-way communication that the procedure entails would be fully operational – not only the submission of the request, but also the response of the authorities in an appropriate electronic format, including the possibility of submitting a complaint to the Ombudsman.
- Further financial and technical support to the sign language interpreting service and the civil society organizations that cooperate with this centre is needed to provide the most effective and prompt support to the deaf and hard of hearing community in Serbia.
- The Ministry of Labour, Employment, Veteran and Social Affairs should consider the possibility of organising a hackathon or a competition for creating different kinds of tools, like the SignVOICE app. Due consideration should also be given to the further development, promotion and support for this application, and other applications such as Defanious<sup>101</sup>, a mobile communications application designed for persons with hearing and speech impairments, Morsenger<sup>102</sup>, an application designed for persons with visual impairments and other similar applications.
- Further support should be provided to the MESTD, faculties and other educational institutions to continue developing innovative technological solutions facilitating access to information for the deaf and hard of hearing.
- Proceed with integrating and standardising different accessibility maps to obtain a better overview of the accessibility of facilities in Serbia. The relevant institutions should examine opportunities for providing support to the further development of these tools.

## **2.3 PUBLIC DIGITAL SERVICES**

When it comes to the development of e-Government services, at the time of writing of this report, and in particular in 2018, the Office for Information Technologies and e-Government (ITE) of the Government of Serbia, in cooperation with other government bodies took major steps to improve digital public services available to citizens. Perhaps the key step in this process was the establishment of the eZUP information system (Law on General Administrative Procedure), which helped save 500,000 hours of the citizens' time for one year of the system's operation and cut the printing of birth certificates in half. It is estimated that in a year or at the most a year and six months' time, the printing of birth certificates will become

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<sup>100</sup> Law on General Administrative Procedure, RS Official Gazette No 18/2016

<sup>101</sup> <http://srednjeskole.edukacija.rs/desavanja/defanious-najbolja-aplikacija>

<sup>102</sup> <http://srednjeskole.edukacija.rs/desavanja/nagrade-za-najuspesnije-aplikacije-srednjoskolaca>

obsolete.<sup>103</sup> Moreover, a unique register of citizens of Serbia was established for the first time in late 2018, and for the first time in electronic format.<sup>104</sup>

According to data of the Statistical Office of the Republic of Serbia (SORS) for 2018, 37.3% of the internet population uses online services instead of making personal contact with or visiting public institutions or administrative bodies. More than 1,500,000 citizens has used online public administration services, according to the latest available data. The SORS survey also showed that 35.5% of the internet population used the Internet to obtain information from public institutions' websites, and 21.7% to download official forms. The completed forms were submitted electronically by 15.9% of Internet users.<sup>105</sup>

In 2019, social cards will be introduced, which should contribute to a more equitable distribution of social rights, raising efficiency in the social policy domain, quicker and easier access to entitlements, as well as the prevention of any abuse of rights. In connection with that, the Ministry of Labour, Employment, Veteran and Social Affairs has reported that activities are underway to regulate the legislative framework and develop an information system intended to enable the automatization of and support to the business processes of the social protection system bodies. According to expectations, the piloting of parts of the information system will be completed by the end of 2019, and the entire project will be realized by the end of this Government's mandate.<sup>106</sup>

Although the foregoing data indicates that a growing number of citizens has started using or is already widely using public administration online services, a further increase in the use of e-Government services is to be expected as more administrative bodies (e.g. local governments) integrate into the eZUP and other information systems, especially by persons with disabilities, the elderly or lower-income persons. On the other hand, as stated in the previous chapter, the adjustment of electronic services to improve their accessibility and ease of use for citizens should be a priority (e.g. the introduction of the possibility of online card-based payment transactions on the e-Government portal<sup>107</sup> and the organization of a hackathon for the improvement of the portal #CodeGovernment).<sup>108</sup>

### **2.3.1 eZUP**

The Ministry of Public Administration and Local Self-Government (MPALSG) on 1 June 2017 announced the launch of the new information system eZUP, on the same day when the new Law on General Administrative Procedure came into effect. In the first phase, the eZUP system connected 14 databases of six large institutions in Serbia – civil registers of the MPALSG, databases of the MoI, Tax Administration, Pension and Disability Fund, National Employment Service and the Central Registry of Mandatory Social

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<sup>103</sup> The introduction of the eZUP system brings considerable savings, Government of Serbia website, published in 19 August 2018, <https://www.srbija.gov.rs/vest/328895/velike-ustede-primenom-sistema-ezup.php> (accessed: 16 January 2019)

<sup>104</sup> A unique register of citizens of Serbia put into digital form for the first time, website of the Office for Information Technologies and e-Government, accessed: 29 December 2018, <https://wwwite.govrs/vest/2960/jedinstvena-evidencija-o-drzavljanima-srbije-po-prvi-put-u-elektronskom-obliku.php> (accessed: 16 January 2019)

<sup>105</sup> Upotreba informaciono-komunikacionih tehnologija u Republici Srbiji (Use of ICT in Serbia), website of the Statistical Office of the Republic of Serbia, p. 27. <http://publikacije.stat.govrs/G2018/Pdf/G201816013.pdf> (accessed: 17 January 2019)

<sup>106</sup> Social Cards, website of the Ministry of Labour, Employment, Veteran and Social Affairs, <https://www.minrzs.gov.rs/sr/projekti/prioriteti/socijalne-karte> (accessed: 2 February 2019)

<sup>107</sup> Dušan Stojanović, "I tested card-based payment on the eGovernment Portal" (Testirao sam plaćanje karticama na Portalu eUprava", Netokracija Srbija, published on 9 January 2018.

<https://www.netokracija.rs/e-uprava-placanje-karticama-141121> (accessed: 16 January 2019)

<sup>108</sup> "Imamo pobednike prvog državnog hakatona u Srbiji" ("We have the winners of the first state hackathon in Serbia"), website of the Digital Serbia initiative, published on 28 May 2018.

<https://www.dsi.rs/imamo-pobednike-prvog-drzavnog-hakatona-u-srbiji/> (accessed: 16 January 2019)

Insurance.<sup>109</sup> The Directorate for Electronic Administration, as e-Government portal administrator, organised the training of trainers on the use of the system for data exchange under the provisions of the Law on Administrative Procedure, attended by the representatives of local self-government units. The training participants proceeded to deliver further pieces of training and trained the staff of local self-government units in administrative procedures during April and May 2017.<sup>110</sup>

The last updated data at the time of writing of this section of the Report (14 January 2019) indicate that more than 300 public administration and local self-government bodies, agencies and other entities made a total of over one million queries in other institutions' records (civil registers, residence records, etc.) since 1 June 2017.<sup>111</sup> According to the data from March 2018, the 10 most active municipalities and towns according to the number hits on eZUP service per number of residents were the municipalities of Rača, Crna Trava, Odžaci, Medveđa, Irig, Beočin and Lebane and the towns of Smederevo and Loznica.<sup>112</sup>

Considering that the eZUP is a new information system and that the public administration bodies are still being introduced to its operation, as well as to that of other integrated information systems, the Contact Centre for Public Administration was launched in December 2018.<sup>113</sup> The staff of eZUP, e-Inspector, e-Baby and of the Single Information System of Local Tax Administration (LTA) can obtain all the information, instructions and regulations from these areas through the contact form on the website of the Contact Centre for Public Administration.<sup>114</sup>

Training and informing staff are crucial in ensuring the viability of electronic administration services and for the efficient running of Government-2-Government (G2G) communication since long and complicated procedures could lead to the loss of citizens' trust in electronic administration. In 2017, the Standing Conference of Towns and Municipalities (SCTM), in cooperation with the Ministry of Public Administration and Local Self-Government, organised training seminars on the implementation of the Law on General Administrative Procedure (LAP) in the local self-government. These pieces of training were completed by some 1000 staff from 135 towns who, within their respective scope, deal with the administrative procedure.<sup>115</sup> In 2016 and 2017, the SCTM, in cooperation with MPALSG and consultation with line ministries, prepared and published 188 administrative procedures, thus contributing to the standardisation and unification of practices of the local self-government units in Serbia and a better implementation of regulations<sup>116</sup>

The networking of institutions and their inclusion in the eZUP Information System is of particular relevance for smaller communities and underdeveloped areas, primarily in terms of saving time and

<sup>109</sup> „Počela primena novog informacionog sistema eZUP – Povezano šest najvećih baza podataka u Srbiji“ (“Application of New e-LGAP Information System Kicks Off – Six Largest Databases in Serbia Now Connected”), eKapija, published on 1 June 2017, <https://wwwekapija.com/news/1777521/pocela-primena-novog-informacionog-sistema-ezup-povezano-sest-najvecih-baza-podataka-u> (accessed: 16 January 2019)

<sup>110</sup> Imenovanje lica za prisustvo obuci „Trening za trenere za korišćenje sistema za razmenu podataka u skladu sa Zakonom o upravnom postupku“ (Nomination of participants for the upcoming “Training of Trainers on Data Exchange System Use pursuant to Law on General Administrative Procedure”), e-Government portal, [https://www.euprava.govrs/eusluge/opis\\_usluge?generatedServiceId=3772&title=Obuka-za-trenere-za-](https://www.euprava.govrs/eusluge/opis_usluge?generatedServiceId=3772&title=Obuka-za-trenere-za-) (accessed: 19 January 2019)

<sup>111</sup> Overview of calls to e-LGAP web service system for electronic data exchange by institution, Open Data Portal of the Republic of Serbia, published on 1 March 2018, <https://data.gov.rs/sr/datasets/pregleđ-poziva-veb-servisa-sistema-za-elektronsku-razmenu-podataka-ezup-po-institutsijama/> (accessed on: 19 January 2019)

<sup>112</sup> Cases of e-LGAP use – visualization, Open Data Portal of the Republic of Serbia, published on 6 March 2018, <https://data.gov.rs/sr/reuses/sluchajevi-korishtsenja-ezup-vizuelizatsija/> (accessed on: 19 January 2019)

<sup>113</sup> Contact Centre for Public Administration, website of the Office for Information Technologies and Electronic Administration, <https://wwwite.govrs/tekst/1836/kontakt-centar-za-javnu-upravu-g2g.php> (accessed on: 19 January 2019)

<sup>114</sup> „Počeo sa radom Kontakt centar za javnu upravu“ (“Contact Centre for Public Administration Launched”), website of the Office for Information Technologies and Electronic Administration, published on 3 December 2018, <https://wwwite.govrs/tekst/2616/poceo-sa-radom-kontakt-centar-za-javnu-upravu.php> (accessed on: 19 January 2019)

<sup>115</sup> “Dodeljeni sertifikati polaznicima eObuke o sprovodenju eZUP-a” (“Certificates Awarded to Participants in eTraining on ZUP implementation”, SCTM website, published on 28 August 2017: <http://wwwskgo.org/vesti/detaljno/1804/dodeljeni-sertifikati-polaznicima-eobuke-o-sprovodenju-zup-a> (accessed on: 19 April 2019)

<sup>116</sup> “Kroz jednostavnije procedure do velikih ušteda za građane” (“Through Simplified Procedures to Great Savings for Citizens”), MPALSG website, published on 26 December 2018: <http://mduls.govrs/saopstenja/kroz-jednostavnije-procedure-do-velikih-ustedza-za-gradjane/?script=lat> (accessed on: 19 April 2019)

resources in providing services to citizens. In less than one year since local self-government units actively started to use eZUP, the staff of city, municipality and city municipality administrations obtained more than 320,000 different data and/or documents from other authorities instead of the citizens – from civil registry extracts to tax administration and cadastral records data.<sup>117</sup>

### **2.3.2 e-Government**

The e-Government portal ([euprava.gov.rs](http://euprava.gov.rs)) was launched in 2010 and is the central access point for electronic services for all citizens, economic operators and state administration employees. Since its launch, according to ITE Office data, citizens have used various services available from the e-Government portal more than three and a half million times. The portal has nearly one million active users who can benefit from 800 electronic services of different state institutions available to them, making it one of the most used and visited national portals.<sup>118</sup> Aside from citizens and businesses, state institutions can also register to announce services, public debates or public calls on the e-Government portal.<sup>119</sup>

The e-Government network is an information-communication network which enables the transfer of data among the authorities and represents the backbone of e-Government development, as well as one of the major resources of state institutions. The Network is administered by the ITE Office and comprises the Office's computer network, together with external links which connect it to the server-computer infrastructure, state institutions and the Internet.<sup>120</sup>

When it comes to persons with disabilities, the e-Government portal contains a special section that enables access to several services relevant for the exercise of the rights of persons with disabilities, such as tax and customs relief, applying for social care, services related to vehicle and parking facilities etc.<sup>121</sup>

In September 2018, the preparation of assessment and analysis of the current state of e-Government at the local level was initiated under the Project Swiss PRO, which aims to contribute to enhancing administrative efficiency at the service of citizens. The assessment and analysis of the state of e-Government will be conducted on a representative sample of 60 local self-government units in the Republic of Serbia and will focus on the functioning of e-government services at the local level, accessibility and quality of e-services for the broadest circle of uses, existing IT and other capacities of towns and municipalities for the provision and use of e-services, e-service user satisfaction, as well as the participation of citizens in decision-making. Each town or municipality covered by the research will also receive a mini action plan with clear guidelines for further improvements and investments in the domain of e-government, aligned with the legislative terms and provisions. The results of the research will be published in 2019 and will lay the ground for the planning of technical support and awarding grant assistance to the towns and municipalities for e-Government improvement.<sup>122</sup>

The range of electronic government services has been expanding over the years and out of these services, the project "Baby, Welcome to the World", e-Kindergarten, e-Foreigner, Local Tax Administration (LTA) Information System should be distinguished as particularly facilitating.

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<sup>117</sup> Ibidem

<sup>118</sup> e-Government portal, website of the Office for Information Technologies and Electronic Administration, <https://wwwite.gov.rs/tekst/77/portal-euprava.php> (accessed: 19 January 2019)

<sup>119</sup> Application for cooperation on the e-Government portal, e-Government portal, [https://www.euprava.gov.rs/eusluge/opis\\_usluge?generatedServiceId=4526&title=Prijava-za-saradn%D1%98u-na-Portalu-eUprava](https://www.euprava.gov.rs/eusluge/opis_usluge?generatedServiceId=4526&title=Prijava-za-saradn%D1%98u-na-Portalu-eUprava) (accessed: 19 January 2019)

<sup>120</sup> E-government network, website of the Office for Information Technologies and Electronic Administration, <https://wwwite.gov.rs/tekst/90/mreza-euprave.php> (accessed: 19 January 2019)

<sup>121</sup> Persons with disabilities, e-Government portal, <https://www.euprava.gov.rs/eusluge?service=lifeSituation&lifeAreaId=54> (accessed: 19 January 2019)

<sup>122</sup> Swiss PRO: Situation Assessment of e-Government at the Local Level as a Step Toward its Development website of the Team for Social Inclusion and Poverty Reduction of the Government of the Republic of Serbia, published on 12 September 2018, <http://socijalnoukljucivanje.gov.rs/swiss-pro-procena-stanja-e-uprave-na-lokalu-kao-korak-ka-njenom-unapredjenju/> (accessed: 19 January 2019)

The e-Baby Information System was launched in 2016, to facilitate administrative procedures for the parents and enable registration of the newborn in the civil register directly at the maternity ward.<sup>123</sup> In the second phase of the project, an online birth grant application was introduced. According to information from December 2018, all e-Baby service functionalities were available in 115 out of 165 towns and municipalities, and it was announced that they would be rolled out in all maternity wards in Serbia by the end of 2018.<sup>124</sup> Problems in the implementation arose with the enactment of the new Law on Financial Support to Families with Children<sup>125</sup> which took force in July 2018. Parents of children born between 25 December 2017 and 1 July 2018 were unable to use e-Baby services to apply for an increase of the birth grant due to changes in the documents required and procedures under the new Law. This means that, if they wish to receive an increase of the birth grant, the parents need to pay a visit to the competent institution in person and deliver additional documents, thus prejudicing the purpose of the electronic system and of the service itself. The Office for Information Technologies and Electronic Administration stated that the application was undergoing revisions to enable an integrated delivery of both services within the e-Baby system.<sup>126</sup> To date, more than 130,000 babies have been registered through the information system, saving parents more than 910,000 hours of queuing and more than 320 million dinars.<sup>127</sup>

The e-Kindergarten service makes it possible for parents to make an online application for enrolment of their children in preschool institutions in four cities in Serbia: Belgrade, Šabac, Sremska Mitrovica and Novi Sad. In these four cities, more than 25,000 children per year apply for admission to preschool institutions and the implementation of this service in all towns and municipalities in Serbia is currently underway.<sup>128</sup> However, there are restrictions as to the eligibility of persons for submission of online applications for preschool institutions. On the e-Government website, there is a list, i.e. category of parents and children who are not eligible to submit an application in this manner due to additional documents that they are required to present, and the list includes exactly the most vulnerable groups (single parents, children – victims of family violence, children from families who benefit from some social welfare...).<sup>129</sup>

The electronic residency application for foreigners who enter the Republic of Serbia, e-Foreigner, is available to users registered by the qualified electronic certificate on the e-Government portal. There are options for registration at the applicants address of residence or address of the immovable property owned by the applicant. In the process of electronic registration of a foreigner's, data additionally required are the email address details of both the applicant and the foreigner applied for, electronic delivery of the confirmation of registration. Electronic application by email is sufficient proof of registration and foreigners no longer need to carry a card as proof that their residence is registered.<sup>130</sup>

As of 1 January 2019, citizens can view all their tax liabilities on the territory of the Republic of Serbia and file an online application for the determination of the amount of property tax through the local tax administration information system on the website lpa.gov.rs. The Office for ITE in the summer of 2018 established a single LTA Information System within the State Data Centre and set up a telecommunication network across Serbia.<sup>131</sup>

<sup>123</sup> "e-Baby the first step in public administration reform", info portal B92, published: 11 October 2016: [https://www.b92.net/info/vesti/index.php?yyyy=2016&mm=10&dd=11&nav\\_category=12&nav\\_id=1186682](https://www.b92.net/info/vesti/index.php?yyyy=2016&mm=10&dd=11&nav_category=12&nav_id=1186682) (accessed: 16 January 2019)

<sup>124</sup> „Peške“ po roditeljski dodatak: i pored aplikacije „Bebo, dobro došla“, mnogi moraju lično da predaju dokumenta“ (‘On Foot’ to Get their Birth Grant: Despite the “Welcome, Baby” Application, In-Person Delivery of Documents Still Faced by Many), *Blic* daily newspaper, published on 3 December 2018 <https://www.blic.rs/vesti/drustvo/peske-po-roditeljski-dodatak-i-pored-aplikacije-bebo-dobro-dosla-mnogi-moraju-licno/4qdef3k> (accessed on: 25 January 2019)

<sup>125</sup> Law on Financial Support to Families with Children, RS Official Gazette, number 113/2017 and 50/2018

<sup>126</sup> „Peške“ po roditeljski dodatak: i pored aplikacije „Bebo, dobro došla“, mnogi moraju lično da predaju dokumenta“ (‘On Foot’ to Get their Birth Grant: Despite the “Welcome, Baby” Application, In-Person Delivery of Documents Still Faced by Many), *Blic* daily newspaper, published on 3 December 2018 <https://www.blic.rs/vesti/drustvo/peske-po-roditeljski-dodatak-i-pored-aplikacije-bebo-dobro-dosla-mnogi-moraju-licno/4qdef3k> (accessed on: 25 January 2019)

<sup>127</sup> [https://www.b92.net/biz/vesti/srbija.php?yyyy=2019&mm=02&dd=06&nav\\_id=1502590](https://www.b92.net/biz/vesti/srbija.php?yyyy=2019&mm=02&dd=06&nav_id=1502590)

<sup>128</sup> e-Kindergarten, website of the Office for Information Technologies and Electronic Administration, <https://www.ite.gov.rs/tekst/82/evrtic.php> (accessed on: 19 January 2019)

<sup>129</sup> <https://www.euprava.gov.rs/pomoc/eVrtic?alphabet=lat>

<sup>130</sup> e-Foreigner, website of the Office for Information Technologies and Electronic Administration, <https://www.ite.gov.rs/tekst/2582/estrancac.php> (accessed on: 19 January 2019)

<sup>131</sup> LTA Information System, website of the Office for Information Technologies and Electronic Administration, <https://www.ite.gov.rs/tekst/2984/infromacioni-sistem-lpa.php> (accessed on: 19 January 2019)

### 2.3.3 Open Government Partnership

Open Government Partnership (hereinafter: OGP) is a multilateral international initiative, launched with the aim of providing support and ensuring greater involvement of governments across the world in the areas such as transparency of work, cooperation with civil society organizations, fight against corruption and use of new technologies, in order to enhance the transparency, efficiency and accountability of the work of public administration. Open Government Partnership was launched on 20 September 2011. At present, 79 states participating in Open Government Partnership, of which the majority are European Union member-states, as well as the countries in our region.<sup>132</sup>

The Republic of Serbia met the minimum criteria for joining OGP by improving the transparency of public finance, enacting the Law on Free Access to Information of Public Importance, Law on Anti-Corruption Agency and Law on State Audit Institution, as well as by creating independent control mechanisms such as the Ombudsman, Commissioner for Information of Public Importance and Personal Data Protection, Anti-Corruption Agency and State Audit Institution. Serbia became a new member-state of this Initiative in 2013.

Under the Action Plan (AP) for the Implementation of the Open Government Partnership Initiative in the Republic of Serbia for 2014 and 2015, three measures were listed under the commitments in the area of access to information, including e-government: improving the e-Government portal (Measure 8), improving the transparency in the work of administration authorities (Measure 9) and introducing new technologies to improve the services provided to citizens (Measure 10).<sup>133</sup>

The OGP Independent Reporting Mechanism End-of-Term Report on OGP AP implementation for 2014 and 2015 states that, although measure 8 was completed to a limited extent, a significant impact was achieved on citizen participation and access to information. Promotional activities for awareness-raising, as well as training courses on this theme, were delivered, contributing significantly to the level of awareness and knowledge about the online public services available from the e-Government portal.<sup>134</sup> However, the End-of-Term Report points out that the progress in implementing the commitment/measure 9 had no impact on citizen participation and that very few institutions extensively followed the Guidelines for the Development of Websites for Bodies of Public Administration, Territorial Autonomy and Self-Government Units in the management of their websites.<sup>135</sup> When it comes to introducing new technologies in order to improve the services rendered to citizens, the End-of-Term Report assesses that it is necessary to improve electronic public services to make them more available and user-friendly, as well as the information systems of state administration bodies, to increase their efficiency and use.<sup>136</sup>

The following Action Plan for the implementation of the OGP Initiative, covering the period 2016–2017, sets the following commitments in the context of e-government: improving proactive transparency – Information Booklets (commitment 6), Open Data Portal development (commitment 8) and drafting of a bylaw based on the Guidelines for Evaluation of Websites (commitment 9).<sup>137</sup>

In the Progress Report for 2016–2017, compiled by the OGP Independent Reporting Mechanism, commitment 6, which included the preparation of the single IT system (application) for the Information

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<sup>132</sup> Official website of the Open Government Partnership, <https://www.opengovpartnership.org/about/about-ogp> (accessed on: 15 January 2019).

<sup>133</sup> Action Plan for the Implementation of the Open Government Partnership Initiative in the Republic of Serbia for 2014 and 2015, website of the Ministry of Public Administration and Local Self-Government, <http://www.mduls.gov.rs/doc/Akcion%20plan%20OGP%202014-15.pdf> (accessed on: 22 January 2019).

<sup>134</sup> European Policy Centre, End-of-Term Report of the OGP Independent Reporting Mechanism on the Implementation of OGP AP for 2014 and 2015 (End-of-Term Report, Serbia 2014–2016), p. 27, website of the Ministry of Public Administration and Local Self-Government, [http://www.mduls.gov.rs/doc/Serbia\\_EoT\\_2014-2016\\_for-public-comment\\_SER%20za%20komentarisanje.pdf](http://www.mduls.gov.rs/doc/Serbia_EoT_2014-2016_for-public-comment_SER%20za%20komentarisanje.pdf) (accessed on: 22 January 2019).

<sup>135</sup> Ibid., p. 30

<sup>136</sup> Ibid., p. 33

<sup>137</sup> Action Plan for the Implementation of the Open Government Partnership Initiative in the Republic of Serbia for 2016 and 2017, website of the Government of the Republic of Serbia, <https://www.srbija.gov.rs/prikaz/279281> (accessed on: 24 January 2019).

Booklets on the work of state administration, it is stated that the application was in the pilot phase at the time of writing of the report, but that the progress in the completion of this commitment was mainly slowed down by the lack of progress in legislative amendments (Law on Free Access to Information of Public Importance).<sup>138</sup> With regard to commitment 8, the Progress Report notes that the Open Data Portal has been developed. It also emphasizes that, although the Government of the Republic of Serbia published some data in open data format in 2015, more effort is needed in order to include open data in Serbia's legal framework, to define open data policy, to raise awareness among the Government and civil society stakeholders and to raise the level of supply of and demand for open data. Regarding commitment 9, the Report states that that the precondition for developing the bylaw is the Law on E-Administration, which at the time of publication of the Progress Report was going through a public consultation process.<sup>139</sup> As stated in the previous chapter, the Law on Electronic Administration and the Government Decree on more specific criteria for the development and maintenance of state authorities' websites were adopted in 2018, which means that the commitment was completed with a delay.

The latest OGP Action Plan, adopted in late 2018, refers to the period from 2018 to 2020 and foresees the following commitments in the sphere of public digital services: facilitated administrative procedures and regulations – e-PAPER<sup>140</sup> and the establishment of an Electronic Notice Board for all public administration and local self-government authorities. It should be noted that, as a commitment carried forward from the previous Action Plan, there remains a need to improve the proactive transparency of the Information Booklet, based on the creation of a single information system for the access to, processing and presentation of the Information Booklet.<sup>141</sup>

### **2.3.4 Open Data**

Reuse of data kept by state institutions, the so-called open data, is prescribed by the Law on Electronic Government.<sup>142</sup> Thus, Article 27 commits state authorities to publish open data from their purview on the Open Data Portal, in a manner which enables their easy search and reuse, as well as to facilitate data reuse in machine-readable format in line with a free licence, unless otherwise provided by a special law.

For the widespread use of large amounts of data, which will stimulate cooperation among different sectors, the progress of the economy and public services, it should be kept in mind that the basic idea is that state institutions should open their data to the extent possible and provide insight into their statistical databases, wherever possible. Considering that the data will be used in different fields, it is necessary to define standards specifying the method of data collection to make them widely acceptable and easy to process and use.

Although state authorities store, collect, process and exchange data, it is very important to note that not all data and datasets kept by the state authorities can be opened, due to legal norms, primarily the Law on Personal Data Protection, clearly stipulating the conditions for any processing of the citizens' personal data. This means that all data which may have added value may be reused only as stipulated by the Law and provided that no person can be identified on the basis thereof, such as data on patients and medical staff which need to be anonymized or completely separated from other types of data, in a manner that the privacy of citizens is not jeopardized (e.g. images made for treatment).<sup>143</sup>

<sup>138</sup> Milena Lazarević, Katarina Kosmina, Dragana Bajić. Independent Reporting Mechanism (IRM): Serbia Progress Report 2016–2017, p. 38–39, website of the Centre for European Policies, [https://cep.org.rs/wp-content/uploads/2018/05/Izve%C5%A1taj-o-napretku-Srbije\\_CEPpdf](https://cep.org.rs/wp-content/uploads/2018/05/Izve%C5%A1taj-o-napretku-Srbije_CEPpdf) (accessed on: 24 January 2019).

<sup>139</sup> *Ibid.*, p. 43

<sup>140</sup> Project of the Government of Serbia for the Reduction of Administrative Burden on Economy – e-PAPER: <http://wwwepapirrsjp.govrs/>

<sup>141</sup> Action Plan for the implementation of the Open Government Partnership Initiative in the Republic of Serbia for the period 2018–2020, website of the Ministry of Public Administration and Local Self-Government, <http://mduls.gov.rs/reforma-javne-uprave/unapredjenje-transparentnosti-uprave/partnerstvo-za-otvorenu-upravu/partnerstvo-za-otvorenu-upravu-akcioni-plan-2018-2020/> (accessed on: 27 January 2019).

<sup>142</sup> Law on Electronic Government, RS Official Gazette, number 27/2018

<sup>143</sup> Strategy for Development of New-Generation Networks by 2023, RS Official Gazette, number 33/2018

The Open Data community in the Republic of Serbia has been registering growth and development over the last few years, particularly regarding the Working Group on Open Data which, in January 2019, had about 60 members consisting of the representatives of state administration, academia, civil society organization, the private sector and technology community.<sup>144</sup> In March 2018, the Open Data Week was organized in Serbia for the first time, including workshops, lectures and coaching sessions at StartIt centres across Serbia (Belgrade, Novi Sad, Indija, Šabac, Vršac, Valjevo and Subotica), gathering the representatives of state institutions, scientific and IT community, the private sector and citizens.<sup>145</sup>

## **Open Data Portal**

The Open Data Portal of the Republic of Serbia<sup>146</sup> was officially launched in October 2017 in the scope of the project: "Open Data – Open Opportunities". At the time, the portal contained 136 datasets from 8 state institutions, grouped under 45 sets and six themes. On that occasion, the Director of the Government ITE Office Mihailo Jovanović emphasized that some 300 state administration and local self-government authorities have huge datasets, whose opening has tremendous potential.<sup>147</sup>

At the time of writing of this chapter of the Report (January–February 2019), 30 public authorities published their datasets divided into seven themes (public security, education, energy, telecommunications, administration, health, environment). Among the organizations that opened their data are city administrations (Belgrade, Šabac, Sombor...), regulatory agencies (RATEL), national institutes (National Statistical Office), Government agencies (Agency for Traffic Safety), scientific/educational institutions (Serbian National Library), as well as non-public sector organizations (Data Science Serbia).<sup>148</sup> The status of open datasets as at 3 February 2019 is 130 sets and 436 resources.<sup>149</sup>

The data from the Open Data Portal may be used by any natural person or legal entity for commercial or non-commercial purposes, including duplication, distribution, making available to third parties, adaptation and linking to other data, integration into business processes, products and services, revisions, as well as other kinds of reuse, different from the purpose for which the data were originally gathered and processed by the body of public authority.<sup>150</sup>

### **2.3.5 Recommendations**

- Improve e-Government portal to make it accessible to persons with disabilities not only in terms of content accessibility on the portal itself but also with new services of relevance for the persons with disabilities that could be provided electronically.
- Further improvement and better implementation of the e-Baby system, so that all documents and procedures can be handled online, without the need for additional documents or in-person visits to an institution.

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<sup>144</sup> „Šta je u Srbiji do sada urađeno na polju otvorenih podataka i šta na čeka u 2019?“ ("What has been done in Serbia So Far in the Field of Open Data and What Awaits Us in 2019?"), StartIt, published on 11 January 2019, <https://startit.rs/steje-u-srbiji-do-sada-uradeno-na-polju-otvorenih-podataka-i-sta-nas-ceka-u-2019/> (accessed on: 9 February 2019)

<sup>145</sup> „Prva Nedelja otvorenih podataka u Srbiji“ ("The First Open Data Week in Serbia"), official website of UNDP Serbia, published on 14 March 2018, <http://wwwrs.undp.org/content/serbia/sr/home/presscenter/articles/2018/open-data-week-organized-for-the-first-time-in-serbia.html> (accessed on: 9 April 2019)

<sup>146</sup> Open Data Portal of the Republic of Serbia: [data.gov.rs](https://data.gov.rs) (accessed on: 7 April 2019)

<sup>147</sup> „Pokrenut Nacionalni portal otvorenih podataka“ ("National Open Data Portal Launched"), Danas, published on 12 October 2017, <https://www.danas.rs/drustvo/pokrenut-nacionalni-portal-otvorenih-podataka/> (accessed on: 9 February 2019)

<sup>148</sup> Organizations, Open Data Portal of the Republic of Serbia, <https://data.gov.rs/organizations/> (accessed on: 9 February 2019)

<sup>149</sup> Activities, Open Data Portal of the Republic of Serbia, <https://data.gov.rs/dashboard/> (accessed on: 9 March 2019)

<sup>150</sup> Terms of Use, Open Data Portal of the Republic of Serbia, <https://data.gov.rs/dashboard/> (accessed on: 9 March 2019)

- Pursue inclusion of other institutions (national level, territorial autonomy level and local self-government level) into eZUP information system for further streamlining of procedures and development of new services.
- Further staff training, as well as technical capacity-building, is necessary for better functioning of the eZUP information system and other elements of IT state infrastructure.
- The achieved level of cooperation among the state institutions in charge of OGP and civil society organisations should be cultivated and fostered.
- Provide higher-level political support for the adoption and implementation of the National Action Plan, e.g. by placing this initiative under the direct responsibility of one of the Deputy Prime Ministers.
- The Action Plan should be much more ambitious in the number and scope of planned activities and should include themes such as:
  - legislative regulation of the obligation of conducting public debates;
  - active measures for inclusion of citizens, particularly minority and vulnerable groups, in the public debate processes;
  - enactment of the law on access to information kept by public institutions (application of the Data Re-Use EU Directive);
  - improvement of the Open Data website;
  - encourage IT, sector entrepreneurs, to develop applications that use public datasets;
  - adoption of general terms of use of the works arising from the public authorities' activities (consider the use of Creative Commons licences);
  - the mandatory part of the Action Plan should remain the mechanism for monitoring the implementation of activities (with a significant role of civil society organisations).
- Adapt the Open Data Portal to make it accessible to persons with disabilities, consistent with the Law on Electronic Government and the RS Government Decree on more specific criteria for the development and maintenance of public authorities' websites;
- Continue with data opening and inclusion of new institutions;
- Through contests on open data, support projects that can improve the status of persons with disabilities, socially vulnerable citizens, elderly persons etc. for their better integration in the digital environment.

## 3. Overview of Digital Inclusion by Key Areas

### 3.1 EDUCATION

#### 3.1.1. Changes in the Legislative Framework

In the reporting period, there have been significant regulatory changes in the education system. The following changes are relevant to the area of increasing digital inclusion:

The Law on the Fundamentals of the Education System (LFES) was amended in 2017 and precisely regulated additional support for the education of children with developmental challenges and disabilities.<sup>151</sup> LFES introduced the personal assistance service, additionally regulated the provisions on the Individual Educational Plan (IEP), stipulated the possibility for institutions to acquire the status of a resource centre for the provision of professional support to children, students and adults with developmental challenges and disabilities<sup>152</sup> and intersectoral commissions. LFES recognises the fact that developmental challenges are not the sole reason why a child and a student require additional support. Reasons can also be social deprivation, learning difficulties, the risk from early school-leaving, social vulnerability, life in underdeveloped areas, specific learning difficulties.

The Law on Primary Education was amended in 2018 (Serbian Parliament adopted the new Law on the Fundamentals of the Education System in 2017)<sup>153</sup>. It stipulates that the parent or another legal guardian may choose their child's education by homeschooling or distance learning (Article 38a), by submitting a written request to the school which decides on the matter based on available resources. However, the rulebooks that more specifically regulate the conditions for the implementation and evaluation of homeschooling or distance learning announced at the time of enactment of the previous law in 2014, have not been issued yet. Online study and ICT in the classroom are used to complement regular classes, and there are also individual distance learning projects, as well as commercial facilities that offer their services to schools.<sup>154</sup>

The new Law on Secondary Education was passed in late 2017.<sup>155</sup> Under the Law, graduation or final exams are adjusted to students with developmental challenges and disabilities by creating conditions that enable them to overcome physical or communication barriers. These students may also be exempted from taking a certain part of the graduation exam or take it according to their individual educational plan. The Law also stipulates the possibility of distance learning, to be more specifically regulated by additional rulebooks and acts.

The new Law on Higher Education passed in late 2017,<sup>156</sup> stipulates the possibility of studies (or certain parts of studies) in a sign language, while also providing for the possibility of distance learning study programmes. Closer conditions and the manner of implementation of distance learning study programmes are to be regulated by the respective higher education institutions, while the Law does not set minimum standards that such programmes would be required to meet. Amendments to the Law on Higher Education were adopted in September 2018, to improve quality control in tertiary education, as well as the functioning of the steering and management bodies of tertiary education institutions.<sup>157</sup>

<sup>151</sup> Law on the Fundamentals of the Education System, RS Official Gazette number 88/2017 and 27/2018

<sup>152</sup> [http://www.parlament.gov.rs/upload/archive/files/lat/pdf/predlozi\\_zakona/2018/3520-18%20-%20Lat.pdf](http://www.parlament.gov.rs/upload/archive/files/lat/pdf/predlozi_zakona/2018/3520-18%20-%20Lat.pdf)

<sup>153</sup> Law on Primary Education, RS Official Gazette number 55/13 and 101/17

<sup>154</sup> Microsoft Project "Partner in Learning": [www.microsoft.com-serbia/obrazovanje/pil/default.mspx](http://www.microsoft.com-serbia/obrazovanje/pil/default.mspx) (accessed on: 5 December 2017). Project "Distance Learning" PS "Dragan Hercog": [www.osdrdraganhercog.edu.rs/ucenje-na-daljinu/](http://www.osdrdraganhercog.edu.rs/ucenje-na-daljinu/) (accessed on: 5. December 2017) and services such as: [www.ucenjenadaljinu.com](http://www.ucenjenadaljinu.com) (accessed on: 5 December 2017)

<sup>155</sup> Law on Secondary Education, RS Official Gazette, number 55/13 and 101/17

<sup>156</sup> Law on High Education, RS Official Gazette, number 88/17

<sup>157</sup> „Usvojene izmene i dopune zakona o visokom obrazovanju“ ("Amendments to Law on High Education Adopted"): <http://www.mpr.gov.rs/usvojene-izmene-i-dopune-zakona-o-visokom-obrazovanju-2/>, published: 29 September 2018 (accessed on: 20 January 2019)

The new Law on Textbooks was enacted in 2018 and stipulated the use of a textbook or supplementary teaching tool in Braille alphabet in the delivery of educational activities to persons with disabilities or developmental challenges, in electronic format or formats adapted to their abilities, needs and capacities.<sup>158</sup> The Law also prescribes the possibility of financing textbooks from the budget of the Republic of Serbia for students and participants from socially/financially disadvantaged families. Based on these provisions, the Government issued decisions on the financing and purchase of textbooks, manuals and teaching materials from the budget for the school years 2016/2017 and 2017/2018. The Law also imposed limitations on the highest retail prices of textbooks, manuals and teaching materials.<sup>159</sup>

The 2018 amendments to the Law on Textbooks also provide for the digitalisation of teaching content, i.e. preparation and publication of digital textbooks, aimed at contributing to the cheaper and more accessible education for all students.<sup>160</sup> It also streamlined solutions and specified time frames for the submission and approval of textbooks and envisaged the possibility of their purchase through the school or students' cooperative. It also foresees the establishment of the Centre for Limited Edition Textbooks in national minority languages for secondary vocational schools, adapted to the needs of children with special needs.<sup>161</sup>

### **3.1.2. Assistive Technologies in Education**

Assistive technologies are technologies that provide accessibility to the constructed environment, transport, information and communication, etc. to enable persons with disabilities to participate in all life segments equally. In the field of education, assistive technologies mean any product, part of equipment or system which is used to increase, maintain or improve the functional capacities of persons with disabilities.<sup>162</sup>

In the Republic of Serbia, there are 48 schools for students with developmental challenges and disabilities. Out of the 40 schools for students with developmental challenges and disabilities which sent their data to the Ombudsman's Office for the preparation of the Special Report on Inclusive Education compiled in 2018<sup>163</sup>, only five reported that they have the capacity to acquire the Assistive Technology Resource Centre status:

- the Mladost Primary and Secondary School, Pirot
- the 9 May Primary School, Zrenjanin
- the Secondary Vocational School, Belgrade
- the Bubanj Special Boarding School, Niš
- the Veljko Ramadanović School for Visually Impaired Students, Belgrade

In addition to the above, the Milan Cvetković Primary and Secondary School from Novi Sad also functions as a resource centre for support to students with disabilities and developmental challenges and has around 1,200 users.<sup>164</sup> The Assistive Technology Centre in the Dimitrije Tucović Primary School in Čajetina was

<sup>158</sup> Law on Textbooks, RS Official Gazette, number 27/2018

<sup>159</sup> Article 10 of the Law on Textbooks

<sup>160</sup> Law on Textbooks, RS Official Gazette No 27/2018

<sup>161</sup> Article 15 of the Law on Textbooks

<sup>162</sup> Assistive Technology Catalogue, Ministry of Education, Science and Technological Development, for the publisher: Mladen Šarčević, Belgrade, 2017.

<sup>163</sup> Special Report of the Ombudsman "Inclusive Education – Additional Support Services to Children and Students in Education", October 2018

<sup>164</sup> „Škola 'Milan Petrović' bogatija za 15 novih računara“ ("15 brand new computers go to the Milan Petrović school), Radio-Television Vojvodina, published on 3 December 2017:

[http://wwwrtvrs/sr\\_lat/vojvodina/novi-sad/skola-milan-petrovic-bogatija-za-15-novih-racunara\\_875058.html](http://wwwrtvrs/sr_lat/vojvodina/novi-sad/skola-milan-petrovic-bogatija-za-15-novih-racunara_875058.html)

(accessed on: 4 December 2018)

opened in 2017.<sup>165</sup> The Centre caters to the users of the Zračak After-School Care Facility, but also to all other children with developmental challenges from the territory of the municipality.

Non-governmental organisations have also recognised the importance of assistive technology centres, and hence, in 2016, the Assistive Technology Centre AsTeh was launched in Belgrade, to promote and encourage good practices in the implementation of AT in education.<sup>166</sup> These schools and centres are examples of good practice, but legal regulation and clear criteria for the operation of assistive technology centres in Serbia are crucial for their sustainability and further functioning.

The Law on the Fundamentals of the Education System in 2009 already introduced the possibility for educational institutions to acquire the status of the Assistive Technology (AT) Resource Centre, as was also recognised in the 2020 Education Strategy. This meant that schools for the education of students with developmental challenges could provide support to regular schools and teaching staff in strengthening their capacity for inclusive education (including the use of AT).

Attempts to establish the network of regional resource centres for assistive technologies were made in 2013 and 2014, within the project: "Delivery of Improved Local Services" (DILS). The project provided funding for the purchase of assistive technologies which was distributed to six schools for students with developmental challenges and disabilities across the Republic of Serbia. The schools purchased different equipment, and it was planned that they lease it to other schools that needed it, share their staff, organise joint activities, etc.

This was not a sustainable solution in practice since the schools designated to become regional resource centres were faced with administrative, financial and procedural issues. The operation and networking of the centres remains unregulated by any law/act/regulation, local self-government units do not fund them, assistive equipment is not insured and is just loaned – instead of being leased as tentatively planned. The lack of national-level training courses (for both users and professionals) and awareness of educational institutions which do not sufficiently use assistive technologies are also reasons why the concept of assistive technology centres has not yielded the desired results.<sup>167</sup>

The local self-government support to these centres is more an exception than regular practice. According to the Ombudsman's Special Report, 13 local self-government units supplied the schools on their territory with some assistive technology in 2018. However, such supplies are not a systemic solution and do not cover the schools' actual needs. Some assistive technologies were made available through donations or projects, but these are sporadic cases and not a systemic solution. The training of the schoolteachers in the implementation and adaptation of assistive technologies is of key importance to achieve their purpose.<sup>168</sup>

To stimulate the training of teaching staff, the Ministry of Education, Science and Technological Development in 2017 published a Catalogue of Assistive Technologies which provides an overview and description of all media, devices and tools that the persons with disabilities can use at all levels of education and in their everyday life.<sup>169</sup> The Catalogue offers a good overview, description and purpose of assistive technologies for persons with physical disabilities, vision and hearing impairment, as well as difficulties

<sup>165</sup> „U Čajetini otvoren centar za asistivne tehnologije za decu sa smetnjama u razvoju“ ("Assistive Technology Centre for Children with Developmental Challenges Opens in Čajetina"), TV5 official website, published on 31 October 2017: <http://wwwtv5.rs/2017/10/31/u-cajetini-otvoren-centar-asistivne-tehnologije-za-decu-sa-smetnjama-u-razvoju/> (accessed on: 15 November 2018)

<sup>166</sup> AsTeh Centre for Assistive Technologies: <https://wwwasistivne-tehnologije.com/> (accessed on: 15 November 2018)

<sup>167</sup> Studija o dostupnosti stručne podrške i znanja u oblasti asistivnih tehnologija u obrazovnom sistemu u Srbiji (Study on the Availability of Professional Support and Knowledge in the Field of Assistive Technologies within the Educational System in Serbia), Ministry of Education, Science and Technological Development and Social Inclusion and Poverty Reduction Team, 2016.

<sup>168</sup> Studija za izradu predloga izmene politika u regulativi i praksi u primeni asistivnih tehnologija (Study for the preparation of proposals for policy revision in legislation and practice in the implementation of assistive technologies), authors: Goran Rojević and Sašenka Mirković, Belgrade, 2017.

<sup>169</sup> Assistive Technology Catalogue: Ministry of Education, Science and Technological Development, for the publisher: Mladen Šarčević, Belgrade, 2017

in communication and learning. It is particularly useful for parents, teachers, persons with disabilities, personal assistants and pedagogical assistants, as well as for intersectoral commissions, organisations and institutions dealing with children with developmental challenges and disabilities.

During 2018, the working group for the development of action plan for improvement of educational work of schools for students with developmental challenges and disabilities was set up, in order to create a network of schools and conditions for the provision of additional support in the education of students with developmental challenges and disabilities and the creation of resource centres. The Working Group should draft all required secondary legislation pertaining to the creation of resource centres, as well as the Rulebook amending the Rulebook on the Quota of Classes of Direct Work with Students for teachers, professional associates and pedagogues in school.

### **3.1.3. Teachers' Digital Competences and Teaching Tools**

Digital competences have become competencies of key importance for all citizens, and they are basically generated in the education system. Practice shows that the level and the pace of acquisition of digital competences of students largely depends on the level of digital competences of teachers. It is natural that, along with the development of new technologies, teaching staff are expected to have an adequate level of computer, information, digital and media literacy and to be familiar with modern concepts, methods and tools assuming a purposeful use of ICT in the fields they teach in.<sup>170</sup>

Consistent with the Strategy for the Development of Education in the Republic of Serbia by 2020 with Guidelines for improving the role of information-communication technologies in education, the Ministry of Education, Science and Technological Development in 2017 created the Digital Competence Framework – Teacher for a Digital Age.<sup>171</sup>

With the adoption of the Digital Competence Framework for teachers, conditions were created for the systematic training of teachers in media literacy. The Framework lists and defines the skills, goals and expected outcomes comprising the corps of digital competences of the teaching profession. Teachers can use the document to assess their skills and contemplate their practice, as well as to plan their professional development. For trainers, this document can be useful to improve the quality and relevance of professional programmes, while decision-makers can use it to assess and revise existing regulations and create support programmes.

The Ministry, in collaboration with the Institute for the Evaluation of the Quality of Education in 2017, piloted the implementation of the framework for self-evaluation and assessment of electronic maturity of institutions called "Selfie".<sup>172</sup> The research is based on the European Framework for Digitally Competent Educational Institutions and the Republic of Serbia was of 14 participating countries. "Selfie" provides support to schools in efficiently and effectively integrating digital technologies into school practices and its implementation with the further development of the Digital Competence Framework is planned for 2019.<sup>173</sup>

To further modernise the digital education system, the Law amending the Law on the Fundamentals of the Education System foresees, in early 2019, the creation of the Educational Technology Centre as a

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<sup>170</sup> Digital Competency Framework – Teacher for the Digital Age, official website of the Ministry of Education, Science and Technological Development, published: 3 April 2017 <http://wwwmpn.govrs/wp-content/uploads/2017/04/Okvir-digitalnih-kompetencija-Final-2.pdf> (accessed on: 10 February 2019)

<sup>171</sup> Ibid.

<sup>172</sup> Public invitation for selection of schools to participate in the pilot research: "Self-evaluation of Electronic Maturity of Institutions", official website of the Ministry of Education, Science and Technological Development, published: 7 July 2017: <http://wwwmpn.govrs/javni-poziv-za-izbor-skola-za-ucesce-u-pilot-istrzivanju-samovrednovanje-elektronske-zrelosti-ustanova/> (accessed on: 10 February 2019)

<sup>173</sup> Plan of priority goals and activities of state administration bodies and Government services for the improvement of IT sector in Serbia for 2019 with the report for 2018, official website of the RS Government [https://wwwsrbi.govrs/view\\_file.php?file\\_id=2300&cache=scr](https://wwwsrbi.govrs/view_file.php?file_id=2300&cache=scr) (accessed on: 9 February 2019)

new organisational unit within the Institute for the Evaluation of the Quality of Education<sup>174</sup>. The main task of the Centre will be to focus on developing quality digital education and planning the integration of digital components into general and specific strategic, development and action plans at the national level.

The Social Inclusion and Poverty Reduction Team of the Government of the Republic of Serbia has published the "Instruction on Preparing Teaching Materials Consistent with the Principles of Universal Design"<sup>175</sup> in collaboration with the Ministry of Education, Science and Technological Development, modelled after the Guidelines for Accessible Information<sup>176</sup> created by the European Agency for Special Educational Needs and Inclusion in Education.<sup>177</sup> The goal of the instruction is to introduce education practitioners to the methods for preparing and adapting teaching materials (especially of those in electronic format) based on the principles of universal design, to make them accessible for learning to every child and student.

In order to enhance the fairness, affordability and availability of quality education, a Rulebook on the Adaptation of Textbooks<sup>178</sup> was adopted in 2017, which regulates the specific criteria regarding the process of preparing, approving, publishing and financing of adapted textbooks and the set of textbooks, further elaborated in the Rulebook on the Publishing of Limited Edition Textbooks.<sup>179</sup> By Decision of the RS Government<sup>180</sup>, the right to free textbooks was also granted for the first time to students with disabilities and developmental challenges who pursue their primary education according to an individual educational plan.

The needs for adapted textbooks were expressed by 160 schools (12 schools for developmentally challenged students and 148 regular schools). The adapted, free of charge textbooks were provided for 647 students (300 students attending schools for students with developmental challenges and 374 regular school students). Among them, the majority are students with vision or hearing impairments, followed by students with intellectual disabilities, students with movement disorders and students using assistive technology. A total of 6,948 textbook units were adapted, including 642 in the Braille alphabet (of that number, 419 for attendees of schools for developmentally challenged students), 866 with enlarged font (of which 416 for students attending schools for developmentally challenged students), 4,515 in electronic format (of which 1,424 for students attending schools for developmentally challenged students) and 925 in audio format (of which, 511 for students attending schools for developmentally challenged students).<sup>181</sup>

## **es-Register**

Electronic School Register (es-Register)<sup>182</sup> was launched in 2017 in the scope of the pilot project of the Ministry of Education, Science and Technological Development e-Education<sup>183</sup> and was conceived as a kind of electronic log of a student's progress, his/her absence and grades, intended not only for teachers and professors but also for parents..

<sup>174</sup> Law amending the Law on the Fundamentals of Education, RS Official Gazette, no. 10/2019

<sup>175</sup> Instructions for Preparing Teaching Materials in Accordance with the Principles of Universal Design, Social Inclusion and Poverty Reduction Team of the Government of the Republic of Serbia, published in 2016

<sup>176</sup> ICT for Information Accessibility in Learning: <https://www.ict4ial.eu/> (accessed on: 7 April 2019)

<sup>177</sup> Official website of the European Agency for Special Needs and Inclusive Education: <https://www.european-agency.org/> (accessed on: 7 April 2019)

<sup>178</sup> Rulebook on adaptation of textbooks, RS Official Gazette No 55/2017

<sup>179</sup> Rulebook on the publishing of limited edition textbooks RS Official Gazette No 69 of 14 September 2018

<sup>180</sup> Decision of the Government of the Republic of Serbia on financing purchase of textbooks from Republic of Serbia budget funds for the school year 2017/2018, RS Official Gazette No 33 of 7 April 2017

<sup>181</sup> Analiza sprovođenja preporuka Komiteta za prava osoba sa invaliditetom u Republici Srbiji (Analysis of Implementation of Recommendations of the Committee for the Rights of Persons with Disabilities in the Republic of Serbia), author: Damjan Tatić, PhD, publisher: National Organization of Persons with Disabilities of Serbia (NOOIS), Belgrade, 2018

<sup>182</sup> es-Register: <https://esdnevnik.rs/> (accessed; 19 January 2019)

<sup>183</sup> Official website of the e-Education project: <http://www.eprosvetars.rs/> (accessed on: 19 January 2019)

From the school year 2017/18 onward, 60 schools started to use the platform called e-Register<sup>184</sup>, its coverage subsequently expanding to 500 primary and secondary schools. After the end of the pilot project, it was decided to include all schools in the main project in the school year 2018/2019. The implementation process was slower than expected, and es-Register was introduced in 831 schools by October 2018.<sup>185</sup> Parents got access to es-Register in December 2018, and the Ministry confirmed that the platform was fully functional in the schools within the system.<sup>186</sup> By 30 November 2018, training courses were delivered for 1,704 schools. The full implementation of es-Register implies that there are no double entries in the paper and electronic grade book. Such es-Register implementation is subject to the school being adequately equipped. Official information on when all schools in the Republic of Serbia will enable this service is not available yet.

## Distance learning

The organisation and implementation of distance learning are envisaged by the legislative framework in the field of education, but the acts meant to ensure the quality and evaluation of homeschooling and distance learning have not been passed yet.

Nevertheless, there are good practice examples in this field, available through the Moodle platform (Modular Object-Oriented Dynamic Learning Environment)<sup>187</sup> which represents an integrated toolkit that enables access to common knowledge resources, educational material exchange, as well as the use of additional modules providing extensions of functionalities.

An example of such platform is the "Education for All" educational website – a service of the Abacus Centre for Improvement of Teaching, launched to assist teachers in the implementation of distance learning methods in their classrooms.<sup>188</sup> The service is free of charge for all Abacus members, as well as the seminar participants and at present, it is used by 78 primary, secondary and adult education schools across Serbia. The schools uploaded their teaching materials on this portal and made it available through their official websites.

One of these schools is the Belgrade-based Dr Dragan Hercog Primary School, which is present at the portal but also uses Skype for video communication in the delivery of distance learning programme for students in-hospital treatment, as well as students with disabilities.

Teachers from the Milan Petrović primary and secondary school based in Novi Sad created and developed a distance learning system called "Milanče"<sup>189</sup>, to create sustainable conditions for children with developmental challenges (primarily children with disabilities) to gain knowledge from key programme areas in the curriculum. "Milanče" is also developed on Moodle platform and includes teaching content in the Serbian language, mathematics, science and society, art, music and English – for primary education and some specialised subjects for secondary schools.

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<sup>184</sup> Pilot project es-Register, official website of the Ministry of Education, Science and Technological Development, published on 13 July 2017: <http://wwwmpn.govrs/pilot-projekat-e-dnevnik/> (accessed on: 24 November 2018)

<sup>185</sup> „Elektronski dnevnik uveden u 830 škola u Srbiji ali roditelji još nemaju pristup“ ("Electronic School Register Introduced in 830 Schools in Serbia but Access for Parents Still Missing", *Blic* daily newspaper, published on 29 October 2018: <https://wwwblic.rs/vesti/drustvo/elektronski-dnevnik-uveden-u-830-skola-u-srbiji-ali-roditelji-jos-nemaju-pristup/dj361cg>, (accessed on: 19 January 2019)

<sup>186</sup> „Elektronski dnevnički: roditelji će od kuće moći da prate ocene svoje dece i njihove izostanke sa časova“ ("Electronic School Registers: Parents Will be Able to Monitor Their Children's Grades and Attendance from Home"), *Blic* daily newspaper, published: 12 Decembeer 2018: <https://wwwblic.rs/vesti/drustvo/elektronski-dnevnički-roditelji-ce-od-kuce-moci-da-prate-ocene-svoje-dece-i-njihove/te9e35wc> (accessed on: 19 January 2019)

<sup>187</sup> Official website of the Moodle platform: <https://moodle.org/> (accessed on: 19 January 2019). The national teaching community is very active in the use and promotion of this tool within the Moodle Serbia network: <http://mms.edurs/moodle/> (accessed on: 19 January 2019)

<sup>188</sup> Official website: "Education for All" <http://www.edukacija.edurs/> (accessed on: 19 January 2019)

<sup>189</sup> Educational portal „Milanče“: <http://www.milance.edurs/> (accessed on: 19 January 2019)

### 3.1.4. Computer Science and Programming

From 1 September 2017, Computer Science is a mandatory subject for fifth-graders in the Republic of Serbia.<sup>190</sup> To introduce this subject as mandatory, and under the recommendations of the Guidelines for improving the role of information-communication technologies in education,<sup>191</sup> new curricula have been prepared<sup>192</sup> and schools supplied with the additional computer and network equipment, connected to the Serbian Academic Network (AMRES).<sup>193</sup> Under the new concept, students acquire computer science knowledge through three themes: information-communication technology, digital literacy and computer science. In the sixth grade, this subject is studied as optional, based on the new curriculum which also includes programming.<sup>194</sup>

In 2018, more than 400 primary school teachers completed the training courses in computer science teaching<sup>195</sup>, and the line ministry also acted to equip IT labs in schools. Training courses in programming were delivered by the Petlja ("Loop") Foundation, in collaboration with the "Microsoft" Corporation, for 800 teachers from 500 schools from across the Republic of Serbia, who were provided with the manuals for working with students.<sup>196</sup> The Foundation is also active within the "Digital Serbia"<sup>197</sup> initiative which focuses on algorithm literacy in primary and secondary schools as of its goals and principal activities.

A surge was registered in the number of specialised IT classes to 44 classes in 36 high schools, nearly five-fold compared to 2017, while new profiles based on the dual education model were created in technical schools at the initiative of the industry and parents: Digital Graphic and Internet Design Technician and Information Technology Electrical Technician.<sup>198</sup>

As part of the "Battle for Knowledge" programme, the CODEplaying ("KODigranje") campaign was launched in early 2017, with the main aim to equip primary schools in Serbia with mBot robots, used as teaching tools in the instruction of programming, electronics and robotics.<sup>199</sup> During the first year of the campaign, a total of 2,005 educational robots were provided for 401 elementary schools in Serbia.<sup>200</sup>

<sup>190</sup> „Informatika i računarstvo obavezan predmet za učenike petog razreda“ ("Computer Science Mandatory Subject for Fifth-Graders"), official website of the Ministry of Education, Science and Technological Development, published: 21 August 2017: <http://www.mpr.gov.rs/informatika-i-racunarstvo-obavezani-predmet-za-ucenike-petog-razreda/> (accessed on: 19 January 2019)

<sup>191</sup> Guidelines for improving the role of ICT in education, National Education Council of the Republic of Serbia: [www.nps.gov.rs/wp-content/uploads/2013/12/SMERNICE\\_final.pdf](http://www.nps.gov.rs/wp-content/uploads/2013/12/SMERNICE_final.pdf) (accessed on: 6 December 2017)

<sup>192</sup> Report of the Working Group for defining proposals for revisions of teaching curricula in the areas of technics, technology and computer science in primary and secondary schools, Ministry of Education, Science and Technological Development: [www.mpr.gov.rs/wp-content/uploads/2016/06/Izvestaj\\_RG.pdf](http://www.mpr.gov.rs/wp-content/uploads/2016/06/Izvestaj_RG.pdf) (accessed on: 6 December 2017)

<sup>193</sup> „Školama stiže 5000 kompjutera zbog informatike“ ("Schools to Receive 5,000 computers for Computer Science"), the Novosti daily, published: 14 April 2017: <http://wwwnovostirs vesti/naslovna/drustvo/aktuelno.290.html660459-Skolama-stize-5000-kompjutera-zbog-informatike> (accessed: 6 December 2017)

<sup>194</sup> „Programiranje obavezni predmet od drugog polugodišta u osnovnim školama“ ("Programming Mandatory in Primary Schools from Second Semester"), the Edukacija info-portal, published on: 14 February 2018: <http://edukacija.rs/obrazovanje/programiranje-obavezni-predmet-od-drugog-polugodista-u-osnovnim-skolama> (accessed on: 19 January 2019)

<sup>195</sup> „Drugi ciklus obuka iz programiranja za dodatnih 400 nastavnika informatike u Srbiji uspešno završen“ ("Second Cycle of Programming Training for Additional 400 Computer Science Teachers in Serbia successfully completed), Magazine Nedeljnik, published: 10 May 2018: <http://wwwnedeljnik.rs/moj-nedeljnik/portalnews/drugi-ciklus-obuka-iz-programiranja-za-dodatnih-400-nastavnika-informatike-u-srbiji-uspesno-zavrsen> (accessed on: 16 November 2018)

<sup>196</sup> „Novi materijali za učenje programiranja u novoj školskoj godini“ ("New Materials in the New School Year for Learning Programming"), official website of the Petlja Foundation, published: August 2018: <https://petlja.org/novi-materijali-za-u%C4%8Denje-programiranja-u-novoj-%C5%A1k/104575> (accessed on: 19 January 2019)

<sup>197</sup> Official website of the Digital Serbia Initiative: <https://wwwdsi.rs/> (accessed on: 19 January 2019)

<sup>198</sup> Plan of Priority Goals and Activities of the Public Administration and Government services for Improving IT Sector in Serbia for 2019, with the Report for 2018, Council for Innovation Entrepreneurship and Information Technologies, [https://wwwsrbia.gov.rs/view\\_file.php?file\\_id=2300&cache=sr](https://wwwsrbia.gov.rs/view_file.php?file_id=2300&cache=sr) (accessed on: 8 February 2019)

<sup>199</sup> „Uvodno o mBotu“ ("mBot Intro"), official website of the initiative "Battle for Knowledge": <http://bitkazazanje.rs/uvodno-o-mbotu> (accessed on: 20 January 2019)

<sup>200</sup> „Bitka za znanje“ (Battle for Knowledge), official website of the B92 Fund: <http://fondb92.org/sr/bitka-za-znanje.1.222.html> (accessed on: 20 January 2019)

Between 2015 and 2018, the Ministry of Trade, Tourism and Telecommunications awarded 153 papers presented by primary school teachers from all over the Republic of Serbia in the scope of the "Digital Classroom" contest.<sup>201</sup> The programme aimed to encourage the use of information technologies as teaching tools, i.e. use of information technologies applicable in teaching and aligned with the tasks and goals of the lesson. The awarded learning papers and projects cover the use of ICT in the fields of social and natural sciences, art and sports.

The training courses for computer science teachers in programming, operating systems, computer and programming application in textual coding language Python are planned to continue in 2019, given that these topics are covered by the curricula of IT and Computing in primary schools and Computing and IT in high schools.<sup>202</sup>

### **3.1.5. Recommendations**

- The Ministry of Education, Science and Technological Development should, through amendments of the present legislative framework, establish a clear legal frame for the functioning and long-term sustainability of assistive technology resource centres. The study on the availability of specialized support and knowledge in the sphere of assistive technologies within the educational system in the Republic of Serbia that the Ministry of Education, Science and Technological Development, prepared together with the Social Inclusion and Poverty Reduction Team in 2016, provides a detailed proposal of the manner of financing, monitoring, geographic coverage and organizational structure of the assistive technology resource centres. It is recommended that this proposal should be seriously considered in the process of legal regulation of the resource centres' operation in the forthcoming period.
- Simplify import procedures for and financing of AT by relevant bylaws/regulations.
- Allocate budgetary funds for equipping schools with IT labs and AT's, as well as for organising training courses for professionals on their use in the classroom based on the expressed needs of schools.
- Intensify promotion of the Assistive Technology Catalogue to expand its use and improve awareness among the teaching staff.
- The Ministry in charge of education should enact bylaws relevant for the implementation, quality assurance and evaluation of homeschooling and distance learning for primary and secondary education as soon as possible. Public advocacy for the introduction of minimum standards for distance learning in primary, secondary and tertiary education could bolster and accelerate the regulation of this area.
- Consider the possibility of a partnership between the line ministry and commercial services offering ready-to-use distance learning solutions based on predefined terms for the provision of their services to schools for children with disabilities, free of charge or at subsidised prices.
- Under current regulations, the licencing for the creation of digital textbooks is restricted only to companies registered for publishing. This inhibits competition and potentially affects the quality of the textbooks themselves. Consider amending relevant provisions to enable IT companies to become equal participants in the digital textbook market.<sup>203</sup>
- Work on general (and mandatory) application of the Instruction for the design of teaching materials in line with the principle of universal design. Observance of this instruction in the creation of

<sup>201</sup> Collection of papers from the competition "Digital Class": <http://zbornikradova.mtt.gov.rs/> (accessed: 16 November 2018)

<sup>202</sup> Plan of Priority Goals and Activities of the Public Administration and Government services for Improving IT Sector in Serbia for 2019, with the Report for 2018, Council for Innovation Entrepreneurship and Information Technologies, [https://www.srbija.gov.rs/view\\_file.php?file\\_id=2300&cache=sr](https://www.srbija.gov.rs/view_file.php?file_id=2300&cache=sr) (accessed on: 9 February 2019)

<sup>203</sup> Recommendation from the Plan of priority objectives and activities of the public administration bodies and services of the Government for the improvement of the IT sector in Serbia for 2019 with Repot for 2018, official website of the Government of Serbia: [https://www.srbija.gov.rs/view\\_file.php?file\\_id=2300&cache=sr](https://www.srbija.gov.rs/view_file.php?file_id=2300&cache=sr) (accessed on: 9 February 2019)

electronic teaching materials may result in high-quality, clear, understandable and user-friendly learning contents for use in school or at home, for children/students with developmental challenges and disabilities and all children/students in general.

- Ensure extensive implementation of the e-Register application and also make it available and easy to use for persons with disabilities.
- Continue with further improvements and intensify cooperation with informal initiatives aiming to enhance digital skills and ICT use in education.

## **3.2 HEALTHCARE**

### **3.2.1 Assistive Technologies in the Area of Healthcare**

Support to persons with disabilities for purchasing assistive technologies is regulated by the Law on Health Insurance,<sup>204</sup> which, despite the amendments introduced thereto from 2014 to 2018, did not improve the mechanism for the purchase of assistive technologies (i.e., medical technical aids) by persons with disabilities that are covered by health insurance. The Rulebook regulates this matter on medical technical aids provided from the mandatory health insurance funds.<sup>205</sup> Article 55 of this Rulebook, in section "Adaptive Technologies", envisages the possibility of purchasing Serbian language speech recognition software to assist blind people in using computers and the Internet.<sup>206</sup>

Coverage for purchasing this software is afforded exclusively to blind (not partially sighted) persons covered by health insurance, and students (starting from fifth grade of elementary school), college students and employees whom the software can help with specific work engagement if they have a computer with appropriate configuration but without this type of speech recognition software. The right to coverage is realised based on a proposal by a doctor-ophthalmologist and a certificate issued by the Union of the Blind of Serbia, which are verified by insured person's branch of the National Health Insurance Fund (NHIF). The right to purchase this software from mandatory social insurance funds can be realised once every five years.<sup>207</sup>

A shortcoming of the Rulebook is that it narrows the scope and type of assistive technologies that PWDs need for the use of computers and the Internet, as well as the type of disability (it includes only blindness, not partial loss of vision, and completely ignores physical impairments and limited mobility).

The Catalogue of Assistive Technology, developed by the Ministry of Education, Science and Technological Development in 2017 in cooperation with UNICEF,<sup>208</sup> recognises that assistive technologies can help both visually impaired people and people with physical impairments and limited mobility in the use of computers and/or access the Internet. There are numerous examples in the field of healthcare of how assistive technology can be used not only for the recovery, rehabilitation of patients after surgery or various interventions when people are temporarily unable to speak, see, move and perform other motor actions, but also for monitoring the current health condition through various applications (blood pressure, blood sugar measurement). The Catalogue provides a detailed overview of different types of customized mice, keys, joysticks, and other devices for using computers and other devices, and includes devices

<sup>204</sup> Law on Health Insurance, RS Official Gazette No. 107/2005, 109/2005 – correction, 57/2011, 110/2012 – CC decision and 119/2012 CC decision, 119/2012, 99/2014, 123/2014, 126/2014 – CC decision, 106/2015 and 10/2016 – as amended)

<sup>205</sup> Rulebook on medical and technical aids provided from the mandatory health insurance funds, RS Official Gazette No. 2 - correction., 73/2012 - correction., 1/2013, 7/2013 - correction., 112/2014, 114/2014 - correction., 18/2015, 19/2017 and 29/2017 - correction.

<sup>206</sup> Like the software anReader, designed by the company AlfaNum, Novi Sad : <http://anreaderalfanum.rs>

<sup>207</sup> Rulebook on medical and technical aids provided from the mandatory health insurance funds

<sup>208</sup> Catalogue of Assistive Technology, developed by the Ministry of Education, Science and Technological Development, on behalf of the publisher: Mladen Sarčević, Belgrade, 2017.

such as the Eye Blink Switch and the Twitch Switch that enable persons with physical impairments and restricted mobility to control computers and various devices by blinking their eyes or twitching their forehead muscles.

### **3.2.2 Tools and applications in the field of healthcare**

#### **Integrated health information system of the Republic of Serbia**

This system is a central electronic system that ensures the unity of data in healthcare and an integrated information and communication infrastructure for the management of data collections and data transmission. Each user of the system (doctor, nurse, etc.) has a unique user account. The system enables easier and better planning in the area of health care, information transparency and reporting, as well as access to health facilities and reduced waiting times.

#### **e-Prescription**

In 2017, the electronic prescription service (e-Prescription) was enabled, to facilitate and simplify procedures for the supply of medicines. The service is booted when the doctor enters the prescribed therapy into the system, and pharmacies that have a contract with the National Health Insurance Fund can access this information system and supply/sell the prescribed therapy to the patient by simply checking his health card. In this way, the patient can collect the treatment without a paper prescription in the next six months, which saves time, does not require additional visits to a doctor, and reduces the use of traditional, paper prescriptions.<sup>209</sup> The Ministry of Health claims that since the beginning of the implementation of e-Prescription, the number of patients who visit the doctor only because of prescriptions has been reduced and that 3,584 pharmacies, 158 health centres and 55 other institutions and health care institutions have been connected to the system.<sup>210</sup>

Problems in practice do exist; however, as the prescription may cease to be valid if the therapy is not collected within the prescribed time limit. Changes in therapy also cause complications, or if one patient needs one pack and a half worth of medicines, and he has been prescribed only one. There are also frequent remarks that health workers in health care centres and institutions are not adequately trained to use computers and need too much time to complete the process of entering e-Prescriptions into the system.<sup>211</sup>

Over 2.5 million citizens of Serbia use this service, and the plan is to completely phase out paper prescriptions, except in cases where doctors practice home visits and do not have access to the system.<sup>212</sup>

#### **The “My Doctor” National Electronic Medical Records System and the “Chosen Doctor” application**

The website of the Ministry of Health [www.mojdoktor.gov.rs](http://www.mojdoktor.gov.rs) is equipped with a search engine “Find a free slot” (book an appointment) that allows search by cities, and within that, a search by specialists and institutions where information is provided to users about free slots per days, months and for each day by vacant slots. The data are provided for information purposes only and are being updated every 15 minutes. As part of the Integrated Health Information System of the Republic of Serbia, as of May 2018, the “Chosen Doctor” application has been made available to the citizens, to provide simple online

<sup>209</sup> “Electronic prescriptions: how to obtain and use them <http://mondo.rs/a1053579/Magazin/Zdravlje/Elektronski-recepti-kako-se-dobijaju-i-koriste.html>” (accessed on: 26 January 2019)

<sup>210</sup> “Medicine at a click, Lončar: the number of patients in waiting rooms reduced thanks to the use of e-Prescription possibilities”, the *Blic* daily, published on: 22 November 2018 <https://www.blic.rs/vesti/drustvo/na-klik-do-leka-loncar-smanjen-broj-pacijenata-u-cekaonicama-jer-koriste-mogucnost-e-zjlk80z> (accessed on: 26 January 2019)

<sup>211</sup> “Electronic prescription is valid all over Serbia”, the *Politika* daily, published on: 16 July 2018.

<http://www.politika.rs/scc/clanak/407438/Elektronski-recept-vazi-u-celoj-Srbiji> (accessed on: 26 January 2019)

<sup>212</sup> <https://www.ite.gov.rs/vest/1952/zdravstvo-u-službi-gradijanja.php>

scheduling of medical examinations in health centres and clinics throughout Serbia.<sup>213</sup> Users must identify themselves by entering their LBO (insured's number) and the Health Insurance Card number. Apart from not being accessible to people with disabilities, this platform and mobile application are plagued with many problems in practice. The Commissioner for Information of Public Importance and Personal Data Protection requested a review procedure and submitted the information collected to the High Public Prosecutor's Office because of suspicions of unauthorized collection of users' personal data by the application.<sup>214</sup> Also, practice indicates that health facilities are still not fully interconnected, so the scheduling of medical examinations is not functional everywhere.<sup>215</sup>

### **3.2.3. Recommendations**

- The National Health Insurance Fund of the Republic of Serbia and the Ministry of Health should consider the possibility of amending the Rulebook on medical and technical aids supplied from mandatory health insurance funds. Consider the possibility of having a separate section of the Rulebook devoted to computer and Internet access, with clear rules on how manufacturers and suppliers of various assistive technologies can become authorised suppliers. Additionally, it is recommended that the list of aids available to PWDs within the framework of health insurance be reviewed and expanded based on the classification and reviews available in the Catalogue of Assistive Technology. In addition to speech recognition software within the scope of mandatory insurance, PWDs should also be given access to devices and equipment that would enable them to use computers and access the Internet (such as mice, keys and devices recognised in the Assistive Technology Catalogue).
- The Chosen Doctor application should be discontinued until it is established how it collects and stores private user data and how these flaws can be remediated in the new version of the application. Consider redesigning and improving the application to make it available to persons with disabilities.
- There is a need for intensive training programmes for healthcare professionals in the use of computers and networked systems at their disposal. Consider that pieces of training need to be repeated and improved periodically.

## **3.3 EMPLOYMENT AND IT ENTREPRENEURSHIP**

### **3.3.1 Digital Inclusion in the Field of Employment**

Based on a survey on the "Work and Employment Status of Persons with Disabilities in the Republic of Serbia" conducted by the Serbian Association of Employers in 2017, it is estimated that in the Republic of Serbia there are about 700,000 persons with disabilities. Between 215,000 and 300,000 PWDs belong to the potential working-age population (15–65).<sup>216</sup>

<sup>213</sup> Official website of the My Doctor application: <https://wwwmojdoktorgovrs/about> (accessed: 16 January 2019)

<sup>214</sup> "The Commissioner submitted the information on the Chosen Doctor app to the High Public Prosecutor's Office" Website of the Commissioner for Information of Public Importance and Personal Data Protection published on: 23 July 2018 <https://www.poverenik.rs/sr/саопштења/2899-повереник-доставио-вишем-јавном-тужилаштву-информацију-повојом-апликације-изабрани-доктор.html> (accessed: 25 January 2019)

<sup>215</sup> "What is wrong with the Chosen Doctor app", BBC news portal in Serbian, published on: 11 June 2018 <https://wwwbbc.com/serbian/lat/srbija-44395059> (accessed: 16 January 2019)

<sup>216</sup> Survey on the "Work and Employment Status of Persons with Disabilities in the Republic of Serbia" ("Položaj osoba sa invaliditetom u pogledu rada i zapošljavanja u Republici Srbiji"), Serbian Association of Employers, 2017.

At the end of June 2018, there were 13,443 persons with disabilities on the unemployment register who were ready to actively seek employment, of which 5,291 were women (39.4%). A breakdown by age shows that this category of unemployed is primarily characterized by a small share of youth up to 30 years of age (15.1%) and a very high share of persons aged 50 and over (42.6%). Their educational structure also poses a significant challenge in terms of providing support for job search and employment, as 39.6% of unemployed persons with disabilities are without qualifications, i.e. unqualified, while only 6.4% of them have a higher education degree.<sup>217</sup>

To create conditions for the equal inclusion of persons with disabilities in the labour market, the employers' obligation to employ persons with disabilities was established under the Law on Vocational Rehabilitation and Employment of Persons with Disabilities of 2009. To promote and support employment, the National Employment Service implements, among others, active employment policy measures targeting employers and persons with disabilities. These include subsidies to employers for the employment of PWDs, mandatory quotas of PWD employed in companies with more than 20 employees, as well as compensation for workplace accommodations for PWDs.<sup>218</sup> In the period between 2014 and 2018, a total of 27,969 PWDs were employed through the National Employment Service, of which 11,181 women. The table below gives a detailed overview by the year:<sup>219</sup>

Year	Total No. of PWDs	Women
2014	4,147	1,549
2015	4,913	1,882
2016	5,860	2,366
2017	6,476	2,570
2018	6,573	2,814

Although the implementation of the Law and incentives resulted in an increase in the number of registered PWD employees, the Serbian Association of Employers in its survey states that the estimated employment rate of PWD is only 13% (relative to 42.5% in the total population of Serbia). This indicates that the work and employment status of persons with disabilities is inadequate and unequal.

A survey on the challenges in the implementation of the Law on Vocational Rehabilitation and Employment of PWDs, conducted by Smart Kolektiv in 2017, shows that companies that want to fulfil the statutory quota and avail themselves of subsidies to recruit PWDs cannot find suitable personnel among this population. The rigidity and complexity of the National Employment Service procedures, the PWDs' low level of education, lack of specific knowledge and skills, as well as lack of previous work experience, are listed as the biggest challenges in implementing the incentives scheme for the employment of PWDs. Alternatively, the Law envisages that companies that are required to hire one or more PWDs may opt to pay penalties to the state fund for vocational rehabilitation and the promotion of employment of PWDs. Employers' attitudes indicate that in many cases, they are more likely to opt for paying these penalties rather than employ PWDs. The payable amount is low, and employers take it as a parafiscal charge rather than as an incentive to employ PWDs, and both researchers and respondents agree that a change of this provision is necessary, in the direction of increasing the penalty amount or introducing some other support mechanism that employers could benefit from.<sup>220</sup>

The Social Inclusion and Poverty Reduction Unit of the Government of Serbia (SIPRU) tested a model for the employment of youth with disabilities who are able to work in 2018, in which 15 persons with disabilities completed work placement programmes in 13 enterprises, including several large public

<sup>217</sup> National Employment Plan for 2019 (NEAP), official website of the National Employment Service: [http://www.nsz.gov.rs/live/digitalAssets/11/11445\\_nacionalni\\_akcioni\\_plan\\_zapo\\_ljavanja\\_za\\_2019\\_godinu.pdf](http://www.nsz.gov.rs/live/digitalAssets/11/11445_nacionalni_akcioni_plan_zapo_ljavanja_za_2019_godinu.pdf) (accessed: 9 February 2019)

<sup>218</sup> "Programs for persons with disability, website of the National Employment Service [http://www.nsz.gov.rs/live/trazite-posao/dok-trazite-posao/programi/programi\\_za\\_osobe\\_sa\\_invaliditetom.cid285](http://www.nsz.gov.rs/live/trazite-posao/dok-trazite-posao/programi/programi_za_osobe_sa_invaliditetom.cid285) (accessed: 27 January 2019)

<sup>219</sup> Data for the preparation of this table were provided by the National Employment Service.

<sup>220</sup> "Law on Vocational Rehabilitation and Employment of the PWDs, - challenges and obstacles in implementation" ("Zakon o profesionalnoj rehabilitaciji i zapošljavanju osoba sa invaliditetom – izazovi i prepreke u primeni"), Smart Kolektiv, 2017.

enterprises. Key project results indicate first, that employers need support in overcoming prejudices against the employment of PWDs, and second, that PWDs have a working capacity that employers can put to use. In 2019, SIPRU plans to cooperate with the National Employment Service (NES) as part of this project to develop a manual for the NES counsellors and support the NES in working with this target population. In addition to this model, SIPRU has tested an employment model for youth who are not in education, employment or training (NEET) through cooperation with several IT companies based in Novi Sad. As part of this model, SIPRU tested a "one-stop-shop" methodology for reaching young people from this category in their natural setting, a training and work placement programme with the possibility of employment in the companies that were involved in the implementation of this project.

Forty-four percent of the total number of people with disabilities interviewed within the scope of the survey "The work and employment status of persons with disabilities in the Republic of Serbia" believe that the employer did not provide the necessary working conditions, and only one fifth of those polled declared that they worked in workplaces with adapted washrooms and equipment (such as specialized software, machines or devices). The lack of computer programmes, special equipment or personal assistants was perceived as an obstacle in the workplace by 42.7% of people with disability. Of the employers who declared that they had taken steps to implement workplace accommodations for persons with disabilities, 12.5% did so by investing in the procurement of assistive technologies.<sup>221</sup>

"Based on the perceptions and opinions of the interviewed PWDs, Employers' prejudices, especially concerning the competence and abilities of persons with disabilities, turned out to be an even greater obstacle to their career advancement than it was in getting the job in the first place. The lack of education, qualifications and work experience as a result of the inadequacy of the education system in general, and in particular when it comes to people with disabilities, and the lack of equal opportunities and opportunities for advancement compared to other employees, as well as the inadequacy of infrastructure and work environment, the lack of special working conditions and equipment, and the lack and incompatibility of additional training modes are other important barriers to the advancement of people with disabilities at work", emphasizes the survey of the Serbian Association of Employers.<sup>222</sup>

A Government programme for vocational reskilling in information technology was launched in 2018. The programme is open both to the unemployed and employed people seeking higher-paid jobs with better opportunities for career advancement. Eight hundred people were given the opportunity to acquire the knowledge and programming skills necessary for the position of junior programmers, and in early 2019, the vocational reskilling of 411 people commenced in Belgrade, Novi Sad, Niš, Valjevo, Čačak, Subotica, Kragujevac, Novi Pazar, Užice and Zrenjanin.<sup>223</sup>

The National Employment Action Plan for 2019 (NEAP) was adopted by the end of 2018<sup>224</sup>. It proposes to involve over 136,000 unemployed persons in active employment policy measures, for which funds have been provided from the budget and EU projects. The plan states that the priority for inclusion in the active employment policy measures will be granted to the categories of hard-to-place persons, i.e. youth up to 30 years of age, redundant employees, persons aged 50+, persons with no or low qualifications, persons with disabilities, members of the Roma minority, recipients of financial social assistance and the long-term unemployed. The active employment policy measures envisaged in the NEAP will be implemented at the national, provincial and local level.

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<sup>221</sup> Survey "The work and employment status of persons with disabilities in the Republic of Serbia" ("Položaj osoba sa invaliditetom u pogledu rada i zapošljavanja u Republici Srbiji), Serbian Association of Employers, 2017.

<sup>222</sup> *Ibid.*

<sup>223</sup> Plan of Priority Objectives and Activities of Public Administration Bodies and Government Services for Improvement of IT Sector in the Republic of Serbia for 2018, official website of the Government of Serbia: <https://media.srbija.gov.rs/medsrp/dokumenti/plan-prior-aktiv-saveta-za-IP-IT-za-2018-271217.pdf> (accessed on: 9 February 2019)

<sup>224</sup> National Employment Action Plan for 2019. (NEAP), official website of the National Employment Service: [http://wwwnsz.gov.rs/live/digitalAssets/11/11445\\_nacionalni\\_acioni\\_plan\\_zapo\\_ljavanja\\_za\\_2019\\_godinu.pdf](http://wwwnsz.gov.rs/live/digitalAssets/11/11445_nacionalni_acioni_plan_zapo_ljavanja_za_2019_godinu.pdf) (accessed on: 9 February 2019)

### 3.2.2 Support Measures in the Field of IT Entrepreneurship

In 2016, the Strategy for Developing the Information Technology Industry for the period 2017–2020<sup>225</sup> was adopted with the Action Plan for 2018<sup>226</sup>. The focus of the Strategy and the related Action Plan were the improvement of the information technology industry in the Republic of Serbia, through the development of successful IT companies and products, improvement of the administrative environment suitable for the development of the IT industry, strengthening of personnel potentials and modernization of business in all branches of industry using IT.

According to the Strategy, an estimated 50,000 to 100,000 new jobs could be created in Serbia in the information technology sector by 2020, at the same time, there is a huge shortage of qualified IT professionals, a problem that has also been identified in the European Union. The sector employs over 40,000 people and generates annual revenue of over EUR 4 billion. The Strategy highlights the need for investing in and supporting the development of IT professionals to harness the potential for employment and the use of IT solutions in education, business and public administration.

In late 2016, the Government of Serbia established the Council for Innovative Entrepreneurship and Information Technology,<sup>227</sup> tasked with developing all segments of entrepreneurship in Serbia in line with the advancement of global information technology. Council meetings are held regularly, and in 2017 this body created the Plan of Priority Objectives and Activities of Public Administration Bodies and Government Services for the Improvement of the IT Sector in the Republic of Serbia for 2018.<sup>228</sup> The Plan of Priority Objectives and Activities of Public Administration Bodies and Government Services for the Improvement of the IT Sector in the Republic of Serbia for 2019, along with the Report for 2018, was published early in 2019.<sup>229</sup>

In its Action Plan for the implementation of the Strategy for Developing and Supporting the IT industry of 2013,<sup>230</sup> the Government envisaged the opening of science and technology parks in Belgrade, Novi Sad and Niš. The technology park in Belgrade was opened in 2015,<sup>231</sup> while the construction of the park in Novi Sad is still in progress and the opening is planned to coincide with the beginning of the school year 2019/20).<sup>232</sup> Regardless of numerous announcements, the construction of the science and technology park in Niš was delayed and the works actually commenced only late in 2018.<sup>233</sup> A part of each technology park should be adapted and made available to technology incubators, shared workspaces and IT clusters, under beneficial lease terms. During 2017, the Serbian Government renovated and fully

<sup>225</sup> Strategy for Development of IT Industry for the period from 2017 to 2020, RS Official Gazette No 95, dated 30 November 2016.

<sup>226</sup> Action plan for 2018, for the implementation of the Strategy of development of IT technologies for the period from 2017 to 2020, official website of the Government of Serbia: <https://www.srbija.gov.rs/dokument/45678/strategije.php> (accessed on: 9 February 2019)

<sup>227</sup> Decision on the Formation of the Council for Innovative Entrepreneurship and Information Technology, "Official Gazette of the RS", number 77 dated 14 September 2016.

<sup>228</sup> Plan of Priority Objectives and Activities of Public Administration Bodies and Government Services for Improvement of IT Sector in the Republic of Serbia for 2018, official website of the Government of Serbia : [https://media.srbija.gov.rs/\\_medsrp/dokumenti/plan-prior-aktiv-saveta-za-IP-IT-za-2018-271217.pdf](https://media.srbija.gov.rs/_medsrp/dokumenti/plan-prior-aktiv-saveta-za-IP-IT-za-2018-271217.pdf) (accessed on: 9 February 2019)

<sup>229</sup> Plan of Priority Objectives and Activities of Public Administration Bodies and Government Services for Improvement of IT Sector in the Republic of Serbia for 2019 with Report for 2018, official presentation of the RS Government: [https://www.srbija.gov.rs/view\\_file.php?file\\_id=2300&cache=sr](https://www.srbija.gov.rs/view_file.php?file_id=2300&cache=sr) (accessed on: 9 February 2019)

<sup>230</sup> Strategy of development and support to IT industry, RS Official Gazette No 25/13

<sup>231</sup> "Science-Technology Park Belgrade Officially Opened", official Website of ST Park Belgrade, published: 30 October 2015: <https://htpark.rs/2015/10/30/svecano-otvoren-naucno-tehnoloski-park-beograd/> (accessed on: 9 February 2019)

<sup>232</sup> "The Science and Technology Park in Novi Sad scheduled to open by the beginning of the school year 2019/20". Novosti daily news portal, published on 17 July 2018: <http://www.novostirs.vesti/srbija/73.html?738776-Mirovic-Naucno-tehnoloski-park-u-Novom-Sadu-bice-zavrsen-do-skolske-201920-godine> (accessed: 9 February 2019)

<sup>233</sup> "Construction of the Science and Technology Park in Niš Commences". N1 Serbia news portal, published on 23 November 2018: <http://rsn1info.com/SciTech/a438191/Pocela-izgradnja-Naucno-tehnoloskog-parka-u-Nisu.html> (accessed: 9 February 2019)

equipped 607 square meters of space at the Faculty of Electronic Engineering in Niš, where the Niš Startup Centre was opened.<sup>234</sup>

Preliminary analyses of the state of innovation potential in Serbia found that local communities possess the capacity for innovation development and that this fact should be used as a starting point for the development of a network of regional innovative startup centres. The Council's Plan for 2019 states that regional innovation start-up centres will be a network of organisational units that, together with similar centres in Belgrade, Novi Sad and Niš complement the innovation ecosystem in Serbia's entrepreneurial segment. To that end, a competition was carried out to provide support to the establishment and development of regional start-up centres<sup>235</sup> in eight cities and municipalities of Serbia worth RSD 250 million and the Budget of the Republic of Serbia for 2019 appropriated another RSD 250 million as additional support for setting up start-up centres in new cities and municipalities.<sup>236</sup>

Apart from these activities, in the period between 2014 and 2018, eight Startit centres were opened in the Republic of Serbia as part of the initiative of the non-governmental organisation SSEE ICCTT, supported by numerous companies and donors.<sup>237</sup> Startit centres are places dedicated to sharing knowledge, encouraging innovation and spreading inspiration among the local IT community and everyone else who wants to become a part of it. The centres actively work in Belgrade, Indija, Novi Sad, Vršac, Zrenjanin, Valjevo, Subotica and Šabac, where educational, information, mentoring and other programmes take place with the aim of raising entrepreneurial spirit and awareness of the importance of IT entrepreneurship.

Business incubators provide support to startups by lowering their start-up costs, by providing workspace under favourable conditions, providing unified administrative services (bookkeeping, legal services, etc.), as well as by organising training in the areas of management, finance, marketing, product development, conquering new markets, etc. According to information from 2017, there were 20 active business incubators across the country,<sup>238</sup> with four employees each, on average. From 2011 to 2017, 10 new incubators were established, while 4 discontinued their activity, and in most cases, they changed their purpose and model of functioning.

Support to and empowerment of women's innovative entrepreneurship at the local and national level is also of the utmost importance for digital inclusion and development of IT entrepreneurship. Disbursement of financial support to entrepreneurial ideas and delivery of online and direct training courses are especially important for women entrepreneurs in Serbia's rural areas. In the course of 2018, 17 women entrepreneurship projects were implemented in 12 municipalities in Serbia.<sup>239</sup> More than 200 women received direct financial support, more than 2,500 women attended various training programmes, education and online courses, and ten conferences, educations, fairs and round tables were held on women's innovative entrepreneurship in cities across Serbia.<sup>240</sup> A continuation of these is planned in 2019 as well.

<sup>234</sup> Official website of the Niš Start-up Centre: <http://www.startupcentarnis.org/> (accessed: 9 February 2019)

<sup>235</sup> Support programme for setting up regional start-up centres, official website of the Office of the Ministry of Innovation and Technological Development, published: 15 May 2018: <https://inovacije.govrs/programi/program-podrske-otvaranju-regionalnih-startap-centara/> (accessed: 9 February 2019)

<sup>236</sup> Plan of Priority Objectives and Activities of Public Administration Bodies and Government Services for the Improvement of the IT Sector in Serbia for 2019 with Report for 2018, official presentation of the RS Government: [https://www.srbija.govrs/view\\_file.php?file\\_id=2300&cache=sr](https://www.srbija.govrs/view_file.php?file_id=2300&cache=sr) (accessed: 9 February 2019)

<sup>237</sup> Startit centre, official website: <https://startit.rs/startit-centar/> (accessed: 9 February 2019)

<sup>238</sup> Map of business incubators in Serbia, official Website of the Institute for Territorial Development, published on 7 September 2017: <http://www.lokalnirazvoj.org/sr/publications/details/53> (accessed: 9 February 2019)

<sup>239</sup> Female innovative entrepreneurship development and promotion support programme, official website of the Office of the Minister for Innovations and Technological Development, published on 13 July 2018. <https://inovacije.govrs/programi/program-podrske-razvoju-i-promociji-zenskog-inovacionog-preduzetnistva/> (accessed: 9 February 2019)

<sup>240</sup> Plan of Priority Objectives and Activities of Public Administration Bodies and Government Services for the Improvement of the IT Sector in the Republic of Serbia for 2019 with Report for 2018, official website of the Government of Serbia: [https://www.srbija.govrs/view\\_file.php?file\\_id=2300&cache=sr](https://www.srbija.govrs/view_file.php?file_id=2300&cache=sr) (accessed: 9 February 2019)

### **3.3.3 Recommendations**

- Intensive investment and planning of training and reskilling programmes for people with disabilities are needed, with an emphasis on the use of ICT, especially for distance jobs (digital marketing, telephone services, market research, design, etc.), but also in line with the needs of employers. Bearing in mind that women account for 39.9% of the total number of PWDs employed through the NES in the period between 2014 and 2018, additional efforts are needed to ensure that this population (especially in rural areas) is included as much as possible in education and potentially reskilling programmes.
- The Smart Kolektiv survey recognises, in particular, the importance of improving the ability to search existing NES databases for PWD candidates. The survey recommends that segmented candidate databases should be created according to criteria harmonised with employers' needs.
- Consider amending the Law on Employment and Vocational Rehabilitation of Persons with Disabilities to simplify procedures for employers to claim refunds or pay penalties.
- The National Employment Service demonstrated a good practice of publishing statistical bulletins for each month, from 2011 to 2018.<sup>241</sup> It is recommended that the NES make available its databases to create statistical bulletins on the Open Data Portal.<sup>242</sup> In this way, the broader community of experts and the wider interested public would benefit from the publication of these statistics and data.
- Efforts should be made to make the IT reskilling programme equally accessible to people with disabilities.
- Consider providing additional support to the existing Startit centres' network, networking and support at the local level. Appropriate resources should be earmarked through programme support to encourage more active participation of people with disabilities, youth from rural areas and other socially marginalised categories of people.
- Consider implementing a special type of education on the use of the Internet and ICT for business development within the frame of the programme for empowering women's innovative entrepreneurship. Consider appropriating funds for purchasing devices or providing fast, high-quality internet access for such enterprises.

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<sup>241</sup> NES Statistical Bulletins, official website of the National Employment Service : [http://www.nsz.gov.rs/live/dokumenti/statisti\\_ki\\_bilteni\\_nsz.cid667](http://www.nsz.gov.rs/live/dokumenti/statisti_ki_bilteni_nsz.cid667) (accessed: 31 January 2019)

<sup>242</sup> Open Data Portal : <https://data.gov.rs/> (accessed: 31 January 2019)

## 4. Programmes and Projects that Contribute to Increasing Digital Inclusion

Bridging the digital divide in Serbia will not be feasible without an overall improvement of digital literacy, equal access to information and communication technologies, the Internet and all public services. To improve the digital literacy and competencies of the entire population, in 2018, the Ministry of Trade, Tourism and Telecommunications established a Working Group for the development of the **Digital Skills Strategy in Serbia for the period from 2019 to 2023**. On the occasion of the announcement of the Strategy, it was emphasized that the use of the Internet should be viewed separately from digital literacy and that this problem is present not only in our country but globally as well. In Serbia, 80% of citizens use the internet, but 49% are digitally illiterate, similar to the EU, which is one of the reasons why we should address the issue of digital literacy.<sup>243</sup>

### 4.1 Projects Supported by State Institutions

Since 2013, the Ministry of Trade, Tourism and Telecommunications have been conducting public tenders inviting bids from associations, endowments and foundations to achieve the overarching goals in the field of information society development across Serbia.

Sixty-nine projects were supported under the framework of information society support programmes implemented by the Ministry of Trade, Tourism and Telecommunications in the period from 2015 to 2018, and a total of RSD 60,084,498 was disbursed for their implementation.<sup>244</sup>

In 2015, funds were approved for **12 projects to increase the social inclusion of persons with disabilities through the use of ICT** under the framework of a competition conducted by the Ministry of Trade, Tourism and Telecommunications.<sup>245</sup> In this field, 12 projects were granted financial support in the total amount of RSD 6,594,680.00, while the total amount awarded based on the public invitation in 2015 was RSD 33,321,447.00.<sup>246</sup>

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<sup>243</sup> "Modern education for the development of digital literacy", website of the Ministry of Trade, Tourism and Telecommunications, published on: 7 December 2018: <http://mtt.gov.rs/slider/savremeno-%D0%BEbrzovanje-za-razvoj-digitalne-pismenosti/?script=lat> (accessed: 8 February 2019)

<sup>244</sup> An overview of the state supported programs in 2014 is given in the Report on digital inclusions in the Republic of Serbia for the period 2011-2014

<sup>245</sup> "Public call inviting programme proposals for the award of funds for programmes in the area of information society development in the Republic of Serbia in 2015", website of the Ministry of Trade, Tourism and Telecommunications, published on 7 May 2015: <http://mtt.gov.rs/vesti/javni-konkurs-za-dodelu-sredstava-za-programe-u-oblasti-razvoja-informacionog-drustva/> (accessed: 18 January 2019)

<sup>246</sup> "Decision on the selection of programmes in the area of development of information society in the Republic of Serbia 2015", website of the Ministry of Trade, Tourism, and Telecommunications, published on 24 August 2015: <http://mtt.gov.rs/download/Konacna%20odluka%20k2015%20za%20sajt%20.pdf> (accessed: 18 January 2019)

Organisation	Project title
Open world (Otvoreni svet), Belgrade	Improvement of the status of PWDs through the use of ICT
Kikinda's Youth Initiative Association (Udruženje Kikindska inicijativa mladih, Kikinda)	Social inclusion through the use of ICT
The Green Horizons Association (Udruženje „Zeleni horizonti“), Vladičin Han	Connection Centre
The Magic Grain. (Magično zrno), Belgrade	Let's jump on board ("Uključimo se")
The SmlneCode Association of education and development of information technologies, Jagodina	Essential information ("Informacija od značaja")
Voice of Opovo Citizens' Association (Udruženje građana „Glas Opova“), Opovo	Together towards knowledge ("Zajedno do znanja")
Society for IT systems and computer networks – Information Society of Serbia, (Informaciono društvo Srbije, Beograd), Belgrade	Development of a module for internet communication of persons with hand impairments
Serbian Society of Mathematicians, Belgrade	Admission exam – equality for all
ORG 21 Citizens' Association, Belgrade	City of PWDs – IT
Forum of Youth with Disabilities, Kragujevac	Virtual museum accessible to all
The Friend Association of Handicapped Citizens (Udruženje građana sa hendikepom „FREND“), Majdanpek	Service for support to persons with visual impairments
The Inclusive Network Association for support to inclusion of minority groups (Udruženje za podršku inkluziji manjinskih grupa „Inkluzivna mreža“), Belgrade	Digital Braille music notebook in a Cloud

Funds were allocated for 8 projects in the field of social inclusion of persons with disabilities using ICT under the public call **for programmes in the field of information society development** in 2016.<sup>247</sup> Unlike the projects approved in 2014 and 2015, this competition supported solely the development of applications for mobile platforms, which has proven to be an additional favourable factor in terms of accessibility of content for the target group of users.

For the implementation of the indicated approved projects, funds were allocated in the amount of RSD 3,427,060.00, while the total amount approved for the implementation of projects based on the public invitation in 2016 was RSD 34,999,955.38.<sup>248</sup>

Organisation	Project title
Society of Special Education Needs Teachers of Vojvodina, Novi Sad	Application for mobile platforms for PWDs
Centre for contemporary education, Belgrade	"Together, we can" (Zajedno možemo)
Centre for persons with a disability, Belgrade	"Application to go" (Aplikacija za poneti)
The Authentic Vojvodina Citizen's Association, Subotica	Subotica – the city of secession 2017
Multiple Sclerosis Association, Knjaževac	"Let's make the city accessible" (Učinimo grad dostupnim)

<sup>247</sup> "Decision on the selection of programs in the area of development of information society in the Republic of Serbia 2016", website of the Ministry of Trade, Tourism, and Telecommunications, published on: 15.11.2016: <http://mtt.gov.rs/download/javne-nabavke/Odluka%20o%20izboru%20programa%20u%20oblasti%20razvoja%20informacionog%20drustva.pdf> (accessed: 18 January 2019)

<sup>248</sup> Ibid.

The "Vrnjački zagrljaj" society for assistance and support to marginalized groups, Vrnjačka Banja	"Accessibility connects us" (Pristupačnost nas povezuje)
Centre for children's rights, Kraljevo	"My communicator SR" (Moj komunikator SR)
Forum of Youth with Disabilities, Kragujevac	Accessibility map of the city of Kragujevac

In 2017, the Ministry of Trade, Tourism and Telecommunications implemented two public invitations in support of 26 **projects in the field of digital inclusion**, none of which directly targeted people with disabilities or socially vulnerable categories of the population.

As part of the first public call, nine **projects were selected aimed at increasing the inclusion of women in the IT sector** through the delivery of reskilling and upskilling programmes, for which RSD 14,800,000 were allocated<sup>249</sup>

Organisation	Project title
Centre for Entrepreneurship Kragujevac	Girl Geeks (Štreberke) - a programme for empowering women through reskilling in the field of ICT
The Vojvodina ICT Cluster	IT girls
The Employment Org. Citizens' Association (Udruženje građana „Zaposlenje Org“)	Reskilling programme for women in the IT sector
The Vranje Centre for Activism	Reskilling and upskilling for women from Pčinja Region to work in ICT sector
Junior Chamber International Zrenjanin-Banat	IT Equality
Women's Initiative of Novi Sad	Training programmes for unemployed women in the field of web programming
The Local Self-organization Citizens' Association (Udruženje građana Lokalna samoorganizacija)	IT the right profession for you
The Lighthouse Association (Svetionik)	IT is for women too
Citizens' Association SEE ICT	The Women of Novi Sad are coding

Within the framework of the second public call, in 2017, **17 projects were approved for the development of digital competences, digital literacy and skills of the elderly and pensioners through the use of ICT**, for the implementation of which funds were allocated in the amount of RSD 10,262,892.00.<sup>250</sup>

Organisation	Project Title
The Tijana Jurić Foundation, Subotica	"Old Age Security" (Sigurna starost)
The Margina Citizen's Association, Novi Sad	The time is high to give the Web a try ("Došlo doba da se internet proba")
The Windmill Citizens' Association, Niš	IT literacy for pensioners
Citizens' Association Local Self-Organization, Belgrade	IT for the Golden Years (IT za treće doba)

<sup>249</sup> "Decision on the selection of programs in the area of development of information society in the Republic of Serbia 2017", website of the Ministry of Trade, Tourism, and Telecommunications, published on: 19 July 2017: [http://mtt.gov.rs/download/Odluka\(2\).pdf?script=lat](http://mtt.gov.rs/download/Odluka(2).pdf?script=lat) (accessed on: 18 January 2019)

<sup>250</sup> "Decision on the selection of programs in the area of development of information society in the Republic of Serbia, 2017", website of the Ministry of Trade, Tourism, and Telecommunications, published on: 24 November 2017: <http://mtt.gov.rs/download/Одлука%20о%20избору%20програма%20из%20области%20развоја%20информационаог%20друштва%20у%20РепублициСрбији.pdf> (accessed: 18 January 2019)

Society for affirmation of persons with disability Phoenix Plus (Društvo za afirmaciju invalida Feniks plus) Bečej	e-Story (E priča)
Junior Chamber International Zrenjanin-Banat	To add future to years (Dodati budućnost godinama)
Humanitarian Centre "Full Heart" (Humanitarni centar Puno srce), Odžaci	Digital Golden Years (Digitalno treće doba)
Association "People of Kragujevac at the right place" (Udruženje "Kragujevčani na pravom mestu"), Kragujevac	The Golden Years - Digital Drive, training provided to retired people of Kragujevac aimed at improving their digital literacy (Treće doba – digitalna moba)
The "I believe in Novi Sad" Citizens' Association (Udruženje građana "Verujem u Novi Sad"), Novi Sad	Digital literacy training
IT Centre Bor, Bor	Training provided to retirees to achieve European standard in digital competences
The City of Niš organization of retirees (Gradska organizacija penzionera), Niš	Seniors' club, – safe digital step (Klub za stare – siguran digitalni korak)
Association for economic empowerment of women (Udruženje za ekonomsko osnaživanje žena), Valjevo	Retired men and women – abreast of digitalization!
Centre for social integrations (Centar za društvene integracije), Vranje	Digital literacy of the golden age population
Association – FORCA Civil Action Forum (Udruženje forum civilne akcije Forca), Požega	Who cares for our elderly – old age (Naši stari ko za njih mari – Treće doba)
Young and Gifted (Mladi i talentovani – MiT), Prijepolje	Old students for the new age!
The Golden Age Association of Retirees (Udruženje penzionera Treće doba), Idoš	Training for retired persons to improve their digital literacy and digital competencies – Idoš 2017
The FERHA Regional Network for Adult Education (Regionalna mreža za obrazovanje odraslih FERHA), Kanjiža	Grandmas, go ahead and click! The world is not just for the young! (Bake, kliknite! Svet nije samo za mlade!) – an IT training course for retirees

Projects approved in 2018 under the framework of the **information society development programme in the Republic of Serbia**, funded from the national budget, are mainly engaged in raising the level of digital literacy and digital competencies of women from rural areas, the safe use of the Internet by children, as well as organizing conferences to exchange experiences in raising general digital literacy and digital competencies.

Support to projects focusing on the digital involvement of women in rural areas is in line with the 2018 Action Plan for the Implementation of the **Strategy for the Development of the Information Technology Industry for the period 2017–2020**.<sup>251</sup> Under the Action Plan, RSD 25,000,000.00 was earmarked from the budget for support programmes to associations for projects aimed at **raising the level of digital literacy and digital competences of women in rural areas**, of which RSD 8,463,842.61 were used to support seven projects under the public call of the Ministry of Trade, Tourism and Telecommunications.<sup>252</sup>

Organisation	Project Title
Centre for Vocational Trainings and Courses – Citizens' Association	Raising the level of digital literacy and digital competencies of women in rural areas
Association of Google Local Guides from Serbia	Training for digital promotion of traditional products
Rural Development Initiative	Web store – homemade products

<sup>251</sup> Action plan for 2018 for the implementation of the Strategy on Development of Information Technology Industry for the period 2017- 2020, official web presentation of the Government of the Republic of Serbia: <https://www.srbija.gov.rs/dokument/45678/strategije.php> (accessed on: 8 February 2019)

<sup>252</sup> "Decision on the selection of programs in the area of development of information society in the Republic of Serbia 2018.", official website of the Ministry of Trade, Tourism and Telecommunications, published on 11 December 2018: [http://mtt.gov.rs/download/Odluka\(7\).pdf](http://mtt.gov.rs/download/Odluka(7).pdf) (accessed: 18 January 2019)

Women's Association "Let's preserve the village" (Sačuvajmo selo)	My window to the world
Local Self-Organization Citizens' Association	Abreast of the times
Media Training Centre	Digital literacy for sustainable development
Women's Initiative	Infoworld for me

In 2018, based on a Public Invitation, 6 projects were approved for **increasing the online safety of children through the development of mobile applications**, for which RSD 6,700,000 were allocated out of the RSD 50,000,000 foreseen by the plan covering the area of ICT application in education for associations.<sup>253</sup>

Organisation	Project Title
The "A Friend is Not a Target" Association	I Got Your Back (Čuvam te)
The Ekozon Association	Developing an application for mobile platforms to improve online safety of children
The Centre for Vocational Training and Courses - Citizens' Association	Designing application for mobile platforms aimed at encouraging safety of children on the Internet
The Civic World Citizens' Association	"Safe click – road to safer childhood" (Bezbedan klik – put ka sigurnijem detinjstvu)
The Fram Zrenjanin Association	Mobile Guard" (Mobil gard)
Citizens' Association - "People of Kragujevac at the right place" (Udruženje građana „Kragujevčani na pravom mestu“)	Digital Consignment (Digitalna pošiljka)

In 2018, nine projects were also approved based on a public invitation for proposals<sup>254</sup> to support the organisation of conferences encouraging an exchange of experiences in raising the level of digital literacy and digital competences at the national and regional level, for which a total sum of RSD 9,836,157.29 was allocated from the national budget.<sup>255</sup> An overview of the programmes that received support is provided in the following table:

Organisation	Project title
The Spectrum Centre for Transition and Human Rights	Regional conference "Entrepreneurship and digital literacy of young people in Serbia, Montenegro and Bosnia and Herzegovina"
Movement for Social and Economic Development of Serbia	Regional conference DIG4TECH
The SEE ICT Association	Conference: "Digital literacy and transformation of education and business"
The iSerbia Association	Disconnect violence

<sup>253</sup> "Decision on the selection of programmes in the area of development of information society in the Republic of Serbia 2018 to be awarded funds from the budget of the Republic of Serbia", published on 4 October 2018:

<https://mtt.gov.rs/download/Odluka%20o%20dodeli%20sredstava%20u%20oblasti%20rayvoja%20informacionog%20drustva%20-%20alikacije%20%20konferencije.pdf>

<sup>254</sup> "Public invitation to submit programme proposals for the public tender for the award of funds for programs in the area of development of information society in the Republic of Serbia in 2018", website of the Ministry of Trade, Tourism and Telecommunications, published on: 3 July 2018, <http://mtt.gov.rs/vesti/javni-konkurs-za-dodelu-sredstava-za-programe-u-oblasti-razvoja-informacionog-drustva-u-republici-srbiji-u-2018-godini/> (accessed: 18 January 2019)

<sup>255</sup> "Decision on the selection of programs in the area of development of information society in the Republic of Serbia 2018", website of the Ministry of Trade, Tourism, and Telecommunications, published on: 4 October 2018:

<http://mtt.gov.rs/download/Odlukakonferencije.pdf> (accessed on: 18 January 2019)

The Local Self-Organization Citizens' Association	Together through IT
The Teach Me Citizens' Association	Conference: Digital humanistics – development of teachers' digital competencies
Union of Youth of Serbia (Unija mladih Srbije)	Conference of students of electrical engineering
The Development and Integration Team Citizens' Association	Online Safety – South Serbia's European link (Bezbednost na Internetu - evropska veza juga Srbije)
WEBIT – Association for the promotion of IT and improvement of Internet culture	WEBIT conference

During 2018, a competition was also organized with the aim of improving teaching and innovating courses at the faculties, following the needs of the digital society, which attracted the participation of 166 teams of professors, of whom 66 received funding in the amounts of RSD 250,000 to RSD 1 million. Support was provided to projects conceived to increase the use of information technologies in teaching and learning, to monitor the needs of the labour market and develop entrepreneurial skills of students and cooperation of higher education institutions with the economy and other stakeholders in the local community.<sup>256</sup>

## 4.2 International Programmes in the field of Digital Inclusion

### The Digital Citizen Project

The regional Digital Citizen<sup>257</sup> project of the Institute for Youth Development and Innovation from Croatia, in the local partnership with the B92 Fund and its Battle for Knowledge programme, should equip 20 libraries in Serbia with advanced technology that will enable their transformation into centres for the development of digital competences, knowledge and skills of children and adults. The main objective is to strengthen local communities and prepare them for the contemporary labour market challenges, knowledge and competences through access to new technologies and tools at the local level.

The competition inviting applications from all public libraries in Serbia, except for school libraries, was finalised at the end of 2018, and at the beginning of 2019, the first micro:bit training was held for 45 librarians from 20 selected libraries across Serbia.<sup>258</sup> The participating libraries will receive 20 micro:bit computers each, packaged as a book, which the libraries will be able to rent out to citizens and use for free workshops in local libraries, educational institutions and other public spaces.

### The XBIT Project

The XBIT – Cross-border IT Network for Competitiveness, Innovation and Entrepreneurship project aims to develop two new digital communities in Croatia and Serbia to improve entrepreneurship and digital literacy through the use of modern information technologies, as well as improve the position and inclusion of as many women as possible in the IT sector.<sup>259</sup>

<sup>256</sup> Ibid.

<sup>257</sup> "Educational IT equipment for libraries in Serbia", project The Fight for Knowledge, published on: 9 December 2018: <http://bitkazaznanje.rs/ekadativna-it-oprema-za-biblioteke-u-srbiji/> (accessed on: 8 February 2019)

<sup>258</sup> "First training courses for librarians within the scope of the "Digital Citizen" project The Battle for Knowledge, published: 18 January 2019: <http://bitkazaznanje.rs/prve-obuke-za-bibliotekare-u-okviru-projekta-digitalni-gradanin/> (accessed on: 8 February 2019)

<sup>259</sup> "Cross-Border cooperation for gender equality in ICT", "Dnevnik" published on: 10 May 2018: <https://www.dnevnik.rs/drustvo/prekogranična-saradna-za-rodnu-ravnopravnost-u-ikt-u-10-05-2018>, (accessed on: 8 February 2019)

The project is being implemented on both sides of the border, one in Donji Miholjac and the other one in Indija to develop two new digital communities through the establishment of two new centres. In line with local specificities, the centres will be specialised for one of the thematic frameworks in the IT industry: virtual reality (VR)<sup>260</sup> and the development and application of Internet of Things (IoT) <sup>261</sup> solutions. Each of the established local digital communities will cover the entire program area in its field of expertise, bring together interested users and actors and give them the opportunity to work together, organise educational programmes, as well as to network and exchange knowledge and experiences. The activities of the regional XBIT project were launched in 2018 with the opening of an information technology laboratory at the Faculty of Technical Sciences in Novi Sad, which will enable students to work with 3D printers, VR technology and IoT sensors, as well as with augmented reality technology (AR).<sup>262</sup>

### **The 21st Century Schools Project**

In Serbia, this project is implemented jointly by the British Council and the Ministry of Education, Science and Technological Development and is scheduled to be completed by 2021.<sup>263</sup> The programme includes teacher training for the implementation of teaching that encourages the development of critical thinking skills of students, problem-solving and the development of digital literacy. The pilot phase of the project included 25 teachers from Serbia. Each of the schools received 30 micro:bit devices (programmable digital devices suitable for project teaching, accelerating functionalization of students' knowledge and significant changes in the dynamics of the teaching process) and training for their programming. The plan is to form an online network of primary schools after the completion of all trainings, to exchange good practices and solve any dilemmas and issues through cooperation. Regional contests for students are also planned based on team work and solving real-life problems, and the plan also foresees training for elementary schools principals.

### **4.3 Projects in the Field of Gender Equality and Internet Safety**

The Government of Serbia recognises gender equality in ICT and the digital inclusion of women as an important factor for the further development of the information society in Serbia. However, the National Gender Equality Strategy for the period from 2016 to 2020 and related Action Plan for the period from 2016 to 2018 propose and regulate the use of ICT to promote gender equality in vague, general terms.

The strategy lists four priorities in the specific area of access to the use of modern knowledge and skills to achieve gender equality through the application of ICT:

- Creating conditions for equal access to education for girls and boys, women and men, especially vulnerable groups, to education, from preschool through higher education to professional development and training.
- Encouraging and supporting the participation of girls and women in education for occupations creating high added value, such as engineering and new technologies.
- Ensuring equal participation of women and men in the processes of planning, formulating and implementing technical and technological development.

<sup>260</sup> <http://virtuelnastvarnost.rs/virtuelna-stvarnost/>

<sup>261</sup> "Internet of Things Technology", Omladinske novine, published on: 18 March 2018:  
<http://omladinskenovine.rs/blog/2018/03/18/internet-stvari-tehnologija/> (accessed on: 7 April 2019)

<sup>262</sup> [https://sr.wikipedia.org/wiki/%D0%9F%D1%80%D0%BE%D1%88%D0%B8%D1%80%D0%B5%D0%BD%D0%B0\\_%D1%81%D1%82%D0%B2%D0%B0%D1%80%D0%BD%D0%BE%D1%81%D1%82](https://sr.wikipedia.org/wiki/%D0%9F%D1%80%D0%BE%D1%88%D0%B8%D1%80%D0%B5%D0%BD%D0%B0_%D1%81%D1%82%D0%B2%D0%B0%D1%80%D0%BD%D0%BE%D1%81%D1%82)

<sup>263</sup> "Plan of Priority Objectives and Activities of Public Administration Bodies and Government Services for Improvement of IT Sector in the Republic of Serbia for 2019 with report for 2018", "Council for Innovation Entrepreneurship and Information Technologies": [https://wwwsrbi.gov.rs/view\\_file.php?file\\_id=2300&cache=sr](https://wwwsrbi.gov.rs/view_file.php?file_id=2300&cache=sr) (accessed on: 8 February 2019)

- Increasing the engagement of girls and women in areas such as science, technology, engineering and mathematics.
- Supporting and promoting women's achievements in science and technology, eliminating discrimination against women in these areas, and providing measures for ensuring the advancement of women in science.<sup>264</sup>

A significant development for increasing the digital inclusion of women, in line with the foregoing goals, was a public competition organized by the Ministry of Trade, Tourism and Telecommunications in 2017, which supported nine projects aimed at increasing the inclusion of women in the IT sector through the delivery of reskilling and upskiling programmes in Novi Sad, Novi Pazar, Vranje, Kragujevac, Zrenjanin and Belgrade.<sup>265</sup>

### International Day of Girls in ICT

Since the establishment of the Girls in ICT Day up until 2019, more than 30,000 girls and young women participated in more than 9,000 celebrations of this day in 166 countries.<sup>266</sup> This initiative aims to bring girls and young women closer to ICT, to acquaint them with opportunities for employment in this field and to encourage them to think about careers in this sector.

The International Day of Girls in ICT in Serbia was first marked on 28 April 2011 with the participation of 270 girls from all parts of Serbia. In 2014, 150 girls, senior year students of Belgrade grammar schools attended the Girls in ICT Day.<sup>267</sup> The following year, the Association of Business Women launched a competition for girls, 7th and 8th grade primary school students, titled "Catch an Idea".<sup>268</sup> The task of the participants was a team presentation of their entrepreneurial ideas on solving some of the daily challenges using digital technologies, thus expanding their knowledge of the career in the ICT sector. The competition was staged three times in a row by the beginning of 2019.

In 2016, the Ministry of Trade, Tourism and Telecommunications marked the Girls in ICT Day within the scope of the "IT Ladies" programme, as part of the Smart and Safe information society development campaign.<sup>269</sup> A round table was organised for the Telenor Girls Day project by the Telenor Foundation and the Association of Business Women, on which occasion awards were granted to the girls who participated in the contest for best video on the topic "Catch an Idea".<sup>270</sup> This day was attended by more than 600 girls from the final grades from 60 elementary schools, together with successful women from over 70 companies.<sup>271</sup> In 2017, on the occasion of the Girls in ICT Day, a contest was organised on "How to Turn Knowledge into Entrepreneurship", as well as visits to companies across Serbia.<sup>272</sup>

<sup>264</sup> National Strategy for Gender Equality 2016–2020, including the Action Plan 2016–2018, RS Official Gazette, No 4/2016, <https://www.srbija.gov.rs/dokument/45678/strategije.php>. (accessed on: 8 February 2019)

<sup>265</sup> "Decision on the selection of programmes in the area of development of information society in the Republic of Serbia 2017", website of the Ministry of Trade, Tourism, and Telecommunications, published on : 19 July 2017, [http://mtt.gov.rs/download/Odluka\(2\).pdf?script=lat](http://mtt.gov.rs/download/Odluka(2).pdf?script=lat) (accessed on: 18 January 2019)

<sup>266</sup> "Greater inclusion of girls in ICT", website of the Ministry of Trade, Tourism, and Telecommunications, published on: 26 April 2018. <http://mtt.gov.rs/slider/vece-uključivanje-devojaka-u-ikt-2/> (accessed on: 8 February 2019)

<sup>267</sup> "International Day of Girls in Information and Communication Technologies (Girls in ICT Day) 2014", website of the Ministry of Trade, Tourism, and Telecommunications, published on: 22 April 2014. <http://mtt.gov.rs/slider/girls-in-ict-day-2014/> (accessed: 8 February 2019).

<sup>268</sup> <http://poslovnezene.org.rs/2018/03/1-takmicenje-za-devojcice-preduzetnice-uhvati-ideju/>

<sup>269</sup> Manifestation on the occasion of the Girls Day in ICT" ", project Smart and Safe, published on: 28 April 2016. <http://www.pametnoibezbbedno.gov.rs-lat/vesti/kategorije/rodna-ravnopravnost-u-ikt-u/2> (accessed on: 8 February 2019)

<sup>270</sup>"Greater inclusion of girls in ICT", official Website of the Ministry of Trade, Tourism, and Telecommunications, published on: 26 April 2018: <http://mtt.gov.rs/slider/uključivanje-devojica-u-svet-ikt-a-i-preduzetnistvo/> (accessed on: 8 February 2019)

<sup>271</sup> "International Day of Girls in ICT Marked in Serbia ", Beta News Agency, published on: 21 April 2016: <https://beta.rs/oms/oms-drustvo/30572-u-srbiji-obelezen-medunarodni-dan-devojcica-u-ikt-u> (accessed on: 8.2.2019)

<sup>272</sup> Ibid.

## Rails Girls

Rails Girls<sup>273</sup> is an initiative created in Finland, and it constitutes a community that exists since 2013 in 150 cities in the world. This initiative aims to bring the IT world closer to women and empower them to realise their ideas in this field. Through workshops and accompanying programmes, girls and women have the opportunity to learn web programming and tools that will help them express their creativity and bring their ideas to fruition using Ruby on Rails (RoR) technology.

Workshops are held twice a year. Participation is free, and women and girls of all ages are encouraged to apply. It is not necessary to have any programming pre-knowledge – all you need is to bring your own laptop and have basic knowledge of computers and the English language. Since 2016 special training courses have been organised for teenage girls only. The Rails Girls idea was conceived in Belgrade<sup>274</sup>, only to spread later to Novi Sad<sup>275</sup>, Zrenjanin<sup>276</sup>, Niš<sup>277</sup>, Kraljevo<sup>278</sup> and Zaječar<sup>279</sup> building communities at the local level.

Some of the girls, encouraged by the workshops, continued to learn RoR, started to learn related technologies, received internships or work in partner companies, and returned as mentors in the next training sessions.

Over 1,000 female attendees have completed the workshops, while the number of interested participants has been several times higher.

## Digital Literacy for Women in Rural Areas

The Ministry of Trade, Tourism and Telecommunications launched a public call in 2018<sup>280</sup> to support programmes for raising the level of digital literacy and digital competences of women from rural areas.

"One of the goals the programmes should achieve is to increase the use of new technologies and e-services for women from rural areas to empower women in these areas, as well as to encourage the development of digital economy and e-commerce.<sup>281</sup> Women in rural areas make up 27.3% of the total number of digital technology users. To empower women in rural areas and improve their socioeconomic status, seven projects were approved through under this public call aimed at developing women's digital skills and competences and increasing their use of new technologies and e-services".

## Internet Safety

The National Information Security Strategy for the period from 2017 to 2020 recognises the **safety of children**, the most vulnerable user group on the Internet, as an especially significant aspect of the development of personal information security.<sup>282</sup> In 2016, the Government of Serbia adopted the Decree

<sup>273</sup> <http://railsgirls.com/>

<sup>274</sup> <http://railsgirls.com/beograd>

<sup>275</sup> <http://railsgirls.com/novisad>

<sup>276</sup> <http://railsgirls.com/zrenjanin>

<sup>277</sup> <http://railsgirls.com/nis>

<sup>278</sup> <http://railsgirls.com/kraljevo>

<sup>279</sup> <http://railsgirls.com/zajecar>

<sup>280</sup> Public call inviting programme proposals for the award of funds for programmes in the area of information society development in Serbia in 2018", website of the Ministry of Trade, Tourism and Telecommunications, published on 11 October 2018, <http://mtt.gov.rs/vesti/javni-konkurs-programi-za-zene-u-ruralu/> (accessed on: 8 February 2019)

<sup>281</sup> "Digital literacy for women in rural areas", Smart and Safe, published on 19 October 2018: <http://www.pametnoizbezbedno.gov.rs/rs-lat/vesti/vest/digitalna-pismenost-za-zhene-iz-ruralnih-oblasti> (accessed on: 8 February 2019)

<sup>282</sup> National Strategy for Information Security in the Republic of Serbia for the period 2017–2020, RS Official Gazette No. 55/05, 71/05 – correction, 101/07, 65/08, 16/11, 68/12 – CC, 72/12, 7/14 – CC and 44/14.

on the Safety and Protection of Children in the Use of Information and Communication Technologies<sup>283</sup> based on which the Ministry of Trade, Tourism and Telecommunications undertake preventive measures for the online safety and protection of children through information and education programmes such as the IT Caravan. Based on this Decree, the Ministry established a National Contact Centre for Children's Safety on the Internet in 2017, as a single point for the provision of advice and processing of notifications regarding the online safety of children.

### **The Smart and Safe Platform**

The Smart and Safe Platform for the Development of Information Society was launched in 2016 by the Ministry of Trade, Tourism and Telecommunications.<sup>284</sup> This initiative aims to educate and raise awareness about the necessity of fast, correct and targeted involvement of citizens, the education system and the economy in contemporary digital trends. The platform consists of educational and promotional projects and activities that should contribute to the development of digital literacy, digital competencies and digital security culture in the entire population. Special attention is paid to projects aimed at young people, children, women, and persons with disability.

### **National Contact Centre for Online Safety of Children**

The National Contact Centre for Children's Safety on the Internet was established under the framework of the platform and by the Decree on Safety and Protection of Children in the Use of Information and Communication Technologies, adopted on the proposal of the Ministry of Trade, Tourism and Telecommunications, in February 2017.

Through the Centre, the Ministry provides counselling services to children, parents, students, teachers, as well as all other citizens, about the advantages and risks of using the Internet and the safe ways of using new technologies. A possibility was created to receive notifications about harmful, inappropriate and illegal content and behaviour on the Internet, i.e. to report violations of the rights and interests of the child. In the period since its establishment in 2017 until the beginning of 2019, the Centre received more than 7,000 calls from citizens and registered 155 cases of serious online threats made to minors. In addition to telephone and online education, the Centre's educators hold lectures across Serbia, so far attended by more than 11,000 students and 3,800 parents.<sup>285</sup>

In addition to the Ministry of Trade, Tourism and Telecommunications, the Ministry of Education, Science and Technological Development, the Ministry of Internal Affairs, the Ministry of Health, the Ministry of Labour, Employment, Veteran and Social Affairs, as well as the Republic Public Prosecutor's Office, are also involved in the work of the Centre.

### **The IT Caravan Campaign**

The IT Caravan runs the Smart and Safe platform and has been implemented across Serbia since 2016. The IT Caravan is the educational campaign of the Ministry of Trade, Tourism and Telecommunications designed to promote the useful, creative and safe use of information technologies.<sup>286</sup> Some 5,000 pupils

<sup>283</sup> Decree on the Safety and Protection of Children in the Use of Information and Communication Technologies, RS Official Gazette No. 61/16.

<sup>284</sup> Smart and Safe official project website, published on 2019: <http://www.pametnoibezbedno.gov.rs-lat> (accessed on: 16 November 2018)

<sup>285</sup> "Together for a better Internet", Smart and Safe website, published on: 5 February 2019: <http://www.pametnoibezbedno.gov.rs-cir/vesti/kategorije/digitalna-bezbednost> (accessed on: 8 February 2019)

<sup>286</sup> Official website of the IT Caravan project: <http://www.pametnoibezbedno.gov.rs-lat/projekti/it-karavan> (accessed on: 8 February 2019)

from senior grades of the elementary school participated in the first campaign, and the content was presented also to the wider public in the city squares. The second IT Caravan was implemented in 2017 in Novi Pazar, Pirot, Niš, Zaječar, Kraljevo, Užice, and Čačak, Kragujevac, Valjevo, Subotica, Novi Sad, Pančevo and Sombor. Within the caravan, robotics and programming were promoted to encourage young people to develop digital competencies through play and entertainment, but also to protect themselves from risky situations on the Internet. Robotics workshops were organised for students, as well as a contest in robot programming at the Petnica research station.

In 2018, the third IT Caravan was presented in a total of 26 schools, while the regional programme from Niš and Novi Pazar was followed by 800 schools through live streaming, for the first time. Open promotions were held for citizens as well as additional workshops for parents in Belgrade, Novi Sad, Subotica, Sečanj, Zrenjanin, Leskovac, Čačak, Kraljevo and Užice. The opening ceremony of IT Karavan 03 marked the 1st anniversary of the National Contact Centre for Children's Safety on the Internet.

In 2018, The Ministry of Trade, Tourism and Telecommunications signed the Agreement on Cooperation with the international organization Save the Children on improving protection against sexual abuse of children on the Internet, and it was envisaged to contribute to the quality and improve the work of the "Smart and Safe" campaign, IT Caravan, and the National Contact Centre for Child Safety on the Internet.<sup>287</sup>

### **The Safe Kids Portal and Application**

At the end of 2018, the Ministry of Education, Science and Technological Development supported the Safe Kids educational platform developed by the Vip Mobile Company<sup>288</sup> on the safe use of the Internet. The goal of the platform is to strengthen the digital competencies of parents and to provide information to parents and teachers on the situation, behaviour and safety of children in the digital environment. Within the application, parents are enabled to monitor and limit the involvement of children in the online sphere, and, generally, to improve the safety of children using IT tools and devices. The platform provides to parents and teachers with educational, relevant and multi-purposeful content to identify potential hazards in the digital environment and with activities that can help them improve the online safety of children.

### **The Safer Internet Centre**

From 2013 to 2016, the B92 Fund, in cooperation with the then Ministry of Foreign and Internal Trade and Telecommunications and the Ministry of Interior of Serbia implemented the Click Safely Safer Internet Centre. The goal of the project was to educate and inform citizens, primarily children and youth, but also their parents, teachers and other Internet users, about the advantages and risks of using information and communication technologies, ways of safe use of new technologies, and about protection of citizens from unlawful, unauthorized and harmful content and behaviour on the Internet.

One of the important components of the project was the electronic mechanism for reporting unlawful, harmful and inappropriate content and behaviour on the Internet – Net Patrol ([netpatrola.rs](http://netpatrola.rs)). From 2013 to 2016, Net Patrol operators received, processed and forwarded citizens' complaints to the Cybercrime Unit of the Ministry of the Interior of Serbia and to other relevant services and organisations, following the established operational procedure.

In addition to the Net Patrol, in the first half of 2015, the Safer Internet Centre organised a spring cycle of educational activities in elementary and secondary schools throughout Serbia. Within the cycle, interactive forums, peer workshops, forum theatre performances and consultations were organised for students and forums and education lectures for parents. A seminar was also organised for teachers and

<sup>287</sup> "Cooperation on the protection against sexual abuse of children on the Internet", published on: 30 October 2018, <http://mtt.govrs/slider/saradnja-u-zastiti-od-seksualnog-zlostavljanja-na-internetu/?script=cir> (accessed on: 8 February 2019)

<sup>288</sup> Website of the Safe Kids platform: <https://www.vipmobile.rs/bezbedniklinici> (accessed on: 8 February 2019)

psychological-school counselling services on improving education and safety of children in the field of ICT. In June 2015 an educational online game was posted, titled "Smart and Safe".<sup>289</sup>

The Click Safely Safer Internet Centre of Serbia, the Net Patrol mechanism and the activities foreseen by them were last realised until the middle of 2016, when the Smart and Safe platform was launched, part of which was the first National Contact Centre for Children's Safety on the Internet. Although it is not clear from the official website of the Smart and Safe platform, it is assumed that this platform has taken over the implementation of the goals and activities of the Safer Internet Centre. The functionality of the Net Patrol that enabled the reporting of suspicious content and whose operators were processing and forwarding the reports to the Ministry of the Interior's cybercrime unit, from 2016, is available through the mechanisms of the National Contact Centre for Children's Safety on the Internet.

Accordingly, since 2016, the role of promoting the education, informing citizens and supporting the development of information security of children on the Internet at the national level is implemented by the Smart and Safe platform.

### **Safer Internet Programme**

Representatives of Serbia and the EU signed a Memorandum of Understanding on the Participation of the Republic of Serbia in EU Programme on Safer Internet Use in Brussels on 30 November 2011.<sup>290</sup>

The Ministry of Foreign and Domestic Trade and Telecommunications, which coordinated the implementation of this programme at the national level, signed an agreement at the end of January 2013 on cooperation in the implementation of the programme with B92 Fund and the Ministry of the Interior, with the aim of establishing the Safer Internet Centre in Serbia (implementation of this project is discussed in more detail in the section "Safer Internet Centre").<sup>291</sup>

The Safer Internet Day was also marked in 2015 when the event focused on the safe behaviour of minors in online communication.<sup>292</sup> In 2016, the Ministry of Trade, Tourism and Telecommunications in cooperation with the Safer Internet Centre of Serbia marked the Safe Internet Day by staging panel discussions on the topics "Personal data protection and role of institutions in the online environment" and "Working with youth and the challenges arising from new technologies".<sup>293</sup>

In 2017, the conference held to mark this day brought together representatives of the state administration involved in launching the National Contact Centre for Children's Safety on the Internet and the development of digital literacy, as well as non-governmental organizations whose projects were approved as a result of the public call of the line Ministry for allocation of funds for programmes for the development of information society. Participants presented projects and activities for improving online safety of children and developing digital literacy in line with the topic "Be the change: Unite for a better Internet".<sup>294</sup>

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<sup>289</sup> "Activity report 2014–2015", "Click Safely", the Safe Internet Centre of Serbia,

[http://kliknibezbedno.rs/files/materijali/Klikni-bezbedno-publikacija-2015\\_1440332559.pdf](http://kliknibezbedno.rs/files/materijali/Klikni-bezbedno-publikacija-2015_1440332559.pdf) (accessed on: 8 February 2019)

<sup>290</sup> "Report on the activity of the Ministry of Telecommunications and Information Society and Digital Agenda Directorate, 2008–2012", *Digital Agenda Directorate*, 2012.

<sup>291</sup> *Ibid.*

<sup>292</sup> "Safer Internet Day 2015", official web presentation of the Ministry of Trade, Tourism and Telecommunications, published on 9 February 2015. <http://mtt.gov.rs/vesti/dan-bezbednog-interneta-safer-internet-day-2015/> (accessed on: 8 February 2019)

<sup>293</sup> "Ministry of Trade, Tourism and Telecommunications marking 9 February – Safer Internet day", official web presentation of the Ministry of Trade, Tourism and Telecommunications, published on: 4 February 2016.

<http://mtt.gov.rs/vesti/ministarstvo-trgovine-turizma-i-dan-bezbednog-interneta/> (accessed on: 8 February 2019)

<sup>294</sup> Safer Internet Day, official website of the Ministry of Trade, Tourism and Telecommunications, published on 6 February 2017. <http://mtt.gov.rs/vesti/dan-bezbednog-interneta-2/> (accessed on: 8 February 2019)

In 2018, the International Safer Internet Day was held under the slogan "Create, connect and share respect: a better Internet starts with you". Two panels were held as part of the conference on "Digital Literacy for Digital Security" and "Institutional and Civil Response to Endangering the Safety of Children on the Internet".<sup>295</sup>

### **The Stop Digital Violence Project**

The Stop Digital Violence project was launched in 2012 by the Ministry of Education, Science and Technological Development - Violence Prevention Unit, in cooperation with UNICEF and Telenor to prevent the abuse of digital media. The primary target group of the project were primary and secondary school students in Serbia, as well as their teachers and parents.

In schools, prevention is implemented through concrete activities, such as workshops for students, research and lectures on digital violence, compiling glossaries of digital terms, developing clear rules for the use of mobile phones, panels and posters on the subject of safety on the Internet, as well as through organizing quizzes on Internet safety.

The Ministry of Education, Science and Technological Development is involved in and supports an international survey on the subject of digital violence, conducted in Serbia by the Institute for Psychology in cooperation with the Ministry of Trade, Tourism and Telecommunications, the Organization for Security and Co-operation in Europe and UNICEF. The results of the survey conducted on a representative sample of 60 schools, that included students from nine to 17 years of age, will be known in the first half of 2019.<sup>296</sup>

In March 2016, training courses were organised under the project for 130 employees of school administrations, primary and secondary schools. Counsellors from the Violence Prevention Unit conducted the courses, representatives of the Ministry of Interior, the Pedagogic Society of Serbia and the school administrations.<sup>297</sup> In Niš, Čačak, Novi Sad and Belgrade, training courses were also held on "Empowering Persons Employed in the Education System to Provide Support to Schools in Protecting Students From Digital Violence".

In 2016 the Ministry of Education, Science and Technological Development, in cooperation with the Pedagogic Society of Serbia, and with the support of UNICEF and Telenor, issued the Manual - "Digital Violence - Prevention and Response".<sup>298</sup> The manual is intended for students, teachers, and parents, as well as for everyone else working to protect children and youth from violence, abuse and neglect. During the project, a blog and a Facebook page were launched as well<sup>299</sup> titled "Biraj reči hejt spreči" ("Choose your words, stop hate speech"), where young people write about their views on peer communication on the Internet and about the ways to protect themselves from digital violence.

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<sup>295</sup> Safer Internet Day, official website of the Ministry of Trade, Tourism and Telecommunications, published on: 5.2.2018. <http://mtr.gov.rs/slider/dan-bezbednog-interneta-3/> (accessed on: 8 February 2019)

<sup>296</sup> "Cooperation of institutions in combating digital violence", official web presentation of the Government of the Republic of Serbia, published on: 5 February 2019: <https://www.srbija.gov.rs/vest/363242/saradnja-institucija-u-borbi-protiv-digitalnog-nasilja.php>. (accessed on: 10 February 2019)

<sup>297</sup> "Project: Stop Digital Violence – training was held for 130 teachers", Pedagogic Society of Serbia, published on: 26 March 2016: <https://www.pedagog.rs/2016/03/25/obuke-zaustavimo-digitalno-nasilje/> (accessed on: 8 February 2019)

<sup>298</sup> Manual available at <http://www.mpr.gov.rs/wp-content/uploads/2015/08/priru%C4%8Dnik-interaktivni.pdf>

<sup>299</sup> Facebook profile of "Biraj reči, hejt spreči", <https://www.facebook.com/BirajReciHejtSpreci> (accessed: 1 July 2014).

## National Committee for Combating Hate Speech on the Internet

Serbia was the first country to join the Council of Europe led campaign against hate speech online called the No Hate Speech Movement,<sup>300</sup> in the Safer Internet Week, on 7 February 2013. In March 2013, by decision of the Minister of Youth and Sports, the National Committee for conducting anti-hate speech campaigns was formed as a body composed of representatives of the government, non-governmental sector and the professional community.

In 2017, the Media Diversity Institute – Western Balkans, and the Serbian Youth Umbrella Organization with the support of the Ministry of Education, Science and Technological Development, implemented the Let's Stop the Hate Speech project. A national training was held in Belgrade, whereupon the training participants together with the members of the project team implemented online and offline activities. A workshop was held in Novi Pazar, where the participants were introduced to the goals of the campaign, the results thus far achieved, presented with the opportunities to join and contribute to the success of the campaign, and shown how to combat hate speech online and in the real world.<sup>301</sup>

## 4.4 Recommendations

- The Ministry of Trade, Tourism and Telecommunications should continue with the implementation of good practices in providing support to programmes in the field of information society development, including support to projects conceived to promote social inclusion through the use of ICT.
- There is a need for ensuring continuous monitoring of the implementation and improvement of the already approved and realised programmes designed to achieve goals of promoting social inclusion through the use of ICT, either by the line ministry or by an independent institution to which required authority would be delegated.
- Perform a summary of projects from previous years and then mark projects for which there is a continued need.
- Perform an evaluation of the success of mobile application development projects, and in relation to the approved projects, allocate funds for their continuous improvement and organise a single database in which all applications would be centralised and publicly available.
- The Ministry responsible for information society should continue with the regular annual celebration of the Girls in ICT Day and increase the media visibility of this event.
- The Ministry of Education, Science and Technological Development should continue with the implementation of activities under the Let's Stop Online Violence project and expand the circle of schools where training and other activities are held aimed at the prevention of digital violence.
- Topics dedicated to the safe use of the Internet and information and communication technologies, hazards and risks for users should be included in the Civic Education and/or IT curriculum.
- It would be good to establish a higher level of coordination and cooperation between various state institutions that implement programmes in the field of prevention of online violence, discrimination and hate speech (Ministry of Trade, Tourism and Telecommunications, Ministry of Education, Science and Technological Development and Ministry of Youth and Sports).
- Carry out campaigns to inform the general public about the services of the National Contact Centre for Safe Internet.

<sup>300</sup> <https://www.coe.int/en/web/no-hate-campaign/no-hate-speech-movement>

<sup>301</sup> Taken over from the official Facebook page of Serbia's Campaign Against Online Hate Speech project (Kampanja Republike Srbije protiv govora mržnje na Internetu): <https://www.facebook.com/negovorumrznje/>. (accessed on: 8 February 2019)



