

NATIONAL STRATEGY

for information society development

“Digital Moldova 2020”

I. INTRODUCTION

1. The Republic of Moldova achieved significant progress in the implementation of information society technologies, ICT contribution share to GDP in recent years has reached the level of almost 8-10%, every second citizen is an Internet user, more than half of households have at least one computer, the majority of connected households have access to broadband Internet, and the country was placed among top 20 countries in the world according to Internet access speed, the biometric passport, the ID card with electronic signature, the e-Statements system and digital map were implemented, country joined the “Open Government Data” initiative, the “e-Transformation” Governance project is running, etc. However, in international classifications the country is not placed among the advanced economies in this field, and the level and speed of information society development do not meet the current international environment requirements, in which the world is becoming even more “hyperconnected”¹ (references are presented in the Annex no 2 to the National Strategy for Information Society Development “Digital Moldova 2020”) and more digitized.

The complex picture of today's digital world includes smart mobile devices and remote collaborative tools, cloud computing and tremendous change of the users' behavior, especially of the digital natives who expect services to be available anytime, anywhere and through any device. These expectations require governments and public institutions to be prepared to provide and use informational services anytime, anywhere and on any equipment in a safer and secured way with fewer resources.

Advantages of digital technologies of which individuals could benefit as citizens/consumers are reduced in many countries, including the Republic of Moldova, because of the security and privacy issues, insufficient access to the Internet, a low degree of functionality, lack of required competences or service accessibility.

2. Building a country's future is unthinkable without a digital strategy that shall create opportunities to innovate and develop based on ICT technologies, yet contractors and government agencies to maximize the usage of government data services for the citizens' benefit. The European Union adopted and implements „Digital Agenda for Europe” Strategy, adjusting its priorities to the new circumstances (*in December 2012 defined 7 priorities*). Countries which occupy first places in international rankings also approved digital strategies aiming to ensure an accelerated development (*USA, UK, Estonia, and Qatar, for example*).

3. The National Strategy for Information Society Development “Digital Moldova 2020” (*hereinafter referred to as Strategy*) is aimed to create conditions through minimum state intervention but with maximum effect for information society development, focusing efforts on three pillars:

- 1) **Pillar I: Access and infrastructure** – improvement of connectivity and network access;
- 2) **Pillar II: Digital content and electronic services**- promoting digital content and generating services;
- 3) **Pillar II: - Capacities and utilization**- strengthening literacy and digital skills to enable innovation and stimulate usage.

These three dimensions have a major favorable impact on the following three components of society:

- a) communities/population, that shall enjoy more comfortable and better life;
- b) businesses, which shall increase the level of competitiveness;
- c) governance, which shall improve their performances and shall provide services to the citizens anytime, anywhere and on any terminal equipment.

4. The Strategy implementation shall be based on core principles of modern information society building, especially on principles of recognition of authenticity and legality of data from electronic registers and information systems and of the electronically performed actions.

5. Strategy is enclosed by an Action Plan for implementation of the National Strategy for Information Society Development “Digital Moldova 2020” (*annex to this Strategy*), which sets out the actions and programs meant to achieve the general objective of building an advanced Information Society and the economy based on knowledge, and the integrating horizontally the priorities as well.

II. CURRENT STATE OF THINGS

2.1. Progress

6. Even if less than a half of 177 actions of the National Strategy for Information Society Action Plan „Electronic Moldova” (2005) directives were fulfilled, this document had a major role in creating a favorable framework for information society technologies development and for preparing the ground for next stages. The implementation of the Strategy and the eSEE Agenda provisions resulted in tangible outcomes. During 2005-2011, various sources allocations for informatization increased substantially and reached approximately 5.36 billion lei.

7. The penetration of Mobile telephony exceeded 119% (*EU average – 128%*)², broadband Internet at fixed locations reached a penetration level of 11.72% (*EU average – 27.2%*), broadband mobile Internet – modems/cards – 4.7% (*EU average – 7.5%*)³.

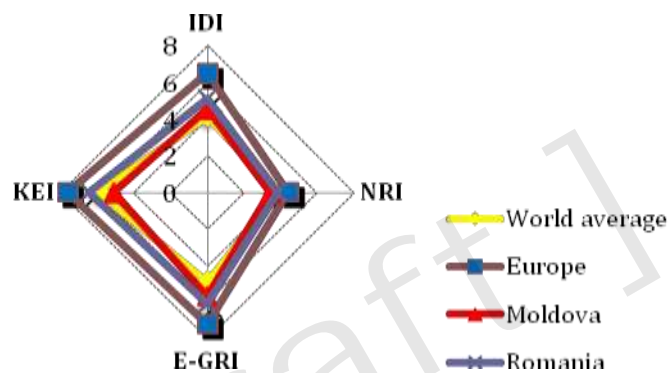
More than a half of population are using the Internet, more than a half of households have at least one computer connected to Internet, half of the population read newspapers online, but only one out of 10 users accesses the government web site (www.gov.md) and only one out of 20 users has accessed at least one electronic public service in the past 12 months. 8 out of 10 Internet users access social networks⁴.

8. The necessary legislative and normative framework was created, which currently includes about 20 laws, 80 Government decisions, about 70 approved conceptual documents regarding the informational systems of public authorities, more than 20 general purpose regulatory acts and 75 with a specific purpose issued by the National Regulatory Agency for Electronic Communications and Information Technology. The Institutional framework was improved through the creation of the Ministry of Information Technology and Communications and of the specialized institutions such as the Centre for Electronic Governance and National Center for Personal Data Protection. In 2011 the Technological Transformation Strategic Program of governance “e-Transformation” was adopted, supported by the World Bank.

9. The online fiscal declarations systems, biometric passport, automated biometric border crossing systems based on electronic passports, Moldova digital map, mobile digital signature and online services as: e-Police Clearance Certificate, e-Licensing, etc. were implemented. The Interoperability framework based on the open standards and cloud computing based services is actually in the process of implementation.

10. Despite the progress in a number of indicators, Moldova is placed far behind the countries that are among the leaders in terms of implementation and use of ICT.

In international ranking according to the level of ICT development (IDI), Moldova ranks 62nd out of 155 countries (4th position among CIS countries)⁵ and at the e-Governance Development Index (e-GRI) ranks 69th out of 159 countries, advancing 11 positions compared to 2010, but it is still on the last place among the countries of Eastern Europe⁶. According to the Global Competitiveness Report 2012-2013⁷, where, according to the Index of Internet penetration in schools (KEI), Moldova is placed on 61st position out of 144 countries. In Training Network Index (NRI) the Republic of Moldova is placed on 78th position out of 142 countries (Picture 1).



Picture 1. The Republic of Moldova in international rankings (2012)

The source: MITC, <http://www.mtic.gov.md/>

Although the progress dynamics of electronic readiness is quite impressive, the Republic of Moldova falls behind as compared to the EU Member States as well as to the neighboring countries: Romania and Ukraine.

The success of the Republic of Moldova Information Society future development mainly depends on the country's ability to overcome the key obstacles that currently hampers its forward development.

2.2. International decisions

11. In 2010, the European Council and Parliament adopted the Digital Agenda for Europe as a part of the Europe 2020 Strategy for boosting digital economy and tackling societal challenges⁸ by means of ICT.

On December 18, 2012, the European Commission adopted new priorities for digital economy and society. The *growth rate registered by the digital economy is seven times higher than the rest of the economy*⁹, but this potential is currently dimmed by a fragmentation of policy framework at pan-European level. The adopted priorities are the result of an extensive review of the policies, and additionally outline the elements with the highest transformation potential of the initial version of the Digital Agenda for Europe 2010.

Full implementation of the updated Digital Agenda shall require the European GDP growth of 5% or 1500 Euro per capita over the next eight years by increasing the ICT investments, improving the computer skills levels of the workforce, facilitating public sector innovation and reforming the framework conditions for the Internet-based economy.

12. The new priorities of the Digital Agenda for Europe are to:

- 1) create a new stable regulatory framework in the field of broadband services;
- 2) new infrastructures of digital public services through the Connecting Europe facility;
- 3) launch the Grand Coalition for promoting competences and create jobs in the digital domain;
- 4) draw up proposals on a strategy and a cyber-security directive at the EU level;
- 5) update the EU framework on copyrights;
- 6) boost the "cloud computing" system based on the public sector purchasing power;
- 7) launch a new industrial strategy in the electronic field.

2.3. Programs, initiatives and important ongoing projects

2.3.1. Governance: the operational e-Governance Center that implements the “e-Government Transformation” project – Strategic program of technological modernization of the governance; Open Government Action Plan for 2012-2013 (Government Decision no.195 of 04.04.2012), including:

- 1) Common M-Cloud Government Technological Platform;
- 2) Government Electronic Payment Service;
- 3) Government Interoperability Platform;
- 4) Paperless Government initiative - SIGEDIA;
- 5) Government Platform for e-Business Reporting;
- 6) Government platform for business permissive licenses;
- 7) e-Acquisitions;
- 8) e-Constructions;
- 9) e-Justice;
- 10) Digitization of Operational Support Systems for the Government;
- 11) Government data storage infrastructure.

2.3.2. Customs system: The development strategy of the Integrated Customs Information System for 2012-2016 years;

2.3.3. Health: Pilot healthcare information systems for widening access to the medical knowledge, patient records, patient monitoring systems and e-Health Strategic Program;

2.3.4. Social protection: Social Assistance Integrated Information System for improving access to the social assistance;

2.3.5. Education: The integration of ICT in education for improving the educational and management process at the level of system, school and class; initiating the drawing up of the e-Education Strategic Program;

2.3.6. Agriculture: The real time data transfer information system by means of web and mobile telephony solutions with following components: PACT (Platform for Early Warning and Communication) and AMIS (Agricultural Marketing Information System);

2.3.7. Land register: The creation of National Geographic Information System. The digital map of the Republic of Moldova;

2.3.8. Culture: The National Program for informatization in the sphere of Culture 2012-2020, “Novateca” program for modernization of public libraries;

2.3.9. Science: Scientific heritage digitization;

2.3.10. Sector competitiveness: The ICT Sector Competitiveness Strategy.

2.3.11. Electoral processes: the drawing up and implementation of the State automated information system “Elections”.

2.4. SWOT analysis

13. The generalization of analysis on the addressed dimensions identifies the following advantages, disadvantages, opportunities and threats in the development of the Information Society in the Republic of Moldova:

INFRASTRUCTURE AND ACCESS

Advantages (Strengths)	Disadvantages (Weaknesses)
<p>1) High speed of Internet access;</p> <p>2) High technological level and a high level of mobile electronic communications services accessibility;</p> <p>3) Relatively high level of electronic communications infrastructure development;</p> <p>4) The legal framework for electronic communications is mainly aligned to the European Union' legal framework;</p> <p>5) The existence of institutional regulatory framework and of the growing regulatory capacities;</p> <p>6) Competition on mobile telephony sector and Internet ;</p> <p>7) Advantageous geographical location of the Republic of Moldova;</p> <p>8) Mobile telephony and Internet access segment are developing quite fast and the majority of fixed Internet connections are made via broadband.</p>	<p>1) Access gap between urban and rural areas;</p> <p>2) Broadband connectivity is not present on the entire territory at the required speed;</p> <p>3) Too high prices in relation to GDP/ per capita;</p> <p>4) Underdeveloped usage capacity of existing electronic communications infrastructure (lack of infrastructure in some localities);</p> <p>5) Low competition in local loop and broadband access to the copper loop/sub-loop services;</p> <p>6) The absence of Mobile Virtual Network Operators (MVNO);</p> <p>7) Misuse of the transit capacities throughout the territory of the country;</p> <p>8) Restricted access (mainly by prices) to the historical operator of the associated infrastructure (especially to the sewerage system);</p> <p>9) Associated infrastructure (pillars, sewerage system and other) is inadequately divided ;</p> <p>10) Outdated regulations of the construction industry regarding the electronic networks placement;</p> <p>11) Limited access to associated infrastructure and local loop, interconnection tariffs are not cost-oriented, historical operator tariffs non-rebalancing ;</p> <p>12) Low Broadband Internet penetration comparing to EU average.</p>
Opportunities	Threat (risks)
<p>1) Legislative and regulatory framework improvement and its harmonization with EU regulations;</p> <p>2) Fast extension of Internet use in the society (more than a half of population use it);</p> <p>3) Republic of Moldova is a testing ground for new mobile communications technologies;</p> <p>4) Use of the digital dividend.</p>	<p>1) Low level of the GDP;</p> <p>2) Crisis prolongation and decrease of investments capacities;</p> <p>3) Failing to recover investments in rural areas;</p> <p>4) Political evolutions;</p> <p>5) Corruption and bureaucracy;</p> <p>6) Continuation of political factor involvement in the operational management of the state institutions and enterprises;</p> <p>7) Violation of the radio frequency spectrum policy, of the National table of frequency band allocation (NTFBA) and National electronic numbering plan (NENP) by the Transnistrean region</p>

CONTENT AND SERVICES

Advantages (Strengths)	Disadvantages (weaknesses)
<p>1) The Government of the Republic of Moldova adopted the direction for EU integration, including alignment to EU standards in the ITC sector;</p> <p>2) Implementation of joint M-Cloud platform for e-Governance and implementation of the Interoperability Framework;</p> <p>3) Open Government Data Initiative;</p> <p>4) Launching of the mobile digital signature;</p> <p>5) Issuance of electronic ID card.</p>	<p>1) Limited availability of local information content and of relevant public applications;</p> <p>2) Small number of electronic services and lack of local digital content;</p> <p>3) Legal and regulatory framework is not yet entirely adjusted to new realities of the digital era;</p> <p>4) Lack of the management framework of the digital content life cycle;</p> <p>5) The interoperability framework is still not functional;</p>

	<ul style="list-style-type: none"> 6) Existence of a unique electronic signature type – digital one; 7) Low level of digital signature usage; 8) Low number of services that accept online payments; 9) Low population confidence in online payments; 10) The Republic of Moldova has an economy mainly based on cash payments; 11) Lack of measuring instruments for local digital content volume; 12) Low ITC skills level of the public sector employees; 13) Low level of ITC use by the population and business; 14) Relatively small market for the digital content.
Opportunities	Threats (risks)
<ul style="list-style-type: none"> 1) Increase of the broadband connection coverage encourages content development; 2) Improving high-tech image of the Republic of Moldova; 3) The use of governmental cloud; 4) An increasing number of worldwide guidelines of good practices; 5) Opportunities of collaboration and first source information (UK, USA, Singapore, South Korea, etc.); 6) Electronic commerce in development; 7) Promotion of electronic payment instruments, including the payment of services rendered by the public services providers. 	<ul style="list-style-type: none"> 1) Low GDP level; 2) Ongoing economic crisis and remittances decline which can reduce the ability to pay for services; 3) Natural endurance of officials to the change of working processes, including technological modernization; 4) Public administration employees do not realize the opportunity of informatization policies of the working processes; 5) Small and fragmented electronic commerce internal market; 6) The increase of cybernetic crimes number reduces the users' confidence; 7) The massive use of cash boosts the shadow economy and fiscal evasion.

CAPACITIES AND USE

Advantages (Strengths)	Disadvantages (weaknesses)
<ul style="list-style-type: none"> 1) Relatively high rate of workforce employed in knowledge-intensive sectors; 2) Large number of ICT graduates; 3) Multilingual human resources with a highly qualified potential. 	<ul style="list-style-type: none"> 1) Low level of population digital literacy; 2) Graduates of educational institutions have no appropriate practical skills to work in an information society; 3) The deficit of qualified ICT teachers in schools; 4) Low level of educational software supply of the educational institutions; 5) Low level of open source software use; 6) ICT curriculum is outdated and there is no institutionalized process for its regular updating; 7) Nomenclature of vocational training areas of the staff training specialties in higher education institutions and the Qualification framework fails to satisfy existing market demand; 8) Lack of normative framework for distance training; 9) Low level of the ICT skills of public sector employees; 10) Lack of express provision in normative acts concerning the digital skills requirements for the employment in a public institution; 11) Low level of ICT use by business and population; 12) Lack of motivation mechanisms for teaching staffs of general, technical-vocational and higher education, in the widespread use of the ICT instruments in the teaching-learning-evaluation process.
Opportunities	Threats
<ul style="list-style-type: none"> 1) Availability to provide assistance (including financial) by the International financial institutions/organisms; 2) International scholarships available for talented young people; 3) Collaboration and training opportunities for 	<ul style="list-style-type: none"> 1) Low level of the GDP; 2) Labor force emigration and brain drain; 3) Manifestation of corruption in the education sector; 4) Difficulties in the economic development of the country.

specialist in the mostly advanced ICT and e-Governance countries (UK, USA, Singapore, South Korea, etc.); 4) New Education Code is under development.	
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The strategic approach consists of using advantages, overcoming weaknesses by transforming opportunities into advantages and mitigating the identified risks and threats.

III. DEFINITION OF THE PROBLEMS

3.1. Unoptimized infrastructure and irregular access

14. The main access and penetration indices:

- 1) mobile telephony – 119,7% (*covering – 99% of the territory / EU – 128%*);
- 2) fixed telephony – 33,87% / EU – 43%;
- 3) broadband fixed Internet – 11,72% / EU-27,2%;
- 4) Internet via mobile networks (*modems/cards*) – 4,7% / EU-7,5%;
- 5) households broadband Internet connection – 35%;

These indices confirm a substantial gap in comparison with the EU countries average. The difference is due to the investments which have been made in the redundant infrastructures with a low use of existing capacities.

15. The limited access (*especially by prices*) to the associated infrastructure (*mainly to ducts*) of the historical operator restricts the access of other operators, thus installation of the overhead cables being a cheaper solution. In most cases associated infrastructure (*pillars, ducts, etc.*) is not divided, fact that leads to a longer investments return period and high network maintenance costs, and therefore restrict technological development opportunities and increase prices levels for the final users.

A long-run solution is needed to streamline the existing associated administrative infrastructure that shall be proposed based on a detailed analysis of the options, including the separation of infrastructure entity from the retail service providers.

16. Although the Republic of Moldova is among the top 20 countries in the world by Internet access speed¹⁰, the broadband connectivity required to meet present and future needs of the country isn't available throughout the entire territory of the country. About 30% of rural areas still do not have broadband access.

17. Because of the construction industry regulations focused on a single provider of electronic communications services, apartment buildings have not set distribution channels/networks for Internet access and in some blocks are installed a significant number of cables, which deteriorates the interior and exterior aspect of the buildings.

3.2. Underdeveloped local digital content and the low availability of electronic services

18. According to the annual national survey 2012 “the perception, assimilation and support by the population of the e-Government transformation”, conducted in November 2012 by the Institute for Public Policy and Magenta, upon the request of the Center for Electronic Governance: 16% of users practice electronic commerce, 8% use Internet banking services. About 63% of the users download digital content, 33% use Internet for education and training, 16% execute procurement and command of some services provided by private institutions and access web pages of the central public institutions, while only 1 out of 20 uses Internet for accessing electronic public services.

19. Digital content and services are key factors that offer benefits to society and the economy of any country and represent a major source of potential workplaces and economic growth.

There is no universally accepted definition of digital content. For example, one of them states that the digital content is any information that is available on the Internet (*or other networks*) to be reached by the user, including web pages, images, music, audio and video documents, books, drivers and software downloads, and reference materials for education and training¹¹.

This Strategy defines the digital content as any information in electronic format submitted to the following processes: creation, collection, management, processing, storage, distribution, access, use and re-use, abolition.

The most important content for the users is usually that which is in their native language and relevant to the communities in which they live and work. UNESCO has defined "the local content" as "the expression and communication of a community's locally generated, owned and adapted, knowledge and experience that is relevant to the community's situation" (UNESCO, 2001).

20. The citizens of the Republic of Moldova face a shortage of local digital content and a low number of electronic services.

Thus, few services out of about 570 public government services are offered through Internet (*only 5 out of 12 online basic public services for citizens, and 6 out of 8 – for economic agents*¹²). Starting from September 2012 to present, within the framework of the e-Government Transformation Project were launched e-Application for criminal record, e-Licensing (*connected to the mobile signature*), electronic reporting to e-CNAM and e-CNAS (*connected to mobile signature*), e-DNC (*Normative Documents in Constructions* www.ednc.gov.md), SIA "the state register of public acquisitions" services. At the same time, in February 2013, was officially launched the M-Cloud common government technology platform, the digitization of the Civil status service archive is in the process of implementation, SIGEDI is implemented in 9 ministries. Recently the State Fiscal Service and Center for Electronic Governance through the medium of SE "Fiscservinform" optimized the process of submitting statements concerning the income tax for physical persons, connecting it to the mobile signature. Other 7 e-services should be launched during 2013 within the frameworks of the projects managed by the Center for Electronic Governance.

21. The Republic of Moldova demand for broadband networks was caused mainly by downloading movies and music via data exchange systems peer-to-peer (Torrents) and by using Skype, social networks "Odnoklassniki", "Facebook", "Netlog", "YouTube" etc. The social network "Odnoklassniki.ru" is the most visited site among the Internet users of the Republic of Moldova¹³. Accessing mostly foreign information resources, the users of the Republic of Moldova outline the low shortage of internal resources. In order to generate more the local digital content, it is necessary to provide conditions and mechanisms for content managers, including intensive use of open data opportunities.

22. Cultural and scientific heritage is not yet digitalized. The national program of informatization of the cultural domain for 2012-2020¹⁴ was approved only in 2012. Although, the measures to digitize the values of other areas are taken¹⁵, assessment actions and interventions measures are required to speed up the process.

23. The legal and regulatory framework is not yet completely adjusted to the new realities of the digital environment, especially regarding the proportional wide use of new information technologies and insuring an adequate level of intellectual property protection¹⁶.

24. The Interoperability Framework Program approved by the Government in September 2012¹⁷ is on the beginning of implementation and the citizen is required to submit copies of a

given number of documents (*identity acts, certificates, etc.*) – each time when requests services or concludes various acts, even if it is addressed repeatedly to the same public institution. This drives to time mismanagement, waste of paper and other materials and therefore unnecessary costs, negative environmental impact and inefficiency of the institutions' activity.

25. There is no digital content management framework during its life cycle that would ensure that the national historic content and the newly created one to be available, accessible, distributed, understandable, used and improved. Providing simple access to this content requires a comprehensive framework that shall cover all management and decision aspects throughout the digital lifecycle. Enriching the content increases the number and quality of services meant for citizens.

26. The Republic of Moldova public institutions data are stored/handled in about 150 data centers, most of which do not correspond to the security conditions, durability and reliability and do not have enough qualified staff to keep them in good conditions. Besides the risks of losing information from these centers, the annual cost of their maintenance is about 150 million lei¹⁸, which indicates an inefficient expenditure of public money.

27. Access to content and services through the electronic signature. Although the Law on electronic document and digital signature is into force since 2004, the digital signature is rarely used. Nevertheless, the process of issuing public key certificates issued by the SE. "Center of Special Telecommunications" over the last period increases, these may be used in all existing electronic systems. .

28. The Mobile Electronic Signature launched in September 2012 places Moldova among the top seven countries in the world that also implements such innovative technology and the use of this tool shall safely boost access to the available electronic services. The Electronic Identity Cards, which shall be implemented, shall facilitate the access to electronic services. If there are more digital identity owners, the digital identity management becomes an important factor for the functionality of infrastructure and access to digital content/services.

29. Although 37,7% of the country's Internet user's make on-line purchases¹⁹, these procurements are mainly from abroad, even with the existing technological infrastructure, e-commerce in the Republic of Moldova is still undeveloped because of the low number of services that accept online payments. However, some abroad, popular e-commerce portals do not support Moldova's inclusion in the list of countries from which they accept Internet payments and send goods and online software²⁰. Republic of Moldova remains a cash-based economy (*cards issued by the banks of the Republic of Moldova are mostly used for cash withdrawals – 87 percent of card holders' cash and 97,7 percent out of the total value of operations realized in the Republic of Moldova*)²¹. As rated by the World Bank, the biggest drawback of electronic payments is the lack of trust and comprehension shown by the society²².

However, there is an increasing trend concerning the number of electronic shops, and on-line electronic payment instruments are deployed, Law no.114 from 18.05.2012 on payment services and electronic money was adopted²³. A number of banks have established Internet payment mechanisms for services, airline tickets commerce, discount cards, books, etc.²⁴ The official inclusion of the Republic of Moldova in the group Europe II was officially declared in august 2012, which abolished the previously existing restrictions and allowed not only sending but also receiving payments, thus, the citizens of the Republic of Moldova may buy products from online stores²⁵.

30. Measuring the volume of digital content is troublesome because of the lack of direct indicators. The empirical research of the Organization for Economic Cooperation and Development (OECD)²⁶ shows that there is a strong correlation between the network infrastructure development and the growth of the local content volume. The significant statistical correlation is evident by using different indirect measurements of local content, such as: number

of visible top-level domains by using country code per capita; Wikipedia articles in state language per capita, blogs per capita, and Internet Development Indicators (*broadband penetration rates, autonomous information systems per capita, international bandwidth per capita, number of IPv4 addresses per capita*). In international reports²⁷, the content accessibility rate is calculated according to the agreed algorithms and countries are rated according to the values of this indicator .

The Republic of Moldova's position is quite weak in terms of online promotion. The number of web-generic top-level domains per 1000 people in the Republic of Moldova is only 2.0 units compared to 2.9 units/1000 in the CIS and 22.3/1,000 in Central and East Europe (CEE)²⁸. This speaks about a low presence of local companies and organizations on the Internet, which is a gap for promoting local digital content and domestic products.

3.3. Low level of "digital literacy" and insufficient use

31. According to the Global IT Report 2012, in terms of people's skills, the Republic of Moldova was assessed with 5 points out of 7 possible (*65th place out of 142*). If in terms of the digital literacy the country is ranked 44th and in terms of education in mathematics and science is ranked 69th (*4 points out of 7 possible*)²⁹, then by the educational system quality, the Republic of Moldova is ranked 102nd with 3.2 points out of 7 possible, which is among the last 40 countries included in the report³⁰, which is a matter of concern. Only 14% of population aged between 35-44 years and 10% of the population aged between 45 and 54 years are Internet users³¹.

The Republic of Moldova, as well as all Europe, faces an increase of the ICT skills gap and a low level of the digital literacy. These drawbacks have consequences like the insufficient use of the benefits granted by Information Society and even the exclusion of many citizens from the ICT-based society and economy. On the other side, although the citizens have computers and are Internet users, many of them do not know even the ICT terminology³², not to mention the entire use of the benefits offered by the ICT.

A large part of the Republic of Moldova population does not possess digital knowledge and skills; this fact reduces the opportunities to participate in the global digital economy.

32. The digital literacy of the population starts from the general education system and mainly due to:

- 1) Curriculum adjusted to the economic needs based on knowledge;
- 2) Teaching staff trained in efficient application of ICT in the educational process;
- 3) Integration of information technology in the didactic process;
- 4) Creation of the digital educational contents, including education support throughout the life.

33. Even though, during the previous years have been undertaken efforts by the Government in order to implement ICT in general education (*800 computer classes in 1997, the "SALT" program, financial resources to open at least one computer class in every school, the broadband Internet access and procurement of didactic software*), these are *not completely integrated into the didactic process*.

Although the equipping level of general educational institutions increased, there is a lack of management, maintenance and budgeting for computer laboratories and the majority of the proprietary software programs are not licensed, at the same time the open software is poorly used. Some sections of the ICT curriculum are outdated and there is no institutionalized process for its periodical updating.

Graduates of educational institutions do not possess sufficient practical skills to work in an information society.

There is a shortage of qualified staff: half of computer science teachers have education in the exact science area and only 3 out of 10 of them graduated computer science. Most of the

didactic staffs that teach computer science and other disciplines have never attended training courses and have not acquired teaching degrees. A lot of teachers do not possess general computer skills (*email, Internet, etc.*), and even fewer of them are able to use ICT in teaching process. School teachers of the main scholar disciplines (*except those 140 schools equipped with educational software*) have no educational software and have not been trained to handle such software. Although there is an increase of applications using ICT in school and university subjects, most of the school subjects have no dedicated educational software.

The most skilled in ICT teaching are not drawn to higher education because of uncompetitive salaries, lack of a performance based management, motivation system and professional development, and the education governance is confused (occupational standards are missing, professional formation is directed by supply and not by demand, qualifications are granted by the educational institutions in the absence of an explicit legal and normative framework that would ensure the involvement of companies in this process, educational institutions do not respond to the features of the graduate's professional paths and other. Nomenclature of the professional formation area and staff training specialties in higher education institution and in Qualification framework fail to satisfy the existing market demand. Evaluation systems of higher education institutions performances are not oriented to the EQF (*European Qualification Framework*).

Internet admission system in the institutions of higher education is not implemented in the Republic of Moldova. Although some universities have implemented information management systems for certain processes and developed electronic courses, not having approved the regulatory framework for distance learning, universities do not apply such mechanisms. Electronic educational services from which people could benefit are only online published lessons without the application of online evaluation mechanisms.

There is a huge brain drain to large international companies from this field. Through the legislative support of the ICT business environment, it is possible to encourage large international companies to use ICT human resources directly in the Republic of Moldova and to encourage valuable professionals to remain in Moldova³³.

34. According to the International Communication Union (ITU) Report 201234, by the use of sub-index, Moldova ranked only number 79, although it has achieved some progress regarding indicators that form this sub-index (*adults' digital literacy rate – 98.5%, population with secondary education rate – 88,0%, and the rate of population with higher education – 38,1%*). According to the Global IT Report 2012, the level of ICT use is also low – only 3,2 points out of 7 possible (*place 90th out of 142nd*)³⁵. The lowest level of use is observed in business environment – 3,0 points out of 7 (*120th out of 142nd*), and governmental use is at 3,5 points out of 7 (*94th out of 142nd*). By the level of e-participation Moldova was ranked 38 out of 125 countries³⁶.

The Insufficient use is due to the small number of online services and low level of digital skills of the public institutions employees. Although the Academy of Public Administration uses Methodological Norms for ICT training and online training tools implemented with the support of UNDP, these instruments have not been used widely because there is no express provision in normative acts that would require digital skills for employment in a public institution.

3.4. Increasing the danger of cybercrime and risk of low trust in networks and online services

35. The more a society is computerized the more it is exposed to cybernetic attacks, and the ensuring of cyberspace security should be a major concern of all stakeholders, especially at the institutional level, which are responsible for coherent policy development and implementation in the field.

Cyber security means the state of normality resulted from application of a set of proactive

and reactive measures that ensure confidentiality, integrity, availability, authenticity and non-repudiation of e-information, public and private resources and services in cyberspace.

Globality of cyberspace is able to increase the risks both for private and public sectors.

Cyber threats are materialized through the exploitation of human, technical and procedural nature weaknesses, most often in:

1) cyber-attacks against the infrastructure that maintain public functions or services of the information society which disruption/damage could be a threat to national security;

2) unauthorized access to cyber infrastructure;

3) unauthorized modification, deletion or damage of information data or illegal access restriction to these data;

4) cyber espionage;

5) causing a loss of property, harassment and blackmail of individuals and legal entities, in the public and private sectors.

The Origin of Hacks Report identifies 981 million hacking attempts worldwide during the third quarter of 2012, with an increase of 23 million compared with the number identified in the second quarter³⁷. The first four top countries in the ranking of the hacker attacks' origin are the USA, Russia, China and Ukraine. Romania was ranked 7th in this top.

Attacks may be politically motivated, as proven by cyber-attacks against Estonia, Lithuania and Georgia³⁸ or electoral - attacks on Central Election Commission of the Republic of Moldova servers on parliamentary election day in 2010. Over 44 million cyber-attacks on Israel government websites were registered between 14 and 19 November 2012, when Israel forces began an offensive in Gaza³⁹.

Being situated territorially between 2 of the top 10 countries, which generate cyber-attacks, Moldova is subjected to major risks of new forms of "cyber" crime. In fact, thanks to the Internet, we can say that all the countries are neighbors in the sense of cyber threats.

36. The Republic of Moldova has ratified the Council of Europe Convention on Cyber crime, adopted in Budapest on November 23rd, 2001⁴⁰. The law on preventing and fighting cybercrime was implemented and adopted⁴¹, it regulates the legal relations on preventing and fighting cyber crimes; the protection and aid delivery to service providers and information systems users; the public administration collaboration with other representatives of civil society in preventing and fighting cybercrime; the cooperation with other states, international and regional organizations.

Currently, in the Republic of Moldova there is no public authority directly liable and empowered with rights, functions and duties on cyber security. At this moment, there are several institutions involved in this process, each of them providing coverage for this issue on their business segment. Thus, the existing gap is to be covered by the legislative and regulatory framework in the field of cyber security.

Being aware of the risks and threats to which the carried on activities are exposed in the cyberspace and of the means to prevent and counterattack them requires an effective communication and cooperation between specific stakeholders in this realm.

From this view, there is a need to develop a culture of the cyber security of the information and communications systems users, which are often poorly informed about the potential risks, and solutions against them.

37. Nowadays, the Internet has become an important information infrastructure for the citizens and for the economy in general, that the ability to resist a multitude of new threats to IT systems and networks is important for users to feel comfortable and safe when connecting online. Just as in the real world, the cybercrime cannot be tolerated. Up till now the Internet has proven to be very safe, strong and reliable, IT networks and end-users terminals remain to be vulnerable to a wide range of new threats: in recent years Unsolicited electronic messages

(SPAM) disturbed to Internet e-mail traffic congestion - according to various statistics, from the total amount of messages in circulation - 80 to 98% of all messages are unsolicited electronic messages (SPAM)⁴² – spreading a multitude of viruses and malicious software. In the Republic of Moldova, for example, only during the period 17 May - 21 November 2012, within the total amount of electronic messages sent to the central public administration authorities, only about 986,500 were legitimate messages, while more than about 8.5 million were spam messages that contained 874 detected viruses⁴³. It follows that Moldova is in the same situation regarding spam as the entire Europe⁴⁴.

The scourge of identity theft and online fraud is ongoing. Attacks are becoming increasingly sophisticated (*trojans, botnets, etc.*) and more difficult to identify and destroy: a good example is the virus “Red October”⁴⁵. Attacks are often motivated by financial purposes.

Although there are technical means, nowadays there are no legally binding provisions for reporting information to Computer Emergency Response Team (CERT-GOV-MD)⁴⁶ and this entity has no special liabilities or sufficient capacity to meet the new challenges at the national level. According to the provisions of the objective nr.1.5.5 of the Individual Partnership Action Plan of the Republic of Moldova – NATO, approved by the Government Decision nr.746 from August 18, 2010, the CERT-GOV-MD is the unique point of access for the users of automated information systems of national importance. This shall ensure the consolidation of the authorities and institutions’ efforts for the attainment of an informed and reciprocally coordinated reaction in the cyber security threats area.

IV. VISION, GOALS AND PROGRAMS

38. Following the example and taking into account the priorities of the European Union and of the most developed countries in the digital field, the Republic of Moldova has formulated its own vision, goals and priority actions till 2020.

4.1. VISION

39. The Government, business environment and civil society agreed on the following strategic visions:

The Republic of Moldova is to become a country with an advanced information society where the use of information and communication technology (ICT), expanded access to modern ICT infrastructure, rich digital content and advanced informational services drives to economic competitiveness, population welfare and good governance of the country.

For achieving this vision the state shall undertake measures that shall remove constraints and overcome identified challenges/constraints.

This strategy is focused on three main policy directives/pillars of development:

- 1) expanding access and connectivity by promoting the competition in the broadband access networks and services;
- 2) stimulating the creation/development of the digital content and electronic services;
- 3) building capacities to use the advantages provided by ICT.

In order to achieve the strategic vision, general and specific objectives, basic principles were established and were identified programs, initiatives and key measures for achieving them.

4.2. GENERAL OBJECTIVES AND SPECIFIC GOALS

40. General objective of the Strategy:

Creating favorable conditions for development and wide use of ICT’s potential by the

public institutions, businesses and individuals in order to help them achieve economic, social and cultural goals, for the benefit of everyone.

4.2.1. Pillar nr.1: Expanding access and connectivity – an omnipresent optimized ICT infrastructure, with free, uniform and non-discriminatory access to everyone.

41. General objective: Information and Communication infrastructure development and improving access for everyone.

Specific objectives:

1) Internet access at a speed of at least 30 Mbps

The state shall establish a legal, institutional and regulatory framework for the development of an optimized info-communication infrastructure, which would meet the quality standards at data transfer speed of at least 30 Mbps covering all the regions with services at affordable prices.

The following programs shall be developed and implemented:

1.1) The fixed broadband networks development program for 2014-2020, that shall provide conditions for:

a) gradual placement of at least one optical fiber network point within each locality with Mayor's Office;

b) management and shared use of electronic communication networks including associated infrastructure through the development/adjustment of the legal and regulatory framework;

c) development of the backbones and access networks through infrastructure sharing and free access to properties.

1.2) The Broadband Radio Access Networks Development Program for 2014-2020 years, which shall include the development/adjustment of the normative regulatory framework for radio frequency spectrum management:

a) development of a legal and normative framework of allocation radio frequencies spectrum limited resources by applying the technological neutrality principle;

b) reallocation of 900-3600 MHz frequency bands through open contest using competitive selection procedure;

c) issuance and allocation of the digital dividend (800 MHz frequency band).

2) The transition to digital terrestrial television

The Government shall create necessary conditions for transition until June 15, 2015 to broadcast digital television programs through digital signal and to cease transmissions through analog transmitters .

The following program shall be developed and implemented:

2.1) The transition program from analogue terrestrial television to digital television includes actions that are meant to ensure transition to digital television by June 15, 2015:

a) development of the legal and regulatory framework to ensure the transition from analogue

terrestrial television to the digital one;

b) ensuring socially vulnerable groups with receiving equipment for digital terrestrial television reception(STB);

c) promotion of the High Definition (HD) standards for national radio transmitters programs.

4.2.2. Pillar nr.2: A rich digital content and available electronic public service.

42. General objective: Setting favorable conditions for the development and use of national digital content and digitization of the existing national one, as well as for the implementation and

use of electronic services.

The Republic of Moldova has a rich intangible heritage and a wide knowledge base that should be identified, recorded and disseminated for the benefit of local and foreign population. Without digitization, a large number of valuable contents shall remain unavailable even for the local population, not to mention the regional or global level.

Various measurements show that the developing countries are more frequently becoming significant sources of content and their share in global content creation is increasing⁴⁷. Nowadays, the Republic of Moldova is able to earn an honorable position in digital content services.

The Government shall undertake strong action in order to improve the opportunities of creating and promoting the digital content and services generated in the Republic of Moldova, including the location services based on GIS (*geographic information system*).

Specific objectives:

- 1) Digital content is available, accessible, used and valued;
- 2) 100 % of the central public administration authorities integrated in the interoperability platform by 2020;
- 3) Public services provided to citizens at the counter (window) are provided on the basis of a single document – ID card, including electronic, or through electronic or mobile identification, without submitting some additional documents or certificates.

The following programs/documents shall be developed and implemented:

1.1) The program „Creation, development and use of the digital content of the Republic of Moldova”

The program shall include actions for:

a) Sorting the existent informational content by fields, assessing its transformation needs into digital format (content digitization), drawing up plans for content digitization by fields and providing access to this content;

b) adjustment of the legal and institutional framework for the digitization of the content, based on the identified constraints and including the budgeting of the content digitization actions in the Medium-Term Budgetary Framework (MTBF) and adopt, approve and implement the major international standards, technical regulations in the field of digitization and online access to content, including the acceptance of the automated information system (AIS) extracts as electronic legally confirmed documents;

c) implementation of the Government Interoperability Framework and Recommendations concerning the national content/resources interconnection and interoperability (including catalogs, classifiers, identifiers, metadata) to facilitate the creation and interoperability of the digital content;

d) facilitating the creation via public private partnership (PPP) of data centers/local digital content warehouses, including geospatial data, in compliance with the content conservation management and effective time accessing standards and setting up Digital Content Register for public access (which shall include orphaned content too).

e) placing on the open data portal pages all public interest electronic information held by the public authorities and regulating the process of information placement and update that integrate digital content and procedures of digital content access and use;

f) diversification of the content and its adjustment for being accessed by people with special needs (*the elderly, people with disabilities, vulnerable groups, people of different gender and culture*);

g) elaborating and spreading recommendations concerning children and adults internet digital content accessing, also including through the existing hazards.

1.2) The program of public services digitization

The program shall include at least:

a) evaluation of the existing public services (*cost, content and volume*) with the optimization of the number of existing public services and processes and reengineering the existing business processes of providing public services with their typing, standardizing and development, the approval of public services digitization Plans in accordance with the priorities by areas: Health Social assistance, Education, Justice, Agriculture, Construction, Cadastre, Transportation, Science, Culture, and so on;

b) the development of the legislative and normative framework in the area of providing and accessing electronic public service (including the electronic identity management, implementation of the minimum standards for the quality of public services and system monitoring/evaluating indicators of their quality, as well as submission of complaints against public services provided under any expectations and development of a transparent and balanced methodology on setting the charges for electronic public services;

c) developing of standard solutions for local public authorities regarding Government to Government (G2G) and Government to Consumer (G2C) services, using the common governmental technological platform;

d) promoting the use of electronic payment mechanisms, including the payment of services provided by the public services providers.

1.3) The documents which shall regulate the implementation of electronic ID card, and which shall touch:

a) the Ministry of Information Technology and Communications tasks in this field:

- ensure the drawing up of electronic ID card and simultaneous issuance with the existing ID card, upon request;

- ensure the creation, implementation and development of the digital signature means in the electronic ID card;

- designation of the State Enterprise "Centre for State Information Resources "Registru" as authorized center to issue, use and update public key certificates and digital signatures at ID documents preparation and issuance;

- development and approval of mechanism for using electronic ID card in information resources and systems, and at the provision of services, including electronic services.

b) the objectives of the State-owned Enterprise "Center of Special Telecommunications", which are to be implemented in accordance with the concluded contracts between this company and the State Enterprise "Centre for State Information Resources "Registru" upon preparing and issuing the electronic ID cards;

1) provide monitoring and control of the public key certificates status and security of electronic communications channels;

2) generate confirmation codes for certificates issued by the State-owned Enterprise "Centre for State Information Resources "Registru";

3) ensure, jointly with the State-owned Enterprise "Centre for State Information Resources "Registru" the mutual recognition of public key certificates among the centers for public key certification.

4.2.3. Pillar nr.3: Building capacities to use ICT - a high usage of the ICT benefits for all members of the society.

43. General objective: Increasing digital literacy, developing digital skills and digital inclusion

The local content development and its distribution, as well as the use of e-services depend on a specific set of skills and tools. The Government shall periodically assess the various skills

of the citizens, such as ICT skills, knowledge, abilities (and attitudes) that shall lead to a critical mass of skills that exist at the local level. The policy measures aimed at the improvement of education in the ICT, shall cover both the formal education system as well as the lifelong training.

Specific objectives:

1) the graduates of the educational institutions have the necessary digital skills to activate in an information society;

2) the public sector employees possess digital skills required for a competitive management;

3) appropriate conditions are created for social inclusion based on electronic services.

The following programs shall be developed and implemented:

1.1) “Digital literacy in general compulsory education” program

The following actions shall be provided:

a) assessing the general compulsory education ICT curriculum;

b) developing the digital literacy educational standards compatible with the European practices;

c) developing / updating the curriculum and electronic textbooks for general education;

d) compulsory certification of ICT skills among graduates of the general secondary and vocational-technical education”;

e) testing the electronic curricula and e-books for general compulsory education and afterwards implement on a large scale curricula and e-books for general education;

f) expanding the digital skills certification scheme in schools and universities.

g) developing electronic courses in order to facilitate access to the studies and educational software;

h) providing separate funds in the financial plans of educational institutions for purchasing equipment and software;

i) creating virtual libraries that shall provide a rich digital treasure to pupils and students and shall include both multimedia books developed and approved in the prescribed manner, and didactic supports developed by the most remarkable teachers- practitioners.

1.2) Continuous training programs and digital inclusion “digital skills for all”

There shall be provided the following below:

a) shall update the continuous training programs, reshaping and retraining by including / adjusting the training modules and performing digital skills based on educational standards similar to European ones;

b) shall organize the ICT area training courses both in a traditional way and on the online platforms for teachers and trainers within the training programs;

c) shall be developed regulatory and legal framework for distance learning;

d) shall be ensured the development of courses in electronic format to facilitate access to education and inclusion;

e) shall establish conditions for remote management training deployment, development and implementation of the educational applications (*software*), as well as electronic versions of academic courses and shall provide access to these courses (*electronic approval*);

f) universities shall implement anti-corruption practices based on the use of ICT measures in the assessment of training outcomes.

g) the standards for ICT skills that shall adjust the study process to the relevant occupational sphere requirements shall be developed for each level of professional training (*secondary vocational, secondary specialized, higher education*).

1.3) The program "Access to equipment and software for the educational process"

The following actions shall be provided:

- a) provision of new equipment, purchased by the educational institutions or the state budget, with legal system and educational software;
- b) performance of measures of modernization/replacement of hardware and software included in the institutional development programs, at least once every three years;
- c) establishment of a mechanism for implementation and maintenance of ICT equipment for learning process and educational management;
- d) elaboration of schemes/options and programs aimed to provide customized ICT equipment (*computers, tablets, etc.*) for pupils, students and teachers and adjustment of the regulatory framework for program implementation.

2.1) The "digital literacy training for public employees"

The following actions shall be provided:

- a) development of occupational standards of digital competences for public positions/public employees in the areas of: health protection, education, social assistance, agriculture, justice, transport, land register, science, culture, archives, etc.
- b) development of modules for traditional and online training of public institutions employees according to specific use of ICT in order to fulfill professional responsibilities;
- c) development of mechanisms for certifying public servants/employees of the public institutions in view of the ICT use;
- d) mandatory minimal requirements for the recruitment and digital literacy of the public institutions servants/employees.

3.1) The program of digital inclusion promotion

The following actions shall be provided:

- a) programs for social inclusion shall include mandatory "Digital Inclusion" component;
- b) training stands for population in sectorial electronic services shall be developed (*ministries shall allocate resources and develop specific electronic guides in areas of Civil Status Office, National House for Social Insurance, National Company of Insurance in Medicine, medical services, building services, etc.*) and interactive electronic boards with demo modules, electronic terminals shall be installed in localities;
- c) public media programs shall include programs promoting and training people to use electronic services;
- d) conditions for the deployment of the equipment meant to facilitate the access to electronic services for people with special needs shall be created;
- e) standards for hardware and software with the prospect of using them by people with special needs shall be implement.

4.3. SECURED AND PROTECTED DIGITAL ENVIRONMENT

44. Main objective: Establish conditions for increasing the security level and confidence in digital space

Specific objectives:

- 1) Improve the cyber security level of the national critical infrastructure (*public authorities/institutions, electronic communications networks, aqueducts, energy networks, transport networks, etc.*);
- 2) Increase the cyber security skills;
- 3) Raise the comprehension level of the digital space risks and of measures necessary to ensure its cyber security;

4) promote and develop international cooperation in cyber security.

1.1) In order to achieve these objectives shall be developed a Cyber Security Action Plan, which shall provide:

Improvement the level of cyber security of the national critical infrastructure (*public authorities/institutions, electronic communications networks, aqueducts, energy networks, transport networks, etc.*), including:

a) definition of national critical infrastructures that are to be protected from cyber-attacks, establishment and application of minimum safety requirements for national critical infrastructure, with relevance to ensure the functioning of these infrastructures, including the establishment and use of a National Cyber Security System;

b) amendment and harmonization of the national legal framework in the field of cyber security, and institutionalization of personal responsibility concerning cyber security;

c) stimulation of the mutual exchange of information between public and private sectors regarding threats, weaknesses, risks and also cyber incidents and attacks;

d) strengthening the CERT-GOV-MD team (*creating the national level CERT-GOV-MD structure/team*);

e) implementation of the electronic identity management for cyber security;

2.1) Increase cyber security skills:

a) adequate training of persons working in cyber security and widespread promotion of professional certification in the field;

b) inclusion of items related to cyber security in training programs and professional development of the public and private sectors managers;

c) informing and training employees of public institutions on cyber security issues and cyber risk reduction;

d) elaboration of a User Guide, concerning minimum requirements for cyber security.

3.1) Raise awareness of the risks of the digital space and measures that are necessary to ensure cyber security:

a) implementation of the national information campaign on the risks in the digital space and protective skills;

b) inclusion in the public media broadcasting of the programs boosting and training people to use electronic services.

4.1) Promote and develop international cooperation in cyber security:

a) conclusion of international cooperation agreements in order to improve the response capacity in the case of major cyber-attacks;

b) participation in international programs aimed at cyber security;

c) promotion of national cyber security interests in the framework of international cooperation, of which the Republic of Moldova is a part.

V. ASSESSMENT OF THE IMPACT AND COSTS

45. The Strategy implementation shall have a positive impact on citizens, business environment and government and shall lead to the accelerated development of the Information Society in the Republic of Moldova, improving the ICT inclusion into society, providing a new quality of economic growth, based on knowledge, human capital, and shall improve the citizens' quality of life

The impact of the Strategy implementation shall occur in:

1) streamlining the act of governance ;

- 2) improving the services for population and business environment;
- 3) diminishing corruption;
- 4) increasing the economic competitiveness.

Therefore, the large scale implementation of the public institutions interoperability shall cause a significant increase of productivity over time.

A 10 percentage points' increase of the digitization level reduces the unemployment rate by 0.84% and contributes to a six-percentage points' increase of the country's score in the Global Innovation Index.

By 2020, the Republic of Moldova shall benefit from ICT solutions for all the components of the society (*the population, the economy, the state*). The use of ICT shall also contribute to a deeper integration into the global economy, promotion of its own information products and services all around the world and the citizens shall have a high level of wellbeing.

46. The strategy involves the allocation of a significant amount of financing during the entire period of implementation (2013-2020). The financial costs are approximate calculations developed during the actions planning phase, when an accurate assessment of the funding is not possible for justified reasons.

During the development processes of programs and projects for the implementation of the Strategy shall be attracted internal and external public and private funds. National resources funds shall come from:

- 1) the funds allocated /approved for the institutions involved in the implementation of the Strategy;
- 2) the state programs for technological development and innovation area;
- 3) the technological transfer projects with mandatory private sector co-financing;
- 4) the public-private partnerships.

Determination of priority actions and their financing by means of including in the strategic costs plan shall be done according to the institutional financing amount and expenditures ceiling set out by the in force Medium-Term Budget Framework, and the annual financing of the actions shall be carried on within the approved national budget allocations for each sector and/or additional sources.

As appropriate, when it is required the achievement of mandatory but financially uncovered measures, additional funding sources identification is to be started.

The "e-transformation" project, funded from the World Bank loan, shall continue to be implemented.

For further funding of the development of information society building shall be attracted international funds, especially the European ones. The European integration potential in research and innovation shall be used in order to stimulate country's economic growth by attending a series of EU funding programs.

Opportunities for support and promotion of the Information Society Technologies activities offered by international organizations as United Nations Economic Commission for Europe (UNECE), United National Industrial Development Organization (UNIDO), United Nations Development Program (UNDP), European Commission Program of Technical Assistance and Information Exchange (TAIEX), European Commission Program of cooperation between public administrations of EU Member State and a beneficiary country (TWINNING), Black Sea Economic Cooperation Organization (BSEC) and others shall be capitalized.

VI. EXPECTED RESULTS AND PROGRESS INDICATORS

47. Implementation of this strategy shall lead to the following measurable results:

1) Ranking the Republic of Moldova among top 50 countries in the international rankings on: ICT Development (ITU), E-Governance development (UN), Network readiness (*World Economic Forum*), the level of the knowledge-based economy development (*World Bank Institute*);

2) All localities of the country shall have at least one point of access to broadband with a minimum speed of 30Mb/s;

3) At least 60% of households shall be connected to broadband Internet;

4) At least 75% of citizens shall be Internet users;

5) 100% of public services which may be provided electronically shall be available online;

6) 100% of archives, civil status records, cultural and scientific heritage shall be digitized and available;

7) At least 80% of citizens shall be satisfied with the quality of provided services;

8) Public services shall be provided under the ID card, including electronic or through electronic or mobile identification;

9) At least 70% of the population shall use electronic services;

10) At least 60% of the population shall use digital signature;

11) At least 20% of the population shall shop online;

12) 100% of the population shall have access to digital terrestrial television.

48. The expected results following this Strategy implementation shall be assessed according to the key progress indicators regarding the implemented objectives:

1) Promotion of the Republic of Moldova in international rankings of the ICT field;

2) Provision of the broadband and digital terrestrial television all over the country;

3) The share of public institutions integrated into the interoperability platform;

4) The percentage of households with computer and broadband internet access;

5) The rate of digital content accessibility;

6) The number of computers per 100 pupils;

7) The rate of general compulsory education graduates possessing ICT skills;

8) The share of public services available online from the total amount of services that can be provided electronically;

9) The confidence degree in the reliability of the online requested service;

10) The number of secured servers per 1 million inhabitants.

VII. IMPLEMENTATION STAGES

49. The strategy shall serve as a key document for coordinating the activities of all policy authorities, authorized in the Information Society development field. The implementation of the Strategy shall be fulfilled with the participation of the relevant ministries and organizations/institutions, but also with the active participation of business and civil society. Implementations shall occur in 3 stages:

1) The organizational stage, adjusting the legal and regulatory framework, the capacity building and launching programs (2013-2014);

2) The stage of the sustainable development of infrastructure, generation and intense digitization of content and services (2015-2017);

3) The stage of total absorption of ICT by means of intensive use of the digital content and on-going e-services on the basis of infrastructure and legal and institutional instruments created during the first 2 stages.

VIII. MONITORING AND ASSESSMENT FRAMEWORK

50. Monitoring

The purpose of monitoring the Strategy is to:

1) supervise the way the Strategy is implemented, the level of achievement of the objectives and proposed tasks, and the need to revise it depending on the evolution of internal and external factors;

2) improve communication environment and foster the exchange of experience among institutions;

3) provide transparency and dissemination of information regarding the carried out activities and the achieved results.

Monitoring shall be an ongoing process,, the completion of which shall be the identification of the intended results and of the factors that hinder the achievement of the expected results. Thus, monitoring shall help to optimize the implementation process and respectively, shall improve the way the products are delivered, results are generated and the expected result is achieved.

The monitoring and assessment of the Strategy implementation shall be accomplished by the e-Transformation Council, the technical support being provided by the Ministry of Information Technology and Communications. The Central public administration authorities shall submit annually to the Ministry of Information Technology and Communications monitoring reports concerning the progress of planned activities and implementation obstacles. The Action Plan format shall be used during the reporting process.

Monitoring shall be based on the performance indicators set out in the Action Plan, also using the information from the “List of indicators for assessing and monitoring the e-Development in the Republic of Moldova”, approved by an Agreement between central public administration institutions on the distribution of responsibilities for the collection, production and dissemination of the monitoring indicators for building the Information Society in the Republic of Moldova. On the basis of primary monitoring reports received from the authorities involved in the Strategy implementation, the Ministry of Information Technology and Communications shall annually draw up the consolidated report on the Strategy implementation, submitted for the e-Transformation Council examination until the 1st of April of the next reporting year.

51. Assessment

The assessment of the Strategy implementation shall be carried out at the end of each stage of implementation on the basis of the Action Plan (*Appendix nr.1 of the hereby Strategy*) and shall result in the intermediate Strategy implementation assessment report.

The intermediate assessment report shall include information concerning the achievements and possible failures in the process of the Strategy implementation for the relevant period, and the impact indicators. Thus, the factors that lead to success or failure of the achievement of the planned actions shall be identified and this information shall be used for the further activity planning.

According to the assessment results, the Action Plan for the implementation of the Strategy shall be updated and modified at the end of each stage in accordance with the existing realities and budgetary planning for the next period. These amendments shall be proposed by the public authorities involved in the implementation process, and the Ministry of Information Technology and Communications shall be responsible for operating the necessary changes and finalizing the Action Plan.

The final evaluation report of the Strategy shall be drafted after the end of its final implementation stage, but not later than six months after the last year of implementation.

Transparency of the implementation process of the hereby Strategy shall be provided through publication on the Ministry of Information Technology and Communications' official website of the annual monitoring reports, intermediate assessment reports compiled at the end of each stage of implementation, and the final evaluation Report.

The Ministry of Information Technology and Communications shall ensure a wide media coverage of the implementation process of the hereby Strategy and shall provide relevant information to their local and foreign partners.

[Draft]

ACTION PLAN

on implementation of the national strategy for information society development “Digital Moldova 2020”

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
PILLAR 1.GENERAL OBJECTIVE:						
Informational infrastructure development and improving access for everyone						
OUTCOME INDICATORS:						
<p>All localities shall be provided with Internet access of at least 30 Mb/s (at least one point of optical fiber network). The subscribers from connected areas shall have minimum speed of 5 Mb/s in 2014, 15 Mb/s in 2017 and 30 Mb/s in 2020. At least 60% of households shall be connected to broadband Internet. 85% of localities shall have access to mobile broadband 100% of new civil buildings, from 2018, shall be equipped with infrastructure access to electronic communications networks. 80% of new backbone networks from urban localities shall be placed underground 100% of population shall have the possibility to access digital terrestrial television</p>						
1 The program “Development of Fixed broadband networks for 2014-2020 years”. Main actions:						
Internet access at the speed of at least 30 Mb/s	1.1 Fixed broadband network development program for the 2014-2020 years	Ministry of Information Technology and Communications	National Regulatory Agency for Electronic Communications and Information Technology, Infrastructure supplier	Institutions’ budget	2014	Developed program
	a) Access networks development:					
	Civil engineering-provision in buildings of spaces / special infrastructures and sewerage systems for access networks	Ministry of Regional Development and Constructions	Ministry of Information Technology and Communications	Institutions’ budget	2014	Developed and adjusted regulatory framework
	Ensuring the shared access to the user’s access network for providers that use the same technology.	Ministry of Information Technology and Communications	National Regulatory Agency for Electronic Communications and Information Technology, Ministry of Regional Development and Constructions	Institutions’ budget	2014	Developed and adjusted regulatory framework
	Modernization and reuse of existing cable television networks for broadband access.	Ministry of Information Technology and Communications	National Regulatory Agency for Electronic Communications and Information Technology	Institutions’ budget	2014-2015	Developed and adjusted normative framework
	b) Main networks development					
	1.2 Develop a feasibility study regarding the opportunity of identification/creation of an operator for associated infrastructure management (sewage, pillars, etc.).	Ministry of Information Technology and Communications	National Regulatory Agency for Electronic Communications and Information Technology	Institutions’ budget , Development partners 50 000 MDL	2014	Performed study
1.3 Identification/creation (in case if feasibility) of an enterprise of management underground	Ministry of Information Technology and Communications	Public Property Agency, Public Local Authorities	Investors/shareholders’ sources	2014	Identified and created enterprise	

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
	ducts/associated infrastructure.					
	1.4 Evaluate the existing underground sewerage capacity and replacement of old or inefficient cables.	Ministry of Information Technology and Communications	National Regulatory Agency for Electronic Communications and Information Technology, JSC "Moldtelecom"	Investors/shareholders' sources	2014	Developed networks mainly located underground
	1.5 Drafting normative documents for more efficient use of complementary/alternative infrastructure investments: a) building alternative infrastructure (roads, bridges, railway, sewerage, electricity pillars) - provisions concerning location of the infrastructure / reservation of space for electronic communications networks b) provisions regarding: - access for using alternative infrastructure for placing electronic communications networks. - sharing passive associated infrastructure (pillars, locations, electrical network, etc.) and existent active operators associated infrastructures (antennas, transmitters, generators, and so on).	Ministry of Regional Development and Constructions	Ministry of Information Technology and Communications, National Regulatory Agency for Electronic Communications and Information Technology	Institutions' budget	2014-2015	Publishing information about new construction at the design stage for the potential participation of electronic communications providers and conditions for access to the alternative/complementary infrastructure.
2. The program "Development of bandwidth radio access networks for the years 2014-2020". Main actions:						
	2.1. Draw up/revise the Program	Ministry of Information Technology and Communications	National Regulatory Agency for Electronic Communications and Information Technology	Institutions' budget	2014	Approved program
	2.2. Draw up/adjust regulatory normative framework for radio frequency spectrum management.	Ministry of Information Technology and Communications	National Regulatory Agency for Electronic Communications and Information Technology	Institutions' budget	2014	Approved normative framework
	2.3. Develop regulatory framework for the allocation and technology licensing, reallocation of 900 - 3600 MHz frequency bands.	National Regulatory Agency for Electronic Communications and Information Technology	Ministry of Information Technology and Communications	Institutions' budget	2014	Approved regulatory framework
	2.4 Issue and allocation of the digital dividend (800 MHz frequency band).	Ministry of Information Technology and Communications	National Regulatory Agency for Electronic Communications and Information Technology	Institutions' budget	2014	Organized procedures Allocated digital dividend
	2.5. Develop Guidebook on providing temporary mobile services to serve demonstrations and public events.	National Regulatory Agency for Electronic Communications and Information Technology		Institutions' Budget	2014	Approved Guidebook
3. The program "Transition from the analogue terrestrial to digital terrestrial television". Main actions:						

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
Transition to digital terrestrial television	3.1. Program Implementation and promotion:	Ministry of Information Technology and Communications	Audiovisual Coordination Council, National Regulatory Agency for Electronic Communications and Information Technology		2014 - 2015	Starting 15.06.2015 all TV transmitters are to work only in digital mode
	3.2. Develop legal framework to ensure the shift from analogue television to digital terrestrial one.	Ministry of Information Technology and Communications	Audiovisual Coordination Council,	Institutions' budget	2014	Approved legal and regulations framework
	3.3. Ensuring socially vulnerable groups with equipment to receive (STB) Digital terrestrial television signal.	Ministry of Information Technology and Communications	Ministry of Labor, Social Protection and Family, Ministry of Finance	National government budget / 500 MDL*100 000 people	2015 - 2016	All households are provided with terrestrial digital TV reception equipment
	3.4. Promoting High Definition standards for national TV broadcasters	Ministry of Information Technology and Communications		Institutions' budget	2016	Adopted High Definition standards

PILLAR II: GENERAL OBJECTIV:

Creating favorable conditions for the development and use of national digital content and digitizing the existing national content, and implementation and use of electronic services

OUTCOME INDICATORS:

Percentage of public services available online out of all services which may be provided online: 2015-30%, 2017-80%, 2020-100%.

Percentage of public administration authorities integrated in the interoperability platform: 2015-50%, 2017-75%, 2020-100 %.

Percentage of population using digital signature: 2015-15%, 2017-35%, 2020-60%.

Percentage of population using e-services 2015-20%, 2017-35%, 2020-70%.

Percentage of people who view / download digital content: 2015-41%, 2017-46%, 2020-57%.

Percentage of Internet users who are satisfied with the quality of public services offered electronically: 80%.

100% of records, documents of civil status, cultural and scientific heritage shall be digitized and available;

100% of public data shall be located in data centers complying with management, preservation and access standards of content over time;

At least 70% of the population shall use electronic services;

At least 20% of the population shall shop online;

At least 80% of citizens shall be satisfied with the quality of provided services;

100% of public service institutions shall be interconnected and shall meet the criteria of Interoperability Framework;

The citizen shall get the desired public service only under the identity document, including electronic ID, and mobile or electronic identification, other information necessary for the service being extracted from the digitized archives.

4. The Program "Creation, development and capitalization of digital content in the Republic of Moldova". Main actions:

Digital content is available, accessible, used and capitalized.	4.1. Establishing the program	Ministry of Information Technology and Communications	State Chancellery, Centre for Electronic Governance, Local public administration authorities, State Agency on Intellectual property	Budget of the involved in institutions	2014- 2015	Program Project developed and submitted to the Government for approval
	4.2. Classification of existing information content by areas and assessment of its conversion needs into digital format (content digitization)	Ministry of Information Technology and Communications	State Chancellery, central and local public authorities, Academy of Science of Moldova	Budget of the involved institutions, Development partners / 12 million MDL for a single archive	2014	Assessment reports on completed directives, identifying constraints and preliminary estimate the costs for each field.
	4.3. Adjustment of legal and	Ministry of Information	State Chancellery,	Institutions' budget,	2014-	Normative acts drafts

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
	institutional framework for the digitization of the content resulting from the identified constraints and its inclusion in the Medium Term Budgetary Framework (MTBF) of the budgeting actions of content transformation into digital format, including the acceptance of Automated Information System extracts as electronic legally confirming documents.	Technology and Communications	Central and local public authorities	donors/ 2.4 million MDL for a single service	2015	of legal framework modification developed and approved. Approved institutional framework.
	4.4. Undertaking, approving and implementing international basic standards, technical regulations of the field of digitization and accessing the content online.	Ministry of Information Technology and Communications	Center for Electronic Governance	Institutions' budget, donors/ 10 000 MDL for a single standard	2014-2020	List of necessary standards Approved standards List of technical regulations developed and approved Approved technical regulations.
100% of the central public administration authorities integrated in the interoperability platform by the year 2020	4.5. Implementation of the Government Interoperability Framework and of the Recommendations on interconnection and interoperability of the content/native resources (including catalogs, classifiers, identifies, meta-data) to facilitate creation and interoperability of digital government content.	Center for Electronic Governance	State Chancellery, Ministry of Information Technology and Communications, central and local public authorities, Center of Special Telecommunications	Budget of e-transformation project, central and public authorities budget / minimum 12 000 MDL for a single involved institution	2016	Rate of the State Automated Information System integrated in the interoperability platform. Rate of digital content out of the planned volume. Number of available electronic services
Wicket public services are provided under the ID, including electronic ID, and mobile or electronic identification, without the submission of additional documents	4.6. Setting up conditions for establishing data centers / digital storages, including geospatial data, including public-private partnership respecting management, preservation and access standards of content over time.	Ministry of Information Technology and Communications	Center for Electronic Governance, Agency for land Relations and Cadastre, Central public authorities, Center of Special Telecommunications	Budget of e-transformation project, Central and public authorities budget, institutions through public-private partnership / 12 million MDL for a single data center	2014-2020	Scenarios for phased migration of data from the existing points to the newly approved centers. Functional data centers.
	4.7. Setting up digital content Register for public access, which shall also include content which does not identify the author's work.	Ministry of Information Technology and Communications	Ministry of Culture, State Agency on Intellectual Property	Institutions' budget	2014-2020	Created register
	4.8. Regulating the processes of placement, access, use and updating the information which constitutes digital content.	Ministry of Information Technology and Communications	State Chancellery,	Institutions' budget	2014-2015	Approved regulations
	4.9. Publishing all information of public interest in electronic format	Central and public authorities	Public institutions	Institutions' budget	2014-2017	Percentage of the public authorities that

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
	on open data portal by public authorities / institutions.					publish information
	4.10. Establish requirements of adjusting the content for being accessed by people with special needs (elders, disable persons, vulnerable, with gender or cultural differences).	Ministry of Information Technology and Communications, Ministry of Labor, Social Protection and Family	Central and local public authorities, institutions and companies that have digital content	National public budget, Budget of the involved institutions, Development partners assistance	2015-2020	Number of applications for people with special needs
	4.11. Promoting the use of open software and free tools for creation, dissemination and use of digital content	Ministry of Information Technology and Communications	State Chancellery, Center for Electronic Governance, Local public administration authorities, Center of Special Telecommunications	Institutions' budget	2014 - 2017	Number of free "plug-in" applications for the use of public services
	4.12. Identifying and implementing monitoring mechanisms for statistical purpose of accessed national Web resources.	Ministry of Information Technology and Communications	National Bureau of Statistics	Institution's budget, donors	2014 – 2015	Periodic reports with recommendations
	4.13. Organization of seminars, workshops, dedicated contests to stimulate the creation, use and dissemination of digital content	Ministry of Information Technology and Communications	Central public authorities, institutions holding digital content	Institutions budget, donors	2014 - 2020	Number of yearly organized seminars
	4.14. Develop and disseminate recommendations for children and adults for accessing digital content in the Internet space, including the existing risks	National Center for Personal Data Protection	Ministry of Information Technology and Communications, Ministry of Internal Affairs	Institutions budget, donors/12 000 MDL for a single recommendation	2014	Developed and disseminated recommendations
	4.15. Optimizing the number of public services , existing processes and re- engineering business – of the existing processes of granting public services and their standardization (front office)	State Chancellery, Ministry of Information Technology and Communications, Central and local public authorities		e-Transformation budget, Institutions budget, donors/ 900 million MDL	2014 - 2020	Inventory report. Optimized and approved list of public services Percentage of business processes revised, typified and standardized.
	4.16. Develop and approve e-strategies, programs / plans to digitize the internal processes of the public authorities/institutions, providing compliance with the Interoperability Framework, the following priority areas (back office) are:	Central Public Authority	State Chancellery, Center for Electronic Governance	Institutions budget, Development partners	2014 - 2020	Approved plans
	a) Health	Ministry of Health	Ministry of Information Technology and Communications	Institutions budget, Development partners	2014	Approved e-Health strategic program
	b) Social Assistance	Ministry of Labor, Social Protection and	Ministry of Information Technology and	Institutions budget, Development partners	2014	Approved e- Social Assistance strategic

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
		Family	Communications			program
	c) Education	Ministry of Education	Ministry of Information Technology and Communications	Institutions budget, Development partners	2014	Approved e-Education strategic program
	d) Justice	Ministry of Justice	Ministry of Information Technology and Communications	Institutions budget, Development partners	2014	Approved e-Justice strategic program
	e) Agriculture	Ministry of Agriculture and Food Industry	Ministry of Information Technology and Communications	Institutions budget, Development partners	2014	Approved e-Agriculture strategic program
	f) Intelligent transport	Ministry of Transport and Road Infrastructure	Ministry of Information Technology and Communications	Institutions budget, Development partners	2014	Approved "Intelligent transport" strategic program
	g) Cadastre	Agency for Land Relations and Cadastre	Ministry of Information Technology and Communications	Institutions budget, Development partners	2014	Developed „e-Cadastre” geo-informational System Program
	h) Scientific content	Academy of Science of Moldova	Ministry of Information Technology and Communications	Institutions budget, Development partners		
	i) Archives	State Archive Service	Ministry of Information Technology and Communications, Center for Electronic Governance	Institutions budget, Development partners	2014	
	4.17. Developing the legal-normative framework in the field of providing and accessing electronic public services.	Ministry of Information Technology and Communications	State Chancellery, Center for Electronic Governance, Central public authorities	Institutions' budget, Development partners	2014 - 2017	Drafts of law, Developed regulations (including electronic identity management)
	4.18. Adopting the legal framework to facilitate the use of electronic signatures through the EU regulatory framework harmonization.	Ministry of Information Technology and Communications	State Chancellery, Center for Electronic Governance, Central public authorities	Institutions' budget, Development partners	2014 - 2020	Adopted legal framework
	4.19. Implementing the minimum quality standards for public services and system monitoring / evaluating indicators for their quality and the tools for submitting complaints against public services provided below any expectations.	State Chancellery	Ministry of Information Technology and Communications, Center for Electronic Governance	Institutions budget, Development partners / 12 000 MDL for a single standard	2014 - 2020	Approved and taken up standards
	4.20. Develop a methodology for transparent and fair pricing of electronic public services	State Chancellery	Ministry of Information Technology and Communications, Ministry of Finance, Central public authorities	Budget of e-transformation project	2014	Approved methodology
	4.21. Developing standard solutions for public authorities G2G and G2C services, using common governmental technological	State Chancellery	Ministry of Information Technology and Communications, Center for Electronic	Budget of e-transformation project, Institutions budget, development partners	2014	Number of developed standard solutions

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
	platform.		Governance, Center of Special Telecommunications			
	4.22. Promote the use of electronic payment mechanisms, including the payment of services provided by public service providers	State Chancellery	Center for Electronic Governance, National bank, Center of Special Telecommunications	Budget of the involved institutions, Development partners / minimum 12 000 MDL for a single service	2014	Number of users of electronic payment mechanisms
	4.23. Develop communication program for conducting media campaigns to promote public electronic services	Center for Electronic Governance	Ministry of Information technology and Communications, State Chancellery	Institutions budget, Development partners / minimum 120 000 MDL for a single campaign	2014 - 2020	Approved program
PILLAR III: GENERAL OBJECTIVE: Increase the digital literacy degree, the digital skills and digital inclusion development						
INDICATORI DE PROGRES: Share of compulsory education graduates having ICT skills: 2015-75%, 2020-100%. Share of secondary general and vocational-technical education graduates which obtained internationally recognized ICT certificates: 2015-20% 2020-40%”. Share of training programs graduates who build/rebuild ICT skills: 2015-80%, 2020-100%. Share of graduates who obtained national digital literacy certificates: 2015-80%, 2020-100%. Share/number of university programs provided electronically: 2015-40%, 2020-70%. Share of Universities that implemented online admission mechanism: 2015-10%, 2020-30%. Share/number of candidates admitted online to Universities: 2015-10%, 2020-30%. Teachers trained to apply ICT: 25%-2015, 45%-2017, 80%-2018. Share of Universities that implemented anti-corruption practices based on the use of ICT: 2015-80%, 2020-100%. Number/share of population using e-services: 2015-25%, 2020-50%. Number/share of curricular programs that include ICT: 2015-40%, 2020-90%. 30% of the total number of computers upgraded/replaced annually in schools Share of training programs for civil servants which include ICT modules: 2015-50%, 2020-100%. Number/share of educational programs that include facilities for people with special needs: 2015-50%, 2020-100%.						
5. Digital education program in general compulsory education. Main actions:						
Graduates of educational institutions have digital skills that enable them to work in an information society	5.1. Evaluating the "Informatica" curriculum for the compulsory general education and the level of digital literacy in secondary education segment (knowledge, skills, attitudes)	Ministry of Education	Ministry of Information Technology and Communications, National Association of Private ICT Companies, National center for personal data Protection	Institutions budget, Development partners / 120 000 MDL	2014	Developed study
	5.2. Developing digital literacy educational standards compatible with European practices	Ministry of Education	Ministry of Information Technology and Communications, National Association of Private ICT Companies	Institutions budget, Development partners	2014	Established standards
	5.3. Developing / updating the curricula and electronic textbooks for general education (electronic curriculum, teaching and evaluation methodology).	Ministry of Education	Ministry of Information Technology and Communications, National Association of Private ICT Companies	Institutions budget, Development partners	2015	Curricula and textbooks updated, completed and implemented under the trial program

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
	5.4. Testing electronic curricula and textbooks for the compulsory education	Ministry of Education		Institutions budget, Development partners	2016 - 2017	
	5.5. Large-scale implementation of the curricula and electronic textbooks for general education	Ministry of Education		Institutions budget, Development partners	2017 - 2020	Implemented electronic curricula and textbooks
	5.6. Applying national digital skills certification system for graduates of compulsory education. Expanding digital skills certification scheme in schools	Ministry of Education		Institutions budget, Development partners	2015	Implemented certification system
6. Training program and digital inclusion „Digital skills for everyone”. Main actions:						
	6.1. Updating training programs, retraining and requalifying by including / adjusting training modules and performing digital skills based on digital literacy education standards similar to European.	Ministry of Education	Training institutions	Institutions budget, Development partners	2014 - 2015	Methodological guides, training aids, evaluation tools
	6.2. Organizing digital literacy courses for teachers and trainers within the training programs.	Ministry of Education		Institutions budget,	2014 - 2020	Methodology and evaluation framework approved
	6.3. Developing legal regulatory framework on distance learning	Ministry of Education	Ministry of Information Technology and Communications	Institutions budget, Development partners	2014	Legal regulatory framework approved by 2014
	6.4. Developing electronic courses to facilitate access to education and inclusion.	Ministry of Education	Universities	Institutions budget, Development partners / 60 000 MDL for a single course	2014 - 2018	20 percent developed courses in 2014, 40 percent in 2015, 100 percent in 2020
	6.5. Creation and implementation of the remote training management systems.	Ministry of Education	Universities	Institutions budget, Development partners	2016 - 2018	Implemented system
	6.6. Develop and implement educational applications (software).	Ministry of Education	Universities	Institutions budget	2014 - 2020	Number of applications submitted. Number of virtual laboratories developed and used
	6.7. Implementation of anti-corruption practices based on ICT assessing learning outcomes.	Ministry of Education	Universities	Institutions budget	2014-2020	Number of courses whose results are assessed through ICTs
	6.8. Developing electronic versions of university courses and assure access to these courses (Electronic approval)	Ministry of Education	Universities	Institutions budget, Development partners		Percentage of approved courses 2013-2020
	6.9. Supply educational institutions with equipment and legal system software and educational software.	Ministry of Education, Ministry of Finance	Education Institutions	Institutions budget, Development partners / 60 000 MDL for a single institution		Percentage share of the equipment with legal software in 2014, 2016, 2020 – 100 percent

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
	6.10. Provision in the financing plans of the educational institutions of different funds for the purchase of equipment and software.	Ministry of Education		Institutions budget, Development partners	2014 - 2020	Equipment and software purchased
	6.11. Enclose measures of modernization / replacement of computers and software in the strategic development programs at least once in three years	Ministry of Education	Ministry of Finance	Institutions budget, Development partners	2014	Regulations budgeting norms for updated educational institutions by 2014
					2015 - 2020	Annual budgets approved
	6.12. Establishing a mechanism for ICT implementation and maintenance in education and educational management process	Ministry of Education	Ministry of Information Technology and Communications	Institutions budget	2014	Implemented mechanism
	6.13. Develop schemes/options and program for supplying pupils, students and teachers with customized ICT programs (computers, tablets, etc.).	Ministry of Education	Ministry of Finance, Ministry of Information Technology and Communications, National Association of Private ICT Companies	Institutions budget, Development partners, Private ICT Companies	2014	Developed program
					2018	Implemented program
	6.14. Adjusting the normative framework needed for program implementation	Ministry of Education, Ministry of Information Technology and Communications		Institutions budget	2014 - 2015	Adjusted normative framework
7. The "digital literacy training for public employees" program. Key actions:						
Public sector employees have necessary digital skills for a competitive governance	7.1. Developing professional standards regarding digital skills for public services fields	State Chancellery	Public Central Authorities, Ministry of Information Technology and Communications	Institutions budget, Development partners	2014 - 2015	Approved standards
	7.2. Develop training modules for civil servants in accordance with the specific ICT peculiarities to exercise professional obligations (organized courses, Academy of Public Administration curriculum, etc.).	State Chancellery	Ministry of Information Technology and Communications, Public Administration Academy attached to the President of the Republic of Moldova	Institutions budget, Development partners	2014 - 2015	Developed, approved and lunched modules
					2014	Methodological framework for updating the approved modules
	7.3. Application of certification mechanism for civil servants in using ICT. Introducing a Dashboard (Score Card) in ICT for the officials to accumulate credits for training and self-training.	State Chancellery	Ministry of Information Technology and Communications, Ministry of Education	Institutions budget, donors	2014	Developed normative framework
					2014 - 2020	Implemented Dashboard
7.4. Adding in the recruitment of civil servants and individual performance evaluation of the mandatory requirements concerning ICT skills.	State Chancellery		Institutions budget	2014	Adjusted employment regulations and procedures	
				2015	Employment is based on new methodology	
8. Digital Inclusion Promotion Program. Key actions:						

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
Appropriate conditions are created for social inclusion of electronic services	8.1. Enclosing in the social inclusion programs the "digital inclusion" component	Ministry of Labor, Social Protection and Family	Central Public Authorities	National public budget, Development partners	2014	Number of social programs with approved "Digital Inclusion" component
	8.2. Broadcast training spots about electronic Services for population (sectorial ministries shall allocate resources and shall develop electronic guides by field – Civil status office, NSIH, NHIC, medical services, construction services, etc.).	Central Public Authorities	Center for Electronic Governance	Central public authorities budget, Development partners	2014 - 2020	Approved public authorities programs Planned budget resources
	8.3. Installing interactive electronic boards in municipalities with demo modules - electronic terminal	Local authorities	Central Public Authorities	Institutions budget, Development partners	2015	Developed and disseminated electronic guides
	8.4. Add programs promoting and training people to use electronic services in public TV schedule.	Central Public Authorities	Ministry of Information Technology and Communications, State Chancellery	Institutions budget, Development partners	2014 - 2020	Budgeted resources reserved for promotion and training programs
	8.5. Creating mechanisms for implementing applications and equipment dedicated to electronic services access for people with special needs.	Ministry of Information Technology and Communications	Ministry of Labor, Social Protection and Family	Institutions budget, Development partners	2014 - 2015	Subvention of the special equipment
	8.6. Develop requirements / standards in terms of equipment and software to be used by people with special needs.	Ministry of Information Technology and Communications	Ministry of Labor, Social Protection and Family	Institutions budget, Development partners	2015	Requirements and special rules regarding electronic services and developed / purchased equipment
IV. GENERAL OBJECTIVE:						
Establishing conditions for increasing digital space security and trust						
PROGRESS INDICATORS:						
Share of population that is aware of cyber risks: 50% by 2015, 65% by 2017, 80% by 2020.						
Share of employees of public institutions responsible for cyber security with certificates that state the professional training in this area: 20% by 2015, 40% by 2017, 80% by 2020.						
Share of institutions that use data protection systems: 70% by 2015, 85% by 2017, 100% by 2012.						
At least 70% of citizens shall feel secure in the digital environment.						
9. Action Plan for Republic of Moldova's cyber security. Key actions:						
Increase cyber security of the national critical infrastructure (public authorities/institutions, electronic communication networks, aqueducts, installations and energy networks, transport networks etc.)	9.1. Develop action plan on cyber security of the Republic of Moldova.	Information and Security Service, Center of Special Telecommunication (CERT-GOV-MD), Ministry of Information Technologies and Communications	Ministry of Internal Affairs, Center for Electronic Governance	Institutions budget	2014 - 2015	Approved documents
	9.2. Defining national critical infrastructure that is to be protected	Information and Security Service	Ministry of Information Technology and	Institutions budget	2014	List of critical infrastructure

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
	from cyber attacks		Communications, Ministry of Internal Affairs, State Chancellery, Center for Electronic Governance			
Increase cyber security abilities	9.3. Establishment and operationalization of a national cyber security system	Center of Special Telecommunication (CERT-GOV-MD), Ministry of Information Technologies and Communications	Ministry of Internal Affairs, State Chancellery, Center for Electronic Governance	Institutions budget, donors	2015	National operational security system.
	9.4. Supplementing and harmonizing the national legislation in the area. Establish and enforce minimum security requirements for national critical infrastructure, but also maintaining its operability.	Information and Security Service	Ministry of Internal Affairs, Ministry of Information technology and Communications, State Chancellery, Center of Special Telecommunications, Center for Electronic Governance	Institutions budget	2014 - 2015	Coordinate minimum requirements
	9.5. Encouraging mutual exchange of information between public and private sector concerning threats, weaknesses, risks, cyber incidents and attacks.	Special Telecommunication Center (CERT-GOV-MD), Ministry of Internal Affairs	Information and Security Service, Ministry of Information Technology and Communications, State Chancellery	Institutions budget, donors	2014	Mechanisms for encouraging the exchange of implemented information
	9.6. Training and informing public institutions employees on cyber security and cyber risks reduction matters.	Special Telecommunication Center (CERT-GOV-MD), Center for Electronic Governance	Information and Security Service, Ministry of Internal Affairs, Ministry of Information Technology and Communications	Institutions budget, donors / 12 000 MDL for a single training	2014 - 2020	Number of prepared programs Number of instructional materials Number of trained employees
	9.7. Establish and apply appropriate training requirements for persons operating in cyber security environment and wide spreading of professional certifications in the area.	Center for Electronic Governance	Technical University of Moldova, Ministry of Information Technology and Communications, Ministry of Education, Central and local public authorities	Institutions budget, donors	2014 - 2020	Number of prepared programs Number of instructional materials Number of trained employees
	9.8. Enclose some cyber security elements in training and professional development programs of private and public sector managers.	Center for Electronic Governance	Academy of Public Administration, Ministry of Education	Institutions budget, donors	2014 – 2020	Number of modules enclosed in the training programs
	9.9. Draw up User's Guide on minimum cyber security insurance with the provisions to institutionalize individual responsibility for cyber security	Special Telecommunication Center (CERT-GOV-MD)	Center for Electronic Governance	Institutions budget,	2014	Drawn up Guideline
	9.10. Develop procedures for accessing information and the audit checking the compliance of these	Ministry of Information Technology and Communications	Center for Electronic Governance, Special Telecommunication Center	Institutions budget	2014 - 2018	Developed and approved procedures

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
	procedures		(CERT-GOV-MD)			
	9.11.Strengthening CERT-GOV-MD team (creating structure / national level CERT team)	Special Telecommunication Center (CERT-GOV-MD), Information and Security Service, Ministry of Internal Affairs	Center for Electronic Governance, Ministry of Information Technology and Communications, State Chancellery	Institutions budget, donors	2014	CERT-GOV-MD team improved capacities
	9.12. Develop and improve the Plan for M-cloud protective and security measures	Special Telecommunication Center (CERT-GOV-MD)	Center for Electronic Governance	e-Transformation budget	2014-2015	Approved plan Developed measures according to the approved plan
	9.13. Providing electronic identity management for cyber security	Special Telecommunication Center (CERT-GOV-MD), Center for Electronic Governance	Ministry of Information Technology and Communications	Institutions budget, e-Transformation budget	2014	All types of digital identities can be certainly used to access services.
	9.14. Providing personal data protection	National center for personal data Protection	Central and local public authorities, Companies that manage personal data	Budget of institutions, companies that manage personal data	2014-2020	Assessing the compliance with the procedures established for personal data access Assure the access right to personal data Implemented liability agreement for personal data disclosure
Increasing awareness of the digital space risks and the measures to ensure cyber security	9.15. Making national awareness campaigns regarding digital space risks and protection skills	Ministry of Information Technology and Communications	CERT-GOV-MD, Center for Electronic Governance, Ministry of Internal Affairs	Institutions budget, donors	2014-2020	Budgeting campaigns Number of campaign organized. Percentage of Internet users who have installed software antivirus.
	9.16. Inclusion in the public media programs promoting and training people to use electronic services.	State Chancellery	Ministry of Information Technology and Communications, Central and local public authorities	Institutions budget	2014-2020	Planned budget resources for promotion and training programs
Promotion and development of international cooperation concerning cyber security	9.17 Signing international cooperation agreements for improving the response capacity in the case of major cyber attacks	Special Telecommunication Center	Information and Security Service, Ministry of Information Technology and Communications	Institutions budget	2014-2020	Number of signed agreements
	9.18. Participation in international programs targeting cyber security area	Special Telecommunication Center (CERT-GOV-	Information and Security Service, Ministry of Information	Institutions budget	2014-2020	Number of performed programs

Objectives	Actions	Responsible authorities	Partners	Financing sources/cost	Dead-lines	Progress Indicators
		MD)	Technology and Communications, Center for Electronic Governance, Special Telecommunication Center			
	9.19. Promoting national cyber security interests in international cooperation formats where the RM is a part of.	Information and Security Service, Special Telecommunication Center (CERT-GOV-MD)	Ministry of Information Technology and Communications, Center for Electronic Governance, Special Telecommunication Center	Institutions budget	2014-2020	Number of Moldova's proposals accepted and included in international documents

[Draft]

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- 18 <http://www.egov.md/index.php/ro/evenimente-noutati/968-raul-rikk-o-societate-informata-nu-poate-exista-fara-securitate-cibernetica>
- 19 Gemius Study, August 2012
- 20 For example, www.acrobat.com does not accept the Republic of Moldova online payment services.
- 21 www.bnm.org/md/payment_system , National bank of Moldova, 2011.
- 22 FIRST Assistant project. Modernization of the payment system: Assessment Report and Action Plan on retail electronic payments, May 2012.
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- ²⁵ <http://totul.md/ro/expertitem/1122.html>, accessed on November 1, 2012. It is to be mentioned that on January 25, 2013 is not solved yet.
- ²⁶ Report on the relationship between local content, Internet development and access prices. ISOC, OECD, UNESCO, 2011.
- ²⁷ For example, The Global Information Technology Report 2012.
- ²⁸ Global Innovation Index 2012
<http://www.globalinnovationindex.org/gii/main/fullreport/index.html>
- ²⁹ The Global Information Technology Report 2012, pag.355.
- ³⁰ The Global Information Technology Report 2012, pag.354.
- ³¹ Source: Magenta consulting. <http://prezi.com/-h5ucdggw2qf/serviciile-noi-in-mediul-on-line-realitaea-utilizatorilor-de-internet-trenduri-stranietati-si-ritualuri-magenta-consulting>
- ³² Perception, assimilation and support by the population of the „e-governance transformation in the Republic of Moldova. Analytic report on the survey results, IPP, Magenta, November 2012.
- ³³ Some experts consider that this is not a problem – it is a natural process. The latest results of the IDIS Viitorul may be consulted – Brain drain: challenges, consequences, remedies, Social Monitor no.3, 2010.
- ³⁴ Annual report of the International Telecommunication Union on monitoring the evolution of information society at the global level „Measuring the Information Society 2012”.
- ³⁵ The Global Information Technology Report 2012, pag.252.
- ³⁶ The Global Innovation Index Report 2012, pag.261.
- ³⁷ <http://www.nccgroup.com/en/news-events/news/hacking-attempts-to-exceed-one-billion/#.UKMYYuOTtE0>
- ³⁸ Source: A Digital Agenda for Europe
http://europa.eu/legislation_summaries/information_society/strategies/si0016_ro.htm .
- ³⁹ <http://www.business24.ro/internet/securitate-it/milioane-de-hackeri-au-atacat-site-urile-guvernului-israelian-in-ultimele-zile-1521870> .
- ⁴⁰ Law no.6-XVI dated on February 2, 2009 for the ratification of the Council of Europe Convention on Cyber crime.
- ⁴¹ Law no.20-XVI dated on February 3, 2009 on the prevention and fight against cyber crimes.
- ⁴² European Network and Information Society Agency spam survey 2009 (January 2010).
- ⁴³ <http://cert.gov.md/incidente/statisticaincidentelor.html>
- ⁴⁴ Art.17 of the Law no.284-XV dated on July 22, 2004 on electronic commerce forbids sending commercial messages without a prior consent.
- ⁴⁵ <http://www.telegraph.co.uk/technology/news/9800946/Red-October-computer-virus-found.html>
- ⁴⁶ Cyber Security Centre (CERT) was created within the State Enterprise „Special Telecommunication Centre”, in accordance with the Government Decision no. 746 dated on August 18, 2010 on “the approval of the updated Republic of Moldova – NATO Individual Partnership Action Plan”. The Centre provides information security for public administration authorities in cyber space through the collection and analysis of information related to cyber attacks, and undertakes urgent and efficient measures to protect information resources.
- ⁴⁷ Source: <http://www.oecd.org/> Organization for Economic Co-operation and Development (OECD).