



Funded by the  
European Union



Ministry of Public  
Administration,  
Digital Society and Media



# **ASSESSMENT OF THE DIGITAL GOVERNANCE FRAMEWORK IN MONTENEGRO**

*Assessment of the Montenegrin  
institutional framework  
for digital governance*

*Note:*

*The Assessment of the Montenegrin institutional framework for digital governance was conducted within the project "E-services and digital infrastructure as a response to Covid-19" funded by the European Union, implemented by UNDP and in cooperation with the Ministry of Public Administration, Digital Society and Media. The content of this Analysis is the sole responsibility of the author and does not necessarily reflect the views of the donors.*

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<b>List of abbreviations</b>	
<b>MPADSM</b>	Ministry of Public Administration, Digital Society and Media
<b>SISEDE</b>	Single Information System for Data Exchange
<b>LEG</b>	Law on Electronic Government
<b>NIO</b>	National Interoperability Framework
<b>MEIS</b>	Montenegro's Education Information System
<b>CRP</b>	Central Register of Population
<b>CRTPIP</b>	Central Register of Taxpayers and Insured Persons
<b>IoT</b>	Internet of Things
<b>AI</b>	Artificial Intelligence
<b>DGRA</b>	Digital Government Readiness Assessment

# 1 Introduction

Building a strong, user-centred digital public administration is the first and most important cornerstone of any digital development, including both the establishment and successful digital economy governance. Digitalization of state administration bodies and services they provide to citizens and businesses, as well as data exchange among institutions where legal basis is provided, not only increases administrative efficiency, but also offers numerous ways to strengthen the economic growth and productivity in each country. In addition, the COVID-19 pandemic, which has been a burning issue in Montenegro for 18 months at the time of writing this assessment, highlighted the importance of the "digital" as a backup or maybe even the first option in all spheres of work and life, including public administration, and sent a warning to everyone that unavailability of digital services in emergencies like these can only deepen divisions further and leave the most vulnerable social structures out of the essential social flows.

After it was inaugurated on 4 December 2020, the Government of Montenegro initiated the review of the existing institutional capacities in the field of digital government readiness, especially within the Ministry of Public Administration, Digital Society and Media, as well as all other state administration bodies and state bodies that share digitalization as a common goal, in order to introduce changes in the way public administration services are provided, in attitude towards citizens and businesses, communication with the target public groups, as well as in the way officials in authorities are motivated. Experiences of more developed economies suggest that it is possible, with adequate political support and appropriate technical, management, and leadership knowledge, to transform institutions and create efficient mechanisms to implement these policies, with the aim of building better society, having fewer socio-economic disparities and social divisions, including the one called "digital divide" in the context of digital transformation.

The aim of this analysis is to assess the readiness of institutions and authorities for digital transformation, with a focus on the Ministry of Public Administration, Digital Society and Media, as the lead implementer of strategic activities related to digitalization.

## 1.1 The Scope

The following analysis is a step towards a better understanding of the institutional framework for digital government. It is divided into 7 thematic sections, i.e. components that shape Montenegro's readiness for digital government and digital transformation. Those sections are:

- 1) Leadership and governance
- 2) User-oriented design
- 3) Public administration reform and change management
- 4) Capacity, culture and skills
- 5) Data infrastructure, strategies and governance

- 6) Cyber security, privacy and agility
- 7) Digital ecosystem

Based on the information obtained from the desk-top research, the information provided in various meetings with representatives of the Ministry of Public Administration, Digital Society and Media and decision makers in this field, as well as the meetings with representatives of other institutions (MESCS, MER, CIRT, etc.), a general review of the institutional framework for digital government has been drafted, including also an analysis of the current state of affairs, obvious deficiencies and opportunities, as well as recommendations for further development in this field.

## 1.2 Limitations

Given the short deadlines, as well as the fact that it was not possible to get exact answers to certain questions and topics in those meetings, mostly because some important aspects of digital government and facts related to this process have not been considered and tracked in institutions that are committed to digitalization, this analysis may contain certain, though not significant, inaccuracies as regards the presented data.

**AUTHORS' NOTE: This analysis should not discourage employees. Its aim, actually, is to highlight the risks and offer recommendations for further actions. This analysis does not indicate previous wrong decisions nor does it promote previous good decisions, as they were not considered under the given circumstances, and as such were not addressed. Also, if some arguments in this analysis do not seem adequate or well interpreted, the authors are available to provide all adequate interpretations and clarify which information they used to come to certain conclusions.**

## 1.3 Assessment framework and methodology

On 9 March 2021, the European Commission adopted the Digital Compass 2030<sup>1</sup>, a sort of a guide for digital transformation in European Union member states, with priority areas, guidelines and goals for the next 10 years. As regards the implementation of this agenda, indicators have been set for the following areas: digital skills, infrastructure, digitalization of government authorities and digital economy. As Montenegro is on its path to EU accession, reaching EU standards in these areas is of utmost importance for Montenegro as well, and this analysis, where applicable, includes references and comparisons to the EU standards in these areas.

Within the process of assessing the institutional framework for digital government, we used the Digital Government Readiness Assessment (DGRA) toolkit of the World Bank as a starting point, although it had to be significantly adapted to the specific features of the Montenegrin public administration and

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<sup>1</sup> [https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en)

its digitalization capacities. After the mentioned adjustments, this methodology included 56 different factors, accompanied by the same number of groups of questions. Their assessment, through interviews with lead implementers of digitalization and in-depth interviews, offers a complete picture of the current status of digital development in Montenegro, with the aim to encourage important policy initiatives and create a new vision of the digital transformation in Montenegro. The methodology used to assess the indicators will be part of the annex to the final report about this analysis.

Within the first phase of the research, the authors analysed the role of institutions of the Government of Montenegro that have competences, according to the Regulation on the organization and method of operation of the state administration,<sup>2</sup> in the digital transformation process. The authors also analysed other relevant documents that may reveal the institutional environment and social and demographic circumstances in Montenegro. Then, a questionnaire was sent to the civil servants responsible for implementation of digitalization activities at the Ministry of Public Administration, Digital Society and Media, to which partial answers were received, although more accurate wording would certainly help us better assess how successful the implementation in this area has been. Finally, understanding of the current situation in areas related to digitalization, current operational goals, strategic plans and policies, as well as of the priorities for the forthcoming period was gained through in-depth interviews with decision makers from the same Ministry.

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<sup>2</sup> Official Gazette of Montenegro 118/2020, 121/2020, 1/2021 and 2/2021

## 2 Analysis

### 2.1. Leadership and governance

The Ministry of Public Administration, as the legal successor of the former Ministry of Information Society, previously set the strategic framework for digital transformation in the Information Society Development Strategy 2016-2020<sup>3</sup>. This strategic document identified goals, performance indicators and responsible institutions, which should contribute to the development of the information society as a whole, as well as to the development of e-government. As a natural continuation of this process, after the inauguration of the new Government on 4 December 2020 and creation of the Ministry of Public Administration, Digital Society and Media, digitalization has been set as one of the Government's priorities, as well as the development of the Digital Transformation Strategy 2022-2026 as a central document, around which the vision of a new "digital Montenegro" is being built.

The above-mentioned Strategy will enable introduction of incentives for the development of innovative solutions, whether it is the development of innovative products or an innovative approach to business operation in all spheres of the society. The strategy aims to identify the principles on which to build further transformation of the society. This transformation is to be achieved also through approximation and adoption of principles that guide not only the European Union but also other developed countries. The action plan that will monitor the implementation of strategic goals will aim to define measures and activities, competent institutions, success indicators, implementation deadlines, necessary funds and other matters of relevance for the implementation of the strategy for 2022. The adoption of this strategic document by the Government of Montenegro is scheduled for the fourth quarter of this year.

The process of digitalization is one of the social development pillars that requires comprehensive and close cooperation at all levels of the government. The Ministry of Public Administration, Digital Society and Media coordinates the digital transformation process, but the involvement of all ministries, as well as key state administration bodies, is crucial. This primarily refers to those institutions that manage basic registers, or provide electronic services that have a great impact on citizens and the economy, and etc. Some of the risks that go with this process are uneven development in institutions, lack of professional staff, insufficient awareness about digital transformation processes in the public administration, as well as insufficient digital literacy of citizens. The possibility of a certain level of non-compliance of legal regulations with regulations in the field of digital management also poses a risk.

In line with the Article 33 of the Law on Electronic Government<sup>4</sup>, the constitutive session of the new Council for Electronic Government was held on 24 September 2021. This council is a coordinating body with responsibilities to define strategic and operational priorities for the development of electronic government, discuss technical issues from the field of information and telecommunication

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<sup>3</sup> <https://www.gov.me/dokumenta/cc172acc-d7a7-4cf0-ba12-e3023ce721b2>

<sup>4</sup> Official Gazette of Montenegro 72/2019

technologies, and guide activities related to the development of the electronic government. At the time of writing this report, the minutes of the first session of the Council were not adopted. Consequently, specific conclusions could not be included in this report.

In June 2021, the Ministry of Public Administration, Digital Society and Media established cooperation with the private sector by signing the Memorandum of Understanding and Cooperation with ICT Cortex and companies Codeus, Logate and Data Design, with the aim to improve and boost the development of digital society in Montenegro. This cooperation resulted in the "E-invoice" project, through which the Ministry and its partners provided free packages, for a period of 12 months, to all VAT payers that do business with non-cash payments only. The requirement to use these packages was an annual turnover of 18,000 to 30,000 euros, as well as a maximum of 10 invoices per month. The companies had the opportunity to apply for these packages from 1 June to 1 October 2021 and 90 of them used this opportunity in the course of project implementation.

The Ministry of Public Administration, Digital Society and Media drafted the Communication Strategy for Public Administration Reform in Montenegro "Administration - Citizen Service" 2020-2024, which sets goals, target groups, communication priorities and messages. Special attention was paid to the process of digital transformation of public administration. With the support of our partners (UNDP, KPMG, DEU), the Ministry implemented numerous informative and educational activities in the previous period in the field of promotion of digital transformation, existing services on the eGovernment portal, new website of the Government gov.me, ePetition portal "Voice of Citizens", eParticipation system, eDMS, within the campaigns "Do it Electronically", Administration - the Citizens' Service, etc. There is a plan to prepare a communication action plan in the near future, which will include activities in the field of digitalization.

However, based on the information obtained, it is clear that there is room for improvement in the MPADSM's communication with the target public groups, especially with regard to service visibility, more accurate selection of target groups, and citizens' perceptions of procedures that can be implemented electronically.

As for control of spending on IT equipment, software solutions and digitalization projects, the Ministry of Public Administration, Digital Society and Media does not have a centralized system to monitor and control these processes. Currently, the IT equipment for all state administration bodies is procured by the Administration for Cadastre and State Owned Property, and this process is conducted without systematic approach to equipment specifications and optimization of requirements, while the Microsoft software upgrade to the latest versions and the procurement of new licenses for state institutions will be provided through the Enterprise Agreement with Microsoft, conclusion of which is expected by the end of 2021. The plan for the forthcoming period is to establish similar cooperation with Oracle, once the assessment of the needs for Oracle licenses in state administration bodies and state bodies is completed.

Given the context, there is a need to draft a specific strategy for the procurement of IT equipment, software and implementation of digitalization projects, and create a central database (information system) for procurements in these fields, which should include records of accompanying SLAs and standard state agreements with corporations such as Microsoft, Oracle, Google, SAP and others. This strategy should highlight the importance of coherent and harmonized approaches in the process of procuring these types of equipment and services, and thus strengthen the Government's commitment to negotiate about procurements of various services (software services, IT consulting, cloud computing, IoT, network and communication equipment, services of promoting digitalization projects, etc.). An additional benefit is that, by looking at the trends and history of spending in these fields over time, the impacts on indicators that are important for the entire digitalization process could be analysed, again over time. A system like this would serve as a good basis for developing universal standards for the processes of ordering goods and spending, as well as for developing clear procurement criteria (optionally and with the assistance of AI-based decision tools), together with mechanisms to evaluate suppliers. It should be noted that changes in this direction are not simple, they are accompanied by many challenges, and in particular bureaucratic mentality, inertia, "silos" effect, formalistic legal thinking and so on. With their implementation, however, Montenegro would be one step closer to EU accession and on the path to a more transparent and well-organized public administration.

#### Recommendations:

- 1) Set up the Office for Digital Transformation and Innovation, which should be an organizational unit within the Ministry of Public Administration, Digital Society and Media. This Office would set priorities and design digital services for citizens and businesses, and coordinate activities related to the improvement of administrative procedures and digitalization at the level of all state administration bodies and state bodies. It needs to be set up as an overarching body for digitalization, in terms of its powers, with mechanisms to encourage, motivate, control, and sanction bodies that do not comply with the Digital Montenegro agenda. Development of digital services by this office should be based on the principles of agile development (work organized through sprints, planning of meetings and retrospectives), which is especially important when selecting candidates who would be responsible for implementing certain activities, with involvement of all relevant stakeholders and provision of repetitive feedback for each stage in the development of specific services. Good practice examples for organization like this one can be found in the region and around the world, and the most notable ones are the RIA in Estonia and the Office for Digital Innovation in California, USA.

This functioning of the Office should be based on several important principles and values that everyone from the team would be familiar with:



The organizational chart of the Office for Digital Transformation and Innovation within the Ministry should be created within the preparatory phase of establishing this organizational unit, and based on the positive experiences of other countries.

- 2) Design a plan for standardization, automation, and preparation of written and oral business communications and communication materials in the field of digitalization. The plan should include specific guidelines for communication towards relevant target groups, as well as ways to involve citizens, businesses, academia, NGOs and others in the process of designing and developing digital services, systems for continuous feedback collection, as well as in evaluations of existing digital services with openness to suggestions for improvement. Communication should be more interactive and result in user-friendly services.
- 3) Implement a centralized IT cost control system for both the equipment segment and the software and services segment. Spending records at the level of all ministries and other bodies should be centralized, and the future process should be defined by taking the following steps:
  - Define pipeline for spending categories in the field of digitalization and IT equipment;
  - Define pipeline for priority procurements, if any;
  - Centralize budgeting and planning at the MPADSM;
  - Design an authority matrix with approval scenarios for specific cost categories, set spending thresholds;
  - Develop an e-ordering system;
  - Enable real-time verification of compliance with the plan and budget;
  - Develop an accompanying system for notifications and advanced reporting for MPADSM.

## 2.2. User-centred design

User-centred design is an iterative process of designing products or services, in which designers focus on users and their needs at each stage of this process. It consists of the following phases:

- a) Identify with users;
- b) Identify user needs and problems (through typical virtual personas, if necessary);
- c) Design innovative conceptual solutions based on user needs;
- d) Make prototypes, as the first phase of development of any service for citizens and the economy;
- e) Test solutions.

The development process is iterative for the product team, which means that some of the phases (or all of them) will be repeated several times until a final solution is reached.

Based on the information obtained from in-depth interviews, it became clear that not much attention was paid to this topic in the public administration system until recently. The services were designed ad-hoc, with small but insufficient inputs from the market and with limited communication with the target public.

Through several strategic and associated operational goals, the Digital Transformation Strategy 2022-2026 will also include the principles of user-centred design, which put the user at the centre of digital services development, while the Public Administration Reform Strategy 2022-2026 will introduce services satisfaction measurement with modern tools in this field.

In 2004, Peter Morville developed 7 user experience indicators, which are applicable to both the public administration and the private sector. Customer satisfaction assessment, once the product team puts the service into use and then continuously afterwards, should definitely include an assessment of these indicators:

- Usefulness

In the context of the electronic services development, the goal should be a full (end-to-end) service, which does not add steps to users, but rather saves time and effort ensuing from the procedure of going to a counter and the subsequent steps. Therefore, the user must perceive a service as useful. i.e. must be encouraged by the appearance and functionality of the service to do things by using electronic tools instead of analogue ones.

- Usability

The usability of a service increases or decreases with the quality of its design. However, a service may be functional and contain all the necessary elements, and users may also like it, but if the application button is too small, or in the wrong place and the user struggles to find and press it, the usability of that service significantly decreases.

- Findability

A portal's well-designed search engine, including filters, tags, etc., can encourage user-system interactions. If opposite is the case, it can prevent or significantly reduce those interactions. Spelling mistakes when entering a search term that get a "no results" answer drive the user to look for alternative ways to engage in interaction. Instead, an overview of similar terms that the user can select from should appear.

- Credibility

Credibility can be achieved by identifying with users and their needs. When designing a service, designers must be objective, honest and empathic. A service that "guides" the user through the process, suggests the best options, and communicates on a personalized level is a credible and persuasive service.



- Desirability

Apple products and services are a good example of desirability. User's perception is that Apple "runs, does not break and does not bug". That is why these products and services are high on the list of desirable ones, as well as Amazon's. Thanks to the attention paid to the quality in these companies,

from the concept and the prototype phase, through production, sales and finally after-sales, the competition is left far behind. These factors transform a neutral user into their buyer and promoter. In the context of public administration services, their design must be so appealing that the user will always prefer the electronic over the analogue method.

- Accessibility

Public administration services should be accessible to all categories and groups of users and additionally promote diversity and inclusion. The services accessible to those with a limited range of abilities guarantee ease of use even by those with a wider range of abilities. Therefore, this may increase the overall number of interactions.

- Valuability

Good user perception increases the value and ability to monetize the service. For public administration, user experience must be of such kind that it has a measurable impact on performance indicators and, ultimately, on the mission of digitalization.

Recommendations:

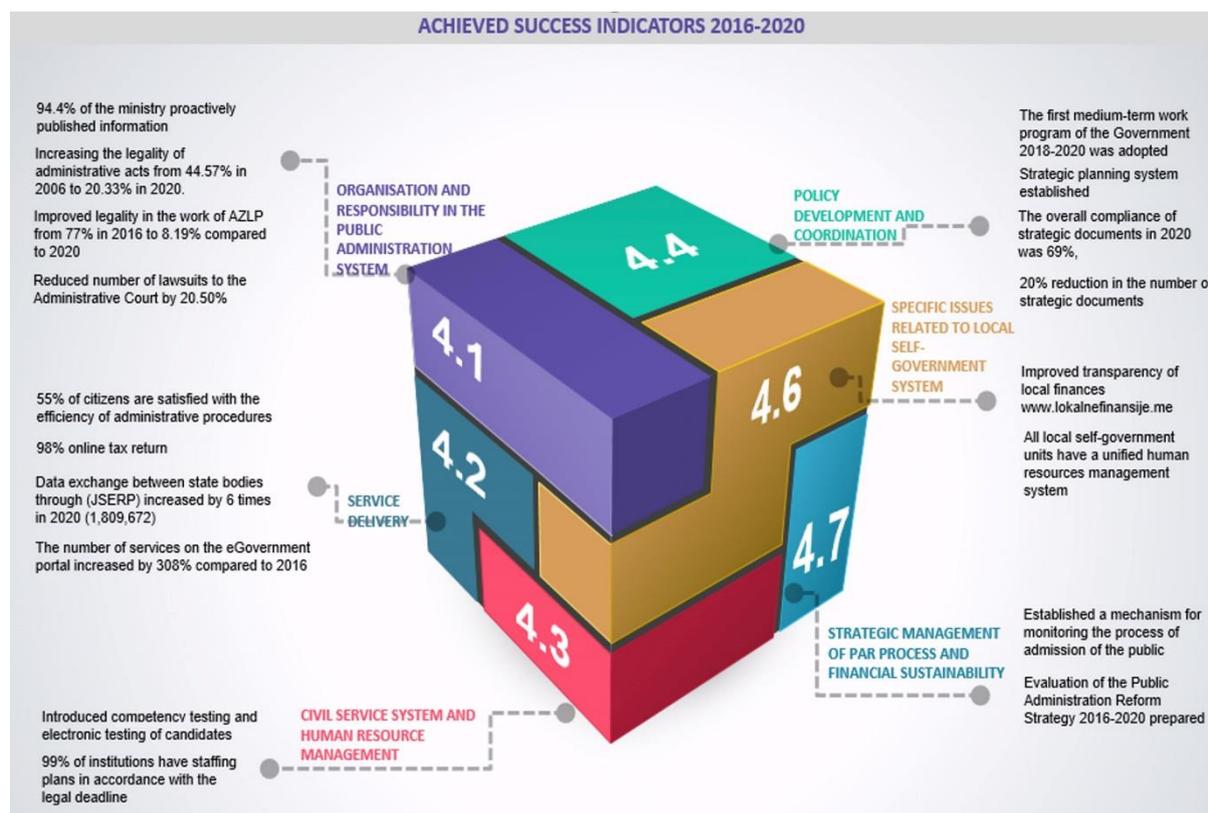
- 1) In the course of developing a new eGovernment portal, a process of designing services for citizens and businesses in line with UX/UI principles should be established and made binding for all initiatives of that kind, regardless of the type of institutions involved. Software developers try to do technical work and complete technology-related tasks, but during the design phase, during the process that precedes the programming, the focus should be on people. Each design is a hypothesis that needs to be tested. It is not possible for developers to represent both the user and the technology. They do not take the goals, needs and motivations of the users into consideration, because they do not know much about them. This then leads to services that work, but lack a coherent user experience.

## 2.3. Public administration reform and change management

The rapid "digital" response to the crisis caused by the Covid-19 pandemic is the best indicator of the implementation of public administration reform so far and of the readiness to adapt to unknown circumstances. At the beginning of the Covid-19 pandemic, the central national portal [www.coronainfo.me](http://www.coronainfo.me) was developed, which was then improved a few months later through [www.covidodgovor.me](http://www.covidodgovor.me), to include all key information on the developments regarding the pandemic in the country, including the number of citizens infected by Covid-19, tested, hospitalized, deceased and other information of importance for this topic. Furthermore, Montenegro responded to the challenges in the field of education and ensured successful completion of the academic year during

the pandemic with the use of online learning platforms <https://www.ucidoma.me>, as well as <http://www.digitalnaskola.edu.me>.

In the field of strategic initiatives and during the previous term of the Government of Montenegro, the Ministry of Public Administration, as the legal predecessor of the Ministry of Public Administration, Digital Society and Media, implemented activities from the Public Administration Reform Strategy 2016-2020.<sup>5</sup> The final report on the implementation of this document is available at the following link<sup>6</sup>, and the main performance indicators are given in the infographic below:



Despite the evident positive developments under specific strategic goals, the total level of achieved results as per performance indicators for the period 2016-2020 is far below expected and amounts to 43.75% (21 completed activity, compared to 27 incomplete).

A new Public Administration Reform Strategy 2022-2026 is currently being drafted and is expected to be adopted by the end of this year. Topics of digitalization of public administration services, as well as digital management are at the core of the new draft Strategy, and the key objectives of the Ministry of Public Administration, Digital Development and Media are identified in the following areas:

<sup>5</sup> <https://www.gov.me/dokumenta/f8073988-466f-4a64-86f1-64cc51f70f16>

<sup>6</sup> <https://www.gov.me/dokumenta/50f923ab-72b8-477e-ad0f-f052ff388bc4> .

**Key goals of the Ministry of Public Administration, Digital Society and Media**

 <p><b>Human resources reform, professionalization of the civil service (Qualified Government)</b></p>	 <p><b>Transparency of the public administration's work (Open Government)</b></p>	 <p><b>Optimization of the administration, processes and services focused on citizens' needs (Optimized Government)</b></p>
 <p><b>Driving innovations, improvement and enabling Digital Society development (Enabling Government)</b></p>	 <p><b>The Government as an efficient service (the Government at the service of all citizens)</b></p>	 <p><b>Strong and free media</b></p>
<p><b>Inclusion, equality, accessibility, elimination of all forms of discrimination (the Government of all its citizens)</b></p>		

Interconnectivity of basic registers and exchange of data between institutions is one of the key premises for the implementation of public administration reform and digitalization of services for citizens and businesses. To this end, the Ministry of Public Administration, Digital Society and Media has developed the Single Information System for Electronic Data Exchange and the National Interoperability Framework (NOI), which builds on the European Interoperability Framework, and sets guidelines for more intensive data exchange between authorities and identifies methods for overcoming organizational, technical, semantic and legal challenges in the field of data exchange. The analysis of the institutions' readiness for interoperability is part of the analysis of internal IT systems, and will not be discussed in detail here. The exception are institutions listed below that provided access to basic registers managed by others, where there is a legal basis for access and use of the data in question. The normative framework for this approach to the exchange of data from government registers through SEDES is provided in Article 19 of the Law on Electronic Government (Official Gazette of Montenegro 72/2019), operational implementation of which began on 03 June 2020.

Within the Single System for Electronic Data Exchange, data are continuously exchanged through 8 exchange processes between institutions, as follows:

- Ministry of Finance and Social Welfare --> getLica - Unique Citizen Identification Number (UCIN) --> Ministry of Interior
- Health Insurance Fund of Montenegro --> GetCurrentInsurance - UCIN --> Revenues Administration
- Ministry of Education --> getLica - UCIN --> Ministry of Interior
- Ministry of Finance and Social Welfare --> studentstatus - UCIN --> Ministry of Education
- Ministry of Education --> currentStatus - UCIN --> Ministry of Finance and Social Welfare

- Ministry of Finance and Social Welfare --> GetCurrentInsurance - UCIN --> Revenues Administration
- Capital City of Podgorica --> GetCurrentInsurance - UCIN --> Revenues Administration
- Environmental Protection Agency --> ServiceCrpsRegistar - TIN --> Revenues Administration

As one of the measures to implement the process of digitalization of services provided by all bodies on the e-government portal, the Ministry of Public Administration developed procedures in 2019 that facilitate definition, development and processing of e-services with accompanying instructions on how the portal is to be used by e-service administrator and e-Participation system moderator.

These procedures specify clear steps for business process monitoring by both administrators and electronic service processors. The procedure for publishing electronic services defines the steps from the identification of a potential service to its verification on the e-Government portal. Definition of such procedures is necessary to ensure that all bodies act uniformly in the process of development and processing of e-services, which will enable systematic monitoring and evaluation of results.

#### Recommendations:

1. Find a model to ensure continuous maintenance and improvement of the Single Electronic Data Exchange System (SEDES). This system is the "backbone" of the public administration digitalization. With no intention to analyse here whether it was implemented to comply with modern standards of information systems architecture, whether it has appropriate functionalities or not, this system should be preserved or replaced with a new one that has better prospects for maintenance and development. However, system shutdown should not be allowed. Interoperable fifth level electronic services are of vital importance for digital transformation.
2. In addition to the above-mentioned procedure that facilitates definition, development and processing of e-services with accompanying instructions, procedures for communication between authorities and with external entities in the field of development of electronic services should also be defined. This includes identification of potential solutions to overcome organizational, technical, semantic and legal challenges in the field of data exchange, as well as definition of the method and timeline to respond to user requests and comments.

## 2.4. Capacities, culture and skills

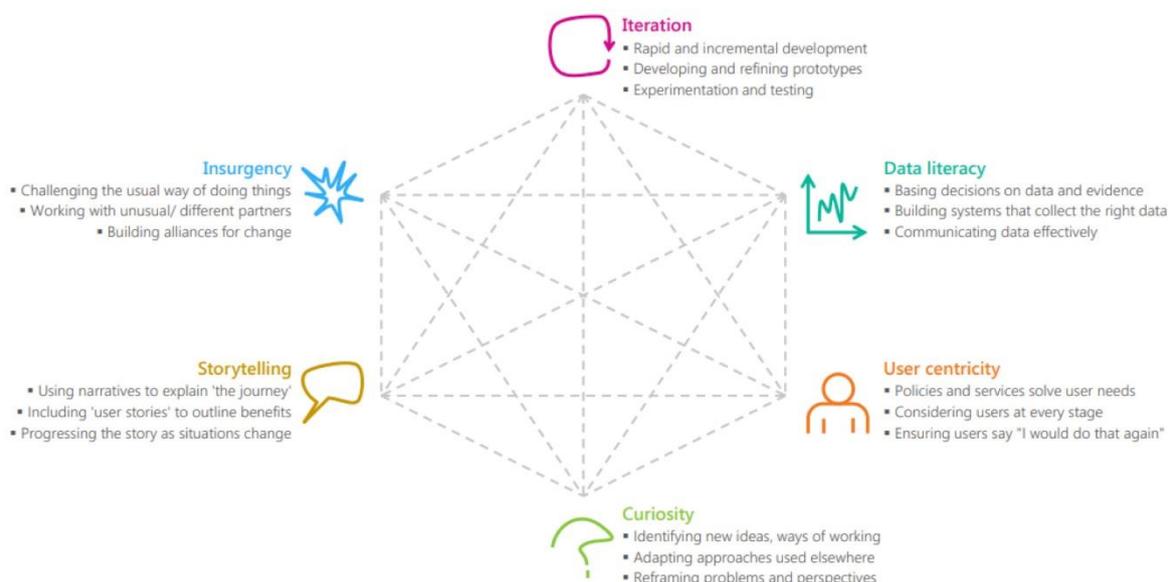
Lack of digital skills and education, and other skills connected to digital management, including knowledge of foreign language, communication, project management, entrepreneurship, innovation, etc., has been recognized as one of the key segments in the Situation Analysis that is being drafted for the Digital Transformation Strategy 2022-2026. The proactive approach of the Government of Montenegro as regards these skills is of crucial importance, especially given the gaps between skills and knowledge that civil servants need in the new digital age and options they have to actually attain them within the formal education institutions in Montenegro.

In this context, one of the projects of the Ministry of Public Administration, Digital Society and Media is to establish a Digital Academy for leaders, civil servants and other relevant persons. The concept of the Academy is being drafted in collaboration with Harvard and Georgetown universities, international partners and ICT Cortex. The draft concept and programme of the Academy are finalized, and a research of local governments' needs for digital skills has commenced, which will be followed by a research of other groups of relevant users. The enhancement of civil servants' capacities in this field at all public administration levels is essential for the implementation of the public administration digital transformation. All resources - programmes, tools, methodologies and lessons learned - resulting from the Academy's work will be publicly available and disseminated to interested citizens, organizations, and the private sector. The Academy also aims to include and educate students, marginalized groups and the elderly, and all of it with the goal of bridging the "digital divide". The primary functions and activities of the Academy include:

- Development of IT literacy, digital skills in public administration, academia, private and civil sector in Montenegro;
- Development of IT workforce in Montenegro, by providing support to programmes implemented or to be implemented by formal and non-formal education institutions;
- Transfer of new IT technologies, service design thinking and agile management, methods and tools for various stakeholders in Montenegro;
- Concept of the Rapid Innovation Laboratory, innovative processes in the provision of public services / to private sector;
- Mentoring and training on leadership skills and new disciplines;
- Setting up of a platform for knowledge transfer in the field of new IT technologies;
- Launching of pilot projects in the field of digital transformation of public administration institutions (state administration and local self-government bodies).

In addition, development of the "Mentorship Program" is one of the planned projects of the Ministry of Public Administration, Digital Society and Media. The project involves a specifically designed set of trainings for civil servants. The implementation of this programme implies a system in which civil servants have the option to choose a local or a foreign mentor who will help them in the course of their training. The Ministry has already prepared an online platform to connect world experts who

have agreed to participate in this programme and through which the mentoring will be conducted. The changes resulting from this program will enable each civil servant to see their career path more clearly, to be prepared for existing and future opportunities along the way, significantly increase job satisfaction and improve motivation. Only such civil servants can adequately respond to the constant changes that are part of the Industrial Revolution 4.0 we live in, with the mindset, approach to work and default skills shown in the illustration below:



**Source: OECD (2017), Core Skills for Public Sector Innovation<sup>7</sup>**

Another initiative worth considering, backed by the vision of the Ministry of Public Administration, Digital Society and Media that entails Montenegro with developed organizational, human, professional capacities that win citizens' trust, resulted from the need to transfer good corporate practices in digital transformation from private industry to public administration. The program is called "Innovation Fellows". Its aim is to recruit experts from the private sector with already accomplished careers who will use their expertise in project management, communications, programming, analytics, research and leadership to assist, in cooperation with civil servants, the Ministry in further digital development. This program will not be limited only to Montenegro in the future, but will open the possibility to recruit foreign experts in these fields, which will make it attractive for local experts, as they will have the opportunity to exchange experiences with people who are renowned in other systems and have various knowledge.

Current Ministry's estimates indicate that state administration bodies and state bodies lack about 500 IT officers, and that such programmes could reduce or eliminate this deficit in the future to some extent. A specific issue that is often highlighted refers to the fact that civil servants with specialist knowledge, especially in the field of IT, are recruited to work in public institutions under the same

<sup>7</sup> [https://www.oecd.org/media/oecdorg/satellitesites/opsi/contents/files/OECD\\_OPSI-core\\_skills\\_for\\_public\\_sector\\_innovation-201704.pdf](https://www.oecd.org/media/oecdorg/satellitesites/opsi/contents/files/OECD_OPSI-core_skills_for_public_sector_innovation-201704.pdf)

regulation as everyone else (Law on Civil Servants and State Employees, Official Gazette of Montenegro 2/2018, 34/2019 and 8/2021), which leaves almost no room for different treatment of this deficient profession, neither in terms of differentiated or preferential salaries, nor in terms of some other tangible or intangible incentives.

As for cooperation with external relevant entities in the field of sharing knowledge and skills that are identified as needed in public authorities, the Ministry of Public Administration, Digital Society and Media is focused on a transparent and consultative process of developing projects, services and strategic documents. Pursuant to the Regulation on the appointment of representatives of non-governmental organizations to working groups set up by state administration bodies and organization of public consultations within preparations of laws and strategies<sup>8</sup>, the Ministry appointed NGO representatives as members of the working groups tasked to draft the two above mentioned strategic documents. Focus groups were also organized with the interested members of the public (businesses, NGO sector, ICT community and academia), in order to get inputs and proposals for the concept and content of those strategic documents from the consultation process.

An Operational Team has been set up to draft the Digital Transformation Strategy 2022-2026. In addition to the representatives of relevant ministries, it also includes representatives of the banking, telecommunications, academic and civil sectors. Within efforts to prepare a high-quality Strategy, an electronic record has been created of interested individuals, representing business associations, academia, IT communities, NGO sectors, who want to participate and believe that they could contribute. The electronic record, created by using a voluntary application form, represents the Consultative Group, whose members get contacted at any stage of Strategy preparation. This has accelerated the strategy development process and many stakeholders have been given the opportunity to get involved in defining both goals and activities per specific areas.

#### Recommendations:

- 1) A digital skills portfolio for public administration (digital competence framework) should be created, with horizontal and vertical career paths and different levels of maturity. After that, the existing offer from formal and non-formal education institutions should be mapped and compared with the digital skills portfolio, and gaps that will thus become more visible should be identified. Finally, trainings that can close the identified gaps should be designed via the Digital Academy or Mentoring Program.
- 2) Design specific initiatives to strengthen collaboration between public and private sectors, either in terms of knowledge sharing through trainings, or in terms of working together on specific projects. A good practice example is 18F, an office within the Federal Acquisition Service that cooperates with other government agencies and offices to work together and solve technical issues, develop products, and improve the way the government addresses

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<sup>8</sup> <https://www.gov.me/dokumenta/1f353a31-1729-4db3-a378-e8c4610a5b04>

citizens' problems by using technology. This partnership helps complete projects on time, to keep them within their budgets and to base them on top technological trends.

- 3) Identify ways to attract talent from local universities, at least through certain forms of volunteering and unpaid internships, in line with regulations in this area. A good start, which requires even better promotion, is the "Innovation Fellows" programme, which has already been launched by the Ministry, with the obligation to develop new modalities to include foreign experts. A good practice example for this is the Presidential Innovation Fellows, within the U.S. General Services Administration. This programme connects talented people from the fields of technology and innovation with top government officials and change agents, working at the top levels of the U.S. Governments, to work together on some of the biggest challenges in public administration. Scholarship recipients selected for this unique and very attractive opportunity work for the U.S. Government for 12 months. During this time, they cooperate with each other and partners from state agencies on initiatives aimed at saving lives, saving taxpayers' money, promoting job creation, and building a culture of entrepreneurship and innovation within the Government.
- 4) Consider regulatory definition of differentiated or preferential salaries and other benefits for civil servants with specialist knowledge in programming, software architectures, IoT, cloud technologies, Blockchain, AI and change management knowledge, to make it easier to draw and retain them in public administration institutions. Rewarding should not be implied, nor should it be based on attained qualifications, but solely on performance results linked to pre-defined project activities and performance indicators.

## 2.6. Data infrastructure, strategies, governance

As mentioned in chapter 2.3, the Unified System of Electronic Data Exchange (USEDE) was set up by the Government of Montenegro, Ministry of Public Administration, Digital Society and Media, to allow for electronic data exchange between institution registers and information systems. All issues of relevance to the functioning of this system are governed by the Law on Electronic Government (“Official Gazette of Montenegro”, No. 72/2019) and the following implementing regulations:

- Decree on methods of governance and other issues of relevance to the functioning of the unified system of electronic data exchange (“Official Gazette of Montenegro”, No. 113/2020),
- Rulebook on technical requirements and security standards for access to the unified system for electronic data exchange (Official Gazette of Montenegro”, No. 108/2020),
- Rulebook on the layout and content of forms for the submission of data on electronic registers and information systems, as well as the content and method of keeping the meta-register (Official Gazette of Montenegro”, No. 111/2020).

These bylaws set out the obligation of institutions to appoint a USEDE Administrator and Processor responsible for recording data exchange applications, data registration, updates, etc. Another role introduced is that of an authority level Controller with a task to approve, based on legal grounds for data downloading, any download of data from the register managed by his institution.

Pursuant to Article 19 of the Law on Electronic Government, authorities are under duty to exchange electronic register and information data using the unified system of electronic data exchange. This aspect of technical interoperability is a necessary but not the only prerequisite to the exchange since legal interoperability must be regulated by a specific or general legal act, which would determine the right of access and data usage by the receiving institution. Another prerequisite to data exchange is the duty of the authorities to ensure technical conditions and security standards for access to the unified system of electronic data exchange, pursuant to the Rulebook on technical requirements and security standards for access to the unified system for electronic data exchange<sup>9</sup>. The Law on Electronic Government, Art. 1, sets out an obligation for state bodies, state administration bodies, state agencies, state funds and other holders of public authority to exchange data via UNEDE. On the other hand, this Law also applies to local self-government bodies, local government bodies, special public services within the meaning of the law governing local self-government, independent and regulatory bodies not falling within the scope of Art. 1 of the Law on Electronic Government, legal and physical persons exercising public authority where they use information-communication technologies in the discharge of duties within their competence. In other words, all the government authorities from those categories can use UNEDE if they express such a need and provided they meet the prescribed technical requirements and security standards.

The current situation with regard to all aspects of interoperability of state administration bodies is discouraging. Namely, institutions do not show the slightest interest in solutions relying on mutual

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<sup>9</sup> „Official Gazette of Montenegro”, No. 108/2020.

networking among institutions, many have not even met their statutory obligations relating to organisational interoperability and appointment of officers, while the questions designed to point to the current situation of certain aspects in this area were not responded to by 8 out of 12 ministries, even after repeated invitations. The fact that such an important issue is not given appropriate attention shows that there is either a lack of willingness to change the provision of services to citizens and businesses and adjust it to the contemporary trends or a lack of knowledge and skills needed to support this change. Whatever the main reason, the Ministry of Public Administration, Digital Society and Media should make additional efforts for the situation in this field to start improving. Training programmes in technical and organisational preparations for interoperability, as well as programmes aiming to change people's attitudes to these issues, especially among civil servants with no technical qualifications, are absolutely necessary because in the 21<sup>st</sup> century, interoperability of the state administration system is an imperative, not a choice.

When it comes to the second aspect of data reusability, focused not on the exchange of relevant data between institutions but rather on public access to information as elaborated on in the context of the Law on Free Access to Information<sup>10</sup>, Montenegro renewed its membership in the OGP Initiative in 2018 by adopting the National Action Plan for 2018-2020. This Action Plan defines the following five key commitments of the Government of Montenegro:

- Improved public services,
- Greater citizen participation,
- More transparent access to information – openness of state administration bodies,
- More efficient management of public resources, and
- Greater public integrity.

Through the web-portal <https://www.otvorenauprava.me> the interested public can have active access to information on current developments of the initiative and implementation of the Action Plan.

The Ministry of Public Administration, Digital Society and Media is taking steps towards setting up a Team to draft a new Action Plan for the next two years. In the discussions with Ministry representatives, the impression was that there was an awareness of how important it was for this process to be as open as possible and for the participatory mechanisms to be continually improved throughout the Plan's drafting, its subsequent implementation, and, especially, evaluation of the results.

When it comes to disclosing machine readable technical reusable data, in spite of the duty to disclose reusable information in an open format under Article 12 a of the Law on Free Access to Information, it is apparent that the authorities could disclose open datasets to a much greater extent. Also, many available datasets include aggregated instead of atomic data, which greatly reduces the analytical potential and data usage. The reason for this, on the one hand, is inadequate understanding of the

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<sup>10</sup> "Official Gazette of Montenegro", Nos. 44/2012 and 30/2017.

benefits of disclosing open data, but also the fact that there are concerns surrounding their disclosure, which falls within the scope of the Law on Personal Data Protection.

The open data portal <https://data.gov.me> was established in Montenegro for the first time in 2018. It is a central location for disclosing information held by public administration and allows for an easy search of open machine readable data. At present, the portal has 146 open datasets, offered by 20 institutions from 15 different areas. Montenegro became a member of the European open data family with its open data national portal becoming available in June 2020 on the European open data portal <https://www.europeandataportal.eu/en>.

The portal's further development, first by adding more datasets, then through its usage also by institutions and citizens, economy, NGO sector and other interested groups is a continuous process. The mission of the Ministry of Public Administration, Digital Society and Media is to make its contribution so that the identified needs are duly met and the user experience improved as a result of improved functionalities of the system. These functionalities primarily include the improvement of the portal search function, an advanced system of set related monitoring and notification, a system for evaluation of sets, but also an expansion of datasets to include the local self-government domain.

In addition to improving the functionality, the Ministry, in collaboration with partners in this field, will work to promote open data, enhance portal visibility, but also develop public administration human capacities to ensure efficiency in the provision of e-services. In addition to consultations with the above mentioned partners, there is also a need to align these activities with the requirements of EU partners (Open data maturity 2021).

In the upcoming period, once functionalities of the open data portal have improved, a series of educational and promotional activities is planned so that data disclosure compliance with the prescribed standards and criteria is enhanced. The Ministry, in collaboration with UNDP, will implement a campaign focussing on the benefits of disclosure and usage of open data for all target groups, particularly for citizens and the economy as end users.

Recommendations:

1. Improve the open data portal according to the existing plan.
2. Design and organise as many trainings as possible in interoperability of state administration system and make the attendance mandatory for all civil servants taking part in the creation and provision of services for citizens and the economy.
3. Update the list of the appointed interoperability officers and, where missing, initiate their appointment.

## 2.7. Cyber security, privacy and agility

The Government of Montenegro has adopted two cyber security strategies, for 2013-2017 and 2017-2021, together with action plans, subject to annual evaluation. The Ministry of Public Administration, Digital Society and Media is now developing a new Cyber Security Strategy for the period of the next four years. The business continuity issue is not defined by these strategies or its accompanying documents, or planned for inclusion in the new strategy.

Following the appointment of the new Government of Montenegro in December 2020, the Information Security Council was set up again as a multisectoral coordination body with a task to design and direct information and cyber security activities. Since 2019, the National CIRT/CERT team has operated not as an organisational unit of the Ministry of Public Administration, but as part of the Directorate for Confidential Data Protection, under the supervision of the Ministry of Defence. This team has operational authority for response to any security-related contingencies, such as cyber attacks, physical disasters in part or entire infrastructure or a pandemic, but does not have adequate technical capacities and skills for a proper fulfilment of its statutory obligations. On the other hand, strategic guidelines and policy design are still within the competence of the Ministry of Public Administration, Digital Society and Media ('MPADSM'), which, following the adoption of the new Law on Information Security<sup>11</sup>, is required to draft the Rulebook on the method of coordination, prevention and protection against cyber-security incidents and other information system security risks ( Article 14). In discussions with the Ministry representatives, the team were informed that this regulation was under development.

The existing public administration recruitment mechanisms make the employment of cyber security professionals a challenge. The centralisation of government recruitment services (Human Resources Management Administration) and the existing recruitment practices make it impossible for the CIRT and the MPADSM to have a key role in the selection process and make sure that the new candidate not only has the right qualifications but also fits well into the team dynamics. Just like with the digitalisation process, the salaries of cyber security staff are low compared with salaries of their counterparts working in the private sector, in spite of the fact that they have important responsibilities (and most often 24/7 duties) and are required to have and maintain a high degree of technical knowledge.

In addition, there are challenges relating to activities of the CIRT team in the context of public communication of incidents that could affect some user groups, as well as useful advice in that regard.

There is a need for a detailed assessment of technical capacity for cyber incident defence also at the level of the MPADSM, then separately at the level of the CIRT team, but also at other relevant institutions such as the Police Directorate, Ministry of the Interior, and others. If everything were organised following the model of countries that are more developed in this field, all the participants

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<sup>11</sup> „Official Gazette of Montenegro ", Nos. [14/2010](#), [40/2016](#), [74/2020](#) – second law and [67/2021](#), 22 June 2021.

in the cyber ecosystem should be able to support the entire life-cycle of security incident management through the following stages:

- Prevention,
- Receipt and resolution of incident reports,
- Categorisation,
- Mitigation,
- Recovery and lessons learned.

In the sphere of protection of critical IT infrastructure<sup>12</sup>, Article 14a of the Law on Cybersecurity provides for the duty of the Ministry of Public Administration, Digital Society and Media to protect these systems. However, although the Law on Identification and Protection of Critical Infrastructure<sup>13</sup>, including also the IT infrastructure, was adopted in late 2019, and its operational implementation started back on 3.01.2020, the critical IT infrastructure has not yet been identified and its protection, therefore, is not yet implemented.

Based on all the information made available, one gets an impression that cybersecurity is one of the least developed segments of Montenegro's state administration. Although the security incident protection system has been under development for almost 10 years, first through the first ever web portal offering digital services to citizens and economy, and later also through the strategic documents and laws which gained particular importance with Montenegro's accession to NATO, the system is still not good enough, nowhere near being good enough. New solutions need to be designed for a greater synergy between authorities, for better data usage, and new tools need to be implemented for identification of any weak points in the system before they could become a target of cyber attacks, and, especially, efforts are needed for a greater understanding of the importance of cybersecurity today. If anywhere at all, it is here that the weakest link rule applies to – for as long as there is a single civil servant in public administration whose action is questionable from the point of view of cybersecurity, as long as there is at least one information system which is not adequately protected – everyone else is under threat too.

Montenegro must do a lot more to strengthen its National CIRT team, as well as the team working on IT infrastructure protection in data centres, but also work on developing future e-services that need to be secure-by-design.

What follows is a record of the number of cyber attacks, by categories, as reported to the National CIRT team over the last 9 years:

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<sup>12</sup> Critical IT infrastructure includes IT systems of bodies that are so vital to the functioning of public interest activities that their disruption or destruction would jeopardize the life, health, and security of the citizens and the state.

<sup>13</sup> "Official Gazette of Montenegro", No. 72/2019.

Year	Attacks against sites and information systems	Internet frauds	Social network account misuse	Inappropriate content on the internet	Malware	Other attacks (harassment, blackmail, identity thefts, etc)	Total
2012	3	2	-	1		-	6
2013	5	3	10	-	1	3	22
2014	5	6	20	5		6	42
2015	6	17	37	19	17	36	132
2016	18	20	36	14	50	25	163
2017	91	18	34	9	368	12	532
2018	13	68	50	6	363	37	537
2019	19	70	79	11	387	38	604
2020	25	84	90	15	383	44	641
2021 until 15.06	12	38	48	7	167	23	295

Recommendations:

4. Support the Ministry of Public Administration, Digital Society and Media in developing policies that will ensure all the future e-services are secure-by-design. The CIRT team should be consulted on every e-government project design and implementation to ensure the projects are aligned with at least minimum security requirements. Also, staff working at the MPADSM and the CIRT team should be trained in applying ISO/IEC 27001 standards on information security (or other similar standards).
5. Develop a web-portal which can continually provide information on:
  - Current cyber threats and attacks in Montenegro
  - Local and global developments in this field
  - Cyber defence methods and tools
  - Guidelines intended for the public on how to protect oneself from cyber attacks, cyberstalking and how to reduce the risks
  - Discussions among cyber experts who engage in a public exchange of opinions on current threats and potential solutions
  - Registration for events and subscription to publications in this field
6. Enhance technical capacities by providing some of the tools from the following categories:
  - Application security testing,
  - Database activity monitoring,
  - Network access control,
  - Packet capture,

- IOC Sweeping and threat response tool,
- Endpoint forensics (hard-drive imager, media image analysis),
- Net-flow and network behaviour monitoring,
- Security orchestration for automatic security management,
- Decompilation and static malware analysis capability,
- Malware detonation and dynamic/runtime analysis (file sandboxing).

## 2.8. Digital ecosystem

If not a required essential, a factor that definitely serves as an accelerator of digital transformation in many countries, which definitely applies to the case of Montenegro, is a well-organised system of formal and informal education institutions that offer training in digital skills and leadership, as well as of other institutions that directly or indirectly support digital business projects, as well as the business community and individuals with innovative ideas.

With these objectives in mind, Montenegro has established 4 (one state and three privately owned) universities, fully operational, of which 3 offer programmes in STEM areas. Among all study programmes, there are 3 that stand out as they continually innovate their programmes and thus contribute to responding better to the demand coming from the market and public administration for digital and complementary skills. These include:

- Faculty of Natural Sciences and Mathematics, University of Montenegro, study programmes “Computer Science” and “Computer Science and Information Technologies”,
- Faculty for Information Systems and Technologies, University of Donja Gorica, study programme “Information System Management”, and a master programme “Software Engineering and Artificial Intelligence”,
- Faculty of Information Technology, Mediterranean University, study programmes “Information-Communication Technologies” and “Software Engineering”.<sup>14</sup>

In addition to the above, given that recent digitalization trends focus more and more on data-driven decisions, business decision-making models and risk predictions, supported by accelerated data collection and dissemination in all spheres of life and work, the knowledge of analytical, statistical and advanced reporting techniques (data mining, Big Data, machine learning, etc.) is becoming one of the desirable prerequisites to working in administration, but also in the private sector. Education programmes that offer these skills are the European Master in Official Statistics at the Faculty of International Economy, Finance and Business, University of Donja Gorica, as well as the study programme Mathematics and Computer Science at the Faculty of Natural Sciences and Mathematics, University of Montenegro.

When it comes to informal education institutions offering specialisation in different digital and complementary skills, there is a variety of programmes on offer in Montenegro, but among those that stand out are Logate Academy, Cortex Academy and IT Academy, as well as specialised programmes offered by companies such as Digital Bee (targeting the youth), Mistral Technologies, Oykos Development, Coinis, etc. All of these, as well as other available programmes, are intended for both

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<sup>14</sup> Author’s Note: Within Montenegro’s education system there are other study programmes offering education in digital and complementary skills, but graduate student employability and career surveys conducted by both universities and commissioned market research independent agencies indicate that the market responds somewhat better to these programmes than to all the others.

those that pursue a career in the private sector, and those who pursue professional careers in the public administration. When it comes to the civil servants, their first choice is a variety of trainings in the Human Resources Management Authority, which also tests computer skills in its selection process, and offers similar professional development in different areas for the civil servants already in the system.

The Digital Academy currently developed by the Ministry of Public Administration, Digital Society and Media, whose concept is described in greater detail in chapter “2.4. Capacities, culture and skills”, will definitely be a step forward in terms of opportunities and possibilities for further development of digital skills among civil servants.

Another aspect of support to digital transformation in Montenegro is the institutions and associations, as well as business incubators and accelerators, designed to serve as support to innovative ideas, regardless of whether they are coming from individuals or start-up companies. This support is most often educational, in the form of various mentoring programmes, while sometimes, particularly if one takes into account competitions (hackathons) organised by these institutions, also financial. There are around ten institutions of this type operating in Montenegro, and the new ones are constantly being developed. Those that stand out are IPC Technopolis, M:Tel Digital Factory, ICT Cortex, Association of Business Women of Montenegro, Entrepreneurial Nest, Digital Den Hub, and others.

When discussing digital innovations and support to start-ups from the point of view of state administration, it is worth noting that this area falls within the competence of the Ministry of Economic Development, that development of innovative activities and technological development is predominantly based on Montenegro’s Smart Specialisation Strategy – S3 (2019-2024), the Law on Incentives for Development of Research and Innovations, and the Law on Innovation Activity, whose implementation will begin only in late 2021 because the work on implementing regulations is ongoing. An important role in these activities will be played by Montenegro’s Innovation Fund of the Secretariat of the Innovations and Smart Specialisation Council, and the Science and Technology Park of Montenegro.

Of particular importance to encouraging innovations, supporting digital transformation projects, strengthening leadership and entrepreneurship for Montenegrin institutions, citizens and economy at the present time, but also in the future, is the support by international partners (UN, EBRD, EIF, DEU, and others) with programme lines in these areas already in place, while commercial banks in Montenegro see the credit lines of this type as too risky and so do not include them in the range of services that they offer. These options are generally extremely rare in international comparative practice too, with the exception of personal business start-up loans, granted on the basis of the applicant’s credit rating, as well as micro-loans, which are still very expensive in countries with fully functional micro-financing.

## 2.9. Conclusions and framework action plan

Digital future has arrived in Montenegro too. No one is spared, and no one must be left behind. With the appointment of the new Government in late 2020, Montenegro started its first democratic transition of government after almost 30 years. This new beginning has created some new issues, but has also brought to the fore some of the old issues and put under spotlight the need to re-examine the institutional, technical, and all the other capacities of public administration and its readiness to respond to the trends of industrial revolution 4.0. Also, when it comes to the regulations that are not yet adapted to the innovative initiatives, the question raised was which ones of the specific laws need to be amended and which new ones are yet to be written for a smooth beginning of the digital transformation process.

What follows is a framework action plan for implementing the recommendations from this report.

No.	Recommendation	Details of recommendation	Expected objectives
1.	Set up the Office for Digital Transformation and Innovation	<ul style="list-style-type: none"> <li>a) Define Office organization and legal arrangements;</li> <li>b) Develop mechanisms to encourage, motivate, control, and sanction bodies in accordance with defined metrics and performances in the field of digitalization;</li> <li>c) Develop mechanisms for recruiting staff who would be able to find their place in the organizational culture and dynamics based on the principles proposed in the analysis;</li> <li>d) Design procedures based on agile development;</li> <li>e) Define modalities for provision of services to others.</li> </ul>	The Office for Digital Transformation and Innovation has been set up as a part of MPADSM and has commenced its operations.
2.	Design a plan for communication towards all target groups	<ul style="list-style-type: none"> <li>a) Identify target groups;</li> <li>b) Define methodologies to be used to develop appropriate standards and procedures;</li> <li>c) Develop standards and procedures for communication with all target groups with accompanying steps;</li> <li>d) Define required time for response in all categories;</li> </ul>	Standards and procedures for communication towards all target groups have been defined.

		<ul style="list-style-type: none"> <li>e) Establish two-way communication between employees and management on the one hand and users on the other, which must be based on the principles of understanding user needs and their participation;</li> <li>f) Identify awareness and motivation mechanisms that enable all employees to understand the mandate, vision, mission, values and strategic plan of the Office.</li> </ul>	
<b>3.</b>	Implement a centralized IT cost control system	<ul style="list-style-type: none"> <li>a) Define pipeline for spending categories in the field of digitalization and IT equipment;</li> <li>b) Define pipeline for priority procurements, if any;</li> <li>c) Centralize budgeting and planning at the MPADSM;</li> <li>d) Design an authority matrix with approval scenarios for specific cost categories, set spending thresholds;</li> <li>e) Develop an e-ordering system;</li> <li>f) Enable real-time verification of compliance with the plan and budget;</li> <li>g) Develop an accompanying system for notifications and advanced reporting for MPADSM;</li> <li>h) Adapt regulation and procedures to the new method of procurement.</li> </ul>	The IT cost control system has been established.
<b>4.</b>	Incorporate UX/UI design principles into all future service development processes	<ul style="list-style-type: none"> <li>a) Adapt the application of the user experience principles, in phases, so that they are compatible with the public administration.</li> </ul>	UX/UI principles have become a part of every digitalization process.
<b>5.</b>	Define a model to ensure continuous maintenance and improvement of SEDES	<ul style="list-style-type: none"> <li>a) Analyse current state of the system;</li> <li>b) Define future desired state;</li> <li>c) Identify gaps;</li> <li>d) Find a model to improve the system based on the identified gaps;</li> <li>e) Design a continuous maintenance model.</li> </ul>	SEDES system has been improved. A contract for maintenance and continuous upgrade of the system for at least 3 years has been signed.

		f) Develop a plan and activities for user acquisition and promotion of the system to other institutions.	
6.	Define procedures and solutions to overcome challenges regarding interoperability, as well as participation procedures	<p>a) Develop procedures that define ways for each institution, which sends data to SEDES, to overcome issues in the domain of:</p> <ul style="list-style-type: none"> <li>• legal</li> <li>• organizational</li> <li>• semantic</li> <li>• and technical interoperability,</li> </ul> <p>in accordance with the National Interoperability Plan from 2019.</p> <p>b) Develop procedures to involve citizens and other target groups in the electronic services design and development process.</p>	<p>Interoperability procedures have been established.</p> <p>Procedures for participation of all target groups have been established.</p>
7.	Create a digital skills portfolio for public administration	<p>a) Define a methodology for creation of the digital skills portfolio;</p> <p>b) Develop the portfolio with horizontal and vertical career paths and different levels of maturity, in line with the methodology;</p> <p>c) Analyse the state of digital skills in the public administration in relation to the defined portfolio;</p> <p>d) Map the offer of formal and informal education institutions and compare it to the portfolio;</p> <p>e) Design trainings via the Digital Academy or Mentoring Program that can close the identified gaps;</p> <p>f) Design models to maintain and enhance knowledge in the fields that are deficit in the public administration.</p>	The digital skills portfolio for public administration has been defined.
8.	Establish cooperation between public and private sectors on specific projects	<p>a) Define forms of cooperation with businesses, and explore legal prerequisites;</p> <p>b) Identify specific areas and projects for collaboration</p> <p>c) Consider models to outsource a part of public administration services</p>	Mechanism of cooperation between public and private sectors has been established.

<b>9.</b>	Identify ways to attract talents from local universities, especially in professions that are deficit in the public administration	<ul style="list-style-type: none"> <li>a) Identify ways to promote public administration as an attractive employer;</li> <li>b) Define legal framework to recruit talents;</li> <li>c) Define specific recruitment steps;</li> <li>d) Consider models to retain talents outside standard labour contracts.</li> </ul>	Mechanisms of recruitment and retention of talents in the public administration have been established
<b>10.</b>	Define a system of differentiated and preferential salaries and other benefits for civil servants who have specialist knowledge	<ul style="list-style-type: none"> <li>a) Consider regulatory matters regarding differentiated and preferential salaries;</li> <li>b) Define rewarding mechanisms and criteria;</li> <li>c) Identify groups of civil servants with benefits;</li> <li>d) Implement a performance monitoring system.</li> </ul>	The system of differentiated and preferential salaries and other benefits for civil servants has been defined.
<b>11.</b>	Improve the open data portal	<ul style="list-style-type: none"> <li>a) Analyse current functionalities and suggestions for improvements</li> <li>b) Improve the portal in line with defined functional requirements</li> <li>c) Promote the benefits of disclosing open datasets</li> </ul>	Open data portal improved Agreement signed on maintenance and continual improvement of the portal for minimum 3 years
<b>12.</b>	Create and organise interoperability training for civil servants	<ul style="list-style-type: none"> <li>a) Create training programmes on the importance of citizen-centric approach in providing public administration services</li> <li>b) Implement training for all civil servants taking part in the provision of services to citizens and economy</li> </ul>	
<b>13.</b>	Update the list of appointed interoperability officers	<ul style="list-style-type: none"> <li>a) Set up a database of civil servants in ministries and other state administration bodies, state and local self-government bodies who will be responsible for communication in the spheres of legal, organisational, semantic and technical interoperability</li> <li>b) Initiate appointments of such civil servants where necessary</li> <li>c) Define performance indicators and monitor their implementation</li> </ul>	

14.	Define policies and procedures for development of “secure-by-design” e-services	<ul style="list-style-type: none"> <li>a) Analyse potential security prerequisites to all e-services</li> <li>b) Ensure compliance of all e-service applications with OWASP lists over time</li> <li>c) Train staff in implementing ISO/IEC 27001 standards on information security (and other similar standards)</li> </ul>	Policies and procedures for development of “secure-by-design” e-services defined
15.	Develop web-portal on cyber security issues in Montenegro	<ul style="list-style-type: none"> <li>a) Develop a project and development plan</li> <li>b) Develop design and user experience</li> <li>c) Develop the portal according to the defined plan and functional specification</li> <li>d) Launch production</li> <li>e) Promote the portal to target audiences</li> <li>f) Establish portal maintenance</li> </ul>	<p>Web-portal on cyber security in Montenegro developed</p> <p>Agreement signed on maintenance and continual improvement of the portal for minimum 3 years</p>
16.	Strengthen technical capacities for cyber defence	<ul style="list-style-type: none"> <li>a) Conduct in-depth analysis of capacities for cyber defence, particularly of skills and technical equipment</li> <li>b) Form a new accountability structure aligned with the proposed structure of the Office of Digital Transformation and Innovations</li> <li>c) Make a capacity development plan by providing some of the tools from the proposed categories</li> </ul>	<p>Cyber defence capacity analysis conducted</p> <p>Cyber Security Sector formed in line with the proposed systematisation</p> <p>Adequate tools procured for strengthening the cyber defence segment</p>