Analysis on Human Resources Management Information Systems in the Western Balkans Region

ReSPA
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PERSONAL RECORDS MANAGEMENT

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HRMIS

ADMINISTRATION OF WORKING TIME

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TRAINING AND DEVELOPMENT

RECORDS OF DISCIPLINARY PROCEEDINGS

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The Regional School for Public Administration (ReSPA) is an inter-governmental organisation for enhancing regional cooperation, promoting shared learning and supporting the development of public administration in the Western Balkans. As such, it helps governments in the region develop better public administration, public services and overall governance systems for their citizens and businesses, and helps prepare them for membership and integration into the European Union (EU). The ReSPA members are Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, and Serbia, while Kosovo* is a beneficiary.

* This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and ICJ Advisory opinion on the Kosovo Declaration of independence.

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The views and opinions expressed in this report are those of the authors. They do not necessarily reflect the official views of the Regional School of Public Administration, or any other government or funding organization.

Contents

Acronyms

AI	Artificial Intelligence
BiH	Bosnia and Herzegovina
BPM	Business Process Management
CSA	Civil Service Agency
DMS	Document Management System
DoPA	Department of Public Administration
DR	Disaster Recovery
GSB	Government Service Bus
EU	European Union
ESS	Employee Self Service
FBiH	Federation of Bosnia and Herzegovina
HR	Human Resources
HRM	Human Resource Management
HRMA	Human Resource Management Authority
HRMD	Human Resource Management & Development
HRMIS	Human Resources Management Information System
HRMS	Human Resource Management Service
ICT	Information and Communication Technology
ISO	International Standard Organization
ISPA	Individual Staff Performance Appraisal Procedures
IT	Information Technology
LMS	Learning Management System
MISA	Ministry of Information Society and Administration
MS	Microsoft
PA	Public Administration
PKI	Public Key Infrastructure
ReSPA	Regional School of Public Administration
RS	Republika Srpska
TMS	Training Management System
WG	Working Group
WB	Western Balkans

Executive Summary

Due to the pervasive nature of information and communication technology (ICT), the computerization of HR processes is crucial for the present and future. In light of this, the main aim of this study was (a) to assess the progress made since 2017 when ReSPA conducted a "Baseline Analysis on HRMIS in the WB region" to assess the development of human resources IT management systems, (b) to share information and different solutions implemented by ReSPA members, (c) prepare new recommendations to foster the digital transformation of HR processes and (d) facilitate regional cooperation.

To collect adequate information from the respective ReSPA members on their human resources IT management systems, a slightly re-designed "Survey on the Implementation of Human Resources Management Information Systems" from 2017 was used (see Annex 1) and analyses of the collected data were conducted with a focus on the digital transformation of various HRM processes (i.e. personal records management, organization and job classifications, contracts management and related rights, administration of working time, administration of allowances, performance management, disciplinary proceedings, training and development, training, recruitment, testing, day-to-day processes for HR units, reporting and business intelligence, employees' self-service, internal labour market and mobility, satisfaction surveys). The areas for analysis included scope and comprehensiveness of data collected, data accuracy, reporting, interoperability and data exchange with other relevant systems, ICT infrastructure, use of digital enablers, maintenance, source code ownership, security, as well as the impact of the Covid19 pandemic on human resources management and development in various public administration departments.

Building critical skills and competencies in the civil service to support digital transformation, an innovation culture and an environment that enables government agility is crucial. These changes have the potential to improve public services for citizens and for businesses, and unlock the ideas, knowledge and capacity for new solutions to social challenges, but they also require widespread changes in the work culture and management of the government. Such changes are a prerequisite for the adoption of digital technologies to improve quality, speed and transparency of internal government processes, and accessibility and availability of public services for citizens and the private sector.

The ongoing pandemic has dramatically accelerated digital transformation in all aspects of life and has shown that technology can assist governments to ensure uninterrupted work, communication, and provision of public services. HR processes were not an exception and their digitalization has remained a key focus of public administration reforms across the region. In addition, HRMIS provides data and reports on the efficiency of HR processes that could be explored to suggest new ways of working and organizing the HR functions. This should make public administration institutions more agile, and responsive to social challenges and adaptive to the current context and such changes are noticeable across the region.

The systems developed differ across the member states of ReSPA, be that in scope, complexity or software used. North Macedonia and Albania remain the only ReSPA members in the region to keep data on all public employees in their HR system (having over 100,000 records), encompassing education and health sector. At the same time, the Civil Service Agency in Federation BiH and the Human Resources Management Authority in Montenegro are currently expanding their system to include employees from local levels of governments. Best practice, followed by almost all ReSPA members, suggests that centralized systems with decentralised data entry significantly reduce the cost of system deployment and maintenance, while, at the same time, providing better data accuracy, as data is more accurate if entered where it is created. However, centralized data entry is still used by the Civil Service Agency in Federation BiH, but, with the constant increase in volumes of data, this will soon prove to be unsustainable.

All ReSPA members have improved their HR register since 2017, in particular, they have expanded the data they collect on employees, improved data quality, and started using the data collected to improve day-to-day processes and statistical reporting. Many ReSPA members acknowledge the importance of data accuracy and have worked hard to improve data completeness and accuracy and introduced various practices, such as; connecting HRMIS with payroll, incorporating social security and pension funds databases, writing procedures stipulating responsibilities for data completeness and accuracy, adopting employee self-services to help employees more easily detect errors in their personal information and automating daily procedures, such as contract management, working time, and allowances, which require regular data updates.

In parallel, work has continued on developing and improving the auxiliary IT systems which support the various HR processes, such as training and development and recruitment. Good practice examples from Albania (recruitment), CSA of BiH (TMS, LMS) and Serbia (LMS) presented in 2017 have helped other ReSPA members gain in-depth knowledge and hands on experience of the digitalization of those processes and helped persuade other members to develop and deploy IT tools to support HR processes. As a result, most of them either have already digitalized those processes or are currently actively pursuing their digitalization. What is now left to do in most cases is to make these standalone systems interoperable and connect them to the HR register.

IT tools to support performance management also being used in most of the ReSPA members, however, interoperability in HR registers and training and development and e-learning to enable data to be fed into performance management modules is still a work in progress in most of the ReSPA members. The same goes for the ESS module, an add on that usually is adopted at the very end of HRMIS development and grants specific rights (read and write) to each employee to securely access the system. This development should ideally be integrated with government single-sign-on identification and authentication systems. Currently, only Montenegro has the "My personal file" system that allows all civil servants to access their own data as well as to communicate with the human resources department in their institution.

In addition, new systems are being deployed in the region, for example, in Serbia and Montenegro, internal labour market software is being used to improve the effectiveness of recruitment to better address the staffing needs of state bodies. This also facilitates the internal mobility and career development of employees, as well as protecting the employment status of unassigned civil servants.

When it comes to the sophistication of online services provided either to staff or citizens (in case of e-recruitment), they are still mainly at the level of information provision (information necessary to start the procedure to obtain the service is available on the web) and interaction (downloadable or printable or electronic forms are available on the web to start the procedure to obtain the service) throughout the Western Balkans.

Regarding system development, most of the HRMIS systems are developed and maintained by external IT companies, with the source code owned by the public institutions themselves to avoid lock in. The IT companies usually provide all-encompassing maintenance, with average annual costs of around €61,000.00, mostly for corrective, adaptive, and perfective maintenance. All systems have adequate backup, physical access and adequate temperature control. Further, all ReSPA members have implemented system security and all HRMIS systems have developed user-roles policies, which provide for secure identification, authentication, and authorization, integrity, confidentiality and auditing. Most systems use the PKI infrastructure and SSL certificates for encrypted connections to the system, two-factor, token and smart card authentication.

For identification and authorisation, the most advanced system is in Albania, as it uses centralized government services for identification, authentication and digital signing that are offered by the Albanian National Agency for Information Society. Use of generic eIDs for identification, authorization and digital signing in HRMIS is user-centric, as users can use the same ID for any service provided, which further enhances standardization and security. In parallel, using centralized government systems such as single-sign-on brings large savings because it can make use of the existing technology, but also further contributes to enhanced standardization and security.

In general, the emerging issues in this study are of a higher order as compared to the study in 2017, with a shift in focus to data utilization and analytics for creating policies, interoperability, usage of shared government building blocks, such as single-sign-on and GSBs, change management, users experience etc. However, central HR units in the ReSPA members should continue to find new ways to achieve business results with greater simplicity and relevance, in a way that is appealing to civil servants and their managers. There is generally a strong interest for this, for building capacities, and enhancing digital skills. HR units are learning from other ReSPA members and sharing experiences and innovative practices on use of emerging technologies and how they can positively affect HR functions, and this should continue in the future.

Digital transformation toward paperless and innovation-based HRMD is clearly the way forward and the resulting changes in the business environment and legal framework, therefore, need to be closely coupled with the improvements in supporting IT systems. The necessary groundwork for creating accurate registers and automating various HR processes in all ReSPA members has been completed and we should expect further developments to realise the full benefits of paperless HRMD. In the near future, ReSPA members need to focus on interoperability and connecting the various HR systems into one networked whole. The same applies to digital government-wide enablers such as generic eIDs and shared digital building blocks, such as single-sign-on and GSBs, that should be reused and integrated with the current IT systems. For this, building e-Government and HR synergy and strengthening the cooperation among e-Government and HR groups would be beneficial. The focus should also be on improving the sophistication of HRMD services provided to staff and citizens, toward fully transactional services, keeping user experience and centricity high on the agenda.

Finally, the general sense is that most of the HRMD practices have been affected by the ongoing pandemic and that HR processes have to become more agile and more responsive. As a result, this study also attempts to identify the changes that have occurred in the central HR units in the ReSPA member states, their responses to the crisis and the possible digital tools that could be added to the HRMD digital toolbox of each of the ReSPA members to alleviate the negative effects of COVID-19 and, in general, contribute to more accessible and transparent HRMD processes.

1

Introduction and Purpose of the Analysis

1.1 Background

The Regional School of Public Administration (ReSPA) is an inter-governmental organisation for enhancing regional cooperation, promoting shared learning and supporting the development of public administration (PA) in the Western Balkans (WB). ReSPA's remit is to help governments in the region develop better public administration, public services and overall governance systems for their citizens and businesses, and to help prepare them for membership in the European Union (EU). Since its inception, ReSPA has contributed to the development of human resources and administrative capacities through training programmes and various cooperative initiatives, such as the exchange of good practices, peer reviews and development of know-how.

In November 2018, the ReSPA Strategic plan 2019-2024 was adopted and a two-year Programme of Work with an Action Plan was developed. The ReSPA Strategy recognises that further professionalisation and depoliticization of the civil service is needed to further improve the public administration in the Western Balkans (WB). All ReSPA members face similar challenges in the provision of public service and in Human Resources Management (HRM). Improving professionalisation and depoliticization of the senior civil service has been a focus of ReSPA from its establishment and this continues with the focus on the following areas identified by the beneficiary administrations of the region: merit-based recruitment and selection and performance appraisal and career development. In addition, a modern HRMD cannot be imagined nowadays without a high degree of automation through the use of IT. The deployment of IT and digitalization should help build more professionally competent

public administration in the Western Balkans that is able to meet the needs of the citizens and to handle the EU integration process.

The fast pace of technological change poses a new set of challenges to all countries. Public administration reforms and policies must take into account wider social trends influenced by global technological shifts, such as changes in communication and consumption habits, the emergence of new business models and payment services, expansion of ubiquitous mobile devices and services, transition of infrastructural services into the cloud, advances in big data analytics, artificial intelligence, etc. and ensure adequate capacities for effectively leveraging new technologies for digital transformation. As public administrations worldwide are starting their journey towards agility and innovation, the ability to quickly adapt and innovate services to citizens and business needs, rapidly and flexibly respond to social needs and lead change productively and cost-effectively is becoming more and more important. This implies significant changes to HRMD processes in the central HR government units responsible. Enabled by digital systems, they should be moving from a silent support department of government to an enabler of the digital and agile government transformation.

On the basis of the discussion above, ReSPA recognized the need to conduct a baseline HRMIS analysis that would offer a clear picture of how HRMIS is developed in the WB. In May 2017, ReSPA conducted the "Baseline Analysis on HRMIS in the WB region". The analysis reviewed the current state of progress in the development of HRM related IT systems, shared information on the different solutions implemented in the WB and provided recommendations for further regional cooperation in this area. The 2017 analysis also highlighted achievements and best practice, as well as difficulties and some other IT specific issues such as outsourcing/in house development, source code ownership, maintenance, security, interoperability, models for data exchange and data accuracy. The analysis resulted in some ReSPA Members visiting Albania to obtain in-depth knowledge about their e-recruitment system with a view to implementing a similar system, and to Bosnia and Herzegovina to learn about their BiH CSA training management system. Moreover, the BiH CSA training management system has been shared and customized to the needs of the RS and FBiH CSA and it is now in operational use in both agencies.

Following this successful exchange of good practice and development of know-how, more than three years after the initial study, the ReSPA Working Group on Human Resources Management and Development commissioned an update to this study, to assess the progress made since 2017, to present new inspiring practices and different solutions implemented in various ReSPA members and prepare new recommendations to advance digital transformation of HR processes. The study was undertaken in December 2020 and encompassed five ReSPA Members (Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, and Serbia). The updated analysis was based on desk research, survey results and structured interviews with key personnel in each ReSPA member state.

1.2   The Role of HRMIS

The HR function is no longer limited to just implementing controls and standards prescribed by law to improve and optimise recruitment, training and development, performance appraisal etc. but

rather to facilitate strategies and projects that are able to drive innovation, collaboration, teamwork, enhance decision-making across institutions and, in general, make institutions more agile and capable to fulfil their mission.

Therefore, the importance of the HRMIS system is multifaceted, it includes operational assistance in collecting, storing and preparing data for reports, simplifying and accelerating HR processes and controlling the available data, and reducing labour costs for HR departments. It also includes providing timely and diverse information to the management, on which quality strategic decisions related to human capital can be made[1]. In addition, HRMIS provides data and reports on the efficiency of the current HRM process that might suggest new ways of working and organizing the HR function to facilitate improved responsiveness and adaptability of activities and structures within specific institutions, so they become more agile, responsive to social challenges and adaptive to the current context.

As each administration's objective is, or should be, to find the best, easiest and cheapest solution for collecting data, to analyse it and t produce better, more strategic policies. HRMIS tool(s) can be used to achieve this goal as they help simplify methods, decrease the possibility for errors in data gathering and data processing, increase the reliability of statistics and information, which should lead to better policies and quality of services.

Almost all ReSPA Members have a centralized HR policy development system, and centralized units benefit from the improved comprehensiveness, accuracy and timely production of data, which results from HRMIS. The use of functional HRMIS allows insights into different classifications (horizontal or vertical in scope) and different methods of reporting, this allows for the development of evidence-based policies and testing on small or large scale. This becomes increasingly important as the HR function, which traditionally has focused on control and alignment, gradually shifts towards a focus on speed of responsiveness to the specific business needs of individual institutions that the central units serve.

At the institutional level, HRMIS allows the HR unit to produce multiple reports related to all HR processes in the institution and plan resources better. Automation of data gathering and data processing helps save time and resources dedicated for all kinds of processing. In addition, the time needed for payroll processing can be reduced by up to 75% with an HRMIS[2]

1.3   SIGMA Methodological Framework

The importance of IT tools to support HR processes is also stressed in the SIGMA Principles of Public Administration[3], particularly in Principle 2, which stipulates that; the policy and legal frameworks for a professional and coherent public service are established and applied in practice; the institutional set-up enables consistent and effective human resource management practices across the public

1   https://mpra.ub.uni-muenchen.de/35286/1/Chapter_2_draft_The_Role_of_Information_Systems_in_Human_Resource_Management.pdf

2   http://peospectrum.com/hris-10-ways-it-can-help-a-small-company/

3   OECD (2017), The Principles of Public Administration, http://www.sigmaweb.org/publications/Principles-of-Public-Administration-2017-edition-ENG.pdf

service; also stipulating in Sub-Principle 7 that a HRM information system should support strategic workforce planning, management and monitoring of HRM practices in the public service; the system should also include correct and complete data at the levels of the entire public service institutions and individual public servants, as required by the legislation, and enable statistical information to be provided at a given date; this system should, in addition, interact electronically with other national databases to avoid duplication of data gathering.

Further, the Methodological Framework for the Principles of Public Administration[4] provides a comprehensive framework for assessing progress against each Principle. The indicator on Adequacy of the policy, legal framework and institutional set-up for professional human resource management in public service measures the extent to which the policy, legal framework and institutional capacities are in place and enable consistent human resource management (HRM) practices across the public service. It also assesses whether policies and laws are implemented to ensure proper management of the civil service, for example, the extent to which there is a functioning civil service database, the availability and use of data, etc., as detailed below:

1. *Existence of a functional HR database with data on civil service:* For the data on public servants to be considered comprehensive at least the following information must be included; name, date of birth, gender, current position, public service positions held, education, salary, bonuses and benefits, performance appraisal results, disciplinary sanctions and termination of employment.

   Points are awarded if each of the five following criteria for database(s) and data available to the central co-ordination unit are met (total of 4 points):

   - Database(s) are *interoperable* with other relevant systems (at least with the payroll system) (1 point).

   - Data is *updated* in real time (0.5 points).

   - Database(s) and data *include all employed civil servants and institutions* required by the relevant regulations (1 point).

   - Database(s) and data *allow quick reporting* on all relevant HR areas, as noted above (0.5 points).

   - Data on public servants is *comprehensive* (1 point).

2. *Availability and use of data on the civil service:* The annual report on the civil service must include at least the following information to be considered to contain relevant and updated data; information on the total number of civil servants, the total turnover in the civil service (broken down by categories), the gender balance in the civil service, the number of candidates per position, training statistics, and data on appeals, appraisals, dismissals and salaries.

   Points are awarded if each of the following criteria are met (total of 5 points);

   - The annual report on the civil service is *easily accessible online* (1 point).

4   OECD (2019), Methodological Framework for the Principles of Public Administration, http://www.sigmaweb.org/publications/Methodological-Framework-for-the-Principles-of-Public-Administration-May-2019.pdf

- The annual report on the civil service is based on *relevant and updated data* (2 points).

- The annual report on the civil service includes conclusions and/or recommendations (1 point).

- The annual report on the civil service is made accessible before the end of June of the year following the reporting year (1 point).

1.4 Methodology of Survey and Analysis

To facilitate the collection of sufficient information from respective ReSPA members on their HRM information systems, the ReSPA "Survey on the Implementation of Human Resources Management Information Systems from 2017" (Annex 1) was slightly re-designed with a focus on digital transformation of various HRM processes, including scope and comprehensiveness of data collected, data accuracy, reporting, interoperability and data exchange with other relevant systems, ICT infrastructure, use of digital enablers, maintenance, source code ownership, security, as well as the impact of the Covid19 pandemic on human resources management and development in public administrations.

The survey (Annex 1) has five separate sections:

- Hosting, IT infrastructure and maintenance

- Security

- IT systems supporting HRM processes:

  - Personal records management

  - Organization and job classifications

  - Contracts management and related rights

  - Administration of working time

  - Administration of allowances

  - Performance management

  - Records of disciplinary proceedings

  - Training and development

  - E-learning

  - E-recruitment

  - E-testing

  - Automation of day-to-day processes for HR units

- ○ Reporting and business intelligence

- ○ Employees' self-service

- ○ Internal labour market and mobility

- ○ Best practices and challenges faced

- ○ Impact of COVID-19 on HRMD

The survey containing both quantitative and qualitative questions was distributed to all central HR units and their replies were collected. Surveys were first evaluated and, following this, interviews were conducted with heads/representatives of the relevant institutions for further clarification, as well as for identifying best practice. The identified good practice was further elaborated and presented during a two-day workshop held in December 2020 along with several best practice examples from the EU. The workshop strengthened the work of the HRMD WG in the area of digital transformation by facilitating learning, providing a platform for sharing and exchanging experiences on HRMIS implementation, and for discussing trends, practical solutions and ideas.

2

HRMIS Modules

As discussed above, a modern HRMIS should facilitate and automate all human resources management processes and should be a central warehouse of accurate and meaningful information on all aspects of human resource management, which should be available to all authorized users. HRMIS should facilitate a broad spectrum of human resource (people) practices; recruitment, onboarding, training and coaching, job titles and job descriptions, objective setting and performance management, compensation and incentives, and dismissals as well as improving information exchange among different organizations (central HR units and individual institutions) and with other related information systems (payroll, treasury, etc.). Further, it should enable HR reporting and production of statistics, and automate a range of daily HRM activities through automated forms, notices, approvals, certificates, contracts, reports, decisions, orders, billing, and any other standard forms in use. HRMIS should:

- be built on modern BPM, DMS and workflow systems to easily facilitate and automate all human resource management processes and be populated with related data and documents, such as HR planning, recruitment, performance management, training, etc.

- be a modular system, built in separate interoperable modules each supporting separate HR functions (organizational structure, employee register, HR processes, documents and notifications, contracts management, working time management, compensation and benefits, competence and goal management, appraisal and reviews, learning and development, recruiting). In such a way, additional modules can be added at a later stage and the system can be upgraded and customized to accommodate any new office functions and internal processes.

- be a central warehouse of accurate and meaningful information on all aspects of human resource management available to all authorized users.

- enable information exchange among different organizations/organizational units, facilitate data manipulation and statistics, and automate a range of daily HRM activities.

In light of the discussion above, the following HRM functions could be supported by HRMIS:

1: Personal records management

2: Organization and job classifications

3: Contracts management and related rights

4: Administration of working time

5: Administration of allowances

6: Performance management

7: Records of disciplinary proceedings

8: Training and development

9: e-Learning

10: Recruitment

11: Testing

12: Internal labour market and mobility

In later stages of development, some of the following supporting IT modules could also form part of the HRMIS system:

13: Authentication and identification and single sign on

14: Document management system

15: Notifications, e-mail and calendar

16: BPM and Workflow module

17: Data exchange

18: Employees' Self Service Portal

19: Automation of day-to-day processes for HR units, such as reporting and business intelligence

20: System administration

21: Help

Details on each Module are provided in Annex 2.

3

Comparative Analysis

3.1   HRMIS Scope and Functions in the Western Balkans Countries

Based on local legislation and legal requirements, the HR registers have different scopes in different ReSPA members.

In Albania, the HR register was already in place in 2015 but is constantly being adapted to a changing legal framework and business environment. It includes personal records management, organizational structure and job classifications, administration of working time, records of disciplinary proceedings, records of performance evaluation and statistical reporting. The focus in Albania was to include fewer modules in the HR register and ensure it was error free prior to its expansion to the health and education sector. The DoPA has worked with 120 institutions over the last few years to perfect the system, finetune the supporting regulations, connect it with payroll, etc., prior to expanding the system to other institutions. In 2019, they decided that they had enough experience to start including new institutions in the digitization process. Other HR processes, such as performance management, learning, training needs assessment, recruitment, testing etc. are supported through separate IT modules and DoPA is constantly working on their interconnections and interoperability with other related systems, primarily the HR register. All systems use the same government wide interoperability platform (GSB) and a common identification and authentication and notification system.

In Bosnia and Herzegovina, three HRMIS systems were assessed because separate civil service laws apply at various administrative levels. Therefore, the systems in BiH institutions (BiH), the Federation of BiH (FBiH) and the Republika Srpska (RS) were assessed.

The purpose of establishing the Register of Civil Servants in the institutions of BiH was to:

- Improve the process of employment of civil servants in the institutions of Bosnia and Herzegovina,

- Provide professional assistance to institutions in the implementation of personnel policy, organizational improvements and development,

- Improve the efficiency, quality and timeliness of reports as well as information on the civil service in the institutions of BiH to inform the work of the Council of Ministers of BiH and the Parliament of BiH,

- Support the preparation of annual work reports and work plans, and quarterly work reports,

- Support the process of exercising the rights and realization of obligations of a civil servant by providing:

  - records of performance appraisal of a civil servant for use by institutions of BiH, and preparation and submission of a summary report on evaluation to the Council of Ministers of Bosnia and Herzegovina, and

  - records of breach of duty of a civil servant, if a disciplinary measure has been imposed for the same.

These basic functionalities of the register are centralized records keeping of institutions and their organizational structure and of civil servants, while the physical records are kept in personnel files at each institution managed by human resources services or persons in charge of human resources. From these centralized records, different aggregate reports and views can generated. The register has already been developed; however, its operationalization is awaiting a positive decision from the agency for data protection. The register will encompass 65 institutions in BiH and will contain records of around 4,000 employees. In addition, well developed, separate systems for training management, e-learning and e-recruitment exist and are operational, but are not yet connected to the HR register.

RS CSA HR Register includes personal data, personal documentation, employment history, work experience, education and professional development, evaluation, promotion, vacations and absences, salaries, allowances and rewards, disciplinary measures and material responsibility and data related to termination of employment. The register currently holds around 5,500 employee records. Moreover, a separate system for training management is operational and interoperable with the HR register.

In Federation BiH, the HRMIS system is designed as a modern multi-layered web application, with a central database, holding records of employees from all institutions at the appropriate administrative level. Employees have access only to that information related to employees for whom they have line management. Thus, for example, a manager can access data about his subordinates, monitor employee targets, performance indicators and competencies, run performance reports, generate

plans and monitor training and development, and approve various requests initiated through the process flow. The HR officer of an institution manages all HR processes and can access all the data on the system and coordinates all HR areas within that institution. The register became operational in 2020 and encompasses 371 institutions with an estimated 24,000 employees. Furthermore, well developed, separate systems for training management, e-learning and e-recruitment exist and are operational, but not yet interoperable with the HR register, but this is planned in the near future (see picture 1 below).
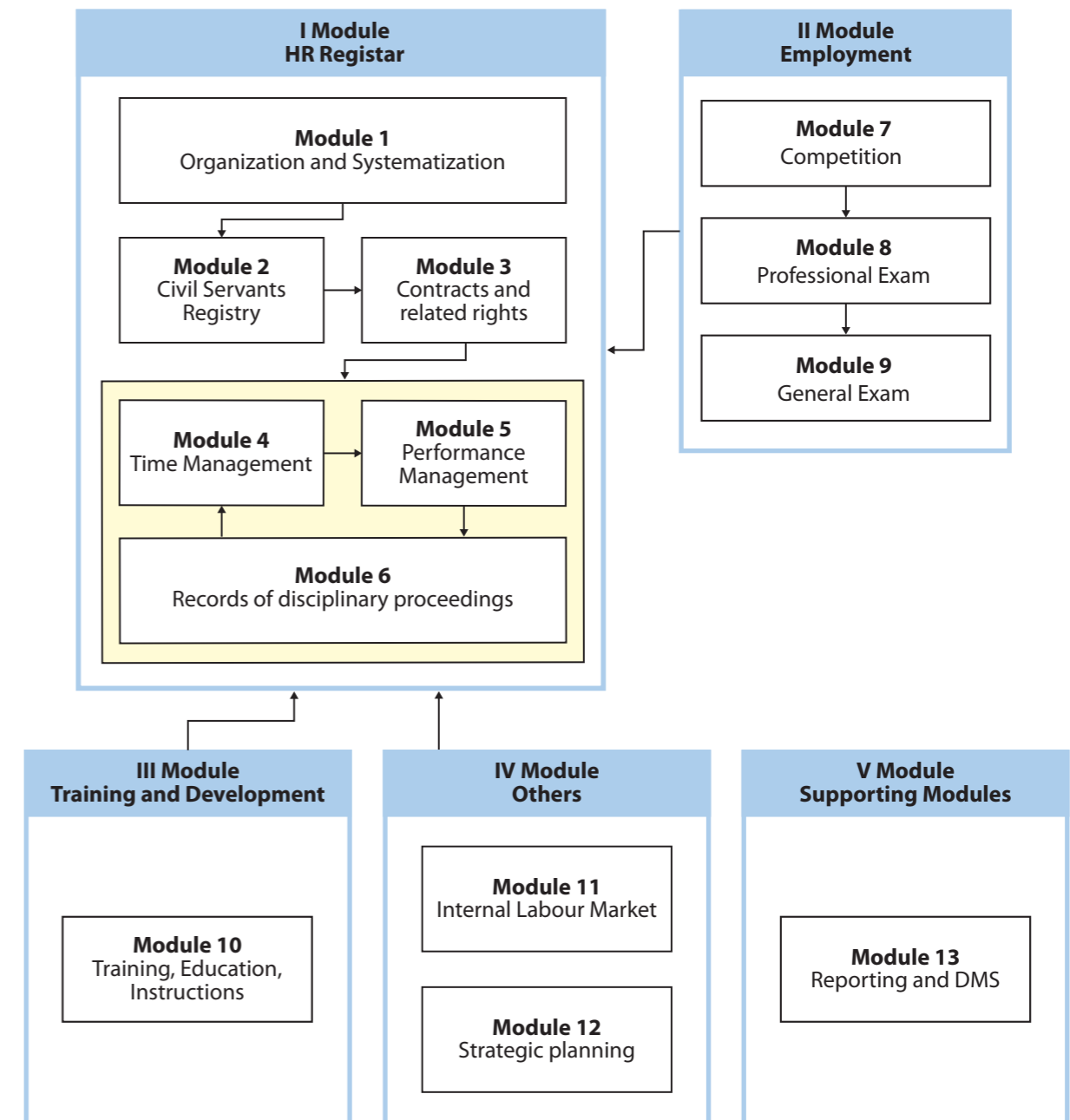
Picture 1: CSA FBiH – HRMIS Modules

In Montenegro, the HR register includes: personal records management, organizational structure and job classifications, contracts management and related rights, records of disciplinary proceedings, performance management, training and development, and the internal labour market. It also allows for statistical reporting and automation of day-to-day practices such as storing of all possible forms, notices, approvals, certificates, contracts, reports, decisions, orders, etc. The register currently covers 112 institutions with approximately 13,000 employees. For the time being, the training module is the only module that has been extended to local governments' units.

In North Macedonia, the HRMIS holds employees' personal records, calculates salaries and manages employees' appraisals. The Human Resource Management Information System is organized into four main modules, as follows: personal records, management of employees' appraisals, calculation of salaries, and reports. These modules manage data on the type of institutions, the organizational structure of institutions, job positions within institutions, employees' personal records, and calculation of employees' salaries, and measurement of employees' appraisals. They allow users to conduct various types of searches, carry out system administration and run various reports.

The following data is collected at the central level:

- personal data (name and surname, name of one of the two parents, gender, personal identification number, date of birth, place of birth, municipality of birth, country, community affiliation, place or residence, municipality of residence, e-mail and telephone,

- data on current employment and previous employment (group, subgroup, category, level and job position),

- data on education, professional qualifications and job competencies,

- data on annual appraisals,

- data on disciplinary proceedings and criminal records,

- mobility data,

- data on the salary and salary allowances

- other data about the employee

- data related to the status, title, mandate, activity, address, organizational structure, job roles and other data related to the public sector institution

Such an extensive set of data obviously provides opportunities for running a wide range of data analysis, reporting and production of business intelligence. For security reasons, the HRMIS system only contains data on the total number of employees for military and civilian personnel in the service of the Army of the Republic of North Macedonia, for officials in the Ministry of Defence, the Ministry of Interior Affairs, the Public Security Bureau and the National Security Agency, the Intelligence Agency, as well as the Financial Police Directorate within the Ministry of Finance.

The plan is to start using soon a performance appraisal module and to digitize the assessment of administrative staff. In addition, well developed, separate systems for training management,

e-learning and e-recruitment exist and are operational, with a plan to make the training management system interoperable with the HRMIS.

In Serbia, according to the current Law on Civil Servants, the Central Personnel Record includes the following data on civil servants:

- person - name and surname, address and unique citizen's number.

- employment - type of employment and the date of commencement.

- posts held within the service from the moment of commencement of the employment in the state administration organ or in the service of the government.

- qualifications, professional exams, training, specialist knowledge and data on professional development.

- the language in which primary, secondary and higher education was conducted.

- length of employment, length of employment calculated for retirement, and benefits related to the length of employment.

- end of service date.

- annual performance appraisal.

- disciplinary proceedings.

- data required for the calculation of salary

- data regarding termination of employment.

- nationality, if the civil servant voluntarily declares this information.

The HRMIS will eventually consist of 14 integrated software modules:

The modules that have been developed are:

- Administrative module – codebook maintenance, system configuration, data migration and user accounts management.

- Central HR Register – employee records management: personal data, employment data, education and qualifications, competences, promotions and awards, work appraisal records, personal and career development records, disciplinary measures and work experience.

- HR Planning – to support the HR Plan adoption process, HR plan record keeping.

- Organisation and Systematization module – to support the rulebook adoption process,

- Recruitment and selection – to support recruitment and selection processes.

- Internal labour market – ILM portal.

- HRMS document management system with electronic sessions support.

Modules that are being developed:

- Work hours management – management of data required for salary calculations.

- Career development and Work appraisals – to support the work appraisal process.

- Professional development – to support HR processes related to professional development.

- User's Portal – Portal for PA employees.

- Helpdesk – a ticketing system for technical support.

- Data Exchange – web services for the exchange of data with the external system.

- Reporting module.

The register currently covers 95 institutions with approximately 25,000 civil servants, but, in the future, the system will be expanded to include all local government units and the judiciary with up to 60,000 employees' records, but it could grow to 250,000 once all public sector employees are included. A module for the Internal labour market in Serbia was established in 2019. Also, a well-developed and operational training and e-learning module exists, which is operated and maintained by the national academy for public administration and development.

To conclude, North Macedonia and Albania are the only countries in the WB to have an HRMIS which includes not just civil servants, but all public employees, including, education and health sector employees.

29%

71%

■ All public employees (Macedonia, Albania)

■ Civil servants only (BiH, FBiH, RS, some expanding to local levels for some functions (TMS: Serbia, Montenegro)
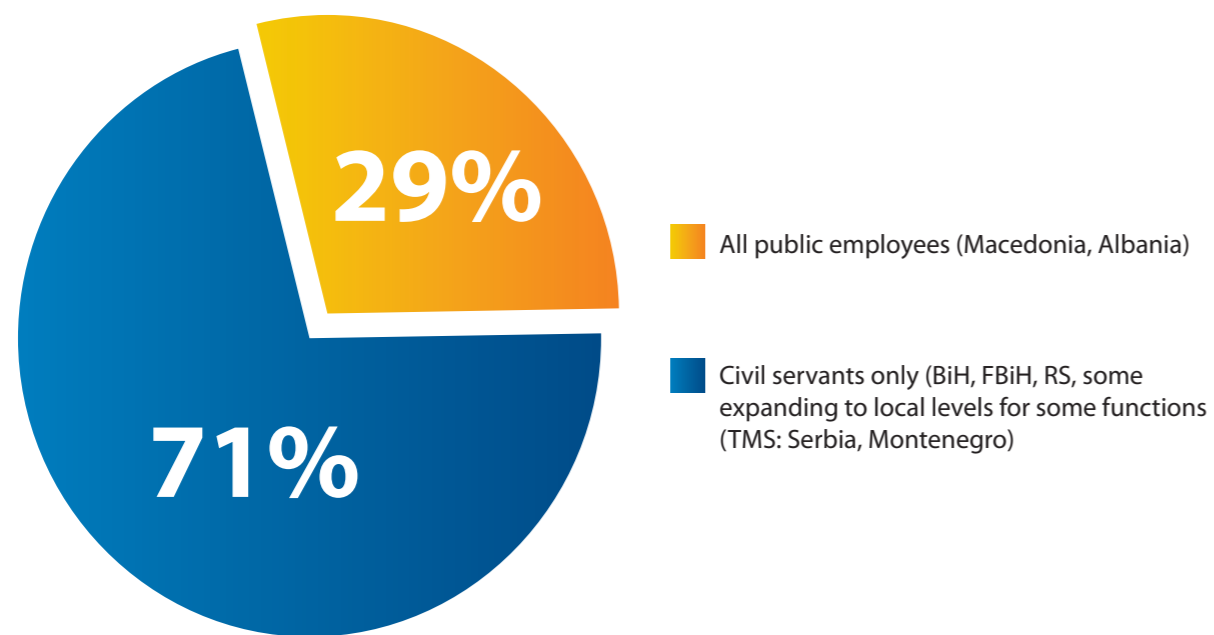
Graph 1: HRMIS Scope in Western Balkan Countries

Due to the planned extent of the system, the HR register in Albania is not yet fully complete and is missing employees' records from the education and health sector, as well as from 50% of local governments units. The actual number of existing employees' records is 60,000 out of expected 100,000. In North Macedonia, 1,324 institutions are already covered by the system while there are some 300 institutions from the health sector that are still to enter their data.

While an expansion of the scope is planned in the long term in most of the ReSPA members, at the moment, the Civil Service Agency in Federation BiH and the Human Resources Management Authority in Montenegro have already included local levels in their current TMS.
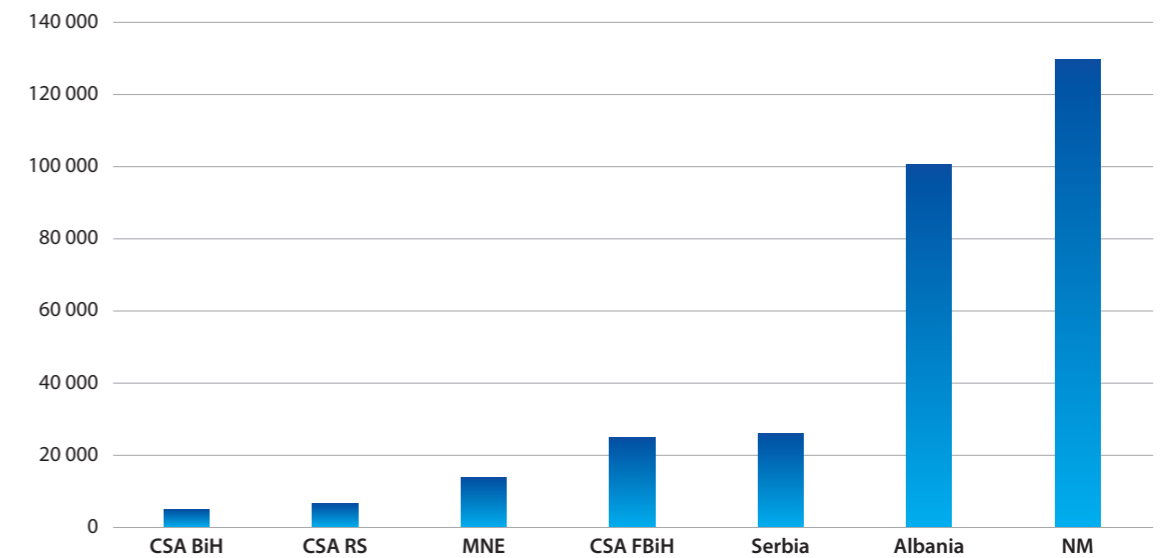
Graph 2: HRMIS Scope in Numbers of Employees

3.2 System Architecture and Data Entry and Accuracy and Interoperability

An integrated central system with distributed data entry is the predominant type of system architecture in the WB. Best practice suggests that an integrated central system with web interface and distributed data entry ensures better data accuracy, as data is more accurate if entered where the records are created (distributed data entry) and central system with web interface significantly reduces costs for system deployment and maintenance, as no installation is required on clients' computers. It is only in Federation BiH that centralized data entry is still carried out, however, with the constant increase in data volume and frequency of data updates, this will soon prove to be unsustainable.

Primary / Central site   Disaster recovery site

Institutions / User computers
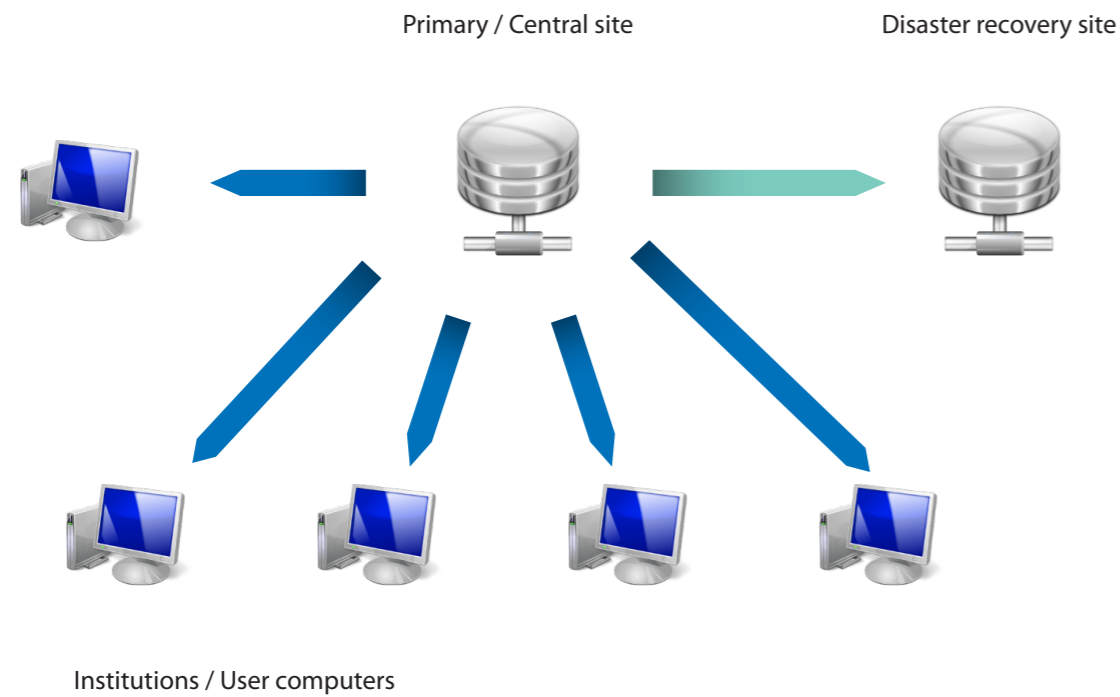
Picture 2: Integrated Central System

14%

86%

■ Central system with distributed data entry at institutions level with central data aggregation

■ Central system with centralized data entry (FBiH)
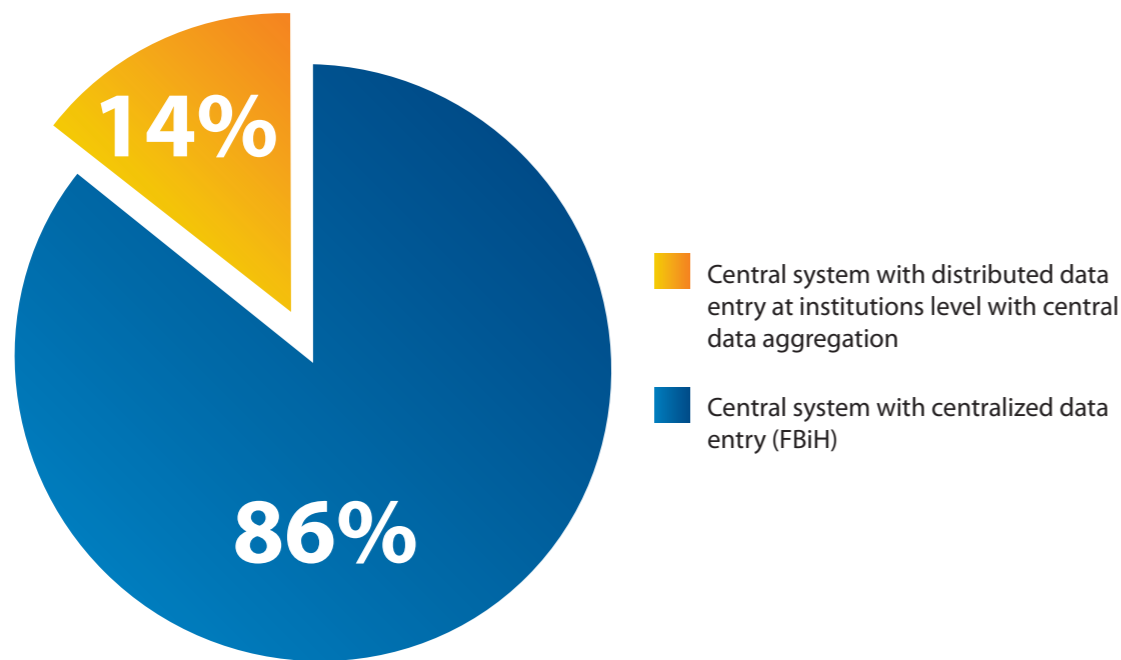
Graph 3: HRMIS Architecture and Data Entry systems in Western Balkan Countries

It is absolutely essential for the success of any database that it is perceived as a trustworthy and reliable source of information. This implies that all data that is supposed to be in the database must be there and that all information in the database is accurate and up to date. ReSPA members acknowledge the importance of data accuracy and have worked hard in the past period to improve data completeness and accuracy by introducing a variety of practices, including: connecting HRMIS with payroll, social security and pension funds databases; writing procedures stipulating responsibilities for data completeness and accuracy; introducing employee self-service where employees can easily detect erroneous personal information and report it; automation of daily procedures, such as contract management, working time, allowances, which require regular data updates and are, thus, likely to drive data accuracy.

In North Macedonia, for example, the system ensures data accuracy through its connection with payroll, but further modernization is envisaged to connect the system with the central population register, and the Pension and Disability Insurance Fund.

One major problem that MISA in North Macedonia has experienced in the past was data accuracy. However, legislation concerning public sector employees was passed stipulating sanctions for institutions that did not enter or update data accurately. This has enabled MISA, in cooperation with the Public Revenue Office, to block salaries until the institution enters or updates data on the system and this has had a significant impact on data accuracy. A new web-service to support this was introduced in the HRMIS in October 2019 and the results are encouraging. Prior to the introduction of this web-service, HRMIS held data on a total of 86,130 employees. Today this number has increased to 101,271, which is a 17,58% increase. To put this in another way, the HRMIS previously held data on 76,40% of the total number of Public sector employees (132,900 – from the Annual Report 2019), while coverage now is 89,83% (see Annex for more information).

ANSWER CHOICES		RESPONSES	
By linking the HR Register with the payroll		57.14%	4
Employers' self-service		28.57%	2
Automating day-to-day processes for the institutions' HR units such as administration, production, transmission, printing, and storing of all possible forms, notices, approvals, certificates, contracts, reports, decisions, orders, etc.		28.57%	2
Having written procedures about data accuracy		71.43%	5
Other (please specify)	Responses	14.29%	1
Total Respondents: 7			

Table 1: Methods to improve data accuracy

As can be seen in the table, almost all ReSPA member states have introduced (or are planning to introduce) measures to improve their data accuracy by interconnecting their HRMIS with other information systems to obtain more accurate data from the data source. However, the best way to link

the data is not by directly linking two related information systems, but through a secure, centralized, interoperable government data exchange platform. In this regard, significant progress in the region has been made through the implementation of government service buses (GSB) through which information from various sources (databases, registers, records etc.) are securely exchanged among the government institutions to increase utilisation of available information. GSB is an integrated structure of hardware and software designed to facilitate exchange of shared government data among government agencies. GSB plays a pivotal role in facilitating business and technological integration among government agencies, which is necessary to fulfil a particular business objective. It is therefore positive that all ReSPA members plan to use recently deployed GSBs for data exchange between HRMIS and other related systems, and this is already the case in Albania.

3.3   Hosting, IT Infrastructure, Security and Maintenance

Most of the ReSPA members host their systems in government data centres, with only North Macedonia and CSA of BiH outsourcing the hosting of their HRMIS systems. The best e-government practice in the region suggests that, in most cases, governments should run their own data centres and government clouds. Moving to cloud computing certainly helps organizations to consolidate their internal infrastructure, and provides more agility in how organizations are able to scale up new resources and push their business forward and might also result in cost savings. Cloud computing is only just emerging in the WB region and all cloud service providers are relatively inexperienced. This makes it difficult to identify a trusted one, as leaving the cloud or migrating can be difficult and expensive, so selection of a trusted cloud provider up front is highly recommended. Trust will be the main key for adoption of outsourced cloud computing by the governments in the WB region since data is stored in the cloud, and the governments must trust that cloud providers will protect data better than if data were stored locally. In addition, data security and privacy requests must be addressed carefully. Obviously, an independent certification or accreditation (such as ISO 27001, ISO 9001 or similar) might help governments to better make decisions about using outsourced cloud-based IT system hosting.

ANSWER CHOICES	RESPONSES	
Internally, within the institution	14.29%	1
Internally, at the government data center	57.14%	4
Hosting outsourced	28.57%	2
Total Respondents: 7		

Table 2: HRMIS hosting modalities

Adequate disaster recovery is provided for by most of the ReSPA members, apart from in the Federation BiH and HRMA in Montenegro. Disaster recovery (DR) involves a set of policies, procedures and tools to enable the recovery or continuation of vital technology infrastructure and the associated systems following a natural or human-induced disaster.

Countries in the WB have adequate backup, physical access and temperature control. Further, all ReSPA members have taken security of their systems very seriously and all HRMIS systems have implemented user-roles-based policies, which provide secure identification, authentication, and authorization, integrity, confidentiality and auditing. Most systems use the PKI infrastructure and SSL certificates for encrypted connections to the system, two-factor, token and smart card authentication.

For identification and authorisation, the most advanced system is in Albania, as it uses centralized government services for identification, authentication and digital signing that are offered by the Albanian National Agency for Information Society, which is the core institution in Albania for ICT, digitalisation of government and public services for citizens, businesses and public administration employees. It provides citizens and business with generic electronic identification, verified electronic signatures, other trust services and reusable technical building blocks such as single sign-on. Use of generic eID for identification, authorization and digital signing in HRMIS is user-centric, as users can use the same ID for any service provided, and it further enhances standardization and security. In parallel, using centralized government building blocks such as single-sign-on brings large savings because it reuses the existing technology, but also further contributes to enhanced standardization and security.

ANSWER CHOICES	RESPONSES	
Identification: All parties accessing the system must be able to identify themselves to the system.	100.00%	7
Authentication: There have to be procedure to verify the identity of the accessing party.	100.00%	7
Authorization: Define set of transactions the authenticated party is allowed to perform.	85.71%	6
Integrity: data must be accurate and complete over its entire life cycle, meaning they cannot be modified in an unauthorized or undetected manner.	100.00%	7
Confidentiality: information is not made available or disclosed to unauthorized individuals, entities, or processes.	100.00%	7
Auditing: All transactions are recorded.	85.71%	6
Availability: the information must be available when it is needed.	100.00%	7
Total Respondents: 7		

Table 3: Security

When it comes to system development, most of the HRMIS systems are developed and maintained by external IT companies, with source codes belonging to the public institutions to avoid lock in. The IT companies usually provide all-encompassing maintenance, with an average annual cost of around 61,000.00 EUROs, including:

- Corrective maintenance – modifying software or correcting issues discovered after initial deployment.

- Adaptive maintenance – modifying software solutions to allow them to remain effective in a changing business environment.

- Perfective maintenance – improving or enhancing software solutions to improve overall performance.

- Enhancements – adding functionality and software innovations.

ANSWER CHOICES	RESPONSES	
Corrective maintenance - costs due to modifying software to correct issues discovered after initial deployment.	66.67%	4
Adaptive maintenance - costs due to modifying a software solution to allow it to remain effective in a changing business environment.	66.67%	4
Perfective maintenance - costs due to improving or enhancing a software solution to improve overall performance.	83.33%	5
Enhancements - costs due to continuous innovations.	66.67%	4
Total Respondents: 6		

Table 4: Maintenance provided by existing contracts

Nowadays, only in rare circumstances, it is possible to state that an information system has been completed. The project might finish, but with technology changing rapidly, information systems must constantly adapt to a changing environment. Therefore, comprehensive maintenance is the key to having an effective system that fulfils its role and swiftly responds to a changing technical and business environment.

3.4 Overview of HRM Functions Supported by Information Systems

Progress in adoption of digital HRM across the region is evidenced by the number of HR processes that have been digitalized. The supporting IT systems are comprehensive, with a high degree of data accuracy and adequate reporting.

Table 5 presents data on the situation in 2020. Boxes highlighted in green represent ReSPA members that had already digitalized a particular HR process in 2017 (Yes). Boxes highlighted in orange represent the progress made in digitalization of HRM functions in Western Balkan Countries from 2017 to 2020, indicating whether a particular HR process has been completely (Yes) or partially (Partially) digitalized in this period or that digitalization is currently ongoing (Planned). White boxes represent member states that are in the process of developing a supporting IT system (Planned) or that do not yet have a plan to automatize a particular HR process (No).

Progress achieved	Albania	BiH - State	BiH - FBiH	BiH - RS	Montene-gro	North Macedo-nia	Serbia
Personal records management	Yes	Planned	Yes	Yes	Yes	Yes	Yes
Organization and job classifications	Yes	Planned	Yes	Yes	Yes	Yes	Yes
Contracts management and related rights	No	Planned	Yes	No	Yes	Yes	Yes
Administration of working time	Yes	No	Yes	No	No	Yes	Planned
Administration of allowances	No	No	No	No	No	Yes	Yes
Performance management	Yes	Planned	Yes	Yes	Yes	Yes	Planned
Records of disciplinary proceedings	Yes	Planned	Yes	Yes	Yes	Yes	Yes
Training and development	Yes	Yes	Yes	Yes	Yes	Planned	Planned
E-learning	Yes	Yes	Yes	Planned	Planned	Planned	Yes
E-recruitment	Yes	Yes	Planned	Planned	No	Yes	Yes
E-testing	Yes	Planned	No	No	Yes	No	Partially
Internal labour market, mobility	No	No	No	No	Yes	Planned	Yes
Employees' self-service	No	Planned	No	No	Yes	Planned	Planned
Automation of day-to-day processes	No	Partially	Partially	No	Partially	Planned	No
Reporting and business intelligence	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 5: Progress achieved in digitalization of HRM functions in Western Balkan Countries from 2017-2020

Table 5 clearly indicates that there has been significant progress made in ReSPA members in the past three years. In general, this period (2017-2020) has been used to strengthen their HR registers, in particular, to expand data sets collected on employees (row 1-5 and 7 in the table above), improve data quality, and/or use the data collected to improve day-to-day processes and statistical reporting (row 15 in the table above). In parallel, work has continued on the digitalization of training and development and recruitment processes. Best practice examples from Albania (recruitment), CSA of BiH (TMS, LMS) and Serbia (LMS) presented in 2017 assisted other ReSPA members in obtaining in-depth knowledge on digitalization of these processes as well as hands on experience. These examples, prompted most ReSPA members to develop similar IT tools to support their own HRM processes. As a result, currently, most of member states have either already digitalized those processes or are actively planning their digitalization.

Concerning the provision of online services to staff or citizens (in case of e-recruitment), this is still mainly at the level of information provision and interaction[5] throughout Western Balkans.

IT tools to support performance management have also been adopted by most ReSPA members, however, interoperability among the HR register and training and development and e-learning modules is still to be established in most of the ReSPA members. This would enable these modules to feed data into the performance management module. The same goes for the ESS module, an expansion that usually comes at the very end of HRMIS development and grants specific rights (read and write) to each employee to securely access the system. This development should ideally involve integration with a government single-sign-on identification and authentication module. Currently, only Montenegro has the module "My personal file" that allows all civil servants to view their own data as well as to communicate with human resources personnel in their institution.

Concerning recruitment and candidate testing, most ReSPA members have computer based multiple choice tests but these are done on unnetworked computers at dedicated centres rather than online. Online testing was not adopted primarily due to difficulties in providing online proctoring and supervising.

In addition, new modules are emerging, for example, in Serbia, internal labour market software is an effective recruitment instrument, which can help to address the staffing needs of state bodies, increasing the internal mobility of employees, facilitating the career development of employees, as well as protecting the employment status of unassigned civil servants (see the inspiring practices chapter for more information).

Paperless HRM seems still to be in its initial stage, as significant amounts of data, documents, certificates and information are still not obtained electronically (see table 6 below).

ANSWER CHOICES		RESPONSES	
phone (%)	Responses	25.00%	1
electronically (%)	Responses	25.00%	1
personal visit (%)	Responses	0.00%	0
written letter (%)	Responses	100.00%	4
I don't know (mark X)	Responses	0.00%	0

Table 6: Methods for obtaining data, documents, certificates and information from other public institutions

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[5]   Informative only - information necessary to start the procedure to obtain the service available on the web
     Interactive - downloadable or printable or electronic forms to start the procedure to obtain the service available on the web.
     Fully transactional - full electronic case handling of the procedure by the service provider including online payment.
     Fully transactional and personalized - proactive, automated and personalized service delivery provided through national portals/one-stop-shops/life events.

However, some good practice exists. In Serbia, for example, a new software solution for professional exams was adopted in 2020 to support administrative decision-making, organizing and conducting qualifying exams and keeping records of exam results. The whole process is completely paperless and utilizes electronic documents, electronic signatures and time stamps.

Now that the necessary groundwork for creating accurate registers and automating various HR processes in all ReSPA members has been completed, further developments to realise the full benefits of paperless HRMD should be expected in the very near future.

Finally, it is important for public organizations to measure staff satisfaction to see if they are doing the right things and if they are doing things right. However, no systematic methods for measuring staff satisfaction have been introduced in ReSPA members nor are these digitalized. However, some tentative initiatives are in existence. In North Macedonia, public employees are asked to reflect upon performance evaluation reports. In Serbia, a quantitative on-line survey on the satisfaction of civil servants is conducted upon exit from public service to monitor turnover rate and investigate reasons for leaving the state administration to try to alleviate any negative impacts of high turnover on the work of the state administration. In Montenegro, HRMA is planning to implement a staff satisfaction survey in the near future as a part of the ESS module.

3.5 Current Practices

Albania:

The COVID-19 crisis has presented an unprecedented challenge for recruitment of civil servants and, in many ReSPA members of the Western Balkans, these procedures have been either suspended or performed only for urgent recruitment or those with a small number of applicants.

The Department of Public Administration (DoPA) in Albania, which is a champion in the field of e-Recruitment among ReSPA members, has examined ways of organising effective recruitment procedures and, in particular, how to replace in-person tests and job interviews with virtual interactions to move the process entirely online. Various online platforms have been introduced, including an online application for vacant positions that has been in use for around five years to date. The government recruitment process has been recently updated, so it is now almost fully digital at all stages, from candidates' applications, evaluation of applicants' files, automatic generation of written tests, and electronic correction of written tests, and online interviews. The solution facilitates coordination between state administration institutions, DoPA and the applicants. The process flow is briefly described below:

- The institution enters the relevant information about the vacancy,

- The information is checked by DoPA and revised if necessary,

- The vacancy is grouped together with other similar positions and then published,

- The applicant (job seeker) builds his/her online profile,

- The applicant applies for that group of positions,

- DoPA staff process documentation electronically through a variety of stages,

- Electronic test (at fixed physical locations) and online video interviews are performed,

- Final results are published.

These changes have not only allowed effective recruitment under COVID-19 conditions, but have also made the process more efficient, transparent, professional, and merit-based as the system does not allow linkage between data on applicant and test results, and all examinations prior to the interview are done anonymously (see Annex 2 for more details).

Bosnia and Herzegovina (BiH):

Very elaborative, cutting-edge modules are in use to support training activities of the Civil Service Agency of BiH, such as a training management system, a learning management platform and a webinar platform. The training management system (www.iLearn.gov.ba) provides end-to-end training implementation support from publishing course notices, through online application and selection of candidates, to course assessment and issue of certificates as well as managing trainers and their performances, contracts and other aspects of training management, making the whole process paperless and more efficient.

The TMS is well developed and provides a customer-centric training portal for all civil servants working in institutions in BiH, and a training management system for BiH CSA staff responsible for training as well as for other institutions for the organization and management of their specific departmental training. All phases of the training, such as organization and administration are supported by the online system. This system provides the following main functionalities:

- Civil servants from all institutions in BiH can self-register and apply for available courses organized by the BiH CSA or other training providers, they can manage their online profile, participate in online training needs analysis, generate personalized transcripts of records and reports, evaluate training, and print training certificates, etc.

- Training administrators from the BiH CSA and other BiH institutions can manage needs analysis, applicants, courses, instructors, and facilities; organize and publish training courses online; evaluate and approve training applications submitted online; electronically communicate with the civil servants and their managers, etc.

- The business intelligence module provides training administrators with information for strategic and operational decision making for further improving the civil service training system.

A learning management platform is used for hosting dynamic online self-access and teacher led courses. It uses the Moodle LMS and provides for effective management of online training content and trainees. This Agency also uses a specialized webinar cloud system[6] that allows classes to be delivered live and on-demand as well as managing training performance data for these types of training.

Following six years of successful practice in delivering online training, the Civil Service Agency leveraged this knowledge in the period of the pandemic and focused on the expansion of the content relevant for civil servants. By providing the possibility of learning from everywhere, at any time, in various modes with distinguished speakers being made accessible, the system has offered tremendous opportunities for trainees to select content and access online delivery. In recognition of this, the Agency was awarded with the prestigious Public Administration Award for 2020 for the Western Balkans, organized by ReSPA and OECD/SIGMA.

Similar patterns of online civil servants training delivery were seen at the entities agencies: The Civil Service Agency of BiH managed to increase training delivery by 100% compared to the same period in 2019, while the Civil Service Agency of Republika Srpska has adopted a customised version of the Training Management System of the BiH Civil Service Agency and used the period of the pandemic to implement this. This demonstrates the ability to adapt a system already in use in the WB rather than building it again from the scratch.

Montenegro:

The HRMA has developed a new HRMIS with new modules, including my personal file, help desk, training and Interoperability with other registers through a single information exchange system and staff planning.

The module "My personal file" is the only ESS module currently deployed in the WB, and it allows all civil servants to view their own data as well as communicate with human resources personnel. All employees can register (even from a mobile phone) and receive a username and password to access their data and, if applicable, can notify HR to correct erroneous data. This functionality is not only improving data quality, but also communication between employees and HR personnel.

The staffing plan enables the presentation of systematized roles in different parts of the of the civil service structure by titles and categories. By creating a personnel plan, the system itself generates reports on different levels with category and titles, as well as the number of employees. The personnel plan contains data on the number of filled posts, fixed-term, or indefinite contracts, as well as the number of vacant posts. It also provides an overview of employees who will meet the conditions for retirement during the year, and the number of available employees from internal labour market.

The training module has been significantly improved with new functionalities including training programs and calendars, databases of trainers, training evaluations, and now has the ability to share employee data with other authorities.

North Macedonia:

The implementation of HRMIS was started in 2014. The system supports; human resources management, workforce planning, hiring, personal files (personal data, education, general competencies, specific competencies, skills and abilities, experience, other information, deregistration, personal documentation), performance management, mobility and salary calculation with benefits including improved data accuracy and simpler and faster salary payments for employees.

The benefits of the system include:

- Enhanced accuracy in the register of public sector employees,

- Automation of processes in human resource management,

- Improved operational efficiency by reducing data processing time,

- Production of statistical reports at different levels (institution or whole public sector)

- Provision of accurate, timely and up-to-date information to employees,

- Cost reductions related to staff management, payroll development, staff development planning and promotion,

- Provision of historical data on developments and changes of the institution as well as the careers of employees.

Unfortunately, HRMIS is not yet used for performance appraisal because the law requires a large part of the procedure to be completed on paper, however, work is being done to simplify and make the performance appraisal process more objective in line with amendments in the new law on administrative servants that will also be supported by HRMIS system changes.

Serbia:

In 2020/21, a new software solution for professional exams was established by the Ministry of Public Administration and Local Self-Government containing modules to support administrative decision-making, the organisation and administration of qualifying exams and record keeping of results. This software was introduced in accordance with the standards of e-government as the first G2G (government to government) system used in public administration in Serbia. A one-stop-shop has been established on the portal of the Ministry, enabling state, and other, bodies and organizations to apply online to take state qualifying exams, special qualifying exams for registrars and the exam for inspectors. The system improves work efficiency in the Ministry and better services to users in the new digital environment in real time. The system meets high standards of information security and personal data protection. All procedures are fully digitized (paperless work), and electronic communication with system users is enabled by integration with a single electronic mailbox established by the Office for IT and eGovernment. Electronic documents, electronic signatures and time stamps have been fully implemented in the system, and, as a result, this project has significantly reduced administrative burdens and costs of services provided by the administration to the administration.

The internal labour market software in Serbia is an effective recruitment instrument, which can be used to efficiently address the staffing needs of state bodies. It increases the internal mobility of employees, facilitates career development of employees and protects the employment status of unassigned civil servants. It is an electronic database holding data on civil service vacancies and the staffing needs of state bodies, as well as on unassigned civil servants or civil servants who want to be transferred to another job position. The records do not contain data marked with a certain degree of secrecy, in accordance with the law, the records on vacancies of civil servants working in security positions such as police officers and those performing security, intelligence work and execution of

criminal sanctions, as well as vacancies in diplomatic and consular missions are limited. However, it includes other state authorities, civil servants and officials in the bodies of the autonomous province and local self-government units, those working in city municipalities and services and organizations established by the competent body of the autonomous province, local self-government units and city municipalities.

It facilitates the following aspects of civil service recruitment:

- State organisations can express their staffing needs more effectively and timeliness and efficiency in filling vacancies is improved.

- Unallocated civil servants can use the internal labour market system to find work.

- Other civil servants and civil servants can use the system to request permanent or temporary transfer to another job in the same or another state body.

The LMS system in Serbia can also be considered an exemplar system as it allows learning from everywhere, at any time, at the user's own pace, while making distinguished speakers more accessible. The National Academy for Public Administration in Serbia won a prestigious award at the South East Europe Customer Experience Awards 2020 for their excellence in Public Administration. The NAPA worked for over a year on the LMS development and created a tutorial called "6 steps to LMS" and provided training sessions to present the functions of the platform. In addition, during the pandemic, 1,600 students and 6 professors have registered on the LMS platform and 1,170 inspectors also registered on the system and undertook online training for supervising measures against the spread of COVID in just three days.

4

Impact of COVID-19 on HRMD and Emerging Technologies

The COVID-19 pandemic has forced organizations in the private and public sector to accelerate transition to digital work practices and arrangements. Human Resource management and development (HRMD) has an important role to play in driving this transition as, firstly, HRMD can help employees to use different digital tools and platforms to do their jobs remotely, and on the other hand, it can help support organizations in their efforts to continue their business processes. The aim of this section of the analysis is to identify the changes that have occurred in the central HR units in ReSPA member states as a result of COVID-19, their responses to the crisis and to present possible digital solutions to still existing impediments to help HR to be more effective and efficient in fulfilling their obligations to their wider government ecosystem. The survey on HRMIS implementation in WB countries was extended to reflect the profound changes that the pandemic has brought to office work. It was adapted to include questions to obtain insights on the responses to the pandemic lockdown, how digitalization and employee wellbeing have been managed during the crisis, and in what way HRM processes were interrupted by the COVID-19. The answers provided by the central HR units have informed the development of a set of recommendations on the digital tools and practices that might be used to alleviate the negative effects.

The following table and graph provide data on the effect of COVID-19 on the work of central HR units of ReSPA Members:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	Total	Weighted average
Human resource planning	0.00% 0	14.29% 1	57.14% 4	14.29% 1	14.29% 1	7	3.29
Recruitment and selection	0.00% 0	0.00% 0	0.00% 0	71.43% 5	28.57% 2	7	4.29
Performance management	0.00% 0	0.00% 0	71.43% 5	14.29% 1	14.29% 1	7	3.43
Learning and development	28.57% 2	0.00% 0	28.57% 2	28.57% 2	14.29% 1	7	3.00
Rewards	14.29% 1	0.00% 0	71.43% 5	0.00% 0	14.29% 1	7	3.00
Managing org. structure	0.00% 0	28.57% 2	57.14% 4	14.29% 1	0.00% 0	7	2.86
Health and safety	0.00% 0	0.00% 0	42.86% 3	28.57% 2	28.57% 2	7	3.86
Personal wellbeing**	0.00% 0	0.00% 0	57.14% 4	42.86% 3	0.00% 0	7	3.43
Administrative HRM operations, including maintaining HRMIS data	14.29% 1	14.29% 1	57.14% 4	14.29% 1	0.00% 0	7	2.71
New work from home practices	0.00% 0	16.67% 1	16.67% 1	50.00% 3	16.67% 1	6	3.67

Table 7: Impact of Covid-19 on HR Processes
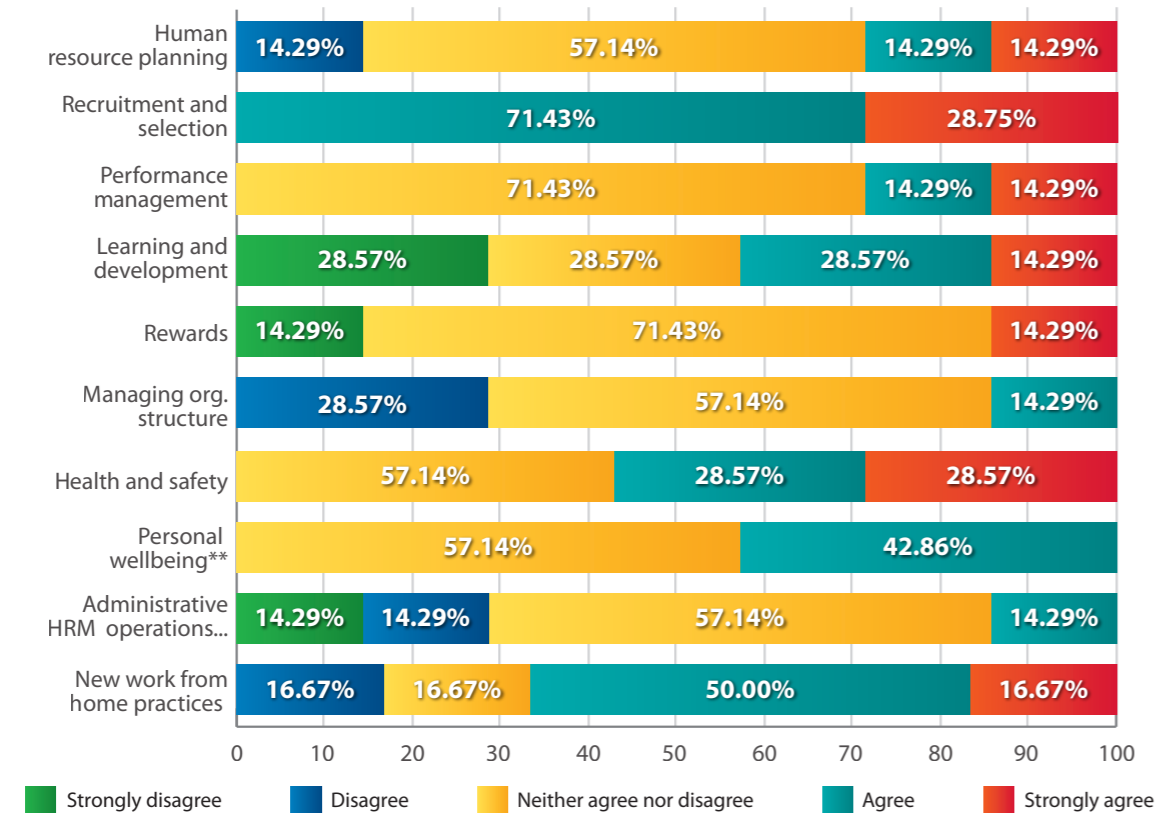
Graph 4: Impact of Covid-19 on HR Processes

The general finding is that most of the HRMD practices have been negatively affected and that HR processes have had to become more agile and more responsive as a consequence of the changed situation.

The following sections presents some of the digital tools that could be added to the HRMD digital toolbox in each of the ReSPA members to alleviate the negative effects of COVID-19 and in general contribute to more accessible and efficient HRMD processes.

4.1 Digital Tools for Recruitment and Selection

The survey has shown that the most affected area of HRMD during the COVID-19 pandemic is recruitment and selection, which is not a surprise considering that the main preventative measure against the virus, which is still in effect, is to avoid physical contact and practice social distancing. A set of digital tools is available to assist when face-to-face contact is not recommended or permitted. In addition, these are also very valuable tools to overcome *location divide* i.e., the fact that people living in distant areas from the location of the central HR unit, are somewhat discouraged from participating in a recruitment process which requires several visits to the central HR unit for different tests in the selection process. In light of this, the central HR units should consider:

- *Introducing e-Recruitment solutions* that allow candidates to apply online for the open job posts. Some obstacles mentioned by the central HR units were lack of digital identities and the limited availability of valid electronic documents, such as diplomas, work certificates etc., required to verify a candidate's eligibility for specific positions. This could be avoided by allowing candidates to apply with soft digital identities (creating accounts with username and password) and with scanned copies of their supporting documents, while the verification of candidates' application could be done for shortlisted or selected candidates only.

- *Introducing e-Testing solutions* that would allow skills tests to be performed with a scoring system customized to match the selection process in the form of an online quiz or using more typical text-based tests. E-Testing would enable recruiters to add video, audio clips, and photos to their questions to make the process more engaging while letting candidates react to real workplace scenarios. The use of e-Testing would eventually build up a database of questions for different types of positions which would enable review and further professionalization of the testing process.

  - E-Testing would also require *online proctoring* that involves supervising digital tests through video to discourage any unethical behaviour by the candidates. HR professionals in charge of managing the testing process would also be able to gain a better understanding of job applicants' outward behaviour, character, and their reactions to test questions through video, which is often more informative than the answers to the questions themselves and should be factored into the selection process. Two types of online proctoring are available:

    - Self-proctored online testing – the e-Testing platform activates the candidates' camera, which then records the candidates taking their tests. The recording is then made available to the hiring HR professional to review if needed. There are

a number of readily available AI (Artificial Intelligence) powered online proctoring services, that can identify and report suspicious behaviour by the candidate and send the incident report to the hiring HR professional for review.

- Human-proctored online testing - mirrors traditional in-person test supervision, but in an online format. Proctors meet with the candidates online, in real-time to supervise the test taking, which is also recorded. AI acts as a second set of eyes for the proctor, constantly monitoring behaviours and alerting the proctor to suspicious activity e.g., lighting changes, unusual noises and looking off screen consistently.

- *Introducing video interviewing* of the candidates. Different video conferencing software tools have already proved to be invaluable tools for organizing different kinds of meetings and conferences during the COVID-19 pandemic. Those tools can further streamline the traditional interview process and increase efficiency. This approach can be used in various stages of recruitment process from the early applicant screening stages to the final interviews. By using the power of web-based video communication systems, HR recruitment specialists can save both time and money while increasing the overall quality of their candidate pool. Two types of online interviewing are available:

  - Pre-recorded interviewing – where applicants complete the interview by responding to pre-set questions, which the system records, meaning that no HR recruiting professional or selection committee is involved the interview. The candidates' videos are then submitted to the selection committee/panel for review at their convenience. In addition to avoiding physical contact, this technology eliminates the need to schedule interviews and, since a selection committee/panel would not be performing the interviews themselves, it would allow an unlimited number of interviews to be done at the same time. The solution could enable HR recruiting professionals to optimize the interview by limiting the time candidates are given to respond. These time savings would allow selection committees to better manage their time and to focus their attention on evaluating the quality of their candidates. The pre-recorded interview system could also enable other potential innovations in the recruitment process, such as: sharing candidate response videos with anyone in the team, including the manager (if not a member of the selection panel) and other co-workers for more detailed evaluation and feedback, enforcing structured digital interview questions into pre-recorded video interviews, minimizing hiring bias by re-watching video responses, and arriving at a hiring decision more fairly.

  - Live video interviewing - mirror traditional in-person interview, but in an online format. Tools already in widespread use such as Zoom, Google Meet, WebEx, MS Teams etc. enable HR recruiting professionals and the selection committee/panel to have the same experience of an in-person interview without the problem of coordinating a time when everyone can be in the same location while reducing costs for the candidates by eliminating travel. All live video interviewing platforms include the option to record entire interviews, allowing the interview to be reviewed at a later time. This eliminates the need to rely on memory or notes in any appeal process as central HR units would access to the interviews.

These kinds of changes would require some legal changes, but there is a need to differentiate between compliance in the legal context of each ReSPA member state and compliance with internal policies and procedures by central HR units that can be easily redesigned and aligned with these tools to provide greater agility and flexibility.

4.2 Digital Tools for Training and Development

The COVID-19 crisis has resulted in a significant increase in online training delivery to civil servants in all Western Balkan ReSPA members. One of the winners of the first Western Balkans Public Administration Award contest was the Civil Service Agency of Bosnia and Herzegovina which reacted quickly to the new reality imposed by the pandemic by designing and delivering a series of relevant webinars. Likewise, in other ReSPA members, much of the training that had started as face-to-face training in classroom environments has been shifted online. Furthermore, time freed up for civil servants by flexible work schemes potentially could be usefully spent in further training and development. Overall, the crisis has been a powerful test of the potential of civil service training and development online. The central HR units should consider:

- *Developing digital communication skills* – these will be instrumental, not just for the successful participation in online learning events but also in the new work-from-home reality for the civil servants and in addressing the associated challenges of preserving productivity and efficiency. Although many civil servants are working intensively with ICT, many have had only limited experience with this form of work organization. The trainers themselves would also need to expand their digital communication toolbox to be able to exploit the options offered by these tools to the optimal level.

- *Motivating online learners* – This is key to successful online training and development for civil servants. Evidence from Massive Open Online Courses (MOOCs) shows completion rates as low as 10%. During the pandemic, time constraints have become even more likely to interrupt learners' participation in training and development. Many civil servants are not able to incorporate training into their work-from-home arrangements, mixed with family responsibilities. Lack of motivation may, therefore, become a significant barrier to successful completion of online learning. However, there is a set of options for central training departments within government HR units to address this as follows:

  - Create virtual social environments for online learning – by actively engaging trainer and civil servants through virtual community/communication platform such as *Slack, MS Teams*, or even *Viber* or *WhatsApp*, a high sense of belonging to a learning community and peer collaboration could motivate learners to be active in online learning.

  - Engage the civil servants with real online workshops – using tools like *Mural* and *Miro*, that can approximate the interaction which happens in a classroom environment to online training. Visually collaborating with trainers and other civil servants provides opportunities for everyone to contribute ideas and opinions, making learning sessions exciting and interesting. Visual collaboration tools used with video conferencing (an integrated software version is likely to become available soon) can be a gamechanger in training delivery, particularly with an integrated software version that is in development.

- *Introducing mobile-first, on-demand micro-learning options* – these micro-options deliver short, focused training sessions and activities to civil servants at regular, ongoing intervals. This repeated exposure to small training segments (text, short video, short audio), along with interactive elements (games, tests, quizzes) and assignments for learners to apply what they are learning, builds knowledge retention. Online micro-learning should be implemented during the COVID-19 crisis not just because it is effective and engaging, but because it is short and easy-to-complete. As previously stated, this is very much relevant for civil servants either having difficulties managing work-from-home and family responsibilities or simply not having the emotional capacity to engage with longer e-Learning courses. Use of emerging technologies, such as Artificial Intelligence, can help in creating very engaging, short learning content, and simulating online coaching on specific topics, where an AI-powered bot with natural language processing capacity serves as a coach. This could be a very effective approach to support civil servant onboarding and mandatory training for newly employed staff.

- *Enable learning by exposing civil servants to new projects and experiences* – through virtual mobility schemes. Civil servants would benefit from developing and learning new skills while being engaged on projects outside their institution, strengthening and expanding their professional network by building mutually beneficial relationships with colleagues from other institutions while enhancing civil servants' resumes with different experiences, providing opportunities for increased visibility within the government, which should result in increased opportunities for further development and career growth. Using digital tools such as video conferencing, visual collaboration and typical office software could create a cost-effective and flexible alternative to the typical in-person programs. From a personal wellbeing perspective, the social interaction and occupation with external projects might positively alleviate the negative effects of social distancing from COVID-19.

4.3 Digital Tools for Performance Management

COVID-19 has exposed some deficiencies in the performance management function. Goals set at the beginning of 2020 may no longer be relevant anymore due to discontinued projects, fast-changing priorities, and emerging needs. Year-end performance appraisal without relevant or updated goals can result in in poor outcomes and a mechanical process. Remote working makes many managers feel they do not have good visibility into civil servants' performance, and vice-versa. Moreover, many civil servants lack the guidance and leadership of their managers. The pandemic crisis has accelerated movement towards more modern and agile performance management practices. As SIGMA notes, teleworking requires not only technical infrastructure (hardware, internet connection, access to IT systems and paperless workflows), but also adjusted management skills, oversight arrangements and collaborative tools[7]. The central HR unit should consider the following options:

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7   SIGMA– Joint initiative of OECD and EU. 2020. Public Administration: Responding to the COVID-19 Pandemic Mapping the EU member states' public administration responses to the COVID-19 pandemic (for EU Enlargement and Neighborhood countries)

- *The goals management and performance appraisal process should be performed through the information system so* it can be performed in the way that reflects work reality. Goals should be updated on a real-time basis so that civil servants and their managers can introduce new emerging goals and manage priorities as well as discontinue ones that no longer apply. The performance appraisal discussion then becomes an ongoing alignment on what work adds the most value to the citizens and businesses the organization serves and what the indicators of success are. There might be a need to re-think the current annual goal setting and performance appraisal and, where appropriate, to introduce a more agile, ongoing process (or at least, a more frequent process) so that obstacles in achieving goals or developments can be immediately addressed. More frequent performance appraisal should be streamlined, be more meaningful and simplified as much as possible, both from the perspective of process and content, so it is a useful tool for managers, rather than another administrative burden. This would help avoid long-term planning paralysis and make the management of civil servant teams more effective. One such system could be a 360-degree feedback process or different forms of agile retrospectives[8] where feedback is a responsibility shared by all members of the team (manager, peers, and including self-appraisal) that would happen routinely and frequently. Furthermore, previously set behavioural goals or competencies may need to be reprioritized to reflect the pandemic reality – emphasizing those behaviours and competencies that best match the new work-from-home challenges. The last year, under conditions of a pandemic, has shown how inappropriate it is for central HR units in the ReSPA members to use performance management reviews involving a face-to-face conversation between a civil servant and his/her manager or based on form filling. It is difficult to justify current, paper-based performance appraisal processes because the physical sharing of paper poses a risk of infection, which could be avoided with the use of digital forms in a performance management information system. Face to face conversations can be easily replaced with video conferencing for the same reason.

The results [9] presented in the ReSPA report (2020) "Towards Effective Performance Appraisal in the Western Balkans: How to develop performance?", show that none of the ReSPA members had fully utilised specifically designed software which would enable more effective online communication and tracking of civil servants' performance during the COVID-19 pandemic. Also, the mere fact that the individual staff performance appraisal procedures (ISPA) are largely conducted in a traditional manner, without online tools to conduct performance interviews or to complete ISPA forms, has further impeded effective performance appraisal. In parallel with the introduction of a performance appraisal information system, the ReSPA report suggests wider use of diverse digital communication tools to track performance and provide feedback/coaching to civil servants, as well as removing impediments to paperless ISPA procedures including, if necessary, online performance interviews. Additional digital tools that would enable

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8   A number of simple and engaging personal and team retrospectives e.g., "Start, Stop, Continue", "Mad, Sad, Glad" etc. could be used even in parallel with the formal appraisal process. Also, there a number of digital tools that could support provision of peer feedback asynchronously or in real time.

9   2020 ReSPA report "Towards Effective Performance Appraisal in the Western Balkans: How to develop performance?" presented the results of two surveys conducted among managerial and non-managerial staff and feedback received from the members of the ReSPA Working Group on Human Resources Management and Development on the performance appraisal system performance, especially during the COVID-19 pandemic.

online check-in/check-out, electronic archive/uploads of relevant documents, and discussion threads should be considered as well including training programmes and other capacity building opportunities for both appraisers and appraisees to enhance the responsiveness of ISPA procedures to emergency situations.

4.4 Digital Tools for Health, Safety and Personal Well-being

The COVID-19 pandemic has brought health, safety issues and personal wellbeing to centre stage and highlighted the HRM function in managing the health, safety, and personal wellbeing of employees. Best practice approaches to ensuring better health, safety and wellbeing consist of several common measures;

a) Providing clear and consistent communication on health risks and available health resources

b) As the pandemic is entering in the second year, fatigue and exhaustion may be setting in, and the mental health problems caused by isolation and uncertainty are becoming more frequent. Central HR units could start to address this problem by using its training and development function to organize a series of webinars for civil servants building awareness on how to live through a pandemic, how to overcome pandemic fatigue and exhaustion and how to keep themselves psychologically healthy, highlighting the emotional implications for civil servants and their families

c) Introducing flexible work arrangements that formalize where, when, and how civil servants do their work. If the pandemic continues over a lengthy period, as is likely, and requires entire households to be house-bound, there is more potential for civil servants to experience increased work-life conflict. This is why it is important to clearly communicate and manage work expectations and helping civil servants to maintain their family responsibilities

d) Helping civil servants to work from home in a healthy manner. There are many simple and cost-effective ways to encourage healthy lifestyle habits. For example, encouraging healthy work practices such as working within regular hours and taking regular work-breaks will help employees to switch off from work and take care of their physical and mental health.

From the viewpoint of digital solutions that support the health, safety and personal wellbeing of civil servants, the central HR units of ReSPA members should consider:

- *Development of a mobile app for civil servants'*– that would serve as an additional communication channel from central HR units and civil servants that could provide better access to available resources (guidelines, instructions, webinars' opportunities, etc.) during the pandemic and beyond. The app could facilitate the onboarding experience and ensure full understanding of government organizational practices, provide resources on civil servants' obligations and rights, improve access to operational policies, and procedures for common horizontal processes and, in addition, serve as a mobile version of the HRMIS self-service module. For civil servants in managerial positions such an app could provide the ability to carry out approvals, rejections, and budget-check functions.

4.5 Changing role of central HR units in promoting government-wide agility

The COVID-19 economic and social disruption has put to the test the Western Balkans governments and their ability to respond and adapt to the new reality. The practices we outline in this report were once considered almost impossible but became the new way of working almost overnight. This rapid increase of digital tools used in government operations is changing the traditional view of government administrative models and practices and civil servants' capabilities. It has become evident that governments' digital transformations have positively affected their ability to be more innovative and agile. Digital transformation enables agile transformation which then suggests the possibility of new digital initiatives, which can react more quickly to the changing social conditions and needs of citizens and businesses.

This newly discovered ability to innovate and adapt swiftly to new circumstances is likely to underpin economic and social growth in the post-pandemic period. The greatest contributor to this new-found government agility will be managers and leaders within government organizations. This is why the agenda and practices of central HR units is likely playing a key and central role in transforming and enabling the governments to embrace digital innovations and agility. The traditional transactional HR policies and practices are clearly outdated. The pandemic has provided central HR units with the opportunity to become truly strategic by exploring, understanding, and instilling a culture of digital innovation and agile practice throughout the government.

This requires the central HR units to re-examine the way they support the government to help it innovate and transform in the future and many of these changes will require real mindset shifts in government leaders and HR managers. The following table provides some examples of the kind of shifts in mindset that are likely to be required:

From:	To:
HR units are transactional, machine-like in supporting departments.	HR units are enablers of people and organizational transformation.
HR units are peripheral to public administration reforms, focusing on functional civil servants' skills.	HR units drive an organizational culture and environment that enables public administration reforms.
HR units focus on individuals.	HR units focus on teams of civil servants.
HR units recruit functional talent.	HR units recruit and retain cross-functional talent.
HR units serve fixed, hierarchical, siloed government structures.	HR units promote and support team-based, networked, and flexible government structures.
Civil servants are rewarded individually.	Government teams are rewarded.
Performance appraisals are conducted annually for individuals.	Performance appraisals are conducted continuously with a team-based focus and include peer feedback, with shorter formal performance inspections.
HR units implement a one-size-fits-all development plan for civil servants.	HR units support development based on individual civil servants' needs as well as team driven development plans.

Even if the governments in the Western Balkans are not yet ready for or not even thinking about such a substantive agile transformation, the central HR units could and should explore and practice agility in their departments. This will ensure that they are agile and able to serve the government leaders, civil service managers and civil servants in a quicker way with solutions that are focused on current challenges and opportunities, but also to be an exemplar on how government departments can be inspiring places of work that embrace innovation, and demonstrate agility in their daily work and constantly strive to improve.

5

Conclusions and Recommendations

The importance of automation of HRM has been clearly recognized by HRMD WG members and this is reflected in recent progress that has been made in this area across the region. All ReSPA members in the region have already developed their HRMIS systems partially or fully, and the focus now is on data utilization and analytics for creating policies, interoperability, use of shared government building blocks, such as single-sign-on and GSBs, change management, user experience etc. Central HR units in the ReSPA member states should continue to find new ways to achieve better business results with greater simplicity, relevance and delivered in a way that is appealing to the civil servants and their managers and move toward true digital transformation, keeping two important aspects in mind:

- *Automation of HR functions is not enough* – if we step back and look at what central HR units have done in the past, we see a consistent focus on HR function automation that brought about repeatable, often easier and faster HR transactions, yet that were fragmented and disconnected. Digital transformation does not equal automation and is much more than this. Digital transformation creates an all-in civil servant approach, beyond automation, with innovative HR products and services which improve the business agility of the government, provides more comprehensive and effective use of the 'people potential' in government, and develops a more digital and innovative workforce.

- *HR work will be reimagined* – citizens, and also civil servants' expectations of government are evolving faster than the government is evolving itself. Many current civil servants, and

potential applicants to the civil service, believe it is very important to work for a digitally enabled organization or a digitally skilled manager/leader and that the workplace should promote a culture of innovation, professionalism, expertise, and a strong sense of purpose. COVID-19 has shown how a prompt and effective government response is essential for the basic functioning of daily life, society, and the economy. The central HR unit role is to support the government in improving its ability to sense, adapt and quickly respond to current and future crises quickly and effectively.

The importance of digitalization of HR processes needs to remain in focus to facilitate process agility, responsiveness to social challenges and adaptiveness to the current context. Central HR units in the ReSPA members should continue to find new ways to achieve business results with greater simplicity, relevance, and in a way that is appealing to civil servants and their managers, they should embrace digitalization, innovation and agility. There is generally a strong interest to achieve this, and to build digital capacities, enhance digital skills and learn from other ReSPA members, to share experiences and innovative practice on the use of emerging technologies and how they can affect HR functions and this should continue.

There is little alternative to embracing digital transformation toward paperless and innovative HRMD and, therefore, changes in the business environment and legal framework need to be closely coupled with improvements in supporting IT systems. The ReSPA members should focus now on interoperability and connecting various HR systems into one networked whole. The same applies to digital government-wide enablers such as generic eIDs and shared digital building blocks, such as single-sign-on and GSBs, that should be reused and integrated with the current IT systems. For this, building e-Government and HR synergy and strengthening the cooperation among e-Government and HR groups will be beneficial. The focus should also be on improving the sophistication of HRMD services provided to staff and citizens, toward fully transactional services, focusing on user experience and centricity. The digital tools identified in this study could be deployed to alleviate the negative effects of COVID-19 and, in general, this should contribute to more accessible and transparent HRMD processes.

Recommendations for ReSPA Members

Digital transformation of HRMD functions:

- Continue introducing changes in the business environment and legal framework to facilitate innovative HRMD functions and closely couple these with the improvements in supporting IT systems.

- Continue working on interoperability and connecting various HR systems into one networked whole. For example, the performance management module should be able to pull together data from the HR register, the training and development module and e-learning, which should help avoid duplicating data entry.

- Promote the use of e-Government enablers such as e-ID and trusted services (e-Sign and registered delivery) in HRM systems and use of shared building blocks such as interoperability platforms and SSO in HRM systems.

- Continue improving the sophistication of HRMD services provided to staff (ESS, TMS, LMS) and citizens (e-recruitment).

- Deploy some of the digital tools identified in this study to alleviate the negative effects of COVID-19 and to contribute to more accessible and transparent HRMD processes.

- Work on improving the user experience – the user experience is now recognized as being essential to the take-up of online services and use of IT systems. This is a complex aspect to measure as it is affected by culture and norms. It also requires more in-depth measurement, beyond the front-of-office website. User experience should cover aspects of usability, transparency, privacy and multi-channel policy as well as the possibility for users to give feedback on the quality of services:

  ○ Transparency: This should allow for progress tracking and tracing, services to be conducted in stages and provide an indication of time duration for service completion.

  ○ Multichannel provision: Can the service be obtained through other channels than online (e.g., mobile friendly, call centre, e-mail).

  ○ Privacy protection: privacy regulations concerning personal data usage should be in place.

  ○ Ease of use: adequate support such as interactive help, FAQ, demo and live support etc. should be available.

  ○ User satisfaction monitoring: some form of user satisfaction monitoring, feedback options and/or complaints management should be provided.

  ○ Accessibility: Compliance with Web Content Accessibility Guidelines (WCAG1.0 standards)[10]. Paperless HRM should also be promoted and implemented, cloud-based technologies should be demystified, while use of e-signatures and digitally signed HR forms and templates should be promoted.

Capacity building:

- Build capacities for advanced data analytics and business intelligence in HRM: Big data analytics should assist HR managers to better understand what drives performance among their workforce, why one employee outperforms another, why certain leaders thrive and others do not, and they should help more accurate predictions about whether a candidate will really perform well in a given institution. Currently, the vast majority of hiring, management, promotion, and rewards decisions are made on gut feeling, personal experience, or public administration belief systems. Overall, data analytics should help better inform HR managers' decisions.

- Build capacities for improving and extending IT: Every IT landscape must change over time. Old technologies need to be replaced, while existing solutions require upgrades to address more demanding situations. Finally, new IT solutions need to be to rolled out to

meet business demands. As the Digital Age transforms many industries, the rate of change in IT is ever-increasing and difficult to manage if adequate preparations are not made. Best practice suggests that one of the best ways to do this is through the Information Technology Infrastructure Library (ITIL) that provides a set of best practices for change management that makes it easier for IT professionals to roll out and prioritize changes efficiently, and keeping the digital transformation in HRMD on track and at the top of the agenda.

- Continuously work on enhancing digital skills.

- Continuously work on building e-Government and HR synergy.

- Explore ReSPA's mechanisms of support to help drive IT development, such as in-country support mechanism, mobility scheme, peer to peer mechanism.

Recommendations for ReSPA

Knowledge exchange and sharing:

- Sharing of advanced individual IT modules (e-learning, TMS, e-recruitment) that have already been developed by ReSPA member states, including information on their localization and adaptation. ReSPA's existing in-country support and peer-to peer mechanisms are available to support this kind of knowledge exchange and sharing between interested ReSPA members, for example, to prepare ToR and supervise the customization of systems that have been successfully implemented in one or more ReSPA members.

- Building capacities to create high quality, interactive and engaging training modules, which include self-testing and evaluation, the use of blended learning methods, webinars etc. In addition, ReSPA could organize workshops to provide insights into these readily available methods and tools and ways of using them.

- Facilitating 'Design Thinking' workshops, for selected HRMD functions, where the knowledge of key HR professionals can be shared to create actionable plans on innovating HRMD practices e.g., how to innovatively address the professional development needs of civil servants or how to redesign the performance appraisal system etc. The design thinking process could be used to come up with experimental designs for employee-centred HR solutions, and the associated tools, and processes. The ultimate goal would be to shake up the status-quo and bring more innovative thinking into specific functions of HRMD (recruitment, talent development, performance appraisal, etc.).

- Defining a Specialised Training and Capacity-Building Programme on Digital Government Transformation, with dedicated modules on AI for the Public Sector, including, in particular, AI and HRMD. This should include technical assistance to support strategic policy design and the setting up of a common monitoring and evaluation system to benchmark progress in the region, as well as implementing a peer-learning system at policy and technical level, involving local and international academic partners and relevant stakeholders and international organisations.

- Building capacities for agile governance, exclusively from the HRMD perspective, by developing the leadership and innovation skills of managers and promoting a different organizational culture in government bodies.

- Showcasing innovative practices and use of emerging technologies, such as AI, cognitive processing, embedded analytics etc. and how they can positively impact on HR functions.

- Promoting digital staff satisfaction surveys.

- Strengthening cooperation among e-Government and HR groups.

Annex 1

Survey on HRMIS Implementations in ReSPA Members

1 GENERAL

Country	
Institution	
Web site	

Responsible staff	**HR officer :**	
	Name	
	Function	
	Contact phone	
	Contact e-mail	
	IT officer :	
	Name	
	Function	
	Contact phone	
	Contact e-mail	

2 HRMIS

2.1 Hosting, IT infrastructure and maintenance

Where is HRMIS hosted (please circle relevant answers)?	• Internally, within the institution • Internally, at the government data centre • Hosting outsourced	
Is physical access controlled?	• yes	• no
Is temperature adequately controlled?	• yes	• no
Do you have "disaster recovery system"?	• yes	• no
Is service infrastructure in place to enable data exchange with other systems? If so, please elaborate in more detail.	• yes	• no
Is the system developed in-house? If so, please elaborate in more detail.	• yes	• no
If not, do you own the source code of the system? Please elaborate in more detail.	• yes	• no

Do you maintain the system in house? Please elaborate in more detail.	• yes	• no
If not, please specify the cost of annual system maintenance and please circle what is included:	• Corrective maintenance – modification of software to correct issues discovered after initial deployment. • Adaptive maintenance – modification of software solutions to allow them to remain effective in a changing business environment. • Perfective maintenance – improving or enhancing software solutions to improve overall performance. • Enhancements – updating systems with the latest developments.	

2.2 Security

Do you have PKI infrastructure in place?	● yes	● no
If yes, is it outsourced or in house?	● outsourced	● in-house
Please provide a short technical and functional description.		
Please explain reasons for this decision		
What kind of authentication mechanism is used for accessing personal records? Please elaborate in more detail.		
Are usernames and passwords used on your systems?	● yes	● no
Is a domain controller used?	● yes	● no
Is your system based on certificates?	● yes	● no
Have user roles-based policies been produced with user rights? Please elaborate in more detail.	● yes	● no

Please circle what is supported:	● Identification: all parties accessing the system must be able to identify themselves to the system. ● Authentication: there are procedures to verify the identity of the accessing party. ● Authorization: there are a defined set of transactions the authenticated party is allowed to perform. ● Integrity: data is accurate and complete over its entire life cycle, meaning it cannot be modified in an unauthorized or undetected manner. ● Confidentiality: information is not made available or disclosed to unauthorized individuals, entities, or processes. ● Auditing: all transactions are recorded. ● Availability: the information is available when it is needed.

2.3 System support to HRM process

2.3.1 HR register and its related modules

Please circle the modules you have within the integral HR system (if modules are separate systems, please complete the separate table below) and add any additional information.	- Personal records management - Organization and job classifications - Contracts management and related rights - Administration of working time - Administration of employees' contributions - Employee self-service - Records of disciplinary proceedings - Performance management - Training and development - E-learning - Recruitment - Staff satisfaction survey - Automation of day-to-day processes for the institutions' HR units such as administration, production, transmission, printing, and storing of all the necessary forms, notices, approvals, certificates, contracts, reports, decisions, orders, etc. - Statistical reporting - Other, please specify:

Scope	- All public employees, including, for example, schools and health sector - Civil servants only - Other, please specify:
Data entry	- Centralized - Distributed to institutions with aggregated data at central level - Distributed to institutions without data aggregation - Other, please specify:
What kind of data is aggregated or collected at the central level?	
How do you ensure data accuracy and quality? Please circle all applicable options.	- By linking the HR Register with payroll - Employers' self-service - Automating day-to-day processes for the institutions' HR units such as administration, production, transmission, printing, and storing of all necessary forms, notices, approvals, certificates, contracts, reports, decisions, orders, etc. - Having written procedures about data accuracy - Other, please specify:

Name of application	
Short functional description of the application	
Is data exchange supported? Please circle all separate systems with which data exchange is supported	• Training module • Performance management module • Citizens register • Payroll system • e-learning • Authentication and identification • e-mail and calendar notification • Other, please specify:
Number of users	
Obstacles faced	

2.3.2 Performance management, if not part of the integral system

Scope	• All public employees, including, for example, schools and health sector • Civil servants only • Other, please specify:
Data entry	• Centralized • Distributed to institutions with aggregated data at central level • Distributed to institutions without data aggregation • Other, please specify:
Name of application	
Short functional description of the application	

Is data exchange supported? Please circle all separate systems with which data exchange is supported	• HR register • Training module • Authentication and identification • e-mail and calendar notification • Other, please specify:
Number of users	
Obstacles faced	

2.3.3 Training and development, if not part of the integral system

Please circle the modules you have and add any additional ones	• Training and development • E-learning • Employees' self-service • Other, please specify:
Scope	• All public employees, including, for example, schools and health sector • Civil servants only • Other, please specify:
Data entry	• Centralized • Distributed to institutions with aggregated data at central level • Distributed to institutions without data aggregation • Other, please specify:

How do you ensure data accuracy and quality? Please circle all appropriate.	• By linking the HR Register with the payroll • Employees' self-service • Through HR units of the institutions by automating day-to-day processes for the institutions' HR units such as administration, production, transmission, printing, and storing of all necessary forms, notices, approvals, certificates, contracts, reports, decisions, orders, etc. • Having written procedures about data accuracy • Other, please specify:
Name of application	
Short functional description of the application	
Is data exchange supported? Please circle all separate systems with which data exchange is supported	• HR register • Performance management module • e-learning • Authentication and identification • e-mail and calendar notification • Other, please specify:
Number of users	
Obstacles faced	

2.3.4 Recruitment, if not part of the integral system

Please circle the modules you have and add any additional ones	• Recruitment • E-recruitment (electronic job applications, notifications) • E-testing • Other, please specify:
Scope	• All public employees, including, for example, schools and health sector • Civil servants only • Other, please specify:

| What is the level of sophistication of e-services provided? | Informative only - information necessary to start the process of accessing the service available on the web Interactive, downloadable, printable or electronic forms to start the process of accessing the service available on the web Fully transactional - full electronic case handling of the procedure by the service provider including online payments Fully transactional and personalized - proactive, automated and personalized service delivery Provided through national portals/one-stop-shops/life events Other: I don't know |
| When designing e-services which centrally available digital enablers do you use? (Multiple answers possible, as e- services should build on shared and reusable solutions, based on agreed standards and technical specifications to reduce their cost of development, and the length of time to deploy solutions and increase interoperability, these are called digital enablers) | We don't use/have any digital enablers generic electronic identification generic mobile ID generic electronic signatures single sign-on and authentication customers mailbox e-delivery system e-invoice system e-payment system: private banking e-payment system: third party payment gateway our own electronic identification our own IT systems for providing online services Other: I don't know |

How do your users interact with your organization to receive information?	- Users access it directly from other public institutions (%) - Our organization accesses it officially from other institutions (%) - Our organization accesses it electronically form other institutions (%) - Our organization accesses it electronically from other institutions using a central data exchange platform (%) - I don't know
How do you generally obtain data (documents, certificates, information) you need from other public institutions to provide your e-services?	- phone (%) - personal visit (%) - written letter (%) - I don't know
Does your organization measure the satisfaction of its users on a regular basis?	- Yes - No - I don't know
Name of application	
Short functional description of the application	
Number of users	
Obstacles faced	

3 Best practices and challenges faced

From the systems in use for HRM described above, please nominate the one you believe is an example of best practice and explain your reasoning:

Please explain the major obstacles faced in implementing the system selected above:

4 Impact of COVID-19 on HRMD

Please indicate your level of agreement on the following rating scale about major challenges faced by your organization due to the COVID-19 pandemic:

The following HR functions became difficult to perform…	strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
Human resource planning					
Recruitment and selection					
Performance management					
Learning and development					
Rewards					
Managing organizational structure*					
Health and safety					
Personal wellbeing**					
Administrative HRM operations, including maintaining HRMIS data					
New *work from home* practices					
Other (please specify)					

* Amending the current organizational structure with the job roles necessary to successfully

implement the organizational mandate

**Assisting and taking care of employees, especially when they run into personal problems

For the HR functions where you selected *Agree* or *Strongly Agree,* please explain how the functions were affected and what possible digital response could be implemented to reduce the negative effects of COVID-19:

For HR functions where you selected *Strongly disagree* or *Disagree,* please explain why these functions were not affected and whether digital HRM tools contributed to alleviating the negative effects of COVID-1:

Annex 2

HRMIS Modules

HR Modules

The following HRM functions should be supported by HRMIS:

- 1: Personal records management
  - Administration of personal data
  - Administration of formal education and qualifications
  - Administration of employment history
  - Administration of completed training
  - Administration of skills and expertise

- 2: Organization and job classifications
  - Administration of institutions
  - Administration of organizational structures
  - Administration of positions in accordance with the systematization
  - Administration of hierarchical structure of line management
  - Administration of vacant and filled posts
  - Historical records of all the above

- 3: Contracts management and related rights
  - Administration of data relating to employment within the civil service (all employment contracts, decisions on employment, decisions on the appointment to the post, temporary recruitment and placement, etc.).

- 4: Administration of working time
  - Administration of employees working time, overtime, work on holidays and weekends, night work, absence (annual leave, paid and unpaid leave, maternity leave, days off, sick leave), records of business trips and travel orders with all details on rights and remuneration.

- 5: Administration of allowances
  - Administration of employees' allowances such as meal allowances, allowances for transport, accommodation pay, retirement severance, jubilee awards and any other benefits

- 6: Performance management
  - Administration of employees work objectives/targets /tasks
  - Administration of success criteria
  - Administration of scores for targets and assessment of competencies
  - Administration of appraisals (date of appraisal, appraisal period, the automatic calculation of the overall performance based on the fulfilment of work objectives and scores for other success criteria)
  - Assessment of the required training and development plan
  - Records of awards
  - Records of promotions

- 7: Records of disciplinary proceedings
  - Records of disciplinary proceedings

- 8: Training and development
  - Training needs analyses, planning and budgeting.
  - Publication of annual training programs and training calendars
  - Administration of training provision (type of training (workshops, seminars,
  - lectures, scientific conferences, study tour, etc.), the name of the training, training description, training area (IT, foreign languages, etc.) and subtopics (foreign languages - English), materials available (documents, multimedia, e - courses , quizzes and web links), competencies that should be acquired, target group, necessary background and preconditions for attendance at training, information on tests and exams, training providers, list of speakers, etc.)
  - Administration of contracts with training providers
  - Administration of registered users
  - Administration of training applications
  - Administration of training costs
  - Attendance tracking
  - Training evaluations

- 9: e-Learning
  - Application management: module for application management and settings intended for system administrators.
  - User management: module for users and roles management available for system administrators and trainers only.
  - Lesson: lesson module, containing materials, resources links, and tasks related to a lesson.
  - Assignments: assignments management module.
  - Forum: forum module for promoting collaboration among trainees and trainers.
  - Questions: question board module, for posting and answering questions concerning course topics.
  - Resource: repository module, containing useful resources for courses and training activities.

- Messaging: notification and messaging module.
- Wiki: Wiki pages module to share content and information.
- Chat: for real time discussion.
- Shared synchronous resources: sharing of a teacher's or student's screen (for example, the teacher demonstrates how to do something) or sharing of software programs. Access to file systems and databanks. Uploading and downloading of documents (organised in folders, for example) created by teachers or students.
- Organisational tools: support systems for teaching organisation (shared calendars, syllabi, frequently asked questions, information). Support systems for group processes (for managing projects, monitoring, decision making, polls, etc).
- Audio/video conferencing: virtual class lesson or seminar discussions. Usually, these tools are integrated to allow the sharing of material (for example, PowerPoint slides) and for managing the class through requests to speak (raising a hand and hosting).

- 10: Recruitment
  - Self-registration and creation of online CV profile.
  - Publishing public vacancies and open civil service positions.
  - Ability to browse and apply for advertised civil service posts.
  - Management of various ad-hoc commissions.
  - Publishing of test schedules and test results and automatic notification.

- 11: Testing, including professional exams

- 12: Internal labour market, mobility

Supporting IT Modules

In later stages of development, some of the following supporting IT modules could also form part of the HRMIS system:

- 13: Authentication and identification and single sign on
  - Identification: All parties accessing the resource are able to identify themselves to the system.
  - Authentication: procedures implemented to verify the identity of the accessing party.
  - Authorization: a defined set of transactions the authenticated party is allowed to perform.
  - Integrity: The information is not changed in anyway.
  - Confidentiality: unauthorised persons not able access and read the information
  - Auditing: All transactions are recorded.
  - Non-repudiation: Both parties are able to provide legal proof to a third party that the sender did send the information, and the receiver received the identical information.

- 14: Document management system
  - Receipt, management, storing, protection and viewing of the contents of documents including:
    - A central electronic repository of all documents with all relevant metadata
    - Web interface to access documents.
    - Document management services such as check-in/check-out, creation, versioning, review, delegation/assignment (person responsible, deadline).
    - Availability of all document versions: tracking and checking of document versions created internally.
    - Implementation of a locking mechanism when modifying documents, tracking of changes to a document (who, when, what).
    - Integration with procedures within the workflow module: possibility for documents in the system to be linked to the specific workflow procedure, and storage of documents created within the workflow.
    - Direct recording of documents from scanners.
    - Enrichment of content by adding meta data information, business rules, security policies and collaboration rules.
    - E-mail notifications for all standard actions and changes to documents and data.

- 15: Notifications, E-mail and calendar
  - E-mail notifications for all standard actions and changes to documents and data.
  - Personal calendars.
  - Graphical representation.
  - Calendar sharing.
  - Group calendars.
  - Support for integration of system calendars and notifications with MS Exchange.

- 16: BPM and Workflow module
  - To automate the flow of documents and information through the workflow, where detailed work procedures can be determined in relation to their participants.

- 17: Data exchange
  - Data sharing and exchange among various HRM modules: organizational structure, employee register, HR processes, documents and notifications, contracts management, working time management, compensation and benefits, competence and goal management, appraisal and reviews, learning and development, recruiting, etc.
  - Data sharing and exchange with external information systems, such as:
    - Citizens register – for accessing up-to-date basic data on employees, residence data etc.
    - Payroll information system - HRMIS should provide data to the payroll information system for payment calculations.
    - System for control of entries and exits.
    - Treasury system.
    - Pension funds.

    - Health insurance.
    - Tax system.

- 18: Employee Self Service Portal
  - The portal should pull through the information from different systems (or parts of the system) and service information, such as: current information, calendar, reports, etc.
  - ESS should provide content like news, articles, list of contacts, shared documents (common procedures, laws, decisions, etc.), lists of available training, lists of job announcements, etc.
  - ESS should provide options for employees to do common tasks such as: updating aspects of personal data (e.g., contact information, marital status, etc.), viewing personal data held in the HRIS system (e.g., gender, date and place of birth, etc.), education background, registered skills, rewards, training undertaken, etc., applying for leave, applying for training, viewing leave history and cancelling approved leave etc. Additionally, managers should have options to, for example, process leave, and to manage training registration, etc.

- 19: Automation of day-to-day processes for HR units, reporting and business intelligence
  - Automation of day-to-day processes for HR units.
  - Rapid running and production of customized reports that meet the requirements of the user.
  - Administration, production, transmission, printing, and storing of all necessary forms, notices, approvals, certificates, contracts, reports, resolutions, decisions, orders, registrations and other standard forms required for everyday human resources management.
  - Advanced analyses and statistics to inform training strategies, strategies to reduce labour reallocation and retraining, knowledge sharing, retention of talent, performance assessment, etc.

- 20: System administration – developments could include aspects such as:
  - Allowing changes to the application to be made without having to change the background or any add additional programming.
  - Accessing and altering the global and specific settings of the application and its modules.
  - Customizing the interface appearance and lay-out.
  - Inserting or removing options and objects from the interfaces and users' menus.
  - Creating and managing notifications to users.
  - Performing backup and restoration of objects stored in content manager.
  - Performing backup and restoration of the whole application and all modules.
  - Administration of the codebook, e.g., classification of codes, organizational units, employees, etc.
  - Adding a workflow editor as a visual tool to design business processes: amending and editing existing workflows and adding new workflows should be possible without an intervention by the supplier and without having special technical and development skills.
  - The ability to define additional data (fields, i.e., metadata) and additional entities (new

forms of metadata) for each type of electronic form.

- Administration of passwords and login procedures for the system.
- Administration of categorization of document security (e.g., public, confidential, secret, top secret) through appropriate labelling or similar.
- In-depth auditing and reporting: running audits and reports on all the activities and historical states of each event

- 21: Help – this feature should be:
  - Intuitive
  - Tailored to the context and situation
  - Easy-to-use
  - Include a downloadable manual for users, explaining every module/part of the system in detail with the instructions on how to use them
  - Include a click-through demo and online video, explaining the steps the user has to take
  - Include help desk contacts

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