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STRATEGIC PLAN FOR THE DEVELOPMENT OF THE HEALTH INFORMATION SYSTEM

2024 - 2030

Prishtina

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ABBREVIATIONS AND ACRONYMS

AIS	Agency for Information Society
KBRA	Kosovo Business Registration Agency
BHIS	Basic Health Information System
CBK	Central Bank of Kosovo
COTS	Commercial off-the-shelf
CRA	Civil Registration Agency
PHD	Prison Health Department
DHIS	Department of Health Information System of MoH
DWH	Data Warehouse
EHR	Electronic Health Record
VAERS	Vaccine Adverse Event Reporting System
ERP	Enterprise Resource Planning that an organization uses to collect, store, manage, and interpret data from activities
ESB	Enterprise Service Bus and cooperation level
FMC	Family Medicine Centre
FMIS	Financial Management Information System
GWP	Gross contributions
HFA	Healthcare Financing Agency
HIE	Health Information Exchange
HIF	Health Insurance Fund
HIFIS	Health Insurance Fund Information System
HIS	Health Information System
HMIS	Hospital Management Information System
HPM	Healthcare Purchasing Mechanisms
HW	Hardware
ICT, IT	Information and Communications Technology
HIF	Kosovo Health Insurance Fund (same as HIF)

HUCKS	Hospital and University Clinical Services of Kosovo
KMA	Kosovo Medicines Agency
MESTI	Ministry of Education, Science, Technology and Innovation
IMS	Information Management System
MLSW	Ministry of Labor and Social Welfare
FMC, MFMC	Family Medicine Centre, Main Family Medicine Centre
MoH	Ministry of Health
MPA	Ministry of Public Administration
NBTC	National Blood Transfusion Centre - The main centre of Kosovo
NIPHK	National Institute of Public Health of the Republic of Kosovo
ODS	Operational Data Storage
OPDBS	Outpatient Drugs Benefit Scheme
PAS	Patient Administration System
PHF	Public Health Facility
RPHC	Regional Public Health Centres
MHC	Mental Health Centre
HRMIS	Human Resources Management Information System
PSMS	Pharmaceutical Stock Management System
SOA	Service Oriented Architecture
SW	Software
TAK	Tax Authority of Kosovo
UCCK	University Clinical Centre of Kosovo
UP	University of Prishtina

Note: Abbreviations and acronyms are professional information technology terms and are taken from Feasibility Study 2023

1. EXECUTIVE SUMMARY

The Strategic Plan for the Development of the Health Information System 2024-2030 was drafted with the aim of further developing the health information system in Kosovo. The Ministry of Health, through this Strategic Plan, will review the current status of developments in the health information system, in order to restore the approach to the national digital health architecture and plans for comprehensive development of the health information system in the future. Taking into account challenges in the development of the health information system in the health sector, the Ministry of Health (MoH) has initiated a comprehensive evaluation of the health information system, with the aim of strategically orienting the development, functionality and integration of the health information system, which represents the essential prerequisite to evidence-based policymaking. Without development of a health information system, we cannot aim for substantive reform of the health system. To set the course for creating the environment for such comprehensive development, the Ministry of Health in 2023 developed the Feasibility Study for the Health Information system in Kosovo that offers alternatives for the strategic direction of the development of the HIS agreed with the main stakeholders (MoH, National Institute of Public Health, Health Insurance Fund, Primary, Secondary and Tertiary Health Care Providers, UCKK, KMA, NBTC, Health and Pharmaceutical Inspectorate) in Kosovo. The study comes with recommendations on ways to use current and previous developments and planning architecture, systems and short-term and long-term approaches.

The analytical data available imposed the necessity of recommending investment in a national health information system, which will enable important steps in improving quality and safety of health services for its citizens in the medium term from 2024 to 2030. Although this goal is ambitious, it is achievable with the preconditions that necessary resources must be provided clearly and in detail in the Feasibility Study 2023.

Based on the above-mentioned facts, the strategic approach for the development of the health information system has been designed, taking into consideration various factors such as global standards in the field, other countries' experiences in building national e-health systems and the specificity of the health system in Kosovo. Considering that support systems are already in use in Kosovo in general, there is no need to withdraw any existing system, as no problems or risks have been identified that require withdrawal and, as such, they can be integrated with new systems adhering to all interoperability standards. The Strategic Plan will be based on continued investment in the BHIS system, along with module upgrades, functional upgrades and infrastructure upgrades, and the establishment of essential medical systems (HMIS; LIS, RIS/PACKS, Emergency System, DSS), e-services solutions (EHR, HIE, e-prescription, e-referral, e-appointments).

The Strategic Plan for the Development of the Health Information System has a strategic objective:

OBJECTIVE I: Development of the health information system

The Action Plan (2024-2026) is an integral part of the Strategy, reflecting in detail activities that will be carried out during this period. The Action Plan (AP) envisages reorganization of governance and administration and establishment of mechanisms for planning and supervision that foresees provision of organizational requirements for successful execution of e-health projects in Kosovo. The Strategic Plan for the Development of the Health Information System, within the framework of developing administrative capacities, foresees the establishment of the e-Health governing body, which will be responsible for supervision of all digital projects in healthcare. The development of governance and administration foresees the general processes of administration and decision-making that ensure effective and responsible use of the health information system. This requires development of clear governance structures and accountability mechanisms to oversee implementation, operation and administration of the Health Information system.

The governance will provide oversight to digital health initiatives including compliance monitoring, evaluating outcomes and ensuring the ethical use of health data. The development of support systems provides that the existing modules, including the Health Professionals Module, the licensing of private health institutions, the pharmaceutical stock management module and other modules, have been developed to meet the specific needs and operational work of the Ministry of Health, and different health institutions. These systems have been implemented in a wide range of health care structures and are actively used by users in their daily work activities. The Strategic Plan envisages investment in all Legacy systems, along with module upgrades, functional upgrades and infrastructure upgrades. To ensure optimal user performance, it is essential to prioritize improvement of existing modules based on user feedback and the resolution of reported bugs.

The development of basic medical systems to guarantee efficiency of the electronic medical record in health institutions will be installed throughout this phase of the implementation of the action plan. This will enable the collection of patient medical information by public healthcare institutions. In addition to installation of LIS and RIS/PACS for institutions with laboratory and radiological diagnostics, it is also planned for improvement of BHIS and further implementation in MFMCs, FMCs and ambulances, as well as implementation of Hospital Management Information System (HMIS), LIS and RIS/PACS in UCKK and general hospitals, deployment of the e-Referral system and implementation of HMIS in all hospitals, completion of EHR and the construction of HIE platform. In order to ensure interoperability between building components, a master data management system must also be implemented. The statistical system of the National Institute of Public Health (NIPHK) and Communicable Diseases will start to be developed and ongoing modifications of the BHIS system and its supporting systems (legacy system, Inspectorate) will be completed. A functional EHR with data from public healthcare institutions (except dental and outpatient emergency treatment) as well as a functional patient portal and e-Referral system should be in place by the end of the phase, which is set for 2026. The development of e-health systems envisages establishment of mechanisms where patients will be able to interact with the health system through various channels such as patient portals and mobile applications. By implementing activities under this specific objective, it will be possible to increase the percentage of patient visits to the patient portal by using the portal to improve access to knowledge for better management of their

chronic conditions. They will be able to access their electronic health records (EHR), schedule appointments, receive e-prescriptions and securely communicate with healthcare providers such as Hospitals, Clinics and Pharmacies, which will be connected to the e-health system through the interfaces or APIs provided. The main services for citizens/patients – e-Referral, Patient Portal, systems to support the work of medical employees in primary, secondary and tertiary care – as well as the basic infrastructure for the national e-health system will be enabled with the successful implementation of the activities from Phase I. Most of the EU countries that are now successful in implementing e-health have followed the same steps (e-Prescription, primary care, EHR), including Estonia, Denmark and Croatia.

Due to the ambitious goals in the Strategic Plan and the number of simultaneous activities, the main risks at this stage are limited human resources. Based on this, the full implementation of the electronic prescription is planned, as well as development of several new modules (Inspection, Supervision, Zoning - digital selection of the doctor, patient portal). The development of hardware is envisaged to provide an appropriate hardware infrastructure (servers, PCs, networks, printers, etc.) which is of key importance for the development of the health information system. This will be rendered possible by assessing the existing IT infrastructure and identifying necessary improvements or investments, such as the state of hardware, software applications, network infrastructure, data storage capacities and security measures needed to support the development and integration of the health information system. Moreover, establishing necessary hardware infrastructure is essential to allow for the implementation of all activities for development of health information system. Strong technical infrastructure including hardware, software and network infrastructure. This can help make the system reliable, secure and interoperable with other healthcare systems. The Strategic Plan, during the implementation phase (2024-2030), foresees that hardware will be purchased/installed during the first two years of the observed period, for about 9% of the total projected costs.

The accomplishment of strategic objective of this strategy will be ensured through the division of responsibilities in a clear way for the implementers, the timing of the achievement of the objectives, coordination and cooperation with all stakeholders in the health sector, the provision of financing through sustainable sources and the continuous monitoring of progress. The Strategic Plan for HIS 2024-2030 also foresees cyber security as a necessary aspect of security, where 10% of the total budget for HIS will be allocated to this field on an annual basis. The feasibility study for HIS 2023 will be an integral part of the Strategic Plan for HIS 2024-2030.

2. INTRODUCTION

The Ministry of Health aims to improve the health of the population of the Republic of Kosovo by ensuring universal and equal access to quality health services for all citizens of the country. The Sector Health Strategy 2023-2030 will serve as a political and professional guide in the development of the health sector that aims to preserve and improve the health of the population as well as provision of accessible and affordable quality health services for all citizens of the Republic of Kosovo.

The Strategic Plan for the Development of the Health Information System 2024-2030 will be an integral part of the Sectoral Health Strategy 2023-2030. The Strategic Plan for the Development of the Health Information System 2024-2030 is based mainly on the feasibility study for HIS, which was developed during 2023 with the aim of comprehensively evaluating the current context of the health information system and providing strategic orientation as in which direction the health information system should be developed.

Digitization is one of the main priorities of the country, therefore the four pillars of the NDS have identified objectives and indicators through which it is intended to plan concrete interventions in different sectors. In order to coordinate efforts in all public policy sectors, the Government of Kosovo, as part of its strategic framework, has drafted a special document called the Kosovo Digital Agenda 2030. The digital agenda is a cross-sectoral document that defines policies and priorities in the context of continuous digital transformation of the economy and society influenced by innovative technologies and global digital trends. Through the Digital Agenda 2030, Kosovo will use the advanced information and communication technologies to become a digital economy and society and support economic growth and competitiveness. The digital agenda addresses many sectors of public policies and covers objectives, which are included or should be included in sectoral strategies.

The Strategic Plan for the Development of the Health Information System 2024-2030 as an integral part of the SHS 2023-2030, is in full compliance with the National Development Strategy 2030 that aims to keep up with technological developments and opportunities offered by digitization. Kosovo still does not have an integrated functional system that would allow digitization of the system and communication between the different levels of health, therefore there is an immediate need for the drafting of a strategic document that will serve as a guide for the development and full functionality of integrated health information system by 2030.

3. METHODOLOGY

The Government of the Republic of Kosovo has defined digitization as one of the main priorities of the country, therefore the four pillars of the NDS have identified objectives and indicators intended to plan concrete interventions in different sectors.

The Strategic Plan will serve as a political and professional roadmap in the development of the health sector aimed at developing the health information system 2024-2030.

During the Strategic Plan development process, quantitative and qualitative research methods derived from the feasibility study for the health information system were used to assess the current state of the health sector. Also, experiences from the implementation of the HIS Strategy 2011-2021, relevant local and international study documentation for the Information system, as well as experts' assessment, with recommendations of workshops and meetings with the teams and/or managers of health institutions, local and international have been taken into account.

The process of drafting the Strategic Plan for the Development of the Health Information System has used a systematic approach of evaluating the activities of administration and change using the processes and tools determined during the evaluations. The process is supported with effective communication between stakeholders and teams by creating, developing, distributing and managing messages and communication materials. During the drafting process of the strategic document, other relevant institutions were also included, such as the Office for Strategic Planning of the Government, the Ministry of Finance and Transfers, the Agency for Information Society and the health institutions of the three levels of health care that will be responsible for the implementation and development of the health information system.

The official data for the preparation of sector analysis during the feasibility study for HIS have been provided by: KAS, MoH and NIPHK. In order to compare indicators with those of the countries of the European Union and of the region, the study used data from other countries. During the drafting of the Strategy, other relevant documents were also consulted, such as: National Development Strategy and Plan 2030, Economic Reforms Program 2023-2025, Medium-Term Expenditure Framework 2023-2025, National Development Plan 2023-2025, Declaration of Government Priorities 2023-2030 as well as the Stabilization and Association Agreement signed with the European Union.

Following the analysis of available data, the SWOT analysis (analysis of the health system's strengths, weaknesses, opportunities, and risks) was included, developed by the working group members, and conclusions were drawn based on strategic objectives and specific objectives for the period 2024-2030.

4. BACKGROUND

The Ministry of Health has made significant efforts and investments in the development of the health information system in recent years, but despite these efforts, the health information system (HIS) is very fragmented, and there is a lack of essential data for evidence-based decision-making, which is a basic prerequisite for the development of an effective health system that provides quality and safe health services. The end result of HIS is timely information with valid and relevant data for all health system participants. The absence of a functional and integrated health system precludes effective planning and equitable allocation of available resources to ensure that institutions and health care providers perform properly. In the absence of an information system, accountability is hampered by unclear roles and responsibilities of organizations and individuals, resulting in severe supply and distribution shortages.

The Ministry of Health's efforts to develop and functionalize the health information system began in 2002/2003 with the piloting of a project supported by the European Agency for Reconstruction (EAR) in UCK, the main family medicine centres in Kosovo, NIPHK, the regional hospital of Gjakova, and the regional hospital of Gjilan. Based on the findings of this pilot, the Ministry of Health has implemented data collection procedures across the country. The Ministry of Health purchased the Human Resource Management Module in 2005-2006 and trained approximately 80 officials from all public health institutions in human resource management, but this module failed to function due to a lack of maintenance.

The SWAP project, which included a comprehensive study of the health information system, was developed in 2009 through funds from the European Commission. Based on the findings of this study, the Ministry of Health has approved the Health Information System Strategy for a ten-year period. The implementation of this strategy was determined to be funded by the budget of the Republic of Kosovo as well as the KSV/017 project funded by the Government of Luxembourg.

This project also failed to be implemented and was thus completed in 2018 following a resolution passed by the Assembly of the Republic of Kosovo and a report by the National Audit Office which identified irregularities.

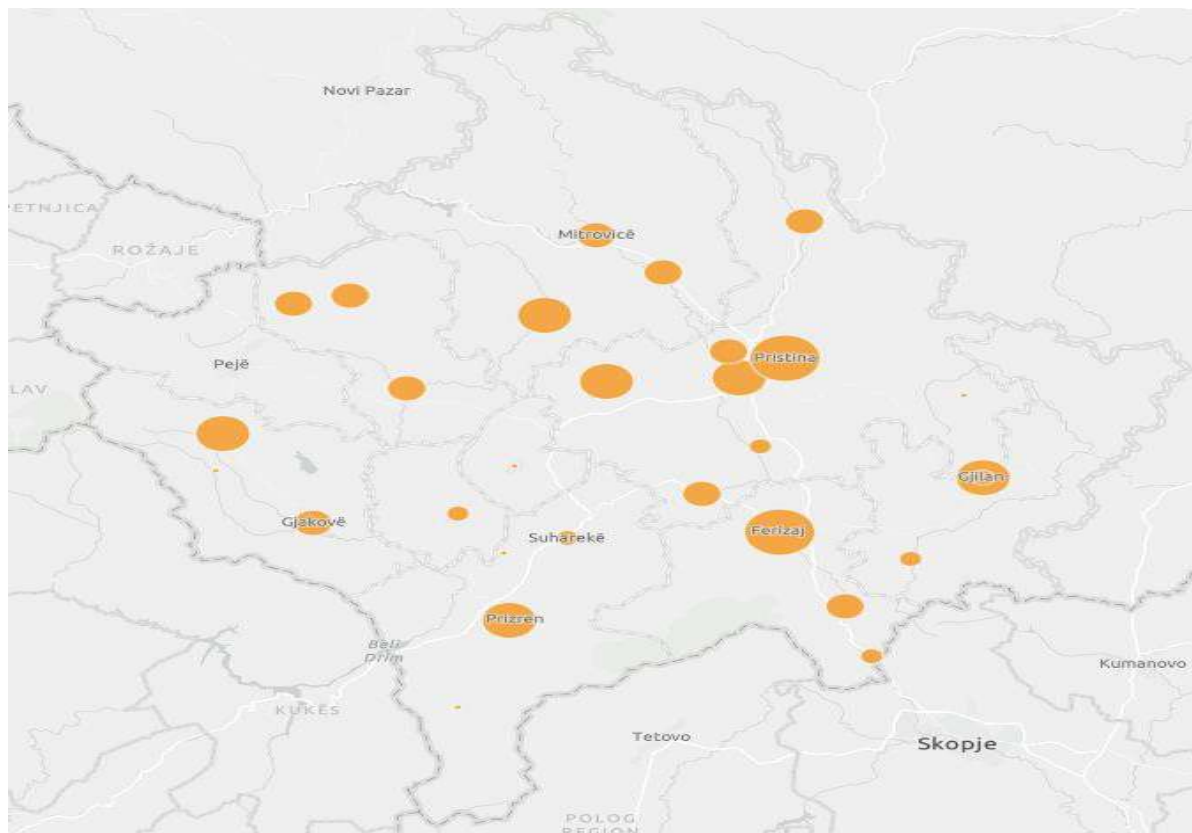
The efforts of the Ministry of Health to create a centralized "web-based" solution (BHIS) for primary health care institutions with limited resources have proven useful, as the system is currently used in 29 Main Family Medicine Centres and the majority of Main Family Centres. This suggests that healthcare providers find the BHIS system useful and are increasingly relying on it to manage patient care and medical records.

Western Balkan countries have functional health information systems and are currently in the process of further digitizing their health systems. Kosovo is currently the only country in the Western Balkans that has yet to implement an integrated health information system. The European Program - Western Balkans Initiative "Joint Action for Better Health" also includes the Western Balkans' digital health transformation 2021-2025 to accelerate the focus on supporting patient and population health management and telemedicine in health systems. This program aims to create platforms to assess digital maturity and digital readiness, to increase digital literacy among health care professionals and the population, to develop the "Electronic Health Record (EHR)" as a catalyst for multidisciplinary work, supporting decisions for noncommunicable diseases, population health management with specific interfaces for risk avoidance and telemedicine, and other digital solutions in Western Balkans countries. To that end, Kosovo should follow suit with the other Western Balkan countries in order to participate in digital health processes.

4.1. Basic Health Information System

The feasibility study for the Health Information System developed in Kosovo in 2023 emphasizes the need for the BHIS to be continued, which will increase the system's capabilities and ensure its continued success in improving health care outcomes. The geographic distribution of initial patient registration in the BHIS is an important indicator of the system's scope and impact on Kosovo's health-care institutions. By analysing the distribution of initial patient records, one can identify where the BHIS system is most widely used and where additional support or resources are required. Furthermore, examining the geographic distribution of initial BHIS patient enrolment can assist health care providers and policymakers in identifying areas that may require additional resources or support to improve health care outcomes. For example, regions with smaller bubbles may need more outreach and education about the BHIS system to encourage more patients to register and use it, while regions with larger bubbles may need more resources to manage the increased volume of patient records and visits.

The most important issues related to BHIS in its current operation have been highlighted through discussions with users and experts from partner companies that have built and/or maintained the system, as well as through user feedback collected through online surveys. They are related to the ICT infrastructure, specifically 1) mainly network unavailability or interruptions (internal and Internet connections), 2) the number and reliability of printers, as well as 3) the availability of toners, which are described in detail in feasibility study for HIS.



While more data, such as population data, facility coverage area, and end-user training, would have been useful in conducting a more accurate analysis of BHIS usage by health facilities, the data presented in this quick evaluation are still strong indicators of current usage growth. Over the years, the number of patients registered in the system and the number of visits registered have increased, indicating a positive trend towards the use of the BHIS system.

Therefore, while more data would be useful to gain a more accurate analysis of BHIS usage, the available data still provide valuable insight into the system's current state and suggest that there is potential for future growth and adoption of the system.

The fact that a total of 904,270 people who received at least one dose of vaccine were registered in the BHIS vaccination module and 1,836,002 vaccines were recorded demonstrates the BHIS system's technical capabilities and ability to handle large volumes of data.

The successful implementation and use of the vaccination module in BHIS highlights the reliability and efficiency of the system. Despite some technical issues such as network problems, internet connectivity and printer problems, the BHIS system was able to support a large number of users and effectively record vaccination data.

The successful implementation of the BHIS vaccination module can be attributed to the technical solution of the system and its ability to handle large volumes of data. It is a testament to the system's scalability and ability to support a large volume of users even in challenging circumstances.

In addition, the lack of maintenance and support for several years has resulted in the system not having new features and not fixing all bugs, which can affect user satisfaction. The evaluation also shows that some users are not using the system despite its availability, highlighting the need for better user training and promotion to increase their adoption. Overall, the successful implementation of the BHIS vaccination module demonstrates the technical capabilities of the system and its ability to support critical healthcare processes such as vaccination.

4.2. Legacy Systems

The so-called legacy systems/modules include the following:

- Pharmaceutical stock management system
- Human resources
- Healthcare workers
- Specialist module
- Licensing of health institutions

All systems are developed as web applications in the Microsoft technology stack (#C, ASP.NET MVC5, Net Framework 4.6.1, MS SQL Server, Microsoft Report Builder in RDL format, etc.). The application follows a three-tier architecture, which divides the application into three distinct layers: the presentation layer, the business logic, and the data access layer, which reside within the same solution and are hosted on the application server.

4.3. Blood Transfusion Information System

The blood transfusion information system has been in use at the NBTCK - Prishtina since 2005 and meets the majority of the NBTCK's requirements. The system is set to be implemented in regional transfusion centres in 2024.

What is lacking is hospital monitoring of information on the traceability of blood products when they arrive at health facilities from transfusion centres, so there is no information on where and on which patient they were used.

In the short term, the system should be improved by connecting regional transfusion centres; and in the long term, hospital information system implementation should include monitoring the traceability of transfusion procedures to the patient.

4.4. Health Insurance Fund Information System

HIF has made significant investments in the development of the HIF Information System (HIFIS). The system has been tested, and approximately 1,000 users have been trained on using it. The system includes basic functions for managing the beneficiary register, collecting revenue (including an online tool for individual premium payments), and making service payments. The connection with external systems is automated for the civil registry, the scheme of excluded categories, the tax administration and the banks. The system is based on solid, well-tested architecture and technology, but considering HIF is not yet managing purchasing packages and services, the system is not in full use. It still has to reach its mature use that will reveal additional functional, technical and fine-tuning requirements. Therefore, technical assistance for health insurance reform may face the need for additional support for the implementation of HIFIS.

The system consists of following modules: Finance and accounting, register of members, register of social schemes, collection of premiums from businesses, individual premiums, health institutions, pharmacies, register of pharmacists, medicines and health services, E-Prescription, E-Patient, administration, assets.

These modules allow for the administration and management of the fund's finances; information on the number of insured beneficiaries; data are provided by social schemes, which, according to the law, are legal beneficiaries of health insurance; it is possible to report and collect premiums from businesses, as well as to issue payment orders to all citizens who do not have "insured" status but wish to become voluntarily insured; contracting with pharmacies is made possible, and the provision of services via E-Prescription is permitted; the service of determining the Fund's reimbursement percentage for medicines and health services is provided; the module allows access to all pharmacies contracted by the Fund and the provision of medications to patients based on the defined reimbursement list; it is possible to provide the patient with information about the status of the health insurance fund as

well as access to the history of services and medications received. This module allows for the registration, depreciation, revaluation, and alienation of assets. Furthermore, all registered assets are identified with a unique code (barcode); end users can report problems in the system, which are handled by the system administrator. Additionally, through this module, end users can evaluate the problem addressed by system administrators.

The Health Insurance Fund Information System (HIFIS) was developed by a local company (DataProgNet). Despite the fact that HIFIS has been implemented, tested, and accepted, the system is not yet fully operational because HIF does not yet fully function as an insurance fund, so it has not yet begun collecting premiums/contributions from businesses and individuals and paying/reimbursing local health care providers. Offsite processing is the only business process that HIF currently supports.

An accurate evaluation of the implemented HIFIS requires that the HIF fulfil its statutory role in financing the health care system to ensure the performance and quality of the HIFIS. However, the discussions and presentation of the system seem to indicate that the vendor is delivering a solid system based on current technology, good integration capabilities, and data security standards.

The main perceived risks identified so far are the lack of ICT staff in the Fund, and under the capacity of the Fund as an organization, operational practice and experience of health insurance business processes and IT support in day-to-day operations, because the system is still in the pre-production phase.

4.5. E-health systems that are currently not developed

4.5.1. Hospital Information System (HMIS)

Hospitals in Kosovo do not use any comprehensive HIS, only some parts of BHIS for keeping medical records of outpatients. The construction of the EHR at the national level is the key strategic point for e-health in Kosovo, and this cannot be done without its operation and functioning in all hospitals. Also, hospitals are large systems (number of employees, operating costs, complexity of processes, sophisticated equipment) to manage without a comprehensive HIS system that will help them be more efficient.

4.5.2. Laboratory Information System (LIS)

Laboratory Information System (LIS) is an application whose main purpose is to automate processes in clinical laboratories. It is built around a centralized database of samples and any associated metadata, results, workflows and instruments. This not only allows a laboratory to remain organized, but also facilitates efficiency, transparency and compliance. We recommend implementing the LIS system in all public health care institutions that have a clinical laboratory and integrate it with BHIS/HIS so that they can act as a

complete EMR system of the institution. Before integrating it, the LIS can function as a stand-alone solution serving only the laboratory department.

4.5.3. Computerized imaging radiography archive system (PACS)

A PACS is a medical imaging technology used to store, manage, and distribute digital medical images, such as X-rays, CT scans, MRIs, and ultrasound images. This technology replaces traditional film-based systems that are time-consuming and expensive and often require physical transportation of images between different locations. PACS is not limited to radiology, as it is also used in other medical specialties that use medical imaging, such as cardiology, pathology and dermatology. PACS systems can be customized to meet the specific needs of different medical specialties and can be integrated with other healthcare information systems, such as Electronic Health Records (EHR) and Radiology Information Systems (RIS), to provide a comprehensive solution for medical image data management.

4.5.4. Radiological Information System (RIS)

The Radiology Information System (RIS) is software that is designed to manage and automate the workflow and data associated with radiology departments in healthcare facilities. Its main objective is to manage patient data, imaging procedures and the distribution of diagnostic reports and images to healthcare professionals. RIS is typically integrated with other healthcare information systems, such as Electronic Health Records (EHR) and Picture Archiving and Communication Systems (PACS), to provide a comprehensive solution for managing medical image data.

4.5.5. Average number of computers per employee

The number of computers per employee in a general hospital can vary depending on a number of factors, including the size of the hospital, the employee's department or role, and the hospital's budget for technology.

In the European Union, larger hospitals generally tend to have a higher computer-to-employee ratio, often providing each employee with their own computer for efficient record-keeping and communication. This can range from one computer for two to three employees in smaller hospitals to one computer for every employee in larger hospitals.

It's also worth noting that some hospital employees may need access to specialized equipment, such as medical imaging workstations or research computers, in addition to their regular office computer.

The table below shows the average number of computers per employee in the general hospital in Kosovo, based on interview data collected in March 2023.

General hospitals	Employees	Beds	Computers	IT staff	Computers/beds	Computers/employee
GH Ferizaj	300	90	80	1	0,89	0,27
GH Gjakova	560	419	120	1	0,29	0,21
GH Gjilan	550	360	200	2	0,56	0,36
GH Mitrovica	417	183	120	1	0,66	0,29
GH Peja	576	400	135	2	0,34	0,23
GH Prizren	730	550	220	2	0,40	0,30
TOTAL	3133	2002	875	9	0,44	0,28

Table 1. Number of computers per employee

4.6. Lack of information technology cadre

The lack of IT professionals is posing a serious challenge to Kosovo's healthcare sector. IT professionals are critical to the digital transformation of healthcare services, which can improve healthcare quality, efficiency, and accessibility. The reasons for this shortage include the rapid pace of technological change, the high demand for IT skills in various sectors in Europe and abroad, an increase in "ICT brain drain", the low attractiveness of IT careers for young people and women in the public sector, a lack of competitive salary levels and models in public health institutions for ICT professionals, and insufficient provision of IT education and training.

The shortage of IT professionals in the healthcare sector is a common challenge faced by many countries and can have significant implications for the quality and efficiency of healthcare services. Investing in attracting, retaining and upskilling IT professionals is essential to achieving digital transformation in healthcare, which can improve patient outcomes and reduce costs. Furthermore, fostering collaboration and innovation between different stakeholders can help create a more supportive environment for the development and implementation of new technologies in healthcare. Overall, addressing the shortage of IT professionals in the healthcare sector requires a multifaceted approach that involves collaboration and coordination among various stakeholders, including government, the private sector, and educational institutions. The current evaluation revealed a small number in all major

institutions of interest, as well as primary health care and public hospitals. Only UCK has a greater number of IT personnel. Precisely as a benchmark for the number of ICT staff in the health sector, based on Cedefop (European Centre for the Development of Vocational Training) data in 2020 in EU member states, 0.5% of all employees in the "health and social care" sector were ICT professionals 2 (0.33%) and ICT technicians 3 (0.17%), but this is a significant increase compared to 2015 data, when there were only 0.1% of ICT professionals and only 0.06% of ICT technicians in the "health and social care" sector.⁴

Institution	Staff of ICT
MoH	5 (must be 24 from the approved organizational chart)
UCK	20 (8 ICT professionals + 12 ICT technicians)
NIPHK	3 (at the head office)
NBTC	1
HIF	1
KMA	1
HOSPITALS	1.5

Table II. Number of IT employees

4.7. Legal framework for the implementation and development of HIS

The basic Law on health has partially regulated the unique and integrated health information system, with which it has determined that the Ministry shall ensure the establishment, development and operation of the unique and integrated health information system in the entire health sector, regardless of the form of ownership, type of institution and its organization, based on norms and standards determined by the Ministry. The Ministry is responsible for the financing and operational functioning of HIS.

Administrative Instruction No. 11/2013 on Health Information System and Reporting of the Statistical Health Data has determined the way of functioning of the health information system as well as the reporting of statistical data collected with this system in function of adequate planning, program and qualitative, fast and efficient management of health services. This Administrative Instruction has been partially implemented and, due to the unclear policy of the health information system, it has not been supplemented and amended since 2013. According to the feasibility study for HIS, it has been concluded that the legal system of Kosovo does not address and does not regulate the basic and minimum requirements for building a health information system, it is not adequate and does not regulate a real health information system. Also, there is a lack of a clear legal basis for such projects, including the establishment of obligations

for the purposes of entering data or sharing data with other subjects and institutions. The Ministry plans to include in the new Law on Health a separate chapter on the Health Information System, where the roles and responsibilities of all health institutions and actors involved at the country level will be clearly defined, the definition of data storage in accordance with international standards, respectively EU legislation, other inter-institutional aspects; fines and misdemeanours of natural persons, legal persons, responsible persons of health institutions.

4.8. Risks and impacts

Concerning the risks and consequences of implementing the development of the Health Information System, the emphasis should be put on supplementing and amending the legal framework. The implementation of the law on health insurance could have a significant impact on HIFIS. When the financing model of health institutions changes and health institutions must issue invoices (health insurance claims) for their services, the implementation of the health insurance law may have a significant impact on HIS. A shortage of IT professionals can have a significant impact on e-Health development plans. The lack and reliability of ICT infrastructure in PHFs may jeopardize the plan to fully implement BHIS.

The plan also presents potential risks and challenges, including the need for adequate budgets and resources that may cause delays in implementation. The large number of interdependent projects requires competent project management skills and additional personnel. Experience from other countries shows that such projects can take more than five years. However, with sufficient budgets and resources secured for efficient implementation and public procurement, the systems can be completed within the proposed time frame.

The plan also requires additional staff, especially for the role of Project Manager, in the DHIS (Department of the Health Information System of the Ministry of Health). Although these activities are included in the plan, it is essential that they start as soon as possible in order to increase capacity.

To keep pace with technological advances, changing industry standards and emerging challenges in e-Health, it is necessary to maintain a robust and effective framework for ensuring the quality and reliability of e-Health software solutions in Kosovo.

Overall, it is critical to carefully consider these potential risks and challenges, as well as the plan's potential benefits, in order to make informed decisions about its implementation and about the priorities of implementation. A well-thought-out strategy, including stakeholder engagement and risk management, will be critical to the success of these projects.

The difficulties in migrating data from the current BHIS to the new solution can be significant. There is no guarantee that all data will be correctly migrated, which could result in data loss or corruption, negatively impacting patient care and administrative processes.

Implementation may encounter resistance from private providers (particularly large and mature providers) to use BHIS as a web-based solution without integration with their existing information systems.

4.9. The role and support of partners and civil society

The overall purpose of stakeholder engagement is to drive the strategic direction of Health Information System development and operational excellence and contribute to sustainable development that can benefit organizations, their stakeholders and the wider society.

Expectations about the development of the health information system may be different for the parties and interest groups compared to the organizational and institutional stakeholders. Stakeholders should be identified early in change projects. Their expectations regarding benefits and timelines should be anticipated, ascertained and managed from the outset to avoid misunderstandings and/or disappointments. Successful implementation projects must have structured processes and approaches to involve and engage key clinical end-user groups.

The first step in the implementation of the Strategic Plan for HIS is the identification of the stakeholders and engagement during the start of the project. Although self-evident, many projects either neglect or limit attention paid to even the most visible stakeholders. Frameworks for categorization may vary by project, but often include: internal stakeholders, external stakeholders and key partners where civil society and the media play a very important role through a proactive critical approach as well as informing citizens about the risks.

The ability to deliver the right message, from the right person, through the right channel, to the right audience, at the right time, is very important. Communications will serve to inform various stakeholders and prompt appropriate responses and/or actions. Targeted communication approaches are determined in response to stakeholder analysis. Leaders and implementers of change in the Strategic Plan for the Development the Health Information System must understand their respective roles in communicating with a wide range of stakeholders.

The main goal of communication during all phases of implementation of the Strategic Plan for the Development of the Health Information System 2024-2030 is to provide people with what they need to know in order to make informed choices about whether/how to agree or commit to the initiative, building trust with honest communication about the need for change and the difficulty of change, including the consequences of not changing, and objective reporting of progress – or lack thereof – so that people can be accountable contributors to success. The essential minimum components of communication that the Strategic Plan will target during implementation are the definition of the target audience, the provision of information, the frequency and responsibility for the provision of information and the required format.

5. OBJECTIVES

The Strategic Plan for the Development of the Health Information System 2024-2030 defines one strategic objective that is ***"Development of the Health Information System"***, which represents the general and long-term goal of the Republic of Kosovo to implement the digital agenda of Kosovo within the National Development Strategy 2030. The Strategic Plan for the Development of the Health Information System 2024-2030 is an integral part of the Health Sector Strategy 2023-2030, namely within the Specific Objective "Operational and integrated Health Information System (HIS)". The feasibility study for the Health Information System 2023 recommends paying special attention to investing in the further development of Kosovo's national e-Health system. The Ministry of Health should review the current state of e-Health developments in Kosovo in order to rethink the approach and decide on the national digital health architecture and future development plans. The Strategic Plan for the Development of the Health Information System 2024-2030 has foreseen specific short-term and concrete goals presented within the framework of specific objectives in order to achieve the strategic objective. These specific objectives provide direction and demonstrate how strategic goals can be met.

5.1. STRATEGIC OBJECTIVE I: Development of the Health Information System

With a strategic decision of the government to invest in a national e-Health system, Kosovo can make important steps in improving the quality and safety of health services for its citizens in the medium term from 2024 to 2030. Although this goal is ambitious, it is achievable with the preconditions that must be ensured based on the feasibility study that will be an integral part of this Strategic Plan.

5.1.1. Specific objective I: *Development of governance and administration*

Within the specific objective *Development of governance and administration*, the general management and decision-making processes that ensure the effective and responsible use of the Health Information System are foreseen. This requires the development of clear governance structures and accountability mechanisms to oversee implementation, operation and management of the Health Information System. Governance also provides oversight of digital health initiatives, including monitoring compliance, evaluating outcomes, and *ensuring the ethical use of health data*. Governance improves services and applications that support the Ministry of Health with emphasis on the National Institute of Public Health (NIPH) and other stakeholders. A centralized governance and administration infrastructure provides a framework for managing support systems at national level and standardized data management practices, including data governance policies and security measures. This centralized approach ensures consistency, security and compliance with regulations and standards across the healthcare system. Governance is about the mechanisms used to guide, direct or regulate the course of an organization or system. Strong governance leads to better decisions, greater alignment with priorities and more buy-in from stakeholders. In relation to e-Health, it is important to establish formal agreements for the governance (and management) of change programs to clearly define roles, responsibilities and "who does what?" throughout the program or project. The governance structure identifies the mechanism

by which stakeholders can influence the priorities and progress of a project. Administration focuses on Master data management and ensures that information remains consistently reliable, up-to-date and easily accessible, thus empowering users.

5.1.2. **Specific objective II:** Development of administrative capacities

Within the framework of Specific Objective II *Development of administrative capacities*, the provision of organizational requirements for the successful execution of e-Health projects in Kosovo is foreseen. Under the development of administrative capacities, the Strategic Plan for the Development of the Health Information System foresees the establishment of the e-Health governing body, which will be responsible for overseeing all digital health projects. This excludes modules from the category of support systems because they are not part of e-Health, but rather back-office software required for the operation of other projects, for which the relevant institutions will continue to be responsible. Standards and procedures, as well as a legal framework, project and product management processes, and change management processes, must all be in place. Creating the right hardware infrastructure (servers, PCs, networks, printers, etc.) is another key opportunity for the e-Health Project.

The establishment and development of the Digital Health Innovation Centre as well as the development of a sophisticated call centre for the health sector that is necessary for the best utilization of health staff are planned within this specific objective. It provides services such as appointment scheduling, prescription refills, and general inquiries. It will also assist citizens in crisis situations such as the COVID-19 pandemic, as well as enable health professionals to manage these types of situations with predefined scripts, instructions, training, and so on, resulting in improved efficiency and communication between citizens and the health sector.

5.1.3. **Specific objective III:** Development of support systems

The Specific Objective III *Development of support systems* foresees that the existing modules, including the Health Professionals Module, the licensing of private health institutions, the pharmaceutical stock management module and other modules have been developed to meet the specific needs and operational work of the Ministry of Health and various health institutions. These systems have been implemented in a variety of healthcare structures, and users actively use them in their daily work activities. The Strategic Plan foresees investments in all Legacy systems, as well as module and functional upgrades, as well as infrastructure upgrades. It is critical to prioritize the upgrade of existing modules based on user feedback and the resolution of reported bugs in order to ensure optimal user performance. Addressing these issues will help to improve the user experience and workflow efficiency. Through its activities, the Strategic Plan will enable the interconnection of Legacy systems in all institutions and health units in order to achieve comprehensive coverage and successful implementation. The continued development of existing modules gives the Ministry of Health complete control over the system and allows healthcare institutions to tailor it to their specific needs. This approach also allows for flexibility to design and incorporate emerging technologies, providing the healthcare organization with greater long-term flexibility as well as lower long-term costs due to the elimination of the need to purchase additional licensing fees. Maintenance and building/development of modules and new features can incur costs. According to the Strategic Plan, zoning will include various components to effectively allocate health care resources and

improve service delivery, as well as further operationalize the blood transfusion system, which is a critical component, with a focus on safe and efficient management of blood products within the health care system.

5.1.4. Specific objective IV: Development of basic medical systems

Within the framework of Specific Objective IV *Development of basic medical systems*, in order to guarantee the efficiency of the electronic medical registry in health institutions, important basic medical systems will be installed throughout this phase. This makes it possible to collect patient medical INFORMATION from public health care institutions. In addition to the installation of LIS and RIS/PACS for institutions with laboratory and radiological diagnostics, the improvement of BHIS and further implementation for MFMCs, FMCs and ambulances, the implementation of the Hospital Management Information System (HMIS), LIS and RIS/PACS that will be done in UCCK and general hospitals, the deployment of the e-Referral system and the implementation of HMIS in all hospitals, the completion of the EHR and the construction of the HIE platform have all been planned. In order to ensure interoperability between building components, a master data management system must also be implemented. The statistical system of the National Institute of Public Health and Communicable Diseases (NIPH) will begin to be developed and ongoing modifications of the BHIS system and its supporting systems (legacy system, Inspectorate) will be completed. A functional EHR with data from public health care institutions (except dental and outpatient emergency treatment), as well as a functional patient portal and an e-Referral system should be in place by the end of the phase, which is set for the year 2026.

5.1.5. Specific objective V: Development of e-Health systems

The Specific Objective V *Development of e-Health systems* has foreseen creating mechanisms where patients will be able to interact with the e-Health system through various channels such as patient portal and mobile applications. Through implementation of activities of this specific objective, it will be possible to increase the percentage of patient visits to the patient portal by using the knowledge portal to improve access to knowledge for better management of chronic conditions. They will be able to access their electronic health records (EHR), schedule appointments, receive e-prescriptions and securely communicate with healthcare providers such as Hospitals, Clinics and Pharmacies, which will be connected to the e-Health system through the interfaces or APIs provided. The main services for citizens/patients – e-Referral, Patient Portal, systems to support the work of medical workers in primary, secondary and tertiary care – as well as the basic infrastructure for the national e-Health system, will be enabled with the successful implementation of the activities from Phase I. Most of the EU countries that are now successful in implementing e-Health have followed the same steps (e-Prescription, primary care, EHR), including Estonia, Denmark and Croatia. Due to the Strategic Plan's ambitious goals and the number of concurrent activities, the main risks at this phase are limited human resources. In addition, the full implementation of e-prescription is planned, as is the development of several new modules (Inspectorate, Supervision, Zoning - digital doctor selection, patient portal).

5.1.6. **Specific objective VI:** Development of Hardware

The Specific Objective *VI Development of hardware* has foreseen ensuring an appropriate hardware infrastructure (servers, PCs, networks, printers, etc.) which is of key importance for the development of the health information system. This will be enabled through a thorough assessment of the existing IT infrastructure and the identification of necessary improvements or investments such as the state of hardware, software applications, network infrastructure, data storage capacities and security measures needed to support the development and integration of the Health Information System. Moreover, the creation of the necessary hardware infrastructure is essential to enable the implementation of all activities for the development of the Health Information System. Strong technical infrastructure including hardware, software and network infrastructure. This can help make the system reliable, secure and interoperable with other healthcare systems. The Strategic Plan, during the implementation phase (2024-2030), foresees that hardware will be purchased/installed during the first two years of the observed period, for about 9% of the total projected costs.

5.1.7. **Specific objective VII:** Improvement of cyber security and its data protection

Within the specific objective VII *Improvement of cyber security and its data protection*, it is envisaged to first ensure a gap analysis to identify the areas where the current cyber security measures of HIS need to be improved in order to be in compliance with the Kosovo Law on Cyber Security. This specific objective envisages the establishment of a dedicated cyber security governance structure within the HIS management framework and the development of a comprehensive incident response plan in accordance with the requirements of the law. In order to ensure the implementation of this objective, the development and implementation of mandatory cyber security awareness training for HIS users is envisaged. Detailed activities are disclosed in the action plan.

6. IMPLEMENTATION, MONITORING AND REPORTING ARRANGEMENTS

The development and functionalization of the Health Information System is a long-term complex process that includes involvement of many health sector stakeholders and sectors. The Ministry of Health will be the bearer of activities for development and functionalization of the Health Information System and is responsible for implementation of the Action Plan of the Strategic Plan for the Development of the Health Information System. Considering the wide dimension of the Health Information System and its inclusion as a process within the digital agenda of the Republic of Kosovo, the role of central mechanisms and interest groups will be essential. For this purpose, the implementation of the Strategic Plan for the Development of the Health Information System 2024-2030 will be supervised by an inter-institutional mechanism established by decision of the Government of the Republic of Kosovo to ensure the participation of all decision-makers and interest groups that, in particular, deal with the digitalization process.

The Strategic Plan for the Development of the Health Information System 2024-2030, within the framework of the planned activities, gives priority to actions that have citizen/patient as their end goal. In order to achieve implementation of the goals of this plan, the Ministry of Health will continue cooperation with relevant institutions at the national and local level as well as with other strategic partners to further advance this vital mechanism that allows for evidence-based decision-making from the health sector. Within the time period 2023-2030, continuous support from the Government and strategic partners is expected, either through financing mechanisms, but also through the provision of the necessary technical assistance.

The Ministry, in order to implement this Strategic Plan of national interest, is evaluating options and alternatives for the resources needed to implement the Strategic Plan. Appreciating the role of civil society, the Ministry aims to continue cooperation with non-governmental organizations that also have the health sector within their scope.

The supplementary document of the Strategic Plan will be the action plan which will include the three-year time period, 2024-2026, with the possibility of annual review depending on the fulfilment of activities planned for different time periods. However, the action plan will also foresee activities that are expected to be implemented in the period 2026-2030 and that will be financially covered according to the regular planning within the Medium-Term Expenditure Framework.

The action plan presents a summary document of all the activities proposed with the 2023 feasibility study, for the development and operationalization of the Health Information System. The action plan within the Strategic Plan for the Development of the Health Information System 2024-2030 provides details about the activities for achieving the specific objectives, the time frame for achieving these objectives, the institutions responsible for implementation, the indicators for their monitoring and evaluation, the cost and cost bearers for the implementation of the activities that are planned in the 2024-2026 Medium-Term Expenditure Framework.

It is important that national policies are based on government decisions to give reforms the right meaning in financial and legal terms as well as the right timing. In order to achieve a successful implementation, it is necessary to include all relevant actors for the implementation of the Strategic Plan for the Development of the Health Information System 2024-2030.

6.1. Monitoring the implementation of the Strategic Plan

This chapter will provide information on the frequency of monitoring and reporting, as well as the focus and procedures. The interim review and evaluation of the action plans, including the scope of the review and the time frame, is determined based on the Progress Reports and the complexity of the strategic document. The development of mechanisms for monitoring and evaluating strategic documents allows for the development of evidence-based health policies and decision-making.

The Ministry will continuously monitor the indicators of the Strategic Plan for the Development of the Health Information System 2024-2030, with the same mechanisms that are provided for the monitoring of the Health Sector Strategy 2023-2030, using clear instruments such as: the matrix, the manual and the work plan for monitoring and evaluation. Based on the findings, a periodic report and recommendations will be prepared for the continuous improvement of this segment by considering and utilizing innovative approaches and applying good examples from other countries.

The monitoring of the Logical Framework and the AP should be done according to the monitoring system which the MoH has defined and which follows the model of the results-based logical framework or management. In the Logical Framework, the Ministry has defined the measurable, specific, achievable and relevant (SMART) indicators, which have defined quantitative and qualitative elements and the timelines for implementation. For these indicators, data has been collected on the current state of the indicator, in order to precisely measure the level of progress after the intervention according to the logic defined in the Logical Framework. In addition, each indicator will have the identification form, which precisely defines the details of the indicator, the degree of inclusion, the spectrum, the method of measurement, the institutions responsible for implementing, collecting, aggregating and analysing data, as well as the deadlines.

Based on the key indicators defined in the Strategic Plan and in the AP, the Ministry will continuously monitor the achievement of results and activities related to the strategic objective and specific objectives, ensuring that the responsible institutions and departments provide accountability in case of non-implementation of planned tasks and activities.

Monitoring will be carried out at two levels:

Monitoring of activities, which determines whether activities were carried out at the right time and at the right quality. The main tool for monitoring the activities is the action plan, which defines the implementation schedule for each activity. Whenever the various activities deviate from their schedule, it should be seen whether there are consequences for other activities and resources. The reasons for such deviations should be analysed, while the implementation plan should be corrected in terms of time. If the delay of the activities affects the implementation schedule of other activities, then the Ministry must react by adapting the plans and redistributing the existing resources. Resources must be available at the right time, at the right quality and quantity. The time required to secure the resources is often underestimated. This concerns human and physical resources. In order to ensure the liquidity of the implementation, the amount of funds that are available, including the situation in the public budget, etc., must be constantly monitored.

Monitoring of the objectives is based on their indicators. The indicators have the baseline value, the interim target and the final year target, in accordance with the period of the strategic document. For monitoring to be effective, interim targets should be set on an annual basis, becoming part of the annual work plan. Then, the conclusion is drawn by comparing the actual value with the defined target.

The assessment of the results achieved, the eventual challenges in the implementation and adoption with the budget planning process will be done through the annual update of the AP and regular reporting regarding the progress of the implementation.

Semi-annual report is prepared by the end of the month after the reporting period. The first semi-annual report covers the first 6 months of the year, while the second semi-annual report covers the period of 12 months. The report focuses on the completion of the actions as foreseen in the action plan, the reasons for delays, the risks associated with the implementation of the actions and the next steps. Below is the general format of the semi-annual report:

- Work plan for the reporting period
- Narrative description of work currently done
- Description of problems encountered and explanations of major deviations from the work plan
- Summary of planned expenses for the six months accompanied by any comments or explanations
- Recommendation for improving the implementation plan, changing measures, budget, etc.
- Work plan for the next six-month period.

Annual report is prepared by the end of the first quarter of the following year. The focus of the annual report is as follows:

- Accomplishment of objectives compared to indicator objectives (at least for the last two years)
- Timely completion of the actions undertaken
- Use of financial resources

- Main obstacles in implementation
- Corrective measures.

6.2. Evaluation of the implementation of the Strategic Plan

Evaluation is the most detailed process for analysing the success of strategy implementation, identifying what went well, examining the reasons behind what went wrong, and then re-adjusting strategic direction accordingly. The design and execution of the evaluation phase is usually independent of the regular monitoring and reporting framework. Evaluation involves formulating evaluation questions, collecting and analysing data to obtain answers to these questions, and gathering evidence to formulate conclusions and recommendations.

The dimensions of the evaluations will be as follows:

Relevance - the compatibility of the goals and objectives of the program with the needs of the citizens and the priorities of the Government;

Effectiveness - matching the achieved results of the strategy with the planned results as well as the needs of direct and indirect beneficiaries;

Efficacy - achieving the results with the lowest costs (the ratio of the results to the costs (resources) required or used for their achievement should be determined);

Implementation - the quality of the implementation process and structures;

Impact - intentional and unintentional influences;

Stability - long-term results and impacts on strategy.

7. BUDGET IMPACT AND IMPLEMENTATION OF THE STRATEGY

The Ministry of Health (MoH) has prepared the budget impact assessment for the Strategic Plan for the Development of the Health Information System 2024-2030 and Action Plan 2024-2026. It is estimated that the cost of its implementation is €52,979,000.00 for the years 2024-2030, which also includes the total cost of anticipated (software) maintenance in the amount of €18,791,000.

The Strategic Plan envisages that, throughout the period of 2024-2030, about 39% of the total costs will be spent on e-services projects with most of them being implemented at the end of the period, after priority projects have been completed, including hardware (HW), which is expected to be purchased/installed during the first two years of the observed period, for about 9% of the total projected costs. The relatively most important and priority parts of the entire e-Health ecosystem – basic medical systems, should comprise about 33% of the total projected costs (including maintenance, once the software is built/purchased and implemented).

The action plan for the implementation of the Strategic Plan for the Development of the Health Information System 2024-2030 will create additional budget costs in the amount of €41,853,410 over the budget appropriations foreseen by Law No. 08/L-193 on the Budgetary Appropriations for the Budget of the Republic of Kosovo for the Year 2023 and the estimates for the years 2025-2026 for the Ministry of Health as implementer of the action plan.

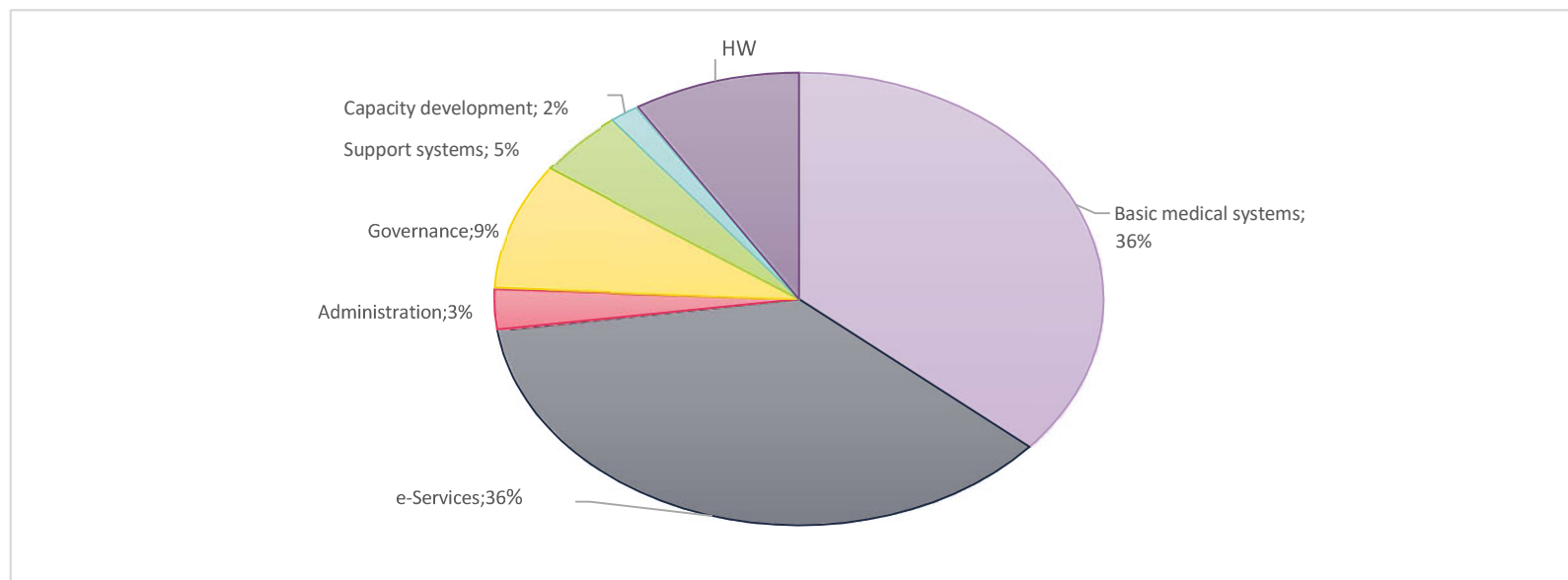


Figure 1- Total cost of specific objectives in %

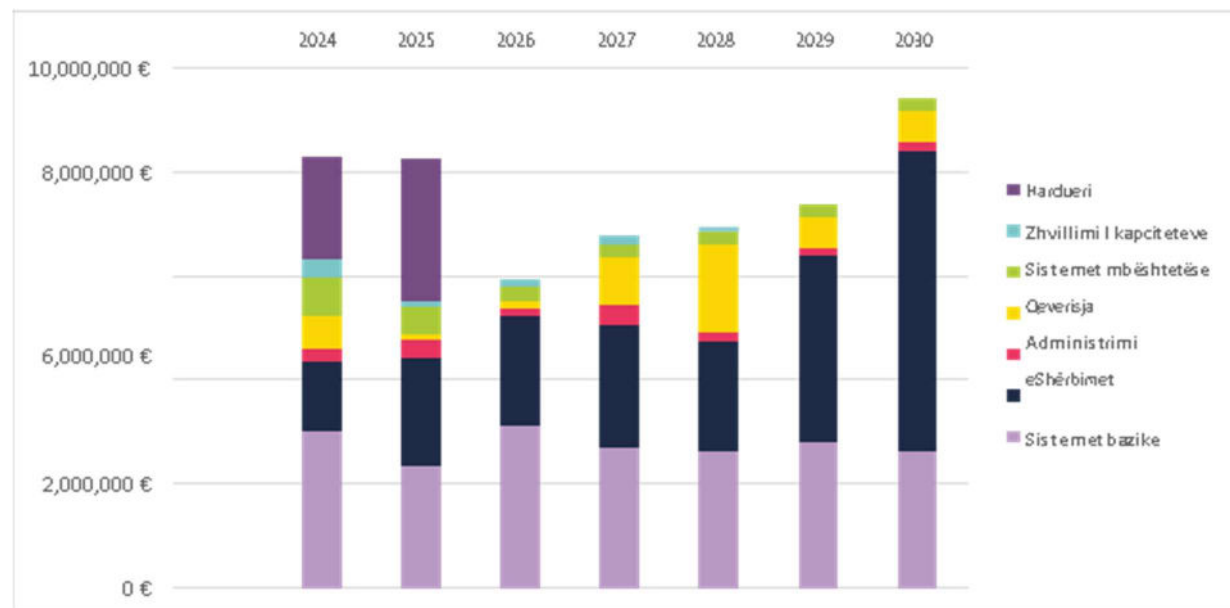


Figure II – Total cost of activities per year according to specific objectives

The Strategic Plan also presents potential risks and challenges, including the need for adequate budgets and resources that may cause delays in implementation. The large number of interdependent activities requires competent project management skills and additional personnel. Experience from other countries shows that such projects can take more than five years. However, with sufficient budgets and resources secured for efficient implementation and public procurement, the systems can be completed within the proposed time frame.

The financing of the Strategic Plan is a matter of public interest and will be done according to health care financing models, allocating funds on an annual basis based on regular budget planning. Healthcare digitization typically accounts for 3-5% of total health care spending. However, in addition to the amount, it is essential to ensure a stable and secure source of income as, like with any infrastructure, constant improvements and maintenance are necessary to keep it useful and functional. In addition, the implementation of the Strategic Plan entails the need to allocate significant initial investment funds, requiring the consideration of alternative sources of financing. The financing sources of the Strategic Plan for the Development of the Health Information System 2024-2030 will be secured through the State budget and the World Bank loan covering the first 4 years of implementation. Public institutions are funded by the Government and may have a limited budget for IT infrastructure and maintenance. As a result, public hospitals may not have the resources to invest in the most advanced IT systems, even if the budget comes from Government funds. In contrast, private institutions may have more financial resources and can afford to invest in more advanced IT systems, giving them a competitive advantage.

8. INVESTMENT PLAN BASED ON THE 2023 FEASIBILITY STUDY

Zhvillimi i studimi të fizibilitetit për eHealth në Kosovë – Raporti Përfundimtar

Plani i Investimeve për vite (në Euro)

ID-ja e projektit	Emri i Projektit	Financuar nga	2024	2025	2026	2027	2028	2029	2030
1	Strategjia e eHealth	MSH	120.000	0	0	0	0	0	0
2	Konsulenca për konfigurimin e Organit Drejtues eHealth	MSH	126.000	54.000	0	0	0	0	0
3	Përcaktoni dhe optimizoni proceset në zbatimin dhe mbikëqyrjen e projekteve të eHealth	MSH	100.800	43.200	0	0	0	0	0
4	Zhvillimi i qendrës së thirrjeve të kujdesit shëndetësor (HCCC)	MSH	0	0	79.200	132.000	52.800	0	0
5	Zhvillimi i Qendrës së Inovacionit të Shëndetit Dixhital (DHIC)	Fondi/donacion i BE-së	0	0	60.000	60.000	30.000	0	0
6	Rinovimi i HW dhe blerjet e reja	MSH	1.974.000	2.726.000	0	0	0	0	0
7	Përmirësimi i BHIS + mirëmbajtja	Organi drejtues i eHealth	360.000	360.000	360.000	360.000	360.000	360.000	360.000
8	HMIS (Sistemi i Informacionit të Menaxhimit të Spitalit)	Organi drejtues i eHealth	1.400.000	1.050.000	1.400.000	700.000	700.000	700.000	700.000
9	LIS (Sistemi i Informacionit Laboratorik)	Organi drejtues i eHealth	444.000	333.000	444.000	222.000	222.000	222.000	222.000

ID-ja e projektit	Emri i Projektit	Financuar nga	2024	2025	2026	2027	2028	2029	2030
10	RIS (Sistemi Informativ i Radiologjisë) duke përfshirë PACS (Sistemet e Arkivimit dhe Komunikimit të Fotografive)	Organi drejtues i eHealth	592.000	444.000	592.000	296.000	296.000	296.000	296.000
11	Përmirësimi i SMSF + mirëmbajtje	Organi drejtues i eHealth	120.000	120.000	120.000	120.000	120.000	120.000	120.000
12	Transfuzioni i gjakut IS, lidh TC rajonale	NCBTK	98.000	42.000	28.000	0	0	0	0
13	EHR + HIE	Organi drejtues i eHealth	1.050.000	1.400.000	1.400.000	700.000	700.000	700.000	700.000
15	Portali i pacientit	Organi drejtues i eHealth	225.000	225.000	300.000	150.000	150.000	150.000	150.000
16	e-Referimi	Organi drejtues i eHealth	50.000	200.000	50.000	50.000	50.000	50.000	50.000
17	Menaxhimit i të Dhënave Kryesore	Organi drejtues i eHealth	250.000	350.000	100.000	100.000	100.000	100.000	100.000
18	Sistemi Statistikor i Shëndetit Publik (SPHS)	IKSHPK	400.000	80.000	80.000	80.000	80.000	80.000	80.000
19	Sistemi i mbikëqyrjes së sëmundjeve ngjitëse	IKSHPK	250.000	50.000	50.000	50.000	50.000	50.000	50.000

ID-ja e projektit	Emri i Projektit	Financuar nga	2024	2025	2026	2027	2028	2029	2030
20	Përmirësimi i sistemeve ekzistuese (Punonjësi shëndetësor, specialist, licencim)	Organi drejtues i eHealth	250.000	50.000	50.000	50.000	50.000	50.000	50.000
21	Zonimi	MSH	150.000	30.000	30.000	30.000	30.000	30.000	30.000
22	Mbështetja e kapacionit në HIFIS	FSHF	35.000	25.000	10.000	10.000	10.000	10.000	10.000
23	Mbështetje DRG në HIFIS	FSHF	60.000	150.000	90.000	60.000	60.000	60.000	60.000
24	Inspektorati	MSH	210.000	150.000	60.000	60.000	60.000	60.000	60.000
25	Integrimi i të dhënave të KMA me MDM	KMA	30.000	120.000	30.000	30.000	30.000	30.000	30.000
26	Stomatologjia	Organi drejtues i eHealth	0	0	50.000	200.000	250.000	100.000	100.000
27	Sistemi i informacionit të kujdesit shëndetësor emergjent (EHIS)	Organi drejtues i eHealth	0	0	100.000	400.000	500.000	200.000	200.000
28	Moduli i transfuzionit në spitale	NCBTK	0	0	0	196.000	140.000	56.000	56.000
29	Përmirësimi i Sistemit të Menaxhimit të Informacionit të Mikrobiologjisë (MIMS) (IKSHPK)	Organi drejtues i eHealth	0	0	24.000	216.000	48.000	48.000	48.000

ID-ja e projektit	Emri i Projektit	Financuar nga	2024	2025	2026	2027	2028	2029	2030
30	e-Appointment	Organi drejtues i eHealth	0	0	0	280.000	200.000	80.000	80.000
31	Integrimet EHR me ofruesit privatë	Organi drejtues i eHealth	0	0	20.000	100.000	80.000	40.000	40.000
32	E-Receta duke përfshirë farmacitë private	Organi drejtues i eHealth	0	0	0	240.000	360.000	120.000	120.000
33	e-Vizitat	Organi drejtues i eHealth	0	240.000	240.000	240.000	120.000	120.000	120.000
34	Telekonsulta (ndërmjet personelit mjekësor)	Organi drejtues i eHealth	0	0	30.000	270.000	60.000	60.000	60.000
35	Telemonitorimi	Organi drejtues i eHealth	0	0	80.000	320.000	400.000	160.000	160.000
36	Sistemi Statistikor i Shëndetit Publik (SSHS) 2.0	IKSHPK	0	0	20.000	180.000	40.000	40.000	40.000
37	Sistemi analitik (DWH)	Organi drejtues i eHealth	0	0	0	280.000	420 mijë	140.000	140.000
38	Gjurmimi	Organi drejtues i eHealth	0	0	0	80.000	720.000	160.000	160.000

ID-ja e projektit	Emri i Projektit	Financuar nga	2024	2025	2026	2027	2028	2029	2030
39	Regjistrat kombëtarë të shëndetit publik (diabeti, kanceri, HIV, TBC, ...)	IKSHPK	0	0	0	260.000	390.000	130 mijë	130.000
40	Softueri i qendrës së thirrjeve (CCS)	MSH	0	0	30.000	270.000	60.000	60.000	60.000
41	e-Radiologjia - Depoja qendrore kombëtare e imazheve të radiologjisë dixhitale	Organi drejtues i eHealth	0	0	0	0	0	600.000	120.000
42	Zhvillimi i zgjidhjes së AI për triazhimin e pacientëve	Organi drejtues i eHealth	0	0	0	0	0	100.000	400.000
43	e-Pathways: Sistemi i informacionit i udhëzimeve të kujdesit shëndetësor	Organi drejtues i eHealth	0	0	0	0	0	160.000	240.000
44	Sistemet e mbështetjes së vendimeve klinike (CDSS)	Organi drejtues i eHealth	0	0	0	0	0	600.000	1.400.000
45	Sistemet e mbështetjes së vendimeve për barnat (DDSS)	Organi drejtues i eHealth	0	0	0	0	0	300.000	1.200.000
46	Sistemet mbështetëse të vendimeve të imazhit (IDSS)	Organi drejtues i eHealth	0	0	0	0	0	240.000	960.000
47	e-Mjekimi: sistem informacioni i integruar për menaxhimin profesional dhe ekonomik të mjekimit	Organi drejtues i eHealth	0	0	0	0	0	800.000	0

Project ID	Project name	Funded by	2024	2025	2026	2027	2028	2029	2030
48	Cross-border patient data exchange	e-Health governing body	0	0	0	0	0	0	500.000
	TOTAL		8,294.800	8,242.200	5,927.200	6,792.000	6,938.800	7,382.000	9,402.000

