National Health and Social Care Program (NHSP)

Digital Strategy | 2020 - 2025 |

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DRAFT

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Acronyms

BMGF	Bill & Melinda Gates Foundation
DHI	Digital Health Interventions
DOH	Department of Health
DW&BI	Data Warehousing and Business Intelligence
EMR	Electronic Medical Record
ESB	Enterprise Service Bus
GHSC-PSM	Global Health Supply Chain Program-Procurement and Supply Management
HISDU	Health Information Service Delivery Unit
ICT	Islamabad Capital Territory
IT	Information Technology
KP	Khyber Pakhtunkhwa
KPITB	Khyber Pakhtunkhwa IT Board
MDM	Master Data Management
MoNHSR&C	Ministry of National Health Services, Regulations and Coordination
NHSP	National Health and Social Care Program
NHWG	National Health Working Group
NIH	National Institute of Health
NITB	National IT Board
NTC	National Telecommunication Corporation
NTF	National Task Force
PCMT	Product Catalogue Management Tool
PHE	Public Health England
PITB	Punjab Information Technology Board
PPE	Personal Protective Equipment
RACI	Responsible, Accountable, Consult, Inform
TECH	Transformation and Excellence Centre for Health
TOGAF	The Open Group Architecture Framework
SDG	Sustainable Development Goals
SOW	Scope of Work
UNDP	United Nations Development Programme
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organization

Message of Special Advisor to Prime Minister on Health

In times when the healthcare systems around the world are switching over to the digital pathways, Pakistan is also recognizing E Health as an imperative establishment at the provincial and national level. Although, digital health may appear a farfetched solution to our indigenous healthcare problems such as inadequate medical facilities, lack of infrastructure and scarcity of medical professionals. However, we are cognizant of the fact that digitization would help in minimizing inefficiencies and improving performance of healthcare delivery system. Substituting tedious paperwork with electronic data would enable faster access and confidentiality of data fostering more efficient and responsive health system.

Government recognizes that a holistic digital strategy for national health and social care program is the need of the hour moving from piecemeal approach to technology. The Ministry of National Health Services, Regulations and Coordination (MoNHSR&C), with the technical assistance of the USAID funded Global Health Supply Chain Program – Procurement and Supply Management (GHSC-PSM) project, have developed the National Health and Social Care Program (NHSP) Digital Strategy. The strategy is aimed at improving health governance by adopting a systemic approach. The government also aims to meet global commitments through this initiative, such as Global Health Security Agenda (GHSA), International Health Regulations (IHR), Sustainable Development Goals (SDG) and Universal Health Coverage (UHC).

We highly appreciate the support of USAID, Pakistan and agency's bilateral contributions in the health sector. I wish to thank Dr. Muhammad Tariq, Country Director, USAID funded GHSC-PSM project Pakistan, for his leadership, technical understanding, and support in developing this strategy with my team.

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Dr. Faisal Sultan
Special Advisor to Prime Minister on Health
Ministry of National Health Services Regulations and Coordination

Acknowledgement from Executive Director, National Institute of Health

The National Institute of Health (NIH) is leading multi-disciplinary public health initiatives in the country with emphasis on diagnostic and field investigation of infectious disease, outbreaks and emergencies, human resource development and capacity building. The current government is fully committed to reinvigorate the NIH and strengthen its role as center for diseases control Pakistan. The establishment of Technology and Excellence Center for Health (TECH) at NIH in line with the presidential ordinance would provide a national digital platform to host data and create harmony among the numerous technology initiatives in the country by public and private sectors.

Under the National Health and Social Care Program (NHSP) Digital Strategy, the formation of a National Task Force (NTF) and sub committees on health systems and technology will provide many benefits, including the development of a national health IT Policy, strategic framework, and enterprise architecture. It will also define the roles and responsibilities of public, private and development partners, develop data standards, and map current implemented solutions along with their financial requirements. To maximize the impact of this strategy, it is crucial to effectively implement the national digital platform and will require close collaboration with provinces at all levels. This will ensure tasks are prioritized, necessary personnel and resources are identified, and strategic goals are being met in accordance with the government priorities. Ultimately, this digital strategy will leverage technology to achieve end to end visibility and will empower evidence-based decision-making.

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Maj. Gen. Dr. Aamer Ikram
Executive Director
National Institute of Health

Executive Summary

Real time information is one of the key pillars of an efficient and responsive health system. Information technology plays a pivotal role through automation of critical functions of healthcare delivery systems to achieve end to end data visibility. Linking preventive and curative health paradigms through technology has resulted in better health and social outcomes for communities.

This strategy is focused on development and implementation of a national digital platform for evidence-based decision-making. It would delineate strategic framework, development of the following:

1. Formation of a National Task Force (NTF) and sub committees on health systems and technology
2. Health information system policy
3. Enterprise architecture
4. Develop data standards and governance model
5. Mapping current implemented solutions, identifying gaps and chalking out the implementation plan along with the financial requirements.

As technical lead and custodian of health policy, the Ministry of National Health Services Regulations and Coordination (MoNHSR&C) aims to implement a robust health system across the country which responds to the local needs as well as global commitments like International Health Regulations (IHR), Sustainable Development Goals (SDG) and Universal Health Coverage (UHC).

As signatory to SDGs, Ministry is privy to align its development agenda with low carbon pathways. The necessary policies would be articulated to ensure the minimum toll of this energy intensive initiative on our eco system by promoting Green IT in a sustainable manner. Furthermore, the involvement of educational institutes/universities would ensure an enabling environment to create linkages between academia and industry, critical to improve socio economic indicators closely linked with the physical and mental health of the population.
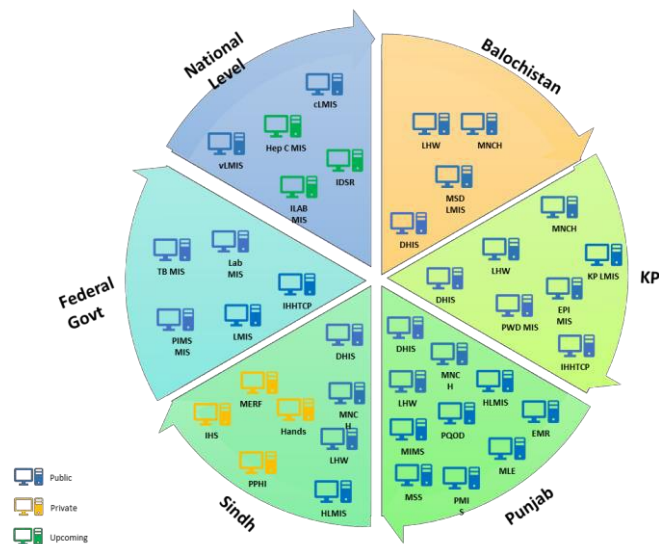
Introduction

Federal and provincial governments are striving hard to promote good health and well-being, Goal 3 of SDGs. The Ministry of National Health Services, Regulations and Coordination (MoNHSR&C) and provincial health departments are committed to uplift their service delivery network in terms of providing quality care by enhancing outreach. It is imperative for institutions to evolve and leverage opportunities offered by digital health and implement new techniques to deal with emerging challenges. The document outlines the strategy aimed at improving health governance through a systemic approach to deal with contemporary and unprecedented challenges. The strategy is hereby referred as National Health and Social Care Program (NHSP)

National Institute of Health under the mandate of MoNHSR&C, has been tasked to conceive, design, develop and implement strategy for NHSP in consultation with all relevant stakeholders. NIH is the foremost institution leading multi-disciplinary public health related activities like diagnostic services, research and production of various vaccines. NIH serves as the backbone to the National COVID response, where it has led in disease analytics and predictive modeling. The infrastructural support extended by NIH includes setting up PCR labs, training of healthcare workers, and provisioning of personal protective equipment (PPE).

Compromised health indicators directly attribute to poverty. Government of Pakistan identifies social security as the topmost agenda. The effective implementation plans mandate close collaboration with provinces at all levels. Interventions like EHSAAS and Benazir Income Support Program (BISP) are designed to improve maternal and child health indicators. Conditional cash transfer-based initiatives linked with ante/post-natal care, facility-based deliveries and primary school enrollments of girls are also under consideration. These initiatives are bound to improve socio-economic conditions of marginalized communities. Programs like Kamyab Jawan and Sehat Sahulat have also been recently launched focused on delivering employment and healthcare opportunities to socially uplift the over-burdened youth and under-privileged communities. Such programs have laid the foundation for social welfare reforms.

The support being extended by NGOs and the private sector cannot be neglected in augmenting government programs along with their own respective welfare initiatives.

USAID supported Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) project is a technology partner of MoNHSR&C and NIH. The project conducted a desk review of management information systems implemented in health sector of Pakistan. The findings included; existence of large number of vertical information systems in Pakistan Health Ecosystem, most information systems are fragmented, ad-hoc and non-standard. Information systems in health sector tend to hold personal identification and information, the safety and security of which is a pressing concern. The desk review pinpoints loopholes

where such sensitive information has been hosted in unsecure unsolicited environment. Certain information systems are developed with the main perspective to enter categorical data and to digitize post-transactional data only. The practice leads to data fudging and other such malpractices, which at best furnishes misleading information. Other constraints are limitation of financing for digitization framework, lack of IT maturity, inadequate legislative support and compromised adaptation.

Key Goals

The NHSP is aiming at essential reforms to reinvigorate the health systems through achieving the following keys goals:

1. Develop Program Framework
2. Develop National Health Digital policy for sustainable systems
3. Situation Analysis: assessment of digital health capacity and implemented information systems
4. Develop Enterprise Architecture
5. Data Security and Governance
6. Strengthening of Transformation & Excellence Centre for Health (TECH)
7. Centralized Monitoring

Objectives

1. Digital Health IT Policy - governance
2. Information systems:
    a. defragmentation by removing duplications
    b. development and implementation of new standard systems to fill in gaps like DHIS2, PCMT, EMR, etc.
    c. enhancing and strengthening existing systems
    d. Single source of information – country wide: data warehousing and business intelligence (DW&BI)
    e. Improve compliance for real-time data reporting
    f. Data Security: hosting at secure government data centers
3. Capacity building
4. Sustainability – Capacity transfer to the public sector stakeholders
5. Consolidation of interventions and funding streams

Scope of Work (SOW)

Under implementation of NHSP, a National Task Force (NTF) led by NIH/MoNHSR&C, including representation from provincial/regional line departments, IT boards, development partners and private sector, will be notified to oversee the design, development and implementation of the systems. Further, NTF would be empowered to notify sub committees to assign tasks including but not limited to development of national health IT Policy, strategic framework, enterprise architecture in line with digital health standards.[1] This apex forum would define the roles and responsibilities of public/private   sectors

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[1]   https://www.who.int/reproductivehealth/publications/mhealth/classification-digital-health-interventions/en/

and development partners for application development & hosting services, interoperability, implementation, change management, and HR capacity building.

Key Performance Indicators

As the process of designing, development and implementation of NHSP would be a multifaceted project ranging from policy formulation at national level to training a community health worker. This would make the performance measurement a complex feature. However, to keep track of the strategic direction and measuring operational deadlines the KPIs would be developed. Few themes are mentioned below for reference:

1. Deliverables related to design, development and implementation achieved on time
2. Quality of developed products to be in line with the required standards
3. Compliance by public and private sector stakeholders

SWOT Analysis

Strengths
- Government's commitment
- IT Capacity within IT Boards & In-house Teams of Departments
- Existing array of Solutions

Weaknesses
- Financial constraints
- ICT Infrastructure at Health Facilities
- IT HR
- Lack of synergies

Opportunities
- Funding Partners
- Implementation partner
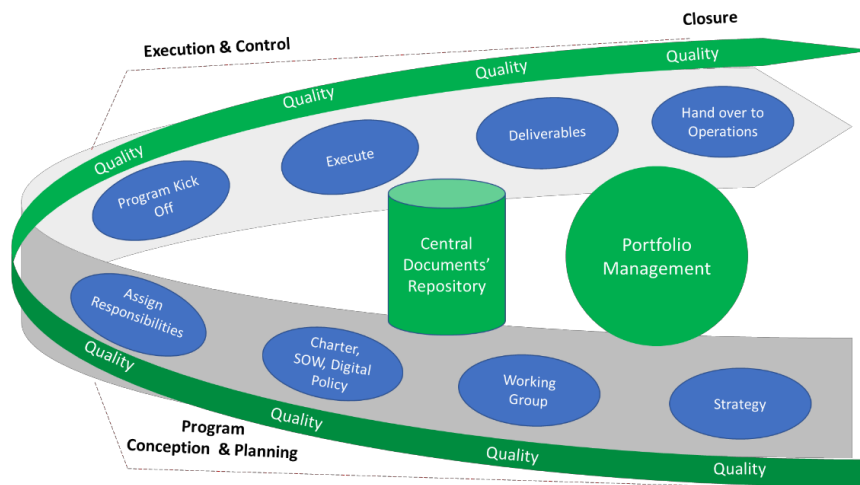
Threats/Risks
- Emergencies
- Authorities commitments

Proposed Framework

Guidelines defined by AXELOS[2] and Project Management Institute (PMI) are proposed to be adopted for the implementation for NHSP. NTF will approve the program charter, team, SOW and further nominate technical and program execution committees. The NTF will also assign responsibilities of committee members and implementation partners. After program prerequisites are completed, the program will be formally launched; followed by program activities to achieve the deliverables. Completed deliverables will be handed over to the operations team which will be enhancing and maintaining the system as per requirements. For Services, IT Infrastructure Library (ITIL) framework is proposed.
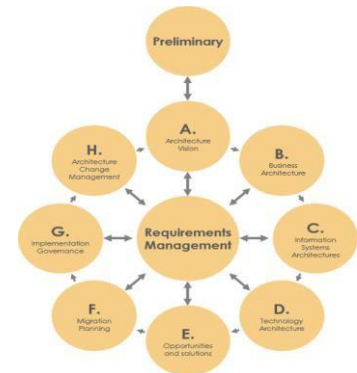
There will be a central document repository, which will maintain complete documentation of each stage and will be available to stakeholders as per their access rights. Portfolio management will be a central body for program management. Quality of work will be part of the framework; quality gates for each stage to ensure quality deliverables.
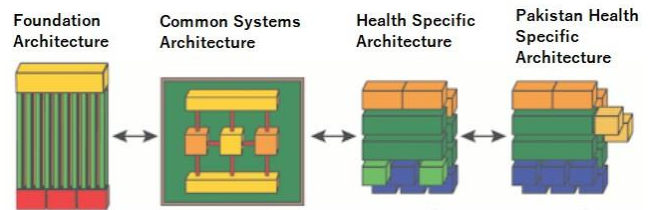

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[2] https://www.axelos.com/about-axelos

Proposed Enterprise Architecture

The Open Group Architecture Framework[3] (TOGAF) is widely used and will be adopted for NHSP in terms of defining the enterprise architecture. TOGAF is a flexible architecture framework that can adopt other frameworks and it is proposed that Health Level Seven (HL7), International Standards Organization (ISO), digital health framework of USAID and open HIE framework may also be adopted within TOGAF[4] as per Pakistan health eco goals and health system challenges (HSC). Enterprise Architecture (EA) will have sub architectures of Business, Information Systems and Technology along with architecture implementation details.

An enterprise architectural approach helps to categorize processes, data, information required at different levels, selection of apt information system and technology (e.g., hosting) and above living repository for defining principles and guidelines. Digital-Health Enterprise Architecture must be defined at the country level to enable the identification of common, standard based, re-usable digital components with exchange of inter-ministerial data to enable decision makers.

Proposed High Level Architecture (HLA)

Following is the proposed high-level architecture, which covers all possible solutions required to achieve a mature health system. Enterprise Service Bus[5], Master Data Management[6] and Data Warehousing[7] are proposed which are mandatory for robust architecture with minimum Total Cost of Operations (TCO) and high-quality data.

It is imperative that systems that are already implemented and are mature will continue functioning. Green fields (non-digitized) and brown field (partially digitized) will be considered a priority for transformation.

For quick wins, it is proposed to implement Medicine Inventory at ICT Tertiary Care Hospitals, its dispensaries and Wards. Followed by Organ Donation portal, Enterprise Service Bus, Master Data Management, interfacing key systems and Business Intelligence for all level consolidated dashboards.

Further details and granular information will be provided in subsequent documents.
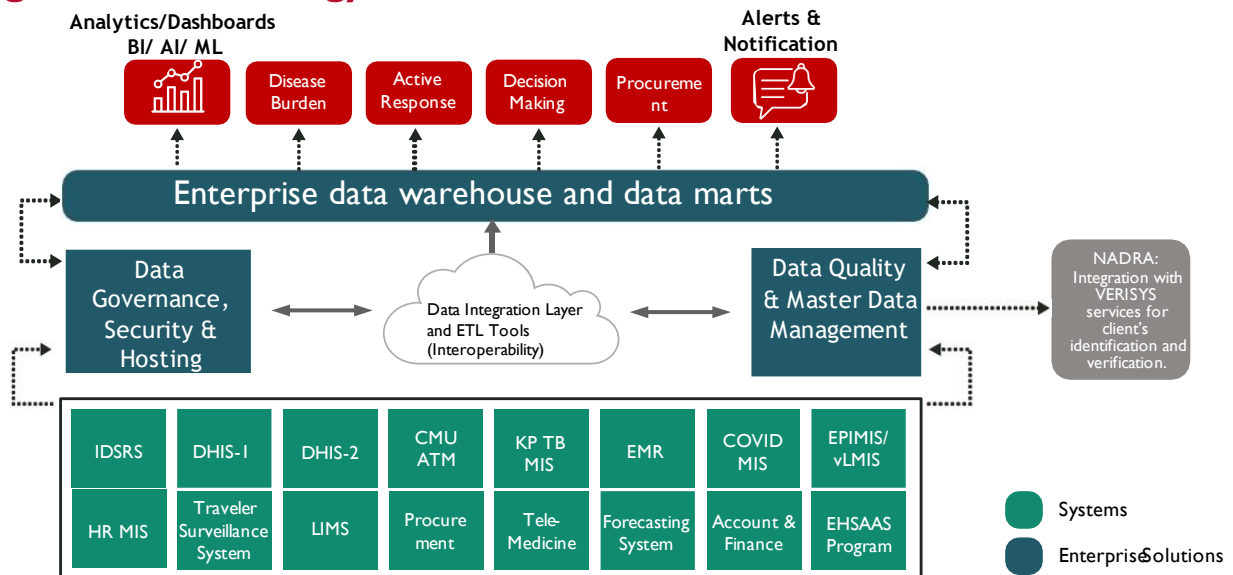
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[4] A Vision for Action in Digital Health 2020-24
[5] https://en.wikipedia.org/wiki/Enterprise_service_bus
[6] https://en.wikipedia.org/wiki/Master_data_management
[7] https://en.wikipedia.org/wiki/Data_warehouse

DigitalHealthStrategy

Analytics/Dashboards
BI/ AI/ ML

Alerts &
Notification

Disease Burden | Active Response | Decision Making | Procurement

Enterprise data warehouse and data marts

Data Governance, Security & Hosting

Data Integration Layer and ETL Tools (Interoperability)

Data Quality & Master Data Management

NADRA: Integration with VERISYS services for client's identification and verification.

| IDSRS | DHIS-1 | DHIS-2 | CMU ATM | KP TB MIS | EMR | COVID MIS | EPIMIS/ vLMIS |
| HR MIS | Traveler Surveillance System | LIMS | Procurment | Tele-Medicine | Forecasting System | Account & Finance | EHSAAS Program |

Systems

Enterprise Solutions

USAID GLOBAL HEALTH SUPPLYCHAIN PROGRAM
Procurement and Supply Management

Budget and Finance

1. Preparation of PC1 based on situational analysis, Enterprise Architecture and Software Requirement Specification development and approval.
2. Financial Support from donor agencies like World Bank, Asian Development Bank, Global Fund etc.
3. Collaboration of development partners including but not limited to WHO, USAID, UNICEF, Public Health England, UNDP, Bill & Melinda Gates Foundation (BMGF) etc.
4. Inter-ministerial and stakeholder collaboration.

USAID GLOBAL HEALTH SUPPLY CHAIN PROGRAM

Procurement and Supply Management