

Ministry of Health Digital Strategy Framework and Roadmap

KSA Ministry of Health

22 December 2020

Version 3.0

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Descriptions of key abbreviations used throughout this document

Abbreviation	Description	Abbreviation	Description
DSFR	Digital Strategy Framework and Roadmap	MoC	Model of Care
MoH	Ministry of Health (KSA)	ACO	Accountable Care Organization
VRO	Vision Realization Office	HIS	Health Information System
VRP	Vision Realization Project	EMR	Electronic Medical Record
NTP	National Transformation Program	EHR	Electronic Health Record
NDU	National Digitization Transformation Unit	PHC	Primary Health Center
NCA	National Cybersecurity Authority	HCP	Health Care Provider
SDAIA	Saudi Data and Artificial Intelligence Authority	OHT	Ontario Health Teams
NHIC	National Health Information Center	LHIN	Local Health Integration Networks
HHC	Health Holding Company	ADHA	Australian Digital Health Agency
PHAP	Program of Health Assurance & Purchasing	iHIS	Integrated Health Information Systems
RHD	Regional Health Affairs Directorate	CBAHI	Central Board For Accreditation Of Healthcare Institutions
SHC	Saudi Health Council	HIMSS	Healthcare Information and Management Systems Society
NHCC	National Health Command Center	HSTP	Healthcare Sector Transformation Plan
DHCoE	Digital Health Center of Excellence	PMO	Program Management Office
CCHI	Council of Cooperative Health Insurance	EA	Enterprise Architecture
NDTS	National Digital Transformation Strategy	PACS	Picture Archiving and Communication System
NHO	National Health Observatory	COPD	Chronic Obstructive Pulmonary Disorder
PSP	Private Sector Participation	KPI	Key Performance Indicator
CoE	Center of Excellence	SME	Subject Matter Expert
NHS	National Health Service	CAGR	Compound Annual Growth Rate
PMO	Project Management Office	NCD	Non-communicable Disease
ITS	Information Technology Shared Services	UHR	Unified Health Record
SeHE	Saudi eHealth Exchange (nphies)	AI	Artificial Intelligence
CEDA	Council of Economic and Development Affairs	SLA	Service Level Agreement
GDP	Gross Domestic Product	RFP	Request for Proposal
ED	Emergency Department	OECD	Organisation for Economic Co-operation and Development
WHO	World Health Organization	ERP	Enterprise Resource Planning
LIS	Laboratory Information System	NDMO	National Data Management Office
SMO	Strategy and Change Management Office	SHIB	Saudi Health Insurance Bus

Definitions of key terminologies used throughout this document

Terminology	Definition
Electronic Health Record	A patient's official health document that is shared among multiple medical organizations. All records are stored in a digital format and include the same types of information, like contact and insurance details, a list of medications and surgeries or procedures performed, etc.
Electronic Medical Record	A patient record created by providers for specific encounters within hospitals and ambulatory clinics environments. It is more than just a replacement for paper records. They effectively allow communication and coordination among members of a healthcare team for optimal patient care.
Health Information Exchange	A reliable and secure sharing of the healthcare-related data among institutions, health information organizations and government facilities in compliance with national standards.
Health Information System	A computer system that addresses mainly the administrative needs of hospitals. They manage the data related to the billing department (RCM), laboratory (LIS), nursing (NIS), pharmacy (PIS), radiology (RIS) and blood bank departments.
Picture Archiving and Communication System	A healthcare imaging technology which provides economical storage and convenient access to the content, including computed tomography (CT) and magnetic resonance imaging (MRI) results.
Roadmap Categories	Collection of portfolios grouped together to highlight the target focus, directly linked to the Strategic Goals
Roadmap Initiative Portfolios	Group of related programs managed in a coordinated way to obtain benefits and control potentially not available when managed individually
Programs/Projects	Focused programs can be broken down to specific projects. These can be linked directly to Strategic Objectives to drive the Strategy and measure the progress of KPIs
Patient Centric Care ⁵¹	Patient-centered care focuses on the patient and the individual's particular health care needs. The goal of patient-centered health care is to empower patients to become active participants in their care.
Value Based Care ⁵⁴	Value-based care may be defined as paying for health care services in a manner that directly links performance on cost, quality and the patient's experience of care.
Enterprise Architecture ⁵²	EA is a well-defined practice for conducting enterprise analysis, design, planning, and implementation, using a holistic approach at all times, for the successful development and execution of strategy. Enterprise Architecture applies architecture principles and practices to guide organizations through the business, information, process, and technology changes necessary to execute their strategies. These practices utilize the various aspects of an enterprise to identify, motivate, and achieve these changes.
Accountable Care Organisation ⁵³	An ACO is a provider organization that takes collective responsibility for the care delivery, quality of that care and cost of that care for a given population, for a defined time under a contractual arrangement with a payer. ACOs are held accountable for achieving a set of pre-agreed quality outcomes within a given budget and are rewarded based on their quality and financial performance. The ultimate goal of ACOs is to meet the Kingdom's triple aim: improve people's experience of care, improve population health and reduce overall cost of care

01 Introduction

1.1 Introduction

1.2 Purpose of the MoH Digital Strategy Framework and Roadmap

1.3 Stakeholder Engagement

Introduction



“Digital health should be an integral part of health priorities and benefit people in a way that is ethical, safe, secure, reliable, equitable and sustainable”¹

World Health Organization

Over the past years, KSA's healthcare system has experienced remarkable transformation, beginning with the development of a **comprehensive and ambitious Vision 2030**, at the heart of which lies a healthy and vibrant society. This led to an **onset of reforms** in the healthcare sector led by entities such as the **NDU, VRO, MoH and other stakeholders**. These entities identified **digital health as a key enabler**, and translated the **Vision 2030 into strategies**. Simultaneously, **many new entities were also established** to address the requirements of an increasingly digitized health sector.

As a result of these reforms, there has been **significant improvements in digital health in KSA**. For instance, 11 million EHRs have been implemented, % of hospitals with HIS systems has increased significantly, e-referrals is now a common practice across MoH healthcare facilities. Likewise, the society has benefited from applications which allow individuals to book appointments, view their health records, as well as receive virtual consultations, which saw a growth in users, especially during the recent pandemic.

However, **there are still challenges and barriers that exist in the digital health ecosystem**, which are the primary causes for inefficiencies such as duplication of initiatives, wastage of resources, lack of clarity and overlapping roles and responsibilities among stakeholders. In addition to the challenges faced by the society, such as delays in receiving care, long waiting time due to increasing demand for healthcare in a growing and ageing society, rising burden of chronic diseases, geographical barriers to accessing care, and lack of high-quality care due to low competency and capability among the workforce.

In order to mitigate these challenges, **measures are being adopted**, including **provider reforms, workforce development, digital health development, governance structure development, financing reforms, and the implementation of a new MoC**. One of the key measures is the **transformation of MoH to be a healthcare super regulator**, focussed on regulating, supervising and monitoring aspects of healthcare including digital health. The planning and delivery of health and digital health services will be the responsibility of ACOs, which are currently clusters that are being positioned to become future ACOs.

In light of these recent developments, taking into account the **changing requirements** imposed by the **recent Covid-19 pandemic**, there is a need for an **updated MoH Digital Strategy Framework and Roadmap** which will guide the MoH Digital Health, MoH internal, as well as external stakeholders, to work in collaboration towards providing a world-class patient-centric healthcare experience, enabled by digital health, as envisioned by the leaders of this country.

The potential benefits of Digital Health in KSA

Digital Health has the potential to deliver safe, high quality, sustainable, and improved health and wellbeing for the population of Saudi Arabia. Delivered effectively, digital health has the following benefits:

For the population

- Availability of multiple channels to receive customized care anytime and anywhere, hence improving the accessibility to health care and wellbeing
- Person-centric digital healthcare solutions to enhance experience, in turn, improving engagement of the individuals and overall satisfaction
- Continuity of care across multiple settings through interoperable and integrated digital health solutions, and as a result, improving the overall quality of care

For the healthcare providers

- Interoperable smart systems leading to improved medical diagnosis, treatment decisions, digital therapeutics, etc. in turn enhanced physician's quality of care delivery
- Allowing physician's more time to communicate with their patients and do things they are meant to be doing by reducing their administrative workload using digitisation

For the healthcare system

- Strengthening of health promotion and disease prevention, leading to healthier society
- Faster and more accurate diagnosis, access to treatment which may be emergency, palliative or rehabilitative care, leading to better outcomes and management of healthcare conditions
- Leveraging digital health solutions to reduce manual administrative tasks, reduce duplications, medical errors, etc. leading to enhanced efficiencies and sustainability in the healthcare systems

The MoH Digital Strategy Framework and Roadmap aims to empower all stakeholders in the ecosystem to realize the maximum benefits of a digitally enabled healthcare system, by enhancing the existing technologies where possible, and implementing new solutions where needed.



The purpose of the MoH Digital Strategy Framework and Roadmap

1

Develop a strategy which is **aligned with the existing national agenda for digital health and transformation** of the health system, demonstrating synergy with the national momentum for digitization of the health system

2

Identify and address as many challenges as possible with a **360 degree view of the digital healthcare ecosystem** in KSA for a comprehensive digital framework and roadmap

3

Define a **strategy direction guided by design principles**, in alignment with the national strategies, embedding learnings from healthcare leaders, to deliver exactly what the society needs from a digitally enabled healthcare ecosystem

4

Declare what **initiatives and programs are in scope for achieving the goals of the strategy framework and roadmap**, and demonstrate how those will be achieved

5

Create a comprehensive document that **incorporates the views of all stakeholders internal and external to MoH and that can be referred to by all relevant stakeholders** to understand MoH Digital Health's Strategic Direction and responsibilities during the transition of MoH to MoH 3.0

6

Define alignment of MoH Digital Health with the **NDTS ehealth priorities by the NDU** in line with the Vision 2030

The MoH Digital Strategy Framework and Roadmap was co-created with stakeholders from both within MoH and external to MoH to ensure alignment within the ecosystem throughout each stage

40+

Interviews



3

Workshops



✓ **8+ hours** of co-design and collaboration workshops

✓ **300+ sticky notes/ideas** and recommendations of MoH's digital health responsibilities as a super regulator

✓ **250+ sticky notes/ideas** written for key healthcare challenges in KSA, and ideation how digital health can overcome these challenges

✓ **200+ responses** for key words to describe their aspirations and ambitions of current Digital Health Strategy and transforming from 1.0 to 2.0 to 3.0

✓ **99 sticky notes** on new potential ideas for vision and strategic goals / objectives

1

Interviews with MoH Digital Health Deputyship and other MoH departments and deputyships, including:

- Cyber Security Department
- Medical Referral Center
- Public Health Deputyship
- NHCC & CoE
- Therapeutic Services Deputyship
- Patient Experience Center Department
- Human Resources Deputyship
- Supporting Services Assistant Deputyship
- Innovation Centre
- Administrative and Financial Affairs Deputyship
- Planning and Institutional Excellence Assistant Deputyship
- Planning and Transformation Deputyship
- Supply and Engineering Affairs Deputyship
- Hajj and Umrah Health Service Department
- Maintenance and Facility Operation Assistant Deputyship

2

Interactive workshops using design thinking tools to align with entities influencing the digital health landscape in KSA, including:



3

Sharing surveys with private and semi-government key vendors to incorporate their thoughts and challenges on the digital health ecosystem in KSA

02 Approach

2.1 Approach

2.2 Identify and Align

2.3 Envision

2.4 Strategize

A three step approach was used to create the MoH Digital Strategy Framework and Roadmap

Identify and Align

Identify and analyse influencers highlighting the need for a MoH Digital Strategy Framework & Roadmap development

- Current challenges & opportunities in the health ecosystem with the focus on digital health
- Transition of MoH to a super regulator (MoH 2.0 to 3.0)
- Learning from global best practices and leading countries
- Alignments with existing national strategies (Vision 2030, MoH Strategy, NDU-NDTS, VRO/VRP, etc.)
- Healthcare entities directly or indirectly influencing digital health landscape
- Impact of Covid-19 on the healthcare system

Envision

Co-Design the desired future state with the relevant stakeholders including the vision, mission & strategic direction of MoH Digital Strategy Framework and Roadmap

- Create a framework for envisioning the future state
- Envision the new roles and responsibilities of MoH Digital Health in line with MoH 2.0 & 3.0 transition plans
- Identify new MoH Digital Health Vision and Mission
- Identify MoH Digital Health strategic goals

Strategize

Identify the specific strategic objectives, the relevant strategic KPIs, the initiatives, and prioritize them as per the envisioned strategic direction to create an implementation roadmap

- Design the specific objectives mapping them to the strategic goals
- Cascade objectives and design the strategic KPIs
- Identify the required initiatives (programs & projects)
- Observe and analyze effective initiatives, timelines and commitments
- Create multi year implementation roadmap

Approach methods



Research & inputs from SMEs for benchmarking practices



Extensive study and alignment of the different strategies and initiatives in the Kingdom pertaining to eHealth



Stakeholder **interviews and engagements***









Stakeholder **co-design workshops***







Stakeholder **surveys***

*Internal to MoH and external non-MoH





The Identify and Align phase was achieved by an extensive study of the KSA healthcare ecosystem and global best practices to identify, analyse and incorporate key inputs for development of the MoH Digital Strategy Framework & Roadmap

Key Input	Overview
 <p>Current challenges in the healthcare ecosystem, focused on digital health</p>	<p>Organizing interviews, interactive workshops and surveys with stakeholders in the digital health ecosystem to capture existing challenges relating planning to delivery of digital health initiatives, and to identify areas of improvement</p>
 <p>The transition plans for MoH 3.0</p>	<p>Considering the transition plans of MoH to become a super regulator which leads a shift in focus (from planning and delivering to supervising and regulating) to make the MoH Digital Strategy Framework and Roadmap relevant in the future state</p>
 <p>Impact of Covid-19 on the healthcare system</p>	<p>Studying the changes in individuals' behaviour in receiving and physicians' behaviour in delivering care, as well as increased adoption of digital health solutions influenced by the recent Covid -19 pandemic</p>
 <p>Global best practices and learnings relating to digital health</p>	<p>Benchmarking of digital health strategies globally, with a focus selected countries - Canada, Australia and Singapore to learn from their journey, aspirations, achievements, challenges, priorities, strategic direction, etc.</p>
 <p>Existing national strategies relating to digital health</p>	<p>Aligning with key strategies by analysing key documents which serve as inputs for the MoH Digital Strategy Framework and Roadmap. to ensure alignment for a common desired future state and strategic direction</p>
 <p>The healthcare entities directly or indirectly active in digital health in KSA</p>	<p>Collaborating, through engaging interviews; co-designing interactive workshops, with stakeholders from entities directly or indirectly influencing digital health in KSA, to align with their mandates, expectations, strategies, policies and initiatives</p>

The Envision Phase was achieved by extensive collaboration to co-design the desired future state with stakeholders including the vision, mission and strategic direction of MoH Digital Strategy Framework and Roadmap

Key Input	Overview
 <p data-bbox="311 347 595 390">Create a framework for envisioning the future state</p>	<p data-bbox="672 331 1624 380">Creating a detailed framework which serves as the foundation for identifying the future strategic direction of the MoH digital health.</p>
 <p data-bbox="311 470 620 540">Envision the new roles and responsibilities of MoH digital health</p>	<p data-bbox="672 470 1676 540">Drafting the the mandate, the key roles and responsibilities for MoH digital health in line with MoH plans transitioning to become super regulation, co-creating the same in interactive workshops using design thinking tools with all MoH digital health stakeholders</p>
 <p data-bbox="311 601 614 649">Identify new Vision & Mission statements</p>	<p data-bbox="672 572 1690 671">Co-creating and finalizing the vision and mission statements of the MoH Digital Strategy Framework and Roadmap by following steps such as analysing the existing strategies, considering current challenges & opportunities, learnings from international benchmarks, capturing the ambitions and aspirations of leading countries.</p>
 <p data-bbox="311 721 556 769">Identify strategic goals, objectives and KPIs</p>	<p data-bbox="672 707 1676 780">Deriving the strategic goals, specific strategic objectives and KPIs using two approaches, i.e by cascading them from goals and objectives of the existing national strategies, and aligning with the vision and mission statements</p>

The Strategize Phase was achieved by extensive engagement with relevant stakeholders to identify the strategic objectives, the strategic KPIs, the initiatives, and prioritize them to create an implementation roadmap for the MoH Digital Strategy Framework and Roadmap

Key Input	Overview
 <p>Identify and consolidate initiatives that are required to achieve the strategic goals & objectives</p>	<p>Listing down all initiatives using a top-down and bottom-up approach in order to consolidate list of existing, planned & ambitious initiatives, and to identify the gaps to achieve the MoH Digital Strategy Framework & Roadmap strategic goals and objectives</p>
 <p>Observe and analyze effective initiatives, timelines and commitments</p>	<p>Documenting and reviewing all initiatives in the consolidated list, including their descriptions, estimated costs to collectively prioritize them for both MoH and the other entities/beneficiaries of MoH's services</p>
 <p>Roadmap detailing the plan of action</p>	<p>Co-creating and finalizing a roadmap design for the initiatives and programs, and validating the transformation framework for MoH 2.0 and 3.0 with the relevant stakeholders</p>
 <p>Strategy enablement factors</p>	<p>Planning strategy enablement factors including planning, delivering and adoption related factors for the successful implementation of the MoH Digital Strategy Framework and Roadmap</p>

03 Identify & Align

3.1 Why do we need a strategy framework?

3.2 Key Challenges and Strengths in KSA Digital Health Landscape

3.3 MoH Transition to a Super Regulator

3.4 Drive to Vision 2030 in KSA, supported by various national level strategies and entities

3.5 Impact of Covid-19 on digital health, globally and locally

3.6 Benchmarking Key Findings

3.7 Design Principles of the MoH Digital Strategy Framework and Roadmap

Why do we need a MoH Digital Strategy Framework and Roadmap?

Highlights of the recent challenges and changes in KSA digital health landscape



There is an accelerated requirement for digital solutions in healthcare, to deliver high quality and sustainable healthcare and to address the co-existing **healthcare challenges in KSA** population, workforce, and the healthcare ecosystem



MoH is undergoing a **transitional journey from MoH 1.0 to 2.0 and 3.0**, which shifts the focus of MoH from planning and delivery at MoH facilities level (1.0) to a regulatory and supervisory role at national level (3.0), with a transitional stage in the process (2.0)



There has been progress made in the digitization of the health sector as a result of the national digitization agenda set by Vision 2030, VRP, NTP, and the Health Sector Transformation Programs, hence the MoH Digital Health Framework and Roadmap needs to reflect the progress and next steps



Multiple **new entities have been established (or enhanced)** since the previous strategy was published (MoH eHealth 2017), therefore the MoH Digital Strategy Framework and Roadmap need to be aligned with all relevant entities and their mandates, as they influence the digital health landscape and contribute to the realization of the planned transformation



The **recent Covid-19 pandemic** has accelerated the digital health trend and increased the adoption of digital health solutions to meet the requirements of the new normal

Key influencers



Key Challenges and Strengths in KSA Digital Health



MoH transition plans to a super regulator



Drive to Vision 2030 (incl. NTP, Corporatisation, PSP, MoC, etc.)



Impact of entities in KSA healthcare ecosystem



Impact of Covid-19 on healthcare systems globally and locally

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Challenges faced by the population of KSA are being addressed by innovative digital solutions, although they need further enhancements to meet the increasing and changing requirements

The healthcare system in Saudi Arabia is undergoing a transformation, with a common goal of promoting, restoring and maintaining health in the country, by using digital health solutions to encourage preventative health, improve therapeutic health and enable better management of health conditions

Aging and growing population ²

- Saudi Arabia's population is expected to grow at a CAGR of 2.5% to reach 45 million people by 2030.
- The elderly population is expected to grow from 1.96 million (2018) to 4.63 million (2030).
- Saudi Vision 2030 aims to increase life expectancy from 75 to 80 years. ²
- A growing and aging population will lead to rise in demand for healthcare services.

Quality of care ²

- Significant gaps exist in the quality of care provided to patients due to the lack of standardized processes, and protocols.
- Lack of measurement of patient processes and outcomes also contributes to inconsistencies.
- Key deficits in patient safety and security have been noted across multiple region.
- Lack of focus on patient welfare and the lack of a patient-centric system.

Growing Burden of Disease ²

- There is a rising number of avoidable injuries and population coexisting with non-communicable diseases.
- There is potential to reduce mortality and avoidable morbidity associated with heart disease, stroke, diabetes mellitus, respiratory disease, mental health, etc.
- There is a risk of major outbreaks of communicable diseases, specially concerning Hajj pilgrims and the recent Covid-19 pandemic.

Challenges relating to access and quality of healthcare also exist within the Kingdom, which can be effectively managed by the adoption of digital health solutions

To promote, restore and maintain health in the Kingdom, the key challenges of operations and funding within healthcare need to be acknowledged and addressed ⁶

Geographical barriers to access ²

- Primary care remains inadequate and inconsistent with variations in the access and service across regions and within regions.
- Geographical barriers exist to accessing secondary and tertiary care due to distance and proximity resulting in reduced utilization, increased transfer rate and delay in receiving treatment.

Resource competency and capability ²

- Gaps in workforce capacity and capability exist.
- This is accentuated by gaps in digital information systems which measure resource productivity, and efficiency.
- Lack of focus on continuous learning and development of resources.

Cost of healthcare ²

- Increasing demand for healthcare is expected to significantly increase the cost of healthcare.
- There is an urgent need to contain public expenditures with the effect of global economy and the changes in oil prices.
- Healthcare systems should also support the diversification of the Saudi economy by pursuing alternate models of financing and shift towards privatisation.

Implementation and enablement of the existing digital health strategy was hindered by a number of barriers...

Through the series of very constructive set of workshops and interviews, the following current challenges behind planning of digital health within the Kingdom has been identified by senior stakeholders and stakeholders involved in the daily delivery of digital programs.³



Lack of **clarity** on the current digital health **vision and strategy** and how it fulfils the new regulatory mandate



Shortfall in **alignment** between the **digital health and business strategies** is required



Lack of an **agile approach** for new business requirements



Delivery of projects sometimes **overlaps** and **lacks coordination** exists



Change management framework and plans need strengthening



Low **communication and awareness** on the **digital health plans and initiatives**



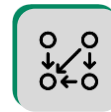
Siloed solutions and insufficient **clarity on the integration and interoperability** plans/roadmaps



Low coordination and communication between the MoH departments (including MoH Digital Health)



Absent **clarity** on **initiative planning prerequisites** and how implementation is linked to them



Dependencies between initiatives is not always clear

... and further barriers relating to governance and division of responsibilities resulted in low clarity of responsibility and accountability when delivering the previous digital health strategy...

Through the series of very constructive set of workshops and interviews, the following feedback was provided in regards to the current challenges with Governance and Responsibilities of digital health within the Kingdom. ³



Permanent **governance** structure (committees and members) and **responsibilities** are **not clearly defined**



Lack of **transition plan** to define the changes in digital health responsibilities (including transfer of delivery related initiatives to other entities) as a result of the MoH 2.0/3.0 transformation



MoH's mandate as a **super regulator** is **not clear and defined**



PMO needs to be strengthened to drive and monitor the execution of the roadmap initiatives



Insufficient alignment between healthcare and non healthcare entities to co-create **regulations and standards** which are **healthcare focused**



Shortage of resources for key responsibilities



Digital health **budget** is limited



Resource planning is **not proactive**, rather it is reactive



Low alignment of operational and tactical **KPIs**



Lack of balance and **time management** between operational work and the time required to execute strategies

... however, there are also key strengths relating the previous strategy, which are continued and considered within the development of the MoH Digital Strategy Framework and Roadmap



Strong MoH leadership to drive a digital transformation with a great understanding of the needs and requirements for KSA health sector ³



The previous strategies have **covered many of the digital health solutions** that are required to enable better quality healthcare ³



There is a desire to **improve the lives of citizens through advanced digital services** which is aligned to the Kingdom's digital transformation ³



Solid infrastructure foundations, technical and cyber security capabilities foundations exist today within MoH ³



General awareness about the need for **MoH transition from 1.0 to 2.0/3.0** ³

Similar challenges were captured by the NDU-NDTS relating to eHealth in KSA



Governance ⁴

- Absence of an overarching entity that considers and owns the full ehealth spectrum to formulate strategy and drive implementation
- Absence of a governing body that ensures consistent architecture across the healthcare ecosystem



Strategy ⁴

- Continuous change in healthcare strategic direction and priority initiatives
- Overlap between healthcare strategies and initiatives
- No clear view on how innovation could transform the healthcare landscape
- Shortage of adequate financing
- No indication of an existing National Crisis Management Strategy
- Shortage of talent that will enable the implementation of the different eHealth initiatives and solutions



Data & Systems ⁴

- Lack of implemented data standards and clinical guidelines as well as functioning HIE
- Willingness of the private sector to share data
- Data availability, cleanliness and integrity; siloed data across different entities
- Infrastructure limitations; proper bandwidth and internet connectivity
- Absence of core initiatives including enablement of Population Health Management and wider analytics resultant from the implementation of the eHealth ecosystem
- Absence of a one-stop-shop platform for the public, multiple solutions and application instead



Policies & Regulation ⁴

- Absence of an overarching umbrella policy which outlines the priorities, objectives and strategies for delivering the eHealth Strategy
- Limited policies to regulate the use of emerging technology within the sphere of healthcare
- Absence of a policy to facilitate digital payments to physicians as part of value based care

New challenges, not captured in previously mentioned stakeholder interviews

This MoH Digital Strategy Framework and Roadmap will address the key challenges

Sources of identified key challenges:



Stakeholders engaged in interviews and workshops



Challenges identified by NDU



Healthcare Transformation Strategy²



Growing and aging population leading to an increase in the demand for healthcare and wellbeing needs and services



Growing burden of disease with relatively **high rates of avoidable injury and NCDs** by international standards



Significant **gaps in quality of services** provided to patients



Geographical barriers to accessing care, accelerated by lack of consistent and adequate primary care



Existing gaps in the **workforce capacity and capability**



Expected increase in cost of healthcare due to the increasing demand leading to financial unsustainability



Inability to receive or provide care in certain situations, such as a pandemic, requiring alternative models



Lack of clarity on approach and **planning aspects relating to digital health**



Lack of **clear governance and responsibilities** due to complexities in the healthcare ecosystem



Absence of an **overarching entity** that considers and owns the full ehealth spectrum to **formulate strategy** and **drive implementation**



Need for an overarching **umbrella policy** for delivering the eHealth Strategy

Key Takeaways

✓ The MoH Digital Strategy Framework and Roadmap must enable **person centric** health and wellness, and ensure delivery of New MoC through digital health to tackle the health challenges.

✓ The MoH Digital Strategy Framework & Roadmap should aim to improve the digital health **skills and competencies**, and create an **agile culture** in the healthcare ecosystem, to meet the changing requirements.

✓ The MoH Digital Strategy Framework & Roadmap must drive a comprehensive digital health governance & performance agenda, ensuring **sustainability** and **cost efficiencies** in the system and a **smooth transition to MoH 3.0**.

03 Identify & Align

3.1 Why do we need a strategy framework?

3.2 Key Challenges and Strengths in KSA Digital Health Landscape

3.3 MoH Transition to a Super Regulator

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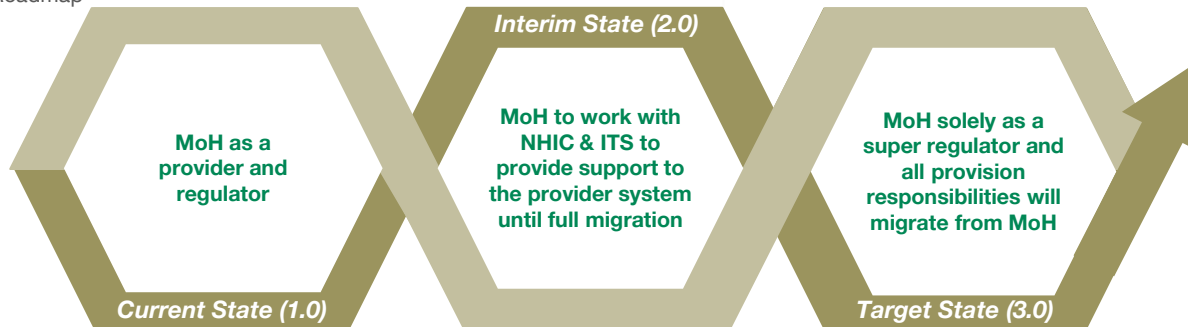
3.5 Impact of Covid-19 on digital health, globally and locally

3.6 Benchmarking Key Findings

3.7 Design Principles of the MoH Digital Strategy Framework and Roadmap

MoH is undergoing a transitional journey to shift its focus from planning & delivery to solely a regulatory & supervisory role

MoH is transitioning from current mandate having both regulator and provider responsibilities, to MoH as a super regulator in the future state which needs to be reflected in the MoH Digital Strategy Framework and Roadmap ^{3,5}



Scope ³

Dilutes from the delivery roles as the ministry focuses more on regulation

Scale ³

Expands from MoH sector to include other sectors on the national level

Key Takeaways

- The MoH Digital Strategy Framework & Roadmap needs to reflect MoH's responsibilities in the interim and future state and be aligned to the new Digital Health Mandate*.
- There needs to be a phased transition of responsibilities from planning, delivering, regulating, funding and monitoring to a more regulatory and supervisory role.
- At the same time, there will be an expansion of scope from MoH facilities to a national level regulator which needs to be taken into consideration

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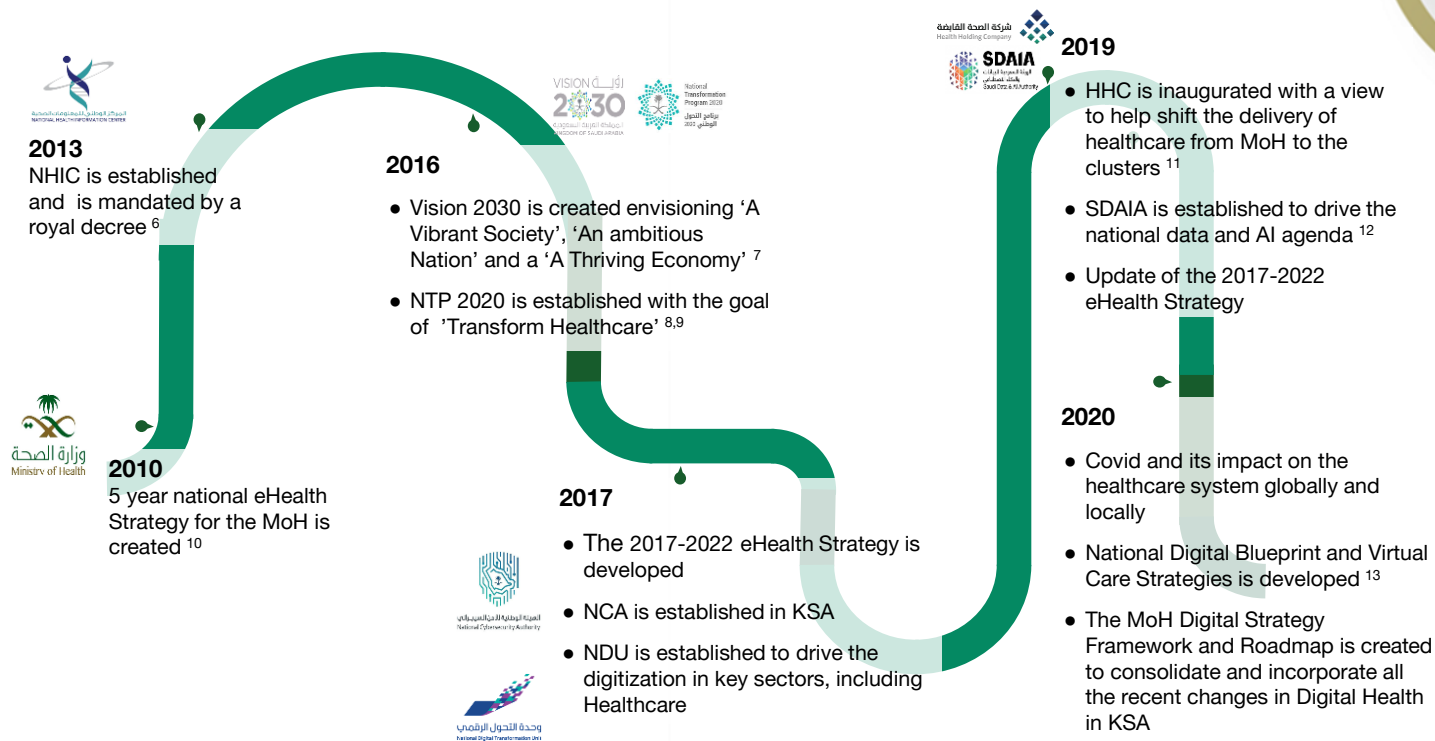
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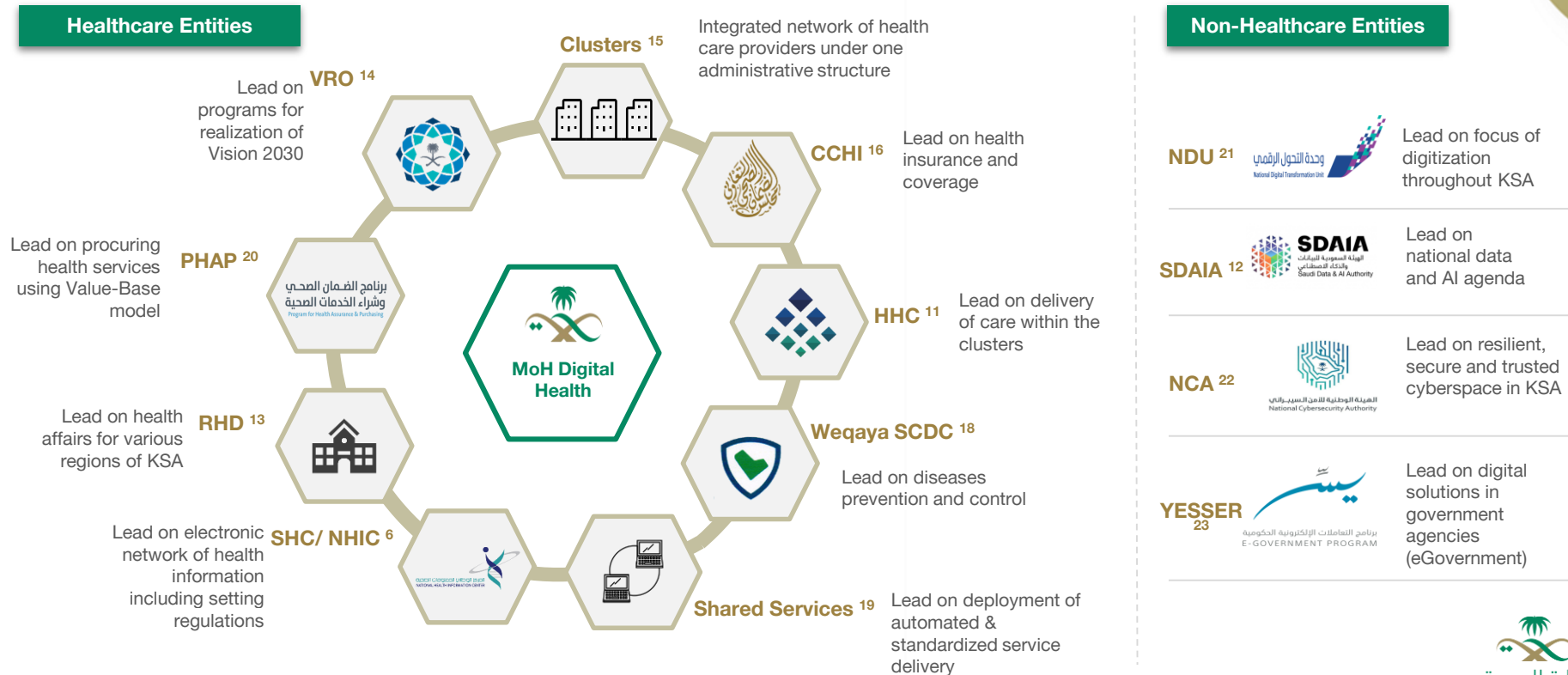
During the past 10 years there have been numerous establishments of new healthcare and non-healthcare entities to fulfil various important roles in a digitally enabled healthcare system

- KSA has been a pioneer in **strategizing and implementing Digital Health** with the first strategy prepared a decade ago in 2010.
- The **Vision 2030 and NTP 2020** objectives set the stage for transformation of the sector.
- The **establishment of key entities** such as NDU, NCA and SDAIA have a key role in ensuring a **safer, regulated and well established digital health environment** in KSA.
- The MoH Digital Strategy Framework & Roadmap needs to **incorporate the recent advancement in the healthcare ecosystem**.



The KSA healthcare system consists of many stakeholders that are directly or indirectly influencing the MoH Digital Health ecosystem

Alignment activities including Interviews, workshops and surveys were conducted with key stakeholders to understand the mandates intersections, challenges, opportunities, collaborations mechanisms, expectations and ambitions which the digital health strategy needs to incorporate.



Digital transformation is at the heart of every entity and embedded in each of the key national strategies created over the last 5 years, destining KSA for a digitally enabled healthcare system

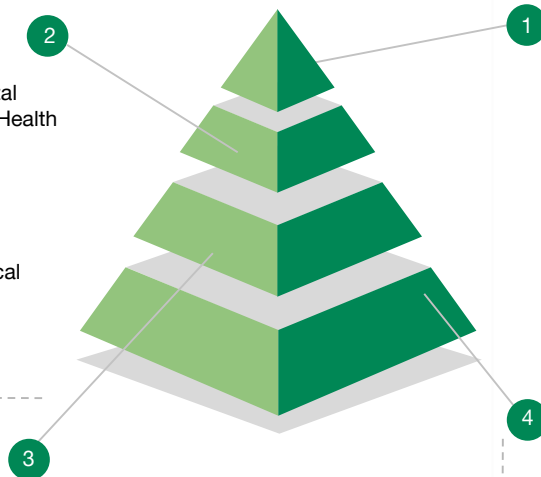


NDU - NDTs²⁴

Envisioning a digital society, digital economy and a digital nation in line with the Vision 2030, NDU has identified eHealth as a priority sector.

The NDTs has detailed priority initiatives such as:

- Telehealth - virtual consultation, remote monitoring, telehealth services
- Connected healthcare- eServices, UHR, NHO, Clinical information systems
- Healthy lifestyle- health and wellness apps, citizen health portal, etc.



Vision 2030⁷

A comprehensive plan for the reform of the entire economic structure of KSA. To achieve the 96 strategic objectives of Vision 2030, CEDA established 13 VRPs. Each VRP comprises a series of initiatives and delivery plans, guided by pre-defined objectives and KPIs tied to 5-year milestones.

Key programs of the Vision 2030: NTP, Public sector governance, privatization program, etc.



VRO & VRP^{14, 25}

Created to ensure the achievement of the objectives for Vision 2030, **VRP** set a **HSTP** to optimize the coverage of digital and health solutions by increasing access to quality healthcare, achieving financial sustainability through public health awareness and preventative care, and increasing stakeholders' satisfaction through global best practices and continuous alignment with public and private sector strategies and initiatives.

Diving deeper into specific healthcare transformation, MoH's **VRO** set the **Healthcare Transformation Strategy** to draw a roadmap towards providing value-based healthcare services.

Key Programs include eHealth, MoC, financing reforms, PSP, workforce development, Digital Blueprint, Virtual Care Strategies, Governance framework, etc.



MoH¹⁰

MoH developed its eHealth Strategy in 2017 followed by a 5-year Roadmap and a strategy update in 2018.

Key MoH Digital Health Programs: HIS implementation, Virtual Clinics Platform, Remote Monitoring, Digital Health Academy, National PACS system, Mawid App, Seha App, Sehatty App, Wasfaty App, etc.

The digital transformation is a key enabler in the KSA Vision 2030 with 3 main themes and specific objectives that act as guiding principles for the reform of the healthcare sector

Saudi Arabia Vision 2030⁷ – the heart of the Arab and Islamic worlds, the investment powerhouse, and the hub of connecting 3 continents has 3 main themes:

A Vibrant Society

A Thriving Economy

An Ambitious Nation

The vision includes digital health related goals to be considered and aligned with for the MoH DSFR, including:

- To increase ratio of individuals exercising at least once a week from 13% of population to 80%
- To increase the life expectancy from 74 to 80 years
- To increase foreign direct investment from 3.8% to the international level of 5.7% of GDP
- To increase the private sector's contribution from 40% to 65% of GDP
- To raise our ranking in the Government Effectiveness Index from 80 to 20
- To raise our ranking on the E-Gov Index to be among the top 5 nations
- To raise the nonprofit sector's contribution to GDP from less than 1% to 5%

Key Takeaways

- ✓ Vision 2030 sets the stage for all national strategies in KSA. The MoH Digital Strategy Framework and Roadmap should be aligned with it and develop a roadmap which leads to achievement of the goals defined in vision 2030.
- ✓ It should take into account the progress made so far, and what remains to be achieved in fulfilling the Vision 2030.
- ✓ The previous digital health strategies focussed more on implementation of health information systems and the availability of universal health records for the citizens of KSA, where significant progress has been made. This strategy focuses more on person-centric and value based care enabled by digital health solutions, adopted by empowered users including citizens, residents, pilgrims and visitors.
- ✓ This strategy will also focus on the transition of MoH to a super regulator, which has been highlighted as a key enabler in the vision 2030. The new focus for MoH Digital Health should be regulating and supervising, with complete migration of delivery related responsibilities to other entities in the future state.

A Health Sector Transformation Plan (HSTP) was developed to realize the Vision 2030 through fulfillment of 3 key objectives included in the key theme 'Transform Healthcare'

HSTP's Transform Healthcare Major Indicators ²⁵



HSTP Objectives ²⁵:



Ease the access to health services

Improve the quality and efficiency of healthcare services



Promote prevention against health risk

Ease Access to Health Services

88% of basic healthcare services coverage available geographically (including remote areas)

55% of referrals from specialized consultants within (4) weeks of the request

54% of patients receiving treatment (discharged or admitted) in ED within 4 hours

Improve Quality & Efficiency of Healthcare Services

85% beneficiary satisfaction rate for inpatient experience

Promote Prevention of Health Risks

50% of specified communicable diseases that achieved targeted reduction levels

75% of health zones prepared for health crisis risks

Key Takeaways

- ✓ Digital Health has been identified as a key enabler of the healthcare transformation, with 38 initiatives described to meet its Strategic Objectives, as well as an implementation roadmap that aims to achieve the targeted vision by 2025.
- ✓ The MoH Digital Strategy Framework and Roadmap will align to the HSTP, published in 2020, as a result of the shift of healthcare strategic plans after HSTP and through key KPIs that **impact MoH's transition to becoming a super regulator**

Accordingly the NDTs envisions KSA as one amongst the top 20 leading digital nations that unleashes new opportunities and improves lives of individuals, and has identified Digital Health as a priority in achieving the vision

Identified Goals of the NDTs ²⁴



Digital Nation



Digital Society



Digital Economy

Identified KPIs for 2019 ²⁴



Percentage of citizens registered in the Shared eHealth file



Number of pharmacies connected to Wasfaty services



Number of citizens registered with Mawid

Number of appointments registered with

Suggested prioritisation of NDU initiatives throughout the Kingdom ²⁴

Telehealth

Launch telehealth and virtual health services to increase **access to healthcare** especially in rural areas, improve **quality and efficiency** of healthcare services and promote **prevention against health risks**

Virtual Consultation

Remote Monitoring

Telehealth Services

Connected Healthcare

Enable **efficient provision of services** through a **connected and centralized repository of health data & infrastructure** spanning across citizens health records, facilities, health insights and research

Virtual Consultation

UHR & SeHE (nphies)

NHO

CIS

Healthy Lifestyle

Promote **healthy lifestyles** and dietary habits, promote **prevention against health risks** and **prevalence of chronic diseases** and increase **participation in sports activities** through the use of technology

Health & Wellness Apps

Citizen Health Portal

Key Takeaways

- ✓ The NDU published their 2019 annual report which highlighted 200+ initiatives which were taken across sectors, including digital health, to demonstrate the progress made with regards to digitization of traditional services, example number of individuals covered by a unified health record, number of users on apps such as Seha, Sehatty, etc.
- ✓ The MoH DSFR should support the ongoing projects, evaluate the effectiveness of these programs, and define the future roadmap to ensure that we achieve the objectives and goals identified in the NDTs for the health sector, example Telehealth, connected healthcare and healthy lifestyle enabled by digital health solutions.

Furthermore, the VRO set the Healthcare Transformation Strategy, with Digital Health Development being a key theme to achieve Transformation Goals

Healthcare Transformation Goals 2,7:

Improve Population Health

Healthcare Quality And Consistency

Value Of The Healthcare Service

The 7 themes to convert theory to strategy

Provider Reforms

- To enhance utilization value at an intermediate level, whether at the clinical micro-system, hospital or local health system level
- To develop all existing MoH providers, through an initial "cluster" phase, into approximately 20 geographically-defined, vertically-integrated ACOs
- To make increased use of private healthcare provision
- To develop third sector provision to cover gaps arising from either government or market failure

PSP

- To reduce public funds' pressures
- To provide performance benchmarks for corporatized providers
- To facilitate partnership opportunities for corporatized providers to divest & re-invest to better service quality or efficiency

New MoC

- To enhance personal value through the improvement of treatment & care modalities at an individual level
- To deliver initiatives across 6 systems of care: Keep Well, Safe Birth, Planned Care, Urgent Care, Chronic Conditions & Last Phase

Digital Health Development

Support information requirements of the other work themes & Enable a value-based healthcare approach & build a learning health system

- Enable the adherence to and enforcement of health system quality and safety practices;
- Provide people with personalized digital tools to promote health management,
- Integrate the continuum of health across all layers of the New MoC to support the flow of personal health information
- Monitor operational efficiencies as well as the outcomes of services provided
- Monitor and optimize the use of healthcare resources, such as workforce, assets and services
- Provide access to high quality data to support medical research and policy making
- Establish a Virtual Academy to build knowledge and skills

Governance Development

- To define, design & support the establishment of the regulatory & improvement functions & institutions necessary to secure & sustain value-based healthcare
- To embed strong, delegated & devolved leadership & governance

Workforce Development

- To support the needed workforce transformation to enable a value-based healthcare approach, which will require major increases in workforce capability & some increase, re-distribution & diversification of workforce capacity

Financing Reforms

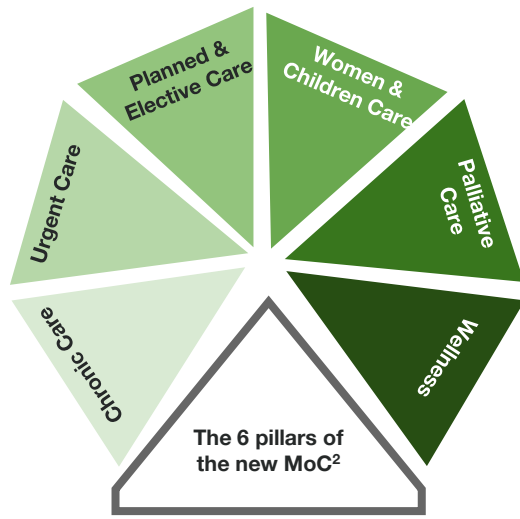
- To enhance allocative value through ensuring those intermediate levels optimize their levels of resources based on patients' needs & their ability to benefit
- Confirmed commitment to universal healthcare coverage to ensure all citizens, residents & visitors can obtain timely access to healthcare services, via insurance, without the risk of impoverishment
- Establishing the PHAP to be a national payor to ensure free care to beneficiaries through the newly MoH corporatized providers & other governmental providers

Key Takeaways

- ✓ The provider reforms leads the transformation of MoH facilities into 'Clusters', and further to 'ACOs', thus shifting the role of delivery from MoH, as they should increasingly focus on being a super regulator. This is currently ongoing with the establishment of 8 pathfinder clusters in KSA. The MoH DSFR should be aligned with this new development.
- ✓ The need for a governance structure has been highlighted which clearly defines the functions of various healthcare entities and gives them responsibilities based on their mandates, goals and objectives. The MoH Digital Transition - Governance Framework has been developed for this purpose, and the MoH DSFR is aligned with it.

Digital Health is also a critical enabler of the health system reform where the New Model of Care (MoC) has been developed to shift the focus from treating the ill to keeping people healthy

The New MoC is made up of 6 consumer-centric systems with 42 total interventions to support the systems of care and identifies services on the provider level that targets different users and accordingly should be taken into account in the MoH DSFR ²

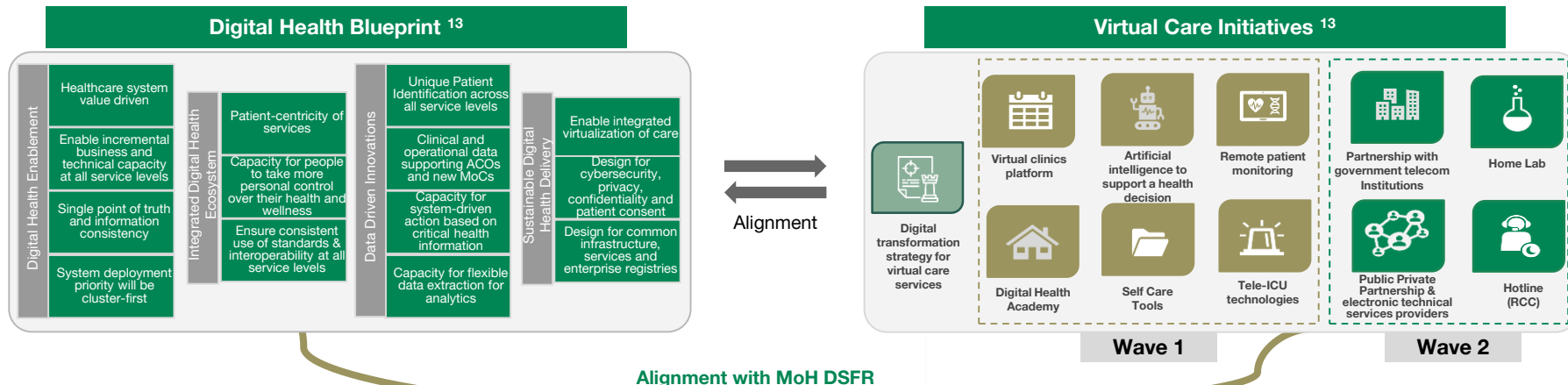


Digital Health is a critical enabler of the MoC and health systems reform

- Provide people with **personalized digital tools** to promote health management, health literacy and navigation to interact with the health system
- Introduce **digital health system access channels**
- Integrate the **continuum of health across all MoC layers** to support the flow of Personal Health Information
- Monitor **operational efficiencies and outcomes** of provided services
- Monitor & optimize **healthcare resource utilization** (workforce, assets, services)
- Provide **access to high quality data** to support medical research & policy making
- Establish a Virtual Academy to **build knowledge and skills** necessary to deliver MoC interventions

Moreover, the recently developed Digital Health Blueprint and Virtual Care Strategy at the provider side act as guidelines for the Clusters and therefore it is important that the Digital Strategy Framework and Roadmap, including the transition framework of digital health responsibilities, is aligned to both

These guidelines have been prepared considering the new MoC, in alignment with the national strategies, MoH Digital Health Strategy based on the cluster needs, as well as focussed on the immediate requirements in healthcare facilities post the Covid pandemic.



Enablers supported by MoH Digital Strategy:

- Digital Health Foundational Programs
- Regulatory framework and policies
- UniPlat
- HIS/EMR waves
- PHC HIS/EMR

- ✓ The Digital Blueprint sets the architecture for digitally enabled clusters that are integrated with the health ecosystem. The virtual care initiatives set the direction for implementing virtual care solutions such as self care tools, remote patient monitoring, Tele ICU, etc.
- ✓ The MoH DSFR sets the premise for MoH's transition to a super regulator to support the blueprint and virtual care initiatives deployment as clusters become independent, whilst ensuring they have the tools, policies and procedures to regulate effectively.

Key Takeaways

In line with the national strategies, MoH created its 2017 eHealth strategy focusing more on delivering digital health solutions at MoH level only...



Vision ¹¹

A consumer-centric, world-class and sustainable health system enabled by eHealth



Mission ¹¹

To transform healthcare delivery through technology to deliver safer, more efficient healthcare services for the population of Saudi Arabia



Enhanced Consumer Experience and Convenience ²⁷

New forms of **interacting with the health system** and consuming its services

Improve **access to patient centric healthcare services** whenever and wherever the patients need it

Empower consumers by **shifting accountability of their care inwards**



Creation of a New Knowledge Industry ²⁷

Improve the **digital skills of the labor force** to effectively implement digital technologies, benefiting both the health system and the economy as a whole



Productivity Increases for Healthcare Providers ²⁷

Increasing the amount of **skilled medical practitioners** to meet the increasing demand for health services

Improving **productivity and utilization** of medical staff by reducing the burden of manual administrative tasks



Efficient and Integrated System ²⁷

Better and efficient utilization of healthcare resources to achieve a sustainable health system



Safer and More Effective Services ²⁷

Real-time access to accurate information of high quality enables better assessment and treatment

Helps **avoid costly medical errors and adverse events** caused by missing or wrong information

Key Takeaways

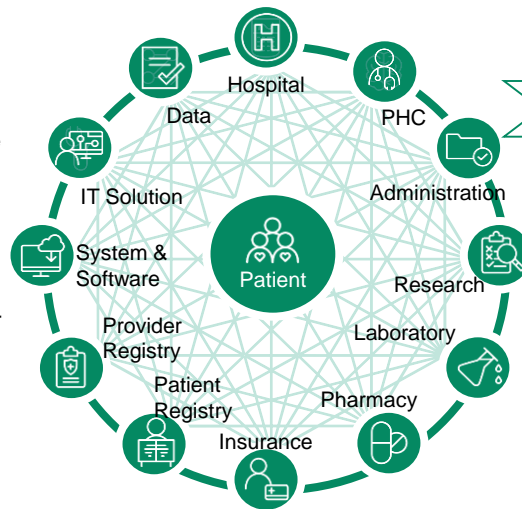
- ✓ The previous strategy focuses on delivering the digital health solutions which enhance consumer experience and convenience, increase productivity of healthcare providers by providing real time access to accurate information. The MoH DSFR however, must **focus on regulating** these aspects of digital health, rather than delivering them in line with the **MoH transition plans**.
- ✓ The MoH DSFR should also **incorporate the new requirements** in light of recent changes in behaviour due to the Covid-19 pandemic.

.. whilst NHIC and CCHI are working on the creation of a HIE (nphies) to form a connected Healthcare ecosystem

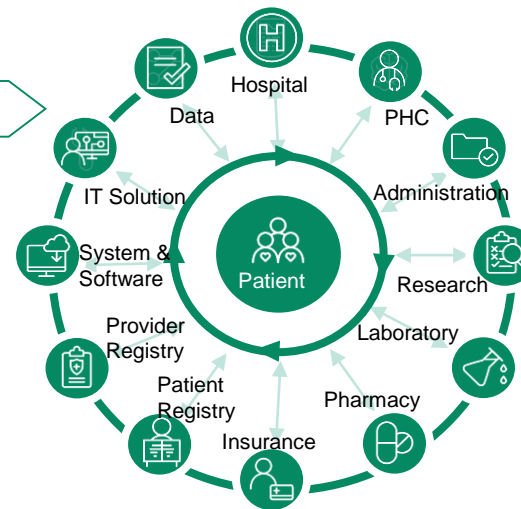


Nphies is currently being implemented from the merger of SHIB and SEHE...

- SHIB was a national project to standardize the recording and reporting of healthcare services to health insurance companies and enable companies to exchanged electronic transactions in a secure and reliable manner
- SeHE enables electronic health data exchange among all facilities in healthcare sectors to enable the creation of the unified and interoperable Electronic health record



Transmission to the Future



- ✓ Enable real time availability of longitudinal patient medical data, reports, test results and prescriptions in relevance to patient-doctor/ receiver- provider relationship.
- ✓ Standardized unified centralized data domain accessible by all stakeholders on the level of provided service with controlled and monitored data transactions.
- ✓ Help in improving the speed, quality, safety and cost of patient care, in addition to sustaining patient rights in confidentiality of care.

Key Takeaways

- ✓ This MoH DSFR will need to align with the available capabilities from Nphies to ensure there is no overlap with new programs.
- ✓ The MoH DSFR should also **ensure that any integration programs and inclusive of this HIE**

In summary, the national drive for digitization of the health sector has resulted in multiple strategies in the sector, which in turn has led to an evolution of digital healthcare landscape

The MoH Digital Strategy Framework and Roadmap is aligned with these strategies, their goals, objectives and strategic direction.



KSA Vision 2030

Fulfillment of Vision 2030 goals is top priority as it mitigates the many challenges in the healthcare ecosystem. The following goals highlighted may be achieved as follows: **'A vibrant society'** by improving the access to high-quality **patient centric care**, **'A thriving economy'** by transforming the delivery of digital health in clusters and **supporting sustainability and cost efficiencies**, **'An ambitious nation'** by having high performing and **agile healthcare** service for all.



NDTS

Achieving the vision of the NDTS is important to provide 'ubiquitous and instant access to care. The NDTS envisions **agility** in digitizing areas in healthcare which strategically use data to develop new products/ solutions which will drive productivity and **cost efficiencies**. The MoH DSFR should support the ongoing projects, evaluate the effectiveness of these programs, and define the future roadmap to ensure that we achieve the objectives and goals identified in the NDTS for the health sector, example Telehealth, connected healthcare and healthy lifestyle enabled by digital health solutions.



Health Transformation Strategy & VRP

Focus on transforming the healthcare system through VRO programs: Digital health development is key to achieving the six programs under VROs Health transformation strategy. The MoH DSFR is aligned with the changes in the ecosystem, such as with the provider reforms there is planned migration of delivery related responsibilities to clusters, and more focus on regulatory responsibilities for MoH. **Value based care** to promote health management, monitor healthcare providers performance and optimize healthcare resources for **cost efficiencies and sustainability, has been incorporated in the MoH DSFR strategic direction.**



HSTP

Fulfill the objectives of Health Sector Transformation Program: 'Ease of access to health services' by **collaborating** and developing digital solutions to increase geographic and timely access, 'Improving Quality and Efficiency of Health Services' by enabling **patient centric care and wellness** in a financially **sustainable** environment, 'Promoting prevention of health risks' by delivering **value based care** enabled by digital health solutions are all incorporated in the design principles, and strategic direction of the MoH DSFR.



Existing MoH Digital Health Strategy and updates

Accelerate the existing initiatives and efforts in the MoH: Improve access to **patient centric** healthcare services whenever and wherever the patients need it. Better and efficient utilization of healthcare resources to achieve a **sustainable** health system. While the previous strategy focuses on delivery aspects of digital solutions to achieve the goals, the MoH DSFR will focus on enabling these goals as a super regulator, and in line with the recent development in the healthcare ecosystem of KSA.

Along with establishment of new entities which directly or indirectly influencing the digital health ecosystem, stressing on the need for a comprehensive strategy framework and roadmap

MoH DSFR has incorporated and aligned with the remits of these entities, as well as their responsibilities and ongoing initiatives which were gathered through stakeholder interviews and discussions, to ensure collaborative execution of all programs without any overlaps.



NDU*

It is essential that the Digital Strategy Framework and Roadmap acknowledges **NDU's priorities** for the Kingdom which will require alignment will all stakeholders in the ecosystem. Also, **NDU has specific KPIs** which the MoH Digital Strategy Framework and Roadmap should be aware of in order to work collaboratively to excel Digital Health in the Kingdom.



SDAIA*

The MoH Digital Strategy Framework & Roadmap should be aligned with SDAIA and it's **vision to enhance the use of AI within healthcare**. Taking into account MoH's future role as a super regulator, the strategy should lay the guidelines to be able to effectively regulate the use of **new technologies and data, specially those around the use of AI in healthcare**.



NHIC*

NHIC's mandate is set by Royal Decree in 2019, therefore the **MoH Digital Strategy Framework and Roadmap should be in alignment with their mandate**. The initiatives in the MoH Digital Strategy Framework and Roadmap should be considerate of the NHIC responsibilities to avoid any overlaps, especially those relating to healthcare data security and health information exchange standards.



HHC*

MoH Digital Strategy Framework and Roadmap needs to be aligned with the **transition of delivery of healthcare** from the MoH to the Saudi HHC. The **cluster level funding of initiatives, roadmaps, activities, integration of providers, facility level policies and standards** will be set by the **Saudi HHC**. Accordingly, the MoH Digital Strategy Framework and Roadmap should have a transition framework to wean off initiatives related to healthcare delivery without disrupting services.



NCA*

MoH Digital Strategy Framework and Roadmap needs to have complete alignment with the **NCA as they set standards and policies to ensure that the cyber space and infrastructure is safeguarded**. The digital health initiatives should be aligned with the **NCA policies and standards**. There should also be initiatives and programs which ensure compliance to the standards.

03 Identify & Align

3.1 Why do we need a strategy framework?

3.2 Key Challenges and Strengths in KSA Digital Health Landscape

3.3 MoH Transition to a Super Regulator

3.4 Drive to Vision 2030 in KSA, supported by various national level strategies and entities

3.5 Impact of Covid-19 on digital health, globally and locally

3.6 Benchmarking Key Findings

3.7 Design Principles of the MoH Digital Strategy Framework and Roadmap

Covid-19 accelerated the adoption and use of digital health solutions globally...

Covid-19 caused a rapid acceleration in the use of digital health services and tools, as well as encouraged more awareness of better health decisions and alternative forms of care, as the pandemic severely restricted patients' ability to receive care and providers' ability to offer care in traditional healthcare settings

Covid-19 has helped demonstrate the need for and value in virtual care solutions among key stakeholder groups globally and within KSA



Patient

Shift from: **11%** use of virtual care solutions in 2019 ²⁹



To: **76%** now interested in continued use of virtual care solutions ²⁹



Provider

57% of the providers view virtual care more favorably that they did pre-Covid³⁰

64% of the providers are more comfortable using virtual care solutions ³⁰

50-75x the number of pre-Covid virtual care visits ³⁰



Regulator

Use of virtual care services has greatly expanded worldwide. Regulators and governments are encouraging the use of virtual care solutions by being flexible with traditional access routes not available due to Covid risks

Key Takeaways

✓ Learning from the recent experience and for future emergency preparedness, the MoH in KSA accelerated the adoption of telehealth as patient were unable to visit their physicians or care providers for face-to-face visits in the pandemic. |

✓ The MoH Digital Strategy Framework and Roadmap should address this change in behaviour of individuals in the new normal, leveraging this accelerated adoption, whilst ensuring that necessary regulations exist to safeguard the patients

... and KSA was no exception, with accelerated digital health adoption during the pandemic, stressing the need for refreshing the existing solutions to meet the new requirements

Advances and a shift towards digital health was already existing in KSA prior to the pandemic; however, the pandemic accelerated the trend and increased the implementation and adoption of digital health solutions to meet the requirements in the new normal. ⁷

In response to Covid-19, Saudi Arabia's government and private sector combined developed, launched and enhanced approximately **19 applications and platforms that serve public health functions and provide health care services.**

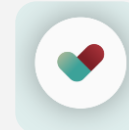
The **agile** response to create and update apps during the pandemic highlights the Kingdom's desire and requirement to utilise digital health to enhance **patient experience**

- ✓ Virtual appointments
- ✓ Tracking cases
- ✓ Real time notifications
- ✓ Communication
- ✓ Booking
- ✓ Public health management

A number of lessons learned were compiled and shared by the MoH and HHC that constitute a reference for future recommendations, in particular in the importance of providing digital communications channels for healthcare facilities and utilize it for daily tasks.



Mawid is a central appointment booking system for primary health centres, created in 2019 and advanced during the pandemic to also provide guidance on whether to isolate or book a hospital appointment

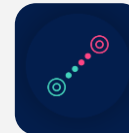


Tawakkalna shows the health status of the users through colored codes. Individuals can report COVID-19 infected and suspected cases or violations of the precautionary measures

19 applications and platforms for health functions were developed, launched or enhanced in KSA ³¹



Sehaty is an online website that gives 24-hour access to personal health information, to manage appointments, view personal medical reports, contact patient relations and much more



Tabaud is a contact notification app that tracks the spread of Coronavirus infection, in which it allows its users to know if they have been in contact with positive cases



Seha is designed to provide online medical consultation services, allowing users to get medical consultations from MoH's accredited doctors in all specialties

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Globally, patient focused digital health solutions are core to ensuring healthcare quality and accessibility



Canada ³⁴

Canada Infoway ACCESS Health program provides Canadians with **access to their personal health information** and to **digitally-enabled** health services.

PrescriberT enables prescribers to **electronically transmit a prescription directly from an EMR to the pharmacy management system** of a patient's pharmacy of choice.



U.S.A ³²

76 percent of U.S.A hospitals connect with patients and consulting practitioners at a distance through the **use of video and other technology**. Almost every state Medicaid program has some form of coverage for telehealth services, and private payers are embracing coverage for many telehealth services.



UK ³³

England's NHS trialed a system in 2017 which **prescribed apps to patients with chronic conditions** such as COPD and gestational diabetes. Through a smart device, these apps can remotely transmit patient data to clinicians. This subsequently **reduced patients' visits to clinics by 25%**, as shown by a two-year trial at the Royal Berkshire NHS Foundation Trust.



Sweden ³⁷

Via the 1177 portal, **Swedish citizens are already given access to their EHRs** and are able to send secure messages to hospitals, are provided with information about illnesses and treatments, and it also allows them to learn more about healthcare in their particular region. A survey even showed that **over 95% of patients were positive towards accessible patient EHR**.



Denmark ³⁵

The country's health ministry aims to bring **EHRs to all insured patients by 2021**, with a focus on data privacy and security as the government will also introduce a law regarding electronic health records protection.

The Danish National Genome Center stores **only one copy of each patient's genetic data**, which cannot be downloaded, copied or removed from the genome database.



Japan ³⁸

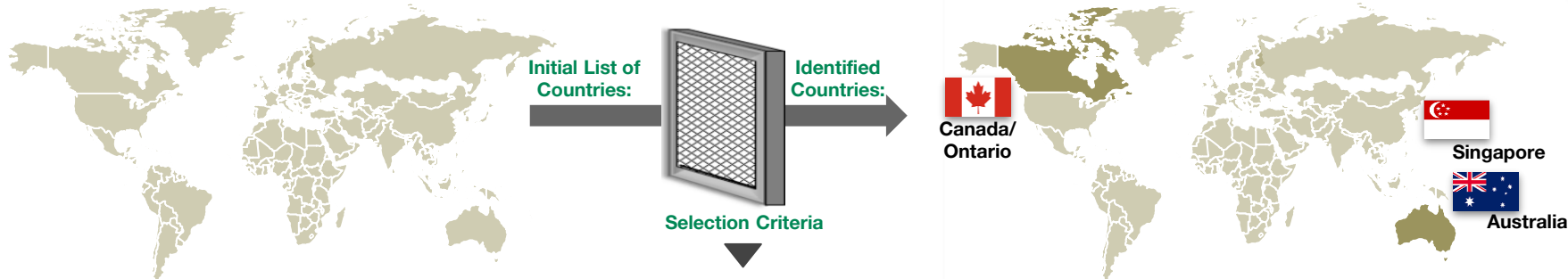
The Government of Japan is working on the **policy framework for digitalisation in healthcare**, dubbed 'Next-Generation Healthcare System' creation. One of the remarkable initiatives for this is the Act on Anonymously Processed Medical Information to Contribute to Medical Research and Development, passed in 2017 and enacted in 2018. The legislation is about establishing a **system for collecting and utilising anonymously processed medical information** including outcome records while safeguarding patient's privacy, aiming at advanced medical research, innovative drug discovery and new business creation.



Australia ³⁶

Australia has a **secure online health record system** called My Health Record. Having a My Health Record means important health information including allergies, medical conditions and treatments, medicine details and scan reports can be **accessed through one system**.

Three countries were selected for a deep dive assessment whilst creating this MoH Digital Strategy Framework and Roadmap, based on four selection criteria...



1

Similarity to KSA Healthcare Context

- **Country Overview;** Population, funding models etc.
- **Healthcare structure:** Centralization vs decentralization of digital health functions, role of the MoH
- Digital health vision & aspirations

2

Digital Health Global Recognition

- **Strong international reputation** for advanced digital health systems & practices

3

Digital Health Players

- The **diversity** of the players in the healthcare system to match the structure in KSA & key lessons pertaining to **decision rights** of the different players (regulation, planning, delivery)

4

Ease of Access to Relevant Information

- Availability of **sufficient information** on digital health related governance aspects

Scope of benchmark research

1. Overview of **digital health system structure, role** of their respective MoHs (and other potential regulators)
2. Digital Health **priorities and themes** in relevance to the overall **healthcare system** (i.e. what are their priorities, what are their vision, mission and goals)
3. Digital Health planning, and delivery model in relevance to the overall healthcare system (i.e. who develops the Digital Health Strategy, who ensures alignment, who is responsible for regulation, monitoring, funding etc.)

...from these countries' experiences, key considerations from their digital health system structure and delivery model as well as how other entities are involved were studied ...

Ontario Province in Canada ^{39, 40}



Role of the Ministry of Health for Digital Health

The federal government does not play an active role in Digital Health as Canada has a predominantly provincial driven government model. **Ontario's provincial Ministry of Health** creates the **digital health strategies and policies**. These are then cascaded to the implementing agencies.

Digital Health Delivery Model

OHTs, (similar to ACOs) previously the LHINs are responsible for **delivering the health services and implementing the digital health services**. They are supported by health systems portfolios, which are shared services delivered by leaders and experts within the areas in the mandate of the OHTs, example: Digital Excellence in Health.

Digital Health Strategy Creation and Implementation Bodies

Strategy is created by **Ontario's Ministry of Health** (provincial), with **support from relevant agencies such as Ontario Health**. They published the Digital First for Health Strategy. They also create resources such as the Digital Health Playbook which guides the OHTs (implementation bodies) to plan, design and implement Digital Health Services based on the needs of their community.

Australia ^{41, 42}



Ministers of Health (COAG Health Council), set the Digital Health Policies and are responsible for approving the digital health strategy once it has been created by the Australian Digital Health Academy (ADHA).

Each of the **states and territories** are responsible for their own **regional digital health strategies that are aligned with the overall national digital health strategies** and delivering these. For example, each state delivered a Electronic Health Record, ensuring that it adheres to the National Digital Health Strategy by facilitating interoperability at a National Level for My Health Record.

ADHA aims to advance digital health and enable digital health integration nationally.

State/Territory Governments create their local digital health strategies and work with ADHA to ensure alignment of local digital health strategies to the national digital health strategy .

Singapore ^{43, 44}



Ministry of Health approves the digital health strategy (HITMAP) and the Ministry of Health Holding monitors delivery. The **ministry also has a regulatory role** of approving and passing digital health policies and providing licenses for the use of technologies such as telehealth.

iHIS is responsible for the **planning and delivery** of digital health solutions. **Implementation** is done with the coordination of the **3 regional clusters** that align with iHIS. **The clusters and iHIS report to the Ministry of Health Holdings** that coordinates and monitors delivery.

Singapore **iHIS** is the in Singapore, responsible for digital **health planning and delivery** as well as regulation (in **digital health arm** cooperation with the Ministry of Health and other entities).

... each of their digital health strategies were also analysed to understand their digital health priorities, strategic goals

Ontario Province in Canada ^{39, 40}



Digital Health Vision

To create a system that is integrated, innovative, efficient and able to respond to the short and long-term needs of patients. There is a clear commitment from the government to end hallway health care by building a modern, **sustainable** and integrated health care system that starts with the patient.

Key initiatives

- Make video visits available across the province via Ontario Telemedicine Network
- Set mandatory online appointment booking targets for OHTs within funding agreements
- Establish a provincial patient digital identity, access and authorization service to enable easy access to patient information
- Modernize provincial digital health infrastructure
- Make it easier for Ontario companies, health system leaders and innovators to integrate with and gain insights from existing health data assets

Themes in the Digital Health Strategy

- Virtual Care
- Online Appointment Booking
- Digital Access for Patients
- Better, more connected tools for frontline providers
- Data Integration and predictive analytics

Australia ^{41, 42}



Better health for all Australians enabled by seamless, safe, secure digital health services and technologies that provide a range of innovative, **easy to use tools for both patients and providers.**

- My Health record - universal, integrated and comprehensive
- Standardizing clinical communications
- Establishing the Cyber Security Centre
- Digitally identifying physical goods
- End-to-end secure messaging solutions, including between health providers
- Create the National Authentication Service for Health (NASH)
- Access information at any time online and through mobile apps

- Accessibility of health information
- Exchange of information
- High quality data
- Workforce confidence with digital tools
- Digitally enabled model of care
- Driving innovation

Singapore ^{43, 44}









Our ultimate aim is to improve our population's health and health administration by integrating intelligent, highly resilient and **cost effective** technologies with process and people.

- Smart Health Solutions which allows Smart Health Video Consultation and the Smart Health TeleRehab
- Prescription in Locker Box (PILBOX) allowed patients from SingHealth Polyclinics to collect their repeat medication at their own time and convenience
- Telestroke utilises video-conferencing technology to allow neurologists to remotely guide the administration of eligible patients with acute stroke.
- Migrating to cloud

- Population Profiling
- Population Enablement
- Prevention & Continuity of Care
- Provider Care & Operations Excellence
- Healthcare Financial Excellence
- Policy & Public Health Workbench
- IT Foundation & Resiliency

From the benchmarking exercise, there were six key strategic direction insights considered when creating the MoH Digital Strategy Framework and Roadmap

- 1  One of the of the common key focus areas are Virtual Care and Telehealth, especially during and after the Covid-19
- 2  Ministry of Health is mainly responsible for the policy issuance and approval of digital health initiatives
- 3  Cyber security and ownership of data is paramount
- 4  Data collection and standardization as well as EHRs are core to all digital health strategies
- 5  Analytics use cases vary in counties, however, business intelligence and data analysis is used to improve both the patient and the providers' experiences and achieve operational and financial excellence
- 6  A focus is needed on the adoption of digital health by educating providers and patients

03 Identify & Align

3.1 Why do we need a strategy framework?

3.2 Key Challenges and Strengths in KSA Digital Health Landscape

3.3 MoH Transition to a Super Regulator

3.4 Drive to Vision 2030 in KSA, supported by various national level strategies and entities

3.5 Impact of Covid-19 on digital health, globally and locally

3.6 Benchmarking Key Findings

3.7 Design Principles of the MoH Digital Strategy Framework and Roadmap

As a result of the 'Identify' and 'Align' stages of the approach, a set of key design principles and considerations were considered to serve as guidelines for the development of the MoH Digital Strategy Framework and Roadmap

Key inputs:

Vision 2030, NTP, NDU, VRO, etc.

MoH Transition to 3.0

KSA Stakeholders Engagement

Best Practices & lessons learnt

Sustainability:

Knowledge and practice of healthcare overcomes challenges such as ageing and growing population, growing costs of healthcare, inefficiencies in the system of care, wastage of resources for long term sustainability



Person First Health and Care:

A healthcare system that puts our population, including citizens, residents, pilgrims and visitors at the forefront to ensure they get a world-class healthcare experience

Collaboration:

Envision the delivery of the strategy with stakeholders and partners in collaboration and consensus; having both clarity of roles and responsibilities as well as accountability for an integrated system



Empower MoH as a super regulator:

- Retain digital health strategic direction and priority setting
- Develop, streamline & govern Kingdom-wide policies
- Manage the transition in a logical & phased manner



Value Based Care:

A healthcare system which motivates our providers to drive overall health improvement of the population, provide high quality care, while reducing costs, thus supporting the new delivery model of ACOs

Cost-efficiencies:

Design the mandate, organizational structure and governance model mindful of cost efficiencies, while promoting private sector participation in line with the Vision 2030



Agility:

A healthcare system striving for a lean and agile regulatory and operating model, to ensure we are always at the forefront of all aspects relating to digital health services within the MoH

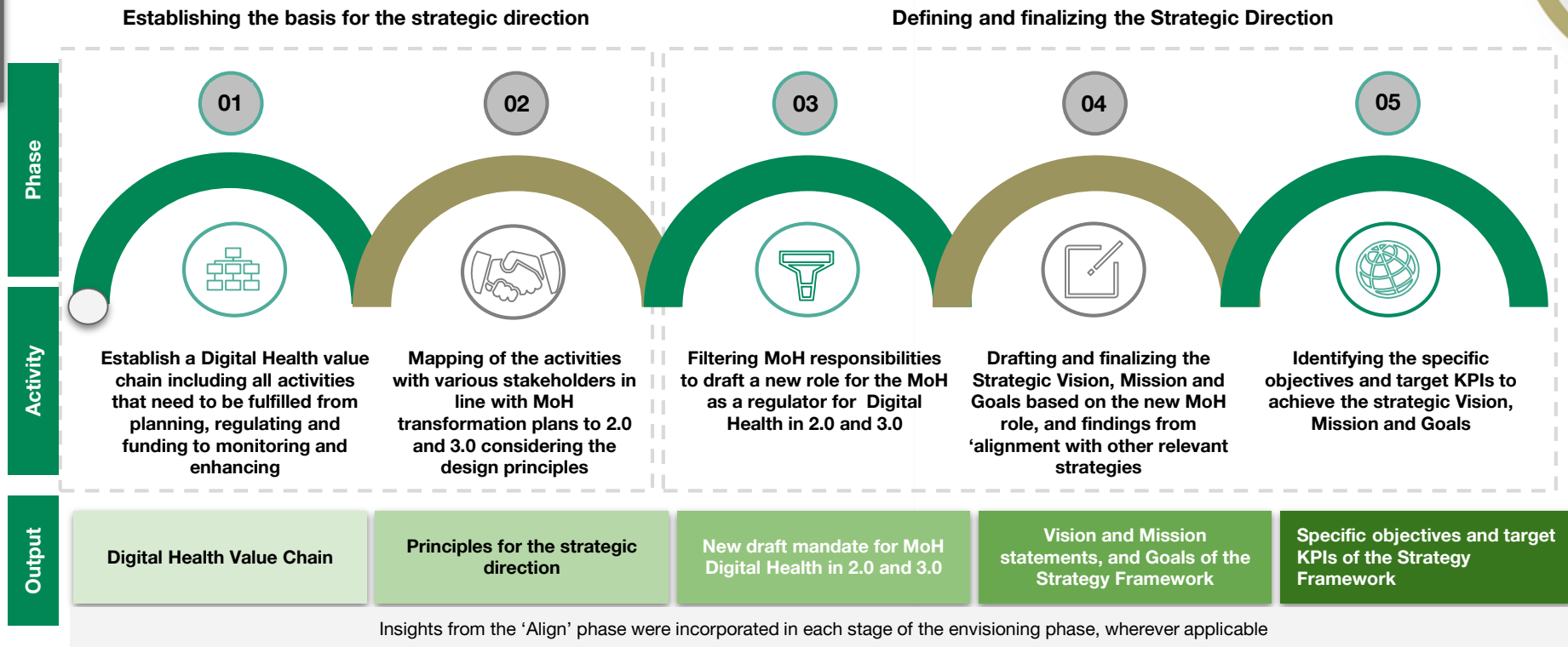
04 Envision

4.1 Identify Future State of MoH

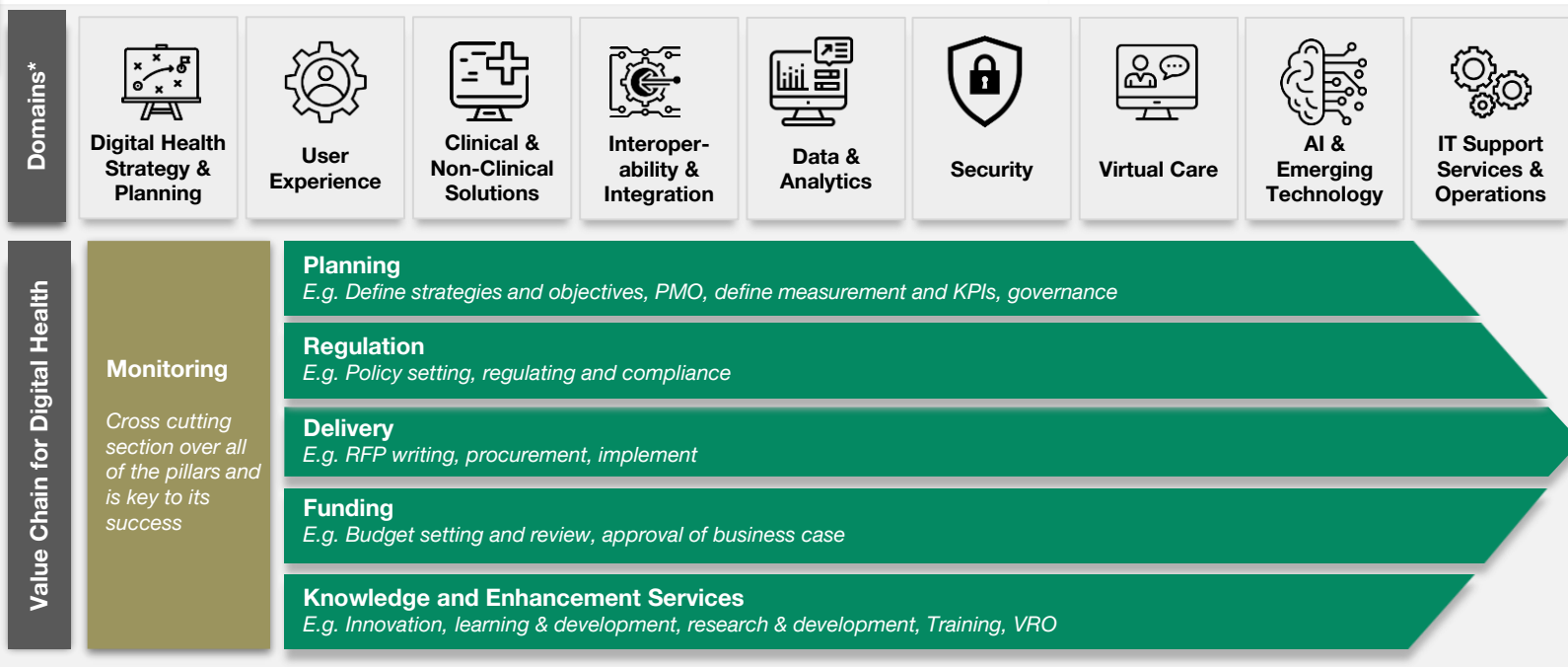
4.2 Vision and Mission Statements

4.3 Strategic Goals

A five-staged framework was adopted for the co-creation of the MoH Digital Strategy Framework & Roadmap with inputs from key stakeholders



Firstly, a Digital Health value chain was identified to highlight the key activities that need to be fulfilled from planning, regulating, funding to implementing, monitoring and enhancing...








As digital health technologies come in various forms & have multiple applications, a list of common domains was created

All activities needed to provide digital health services or solutions; these were taken into account in order to map the end-to-end responsibilities needing fulfillment by various entities in the ecosystem

...MoH Digital Health's current activities* were captured and placed against this Digital Health Value Chain

The key activities in the current state were mapped across the digital health value chain:

 Planning	 Regulating	 Delivery	 Funding	 Other activities
<ul style="list-style-type: none"> ✓ Assessing digital health needs ✓ Creating and updating national level digital health strategy ✓ Identifying national level initiatives ✓ Coordinating and aligning with VRO on initiatives planning & roadmap ✓ Operating digital health PMO ✓ Ensuring digital health requests align to strategy ✓ Writing and publishing RFPs 	<ul style="list-style-type: none"> ✓ Creating the relevant committees (example: Data Governance Committee) ✓ Determining the model for ownership and governance of data ✓ Creating digital health policies, standards and guidelines in alignment with other entities 	<ul style="list-style-type: none"> ✓ Application creation covering both National and Enterprise applications ✓ Implement National and Enterprise solutions ✓ Deliver an Infrastructure readiness project to all facilities ✓ Ensuring RFPs are aligned with the integration and interoperability standards within MoH ✓ Change management for each digital health project through steering committees ✓ Knowledge transfer of solutions to clusters and facilities 	<ul style="list-style-type: none"> ✓ Budget for digital health and solutions ✓ Completed spending optimisation exercises related to digital health ✓ Review and approvals of business case and required costings for each digital health project 	<ul style="list-style-type: none"> ✓ Creation of an MoH innovation garage to create solutions and systems incorporated with design thinking and focussed on user experience ✓ Analysing emerging technologies and their impact on KSA
<div style="display: flex; align-items: center;"> <div style="background-color: #008000; color: white; padding: 5px; writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">Monitoring</div> <div style="margin-left: 10px;"> <ul style="list-style-type: none"> ✓ Collating and reporting statistics and information relating to National Health KPIs (e.g. from Clusters) ✓ Continuously reviewing patient experience for digital health (e.g. digital health apps and patient portals etc.) ✓ Ensure compliance of all solutions under the ministry with the cyber security standards ✓ Track suspicious activities throughout all MoH facilities relating to data and privacy security </div> </div>				

*Non-exhaustive. This list was collected through interviews and may not be fully exhaustive of all MoH current Digital Health responsibilities

Seven key guidelines were created to confirm which of these existing MoH Digital Health activities will be still required within the new MoH 3.0 mandate and to identify any further new responsibilities for MoH 3.0

01

Empower MoH as the national digital health regulator



02

Retain digital health strategic direction and priority setting



03

Develop, implement and govern policies that must be Kingdom-wide



04

Avoid cost escalation and seek opportunity for savings from economies of scale and efficiencies



05

Responsibilities transitioned are moved as close as possible to end user and customer (patient)



06

Responsibilities transitioned are moved to organizations which have the core competencies and synergies



07

Transition functions from MoH in a logical and phased manner with minimal disruption



A new mandate for the MoH Digital Health was drafted by filtering of activities and validating them against the principles (1/3)

- ✓ This mandate demonstrates the **responsibilities** and **scope** for the MoH Digital Health post-transition to MoH 3.0 - super regulator stage
- ✓ The MoH Digital Strategy Framework and Roadmap **is completely aligned with this mandate** to ensure all responsibilities are addressed in articulation of goals, objectives, as well as the initiatives
- ✓ This mandate also **guides on clarity of ownership for initiatives** in the case of overlapping responsibilities with other entities

Planning

1

Set the national digital health strategy and roadmap in coordination with relevant entities to accelerate the digital transformation of the KSA healthcare sector

2

Drive the design of national reference architecture and ensure alignment across all ongoing and planned digital health initiatives

3

Set the digital health governance framework through aligning and engaging key stakeholders in the ecosystem in the national strategic planning, approving their program initiatives and assigning ownerships

4

Set sector wide national digital health performance indicators and oversee the quality of service delivery, adoption and overall user experience in order to ensure patient satisfaction and service efficiency

5

Set and update MoH digital transformation strategy

A new mandate for MoH Digital Health was drafted by filtering of activities and validating them against the principles (2/3)

Regulation

1

Set and streamline national digital health policies & regulations in alignment with relevant regulatory entities to enable the achievement of sectoral strategic objectives

2

Set and enforce health data privacy and security standards and policies in line with relevant national laws

3

Drive the formulation of sector wide digital health data governance framework

4

Monitor and ensure compliance to set digital health policies and standards in alignment with relevant stakeholders (such as Cybersecurity department, etc.)

Funding

1

Plan and allocate yearly budget for national digital health programs and initiatives in coordination with relevant entities (e.g VRO, NDU, etc.)

2

Monitor the budget spent against set national objectives and ensure **benefits realization** in line with national digital health agenda

A new mandate for the MoH Digital Health was drafted by filtering of activities and validating them against the principles (3/3)

Delivery

1

Deliver national digital health services and solutions that are strategic, Kingdom wide and in compliance to set policies and regulations e.g. Sehaty (MoH 2.0)

2

Monitor the execution of nation wide digital health programs and **ensure their compliance to set policies** and **regulatory** frameworks



3

Set up and operate a national digital health PMO for portfolio management and ensure timely achievement of national program objectives and initiatives

4

Oversee the utilisation of data in the health system planning and delivery - and drive sectoral coordination with relevant entities

5

Set the guidelines for identifying and rolling out **MoH headquarter wide internal systems & solutions**

Knowledge and Innovation

1

Set and drive sector wide digital health strategies and plans for knowledge management and innovation agenda

2

Drive nation-wide digital health capability building programs to ensure continuous skill-set development

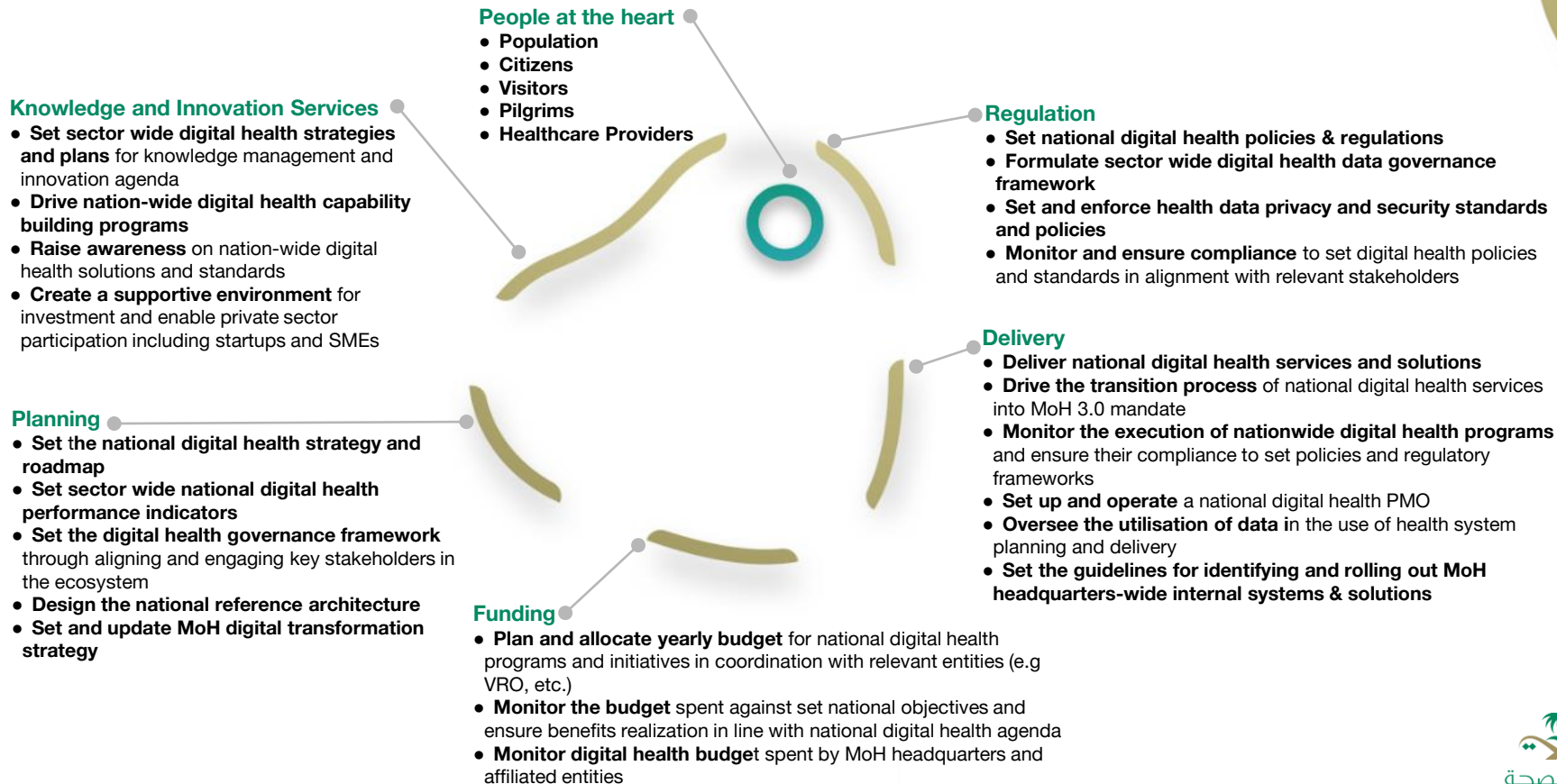
3

Raise awareness on nation-wide digital health solutions and standards

4

Create a supportive environment for investment and enable PSP including startups and SMEs to foster constant innovation and service advancement

In summary, the Digital Health Mandate was created to take into account the transition of MoH to a super regulator through the Digital Strategy Framework and Roadmap's value chain pillars



04 Envision

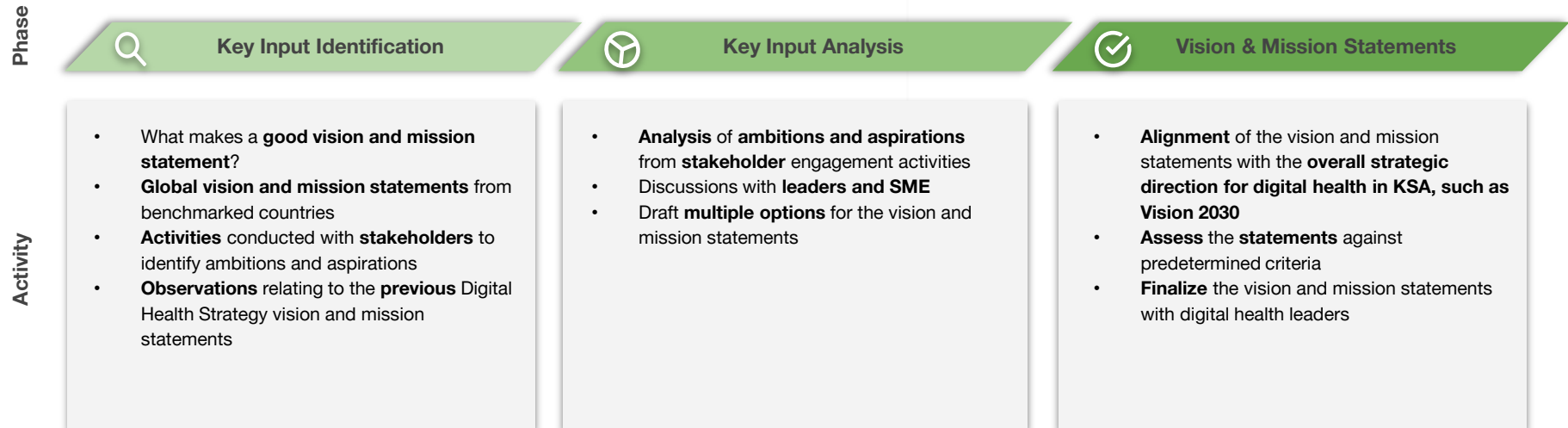
4.1 Identify Future State of MoH

4.2 Vision and Mission Statements

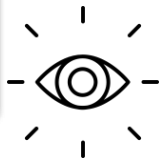
4.3 Strategic Goals

Methodology adopted for the creation of Vision and Mission Statements

A three-steps approach was taken to co-create the Vision and Mission statements of the MoH Digital Strategy Framework and Roadmap



First, a set of criteria for assessment of vision and mission statements were identified...



The **vision statement** defines what the MoH Digital Strategy Framework & Roadmap wants to deliver in the future. It envisages the **ultimate destination** and aims to achieve it by guiding and gearing all strategic actions towards it

Criteria	Targeted	Recognize the stakeholders who will be targeted and how
	Dream	Qualify or quantify an impact on the target indicating success
	Value Proposition	Define the means by which the dream will be achieved



The **mission statement** is the **roadmap** for the vision statement of the MoH Digital Strategy Framework & Roadmap. It may include whom it will affect, the regions it will consider, and the basic principles by which it be accomplished

Criteria	Purpose	How we are trying to achieve the promised offerings
	Realistic & Clear	The message of the mission is short, realistic and memorable, not convoluted
	Inspirational	The key driver which can motivate employees and stakeholders for a bigger purpose

... these criteria were applied to the eHealth 2017 vision and mission, which highlighted that the previous vision and mission were clearly targeted with a clear purpose, however there is a need to include key messages in line with the recent changes in the digital health ecosystem

MoH eHealth Vision Statement

A consumer centric, world class and sustainable health system enabled by eHealth

Targeted  Dream  Value Proposition 

Analysis

- ✓ Putting the consumer first
- ✓ Sustainable
- eHealth focuses more on information and communication, instead use vocabulary '**digital health**' which is the umbrella term and includes ehealth as well as telemedicine, AI, connected medicine, etc.

MoH eHealth Mission Statement

To transform healthcare delivery through technology to deliver safer, more efficient healthcare services for the population of Saudi Arabia

Purpose  Clarity  Inspirational 




Analysis

- ✓ Need for safe and efficient healthcare
- Should also include Hajj and Umrah pilgrims, not just the population
- Now needs a focus on enhancing the already established solutions and infrastructure from previous strategies, rather than a focus on 'transforming'

In the context of KSA's 2030 aspirations, MoH's 2017 eHealth vision and mission, captures being patient centric, however, it is limited to digital information and healthcare services. It does not emphasize on the impact of digital information pertaining to:

- Improve quality of healthcare (support the preventive direction)
- Achieve good governance of the sector
- Improve the efficiency, effectiveness and performance of the healthcare sector

Digital Health Visions from benchmarked countries were also referenced when defining the vision and mission for the MoH Digital Strategy Framework and Roadmap

	Ontario ⁴⁵ 	Australia ⁴⁶ 	Singapore ⁴⁷ 
Vision of digital health strategies	<p>To create a system that is integrated, innovative, efficient and able to respond to the short and long-term needs of patients.</p> <p>There is a clear commitment from the government to end hallway health care by building a modern, sustainable and integrated health care system that starts with the patient.</p>	<p>Better health for all Australians enabled by seamless, safe, secure digital health services and technologies that provide a range of innovative, easy to use tools for both patients and providers.</p>	<p>Our ultimate aim is to improve our population's health and health administration by integrating intelligent, highly resilient and cost effective technologies with process and people.</p>

Key Considerations in KSA context

- All visions focus on the **eventual improvement of their citizen's health** and being patient centric
- Benchmarked visions for the selected countries appear to mostly **focused on the human element of healthcare** rather than focus on the technology
- They claim they will achieve this **impact through means of technological advancements.**

As a result, each key word in the vision statement resonates with the aspirations of stakeholders, aligns with the Vision 2030 and other national strategies, as well as fulfils the assessment criteria

A dream for an 'empowered' system where the stakeholders in the ecosystem have clear roles and responsibilities, including having the right information, knowledge and competency to perform and deliver

✓ Dream

A well structured system that holds appropriate entities accountable for continuously improving digital health operations, resource competency and processes, monitoring performance, etc.

The vision applies to the entire KSA health system (inclusive of all those who are a part of the ecosystem, such as population including citizens, residents, pilgrims and visitors, providers, payers, and regulators)

✓ Targeted

“ An empowered, equitable and well-governed health system within Saudi Arabia, made possible by digital innovation ”

Equitable care stresses on the equality to access, utilize and benefits or outcomes of care for those in equal need

'Made possible' and not 'enabled' highlights that Digital is core to achieving this vision, and no longer an enabler

Putting innovation on the forefront shows readiness to embrace a modern digital healthcare system

✓ Value Proposition

Why this vision statement?

- It qualifies against the predetermined criteria which makes a good vision statement, i.e. containing a Dream, and Value Proposition while being Targeted as demonstrated above
- An **empowered and equitable** health system directly relates to 'A vibrant society' with fulfilling lives for the entire society
- **Innovation** in digital health highlights a strive to be 'An ambitious nation'
- **Good governance** is essential for a 'A thriving economy' as it implies being regulated with the standards, policies and guidelines
- Thus, this vision statement is **aligned with the Vision 2030**

Each key word in the mission statement resonates with the ambitions of stakeholders, aligns with the MoH VRO, VRP, NTP, NDTs goals, as well as fulfils the assessment criteria



Why this mission statement?

- It qualifies against the predetermined criteria which makes a good mission statement, i.e. inspirational, driven by a definite purpose, while being realistic & clear
- Enhanced integrated digital health solutions will promote **access to health services**
- Value based healthcare and wellbeing will promote the **prevention of health risks and diseases, and promote an outcome driven healthcare system**
- Collaborative manner will ensure **cost efficiencies in the system**
- Thus, this vision statement is aligned with the **NTP, NDTs, VRP, and MoH VRO Goals**

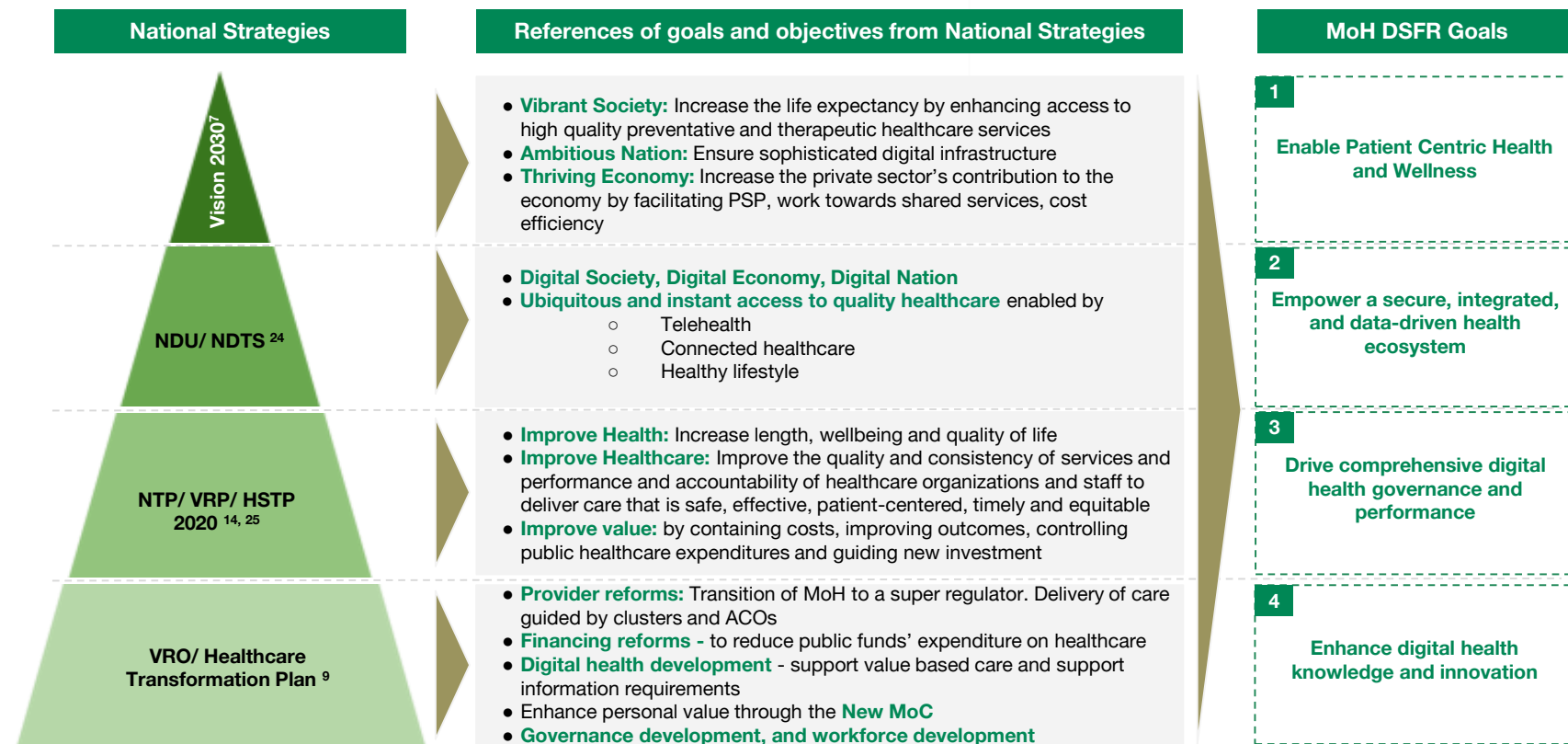
04 Envision

4.1 Identify Future State of MoH

4.2 Vision and Mission Statements

4.3 Strategic Goals

Strategic Goals of the MoH Digital Strategy Framework and Roadmap were created and cascaded from the Vision 2030, and in alignment with other relevant strategies goals and objectives to ensure synergy between all the strategies



Simultaneously, these goals were validated and cross checked with the finalized Vision and Mission statements of the MoH Digital Strategy Framework and Roadmap

Vision

An **empowered**, equitable and **well-governed** health system within Saudi Arabia, **made possible by digital innovation**

Mission

Enhance **integrated** digital health solutions to deliver **value-based healthcare and wellbeing** in a collaborative manner

Goals



Enable person centric health and wellness



Empower a secure, integrated, and data-driven health ecosystem



Enhance digital health knowledge and innovation



Drive comprehensive digital health governance & performance

05 Strategize

5.1 Strategic Objectives

5.2 Digital Health Key Performance Indicators

To translate the strategic goals to specific objectives, the following guiding principles were applied

- Objectives describe what is to be done to **accomplish the vision** and **strategic goals**
- Objectives are a linked set of priorities that **deliver the strategy**
- Objectives are typically **cascaded from the Strategic Vision & Mission**, with reference to the internal analysis of the organization, using a **Strategy Map and the balanced scorecard**
- Objectives have to be **SMART**:



A Strategy Map and the Balanced Scorecard were used to identify MoH Digital Strategy Framework and Roadmap Strategic Objectives...

MoH Vision and Mission
What does success look like?



1

People/Stakeholders ²⁸

"What do we want to achieve for our people and stakeholders?"

2

Operations & Governance ²⁸

"How effective are our operations (planning- regulation- delivery- funding) in achieving the outcome, what must we excel at?"

3

Learning & Innovation ²⁸

*"How can we best support our **people** and **processes** to achieve the outcome?"*

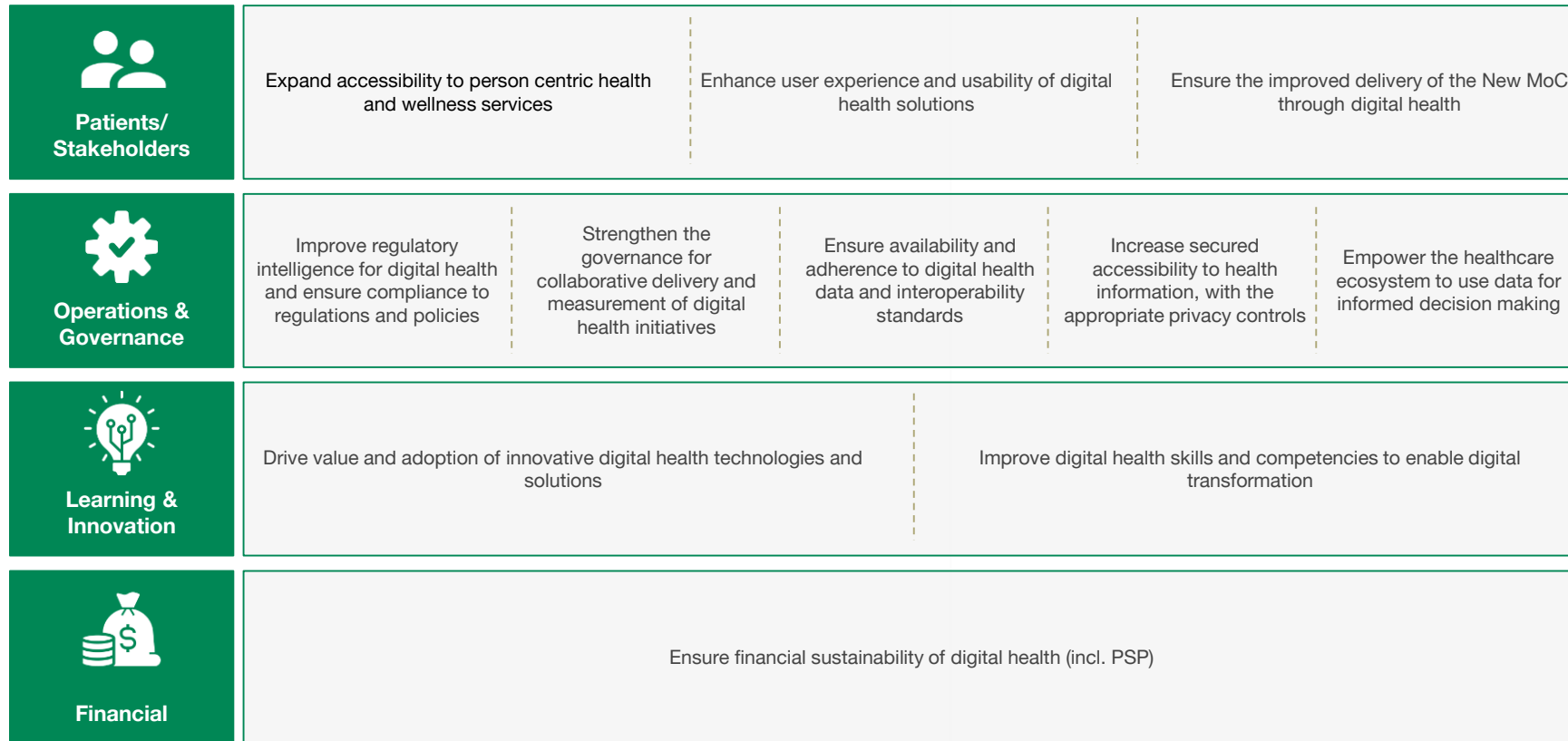
4

Financial ²⁸





"What are the financial requirements/ obligations required to support MoH to achieve its outcome?"

Strategy Map Pillars

...and eleven objectives were developed to cover the four Strategy Map Pillars



These objectives were then are aligned to the strategic goals and cross checked to ensure an accurately defined direction for the MoH Digital Strategy Framework & Roadmap

Strategic Goals	Key Objectives
<p>Enable person centric health and wellness</p>  <p>01</p>	<p>1.1. Expand accessibility to person centric health and wellness services</p> <p>1.2. Enhance user experience and usability of digital health solutions</p> <p>1.3. Ensure the improved delivery of the New MoC through digital health</p>
<p>Empower a secure, integrated, and data-driven health ecosystem</p>  <p>02</p>	<p>2.1. Ensure availability and adherence to digital health data and interoperability standards</p> <p>2.2. Increase secured accessibility to health information, with the appropriate privacy controls</p> <p>2.3. Empower the healthcare ecosystem to use data for informed decision making</p>
<p>Drive comprehensive digital health governance & performance</p>  <p>03</p>	<p>3.1. Improve regulatory intelligence for digital health and ensure compliance to regulations and policies</p> <p>3.2. Strengthen the governance for collaborative delivery and measurement of digital health initiatives</p> <p>3.3. Ensure financial sustainability of digital health (incl. PSP)</p>
<p>Enhance digital health knowledge and innovation</p>  <p>04</p>	<p>4.1. Drive value and adoption of innovative digital health technologies and solutions</p> <p>4.2. Improve digital health skills and competencies to enable digital transformation</p>

Goal 01: Enable Patient Centric Health and Wellness



Objectives:

1.1. Expand accessibility to person centric health and wellness services

1.2. Enhance user experience and usability of digital health solutions

1.3. Ensure the improved delivery of the New MoC through digital health



What will be different for the...



Individuals and Family

All residents, visitors, citizens and pilgrims in KSA will be able to book appointments easily, receive high-quality preventative and therapeutic care wherever and whenever they need it, access their medical records and share them if necessary, receive personalized experience comparable to other digital technologies they use in day-to-day life.



Provider

Providers from all specialities will be empowered to provide care to their patients using multiple delivery channels such as through phone, chat, in-person, video/audio consultations, etc. Physician's may access patient's medical records easily and in turn reduce medical errors, avoid duplications and unnecessary testing.



MoH Digital Health

The MoH Digital Health will set the relevant policies and regulations to ensure the appropriate regulatory frameworks exist to ensure development of solutions embodying user preference, person centered design, equity of access and accessibility.



Clusters

Clusters may easily monitor operational efficiencies & outcomes of provided services, in line with the new Model of care, in turn promoting a value based care system driven by outcome and reduction in adverse events and disease incidence as well as prevalence.

Goal 02: Empower a secure, integrated, and data-driven health ecosystem



Objectives:

2.1. Ensure availability and adherence to digital health data and interoperability standards

2.2. Increase secured accessibility to health information, with the appropriate privacy controls

2.3. Empower the healthcare ecosystem to use data for informed decision making



What will be different for the...



Individuals and Family

All persons will be empowered to use data for shared decision making in a way that better their health and wellness. This will enhance their engagement with the digital health tools, and other resources pushed through their providers via the platforms available to them. More engaged persons, will lead to a healthier society.



Provider

Use patient data responsibly with knowledge and awareness of privacy standards and dealing with patient health information. Providers will be able to engage the patient for shared decision making by sharing relevant resources with their patient via various communication channels.



MoH Digital Health

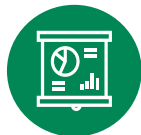
MoH will ensure no gaps exist with regards to data and interoperability standards, privacy standards and other regulations. They should be adhered to by healthcare entities, in hospitals, clinics and medical cities, as well as by vendors or solution providers for digital health tools. MoH will monitor the adherence to these standards.



Clusters

The increase in digital health results in more information being documented and available online and in tools, portals and apps, therefore it is crucial that the privacy of citizens, residents, pilgrims and visitors of the Kingdom is kept confidential, safe and secure. This will be the responsibility of the clusters.

Goal 03: Drive comprehensive digital health governance & performance



Objectives:

3.1. Improve **regulatory intelligence** for digital health and ensure **compliance** to regulations and policies

3.2. Strengthen the **governance** for **collaborative delivery** and **measurement** of digital health initiatives

3.3. Ensure **financial sustainability** of digital health (incl. PSP)

What will be different for the...



Healthcare entities

Healthcare entities in the KSA ecosystem, directly or indirectly influencing digital health, will work in collaboration on initiatives, contributing in their capacity by bringing in relevant expertise and competencies. The existing challenges due to overlapping programs will be resolved.



Clusters & Providers

Providers' support in clarity on their roles and authorities, and leveraging secured and regulated digital health for improved performance and better utilization of the provided healthcare services.



MoH Digital Health

Ensuring relevant regulations, policies, and standards, as well as strategic and tactical governance that enables the ministry to realize its role as a super regulator and oversee and align with the different stakeholders in the health ecosystem. They will also be monitoring indicators for the various initiatives to ensure successful implementation.



Payer

Financial sustainability and efficiency throughout the kingdom and alignment with the VRO program for PSP, including effective budgeting that is supported by business cases and ROI to support sustainability and cost efficiencies in the healthcare sector.

Goal 04: Enhance digital health knowledge and innovation



Objectives:

4.1. Drive value and adoption of innovative digital health technologies and solutions

4.2. Improve digital health skills and competencies to enable digital transformation



What will be different for the...



Individuals and Family

Encouragement of the patient to explore other possibilities of receiving care and enabling the patient to have more of an active role in their care management thus promoting preventative care and for individuals and better health for the society at large.



Providers & Clusters

Empowered providers will have sufficient skills and resources to plan, implement and use the technologies and data in an effective manner. They will understand and realize the value of digital health in their practice. They will be convinced of the clinical efficacy of digital health solutions, that they would encourage their patients to adopt.



MoH Digital Health

Drive continuous research and promote the adoption of digital health solutions and emerging technologies throughout the Kingdom. Assess and evaluate the effectiveness, safety and security of the different technologies and solutions continually and suggest improvement measures as necessary.



Payer

Enable faster implementation of digital health initiatives leading to a higher return on investment. Continuous evaluation of digital health innovations for deployment, in order to continue delivering world class healthcare experience.

05 Strategize

5.1 Strategic Objectives

5.2 Digital Health Key Performance Indicators

Key Performance Indicators at strategy level are designed to focus on the impact and the outcome to be cascaded to operational KPIs and activities

Most relevant & provides necessary information to assess the extent of the progress, achievements and overall position

Key Performance Indicators

Focus

Strategy KPIs

- Indicators used to assess performance against the overall strategy

Impact

- Evaluate the ultimate impact of a program and outcome achieved of the specific initiatives

Outcome

- Assess impact of program in terms of objectives and overall mission and vision

Output

- Determine if the immediate product of an activity is the target of the initiative

Activities

- Assess completion of programs & activities to support targets

Input

- Define what is required to complete an initiative and includes resources (financial & human) to deliver output

Operational KPIs

- Indicators used to assess operational capabilities to the overall strategy

Besides MoH's existing Digital Health KPIs, new KPIs are required to measure the performance and achievement of the objectives

Existing KPIs

- KPIs reported to ADAA
- KPIs for the current initiatives
- Internal KPIs of the different departments

New KPIs

Focus

- Performance indicator set to measure progress against strategy Objectives
- Some of the new KPIs are not currently measured, so there is no baseline
- Initiatives i.e. programs or projects will be required to start measuring the KPIs and be able to set representative and achievable targets
- Initiatives can be developed to start measuring the KPIs, support in consolidating and calculating them, or design reporting tools and mechanism to report the KPIs

Data Collection

Initiatives should be developed to collect the data in a consistent manner. *For example: Develop an innovation platform, to start measuring number of active users*

Consolidation and Transformation

Develop initiatives to consolidate data, calculate it and measure performance. *For example: Consolidate a service directory to be able to calculate the % of digitized services*

Reporting

To report on a regular interval in a consistent manner, some initiatives may be created. *For example: Create a compliance and assurance function to be able to report on the facilities compliance to set policies and regulations*

Key Performance Indicators are assigned to Strategic Objectives to ensure measurable results and vision realization (Goal 1)

Key Objectives	Digital Health KPIs	Measure
1.1 Expand accessibility to person centric health and wellness service through digitization	% of MoH eServices use and adoption against target	<ul style="list-style-type: none"> (Number of active users/ number of targeted users) per MoH service
	% of active users to the published digital inclusion framework	<ul style="list-style-type: none"> (Number of active users/ number of targeted users)
	% active users to Awareness and communication platforms (staff and community)	<ul style="list-style-type: none"> ((Number of active users of communication and awareness platforms/ total targeted number of users)*100))
1.2 Ensure satisfactory user experience and usability of digital health solutions	Average People Satisfaction scores	<ul style="list-style-type: none"> Average scores of People User surveys (e.g. Net Promoter score, System Usability Scale (SUS))
	Average Provider (facilities) Satisfaction	<ul style="list-style-type: none"> Average scores of Provider User surveys
1.3 Ensure the improved delivery of the New MoC through digital health	% of HIS coverage and activation by type of facility (hospitals, PHCs, dental centers and specialized support centers)	<ul style="list-style-type: none"> (Number of hospitals covered and activated by HIS/ total number of hospitals)*100) (Number of PHCs covered and activated by HIS/ total number of PHCs)*100) (Number of dental centers covered and activated by HIS/ total number of dental centers)*100) (Number of specialized support centers covered and activated by HIS/ total number of specialized support centers)*100)
	% of Medical Image archiving system (PACS) coverage and activation by type of facility (hospitals, PHCs)	<ul style="list-style-type: none"> (Number of hospitals that implemented PACS/ total number of hospitals)*100) (Number of PHCs that implemented PACS/ total number of PHCs)*100)

Strategic Objectives linked to Key Performance Indicators will need to ensure measurable results when linked to the initiatives (Goal 2)

Key Objectives	Digital Health KPIs	Measure
2.1 Ensure availability & adherence to digital health data & interoperability standards	<p>% of published policies and guidelines for data and interoperability standards against target</p> <p>Compliance to national policies & regulations pertaining to data value chain: <i>data storage/retention, data quality, data sharing & data management</i></p>	<ul style="list-style-type: none"> • $((\text{Number of published policies and guidelines} / \text{total number of targeted publications}) * 100)$ • $(\text{Number of compliant vendors and healthcare facilities} / \text{total number of vendors and healthcare facilities}) * 100$
2.2 Increase secured accessibility to health information, with the appropriate privacy controls	<p>% of healthcare facilities complying to cybersecurity standards</p> <ul style="list-style-type: none"> • <i>NCA KSA Cyber security essential cybersecurity controls (NCA-ECC)</i> • <i>MoH Cyber Security Department policies and procedures</i> • <i>Global cyber security standards such as HIPAA and ISO 27799</i> • <i>MoH IAM, Privileged Access Management and Multi Factor Authentication</i> • <i>Other relevant privacy and security policies</i> <p>% of cybersecurity alerts and threats handled successfully within time</p>	<ul style="list-style-type: none"> • $(\text{Number of healthcare facilities compliant with cybersecurity standards} / \text{total number of facilities}) * 100)$ • $\text{Number of cybersecurity handled successfully within time} / \text{number of alerts received} * 100\%$
2.3 Empower the healthcare ecosystem to use data for informed decision making	<p>% of active users to the approved data analytics tools and reports</p> <p><i>Including clinical decision support models published to support data analysis and business intelligence</i></p>	<ul style="list-style-type: none"> • $((\text{Number of active users} / \text{target number of users}) * 100)$

Key Performance Indicators are assigned to Strategic Objectives to ensure measurable results and vision realization (Goal 3) (1/2)

Key Objectives	Digital Health KPIs	Measure
3.1 Improve regulatory intelligence for digital health and ensure compliance to regulations and policies	% of policies and regulations that have published plans for their introduction, review or repeal against target	<ul style="list-style-type: none"> • $((\text{Number of policies \& regulations with published plans for introduction, review or repeal} / \text{targeted number of policies \& regulations}) * 100)$
	% of published and updated policies and guidelines and their respective by-laws against target	<ul style="list-style-type: none"> • $((\text{Number of policies and guidelines that are published and reviewed} / \text{targeted number of policies \& guidelines}) * 100)$
	% of regulations and policies that had a regulatory impact assessment (<i>systematic appraisal of regulations</i>)	<ul style="list-style-type: none"> • Number of regulations and policies with a regulatory impact assessment/ total number of regulations and policies published
	% of facilities complying to regulations, policies and guidelines	<ul style="list-style-type: none"> • $((\text{number of Healthcare facilities compliant to regulations, policies and procedures} / \text{total number of facilities}) * 100)$
	Average Regulatory Environment Assessment Score	<ul style="list-style-type: none"> • Average survey results filled by: Other entities in the healthcare sector, facilities (by type), private sector & investors, people and patients
	% of regulations and assessments conducted under bilateral arrangements against target	<ul style="list-style-type: none"> • $((\text{Number of regulations and assessments conducted in agreement with international entities (such as WHO, OECD, etc.)} / \text{total targeted number of regulations and assessments}) * 100)$

Key Performance Indicators are assigned to Strategic Objectives to ensure measurable results and vision realization (Goal 3) (2/2)

Key Objectives	Digital Health KPIs	Measure
3.2 Strengthen the governance for collaborative delivery and measurement of digital health initiatives	<p>% of active committees and coordination activities</p> <p>Average score of “value and impact of meetings and action items” survey</p>	<ul style="list-style-type: none"> • ((Number of committees and/ or coordination meetings regularly and achieving quorum// total number of identified digital health committees and coordination activities)*100)) • Average scores of survey results
3.3 Ensure financial sustainability of digital health (incl. PSP)	<p>Budget Adherence (<i>The ability to abide by the given budget while still realizing the objectives</i>)</p> <p>% of PSPs against target</p>	<ul style="list-style-type: none"> • Actual spending per budgetary item / Allocated Budget per item • Number of initiatives that were contracted as PSP/ total number of initiatives targeted for PSP

Strategic Objectives linked to Key Performance Indicators will need to ensure measurable results when linked to the initiatives (Goal 4)

Key Objectives	Digital Health KPIs	Measure
4.1 Drive value and adoption of innovative digital health technologies and solutions	<ul style="list-style-type: none"> % of delivered against a target digital health approved use cases % of delivered against a target digital health pilots and proof of concepts % of pilots against target which were successful and had broad rollout and use % active users of innovation platform against target 	<ul style="list-style-type: none"> (Number of approved use cases delivered/ targeted number of use cases)*100 (Number of pilots and proof of concepts/ targeted number of pilots and proof of concepts)*100 (Number of pilots that were rolled out/ targeted number of pilots and proof of concepts)*100 (Number of active users for the innovation platform/ targeted number of active users)*100
4.2 Improve digital health skills and competencies to enable digital transformation	<ul style="list-style-type: none"> % increase in number of trainings offered Year on Year % of digital health trained employees against target on: Innovation- Data analytics- Regulation and compliance % of internationally certified digital health employees against target (ex. HIMSS Certified Professional HIMS, HL7...etc.) 	<ul style="list-style-type: none"> (Number of trainings offered in y2/ number of trainings offered in y1)*100 ((Number of employees who received relevant training/ total number of employees)*100) ((Number of internationally certified digital health employees/ total number of digital health employees)*100)

06 Digital Health Strategic Programs

6.1 Strategic Programs - Approach

6.2 Definition and criteria for groupings

6.3 Selected Roadmap Initiative Portfolios and Programs

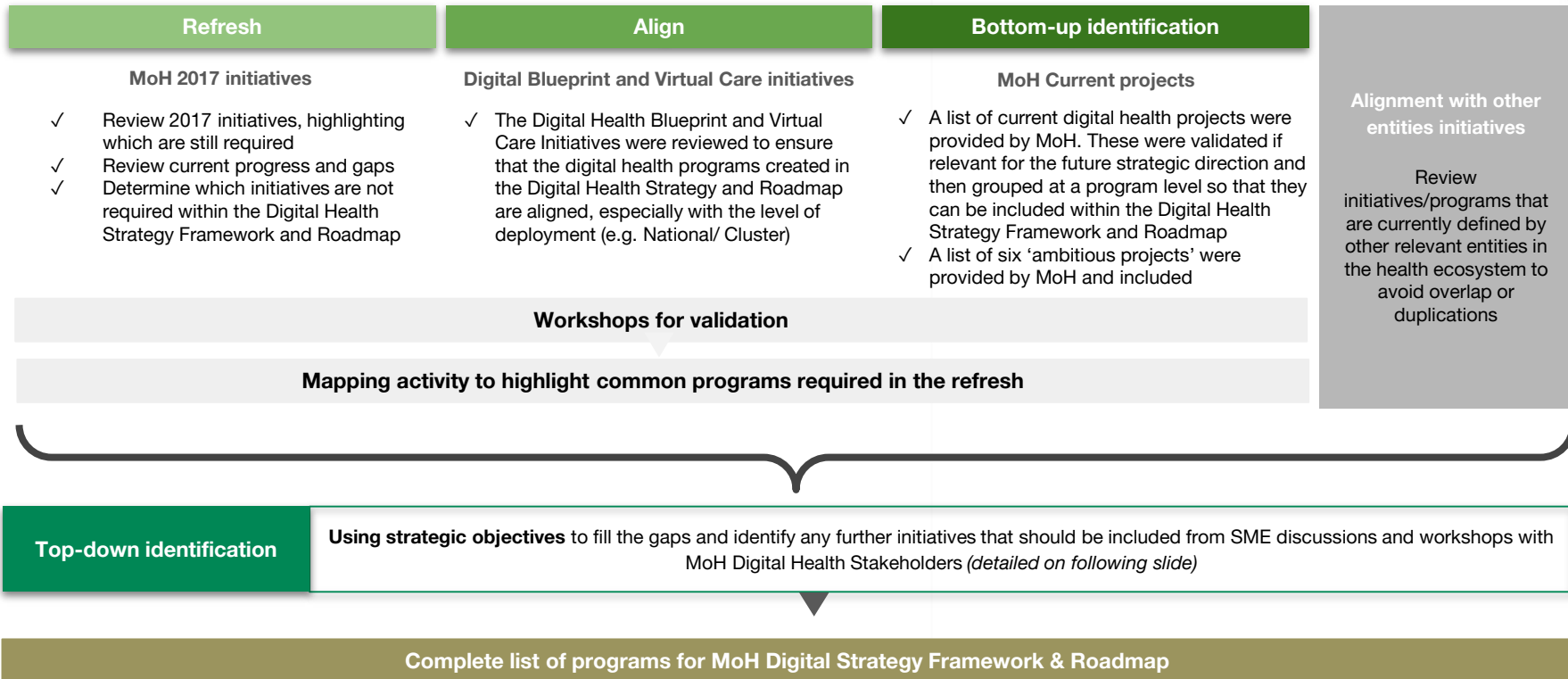
6.3.1 Digital Health Foundations

6.3.2 Person Centricity

6.3.3 Healthcare and Wellness Providers

6.3.4 Integrated Ecosystem

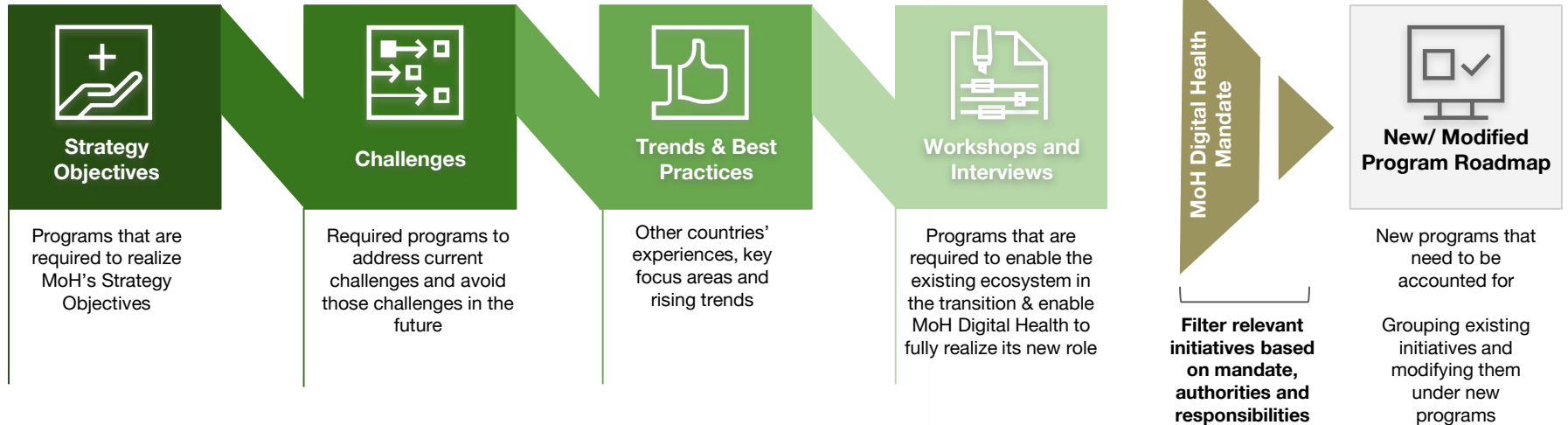
Programs/projects were created from both bottom-up and top-down approaches, to ensure a consolidated and comprehensive list



Furthermore, multiple sources have been utilized to ensure comprehensiveness and relevance of the initiatives in the top down identification

Top-down identification

Using **strategic objectives** to fill the gaps and identify any further initiatives that should be included from SME discussions and workshops with MoH Digital Health Stakeholders (*detailed on following slide*)



Selection criteria was set to prioritize the most relevant programs

After creating a comprehensive list of programs, the following criteria was set to select the key programs that MoH Digital Health needs to focus on moving forward:

1

Is this **new program core** to achieving the **strategic vision, mission and objectives**?

2

Will this program **enable** the MoH Digital Health (as well as the rest of the Ministry) to **transition** and fulfill its mandate in **2.0 and 3.0**?

3

Does this program include **setting regulations**, policies and guidelines and is **unique** to the **ministry's role**?




4

Is this a **current program** that has already initiated and aligned with **strategic vision, mission and objectives**?

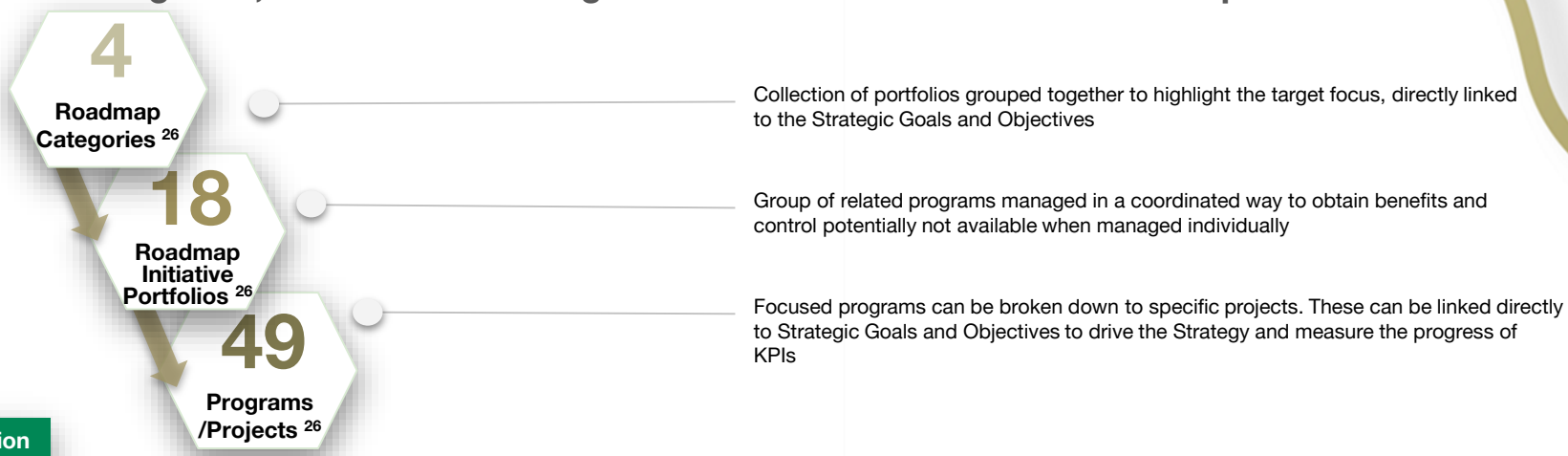
Additionally, the roadmap has been informed from other benchmarked countries' experiences

Some key themes in benchmarked countries emphasize on supporting patients, enabling providers, setting strong digital health foundation and regulation in the digital health ecosystem which as well in alignment of the key themes and strategic goals of the strategy

Themes in the province/countries' Digital Health Strategy

Ontario 	Australia 	Singapore 	
<ul style="list-style-type: none"> Virtual Care Online Appointment Booking Digital Access for Patients 	<ul style="list-style-type: none"> Digitally enabled model of care 	<ul style="list-style-type: none"> Population Profiling Population Enablement Prevention & Continuity of Care 	Support Patients and people
<ul style="list-style-type: none"> Better, more connected tools for frontline providers 	<ul style="list-style-type: none"> Workforce confidence with digital tools 	<ul style="list-style-type: none"> Provider Care & Operations Excellence 	Enabling Facilities & Providers
	<ul style="list-style-type: none"> Accessibility of health information Driving innovation 	<ul style="list-style-type: none"> Healthcare Financial Excellence IT Foundation & Resiliency 	Digital Health Foundations
<ul style="list-style-type: none"> Data Integration and predictive analytics 	<ul style="list-style-type: none"> High quality data Exchange of information 	<ul style="list-style-type: none"> Policy & Public Health Workbench 	Ecosystem Regulation & Governance

Definitions of Categories, Portfolios and Programs* & Classification and Ownership Considerations



Classification

Each of the programs/projects are classified to highlight their place in the transition of MoH to a super regulator**

Transitional

Programs/projects that are purely required to facilitate the transition process toward a super regulator, for example 'Optimisation of resources'

MoH 2.0

Programs/projects that are still valid during the transition, however may not be relevant during MoH 3.0, for example the delivery of specific digital health solutions

MoH 3.0

Programs/projects that are required to continue throughout MoH 3.0, for example digital health regulations, policies and procedures

Candidate Ownership

Refers to the potential owners of the program as/when it moves out of the remit of MoH during the transition. All candidate ownerships for MoH 3.0 classification will be MoH Digital Health as these will be aligned with their mandate in the future. MoH 2.0 classified programs may move to either the Clusters or ITS.

Moreover, the strategy does not address the deployment level i.e national cluster, enterprise. For instance, the clusters will be adopting the national digital blueprint that accompanies the cluster in the journey to become an ACO.

Thus, the final destination of some solutions and programs shall be subject to future considerations, in addition to taking into account dependencies and stakeholders' alignment to be tackled in the future, during and after the transition.

*Aligned with The new PMI standard for portfolio management

** strategy does not define the handover throughout the transition

Initiatives have been grouped into categories in the roadmap to cluster them based on the nature of each initiative and accordingly mapped them to the defined Strategic Goals

Strategic Goals



Enable person centric health and wellness



Empower a secure, connected and data-driven health ecosystem



Drive comprehensive digital health governance & performance



Enhance digital health knowledge and innovation

Roadmap Category

Digital Health Foundations

This contains all preliminary and essential activities required to begin the transformation and implementation in the next 5 years. Main focus areas are MoH Digital Health 2.0/3.0 transition planning, Target Operating Model, digital health policy and regulations, governance and monitoring compliance.

Person Centricity

This is focusing on the requirements of the person (including population, citizen, pilgrims etc) and user experience in order to utilise digital health in an impactful way from seamless access to data and records to remote access to healthcare.

Healthcare and Wellness Providers

This is ensuring that there are programs focusing on how digital health can assist the healthcare providers, streamlining their work and increasing the quality of healthcare. Main focus areas are the HIS/EMR, PACS, ERP and other key healthcare providers solutions.

Integrated Ecosystem

This category focuses on all of the digital requirements to connect the ecosystem in a secure and efficient way. This will include such as infrastructure, interoperability, integration standards, use of data and security.

Roadmap Categories and their relevant Roadmap Initiative Portfolios

Digital Health Foundations



Person Centricity



Healthcare and Wellness Providers



Integrated Ecosystem



06 Digital Health Strategic Programs

6.1 Strategic Programs - Approach

6.2 Definition and criteria for groupings

6.3 Selected Roadmap Initiative Portfolios and Programs*

6.3.1 Digital Health Foundations

6.3.2 Person Centricity

6.3.3 Healthcare and Wellness Providers

6.3.4 Integrated Ecosystem

Roadmap Categories and their relevant Roadmap Initiative Portfolios

Digital Health Foundations

	Strategic Transformation Management		MoH Digital Enablement		Governance & Regulations		Funding		Digital Health Competencies		Knowledge & Innovation
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Person Centricity

	Experience & Access		Population Engagement & Wellness		Hajj & Umrah		Privacy
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Healthcare and Wellness Providers

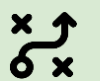
	Connected Care		Specialized Care		Public Health		Business Services Capabilities
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Integrated Ecosystem

	Data & Analytics		Interoperability & Integration		Technology & Infrastructure		Security
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Roadmap Initiative Portfolios and underlying Programs/ Projects

Digital Health Foundations



Strategic Transformation Management



MoH Digital Enablement



Governance & Regulations



Funding



Digital Health Competencies



Knowledge & Innovation

Program/ Project

Scope and Description

Classification

Candidate Ownership

Program/ Project	Scope and Description	Classification	Candidate Ownership
Setup and Operate Strategy & Change Management Office	<ul style="list-style-type: none"> Strategy execution and change management framework and processes. Set up strategy management tool to automate processes and roll out strategy performance management system. Manage digital strategy communications and change management across MoH Digital Health and its stakeholders 	Transitional	MoH Digital Health
Optimise and Enhance Digital Health Portfolio and Program Management Office (PMO)	<ul style="list-style-type: none"> Program to optimise the PMO for efficient planning of digital health, defined program monitoring processes, business case assurance monitoring and coordination with VRO, VRP and HHC PMO Project to enhance the communications processes within MoH departments and Digital Health department - define the tools that are using Automate processes and roll out portfolio and program performance management system 	Transitional	MoH Digital Health
Plan Transition of Digital Health services	<ul style="list-style-type: none"> Align with sector wide digital health strategy initiatives, clarifying ownership and scope. Including setting national frameworks with healthcare and non-healthcare entities such as SDAIA and NDU Plan the the transition of digital health services, solutions and human capital resources for the MoH 2.0/ 3.0 transition. This includes collaborating with inter-MoH departments/deputyships as well as with external stakeholders and entities in the health ecosystem. Includes KPIs for the transition A plan for resources is high impact for this strategy due to the transition of digital health responsibilities 	Transitional	MoH Digital Health
Optimize and Enhance EA Office and Design Authority Function	<ul style="list-style-type: none"> Set up a digital health EA framework, governance, policy and processes in alignment with international standards, best practices and national framework e.g Nora Manage and maintain the national reference digital health blueprint. Set and define digital health architecture standards for MoH and digital health Set up national design authority function for digital health solutions Implement and automate a digital health EA tool 	Transitional	MoH Digital Health



New program

Roadmap Initiative Portfolios and underlying Programs/ Projects

Digital Health Foundations



Strategic Transformation Management



MoH Digital Enablement



Governance & Regulations



Funding



Digital Health Competencies



Knowledge & Innovation

Program/ Project

Scope and Description

Classification

Candidate Ownership

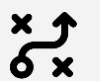
Program/ Project	Scope and Description	Classification	Candidate Ownership
<p>MoH Digital Enablement</p> <p>Define MoH Digital Health Target Operating Model Development and Restructuring</p>	<ul style="list-style-type: none"> Design the MoH Digital Health Target Operating Model, and the internal governance framework including the reporting system in alignment with the 3.0 remit Identify the new MoH Digital Health organizational structure in light of the transition plan Assess existing functions, repurpose and add new functions to support the regulatory role (for example: quality audit and assurance, regulations center of excellence functions) Define the competency framework on the MoH Digital Health level based on the new and repurposed positions Set an internal performance management system for MoH Digital Health and cascade objectives and KPIs to the individual's level Conduct digital upskilling activities for the MoH Digital Health employees based on need, and track progress 	Moh 2.0 / MoH 3.0	MoH Digital Health
<p>Re-engineer and Automate MoH Functions Processes</p>	<ul style="list-style-type: none"> Document the MoH Digital Health policies and procedures and map the as-is processes Assess and re-engineer the process maps in light of the transition and as ISO-200000 compliant Identify bottlenecks and automation points to ensure efficiency and measure compliance Publish the policies, procedures and processes and make them available on an internal portal for all MoH staff 	Moh 2.0 / MoH 3.0	MoH Digital Health
<p>Define Digital Health Communications and Public Relations Strategy</p>	<ul style="list-style-type: none"> Set a comprehensive communication strategy for the transition to 3.0, including positioning and key messages Standardize and streamline tools and processes for stakeholders (internal and external) engagement and communications in Digital Health strategies and policies Develop and maintain Interactive communications platforms Conduct conferences and workshops for announcements, engagement and communications Design and roll out tools for surveying and feedback collection, as well as support mechanisms 	MoH 3.0	MoH Digital Health



New program

Roadmap Initiative Portfolios and underlying Programs/ Projects

Digital Health Foundations



Strategic Transformation Management



MoH Digital Enablement



Governance & Regulations



Funding



Digital Health Competencies



Knowledge & Innovation

Program/ Project

Scope and Description

Classification

Candidate Ownership

Program/ Project	Scope and Description	Classification	Candidate Ownership
Governance & Regulations Create National level Digital Health Services Catalog	<ul style="list-style-type: none"> ○ Create a national digital health services catalog to measure the success of digitisation within healthcare and also facilitator to measure certain KPIs which look at 'how many services are digitised' - this is a base to measure success of digitising services 	MoH 3.0	MoH Digital Health
Governance & Regulations Define Digital Health Policy and Regulations, Governance and Monitoring Compliance Framework	<ul style="list-style-type: none"> ○ Define process for writing, publishing and updating digital health regulations, legislation, and clinical national guidelines ○ Identify key digital health areas that require digital health regulations and legislations. Write and publish these required regulations and legislations. ○ Build the function, the capabilities and procedures to monitor adherence to standards and regulation, as well as defining a compliance framework 	MoH 3.0	MoH Digital Health
Governance & Regulations Implement and Deploy Digital Health Policy Management Tool	<ul style="list-style-type: none"> ○ This project will provide tools and procedures to maintain an electronic database of all current MoH policies and procedures, and disseminate notification of updates to same to all affected parties. ○ Tools and procedures to maintain electronic platform process and policies and send notifications to notify clusters/ ACO and other stakeholders of update of policies 	MoH 3.0	MoH Digital Health
Governance & Regulations Define Digital Health Reporting and Performance Policy	<ul style="list-style-type: none"> ○ The Ministry of Health is committed to ensuring investments in health care system are transparent and accountable. Clusters are a key player in advancing the digital maturity of KSA health care system, and as such play an important role in tracking progress. ○ This program will guide all digital health delivery organizations to report on the sets of digital health solutions being developed, procured, deployed within their facilities to improve KSA digital health maturity and interoperability. 	MoH 3.0	MoH Digital Health

Roadmap Initiative Portfolios and underlying Programs/ Projects

Digital Health Foundations



Strategic Transformation Management



MoH Digital Enablement



Governance & Regulations



Funding



Digital Health Competencies





Knowledge & Innovation

Program/ Project

Scope and Description

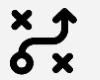
Classification

Candidate Ownership

Funding	<p>Define Digital Health Investment and Value for Money Policy</p> 	<ul style="list-style-type: none"> The policy will ensure that the acquisition of digital health solutions and tools does not place an undue burden on the healthcare delivery organization. It will support the evaluation of promising innovations, enable the spread and scale of proven and successful digital health tools, and reduce the fragmentation caused by local decisions and one-off purchases that can potentially lead to inequality and variation in health outcomes. This program will include the policy and the development of business cases for these digital health solutions and will explore opportunities for private sector participation. 	MoH 3.0	Administrative and Financial Affairs Deputyship, MoH Digital Health
Digital Health Competencies	<p>Define the National Digital Health Workforce Capabilities Framework</p> 	<ul style="list-style-type: none"> Identify the impacts of digital health adoption on the health workforce and the enabling education programs required to build digital health capability and capacity across KSA, 'health workforce' is defined to encompass 'all individuals who deliver or assist in the delivery of health services or support the operation of health care facilities'. Ultimately, the National Digital Health Strategy's vision cannot be achieved without improving the digital capability of the health workforce. 	MoH 3.0	MoH Digital Health

Roadmap Initiative Portfolios and underlying Programs/ Projects

Digital Health Foundations



Strategic Transformation Management



MoH Digital Enablement



Governance & Regulations



Funding



Digital Health Competencies



Knowledge & Innovation

Program/ Project

Scope and Description

Classification

Candidate Ownership

Create Digital Health Awareness Strategy and Digital Health Inclusion Guidelines

- o A framework & guide to help healthcare providers, commissioners, and designers ensure that services delivered digitally are as inclusive as possible, meeting the needs of all sections of the populations.
- o Design for accessibility, i.e. people with different physical, mental health, social, cultural and learning needs, and for people with low digital literacy or those less able to access technology

MoH 3.0

MoH Digital Health

Implement Digital Health Knowledge Management Framework, Guidelines & Solution

- o Implement knowledge management solution based on a knowledge management framework and guidelines for entities to follow and ensure roll out to clusters

MoH 3.0

MoH Digital Health

Design Digital Health Innovation Framework

- o Provide direction to health technology innovators, healthcare organizations and guide the use of emerging health technologies.

MoH 3.0

MoH Digital Health

Setup and Operate the Digital Health Innovation Space and Lab

- o Define the strategy for the development and use of new technology, including research and development, funding, testing environments etc
- o Set standards and plans to prioritize emerging tech, ensure working closely with the cluster's own innovation hubs
- o Set and roll out an innovation & ideation platform

MoH 3.0

MoH Digital Health, Center of Excellence

Define AI in Healthcare Strategy

- o Develop the AI in healthcare Strategy and framework including AI as a service policy, in alignment with SDAIA

MoH 3.0

MoH Digital Health



New program

06 Digital Health Strategic Programs

6.1 Strategic Programs - Approach

6.2 Definition and Criteria for Groupings

6.3 Selected Roadmap Initiative Portfolios and Programs*

6.3.1 Digital Health Foundations

6.3.2 Person Centricity

6.3.3 Healthcare and Wellness Providers

6.3.4 Integrated Ecosystem

Roadmap Categories and their relevant Roadmap Initiative Portfolios



Roadmap Initiative Portfolios and underlying Programs/ Projects

Person Centricity



Experience & Access



Population Engagement & Wellness



Hajj & Umrah



Privacy

Program/ Project

Scope and Description

Classification

Candidate Ownership

Experience and Access	<p>Create UI/UX Person-centered Design Standards and Guidelines</p> <ul style="list-style-type: none"> Drive user or person-centered design and understand the needs and perspective of the end-user. Publish design standards and guidelines for vendors, clusters and facilities to improve person-facing services to accelerate the delivery of safe and intuitive systems that work well together. 	MoH 3.0	MoH Digital Health
	<p>Define Strategy, Set Guidelines and Consolidate Patient Access Tools and Applications</p> <ul style="list-style-type: none"> Create a omni-channel strategy for all applications relating to access, e.g. access to medical records, medical and appt and reminders (e.g. Sehaty, Mawid) and hotline. Setting clear guidelines for all access channels. 	MoH 3.0	MoH Digital Health
	<p>Implement and Enhance Patient Virtual Care Platforms and Tools</p> <ul style="list-style-type: none"> Implement and enhance patient virtual care platforms and tools relevant on a national level, e.g. Virtual consultation, remote patient monitoring, home care solutions (incl. home labs) 	MoH 2.0 (potentially MoH 3.0)	MoH Digital Health
Engagement & Wellness	<p>Implement and Enhance Wellness Self Care Tools</p> <ul style="list-style-type: none"> Program to deploy wearables, solutions and educational material for the population to be empowered , this would include accessing educational content, setting their own health goals and track progress 	MoH 2.0 (potentially MoH 3.0)	MoH Digital Health, Center of Excellence

Roadmap Initiative Portfolios and underlying Programs/ Projects

Person Centricity



Experience & Access



Population Engagement & Wellness



Hajj & Umrah



Privacy

Program/ Project

Scope and Description

Classification

Candidate Ownership

Program/ Project	Scope and Description	Classification	Candidate Ownership
Hajj & Umrah Conduct Hajj and Umrah Readiness	<ul style="list-style-type: none"> A program for all projects related to the readiness of Hajj pilgrims and Umrah pilgrims. This is a cross cutting program as it will need to link to others such as EMR and provisioning of remote care for pilgrims. 	MoH 3.0	MoH Digital Health
Privacy Define Digital Health Privacy and Consent Management Regulations and Policies	<ul style="list-style-type: none"> Define and detail the digital health privacy and consent management guidelines that digital health tools and applications should follow to ensure the correct sharing and use of patient's data. In alignment with MoH Cyber Security Department, NCA and global/national best practices 	MoH 3.0	MoH Digital Health

06 Digital Health Strategic Programs

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6.3.4 Integrated Ecosystem

Roadmap Categories and their relevant Roadmap Initiative Portfolios

Digital Health Foundations



Person Centricity



Healthcare and Wellness Providers



Integrated Ecosystem



Roadmap Initiative Portfolios and underlying Programs/ Projects

Healthcare and Wellness Providers



Connected Care



Specialized Care



Public Health



Business Services Capabilities

Program/ Project

Scope and Description

Classification

Candidate Ownership

Program/ Project	Scope and Description	Classification	Candidate Ownership
Connected Care	Deploy and Enhance HIS/EMR*	MoH 2.0	Clusters, ITS
	Deploy and Enhance RIS & PACS	MoH 2.0	Clusters, ITS
	Define Strategy to Enhance and Connect E-services	MoH 2.0	Clusters, ITS
	Deploy and Enhance Labs and Blood Banks	MoH 2.0	Clusters, ITS
	Deploy and Enhance Provider Virtual Care Platforms and Tool	MoH 2.0	Clusters, ITS

○ A program to complete the deployment of HIS in MoH hospitals. This will also cover those projects relating to HIS in PHCs and dental clinics. The program should also define the policies of minimum data requirements for each data input on the EMR and ensure the use of EMR across the kingdom (aligned with NHIC EMR initiative)

○ Complete the national deployment of PACS, including dental and specialised PACS such as ophthalmology, Cardiac PACS

○ Continuous enhancement of integrating e-services such as e-prescription, e-referral etc. Includes further enhancement of the 'Unified Referral System Platform'

○ Complete the national LIS and Blood Banks deployment and set the relevant policies and guidelines

○ Implement digital tools for the purpose of supporting healthcare services, that do not involve interaction with patients - including, Tele ICU, tele-radiology and other telemedicine solutions

*This program should be aligned with Cluster's requirements to avoid systems discrepancy and replacement after implementation.

Roadmap Initiative Portfolios and underlying Programs/ Projects

Healthcare and Wellness Providers



Connected Care



Specialized Care



Public Health



Business Services Capabilities

Program/ Project

Scope and Description

Classification

Candidate Ownership

Program/ Project	Scope and Description	Classification	Candidate Ownership	
Specialized Care	Deploy Mental Health Solutions and Tools	o Deploy national solutions that relate to behaviour and mental health	MoH 2.0	MoH Digital Health
	Enhance Family Care Solutions and Tools	o Covers all family related projects; from marriage solutions, to women and children applications, as well as new born solutions	MoH 2.0	MoH Digital Health
	Enhance Long-term Care Solutions and Tools	o A program to focus on the needs of the population relating elderly care and includes the planning of any relevant national solutions	MoH 2.0	MoH Digital Health
	Enhance Digitisation of Other Specialised Care Solutions	o Program to identify any further national solutions that will be procured and deployed by MoH prior to its full transition, this may include medication management, oncology solutions	MoH 2.0	MoH Digital Health

Roadmap Initiative Portfolios and underlying Programs/ Projects

Healthcare and Wellness Providers



Connected Care



Specialized Care



Public Health



Business Services Capabilities

Program/ Project

Scope and Description

Classification

Candidate Ownership

Program/ Project	Scope and Description	Classification	Candidate Ownership
Public Health Define Strategy to Enhance Communicable Disease Solutions	<ul style="list-style-type: none"> Strategy and plan for the managing and reporting communicable diseases, including pandemic preparation and data reporting 	MoH 2.0 (potentially MoH 3.0)	Clusters, HHC (National solutions through MoH Digital Health)
Public Health Define Strategy to Enhance Non-Communicable Disease and Toxicology Solutions	<ul style="list-style-type: none"> Strategy and plan for the managing and reporting NCDs, with a focus on the relevant diseases for KSA 	MoH 2.0 (potentially MoH 3.0)	Clusters, HHC (National solutions through MoH Digital Health)
Public Health Define Strategy and Enhance Preventative Screening Tools	<ul style="list-style-type: none"> Program for national screening strategies and solutions, including cancer screening programs 	MoH 2.0 (potentially MoH 3.0)	Clusters, HHC (National solutions through MoH Digital Health)
Public Health Define Strategy for Digitising Population Health	<ul style="list-style-type: none"> Initiative to focus on the requirements of population health, the strategy to use data, policies for population health surveillance and health risks stratification shared between Payer, Provider & Regulator 	MoH 3.0	MoH Digital Health*

*Ownership is shared between Payer, Provider & Regulator

Roadmap Initiative Portfolios and underlying Programs/ Projects

Healthcare and Wellness Providers



Connected Care



Specialized Care



Public Health



Business Services Capabilities

Business Services Capabilities

Deploy and Enhance Enterprise Management Solutions

The program includes initiatives that are offered by MoH Digital Health to the Ministry to standardize and automate operations using different tools . Current Initiatives include:

- Mobile Supply Chain
- Enterprise Asset Management
- Enterprise Performance Management
- Enterprise Talent Management
- Robotic Process Automation

MoH 2.0

Clusters, ITS



New program

06 Digital Health Strategic Programs

6.1 Strategic Programs - Approach

6.2 Definition and Criteria for Groupings

6.3 Selected Roadmap Initiative Portfolios and Programs*

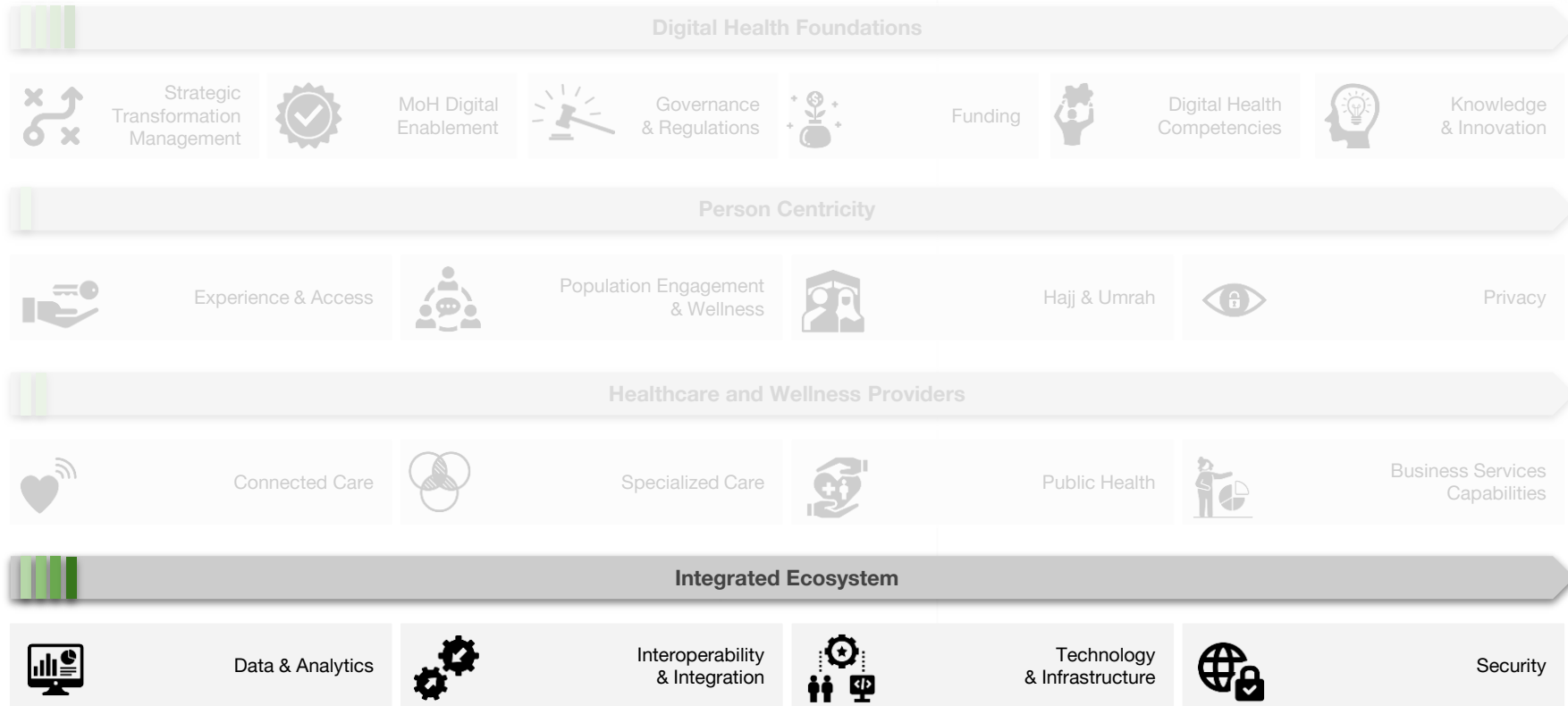
6.3.1 Digital Health Foundations

6.3.2 Person Centricity

6.3.3 Healthcare and Wellness Providers

6.3.4 Integrated Ecosystem

Roadmap Categories and their relevant Roadmap Initiative Portfolios



Roadmap Initiative Portfolios and underlying Programs/ Projects

Integrated Ecosystem



Data & Analytics*



Interoperability & Integration



Technology & Infrastructure



Security

Program/ Project

Scope and Description

Classification

Candidate Ownership

Program/ Project	Scope and Description	Classification	Candidate Ownership
Data & Analytics Set Data Governance Strategy and Streamline Data Standards and Governance Policies/Procedures	<ul style="list-style-type: none"> Develop a data strategy for data management across regulators, providers and payers and define the data governance framework to govern the interaction between healthcare entities Align with NDMO and NHIC Streamline data standards for healthcare, in alignment with NHIC and along with the Data office. Streamline all standards and translate to health standards 	MoH 3.0	MoH Digital Health
Data & Analytics Set Guidelines for Data & Analytics and Implement Tools	<ul style="list-style-type: none"> Guidelines for departments and entities to ensure the availability of the tools, that are required to use data. Including, infrastructure, warehouses, data lakes, Business Intelligence and analytics tools and endpoints 	MoH 3.0	MoH Digital Health
Data & Analytics Define Digital Health Open Data Policy & Standards	<ul style="list-style-type: none"> In alignment with e-gov open data policy, define the digital health open data policy & standards. Proactively Release selected open data, Specify Methods Of Determining The Prioritization Of Data Build processes to appropriately Safeguard Sensitive Information 	MoH 3.0	MoH Digital Health

* In alignment with the MoH Data Governance Project and deliverables

Roadmap Initiative Portfolios and underlying Programs/ Projects

Integrated Ecosystem



Data & Analytics



Interoperability & Integration



Technology & Infrastructure






Security

Program/ Project

Scope and Description

Classification

Candidate Ownership

Program/ Project	Scope and Description	Classification	Candidate Ownership
Interoperability & Integration Define Integration Standards and Guidelines 	<ul style="list-style-type: none"> Defining integration standards and guidelines to facilitate a connect digital health landscape across MoH 	MoH 3.0	MoH Digital Health
Plan Clinical Integration and Interoperability Fabric 	<ul style="list-style-type: none"> Planning integration throughout the Kingdom; intra-facility, cross-facility and with MOH and other entities. Setting the guidelines to use interoperability fabric in line with the Digital Health Blueprint 	MoH 3.0	MoH Digital Health
Plan Integration with External Entities 	<ul style="list-style-type: none"> Planning integration with non-MoH entities, including both health and non-health related entities. 	MoH 3.0	MoH Digital Health

Roadmap Initiative Portfolios and underlying Programs/ Projects

Integrated Ecosystem



Data & Analytics



Interoperability & Integration



Technology & Infrastructure



Security

Program/ Project

Scope and Description

Classification

Candidate Ownership

Deploy and Enhance Infrastructure

- A program to ensure the infrastructure is sufficient for the deployment of digital health solutions. This includes ICT infrastructure projects for hospitals, PHCs, clusters and overall foundational infrastructure.

MoH 2.0

Clusters

Develop, Deploy and Enhance Applications and Software

- A program outlining the strategy and processes of in house application and software development including business driven components through alignment and accommodation of business needs

MoH 2.0/MoH 3.0

Clusters, ITS

Define Strategy and Policies for Cloud Technology and Implement Cloud Infrastructure

- Defining the strategy for the use of Cloud technology.
- Set up and define policies and standards for cloud technology migration and usage

MoH 3.0

MoH Digital Health

Conduct Virtual Care Maturity Assessment

- Set up a strategy, framework and toolkit to assess the virtual care maturity and readiness across core MoH competencies such as: Strategy & Governance, Citizen Experience & Engagement, Care Model Design, Operations & Workflow Integration, Revenue Risk & Progression, Technology Infrastructure & Interoperability, Cognitive & Analytics, Workforce Readiness & Engagement

MoH 2.0
(potentially MoH 3.0)

Collective Committee
(MoH Digital Health, Clusters etc)

Technology & Infrastructure

Roadmap Initiative Portfolios and underlying Programs/ Projects



Data & Analytics



Interoperability & Integration



Technology & Infrastructure



Security

Program/ Project

Scope and Description

Classification

Candidate Ownership

- A program overseeing all Cyber and Security Projects, including:
 - Security Operations Center and its relevant sub-projects
 - IAM setup and establish the required access management tools throughout digital health solutions and portals, including the use of single-sign-on.
 - Provide information security over Cloud and add relevant infrastructure services to Cloud, to minimize headquarter Data Center load, facilitate transition & transformation process and develop Operation Model.
 - Apply the multi tenancy model for the all entire monitoring and operations)
 - Manage and identify all security risks, threat & remedies management
 - Providing 24/7 support, monitoring and operation throughout the Ministry's network, including hospitals, centers and administrative buildings

MoH 3.0

MoH Digital Health

Security

Cybersecurity and security operations

07 Implementation Roadmap

7.1 Key Assumptions and Considerations

7.2 Implementation Roadmap Design

7.3 Pre-waves Setup

7.4 Roadmap

The roadmap is based on the following key assumptions and considerations

Areas	Assumptions
<p>Timeline & Waves Assumptions</p>	<p>Assuming a transition duration of five years from MoH 2.0 to 3.0.</p> <p>The proposed three waves do not necessarily align with years' timelines i.e a foundational program of wave 1 type can span across five years for implementation.</p> <p>Moreover, some program and projects are shown on the roadmap to be in more than one wave, the rational is to reflect the morphology maturity and considerations to be accounted in different waves for the same program and project.</p> <p>The roadmap is acknowledged to be practical to implement the programs. Furthermore, IT programs must be paired with counterpart business initiatives and programs to limit the planning and design phase and optimize implementation time</p>
<p>Budget Assumptions</p>	<p>Mainly the capex activities of the initiatives and programs were mapped on the implementation roadmap.</p> <p>The business as usual and opex activities are not considered as part of the roadmap, being recurring in their nature and tied with the capex activities presented in the roadmap i.e operations and maintenance of HIS solutions will span across year 2 to year 5</p>
<p>Current State</p>	<p>Current Initiatives and Programs roadmap is based on the current stated information collected from questionnaires, workshops, conversations and overall engagement with the stakeholders. This information includes scope, timelines and dependencies of these current initiatives.</p>
<p>Priorities - capabilities and competencies</p>	<p>Alignment between capabilities and competencies, to make sure that the right and relevant competencies are able to lead or support the implementation of key capabilities by vendors or other entities. Exception eventually for the initiatives and programs intended to build workforce capability and competencies</p>

Important Note: the roadmap applies the definitions of Categories, Portfolios and Programs & the Classification and Ownership of programs as defined on page 94. Accordingly, the accountability, dependencies, ownership and implementation levels of some solutions is subject to future considerations in line with the transition.

07 Implementation Roadmap

7.1 Key Assumptions and Considerations

7.2 Implementation Roadmap Design

7.3 Pre-waves Setup

7.4 Roadmap

The implementation roadmap designed to spans across three key waves of implementation and a one separate setup phase

Pre-Waves Setup

Digital Health Strategy Transformation Setup

This contains all preliminary and setup activities required to begin the MoH Digital Strategy Framework and Roadmap execution and transformation such as:

1. **Transition Planning of Digital health services**
2. **Optimise and enhance Digital Health Portfolio and PMO**
3. **Set up and operate MoH Digital Health SMO**
4. **Optimize and enhance EA office and design authority function**

Wave 1

Build Essential Capabilities

This contains all key start of activities required to establish the technology foundation and continue existing or already started key projects (such as **infrastructure readiness, HIS waves, PACS, interoperability fabric and security**).

Also begin key MoH transition related programs (such as **resource transition planning and optimization program, define process for digital health regulations and legislation program and define process for policies and procedures**).

Wave 2

Apply and Enhance Digital Health Regulator Capabilities

This contains all activities required to apply and enhance MoH digital health regulator , capabilities and to enable MoH to become a super-regulator across all sectors (such as **national digital Health workforce capabilities framework, health technology innovation framework**).

Wave 3

Strengthen Value Add Digital Health Regulator Capabilities

This contains all activities required to enable more digital health value add and advanced capabilities to be a super-regulator with most or all provision responsibilities migrated from MoH to HHC and Clusters (e.g. **Facilitate the Innovation Hub / Creation Hub and more regulatory and monitoring compliance related programs and projects**). Also working closely with key national entities such as **setting any national frameworks with both healthcare and non-healthcare entities, including SDAIA and NDU**.

07 Implementation Roadmap

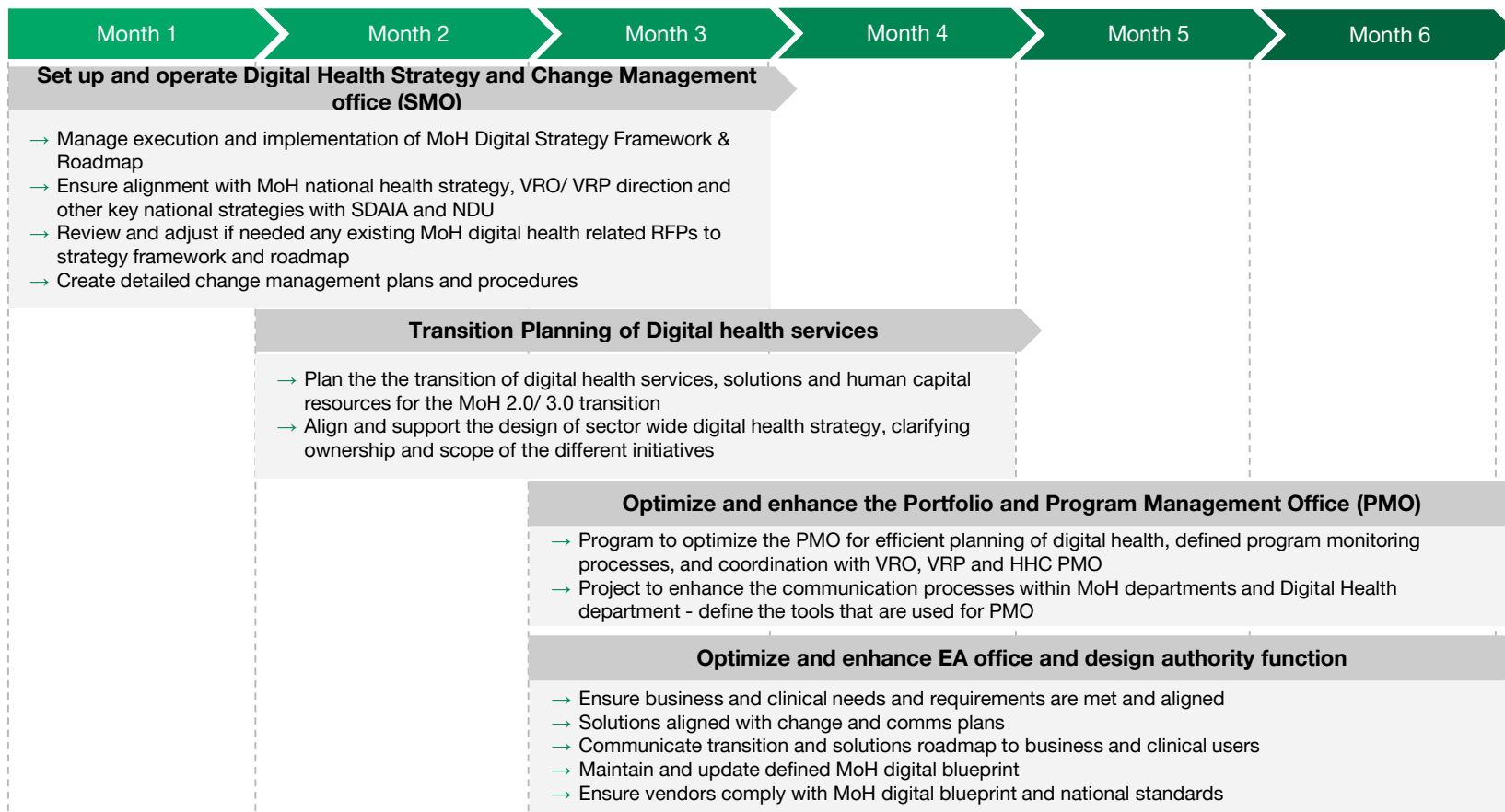
7.1 Key Assumptions and Considerations

7.2 Implementation Roadmap Design

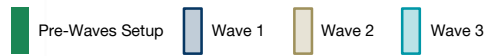
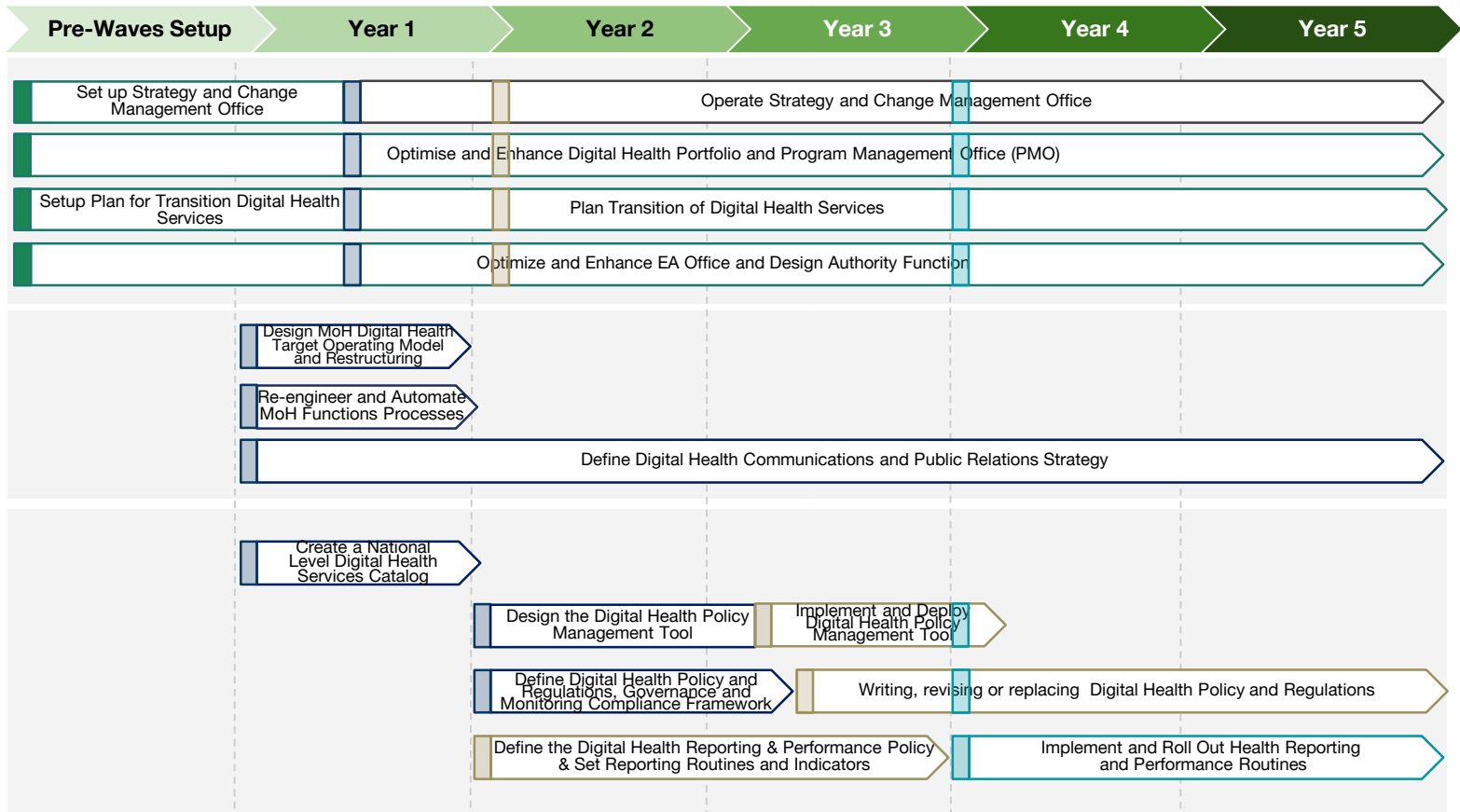
7.3 Pre-waves Setup

7.4 Roadmap

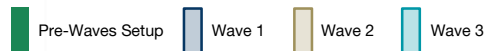
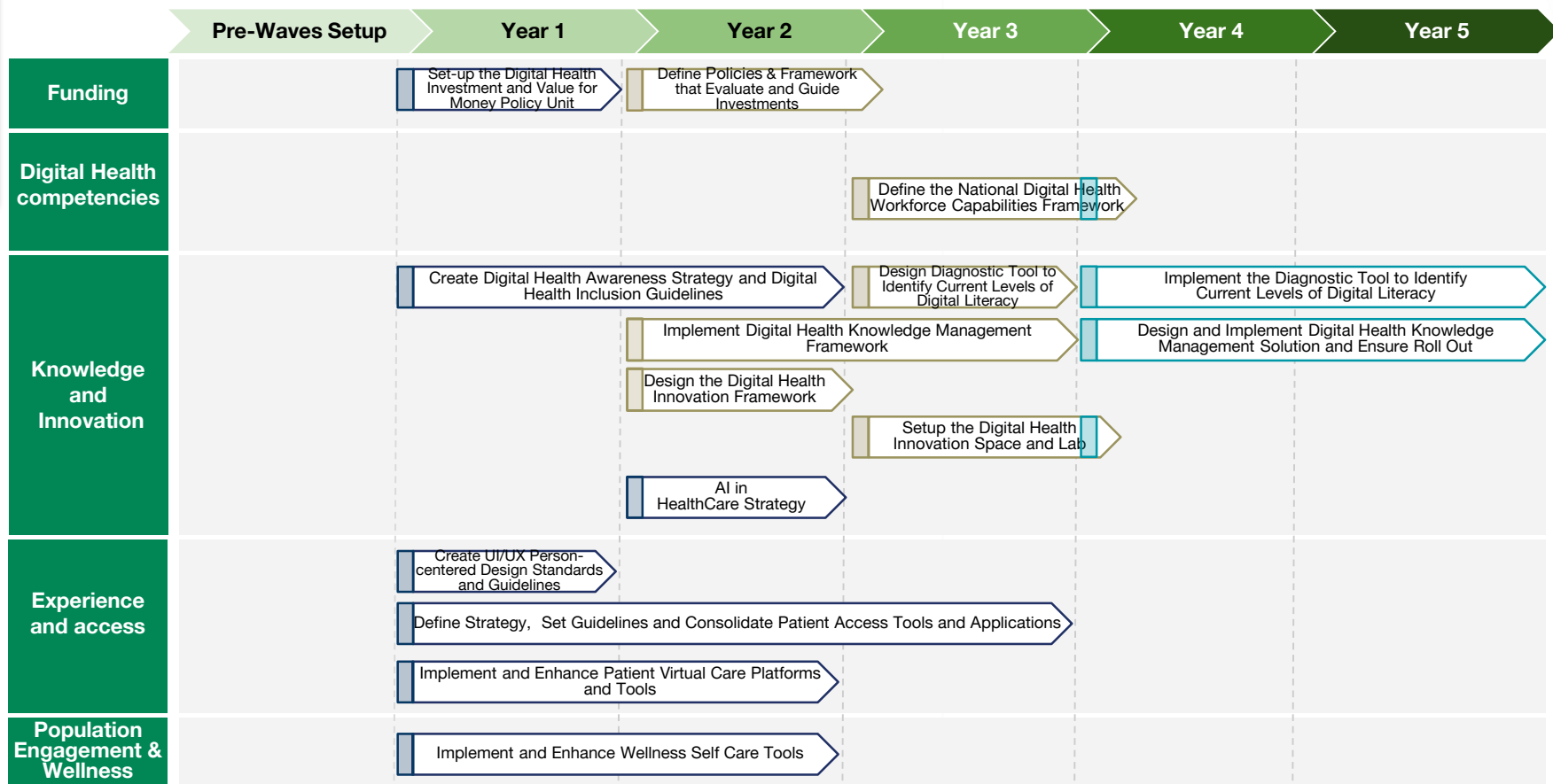
Pre-Waves Setup (Six months Action Plan)



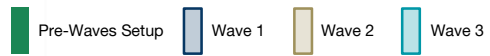
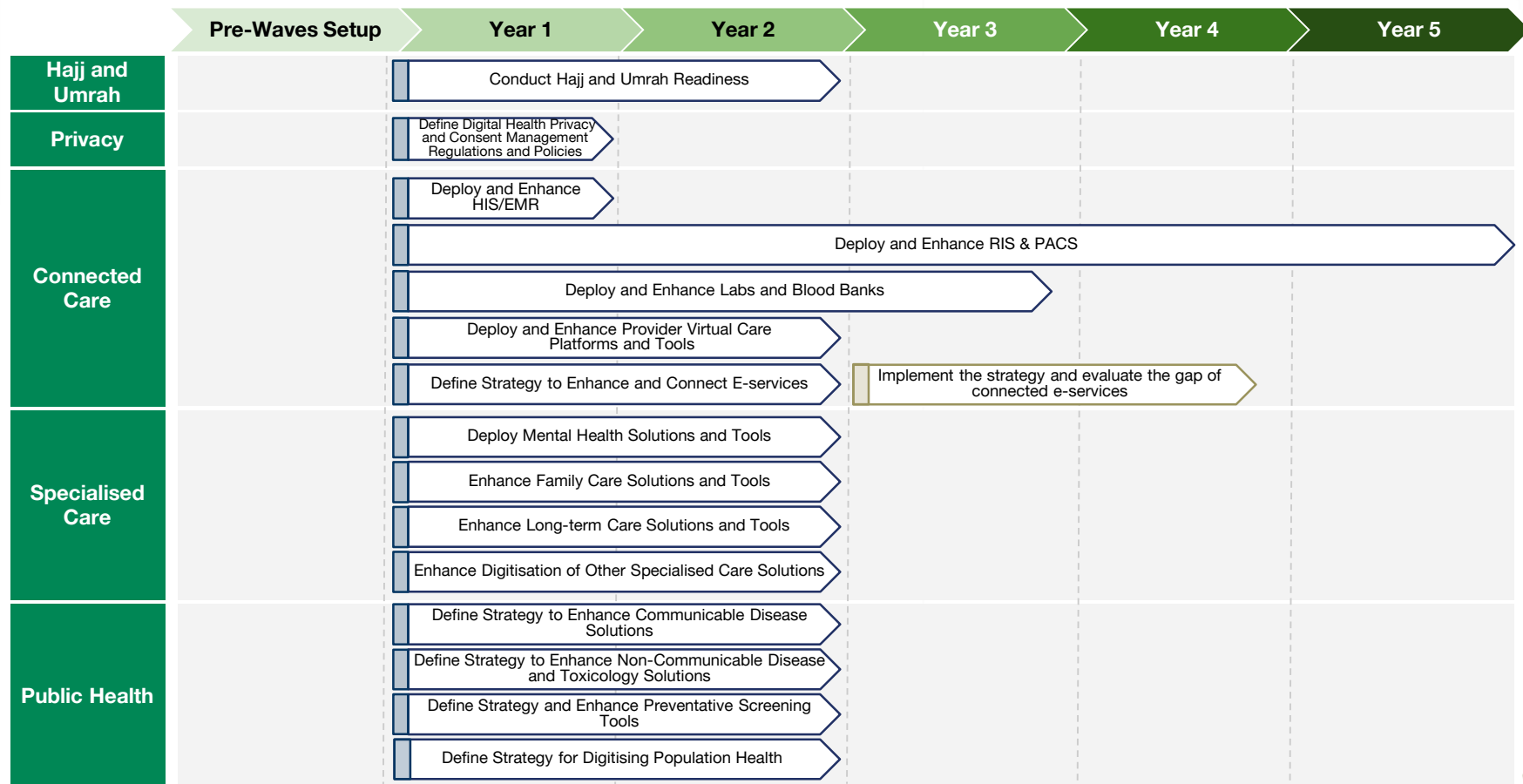
Roadmap (1/4)



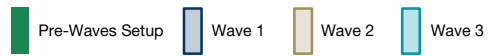
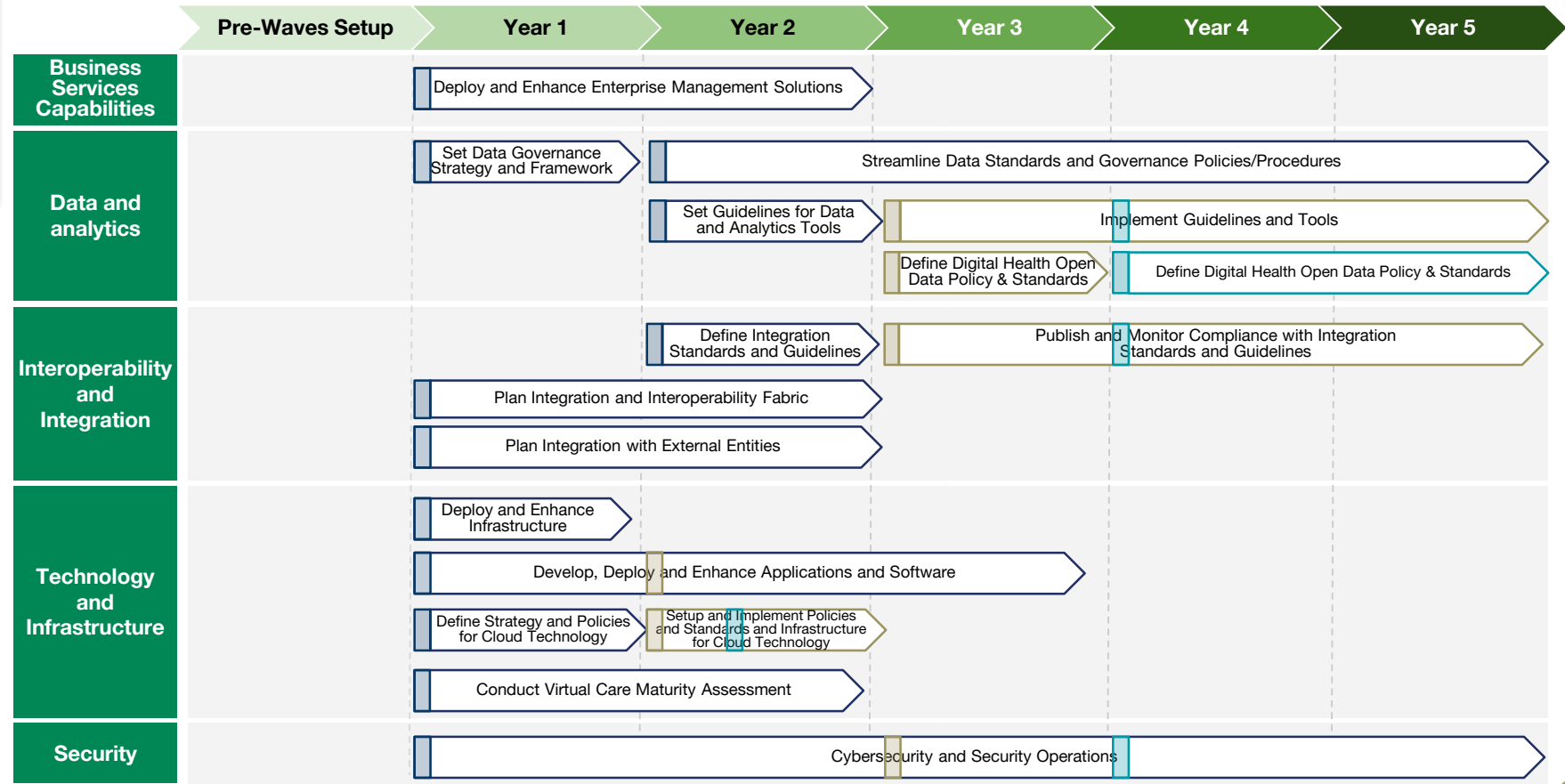
Roadmap (2/4)



Roadmap (3/4)



Roadmap (4/4)



08 Transition Framework

In line with the MoH Digital Transition Governance Framework, the transition from MoH 2.0 to 3.0 will involve fundamental changes due to shift in focus from regulatory and planning activities in 2.0, to solely a regulatory role on a wider scale in 3.0

The changing roles and responsibilities of MoH Digital Health have been defined in the MoH Digital Transition Governance Framework which are incorporated in the MoH DSFR transition framework, to ensure alignment and synergy of operations across the digital healthcare ecosystem in KSA

	MoH 2.0	MoH 3.0	Remarks
1 Digital Health Strategy Management	Responsibility at national level	Responsibility at national level	Includes driving digital health strategy, investments, benefits, risks and performance oversight
2 Regulatory Responsibilities	Partial regulatory responsibility across stakeholders	Full regulatory responsibility including non-MoH providers	Including development to implementation of data, reference architecture, HIS, SLAs
3 Delivery Responsibilities	Direct involvement in delivery activities through active clusters	No direct involvement in delivery. Responsibility for Performance monitoring and compliance in collaboration with VRPs	Includes operational, performance monitoring and compliance responsibilities
4 Funding Responsibilities	Digital health funding responsibilities	Digital health funding responsibilities	Includes budget management, benefits realization, & innovation investment

The strategic objectives have been created to demonstrate fluidity, with the usage of words such as ‘Expand/ Enhance/ Improve/ Drive’, etc. and not ‘Regulate/Plan/Deliver/Monitor’, to accommodate the changing scope and scale in different phases of MoH transition

Strategic Objectives

The word ‘**Expand/ Improve/ Drive**’ etc.’ has been used and not regulate/plan/deliver to keep the objective **fluid** and to allow it’s **interpretation to suggest all or few responsibilities**, depending on the phase of transition as well as the final definition of the phases. As can be visualized here..

MoH 2.0

MoH 3.0

Scope					Scale		
P	D	R	F	M	MoH	Non MoH	Private

Scope ↓ from 2.0 to 3.0 Scale ↑ from 2.0 to 3.0

- **Scope** is defined as **responsibility for activities**, i.e. **Planning (P), Delivery (D), Regulatory (R), Funding (F), and Monitoring (M)**, for digital health initiatives, from MoH Digital Health perspective. In the demonstration above, MoH may be responsible for the planning, delivering, regulating, funding and monitoring in 2.0. However, MoH Digital Health’s scope may be diluted to that of a regulatory, funding and monitoring role in 3.0.
- **Scale** is defined as the extent of **regulatory responsibility to facilities and digital health solution providers**, i.e. **MoH owned or operated, Non-MoH including National Guard, Military Hospitals**, etc. (non MoH) and **Private Sector (Private)**, from MoH Digital Health perspective. In the demonstration above, MoH Digital Health **regulatory role will expand** from being a regulator to **only MoH facilities and digital health solutions in 2.0**, to being regulator for **all facilities and digital health solutions in KSA, including MoH, non-MoH and Private sector in 3.0**.
- This exercise will be done at a larger scale with mapping of all objectives, considering the future governance and collaboration structure as a separate initiative ‘Transition planning of digital health services’ which had been elaborated in the relevant Program Card in Appendix C - Program Card.

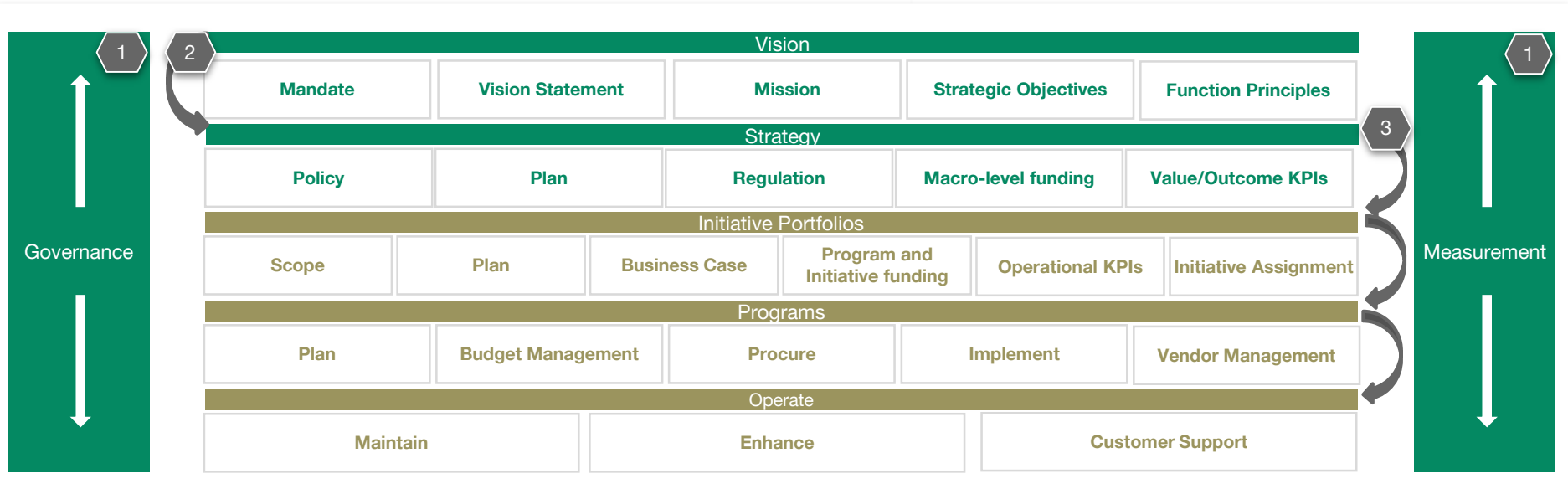
A framework to shape the digital health roles and governance relationships between MoH and other entities in the end state of MoH 3.0

The framework highlights three important aspects relating to the fulfillment of digital health roles, responsibilities and governance by MoH and other entities:

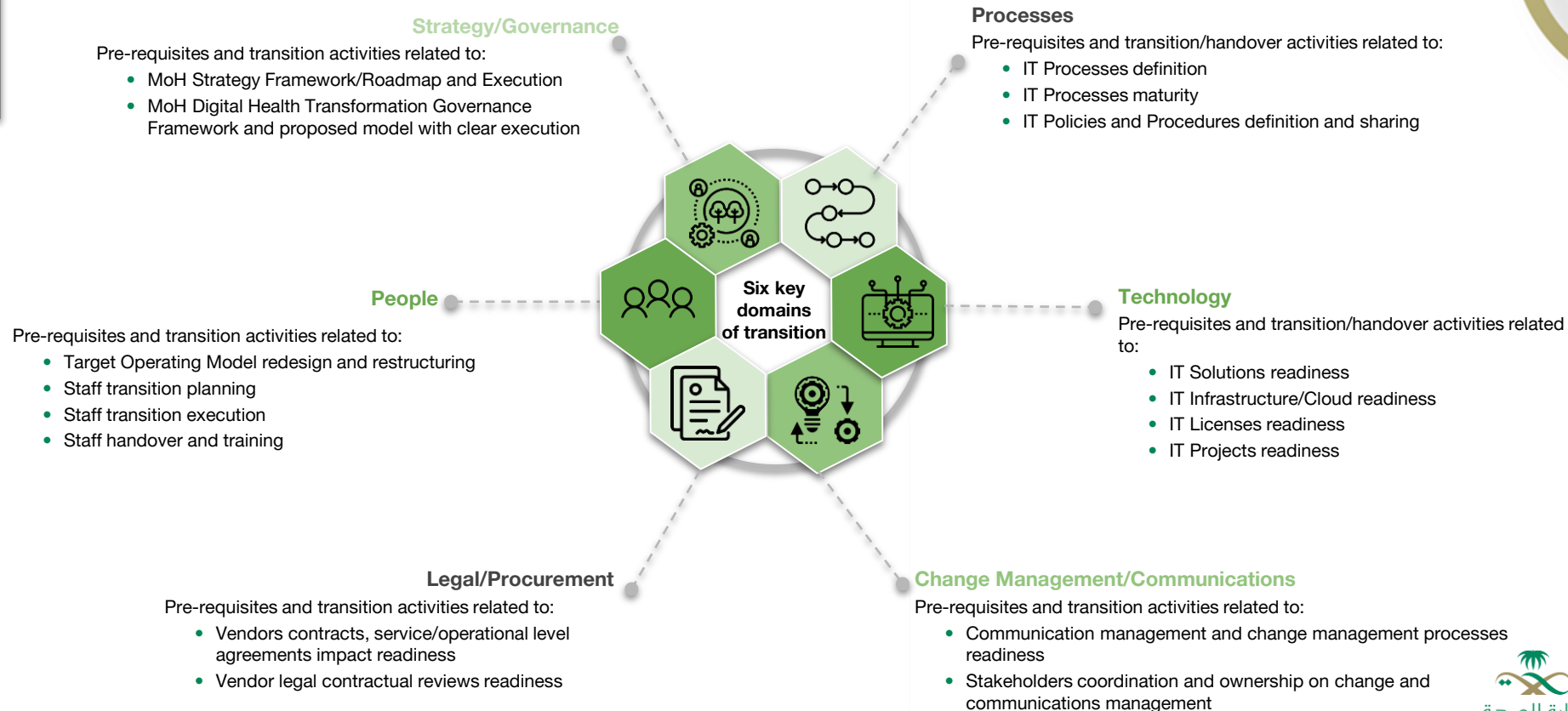
- 1 Governance and measurement by the MoH covers all layers
- 2 The Vision layer informs the Strategy layer
- 3 All elements of the Strategy layer guide and empower the 3 layers below which are roles of organizations outside the MoH in MoH 3.0

End State MoH Roles




End State Delegated Roles






Six key domains to be considered in the transition plan to enable a smooth and gradual MoH transition in 2.0 and 3.0 (1/3)



Six key domains to be considered in the transition plan to enable a smooth and gradual MoH transition in 2.0 and 3.0 (2/3)

	Prerequisites for transition activities checklist	Transition activities checklist
 <p>Strategy/ Governance</p>	<p>Execute Digital Health Strategy Transformation Setup Initiatives from the MoH Digital Health Strategy Framework/Roadmap</p> <p>Ensure alignment with defined MoH Digital Health Governance Framework and proposed Model for the transition to MoH 2.0 and 3.0</p>	<p>Transition impact on strategic/operational KPIs and transparency on performance reporting</p> <p>Transition impact on Governance Model, Roles, and Committees</p>
 <p>Processes</p>	<p>Define MoH Digital Health process maturity and standardization model to reduce the time for knowledge transfer</p> <p>Define IT Shared Services Charter & Mandate with clear roles/responsibilities</p>	<p>Evaluate and measure end to end processes maturity defined with clear ownership and touchpoints</p> <p>Monitor and ensure compliance with defined processes, procedures and policies</p>
 <p>Technology</p>	<p>Define infrastructure and solutions migration approach and plan</p> <p>Define IT licenses and projects migration readiness assessment and plan</p>	<p>Phased migration approach of solutions and infrastructure to minimize disruption on business and clinical continuity and BAU</p> <p>Suggestions would be to migrate less complex or more mature solutions first and ensure business continuity plan is agreed and approved</p>

Six key domains to be considered in the transition plan to enable a smooth and gradual MoH transition in 2.0 and 3.0 (3/3)

	Prerequisites for transition activities checklist	Transition activities checklist
 <p>Change Management/Communications</p>	<ul style="list-style-type: none"> Define and socialize change management framework and process Define and socialize communications plan and process Agree on communications methods, frequency and tools 	<ul style="list-style-type: none"> Mobilize and ensure change advisory board(CAB) is in place to monitor or approve changes Review and communicate transition progress and analyze results
 <p>Legal/Procurement</p>	<ul style="list-style-type: none"> Define vendors legal review process and sign off Develop policy for vendor procurement Review existing contract vendors and service/operational level agreements and any penalties or early settlement clauses 	<ul style="list-style-type: none"> Evaluate and decide on vendor contracts impact with transition (Which ones retain or transit) Necessity to assign clear ownership and communication on handover of vendor contracts
 <p>People</p>	<ul style="list-style-type: none"> Develop policy for staff transition Do planning on needs and org structure 	<ul style="list-style-type: none"> Right size staff to keep, transition to new org, hire, re-deploy, identify staff for each category Collaborate and plan transition with new org, transition MoH staff retained into new org,, train staff if necessary

09 Strategy Enablement

9.1 Critical Success Factors

9.2 Planning Factors

9.3 Delivery Factors

9.4 Adoption Factors

Critical Success Factors for the MoH Digital Strategy Framework & Roadmap

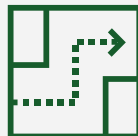
In order to realise the benefits of digital health, the following factors have been identified which need to be addressed in different phases of the strategy to ensure successful execution



Planning

These factors must be addressed while planning the programs and initiatives in line with the strategy roadmap for clarity of direction and the action plan

- Clarity of strategy and roadmap
- Lead with strategy management
- Well defined Enterprise architecture
- Effective change management
- Committees for digital health transformation



Delivery

These factors must be addressed throughout the delivery of the programs/ initiatives to ensure successful completion in line with the strategic direction and roadmap

- Commitment for collaborative delivery
- Effective governance and leadership
- Funding and budget management
- Infrastructure readiness
- Appropriate Regulatory Frameworks



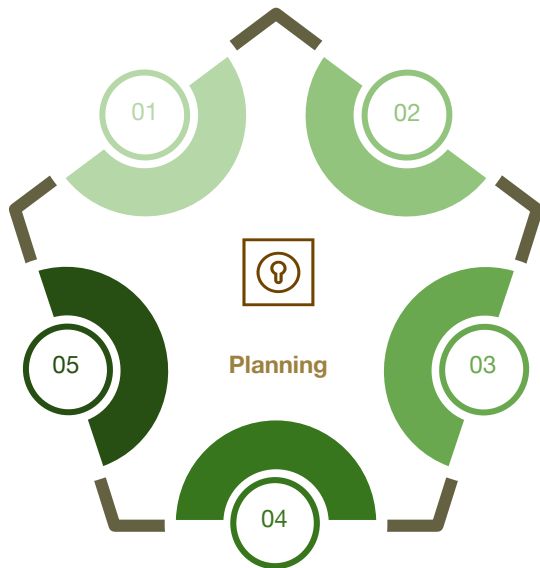
Adoption

These factors must be addressed throughout the delivery and post-delivery phase to ensure the realization of expected outcomes

- Workforce Readiness
- Assurance of privacy and security
- Population and provider engagement

Planning Factors for Strategy Enablement

These factors must be addressed in the initial stages of execution, i.e. when planning the programs and initiatives that are required to be implemented towards achieving this strategy framework and roadmap



01 Clarity of strategy and roadmap

It is imperative to socialize this strategy with the right stakeholders and audience to ensure a general agreement and awareness regarding the strategic direction and implementation roadmap. Seek feedback, wherever necessary, from all relevant entities to assess their clarity and level of agreement with the strategy framework and roadmap

02 Lead with strategy management

A strategy management office which will be responsible for planning the collaborative delivery of initiatives and programs across business units and entities by communicating the strategy across organizations. The performance will be continually reviewed, evaluated, and assessed for effectiveness of initiatives using appropriate tools.

03 Well defined EA

The EA will take into consideration the various aspects to identify, motivate, and achieve the strategy, specially during the MoH transition phases. Develop the EA to guide the healthcare and non healthcare entities through the business, information, process, and technology changes necessary to execute the strategies.

04 Committees for digital health transformation*

Plan to create formal committees that are responsible for overall digital health strategic planning and oversight for the Ministry of Health and its affiliates. These committees will ensure alignment of all national level strategies to the Digital health framework and roadmap.

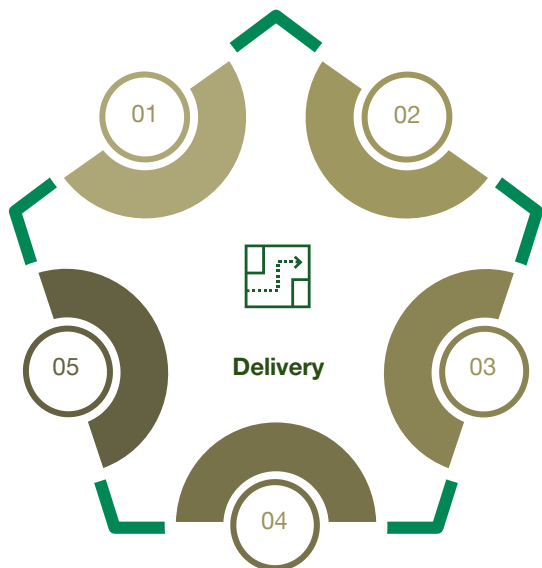
05 Effective change management

Plan to ensure all stakeholders and employees embrace and adopt the changes required in their way of working by equipping and supporting them, specially those who will be changing job roles with the transition plans from MoH 2.0 to 3.0.

* Suggested committees for the digital health transformation are detailed in the MoH Digital Transition - Governance Framework Document

Delivery Factors for Strategy Enablement

These factors must be addressed throughout the delivery of the programs and initiatives to ensure their successful completion in line with the strategic framework and roadmap



01 Commitment for collaborative delivery

A national approach must be taken to avoid duplication of activities, such as overlaps of initiatives. All entities should support the strategic goals and objectives, working together and leveraging assets and capabilities. Meaningful partnerships, including with the private sector, are key to improving the overall quality while bringing in efficiencies.

02 Infrastructure readiness

Infrastructure readiness can be a big barrier to achieving the initiatives, specially around implementing digital health solutions, as planned. Dependencies should be clearly defined in the planning stages to avoid delays in implementing the initiatives. Detailed vendors evaluation should specify all prerequisites to implement the solutions.

03 Effective governance and leadership

No single organization alone can achieve the desired outcomes from digital health. There is a need for a strong and effective governance structure with clear accountabilities, and responsibilities based on the entities mandates for a coordinated approach to deliver the objectives. (Refer to MoH Digital Transition - Governance Framework for more details)

04 Funding and budget management

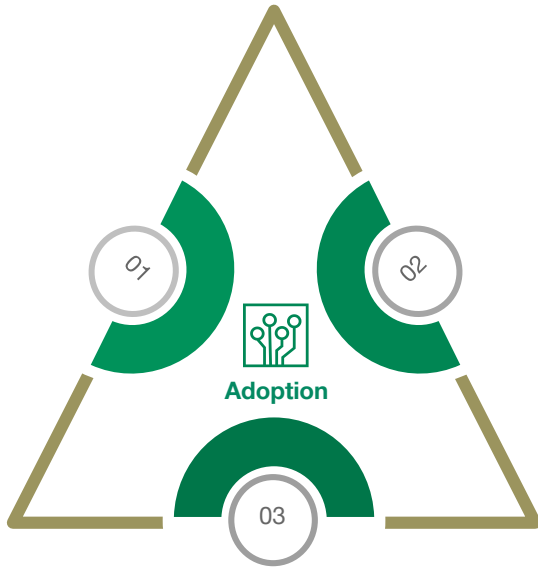
Lack of budget has been highlighted as a key challenge by stakeholders. Many initiatives may require a high initial expenditure for implementation, alternative funding models should be explored in the initial stages, specially when planning for the initiative.

05 Appropriate regulatory framework

KSA's regulatory intelligence must be able to accommodate changes that will occur from time to time in evolving healthcare technologies. With a shift of focus from a delivery to a regulatory role, it is imperative that the legislative framework exist to deliver the goals. This may require capabilities that do not yet exist in the healthcare system.

Adoption Factors for Strategy Enablement

These factors must be addressed throughout the delivery of the programs and initiatives to ensure their successful completion in line with the strategic framework and roadmap



01 Population and provider engagement

Any system is as good as it's adoption and usage by the ultimate beneficiaries. The responsible entities must work with individuals, healthcare providers and solution providers to ensure collaborative, and co-designed person-centric solutions, which provide the details and information required to empower individuals and support them in being active in management of their health.

02 Workforce readiness

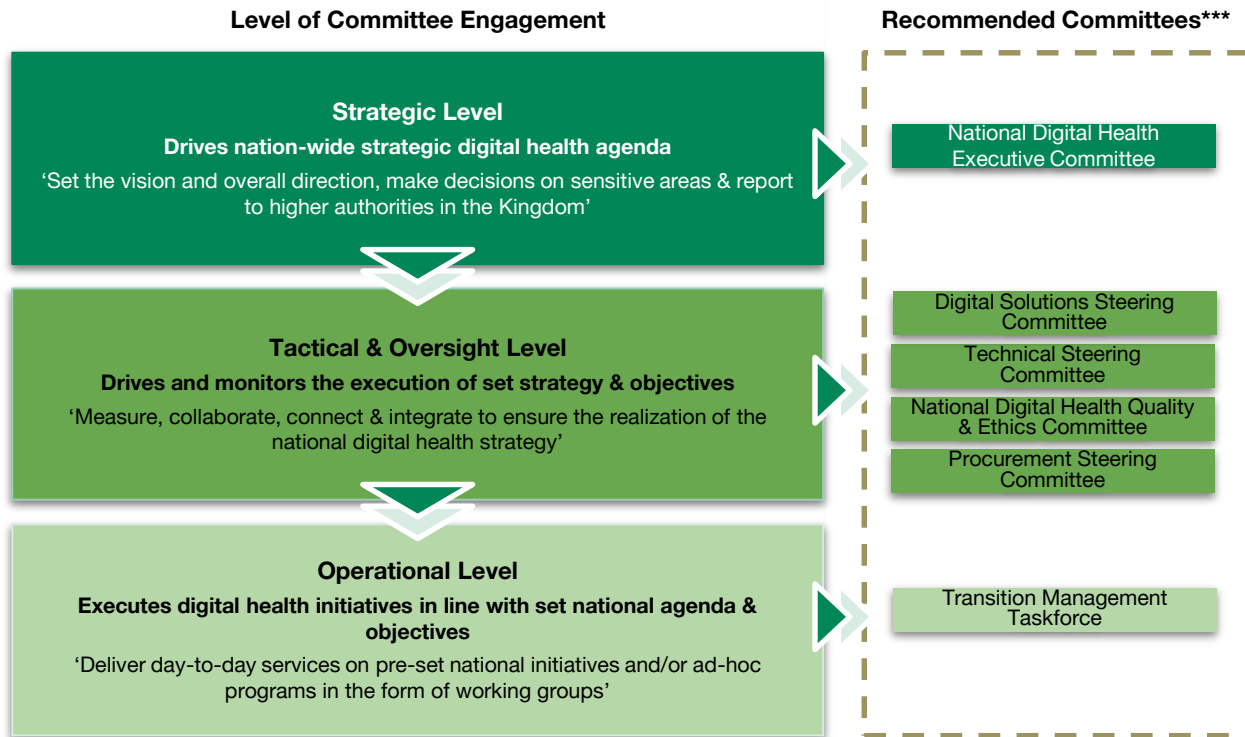
To drive the adoption of the Digital health solutions, they must first and foremost win the confidence of the healthcare providers by demonstrating clinical efficacy and ease of usage. Lack of confidence, a major barrier to adoption, should be addressed via elevated education and awareness, and conversations about how to make better use of technology to support patient care.

03 Assurance of privacy and security

Population, including individuals and providers, trust in digital health is critical for successful adoption of the solutions. Sensitive health information should be protected with strong privacy and security frameworks to drive it's adoption.

Suggested committees for the digital health transformation which should be formed at different levels to support delivery and implementation needs in a structured & collaborative manner**

Collaboration to set, drive, and execute digital health strategic objectives and program initiatives at each stage is necessary to unitedly work in a multi-stakeholder ecosystem, to achieve common goals and promote long term efficiency and sustainability



** Pending approval on the set up of these committees from the Project Executive Committee

*** Further details such as composition, key roles and responsibilities can be found in the MoH Digital Transition - Governance Framework

10 Appendix

Appendix A - Strategy Map

MoH Digital Strategy Framework & Roadmap

Supporting the MoH Digital Health Mandate and its transition to a super regulator



Vision

An **empowered, equitable and well-governed** health system within Saudi Arabia, made possible by **digital innovation**

Mission

Enhance integrated digital health solutions to deliver value-based healthcare and wellbeing in a collaborative manner

Design Principles

Sustainability

Collaboration

Person First Health and Care

Value Based Care

Agility

Cost-efficiencies

Strategic Goals

Enable person centric health and wellness

- **Expand accessibility** to person centric health and wellness services
- Enhance **user experience** and **usability** of digital health solutions
- **Ensure the improved delivery** of the **New MoC** through digital health

Empower a secure, integrated, and data-driven health ecosystem

- Ensure **availability and adherence** to digital health **data and interoperability standards**
- Increase **secured accessibility** to health information, with the appropriate **privacy controls**
- Empower the healthcare ecosystem to **use data for informed decision making**

Drive comprehensive digital health governance & performance

- Improve **regulatory intelligence** for digital health and ensure **compliance** to regulations and policies
- Strengthen the **governance** for **collaborative delivery** and **measurement** of digital health initiatives
- Ensure **financial sustainability** of digital health

Enhance digital health knowledge and innovation

- Drive value and adoption of **innovative digital health technologies and solutions**
- Improve **digital health skills and competencies** to enable digital transformation

Strategic Objectives



Programs designed to support MoH at every stage of its transition

Transitional Programs

Programs required to facilitate the transition process toward a super regulator

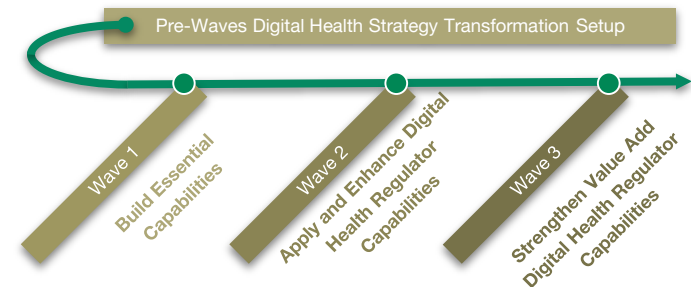
MoH 2.0 Programs

Programs that are still valid during the transition, however may not be relevant during MoH 3.0 as it fulfils its new mandate

MoH 3.0 Programs

Programs required to continue throughout MoH 3.0 as a super regulator

A five year roadmap, aligned with the MoH transition to a super regulator



Appendix B - Program/ Project Cards

Digital Health Foundations

Strategic Transformation Management
MoH Enablement
Governance and Regulations
Funding
Digital Health Competencies
Knowledge and Innovation

Digital Health Foundations

Strategic Transformation Management

MoH Enablement
Governance and Regulations
Funding
Digital Health Competencies
Knowledge and Innovation

- Plan Transition of Digital Health Services
- Optimise and Enhance Digital Health Portfolio and Program Management Office (PMO)
- Setup and Operate Digital Health Strategy and Change Management office (SMO)
- Optimize and Enhance EA office and Design Authority Function

Setup and Operate Digital Health Strategy and Change Management Office (SMO)

Overview

The initiative will lead the setup and operation of digital health strategy and change management office (SMO). Will also work closely with the Digital Health Portfolio and Program Management Office (PMO) to plan and execute initiatives from the strategy. Also procure, design and setup a strategy management tool to automate processes and roll out a strategy performance management system. In addition manage digital strategy communications and change management across MoH Digital Health and its stakeholders.

Key Projects and Milestones

- Setup digital health strategy and change management office(SMO).
- Procure, design and setup strategy management tool.
- Setup communications and change management process across MoH Digital Health and its stakeholders.
- Operate digital health strategy and change management office(SMO).

Impact on Strategic Direction

- The initiative will ensure effective execution and implementation of the strategy and priorities.
- Alignment and engage with various health and non-health national entities with guidance on defining or updating digital health strategies and roadmaps.
- Alignment on sector wide national health and digital strategies

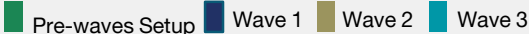
Interdependencies

- Set up and operate Digital Health Strategy and Change Management office (SMO) is a predecessor to all other Pre-Waves Setup (Six months Action Plan) initiatives.

Program benefits and outputs

- Ensure continuing alignment of digital health strategy to MOH business strategy and transition to MOH 2.0/3.0 as a super regulator.
- Will ensure the effective management of the Change Management office, with its anticipated benefits of strong user acceptance and adoption of all digital health solutions.

Implementation Analysis

Classification:	Transformational
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	N/A - Transformational
Estimated Budget:	SAR 20m
Roadmap wave(s):	
Duration:	Throughout Strategy
Deployment	

Optimise and Enhance Digital Health Portfolio and Program Management Office (PMO)

Overview

Program to optimise the Program Management Office (PMO) for efficient planning of digital health, defined program monitoring processes, business case assurance monitoring and coordination with VRO, VRP and HHC PMO. The program will also focus on automating processes and roll out portfolio and program performance management system.

Key Projects and Milestones

- Define a PMO charter stating the PMO’s purpose, goals and objectives
- Enhance the communications processes within MoH departments and Digital Health departments
- Define measurement parameters for progress and success of PMO
- Defines, manages and reports on the internal and external KPIs
- Utilise the tools and digital solutions required to operate a seamless and efficient PMO with live reporting and updates on progress

Impact on Strategic Direction

- The PMO will directly impact all of the other programs within this Digital Strategy Framework and Roadmap and hence indirectly linked to each of the strategic objectives

Interdependencies

- No major Interdependencies for this program

Program benefits and outputs

- Enhancing the PMO will ensure the alignment with the Digital Strategy Framework and Roadmap to other strategies and business requirements within the Ministry
- The PMO should provide agility to adapt as strategy is deployed and changes/updates may be required (especially as the transition to MoH 3.0 reveals)
- The PMO should provide measurement criteria and reports to show the progress of KPIs in order to drive the Strategy Framework and Roadmap

Implementation Analysis

Classification:	Transformational
Current Owner:	Business: MoH Digital Health
	Delivery: MoH Digital Health
Candidate Owner:	N/A - Transformational
Estimated Budget:	SAR 210m
Roadmap wave(s):	■ Pre-waves Setup ■ Wave 1 ■ Wave 2 ■ Wave 3
Duration:	Throughout Strategy
Deployment	

Plan Transition of Digital Health Services

Overview

The initiative will lead and support the MoH transition plan of digital health services, solutions and human capital resources for the MoH 2.0/3.0 transition. This includes collaborating with inter-MoH departments/deputyships as well as with key national external stakeholders and entities in the health ecosystem. Includes executing and monitoring KPIs for the transition.

Key Projects and Milestones

- Setup Transition Planning Committee with a clear and approved mandate. Also representatives from all National entities impacted.
- Define detailed MoH transition plan defined for delivery, workforce and vendor contracts with clear action owners and timelines.
- Define a transition vendors contract risks impact assessment with legal assistance or support.

Impact on Strategic Direction

- The initiative will enable and ensure the ministry to realize its role as a super regulator and oversee and align with the different stakeholders in the health ecosystem.
- They will also be monitoring indicators for the various initiatives to ensure successful implementation.

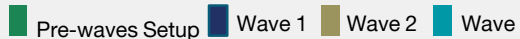
Interdependencies

- Set up and operate Digital Health Strategy and Change Management office (SMO) is a predecessor to this initiative.

Program benefits and outputs

- Smooth and phased approach for transition to not disrupt current services and activities provided.
- Enable the preparation and readiness of the transfer or transition of delivery and workforce.
- MoH Digital Health will be primarily focused regulating the use digital health, monitoring and evaluation of existing implementation and promoting innovation and digital health workforce capabilities

Implementation Analysis

Classification:	Transformational
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	N/A - Transformational
Estimated Budget:	SAR 30m
Roadmap wave(s):	
Duration:	Throughout Strategy
Deployment	

Optimize and Enhance EA Office and Design Authority Function

Overview

The initiative will lead the optimize and enhance EA office and design authority function. Set up a national digital health EA framework, policy and processes in alignment with international standards, best practices and national framework e.g. Nora. Manage and maintain the national reference digital health blueprint, and ongoing enhancement of architecture as it evolves. Implement and automate a digital health EA tool.

Key Projects and Milestones

- Asses current EA office and undertake a gap analysis.
- Set up a national digital health EA framework, policy and processes.
- Implement and automate a digital health EA tool.
- Setup a design authority.

Impact on Strategic Direction

- The initiative will ensure IT and clinical/business alignment and promote a person centric architecture.

Interdependencies

- Setup and operate Digital Health Strategy and Change Management office (SMO) are both predecessors to this initiative.

Program benefits and outputs

- The level of collaboration which digital health makes possible will have a profound effect on the MOH business architecture and business deputyships/departments/functions.

Implementation Analysis

Classification:	Transformational
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	N/A - Transformational
Estimated Budget:	SAR 20m
Roadmap wave(s):	Pre-waves Setup
Duration:	Throughout Strategy
Deployment	

Digital Health Foundations

Strategic Transformation Management

MoH Enablement ●

Governance and Regulations

Funding

Digital Health Competencies

Knowledge and Innovation

- Define MoH Digital Health Target Operating Model Development and Restructuring
- Re-engineer and Automate MoH Functions Processes
- Define Digital Health Communications and Public Relations Strategy

MoH Digital Health Target Operating Model and Restructuring

Overview

A program to design MoH Digital Health Target Operating Model, and the internal governance framework including the reporting system in alignment with the 3.0 remit. This will also include identifying a new MoH Digital Health organizational structure in light of the transition plan and assessing existing functions whilst repurposing and adding new functions to support the regulatory role (for example: quality audit and assurance, regulations center of excellence functions)

Key Projects and Milestones

- Define the competency framework on MoH Digital Health level based on the new and repurposed positions
- Set an internal performance management system for MoH Digital Health and cascade objectives and KPIs to the individuals level
- Conduct digital upskilling activities for MoH Digital Health employees based on need, and track progress

Impact on Strategic Direction

- Indirectly impacts the improvement of digital health skills and competencies to enable digital transformation, as MoH Digital Health consider the restructuring required to fulfill their digital health mandate
- Indirectly impacted the objective to strengthen the governance for collaborative delivery and measurement of digital health initiatives

Interdependencies

- Plan Transition of Digital Health Services

Program benefits and outputs

- Optimisation of the MoH Digital Health resources to ensure efficiency
- Design a Target Operating Model that enables effective execution of MoH Digital Health's strategy and mandate after it has transitioned to a super regulator

Implementation Analysis

Classification:	MoH 2.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 10m
	■ Wave 1
Roadmap wave(s):	
Duration:	1 year

Re-engineer and Automate MoH Functions Processes

Overview

In light of the transition to 3.0, and to be able to realize the set digital strategy, this initiatives aims to streamline MoH processes to be able to optimize operations within the ministry and automate whenever possible and to be ISO 20000 compliant.

Key Projects and Milestones

- Document the MoH Digital Health policies and procedures and map the as-is processes
- Assess and re-engineer the process maps in light of the transition
- Identify bottlenecks and automation points to ensure efficiency and measure compliance
- Publish the policies, procedures and processes and make them available on an internal portal for all MoH staff

Impact on Strategic Direction

- Indirectly impacted the objective to strengthen the governance for collaborative delivery and measurement of digital health initiatives

Interdependencies

- Design MoH Digital Health Target Operating Model and Restructuring is a dependency to be able to identify the new processes required and assign ownerships to the new functions

Program benefits and outputs

- Optimised processes within the ministry, using digitisation and automation to reduce errors and increase efficiency.

Implementation Analysis

Classification:	MoH 2.0 / MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 10m
	Wave 1
Roadmap wave(s):	
Duration:	1 Year

Define Digital Health Communications and Public Relations Strategy

Overview

A program to set a comprehensive communications strategy to focus on the awareness the MoH's transition to 3.0 using digital means for both internal and external stakeholders. This will include a range of media, including platforms and virtual conferences to communicate key messages, in addition to, surveys and engagement tools to capture stakeholders' input and feedback. Part of this program will also focus on developing the ministry's website

Key Projects and Milestones

- Set Digital Health Communications Strategy
- Develop tools and processes for stakeholder engagement and communications in Digital Health strategies and policies
- Develop and maintain Interactive communications platforms
- Conduct conferences and workshops for engagement and communications
- Design and roll out tools for surveying and feedback collection, as well as support mechanism

Impact on Strategic Direction

- Directly impacts the strategic objective to drive value and adoption of innovative digital health technologies and solutions as well as expand accessibility to person centric health and wellness services

Interdependencies

- Setup and Operate Digital Health Strategy and Change Management Office (SMO)

Program benefits and outputs

- This program is key to engage the different stakeholders in the digital health strategies and policies. Obtaining the buy-in of the different stakeholders will:
 - Ease the roll out of digital health solutions and policies
 - Increase awareness and accordingly, increase adoption of the different solutions and policies

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 1m
	Wave 1
Roadmap wave(s):	
Duration:	5 Years

Digital Health Foundations

Strategic Transformation Management
MoH Enablement
Governance and Regulations
Funding
Digital Health Competencies
Knowledge and Innovation

- Create a National Level Digital Health Services Catalog
- Define Digital Health Policy and Regulations, Governance and Monitoring Compliance Framework
- Implement and Deploy Digital Health Policy Management Tool
- Define Digital Health Reporting and Performance Policy

Create a National Level Digital Health Services Catalog

Overview

This program aims to consolidate and create a list of all national level digital health services that are available to the people across the kingdom. The program serves the people and patients, the facilities and it also helps the Ministry in tracking and pushing digitization across the sector. It is split into three main categories: Clinical Services, Administrative Services, and IT Services.

There will also be a MoH HQ service catalog and as well as a Cluster level local service catalog which would differ from one cluster to other cluster. All of these will be visible and accessible by MoH facilities and clusters.

Impact on Strategic Direction

- This program directly impacts the strategic objectives as it supports in “Expanding accessibility to person centric health and wellness services”

Program benefits and outputs

- People and Patients: Better understanding of the different services provided and more accessibility to those services
- Facilities: Understanding of services that are provided by different government entities and other facilities and guidance on digitization solutions and projects that could be implemented
- MoH: Tracking of existing services, better identification of potential gaps and existing duplicate projects, and better decision making

Key Projects and Milestones

- Create and consolidate digital health service catalog
- Publish the catalog on an interactive platform
- Ensure updating the catalog

Interdependencies

- Design MoH Digital Health Target Operating Model and Restructuring
- Plan Transition of Digital Health Services

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 1m
	 Wave 1 Wave 2 Wave 3
Roadmap wave(s):	
Duration:	5 Years

Define Digital Health Policy and Regulations, Governance and Monitoring Compliance Framework

Overview

As the super regulator, the ministry will be setting and streamlining the different digital health policies and regulations and ensuring compliance. This program is considered a key step, where it sets the regulations and governance framework, identifies the different areas in digital health that need regulations and consolidates existing policies, the different entities and their governance and best practices to have a KSA specific digital health policies, regulations, governance and monitoring framework.

Key Projects and Milestones

- Define process for writing, publishing and updating digital health regulations and legislation
- Identify key digital health areas that require digital health regulations and legislations. Write and publish these required regulations and legislations.
- Build the function, the capabilities and procedures to monitor adherence to standards and regulation, as well as defining a compliance framework
- Writing, revising or replacing Digital Health Policy and Regulations, waves 2 & 3

Impact on Strategic Direction

- This program is key to improve regulatory intelligence for digital health and ensure compliance to regulations and policies

Interdependencies

- Design MoH Digital Health Target Operating Model and Restructuring

Program benefits and outputs

- A comprehensive framework to provide guidance for MoH to successfully fulfill the role of a super regulator in a proficient manner and enable the Kingdom's Health ecosystem to adopt Digital Health in an effective, secure and sustainable way.
- Approved comprehensive standard for coding ambulatory procedures till this moment.
- Clinical national guidelines including but not limited to standardized nomenclature for clinical drugs that provides accurate and complete connections between SFDA National Drug Codes (GTIN) and standard non-proprietary names of medications recommended for use in electronic health records (EHRs)-physician orders in generic nomenclature

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 10m
	Wave 1
Roadmap wave(s):	
Duration:	1 year

Implement and Deploy Digital Health Policy Management Tool

Overview

This project will provide tools and platform to maintain an electronic database of all current MOH policies and regulations, and disseminate notification of updates to all affected parties including clusters/ ACO and other stakeholders

This platform acts as both a communication tool as well as an internal tracking and assessment tool for the ministry that supports in assessing the regulatory environment and impact

Key Projects and Milestones

- Develop the tool/ platform
- Consolidate existing policies and update them
- Add new policies
- Publish policies on the platform and gather feedback
- Ensure continuous updating of the content and the platform itself

Impact on Strategic Direction

- This program is key to “Improve regulatory intelligence for digital health and ensure compliance to regulations and policies”

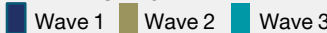
Interdependencies

- Design MoH Digital Health Target Operating Model and Restructuring

Program benefits and outputs

- Act as a communication tool to the different facilities that keeps them updated with the different policies and regulations and gathers feedback on the Regulatory Environment Assessment
- Act as an assessment tool for the ministry, to be able to track existing policies, measure the regulatory impact assessment, identify gaps and need for new policies or policies that need to be repealed.

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 5m
	
Roadmap wave(s):	
Duration:	4 Years

Define Digital Health Reporting and Performance Policy

Overview

This program will guide all digital health delivery organizations to report on the sets of digital health solutions being developed, procured, deployed within their facilities to improve KSA digital health maturity and interoperability.

Key Projects and Milestones

- Create tool for collecting information relating to all digital health solutions in MoH and its facilities

Impact on Strategic Direction

- Impacts the strategic objective to strengthen the governance for collaborative delivery and measurement of digital health initiatives, specifically focusing on the impact of digital health solutions and measuring their effectiveness

Interdependencies

- No major interdependencies for this program

Program benefits and outputs

- This program will bring together a collective database of all digital health solutions that are deployed throughout the Ministry and its facilities. This then provides the comprehensive information for the Ministry to conduct a digital health maturity assessment to understand their current capabilities and create a plan for enhancement and more solutions in the future.
- Economies of scale can also be drawn from this program, as the ministry will be able to see the performance of solutions

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery: MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 10m
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Roadmap wave(s):	
Duration:	4 Years

Digital Health Foundations

Strategic Transformation Management
MoH Enablement
Governance and Regulations
Funding
Digital Health Competencies
Knowledge and Innovation

Define Digital Health Investment and Value for Money Policy

Define Digital Health Investment and Value for Money Policy

Overview

This policy will support the evaluation of promising innovations, enable the spread and scale of proven and successful digital health tools, and reduce the fragmentation caused by local decisions and one-off purchases that can potentially lead to inequality and variation in health outcomes. This program will cover all aspects of digital health, including the funding and investment of Infrastructure.

Key Projects and Milestones

- Establish and set-up the Digital Health Investment and Value for Money Policy Unit and recruiting its human capital.
- Operating the Digital Health Investment and Value for Money Policy Unit that should be issuing on an ongoing basis updates of policies and frameworks that evaluate and guide the investment in digital health in the Kingdom.

Impact on Strategic Direction

- The policy will ensure that the acquisition of digital health solutions and tools does not place an undue burden on the healthcare delivery organization. As these tools should support the national directions and objectives, and improve the experience of patients and providers.
- Direct impact on the objective to ensure financial sustainability of digital health (incl. PSP)

Interdependencies

- No major Interdependencies for this program

Program benefits and outputs

- Leveraging economies of scale across the sector, when appropriate, to improve value for money for all digital health solutions.
- Benchmark financial performance of best in class facilities of a similar size and patient mix.
- Evaluation and identification of key areas that can benefit from Private Sector Participation
- Issuing guidelines and frameworks for investing in digital health in the Kingdom

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 5m
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Roadmap wave(s):	
Duration:	2 Years

Digital Health Foundations

Strategic Transformation Management
MoH Enablement
Governance and Regulations
Funding
Digital Health Competencies
Knowledge and Innovation



Define the National Digital Health Workforce Capabilities Framework

Define the National Digital Health Workforce Capabilities Framework

Overview

The framework defines the Digital skills that the nation requires to utilise and contribute to Digital Health in the Kingdom. This framework is a necessity for the Kingdom’s Health ecosystem to realise Vision 2030 as an ‘ambitious nation’. Not only will the framework describe the minimum digital skill requirements to communicate and document in a secure manner, it will also focus on those skills required to optimise the use of digital health in innovative ways.

Key Projects and Milestones

- Identify key domains required within the National Digital Health Workforce Capabilities Framework
- Identify and prioritize key departments/areas to focus Digital Health Capabilities efforts
- Socialize and finalize the National Digital Health Workforce Capabilities
- Monitor the use of the framework and then impact on Digital Health Skills within the workforce

Impact on Strategic Direction

- This framework is required to ensure that there are sufficient digital health capabilities throughout the workforce to drive the digital health adoption and transition
- Ultimately, the National Digital Strategy’s vision cannot be achieved without improving the digital capability of the health workforce

Interdependencies

- Plan Transition of Digital Health Services

Program benefits and outputs

- Create an environment where the importance of the Digital Health Capabilities within the workforce is at the forefront
- Ensuring that all of the Health workforce are able to use Digital Health tools and data safely
- Encourage all MoH facilities to ensure that they are upskilling their workforce or seeking specific digital health skills within their recruits

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 50m
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Roadmap wave(s):	
Duration:	1 Year - 2 Years

Digital Health Foundations

Strategic Transformation Management
MoH Enablement
Governance and Regulations
Funding
Digital Health Competencies
Knowledge and Innovation

- Create Digital Health Awareness Strategy and Digital Health Inclusion Guidelines
- Implement Digital Health Knowledge Management Framework, Guidelines and Solution
- Design Digital Health Innovation Framework
- Setup and Operate the Digital Health Innovation Space and Lab
- Define AI in Healthcare Strategy

Create Digital Health Awareness Strategy and Digital Health Inclusion Guidelines

Overview

This program will design and issue framework and guide to help healthcare providers, commissioners, and designers ensure that services delivered digitally are as inclusive as possible, meeting the needs of all sections of the population. Design guidelines for accessibility, i.e. people with different physical, mental health, social, cultural and learning needs, and for people with low digital literacy or those less able to access technology

Key Projects and Milestones

- o Dedicate a team/committee for Digital Inclusion
- o Design Digital Awareness Strategy, identifying the usability requirements of all population
- o Design and implement a diagnostic tool to identify current levels of digital literacy and development areas in line with the related strategy and guidelines
- o Socialise the Digital Awareness Strategy and tools in media that is accessible by all of the population
- o Measure the effectiveness of the Inclusion strategy

Impact on Strategic Direction

- o A framework and guide to help healthcare providers, commissioners, and designers ensure that services delivered digitally are as inclusive as possible, meeting the needs of all sections of the population

Interdependencies

- o Define Digital Health Privacy and Consent Management Regulations and Policies
- o Alignment with Create UI/UX Person-centered Design Standards and Guidelines

Program benefits and outputs

- o A strategy that drives the adoption of digital health within the Kingdom to in order to reach the Vision 2030's 'ambitious nation'
- o Through a digital inclusion strategy, the outreach of the digital health tools will be more expansive, hence improving the use of the tools and increasing health care (specifically though digital self-care tools)
- o Empower stakeholders and collaborators to produce and develop similar content.

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 10m
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Roadmap wave(s):	
Duration:	5 Years

Implement Digital Health Knowledge Management Framework, Guidelines & Solution

Overview

Healthcare is an information and knowledge intensive industry, therefore a knowledge management solution would be crucial and valuable. To implement a Digital Health knowledge management solution or tool based on a knowledge management framework and guidelines so entities can follow and ensure roll out to clusters.

Key Projects and Milestones

- Create Digital Health Knowledge management Framework
- Create Digital Health Knowledge management Guidelines
- Procure, design and implement Digital Health Knowledge management Solution

Impact on Strategic Direction

- To achieve the strategic goal to enhance digital health knowledge and innovation, by promoting digital health knowledge sharing across the health ecosystem.
- In addition, further digital health knowledge collaboration should directly impact and improve digital health skills and competencies to enable digital transformation.

Interdependencies

- No major Interdependencies for this program

Program benefits and outputs

- Immediate, searchable access to all digital health content and knowledge reference materials, for all MOH HQ, departments, clusters and facilities, at any internet connected location throughout the Kingdom. Use of this system should: save time in finding reference material, have access to more information, provide the ability to make more informed decisions and have access to most current research.

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 80m
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Roadmap wave(s):	
Duration:	3 Years

Design Digital Health Innovation Framework

Overview

The framework will provide direction to digital health innovators, healthcare clusters and facilities and guide them in the use of digital health solutions and emerging health technologies. This will also provide guidance on framing innovation around business / healthcare problems and not only around technology. Also incorporating stakeholders from across the continuum of care in strategizing, planning, piloting, socializing innovations.

Key Projects and Milestones

- Create a digital health innovation steering committee
- Identify key domains and sub-domains for Digital Health Innovation Framework
- Identify and prioritize clinical or business problems to focus innovative efforts
- Socialize and finalize the Digital Health Innovation Framework

Impact on Strategic Direction

- Directly impacts the strategic objective to drive value and adoption of innovative digital health technologies and solutions

Interdependencies

- Setup the Digital Health Innovation Space and Lab

Program benefits and outputs

- Establish a risk tolerant environment that is supportive of failure (there are no failed innovations, only learning opportunities)
- Healthcare improvements (safety, outcomes, efficiency, communication, satisfaction, etc.) driven by innovative solutions

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 1m
	Wave 2
Roadmap wave(s):	
Duration:	1 Year

Setup and Operate the Digital Health Innovation Space and Lab

Overview

The Digital Health Innovation Space and Lab will serve as a catalyst for the design, development, and testing of new digital health solutions. This will be delivered both through direct and controlled investment into third-party innovation projects as well as through internal developmental efforts by cross-jurisdictional, multi-disciplinary teams.

Key Projects and Milestones

- Create a digital health innovation steering committee
- Define the strategy for the development and use of new technology, including research and development, funding and testing environment
- Setting overall standards and plans to prioritize emerging tech, ensure working closely with the cluster's own innovation hubs
- Setting and rolling out an ideation and innovation platform

Impact on Strategic Direction

- The Innovation Space and Lab will be responsible for encouraging industry innovation that is well aligned to the MoH mandate, vision, mission and strategic goals/objectives

Interdependencies

- Design Digital Health Innovation Framework

Program benefits and outputs

- Through internal development efforts, the Innovation Space and Lab will be able to create, trial, and test innovative solutions in localized context within a safe environment, fostering their growth towards operational solutions

Classification:	MoH 3.0
Current Owner:	Business: CoE <i>(with support from MoH Digital Health)</i>
	Delivery:
	CoE <i>(with support from MoH Digital Health)</i>
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 75m
	 Wave 2 Wave 3
Roadmap wave(s):	
Duration:	1 Year

Define AI in Healthcare Strategy

Overview

Develop the AI in healthcare Strategy and framework including AI as a service policy, in alignment with SDAIA. This strategy will focus on the key areas where AI can assist with healthcare, whether that is in health care delivery or utilising data for predictive capabilities, etc. This program will cover all current AI projects or ideas, including integrating AI in SEHA and AI in diagnostic/care support, pharmaceutical and/or retinopathy, etc.

Key Projects and Milestones

- Define AI in healthcare strategy, including use case examples and aligning with the Innovation Space and Lab capabilities and resources
- Align strategy with the Digital Health Innovation Framework
- Socialise the strategy
- Monitor the progress of the strategy

Impact on Strategic Direction

- Direct impact on the strategic objective to drive value and adoption of innovative digital health technologies and solutions
- Impacts the delivery of healthcare and hence this strategy impacts the strategic objective to ensure the improved delivery of the New MoC through digital health

Interdependencies

- Design Digital Health Innovation Framework

Program benefits and outputs

- The strategy will provide a collective drive for the increased use of AI in healthcare in a safe manner by defining the areas where AI can be used to improve decision making processes.
- AI can provide cost reductions to the healthcare system if used efficiently, therefore the program will be crucial to defining where these efficiencies can be made
- As AI is used increasingly throughout healthcare, the programs will ensure that the strategy also focuses on the cyber security aspect of AI, hence ensuring that the safety and privacy of individual's data is at the forefront when defining any AI tool or process
- The strategy will focus on where human interaction is needed, as especially in healthcare there are many benefits of person-to-person care and interaction, therefore the strategy will identify those areas where AI needs assistance from humans for better user experience

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 30m
	■ Wave 1
Roadmap wave(s):	
Duration:	1 Year

Person Centricity

Experience and Access
Population Engagement and Wellness
Hajj and Umrah
Privacy

Person Centricity

Experience and Access ●

Population Engagement and Wellness
Hajj and Umrah
Privacy

- Create UI/UX Person-centered Design Standards and Guidelines
- Define Strategy and Set Guidelines for Consolidation of Patient Access Tools and Applications
- Implement and Enhance Patient Virtual Care Platforms and Tools

Create UI/UX Person-centered Design Standards and Guidelines

Overview

The aim of this initiative is to drive user or person-centered design and understanding the needs and perspective of the end-user. Also understanding the existing ecosystem: well-designed solutions, tools and applications considering the existing structures and needs. Also publish design standards and guidelines for vendors, clusters and facilities to improve person-facing services to accelerate the delivery of safe and intuitive systems that work well together.

Key Projects and Milestones

- Assess current specific user or person design challenges
- Assess current specific user or person design standards & guidelines
- Design and create UI/UX Person-centered design standards & guidelines
- Publish and share UI/UX Person-centered design standards & guidelines

Impact on Strategic Direction

- Direct impact on the strategic goal to enable person centric health and wellness.
- Also, direct impact on the strategic objective under the same goal which is to enhance user experience and usability of digital health solutions

Interdependencies

- No major Interdependencies for this program

Program benefits and outputs

- High end user satisfaction scores
- High use and adoption related to health and wellness digital health services

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery: MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 5m
	■ Wave 1
Roadmap wave(s):	
Duration:	1 Years

Define Strategy, Set Guidelines and Consolidate Patient Access Tools and Applications

Overview

This strategy will take the UX guidelines and define a strategy and roadmap to consolidate the user experience channels into a unified platform with open and restricted digital services as well as education programs. It will also set and implement guidelines for new patient access tools and applications to ensure that they are consolidated or unified for the best user experience. This covers all of the existing applications, portals and hotline, as well as future channels of access.

Key Projects and Milestones

- Identify which of the patient access channels can be consolidated for ease of access
- Create access channel with secure single login
- Communication strategy to public to increase awareness of the unified access channel
- Monitor new applications and solutions to ensure compliance with this strategy

Impact on Strategic Direction

- Direct impact on the ability to enhance user experience and usability of digital health solutions
- Indirectly impact the objective to increase secured accessibility to health information, with the appropriate privacy controls

Interdependencies

- Create UI/UX Person-centered Design Standards and Guidelines
- Define Digital Health Privacy and Consent Management Regulations and Policies
- Set Data Governance Strategy and Streamline Data Standards and Governance Policies/Procedures

Program benefits and outputs

- Through unified access channels the number of log-ins or portals required for each aspect of healthcare and wellness will be reduced, hence this will enhance the user experience. In turn, this will encourage more of the population to use these digital skills and therefore increase the adoption of digital health tools for access and delivery

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 160m
	Wave 1
Roadmap wave(s):	
Duration:	3.5 Years

Implement and Enhance Patient Virtual Care Platforms and Tools

Overview

A program to design, procure and implement, or enhance existing virtual care platforms and tools. These platforms and tools may be implemented on a national or cluster level, based on the feasibility and the requirements of the target population. The virtual care platforms may support various applications such as Virtual clinics, Home Labs, Remote Patient Monitoring, Home Techniques etc. These platforms should aim to increase access to high-quality healthcare services and promote preventative health, aligned with the new Model of Care.

Key Projects and Milestones

- Assess pilots and study from past experiences and create feasibility study
- Design and implement tools and platforms ensuring compliance to standards (e.g. interoperability, data, privacy etc)
- Digital upskilling of healthcare providers, and awareness among population
- Monitor the use of virtual care platforms and tools, compliance to standards and the return on investment

Impact on Strategic Direction

- Directed impact on the ability to expand accessibility to person centric health and wellness services
- Impact the user experience and usability of digital health solutions
- Directly impacting the objective of improved delivery of the New MoC through digital health


Interdependencies

- Create UI/UX Person-centered Design Standards and Guidelines
- Define Digital Health Privacy and Consent Management Regulations and Policies
- Set Data Governance Strategy and Streamline Data Standards and Governance Policies/Procedures

Program benefits and outputs

- Convenient access to high-quality healthcare for all sections of the population.
- Individuals may benefit from multi-speciality care without visiting multiple facilities.
- Avoid unnecessary visits, specially benefiting those individuals who stay away from healthcare facilities and may need to miss work, or be away from family to receive care.
- Promotes preventative health and motivates individuals to receive timely care.
- Frees up physician's time as it reduces the need for unnecessary visits, for example visits made by patients for refilling of prescriptions, ordering diagnostic tests, etc. Thus allowing more time to focus on cases which need more attention, and reducing physician burnout.
- Cost efficiencies in the system and reduced burden on healthcare facilities to meet the growing demand for care.

Implementation Analysis

Classification:	MoH 2.0 (possibly MoH 3.0)
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health, Clusters
Estimated Budget:	SAR 240m
	 Wave 1
Roadmap wave(s):	
Duration:	2 Years

Person Centricity

Experience and Access

Population Engagement and Wellness ●-----●-

Hajj and Umrah

Privacy

Implement and Enhance Wellness Self Care Tools

Implement and Enhance Wellness Self Care Tools

Overview

Program to deploy technologies and solutions for individuals to be empowered to take control of their health maintenance and management. These technologies promote overall well-being, by helping in preventing health risks, and self-management of certain illnesses that do not require constant assistance of a healthcare professional. Examples of applications of self-care tools include accessing educational content, setting individual health goals and tracking progress, booking and managing appointments, connecting wearable devices, interacting with health coaches and other professionals on an as-needed basis.

Key Projects and Milestones

- Assess pilots and study from past experiences and lessons learnt.
- Feasibility study for self-care tools
- Design and implement tools, or enhance existing ones, ensuring compliance to standards (e.g. interoperability, data, privacy etc)
- Digital upskilling of healthcare providers, and awareness among population
- Monitor the use of self-care tools, compliance to standards and the return on investment

Impact on Strategic Direction

- Direct impact on the ability to expand accessibility to person centric health and wellness services through the use of self care tools available to the user through mobile applications
- Direct impact on the improved delivery of the New MoC by leveraging virtual care solutions to promote preventative health, as well as bringing care closer to the individual
- Direct impact on empowering healthcare ecosystem to use data for informed decision making as patient become more and more engaged in their healthcare management
- Direct impact on driving adoption of innovative digital health technologies such as using wearables, and self-care tools in day to day life

Interdependencies

- Create UI/UX Person-centered Design Standards and Guidelines
- Define Digital Health Privacy and Consent Management Regulations and Policies
- Set Data Governance Strategy and Streamline Data Standards and Governance Policies/Procedures
- Create Digital Health Awareness Strategy and Digital Health Inclusion Guidelines

Program benefits and outputs

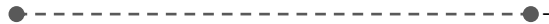
- Patients will be more involved in their healthcare management of existing illnesses, thus promotes patient empowerment, which leads to better health outcomes
- Decrease the burden of chronic diseases in the society by preventing health risks and promoting healthy lifestyle for users of self-care tools and technologies
- Reduction in overall healthcare costs to society
- Enhanced ability of patients to interact with their healthcare providers via multiple channels
- Self-care tools may lead to faster diagnosis due to increased engagement with healthcare system and providers, thus better outcomes of care for individuals
- Individuals may be able to better manage existing healthcare conditions, reducing avoidable and unnecessary visits to healthcare facilities

Implementation Analysis

Classification:	MoH 2.0 (possibly MoH 3.0)
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health, Clusters
Estimated Budget:	SAR 100m
	■ Wave 1
Roadmap wave(s):	
Duration:	2 Years

Person Centricity

Delivery and Access
Population Engagement and Wellness
Hajj and Umrah
Privacy



Conduct Hajj and Umrah Readiness

Conduct Hajj and Umrah Readiness

Overview

A cross-cutting program that facilitates the use of Digital Health for a particular for pilgrims and holy visitors. Whether it's Umrah pilgrims throughout the year, or a large group of Hajj Pilgrims once a year, this program will set out all of the requirements. This may include the use of electronic health records for the pilgrims, setting up remote care on in those holy regions where the pilgrims will reside and the installation of emergency transportation systems for Hajj areas

Key Projects and Milestones

- o Detailed strategy outlining how digital health can be used to serve pilgrims for Umrah and Hajj
- o Deploy relevant tools and solutions and define processes for the use of digital health for Pilgrims
- o Monitor the impact of digitising for providing healthcare to pilgrims
- o Supply, installation and maintenance of emergency transportation systems for Hajj areas (Makkah Al-Mukarramah, the Holy Places, Madinah, Jeddah and Taif) with the provision of technical support service

Impact on Strategic Direction

- o Focusing on person-centricity, it is important to consider those Digital Health requirements for such as large group of visitors/pilgrims
- o This program is also crucial for the Kingdom's overall vision to continue its role as a religious and cultured national

Interdependencies

- o Define Digital Health Privacy and Consent Management Regulations and Policies

Program benefits and outputs

- o Creating an equitable ecosystem that ensure that pilgrims benefit from the Digital Health efficiencies
- o Optimization of resources for the MoH facilities during periods where there is such a surge usage. I.e by leveraging the in house application to record the data of staff working in field hospitals during the Hajj season
- o Preparing to use digital tools where possible (e.g. remote care)

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 30m
	Wave 1
Roadmap wave(s):	
Duration:	2 Years

Person Centricity

Delivery and Access
Population Engagement and Wellness Tools
Hajj and Umrah

Privacy



Define Digital Health Privacy and Consent Management Regulations and Policies

Define Digital Health Privacy and Consent Management Regulations and Policies

Overview

The purpose of this initiative is to define and detail the digital health privacy and consent management regulations, policies and guidelines that digital health solutions, tools and applications should follow to ensure the correct sharing and use of patient's data. In alignment with MoH Cyber Security department policies , NCA and global best practices such as HIPAA and GDPR.

Key Projects and Milestones

- Define digital health privacy and consent management policies
- Share and publish digital health privacy and consent management policies

Impact on Strategic Direction

- Direct impact on the strategic objective to increase secured accessibility to health information, with the appropriate privacy controls.

Interdependencies

- No major Interdependencies for this program

Program benefits and outputs

- Systems to manage consumer privacy through consent, opt in/opt out or similar mechanisms & to secure information across solutions
- Health regulators need to ensure that privacy, data ownership and consent rules to cope with the shift to new technologies and consumer empowerment

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 5m
	■ Wave 1
Roadmap wave(s):	
Duration:	1 Years

Healthcare and Wellness Providers

Connected Care
Specialised Care
Public Health
Business Services Capabilities

Healthcare and Wellness Providers

Connected Care

Specialised Care

Public Health

Business Services Capabilities

- *Deploy and Enhance HIS/EMR*
- *Deploy and Enhance RIS & PACS*
- *Deploy and Enhance Labs and Blood Banks*
- *Deploy and Enhance Provider Virtual Care Platforms and Tool*
- *Define Strategy to Enhance and Connect E-services*

Deploy and Enhance HIS/EMR*

Overview

This is an ongoing initiative to complete the deployment of HIS waves in MoH hospitals. This is also related to the HIS deployed in the PHC clinics. The program will be in alignment with the operational capabilities and corporatization efforts with the cluster, in alignment with the Nphies national HIE project across the kingdom and will include the HIS registry system.

Key Projects and Milestones

- Deploy and enhance HIS Hospital waves Project
- Deploy and enhance HIS PHC clinics Project

Impact on Strategic Direction

- Direct enabler for the strategic goal to empower a secure, integrated, and data-driven health ecosystem.
- Direct impact on enhance user experience and usability of digital health solutions.
- Also on to ensure the improved delivery of the New MoC through digital health.

Interdependencies

- Deploy and Enhance Infrastructure
- Define Integration Standards and Guidelines
- Plan Clinical Integration and Interoperability fabric

Program benefits and outputs

- All Saudi public hospitals meet a minimum standard of digital health capabilities, including HIS and ancillary support systems (lab, pharmacy, radiology, etc.)
- Reduced medical error and duplication of services
- Increased healthcare service efficiency and access to health information

Implementation Analysis

Classification:	MoH 2.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	Clusters, ITS
Estimated Budget:	SAR 3,480m
	Wave 1
Roadmap wave(s):	
Duration:	1 Year

*This program should be aligned with Cluster's requirements to avoid systems discrepancy and replacement after implementation. And shall consider current the transitions to 2.0 and 3.0 across all entities, their maturity and the continuity of care.

Deploy and Enhance RIS & PACS

Overview

This is an ongoing initiative to complete national deployment of PACS, including specialized PACS such as dental, ophthalmology, cardiac PACS. The program will be in alignment with the operational capabilities and corporatization efforts with the clusters. Also, in alignment with the Nphies national HIE project across the kingdom. It includes the deployment of PACS into those facilities that currently do not have the system, as well as upgrading and enhancing less mature PACS.

Key Projects and Milestones

- Deploy and enhance national RIS/PACS
- Deploy and enhance national RIS/Dental PACS
- Deploy and enhance national RIS/Ophthalmology PACS
- Deploy and enhance national RIS/Cardiac PACS

Impact on Strategic Direction

- Direct enabler for the strategic goal to empower a secure, integrated, and data-driven health ecosystem.
- Direct impact on enhance user experience and usability of digital health solutions.
- Also on to ensure the improved delivery of the New MoC through digital health.

Interdependencies

- Deploy and Enhance Infrastructure
- Define Integration Standards and Guidelines
- Plan Clinical Integration and Interoperability fabric
- Deploy and Enhance HIS/EMR

Program benefits and outputs

- All Saudi public hospitals meet a minimum standard of digital health capabilities, including HIS and ancillary support systems (lab, pharmacy, radiology, etc.)
- Reduced medical error and duplication of services
- Increased healthcare service efficiency and access to health information

Implementation Analysis

Classification:	MoH 2.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	Clusters, ITS
Estimated Budget:	SAR 830m
	■ Wave 1
Roadmap wave(s):	
Duration:	5 Years

Deploy and Enhance Labs and Blood Banks

Overview

The program is to complete the national LIS and Blood Banks deployment and set the relevant policies and guidelines. It will focus on utilising digital health technologies for all aspects, including: centralized and regional labs and blood bank. This program will also cover current Moh projects to provide medical examinations to government agencies from ministry of health facilities.

Key Projects and Milestones

- Identify the progress of deployment a National Lab Information System (LIS) and blood banks

Impact on Strategic Direction

- Direct impact on the strategic objective to ensure the improved delivery of the New MoC through digital health

Interdependencies

- Deploy and Enhance Infrastructure
- Define Integration Standards and Guidelines
- Plan Clinical Integration and Interoperability fabric
- Deploy and enhance HIS/EMS

Program benefits and outputs

- A national Lab Information System (LIS) will streamline the operations of laboratories bring efficiencies to daily tasks.
- Digitising labs and blood banks will also provide data in a structured way in order to increase the quality of results etc.

Implementation Analysis

Classification:	MoH 2.0
Current Owner:	Business: Center of Excellence
	Delivery:
	MoH Digital Health (with support from CoE)
Candidate Owner:	ITS, Clusters
Estimated Budget:	SAR 310m
	■ Wave 1
Roadmap wave(s):	
Duration:	3 Years

Deploy and Enhance Provider Virtual Care Platforms and Tools

Overview

Implement or enhance existing digital platforms and tools for the purpose of supporting healthcare services, that involve direct interaction between healthcare providers. These may be implemented at national level or cluster level, depending on the requirement of the healthcare providers, and the business owners. This program enables various applications such as tele-ICU, teleradiology, tele-pathology, tele-cardiology, and other telemedicine solutions.

Impact on Strategic Direction

- Direct impact on ensure the improved delivery of New MoC as
- Direct impact on ensure financial sustainability of digital health, as solutions and technologies can be used for resource optimization, thus reducing the need to hire specialists at every facility.
- Direct impact on improve digital health skills and competencies to enable digital transformation, as these solutions promote standardization of care and facilitates knowledge sharing between providers

Program benefits and outputs

- Cost avoidance of hiring specialists at every facility
- Resource optimization as specialists may provide their expertise remotely, increasing their ability to cater to higher volume of patients without the need for re-location
- Reduced unnecessary transfer of patients to higher facilities to receive care from specialists, thus driving down costs as well as burden on family members
- Improved quality of care, patient safety and standardization as specialist oversight is available at any facility, specially benefitting remote locations
- Improved patient satisfaction as they receive care faster and experience better outcomes, such as reduced length of stay in hospital, reduced complication rates

Key Projects and Milestones

- Assess pilots and study past experiences and lessons learnt
- Feasibility study for provider virtual care platforms and tools
- Design and implement, or enhance existing tools and platforms, ensuring compliance to standards (e.g. interoperability, data, privacy etc)
- Digital upskilling of healthcare providers to enhance physician's acceptance
- Monitor the use of virtual care platforms and tools, compliance to standards and the return on investment

Interdependencies

- Deploy and Enhance Infrastructure
- Create UI/UX Person-centered design standards & guidelines
- Define Digital Health Privacy and Consent Management Regulations and Policies
- Set Data Governance Strategy and Streamline Data Standards and Governance Policies/Procedures
- Define Digital Health Policy and Regulations, Governance and Monitoring Compliance Framework

Implementation Analysis

Classification:	MoH 2.0
Current Owner:	Business: MoH Digital Health <i>(with support from CoE)</i>
	Delivery:
	MoH Digital Health <i>(with support from CoE)</i>
Candidate Owner:	ITS, Clusters
Estimated Budget:	SAR 480m
	Wave 1
Roadmap wave(s):	
Duration:	2 Years

Define Strategy to Enhance and Connect E-services

Overview

A program to define the strategy for continuous enhancement, integration and connection of e-services such as e-prescription, e-referral etc. The program will be aligned with the current project for enhancement of the 'Unified Referral System Platform'

Key Projects and Milestones

- Identify all e-services that can be enhanced and connected
- Define strategy to connect e-services
- Facilitate the connection of all e-services (ie. to create and omni-channel experience)
- Communicate with end-users

Impact on Strategic Direction

- Direct impact on the ability to enhance user experience and usability of digital health solutions
- Direct impact on the improved delivery of the New MoC through digital health due to the ability to reduce human errors in prescriptions and reduce the time taken to process referrals.
- Indirectly impact the objective to increase secured accessibility to health information, with the appropriate privacy controls

Interdependencies

- Create UI/UX Person-centered Design Standards and Guidelines

Program benefits and outputs

- Consolidating national e-services would enable healthcare providers to facilitate seamless transition of patients from one facility to another, or from virtual clinic to an in-person specialist visit. Through one portal using referral systems and electronic prescriptions, the patient journey can be documented comprehensively with a clear record any medications.

Implementation Analysis

Classification:	MoH 2.0
Current Owner:	Business: MoH Digital Health (support from Referral Centre)
	Delivery:
	MoH Digital Health
Candidate Owner:	ITS, Clusters
Estimated Budget:	SAR 20m
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Roadmap wave(s):	
Duration:	2 Years

Healthcare and Wellness Providers

Connected Care
Specialised Care
Public Health
Business Services Capabilities



- *Deploy Mental Health Solutions and Tools*
- *Enhance Family Care Solutions and Tools*
- *Enhance Long-term Care Solutions and Tools*
- *Enhance Digitisation of Other Specialised Care Solutions*

Deploy Mental Health Solutions and Tools

Overview

This program oversees the use of Digital Solutions for the provision of Mental Health care and support at a national level. A solution can be deployed on a national level, which would supports activities such as patient record keeping and scheduling for mental health facilities and could cover the delivery of community mental health, inpatient mental health, outpatient mental health and substance used disorder. It will also cover any remote care solutions related to mental health.

Key Projects and Milestones

- Strategy/plan to define the digital health requirements to provide mental health care and wellness program throughout the nation
- Procurement and implementation of any solutions or applications
- Communication strategy for awareness of mental health digital solutions to encourage the adoption of these for preventive care and wellness

Impact on Strategic Direction

- Direct impact on the objective to ensure the improved delivery of the New MoC through digital health
- Through digital health solutions, this would also impact the ability to expand accessibility to person centric health and wellness services

Interdependencies

- Deploy and Enhance HIS/EMR
- Deploy and Enhance Infrastructure
- Define Digital Health Privacy and Consent Management Regulations and Policies

Program benefits and outputs

- A national program that providers care and wellness tools relating to mental health continuously and through remote means can help tackle the availability of mental health care through the Kingdom.
- Using a mental health tool with structured data will facilitate the use of data for mental health care and wellness, and will be able to offer educational content to national to empower them to look after their mental health.
- Over time, through structure data and AI, the solution will also be able to offer predictive capabilities in order for healthcare providers to proactively reach out to those individuals that are potentially at risk at having mental health problems

Implementation Analysis

Classification:	MoH 2.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	ITS, Clusters
Estimated Budget:	SAR 20m
	Wave 1
Roadmap wave(s):	
Duration:	2 Years

Enhance Family Care Solutions and Tools

Overview

A program that covers all aspects of family care and will include all family related projects; from marriage solutions, to women and children applications, as well as new born solutions. This program will facilitate care and wellbeing from birth to death to ensure holistic care and detailed health record keeping through an individual's life.

Key Projects and Milestones

- Strategy/plan to define how digital health can help from birth to death for all family members
- Design and implement relevant solutions and applications, ensuring standards are adhered to (e.g. interoperability and data)

Impact on Strategic Direction

- Direct impact on the objective to ensure the improved delivery of the New MoC through digital health
- Through digital health solutions, this would also impact the ability to Expand accessibility to person centric health and wellness services

Interdependencies

- Deploy and Enhance HIS/EMR
- Deploy and Enhance Infrastructure
- Define Digital Health Privacy and Consent Management Regulations and Policies

Program benefits and outputs

- An inclusive family orientated ecosystem where holistic care can be provided through digital means. Using digital tools for every steps of a humans life, provides the ability to collect a comprehensive electronic medical record for the individual, hence providing better personalised care in future.

Implementation Analysis

Classification:	MoH 2.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	ITS, Clusters
Estimated Budget:	SAR 40m
	Wave 1
Roadmap wave(s):	
Duration:	2 Years

Enhance Long-term Care Solutions and Tools

Overview

A program to focus on the needs of the population relating to chronic disease and elderly care and how national digital solutions and tools can help. The strategy will identify what solutions are required to provide enhanced long-term care, either using data to provide better care, using virtual appointments for check-ins or through remote patient monitoring.

Key Projects and Milestones

- Strategy/plan to define the digital health requirements to provide long term care
- Procurement and implementation of any solutions or applications
- Communication strategy for awareness of mental health digital solutions to encourage the adoption of these for preventive care and wellness

Impact on Strategic Direction

- Directly impacting the ability to expand accessibility to person centric health and wellness services
- Directly impacting the improved delivery of the New MoC through digital health

Interdependencies

- Deploy and Enhance HIS/EMR
- Deploy and Enhance Infrastructure
- Define Digital Health Privacy and Consent Management Regulations and Policies

Program benefits and outputs

- Ensuring the health ecosystem to be able to offer long term care through digital means, resulting in the ability to offer continuous remote care (rather than human check ups periodically through the day), as well as remote monitoring of health to react quicker within emergencies

Implementation Analysis

Classification:	MoH 2.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	ITS, Clusters
Estimated Budget:	SAR 40m
	■ Wave 1
Roadmap wave(s):	
Duration:	2 Years

Enhance Digitisation of Other Specialised Care Solutions

Overview

Program to identify any further national solutions that will be procured and deployed by MoH prior to its full transition to MoH 3.0, this may include medication management, oncology solutions, etc.

Key Projects and Milestones

- Strategy/plan to define the required specialised digital health solutions on a national level
- Design and implement relevant solutions and applications, ensuring standards are adhered to (e.g. interoperability and data)

Impact on Strategic Direction

- Directly impacting the objective to ensure the improved delivery of the New MoC through digital health
- The deployment of specific digital healthcare solutions relates to the objective to drive value and adoption of innovative digital health technologies and solutions throughout health care as the Ministry deploys national solutions

Interdependencies

- Deploy and Enhance HIS/EMR
- Deploy and Enhance Infrastructure
- Define Digital Health Privacy and Consent Management Regulations and Policies

Program benefits and outputs

- As other specialised systems are digitised, it will increase the efficiency and quality of healthcare. For example, the use of a digital medications management solution can reduce the risk of provider errors with prescriptions, whilst also controlling and monitoring the patients dosage and repeat-prescriptions.
- At a point in time when all solutions are digitised, this would result in more accurate and structured collective data and detailed medical records (reports and images/x rays) from all specific and specialised care solutions, therefore providing the potential increase in quality of healthcare for individuals

Implementation Analysis

Classification:	MoH 2.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	ITS, Clusters
Estimated Budget:	SAR 50m
	■ Wave 1
Roadmap wave(s):	
Duration:	2 Years

Healthcare and Wellness Providers

Connected Care
Specialised Care
Public Health

Business Services Capabilities

- Define Strategy to Enhance Communicable Disease Solutions
- Define Strategy to Enhance Non-Communicable Disease and Toxicology Solutions
- Define Strategy and Enhance Preventative Screening Tools
- Define Strategy for Digitising Population Health

Define Strategy to Enhance Communicable Disease Solutions

Overview

This strategy will be focused on communicable diseases, detailing how digital health can help. The program will also facilitate the enhancement of communicable disease solutions, the innovation of further digital solutions and tools, and also detail how to use data to combat and manage communicable diseases.

Key Projects and Milestones

- Strategy/plan to how digital health will be used to manage communicable diseases
- Updated current solutions or design and implement new solutions and applications, ensuring standards are adhered to (e.g. interoperability and data)
- Communication strategy for awareness of the population to use these digital health solutions to manage communicable diseases

Impact on Strategic Direction

- Direct impact on the improved delivery of the New MoC through digital health
- Impact on the strategic objective to empower the healthcare ecosystem to use data for informed decision making, as the strategy and solution should be linked to individual's information and health records to proactively pre-empt the onset of non-communicable disease as well as manage the disease effectively.

Interdependencies

- Deploy and Enhance HIS/EMR
- Define Digital Health Privacy and Consent Management Regulations and Policies
- Define Digital Health Open Data Policy & Standards

Program benefits and outputs

- This program will enhance any current communicable disease digital tools. Given the recent 2020 Covid-19 pandemic, this program is very relevant and can be accelerated with recent digitisation of applications.
- The strategy will focus on consolidated tools that are already available (e.g. Covid-19 Tracking Apps), whilst also enhancing these to be used with other communicable diseases in the future. The strategy will also focus on using digital means to push educational content to help raise awareness of communicable diseases and empower the nation to take steps to reduce risks of spreading the disease.

Implementation Analysis

Classification:	MoH 2.0 (potentially MoH 3.0)
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	ITS, Clusters
	(National solutions through MoH Digital Health)
Estimated Budget:	SAR 80m
	Wave 1
Roadmap wave(s):	
Duration:	2 Years

Define Strategy to Enhance Non-Communicable Disease and Toxicology Solutions

Overview

Strategy and plan for the managing and reporting of non-communicable diseases, with an immediate focus on the management of the non-communicable diseases that are currently prevalent and high risk within the Kingdom. This program also includes a focus area on toxicology digital solutions and aligning with the Poison Control Centre.

Key Projects and Milestones

- Strategy highlighting how digitisation can be beneficial
- Design and implement Digital Health tools for management of non-communicable diseases and toxicology research
- Communication strategy for awareness to entice the population to use the digital health tools

Impact on Strategic Direction

- Direct impact on the strategic objective to ensure the improved delivery of the New MoC through digital health, as the strategy and solutions will provide new ways of managing disease.
- Impact on the strategic objective to empower the healthcare ecosystem to use data for informed decision making, as the strategy and solution should be linked to individual's information and health records to proactively pre-empt the onset of non-communicable disease as well as manage the disease effectively.

Interdependencies

- Deploy and Enhance HIS/EMR
- Define Digital Health Privacy and Consent Management Regulations and Policies
- Define Digital Health Open Data Policy & Standards

Program benefits and outputs

- Effectively managing non-communicable diseases and increasing toxicology research can drastically reduce death rates in the Kingdom.
- The strategy and solutions will be able to highlight links between different non-communicable diseases within the population (e.g. having X communicable disease would increase the likeliness of having Y disease), and therefore provide proactive wellness services as well as reactive care.
- With a well defined communication and awareness strategy, the tools for managing non-communicable diseases can empower the population to better care for themselves

Implementation Analysis

Classification:	MoH 2.0 (potentially MoH 3.0)
Current Owner:	Business: MoH Digital Health Delivery:
Candidate Owner:	MoH Digital Health ITS, Clusters (National solutions through MoH Digital Health)
Estimated Budget:	SAR 20m
Roadmap wave(s):	Wave 1
Duration:	2 Years

Define Strategy and Enhance Preventative Screening Tools

Overview

Program for national screening strategies and solutions, including cancer screening programs.

Key Projects and Milestones

- Define strategy to determine how digital health can assist with preventative screening (including, solutions, applications, use of data, etc.)
- Deploy the digital health tools and solutions required
- Develop communication strategy to increase population's awareness to use preventative tools

Impact on Strategic Direction

- Directly impacting the accessibility to person centric health and wellness services through preventative digital tools and applications
- Directly impact the improved delivery of the New MoC through digital health by digitising the communications for preventive screening awareness
- Impact on empowering the healthcare ecosystem to use data for informed decision making

Interdependencies

- Define Digital Health Privacy and Consent Management Regulations and Policies
- Define Digital Health Open Data Policy & Standards
- Set Guidelines for Data & Analytics and Implement Tools

Program benefits and outputs

- A data driven Kingdom where statistics facilitate the ability to provide preventative care specific to the health care issues of the region
- Using digitisation to notify and prompt the population to take preventative screening in order to improve the amount and frequency of screening
- A proactive health ecosystems using an individual's data and health record to target the preventative screening (e.g. by age or previous health conditions)

Implementation Analysis

Classification:	MoH 2.0 (potentially MoH 3.0)
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	ITS, Clusters
	(National solutions through MoH Digital Health)
Estimated Budget:	SAR 25m
	■ Wave 1
Roadmap wave(s):	
Duration:	2 Years

Define Strategy for Digitising Population Health

Overview

A program to focus on the requirements of population health in order to improve health outcomes of the Kingdom whilst improving efficiencies and reducing the total costs. The program will include the strategy to use data for health risks stratification, the relevant policies for population health surveillance and health risks stratification as well as the solutions and tools required to optimise population health.

Key Projects and Milestones

- Define the strategy for population health
- Identify the data and tools required to provide population health, e.g. population data, BI tools, risk stratification methods
- Detail the process for providing population health measures for those areas in need of intervention (e.g. through the clusters, or through a national project)

Impact on Strategic Direction

- Direct impact on the strategic objective to ensure the improved delivery of the New MoC through digital health
- Impacts the empowerment of the healthcare ecosystem to use data for informed decision making

Interdependencies

- Set Guidelines for Data & Analytics and Implement Tools
- Define Digital Health Open Data Policy & Standards

Program benefits and outputs

- In order for population health to be optimised, this program will provide the strategy to aggregate all population's data in order for it to be analysed effectively through data tools. It will not only provide the providers guidelines for those problematic areas to target, it will also provide guidelines and a plan to increase patient engagement by publishing population data and reports in order to encourage self-care from individuals.
- A data driven Kingdom where statistics facilitate the ability to provide care and wellness specific to the health care issues of the region
- A the population health strategy can focus on the nation and geographic populations whilst also identifying groups such as employees, ethnic groups, disabled persons, prisoners etc, thereby providing inclusive health and wellness.

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health*
	Delivery:
	MoH Digital Health*
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 5m
	Wave 1
Roadmap wave(s):	
Duration:	2 Years

*Ownership is shared between Payer, Provider & Regulator

Healthcare and Wellness Providers

Connected Care
Specialised Care
Public Health

Business Services Capabilities



Deploy and Enhance Enterprise Management Solutions

Deploy and Enhance Enterprise Management Solutions

Overview

The program includes projects provided by the MoH Digital Health to the Ministry to standardize and automate operations using different tools, to develop new capabilities that weren't economically feasible with manual labor. There are many solutions that this program will oversee, including: Mobile Supply Chain, Enterprise Asset Management, Enterprise Performance Management, Enterprise Facility Management, Enterprise Talent Management, Robotic Process Automation (RPA), e-claims solutions and ITSM. The program will also cover the strategy, tools and procedures for analysing health services as well as ensuring the readiness of health facilities

Key Projects and Milestones

- Conduct feasibility assessments for each of the solutions suggested
- Develop the solutions and implement throughout the facilities
- Ensure all solutions are interoperable and adhering to standards
- Confirm the level responsible for operation and maintenance of each solution
- Enhance and advance enterprise management solutions through the use of IoT

Impact on Strategic Direction

- The program indirectly impacts multiple strategic objectives. standardizing operations can help ensure governance and collaborative delivery of digital health initiatives

Interdependencies

- No major Interdependencies for this program

Program benefits and outputs

- Increase efficiency and effectiveness through digitizing key functions, hence reducing time and also human errors across business units and enabling cost savings
- Using hyper automation to create a frictionless environment and automate processes in ways that are significantly more impactful than traditional automation capabilities
- Provide the capabilities to standardize output and reporting, hence improving the ease of decision making processes, as well as collating data to analyse the performance of the health provision and costing data in alignment with payers as well as reports of health outcomes
- Potential concerns and risks can be acknowledged faster, hence easing mitigation.
- Provide the solutions as a foundation to use further technology and IoT to enhance effectiveness of the tools

Implementation Analysis

Classification:	MoH 2.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	Clusters, ITS
Estimated Budget:	SAR 135m
	■ Wave 1
Roadmap wave(s):	
Duration:	2 Years

Integrated Ecosystem

Data and Analytics
Interoperability and Integration
Technology and Infrastructure
Security

Integrated Ecosystem

Data and Analytics

● - Interoperability and Integration
- Technology and Infrastructure
- Security

- *Set Data Governance Strategy and Streamline Data Standards and Governance Policies/Procedures*
- *Set Guidelines for Data and Analytics Tools*
- *Define Digital Health Open Data Policy & Standards*

Set Data Governance Strategy and Streamline Data Standards and Policies/Procedures

Overview

As the super regulator in 3.0, the ministry will need to streamline the different data standards, ensure their comprehensiveness and ensure compliance to them. Accordingly, the ministry needs to set a data governance strategy, that identifies the different data custodians, regulators, and other data projects and the data identification, storage and sharing processes within the stakeholders. The ministry would also be setting the policies and procedures pertaining to data governance

Key Projects and Milestones

- Develop a data strategy for data management across regulators, providers and payers and define the data governance framework to govern the interaction between healthcare entities
- Align with relevant entities including (NDMO and NHIC)
- Streamline data standards for healthcare, in alignment with NHIC and along with the Data office. Streamline all standards and translate to health standards

Impact on Strategic Direction

- This program directly impacts the strategic goal to empower a secure, integrated, and data-driven health ecosystem, with all its strategic objectives:
 - Ensure availability and adherence to digital health data and interoperability standards
 - Increase secured accessibility to health information, with the appropriate privacy controls
 - Empower the healthcare ecosystem to use data for informed decision making

Interdependencies

- No major Interdependencies for this program

Program benefits and outputs

- This program is critical to enable a data driven health ecosystem. By setting the required governance measures and standards to data across its value chain, data can be used to make informed decisions within the relevant privacy and security measures.
- The program is also key in establishing MoH as a super regulator and removing the burden on the facilities from reporting to multiple entities on different data aspects

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 10m
	■ Wave 1
Roadmap wave(s):	
Duration:	5 Years

Set Guidelines for Data & Analytics and Implement Tools

Overview

This program will set guidelines for departments and entities to ensure the availability of the tools, that are required to use data, including, infrastructure, warehouses, data lakes, BI and analytics tools and endpoints. This program will not cover only the guidelines for collecting data and making reports, but also using data tools for making clinical decisions. This program will also cover the implementation of some data and analytics tools where needed, to ensure that MoH can act as a regulator and that the MoH facilities are equipped to use data.

Key Projects and Milestones

- Set guidelines for data and analytics tools
- Implement guidelines to ensure the availability and compliance of analytics and BI tools
- Align with National Health Observatory Project

Impact on Strategic Direction

- Direct impact on the strategic objective to empower the healthcare ecosystem to use data for informed decision making, through setting the guidelines for effective data and analytics tools

Interdependencies

- No major interdependencies for this program

Program benefits and outputs

- Clear guidelines will assist MoH and the healthcare providers to understand what tools are needed to be able to use data effectively within their practice
- With standardised guidelines, all of the healthcare facilities will be able to collectively use data to their advantage, whilst understanding what tools other facilities within the Ministry are utilising. Standardised guidelines would also provide opportunities for economies of scale should the facilities share data tools where possible

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery: MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 120m
Roadmap wave(s):	Wave 1 Wave 2 Wave 3
Duration:	4 Years

Define Digital Health Open Data Policy & Standards

Overview

A program to define the Digital Health open data policy and standards in alignment with e-gov open data policy. This will facilitate the proactive release of selected open data with specific methods of prioritisation for that data. Throughout the program there will be a key focus on the build of processes to appropriately safeguard sensitive information.

Key Projects and Milestones

- Draft and prepare open data policy
- Draft and prepare open data standards
- Share and publish policy and standards
- Monitor the compliance to the open data policy and standards
- Identify the key registries where the open data is available

Impact on Strategic Direction

- Direct impact on the objective to empower the healthcare ecosystem to use data for informed decision making whilst also impacting the secured accessibility to health information, with the appropriate privacy controls
- Impact on the improved delivery of the New MoC through digital health as the use of open data would bring new research to health care and hence potentially improving health care delivery

Interdependencies

- Set Data Governance Strategy and Streamline Data Standards and Governance Policies/Procedures
- Set Guidelines for Data & Analytics and Implement Tools

Program benefits and outputs

- The strategy is required for the Kingdom to be able to use data in a meaningful way to improve healthcare, using anonymous data where required and whilst protecting the privacy of the owner
- Open data in healthcare, provides valuable information on symptoms, diseases (communicable and noncommunicable), diagnosis and treatments etc, therefore it is crucial that the standards to policies to collect and use this data are set to ensure effective use for research and also potentially improving health and wellness of individuals

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery: MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 10m
Roadmap wave(s):	Wave 2 Wave 3
Duration:	2 Years

Integrated Ecosystem

Data and Analytics
Interoperability and Integration
Technology and Infrastructure
Security



Define Integration standards and guidelines
Plan Clinical Integration and Interoperability Fabric
Plan Integration with External Entities

Define Integration Standards and Guidelines

Overview

This initiative is related to defining and sharing integration standards and guidelines to facilitate an integrated digital health landscape across MoH. In addition, aligning with NHIC in complying with integration standards (such as HL7, FHIR, DICOM etc.) published by NHIC. Implement a compliance program to test implementation of integrations standards by vendors and organizations such as HL7 and IHE.

Key Projects and Milestones

- Draft and prepare national integration standards and guidelines
- Implement a compliance program to test implementation of integration standards
- Share and publish national integration standards and guidelines

Impact on Strategic Direction

- Direct impact on the strategic objective to ensure availability and adherence to digital health data and interoperability standards
- Direct impact on the strategic objective to empower the healthcare ecosystem to use data for informed decision making.

Interdependencies

- No major interdependencies for this program

Program benefits and outputs

- Through this program a standardised integrated ecosystem can be formed, using the guidelines and standards set.
- In order to connect all healthcare facilities, clusters and the ministry, it is important that this program is deployed and standards are defined and adhered to, hence making it easier to create a connected ecosystem.
- This program is not only key for the connection of facilities, it is also crucial for new solutions and tools intra-facility to be adhering to the standards defined by this program to reduce the number of siloed solutions within a facility, hence reducing the need for manual reporting or transfer of data etc.

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery: MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 10m
Roadmap wave(s):	Wave 1 Wave 2 Wave 3
Duration:	4 Years

Plan Clinical Integration and Interoperability Fabric

Overview

This program relates to integration planning throughout the Kingdom; intra-facilities, cross-facility and with MoH and other entities. It includes setting the guidelines to use interoperability fabric inline with the National Reference Digital Health Blueprint, designing and implementing cluster Interoperability Fabric to cover complex integration needs of the cluster. It enables integration between clinical and non-clinical solutions.

Key Projects and Milestones

- Draft and prepare integration planning approach and plan
- Test and deploy cluster Interoperability Fabric per the plan

Impact on Strategic Direction

- Direct impact on the strategic objective to empower the healthcare ecosystem to use data for informed decision making.

Interdependencies

- Define Integration Standards and Guidelines
- Deploy and Enhance HIS/EMR
- Deploy and Enhance RIS & PACS
- Test and Enhance Infrastructure Readiness

Program benefits and outputs

- Integrating all healthcare organizations in the Kingdom across all healthcare
- Enhancing and expanding to connect all healthcare facilities using an integrated and secure network
- This is crucial for the ability to connect facilities, clusters, Holding Company and the Ministry in order to be able to complete the MoH 3.0 transition in a smooth process. Clusters will need to report to the HHC, whilst MoH as a super regulator will need to access certain data and information from the Clusters and HHC to regulate effectively, hence the integration and interoperability fabric will be the key to nationwide connections.

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery: MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	Wave 1 SAR 590m
Roadmap wave(s):	
Duration:	2 Years

Plan Integration with External Entities

Overview

This program focuses on the integration of MoH and its facilities with external entities (including sister-entities), not only focusing on other healthcare entities, but also non-health related entities. For example integrating with the Ministry of Interior, Finance and Justice. This program will also include projects for inter-agency interconnection and operation.

Impact on Strategic Direction

- Impacts all strategic objectives that will at some point required input or exchange with other entities

Program benefits and outputs

- Integrating all healthcare organizations in the Kingdom across all healthcare
- Enhancing and expanding to connect all healthcare facilities using an integrated and secure network
- This is crucial for the ability to connect MoH and its facilities to external entities to enhance healthcare throughout the whole Kingdom

Key Projects and Milestones

- Draft and prepare external integration approach and plan
- Identify all external entities that required integration with MoH
- Align integration standards and other standards related to sharing of data and open data
- Continuously review the requirement to integrate with other entities to ensure relevant connections are made as new entities are created

Interdependencies

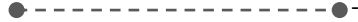
- Infrastructure Deployment and Enhancement
- Define Integration Standards and Guidelines
- Plan Integration and Interoperability Fabric
- Define Digital Health Open Data Policy & Standard
- Set Data Governance Strategy and Streamline Data Standards and Governance Policies/Procedures

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	MoH Department budget covers this
program	■ Wave 1
Roadmap wave(s):	
Duration:	2 Years

Integrated Ecosystem

Data and Analytics
Interoperability and Integration
Technology and Infrastructure
Security



- *Deploy and Enhance Infrastructure*
- *Develop Applications and Software*
- *Define Strategy and Policies for Cloud Technology*
- *Conduct Virtual Care Maturity Assessment*

Deploy and Enhance Infrastructure

Overview

A program to ensure the infrastructure is sufficient for the deployment of digital health solutions, to deploy required infrastructure and enhance any existing infrastructure. This includes ICT infrastructure projects for hospitals, PHCs, clusters and overall foundational infrastructure, which is crucial not only to deploy solutions, but also to be able to exchange data, enable cloud technology, ensure business resilience and security and IAM.

Key Projects and Milestones

- Establish the minimum infrastructure requirements to deploy the foundational backbone of digital health solutions such as HIS and to be able to connect with the health information exchange
- Complete project to check and upgrade (where required) the infrastructure of all facilities, document all facilities infrastructure abilities for future reference.
- Monitor the infrastructure readiness as further digital health solutions are deployed and infrastructure requirements may change

Impact on Strategic Direction

- This program indirectly impacts most of the strategic objectives due to the fact that if the infrastructure is not readily available and up to a specific standards, then the digital health tools will not be able to be deployed, there will be no ability to share data and new technologies and innovation will not be implemented successfully.

Interdependencies

- No major interdependencies for this program

Program benefits and outputs

- The main outcome and benefits of this program is to ensure the deployment of digital health solutions and tools is not held up by lack of digital infrastructure within the facilities and the ministry, thereby contributing to the drive of transformation in an efficient manner.
- By being proactive and testing the infrastructure readiness, this will provide valuable information hence assisting a smooth deployment of more advanced digital health solutions in the future (e.g. virtual care or using AI)

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery: MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	Wave 1 SAR 950m
Roadmap wave(s):	
Duration:	1 Year

Develop, Deploy and Enhance Applications and Software

Overview

A program outlining the strategy and processes of application and software development through MoH Digital Health, including business driven components through thorough alignment and accommodation of business needs. This program does not only reflect the development of new applications, it also sets the strategy and process for additional modules and enhancement of existing systems

Key Projects and Milestones

- Define strategy for approach to creating applications
- Define business needs case template and a prioritization guidelines
- Socialise the strategy and processes guidelines with all business owners (e.g. clinical staff)
- Monitor the application and software development, including measuring the impact and users experience.

Impact on Strategic Direction


- This program impacts all of the Strategy Goals, as the it will cover the person-experience through applications, it will give provider's the tools and applications needed by the citizens, providers and administrative MoH Staff as well as supporting the Digital Health foundations and contributing to a connected ecosystem

Interdependencies

- No major interdependencies for this program

Program benefits and outputs

- A program to oversee the development of new applications and software in order to align on budget asks, business needs and implementation requirements linked to standards and policies in a comprehensive manner
- Part of the program will focus on the continuous enhancing of existing applications and software and will provide a means to track this advancement

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery: MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	MoH Department budget covers this program
Roadmap wave(s):	
Duration:	3 Years

Define Strategy and Policies for Cloud Technology

Overview

This initiative is related to defining the strategy for the use of Cloud technology within healthcare in KSA, in alignment and compliance with the KSA Cloud First Policy from the Ministry of Communications and Information Technology. It includes the setup and defining policies and standards for cloud technology scope, migration and usage for MoH HQ departments, clusters and facilities. It will be aligned to current MoH projects such as using a managed services model.

Key Projects and Milestones

- Draft and prepare national healthcare Cloud technology strategy
- Draft and prepare national healthcare Cloud technology policies and standards
- Share and publish national healthcare Cloud technology policies and standards

Impact on Strategic Direction

- Direct impact on the strategic objective expand accessibility to person centric health and wellness services
- Direct impact on drive value and adoption of innovative digital health technologies and solutions

Interdependencies

- No major interdependencies for this program

Program benefits and outputs

- The strategy can identify if cloud computing has significant potential in terms of economic benefits and reduce TCO(Total Cost of Ownership) for some solutions or applications
- The strategy can identify if cloud computing can provide technical or architecture benefits or strengths

Implementation Analysis

Classification: MoH 3.0
 Current Owner: Business: MoH Digital Health
 Delivery: MoH Digital Health
 Candidate Owner: MoH Digital Health
 Estimated Budget: SAR 20m
 Roadmap wave(s): Wave 1 Wave 2 Wave 3
 Duration: 2 Years

Conduct Virtual Care Maturity Assessment

Overview

The program focuses on creating a maturity assessment tool to measure the impact of current virtual care tools, as well as planning the path to increase effective use of virtual care tools throughout the MoH facilities. It will help MoH and facilities understand what their current virtual care capabilities are and how they move forward in advancing the virtual care technology that is used.

Key Projects and Milestones

- Conduct current state assessment of virtual care tools
- Define the dimensions within the tool and consider specific aspects relevant to the nation (e.g. population, providers, tech, data extractions etc)
- Create the tool, assessment framework and roadmap
- Socialise with stakeholders
- Pilot the assessment tool, roll out and analyze results

Impact on Strategic Direction

- Directly impact on the strategic objective to enhance user experience and usability of digital health solutions, as the maturity assessment will provide the pathway to increasing the usability and effectiveness of virtual care tools.

Interdependencies

- No major interdependencies for this program

Program benefits and outputs

- Throughout 2020, there was an increase in the use of virtual care throughout Saudi Arabia (as well as globally), due to the Covid-19 pandemic. This program will provide the ministry with a tool that will measure the maturity of those deployed solutions and virtual care tools to ensure that they are sufficient, as well as providing a roadmap to optimal efficiency and effectiveness of virtual tools within the future.

Implementation Analysis

Classification:	MoH 2.0 (potentially MoH 3.0)
Current Owner:	Business: MoH Digital Health
	Delivery:
	MoH Digital Health
Candidate Owner:	Collective Committee
	(MoH Digital Health, Clusters etc)
Estimated Budget:	Wave 1 SAR 30m
Roadmap wave(s):	
Duration:	2 Years

Integrated Ecosystem

Data and Analytics
Interoperability and Integration
Technology and Infrastructure
Security



Cybersecurity and Security Operations

Cybersecurity and Security Operations

Overview

This initiative relates all security projects, including cyber security and information security in alignment with national security policies and standards. It will include all projects relating to security operations center (SOC), identity access management (IAM) and Cloud-based Security Service. The program will apply the multi-tenancy model for processes and solutions and well as detail the requirements to manage and identify all security risks, threat & remedies. Finally, the program will strive to provide 24/7 support, monitoring and operation throughout the Ministry's network, including hospitals, centers and administrative buildings.

Key Projects and Milestones

- Clean Pipe (cloud-based security services)
- Security Operations Center (SOC)
- Identity Access Management (IAM)

Impact on Strategic Direction

- Direct impact on the strategic objective increase secured accessibility to health information, with the appropriate privacy controls.

Interdependencies

- Plan Clinical Integration and Interoperability Fabric
- Plan Integration with External Entities
- Define Integration Standards and Guidelines
- Deploy and Enhance Infrastructure

Program benefits and outputs

- Enhancing and expanding infrastructure to connect all healthcare facilities using an integrated and secure network
- Effective technical and non-technical security and privacy controls in place to ensure that health information is always secured
- Creating a digital health ecosystem that is secure whilst providing the access to the right information, to the right people when required.

Implementation Analysis

Classification:	MoH 3.0
Current Owner:	Business: MoH Digital Health
	Delivery: MoH Digital Health
Candidate Owner:	MoH Digital Health
Estimated Budget:	SAR 140m
Roadmap wave(s):	Wave 1 Wave 2 Wave 3
Duration:	5 Years

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