Agenda for the
Digital Transformation of the Health Sector in Suriname

Vision 2030: Information Technology to Increase the Human Touch in Health Care

Ministerie van Volksgezondheid

IS4H
Information Systems for Health
Suriname

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Digital Transformation of the Health Sector in Suriname

Vision 2030:
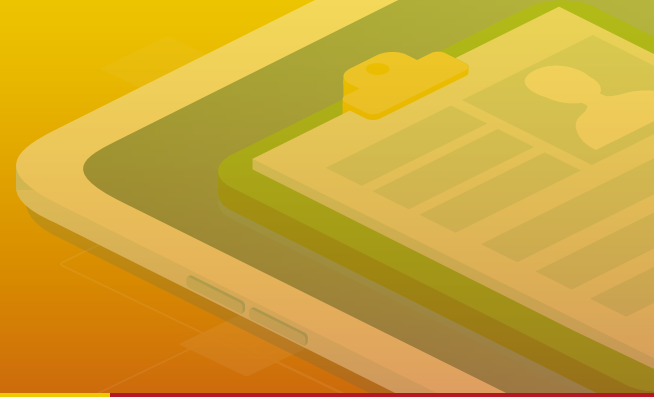## Information Technology to Increase the Human Touch in Health Care

Contents

Foreword: Minister of Health

The Government Declaration 2020-2025 of the Government Santokhi – Brunswijk states the creation of a welfare society through sustainable economic growth. It is therefore also necessary to make health care affordable, available and accessible to every citizen, both for the first, second- and third line healthcare services.

The current situation derived from the COVID-19 pandemic has put all countries and their health information systems to the test. They have been forced to respond to the challenges of public health with the available tools and technological infrastructure. This challenging period confirmed the need to continue working on strengthening the health information systems to guarantee increased capabilities to respond to future health challenges and reduce the digital gaps.

One of the steps undertaken by the Ministry of Health Suriname, is fulfilling her health care responsibility towards all Surinamese citizens. Of this a crucial element is the development of the "Agenda for the Digital Transformation of the Health Sector in Suriname", as part of the Information Systems for Health (IS4H) supported by the World Health Organization and Pan American Health Organization (WHO/PAHO). The first step in this process is the digital transformation of the publicly funded primary care and public health programs. This will be followed by including private primary care providers and supporting healthcare sectors like pharmacy and diagnostics. Secondary and tertiary care providers in both the public and private sectors.

The IS4H should result in citizens being helped "faster and more efficiently". Its purpose is to have reliable information available to the Ministry of Health, who can use this to take effective decisions. Over the past two years all Private General Practitioners have been informed about the IS4H project and asked to provide their clinic with a by the Ministry of Health certified automation system that meets the by all healthcare stakeholders approved requirements for a Primary Health Information Systems (HIS).

Next, this group will be connected with their HIS to the Health Information Exchange Platform (HIEP). This enables relevant information to be shared between stakeholders such as Laboratories, Pharmacists, General Practitioners, Insurance Companies the Central Bureau for Civil Affairs (CBB) and The Ministry of Health itself.

The Ministry of Health Suriname thanks, in particular, the Pan American Health Organization, the Inter-American Development Bank for its support in developing this important document, Dr. Ritesh Dhanpat as Chair of the Steering Committee IS4H Suriname, the other members of this Steering Committee and all other relevant stakeholders.

Dr. Amar Ramadhin
Minister of Health
Suriname

Executive Summary

Context

The Constitution of the Republic of Suriname establishes the right to health for all and gives the government the responsibility to promote health by systematically improving the living and working conditions and providing information for the protection of health. Suriname has made significant progress in reducing illness and mortality from infectious diseases; however, each year Suriname loses 170,000 productive years of life due to poor health and premature mortality. Suriname has not yet reached global targets for the reduction of maternal and child mortality and also faces a significant disease burden due to chronic non-communicable disease, traffic accidents, and mental health conditions. Inflation and an economic crisis have put further pressure on the healthcare system and highlight the need to reduce costs and optimize the delivery of healthcare services.[1]

In response to these challenges, the Government of the Republic of Suriname has embarked on several significant health system reform and improvement initiatives that will transform the way care and services are delivered in the country. The *Ministry of Health's Policy Plan 2021-2025* identifies a vision driven by two key policy priorities focused on reducing the burden of disease and increasing access to high quality care and services.

The Government of Suriname has recognized that the digital transformation of the health sector will be critical to achieving these policy priorities. Evidence from global experience shows that the digital transformation of the health sector has the potential to improve efficiency, quality, and equity.

❑ Digital Health Agenda Vision 2030

In 2030 - In Suriname information technology is used to increase the human touch in health care.

↘ Health policy and health system management is evidence-informed supported by high-quality, timely information.

- Transparency and accountability at the core.
- Data is effectively governed and protected.
- There is an embeded data culture among planners, providers and patientes.

↘ Informed health care providers have access to tools, supplies and information to provide quality care across the continuum with a focus on prevention.

↘ Empowered and educated patients can manage their own health and wellness.

- One patient, one record.

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1. Policy Plan 2021-2025, Ministry of Health, Governement of the Republic of Suriname.

Digital Health Objectives

The Digital Health Agenda is initially focused on the digital transformation of the publicly funded primary level of health care and public health programs, but will be expanded in future phases to include private primary care providers, as well as secondary and tertiary care providers in both the public and private sectors.

The Digital Health Agenda is divided into three phases over a seven-year implementation period and organized by four key objectives:

↘ **Objective 1:** Strengthen capacity for planning, governing, and managing digital health.

↘ **Objective 2:** Improve IT infrastructure and the availability of quality data for clinical care and policy decision-making.

↘ **Objective 3:** Transform the delivery of health care through digital health and other innovations.

↘ **Objective 4:** Generate knowledge from data and improve access to knowledge that strengthens the health system and improves health outcomes.

❑ Overview of Phases

The Digital Health Agenda will be executed across three phases.

↘ **Phase 1** is focused on building the foundations for digital transformation.

↘ **Phase 2** will evolve organizational, infrastructure, infostructure and people capacity to deliver early interoperable digital health platforms that advance digital health transformation in Suriname.

↘ **Phase 3** will be focused on expanding interoperable digital health tools and preparing for sustainability and future phases of digital health transformation.

The focus of the activities and products across these three phases is digital transformation of the health sector in line with Suriname's Vision 2030, with a specific attention on supporting chronic disease care and management, the COVID-19 response, and strengthening information systems for malaria, maternal and child health, and national cancer registry.

Expected Benefits and Results

The Ministry of Health of Suriname expects the following benefits and will monitor them during implementation of the digital health agenda:

↘ Increase quality of care for non-communicable diseases

↘ Increase patient empowerment and access to personal health information

↘ Increase continuity of care for chronically-ill patients

↘ Increase timely information for decision making

↘ Improve efficiency of the health sector by increasing access to specialists via telehealth

↘ Increase access to digital health services for the citizens of Suriname

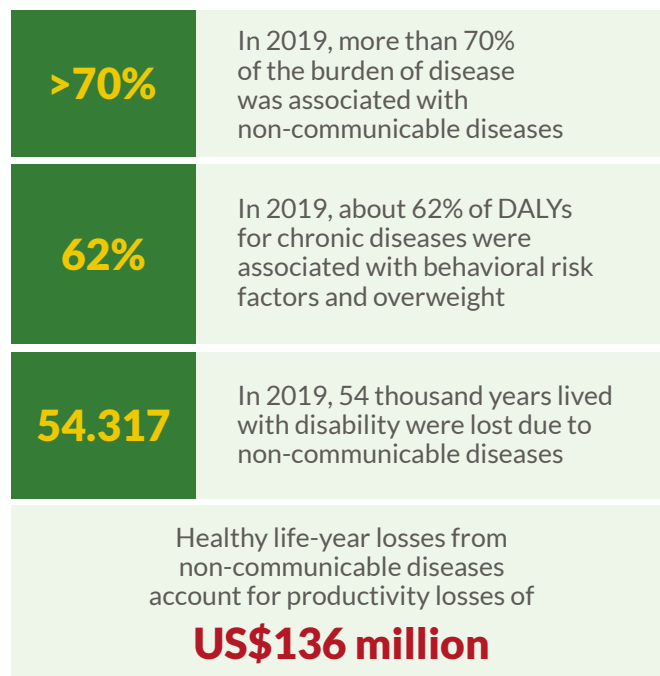# 1. Context

Health System Key Challenges

The Constitution of the Republic of Suriname establishes the right to health for all and gives the government the responsibility to promote health by systematically improving the living and working conditions and providing information for the protection of health. Suriname has made significant progress in reducing illness and mortality from infectious diseases. However, each year Suriname loses 170,000 productive years of life due to poor health and premature mortality. Suriname has not yet reached global targets for the reduction of maternal and child mortality and also faces a significant disease burden due chronic non-communiciable disease, traffic accidents and mental health conditions. Inflation and an economic crisis have put further pressure on the healthcare system and highlight the need to reduce costs and optimize the delivery of healthcare services.[2]

❑ High burden of Non-Communicable Diseases (NCDs)

In 2016, non-communicable diseases (NCDs) such as heart and chronic kidney disease, stroke, diabetes, and cancer were the top causes of deaths (75.7% of the total), loss in disability-adjusted life years (DALYs) (66.9% of the total), and accounted for 50% of premature deaths.[3] **Nineteen percent of the total population aged 15-64 has been diagnosed with a NCD (21% women and 17% men).**

NCDs are driven by population aging and social determinants (urbanization, globalization, poverty, and lack of education) which contribute to unhealthy living environments and behavioral risk factors for NCDs. According to the 2013 Suriname

Figure 1 - High burnden of NCDs in Suriname

>70%	In 2019, more than 70% of the burden of disease was associated with non-communicable diseases
62%	In 2019, about 62% of DALYs for chronic diseases were associated with behavioral risk factors and overweight
54.317	In 2019, 54 thousand years lived with disability were lost due to non-communicable diseases

Healthy life-year losses from non-communicable diseases account for productivity losses of

US$136 million

Source: IHME Global Burden of Disease, IDF Diabetes Atlas, ILO and IMF.

STEPS Survey,[4] two thirds of the population aged 15-64 (about 232,000 people) has 1-2 risk factors for NCDs and the remaining third have between 3-5 risk factors. Nearly 30% of adults, and 40% - 50% of the population over age 55 suffers from high blood pressure, 18% of men, 31% of women; and 26% of children aged 3-15 are overweight or obese. Only 56% of the population met the World Health Organization's (WHO) recommended exercise levels. Other risks like smoking and alcohol consumption are higher among men than women (35% vs. 6.5% and 73% vs. 43% respectively).

In addition to health impacts, worldwide and Caribbean region evidence shows that NCDs have negative economic consequences. Economic impacts of NCDs at the household level include income loss and increased out-of-pocket expenses, and at the national level include loss of skilled labor and productivity, lower competitiveness, and higher government health and social expenditures.[5]

2. Policy Plan 2021-2025, Ministry of Health, Governement of the Republic of Suriname.
3. Institute of Health Metrics and Evaluation, Global Burden of Disease, 2016.
4. STEPS study results, a nationally representative,stratified-multistage cluster household survey on NCDs and risk factors. Department of Public Health. Anton de Kom University of Suriname 2016. Chronic Disease Risk Factor Surveillance. Data Book for Suriname.
5. World Bank. NCDs in the Caribbean: The New Challenge for Productivity and Growth. Caribbean Knowledge Series No.78596, World Bank; 2013.

Figure 2 - Projections for 2050: Evolution of Health Investment

Health expenditure in 2019

Legend:
- Health expenditure as % of GDP
- Out-of-pocket expenditure as % of total health expenditure

Categories: Suriname, LAC, OECD (axis 0 to 40%)

Projections 2030 to 2050 (millions)

Bar chart, axis $0 to $600, years 2018, 2020, 2030, 2040, 2050

By **2050**, expenditure is expected to grow by

US$326 million

31% corresponds to an increase in expenditure on diseases of the circulatory (**11%**), respiratory (**5%**) and digestive (**7%**), neoplasms (**6%**) y mental disorders (**2%**)

Source: WHO Global Health Expenditure Dataset (GHED), and Rao *et al*. (2022). "Future Health Spending and Treatment Patterns in Latin America and the Caribbean: Health Expenditure Projections and Scenario Analysis". IDB.

Given the existing high levels of exposure to NCD risk factors in the country, unless current trends in Suriname are reversed, NCDs are likely to pose additional burden on healthcare services, increase pressure on healthcare costs, and further deteriorate health outcomes. Compared to the rest of the Caribbean, DALYs caused by diabetes and Chronic Kidney Disease (CKD) are almost twice the regional average and have been growing at a faster rate. Between 2005-2016 the new cases of diabetes, ischemic heart disease and CKD in Suriname grew by 39%, 19%, and 24% respectively.[6] High blood sugar levels is the main risk factor driving the most death and disability combined.

❑ Fragmented Health System

The Ministry of Health is responsible for the establishing the strategic priorities for the national health system, as well health system planning, standards, inspection of health services, and for monitoring the health system and population health outcomes. The Bureau of Public Health, an institution within the Ministry of Health, is responsible for the development and delivery of vertical public health programs, such as immunizations, public health surveillance, chronic non-communicable diseases, and maternal and child health.

People in Suriname may receive health services from public or private health care providers. Residents of the Atlantic Coast, which represents approximately 90% of the population, typically receive primary care services from private health care providers or from the publicly subsidized Regional Health Service (RGD) which operates 43 clinics. People who are certified by the Ministry of Social Services are entitled to free primary care services at RGD clinics. There are also approximately 150 private general practitioners (GP) that serve the population near the coast. Individuals that use private health services self-pay or may be covered by either the State Health Insurance (SZF) or by private insurance firms.

The Medical Mission (MM), a publicly subsidized NGO, serves the approximately 40,000 Surinamese residents that live in the interior of the country. Medical Mission primary care services are provided through a network of 56 health centers that are staffed by health workers. Public health doctors are consulted for difficult cases. Patients that need hospitalization are transported to Paramaribo and receive care in the private Diakonnessen Hospital. Several other NGOs are also recognized by the government to provide specific health care services.

6. Institute of Health Metrics and Evaluation. Suriname Statistics: http://www.healthdata.org/suriname.

Suriname has two private and three public hospitals, four of which are in Paramaribo and one in the district of Nickerie at the western border. There is one public psychiatric hospital in Paramaribo as well. Most specialists provide outpatient consultations in the outpatient polyclinics that are attached to one of the public and private hospitals or through private clinics. The country is also served by several private laboratory and diagnostic service providers and pharmacies.

❑ Fragmented Health Information and Systems

The lack of data and analytical tools is a significant barrier to the development of evidence-information policies and for monitoring performance in the health system. Core health information such as epidemological, health services production, and cost and performance data is not typically collected requires resource-intensive manual processes to collect and collate. Data that is available is fragmented and rarely integrated due to a lack of information systems and standards.

While several health system partners are in the process of developing and implementing health information systems to collect data and support the delivery of care and services, currently there are no integrated health information systems, such as interoperable electronic health records.

Strategic Response

In response to these challenges, the Government of the Republic of Suriname has embarked on several significant health system reform and improvement initiatives that will transform the way care and services are delivered in the country. The *Ministry of Health's Policy Plan 2021-2025*[7] identifies a vision driven by two key policy priorities focused reducing the burden of disease and increasing access to high quality care and services:

↘ **Policy Area 1:** Prevention and reduction of disease and mortality:

- Reducing maternal and child mortality

- Reducing morbidity and mortality due to chronic non-communicable diseases, infectious diseases, and mental health conditions

↘ **Policy Area 2:** Increasing the availability and accessibility of quality health care for the entire population:

- Restructuring of the healthcare system for more efficient, cost-effective, qualitative and patient-friendly services

The government has also developed an eGovernment Strategy[8] with a focus on strengthening national data hosting and network infrastructure, cybersecurity, digital policies and enabling legislation, digital literacy, IT services, and enhancing Government to Government (G2G), Government to Business (G2B), and Government to Citizen (C2C) electronic communications and services.

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7. Policy Plan 2021-2025, Ministry of Health, Government of Suriname.
8. https://gov.sr/wp-content/uploads/2022/12/Presentatie-e-Government-ICTVision2030Seminar_20211123_v1.1-1.pdf.

Figure 3 - Vision, Mission and Policy Priorities, Ministry of Health

Vision
Guaranted access to quality care

Mission
To achieve an integrated and sustainable system of quality and effective health care, wich is accessible to everyone on the Surinamese territory nd a continuous increase in health benefits for the entire population. We achieve this through local and international partnerships.

Prevention and reduction of morbidity and mortality

Integrated

Qualitative and effective

Availability and accessibility of quality health care of the entire population

Accessibility

Sustainable and affordable

Source: Ministry of Health, Government of the Republic of Suriname.

Digital Transformation of the Health Sector: A Critical Enabler of Suriname's Health System Priorities

The Government of Suriname has recognized that the digital transformation of the health sector will be critical to achieving these policy priorities. Evidence from global experience shows that that the digital transformation of the health sector has the potential to improve efficiency, quality, and equity. For example, interconnected and interoperable health systems can reduce health care costs associated with redundant diagnostic testing, unnecessary hospitalizations, and preventable readmissions. Digital health tools can be used to effectively monitor the burden of disease and the health status of a country, providing valuable data to guide cost-effective policy interventions and improvement initiatives.

Digital health tools can support improvements to the quality of care by providing decision-support tools that support the application and monitoring of standardized clinical protocols.
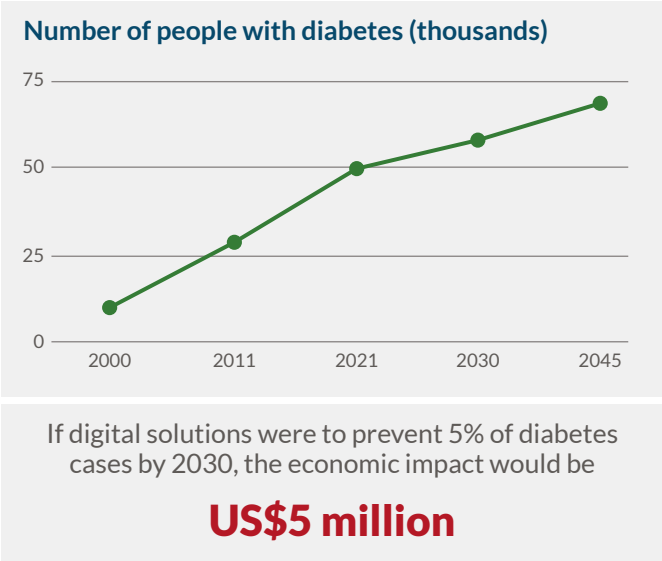
Interoperable health information systems enable the contuity of care across levels of care, and can also strengthen patient safety, for example by flagging potential drug interactions. Digital health solutions also provide access to the data and tools that support population health management approaches for the prevention and effective management of chronic conditions such as diabetes, heart disease, and mental health conditions.

Digital health can also increase access to essential health care services, and potentially reduce barriers to access that contribute to health inequities. Telehealth can connect patients in remote regions to healthcare specialists, without the need to travel. Patient portals and mobile applications empower patients with information and tools to better manage their own health.

However, in order to realize these potential benefits of the digital transformation of the health sector, **Suriname needs to have a coordinated approach, informed by evidence and guided by best practices and principles.** Therefore, the *Agenda for the Digital Transformation of the Health Sector* has been developed in alignment with the national eGovernment strategy to help achieve the Ministy of Health's key policy priorities.

Figure 4 - **Projected economic impact of digital health in the prevention of diabetes in Suriname,IDB Regional Policy Dialogue, 2022**

Number of people with diabetes (thousands)

	2000	2011	2021	2030	2045

If digital solutions were to prevent 5% of diabetes cases by 2030, the economic impact would be

US$5 million

Source: IHME Global Burden of Disease, IDF Diabetes Atlas, ILO and IMF.

2. What is Digital Health and Digital Transformation?

❑ Digital Health

The World Health Organization defines digital health as the field of knowledge and practice related to the use of digital technologies to deliver health care and services, and to improve health. Digital health expands the concept of eHealth to include digital consumers, with a wider range of smart devices and connected equipment. It also covers other uses of digital health technologies such as the Internet of Things, artificial intelligence, big data, and robotics.[9]

Digital health tools, for example, include information systems such as electronic health records, telehealth and virtual health care solutions, and mobile health apps, as well as information systems that faciliate the exchange of health information between health information systems.

❑ Digital Transformation and the health sector

It is important to distinguish digital transformation from digitization and information technology. Digitization refers to the use of computerized tools to automate or store information in a digital format without redesigning existing processes. Information technology refers to the set of tools necessary for digitization, such as computers, networks, and software.

However, digital transformation is about the use of computerized tools and information technologies to change the way we work, the way we communicate and interact, and even the way we think. Implementing computers, networks and software alone will not improve the efficiency of health administration, reduce medical errors, or provide access to better care. Although technology makes these changes possible, digital transformation will not succeed unless healthcare functions, roles and processes are redesigned to optimize the potential of digital technologies.
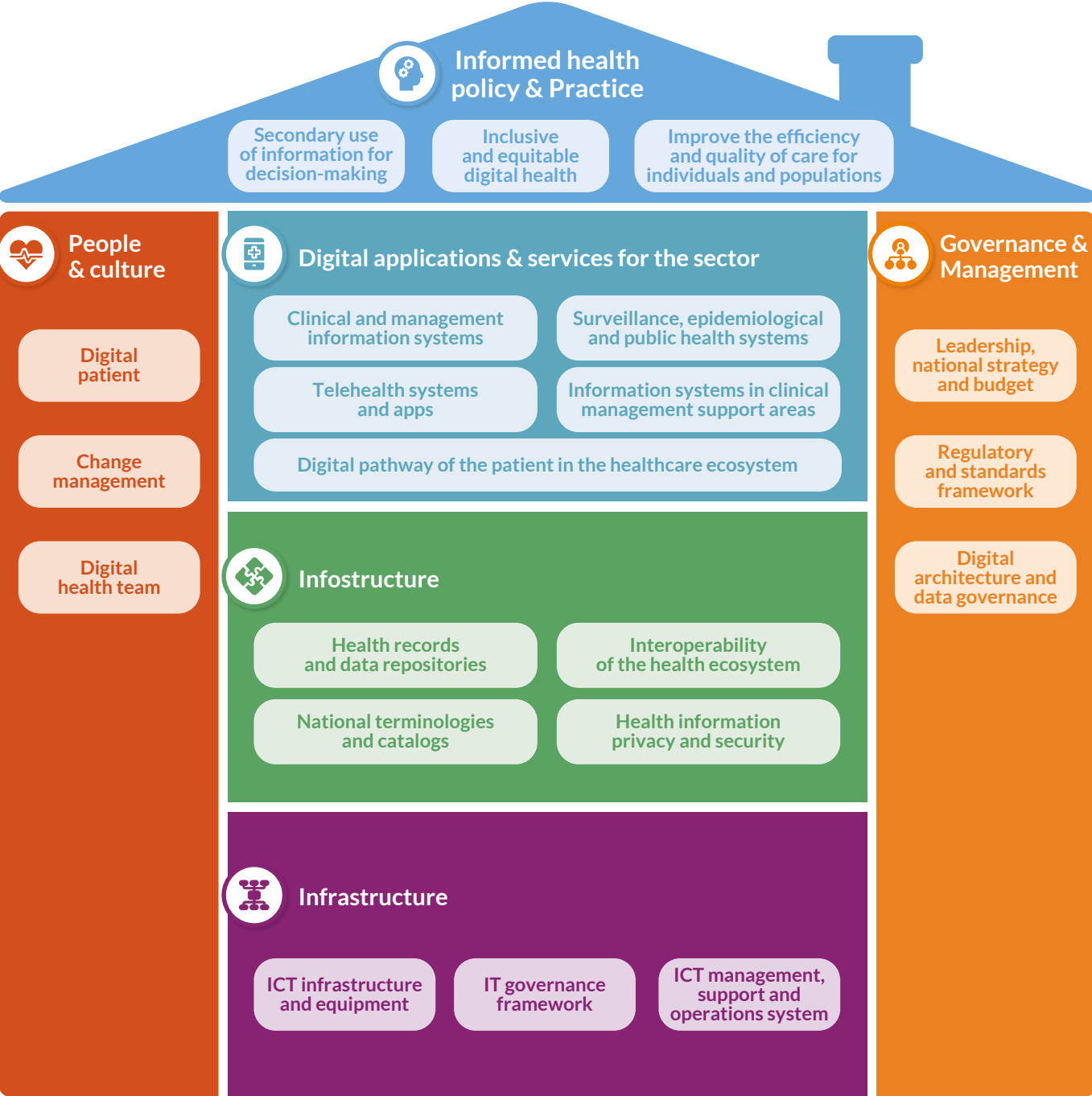
For digital transformation in the health sector to be successful, patients, health care providers, health administrators, and health planners need to have confidence in digital tools and the data they generate. For digital tools to be adopted, they must be easy to learn and use and the benefits for adoption must be clear and compelling.

As well, countries face significant challenges when adopting digital health tools, such as lack of financial resources, infrastructure limitations, uncertainty about ethical and legal issues (e.g., how to protect personal health information, the legality of the electronic health record, the ethical use of data, etc.), a lack common interoperability standards, lack of a workforce trained in health informatics, and poor national and regional collaboration.

To overcome these challenges, the Inter-American Development Bank (IDB) advocates that successful digital health transformation requires balanced investments in six dimensions: governance and management of digital health transformation; infrastructure; infostructure and standards; health applications and services; people and culture; and informed health policy and practice, referred to as the "Digital House." **Digital transformation requires a portfolio of projects and investments that together address these six dimensions.**

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9. Global strategy on digital health 2020-2025. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO.

Figure 5 - SPH Digital House, based on the Model of Digital Health Architecture

Informed health policy & Practice

- Secondary use of information for decision-making
- Inclusive and equitable digital health
- Improve the efficiency and quality of care for individuals and populations

People & culture

- Digital patient
- Change management
- Digital health team

Digital applications & services for the sector

- Clinical and management information systems
- Surveillance, epidemiological and public health systems
- Telehealth systems and apps
- Information systems in clinical management support areas
- Digital pathway of the patient in the healthcare ecosystem

Governance & Management

- Leadership, national strategy and budget
- Regulatory and standards framework
- Digital architecture and data governance

Infostructure

- Health records and data repositories
- Interoperability of the health ecosystem
- National terminologies and catalogs
- Health information privacy and security

Infrastructure

- ICT infrastructure and equipment
- IT governance framework
- ICT management, support and operations system

Source: ISO/TR 14369; (Bagolle *et al.*, 2022).

3. Building the Digital Health Agenda

The Agenda for the Digital Health Transformation of the Health Sector (Digital Health Agenda) describes the objectives and key lines of action for the digital transformation of the health sector in Suriname. The vision and actions outlined in this document were developed through a series of multi-stakeholder workshops that included not only representatives from across the public and private health sector, but also from national partners such as e-Gov and the State Health Fund (SZF), supported by international partners, including the Pan-American Health Organization (PAHO), and the Inter-American Development Bank (IDB).

The Digital Health Agenda is initially focused on the digital transformation of the publicly funded primary level of health care and public health programs, but will be expanded in future phases to include private primary care providers, as well as secondary and tertiary care providers in both the public and private sectors.

This Digital Health Agenda identifies activities and products that will strengthen IS4H and drive digital health transformation in Suriname for the next several years. A main objective of the Digital Health Agenda is to maintain an integrated and shared vision on the desired future state and to coordinate multistakeholder actions and financing to ensure a cohesive and effective approach to the digital transformation of the health sector.

It will be essential that the various health system partners are able to work together to realize the single vision identified in the Digital Health Agenda, and develop a common health system information and technology infrastructure to ensure that data collected across the various digital health tools by national partners can be shared and integrated at the national level to support effective decision-making, and can be shared between systems to support continuity of care and empower patients.

Without national leadership and coordination, there is a significant risk that Suriname could develop "siloed" systems of health information that become barriers to quality care and services.

As such, The Ministry of Health has established a multi-stakeholder governance structure that sets national priorities and strategies and provides coordination of related initiatives at the national level. This governance structure includes a technical layer to guide development in technical domains, such as IT infrastructure, data and interoperability standards, policies, change management, and the design of an integrated health information exchange platform.

Vision 2030: The Vision for Digital Health Transformation

The starting point for the digital transformation of the health sector must be a vision for the future state of the health system developed by all stakeholders in the health system supported by coordinated plans with governance and overisght from multi-stakeholder representatives. Without these, the process of the digital transformation of the health sector will be at risk of shifting directions, priorities, and investments that will result in the loss of valuable resources, or worse, negatively impact the health of the population.

Suriname's digital health vision supports the Ministry's overall vision of "guaranteed access to quality care" and will enable the Ministry's key policy objectives of reducing the burden of disease and improving acces to quality care. Central to this vision is the availability of high quality data for decision-making, tools that support health care providers in keeping their patients healthy and enable the continuity of care across the continuum of health services and help prevent disease – all enabled through the core idea of "one patient, one record."

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Digital Health Architecture

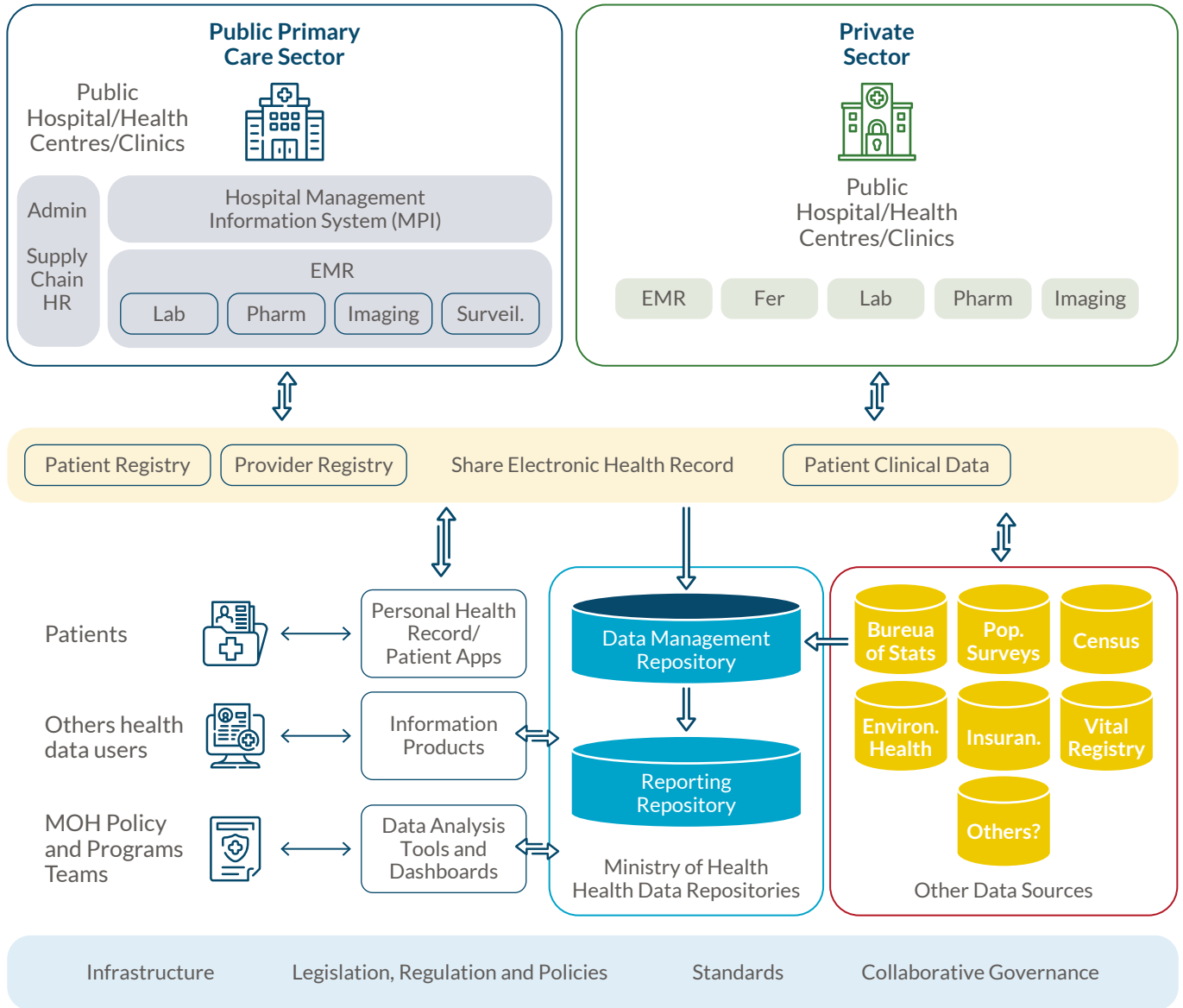**Achieving this vision will require interconnected and interoperable health information systems, guided by a common "blueprint" or architecture.** This digital health architecture will define how health information systems will be connected, how information will flow between systems, and how information will be made accessible for care and decision-making, all while protecting the privacy of indviduals.

As well, Suriname's approach to the development of an interoperable national Electronic Health Record (EHR) reflects the initiatives and information systems currently in use or in development across national health system stakeholders, for example SZF, RGD, MM, diagnostic services, and hospitals.

As such, one of the initial objectives of Digital Health Agenda is to design the digital health architecture that defines the various information systems across national stakeholders in both the private and public health sectors, and how these systems will share information to enable an integrated national electronic health record for every individual in Suriname ("one patient, one record'), and to provide information at the provider and national level to support effective, evidence-informed decision making.

The diagram included here provides a generic, high-level example of national conceptual technical architecture. However, it will be critical to design and implement a digital health architecture specific to Suriname, and to validate this approach with key national stakeholders. **The digital health architecture will then serve as a "blueprint" for the identification of information and technology standards and information technology investments required to build an interoperable national EHR and health data repository.**

Figure 6 - Conceptual Digital Health Architecture

Public Primary Care Sector

Public Hospital/Health Centres/Clinics

Admin	Hospital Management Information System (MPI)
Supply Chain HR	EMR
	Lab · Pharm · Imaging · Surveil.

Private Sector

Public Hospital/Health Centres/Clinics

EMR · Fer · Lab · Pharm · Imaging

Patient Registry · Provider Registry · Share Electronic Health Record · Patient Clinical Data

Patients — Personal Health Record/ Patient Apps

Others health data users — Information Products

MOH Policy and Programs Teams — Data Analysis Tools and Dashboards

Data Management Repository

Reporting Repository

Ministry of Health Health Data Repositories

Bureua of Stats · Pop. Surveys · Census

Environ. Health · Insuran. · Vital Registry

Others?

Other Data Sources

Infrastructure · Legislation, Regulation and Policies · Standards · Collaborative Governance

Source: Ministry of Health, Government of the Republic of Suriname.

The Government of the Republic of Suriname is strengthening their information systems for health in collaboration with PAHO, the IDB, and other international partners.

❏ Pan-American Health Organization

These initiatives will advance Suriname's commitment as a PAHO Member State for strengthening IS4H in the Region. In June 2019, PAHO Member States formally adopted the regional *Plan of Action on Information Systems for Health*.[10] The aim of the Regional Plan of Action for IS4H is to strengthen decision and policy-making mechanisms in the Caribbean and Latin America through health systems that ensure universal, free and timely access to quality and open data, and strategic information using the most cost-effective ICT tools. The Plan of Action supports the health institutions of the Member States in their efforts to move towards achieving the objectives set forth in the *Sustainable Health Agenda for the Americas: A Call to Action for Health and Well-Being*[11] in the Region through the effective use of information and evidence for decision-making and the digital transformation of the health sector. All countries, including Suriname, renewed their commitment to digital health transformation by adopting the regional policy *The Roadmap for the Digital Transformation of the Health Sector in the Region of the Americas*[12] in 2021.

❏ Inter-American Development Bank

To harness digital tools to curb the growth and impact of NCDs and improve the efficiency, quality, and equity of the sector, the **Inter-American Development Bank (IDB) through the Social Protection and Health Division (SCL/SPH) works in four main areas:** (i) support quality design, execution and evaluation of digital health transformation agendas & operations; (ii) increase human capital in LAC for digital transformation; (iii) build strategic partnerships within and outside of IDB for digital transformation; and (iv) generate & disseminate knowledge for digital transformation of health services in LAC. This work is a critical area in the Health Sector Framework Document[13] and is aligned to the broader Social Sector (SCL) Digital Agenda to improve the efficiency of the sector, improve the quality of social services, and reduce inequality through digital services.

The Ministry of Health has also decided to make an important investment in digital transformation through an IDB investment loan to fund the Health Services Support Project (HSSP). The program objective, aligned with national priorities, is to contribute to the reduction of the burden of disease in Suriname by improving access to high quality, integrated primary care services, and enhancing the effectiveness of the health sector to address priority epidemiological challenges.

Specifically, Suriname is leveraging the IDB investment loan to improve the information systems for health (IS4H) ecosystem in Suriname, including improved ICT infrastructure, the implementation of digital health systems to support the expansion of an improved chronic care management, the design and implementation of a platform to allow interoperability between digital health systems, data repositories and tools for the analysis of health information, and the modernization of policies and standards to support digital health.

10. Plan of Action for Strengthening Information Systems for Health 2019-2023, CD57/9, Pan-American Health Organization, 2019. https://iris.paho.org/bitstream/handle/10665.2/51617/CD57-9-e.pdf?sequence=1&isAllowed=y.
11. Sustainable Health Agenda for the Americas 2018-2030, CSP29/6, Rev. 3, Pan-American Health Organization, 2017. https://iris.paho.org/bitstream/handle/10665.2/49170/CSP296-eng.pdf?sequence=1&isAllowed=y.
12. The Roadmap for Digital Transformation of the Health Sector in the Region of the Americas, CE168/10, Pan-American Health Organization, 2021. https://www.paho.org/en/documents/ce16810-roadmap-digital-transformation-health-sector-region-americas.
13. Health Sector Framework Document, Inter-American Development Bank, 2021. https://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=EZSHARE-1348179246-3.

Regional and Global Frameworks

The Digital Agenda is informed by several regional and global frameworks. Like the IDB "digital house" framework discussed previously, **these frameworks provide guidance to ensure the key components for digital health transformation are included in the Digital Agenda, and that Suriname is aligned with regional and international strategies and best practices.**

### ❑ The PAHO IS4H Strategic Framework and Regional Plan of Action

The PAHO Information Systems for Health Strategic Framework[14] provides a comprehensive framework for strengthening Information Systems for Health

(IS4H) within a broader set of Regional strategies and priorities endorsed by PAHO Member States. **The IS4H Strategic Framework includes four strategic domains for the strengthening of IS4H in countries in the Caribbean and Latin America:**

1. Data Management and Information Technology
2. Management and Governance
3. Knowledge Management and Sharing
4. Innovation

Objectives and expected results of the Digital Agenda are also aligned with the The Plan of Action for Strengthening Information Systems for Health 2019-2023, and the Roadmap for the Digital Transformation of the Health Sector in the Region of the Americas, ensuring Suriname is aligned to broader regional actions and commitments.

Figuur 7 - PAHO IS4H Strategic Framework
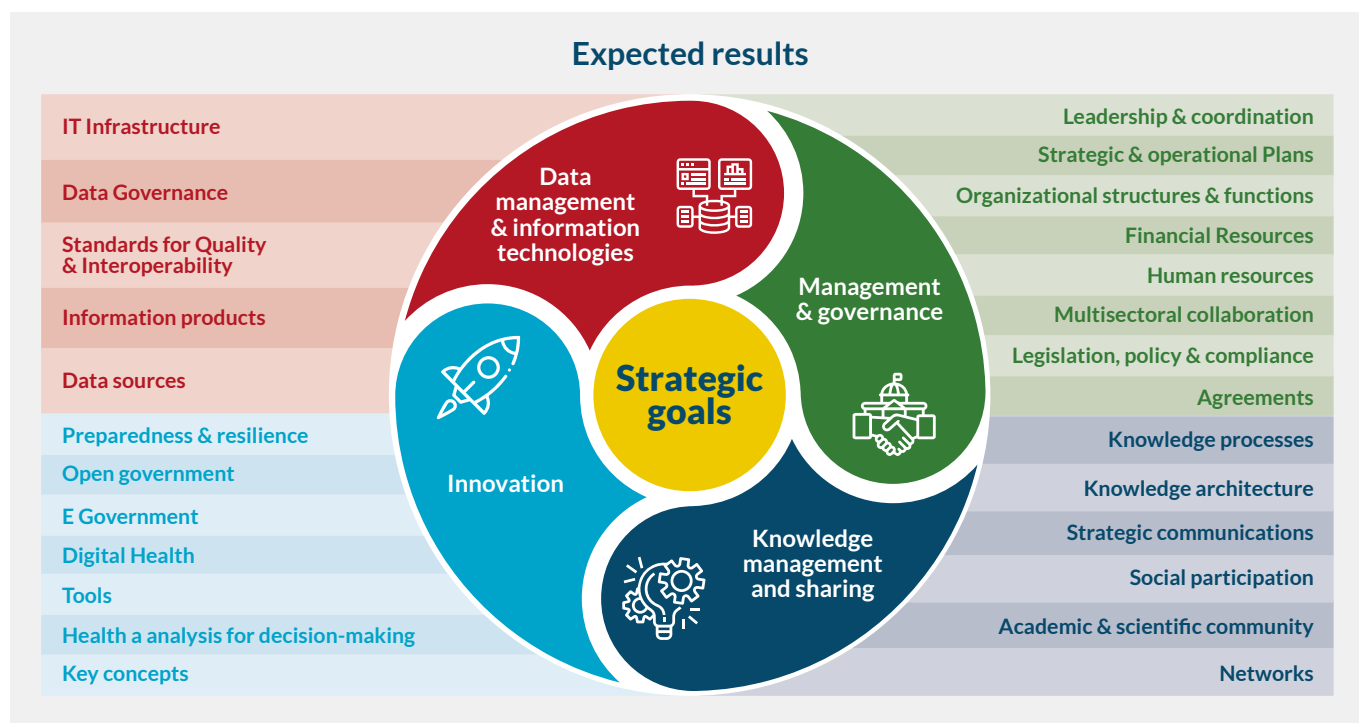
14. The Information Systems for Health Strategic Framework, Pan-American Health Organization, 2016. https://www3.paho.org/ish/images/docs/framework.pdf.

❑ Eight Guiding Principles for Digital Transformation of the Health Sector

The digitization of health services implies important cultural changes for both health personnel and the population in general. PAHO's *Eight Guiding Principles for the Digital Transformation of the Health Sector*[15] is aimed at guiding the countries of the Region of the Americas in the processes of digital health transformation. Their purpose is to support countries in making informed decisions, formulating short and long-term goals, and developing solid and sustainable public policies, leaving no one behind.

In 2020, the United Nations endorsed eight areas of collaboration to strengthen technical cooperation in the era of digital interdependence, based on the recommendations of a high-level panel. The eight guiding principles to support digital transformation processes in the health sector in the Region of the Americas are fully in line with the areas defined by the United Nations.

The exchange of health information between health system planners, health care providers, and patients is essential for improving health outcomes, and optimizing the use of health system resources. However, achieving interoperability is challenging in the health sector, given the large number of actors and stakeholders, the lack of coordination between components of the health sector, and a lack of common standards and frameworks. Full interoperability between health information systems (HIS) requires a strategy to progressively deploy systems and technologies based on compatible standards and requires the use of a systematic architectural approach. The actions and products of the Digital Agenda are also aligned with this approach.?

Figure 8 - 8 Guiding Principles for the Digital Transformation of the Health Sector

1	Universal connectivity		**Ensure** universal connectivity in the health sector by 2030
2	Digital goods		**Co-create** digital public health goods for a more equitable world
3	Inclusive digital health		**Acelerate** towards inclusive digital health with an emphasis on the most vulnerable
4	Interoperability		**Implement** interoperable, open, and sustainable digital health and information systems
5	Human rights		**Mainstream** human rights in all areas of digital transformation in health
6	Artificial intelligence		**Participate** in global cooperation on artificial intelligence and any emerging technology
7	Information security		**Establish** mechanisms for trust and information security in the digital environment of public health
8	Public Health Architecture		**Design** public healthcare architecture in the era of digital interdependence

15. Eight Guiding Principles of Digital Transformation of the Health Sector. A Call to Pan American Action, Pan American Health Organization, 2021. https://iris.paho.org/handle/10665.2/54256.

4. Digital Health Agenda

Key Objectives

Suriname's Digital Health Agenda includes four key objectives that will be executed across three phases between 2020 and 2027. These objectives are aligned with the PAHO IS4H Strategic Framework and the IDB's approach (the "Digital House") for building sustainable interoperable information systems that drive the digital transformation of the health sector. As well, the approach and activities to achieve these objectives are aligned with PAHO's 8 *Principles for the Digital Transformation of Health Sector*, which seeks to use public resources effectively, ensure the ethical use of digital health technologies and health information, and ensure that no one is left behind.

↘ **Objective 1:** Strengthen capacity for planning, governing, and managing digital health.

↘ **Objective 2:** Improve IT infrastructure and the availability of quality data for clinical care and policy decision-making.

↘ **Objective 3:** Transform the delivery of health care through digital health and other innovations.

↘ **Objective 4:** Generate knowledge from data and improve access to knowledge that strengthens the health system and improves health outcomes.

Overview of the Digital Health Agenda Phases

The Digital Health Agenda will be executed across three phases.

↘ **Phase 1** is focused on building the foundations for digital transformation.

↘ **Phase 2** will evolve organizational, infrastructure, infostructure and people capacity to deliver early interoperable digital health platforms that advance digital health transformation in Suriname.

↘ **Phase 3** will be focused on expanding interoperable digital health tools and preparing for sustainability and future phases of digital health transformation.

The focus of the activities and products across these three phases is on strengthening the IS4H across the MOH and other national stakeholders in support of the Suriname 2030 Vision, with a specific attention on the application of digital tools to improve quality of care at the provider level, especially the COVID-19 response, chronic disease care and management, malaria, maternal and child health and a national cancer registry.

Phase 1 – Foundations (2020-2023)

The focus of Phase 1 is to generate the foundational structures to enable and sustain the digital transformation of the health sector in Suriname.

This phase is focused on strengthening Ministry of Health (MOH) IT infrastructure, governance and management capacity, processes, and organizational culture to drive and support the digital transformation. Policies will be developed that will allow for electronic health records and interoperability between health information systems, while ensuring the protection of personal health information.

This phase will also ensure that publicly funded primary care health facilities have the infrastructure and software to enable patient-centered chronic disease care through digital health tools, such as electronic health records (EHR) and telehealth.

A national health information exchange platform will be essential to connect and share information across health care provider organizations in both the public and private sectors. This phase will include the design of a high-level conceptual business and technical architecture for the national health data ecosystem.

By the end of this phase, MOH will have a proof-of-concept dashboard to visualize and analyze critical health data from several key sources, which will be expanded and improved in future phases as connected information systems are implemented and integrated. This phase also includes actions to strengthen health team on the implementation of IS4H and use of information for decision-making.

As well, telehealth services will be piloted for primary care clinics that service the population in the interior of Suriname. The specific modality (e.g., tele-mentoring, telemedicine, e-consultations, etc.) will be determined early in the process based on the chronic care model or other challenges for remote health facilities.

Existing digital health initiatives and projects will need to be integrated and aligned during this phase to ensure their continuity and their contribution to the national health information platform and repository. This phase will result in a strategy and blueprint for advancing electronic health records and other digital health tools that will address how health information systems currently in use or being planned by various national stakeholders will be deployed and integrated into a national health information platform.

❑ Phase 1: Objectives and Activities

🎯 OBJECTIVES

🖋️ ACTIVITIES

OBJECTIVE 1:
Strengthen capacity for planning, governing, and managing Digital Health.

P1.1.1

Establish a national multi-sectoral IS4H/Digital Health body to plan and coordinate the digital transformation of the health sector in Suriname.

P1.1.2

Develop a National IS4H/Digital Health Strategic Plan and budget (7 to 10 Years) to guide digital transformation activities and investments for the entire health sector.

P1.1.3

Draft national policies and guidelines to protect personal health information (privacy, security, data sharing) and enable the interoperability of health information.

OBJECTIVE 2:
Improve IT infrastructure and the availability of quality data for clinical care and policy decision-making.

P1.2.1

Implement basic information technology infrastructure (networks, computers, etc.) in public primary health care facilities (RGD and MM) and the Ministry of Health.

P1.2.2

Design the national data and technology architecture (Heath information Exchange), including specifications for cybersecurity.

P1.2.3

Implement the foundational components for the health Information exchange platform.

P1.2.4

Implement a health information dashboard to support decision-making within MOH and publicly funded primary care health facilities, with a focus on the management of chronic non-communicable diseases.

P1.2.5

Implement a Malaria Information System to support the national malaria elimination targets that can be integrated into the national health information exchange platform in future phases.

P1.2.6

Implement a COVID-19 vaccine database that can be extended to other vaccine types in the future, and be integrated into the national health information exchange platform in future phases.

OBJECTIVES	ACTIVITIES

OBJECTIVE 3:
Transform the delivery of health care through digital health and other innovations.

P1.3.1

Implement an interoperable electronic health record (EHR) solution that supports Chronic Care Model in Phase 1 health facilities (Target: 4 publicly funded primary healthcare facilities by end of 2023).

P1.3.2

Implement a consumer app to support patient self-management of chronic non-communicable diseases (e.g., diabetes, high-blood pressures, heard disease).

P1.3.3

Implement a telehealth pilot to support the management of chronic care disease in at least one primary care clinic that serves people in the interior of Suriname.

OBJECTIVE 4:
Generate knowledge from data and improve access to knowledge that strengthens the health system and improves health outcomes.

P1.4.1

Develop a Strategic Communications Plan for Digital Health Transformation to promote and support the Digital Health Agenda.

Phase 2 – National Development and Deployment (2024-2025)

The focus of Phase 2 is to expand on the foundational IT infrastructure, infostructure, management, governance and digital health components developed in Phase 1. This phase will see an expansion of the health information exchange platform that was implemented in Phase 1 and extend its capability to allow interoperable data sharing between clinical information systems, as well as expand the sources of electronic data for the national health data repository.

The MOH dashboard implemented in Phase 1 will be extended in this phase to include additional data sources, including specific disease registries (e.g., cancer, COVID-19). The EHR solutions implemented in Phase 1 will be expanded to a minimum of four additional health care facilities and use of the EHR will be strengthened to further support the chronic care model. The consumer self-management app for chronic non-communicable conditions implemented in the first phase will be further enhanced to allow patient access to components of their own health data and/or to communicate directly with health care providers in support of the chronic care model.

As well, telehealth services will be expanded for primary care in the interior and other primary care clinics in support of the chronic care model.

During this phase, it is expected that identified gaps in legislation, regulation and policy to support digital health will be addressed through a variety of mechanisms to ensure a robust legal/policy environment.

Finally, during this phase there will be a focus on strengthening knowledge management and sharing capacity within MOH through the development of knowledge management tools and platforms, and through strengthening organizational knowledge management skills and capacity.
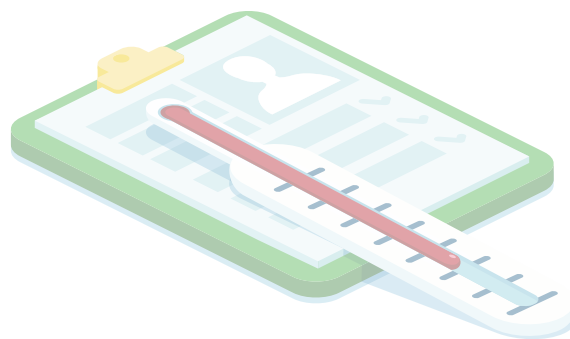
OBJECTIVES

ACTIVITIES

OBJECTIVE 1:
Strengthen capacity for planning, governing, and managing Digital Health.

P2.1.1

Update legislation and/or regulation and policy to effectively enable digital health and protect personal health information.

OBJECTIVE 2:
Improve IT infrastructure and the availability of quality data for clinical care and policy decision-making.

P2.2.1

Expand health data dashboards to support quality improvement with additional data sources and metrics in the Ministry of Health at least four additional publicly funded primary care health facilities.

P2.2.2

Fully implement the registries for cancer, COVID-19 and maternal and child health piloted in Phase 1 and integrate these with primary care electronic health records (EHRs).

P2.2.3

Expand the data sources connected to the Health Information Exchange implemented in Phase 1 to enable data sharing between EHRs and other clinical systems (e.g. laboratory or diagnostic imaging systems.

P2.2.4

Expand dashboard and data tools to ensure that data is readily available to support disaster preparedness and response.

P2.2.5

Improve IT infrastructure and health information systems to ensure they are resilient during natural or other disasters, and protected from cybersecurity risks.

OBJECTIVES

ACTIVITIES

OBJECTIVE 3:
Transform the delivery of health care through digital health and other innovations.

P2.3.1

Expand the consumer app that supports chronic non-communicable disease self-management to include access to patients' health records and/or to enable communication with health care providers in support of the chronic care model.

P2.3.2

Expand adoption of the EHR solution that supports Chronic Care Model to at least four additional publicly funded primary care facilities (Target 8 health facilities by end of 2024).

P2.3.3

Expand the use of telehealth applications to support Chronic Care Model or other health delivery challenges in remote health facilities.

OBJECTIVE 4:
Generate knowledge from data and improve access to knowledge that strengthens the health system and improves health outcomes.

P2.4.1

Design the knowledge management architecture and implement the process and tools to support more effective knowledge capture and sharing within the Ministry of Health and among key national stakeholders.

P2.4.2

Establish formal relationships with academic institutions to build capacity for digital health, information technology and health data analysis and use.

Phase 3 – Consolidation and Continuity (2026-2027)

Phase 3 will focus on consolidating the IS4H capabilities and capacities developed in the previous two phases and supporting MOH in preparing to **expand its infrastructure and health information and digital health platforms to additional facilities.**

Specific activities and results will be further identified and refined through the development of the Digital Health Strategic Plan that is a key result of Phase 1.

OBJECTIVES

ACTIVITIES

OBJECTIVE 1:
Strengthen capacity for planning, governing, and managing Digital Health.

P3.1.1

Begin implementation of new modernized IS4H/digital health organizational and functional models across national entities (e.g. Ministry of Health, proposed national public health agency, egov, etc.) to ensure long-term capacity and sustainability of digital transformation of the health sector.

P3.1.2

Transition to permanent program and human resources to support IS4H/digital health, including data management, information technology and infrastructure, health informatics, and knowledge management.

OBJECTIVE 2:
Improve IT infrastructure and the availability of quality data for clinical care and policy decision-making.

P3.2.1

Continue to expand the health information exchange platform to include connections to additional clinical information systems (laboratory, pharmacy, etc.), and potentially other data sources such as vital statistics information systems, census systems, injury surveillance, etc.

P3.2.2

Strengthen and expand IT infrastructure to primary care clinics in the interior as national infrastructure in these areas is improved.

| OBJECTIVES | ACTIVITIES |

OBJECTIVE 3:
Transform the delivery of health care through digital health and other innovations.

P3.3.1

Expand adoption of the EHR in to remaining publicly funded primary health care clinics in support of a chronic care model (target: TBD. The total number will depend on national infrastructure availability and funding availabilty).

P3.3.2

Begin the implementation of digital health transformation in the specialty and acute care sectors, for example through the implementation of hospital information systems, laboratory, pharmacy and digital imaging to other public health facilities (to be guided by National Digital Health Strategic Plan developed in Phase 1).

P2.3.3

Implement a patient portal website and mobile app to enhance health self-management and access to personal health information by individuals.

OBJECTIVE 4:
Generate knowledge from data and improve access to knowledge that strengthens the health system and improves health outcomes.

P3.4.1

Strengthen partnerships with academic institutions by engaging institutions to use their expertise to produce health knowledge needed for decision-making.

P3.4.2

Develop the roadmap for the MOH to build capacity to become a learning organization.

5. Expected Results and Benefits

THE MINISTRY OF HEALTH OF SURINAME EXPECTS THE FOLLOWING BENEFITS AND WILL MONITOR THEM DURING IMPLEMENTATION OF THE DIGITAL HEALTH AGENDA:

Increase quality of care for non-communicable diseases

Increase timely information for decision making

Increase patient empowerment and access to personal health information

Improve efficiency of the health sector by increasing access to specialists via telehealth

Increase continuity of care for chronically-ill patients

Increase access to digital health services for the citizens of Suriname