

# Suriname's Path to Digitally Transforming Its Health System



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**Design:** [www.souvenirme.com](http://www.souvenirme.com)

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# ABBREVIATIONS AND ACRONYMS

<b>API</b>	application programming interface
<b>BOG</b>	Bureau of Public Health
<b>DMSS</b>	Digital Mortality Surveillance System
<b>eGov</b>	eGovernment
<b>EHR</b>	electronic health record
<b>HIEP</b>	health information exchange platform
<b>HL7</b>	Health Level Seven
<b>ICD</b>	International Classification of Diseases
<b>ICD-11</b>	International Classification of Diseases 11th revision
<b>ICT</b>	information and communications technology
<b>IDB</b>	Inter-American Development Bank
<b>IS4H</b>	Information Systems for Health
<b>IT</b>	information technology
<b>LOINC</b>	Logical Observation Identifiers Names and Codes
<b>NCD</b>	noncommunicable disease
<b>PAHO</b>	Pan American Health Organization
<b>QR</b>	quick response
<b>REDCap</b>	Research Electronic Data Capture
<b>RGD</b>	Regional Health Services
<b>SNOMED</b>	Systematized Nomenclature of Medicine
<b>WHO</b>	World Health Organization





# EXECUTIVE SUMMARY

**A transition from paper-based health systems to digital ones can strengthen the functionality and efficiency of health systems.**

Digital systems can get critical information to people at the right place and time, which increases access to data for decision-making, enhances health services, and improves health outcomes—which in turn accelerates efforts toward achieving Sustainable Development Goal 3, ensuring healthy lives and promoting well-being for all.<sup>1</sup>

The Ministry of Health, Republic of Suriname has undertaken a multiyear digital transformation of the country's health system, using an iterative, comprehensive approach that addresses governance, strategy, policy, infrastructure, and other enabling components. The process began with the development of a digital health roadmap, the establishment of a governance structure, and investments in skilled human resources to support

day-to-day activities. The government has also continued developing its policy framework and architecture to support the transition.

Although the change is still underway, the successes to date have been attributed to the country's leadership commitment and ownership of its digital health vision. Further, the formal governance structure has built strong working relationships with stakeholders across the health system and various ministries, allowing for coordinated and collaborative thought leadership and decision-making. The government's early engagement with private sector health providers and partners is notable, as it brings them into the digital age alongside public health facilities and has also identified financing to help private facilities offset the financial costs of transitioning to digital.

**Insights from Suriname's digital health transformation journey provide valuable experiences and lessons that can help inform and shape approaches of other countries in the region, and even around the globe.**

<sup>2</sup> <https://www.globalgoals.org/goals/3-good-health-and-well-being/>



## INTERVIEWEES FOR THE CASE STUDY

Name	Title and Organization
Yafflo Ouattara	Country Representative, PAHO
Aloysius Koendjibharie	Physician, Quality Improvement-Program Coordinator, Coordinator Community Health Department, Policy Advisor, RGD
Radjesh Radjkoemar	Director, RGD
Amardjit Gaglall	Assistant Automating, Medical Mission
Daniel Doane	Digital Health Team, IDB
Dominique Afoon	Senior Associate, IDB
Dr. Amar Ramadhin	Minister of Health, Ministry of Health, Republic of Suriname'
Dr. Pinas Ronie	Doctor, Brownsweg Clinic, Medical Mission
Dr. Rakesh Gajadhar Sukul	Director of Health, Ministry of Health, Republic of Suriname'
Dr. Ritesh Dhanpat	Deputy Director of Health, Ministry of Health, Republic of Suriname'
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R. Ori	Director, Bureau of Public Health
Rosmond Adams	Advisor, Health Systems and Services, PAHO



1.

# DIGITAL HEALTH TRANSFORMATION ACROSS THE GLOBE



# 1. DIGITAL HEALTH TRANSFORMATION ACROSS THE GLOBE

Countries worldwide are undertaking efforts to digitally transform their paper-based health systems to accelerate their movement toward achieving Sustainable Development Goal 3, ensuring healthy lives and promoting well-being for all.<sup>2</sup>

Digital transformation is how technologies change the rules of engagement, ways of working, interactions, and mindsets.<sup>3</sup> Similarly, *digital health* refers to a health sector's "systematic application of information and communications technologies, computer science, and data to support informed decision-making by individuals, the health workforce, and health institutions, to strengthen resilience to disease and improve health and wellness for all."<sup>4</sup> From primary care to public health settings, the adoption of digital applications can address pressing challenges, such as making it possible to have the necessary information available at the right place and time for the people who need it.

Further, digitally transforming the health sector helps countries move toward the ambitious quintuple aim, which has been endorsed by the Inter-American Development Bank (IDB), **comprising the following goals:**<sup>5,6</sup>



Improving the health of the population



Enhancing the experience of care for individuals



Reducing health care costs



Improving health care workers' experience



Promoting equity and inclusion

Although digital transformation can be disruptive by changing current models of care, it is powerful and provides new opportunities to standardize workflows, promote access, exchange and use/reuse data for enhanced care and decision-making, and enable more integrated, patient-centric care—efforts that collectively drive improved health outcomes. To realize these benefits, digitalization efforts require a holistic approach that invests not just in technology but also in strengthening the foundational environment by improving policy, governance, strategy, workforce capacity, and related elements. The Pan American Health Organization (PAHO) calls this holistic approach *Information Systems for Health (IS4H)*, advocating it as a means to manage “interoperable

<sup>2</sup> <https://www.globalgoals.org/goals/3-good-health-and-well-being/>

<sup>3</sup> <https://publications.iadb.org/es/publications/english/viewer/The-Golden-Opportunity-of-Digital-Health-for-Latin-America-and-the-Caribbean.pdf>

<sup>4</sup> <https://www.exemplars.health/topics/digital-health>

<sup>5</sup> <https://www.annfamned.org/content/12/6/573>

<sup>6</sup> <https://pubmed.ncbi.nlm.nih.gov/articles/PMC8608191/>

<sup>7</sup> <https://www.paho.org/en/information-systems-and-digital-health>

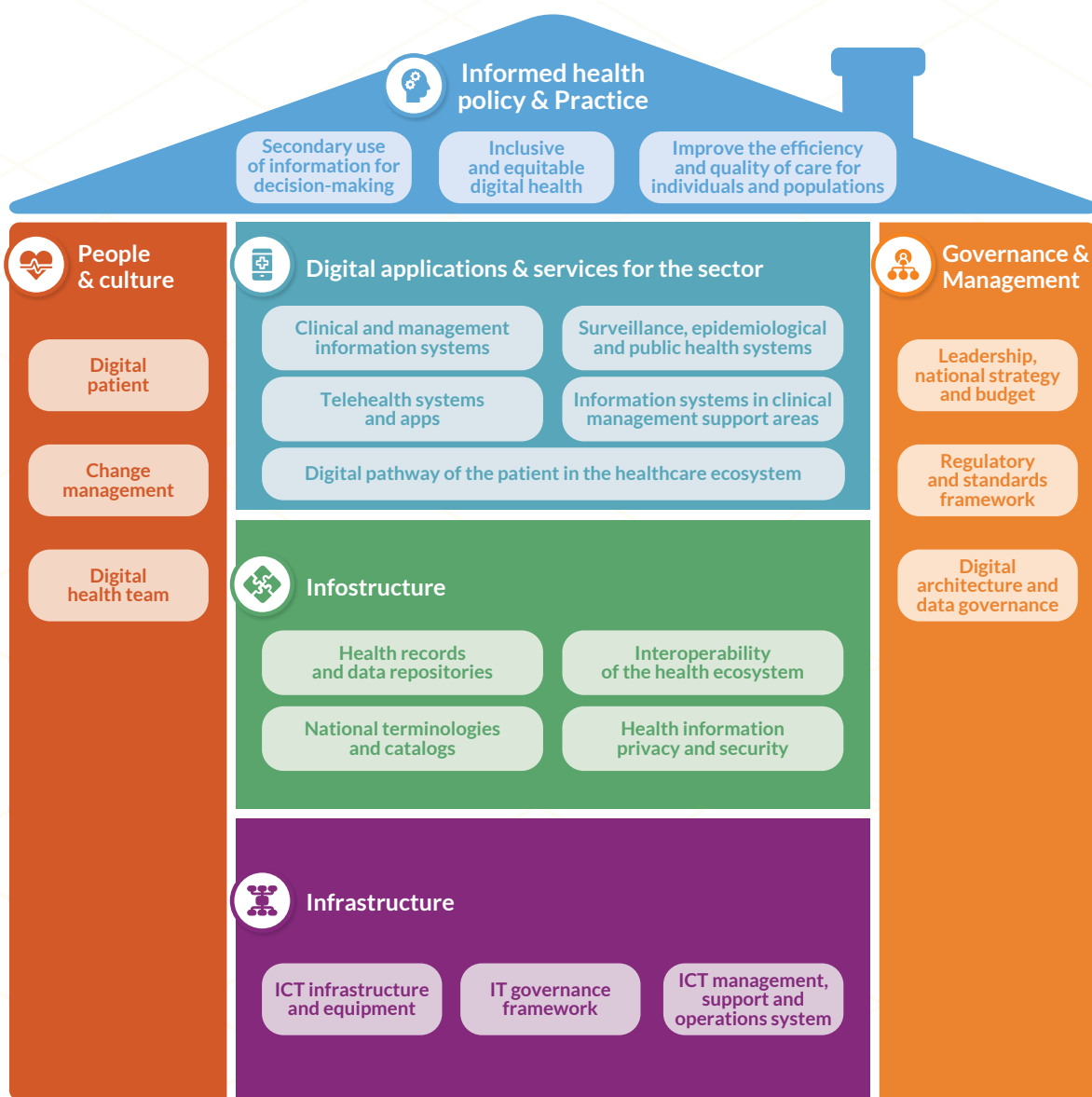


systems with open data that comes from different sources and that is ethically used, through effective information and communication technology tools, to generate strategic information for the benefit of public health.”<sup>7</sup>

Every country’s digital health transformation needs strong leadership in addition to a well-defined roadmap to optimize digital investments and reach the health system’s intended outcomes.

The roadmap needs to describe the current health sector’s environment and define a vision for the future by addressing six interconnected dimensions that set the country on a path to achieve its health goals. The six dimensions—named the *digital house* by the IDB—are governance, people and culture, informed health policy and practice, infrastructure, infostructure, and applications and digital services for the sector (see Figure 1).

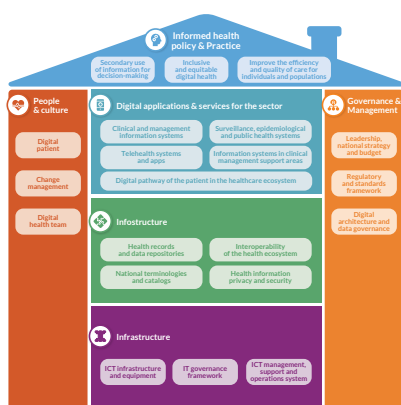
**FIGURE 1:**  
**IDB Digital House**



Source: <https://publications.iadb.org/es/publications/english/viewer/The-Golden-Opportunity-of-Digital-Health-for-Latin-America-and-the-Caribbean.pdf>



## AN OVERVIEW OF THE DIGITAL HOUSE'S SIX DIMENSIONS FOLLOWS:



### GOVERNANCE AND MANAGEMENT

Involves the mechanisms, structures, and processes that political, administrative, and technical authorities use to coordinate partners, set a vision, establish priorities, direct investments, and manage all IS4H matters across a national health system.



### PEOPLE AND CULTURE

Calls for robust engagement with health system personnel and citizens to build trust and digital acceptance through communications, capacity-building efforts, and organizational change management actions.



### INFORMED HEALTH POLICY AND PRACTICE

Calls for robust engagement with health system personnel and citizens to build trust and digital acceptance through communications, capacity-building efforts, and organizational change management actions.



### INFRASTRUCTURE

Encompasses the information and communications technology needed to access the internet and collect, store, process, and use health data—such as networks, servers, software applications, devices, and diagnostic equipment—as well as human resources to staff these operations.



### INFOSTRUCTURE

Refers to the components needed to develop the digital health system's syntactic and semantic interoperability processes, such as patient privacy and consent, cybersecurity, data standards, interoperability frameworks, and information repositories (e.g., master patient index, provider directory, health care facility registry).<sup>9</sup>



### APPLICATIONS AND DIGITAL SERVICES

Refers to the software applications that are developed, configured, implemented, integrated, operated, and maintained for a range of clinical, administrative, and public health uses (e.g., electronic health records [EHRs], telehealth, disease surveillance) that need to be connected through an infostructure to avoid data silos.

**Further, because digital transformations take time and there is no one-size-fits-all approach, each country's roadmap needs to define its priority activities and a sequence for addressing the digital house components.**

<sup>9</sup> [https://www.itu.int/pub/D-STR-E\\_HEALTH.10-2020](https://www.itu.int/pub/D-STR-E_HEALTH.10-2020)





**2.**

## **HEALTH CARE IN SURINAME**



## 2. HEALTH CARE IN SURINAME

The Republic of Suriname is a small country on the northeast coast of South America, with an interior that predominantly consists of Amazonian rainforest.

The country has rich natural resources, specifically abundant gold and oil, that are exported and generate public sector revenue.<sup>10</sup> Of the 10 administrative districts, eight are in the coastal area, including the two urban districts of Paramaribo (the capital) and Wanica, and two are in the interior. Approximately 70 percent of the country's population live in the two urban districts. As of the 2023 census, the population of Suriname is 623,236, with 101.1 women per every 100 men.<sup>11</sup> Since 2021, public expenditures on health care have been 3.3 percent of gross domestic product and 10.02 percent of total public expenditure, while out-of-pocket spending on health has accounted for 24.83 percent of total health expenditure.<sup>12</sup>

The Constitution of Suriname establishes the right to health for all citizens as well as the government's responsibility to promote general health care by a systematic improvement of living and working conditions and the provision of information on the protection of health.<sup>13</sup> The Ministry of Health manages the country's health system, through setting priorities for, planning, and

supervising programs; enacting policies; and monitoring health outcomes. The Bureau of Public Health (BOG), an institution under the Ministry of Health, oversees public health programs, including disease surveillance, immunizations, chronic noncommunicable diseases (NCDs), and child and maternal health.

In 2014, Suriname issued a mandate that all citizens must have health insurance, and today about 78 percent of them are insured.<sup>14</sup> Citizens can choose between public insurance (the State Health Insurance Fund), which primarily supports government employees and low-income groups, or private insurance (i.e., Assuria, PZS, Parsasco). Suriname has 295 primary health care clinics (180 private health clinics and 115 public health clinics) and five hospitals that provide health care services.

The Regional Health Services (RGD) and Medical Mission are key Ministry of Health partners whose networks of clinics provide the public health care services ranging from routine health check-ups and vaccinations to more comprehensive care for chronic conditions. RGD's mandate involves providing accessible and quality health care services to all segments of the population, with a focus on improving public health standards and ensuring that basic health care needs are met efficiently. RGD is funded by the government and operates 57 public clinics across the coastal region, that serve about 125,000 patients (one-quarter of the

<sup>10</sup> <https://www.worldbank.org/en/country/suriname/overview>

<sup>11</sup> <https://www.paho.org/en/suriname>

<sup>12</sup> <https://hia.paho.org/en/country-profiles/suriname>

<sup>13</sup> [https://www.oas.org/juridico/pdfs/mesicic4\\_sur\\_const.pdf](https://www.oas.org/juridico/pdfs/mesicic4_sur_const.pdf)

<sup>14</sup> <https://www.iadb.org/en/project/SU-L1054>

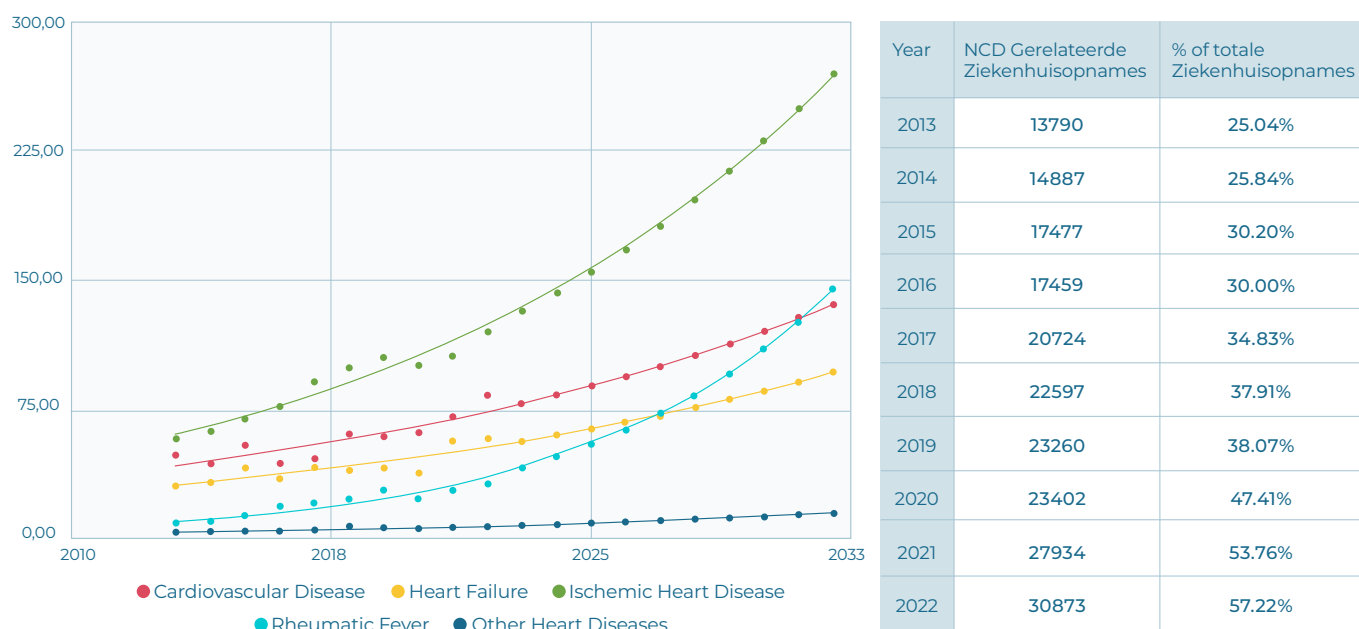
population). Its core patient services include primary care, preventive health care services, some emergency services, and community health programs.

The Medical Mission is dedicated to ensuring that individuals in remote areas and underserved populations have access to essential health care services, including providing services in many different languages and showing respect for the cultural backgrounds and traditions of the indigenous and Maroon populations. The Medical Mission is a charitable organization funded by the government and other donors and has 58 clinics throughout the interior region that serve about 54,000 individuals, mostly indigenous (Amerindian), tribal (Maroon), and migrant communities (particularly gold miners and forestry workers).

The health system faces numerous challenges, including a high burden of NCDs, rising cases of communicable diseases such as HIV, infrastructure gaps, limited human resources, and a lack of data for evidence-based decision-making. A shared challenge across RGD and Medical Mission clinics is the lack of a digital application to record patient health information, schedule appointments, and share information with other attending providers.

NCDs, especially cardiovascular diseases, diabetes, and cancers are the leading cause of death in Suriname (around three out of four deaths), dominating the health care needs of the population and contributing significantly to health care costs.<sup>15</sup> Cardiovascular diseases occur primarily among men, while diabetes and cancers

**FIGURE 2:**  
**Suriname Hospital Admissions Related to NCDs**



Source: Republic of Suriname, Ministry of Health.

<sup>15</sup> <https://www.who.int/news-room/feature-stories/detail/suriname-turning-global-commitments-into-political-action-on-noncommunicable-diseases>

<sup>16</sup> [https://www.iccp-portal.org/system/files/plans/SUR\\_B3\\_Document%201\\_NCD%20Action%20Plan.pdf](https://www.iccp-portal.org/system/files/plans/SUR_B3_Document%201_NCD%20Action%20Plan.pdf)

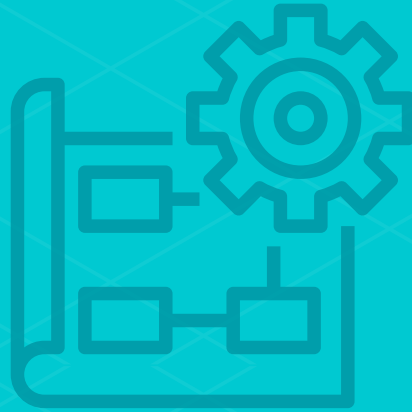
<sup>17</sup> <https://hia.paho.org/en/country-profiles/suriname#:~:text=The%20rate%20of%20age%2Dadjusted,9%20per%20100%20000%20population>

<sup>18</sup> Ibid.



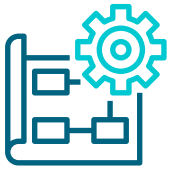
similarly impact men and women.<sup>16</sup> A 2015 report indicated that the prevalence of hypertension (high blood pressure) among people 18 years of age and older was 22.4 percent, and diabetes was at 12.3 percent.<sup>17</sup> Based on information from the Ministry of Health, hospital admissions related to NCDs doubled from 2013-2022 as seen in Figure 2. The majority of cardiovascular diseases and diabetes cases are among the Hindustani population, and to a lesser degree within the Creole and Javanese populations, while cancers are seen primarily among the Creole population, followed by the Hindustani, Javanese, and Maroon populations.<sup>18</sup>

Further compounding the challenge of addressing NCDs is the use of varied, mostly paper-based tools to track patient care at health facilities. For the Ministry of Health, the lack of timely access to high-quality data for evidence-based decision-making impedes its ability to effectively shape policies and programs and monitor the health system's performance. **In recognition of these challenges, the Ministry of Health has undertaken a process to digitize the health system.**



**3.**

## **A ROADMAP FOR SURINAME'S DIGITAL HEALTH TRANSFORMATION**



### 3. A ROADMAP FOR SURINAME'S DIGITAL HEALTH TRANSFORMATION

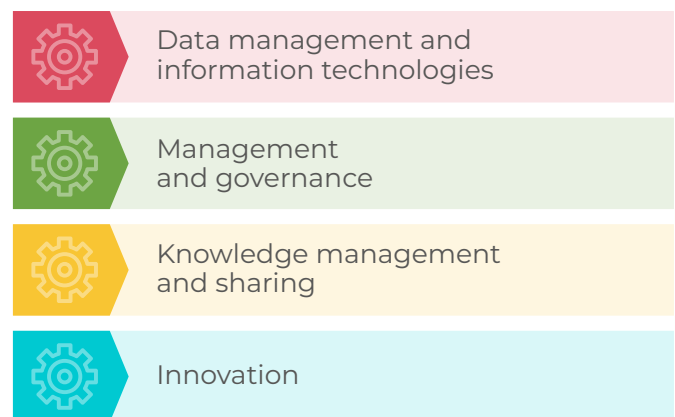
As far back as 2012, the Medical Association, which represents the interests of the private primary health care providers and individual health providers were making isolated investments in digital applications, but the efforts always failed to get off the ground.

A key insight learned from these experiences was that isolated efforts, as opposed to efforts undertaken as part of a larger comprehensive plan to establish digital house foundations, were insufficient. Without addressing the foundational requirements, the efforts could not ensure a commitment to scalability and sustainability of investments.

Taking this lesson into consideration, the Ministry of Health began working with the IDB, PAHO, and other partners to develop a digital health strategy (titled the 'Digital Health Agenda'), which is a critical step in articulating the government's vision and priorities for leveraging digital investments to support the health system's goals and respond to its challenges. A typical national digital health strategy includes information on vision, priorities, landscape and challenges, governance structures, specific projects, investments, estimated timelines, estimated costs, and monitoring plans.

The first step in Suriname's approach was to conduct a rapid IS4H maturity assessment through a series of interviews and stakeholder meetings to evaluate the Ministry of Health's priorities, maturity, and capacities for leading and enabling IS4H. The assessment followed PAHO's IS4H framework, which provides a comprehensive model of the capacities required to strengthen and optimize information systems for health.

As shown in Figure 3, the capacities are categorized into four overarching strategic domains:



The capacities are also ranked on a scale of 1–5 by level of maturity,<sup>19</sup> as shown in Figure 3.

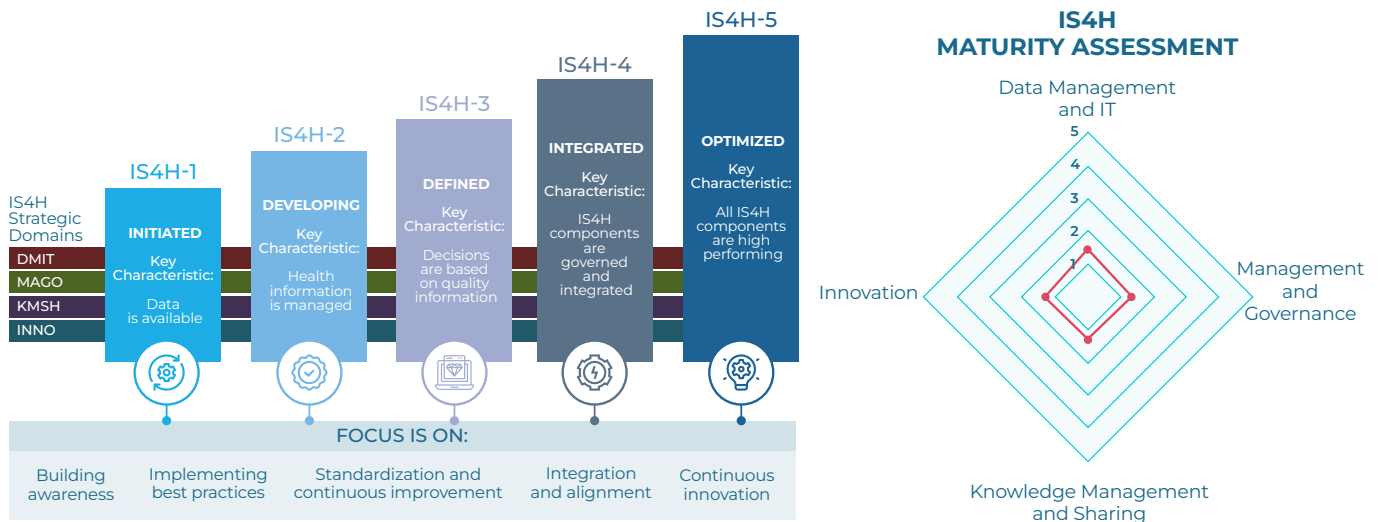
<sup>19</sup> <https://www.paho.org/en/documents/is4h-toolkit-questionnaire>

**FIGURE 3:**  
The PAHO IS4H Framework



Source: <https://www.paho.org/en/documents/infographic-information-systems-health-is4h-conceptual-framework>.

**FIGURE 4:**  
The PAHO IS4H Framework's Five Levels of Maturity



Source: <https://www.paho.org/en/documents/infographic-information-systems-health-is4h-conceptual-framework>.

The assessment indicated that Suriname was at Level 1 on the IS4H maturity scale across domains meaning some data on indicators are collected and analyzed, but it is paper-based and resource intensive. In addition, Suriname received specific recommendations to invest in strengthening foundations and capacity within the government.

**The challenges identified in the IS4H maturity assessment and other information gathering efforts can be summarized as:**<sup>20</sup>

➔ **Data management and accessibility:** Without digital applications, maintaining and accessing patient records has been cumbersome and time-consuming. Paper records are prone to loss, damage, and mismanagement.

➔ **Efficiency in health care delivery:** Manual record-keeping and administrative processes slow health care delivery, affecting both health care providers' efficiency and patient waiting times.

➔ **Quality of care:** The inability to quickly access a patient's longitudinal medical history can impede the provision of personalized and informed health care services, potentially affecting the quality of care.

➔ **Resource allocation:** Without digital data, it is challenging to analyze health care needs effectively, leading to the potential misallocation of resources and difficulties in planning and implementing public health initiatives.

➔ **Communication and coordination:** The lack of a centralized digital system hampers effective communication and coordination between different health care facilities and professionals within the RGD network.

Government stakeholders reported that they felt engaged in the assessment process and found the results to be very useful for understanding the current health system's state. This process was a critical input for the development of the Digital Health Agenda and helped get buy-in from key stakeholders to move forward. Following the assessment, the Ministry of Health led additional conversations with stakeholders to define a vision and plans that reflected the long-term goals and aspirations they hope the country can achieve by 2030. **The vision statement developed was, "in Suriname, information technology is used to increase the human touch in health care," includes three parts:**<sup>21</sup>

➔ **Health policy and health system management** are evidence-informed and supported by high-quality, timely information.

- ◆ Transparency and accountability are at the core.
- ◆ Data is effectively governed and protected.
- ◆ There is an embedded data culture among planners, providers, and patients.

➔ **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, an integrated national EHR for every individual in Suriname.

In terms of scope, the Digital Health Agenda focuses on the digital transformation of the publicly funded primary health care and public health programs and private health care providers.

<sup>20</sup> Suriname EHR Business Requirements 2023

<sup>21</sup> [https://extranet.who.int/countryplanningcycles/sites/default/files/public\\_file\\_rep/SUR\\_Suriname\\_Digital-Health-Strategy\\_2022.Pdf](https://extranet.who.int/countryplanningcycles/sites/default/files/public_file_rep/SUR_Suriname_Digital-Health-Strategy_2022.Pdf)

<sup>22</sup> Ibid.

## FIGURE 5: Suriname's Digital Health Agenda



Source: [https://extranet.who.int/countryplanningcycles/sites/default/files/public\\_file\\_rep/SUR\\_Suriname\\_Digital-Health-Strategy\\_2022.Pdf](https://extranet.who.int/countryplanningcycles/sites/default/files/public_file_rep/SUR_Suriname_Digital-Health-Strategy_2022.Pdf)

At some point, a plan will be developed to transform secondary and tertiary care. The Digital Health Agenda outlines three phases of implementation over seven years, targeting four key objectives and related sub-objectives:<sup>22</sup>

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

➤ **Objective 2:** Improve information technology 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.

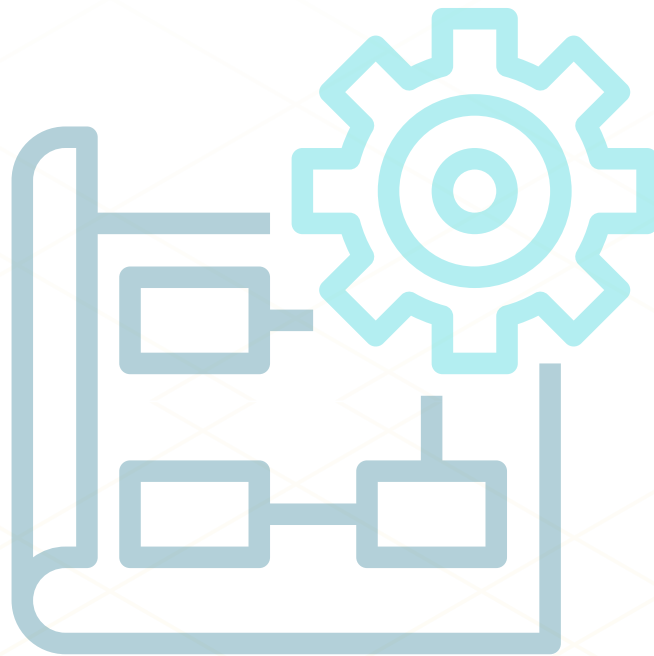
➤ **Objective 4:** Generate knowledge from data and improve access to knowledge that strengthens the health system and improves health outcomes.

## FIGURE 6: Dr. Ritesh Dhanpat, Deputy Director of Health, Dr. Amar Ramadhin, Minister of Health and Dr. Rakesh Gajadhar Sukul, Director of Health



Source: Daniel Doane, IDB.

*“We are proud of the IS4H initiative and the clear roadmap we developed to guide the implementation for digitization of health care. Starting with primary health care and connecting other services, lab, radiology, and hospitals. With those steps we are setting a strong foundation for further development.” --  
Dr. Amar Ramadhin, Minister of Health*



**Together, the vision, objectives, and conceptual digital health architecture described in the Digital Health Agenda lay the groundwork for change and the realization of the benefits of digital transformation.** Improvements such as increasing quality of care, empowering patients, improving continuity of care for chronically ill patients, improving access to timely information for decision-making, increasing access to telehealth, and increasing access to digital health services for citizens.

**With a government-owned, clearly defined roadmap for digitizing the health system, partners like the IDB were able to commit funding to support the execution of these plans.** With a clearly defined country plan, donors and partners have needed clarity and direction to align financial contributions in support of the priorities.



**4.**

# **SUPPORTING PEOPLE AND CHANGING CULTURES**



## 4. SUPPORTING PEOPLE AND CHANGING CULTURES

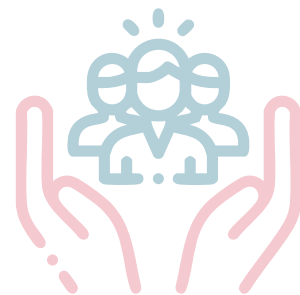
The Ministry of Health took an important step in advancing the priorities of the Digital Health Agenda by establishing the IS4H Program Unit in 2022 which reports to the ministry Director of Health.

To staff the program unit, the ministry, with IDB support, hired local technical experts in policy, change management and communications, systems design, and data standards and interoperability. The program unit staff, known as the IS4H team, is charged with leading the IS4H program portfolio. The IS4H team works to navigate the complexities of implementing multiple concurrent digital health investments and procurements, while maintaining a cohesive and collaborative working relationship with its partners, through the governance structure. In addition, the IS4H team has played a key role in the technical design of architecture, and development of strategies, systems requirements, and more.

One of the critical workstreams the IS4H team manages is communications and change management, directed at three target audiences: health system leaders, the health care workforce, and the public. The team's early communications with health system leaders included face-to-face consultations focused on building an understanding of the idea, value, and importance of the IS4H program. Over time, its communications have evolved into progress updates.

The IS4H team has proactively engaged with the health care workforce on the plans to adopt EHRs, make telehealth available, and support the HEARTS application through numerous communication channels and events, including workshops, seminars, press events, and conferences, as discussed in [Section 7.1](#). The team is also heavily engaged with the Medical Association to engage private primary health care providers, which has helped with understanding private providers' needs, sharing IS4H program plans, and supporting efforts to build digital literacy among the health workforce.

Additionally, there is an EHR Evaluation Task Force, a small group of independent experts paid to assess and evaluate the EHR systems that apply for certification. The EHR Evaluation Task Force consists of experts in health informatics, data security, and interoperability who come together every six months to support the certification process for EHRs seeking to join the private sector marketplace by evaluating EHR systems against established technical specifications. The task force assesses the EHR systems and then develops a report with its findings and recommendations for the EHR Certification Committee to act on.





**5.**

## **ENABLING POLICIES AND GOVERNANCE**



## 5. ENABLING POLICIES AND GOVERNANCE

In addition to creating the IS4H Program Unit, the Ministry of Health created a formal IS4H program governance structure that brings together key stakeholders from different parts of the health system to make decisions and guide implementation.

This country-led governance structure consists of the following committees:

↳ **IS4H Steering Committee**, which provides strategic and technical leadership and national coordination for information systems for health in Suriname

↳ **EHR Certification Committee**, which designs the pre-certification process for the EHR marketplace—from which private health clinics choose their EHR systems—including developing assessment criteria and making the final decisions on which EHR systems get certified for the marketplace (launched in 2023)

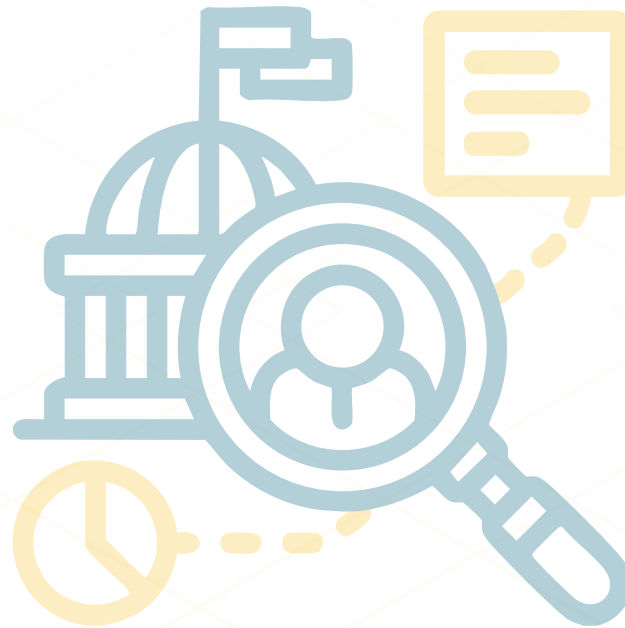
↳ **Legal Committee**, which is responsible for identifying policy gaps and requirements and facilitating the development of legislation (e.g., the Privacy Protection Act and Personal Data) (launched in 2023)

With their good working relationship and strong cooperation, the IS4H Steering Committee partners have been able to drive forward the digital

transformation strategy by shaping plans, directing investments, and establishing priorities. The IS4H Steering Committee initially met quarterly and more recently shifted to bi-annual meetings. Key government partners and health system leaders that have meaningfully engaged in the IS4H Steering Committee include eGovernment (eGov), which is the agency leading all government digitization efforts; RGD; Medical Mission; the BOG; hospitals; insurance companies; and the Medical Association. Support and engagement have also been provided by the IDB and PAHO. There is a strong cross-ministry partnership between eGov and Ministry of Health to support the IS4H program through the governance structure and team level collaboration.

The EHR Certification Committee helps curate the EHR marketplace, from which private health care providers (see Section 7.1.2) select an EHR system (public providers have different options). The committee receives recommendations from the EHR Evaluation Task Force on which EHR systems to certify and makes a final decision. It also identifies and assesses risks and vulnerabilities within certified EHR systems and makes recommendations to the Steering Committee regarding compliance and improvements in EHR certification.

Meanwhile, the IS4H Legal Committee brings together stakeholders from varied legal backgrounds, including universities, ministries, and other institutions, to assess current policy gaps, research and develop new policies, and provide other legal support for the IS4H program. The Legal Committee has been a key contributor to the forthcoming Privacy Protection Act and Personal Data legislation. Suriname's privacy legislation,



which is national and sector-agnostic, has been under development since 2019 and recently submitted to parliament. As a key contributor, the Ministry of Health worked closely with the Ministry of Justice and eGov on this privacy legislation that defines data privacy and security protections. The IS4H Legal Committee is working to build on top of the Privacy Protection Act and Personal Data legislation for health system-specific considerations needed for data sharing through the health information exchange platform (HIEP) (see Section 7.2). As part of this forthcoming legislation, the Legal Committee is working to further define the consent framework to collect and share health information. Additional future plans for the

IS4H Legal Committee include defining data sharing and use policies.

**Another enabling policy is the ministerial decree for health care providers to work digitally, including using EHRs to renew and maintain their business license.** The decree was developed during an 18-month process, and since its signing in January 2025, has been paving the way for providers to digitally collect and use patient health information for treatment purposes. Private sector health care providers must comply by demonstrating their adoption and use of a certified EHR system.



6.

## **DIGITIZING PRIMARY CARE: TOOLS AND PROCESSES**



## 6. DIGITIZING PRIMARY CARE: TOOLS AND PROCESSES

This section dives into some foundational steps the Ministry of Health and its partners have taken to digitize primary health care and address priority health care challenges.

The EHRs, the HIEP, the patient access platform, and the telehealth sections discuss the core functions of the digital health ecosystem, and discussions on the HEARTS application and Suriname's groundbreaking death certificate process follow.

### 6.1. Moving to EHRs

Most of Suriname's health care facilities, including clinics and hospitals, use paper-based tools for patient records, practice management, and reporting, which creates challenges for health care providers and the Ministry of Health around data management, timely access to comprehensive patient record data, data sharing, and data use and analysis. In addition, with paper-based records, patient management and follow-up are hindered, continuity of care and coordination across facilities is difficult, and it is challenging to assess and address the population's health needs. To propel the country's health system into the digital age and address the shortcomings of operating on paper, the Ministry of Health's IS4H program made a strategic decision to prioritize implementing EHRs in primary health care clinics.

Primary health care is the entry point for most citizens, and digitization is expected to have a big impact on care delivery and health outcomes. This priority is also anchored in the Digital Health Agenda, which outlines plans to implement an interoperable EHR system that supports the country's chronic care model.<sup>23</sup> The country's objectives for adopting an EHR system include the following:<sup>24</sup>

- Give providers access to complete, up-to-date patient health records to make informed decisions and provide better care.
- Streamline administrative and clinical processes, including a reduction in manual data entry and potential for errors.
- Provide decision support tools to make informed diagnoses and design treatment plans based on evidence-based guidelines.
- Send automated alerts to providers about significant changes in a patient's health status and reminders related to appointments and care.
- Ensure robust privacy and security protocols to protect the integrity, confidentiality, and availability of patient health information.
- Promote patients' engagement in their care and enable their access to their personal health information.

<sup>23</sup> [https://extranet.who.int/countryplanningcycles/sites/default/files/public\\_file\\_rep/SUR\\_Suriname\\_Digital-Health-Strategy\\_2022.Pdf](https://extranet.who.int/countryplanningcycles/sites/default/files/public_file_rep/SUR_Suriname_Digital-Health-Strategy_2022.Pdf)

<sup>24</sup> Suriname EHR Business Requirements 2023

- Connect with the HIEP to enable interoperability of health information to support longitudinal health records and care coordination.
- Comply with Suriname health care laws, standards, and regulations.
- Curate an ecosystem that can adapt to a changing landscape and scaling with growth in the volume of patients, providers, and data.

**Digital tools such as EHRs must ensure that providers, nurses, and other health care staff involved in patient care are able to securely record, access, and manage patient care and health information.** As a first step toward this goal, the IS4H team developed the EHR Due Diligence and Data Requirements and the Core Dataset HIEP to define the technical and nontechnical requirements.<sup>25,26</sup> This included identifying data that would need to be collected in a standardized format to enable interoperability through the forthcoming HIEP and core EHR system functionalities including scheduling, finance processes, patient demographics/registration, insurance information, episode registration, consultation elements, communications, decisions support/disease management, and continuity of care.<sup>27</sup>

The IS4H team also developed a two-part strategy for getting the EHRs into clinics, with one approach for public health care clinics and another for private ones. The public and private clinics require separate approaches for multiple reasons, as discussed below, but the most notable is the difference in public and private funding mechanisms. While the two strategies are being executed, the IS4H program is working to ensure their alignment on data standards and interoperability requirements to prevent data from being siloed into different EHRs that cannot communicate or exchange data in the future.

To prepare both public and private health care providers for EHR adoption, the IS4H team has engaged in ongoing, robust communications efforts

to share plans and prepare health care providers for the transition. Examples include radio ads, social media posts, meetings, events, training, and leveraging other communication channels and networks to get the message out. Initially, providers were reluctant to move to EHRs and had some misunderstandings about them, but over time most providers have come to understand the need to digitize and are looking forward to the benefits.



### 6.1.1. BRINGING EHRs INTO PUBLIC HEALTH CARE CLINICS

**By exploring options with RGD and Medical Mission, the Ministry of Health determined that the best possible route for public health clinics to adopt EHRs would be to provide an EHR system that could be installed free of charge in all 130 clinics.** The IS4H team followed the EHR Due Diligence and Data Requirements and the Core Dataset HIEP documents, taking international best practices and specific Surinamese needs into consideration. The team also conducted a formal procurement, and after reviewing all bids the evaluation committee determined that none of the options would be financially sustainable for the Ministry of Health. From there, the IS4H team and the ministry's partners decided to close the procurement and shift to an open source software solution that would reduce the costs associated with licensing and configuration to local needs. Open source software is a cost-effective option that provides greater flexibility, transparency, and capability to configure while also offering the option of internal operations and maintenance.<sup>28</sup>

Research on open source solutions is underway, and the IS4H team is assessing available options against the requirements, as well as considering which technical skills and expertise exist in the country to support implementation and ongoing operations. It is anticipated that an open source EHR system will be selected in mid-2025

<sup>25</sup> <https://www.is4h-suriname.sr/ehr-report/>

<sup>26</sup> <https://www.is4h-suriname.sr/core-dataset/>

<sup>27</sup> <https://www.is4h-suriname.sr/ehr-report/>

<sup>28</sup> <https://digitalsquare.org/resourcesrepository/2023/5/25/global-goods-guidebook-version-40>

and rolled out once it has been configured to local needs. Meanwhile, the IS4H team is procuring equipment for the Ministry of Health and the BOG. Medical Mission and RGD had previously received a portion of needed equipment to support the use of the HEARTS application to monitor NCDs and the telehealth platform, so the IS4H team plans to start the rollout with a pilot at eight public health care clinics to test the environment, identify challenges, and gather feedback. After the necessary adjustments are made based on the pilot's findings, the IS4H team, working closely with RGD and Medical Mission, will support a phased rollout to clinics over several years.

A training plan has been developed that outlines the comprehensive activities for supporting clinics as they transition from paper-based processes to the EHR system. The plan includes orientation sessions to gain familiarity with the EHR system and its functionalities, lessons on data entry and other tips for use, training materials to support the specific needs of different user groups, online support, continual learning opportunities, and feedback loops to understand challenges and areas of improvement.

The IT staff at RGD and Medical Mission will also serve as the first line of support to their respective health care clinics, providing both hardware assistance and maintenance, as well as troubleshooting basic EHR system issues. The Ministry of Health has committed to supporting the operations, monitoring, and end-user support for the forthcoming open source EHR system internally, likely through a partnership with eGov. Together, these teams are also working to overcome infrastructure barriers related to electricity and connectivity, especially in the interior region where Medical Mission operates.



## 6.1.2. BRINGING EHRS INTO PRIVATE HEALTH CARE CLINICS

**In the Ministry of Health's early discussions about digitization with the representatives of the country's 180 private health care clinics, it was apparent that the providers had a variety of past experiences with technology and wanted to be presented with options about EHR systems so they could make their own choices.** This request became the basis of the Ministry of Health's EHR strategy to create a marketplace of certified EHR systems for private health care clinics to select from. To support this approach, the IS4H team worked with stakeholders in the EHR Certification Committee, to design a pre-certification process, develop assessment criteria, and make decisions on EHRs to certify based on evaluation findings from the EHR Task Force. During its EHR evaluation periods, the EHR Task Force conducts rigorous evaluations including live testing of capabilities and performance on use cases and develops a report with its findings and recommendations for the EHR Certification Committee to act on.

The IS4H team also applied the EHR Due Diligence and Data Requirements and Core Dataset HIEP documents, which describe the technical and nontechnical requirements that interested technology vendors must comply with.<sup>29,30</sup> Another stipulation in the requirements is that vendors must agree to lock in costs and fees for 10 years, including training and support costs for end users.

**The pre-certification process includes the following steps:<sup>31</sup>**

- 1. Call for applications:** The Ministry of Health officially opens the pre-certification process and announces the opportunity for companies to participate.<sup>32</sup>

<sup>29</sup> <https://www.is4h-suriname.sr/ehr-report/>

<sup>30</sup> <https://www.is4h-suriname.sr/core-dataset/>

<sup>31</sup> Suriname EHR Pre-Certification Program

<sup>32</sup> <https://gov.sr/wp-content/uploads/2023/10/To-whom-it-may-concern-2403-MVo-certification-letter-1.pdf>



- 2. Registration:** The EHR system and company seeking certification must register on Suriname's IS4H program website.<sup>33</sup>
- 3. Demonstration:** The EHR Certification Task Force schedules a date for the registered company to showcase its EHR system and functionalities. This meeting provides the task force with the opportunity to get a firsthand look at the system and ask questions.
- 4. Evaluation:** The EHR Certification Task Force scores the EHR system against the established criteria to evaluate its performance, safety features, and other relevant attributes.
- 5. Report compilation:** Based on its evaluations, the EHR Certification Task Force develops a comprehensive report on its findings, observations, and recommendations concerning the system's suitability for certification.
- 6. EHR Certification Committee review:** The EHR Certification Task Force report is submitted to the EHR Certification Committee, which is responsible for reviewing the findings and making a final decision.
- 7. IS4H Steering Committee decision:** After reviewing the EHR Certification Committee's report, the IS4H Steering Committee makes one of the following decisions:
  - ◇ **Positive response:** The system meets all criteria and is granted certification.
  - ◇ **Negative response:** The system fails to meet the necessary criteria and is denied certification.
  - ◇ **Advice for alteration:** If the IS4H Steering Committee identifies minor areas that need improvement or limited changes in the system, it will offer detailed recommendations for the necessary alterations. In response to these findings, a date for re-evaluation will be established.

The Ministry of Health opened the first round of certification in November 2024 and received five registrations, of which two local companies were certified. A second round of certification that opened on March 24, 2025, is expected to increase the number of certified EHR systems available in the marketplace. In using this approach, Suriname is providing an open, transparent, and fair process for interested technology vendors to understand the requirements for EHR performance, safety, and reliability and the broader vision of the Suriname Digital Health Agenda.

**Another topic that is central to the digitization and standardization of data in private health care clinics is the affordability of EHR systems.**

The Ministry of Health recognized that with access to digital, standardized data on tests, procedures, and services, health insurance organizations can access improved information, expedite claims processing, help detect fraud and waste, support risk assessments, and more. The Ministry of Health estimates that 71 percent of patients who see a private health care provider are insured, of which 70 percent are insured by the State Health Insurance Fund. Given this, the Ministry of Health negotiated with insurance companies (Assuria, PZS, Parsasco) to provide funding to help offset costs of adopting EHR systems, licensing, and purchasing hardware for private health care clinics. An assessment of hardware needs and procurement of devices is also underway to ensure suitable availability in clinics. Engaging with insurance company representatives and coming to an agreement was time-intensive and challenging, but necessary to ensure adequate funding for the program.

**To accelerate the EHR transition, the Ministry of Health established a ministerial decree that private health care providers must adopt an EHR system to renew and maintain their business licenses.** The decree, signed in January 2025, took almost two years to develop and be approved, but it is a strong policy lever. As of February 2025,

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<sup>33</sup> <https://www.is4h-suriname.sr/>

11 early adopter clinics have selected a certified EHR system and received training from the vendor on how to use the system in their daily workflow. An additional 30 private health care clinics have registered with the program to start the process of selecting a certified EHR system and getting the necessary hardware.

*“Looking at past experiences and challenges, it became clear that excluding certain groups or failing to engage all stakeholders would only hinder progress. Coming from and being part of the private sector myself, I understood firsthand the importance of their involvement. For Suriname to successfully transition to a digital health system, it was crucial to ensure that every voice—including private doctors—was heard. Their participation is key to creating an inclusive, effective, and sustainable health care transformation.”* -- Dr. Ritesh Dhanpat, Deputy Director of Health, Ministry of Health, Republic of Suriname

With a lot already accomplished in a short time by a group of dedicated stakeholders, the Ministry of Health looks forward to its ongoing journey to roll out EHRs across all health care clinics and the opportunity to continue to learn and adapt as it works to reshape health care delivery and improve outcomes.

## 6.2. Connecting Digital Health Systems to the HIEP

**As the number of digital health applications implemented in a country increases, the financial and human resources needed to maintain point-to-point connections for data exchange increase exponentially.** A finding across the global health community is the need to plan for standards, interoperability, and data exchange early to avoid data being locked into information silos, which can lead to duplicate data collection efforts and difficulty accessing data for use.

This approach is often termed digital health *infrastructure* or *architecture*, which refers to its convergence of business processes, data, standards, exchange capabilities, core repositories, and digital health systems that support a government's health system and enable interoperability.<sup>34,35</sup>

### An infostructure includes a combination of:

- Governance and coordination across stakeholders and experts
- Development of technical plans
- Guidance on data standards
- Development of an architectural design and data flows
- Agreements and policies
- Exchange platform with services and functionalities
- Human resources to support activities and operations

<sup>34</sup> <https://www.who.int/publications/i/item/9789240010567>

<sup>35</sup> [https://www.itu.int/pub/D-STR-E\\_HEALTH.10-2020](https://www.itu.int/pub/D-STR-E_HEALTH.10-2020)

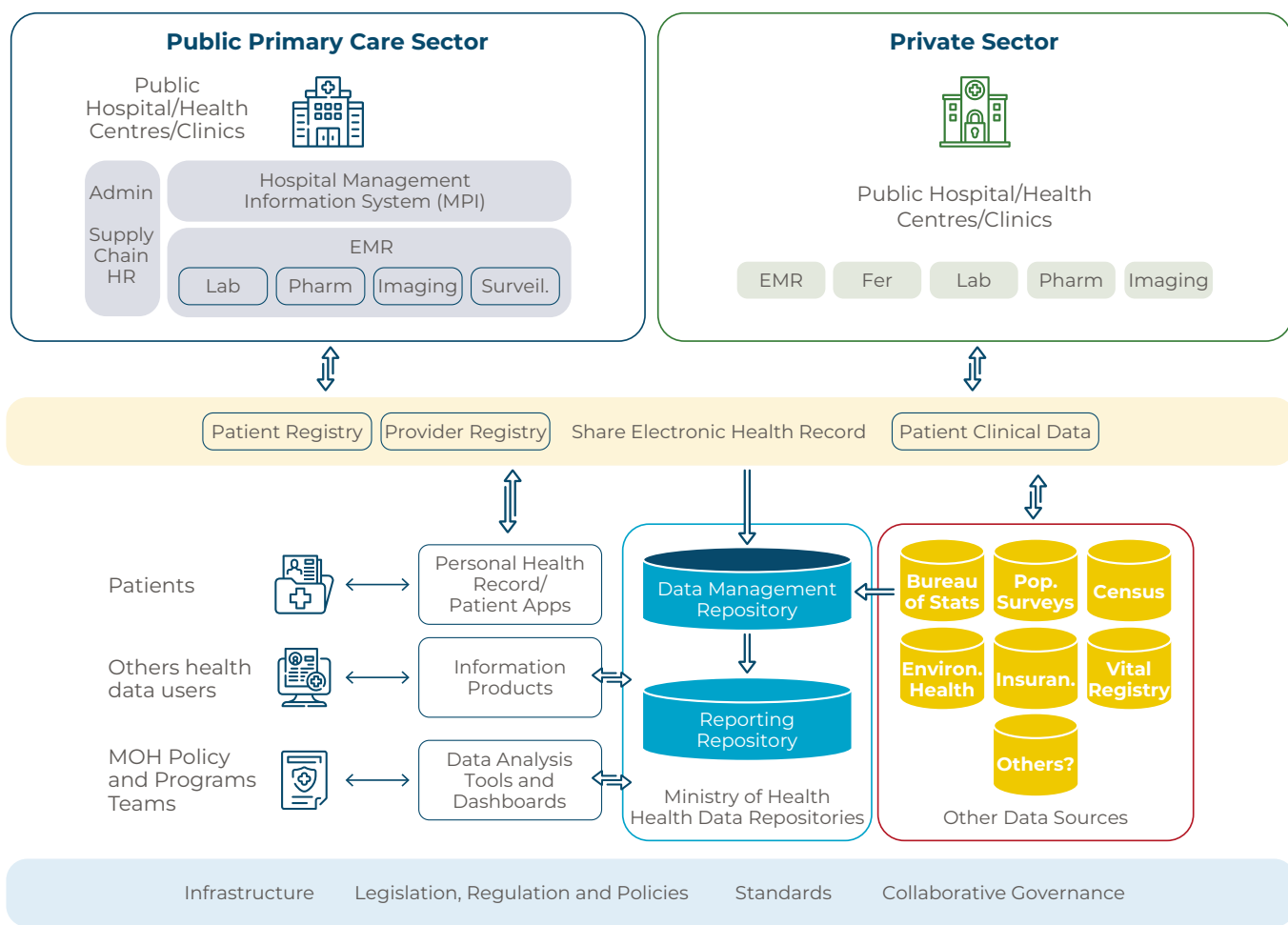


When implemented effectively, this approach and the resulting exchange platform can help manage complex health system data and business processes, reduce administrative burden, enable data sharing and reuse, promote coordination, support privacy and security protocols, and build trust using data governance and agreements.

Learning from other countries' experiences, the IS4H team undertook efforts early to plan for interoperability and developed the conceptual national digital health architecture published in the Digital Health Agenda (Figure 7), followed by the Core Dataset HIEP document which defines business requirements.

The HIEP is envisioned to be a digital platform with a centralized clinical data repository for facilitating the exchange and interoperability of health information among various health care entities and disparate digital health applications, such as EHR systems, lab information systems, pharmacy systems, and more. The clinical data repository also enables the Ministry of Health to gather statistics that can inform policies and programs. The business requirements outlined use cases, technical specifications, a core dataset, standards, and functionalities for the platform.

**FIGURE 7:**  
**The Conceptual National Digital Health Architecture**



Source: [https://extranet.who.int/countryplanningcycles/sites/default/files/public\\_file\\_rep/SUR\\_Suriname\\_Digital-Health-Strategy\\_2022.Pdf](https://extranet.who.int/countryplanningcycles/sites/default/files/public_file_rep/SUR_Suriname_Digital-Health-Strategy_2022.Pdf).

## The HIEP's core functionalities will include:

- Data integration
- Unified longitudinal patient health records
- A clinical data repository
- Information exchange and communications between health care entities
- Privacy and security measures and protections
- Automated alerts and notifications
- Data analytics, dashboards, and reporting
- User access management to ensure appropriate roles and permissions
- Logs and audit trails
- Patient engagement module
- Scalability and a modular design to allow for future expansion

**An essential ingredient to matching patient data into a unified, longitudinal health record is being able to uniquely identify an individual.** Many countries around the world lack a national ID and struggle with correctly identifying and matching an individual's health information across disparate digital applications. In understanding these challenges, and learning from promising approaches in countries like Estonia, Suriname is using its national identity card as an individual's digital identity link to all government services, including health care.<sup>36</sup> The card is linked to an individual's birth record, passport, and driver's license and will be lynchpin in the HIEP to connect patient health information.

Similarly, to ensure that structured, standardized data—which is needed to enable the exchange of health information—is used in the HIEP and integrated systems, the IS4H team is working on country-based catalogs that include the use of HL7 (Health Level Seven) version 2, SNOMED (Systemized Nomenclature of Medicine), LOINC (Logical Observation Identifiers Names and Codes), and country-specific codes.

The Ministry of Health is engaged in a formal procurement for a technology partner to develop HIEP. A contract is expected any day, and then development will kick off. The IS4H team anticipates a year and a half for development and testing activities and anticipates testing and implementation of HIEP sometime in 2026. After development and implementation is complete, the ministry's plan is to transition hosting, operations, and maintenance of the HIEP to a medical informatics department. At this phase, hospitals will be able to start accessing the HIEP through an interface that enables them to query for patient information. In a later phase, the HIEP will be embedded and accessible directly through a provider's EHR system through single sign-on.

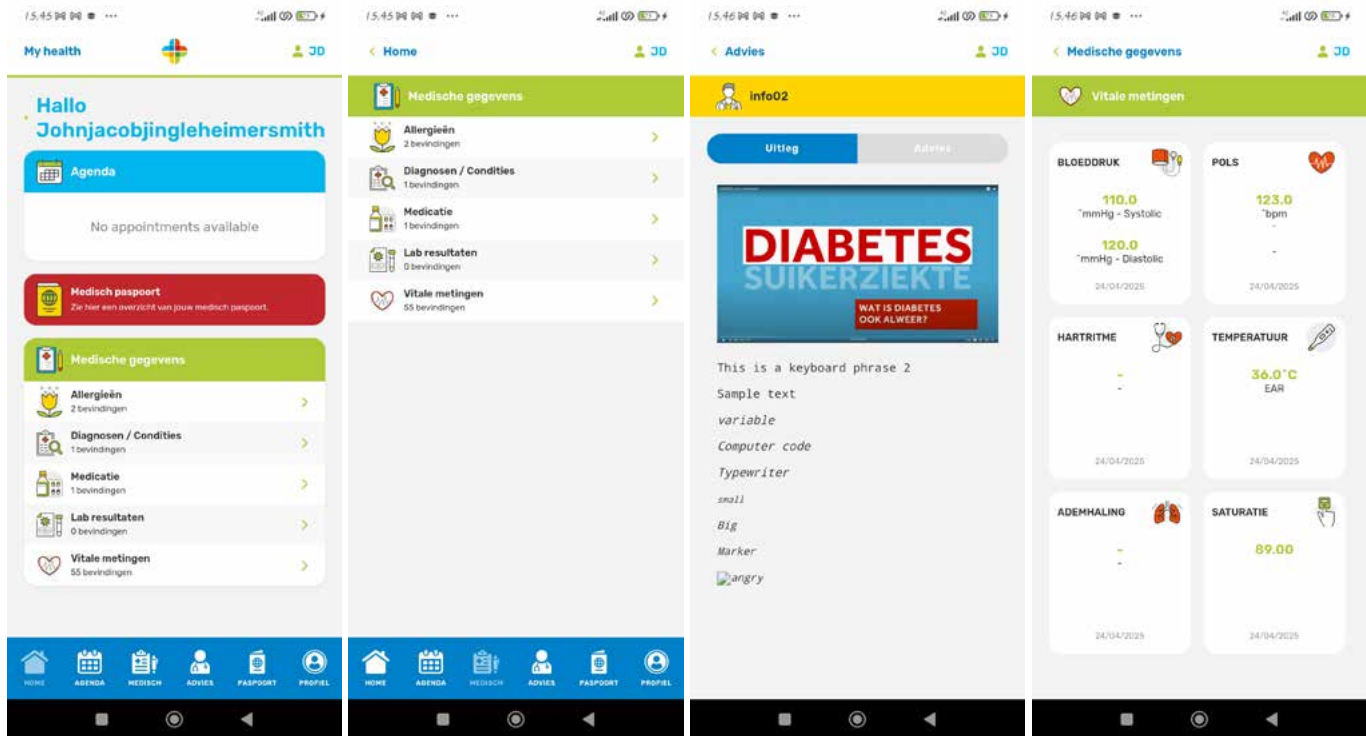
## 6.3. Giving Patients Access to Their Health Information

**Citizens in Suriname do not have easy access to their consolidated health information and can only request paper copies of records from individual health providers, which is a time-consuming, labor-intensive process.** Paper records can also make it challenging to adhere to treatment plans, particularly for individuals managing chronic health conditions. The International Telecommunication Union estimates that as of 2023 in Suriname, 84 percent of citizens had access to the internet and 90 percent of citizens owned a mobile phone; however, the percentage with smart phones was unknown.<sup>37</sup> With this level of digital coverage and a demand from citizens for access to their health information, the Digital Health Agenda vision for 2030 prioritized empowering

<sup>36</sup> <https://e-estonia.com/solutions/estonian-e-identity/id-card/>

<sup>37</sup> <https://datahub.itu.int/>

**FIGURE 8:**  
**MyHealth Patient Portal**



Source: Republic of Suriname, Ministry of Health.

patients with information and tools to better manage their own health and wellness.

The Ministry of Health has taken steps to develop requirements and plans for a patient portal application that can integrate with the HIEP to be populated with data collected by health providers on EHRs. The patient portal will initially be deployed as a separate application that connects to providers' certified EHRs. The EHRs can generate a QR (quick response) code that can be given to patients to activate and access their portals. Eventually, the patient portal will connect directly to the HIEP.

Patient portals provide patients with online, real-time, secure access to their health information, promoting greater awareness of their health and more active engagement in their care. Other benefits include secure provider-patient communication, the ability to track progress on one's health care-related goals, and access to health promotion and education materials to maintain a healthy lifestyle. These benefits can contribute

to increased patient satisfaction and improved health outcomes, particularly in relation to the NCD crisis.

A formal procurement was conducted in 2024, and a local technology partner was selected to develop a national patient portal application called *MyHealth*. With a signed contract in place, the technology partner has started development on the application, which will be offered through the Google Play Store (Android devices) and Apple Play Store (iOS devices) for download. MyHealth includes the following features:

- Access to health information including medications, allergies, and diagnosis
- Appointment scheduling
- Information on lab orders and results
- Sick leave information

**The IS4H team is planning a two-phase implementation strategy.** Phase one consists of a pilot to test MyHealth with a restricted group of private primary care providers using certified EHR systems with a few of their patients. The pilot will be conducted at a diverse set of private primary care provider locations across the country to ensure a representative sample and breadth of identification of challenges. Findings from the pilot will be used to plan the second phase of implementation to roll out the MyHealth application across the country over several years. After development and implementation is complete, the plan is to transition hosting, operations, and maintenance of MyHealth to the government, possibly eGov.

A key consideration for the rollout of MyHealth is the comprehensive communication and training efforts required to ensure accessibility for all citizens, given the varying levels of education and digital literacy across different population groups in the country.

Over the past year, the IS4H team has been actively engaging the public through a multichannel communication strategy. This has included the IS4H website, posters in health clinics, social media campaigns, and television promotions, all aimed at raising awareness about the digitization of the health system and the introduction of a patient portal. Articles have also been regularly published in newspapers to explain the transformation to digital health care and its impact on citizens. So far, all information has been shared in Dutch. In the future, the IS4H team intends to include communication in Sranan Tongo to better reach those who are more comfortable with that language.

As part of its outreach efforts, the IS4H team has also conducted interviews with key stakeholders to provide deeper insights into the transformation toward digital health care. They interviewed the Minister of Health to discuss policy and long-term strategy, parliamentary representatives to address privacy and legislation, and technical team members to explain what the transition to digital health care truly entails. Additionally, the IS4H

team spoke with a physician to highlight the experience of working with an EHR system and the convenience it brings to medical practice.

## 6.4. Improving Health Care Access Through Telehealth

**About 54,000 individuals in Suriname, mostly indigenous (Amerindian), tribal (Maroon), and migrant populations (gold miners and forestry workers) are living in camps, villages, and other settlements in the districts of Brokopondo and Sipaliwini.<sup>38</sup>**

**These communities are spread over 130,000 square kilometers of the interior (90 percent of the country's geographic area) and are often in remote areas only accessible by boat or plane, making health care delivery challenging.** Across many of these communities, there are also individuals of African American descent who have a higher prevalence of hypertension and diabetes due to their diet. These communities are challenged by inconsistent electricity and limited internet connectivity, and the Ministry of Health does not have clinics in the interior to provide health care services.

Medical Mission, an organization working to promote the physical, mental, and social well-being of the population in the interior, is therefore integral to Suriname's health care system and an invaluable partner to the Ministry of Health. Founded over 250 years ago, Medical Mission provides essential health care services, including primary health care, emergency dental care, and community health programs—while balancing cultural sensitivities among patients. In addition to a team at headquarters, Medical Mission employs 13 doctors who travel between the 58 health clinics. Health clinics are also staffed by nurses, lab

<sup>38</sup> <https://www.paho.org/en/partnerships/medical-mission-primary-health-care-suriname-access-health-remote-areas>

assistants, clinic aids, and health assistants who are trained community members. Most individuals living in the interior are uninsured, but financial support for Medical Mission comes from the Ministry of Health and other donor partners.

**In recognition of the challenges of reaching and serving the populations in the interior, as well as the financial costs, the Ministry of Health in collaboration with Medical Mission and PAHO adopted the All-in-One telehealth platform.**<sup>39</sup>

Telehealth provides an opportunity to leverage transformative innovative technology to enable a more inclusive, equitable approach to provide access to high-quality health care. The country plans to use telehealth to connect patients with specialists at hospitals and provide easier access to primary health care providers. The use of telehealth is part of the larger effort to digitally transform the country's health system under the IS4H program.

PAHO is leading a regional telehealth program supporting countries with adopting this approach for effective digital care, which includes a packet of resources and the All-in-One telehealth platform. The platform is a digital global good for managing teleconsultations for primary care providers with a special focus on NCDs, which are a big challenge in Suriname.<sup>40</sup> Capabilities include registering patients, scheduling virtual appointments, providing secure communications between patients and health care providers, conducting live video consultations, and capturing information on patient health encounters.<sup>41</sup> The telehealth platform is designed to be interoperable with other digital applications to enable data sharing and exchange across care providers, which is aligned with the national Digital Health Agenda. Every citizen in Suriname has a national ID that is used in the platform to uniquely identify individuals and ensure all their health information is linked. In addition, the All-in-One platform includes privacy and security protocols and protections that align with international best practices and can be configured to local regulations.

## FIGURE 9: Dr. Pinas Ronie at the Brownsweg Health Clinic



Source: Daniel Doane, IDB.

**The Ministry of Health planned a phased implementation of the telehealth platform, starting with a pilot at six Medical Mission sites (five health clinics and headquarters).** The pilot enables stakeholders to test run the platform on a small scale to gain experience, gather end-user feedback, identify potential issues, and use those insights to adapt plans and reduce risks going forward. Partners provided and set up the necessary IT equipment, including devices, servers, and medical equipment (e.g., heart monitors) at the six pilot sites and supported extensive training sessions for doctors, nurses, and other staff to learn how to use the platform. In mid-January 2025, the pilot sites started using the telehealth platform to register patients, schedule appointments, and record information on patient visits, and consultation capabilities using video are expected to be available soon.

<sup>39</sup> <https://www.paho.org/en/information-systems-and-digital-health/all-one-platform>

<sup>40</sup> According to the Digital Square *Global Goods Guidebook*, "Global goods are digital software health tools that are adaptable to different countries and contexts to help address key health system challenges. Mature digital health global good software is free and open source software, supported by a strong community, funded by multiple sources, and designed to be interoperable." See <https://socialdigital.iadb.org/en/sph/covid-19/technical-resources/4744>

<sup>41</sup> <https://www.paho.org/en/information-systems-and-digital-health/paho-all-one-download>

*“A very positive side of bringing everything digital is that I can see all of the patient’s information. I am not at the mercy of someone’s handwriting, I can see the patient’s health history recorded and use the information during their visit to make an informed decision about treatment.”* -- Dr. Pinas Ronie, Brownsweg Health Clinic

## 6.5. Case Study: An Integrated Chronic Care Model to Address the NCD Crisis

In response to the growing NCD epidemic, the Ministry of Health directed the development of the NCD Action Plan 2015–2020, in collaboration with the BOG, RGD, the Medical Mission, PAHO, the Caribbean Epidemiology Centre, and the US Centers for Disease Control and Prevention.

Within the first two weeks of the platform’s use, 181 patients were registered on the platform. Doctors at the pilot sites are already providing positive feedback on the telehealth platform, which has helped them better manage their patient population and workload, access information on patient encounters and needs remotely, and advise nurses and other staff across the multiple health clinics they are responsible for.

Despite the early success, there are persistent challenges to reliable electricity and stable internet access in remote areas. Stakeholders are working to solve these challenges, and plans are underway to provide more generators, make additional investments in infrastructure, and explore telecommunications partnerships. The next phase of the telehealth rollout includes expanding to all 58 Medical Mission clinics, implementing with RGD in the public health care clinics in the coastal region, and working with hospitals and specialists to get them to also use the telehealth platform. Under the IS4H program, the Ministry of Health is making a large investment in EHRs, and the All-in-One platform will be connected and integrated. By using telehealth, patients will save time and money because they have easier access to health care providers, and the Ministry of Health anticipates reductions in emergency room visits and hospitalizations.

The plan provides a framework for a coordinated, integrated approach to raising public awareness about the burden, promoting healthier lifestyles, strengthening policy, strengthening NCD surveillance and operations research, and improving monitoring and evaluation of the epidemic.

To build on the plan, the Ministry of Health in 2021 adopted the HEARTS initiative, which is a global initiative supported by PAHO that provides a package of clinical tools including modules and guidance for diagnosis, treatment protocols, clinical decision support, a software application to assess patient risk, and counseling and patient education materials to promote a healthy lifestyle.<sup>42</sup> The HEARTS integrated care model can be implemented at primary health care clinics.

**The ministry worked with stakeholders to select priority modules, and the decision was made to focus on hypertension and diabetes.** Stakeholders reviewed the hypertension and diabetes modules and adjusted the protocols based on the country context. Previously, health providers had used their own variation of clinical protocols, but HEARTS presented the monumental opportunity to standardize and align all the country’s health providers with global best practices.

<sup>42</sup> <https://www.paho.org/en/hearts-americas>



**FIGURE 10:**  
**HEARTS Application**



Source: PAHO.

**In addition, the ministry prioritized plans to use the HEARTS application as part of the larger effort to digitize the health system under the IS4H program.** The HEARTS application includes forms to assess patient risk factors during a clinic visit and supports monitoring and follow-ups. Through collaboration with Anton de Kom University of Suriname, a REDCap (Research Electronic Data Capture) database was developed to store and analyze data collected on the HEARTS application for quality improvement and to inform policy decisions. To ensure patient privacy and security, health care providers can access only their

own clinic's data. Anton de Kom University of Suriname also developed dashboards to help providers more easily review data, determine coverage, identify high-risk populations, and interpret patient data. To support the rollout, stakeholders procured the equipment needed by health clinics to assess blood sugar, blood pressure, and body mass index, as well as devices for accessing and using the HEARTS application.

The Ministry of Health opted for a staged implementation of the initiative but is ultimately targeting 100 percent adoption among primary health care clinics. RGD, a strong advocate for HEARTS, trained nurses and providers and piloted the hypertension and diabetes modules, including the HEARTS application, at eight public health clinics. The next phase of the initiative is expanded training and implementation for 13 RGD public health clinics and 22 private health clinics. Plans are underway to bring on 36 additional health care clinics over 2026.

Stakeholders have been gathering feedback on the providers' experiences with HEARTS, and most indicate that they are comfortable with using the updated protocols and find the resources useful, but they are less comfortable with using the HEARTS application. For many, the HEARTS application is their first foray into using digital in health care, and the transition can take time as providers gain experience and comfort, adjust workflows, and improve processes. Based on the providers' feedback, PAHO and the IDB continue to support change management activities, including training nurses and providers on standardized hypertension and diabetes protocols, adjusting workflows, and supporting the shift from paper-based to digital data collection and analysis.

## 6.6. Case Study: A Groundbreaking Digital Death Certificate Application

Around the world, mortality and morbidity data provide tremendous value to public health officials, enabling them to understand a country's death rate and life expectancy, monitor the impact of public health interventions, identify high-risk groups, and analyze trends in causes of death.

This information is vital to evidence-based decision-making, shaping public health programs and policies, and allocating financial and human resources effectively. However, countries struggle with burdensome paper-based processes for death registration, low-quality data, and siloed data systems for health records, vital statistics, and unique identity.

In Suriname, according to a 2012 Ministry of Health report, about 70 percent of deaths occur within hospitals or institutions and 30 percent occur in primary health care clinics or the community.<sup>43</sup> However, the last mortality report was generated over ten years ago because of several challenges. One major challenge was that until recently, the death certificate was an outdated paper-based form that had been unchanged since 1958. It captured a limited set of data, which caused underreporting in many areas, such as maternal mortality. Also, there are human resource capacity gaps: not only are there limited resources supporting this work, but there are very few International Classification of Diseases (ICD) coding experts available in the country to translate data collected on paper forms into the standardized codes needed for analysis, interpretation, and reporting.<sup>44</sup> Further, family members

of the deceased need timely death certificates for burial and religious ceremonies, and need an official death certificate from the Ministry of Internal Affairs local civil registration office to register the death for legal matters.

This combination of burdensome paper-based workflows, data quality issues, and delays in access to mortality and morbidity data hinders the Ministry of Health's ability to implement timely and responsive public health interventions. **In recognition of the need to modernize current processes and improve the quality of mortality and morbidity data, the Ministry of Health developed an approach with three primary activities:**

- Update the death certificate form to align with the 2016 World Health Organization (WHO) medical certificate of cause of death;<sup>45</sup>
- Build coding capacity and implement International Classification of Diseases 11th revision (ICD-11); and
- Digitize mortality surveillance, including the death certificate.

To kick off the digitization process, the IS4H program worked with the Ministry of Health, the Ministry of Internal Affairs, and other stakeholders to develop a set of requirements for the Digital Mortality Surveillance System (DMSS). The team then engaged in a formal procurement process and selected a local technology partner to design, develop, test, and implement the application.

The initial capabilities of the DMSS include death registration, the death certificate and a connection to ICD-11 coding tool to standardize the data and enhance data quality. The system consists of a mobile application, a web-based portal, and a central database for storing collected data. Data from the mobile application is sent to the web portal, which acts as a central hub with an API (application programming interface) connecting

<sup>43</sup> W. Punwasi. *Doodsoorzaken in Suriname 2010–2011*. (2012)

<sup>44</sup> <https://www.who.int/standards/classifications/classification-of-diseases>

<sup>45</sup> [https://platform.who.int/docs/librariesprovider20/default-document-library/resources/volume2-death-certificate-final-2015-04-17.pdf?sfvrsn=6f993d8a\\_2](https://platform.who.int/docs/librariesprovider20/default-document-library/resources/volume2-death-certificate-final-2015-04-17.pdf?sfvrsn=6f993d8a_2)

data from mobile entries. This integration enables real-time or queued data syncing, ensuring consistency across all entry points and providing a seamless workflow for users.

In August 2024, the DMSS was released for download in the Google Play Store (Android devices) and the App Store (iOS devices), and the online version was launched. To support the rollout, experts from the Dutch National Institute for Public Health and the Environment trained a group of providers and coders on the DMSS and ICD-11 coding. Subsequently, those trained have supported a series of training sessions at the Ministry of Health, hospitals, and health clinics to instruct staff on how to download the DMSS, practice using the DMSS to gain experience, and build knowledge and expertise on ICD-11.

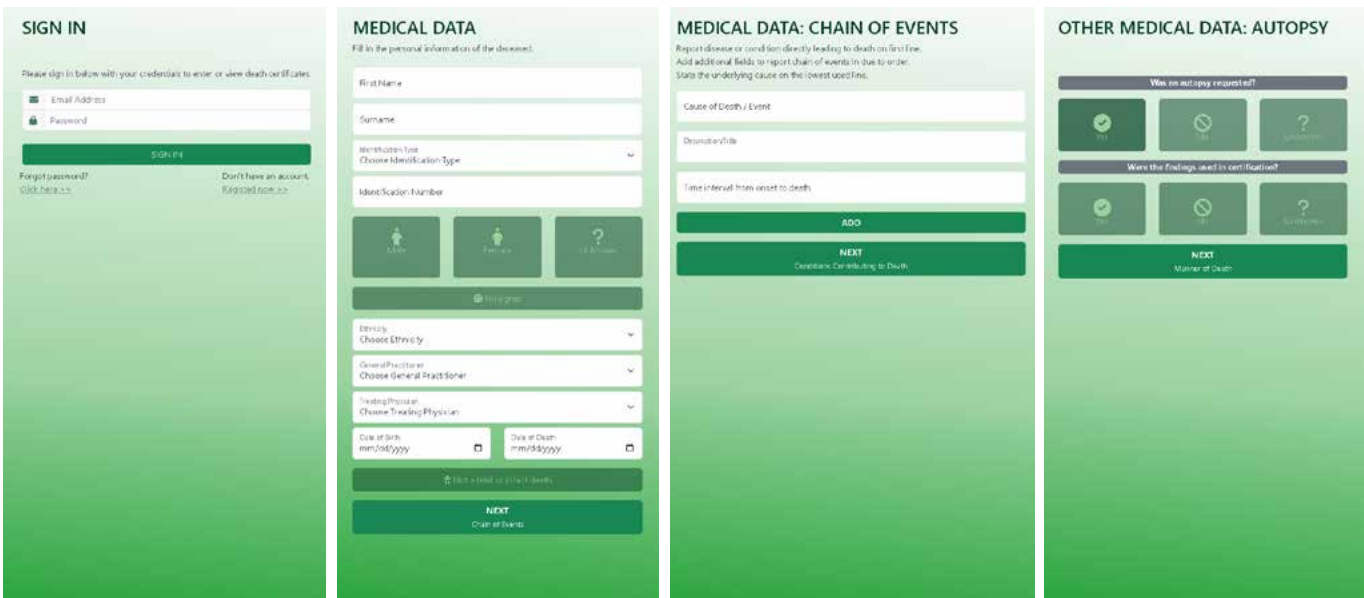
The transition to digital also means modifying workflows at hospitals to incorporate the DMSS into existing processes. Hospital administrators are working to promote the DMSS and help determine how nurses and administrative staff can support providers and specialists with data entry. Generally, the DMSS has been accepted by providers, but some have noted that the updated

death certificate is time-consuming, while others are asking for feedback on data quality and errors so they can improve.

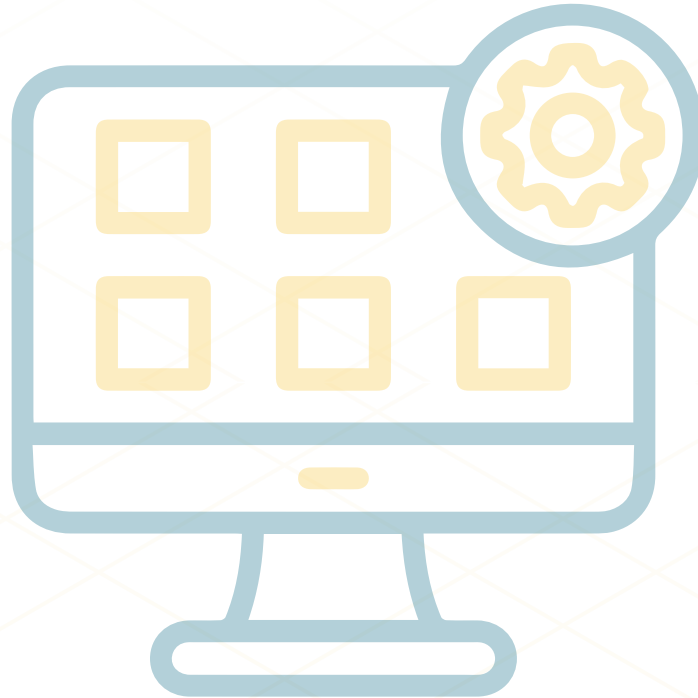
Plans are underway for additional training opportunities to further scale up the adoption of the DMSS, increase its use, and engage in quality improvement efforts to increase the accuracy of the data collected. To build on this momentum, the Ministry of Health announced that all death certificates must be completed digitally on the DMSS starting in January 2025, so it continues to work with partners to raise awareness and promote DMSS use. The BOG is eager to begin using the standardized data being collected on the DMSS to further analyze and inform public health interventions.

**Digitization is a really good thing and will open more doors and more possibilities. Good data will lead to better, more evidence-based policy.”** -- R. Ori, Director, Bureau of Public Health

**FIGURE 11:**  
**The DMSS Application**



Source: Republic of Suriname, Ministry of Health.



**Conversations are underway around long-term hosting, operations, and maintenance that may be supported by eGov. Future phases have been planned to evolve the DMSS capabilities to enable more active mortality surveillance, monitoring, and analysis to enhance epidemiological insights, including the following:**

- A public health surveillance dashboard
- A leveraged DORIS (WHO Digital Open Rule Integrated Cause of Death Selection) tool for analysis of the underlying cause of death<sup>46</sup>
- The digitization of Form A for civil registry integration<sup>47</sup>

➤ An integration with the HIEP to enable data exchange between the DMSS and the civil registry system

➤ The addition of user feedback

**Suriname is the first country to have a digitized death certificate with ICD-11 coding.** This groundbreaking innovation will improve mortality and morbidity data accuracy, timeliness, and accessibility for the country, enabling more data-driven decision-making for public health policies and programs. The Ministry of Health and partners are also exploring how to make the DMSS a global good to engage in regional collaboration and share the application with other countries.

<sup>46</sup> <https://icd.who.int/doris/en>

<sup>47</sup> <http://www.surinameembassy.cn/make-an-appointment/mkv/3-continue-on-to-kv-visa/>





**7.**

## **INFRASTRUCTURE CONSIDERATIONS**



## 7. INFRASTRUCTURE CONSIDERATIONS

The importance of infrastructure cannot be underestimated because it is the backbone of digital transformation.

For an EHR system to operate, it must be hosted on a server, often in a data center; for it to be used by a health care provider at a health clinic they must have electricity, internet access, and a computer or mobile device on which to use it. When countries lack sufficient infrastructure, it can become a major barrier to adopting and using technology.

Suriname is tackling infrastructure barriers to set up the country for the successful adoption of all digital government services, including those under the IS4H program. Under the eGov National Digital Strategy 2023–2030, the country's strategic priorities for digitization across government services include:<sup>48</sup>

- **Strengthening digital infrastructure** to build the strongest possible foundations for the digital transformation of Suriname
- **Providing accessible and affordable internet** to ensure that all individuals, businesses, and organizations can have a high-quality online experience

- **Delivering digital identity** to improve the delivery and functioning of public and private digital services
- **Improving access to government services** to allow citizens to interact with the government at their convenience
- **Ensuring hybrid and distance digital learning** such as leveraging digital technologies to improve digital literacy and shaping an approach to lifelong learning
- **Increasing citizen awareness and creating a mindset shift** to support all citizens in benefiting from the potential of digital technology

eGov is the agency leading efforts in the country to digitize government services, including strengthening digital infrastructure and setting up licensing agreements with ministries to support centralized physical data centers to house servers and networking equipment, as well as supporting back-up and disaster recovery.<sup>49</sup> This enables ministries to run applications and store, manage, and distribute data on the government network within a protected firewall. eGov is working toward ISO certification of its data centers to ensure alignment with global best practices.<sup>50</sup> With support from the IDB, the Ministry of Health is purchasing servers and partnering with eGov

<sup>48</sup> <https://gov.sr/wp-content/uploads/2023/09/Suriname-National-Digital-Strategy-2023-2030.pdf>

<sup>49</sup> Ibid.

<sup>50</sup> <https://www.iso.org/sectors/it-technologies/data-centres>



to host digital health applications on the government network, as well as exploring opportunities for eGov to increase staffing to manage the back end of these applications in the future.

eGov and the Ministry of Health are also exploring options with telecommunications companies and other internet service providers to accelerate connectivity in remote parts of the country lacking Wi-Fi and mobile coverage, particularly the interior, to offset challenges with reliable electricity and stable internet access. **This connectivity is especially important for health services where Medical Mission operates.**

Another example of collaborative infrastructure strengthening has been the purchase of hardware devices for many public primary health clinics to use the HEARTS application and the forthcoming EHR system, which was undertaken by the Ministry of Health, PAHO, and the IDB. However, there is not yet sufficient funding for computers and devices at all facilities. Similarly, through the Ministry of Health's partnership with insurance companies, private primary health clinics will also receive devices to run their EHR systems.

Finally, to address the critical issue of security on government platforms, eGov is also working on a cybersecurity initiative with the International Telecommunication Union and the IDB to increase cybersecurity skills and expertise, as well as conduct training and assessments.



**8.**

## **REGIONAL COLLABORATION**



## 8. REGIONAL COLLABORATION

A crowning achievement in Suriname's digital health transformation journey to date is its efforts to partner with countries in the region to share information and collaborate.

The IS4H team and eGov are actively participating in regional initiatives and contributing to connectathons to test cross-border data exchanges. Since 2022, eGov has played a key role in preparing, setting up methodologies for, and executing technical activities at regional connectathons, including participating in LACPass to exchange COVID-19 digital vaccine certificates.<sup>51</sup> These are key opportunities to learn and build capacity and skills for the country of Suriname to advance the digital health transformation plans.

In 2024, Suriname participated in Caribbean Connect: Building the Pan-American Highway for Digital Health (PH4H) in Kingston, Jamaica, and Connecting the Americas: Launch of the Pan-American Highway for Digital Health in Bogota, Colombia. Led through a partnership between PAHO, the IDB, and countries of the region, with funding from the Government of Japan, the PH4H initiative is aimed at ensuring connected health and continuity of care across the region to provide patients with better health care services no matter their location. The Caribbean and regional

events provided a platform for information sharing, learning, and strategic priority setting among countries. During these events, representatives from participating countries discussed approaches and tools to advance digital health transformation and demonstrate cross-border readiness for data exchange, including vaccines, continuity of care, and technical readiness to join the WHO Global Digital Health Certification Network.<sup>52</sup> The PH4H initiative is working with countries to shift from an individualized approach to a regional one and in doing so to align national strategies and harmonize legal frameworks to enable existing digital health systems to support cross-border exchange within and across countries.

**Regional collaboration is a strategic priority for Suriname**, which has committed to actively engaging in the technical and governance activities to support the PH4H initiative. The next steps include meeting with partner countries in a working group to further define the selected use cases for cross-border exchange (i.e., yellow fever, telehealth, and an international patient summary (focus on migrant health)).

**Suriname is looking for other opportunities to collaborate with countries in the region, such as exploring the possibility of making the DMSS a digital public good that others can leverage.** This would be a tremendous opportunity to share investments with other countries and showcase the groundbreaking work happening in Suriname.

<sup>51</sup> <https://www.racsel.org/en/news/LACPass-The-benefits-of-interoperability-for-citizens-of-the-region-when-crossing-borders/>

<sup>52</sup> The Global Digital Health Certification Network is an open source platform based on transparent standards and available for use free by WHO member countries. See <https://www.who.int/initiatives/global-digital-health-certification-network/global-digital-health-certification-network-faqs>.



**9.**

## **KEY INSIGHTS**



## 9. KEY INSIGHTS

Digital health transformation is a journey, and through the work completed to date, the Ministry of Health and its partners have gained valuable experiences and lessons that have been used to adapt and strengthen approaches.

Notable promising approaches include:



### LEADERSHIP COMMITMENT AND COUNTRY OWNERSHIP

The IS4H program has been able to gain momentum and accomplish a lot in a short time because of its strong leadership within the health system. The director of RGD, the director of Medical Mission, the Medical Association, the minister of health, and even the president of Suriname see the value of digital health transformation and have expressed their support and commitment to this strategic initiative. Another champion from the Ministry of Health is Dr. Ritesh Dhanpat, the Deputy Director of Health. Dr. Dhanpat has been critical in shaping and overseeing the vision for digital health, and as a doctor himself is passionate about improving health care in the country.



### STRONG GOVERNANCE AND PARTNERSHIP

A lot of the achievements to date can be attributed to partner engagement and commitment to the mission. The IS4H team has spent several years investing in building strong relationships and trust with key stakeholders across the health system and government ministries. This includes establishing a governance structure to provide a formal space for collaboration and coordination with public and private sector representatives. Also, through open and transparent communications, the IS4H team has worked to convey the value proposition of digital and gained buy-in and alignment on a shared vision and strategic plan. Leaders across key organizations have developed a strong working relationship that enables them to engage in collaborative decision-making and thought leadership and get things done efficiently and effectively to keep work moving and navigate roadblocks. The eGov and Ministry of Health partnership on the IS4H program is a shining example of what can be accomplished through cross-ministry collaboration.





## ALIGNMENT WITH THE DIGITAL HEALTH AGENDA

After fits and starts at digital health, Suriname conducted an IS4H assessment and then used the findings to inform the contents of the national digital health strategic plan. The Digital Health Agenda is government-owned, with a clearly defined vision, objectives, and strategic priorities for strengthening the whole of the digital house that underpins sustained and interoperable digital health. Stakeholders have conveyed they feel more comfortable making commitments and investments knowing that they are anchored in the Digital Health Agenda. Having a common vision and clear roadmap that stakeholders can commit to has been essential to making progress.



## PRIVATE SECTOR ENGAGEMENT STRATEGY

Unique to Suriname's digital health transformation is the private sector strategy targeting all 180 private health clinics. Most countries that invest in EHRs and other digital health applications initially set aside the private sector to focus on the public sector. But Suriname has made a strategic decision to be inclusive and not leave anyone behind. The Ministry of Health wanted to undertake the ambitious goal of engaging both public and private primary care providers while designing separate approaches. The ministry listened to private sector providers' desire to be able to choose their own EHR systems and designed an EHR certification process to get their buy-in and meet their needs. This engagement is expected to pay off in dividends as both public and private sectors adopt and use EHRs and can contribute toward the longitudinal health records that will be accessible through the HIEP.



## DESIGN FOR INTEROPERABILITY

As the IS4H team is simultaneously planning for the rollout of telehealth, the patient portal, the HEARTS application, and EHRs, they are carefully working to align technical specifications and standards to enable future data exchange and interoperability. The team that includes this expertise developed technical specifications and plans for the HIEP that will bring all the digital health applications together, reducing the risk of data silos. This thoughtful approach is designed for the future and will help optimize the potential of these investments.

*“The digital transformation of health care is a shared challenge that we could not have tackled alone—success depends on collective effort. Through collaboration with key stakeholders, we have achieved important milestones, though we are still at the beginning of this journey. The progress so far has reinforced the critical role of data in improving health care, enabling better patient care, streamlining processes, and driving evidence-based decision-making for long-term impact.”* -- Richard Mendes, Technical Lead, IS4H program, Ministry of Health, Republic of Suriname



As part of the continuous learning journey, the IS4H program has also bumped up against **challenges** that they continue to work to overcome with support from partners.

### SOME EXAMPLES INCLUDE:



#### INFRASTRUCTURE

**Infrastructure is a persistent challenge that the Ministry of Health in partnership with eGov is working to address.** Health care providers across the country need reliable electricity and internet access and devices to effectively adopt and use EHR systems, telehealth, and the HEARTS application.



#### CHANGE MANAGEMENT

**While the IS4H team worked hard to engage health care providers and change mindsets on digital systems, this is an ongoing process.** Some older providers have low digital literacy and are resistant to big changes. Targeted communications and outreach activities will need to continue for years to come.



#### PRIVACY AND CONSENT

**A lot of time and energy has been invested by several ministries to develop the Privacy Protection Act and Personal Data legislation, but it has not been approved and published.** This impacts patient consent and is a necessary precursor to sharing health information across the HIEP. Further delays in the privacy legislation will impact the timeline for the HIEP. The IS4H team has indicated in retrospect, they would have initiated the privacy legislation work earlier in the process had they known the time it would take to get it passed.



#### LIMITED TECHNICAL RESOURCES

**Suriname has a limited pool of digital experts in the country, let alone digital health experts.** There will be increased demand for digital experts in the country as the IS4H investments roll out, but the market is not yet ready to meet this demand. Further, the health care workforce suffers from turnover, and there is an insufficient number of trained medical doctors and nurses, and not all have digital experience. The IS4H team continues to explore opportunities for upskilling staff and building out other training opportunities with academic partners.



**10.**

## **FUTURE PLANS**



## 10. FUTURE PLANS

The next steps in Suriname's digital transformation of the health system include a focus on the sustainability of current and planned investments.

**This is being done through a combination of leveraging local capacities, investing in people, leveraging policy, and aligning new funding to the Digital Health Agenda.** For example, through its partnership with eGov, the ministry is exploring options for training staff to not only host but also support the back end of digital health applications. The ministry is thoughtfully selecting digital health applications that can be supported by the skills available in the country to reduce reliance on international technology partners, and

the ministry's move toward an open source EHR system for public health care clinics is a strategic decision to increase flexibility and control while also reducing costs. Next, the policy requiring primary health care providers to adopt and use EHR systems to improve care and access to data ensures a degree of sustainability. Similarly, as donors and other partners bring new funding to the country's health system, they must align with the Digital Health Agenda and build on top of current investments.

**The Ministry of Health will continue to push forward with the Digital Health Agenda to digitally transform the health system** through strengthening governance, building capacity, changing mindsets, increasing access to data for evidence-based decisions, addressing infrastructure gaps, providing digital health tools, and enabling interoperability of data across disparate systems.





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