COMMISSION ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)

Twenty-eighth session
Geneva, 7-11 April 2025

Submissions from entities in the United Nations system, international organizations and other stakeholders on the progress made in the implementation of the outcomes of the WSIS during the past 20 years

Submission by

World Health Organization

This submission was prepared as an input to the report of the CSTD secretariat that will inform the substantive discussion at the CSTD on the progress made in the implementation of the outcomes of the WSIS during the past 20 years during its 28th annual session in April 2025, in response to the request by the Economic and Social Council, in its resolution E/RES/2023/3, to the CSTD to conduct such substantive discussions and to report thereon, through the Economic and Social Council, to the General Assembly.

United Nations Commission on Science and Technology for Development

Twenty years in the implementation of outcomes of the World Summit on the Information Society (WSIS)

WSIS+20 Reporting Template

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Date of response: 15 November 2024

I. What is your organization's formal role and responsibilities concerning WSIS implementation?

a. Mandates of your organization relevant to the WSIS implementation

As one of the agencies of the United Nations, the World Health Organization (WHO) has the broad mandate on eHealth to contribute to the outcomes of the World Summit on the Information Society (WSIS) and to prioritize the allocation of adequate resources in this regard.

More specifically, WHO is the lead facilitator of the WSIS Action Line C7: ICT Applications: E-health along with the Internation Telecommunications Union (ITU) as cofacilitator. In this role, WHO is concerned with the use of Information and Communication Technologies (ICTs) for Health, also referred to as eHealth or Digital Health in recent times (from this point forward, the term eHealth and Digital Health will be used interchangeably). The 2005 mandate for Action Line C7: ICT Applications: E-health advocated for collaboration between international organizations, governments, health professionals and other stakeholders to promote positive health outcomes using information and communications technologies (ICTs). Critical eHealth application areas in health practice identified included access to health information, particularly content on sexual and reproductive health and MDG priority diseases (HIV/AIDS, malaria and tuberculosis); the use of ICTs to monitor and control the spread of communicable diseases; the development of international standards for the exchange of health data; the adoption of ICTs to improve and extend health care and health information systems to remote and underserved areas and vulnerable populations; and the use of ICTs in humanitarian disasters and emergencies.

In 2009 WHO declared that future Action Line priorities would also include the legal and regulatory environment for Digital Health, as well as improvements in systems for monitoring disaster and emergency response, which require international collaboration and investment.[1]

In 2015 the potential of Digital Health was reaffirmed in the WSIS+10 vision which encouraged the development and implementation of national Digital Health strategies “focusing on implementing a sound enabling environment, integrating ICTs to support the priorities of the health sector, and

[1] Implementing WSIS Outcomes: A ten-year review. United Nations, New York and Geneva. 2015. https://unctad.org/system/files/official-document/dtlstict2015d3_en.pdf

providing reliable, affordable and sustainable connectivity for health services, health systems and the general public to improve the health of all people".[2] Particular reference was made to ensuring trust in Digital Health through the adoption of standards which facilitate data-sharing while respecting privacy. It was recommended that more attention be given to applications to support the flow of information between health professionals, the use of ICTs to monitor public health, and the preparation for natural emergencies.[3]

Later in 2015, the outcome document of the high-level meeting of the United Nations General Assembly on the overall review of the implementation of the outcomes of the WSIS emphasized the importance of ICT applications in government operations and services, especially in health care and health information, education and training. The document further highlighted the breakthroughs in the provision of health care enabled by ICTs, with greater numbers of people having access to services and data that might previously have been out of reach or unaffordable. Ministers and heads of delegations committed themselves to harnessing ICTs to achieve the 2030 Agenda for Sustainable Development, noting that they could accelerate progress across the health-related Sustainable Development Goals (SDGs).[4]

b. Brief History of your organization's contribution to the World Summit on the information Society (WSIS)

History of WHO's contribution to WSIS: 2005 – 2015

In 2005 the fifty-eighth World Health Assembly (WHA) through its resolution WHA58.28[5] on Digital Health urged Member States "to consider drawing up a long-term strategic plan for developing and implementing eHealth services…to develop the infrastructure for information and communication technologies for health…to promote equitable, affordable and universal access to their benefits." Countries were urged to develop strategies for digital health that would guide policy development, plan for sustainable implementation, and address data security, privacy, interoperability, cultural and linguistic issues, workforce development, infrastructure, financing and evaluation.

In 2013 the sixty-sixth WHA adopted a further resolution (WHA66.24[6]) urging Member States to "consider developing … policies and legislative mechanisms linked to an overall national eHealth strategy". Countries and stakeholders were urged to direct their efforts towards creating a consistent digital health vision in line with a country's health priorities and resources, developing an action plan to deliver the proposed vision, and creating a framework for monitoring and evaluating eHealth implementation and progress. By 2015, 85 Member States had developed a national digital health strategy.

The WHA resolution WHA66.24 also responded to the call to promote the adoption of digital health standards to enable the secure, accurate and timely transmission of health data. This resolution

[2] WSIS+10 Outcome Documents. 2014. International Telecommunication Union (ITU), Geneva.

[3] Ibid

[4] Ibid

[5] https://iris.who.int/bitstream/handle/10665/20378/WHA58_28-en.pdf?sequence=1&isAllowed=y
[6] https://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R24-en.pdf

provided strategic direction for full adoption of standards for interoperability of digital health systems and related services. It highlighted the importance of protecting the security and privacy of personal clinical data and urged relevant stakeholders, including national authorities, relevant ministries, health-care providers, and academic institutions, developing partners to draw up roadmaps for implementation of health data standards at national and subnational levels. The resolution further stressed the importance of developing appropriate policies and legislative mechanisms to ensure compliance in the adoption of health data standards by the public and private sectors, including the donor community.

WHO's Global Observatory for eHealth (GOe) was launched in 2005 to study the evolution and impact of digital health in Member States. The GOe undertook several surveys on digital health experience and implementation to inform discussions in the Action Line and the work of agencies implementing digital health initiatives. The report of the third global survey on digital health, "Global diffusion of eHealth: making universal health coverage achievable[7]" was published in 2016. The survey showed that 83% of Member States had at least one mHealth initiative, while 77% had one or more telehealth initiatives and 47% had national electronic health record systems.

In 2012 WHO, with the ITU, launched a National eHealth Strategy Development Toolkit[8], a practical guide to the development of national eHealth strategies. The toolkit provides governments, their ministries and stakeholders, with a solid foundation and methodology for the development and implementation of a national eHealth vision, action plan and monitoring & evaluation framework.

With the increased use of mobile telephony, WHO and partners continued to leverage the proliferation of mobile phones to address the increasing demand for digital health tools to support integrated care, improve access to and the quality and safety of care, including monitoring performance of health services and systems. For example, in 2012, WHO and the ITU launched a joint initiative to mitigate non communicable diseases. The initiative is called the "Be Healthy Be Mobile" or BHBM[9] for short. It employs mobile technology to support national efforts in the prevention and management of noncommunicable diseases. The initiative leverages the reportedly more than 7 billion mobile telephone subscriptions across the world, of which over 70% are in low- or middle-income countries.

BHBM works with governments to scale up targeted client communication messaging services for noncommunicable diseases (NCDs) and their risk factors. NCDs kill around 41 million people each year, over 70% of all deaths. Millions of people have been reached through the programmes and evaluation indicates that they are impacting positively on users' health.

In response to the WSIS call for improving access to the world's health information, initiatives such as the HINARI [10]Access to Research in Health Programme set up by WHO and major publishers to enable low- and low-middle-income countries to access one of the world's largest collections of biomedical and health literature has received tremendous uptake and progress[11].

During this decade significant advances were made in the use of ICTs in education and training of health personnel. In addition, universities, governments and civil society employed ICTs to make

[7] https://www.who.int/publications/i/item/9789241511780
[8] https://www.who.int/publications/i/item/national-ehealth-strategy-toolkit
[9] https://www.who.int/initiatives/behealthy
[10] https://www.research4life.org/about/programs/hinari/
[11] https://www.who.int/news/item/30-09-2024-who-s-hinari-access-to-research-programme-drives-increase-in-publications-and-trials

content and open learning courses available and affordable for audiences such as policymakers, researchers, health personnel and agencies.

Other WSIS Action lines provided a strong basis for establishing partnerships, for example Action line C2 on improving ICT connectivity; C6 on the need for an enabling environment; and C7 on ICT applications, including digital health, in all aspects of life. During this decade public-private partnerships were leveraged, enabling knowledge sharing and new models of collaboration towards innovative solutions and impact on health. With the support of WHO, key stakeholders in the health sector responded to the WSIS call for participation. These included governments; multilateral agencies and development partners; health care organizations and businesses; academic, research and public health institutions; standards development organizations; health workers and professional associations; ICT entities; nongovernmental organizations; and individuals, families and communities.

During this decade, countries faced a number of barriers to implementing and scaling up digital health implementations. Challenges included varied political commitment; lack of suitably qualified or experienced professionals to develop and implement digital health projects; inadequate infrastructure to support digital health programmes; lack of adequate business models to support sustainable digital health delivery; gaps in national legal and regulatory landscapes for incorporating ICTs into health services; and inadequate adoption of health data standards to facilitate interoperability among systems and devices while providing for privacy and security in health information systems. Effective governance of digital health resources and maintaining trust in the digital health environment emerged as critical to progress and scaling up digital health implementations.

History of WHO's contribution to WSIS: 2015 to present

In the decade since WSIS+10, WHO has continued to be active in its role as the lead facilitator of the WSIS Action Line C7: ICT Applications: E-health, along with the ITU as cofacilitator, responding to new challenges and proactively providing global leadership and guidance to enable the sustainable digital transformation of health, to improve the health of all people.

Acting on the 2018 resolution of the World Health Assembly, and following extensive and inclusive consultation, WHO Member States, WHO and Development partners developed the Global Strategy on Digital Health 2020–2025 (GSDH)[12]. The GSDH was endorsed in 2020 by the seventy-third WHA in resolution WHA73.28[13]. The vision of the GSDH is to improve health for everyone, everywhere by accelerating the development and adoption of appropriate, accessible, affordable, scalable and sustainable person-centric digital health solutions to prevent, detect and respond to epidemics and pandemics, developing infrastructure and applications that enable countries to use health data to promote health and well-being, and to achieve the health-related Sustainable Development Goals.

Since the endorsement of the GSDH, WHO has launched several activities to meet the four strategic objectives which are: (i) promote global collaboration and advance the transfer of knowledge on digital health; (ii) advance the implementation of national digital health strategies; (iii) strengthen governance for digital health at global, regional and national levels; and (iv) advocate for people-centred health

[12] https://www.who.int/publications/i/item/9789240020924
[13] https://apps.who.int/gb/ebwha/pdf_files/WHA73/A73(28)-en.pdf

systems that are enabled by digital health.

In 2023 WHO launched the Global Initiative on Digital Health (GIDH)[14], a WHO-managed network of organizations, institutions and government technical agencies actively engaged in supporting national digital health transformation and is WHO's WSIS implementation mechanism for the E-Health C7 Action Line. The GIDH, which was developed through collaboration with Member States through G20 and stakeholders, aims to focus country-level efforts and align resources toward country-led digital health transformation through strengthened collaboration and knowledge exchange.

In 2024 the GIDH has co-organized, co-hosted or participated in several global events with Member States, and development and implementing partners to collaborate in moving towards sustainable digital health transformation through robust foundations and digital public Infrastructure. Through its Transformational Toolbox, the GIDH provides access to tools and resources to support development, costing and implementation of digital health strategies.

WHO has continued to provide access to knowledge and guidance to support digital health activities at international, regional and national level. In the period 2020-2024 WHO developed more than 60 digital health knowledge resources including guidelines, toolkits, and reports. Guidance on emerging technologies has been produced relating to the ethical and impactful use of frontier digital technologies such as artificial intelligence.

To support the implementation of WHO guidelines in digital health solutions, WHO developed SMART Guidelines[15] (Standards-based, Machine-readable, Adaptive, Requirements-based, and Testable) on antenatal care, HIV, family planning, tuberculosis, child health in humanitarian emergencies, immunizations, and the digital documentation of COVID-19 certificates, comprising recommendations on the data, digital functionality, ethics, and trust architecture needed to ensure the interoperable, person-centered availability of immunization and health records globally.

In 2024, WHO contributed to efforts led by the UN envoy on Technology on the establishment of the Global Digital Compact, the Pact for the Future and the declaration on future generations[16]. During the 79th UN General Assembly in 2024, WHO also hosted an event with several partners on strengthening health data governance.

In 2020, to partner with governments in shaping national ecosystems that enable the systematic use of innovation to promote health equity, WHO established a Global Innovation Hub located at Headquarters[17]. In 2024, the Innovation Hub launched the WHO Country Demand Catalyst initiative supporting governments to translate priority health needs into demands for innovation, and address these through scaling of de-risked innovations. This approach has supported governments in selecting country-appropriate digital (and other) innovations.

To build capacity in digital health for Member States and partners, WHO has developed courses on digital health and together with development partners and sister United Nations agencies, has provided training to thousands of people globally through online and in-person courses. WHO has further contributed to capacity building through global summits and regional workshops. With the Global Digital Health Partnership and other communities of practice, WHO has supported

[14] https://www.who.int/publications/m/item/global-initiative-on-digital-health
[15] https://www.who.int/teams/digital-health-and-innovation/smart-guidelines
[16] https://www.un.org/techenvoy/global-digital-compact
[17] https://www.who.int/teams/digital-health-and-innovation/who-innovation-hub

government-to-government knowledge sharing and collective learning in support of digital transformation. The WHO-ITU-WIPO led Global Initiative on Artificial Intelligence for Health[18] NOW convenes regularly to harness artificial intelligence in health, by developing policies, standards, guidance to enable innovation, facilitating global collaboration, and implementing AI solutions effectively across diverse healthcare systems.

WHO has supported Member States in the use of the WHO Digital Health Atlas[19] for country-level enumeration and governance of digital health solutions and coordination of investments. The Global Digital Health Monitor[20], an interactive digital health maturity model developed by partners and being migrated to WHO Head Quarters and complements the Digital Health Atlas and helps countries prioritize and monitor their digital health interventions based on the WHO/ITU eHealth Strategy Toolkit framework.

WHO hosts the Global Digital Health Certification Network[21] (GDHCN), a standards-based digital public infrastructure (DPI) for health. This DPI supports participating jurisdictions to recognize and trust each other's health documents. The GDHCN is built on the European Commission's EU Digital COVID-19 Certificate system. Current and future uses of GDHCN include digital COVID-19 certificates, digital international certificate of vaccination and prophylaxis, digital personal immunization records, an international patient summary and the Hajj health card initiative.

In 2021, WHO implemented a health information dissemination programme through which trusted health information and evidence-based guidance was provided to more than 1 billion people during the COVID-19 pandemic.

In early 2020, WHO established a Digital Clearinghouse[22] platform which is aimed at assessing solutions that deliver digital health interventions at the primary healthcare level in low- and middle-income countries (LMICs). Through the platform, ministries of health and other government agencies responsible for digital health can access reviewed digital health solutions for adoption considerations.

At the regional level WHO has worked with Member State Regional bodies such as the Africa CDC, the G7 and the G20, to leverage the GSDH to inform the priorities and interventions on digital health of Member States in the regions.

Several government-to-government collaborations on digital heath and health information systems have been formed in four WHO regions; the African, European, Western Pacific Regions and the WHO Regional Office for the Americas (PAHO). These have strengthened digital health coordination among Member States, focusing on digital health governance, stewardship, and sustainability. Forty Member States have joined the voluntary Government to Government Global Digital Health Partnership which has fostered Member State collaboration.

By the midterm implementation of the World Summit on the Information Society in 2015, 85 (44%) countries had developed national digital health strategies. To date, 129 (66%) countries have national digital health strategies. Member States in all regions have actively participated in consultations towards regional strategies or action frameworks for digital health.

[18] https://www.who.int/initiatives/global-initiative-on-ai-for-health
[19] https://www.who.int/initiatives/gidh/toolbox
[20] https://www.who.int/initiatives/gidh/toolbox
[21] https://www.who.int/initiatives/global-digital-health-certification-network
[22] https://www.who.int/teams/digital-health-and-innovation/who-digital-clearinghouse

Trusted and inclusive digital health interventions that emphasize focus on the most vulnerable, are emerging as important guiding principles for digital transformation of the health sector across all regions. For example, in the Region of the Americas "Leaving no one behind in the digital age" has been defined as reaching all vulnerable populations as well as those that are not digitally literate.

There is an increasing trend in all Regions for digital transformation and ICT strategies in Member States to include and address digital health needs, while country strategies for health place increasing emphasis on capitalizing on digital technologies for improved health outcomes. This convergence is in line with the WSIS+10 Vision which encourages implementation of "a sound enabling environment, integrating ICTs to support the priorities of the health sector". It is also aligned with the 2024 call of the Digital Health Compact to leverage digital public goods and digital public infrastructure to achieve the targets of the SDGs, including SDG 3 (Good Health and Well-Being).

c. Implementation processes and initiatives within your organization and/or in partnership with other organizations

Since 2015, WHO has continued to work with various stakeholders in the implementation of digital health. The following is a summary of initiatives undertaken since 2015:

WHO - Normative Initiatives

In May 2018 the Health Assembly adopted resolution WHA71.7[23] on digital health, in which it requested the Director-General "to develop … in close consultation with Member States and with inputs from relevant stakeholders … a global strategy on digital health, identifying priority areas including where WHO should focus its efforts". The strategy was developed through a consultative process launched in March 2019 that included discussions in online public forums, technical consultations, meetings of the WHO regional committees and the Executive Board at its 146th session. The Global Strategy on Digital Health 2020–2025 (GSDH)[24] was endorsed in 2020 by the seventy-third WHA in resolution WHA73.28.

The vision of the GSDH is to improve health for everyone, everywhere by accelerating the development and adoption of appropriate, accessible, affordable, scalable and sustainable person-centric digital health solutions to prevent, detect and respond to epidemics and pandemics, developing infrastructure and applications that enable countries to use health data to promote health and well-being, and to achieve the health-related Sustainable Development Goals. The strategy contains four objectives, proposed policy actions and 172 proposed actions for Member States, the Secretariat and partners, spread over the short, medium, and long term.

The objectives and proposed actions contained in the GSDH are closely aligned with the affirmations in WSIS Beyond 2015 (Outcome documents 2014), in particular:

- promoting and maintaining gender equality

[23] https://iris.who.int/bitstream/handle/10665/279505/A71_R7-en.pdf?sequence=1
[24] https://www.who.int/docs/default-source/documents/gs4dhdaa2a9f352b0445bafbc79ca799dce4d.pdf

- providing equitable access to information and knowledge for all
- inclusively building ICT capacity for all and confidence in the use of ICTs by all
- effective cooperation backed by adequate funding and assistance for inclusive ICT initiatives for the benefit of the developing and least developing countries
- strengthening the trust framework, including information security and network security, authentication, privacy and consumer protection
- building a multistakeholder people-centric approach

Since the endorsement of the GSDH WHO has launched several activities to meet the four strategic objectives which are: (i) promote global collaboration and advance the transfer of knowledge on digital health; (ii) advance the implementation of national digital health strategies; (iii) strengthen governance for digital health at global, regional and national levels; and (iv) advocate for people-centred health systems that are enabled by digital health.

To develop norms and standards on digital health competencies both for inservice and preservice, WHO has commenced the development of a Global Digital Health Competency Framework.

WHO - Guidance and Knowledge Sharing Initiatives

WHO launched the Global Initiative on Digital Health (GIDH) in October 2023. GIDH is a WHO-managed network of organizations, institutions and government technical agencies actively engaged in supporting national digital health transformation and is WHO's WSIS implementation mechanism for the E-Health C7 Action Line.

Created as a vehicle to help accelerate the implementation of the Global Strategy on Digital Health, the GIDH aims to focus country-level efforts and align resources toward country-led digital health transformation through strengthened collaboration and knowledge exchange. The initiative aims to move beyond experimental and pilot projects towards full-scale digital transformation by creating the necessary supportive foundations of policy, governance and digital public infrastructure for countries.

With the purpose of assisting countries at every stage to effectively plan, build, finance, and govern their digital health ecosystems, the GIDH aims to achieve the following objectives through collaborative efforts:

- Assess and prioritize country needs for sustainable digital health transformation.
- Increase the alignment of country-level digital health resources and unfunded priorities.
- Support the accelerated achievement of the strategic objectives of the Global Strategy on Digital Health.
- Build capacity and converge efforts to encourage local development, maintenance, and adaptation of digital health technologies to continuously changing needs.

The GIDH organized a two-day side event alongside the WSIS+20 High-Level Event in Geneva in May 2024[25]. This event was the first GIDH Multistakeholder Dialogue on National Digital Health Transformation under the framework of the WSIS and the C7 action line on E-Health. At the event, countries, development and implementing partners discussed latest learnings and collaborations in

[25] https://www.who.int/news-room/events/detail/2024/05/28/default-calendar/multistakeholder-dialogue-on-national-digital-health-transformation

advancing country-stewardship towards sustainable digital health transformation through robust foundations and digital public Infrastructure. Stakeholders shared key areas or digital health transformation such as government to government collaboration, digital public infrastructure for health, tracking digital health investments, measuring digital health maturity and much more. This event was co-organized by WHO and the International Telecommunication Union (ITU), as Action line facilitators of the WSIS action line C7 on E-Health.

In September 2024, GIDH co-hosted a side event at the United National General Assembly with ITU, the Government of Estonia, the Government of Ireland, the Global Disability Innovation Hub and Transform Health. Titled "Multistakeholder Dialogue on Investing in Digital Public Infrastructure for Equitable Future Health Systems, with Assistive Technology as a Use Case"[26], the event addressed key challenges faced when moving from fragmented digital transformation to country-led and inclusive digital transformation of health systems.

Through its Transformational Toolbox[27], the GIDH provides access to tools and resources to support development, costing and implementation of digital health strategies, for example: the Digital Implementation Investment Guide; Guidance for building a digital health information infrastructure; Digital transformation handbook for primary health care; Digital transformation handbook for health supply chain architecture; and self-paced online courses, digital health maturity and national digital health solutions inventorying.

In 2024, on the basis of the UN Secretary-General's Roadmap for Digital Cooperation[28] (A/74/821), which provides a vision for a digitally interdependent world and sets forth actions for the global community to connect, respect, and protect people in the digital age, WHO contributed to efforts led by the UN envoy on Technology on the establishment of the Global Digital Compact[29], the Pact for the Future[30] and the declaration on future generations[31].

During the 79th UN General Assembly in 2024, WHO hosted an event with several partners on strengthening health data governance.

WHO has published guidance to support Member States in the implementation of their national digital health strategies. It has also helped Member States in the WHO African, European, Eastern Mediterranean, and Western Pacific Regions, and the Region of the Americas, to conduct needs assessments, digital health surveys and standardized digital ecosystem maturity assessments, to develop and launch reusable tools and templates in support of government-led digital health transformation.

WHO has provided access to knowledge and guidance to supported digital health activities at international, regional and national level. In the period 2020-2024 WHO developed more than 60 digital health knowledge resources including guidelines, toolkits, and reports. Examples of these are provided here:

- Fourteen downloadable handbooks for the BHBM initiative have been developed to support

[26] https://webtv.un.org/en/asset/k1c/k1cnzfo4jx
[27] https://www.who.int/initiatives/gidh/toolbox
[28] https://www.un.org/en/content/digital-cooperation-roadmap/
[29] https://www.un.org/global-digital-compact/sites/default/files/2024-09/Global%20Digital%20Compact%20-%20English_0.pdf
[30] https://www.un.org/sites/un2.un.org/files/sotf-pact_for_the_future_adopted.pdf
[31] https://www.un.org/en/summit-of-the-future/declaration-on-future-generations

mitigation of a range of NCDs by informing individual behaviour change. In 2021 it was reported that since its launch in 2013, the BHBM initiative has reached 3.7 million users with evidence-based behaviour change information and helped governments to design and integrate digital health services into existing health systems, through 16 programmes in 12 countries.

- The "Consolidated Telemedicine Implementation Guide" (2022). This guide targes decision makers and those responsible for the design and oversight of telemedicine implementations. It provides a comprehensive overview of the planning, implementation and maintenance processes to inform a costed investment in telemedicine and support countries across different stages of telemedicine implementation.
- In responding to increasing demands from the Member States on better governance on the use of frontier technologies such as artificial intelligence, WHO has developed several guidance documents on Artificial Intelligence such as the Regulatory Considerations on AI for Health; Generating Evidence for Artificial Intelligence-based Medical Devices: a Framework for Training, Validation and Evaluation; and Ethics and Governance of AI for Health: Large Multi-Modal Models (LMMs) - published in 2024. These tools support responsible and impactful uses of AI in specific health areas such as sexual and reproductive health, traditional and complementary medicine, tuberculosis, and evidence informed policy making.
- "Ethics and governance of artificial intelligence for health: WHO guidance" (2021) seeks to ensure that all stakeholders, whether designers and programmers, providers or patients, or even Ministries of Health and Ministries of Information Technology, are guided by appropriate ethical norms and standards in the development and use of AI for health.
- The "Classification of Digital Interventions, Services and Applications in Health: a shared language to describe the uses of digital technology for health, second edition", published in 2023. This updated Classification of Digital Interventions, Services and Applications in Health (CDISAH) is a set of categorizations that links how digital health interventions (DHIs) embedded into digital applications and services are used to address personal and health system challenges and needs. The aim of the CDISAH is to support countries in the process of planning and implementing a digital health enterprise.
- In order to support the implementation of WHO guidelines in digital health solutions, WHO has developed SMART (Standards-based, Machine-readable, Adaptive, Requirements-based, and Testable) Guidelines on antenatal care, HIV, family planning, tuberculosis, child health in humanitarian emergencies, immunizations, and the digital documentation of COVID-19 certificates, comprising recommendations on the data, digital functionality, ethics, and trust architecture needed to ensure the interoperable, person-centered availability of immunization and health records globally. This approach has been adopted by over 18 Member States across all regions.
- WHO has also made available WHO COVID-19 and other health recommendations through a living catalogue (Recmap) for clinical, public health and health policy. The WHO Secretariat is implementing an end-to-end digital publishing and dissemination system to make all WHO normative and standard-setting guidance available in digital formats.

Further guidelines include "Youth-centered digital health interventions: a framework for planning, developing and implementing solutions with and for young people" (2020) offering guidance on planning, developing and implementing digital interventions to promote better health among adolescents and youth.

In 2023, WHO published a document called "Assessing the effects of digital technologies on health financing and universal health coverage objectives. A guide with key questions[32]". The aim of the publication is to support the generation of evidence on how digital technologies (positively or negatively) influence health financing functions and tasks, and how this may contribute to progress towards the UHC goals.

In 2019, WHO established a Global Innovation Hub at its Headquarters. With its core objective to partner with governments in shaping national ecosystems that enable the systematic use of innovation to promote health equity, the Innovation Hub leads three strategic areas of work: 1) Developing normative guidance, including blueprints and standards to guide sustainable innovation scale-up; 2) Supporting the scale-up of innovation by identifying health needs, sourcing innovations, and expanding them to meet national priorities; and 3) Facilitating collaborative learning and skills-building through flexible approaches that focus on people's needs.

In support of strengthening the innovation ecosystem, the WHO Innovation Hub launched the Call to Action for Advancing Public Sector Scale-Up of Health Innovation[33] in 2023 in order to promote government stewardship of the scaling of locally appropriate health innovations. This key normative document outlines essential "asks" for governments and ecosystem partners to create sustainable, locally driven scaling processes while addressing barriers that impede these efforts. In addition to engaging with governments, the Innovation Hub collaborates with leading innovation networks, such as the UN Innovation Network and the International Development Innovation Alliance. It also engages other major multilateral organizations focused on health innovation, including the UN Office of Information and Communications Technology (UNOICT), the Global Fund, Gavi, UNICEF, and UNDP.

In 2020, the Innovation Hub launched the LEAD internal innovation program to enhance WHO staff competency to lead innovation. This program acts as a global funnel for employee engagement and intelligence on emerging technologies and other innovations. Since its launch, LEAD has attracted over 240 ideas from WHO staff across all organizational levels, receiving a record 84 ideas in 2024 alone, and over 7,000 WHO employees utilize one or more LEAD ideas. This year also saw a 60%+ increase from last year with more than 60% of these coming from country offices. Aligning with WHO and national digital health strategies and priorities, ideas leverage cutting-edge digital technology, or feature a digital component, in their development and implementation. With over 90% of LEAD portfolio of ideas being ICT-related, or featuring an ICT component, some examples of LEAD ideas include an artificial intelligence (AI) language barrier breaker to access healthcare (Bulgaria), a gaming initiative to promote health and wellbeing (HQ), a digital adaptation kit for self-care with a focus on education, empowerment, engagement (WHO Eastern Mediterranean Regional Office), and an initiative using generative AI to protect children from harmful food advertising (WHO European Regional Office and WHO Eastern Mediterranean Regional Office). As the first UN agency to be onboarded and implement their new Unite Ideas Innovation Management Platform, LEAD is also continuing its collaboration with the UN's Office of Information and Communications Technology Innovation Unit.

WHO established an innovation space (Eurêka) in 2022. Located at its Headquarters, the Eurêka facilitation space is equipped with advanced digital technology for virtual and hybrid engagements among global ecosystem stakeholders. It also has a showcase function to highlight cutting-edge digital and other innovations in countries.

[32] https://www.who.int/publications/i/item/9789240076808
[33] https://iris.who.int/bitstream/handle/10665/375598/9789240084698-eng.pdf?sequence=1&isAllowed=y

In 2024, the Innovation Hub launched the WHO Country Demand Catalyst initiative supporting governments to translate priority health needs into demands for innovation, and address these through the scaling of innovations. Sixteen countries in sub-Saharan Africa are currently engaged in the programme (Angola, Botswana, Burkina Faso, Ethiopia, Ghana, Kenya, Malawi, Namibia, Nigeria, Rwanda, Somalia, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe), with plans to further expand over time. This approach has resulted in several governments selecting digital (and other) innovations. In Nigeria, for example, digital continuous learning management systems for improving the quality and scale of health workforce training while reducing the cost and disruption in service delivery, has been highly successful. As a part of this program, a WHO Guidance and toolkit is under development to further support Member States on scaling innovation. The Innovation Hub is also convening an innovation expert group and undertaking a literature review to ensure that the latest innovation expertise is included in the guidance and toolkit.

To build capacity in digital health for Member States and partners, WHO has developed five courses on digital health and together with development partners and sister United Nations agencies, has trained over 1600 government officials from over 100 Member States in digital health and artificial intelligence. More than 300 participants from 59 countries have attended in-person technical workshops on telemedicine and artificial intelligence for health. Over 25,000 health workers, policymakers and students from 175 countries have participated in the OpenWHO online course on ethics and governance of artificial intelligence for health. In 2021 WHO hosted two Global Health Data Governance Summits.

WHO has developed and maintains a central database of national digital health policy and strategic documents[34] available for use by Member States to foster visibility of best practices and collaboration between regions and countries.

WHO has supported Member States in the use of the WHO Digital Health Atlas for country-level enumeration and governance of digital health solutions and coordination of investments. The Global Digital Health Monitor, an interactive digital health maturity model developed by partners, complements the Digital Health Atlas. It helps countries prioritize and monitor their digital health interventions based on the WHO/ITU eHealth Strategy Toolkit framework. It will be migrated to servers at WHO as part of the Global Initiative on Digital Health Transformational Toolkit[35].

To monitor the maturity of national transformation journey, 130 Member States have performed digital health maturity at the Member State level using the global digital health monitor. Data from the global digital health monitor shows that most countries are in maturity level 3 of 5 across the 7 WHO-ITU building blocks. The building block lagging behind pertains to health workforce skills in digital health.

Together with the Global Digital Health Partnership and other communities of practice, WHO has supported government-to-government knowledge sharing and collective learning in support of digital transformation. The WHO-ITU-WIPO led Global Initiative on Artificial Intelligence for Health has convened over 100 stakeholders on a monthly basis to develop benchmarking on artificial intelligence for health.

[34] https://extranet.who.int/countryplanningcycles/file-repository
[35] https://www.who.int/initiatives/gidh

WHO – Technology Initiatives

The United Nations Global Digital Compact[36], annexed to the United Nations Pact for the Future, identified digital public infrastructure (DPI) as a critical enabler of digital transformation and a means to improve public service delivery at scale, helping countries achieve their national priorities and accelerate the Sustainable Development Goals. WHO, with the International Telecommunication Union (ITU), is forming an expert digital health Technical Working Group to provide expertise to regions and Member States in the development, implementation, and evaluation of Digital Public Infrastructure (DPI) for health. This Working Group will be part of the Global Initiative on Digital Health (GIDH) and will focus on advancing the use of DPIs to achieve broader national health objectives.

In response to global needs of cross border trusted digital information, WHO established the Global Digital Health Certification Network (GDHCN)[37], a standards-based digital public infrastructure (DPI) for health. This DPI supports participating jurisdictions to recognize and trust each other's health documents. The GDHCN is built on the European Commission's EU Digital COVID-19 Certificate system.

Current and future uses of GDHCN include digital COVID-19 certificates, digital international certificate of vaccination and prophylaxis, digital personal immunization records, and an international patient summary. More than 1.8 billion people in the 80 countries that are joining the GDHCN, will be able to retrieve their health documents in a secure, verifiable manner. In October 2024, WHO and the Kingdom of Saudi Arabia launched the Hajj health card initiative to support the 3 million pilgrims who undertake the holy Hajj pilgrimage every year. The Hajj health card, built on the WHO GDHCN's public key infrastructure, summarizes critical health information, such as medication needs, allergies, immunization status and pre-existing conditions.

Pursuant to the cross-cutting implementation objectives of the Global Strategy on Digital Health, WHO has continued to improve the specifications, interoperability, architecture and tooling surrounding the published set of Digital Documentation of COVID-19 Certificates guidance documents. WHO successfully concluded a technical feasibility study for establishing a federated global trust network, which tested the ability to interoperate the health content and trust networks across existing regional efforts (for example, the European Union Digital COVID-19 Certificate, the International Civil Aviation Organization (ICAO) Health Master List, the Digital Infrastructure for Verifiable Open Credentialing, the LACPASS, and SMART Health Cards) using open standards and open source software compliant with WHO Digital Documentation of COVID-19 Certificates guidance. Based on this, WHO is able to act as a trust anchor for a voluntary trust network for a public key infrastructure, which enables Member States to continue to bilaterally ensure the veracity of COVID-19 certificates.

In 2021, WHO implemented a health information dissemination programme that leverages various digital channels. Through this programme, the WHO made trusted health information and evidence-based guidance available to more than 1 billion people and provided 300 million users a day with life-saving information during the COVID-19 pandemic.

In 2023, WHO established a Digital Clearinghouse platform, that was established to assess, curate, and catalogues digital solutions that meet minimum requirements in the delivery of digital health interventions. The platform enables ministries of health, development partners and government

[36] https://www.un.org/techenvoy/global-digital-compact
[37] https://www.who.int/initiatives/global-digital-health-certification-network

agencies responsible for digital health, health information systems, or information and communication technologies to find standards based digital solutions meeting WHO standards. It also supports technologists to build digital health solutions that leverage appropriate health and data content from WHO. The WHO Classification of Digital Interventions complements this platform and provides a taxonomy for understanding digital health use cases.

Initiatives by Partner Organizations

Multiple partners are engaged in supporting Member States to advance implementation of digital health strategies, e.g. the Inter-American Development Bank (IDB) collaboration with the Region of the Americas on the "Pan-American Highway for Digital Health"; and the United Nations Digital Health for Development Hub with 118 initiatives worldwide.

Working with the Regional Office of the Americas, digital health is being enhanced through a new PAHO-IDB-World Bank Alliance for Primary Health Care. In 2020 the IDB published a document on Digital Health Governance which has been downloaded 3697 times in English and 6429 times in Spanish.

To foster knowledge exchange, partnership and collaboration at all levels, development partners have established and sustained various global, regional, and national convenings and knowledge exchange platforms on digital health. For example, the ITU has developed a digital health development platform handbook to foster the development of infostructure for digital health. The Global Digital Health Forum that fosters knowledge exchange and best practices in digital health has continued to convene annually with more than 2,500 attendees each year.

From 2020 to 2024, capacity-building activities using the Digital Health Planning National Systems training course have had more than 975 graduates from 93 countries.

In 2021 the Digital Health Applied Leadership Program was launched to support building digital health capacity within country governments. The first cohort of 41 participants from the African Region graduated in 2023.

Building on WHO's data governance principles, including the UN Secretary General's data governance principles, several partners have advanced the cause of data governance in health. For example, in 2024, Transform Health convened consultations with around 500 stakeholders in 65 countries to develop a minimum set of components for health data governance regulations. PATH has provided support to Member States to establish robust health data governance frameworks.

Development partners have played crucial roles in fostering patient-centered care services enabled by digital health. For example, a global webinar was held in 2022 by partners to discuss the interplay of digital health and patient centered health care services. Development partners have also extended the WHO-ITU digital health transformation building blocks to include a focus on people through a digital transformation to accelerate data use framework.

The World Bank produced a report on the value proposition of digital health in unlocking value for everyone, while the Broadband Commission, working with WHO, produced a policy document on virtual health and care to foster the uptake of telehealth.

In 2024, the United States Agency for International Development (USAID) released a Digital Health

Position Paper (2024–2029). The position paper lays out a strategic vision for USAID investments and activities that advance global health using digital technologies. The Position Paper recommits to the four strategic priorities of USAID's Digital Health Vision (2020-2024), which are: assess and strengthen a country's digital health enabling environment; align digital health investments to national digital health strategies; align digital health investments to national digital health architecture; and consider the use of global goods.

In 2024 Gavi, the Vaccine Alliance, released a report with DataKind which landscaped the potential of AI and data science to advance coverage, equity, and efficiency of vaccine deployment. The report lays out a roadmap for leveraging digital innovation to achieve universal health coverage and vaccination coverage targets.

The World Bank's Joint Learning Network for Universal Health Coverage (JLN) is an innovative, country-driven network of practitioners and policymakers from around the globe who co-develop global knowledge products that help bridge the gap between theory and practice to extend health coverage to more than 3 billion people.

The JLN's Digital Health Collaborative aims to share practical implementation experiences, e.g. establishing interoperability through a health information exchange (HIE) and leveraging public-private partnerships. The World Bank provides technical facilitation for this Collaborative in partnership with other partners.

In February 2024 the Joint Learning Network Climate Smart Health Systems Collaborative was launched in Washington DC. The collaborative aims to share knowledge to enable and strengthen adaptation and mitigation to climate change in country health systems.

Since 2023 the Commonwealth's Technical Country Support Programme on Enhancing Digital Health Maturity has been supporting countries in conducting comprehensive national digital health assessments through multi-stakeholder in-country workshops. Further technical support and capacity-building activities to address gaps that emerge, have been provided post-assessment.

In 2024 the Chair of the Commonwealth Center for Digital Health (CWCDH) chaired a ministerial panel where government ministers shared their national experiences implementing key digital health solutions, such as electronic health records (EHRs). The importance of digital health maturity assessments to understand gaps in national systems was highlighted.

The Organization for Economic Co-operation and Development (OECD) has supported the Secretariat's Global Initiative on Digital Health (GIDH) digital health strategy development work. The OECD has worked on this same agenda as the Global Digital Health Partnership.

In 2023, the WHO Collaborating Center on Health Innovation in India hosted, in collaboration with the WHO Innovation Hub, the World Health Innovation Forum. The event convened public sector leaders and other ecosystem actors to promote a more balanced and equity-driven innovation ecosystem and raise awareness about the opportunity for governments to integrate innovation at the core of their mission to promote Universal Health Coverage.

Member State Regional bodies such as the Africa CDC, the Association of Southeast Asian Nations (ASEAN), Council of Health Ministers of Central America and the Dominican Republic (COMISCA), Caribbean Community (CARICOM), the G7 and the G20, have leveraged the Global Strategy on Digital

Health to inform the priorities and interventions on digital health of Member States in the regions. For example, through the G20, Member States have collaborated with the Secretariat to develop a Global Initiative on Digital Health (G20 India and Brazil), interoperability (G20 Indonesia), and telemedicine expansion (G20 Saudi Arabia and Brazil). COMISCA also undertook the development of a subregional strategy on Information Systems and Digital Health.

Several government-to-government collaborations on digital heath and health information systems have been formed in four WHO regions; the African, European, Western Pacific Regions and the WHO Regional Office for the Americas. These have strengthened digital health coordination among Member States, focusing on digital health governance, stewardship, and sustainability. Forty Member States have joined the voluntary Government to Government Global Digital Health Partnership which fosters Member State collaboration on specific digital health thematic areas.

As an example of South-South collaboration between the three levels of the World Health Organization, Headquarters, Regional Offices (AFRO and PAHO) and Member States, telehealth joint efforts were made to share best practices in the Americas and Africa. Through coordinated efforts, PAHO and AFRO facilitated knowledge-sharing and capacity-building exchanges on telehealth, leveraging the Americas' successful experiences in expanding telehealth services to remote and underserved areas.

Each WHO Region has at least one Member State which has developed dedicated body and governance mechanism on digital health to prioritize and implement digital health at the national level. The Region of the Americas and the European Region published documentation to support Member States with health information system governance.

In the Western Pacific and South East Asia Regions, Member States have undertaken exercises to identify and share information about gaps, priorities and resources needed for digital health scaling and research.

Estonia, Ireland, Malawi, India and Brazil have led key roles in multistakeholder global sessions convened by the Secretariat to support scaling up of digital health and innovations at the national level.

To foster capacity building programmes at the national level, Member States have built specialized national digital health competency frameworks. For example, Australia and the Kingdom of Saudi Arabia have each developed national competency frameworks for the use of ICTs in Health.

Member states are establishing innovation hubs at the national level, and institutionalizing health innovation in the Ministries of Health. Ethiopia, for example, has established an agency for Health System Innovation and Quality that is taking the lead in guiding and driving the health innovation ecosystem.

By the midterm implementation of the World Summit on the Information Society in 2015, 85 (44%) of countries had developed national digital health strategies. By 2020, this number had progressed to 120 (68%). Today, 129 countries have national digital health strategies. Of the 67 Member States participating in the Global Digital Health Monitor in 2022, 75% had strategies and 27% had strategies that were also fully costed. Countries with federated health systems, for example, Canada and Nigeria, are also developing sub-national digital health strategies.

Member States in all regions have actively participated in consultations towards regional strategies or

action frameworks for digital health. Examples include the WHO Action framework for the implementation of the Global Strategy on Digital Health, the WHO Regional Office for South-East Asia's "Regional Strategy for Strengthening eHealth in the South-East Asia Region, 2014–2020" and the "Plan of Action for Strengthening Information Systems for Health 2024–2030", announced by the Region Office for the Americas.

In 2023, although 71% of 67 Member States reported having policies and regulatory frameworks for digital health, 56% had no functional digital health governance. Member States are addressing those elements essential to successful implementation of digital health strategies. For example, of 52 European Member States surveyed in 2022, 42 reported having some processes for monitoring and evaluation of digital health interventions, programmes or services. In 2024 Member States in Africa endorsed the Regional Health Data Governance Protocol and Health Data Hub to address challenges in establishing governance, standards and interoperability frameworks for health data.

Three digital health professional networks in three WHO Regions have been active in fostering regional collaboration on digital health: Health Informatics in Africa (HELINA), Asia eHealth Information Network (AeHIN) and the Latin American and the Caribbean Network for Strengthening Health Information Systems (RELACSIS). These have strengthened digital health coordination among Member States, focusing on digital health governance, stewardship, and sustainability. These three networks and the Pacific Health Information Network (PHIN) have convened regular events on digital health.

Forty Member States have joined the voluntary Government to Government Global Digital Health Partnership which has fostered Member State collaboration on foundational digital health thematic areas.

Trust and inclusive digital health that emphasizes the most vulnerable, are emerging as guiding principles for digital transformation of the health sector across all regions. In the Region of the Americas. "Leaving no one behind in the digital age" is defined as reaching all vulnerable populations as well as those that are not digitally literate.

It is worth noting that there is an increasing trend in all Regions for digital transformation and ICT strategies in Member States to include and address digital health needs, while country strategies for health place increasing emphasis on capitalizing on digital technologies for improved health outcomes. This convergence is in line with the WSIS+10 Vision which encourages implementation of "a sound enabling environment, integrating ICTs to support the priorities of the health sector". It is also aligned with the 2024 call of the Digital Health Compact to leverage digital public goods and digital public infrastructure to achieve the targets of the SDGs, including SDG 3 (Good Health and Well-Being).

Region specific initiatives – with country illustrations

African Region

In the African Region, the "Framework for Integrating Country and Regional Health Data in the African Region" which includes the Regional Health Data Hub 2024-2030, was endorsed by Member States in 2024. This framework recognizes the critical importance of health data and addresses associated concerns by proposing the development of the Regional Health Data Governance Protocol to mitigate risks and ensure the responsible use of health data. Additionally, the framework includes the development of the Regional Health Data Hub (RDHub) to address data fragmentation, and enable

efficient, effective and convenient access to data, data systems and platforms by ensuring interoperability across data systems.

To document progress in the implementation of this framework at the regional level, the use of digital health tools was assessed in order to establish benchmarks and monitor progress annually. In 2024 the "Progress Report on Framework for Implementing the Global Strategy on Digital Health in the WHO African Region" reported that 38 Member States (81%) had developed national digital health strategies. Besides standard strategies on digital health, countries have also progressed to establish digital health acts, such as Kenya's Digital Health Act of 2023. The Kenya (Digital Health Maturity Level 4 as of 2024) Digital Health Act defines the prerequisites for successful implementation of the national digital health strategy. Kenya also established a Digital Health Agency, staffed with personnel, funding and goals which span digital health standards and interoperability, data governance and digitally enhanced health services.

In October 2024 the Africa WSIS+20 Regional Review Meeting was held in Tanzania, focusing on evaluating the 20-year progress of WSIS action lines in Africa and identifying future priorities. The meeting convened key stakeholders, including representatives from ITU, United Nations Economic Commission for Africa (ECA), African government officials, regional NGOs and representatives of Civil Societies, to discuss the integration of the WSIS action lines with Africa's digital priorities and sustainable development aspirations.

Government representatives from Burundi (Digital Health Maturity Level 3 as of 2024) , Tanzania (Digital Health Maturity Level 4 as of 2024), Côte d'Ivoire (Digital Health Maturity Level 3 as of 2024), Ethiopia (Digital Health Maturity Level : no data available in the global digital health monitor) , Benin(Digital Health Maturity Level 3 as of 2024) , Uganda(Digital Health Maturity Level 3 as of 2024) , Gambia (Digital Health Maturity Level : no data available in the global digital health monitor) , Namibia (Digital Health Maturity Level : no data available in the global digital health monitor) , and Gabon (Digital Health Maturity Level 2 as of 2024) reported on their progress in implementing WSIS Action Lines. Key challenges highlighted included connectivity barriers related to internet service providers, the need for enhanced digital literacy and training programs, and cybersecurity concerns. They noted strong political commitment to WSIS objectives and emphasized the value of initiatives like the Global Digital Compact and the Internet Governance Forum in providing regional guidance for digital transformation, addressing ICT access disparities, and improving accessibility for persons with disabilities.

With respect to Action Line C7 E-Health in WSIS Africa 2025, it was proposed that:

- Digital health initiatives be aligned with the targets of the Sustainable Development Goals (SDGs), particularly SDG 3 (Good Health and Well-Being) to ensure that projects support broader health and development goals in Africa.
- WHO leadership collaborates with the WSIS Africa Secretariat and national health ministries to address region-specific health challenges, fostering strong regional ownership and alignment with the priorities for digital public infrastructure.
- Within the framework of the GIDH, funding be secured through partnerships with international health bodies to showcase sustainable programs in selected countries, demonstrating scalability and impact on health outcomes.
- With the support of the GIDH and the WHO Academy, capacity building and local skill development be fostered through programmes that are tailored to African contexts, supporting the creation of a knowledgeable workforce capable of managing and sustaining digital health projects.

- Monitoring mechanisms such as the Global Digital Health Monitor be used to assess progress to ensure that digital health initiatives contribute measurably to improved health outcomes.

In Africa, Member States, working with WHO and the International Telecommunications Union (ITU), the African Union (AU) and the SmartAfrica initiative, have developed a regional blueprint for digital health aimed at accelerating the use of digital technologies to improve healthcare and strengthen health systems across the African continent. The blueprint will be implemented in 2024/2025.

In 2022, the Regional Office for Africa conducted a telemedicine workshop aimed at strengthening government leadership on person-centric virtual health modalities. Further, the Pan African Health Informatics Association (HELINA), an African regional body of the International Medical Informatics Association (IMIA), whose primary purpose is to promote education and research in digital health in Africa and the implementation of ethical, modern and evidence based digital health to enhance access to quality healthcare in Africa, has convened on a regular annual basis bringing together health informatics professionals on the African continent to further the research agenda in health informatics. HELINA holds regular conferences and enables continuous networking between African digital health stakeholders. Through HELINA, the Women for SMART Health in Africa (WoSHA) initiative is committed to advancing digital health across the continent thereby supporting the sustainable adoption of WHO guidelines through providing resources, training, and advocacy for standards-based digital health solutions.

Building on the 2022 agreement between the Africa Centres for Disease Control and Prevention (Africa CDC) and Smart Africa, work has continued towards accelerating the use of digital technologies to improve healthcare and strengthen health systems across the African continent. In May 2024 Smart Africa, Africa CDC and GITEX Africa co-hosted the Africa Digital Health Leadership Forum in Morocco (Digital Health Maturity Level 2 as of 2024) , bringing together the continent's key digital health policy makers, leaders, entrepreneurs and investors.

In October 2024, the Africa Health Tech Summit was held in Rwanda (Digital Health Maturity Level: no data available in the global digital health monitor), bringing together key policy makers and stakeholders to explore how emerging technologies can be harnessed to build resilience and improve health systems and individual wellbeing across African communities. Under the theme ‘Innovating for Community Health Unleashing the Power of AI’ the Summit focused on critical questions raised in the use of AI to in improving delivery and access to healthcare.

Led by Africa CDC in partnership with AU Member States, work continues on the AU Health Information Exchange (HIE) and the Central Data Repository (CDR) to optimize the flow of health data across Africa. The task force established by Africa CDC to provide expertise and guidance in the development of AU HIE guidelines and standards, met with Ghana’s Health Minister to discuss a Data Sharing Agreement. These efforts will enhance data sharing, drive better decisions and improve health outcomes across the continent.

In June 2024 more than 130 African ministers and experts met for the 2nd Extraordinary Session of the Specialized Technical Committee on Communication and ICT to initiate development of a strategy to provide guidance to African countries in using artificial intelligence to meet the continent’s development aspirations and the well-being of its people, while promoting ethical use, minimizing potential risks, and leveraging opportunities with health as a key sector.

In 2024, 15 Member States in the African Region convened to share best practices on digital health

governance, with participation of WHO, the Africa CDC and the Regenstreif Institute. Roadmaps and action plans for digital health were developed at this meeting.

In 2024 WHO AFRO has set about establishing a Regional Advisory Group on Digital Health (RAG-DH), a "knowledgeable body of experts to provide advice on scientific matters, especially in health and health technology innovations". The goal of the RAG-DH is to provide structured, consistent, unbiased knowledge on digital health, and guidance for the scale of digital transformation for Health in appropriate contexts, with the support of Member States and the Regional office.

Country examples

Burkina Faso (Digital Health Maturity Level: no data available in the global digital health monitor)

The Be He@lthy, Be Mobile (BHBM) initiative supported Burkina Faso in the implementation of an mHealth for Tobacco Cessation programme. The programme content has been adapted with end-users and with its strong support from the Ministry of Health, it was launched in early 2021.

Ethiopia (Digital Health Maturity Level: no data available in the global digital health monitor)

In 2023 Ethiopia developed a strategy for "Mainstreaming Gender within Digital Health and Health Information Systems" in the country. The strategy aims to address gender disparities in access to and use of digital health technologies and Health Information Systems. It also aims to address gender biases and issues in the development, implementation, and evaluation of digital health and HIS initiatives.

Kenya (Digital Health Maturity Level 4 as of 2024)

Kenya has implemented innovative technologies and established supportive policies and laws for its digital health initiatives. The country had a strategy for digital health as early as 2011.

In 2023 the Kenyan Digital Health Bill 2023 was enacted. This 10-part bill provides for the establishment of the Digital Health Agency; a framework for provision of digital health services; and establishes a comprehensive integrated digital health information system. The bill will operate under the following key guiding principles: It considers health data as a strategic national asset; it promotes privacy, confidentiality, and security of data for information sharing and use; it facilitates data sharing; and mandates that the digital health ecosystem serves the health sector in a progressive and equitable manner, to the highest attainable standard of health.

Demonstrating technology innovation for better health outcomes, Amref Kenya, in partnership with the Ministry of Health and other stakeholders, has successfully rolled out the Electronic Community Health Information System (eCHIS) in all counties across Kenya. This initiative marks a significant milestone in the country's healthcare landscape, particularly in Primary Health Care (PHC) and the acceleration of Universal Health Coverage (UHC). eCHIS aims to eliminate the need for community health workers to carry heavy paper records from house to house. It also brought to an end a paper-based system that was prone to errors and data quality issues. With eCHIS, data can be aggregated and used for timely decision-making. This can help the government identify health trends, respond to outbreaks, and allocate resources appropriately. A critical feature of eCHIS is that it is able to send diagnostic data directly from households to facilities, enabling timely malaria treatment.

In Kenya, a smartphone app called the Portable Eye Examination Kit, or Peek, is used at schools in rural parts of the country, where vision problems are common but access to opticians and reliable health equipment is limited. The Peek system makes eye screening as easy as taking a photo and, with an adapter for optic disc imaging, can also replace expensive, bulky equipment used for identifying other eye problems such as cataracts, glaucoma, or nerve disease.

Mauritius (Digital Health Maturity Level: no data available in the global digital health monitor)

Since 2020, the Digital Initiative Group at I-TECH (DIGI) has worked closely with the Mauritius Ministry of Health and Wellness (MOHW) to deploy a national laboratory information management system (LIMS) using the OpenELIS platform. The LIMS connects the national reference laboratory to regional laboratories and flu clinics around the country to quickly process COVID-19 tests, as well as send results notifications to patients via text message or email.

In 2024 the MOHW launched the "One Patient, One Record" project, in collaboration with the UNDP Mauritius Country Office. This project will transition the country's public healthcare services from the traditional paper-based system to a fully digitized system. A pivotal aspect of the project is the implementation of a Patient Portal and Patient Administration System, providing healthcare professionals with access to accurate and up-to-date information about patients. This technological advancement is expected to eliminate challenges associated with lost or misplaced medical files, offering instant access to crucial patient data with a simple click.

Mozambique (Digital Health Maturity Level: no data available in the global digital health monitor)

In 2023, Mozambique's Ministry of Health (MISAU) deployed the digital public infrastructure (DPI) approach for public health services in partnership with the eGov Foundation. Malaria remains a major public health concern in sub-Saharan Africa. DIGIT Health DPI, locally named Salama, was deployed to improve the efficiency of bed net distribution in two provinces, Tete and Gaza, and seasonal malaria chemoprevention (SMC) in Nampula province. The aim was to streamline processes, connect stakeholders, and increase coverage by digitizing campaign operations including setup, planning, inventory management, registrations, and service delivery. Digitization enabled the campaign to cover 1.16 million households, enabling the distribution of 2.6 million bed nets, and reaching 4.71 million people.

Rwanda (Digital Health Maturity Level: no data available in the global digital health monitor)

As part of its strategy for digital transformation of health, Rwanda aims to ensure accessible, quality and efficient delivery of health services using technology, towards achieving UHC. For more than a decade, the country has been exemplary in Africa in implementing digital health solutions at a national scale including significant contributions from the private sector. An example of a private sector initiative is Babyl. Combining several technology platforms such as SMS, USSD, mobile money, a call center and an artificial intelligence triage system, Babyl has delivered more than 5,000 virtual consultations per day. Following consultations, prescriptions and laboratory test orders are sent to patients via coded SMS messages. These codes can then be redeemed at partnering pharmacies and laboratories for service. Since its launch in 2016, Babyl has registered over 2 million users and performed more than 1.3 million consultations.

Senegal (Digital Health Maturity Level 3 as of 2024)

Senegal's Ministry of Health was one of the earliest partners in mDiabetes (a Be He@lthy, Be mobile initiative) and negotiated a business model for delivery from national telecom operators of a programme that has been shown to improve glycaemic control at a cost of just US$ 3.10 per person. An independent evaluation published in the journal BMJ Innovations (2018) concluded that "mHealth is both a cheap and effective tool for the therapeutic education of people with diabetes".

South Africa (Digital Health Maturity Level: no data available in the global digital health monitor)

The Western Cape Province is one of nine provinces in South Africa, and has more than 7 million inhabitants, three quarters of whom use the public-sector services. For many high burden health conditions such as HIV and tuberculosis, the vast majority of patients use the public sector for all or most of their care. There are more than 15-million patient contacts annually at 52 hospitals and 272 primary care clinics managed by the PDoH, and 82 clinics managed by the City of Cape Town municipality. In some larger hospitals, patient registration has been digitalized for over 40 years.

Over the past two decades the Provincial Department of Health (PDoH) has gradually implemented patient administration systems in all fixed public-sector facilities, which share a unique health identifier or patient master index (PMI). Increasing availability of patient-level data from laboratories and pharmacies that were linkable by the PMI resulted in new opportunities for data to improve care and services. This led to the establishment of a Provincial Health Data Centre (PHDC) in late 2015, which positively impacted service delivery, directly through clinical tools actionable at patient-level, supporting continuity and quality of care, and indirectly through health system intelligence actionable at organizational unit level. Clinical access is provided through integrated clinical viewing of a single patient's data (the Single Patient Viewer), supporting health care delivery across more than 400 facilities.

During the COVID-19 pandemic, it was possible to rapidly build on the existing infrastructure and launch a provincial COVID-19 dashboard with daily updates, providing accurate information, transparency and accountability throughout the pandemic.

Tanzania (Digital Health Maturity Level 4 as of 2024)

Tanzania first applied digital technology to health care in the 1990s, with a scheme for digitizing the country's health management system under which data collected from local health facilities were used for planning at the district level. Hospitals performing research and clinical trials, especially on HIV, then began to go digital. The digital system called Afya-Tek was co-created with users and beneficiaries and utilizes open-source technology in line with existing government systems. The system guides healthcare actors with individualized decision support during client visits and recommends accurate next steps (education, treatment, or referral).

From July 2020 to June 2023, a total of 241,000 individuals were enrolled in the Afya-Tek program covering 7,557 pregnant women, 6,582 postpartum women, 45,900 children, and 25,700 adolescents. Community health workers have conducted a total of 626,000 home visits to provide health services, resulting in 38,100 referrals to health facilities. As the first digital health program in Tanzania to demonstrate the linkage among public and private sector primary healthcare actors, Afya-Tek holds promise to improve maternal, child and adolescent health as well as for scale-up and sustainability, through incorporation of other disease conditions and integration with government's Unified Community System (UCS).

Region of the Americas

The Information Systems for Health (IS4H) initiative is a Pan American Health Organization's (PAHO) led project, endorsed by all member states and partners to strengthen national health information systems, and to enhance their process towards the digital transformation of the health sector. The initiative's goals include data management and information technologies, management and governance, innovation and performance, and knowledge management and sharing. The IS4H initiative includes a strategic framework and plan of action that provides tools and support for addressing challenges.

In the Americas more than 17 countries are implementing national strategies for information systems and digital health, aiming to strengthen their health systems through coordinated efforts. Since 2016, 48 PAHO, in collaboration with the Interamerican Development Bank, the World Bank and other important partners such as USAID, US-CDC, AECID, Bloomberg Philantropies and the GIZ, countries and territories of the Americas assessed their level of maturity on information systems for health, including their progress on vital statistics and digital health.

With the support of collaborating centers and technical institutions, a new competency map for digital health workers was developed as the foundation of the Regional Digital Literacy program for the Americas launched in October 2024.

The Region of the Americas has published a series of tools and technical documents to support Member States with health information system governance and digital health national policy implementation. Several tools have been developed to support national digital transformation processes, especially focused on Artificial Intelligence and Cybersecurity. These include the PAHO Digital Transformation Toolkit, PAHO's All-in-One Telehealth Package, online simulation training, and other operational tools designed to facilitate the implementation of digital health strategies across Member States.

In support to the Global Digital Health Certification Network, a PAHO-IDB initiative was launched to ensure cross-border interoperability through the Pan American Highway for Digital Health, the Americas branding for the WHO GDHCN. This initiative aims to facilitate the adoption of standardized, interoperable digital health solutions across the region, with a particular focus on strengthening health information systems and electronic medical records. Primary Health.

With the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, an innovative project was developed under the framework of the global Digital Innovation in Pandemic Control (DIPC) initiative. Initially focused on Peru, it was designed as a digital public good that can be expanded to all countries across the continent.

PAHO, together with the IDB, World Bank, WHO HQ, and UNICEF, developed a tool to support countries in establishing rapid response strategies for cybersecurity incidents in the health sector.

In the Americas, five regional consultations were conducted with all Member States, hosted by Chile (Digital Health Maturity Level 4 as of 2024) , Panama (Digital Health Maturity Level : no data available in the global digital health monitor), Brazil (Digital Health Maturity Level : no data available in the global digital health monitor), Jamaica (Digital Health Maturity Level 3 as of 2024) , and Colombia (Digital Health Maturity Level : no data available in the global digital health monitor). These consultations fostered collaboration and alignment on information systems and digital health initiatives across the region. Additionally, innovative actions such as connectathons and datathons

were organized in several countries, bringing together experts, developers, and public health professionals to address key challenges in health information systems and digital transformation. Furthermore, study tours and country-to-country peer learning exchanges were conducted, enabling information and knowledge sharing among nations.

In the Americas progress was made in strengthening the Latin American and the Caribbean Network for Strengthening Health Information Systems (RELACSIS), a community of practice supported by PAHO and USAID to improve the quality of data, diagnostics and health policies related to health data in Latin American countries. Collaboration has expanded and progress has been made in co-creating digital public goods with the IDB and other partners. With support from the Inter-American Development Bank (IDB), networks for adopting international vaccine certificate guidelines have expanded. New partners, including the CDC, joined the IS4H initiative, alongside USAID, the Spanish Agency for International Development Cooperation (AECID), IDB, and the World Bank.

In a collaborative effort between the Global Level and the Region of the Americas, an AI Event was conducted withing the context of a regional consultation for the digital transformation of the health sector held in Panama.

Country examples

In Latin America, PAHO has worked to support countries with the development and implementation of national electronic immunization registers (EIRs), as a component of their national immunization programs. EIRs help to support the analysis and use of immunization data to promote timely vaccination and improve coverage. Uruguay (Digital Health Maturity Level: no data available in the global digital health monitor) and Mexico (Digital Health Maturity Level: no data available in the global digital health monitor) were using computerized national immunization registries as early as 1987 and 1991 respectively. In the decades that followed, several other countries including Panama (Digital Health Maturity Level : no data available in the global digital health monitor), Chile(Digital Health Maturity Level 4 as of 2024), Argentina(Digital Health Maturity Level : no data available in the global digital health monitor) , Brazil(Digital Health Maturity Level : no data available in the global digital health monitor) , Belize(Digital Health Maturity Level : no data available in the global digital health monitor) , Colombia(Digital Health Maturity Level : no data available in the global digital health monitor), Costa Rica(Digital Health Maturity Level 3 as of 2024) , Guatemala(Digital Health Maturity Level : no data available in the global digital health monitor) , Paraguay(Digital Health Maturity Level : no data available in the global digital health monitor) and Honduras(Digital Health Maturity Level : no data available in the global digital health monitor) , implemented national EIRs.

Eastern Mediterranean Region

In line with WHO's Thirteenth General Programme of Work (GPW 13), the Region's "Vision 2023" recognized that for all countries and territories in the Region to achieve the health-related SDGs, a step-change is required to make the collaboration between WHO's workforce and their national counterparts to be more agile and effective. Transforming WHO has therefore been a priority throughout the past five years. A critical part of that transformation involved using data and information to drive health policies, systems and services, and WHO worked to enhance the collection, analysis and use of information for health both within countries and at regional level.

Countries were supported to improve health information systems, national registries and the availability and quality of morbidity and mortality data, and WHO also invested in the Regional Health

Observatory and flagship information products. A new regional framework supported enhanced national capacities for the use of evidence in health policymaking, and a regional strategy was introduced in 2022 to harness digital technologies for health.

The WHO Regional Committee for the Eastern Mediterranean endorsed the "Regional strategy for fostering digital health in the Eastern Mediterranean Region (2023–2027)" in 2022. The strategy notes challenges faced in the region such as the high implementation costs of digital health, weak and fragmented governance, issues with data security and privacy, inadequate protection against risks from improper use, and language barriers. While WHO surveys done in 2021–2022 showed that most of the Member States of the Region had relevant policies, strategies and/or legislation in place, only a small number of countries had fully realized the potential of digital health applications during the pandemic. Only seven countries in the region (33%) had a national digital health strategy. The regional strategy aims to provide strategic direction to realize the potential of digital health in the countries and territories of the Region.

Member States of the Region participated in surveys conducted by WHO during 2018 and 2021–2022 (Digital health in the Eastern Mediterranean Region: contemporary trends and prospects. Cairo: WHO Regional Office for the Eastern Mediterranean). The results showed that 15 (68%) countries reported having national digital health policies/strategies or being "in the process" of developing such strategies. Fourteen (64%) countries reported having legislation on data security and citizen privacy issues, 12 (55%) reported having common digital health terminologies and 12 (55%) reported having introduced electronic medical records systems.

During the COVID-19 response many countries of the Region moved forward with digital health facilities, applications and services that were useful in all response phases and use cases, including those for surveillance, prevention, diagnostics, therapeutics, follow-up, contact tracing, communication and community engagement. Examples include:

- telemedicine, the use of which was reported by many Member States of the Region (especially in the private sector) and includes online consultations, referrals to diagnostics and inpatient care, and management;
- mobile applications used for diagnosing and managing patients (the digital maternal and child health app e-MCH and the noncommunicable disease app e-NCD developed by the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) and used in Jordan(Digital Health Maturity Level : no data available in the global digital health monitor) , Lebanon(Digital Health Maturity Level : no data available in the global digital health monitor), Palestine (Digital Health Maturity Level : no data available in the global digital health monitor) and the Syrian Arab Republic (Digital Health Maturity Level : no data available in the global digital health monitor)).
- telehealth applications used for teaching, diagnosis, management and follow-up (used in Oman (Digital Health Maturity Level : no data available in the global digital health monitor)); digital contact tracing (used in Tunisia(Digital Health Maturity Level : no data available in the global digital health monitor)); and
- digital inventories and registries for the home delivery of medicines, especially for noncommunicable diseases (used in the Islamic Republic of Iran (Digital Health Maturity Level : no data available in the global digital health monitor) , Qatar(Digital Health Maturity Level : no data available in the global digital health monitor) and Sudan (Digital Health Maturity Level : no data available in the global digital health monitor)).

Challenges in implementation of the digital health agenda in the Region include:

- Concerns around data security and privacy, especially when almost many of the countries/territories in the Region are experiencing social conflict and/or emergency situations;
- Weak or fragmented digital health governance in most countries of the Region with a lack of national roadmaps for action, ownership, investment plans, digital architecture and policies;
- Lack of national digital architecture plans and direction regarding standards for interoperability;
- Lack of digital health knowledge and skills;
- Weak digital health governance and lack of engagement of the public in policy development, monitoring and accountability;
- Lack of formal digital health training for personnel, especially training that is appropriate to the cultural context;
- Weak public–private partnerships in many countries, leaving the public sector isolated while the private sector, unsupervised, is predominantly the sole implementer, causing further fragmentation of projects (for example, telehealth is usually led by the private sector or academia);
- No clear legislation and/or regulating policies for telemedicine in most countries of the Region;
- Digital health applications mostly do not take differences in socioeconomic factors, language, disability and digital literacy into account.

Although countries of the Region with greater digital health capabilities and facilities including virtual hospitals and centers (for example, Egypt (Digital Health Maturity Level : no data available in the global digital health monitor), Pakistan (Digital Health Maturity Level : no data available in the global digital health monitor), Saudi Arabia(Digital Health Maturity Level 5 as of 2024)) have been attempting to assist lower-resourced nations with telemedicine and intensive care services, these often involve areas of care that may not be available in low-resource settings.

The Gulf Cooperation Council (GCC) Taskforce on Workforce Development in Digital Healthcare (ZIMAM) is a non-for-profit initiative that strives for sustainable digital health ecosystems through the provision of adequate supply of skilled and empowered local digital workforce. The 7th GCC eHealth Workforce Development Conference was held in November 2024.

Country examples

In 2010, the Aga Khan Development Network (AKDN) set up an eLearning programme in Afghanistan in which later expanded to Tajikistan, Pakistan and Kyrgyzstan. The AKDN eHealth Resource Centre (eHRC) was established in 2011 to provide strategic eHealth support to the AKDN health agencies and their partner health institutions with managing eHealth operations, such as the eLearning programme, which facilitates professional development and capacity building via ICTs. The aim of the eHRC is to increase knowledge, enhance clinical and managerial skills and enable health professionals to deliver improved quality of care to patients. While enabling health professionals to undertake learning at a distance, the programme also helps health professionals to become more comfortable with digital technology and reduces professional isolation, often a consequence of working in remote areas.

Egypt (Digital Health Maturity Level: no data available in the global digital health monitor)

The Global Digital Public Infrastructure (DPI) Summit was held in Egypt in October 2024. The summit illustrated the potential that digital public infrastructure holds for inclusive digital transformation in

Africa. Transformation can be achieved through leveraging artificial intelligence, open-source technologies, and public-private partnerships. It was acknowledged that this would not be without challenges, such as developing appropriate and sustainable infrastructure, policies and partnerships; and enabling capacity building and skills development.

A good example of telemedicine in action is the "One Million Free Consultations Initiative," launched in 2020 as a collaboration between Telecom Egypt, Altibbi (a digital health platform), and the United Nations Development Programme (UNDP). Using digital technologies, including online platforms, voice calls, and text messages, the initiative has successfully conducted over 750,000 digital consultations as of 2021, with a quarter of these related to COVID-19. The project has not only reduced the cost of medical consultations but also promoted social distancing during the pandemic and alleviated pressure on hospitals and clinics. While available nationwide, the initiative has a particular focus on residents of Upper Egypt, who often face challenges in accessing quality healthcare.

Libya (Digital Health Maturity Level: no data available in the global digital health monitor)

In 2020, as part of a coordinated effort to facilitate improved access to healthcare for all people in Libya, and as a successful example of a private-public partnership, the United Nations Development Programme (UNDP), with support from the Government of Japan, partnered with Speetar, a private sector startup company, and the Ministry of Health to develop the first telemedicine initiative in Libya. Kashada et al. (2023) reported that, as a developing country, Libya faces significant barriers to implementing sustainable telemedicine initiatives. These include the cost of ICT hardware, lack of communication skills, poor internet connectivity, absence of relevant government policies, and inadequate training.

Morocco (Digital Health Maturity Level 2 as of 2024)

Following a roundtable of key digital health stakeholders organized by the Rabat Mohamed V University in 2021, a white paper on digital health in Morocco was published in 2022. The paper, "White Paper on eHealth in Morocco – Realities, Challenges and Development Levers", offers a review of digital health components, opportunities and challenges, and articulates a vision for a digital transformation of the health sector. The review showed that digitization in the health sector did not reflect the digital boom in Morocco, reflecting an extensive digital divide. Few digital health services were available or accessible to patients and professionals, with data silos existing in institutions. Challenges identified were the absence of a normative framework, limited financing capacities, and significant technological disparity between the public and the private sectors. The paper concludes that digital health "represents a real opportunity to overhaul the current health system and its digital transition by proceeding to an in-depth upgrade of the healthcare offer, governance, health professions and patient relationship, all in perfect synergy between the public and private sectors."

Pakistan (Digital Health Maturity Level: no data available in the global digital health monitor)

Sehat Kahani, launched in 2019, is a leading telehealth initiative, connecting a vast network of predominantly female doctors to patients in remote areas of Pakistan. Initially launched with about 60 doctors, Sehat Kahani now comprises a large network of more than 7,000 doctors, 90% of whom are women. Fifty percent of the doctors are home-based female doctors who have returned to practice after leaving when they got married and had children. The Sehat Kahani app was brought into the federal government's 'Digital Pakistan' drive and used in 65 intensive care units (ICUs) across Pakistan

under a project with UNDP, Health Services Academy and the federal and provincial governments. This allowed health workers to access critical care consultation through a Virtual Critical Care Specialist (VCCS). In collaboration with WHO and the federal government of Pakistan, six clinics were launched in hard-to-reach areas of Pakistan during the COVID-19 pandemic, and a specific focus on sexual and reproductive healthcare services has also been added to this project.

The Kingdom of Saudi Arabia (Digital Health Maturity Level 5 as of 2024)

The development of digital health in Saudi Arabia has been evolving at a rapid pace, in alignment with the health sector's 2030 Transformation Program. Between 2019 and 2021, the COVID-19 pandemic led to the expedited adoption of digital health technologies in Saudi Arabia, leading to the expansion of digital health infrastructure and the introduction of many population-level applications by the government.

Seha Virtual Hospital is a specialized healthcare virtual facility that can accommodate up to 400,000 patients annually. It employs advanced technologies that offer specialized services and has the capacity to assist around 152 hospitals throughout the Kingdom, in addition to 15 primary specialized health services and 34 sub-specialized services. The hospital has embraced a patient-centric approach to healthcare delivery, improving patient outcomes and experiences through technologies already well established in the Kingdom such as electronic health records, Telemedicine and artificial intelligence, and remote monitoring technologies that help bridge the gap between patients and providers.

In 2022, Saudi Arabia partnered with health data platform provider Orion Health to deliver the world's largest health information exchange, which will take data from 5,000 government and private health institutions and harness the data of 32 million people.

Djibouti (Digital Health Maturity Level: no data available in the global digital health monitor)

In 2023 the Intergovernmental Authority on Development (IGAD), in collaboration with the government of Djibouti: Ministry of Health (MoH), launched a transformative sub-project to digitize the country's disease surveillance system using Surveillance, Outbreak Response Management and Analysis System (SORMAS).

Somalia (Digital Health Maturity Level 2 as of 2024)

In 2020, the Somalian solar energy company Samawat Energy launched Samawat Afiya: a digital health platform that allows health workers to visit rural, off-grid communities. Using smartphones and medical technology powered by solar energy, healthcare workers can collect and store patient data. Medical information is stored on the phone and automatically uploaded to the cloud when connectivity is restored. The service aids coordination between patients, healthcare facilities and workers, creates a better picture of disease clusters and makes disease prevention more efficient.

European Region

In the WHO European Region, digital health transformation of healthcare is progressing in alignment with the region's digital health action plan for 2023–2030. Working with Member States, WHO Europe has moved forward in all the strategic priorities outlined in the plan: setting norms and providing guidance for digital health; strengthening countries' capacities for governance and digital literacy; fostering innovation through networks and knowledge exchange; and identifying scalable, patient-

centred digital health solutions.

The European Region has published documentation to support Member States with health information system governance. In 2023 the region initiated a project with the European Commission to align regional health data governance and standards.

Member States are addressing elements essential to successful implementation of digital health strategies. Of 52 European Member States surveyed in 2022, 42 reported having some processes for monitoring and evaluation of digital health interventions, programmes or services.

In 2024, WHO European Regional Office released a report that shows that digital health technologies can improve women's health and promote equity. The benefits are primarily associated with improving access to health-care services, enhancing maternal health, providing essential health information, and empowering women to have more autonomy.

WHO European Region has launched knowledge-exchange initiatives, such as the Decoding Data and Digital Health webinar series in the WHO European Region. WHO Europe has also launched the Strategic Partners' Initiative for Data and Digital Health (SPI-DDH) to identify and address gaps in data and digital health ecosystems.

Published in July 2024, this report presents results of the assessment on EU27 countries' (plus Iceland and Norway) state-of-play towards delivering the Digital Decade's e-Health target of 100% EU citizens having access to electronic health records by 2030. The top five most mature countries in the EU-27 were reported to be Belgium (100%), Denmark (98%), Estonia (98%), Lithuania (95%) and Poland (90%). The biggest improvement over the previous year was observed for France (+25 points), Portugal (+23 points), Slovakia (+20 points), and Germany (+17 points).

At the end of 2023 WHO Europe and the European Commission embarked on an ambitious new partnership to strengthen health information systems and boost health data governance and interoperability in the WHO European Region. The €12 million project, funded by the European Commission, will support health-care services for the nearly 1 billion people living across the 53 countries in the Region. This 4-year project aims to improve the use and reuse of health data by health-care providers, policymakers and patients, and to enhance the quality and interoperability of health information systems.

The European Health Data Space (EHDS) is a key pillar of the project. The EHDS initiative establishes a legal framework for the re-use of health data for research, innovation and public health purposes in full compliance with strict EU data security and access criteria, fundamental rights and cybersecurity rules.

The Central Asian Republics Information Network (CARINFONET) is a collaborative network of five countries and a platform for improving health information systems. It promotes collaboration within and between countries in the region of central Asia to produce relevant, objective and accurate statistics. CARINFONET works with the overall purpose of strengthening health information systems across central Asian countries in the WHO European Region. CARINFONET's commitment to helping countries is part of larger efforts geared towards strengthening national health information systems. This is a priority area of focus also identified in WHO's European Programme of Work.

In 2024 the region published a two-year progress report on the Regional digital health action plan for the WHO European Region 2023–2030. It provides an overview of significant progress made to date

across all 18 key focus areas outlined in the action plan, driving innovation, improving access to care, and strengthening health systems. The report shows that digital transformation of health care is picking up across the region. The report is accompanied by a new set of illustrative actions which reflect evolving needs and latest advancements in digital health.

Progress has been made in setting norms and providing guidance for digital health, strengthening countries' capacities for governance and digital literacy, fostering innovation through networks and knowledge exchange, and identifying scalable, patient-centred digital health solutions. To address the need for evidence-based guidance, WHO Europe has collaborated with countries, international organizations, academic institutions, civil society, and other partners to produce 14 technical publications, including a report assessing the state of digital transformation across the region, as well as research on artificial intelligence (AI), telemedicine, digital health literacy, equity, and the implementation of digital tools.

To build digital literacy skills, over 30 countries benefited from capacity-building activities related to Big Data, telemedicine, ICD-11 introduction, and strengthening health information systems. In addition, WHO Europe has partnered with the United States Centers for Disease Control and Prevention (CDC) to launch a special fellowship programme in eastern Europe and central Asia, which helps to improve the use of data science in public health. To date, the programme has been implemented in 8 countries.

Since 2022, countries have been receiving increased support to improve their health information systems and establish telemedicine services to ensure that high-quality care reaches everyone, especially in rural areas. Fifteen countries have now made this a priority. In addition, the WHO European Geospatial Coordination Hub, launched in 2023, is working to improve country capacities in using geospatial data for health care.

WHO Europe will continue to work closely with countries and stakeholders focusing on expanding research, fostering partnerships, enhancing capacity, and driving innovation. Much of the research will explore how digital health can contribute to climate sustainability, what role it plays in combating antimicrobial resistance, how gender-related issues manifest in digital environments, and how digital solutions can support healthy ageing.

AI remains a major area of interest for the future of health care in the region. Work is under way to develop a regional report on the status of AI in the European Region, and to establish a technical advisory group to provide expert guidance on AI use, ensuring that its implementation is safe and effective.

To foster discussions on future health-care solutions, WHO Europe will host the third WHO Symposium on the Future of Health Systems in a Digital Era in the European Region in 2025.
WHO Europe will continue to raise awareness of the importance of equity in digital health, ensuring that new technologies benefit those who need them most. This work will contribute to the development of a European framework for measuring digital health equity.

Country examples

Austria (Digital Health Maturity Level: no data available in the global digital health monitor)

The Austrian EHR System (ELGA) was anchored in law in 2012 and since then gradually put into

operation, starting in the inpatient sector. Besides medical eReports, which are most important for the continuity of health care (i.e. discharge letters, laboratory findings and diagnostic imaging findings), ELGA also offers the eMedication service, providing an overview of a patient's prescription and non-prescription medicines that are relevant for interaction. In the years since 2012, the system has been increasingly adopted and is being continuously optimized.

Belgium

Founded in Belgium in 2013, Break Dengue is a global initiative to combat dengue fever, a global neglected disease that affects the most marginalized populations but can now also be found in some of the world's wealthiest countries. Break Dengue uses digital channels and social media to target and connect patients, doctors, the pharmaceutical industry, research and development organizations, NGOs and associations at both global and local levels. Digitally engaged through social media, audiences are empowered with information on dengue prevention, the latest news on dengue fever, and real stories from patients and clinicians who have encountered dengue.

Denmark

Launched in 2003, the Danish health portal, sundhed.dk, is based on a federated ICT architecture. It integrates with local EHR systems and consolidates relevant information from all parts of the health care service. The portal serves as a central access point for doctors and citizens to make appointments and view images, laboratory results, clinical reports, medications, treatment plans and bills. The sundhed.dk digital health portal collates medical information and data for all Danish citizens aged 15 years or older. Sundhed.dk displays data from more than 120 different sources without storing or duplicating data. Accessibility to the portal across different end-user platforms (personal computers, tablets and mobile phones) is high and requests to display citizen health data are dealt with in a timely, efficient and secure manner.

Estonia

Estonia's E-Health Revolution has modernized Estonia's healthcare infrastructure and positioned the country as a global leader in leveraging technology to improve patient care and health system efficiency. Foundational to the digital transformation is the EHR system, a centralized platform that aggregates patient data from diverse sources, enabling comprehensive and efficient delivery of health services.

The infrastructure facilitates interoperability and seamless data exchange, enabling a holistic view of patient health records. The E-Health Revolution provides citizens with an accessible and user-friendly digital portal, allowing them to access their health records, track prescriptions, and manage permissions for healthcare providers. This citizen-centric approach fosters transparency and empowers people to actively participate in the management of their health. Estonia also makes effective use of telehealth services, including virtual consultations, remote monitoring, and e-prescriptions. The impact of telehealth on rural communities where access to healthcare was limited is particularly positive.

Security and integrity of the health data had been achieved through the use of blockchain technology, creating a secure and transparent system that safeguards patient information, instilling trust among citizens and healthcare providers.

France

In an important step for the governance of digital health in the country, the Ministry of Health created a single Ministerial Delegation for Digital Health in 2019. The role of the delegation is to oversee all digital health activities within the Ministry. In the same year, the Agence du Numérique en Santé (digital health agency) was established to operationalize the government's eHealth strategy. The Agency published the overarching technical policy framework for national digital health services and platforms foreseen by the new legislation.

Hungary

During the COVID-19 pandemic the Hungarian Government introduced a new set of legal provisions to promote telehealth. The Telemedicine Decree 157/2020 (IV. 29.) temporarily extended access to telemedicine to all doctor-patient and doctor-doctor activities during the pandemic emergency. The regulation enabled health-care providers to set up their own telemedicine protocols and provide telemedicine services in a regulated manner. The new legal frameworks have resulted in an expansion of telehealth in primary and outpatient care.

Lithuania

The Lithuanian Patients e-services portal was created in 2019. It provides medical history and allows patients to send and receive documents and book appointments with doctors and specialists – previously, patients were required to use a number of different booking systems. Appointments can also be made for out-patient visits in managed health services. Patient history and electronic referrals are provided by the integration of the portal with the national database of patient EHRs. The system is currently used by more than 400 clinics which are principally government and municipality owned clinics, as well as health service private clinics that are financed by the state health insurance fund. In all, information from 1400 GPs (70% of Lithuania's GPs) and 5000 specialists (60% of all specialists) is managed in the system. Patients can also see approximate waiting times for appointments with doctors and specialists. The success of the system and acceptance by patients has facilitated the development of new systems including telehealth services.

Poland

From January 2020 ePrescription became mandatory in Poland. It proved to be an efficient and useful tool particularly in the COVID-19 pandemic, bringing benefits both to medical staff and patients. By November 2022 more than 1,338 million e-prescriptions had been issued. The service is available for all patients, regardless of gender, age or place of living. Patients can get ePrescription not only during physical visits but also during teleconsultations. Introducing ePrescription in Poland has made access to health care more available, especially for vulnerable groups of society. It saves time for patients and doctors, contributes to reducing the number of medical appointments and therefore to better availability of services, increased resistance to epidemiological threats and improved continuity of care. From September 2022 Poland has joined the group of countries using the MyHealth@EU information technology system and has gone live with crossborder ePrescription.

Uzbekistan

The national "Digital Uzbekistan-2030" strategy approved in 2020 included a five-year action plan for the digital transformation of the health-care system covering health data governance, HIS architecture and digital health initiatives. In 2021, to execute the action plan for digital health, the Ministry of Health formed a limited liability company, IT-Med, for the digitalization of the health sector. In a

relatively short time, IT-Med was able to deliver information systems for hospitals, polyclinics and other medical institutions. It also launched a number of pilots, including two flagship initiatives: the "Medical Information System" (the MIS project) which aimed to provide universal coverage throughout the country by 2023; and the "103-Ambulance" system to optimize ambulance services in the country.

United Kingdom

The 100% Digital Leeds programme, which started in Leeds Libraries, is an initiative to strengthen the digital inclusion infrastructure in communities and to develop a network of organizations committed to combatting digital exclusion. Working with Health Education England and the Chartered Institute of Library and Information Professionals, Leeds Libraries aims to embed health literacy skills development into digital access interventions. As a high percentage of the population struggle to use health information that combines words and numbers, this initiative provides citizens with valuable health literacy skills while also empowering them to use digital tools.

South East Asia Region

The WHO Regional Office for South-East Asia was the first region to prepare a regional strategy for digital health. The "Regional Strategy for Strengthening eHealth in the South-East Asia Region, 2014–2020" held the vision that affordable, appropriate and sustainable digital health be established as one of the foundations of health systems in achieving the desired health outcomes in the region.
More recently, the South East Regional Strategy for Primary Health Care 2022–2030 stressed the urgency to leverage the potential of digital technology to improve access to quality and equitable primary health care.

The Association of South East Asian Nations (ASEAN) has worked with Member States on digital health assessment and maturity aimed at benchmarking progress on digital health. The ASEAN Digital Masterplan (ADM) 2025 addresses achieving better healthcare through digital services. It stresses that, particularly in areas like health, consumers need to trust digital services, especially those delivered through new and emerging technologies. A key part of this is ensuring that cybersecurity and digital data governance best practices are adopted as widely as possible. The ADM noted that the COVID-19 pandemic led to a substantial acceleration in the use of telehealth services across ASEAN, with some member states directing citizens to telehealth services and service providers.

Although telemedicine has been in use in many of the countries in region, existing policy and regulatory challenges have restricted its widespread adoption. During the pandemic, several countries in the region passed various legislations and issued telemedicine practice guidelines resulting in increased uptake and acceptance of telemedicine among patients and providers.
In these countries and countries with pre-existing national digital health frameworks and enabling regulatory environments, telehealth interventions, while strengthening the public health response to COVID-19, also supported the continuum of care at the primary care level. This demonstrated that telemedicine has the potential to address persistent obstacles to primary care in the South East Asia region, including scarcity of trained healthcare workers, access challenges and costs associated with in-person care.

In 2021, on behalf of the Asia Pacific Observatory on Health Systems and Policies, the WHO Regional Office for South-East Asia published "Use of e-health programmes to deliver urban primary health-care services for noncommunicable diseases in middle income countries". The goal of this policy brief was to investigate the steps needed to create a favourable environment for the implementation and

utilization of digital health services to deliver non-communicable disease (NCD) services at the primary health care level.

Leveraging India's presidency of the G20 and building on the actions and commitments of previous presidencies, the WHO South East Asia Regional office and the Government of India joined efforts in 2023 to give new impetus to global collaborations and actions in the implementation of digital health technologies and innovations. Together, they hosted the Global Conference on Digital Health to shift the focus from strategy to achieving a global consensus on a Plan of Action that produces impactful results on the ground, through a set of digital health initiatives aimed at accelerating progress towards Universal health Coverage. ('Taking UHC to the Last Citizen' 20—21 March 2023, New Delhi, India.)

Based on WHO's guidance for the implementation of person-centered telemedicine practices, a regional conference on telemedicine was hosted in 2023 by the South East Asian Regional Office and the Indian Government with the aim of accelerating digital health as an integral component of Primary Health Care. Country delegates from Bangladesh Bhutan, India, Indonesia , Maldives, Nepal, Sri Lanka, Thailand, and Timor-Leste were joined by representatives from WHO, Asia eHealth Information Network (AeHIN), the International Telecommunication Union (ITU), the World Trade Organization (WTO), the University of Geneva WHO Collaborating Centre, The Asia Foundation, The George Institute of Global Health, and TATA Memorial Center.

The objectives were to assess current implementations of telemedicine technologies and results in Member States and to share lessons learned especially during the COVID-19 pandemic response; to identify gaps, challenges, and opportunities in telemedicine that hinder/facilitate progress towards UHC; and to outline country-specific roadmaps or action plans aimed at strengthening telemedicine, as a strategic, technical and operational support from WHO and partners to SEARO Member States. Some important outcomes of the conference were that there is a strong will to strengthen country capacities in the implementation and use of telemedicine interventions; there is consensus that data governance must be strengthened via digital architecture, data privacy, interoperability standards; that legal and regulatory frameworks must be strengthened; that telemedicine interventions should be part of a comprehensive digital health strategy that includes investments into data and digital infrastructure such as electronic health records, e-prescriptions and linkages to diagnostic information systems and citizen engagement interfaces.

The Asia eHealth Information Network (AeHIN) is a collaboration of digital health advocates from South and South-East Asia committed to promote interoperability for better health. With a vision towards a strengthened interoperable digital health ecosystem for better health in Asia, AeHIN has been promoting learning, resource sharing and knowledge exchange to strengthen digital health through the networking approach. Created in 2011, AeHIN has over 2,400 members with a presence in 84 countries. AeHIN is incorporated in Hong Kong and maintains secretariats in Manila, Bangkok, Jakarta, and Kuala Lumpur. AeHIN has helped build capacity in the region by laying down national health information foundations: governance, architecture, program management, standards and interoperability or GAPS designed to support country efforts to develop and implement their national digital health strategies. AeHIN encourages countries to Mind the GAPS in their digital health planning and implementation.

The AeHIN Mind the GAPS, Fill the GAPS Framework compartmentalizes the complex points in health information systems. It summarizes the main areas that countries can work on to efficiently and effectively carry out their digital health plans: Governance, Architecture, People and Program Management, and Standards and Interoperability. AeHIN encourages countries to lay out a clear governance structure and framework to guide the design and implementation of a blueprint

(enterprise architecture). This governance structure and framework should ensure that stakeholders (people) understand and follow the blueprint (program management) and adopt the standards needed for interoperability. AeHIN's activities include conferences, convergence workshops, general meetings, certification training, webinars, and online repositories, all of which contribute to a stronger networked approach to digital health development. A convergence workshop is a country-specific government-led event that brings together all stakeholders relevant in the development, implementation and uptate of the national digital health strategy/blueprint. This convening is usually facilitated by AeHIN with the support from national and international partners. It aims to achieve a coherent vision and mission for national digital-in-health programs through multisectoral coordination, cooperation, and collaboration. AeHIN has supported 14 convergence workshops in 10 countries.

In February 2024, AeHIN participated in the public launch of the Global Initiative on Digital Health (GIDH) and expressed support for the WHO-managed Network aiming to amplify and align resources toward country-led digital health transformation through strengthened collaboration and knowledge exchange. In April 2024 AeHIN conducted a virtual regional consultation on the draft model law on Health Data Governance (HDG), where 33 high-level stakeholders from India, Nepal, Malaysia , Maldives, the Philippines, Sri Lanka, and Thailand representing various sectors participated. This draft model law drafted by Transform Health and partners is flexible and non-prescriptive, allowing countries to adapt it in their respective legal systems to help strengthen national laws, regulations, and frameworks on HDG. In May 2024, AeHIN participated in the first GIDH Multi Stakeholder Dialogue on National Digital Health Transformation co-organized by the World Health Organization (WHO) and the International Telecommunication Union (ITU) in Geneva under the framework of the World Summit of the Information Society (WSIS), Action Line C7 on eHealth. AeHIN was part of the panel on "Regional Updates and Case Studies" during this event and shared experiences from the network's operations and outputs from collaboration with various partners.

There are some systems in the region that are already in advanced stages of AI implementation. For example, Singapore utilizes AI to support several services like pathology and medicine delivery; an Indonesian start-up named CekMata14 has used AI for detecting cataracts; and in Thailand, IBM Watson supercomputer analytics has been integrated into the oncology department at Bumrungrad International Hospital to advise doctors on the best treatment plans for cancer patients.

The 2023 publication, “To meet the unmet: Preparing for Health Equity Challenges in WHO South-East Asia Region (2023)” aims to help policy makers, health system designers, academics and health professionals across the region build fairer, more equitable health systems. It does this by documenting progress and challenges in meeting unmet needs, and by identifying ways forward to address health inequity at sub-national, national and regional levels.

The publication emphasizes the role of digital technology in the transformation of a health system. Although information and communication technology (ICT) can be disruptive, it is seen to present new opportunities and challenges for the achievement of all 17 Sustainable Development Goals in the region. Strategic and innovative use of digital and cutting-edge ICT will be an essential enabling factor towards ensuring UHC in the region, by improving access to and quality of care; reducing costs; promoting health literacy and skills among populations; and for promoting evidence-based knowledge, skills and competence to health and care workers.

“To meet the unmet”, further recommends were that digital health should be an integral part of health priorities and should benefit people in a way that is ethical, safe, secure, reliable, equitable and sustainable. It should be developed with principles of transparency, accessibility, scalability,

replicability, interoperability, privacy, security and confidentiality. It was concluded that, despite the considerable progress made by some countries, application of digital health to improve the health of populations remains largely untapped. Countries still require institutional support for the development and consolidation of national digital health strategies and the implementation of their plans, which usually requires considerable resources and capabilities.

Country examples

Bangladesh
Bangladesh has customized and taken to scale a large range of interoperable open-source technologies that have facilitated the collection and reporting of nationwide aggregate data and public health information, health facility management and electronic medical records. Another example is the deployment of the WHO Open Smart Register Platform (OpenSRP) to track mothers and their children from antenatal care to delivery of immunizations for the child. OpenSRP has helped streamline data collection and aggregation and has enabled instantaneous communication between health workers, thereby improving not only service delivery but also the reliability of national health indicators.

India

In India, the Government of the state of Uttar Pradesh implemented mSehat, a family planning and healthcare mobile app, embedding technology into the workflow of frontline health workers. mSehat supports client-based tracking by enabling the frontline health workers to record maternal and infant data in real-time, reinforcing learning, and strengthening counselling efforts during home visits.

Be He@lthy, Be Mobile has also reached over 3.5 million people with its mHealth programmes. The Ministry of Health and Family Welfare of India, together with the WHO and ITU, launched the mTobaccoCessation programme, which now has over 2 million self-registered users. The Ministry of Health is preparing a strategy to extend the programme, add other languages and enhance the content with an interactive voice response system. The mTobaccoCessation programme achieved a 19% self-reported quit rate (defined as not having used tobacco in the past 30 days) as compared with an estimated baseline population quit rate of around 5%. Of the current tobacco users who subscribed to the programme, 66% reported having tried to quit, and 77% reported that the programme was helpful or very helpful in quitting tobacco.

Regarding the mDiabetes programme in India, 41% of users surveyed in 2018 said that they followed healthy dietary advice and 55% practised physical activity. The programme also helped to improve understanding of diabetes for 56% of users and prompted 11% to be screened for diabetes. The study demonstrated the feasibility and acceptability of mHealth for improving health-seeking behaviour in a large population.

In 2022, WHO launched a WHO Collaborating Center on Health Innovation at the Kalam Institute for Health Technology in India, to support WHO to deliver on its mission through innovation. In 2023, the Collaborating Center hosted, in collaboration with the WHO Innovation Hub, the World Health Innovation Forum. The event convened public sector leaders and other ecosystem actors to promote a more balanced and equity-driven innovation ecosystem and raise awareness about the opportunity for governments to integrate innovation at the core of their mission to promote Universal Health Coverage.

Led by the the Ministry of Health and Family Welfare, India took a significant step forward in

telemedicine, through the launch of the e-Sanjeevani platform in November 2019. This e-Sanjeevani programme aims to provide equitable and quality care and strengthen continuum of care amidst geographical and socioeconomic challenges. This free-of-cost communication also supports Ayushman Bharat Digital Mission in developing the integrated digital health infrastructure of India. The first mode of e-Sanjeevani is the 'hub-and-spoke provider-to-provider platform', designed for tele-consultation especially between those frontliners, health and wellness centres (HWCs) and physicians at upper levels of care. The e-Sanjeevani OPD platform, the second mode, enables patients to connect with providers even from their homes. Unique patient IDs are used to facilitate the continuum of care across all levels of care as well as the development of health provider and health facility registries.

The e-Sanjeevani is arguably the world largest telemedicine platform. As of mid-2023, more than 114 million patients have availed e-Sanjeevani services. With 57% and 19% of beneficiaries as females and the elderly, respectively, e-Sanjeevani has been a game-changer to address health inequity in access to health among vulnerable populations in India. WHO is providing technical support for upscaling the programme coverage, with collaboration from state and district officials, physicians at the secondary/ tertiary hub, and on-ground HWC teams.

Maldives

The Government of Maldives, strongly committed to UHC, has sought to ensure accessible health-care services on every inhabited island. They have pledged to upgrade the capacity of the health system to provide in-demand services, especially for noncommunicable diseases (NCDs). Digital health technologies presented an opportunity to address the key challenges, including the capacity to provide people-centred care through a life-course approach, as well as interconnectedness of the health information system.

Subsequently, the Ministry of Health (MoH), Maldives and WHO launched a pilot project to strengthen integrated NCD services and the information system at the PHC level in Faafu Atoll. The newly developed digital health platform, 'Primary Health Care Registry', facilitates effective empanelment, screening, follow-up and continuity of care for the entire population. The comprehensive 'Island Health Profile Database' plays a crucial role in NCD prevention and control, including early detection, identifying population-level risk factors, and ensuring timely management within the island communities. By enrolling all residences, the project supports inclusive services to all walks of life, including undocumented migrants, vulnerable groups, and minorities.

The Primary Health Care Registry is software owned entirely by the MoH and is developed on the District Health Information System (DHIS2), a free open-source software platform. WHO has played a significant role in supporting capacity development and has provided relevant training modules to the MoH, ensuring a smooth transfer of the registry's responsibilities. Additionally, this platform facilitates the integration of other DHIS2 modules, such as Child Growth Development, and Antenatal and Postnatal Care. This integration contributes to a comprehensive health information system fundamental to address health demand at the entire life-course.

Following three months of implementation, 93.6% of the target population has been enrolled. Commendably, 96.6% of the enrolled population has also been screened. This initiative demonstrates achievement in enhancing data accessibility and ultimately improve health outcomes for all individuals of the Maldives, aiming to leave no one behind.

Myanmar

In Myanmar, telemedicine has been implemented from 2017 in partnership with a leading

telecommunication service provider to facilitate consultations between patients and doctors. The telemedicine services were scaled up during the pandemic where the government along with an implementation partner enhanced the availability of mobile tablet devices with embedded health information packages and decision support tools for pandemic response. This initiative supported frontline healthcare workers and equipped them with contextually relevant information to support the pandemic response as well as improving primary care delivery.

Nepal
In Nepal, the remote and rural healthcare units rely on provider-to-provider telemedicine consultations where health assistants consult specialists at tertiary care centres in medical colleges and teaching hospitals to reduce the necessity for patients to travel long distances for postoperative care.

Singapore
Singapore is at the forefront of embracing key digital health technologies, with notable advancements in artificial intelligence (AI), telemedicine, mobile health, data analytics, and integrated healthcare systems. Central to these efforts is the Singapore Smart Health Initiative, which aims to empower individuals with the knowledge and tools necessary to manage their health effectively, leveraging technology and robotics in healthcare delivery. Supporting this initiative are various digital health programmes and policies, including the Singapore one-stop health portal known as HealthHub, the National Steps Challenge™ & Healthy 365 App, Project Pensive, aimed at early detection of dementia through technology, and telehealth services designed to bring healthcare directly to homes. These initiatives underscore the Singaporean government's commitment to revolutionising healthcare through digital innovation.

Sri Lanka

Sri Lanka has deployed and fully scaled up an electronic reproductive health management information system (eRHMIS), first introduced in 2016. This has resulted in complete, timely and high-quality data collection, analysis and use across Sri Lanka at all levels of the health system. Use of eRHMIS has facilitated the efforts that have ensured continued reductions in maternal and child mortality and improved island-wide reproductive, maternal, newborn, child and adolescent health service delivery.

Western Pacific Region

The Western Pacific Regional Office developed guidance on "Electronic Health Records – Manual for Developing Countries" as early as 2006.

In 2018, responding to the Seventy-first World Health Assembly's resolution affirming the value of digital technologies in advancing universal health coverage (UHC), the WHO Regional Committee for the Western Pacific endorsed the "Regional Action Agenda on Harnessing e-Health for Improved Health Service Delivery in the Western Pacific". The Action Agenda was based on lessons learnt in the region and proposed a stepwise approach to sustainable digital health development. It provided practical guidance and actions that Member States could take to harness digital health to strengthen health services and improve health outcomes.

Since the adoption of the Action Agenda, the region has seen rapid and large-scale development of digital health. The growth of digital health technologies was further propelled by the COVID-19

pandemic, which spurred a demand for digital transformation.

WHO in the Western Pacific Region held its second virtual Partners' Forum in 2021. Attended by almost 700 participants representing over 35 countries and areas, the Forum focused on the essential role of partnerships in the Western Pacific Region in advancing health priorities, how partnerships have changed during the COVID-19 pandemic and how institutions can work together to address future public health challenges. The Forum addressed the issue that, despite the many public health gains made across the region, many people remained unreached by essential health services. Partners discussed the important role of innovation and technology in reaching the most marginalized, vulnerable and stigmatized groups. It was agreed that community-led digital health approaches that emphasize the importance of trust were essential for transformation.

In 2021 the World Health Organization in the Western Pacific launched the first WHO Western Pacific Innovation Challenge: "Innovation for the Future of Public Health". The Innovation Challenge called for innovators to submit their solutions to better the health and well-being of people in the Western Pacific Region.

The second WHO Innovation Forum in the Western Pacific Region was held in 2022, addressing real-world challenges in the region, ranging from looking for new ways of eliminating cervical cancer and disseminating health policy innovation, to how to diffuse and increase uptake of digital health intervention, and build medical registry for vulnerable populations.

In 2023 the WHO Region published the Data Management Competency Framework, a tool defining each component of the data life cycle as well as the required skills and knowledge for different health information worker (HIW) levels, making it possible to identify current competency gaps, measure competency development and identify future competency needs to support Member States in promoting sustainable and integrated HIW capacity building.

The Pacific Heads of Health at the Fifteenth Pacific Health Ministers Meeting have prioritized advancing health information and digital transformation in the health sector as one of the four strategic priorities for the region.

In 2024, following extensive consultations with Regional Member States and digital health experts, the region adopted the Regional Action Framework on Digital Health in the Western Pacific. The action framework provides guidance for Member States to leverage digital health by addressing emerging governance challenges and building people-centric health technologies. Three key areas have been prioritized for support in the Region; developing costed national digital health strategies and plans; providing normative guidance on key areas of digital health such as governance, standards and interoperability and ethical use of technologies such as AI; fostering country tailored support in the adoption of innovative technologies in health.

Country examples

Australia

The "My Health Record" (MHR), originally introduced in 2012 as the Personally Controlled Electronic Health Record, is the national electronic health record system in Australia. It is a secure online repository for documents and data that contains information about an individual's health and healthcare, such as current medications, adverse drug reactions, allergies and immunization history. This MHR is stored in a network of connected systems with the ability to improve the sharing of information amongst health care providers to improve patient outcomes no matter where in Australia

a patient presents for treatment. Patients can read in full everything that is added to their health record and can add information in their own local clinical information system that is not included in the MHR. Patients are identified through a unique 16-digit Individual Healthcare Identifier (IHI). Patients can choose to opt out of MHR, with all information in the record being permanently deleted.

The My eHealth Record (MeHR), an electronic shared record service, was established in 2005 in Australia's Northern Territory and surrounding regions of Central Australia to address the fragmentation of health information for a predominantly Indigenous and mobile population with multiple health concerns. The MeHR service has supported health care service delivery and continuity of care through improved access to reliable health information, particularly at the critical points of clinical handover.

Republic of Korea
In 2015, adoption rates of electronic medical record systems in the Republic of Korea were reported to be "100% in tertiary hospitals, 99% in general hospitals, 95.4% at local hospitals and 91.9% at local primary care clinics". This was associated with nearly universal digitization of patient data, digital storage of clinical images, electronic hospital administration databases and the expanding use of remote sensor technology.

Republic of Marshall Islands

In 2016, the Ministry of Health of the Marshall Islands implemented a new client registration scheme as the first phase of the tuberculosis, leprosy and noncommunicable disease mass screening programme in Ebeye, the second most populous island in the country. Working with the United States Centers for Disease Control and Prevention (CDC) and the WHO Regional Office for the Western Pacific, the Ministry developed an electronic registration form. Through this form patients registered their fingerprints, address and other personal information, which were linked to their unique hospital number. This enhanced client registration scheme resolved duplicate patient records in the database and facilitated disease screening, the second phase of the mass screening programme.

New Zealand

In New Zealand, the National Health Index (NHI) number is a unique identifier assigned to every person who uses health and disability support services. Each person's number is stored on the NHI along with that person's demographic details. The NHI is used to link information and get a better understanding of each person's needs, and to help with planning, coordination and provision of health and disability support services across the country. With the NHI, authorized users can uniquely identify information in the Medical Warning System, which is designed to warn health-care providers of any known risk factors that may be important when making clinical decisions about individual patient care.

Pacific Open Learning Health Net

The Pacific Open Learning Health Net (POLHN), developed by WHO and Pacific Ministries of Health and established in 2003, continues to provide free online learning opportunities and continuing professional development for health professionals in the Pacific.

II. What have been your organization's main contributions to the direct implementation of the WSIS outcomes and related areas of digital development since the Summit, particularly since 2015?

a. WSIS Action Lines (as lead, co-facilitator or supporting participant)

As lead, WHO has:

- Urged countries to draw up strategies for implementing digital health services. As of 2024, 129 countries have developed a national digital health strategy. The repository of national digital health strategies is located here[38].
- Developed a digital health course for all stakeholders operating at the tactical level. All WHO regions have used this course for digital health trainings. Over 1,000 learners have received training using this course.
- Urged countries to create frameworks for monitoring the implementation and progress of digital health strategies.
- Urged countries to adopt standards for the secure, accurate and timely transmission of health data.
- Highlighted the importance of protecting security and privacy of personal clinical data.
- Urged relevant stakeholders to draw up roadmaps for implementation of health data standards at national and subnational levels.
- Urged countries to develop appropriate policies and legislative mechanisms to ensure compliance in the adoption of health data standards.
- Launched the report on the Global Observatory for eHealth to disseminate results of the study, the evolution and impact of digital health in Member States.
- Conducted global surveys on digital health.
- Responded to the demand for digital health tools to support health service delivery.
- Provided access to tools and resources to support digital health implementation.
- Encouraged knowledge sharing and collaboration.
- Encouraged the leveraging of private-public partnerships.
- Developed and endorsed the Global Strategy on Digital Health 2020-2025.
- Launched the Global Initiative on Digital Health in 2023.
- Developed SMART Guidelines on several areas of health care.
- Established a Global Innovation Hub.
- Developed and maintained a central database of national digital health policy and strategic documents.
- Hosted the Global Digital Health Certification Network (GDHCN), a standards-based digital public infrastructure (DPI) for health.
- Implemented a health information dissemination programme to provide trusted health information and evidence-based guidance to people all over the world.

As Co-facilitator, WHO has:

- Collaborated with universities, government and civil society to make content and open learning courses available
- Supported government-to-government knowledge sharing through the Global Digital Health Partnership
- Developed benchmarking on artificial intelligence through the ITU-WHO Focus Group on AI

[38] https://www.who.int/teams/digital-health-and-innovation/global-repository-on-national-digital-health-strategies

- Organized multistakeholder events for knowledge sharing and collaboration, and to address challenges faced in the digital transformation of health.
- Launched the National eHealth Strategy Toolkit with the ITU in 2012.
- Launched the WHO-ITU "Be Healthy-Be Mobile" initiative.
- Launched the HINARI Access to Research in Health Programme with major publishers.

b. WSIS-related projects

Below are WSIS-related projects:

Capacity Building in Digital health

1. Global Digital Health Competency Framework for health workers.
2. Global Digital Health Training Course – over 1000 learners have undertaken this course.
3. Telemedicine.
4. Digital Public Infrastructure for health.

Collaboration

1. Launch of a global initiative on digital health.
2. Launch of global AI initiative.
3. Launch of a global digital health certification network.

Digital health governance

1. Digital health maturity modeling.
2. Collation of national digital health strategies.
3. Capacity strengthening in digital health governance.

c. Indicators used to measure the impact of ICT in the achievement of the SDGs in your organization's area of work

Based on the WHO/ITU eHealth Strategy Toolkit framework, the Global Digital Health Monitor uses seven key indicator categories to track progress of digital health interventions in Member States:

Leadership and Governance

1. Digital health is prioritized at the national level through dedicated bodies / mechanisms for governance.
2. Digital Health is prioritized at the national level through planning.
3. Health is prioritized in national digital transformation and data governance policies.

4. Readiness for emerging technologies adoption and governance.
5. Diversity, Equity, and human rights analysis, planning and monitoring are included in national digital health strategies and plans.
6. Gender considerations accounted for in digital health strategies and digital health governance.

Strategy and Investment

7. National eHealth/ Digital Health Strategy or Framework exists.
8. National digital strategy alignment with Universal Health Coverage (UHC) Core Components.
9. Public funding for digital health.
10. Private sector participation and investments in digital health.

Legislation, Policy and Compliance

11. Legal Framework for Data Protection (Security / Cybersecurity).
12. Laws or Regulations for privacy, consent, confidentiality and access to health information (Privacy).
13. Protocol for regulating or certifying devices and/or health services - including provisions for AI and algorithms (at higher stages of maturity).
14. Protocol for regulating and certifying AI within health services.
15. Cross-border data security and sharing.

Workforce

16. Digital health integrated in health and related professional pre-service training (prior to deployment).
17. Digital health integrated in health and related professional in-service training
18. Training of digital health workforce.
19. Maturity of public sector digital health professional careers.

Standards and Interoperability

20. National digital health architecture and/or health information exchange.
21. Health information standards.

Infrastructure

22. Network readiness.
23. Planning and support for ongoing digital health infrastructure maintenance.

Services and Applications

24. Nationally scaled digital health systems.
25. Digital identity management of service providers, administrators, and facilities for digital health, including location data for GIS mapping.
26. Digital identity management of individuals for health.
27. Secure Patient Feedback Systems.
28. Population health management contribution of digital health.

The Global Strategy on Digital Health 2020 – 2025 proposed 172 actions to meet the four strategic

objectives which are: (i) promote global collaboration and advance the transfer of knowledge on digital health; (ii) advance the implementation of national digital health strategies; (iii) strengthen governance for digital health at global, regional and national levels; and (iv) advocate for people-centred health systems that are enabled by digital health. These actions were assigned to the WHO Secretariat, to Member States, and to Partners, across the short, medium and long term.

One of the first milestones was the development of a core set of quantifiable process indicators related to the objectives of the action plan. These would be used to measure subsequent progress and contribute to accountability. They would mostly focus on action taken by Member States and the Secretariat.

The WHO Secretariat's accountability for the actions contributing to the **first objective**, to "promote global collaboration and advance the transfer of knowledge on digital health", is measured by the following indicators:

Short-term (1-2 years)

- Analyzed the landscape of digital health networks and partnerships at national, regional and global levels to promote and participation in collaborations and partnerships to promote successful global digital health transformation.
- Provided policy dialogue platform and technical support to countries to enable prioritization of digital health at national level.
- Convened or participated in multistakeholder groups to support scaling up of digital health and innovation contextualized to public health priorities and needs including being prepared in times of emergency.
- Participated in the multistakeholder digital inclusion coalition convened by the UN Secretary General.
- Developed a knowledge repository of stakeholders and digital health solutions to support Member States.
- Developed capacity-building methodologies, tools and training materials to help Member States to identify, systematize and share good practices and lessons learned on digital health.
- Promoted health innovations where appropriate including cutting-edge digital technologies, such as the use of artificial intelligence, blockchain and big data analytics, and other emerging techniques and solutions in the health sector.
- Established standards to facilitate networking and partnerships that can be adapted at national, regional and global levels based on different levels of cooperation.
- Provided classification of the different tools and technologies included in the digital health ecosystem, and developing ways to assess and monitor their efficacy.
- Developed, promoted and supported the adoption of technical documents and guidelines, ethical and legal frameworks, and planning and implementation toolkits.

Medium term (2-4 years)

- Established mechanisms for joint action on agreed-upon appropriate use of digital health tools to achieve global, regional and national health goals.
- Supported the development of a global digital health research agenda.
- Gathered, mapped and shared globally digital health business cases and facilitated exchange of lessons learned between countries and portfolios.

- Promoted digital health collaborations and partnership models within and across organizations on the use of software global goods, open-standards, and common digital health architecture.
- Provided policy dialogue platforms and technical support to countries to enable prioritization of digital health at regional and global levels.
- Convened multistakeholder groups and explored new modes of cooperation to support the scaling up of digital health and innovation.
- Reviewed annually the global agenda for action to build the future of the digital health and information and communications technology workforce; and the digital capacity of the health workforce.
- Managed or engaged in partnerships that serve public health system objectives.

Long term (4-6 years)

- Established a knowledge management approach for sharing and emphasizing the role of digital health investments on catalysing the achievement of national health priorities, universal health coverage, Sustainable Development Goals and WHO's Thirteenth General Programme of Work, 2019–2023.
- Documented and shared digital health global repository of knowledge and proposed interventions to enhance the impact of digital health technologies towards universal health coverage, Sustainable Development Goals and WHO's Thirteenth General Programme of Work, 2019–2023.
- Defined comparative metrics and developed benchmarking tools and assessment frameworks for digital health solutions, goods and innovations, and the health content specific to program areas and use cases.
- Addressed and developed strategies to incorporate lessons learned and to mitigate shared challenges in ethics, legal frameworks and governance in digital health including data privacy and sharing and ensuring safety and protection of individuals within the digital health environment.

The WHO Secretariat's accountability for actions contributing to the **second objective**, "advance the implementation of national digital health strategies", is measured by the following indicators:

Short term (1-2 years)

- Provided support to countries in developing (or ensuring) a national digital health strategy or equivalent strategic framework.
- Provided support to countries for prioritizing national investment in digital health in support of primary health care and universal health coverage.
- Identified and engaged with relevant stakeholders, regulatory bodies and regional eHealth/digital health networks to support the implementation of digital health transformation at national or regional level.
- Supported capacity-building to develop, update and implement national strategies and investment plans for digital health.
- Developed or adapted a maturity model, investment prioritization including tools and training materials, on the status of development and implementation progress of digital health strategies that can be adapted at local, regional and national levels.
- Developed tools for impact assessment that can measure the effectiveness of the

interventions using digital health.

Medium term (3-4 years)

- Facilitated dialogue to engage Member States and stakeholders to obtain sustainable national political, social and economic commitment and mandated for digital health through appropriate national and subnational policies, procedures, and legislation that governs digital health.
- Advocated digital health architectural blueprints or road maps, adoption and use of open-source standards and reuse of shared assets or services and systems including interoperability standards.
- Facilitated the use of organizations involved in standards development and partner agencies to advance the use of appropriate standards to ensure interoperability between systems and across domains.
- Developed a template business case for investments in digital health for Member States.
- Developed a library of proven digital health solutions.
- Developed relevant norms and standards on digital competencies through WHO's programme on health workforce capacity-building. This will include using partnerships with collaborating centres and affiliated professional associations to strengthen the role of health workers in providing cost-effective, efficient and safe health services through digital means as appropriate.

Long term (5-6 years)

- Shared good practices and lessons learned with countries and international community, through WHO regional offices, existing and existing regional and global digital health networks.
- Supported countries to build trust in the use of emerging and existing digital health technologies by ensuring placing importance on quality, safety and ethical considerations.
- Established a digital platform that allows ministries of health to review and access digital health solutions that can best support public health interventions in the context of health system strengthening, health emergency response and healthy populations.
- Integrated the template business case in the Dynamic Digital Maturity Model.

The WHO Secretariat's actions contributing to the **third objective**, "strengthen governance for digital health at global, regional and national levels", is measured by the following indicators:

Short term (1-2)

- Established criteria for assessing the relevance and impact of digital health solutions, for example including priority characteristics relevant to low-resource settings.
- Facilitated the use of global technology registries for digital technologies and projects at country and global levels that support the unique registration, monitoring and coordination of digital investments (for example, WHO's Digital Health Atlas).
- Developed evidence-based technical documents on different topics related to digital health, such as cost-effectiveness, sustainability and affordability, ethical use, privacy and security, and safety in the context of health system strengthening, health emergency response and healthy wellbeing.

- Used inputs from experts (for example, the members of WHO's technical advisory group on digital health) to develop or update the pipeline of technical documents (for instance, handbooks, toolkits and guidelines) on digital health interventions to improve health and well-being.
- Assessed and promoted innovative solutions that can have an effective impact in the future of health and well-being.

Medium term (2-4 years)

- Developed a WHO framework for assessing and regulating digital health technologies.
- Developed regulatory framework on international health data, to agree on global appropriate use of health data, and to outline principles of equitable data-sharing principles for research, consistent metadata and definitions, artificial intelligence and data analytics; primary and secondary use of data.
- Promoted exchange of best practices, good governance, infrastructure architecture, programme management, and use of standards to promote interoperability for digital health.
- Developed guidance on new areas being enabled by digital health technologies such as digital hospitals, digital therapeutics, personalized medicine, location-based services, infodemic management.
- Designated and used WHO collaborating centres on digital health to advise, support activities and facilitate knowledge exchange and learning within and between countries.
- Produced guidance on groundbreaking health system processes and practices supported by digital technologies.
- Identified mechanisms to ensure the rapid deployment of surge capacity in response to an acute public health event.
- Developed guidelines on global interoperability standards for digital health.

Long term (5-6 years)

- Tracked advancements across the global digital health ecosystem and propose concrete policy actions to advance progress towards the achievement of the targets of the Sustainable Development Goals using digital health.
- Developed research and promoted capacity-building to enable Member States and other stakeholders to take informed decisions in order to support sound digital health investments for health system strengthening and emergency response.
- Translated collected information into actionable knowledge tailored to countries and partners to support acceleration of systematic and transparent translation of evidence to inform policy and national decision-making.
- Developed a framework for regulating, benchmarking or certifying artificial intelligence and digital health medical devices, and support countries to develop capacities to use such frameworks.

The WHO Secretariat's accountability for the actions contributing to the **fourth objective**, "advocate for people-centred health systems that are enabled by digital health", is measured by the following indicators:

Short term (1-2 years)

- Disseminated best practices for engaging professional and patients' associations, which are active participants in digital health development and the implementation of the global strategy on digital health.
- Provided support to countries for accessible tools to enable literacy in digital health technologies and systems.
- Developed a framework allowing individual feedback for validating the performance of digital health tools and services.
- Developed global minimum standards for electronic health records.
- Developed global guidance on personalized medicine.
- Developed an ethics framework for technologies for health, to support countries in strengthening public trust in digital health inside or outside the context of a public health emergency.
- Promoted ethics, governance and security in handling and processing data for research or for other data-sharing requirements for the public good.
- Identified the core competencies of digital health literacy that might be included in education and training curricula of health professionals and allied workers.

Medium term (3 -4 years)

- Promoted digital health interventions while addressing social determinants of health.
- Supported Member States and stakeholders to use person-centric, digital health devices and systems to enhance health workforce performance and facilitate evidence-based decision to improve public trust in using digital health technologies inside or outside the context of a public health emergency.
- Supported Member States to identify and implement appropriate digital health interventions combined with appropriate health and data content across interoperating digital systems to address quality, coverage and equity goals within the health system.
- Scanned the landscape of projects and initiatives that use population health management and gender-equality approaches through digital health solutions to move health and well-being from reactive care models to active community- based models.

Long term (5-6 years)

- Provided support to countries to enable countries to meet global minimum standards for electronic patient health records.
- Provided support to countries in capacity-building in utilizing personalized medicine.
- Developed and promoted the use of tools that support the digitalization of integrated health service with a focus on patient's managed quality of service.
- Synthesized international research results and disseminate evidence on the contribution of digital health interventions to performance of health systems and their impact on people-centred outcomes, including universal health coverage, with an essential package of interventions.

d. What assessment has your organization made of its engagement in WSIS-related work and digital development in its areas of responsibility?

Four global surveys on eHealth were conducts since 2005 as follows :

2015 eHealth survey
2013 eHealth survey
2009 eHealth survey
2005 eHealth survey

Over 100 countries have been assessed in terms of their digital health maturity status.

WHO Regions have also conducted their own regional surveys and assessments.

Regional Bodies and development partners have also conducted their own assessments. These include, but not limited to, the AfricaCDC, GIZ, The Transform Health Coalition, IQVIA, The Warwick University, the World Bank etc.

III. What does your organization see as the main achievements, problems and emerging issues arising from WSIS and from digital development in its areas of responsibility since the Summit, particularly since 2015?

a. What have been the main achievements of WSIS and digital development?

Generally, countries have progressed from experimentation to implementation since the action line on eHealth was introduced. Countries are now progressing towards investing in digital health foundations and blueprints.

At international, regional, and national levels across all WHO regions there has been a marked emphasis on collaboration and networking for the purposes of knowledge sharing; development of blueprints, roadmaps, and strategies; support for sustainable digital health implementation and transformation; and capacity building. Collaboration and networking links have been established between regions, governments, and development partners.

Countries have also progressively developed national digital health strategies, with 129 countries having a national digital health strategy by 2024.

b. What problems, obstacles and constraints have been encountered?

The uptake of interoperability standards has been slow leading to reduced interoperability within countries and across countries. Limited nationwide connectivity coverage has also hampered scale of digital health solutions.

The COVID-19 pandemic is probably the first in human history in which innovative digital technologies and social media were being used on an unprecedented scale to keep people connected, safe and productive, while being physically and socially apart. However, the COVID-19 pandemic exposed longstanding health data and digital governance challenges at organizational, national and international levels. Countries and regions with more established foundations, legislation and policies

for the use of digital health services enabling timely and secure access to accurate personal digital health data were more effective in implementing solutions to support the response to the pandemic.

Data from the Global Digital Health Monitor shows that most countries are at maturity level 3 of 5 across the 7 WHO-ITU building blocks. The building block in which most countries are at the lowest maturity level pertains to health workforce skills in digital health.

In 2023, although 71% of 67 Member States reported having policies and regulatory frameworks for digital health, 56% had no functional digital health governance. In 2023, of 67 countries, only 19% of the countries systematically considered gender in their digital health strategies.

Common challenges faced in all regions are those related to sustainable funding for digital health programmes and implementation; establishing suitable national governance mechanisms for digital health; building a workforce skilled in digital health; establishing or leveraging digital infrastructure to support digital health transformation; fragmented data systems and inadequate application of interoperability standards for data sharing; and bridging the divide to reach those who risk being underserved due to lack of digital literacy, disability or any other isolating factor.

The review published by the WHO European Region as “Monitoring the implementation of digital health: an overview of selected national and international methodologies” found that, although the international community had made progress in monitoring digital health, there was a lack of suitable internationally agreed measures or adequate data for monitoring digital health. Much still needs to be done to strengthen the evidence base needed to monitor and shape the digital transformation of health-care systems. The review concluded that the measurement of governance and reuse of health data across health-care systems, and technical and operational readiness to share these data for statistical and research purposes (e.g. system-wide interoperability), are emerging as common and challenging priorities.

c. What new opportunities and challenges have emerged over the years since WSIS which need to be addressed?

Trust and inclusive digital health that emphasizes the most vulnerable, are emerging as a guiding principle for digital transformation of the health sector across all regions. An encouraging common theme across activities is that of equitable access to healthcare and “leaving no-one behind in the digital age” and reaching all vulnerable populations as well as those that are not digitally literate.

Several initiatives are actively addressing these challenges with considerable success and new initiatives hold the promise of digital health transformation that improves health and wellness outcomes, especially where this is most needed. Mobile health solutions and telemedicine interventions are increasingly being successfully utilized and there is widespread interest across all WHO regions in frontier technologies, especially artificial intelligence (AI) for health. WHO provided access to detailed guidelines for the ethics and governance of AI for health and several subsequent materials thereafter.

The Pact for the Future together with the global digital compact will be instrumental in fast tracking the uptake of digital health.

Specific challenges include:

- Interoperability of digital health systems
- Data security and citizen privacy issues
- Availability of digital health applications that consider socioeconomic factors, cultural and language barriers, disabilities, and digital literacy
- The often extreme digital divide between public and private sectors
- Bridging the gender digital divide and overcoming the negative impact of rapid technological change on existing gender inequality

The Pact's Global Digital Compact initiative strongly supports addressing these and other challenges faced in the digital transformation of health. It aims to close all digital divides and expand inclusion in an open, safe and secure digital space that respects, protects and promotes human rights. This includes establishing and maintaining responsible, equitable and interoperable data governance approaches and enhancing international governance of artificial intelligence for the benefit of humanity.

An area articulated by the Global Digital Compact is that related to Digital Public Infrastructure (DPI). With respect to this, there is a need to articulate the broader ecosystem within which a DPI for health will reside. Once that is done, countries can, in consultation with key stakeholders, develop a clear and unambiguous DPI for health.

IV. Lessons learned in the implementation of the Summit outcomes in your organisation's specific areas of responsibility

The WSIS Vision for WSIS Beyond 2015 emphasized the importance of implementing the gender commitments made in the WSIS outcome documents, to realize "full integration of women's needs and perspectives". In addition, it further enhanced the original Action Line for E-Health, calling for seven outcomes. Lessons learned are discussed in the context of these.

With respect to the **gender commitments**:

While the accelerated adoption and use of digital health and artificial intelligence for health has the promise of transforming health care, it comes with the challenge that it may widen the digital gender divide.

The results of the 2024 scoping review of peer-reviewed primary studies exploring digital health and its impact on women's health and women's equality and empowerment conducted by the Data and Digital Health Unit, Division of Country Health Policies and Systems of the WHO Regional Office for Europe, strongly support the potential that digital health technologies have to impact women's empowerment, facilitate the achievement of gender equality and improve health outcomes for women.

Nevertheless, in 2023, data collected by the Global Digital Health Monitor indicated that, of 67 countries, only 19% systematically considered gender in their digital health strategies.

In 2024 the Digital Health and Rights Project Consortium, hosted by the Centre for Interdisciplinary Methodologies at the University of Warwick, at the invitation WHO and in consultation with civil

society and youth leaders, reviewed 20 national digital health strategies with a gender, equity and human rights lens. The review found that, despite evidence that in most countries a digital gender divide creates unequal access to digital tools and platforms for women and girls, consideration of gender inequalities was omitted from all the strategies. Most strategies omitted mention of human rights in their vision, mission and objectives statements, and throughout their narratives.

Lessons: There is an urgent need to ensure that in future all digital health strategies address the digital gender divide and include concrete objectives that address gender inequalities and inclusivity of any marginalized or isolated groups.

With respect to **WSIS Beyond 2015 Outcome 1 for E-Health** (Foster the development and implementation of national eHealth strategies, focusing on implementing a sound enabling environment, integrating ICTs to support the priorities of the health sector, and providing reliable, affordable and sustainable connectivity for health services, health systems and the general public to improve the health of all people.)

Current data show that only 66% of Member States have a national digital health strategy or policy. While this number has increased since 2015, when only 85 (44%) countries had strategies, there is still a long way to go.

Lessons: There is still considerable inequity across countries. The digital divide is exacerbated in countries struggling with war, famine, political unrest, lack of capacity, issues impacting public health, and lack of supporting legislation. In many countries where strategies for digital health do exist, there may have been little or no progress with respect to implementation. Strategies are not an end in themselves and need to be appropriate, relevant, funded, adopted and monitored. Where countries have digital health strategies, there is largely inadequate monitoring of progress with respect to the implementation of strategies. Better information and global standard indicators are needed to monitor progress.

With respect to **WSIS Beyond 2015 Outcome 2 for E-Health** (Promote the use of ICTs to strengthen those sectors linked to human health and health systems – public health and health care services (including traditional medicine); sanitation, food and water; veterinary medicine and social services – with special efforts to reach people in remote and under-served areas, particularly in developing countries.)

Regional digital health frameworks and country digital health strategies make little or no mention of data sharing with veterinary medicine through health information exchanges and data centres. The focus is person centric in keeping with the focus of global, regional and country health services. Nevertheless, digital health strategies should allow for the inclusion of and interoperability with geospatial, climate, environmental and veterinary data, for example recording veterinary outbreaks in the locus of regional or country data centres. There is currently no real time mapping that allows countries to monitor the possible risk of zoonotic infections.

Digital health strategies largely focus on the provision of allopathic health services and there is a need to plan for interoperability with data from traditional healers as well as social services, especially relating to integrated care models.

Lessons: Urge countries to include all sectors linked to, and impacting, human health and health systems in their future health strategies.

With respect to **WSIS Beyond 2015 Outcome 3 for E-Health** (Facilitate innovation and access to e-Health applications to support health professionals, improve local access to information, and enable the flow of information in health services and systems, including tele-health, tele-medicine, electronic medical records, personal health records, and health information systems.):

There has been a surge of innovation and access to digital health applications, although this has largely depended on the digital health maturity of countries and their ICT ecosystems. The COVID-19 pandemic led to a rapid increase of telehealth adoption and usage, with many countries making the necessary adjustments to related regulations and laws.

Lessons: WHO should continue to support and nurture this innovation and adoption of digital health technologies in Member States. The launch of WHO's Global Initiative on Digital Health has come at the right time and the initiative is well placed to lead future efforts for global collaboration and knowledge sharing.

With respect to **WSIS Beyond 2015 Outcome 4 for E-Health** (Ensure public trust and confidence in e-Health, through adoption of policies, regulations and other measures that address the concerns of the health sector, including those of a cross-border nature.):

With the need to know whether people had been vaccinated or not, the COVID-19 pandemic raised important issues regarding cross-border data sharing and trust between countries and regions. Individuals are also becoming more aware of their rights to privacy and the importance of data security. This has ramifications when individuals consent to have their data shared and stored with a provider or third party.

Lessons: With trust in digital health becoming a major challenge for the future, it is critical to demonstrate that technology can provide the required security and privacy, for example by using blockchain. Future digital public health infrastructures (DPIs) need to conform to strict standards. There is a role for WHO to define a standard DPI for health that can be implemented and trusted.

With respect to **WSIS Beyond 2015 Outcome 5 for E-Health** (Promote the adoption of eHealth standards to enable the secure, accurate and timely transmission of health data, taking full account of privacy, security and confidentiality requirements, in this regard.):

While the adoption of digital health standards is universal, certain regions are lagging as evidenced by many siloed systems with little or no interoperability. Although most countries' digital health strategies, as recommended by the WHO-ITU digital health strategy toolkit, address standards as foundational, the implementation of these is usually not monitored. The ICD11 disease classification coding system adopted by the World Health Assembly in 2019 and brought into effect on January 1, 2022, has to date only been implemented in 120 countries.

Lessons: There is a need for more research to determine why countries have limited standards adoption. The evidence from this research should inform advocacy and support efforts to improve the adoption of digital health standards.

With respect to **WSIS Beyond 2015 Outcome 6 for E-Health** (Integrate the use of ICTs in eHealth in preparing for, sharing information on, and responding to disease outbreaks, disasters and other emergencies requiring intersectoral collaboration and exchange of information in real-time.):

Lessons: The COVID-19 pandemic demonstrated the urgency of this. See above for lessons learned.

With respect to **WSIS Beyond 2015 Outcome 7 for E-Health** (Promote the use of evidence for the adoption of eHealth as well as the measurement and development of indicators and tools for its socio- economic impact on national, regional and international level.):

Lessons: There is a need for better standardized indicators for digital health, derived from more reliable and granular data collected from countries.

V. Observations or recommendations concerning the future of WSIS and digital development, taking into account the outcomes of the Summit of the Future in September 2024

The World Summit on the Information society has continued to add value in as far as fostering multilateralism in the injection of ICTs across sectors. As we proceed towards the finish line of the 2030 SDG agenda, the WSIS mechanism will remain relevant. A transition is needed to convert the information society into a digital society, keeping in line with the rise of the digital age. Key areas of consideration within the WSIS framework include :

Investment in Digital Public Infrastructure as foundations to digital transformation

Strengthening investments in digital competencies

Strengthening collaboration in digital development especially focused on interoperability

VI. Please identify publications, reports and other documents by your organisation which you consider can contribute to the work of the review.

Progress reports by the Director-General to the Seventy-sixth World Health Assembly, A76/37, April 2023. Item O: Global strategy on digital health (decision WHA73(28) (2020))

The State of Digital Health 2023: Global Digital Health Monitor. HealthEnabled and Global Development Incubator. 2024.

The Global Strategy on Digital Health, WHO, 2020

Global diffusion of eHealth: Making universal health coverage achievable, WHO 2016

Digital health platform handbook: building a digital information infrastructure (infostructure) for health, WHI – ITU, 2020

Digital implementation investment guide (DIIG): quick deployment guide, WHO, 2020

Atlas of African Health Statistics 2022: Health situation analysis of the WHO African Region. Brazzaville: WHO Regional Office for Africa; 2022.

Progress report on the Framework for Implementing the Global Strategy on Digital Health in the WHO African Region. Seventy-fourth session of WHO African Regional Committee. AFR/RC74/INF.DOC/3.

August 2024.

From the Evolution of Information Systems for Health to the Digital Transformation of the Health Sector. IS4H Conference Report © Pan American Health Organization, 2021.

Report Caribbean Connect: Building the Pan-American Highway for Digital Health. © Pan American Health Organization and © Inter-American Development Bank, 2024.

Progress Report. Leveraging digital transformation for better health in Europe: Regional digital health action plan for the WHO European Region 2023–2030. Regional Committee for Europe 74th session. Copenhagen, Denmark, October 2024.

Exploring the digital health landscape in the WHO European Region: digital health country profiles. Copenhagen: WHO Regional Office for Europe; 2024.

The ongoing journey to commitment and transformation: digital health in the WHO European Region, 2023. Copenhagen: WHO Regional Office for Europe; 2023.

Accelerating digital health transformation in Europe: a two-year progress report. WHO Regional Office for Europe. October 2024.

The role of digital health technologies in women's health, empowerment and gender equality. Project report. Copenhagen: WHO Regional Office for Europe; 2024.

Equity within digital health technology within the WHO European Region: a scoping review. Copenhagen: WHO Regional Office for Europe; 2022.

Monitoring the implementation of digital health: an overview of selected national and international methodologies. World Health Organization. Regional Office for Europe. 2022.

Conference Summary Report. The Global Conference on Digital Health, 'Taking UHC to the Last Citizen'. March 2023, New Delhi, India. World Health Organization Regional Office for South-East Asia.

Workshop Summary Report. Regional workshop on Strengthening Telemedicine Implementation in the WHO South-East Asia Region. February 2023, New Delhi, India. World Health Organization Regional Office for South-East Asia.

Use of e-health programmes to deliver urban primary health-care services for noncommunicable diseases in middle-income countries. New Delhi: World Health Organization Regional Office for South-East Asia; 2021.

Meeting Report. Member State consultation on the Draft Regional Action Framework on Digital Health in the Western Pacific. Convened by: WHO Regional Office for the Western Pacific, Manila, Philippines. March 2024.

Serra, F, West, T, Simms, S, Davis, SLM (2024) Towards people-centred approach digital health strategies: Gender, equity, rights and inclusion. Narrative Report. Digital Health and Rights Project Consortium, University of Warwick.

Useful reference links:

Geneva and Tunis outcome documents from WSIS - https://www.itu.int/net/wsis/outcome/booklet/index.html

The General Assembly's ten-year review report - https://publicadministration.un.org/wsis10/Portals/5/N1543842.pdf
The CSTD ten-year review – https://unctad.org/system/files/official-document/dtlstict2015d3_en.pdf

Contributions should be submitted by **15 November 2024** to the CSTD Secretariat at cstd-wsis20@unctad.org. They will be made available on the CSTD website for consideration by the Commission unless contributors specifically request that their submissions should not be published.

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