Shaping the market for digital health tools

A roadmap to a sustainable global goods ecosystem

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CONTENTS

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EXECUTIVE SUMMARY

The global health sector has witnessed a rapid digital transformation over the past two decades, fueled by investments in digital health tools and the emergence of open source solutions known as global goods. While these tools have enhanced health system efficiency and equity, their long-term sustainability remains challenging due to inconsistent funding, a lack of structured market pathways, and limited government ownership. This report, developed by Digital Square with funding from the Gates Foundation, outlines a roadmap for shaping a sustainable global goods ecosystem, ensuring these critical digital solutions remain viable, scalable, and impactful.

Global goods, such as DHIS2, OpenMRS, CommCare, and many others, have demonstrated their ability to standardize and scale digital health interventions. However, despite their successes, many tools struggle to transition from donor-funded projects to fully integrated, government-supported solutions. The digital health marketplace must evolve beyond fragmented, pilot-driven models toward coordinated investments that enable long-term sustainability.

Drawing on eight years of experience supporting the global goods ecosystem and with insights from the developers, stewards, and funders of these tools, Digital Square presents three key recommendations to strengthen the market for digital health:

1. **Adopt blended financing models.** While donor funding is crucial for early-stage development, long-term sustainability requires diversification. Social impact investments, private-sector partnerships, and government budget allocations must work in tandem to ensure these tools are properly maintained and scaled.

2. **Strengthen local capacity.** Governments and local implementers must have the skills and resources to sustain and adapt digital solutions. Investing in certification programs, fostering public-private partnerships, and supporting homegrown digital health entrepreneurs will enable countries to take greater ownership of global goods.

3. **Develop robust impact metrics.** Standardized measurement frameworks are needed to demonstrate the value of global goods and justify continued investment. Establishing clear impact metrics will help stakeholders assess cost-effectiveness, health outcomes, and system-wide benefits.

The future of digital health depends on a thriving, sustainable global goods ecosystem. By aligning investments, strengthening governance, and fostering innovation, we can ensure that global goods continue to drive equitable, technology-enabled health systems worldwide.

Charting the origins of a community for digital health

A brief history of digital and data systems

In the early 2000s, the global health landscape faced significant challenges in achieving equitable access to technology solutions that supported public health systems. Between 2005 and 2017, donor organizations focused on funding digital health tools to meet high-priority needs in countries with emerging health systems. However, these efforts were often fragmented and lacked coordination, resulting in duplicative projects and limited reuse of effective technologies. This piecemeal and short-term funding approach meant that many digital health tools never progressed beyond pilot phases or scaled to meet countries' long-term needs.

The Ebola epidemic of 2014–2016 further exposed these gaps.[1] During the crisis, governments rapidly deployed up to 50 new technology platforms for human resource management, contact tracing, and asset tracking functions. Yet these platforms were often siloed, standalone systems that did not integrate or share data, and many were developed and implemented by extragovernmental organizations without input from national governments. The lack of coordination led to inadequate documentation and limited understanding at the national level of what data were collected and for what purposes. Additionally, many solutions were introduced without considering the affected countries' existing information technology (IT) infrastructure, resulting in ineffective and/ or duplicative implementations. These issues, emblematic of broader challenges within the development community, underscored the need for a coordinated approach emphasizing scalable, interoperable solutions.
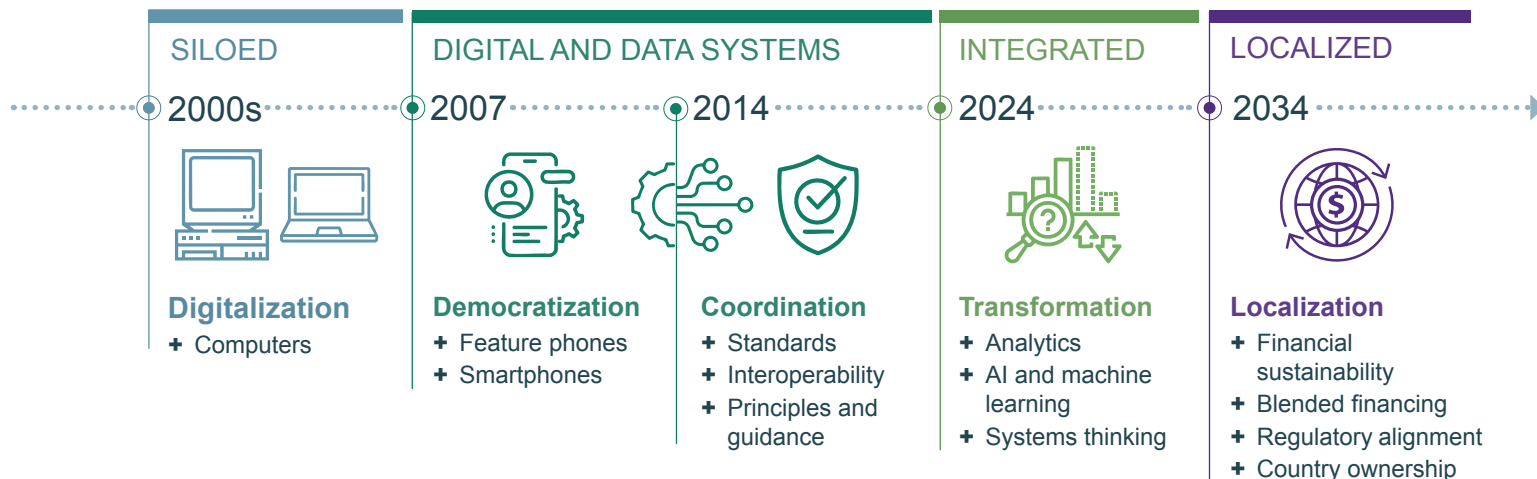
To address these challenges, the United States Agency for International Development (USAID) initiated a Broad Agency Announcement focused on improving the interoperability of health information systems (HIS). This collaborative process involved 37 partners, including government agencies, nongovernmental organizations (NGOs), private-sector entities, and academic institutions.[a] Workshops and discussions facilitated inclusive and participatory development, ensuring that diverse perspectives informed the creation of concept notes to tackle key interoperability issues. Seven concept notes, such as the *HIS Interoperability Layer Concept and the Global Open Facility Registry (GOFR)*, provided innovative solutions designed for broader application and sustainability. These concept notes were prioritized for early advocacy and identification of new sources of support to carry them forward.

Building on this process, USAID invited PATH, a global health nonprofit, to propose an international digital health investment initiative to streamline and coordinate resources across stakeholders in the health sector. The resulting initiative, Digital Square, is a collaborative platform for donors, governments, technologists, and private-sector organizations to improve how the global community designs, uses, and pays for digital health tools and approaches. Since 2016, Digital Square has been accelerating health equity by developing, adopting, scaling, and delivering digital health

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[a] The 37 partners who participated in the co-creation process included a diverse group of organizations, such as government agencies, NGOs, private-sector companies, and academic institutions, including Africare ICT, Apelon Inc., Columbia International eHealth Laboratory (CIEL), Dimagi, Inc, eHealth Africa, Grameen Foundation, Harvard T.H. Chan School of Public Health, World Health Organization (WHO), IntraHealth, Jembi Health Systems NPC, Johns Hopkins University, JSI, Management Sciences for Health, OpenMRS, VillageReach, and WHO.

innovations. Digital Square strengthens the digital health market by aligning investors and governments around country priorities, advancing the adoption and reuse of global goods, and supporting national digital health governance.

Digital and data systems over time

SILOED	DIGITAL AND DATA SYSTEMS		INTEGRATED	LOCALIZED
2000s	**2007**	**2014**	**2024**	**2034**
Digitalization	**Democratization**	**Coordination**	**Transformation**	**Localization**
+ Computers	+ Feature phones + Smartphones	+ Standards + Interoperability + Principles and guidance	+ Analytics + AI and machine learning + Systems thinking	+ Financial sustainability + Blended financing + Regulatory alignment + Country ownership

Over the past decade, the digital health landscape has shifted from coordination to full-scale transformation. Initially focused on standards, interoperability, and basic digitization, the sector is now embracing advanced analytics, artificial intelligence (AI), and integrated systems that enable seamless data flow. With the rapid growth of locally skilled digital health developers, countries are increasingly aligning around standards-based infrastructure and interoperability. Multiple communities of practice have been established to support the evolution of global standards and inclusive design practices, including the Open Health Information Exchange (OpenHIE), Health Level Seven International (HL7) Fast Health Interoperability Resources (FHIR®), the World Health Organization's SMART (Standards-based, Machine-readable, Adaptive, Requirements-based, and Testable) Guidelines, the Data Use Community, and the Program Results and Impact Monitoring for Epidemic Control Systems Enterprise Architecture Council. Governments like Kenya, Tanzania, Senegal, and the Democratic Republic of the Congo are among many that recognize the need for sustainable, government-led digital strategies and are building foundational enterprise architecture backed by national policies and costed plans.[2,3,4,5] This shift demonstrates how much digital and data systems have progressed. What began as a patchwork of uncoordinated pilots has transformed into a more harmonized, standards-driven ecosystem where governments are leading digital health strategies, interoperability is prioritized, and global communities of practice are shaping the future of digital health.

An evolving market for digital health

Despite this progress, the ecosystem still faces challenges implementing and maintaining these technologies. While open source global goods have played a critical role in reducing development costs, accelerating innovation, and fostering collaboration, the financial realities of sustaining these tools are often misunderstood. Governments and donors sometimes assume that because these solutions are freely available, they come without ongoing costs—when, in reality, significant investment is needed for implementation, maintenance, and long-term support.

Additionally, open source tools offer a strong foundation for local digital health innovators by providing proven, standards-based solutions that can be adapted to meet national and regional needs. However, misalignment between market demand and financing structures can make it difficult for these innovators to secure government contracts, as procurement cycles are often long, costly, and time bound. Investors, in turn, are often hesitant to fund local companies in the complex healthcare ecosystem, slowing the development of a robust private digital health sector.

Further, the industry has not yet aligned around a standard methodology for measuring the impact of digital interventions on health, making it difficult for governments and donors to justify and allocate funding for investments in digital and data technologies.

Today, the digital health ecosystem is poised for continued evolution, with local digital health policymakers, developers, and implementers at the helm—and the marketplace for global goods must evolve along with them. Ensuring global goods' long-term sustainability and scale will require aligning market expectations, securing diverse financing streams, and fostering local ownership. While some structures to support this growth are already in place—global standards for interoperability, nontraditional funding models, and methodologies to measure impact more effectively—their widespread and consistent use could vastly improve the scale and sustainability of digital health tools worldwide.

Drawing from Digital Square's eight years of experience, this report showcases examples of where global goods have succeeded, outlines current challenges faced by the global goods community, and offers tested recommendations to build a thriving global goods ecosystem that continues to drive health equity on a global scale.
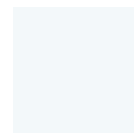
Laying a foundation for digitalized health care
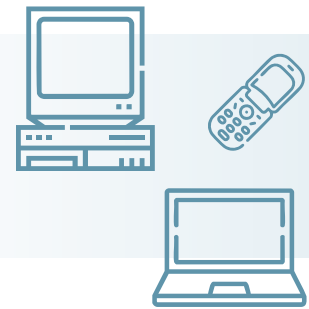
Early exemplars pave the way

Early examples of global goods, such as DHIS2 and OpenMRS, illustrate how these tools evolved to address significant public health challenges and drive coordinated responses. DHIS2, initiated in the 1990s by the Health Information Systems Programme at the University of Oslo, aimed to digitize health management information systems in post-apartheid South Africa, where health service disparities were significant. The platform was designed to empower health staff with timely data to make informed decisions. Evolving from a simple database tool (DHIS 1.4) to a robust, open source solution, DHIS2 emphasized interoperability, allowing for real-time analytics and broad adaptability across more than 70 countries. It provided flexibility for local customization while maintaining a core set of generic features, reducing data silos, and enhancing accessibility.

OpenMRS, first released in 2004, is a widely used open source electronic health record system. Developed by researchers at the Regenstrief Institute and Partners In Health, it was designed to address the health care needs of resource-constrained environments. Its first implementation was for the Academic Model for Prevention and Treatment of HIV/AIDS (AMPATH) project in Eldoret, Kenya, where existing health systems were struggling to manage the increasing data from HIV/AIDS patients. Since then, OpenMRS has been adopted in over 80 countries, reaching over 22 million patients across various health care settings, including HIV, tuberculosis, maternal and child health, and cancer care.[6] The platform's key features include scalability, multilingual support, and the ability to operate in low-resource environments with limited internet access, making it adaptable for a wide range of health use cases.

While both DHIS2 and OpenMRS have roots in the university setting, their business models differ, demonstrating two ends of a financial spectrum to support open source digital tools for health. DHIS2 operates under a donor-funded institutional model with structured regional implementation networks, while OpenMRS follows a community-driven approach reliant on decentralized contributions and project-based funding. Both DHIS2 and OpenMRS benefitted from strong donor support in their early stages. Donors such as USAID and the Gates Foundation prioritized investments in reusable and scalable digital tools. While DHIS2's integration into national health systems made it a favorable choice for donor investment, OpenMRS's platform is supported by a large, active global community of developers, implementers, and health care professionals. This community helps maintain and improve the system while offering technical support to countries deploying the platform. Countries benefit from shared resources, such as tutorials, documentation, and best practices, which help reduce costs and speed up deployment.

Over time, donor-funded universities played a crucial role in incubating these tools, helping them mature before transitioning into broader global health ecosystems. However, their different paths to financial viability highlight how global goods can evolve based on institutional backing, community governance, and economic models. These differences illustrate how global goods have navigated different financial models—DHIS2 with a structured support ecosystem and OpenMRS with a more community-driven approach.

Comparing the business models of DHIS2 and OpenMRS

DHIS2	FEATURE	OpenMRS
Health Information System (HIS) focused on aggregate data reporting and analysis	TYPE	Electronic Medical Record (EMR) system focused on individual patient records
Self-hosted by governments/ organizations; some cloud options exist	HOSTING MODEL	Self-hosted, but partners offer managed hosting services
Ministries of Health, NGOs, global health organizations	PRIMARY USERS	Clinics, hospitals, NGOs, research institutions
Strong regional implementation networks (HISP groups)	ECOSYSTEM	Global network of OpenMRS implementers and developers
Strong institutional backing and donor support	FINANCIAL SUPPORT	More fragmented funding, relies on volunteer contributions and project-based funding

Abbreviations: HISP, Health Information Systems Programme; NGO, nongovernmental organization.

Before the concept of a "global good for health" existed, DHIS2 and OpenMRS offered a template for other open source tools to scale across different countries and projects by thoroughly documenting their processes and adapting their technology for low-resource settings. These global goods also exemplify how the digitalization and democratization of digital health solutions have helped overcome the challenges of fragmented pilot projects. While they may not always be interoperable by default, their reusability has enabled broader adoption, reduced duplication of efforts, and allowed investments in digital infrastructure to be more cost-effective and impactful. Their origin stories underscore how early global goods laid the groundwork for scalable digital health solutions that have advanced global health progress and continue to inspire and shape future innovations in the field.

From digitalization to transformation

The strong foundation built by early exemplars has led to significant progress in the global goods community. Initially, reusable tools like DHIS2 and OpenMRS were implemented in siloed projects. However, as feature phones and smartphones became more widely available, these digital tools became more accessible, interoperable, and scalable. Adopting standards, interoperability frameworks, and guiding principles allowed greater coordination between global goods, creating a more connected digital health landscape.

During the COVID-19 pandemic, in 2019 and 2020, multiple global goods contributed to a more coordinated and rapid international response. mHero, a two-way, mobile phone–based communication system that connects ministries of health and health workers, was adopted by Liberia's Ministry of Health to surveil potential COVID-19 cases and send messages to health workers as part of the country's response. In Nigeria, CommCare, a global good developed by Dimagi, was used for contact tracing and case investigation to support the rapid deployment of pandemic response solutions. More than 200 organizations accessed the template within 24 hours of its release.

While these tools were essential in responding to countries' immediate needs, the COVID-19 pandemic underscored the need for national digital health strategies prioritizing global goods to ensure long-term sustainability and resilience. By integrating global goods into national digital health strategies, countries could reinforce the promise and power of government ownership.

A rise in government adoption meets the emergence of an entrepreneurial ecosystem

As global goods matured, they began forming the backbone of national digital health systems. Many governments first established national digital health strategies to guide their investments and followed up with enterprise architecture frameworks to integrate and scale these solutions effectively. For example, Kenya has been a pioneer in adopting digital health strategies to improve health care delivery. In 2011, Kenya introduced its first Kenya National eHealth Strategy (2011–2017), which outlined the country's vision for integrating digital health technologies into its health care system. The strategy provided a roadmap for implementing solutions such as electronic health records, telemedicine, and mobile health (mHealth). Following this, in 2020, Kenya launched its Kenya Health Enterprise Architecture (KHEA) to support scaling digital health solutions within a cohesive, interoperable framework. The KHEA plan was designed to provide a structured approach to integrating health information systems across different levels of the health sector. It helped to align various digital health tools, ensuring they could work together seamlessly. Efforts like these ensured that digital tools were not implemented in isolation but rather as part of a broader, interoperable health system infrastructure.

The national Electronic Community Health Information System (eCHIS) exemplifies this approach in Kenya. Developed with technical support from Living Goods and backed by the Ministry of Health and Kisumu County Government, it supports over 107,000 community health workers.

Built on Medic's Community Health Toolkit platform, a recognized global good since 2023, eCHIS demonstrates how governments are adopting open source solutions for nationwide health service delivery. In addition to Kenya, the Community Health Toolkit has been selected as a digital community platform of choice in Mali, Nepal, Niger, Uganda, and Zanzibar, supporting a collective of 140,000 community health workers who have conducted over 153 million health care activities.[7]

Alongside government adoption, an entrepreneurial ecosystem has emerged, leveraging global goods and open source solutions to build localized, innovative digital health tools. Many private-sector health care providers that traditionally operated without digital components are now developing their own technology to enhance service delivery, patient engagement, and interoperability with national systems.

> **CHT has been selected as a digital community platform of choice in Kenya, Mali, Nepal, Niger, Uganda, and Zanzibar, supporting a collective of 140,000 CHWs who have conducted over 153 million health care activities.**

For example, IntelliSOFT, a Kenyan health technology company, collaborated with a consortium of partners—including Kabarak and Strathmore Universities, the Technical University of Mombasa, and e-Med Solutions—to develop Mama's Hub, a mobile application powered by Open Health Stack's Android FHIR software development kit (a global good). Mama's Hub allows community health workers to record antenatal care encounters on an Android smartphone and generate electronic referrals to health facilities. By leveraging Open Health Stack, IntelliSOFT cut development time by six months, allowing more focus on value-adding features like integrating blood pressure readings. Since the app is FHIR compliant and offline capable, data are securely stored and can be accessed across different clinics and applications, enhancing continuity of care.

Similarly, Helium Health, a Nigerian health-tech company, has leveraged global goods to accelerate the development of its electronic medical records (EMR) platform. As a leading provider of digital health solutions in West Africa, Helium Health has raised $42 million in funding, including a $30 million Series B round, to expand its software-as-a-service (SaaS) offerings. The company used OpenMRS to rapidly develop key EMR modules that were missing from its platform, enabling healthcare providers to digitize patient records efficiently. Additionally, Helium Health integrated OpenHIM, an interoperability middleware, to streamline data exchange between different health systems, improving care coordination and decision-making. By building on existing global goods, Helium Health has been able to scale its impact across multiple countries, reinforcing the role of open-source solutions in driving innovation and expanding access to digital health services.

These successes illustrate the transformative power of global goods, demonstrating how open source, collaborative approaches can amplify progress, enhance resilience, and redefine digital health responses worldwide. By facilitating interoperability, government adoption, and entrepreneurial innovation, global goods continue to evolve, proving essential in shaping the future of digital health.

Growing the global goods community

Establishing a global goods community via Digital Square in 2016 marked a pivotal shift toward a unified, collaborative approach in the digital health ecosystem, addressing the longstanding challenges of fragmented efforts and inefficiencies. The initiative has evolved from a mere compilation of global goods to a dynamic, structured marketplace where rigorous standards, robust

security, and strategic partnerships are integral to success. Support from major donors, including the Gates Foundation, ELMA Philanthropies, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), The Norwegian Agency for Development Cooperation (Norad), The Rockefeller Foundation, the UN Children's Fund (UNICEF), USAID, and US Centers for Disease Control and Prevention (US CDC), among others, played a crucial role in expanding the community.

Digital Square's Open Application Process (OAP) was instrumental in fostering collaboration and transparency, facilitating the approval of 48 global goods (40 software, eight content) between 2019 and 2025. Digital Square designed the OAP to address the challenges of fragmented funding and siloed digital health investments by incorporating a notice-and-comment period and inviting input from diverse stakeholders to provide feedback on proposed projects, ensuring project alignment with global health priorities and countries' needs. This participatory approach strengthened trust and inclusivity, promoting shared ownership of solutions and coordinated funding mechanisms.

Members of the global goods community gather in Tanzania for the 2023 Global Goods Innovators Summit. Photo: PATH.

Beyond the OAP, Digital Square actively strengthens the global goods ecosystem by facilitating peer-to-peer learning, convening key actors, and advancing pathways to scale through the following means:

☑ **Knowledge sharing and capacity building.** Through webinars, technical discussions, and cross-learning events, Digital Square brings together global goods stewards, implementers, and funders to exchange best practices on key topics such as FHIR, cybersecurity, interoperability, and business model development. The Digital Health Applied Leadership Program (DHALP) has also played a critical role in strengthening local capacity by equipping digital health leaders with the skills to sustain and scale global goods. The Global Goods Innovators Summit creates a dedicated space for global goods leaders to network, share experiences, and explore strategies for sustainability, scale, and impact.

☑ **Curating community resources and governance structures.** The Global Goods Guidebook serves as a living digital resource, providing governments, donors, and implementers with insights into the categorization, application, and maturity levels of various digital public goods for health. In parallel, Digital Square established governance structures to review and approve global good recommendations, ensuring that investments align with global health priorities and country needs.

☑ **Strengthening market pathways and sustainability models.** Digital Square has worked to shape a healthy market for global goods by exploring coordinated procurement models, funding diversification strategies, and investment readiness support. The Total Cost

of Ownership Tool and the Sustainability Calculator help governments and funders assess the long-term viability of digital health tools, while market analysis efforts have focused on better understanding demand-side dynamics and barriers to adoption.

☑ **Providing direct financial and technical support.** Digital Square facilitated direct funding awards for core software development and maintenance, ensuring that global goods received sustained investment beyond initial donor contributions. In addition, by supporting convenings of global good innovators—including a Summit in Tanzania in 2023 that brought together local entrepreneurs implementing global goods—Digital Square has fostered a collaborative ecosystem that drives innovation and sustainability.

☑ **Advancing advocacy and thought leadership.** Digital Square has published various advocacy pieces and resources supporting global goods, articulating their role in strengthening digital public infrastructure. By elevating the visibility of global goods and their broader ecosystem enablers, these efforts help secure long-term policy and financial commitments from governments and funders.

The global goods community continues to evolve in response to shifting health priorities, emerging technologies, and the growing role of digital public infrastructure. Strengthening regional capacity, increasing government ownership, and fostering stronger public-private partnerships will ensure that global goods remain scalable, influential, and enduring. By continuing to build a collaborative, market-driven ecosystem, Digital Square and its partners are laying the foundation for a future where digital health innovations are locally accessible and locally led.

A critical turning point for the digital health marketplace

The evolution of global goods has demonstrated their immense potential to improve health system efficiency, enhance service delivery, and drive equitable access to care. To date, Digital Square has facilitated $31 million in donor funding through subawards to the global goods ecosystem, advancing initiatives that have strengthened the development and use of these tools. These open source solutions address critical health care challenges—community health, clinical decision support, electronic medical records, and supply chains—by providing standardized yet adaptable options tailored to local needs. Deployed in 191 countries, global goods have proven their scalability, adaptability, and impact on a worldwide scale.[b]

However, realizing the full potential of global goods requires more than continued investment—it demands structural shifts in how these tools are financed, maintained, and governed. Expanding regional capacity building efforts will be key to equipping local implementers with the skills and infrastructure needed to sustain and scale digital health solutions. In parallel, governments must take a more significant ownership role, integrating global goods into their national strategies and ensure they are embedded within a digital public infrastructure.

As the digital health marketplace matures, coordinated action among funders, governments, and the private sector will be essential to overcoming persistent barriers to sustainability. The next growth phase for global goods will depend on blended financing models, more substantial regional ownership, and deeper alignment with health system priorities. By evolving beyond donor dependency and fostering a more resilient market, the global goods community can solidify its role in shaping the future of equitable, technology-driven health systems worldwide.

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[b] Data reported by global goods through the Open Application Process.

PART 3

Shaping a sustainable future for digital health

The digital health landscape has evolved significantly since Digital Square's inception, as more software developers, investors, governments, and other stakeholders have entered the ecosystem. While this growth has brought new opportunities, it has also given rise to complex challenges requiring coordinated solutions.

Testimony from the global goods community has demonstrated that donor funding alone cannot sustain these tools over time. When asked how their solution is supported financially, 56 percent of global goods mention grant funding as part of their business model.[c] Outside traditional project funding, global goods must generate most of their resources to maintain core functionalities, develop new features, and meet evolving demands. As donors face competing and urgent issues like climate change and development partners' spending continues to decline, an overreliance on grant funding will continue to strain global goods stewards.[8]

At the country level, while governments are beginning to prioritize digital health in national strategies, more can be done to fully localize global goods so they align with country-specific health systems and are sufficiently and sustainably funded. In a study conducted by Digital Square on digital health priorities across six countries—Burkina Faso, the Dominican Republic, India, Indonesia, Kenya, and Nigeria—findings revealed six recommendations that can help advance digital health agendas. Nearly all six recommendations included some form of capacity building—for example, strengthening national digital health agencies and working groups to improve decision-making and collaboration; promoting awareness of digital health budgeting tools within ministries of health and governments; increasing country leaders' understanding of open source software benefits, implementation models, and data privacy and security measures; and strengthening the capacity of standards and interoperability at national and subnational levels.[9] Prioritizing digital skill building among local actors in these areas ensures that solutions are relevant, interoperable, and adaptable.

However, while global goods were primarily designed to support government health systems, a critical gap remains in enabling governments to become direct buyers of these solutions. Many countries still rely on donor-driven procurement processes rather than integrating global goods into national procurement and budgeting systems. To ensure long-term sustainability, governments must gradually assume financial responsibility for digital solutions, transitioning from donor-supported or blended financing models to fully self-sustained systems. By incorporating global goods into national health budgets and procurement frameworks, governments can ensure these digital solutions become integral to healthcare infrastructure, enhancing resilience and independent scalability.

In addition to strengthening procurement capacity, global goods must also navigate complex market dynamics that differ across regions. For example, in countries like Rwanda—where most healthcare delivery is public sector-driven—direct government adoption of global goods may be more feasible. In contrast, sustainability strategies in mixed-market environments like Kenya may require a blend of public and private-sector partnerships. Open-source platforms often face sustainability challenges due to limited market insights and strategic positioning. Many lack the internal capacity to gather

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[c] Data reported by global goods through the Open Application Process.

demand-side analytics and translate them into effective go-to-market strategies. To bridge this gap, players within the digital health ecosystem have an opportunity to develop market intelligence assets that enhance procurement pathways for both governments and private-sector partners. By coupling these assets with the existing capacity assessment tools, the digital health market can be repositioned to ensure global goods align with real-world health system needs and financing structures.

Compounding these obstacles is a dearth of evidence demonstrating the value of digital tools and data to health and an absence of clear and consistent metrics for measuring said value, making it hard to adequately align solutions with donor and government priorities. With these challenges in mind, the community must explore new strategies and funding models to secure the long-term resilience of the global goods ecosystem.

What does a thriving global goods ecosystem look like?

Drawing on nearly a decade of leadership in this space and in lockstep with the global goods community, Digital Square and its partners have developed a keen understanding of where the digital health marketplace has succeeded—and notably, where opportunities still exist—in creating an environment where global goods can thrive. Learnings from regular convenings, peer-reviewed academic research, market analyses, strategic partnerships, technical development, and financial investment into the ecosystem informed a set of core hypotheses and potential solutions that could significantly influence global goods' future success. After testing these hypotheses with global goods stewards and donors, Digital Square has formed a set of data-backed recommendations and solutions to help guide the collective future of the global goods ecosystem.

Counries where global goods are deployed

Data reported
as of March 2025
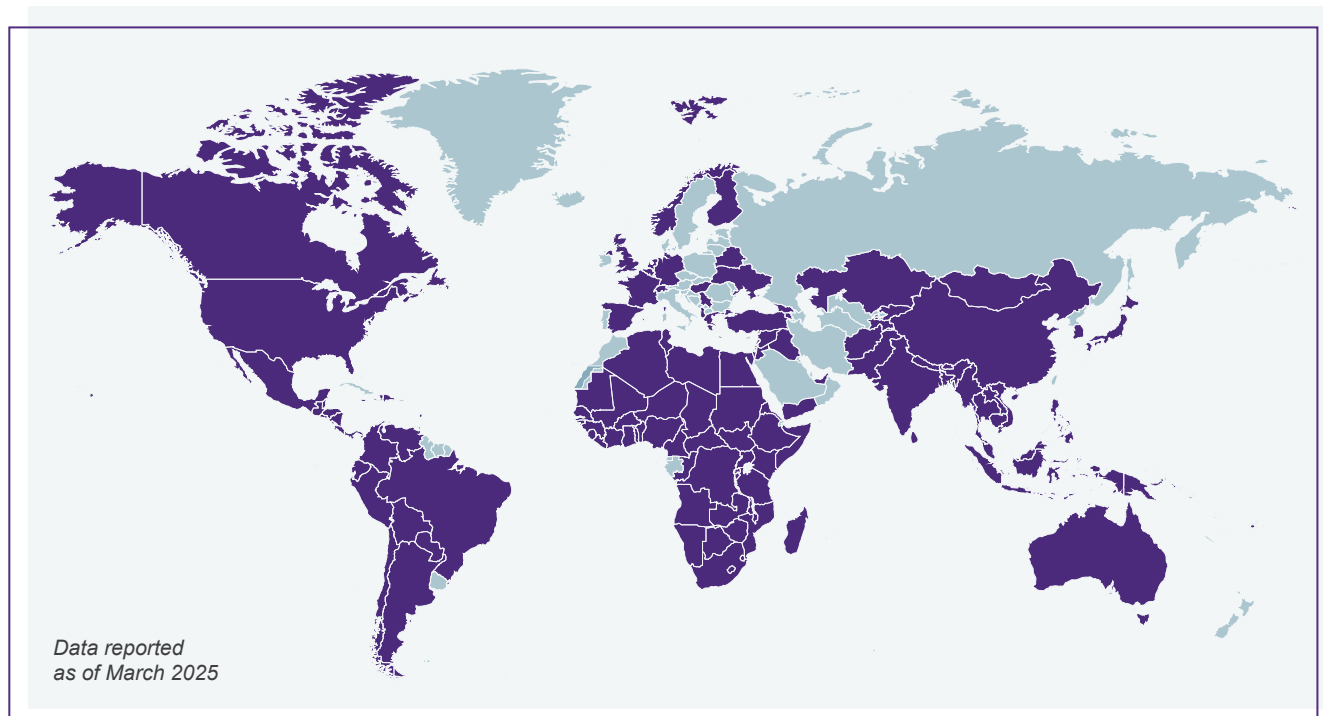
RECOMMENDATION #1

Employ blended financing models to alleviate global goods' long-term dependence on donor funding and allow for broader market uptake and government ownership.

Donor funding is critical in the early stages of global goods' development as it provides the initial capital needed to design, scale, and implement digital, open source tools. This catalytic funding helps de-risk early-stage investments, allowing global goods to prove their immediate value and build a user base. However, as global goods evolve and initial project funding ends, the free and open source nature of these tools can threaten their ability to progress past the pilot stage. As these platforms mature and their utility becomes clearer, donor funds should optimally shift toward targeted technical assistance, capacity building, and sustainability planning to ensure the tools remain viable as they transition to broader funding sources.

A rise in the emergence of digital health accelerators, incubators, and social impact funds reflects a sector-wide desire to achieve broader market uptake of digital health tools. Social impact investment, which aligns financial returns with measurable results, offers a unique alternative to the traditional project-based funding model. Villgro Africa is an example of an impact investor working with emerging companies focused on health care innovations in Africa. Outside of financial investment, Villgro offers ongoing support to innovators, including ecosystem building, market entry support, mentoring, and customized technical assistance. Using this model, in its first seven years, Villgro onboarded 53 companies that received between $20K–$50K, 70 percent of which raised capital after receiving initial seed funding—a success rate punctuated by the 600 jobs created in service of over 4 million Africans. [10]

It's not just social impact investors who can provide this kind of diverse support. Private equity firms, certain foundations, and results-driven venture capitalists can bring much-needed capital to sustain global goods beyond initial donor funding. These investors often accept lower financial returns to achieve long-term societal benefits, such as improved health outcomes and strengthened

This **blended financing model** is exemplified by the business model of OpenFn, a global good used by governments and NGOs to securely automate business processes, exchange critical information, and achieve interoperability.[1] OpenFn's steward, Open Function Group, is a public benefit corporation that primarily relies on revenue from selling software licenses, implementation work, and key grants and donations to strengthen and improve the product. In 2023, Open Function Group received a $2 million investment from the Steele Foundation for Hope, backing the next stage of OpenFn's growth. In a blog post, OpenFn Chief Executive Officer and Founder Taylor Downs explained why the Steele Foundation funding was significant: "It allows us to expand key aspects of our business that may ultimately help us reduce our reliance on donors and drastically expand the social impact of the free and open source digital public good we provide." Downs went on to illustrate how the ability to "set and execute on a longer-term strategy for the product" and backing up that strategy with "serious capacity building and business generation initiatives that grow the implementer network" ensures there will be "more capable OpenFn implementers within governments, NGOs, and for-profit consultancies all over the world."[11]

digital health infrastructure. By blending these funds with ongoing donor contributions, global goods can move toward business models prioritizing revenue generation, operational efficiency, and scalability.

OpenLMIS Reinvented: A Public-Private Model for Long-Term Impact

As the global health community seeks sustainable models for digital health tools, the transition of OpenLMIS to a private-sector steward offers valuable lessons in financing, governance, and long-term viability. Initially developed as an open-source logistics management information system (LMIS) for public health supply chains, OpenLMIS was incubated within VillageReach and supported by Digital Square and other global health donors and partners. However, recognizing the need for a more financially sustainable and scalable model, OpenLMIS transitioned to a public-private partnership under Vitalliance, a new steward tasked with maintaining and expanding the platform beyond donor reliance.

The transition was guided by several key objectives: ensuring financial sustainability, enabling technical enhancements, expanding geographic reach, and preserving the open-source commitment that defined OpenLMIS from its inception. While the reliance on donor funding for core operations ended, sustainability was pursued through maintenance fees, paid mainly by NGOs supported by donors. Despite efforts, complete diversification into private-sector or direct government funding remained challenging. Nevertheless, Vitalliance successfully tightened operational costs to maintain self-sufficiency, ensuring that core maintenance updates and new feature enhancements continued—most notably through OpenLMIS implementations in Nigeria, a significant addition to the platform's footprint.

From a technical perspective, the transition period saw an increased focus on cloud hosting options, greater supply chain traceability, and enhanced equipment management features. While interoperability with broader health information systems, as envisioned within OpenHIE, remains a work in progress, integrations with master data management and product catalogs have strengthened the system's capabilities.

Community engagement also played a pivotal role in the transition's success. While participation from the original OpenLMIS community has decreased from its peak, Vitalliance has continued fostering country-led involvement, ensuring that the open-source principles and governance structure remain intact. The partnership process was successful, with clear transition milestones, adherence to planned timelines, and a smooth knowledge transfer, aided by key VillageReach staff moving to Vitalliance to ensure continuity.

This transition underscores the complexities of evolving digital health global goods toward sustainable business models. While OpenLMIS has demonstrated that moving from donor-reliant models to private-sector stewardship is feasible, the experience highlights the critical need for diverse financing streams, stronger direct government engagement in procurement, and ongoing measurement of health system impact to ensure long-term sustainability.

Even with a strong foundation of diverse funding, the long-term sustainability of global goods will ultimately depend on government ownership—integrating these tools into national health strategies and digital public infrastructures to ensure their continued adaptation and maintenance. Governments can incorporate global goods into their budgets. Still, for this to happen at scale, the value of these tools must be clearly demonstrated through cost savings, improved service delivery, and enhanced health outcomes, making the transition from donor dependency to government financing a logical and necessary step.

To facilitate this shift, Digital Square analyzed business models used by software global goods, drawing on literature reviews, surveys, and interviews to identify 13 revenue models tested in the ecosystem.[12] These models—including software as a service (SaaS), licensing, and customization—illustrate how global goods can engage directly with governments or blend public- and private-sector funding to bridge long-term government partnerships. While further testing is needed, these emerging models provide viable pathways to sustain global goods beyond donor funding and foster more substantial alignment with government health priorities.

To support global goods and the local organizations and governments using them, it is essential to foster a fundamental shift toward creating investment-ready, data-driven business plans that align with the priorities of the countries where the tools are deployed. The following actions can help guide this transition responsibly:

Provide global goods with a bridge to investment readiness.

Investment readiness is the process of preparing a business to secure funding from investors by supporting several key components: developing a business model, demonstrating financial health, clearly articulating a value proposition, market positioning (understanding the landscape, differentiating from competitors, and showcasing a compelling growth strategy), having strong governance and operations structures in place, and identifying appropriate sources of capital, such as grants, equity, or debt, and structuring investments to meet business needs.[13] Organizations like the Health Finance Coalition specialize in working with innovators to bridge gaps in investment readiness, ensuring they can attract funding and scale effectively. By providing tailored investment readiness support, such as simplifying communication, building internal leadership capacity, and addressing business needs, such as hiring and project pricing, the Health Finance Coalition's model launches innovators into the ecosystem with sufficient capacity to pitch to investors.

This approach strengthens individual global goods and enhances the overall ecosystem by ensuring that high-impact, scalable solutions are positioned to attract sustainable investment. By bridging the gap between innovation and capital, investment readiness support helps global goods transition from grant dependency to diversified, long-term financing, ultimately driving greater resilience and impact on global health.

Cultivate market analyses and assessment tools that support global goods in their go-to-market planning.

In 2024, Digital Square introduced the Organizational Capacity Assessment Tool to help technical partners and the broader ecosystem assess their ability to implement impactful, transparent, resilient programming. The tool provides a framework for identifying organizational strengths and developing plans to address priority areas. Building on this concept, the

ecosystem could support a market analytics dataset focused on key digital health markets, such as those in sub-Saharan Africa. Additionally, a go-to-market strategy playbook or toolkit that helps global goods understand their customers, pricing, and sales strategy could guide organizations in using this data to develop strategies, identify potential partnerships, and scale their solutions.

By equipping global goods with robust market insights and strategic guidance, these tools can help organizations navigate complex digital health landscapes and position themselves for lasting growth. Strengthening go-to-market planning accelerates adoption and scalability while fostering a more resilient and competitive ecosystem for digital health innovation.

Expand government ownership by demonstrating how incorporating global goods into budgets can save costs and align with national health strategies.

Although global goods are open source and freely available, a common misconception among donors and governments is that they come without costs. In reality, global goods require significant funding for implementation, maintenance, and ongoing support, including both human resources and technological infrastructure. Proper financial planning is essential, and tools like Digital Square's Total Cost of Ownership tool and Sustainability Calculator offer critical insights into the initial and ongoing costs of digital health interventions.[14]

This model of government stewardship and financial commitment to global goods has been successfully implemented in several countries, with India being a prime example. In 2018, the government of India and the Ministry of Health and Family Welfare partnered with Everwell, a global good, to develop and implement Nikshay, a comprehensive digital platform designed to support the patient journey and cascade of care for tuberculosis (TB) treatment across the country.[15] Nikshay is a centrally sponsored government scheme under the National Health Mission, powered by an open source global good, that enables health care providers to monitor patient progress, manage test results, and deliver personalized care through virtual mechanisms. As of September 2024, Nikshay had recorded over 14.7 million TB episodes, facilitated more than ₹90 billion in digital payments to support TB-affected individuals and providers, and is used daily by over 14,000 health care providers nationwide.[16] This unified, government-led system exemplifies how a government can implement and fund global goods to enhance its national health system.

By providing transparent costing data, governments, donors, and implementers can account for critical factors like security, cloud hosting, and operational costs. This ensures that financial constraints do not undermine the sustainability of global goods once initial funding ends. Clear communication of these costs and an alignment among stakeholders of the true cost of digital health transformation will allow stakeholders to build more realistic budgets and better appreciate their value, particularly in comparison with proprietary solutions. This approach ultimately supports a more resilient and scalable digital health ecosystem.

RECOMMENDATION *#2*

Strengthen local capacity to build and sustain digital health ecosystems.

Sufficient local capacity ensures that digital tools are context appropriate, sustainable, and valuable. Solutions can remain relevant, interoperable, and adaptable by localizing global goods to align with unique health systems and building digital skills among local actors (i.e., the technologists, developers, implementers, entrepreneurs, and stewards working in and for the countries served by a digital health tool). By involving decision-makers and digital health entrepreneurs in the development and adaptation process, countries can create tailored solutions that meet the unique needs of a health system.[17]

A Voluntary Health Team member conducting refugee household registration, shadowed by a Guild Digital member of staff in Panyadoli village, Kiryandongo settlement, Kiryandongo District, Uganda. Photo: Guild Digital.

One way to support local entrepreneurs and implementers is to include them in the global goods community and strengthen their organizational capacity, as the Digital Health Ecosystem (DHE) project exemplifies.[18] PATH partnered with the Bayer Foundation and Medic Mobile to identify Africa-based entrepreneurs and pilot a digital health accelerator that would expand digital tools for community health by changing how they are built, deployed, and scaled. One of the entrepreneurs identified through the process, Guild Digital Solutions, created a digital application to help humanitarian response supervisors support village health teams in refugee settlements. The UNHCR Uganda CHMIS App was developed, tested, and deployed across all settlements in Uganda within three months, reaching 3,000 new users—a tenfold increase.

When asked why they chose to pursue the DHE project, Guild Digital's Co-Founder Brian Ssennoga shared that the company "sought funding to contribute to developing a comprehensive ecosystem that integrates innovative digital solutions, health care providers, patients, and data analytics. This initiative aligns with the health sector's pressing need for streamlined health care delivery, improved patient health, and enhanced data-driven decision-making but also positions Guild at the forefront of this dynamic sector as a contributor to advancing health care services through digital innovation."

Through the organizational support provided by PATH during the DHE program, Guild Digital further refined its business strategy and pitch deck, successfully securing its first impact investment: $300K in follow-on investment from Dovetail Impact Foundation. This represents a nearly 450 percent return on the investment made by PATH. Guild Digital is now collaborating with OpenMRS to integrate its app with Uganda's medical record system for broader scaling. This kind of localized innovation builds a strong ecosystem and increases the adoption of homegrown solutions.

Projects like these and the robust local communities some global goods have built demonstrate the value of building a relationship between global goods and local entrepreneurs to grow the community. To accelerate the already increasing capacity for local digital health actors, the global goods community, including its funders, can:

Support local entrepreneurs and implementers financially and through capacity strengthening.

By leveraging the DHE project model, donors can act as bridge makers to facilitate connections between local developers, social ventures, and the global goods community to foster collaboration and growth. Building and maintaining a strong community of practice is also essential for the continued success of global goods. Of the 48 currently approved global goods, roughly 75 percent have a dedicated community engagement platform or mailing list, and 60 percent regularly host events or community calls around the tool.[d]

Peer learning and real-time knowledge sharing are often facilitated through low-cost, easily accessible platforms like WhatsApp, which require minimal moderation. And while digital platforms offer ongoing opportunities for engagement, they cannot replace the value of in-person meetings. There is much to be gained in bringing together global goods developers and stewards in a neutral, cross-tool space to share ideas, build personal connections, engage in informal discussions, and openly address challenges. These in-person meetings, such as the global OpenMRS Implementers Conference, the OpenHIE Community Meeting, the DHIS2 Annual Conference, the openIMIS Stakeholder Conference, and the Open Digital Health Summit, are key to growing a robust global goods community and should be appropriately supported and funded.[8]

By investing in digital and in-person engagement opportunities, the global goods ecosystem can cultivate a stronger, more resilient community of practice. Sustained support for local entrepreneurs and implementers—through financial backing, capacity strengthening, and peer collaboration—ensures that global goods remain responsive, locally driven, and positioned for long-term success.

Develop certification pathways for local professionals to maintain and scale digital tools.

Building a sustainable digital health ecosystem requires equipping local professionals with the technical and operational expertise to manage and scale global goods. However, for certification programs to be effective, there must be an apparent market demand for these skills, ensuring that trained professionals have pathways to employment and that organizations recognize and seek certified expertise. Establishing or strengthening certification pathways for digital health tools can create and reinforce this demand, making certified professionals more valuable in the workforce and incentivizing participation in these programs.

Enterprise software models, such as those employed by Oracle and SAP, offer useful insights into how certification can drive ecosystem sustainability. Unlike global goods, these companies operate in large, well-established commercial markets with extensive customer bases willing to pay for both software and specialized expertise. Their certification programs thrive because enterprises view them as critical investments, reinforcing a self-sustaining cycle of demand for skilled professionals and generating revenue that supports product innovation and long-term viability. While the global goods landscape differs—often constrained by perceptions that digital health solutions should be freely available—structured

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[d.] Data reported by global goods through the Open Application Process.

certification programs could still play a transformative role by creating a workforce that is both technically proficient and in demand. To be effective, these programs must be paired with sustainable financing models and clear value propositions that incentivize investment from governments, NGOs, and implementing partners.

Some global goods are already exploring certification as a strategy to expand adoption and sustainability. The Community Health Toolkit (CHT) Academy provides a strong example, offering structured training and certification for developers to become recognized technical partners for implementing CHT-based solutions. Expanding similar certification initiatives across other global goods would create a pipeline of trained professionals ready to support national and regional digital health initiatives, ensuring long-term sustainability and scale.

Beyond technical training, organizational capacity development is equally critical for long-term success. Many digital health startups and local implementers struggle with core business functions such as financial planning, human resources, and governance structures. Initiatives like HealthTech Hub Africa and the Digital Health Ecosystem accelerator have demonstrated the importance of pairing technical mentorship with business strategy support. For example, IntelliSOFT, a DHE grantee, needed assistance with succession planning, while another company entered the program without a formal human resources policy. These gaps underscore the need for structured organizational development alongside technical training to ensure that local implementers have the skills to maintain digital tools and the capacity to scale and sustain them within a growing market.

Leverage product suites to maximize the sustainability of multiple global goods in one country.

Product suites are collections of multiple open source digital health tools and frameworks designed to support a functional health domain, such as telemedicine, primary care, immunization, or neonatal care.[19] They package digital tools together and exchange data to achieve a desired set of outcomes, leveraging global standards like SMART Guidelines and FHIR to frame workflows, making it easier for a country to have an "off-the-shelf" solution for a specific function. Product suites bring together the global contributions and core functions of different tools into a singular package, allowing each tool to play its role well and interface and exchange with others, thereby reducing the need for adding duplicative features (i.e., those found in other tools) into a single tool and hence bringing in the value of a well-rounded functionality to meet the business case of the produce suite. For example, the Global Immunization Product Suite, developed by Ona, comprises four integrated layers: OpenSRP 2 (a client and population management tool), DHIS2 (a health information system tool supporting health workers and support personnel), RapidPro (a client-facing tool), and OpenHIM (open health information mediator).

The product suite model showcases how innovative technologies can deliver impactful, standards-based digital health solutions to strengthen health systems over the long term by aligning with national guidelines and integrating with existing systems. By leveraging product suites, countries can streamline implementation, reduce fragmentation, and enhance interoperability across digital health solutions. This approach strengthens health systems by aligning with national priorities and maximizing the long-term footprint of global goods by fostering adoption and integration.

Strengthening country-level investment strategies

To ensure the long-term sustainability of global goods, it is critical to support country-level investment strategies that align with national roadmaps and build the capacity for standards-based policies and digital public infrastructure (DPI). While direct investment in global goods remains essential, complementary investments in ecosystem enablers at the country level—such as governance structures, workforce capacity, and policy frameworks—are equally vital. These enablers create an environment where global goods can be effectively implemented, maintained, and integrated into national health systems.

This approach recognizes that funding for global goods should not be limited to direct support for their core development but should also extend to country-level mechanisms that facilitate adoption, scaling, and sustainability. Strengthening government ownership through technical assistance, digital governance frameworks, and financing mechanisms ensures that digital health investments translate into long-term, impactful solutions.

Establish robust, systematic metrics to assess the long-term impact of digital health tools and the value of open source.

Robust metrics are essential for demonstrating the value of global goods, enabling stakeholders to evaluate their impact on health outcomes, equity, and cost-efficiency. Metrics not only justify continued investment by donors, governments, and private-sector partners but also foster accountability and guide iterative improvements, ensuring global goods remain relevant as health systems evolve.

To ensure that global goods continue to receive sustainable investment and integration into national health systems, stakeholders must establish clear, standardized metrics that evaluate both their health impact and cost-effectiveness. This recommendation is structured into two key areas:

☐ Develop better metrics for measuring the impact of digital health solutions

A major challenge in digital health is the lack of standardized, actionable metrics to measure the impact of digital solutions on health outcomes. Without clear, evidence-based indicators, it is difficult for governments and donors to assess effectiveness, justify funding, and ensure alignment with broader health system goals. The establishment of standardized measurement frameworks will help stakeholders evaluate cost-effectiveness, health outcomes, and system-wide benefits of digital health interventions.

To improve measurement and accountability, stakeholders should focus on:

- **Incorporating real-time or periodic feedback loops** that allow stakeholders to adapt implementations based on local challenges and evolving needs.

- **Defining intervention types and objectives**—such as clinical decision support or supply chain management—to establish meaningful, targeted metrics.

- **Leveraging standardized methodologies**, like the World Bank's economic evaluation framework, to ensure consistency and transparency across assessments.

- **Incorporating insights from the 2024 Oxford Open Digital Health supplement**, which highlights the importance of multidimensional metrics capturing health and economic outcomes and embedding adaptive feedback mechanisms into measurement processes.

☐ Demonstrate the value and cost-savings of utilizing open source global goods

A robust cost-benefit analysis is needed to highlight the financial advantages of open-source global goods compared to proprietary alternatives. This includes demonstrating cost savings, long-term sustainability, and efficiency gains achieved through interoperability and open data standards. By making a compelling financial case, governments and funders can be encouraged to adopt global goods as viable, scalable solutions within national health strategies.

Case studies, such as the adaptation of DHIS2 in Botswana, demonstrate that open-source solutions can provide significant cost savings over time. However, without standardized cost-

comparison frameworks, it is challenging to assess similar outcomes consistently across the global goods ecosystem. To address this gap, governments and donors should:

- **Develop transparent costing models** that highlight both initial and long-term savings of global goods versus proprietary alternatives.

- **Align cost analysis with broader national digital health strategies** to inform procurement decisions.

- **Leverage tools like Digital Square's Total Cost of Ownership tool and Sustainability Calculator** to provide clear financial insights for decision-makers.

By addressing both impact measurement and financial viability, these actions will ensure that digital health solutions remain not only effective but also financially sustainable.

Defining the path to a more resilient global goods community

Backed by an increasingly powerful demand from countries primed to implement digital health transformation, progressive funders willing to invest in country-led digital health solutions, and technical experts prepared to harmonize these efforts, a thriving ecosystem for global goods is well within reach. Using these three recommendations as a guide, there is a clear path to a stronger digital health market. Improving financial stability, increasing government ownership, and expanding local capacity are critical steps in ensuring that global goods remain impactful, scalable, and resilient. By leveraging coordinated investment strategies, fostering regional innovation, and establishing clear metrics for success, the digital health community can move toward a future where global goods serve as foundational infrastructure for health systems worldwide.
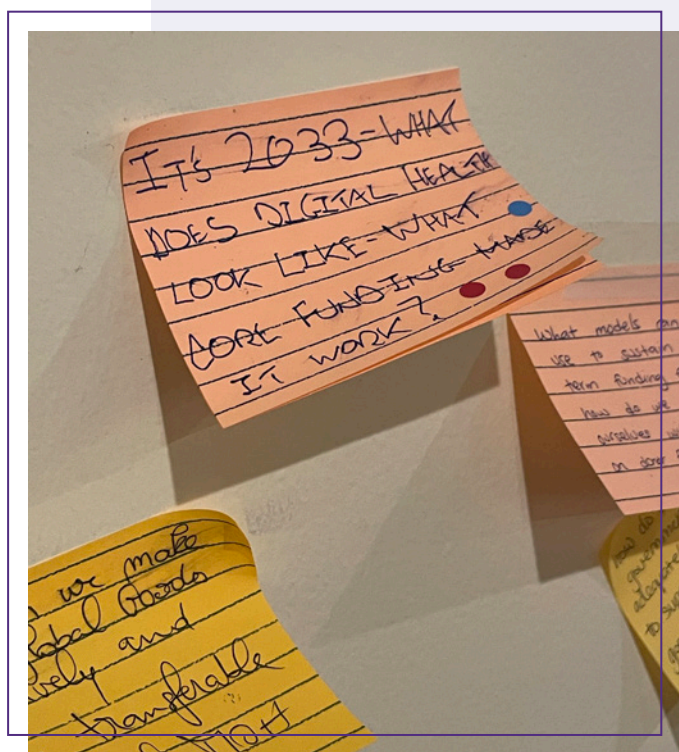
Post-it note captured during the Global Goods Innovators Summit that reads: "It's 2033—what does digital health look like—what core funding model made it work?" Photo: PATH.

CONCLUSION
A new direction for global goods

Over the past decade, the global goods ecosystem has demonstrated its transformative potential in advancing health equity and strengthening health systems worldwide. Open source, interoperable tools have empowered governments to address critical challenges, from health care worker shortages to global pandemics. Yet, as this ecosystem matures, it faces significant hurdles, including reliance on short-term donor funding, complex market dynamics, and the need for more substantial local ownership and capacity.

To sustain and scale the impact of global goods, the ecosystem must prioritize innovative financing models, such as blended funding approaches that align donor and private-sector investments, while fostering government ownership and testing business models that global goods can use to engage buyers directly. Developing robust, standardized metrics that capture health and system-level benefits like economic savings and improved efficiency is equally critical. Strengthening local capacity is essential, ensuring that global goods are contextually relevant, locally led, and aligned with national priorities to maintain sustainability.

The examples highlighted in this report showcase how global goods can be integrated into national strategies to achieve transformative results. However, these successes also underscore the importance of fostering collaboration across donors, implementers, and governments to address persistent gaps and build a resilient ecosystem.

By its nature, technology demands continuous evaluation, adaptation, and collaboration—digital health is no exception. A thriving global goods ecosystem depends on collective action, transparency, and a shared commitment to scaling equitable digital health solutions. By addressing these challenges with urgency and innovation, the global community can unlock the full potential of digital health tools, driving meaningful and sustainable health outcomes for all.

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