SPICE is an open-source digital platform designed with and for health systems, patients, and communities. SPICE is focused on data-driven, outcomes-focused care at both the community and primary care levels. The platform is certified as a digital public good, FHIR compatible for interoperability, and designed for long-term country ownership by ministries of health.

SPICE was built on the principles that digitization is not enough, and that data collection alone does not drive outcomes. The platform enables health systems to collect high quality data, coordinated across levels of care, and use data insights to make decisions that drive improved clinical outcomes. We focus on integrating care for a range of primary care areas including tuberculosis (TB), malaria, HIV, diabetes, hypertension, ante- and post-natal care, and immunizations.

Rather than community health– and facility-level care operating in silos, SPICE bi-directionally links community health work with facility services with closed-loop referrals and counter-referrals. Community health workers receive targeted community-based follow-up for longitudinal patient management based on clinical algorithms. At the facility-level doctor visits, pharmacy and lab workflows are augmented by clinical decision support functionality. Ultimately, the community and primary care model enabled by SPICE drives improved health outcomes for patients.

To date, SPICE-enabled programs have screened 500,000 patients, referred 146,646 patients, and measurably improved the lives of over 130,000 patients globally. In multiple peer-reviewed studies, Medtronic LABS has shown significant decreases in clinical indicators such as blood pressure and blood glucose for patients across multiple sub-Saharan African countries.

General Details

PRIMARY USERS:

The primary users of the Medtronic LABS SPICE platform include community health workers and healthcare providers like nurses, doctors, and pharmacists. These users leverage the platform to manage and coordinate care more effectively, benefiting from features such as screening, assessment, patient enrollment, medical reviews, and prescription management. The solution is designed to integrate community health work with facility services, enhancing both data-driven decision-making and patient care continuity across different healthcare settings.

REACH OF TECHNOLOGY:

SPICE is a recognized as a cutting-edge digital health tool focused on driving clinical outcomes through integrated primary care.

LANGUAGES:

English

TYPE:

Software Application

OPEN SOURCE LICENSE:

BSD-3-Clause

Access Information

SOURCE CODE

https://github.com/Medtronic-LABS

WEBSITE

https://www.medtroniclabs.org/technology-platform/

CONTACT

samuel.kanga@medtroniclabs.org

WHO System Classification

PRIMARY

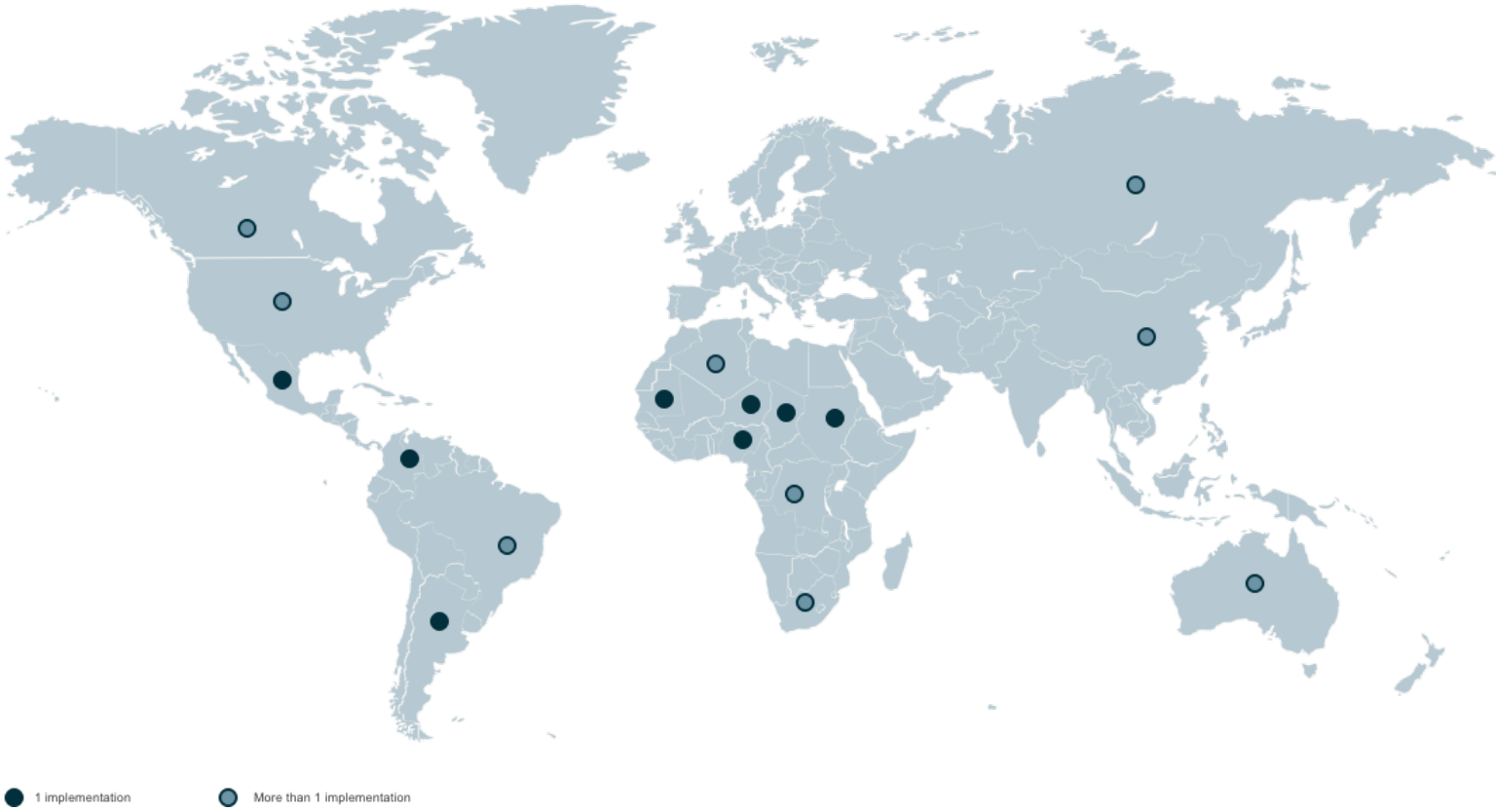
A2 | A2 Community-based information systems

ADDITIONAL

A3 | A3 Decision support systems
A5 | A5 Electronic medical record systems
D1 | D1 Analytics systems
D2 | D2 Data interchange and interoperability
D6 | D6 Health management information systems (HMIS)

Geographic Reach & Impact

SPICE is currently deployed in six countries globally with planned expansion to new countries in 2024 through open-source deployments. SPICE currently supports over 3,500 users on the platform across all the support user roles. To date, SPICE has screened 500,000 patients and referred 146,646 patients to seek further care. SPICE has enrolled 222,000 patients in the program and measurably improved the lives of over 130,000 patients globally.



Standards & Interoperability

STANDARDS

ICD-10, ICD-11, ICD-9, LOINC, SNOMED

OPENHIE COMPONENT

Point of service

Maturity

All maturity model assessments are self-reported by the funded organization leading the software development of the global good.

Maturity Matrix: 2023

Global Utility

Country utilization	Medium
Country strategy	Low
Digital health interventions	High
Source code accessibility	High
Funding and Revenue	High

Community Support

Community engagement	Low
Community governance	Medium
Software roadmap	High
User documentation	Medium
Multilingual support	Medium

Software Maturity

Technical documentation	High
Software productization	Medium
Interoperability and data accessibility	High
Security	High
Scalability	High

Resources

Documentation URL
https://spice.docs.medtroniclabs.org/engineering/api-documentation

Architectural Documentation URL
https://spice.docs.medtroniclabs.org/engineering/architecture

Issue Tracking URL
https://github.com/Medtronic-LABS/spice-android/issues

Troubleshooting URL
https://spice.docs.medtroniclabs.org/deploy/deployment-guide

User Guide URL
https://spice.docs.medtroniclabs.org/overview/spice-app-workflows

Community

Ministries of health in each of our deployment countries are design and implementation partners from the start. Key MOH departments (ICT, Primary Health, any disease verticals in scope) ensure that primary health care functionality, clinical algorithms, and workflows are in line with national requirements and priorities. Health system staff (i.e., public facility and country / district leaders) are co-owners in implementation, ensuring ownership of the use of SPICE in their facilities and communities from the start and supporting sustainability in the long run.

In each country, we also work with interoperability partners to enable and link into existing routine reporting tools. Examples include working with the DHIS2 system in Sierra Leone and HISP in Kenya. Additional partners include our funders, who advise, but are not directly involved in, implementation. Frequently our funding partners have existing government relationships that we align into. These partners include Bill & Melinda Gates Foundation, KOICA, Patrick J. McGovern Foundation, World Diabetes Foundation, Roche, and Novo Nordisk.

In coming months, we will launch a Community of Practice for Ministry of Health technical leads. This community of software developers will be made up of MOH partners from each county where SPICE is deployed. Community members will be empowered to test new releases, provide feedback on feature sets, and contribute to open-source code development.

PLATFORMS / MAILING LISTS

The technical community is engaged through GitHub Discussions where users can ask questions, post ideas, initiate polls, and view all discussions from open-source community members. The Medtronic LABS team monitors the discussion and will respond to all questions and discussion topics. Link for engagement forum: https://github.com/orgs/Medtronic-LABS/discussions

Medtronic LABS has established a developer code of conduct (https://github.com/Medtronic-LABS/spice-android#coc-ov-file) to guide the community members on contributing to the code base. Medtronic LABS follows the principles for digital development and encourages community members to adhere to these principles to promote sustainable and inclusive development.

The community can also directly ask questions of the Medtronic LABS team by sending an email to **community@medtroniclabs.org** . This mailbox is monitored daily, and response times are 2-3 business days. Interested individuals can also join our mailing list and receive emails on upcoming product releases, roadmap updates, and ways to engage with the SPICE community.

EVENTS & CONFERENCES

Events where we have had tool demos, presentations, and speaker sessions involving SPICE are: World Health Assembly 2022, 2023, & 2024, Global Digital Health Forum 2022 & 2023, Transform Africa Summit 2023, and Africa Digital Health Summit 2023.

Sustainability

Medtronic LABS (www.medtroniclabs.org) is the steward of SPICE, an open-source digital platform design with and for health systems, patients, and communities. Medtronic LABS is the primary developer of the SPICE platform and has implemented SPICE with partners in seven countries globally. Medtronic LABS is focused on developing the core platform, building the community, and supporting countries in deploying the solution. Medtronic LABS is a globally distributed organization with team members residing in the following countries: Bangladesh, Ghana, Kenya, India,Sierra Leonne, United States, United Republic of Tanzania. The headquarters of Medtronic LABS is Nairobi, Kenya and 80% of the organization resides in the countries where our programs operate. The core development team for SPICE is distributed between Nairobi and Chennai, India. Medtronic PLC provides an annual donation to cover platform innovation and overhead costs. Country-specific platform deployment, training, and capacity building activities are covered at-cost by grant funding. In each country where we deploy SPICE, the intention is for it to be fully owned and sustained by the local government in the long term. Therefore, Medtronic and grant funding is used to cover set-up and ramp-up costs and then the government is responsible for covering the costs to sustain the platform once it has been transitioned to them for full ownership and scale. Key funders/investors of the work over the past 5 years are: Bill & Melinda Gates Foundation, GIZ, KOICA, Medtronic, Novo Nordisk, Patrick J. McGovern Foundation, Roche, Sanofi, World Diabetes Foundation.

Linked Registries & Initiatives

Policies

Terms & Conditions	https://spice.docs.medtroniclabs.org/overview/data-privacy-and-security/terms-and-conditions-of-use
Tool Privacy Policy	https://spice.docs.medtroniclabs.org/overview/data-privacy-and-security/privacy-policy