LOCALIZING COMMON REQUIREMENTS FOR IMMUNIZATION DIGITAL SYSTEMS

Experience from the Digital Innovation in Pandemic Control project

BACKGROUND

Digital health and documenting requirements

Digital health involves leveraging information and communication technologies to enhance healthcare delivery by utilizing tools such as electronic health records and mobile apps. Using these technologies is vital for improving efficiency, increasing access to information, enabling remote monitoring, and generating data-driven insights.

Documenting system and user requirements—capturing what users want a digital system to do—is crucial for ensuring clarity and quality, communicating effectively between stakeholders, mitigating risk, and satisfying users. Documenting requirements contributes to the success of digital health initiatives by aligning the technology with healthcare needs and facilitating innovation in the delivery of patient-centric care.

A health care worker at Salima District Hospital in Malawi sifts through paper health records. Photo: PATH.

Digital Adaptation Kits

Digital Adaptation Kits (DAKs) are part of the World Health Organization (WHO) SMART Guidelines initiative, which is aimed at promoting adherence to WHO recommendations by providing digital elements that are **S**tandards-based, **M**achine-readable, **A**daptive, **R**equirements-based, and **T**estable.[1] DAKs provide a structured and standardized way to write user and system requirements for a specific health area. They are designed to accurately reflect WHO's clinical, public health, and data use guidelines within the digital systems that countries adopt. DAKs are a simple, easy, and relatively quick way to validate system requirements, as much of the information is already prepared. DAKs are intended for use across a wide range of stakeholders including ministries of health, software developers, and health care workers.

Digital Innovation in Pandemic Control project

Countries face significant challenges when building digital immunization solutions, especially during pandemics. Fragmentation inhibits secure and interoperable data exchange across systems. A lack of resources can impede local stakeholders from sustaining these systems and easily adapting to changing healthcare needs—as was the case for many countries during the COVID-19 pandemic. Through the Digital Innovation in Pandemic Control (DIPC) project, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and PATH's Digital Square initiative are addressing these challenges by partnering with ministries of health in **Ghana**, **Malawi**, and **Tanzania** to select and adapt robust digital tools to strengthen immunization systems. The goal of DIPC is to create models for more agile, efficient, sustainable, and pandemic-prepared health systems with a focus on immunization workflows. By leveraging existing tools, guidelines, and standards—such as WHO's SMART Guidelines and their DAK framework—DIPC is improving systems to be more responsive to the needs of clients, healthcare providers, and health system managers.

DIGITAL ADAPTATION KIT COMPONENTS:[2]

1. Relevant health interventions and recommendations from WHO guidelines and guidance.
2. Generic personas.
3. User scenarios.
4. Business processes and workflows.
5. Core data elements.
6. Decision-support logic.
7. Indicators and performance metrics.
8. Functional and non-functional requirements.

1. World Health Organization. SMART Guidelines. Available at: https://www.who.int/teams/digital-health-and-innovation/smart-guidelines
2. World Health Organization. Digital adaptation kits: What are they and why should I use them? Available at: https://cdn.who.int/media/docs/default-source/reproductive-health/digital-health/who-dak.pdf?sfvrsn=155bea76_7

APPLYING WHO'S DAK FRAMEWORK TO IMMUNIZATION

Using the WHO DAK framework across DIPC countries

While WHO has released DAKs for HIV, family planning, and antenatal care, an immunization DAK was not yet available when DIPC project countries were designing their system enhancements. Instead, DIPC teams opted to use the WHO DAK framework available from other health areas and apply it to immunization to create a system and user requirements document (SURD) for each country. Each localized SURD then served as the foundational document used for system development. Additionally, each SURD aims to provide a common language across various audiences–e.g., program managers, software developers, and implementers of digital systems–to ensure a shared understanding of the appropriate health information content within the immunization program, thereby catalyzing the most effective use of these digital systems.

DIPC's DAK framework localization process

DIPC started the localization process by completing a desk review of all existing guidelines across Ghana, Malawi, and Tanzania. The technical team then used the DAK framework to create a SURD. After that, the team created a SURD validation tool, which included separate personas and data elements, and held validation workshops involving community- and national-level experts in each country. During the workshops, the validation tool was used to validate the SURD content and adapt it as needed to fit each local context. Each country's localized SURD was then sent to ministries of health for final approval. Finally, the localized SURD was included in each country's solicitation for digital system development, allowing developers to use them to guide the development process.

DIPC Technical Project Manager Gideon Sarpong Nyamekye leads a breakout session during a SURD validation workshop in Accra, Ghana. Photo: PATH.

Lessons learned from applying WHO's DAK framework to immunization

Across project countries, teams found that localizing each SURD based on the DAK framework was much faster than the traditional requirements gathering process because much of the documentation was completed ahead of time. Important lessons learned throughout the process include:

- **Take caution** when assuming the SURD is complete. Always double-check all components.
- **Include relevant health and IT experts** from all health system levels (e.g., national, district, facility, and community) to validate all steps.
- **Ensure ample time** to cover all materials in the workshop, including some buffer time.
- **Start by having users describe different processes** and then amend them accordingly in the document.
- **Emphasize with partners that the SURD is a living document** and highlight the importance of version control and ownership.

Going forward

Once completed, the localized SURD should be viewed as a 'living' document. There may be situations in the future where further iterations will be required, such as WHO changing its guidelines, a new vaccine being introduced, or user acceptance testing highlighting that additional changes are warranted.

EXPLORE LOCALIZED SURDS FOR IMMUNIZATION:

- Ghana
- Malawi
- Tanzania

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