



Scale the Technology Now

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Premise:

By separating the technology and content during the development life cycle, as the principles of information theory suggest, we discover opportunities to strengthen and institutionalize health systems that leverage digital technology.

(Assumed) Goals

- Scale (that equates with administrative authority – usually national)
- Respects Principles of Digital Development
- Extensible software architecture
- Design for Interoperability
- Government Ownership (that accommodates private investment, extensibility and interoperability)

Theoretical Basis for Separating Content from Delivery

“Frequently the messages have meaning; that is they refer to or are correlated according to some system with certain physical or conceptual entities. *These semantic aspects of communication are irrelevant to the engineering problem.*”

Claude Shannon

Qualifier: focus is on Information Dissemination



Labrique AB, Vasudevan L, Kochi E, Fabricant R, Mehl G. mHealth innovations as health system strengthening tools: 12 common applications and a visual framework. Glob Health Sci Pract. 2013;1(2):160-171. <http://dx.doi.org/10.9745/GHSP-D-13-00031>.

**So where is the conflation of technology
and content most damaging in the
development life cycle?**

For Procurement: Lack of coordination leads to duplication and gaps

- Procurement of digital technology is often tied to specific health issues, geographies or programs, restricting scaling potential and Government ownership.

Recognizing the need to make this separation is a first step towards addressing the lack of coordination in procurement among sponsors, resulting in duplication and gaps in program implementation.

GLOBAL CONSENSUS



Ecosystem **collaboration** is needed to address current fragmentation and create a **holistic digital health model**

GSMA – Scaling Digital Health in Developing Markets, June 2017



At the country level, cross-cutting **digital health platforms should be interoperable** and yet adaptable to local requirements and sovereignty

National Academies of Science, Engineering, and Medicine, May 2017



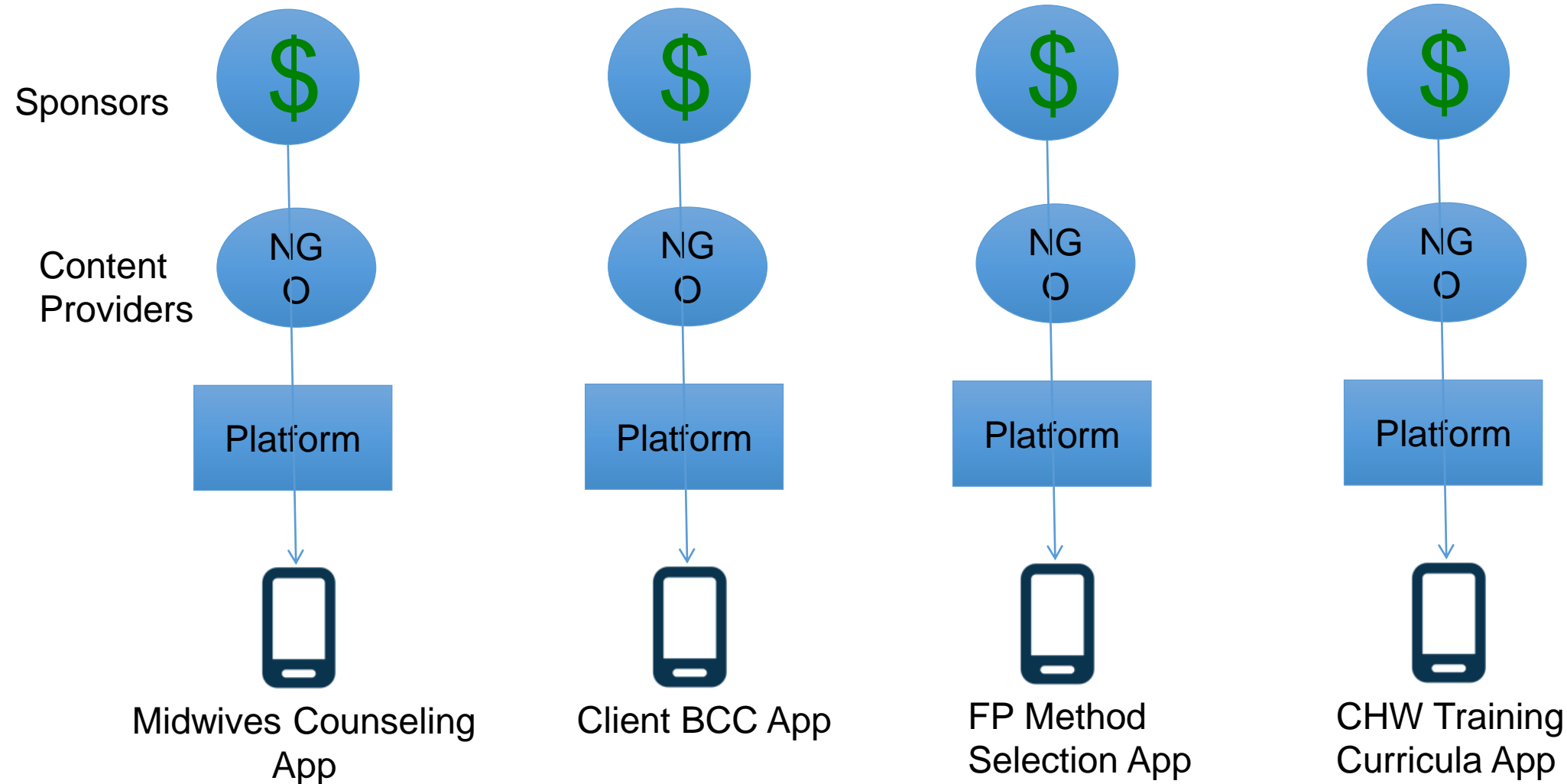
As a first step toward national digital health implementation, leaders can develop a **national digital health vision and strategy**. Strong leadership and governance can **prevent duplication** of effort and harmonize standards for digital technology.

Broadband Commission Report on Digital Health, February 2017

For Implementation: Hard-coded content can create “lock-in” problems

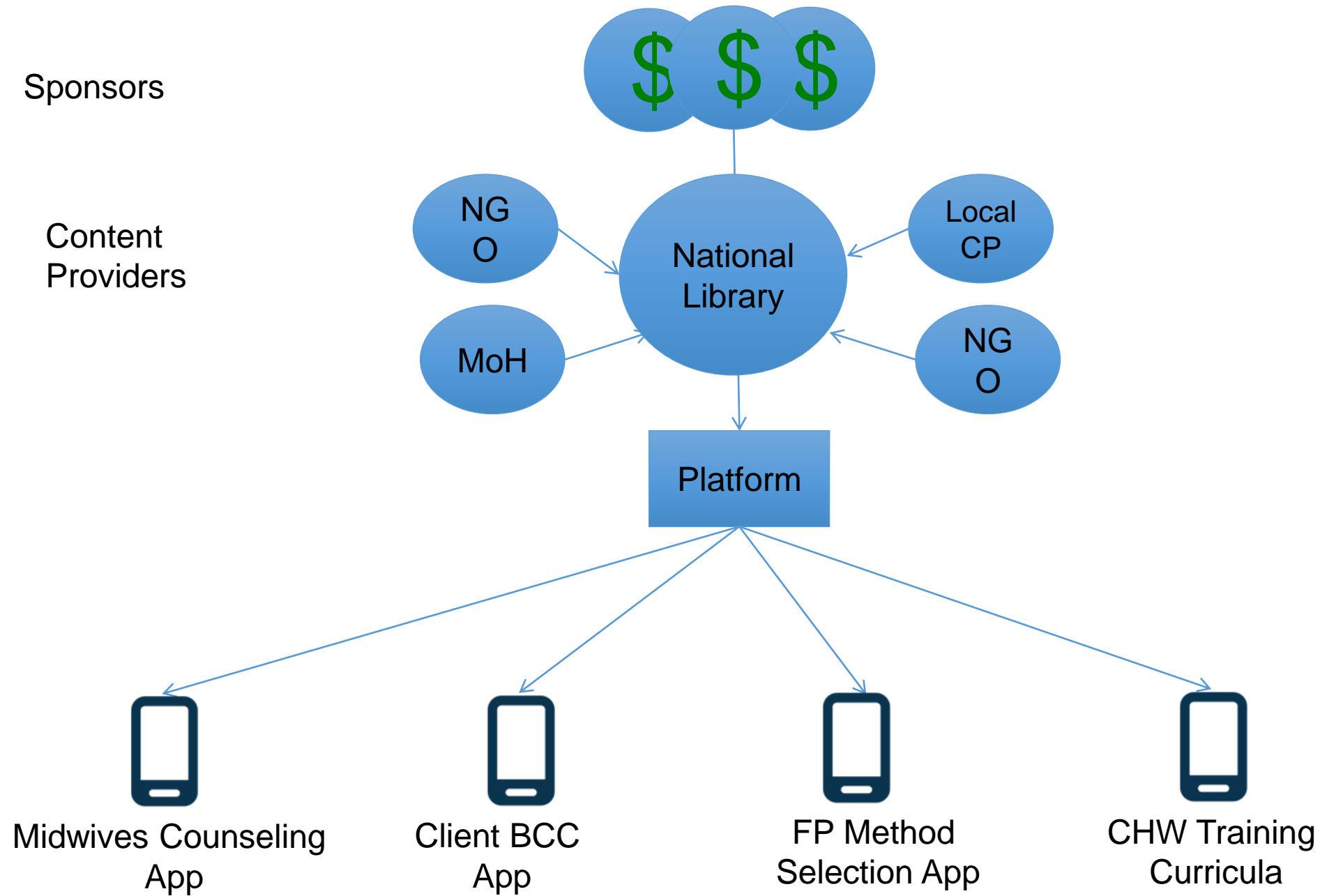
- Application or software design can involve hard-coded content, which ties application technology to specific content, slows adaptation to other contexts and complicates licensing and sharing.

Sample Apps



Sponsors

Content
Providers



Independently Developed Health Apps Should be Approached with Caution

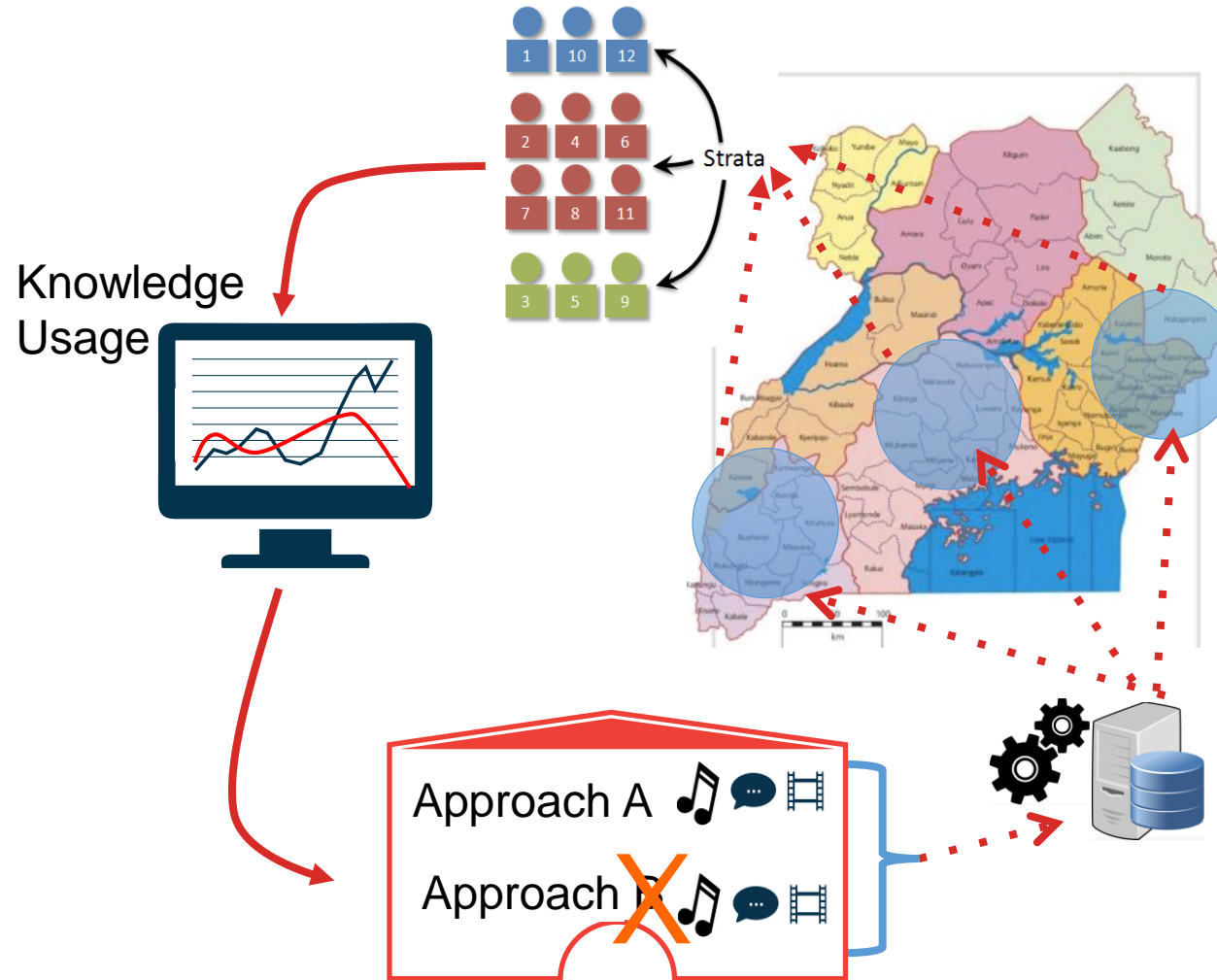


For Evaluation: Centralized Content Library Accelerates Process

Allows for A/B Testing: (for example) evaluation of two different approaches to a training on a particular health topic to two different user groups in nearly real time.

Automated usage statistics and quiz results make it possible to track which group performs best, identifying which training or BCC content was the most effective (as well as UI and selective functionality).

A/B Testing for Evaluation of Health Worker Training

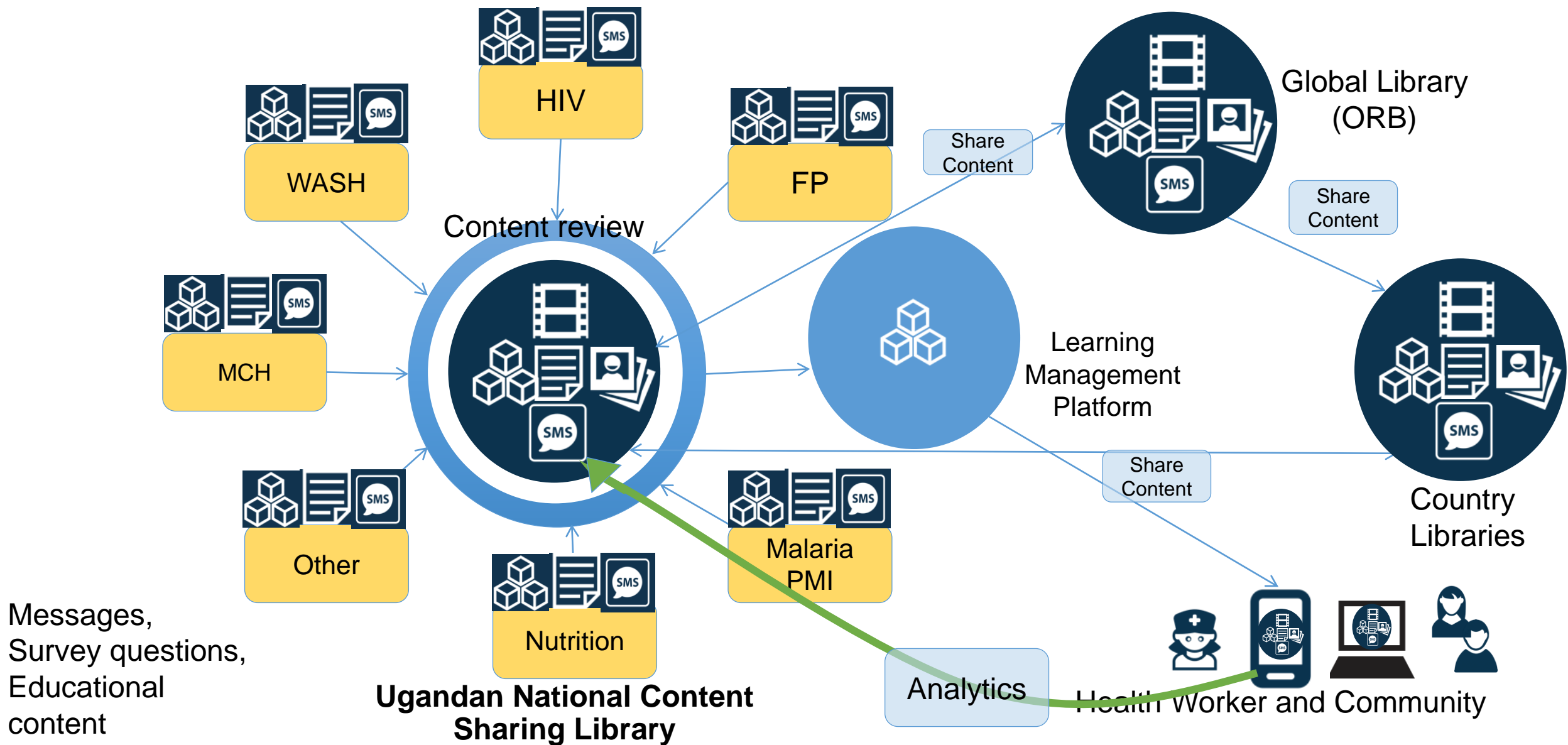


Way Forward

One way to address the technology and content conflation problem is through the loose **integration of a digital content sharing library** with a standards-based **mobile-enabled delivery system** for a **minimum viable product** that can meet immediate needs but allow for future evolution

This library separates the content from the delivery system, **allowing local and international organizations to contribute validated health content** that meets the training needs of a health workforce and many of the informational needs of the public.

SOLUTION: National Library of Digital Resources



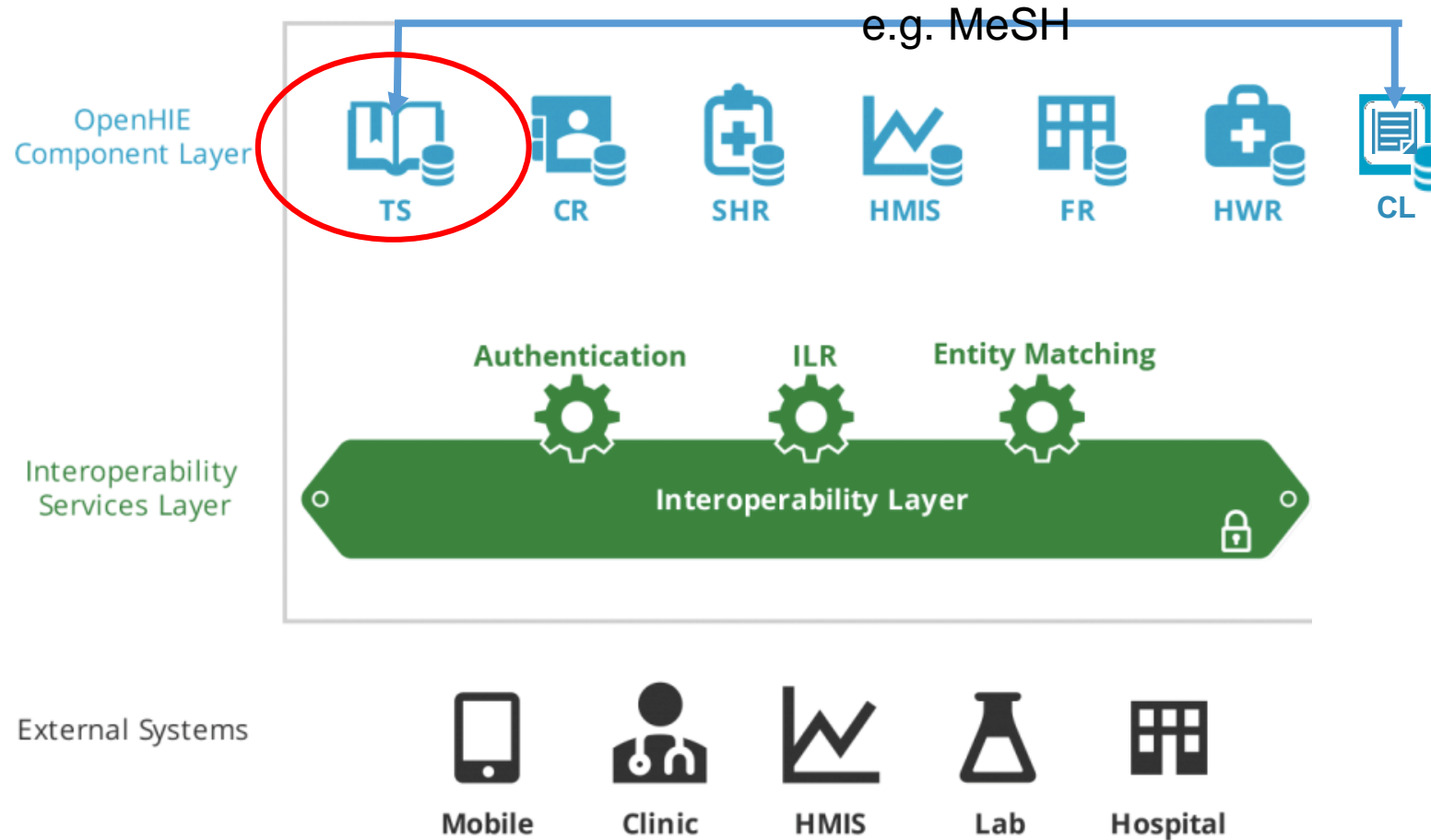
A REGIONAL VISION



Role within OpenHIE Framework

OpenHIE Goals

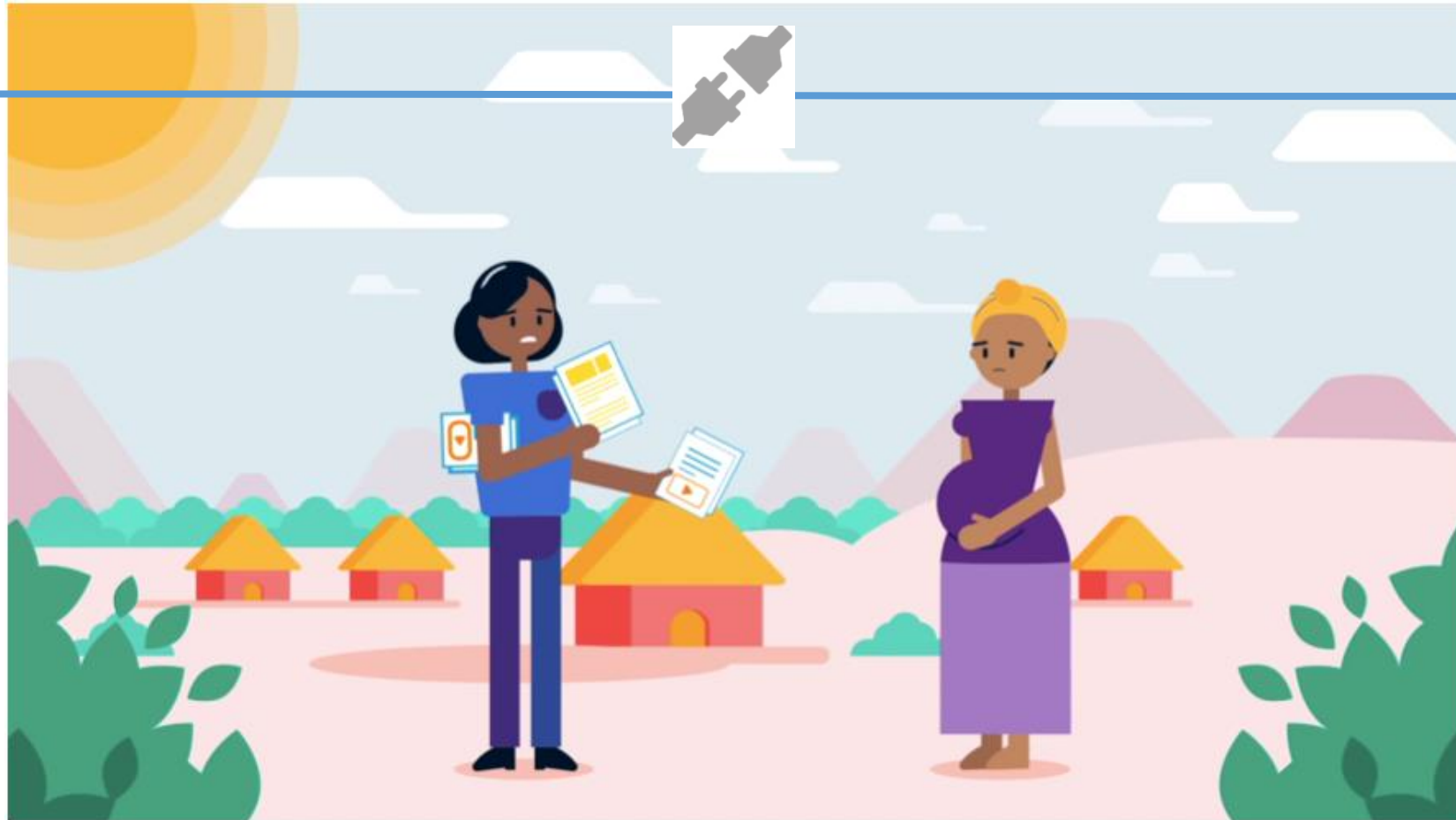
“....open and collaborative, development and support of country driven, large scale health information sharing architectures.”



Interoperability between Content Library and Client Registry = Personalized Medicine

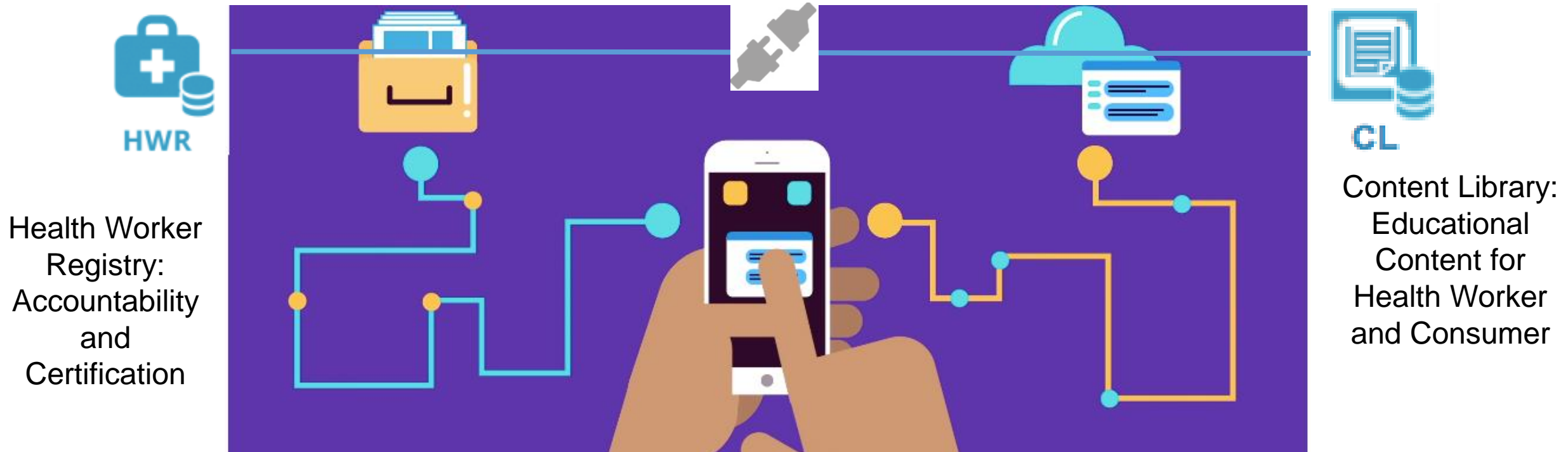


Client Registry:
Documentation
and Reporting



Content Library:
Educational
Content for
Health Worker
and Consumer

Interoperability between Content Library and Health Worker Registry = Improved Certification



Summary

- Technology deployments involving a government's health workforce should be **designed for rapid transition to government ownership** and institutionalization.
- Working from **national digital content libraries** will help ensure that services and functions are implemented in accordance with a country's workforce needs and international standards, and will allow contributions from validated content creators.
- **Conflating technology and content** in mobile health can lead to fragmented implementations, inconclusive evaluations, stalled scaling processes and impediments to content sharing and collaboration.
- **Scaling now contextualizes the evaluation of mHealth** by providing a centralized resource of national content with a standard delivery system and large sample size.