Life Saving Commodities
Improving access, saving lives

Open Source Solutions for Data Management

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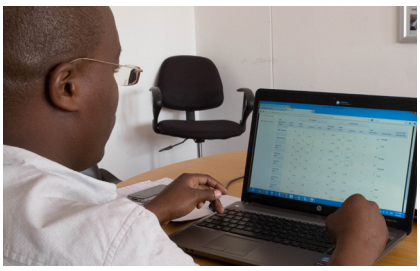
EVERY WOMAN
EVERY CHILD

A Comparison Guide

Open Source Solutions for Data Management

Data management is intrinsic to all aspects of running the supply chain, encompassing identifying, collecting, validating, storing, analyzing, and applying information to make decisions and, most importantly, to take action. Accurate and timely data are crucial to running an effective and efficient supply chain, and there are many tools countries can use to improve data collection and visibility at various levels of the health system.

Recognizing the importance of data visibility for effective supply chains, the UN Commission on Lifesaving Commodities (UNCoLSC) has invested in three open source software tools designed to strengthen and support data management in logistics. This brief outlines their capabilities and features, and provides guidance on how to learn more about each product.



Why Open Source?

Non-proprietary, open-source solutions empower countries to own, customize, extend and manage their electronic logistics management information systems (LMIS), providing shared investment and reduced up front development costs. Open source communities provide access to other contributors and implementers for shared learning and support. Countries and implementing partners can access tools and methodologies from which their electronic LMIS can be developed and customized for local deployments.

Effective Open Source Tools

The UNCoLSC has invested in the following data management tools to support the development and implementation of effective and appropriate technology to improve data visibility for health systems.

CommCare SUPPLY

CommCare Supply is a mobile logistics management system for low-resource settings and areas of low connectivity. It is designed to support health workers and other mobile agents who manage commodities through improved inventory management, resupply, and delivery. For more information, please contact: **supply@dimagi.com** or visit **www.dimagi.com**

open LMIS™

OpenLMIS is a state-of-the-art, web-enabled, enterprise class electronic LMIS solution that facilitates the requisition and resupply process in low-resource settings for health commodities. OpenLMIS automates the LMIS system at sub-national levels, and is interoperable with different systems at multiple levels including HMIS visualization software, mobile data collection platforms, and warehouse ERP systems. To learn more, please contact: **info@openlmis.org** or visit **www.openlmis.org**

dhis2

DHIS2 is a flexible, web-based open source information system specifically designed to support a Health Management Information System (HMIS). DHIS2 is typically used as a national HMIS system for routine data management and analysis purposes, and includes advanced features like GIS mapping for high-quality data visualization. For further information, please contact: **post@dhis2.org** or visit **www.dhis2.org**

The Right Tools at the Right Time

While each of the open source options featured has multiple capabilities and functions (see Feature Table for a complete view) this scenario (end-to-end roles) highlights a sample use case for each tool based on the most typical application at various levels of the health system.

How can these products work together to provide end-to-end data visibility for my health supply chain?

This scenario shows an example of how these tools can work together to support and enhance end-to-end supply chain data management. All three tools have diverse capabilities and may be deployed and integrated with other existing systems at multiple levels of the supply chain, depending on the context.
See feature list for more information.

Facility Level

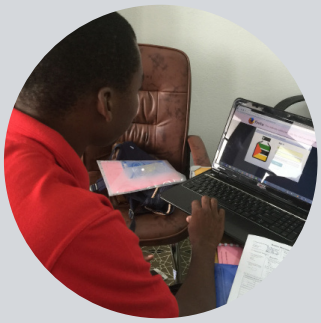
A health worker at a facility or in the community manages their inventory through **CommCare Supply** directly on a mobile device. The application alerts on impending stockouts, recommends reorder amounts, manages requisitions, tracks upcoming deliveries, and ensures compliance with supply chain standard operating procedures.

Sub-national Level

A district manager at the sub-national level uses **OpenLMIS** to process, adjust, and approve requisitions, fill orders, and create PODs. OpenLMIS can draw data from CommCare Supply on requisitions, reporting rates, commodity levels, and other key indicators useful to strengthen supportive supervision.

OpenLMIS feeds data from the sub-national level to the national ERP system, which the warehouse manager uses to inform supply chain decisions at the national level.

National Level



An HMIS data manager at the national level uses **DHIS2** data visualization capacity to get a complete picture of health management data throughout the supply chain.

Transportation

Throughout the process, a truck driver, transportation officer, or mobile warehouse can use **CommCare Supply** to track and report delivery status, routes taken, fuel consumption, wastage, and other key transportation metrics

Feature Table

	CommCare Supply	OpenLMIS	DHIS2
GENERAL			
Configurable Using Administrative Functions	✓	✓	✓
Turnkey Dashboard Management	✓	○	✓
Role-based Access Rights	✓	✓	✓
Offline Capability for Specific Functions	✓	✓	✓
Mobile Application for Data Collection	✓	○	✓
Interoperable With Other Health and Logistics Systems (ERP, EMR, etc.)	✓	✓	✓
REQUISITION, RESUPPLY, INVENTORY MANAGEMENT			
Manage both Push and Pull Systems	✓	✓	○
Submit Requisitions for Approval Electronically	✓	✓	○
Approve and Authorize Requisitions Electronically	✓	✓	○
Automatic Calculation of Resupply Quantities	✓	✓	○
Order Fulfillment and Tracking Through Delivery	✓	✓	○
Manage Cold Chain Program, Product & Equipment	✓	✓	○
Inventory Management	✓	✓	✓
REPORTING & ANALYTICS			
Aggregate and Visualize Data	○	○	✓
Analyze Data Using Basic Reporting	✓	✓	✓
Analyze Data Using Pivot-Tables, Dashboards, Charts, and GIS	✓	○	✓
Report Inventory Statistics (Stockouts, Consumption) for LMIS Data	✓	○	✓
FINANCIAL TRACKING			
Track Financial Data, Facility Budgets	○	✓	○
SECURITY FEATURES			
Security Control & Enforcement Process	✓	✓	✓

KEY: ✓ - Optimal ○ - Secondary

Interoperability

For many health programs, one solution may not meet all potential needs, or there may be existing tools in-country that are established and functional. OpenLMIS, CommCare Supply, and DHIS2 have all been designed with complementarity in mind, making it easy to integrate between systems, or with other existing systems such as ERPs, EMRs, or mobile applications. (See page 6 for examples of featured integrations)

MOTECH
MOBILE TECHNOLOGY FOR COMMUNITY HEALTH

MOTECH is an open source server platform designed to facilitate integration with a set of self-service features, enabling the sharing of data between systems to be configured without software developers or code changes. MOTECH can be used to help facilitate integration between these, and other existing health systems.
To learn more, visit **https://motechproject.org/**

All three products are interoperable with many existing systems in-country, and with each other as follows:

CommCare SUPPLY

CommCare Supply:
Feeds data from the mobile level into OpenLMIS and DHIS2

open LMIS™

OpenLMIS:
Interoperable with national ERP system, with DHIS2, with CommCare Supply at mobile level

dhis2

DHIS2:
Interoperable with OpenLMIS from facility level up, and with CommCare Supply at the mobile level

Global Perspective

CommCare Supply has received nearly 1 million stock reports from over 8,500 active facilities, including 3,000 community health workers using the system in 9 countries.

OpenLMIS manages the electronic LMIS process at almost 9,000 health facilities in 6 geographies across Africa, across all major health programs.

DHIS2 is the preferred health management information system in 47 countries and 23 organizations across 4 continents.

Implementations and Integrations

Examples of select implementations and integrations illustrate specific use cases in different countries and contexts.

Integrations

SENEGAL:

CommCare Supply is the mobile supply chain management tool used in an Informed Push Model by IntraHealth and the Senegal MoH to manage and distribute Family Planning commodities at national scale covering 1,400 public health facilities. The system has expanded to include integration with DHIS2 for improved reporting at the national level.

TANZANIA:

1) **OpenLMIS and DHIS2** – In Tanzania, an HMIS/LMIS dashboard was launched in 2016 which reports national LMIS and HMIS data for 13 commodities for over 6,000 health facilities in the country (national deployment).

2) **OpenLMIS and CommCare Supply** – In Tanzania, OpenLMIS is deployed under the name eLMIS, while CommCare Supply is called the ILS Gateway. CommCare Supply gathers data on 22 tracer commodities from more than 4,500 facilities, feeding this data into the national OpenLMIS system which manages more than 6,000 service delivery points and supports requisitioning supplies for all programs, including Malaria, TB, HIV/AIDS, lab commodities, essential medicines, and vaccines.

Implementations

RWANDA:

DHIS2 – Used for the national Health Management Information System (HMIS), DHIS2 supports routine data collection and analysis at all levels in the health system, including over 700 public health facilities. It is also used for Disease Surveillance, Performance Based Management, and the national blood bank.

MALAWI:

CommCare Supply – Deployed as cStock, CommCare Supply is scaled nationally to calculate just-in-time stock needs of the over 3,000 community health workers (CHWs). An evaluation of the pilot found that 99% of CHWs indicated that cStock saved them significant time in collecting products. Compared to baseline, product availability more than doubled after the introduction of a set of interventions, which included cStock.

MOZAMBIQUE:

OpenLMIS – Deployed locally as SELV, OpenLMIS supports an informed push model for vaccine distribution to more than 725 health centers serving over 13 million people. SELV is the information system supporting the Dedicated Logistics System (DLS), a comprehensive supply chain redesign effort to streamline the supply chain in Mozambique.

About the United Nations Commission on Life-Saving Commodities

The UN Commission on Life-Saving Commodities (UNCoLSC) works to make thirteen life-saving commodities more widely available and used in developing countries to avert preventable maternal and children deaths (full commodity list available here).

The UNCoLSC – through the Supply Chain Technical Resource Team – has supported the development and implementation of a number of tools that can help countries strengthen data management within their supply chain including DHIS2, OpenLMIS, and CommCare Supply. This has demonstrated an ongoing commitment to global health system strengthening through the support of open source software for data management.

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