



**GLOBAL
HEALTH**
SUPPLY CHAIN SUMMIT



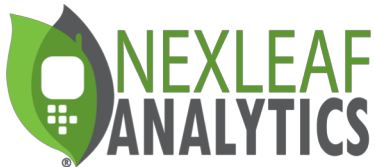
Thanks to our generous sponsors





Designing and Developing Logistics Management Information Systems for a Smarter Cold Chain in Kenya

Catherine Weyanga Silali
Ministry of Health Kenya
National Cold Chain Maintenance Technician



REPUBLIC OF KENYA



MINISTRY OF HEALTH



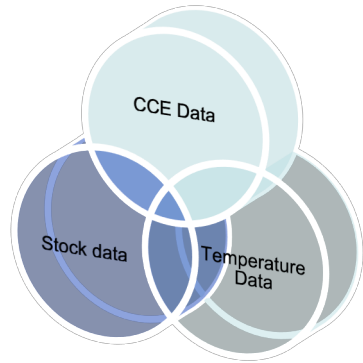


Problem Statement

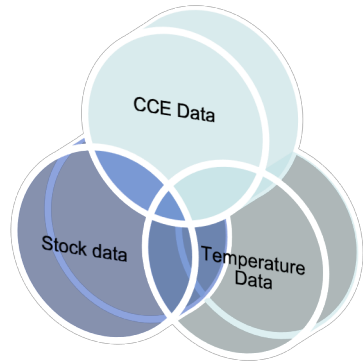
- In 2010, the National Vaccines and Immunization Program identified one of the major problems in the Immunization Supply Chain was **lack of data visibility** across different levels.
- This meant that there was:
 - Inadequate knowledge on Stock levels
 - Inadequate knowledge on Cold Chain Equipment (CCE) availability and performance
 - Inadequate knowledge on temperature monitoring of the Cold Chain Equipment

As a result, planning and decision making was sub-optimal leading to system inefficiencies.

Stock Management Visibility



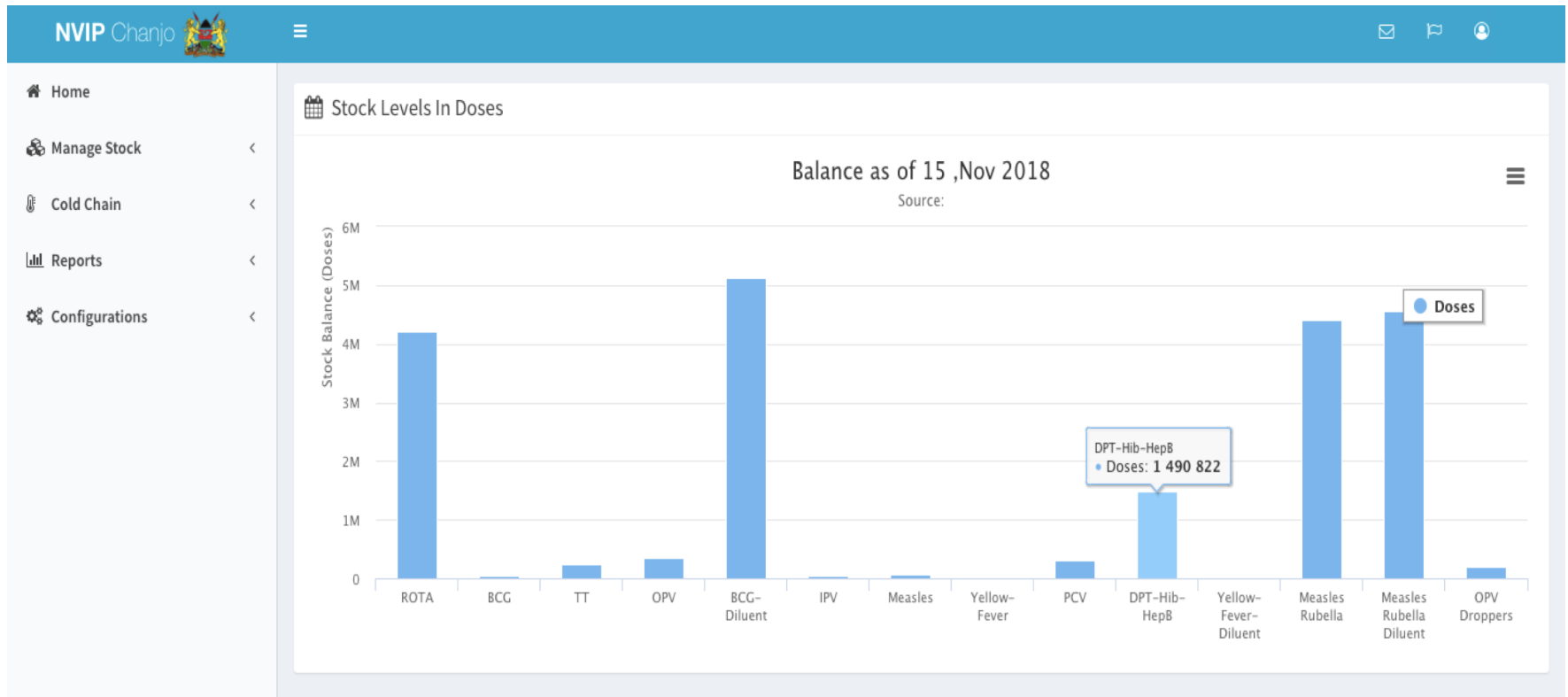
- Electronic Stock Management Tool (SMT-KE) was rolled out at the national level in 2010.
- In 2012, it scaled up to all the 9 Regional vaccine stores.
- For stock visibility at the county level, the system was adapted for use by sub-county vaccine stores and re-named Chanjo[®]. This was implemented in 2016.



- Chanjo[®] is a web-based platform that is used to collect data on Cold Chain Equipment, Vaccine Stock & related commodities, Remote Temperature (via Nexleaf Analytics) and Performance (via DHIS)
- Chanjo[®] contains a dashboard and periodic reports that provides graphs and analytics that are used to inform action, drive programmatic & operational decisions.



Managing Stock





CCE Data Visibility

- The Cold Chain module in Chanjo® supports the CCE inventory, functionality and flagging CCE due for PPM/repairs.

The screenshot displays the NVIP Chanjo web application interface. The top navigation bar includes the NVIP Chanjo logo and a user profile for 'Kamari'. The main content area is titled 'Store | Store Mombasa County / Likoni Sub-County' and features a dashboard with six colored cards representing different inventory categories: Fridges (3), Vaccine Carriers (0), Live Births (0), Catchment Pop (222397), Cold Boxes (0), and Ice Packs (0). Below the dashboard is a section titled 'My Fridges' with an 'Add Refrigerator' button. A table lists the details of three refrigerators, including their Name, Fridge ID, Model, Temp. Monitor No., Power Source, Year of Installation, Status, and Action options (Edit, Print Label, Flag for Repair).

Name	Fridge ID	Model	Temp. Monitor No.	Power Source	Year of Installation	Status	Action
N/A	242997671-AK-3-0-0-0	TCW 3000 A	●	Electricity	2014	Functional	Edit Print Label Flag for Repair
N/A	1273516311-AK-3-0-0-0	RCW 50 EG	●	Electricity	2012	Nonfunctional	Edit Print Label Flag for Repair
N/A	1124401985-AK-3-0-0-0	MK 144	●	Electricity	2016	Functional	Edit Print Label Flag for Repair



Chanjo[®] CCE Inventory

Store | Store NVIP / Mombasa Regional Store

MY STORE | SUBCOUNTY STORES

Sub county Stores Add Store Refrigerator Add Store

Subcounty	Catchment Pop	Live Births	Pop preg women	Pop surv infants	Pop adolescent girls	Cold Boxes	Vaccine Carriers	Ice Packs	Fridges	Action
Kisauni Sub-County	259982	0	0	15599	8060	0	0	0	1 View	Edit Store
Likoni Sub-County	222397	0	0	6894	13344	0	0	0	3 View	Edit Store
Mvita Sub-County	191745	0	0	11505	5944	0	0	0	3 View	Edit Store
Nyali Sub-County	258872	0	0	7521	15532	0	0	0	1 View	Edit Store
Changamwe Sub-County	177763	0	0	7891	5511	0	0	0	8 View	Edit Store
Kaloleni Sub County	208649	0	0	7591	12519	0	0	0	2 View	Edit Store
Kilifi North Sub County	212795	0	0	9989	9989	0	0	0	8 View	Edit Store
Kilifi South Sub County	222250	0	0	8090	13335	0	0	0		Edit Store
Magarini Sub County	228801	0	0	8237	13728	0	0	0		Edit Store



Chanjo® CCE Repair Notification

Are you sure you want to flag this for repair?

No, Cancel! Yes

Name	Fridge ID	Installation	Status	Action
N/A	152668038-AK-3-0		Functional	🔴 Flag for Repair
N/A	1449509489-AK-3-0		Functional	🔴 Flag for Repair
N/A	183464574-AK-3-0		Nonfunctional	🔴 Flag for Repair
N/A	736237698-AK-3-0		Functional	🔴 Flag for Repair
N/A	158035960-AK-3-0-0-0	RCW 50 EG	Nonfunctional	🔴 Flag for Repair
N/A	1797982992-AK-3-0-0-0	RCW 42 EG	Functional	🔴 Flag for Repair
N/A	1191975634-AK-3-0-0-0	RCW 42 EG	Functional	🔴 Flag for Repair
N/A	436822474-AK-3-0-0-0	RCW 42 EG	Nonfunctional	🔴 Flag for Repair
qwe	1032795575-AK-3-40-173-0	HBC 200	Functional	🔴 Flag for Repair

Is the fridge still functional?

Type Yes or No:

Cancel OK

Name	Fridge ID	Installation	Status	Action
N/A	152668038-AK-3-0		Functional	🔴 Flag for Repair
N/A	1449509489-AK-3-0		Functional	🔴 Flag for Repair
N/A	183464574-AK-3-0		Nonfunctional	🔴 Flag for Repair
N/A	736237698-AK-3-0		Functional	🔴 Flag for Repair
N/A	158035960-AK-3-0-0-0	RCW 50 EG	Nonfunctional	🔴 Flag for Repair
N/A	1797982992-AK-3-0-0-0	RCW 42 EG	Functional	🔴 Flag for Repair
N/A	1191975634-AK-3-0-0-0	RCW 42 EG	Functional	🔴 Flag for Repair
N/A	436822474-AK-3-0-0-0	RCW 42 EG	Nonfunctional	🔴 Flag for Repair
qwe	1032795575-AK-3-40-173-0	HBC 200	Functional	🔴 Flag for Repair

Nice!

Your request was Successful.

OK

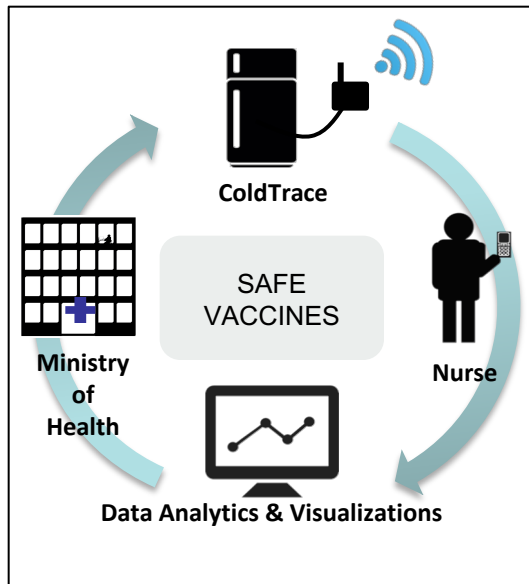
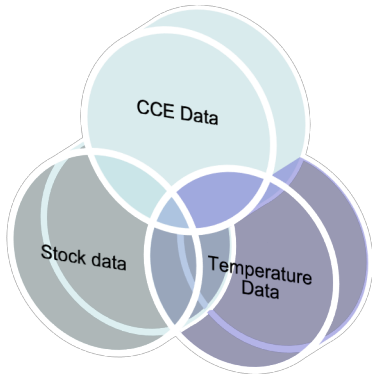
Name	Fridge ID	Installation	Status	Action
N/A	152668038-AK-3-0		Functional	🔴 Flag for Repair
N/A	1449509489-AK-3-0		Functional	🔴 Flag for Repair
N/A	183464574-AK-3-0		Nonfunctional	🔴 Flag for Repair
N/A	736237698-AK-3-0		Functional	🔴 Flag for Repair
N/A	158035960-AK-3-0-0-0	RCW 50 EG	Nonfunctional	🔴 Flag for Repair
N/A	1797982992-AK-3-0-0-0	RCW 42 EG	Functional	🔴 Flag for Repair
N/A	1191975634-AK-3-0-0-0	RCW 42 EG	Functional	🔴 Flag for Repair
N/A	436822474-AK-3-0-0-0	RCW 42 EG	Nonfunctional	🔴 Flag for Repair
qwe	1032795575-AK-3-40-173-0	HBC 200	Functional	🔴 Flag for Repair

Remote Temperature Monitoring

ColdTrace is a Remote Temperature Monitoring System for cold chain equipment (CCE) that store vaccines and other temperature-sensitive products.

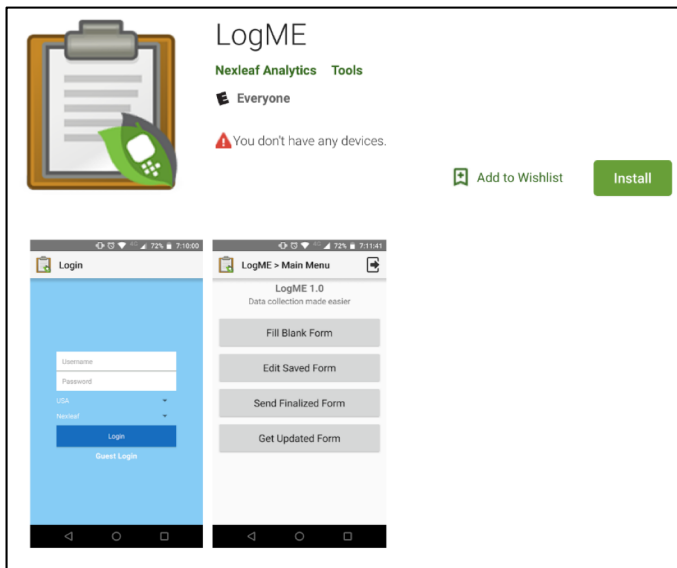
It has 2 core components:

- ColdTrace unit - collects and transmits temperature and power data from the CCE and sends alerts to health clinic staff via text message or email when temperature inside of the CCE is outside of the safe range.
- ColdTrace dashboard - a secure, cloud-based platform giving health clinic staff remote access to near real-time temperature and power data with customizable analytics and report-generating tools to track equipment performance.



Consolidating Maintenance Information

LogME (Log Maintenan**E**) is an Android App designed to survey information flows between technicians and managers. The maintenance technicians can enter information on CCE maintenance such as symptoms, diagnosis, actions, and spare parts. The tool can also be used to track issues with RTM devices.

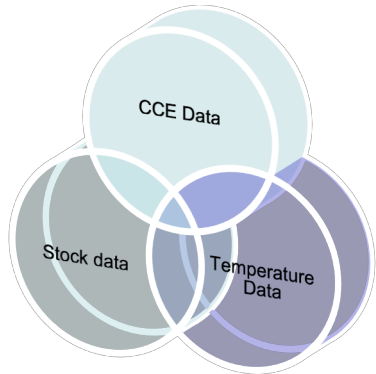


LogME training for maintenance technicians in Nairobi.



GLOBAL
HEALTH
SUPPLY CHAIN SUMMIT

Pilot to Scale at all Sub-county Stores



- ColdTrace was first used in Kilifi County where the first version was piloted successfully.
- In 2017, through funding from ELMA and support from JSI, ColdTrace was implemented in 36 sites and was monitoring 59 equipment in three counties – Nairobi, Isiolo and Kajiado.
- In 2019, scale up to all sub-county stores in country (over 300) was funded by Gavi.

- **Stories of Impact:**

- In Nairobi, county logistics set up a specific cold-chain working group to look at the data about their refrigerators and met monthly to discuss the data.
- In Isiolo, county logistics were able to establish a power profile for the areas with electrical fluctuations and subsequently replace deficient electric refrigerators with a solar powered refrigerators.



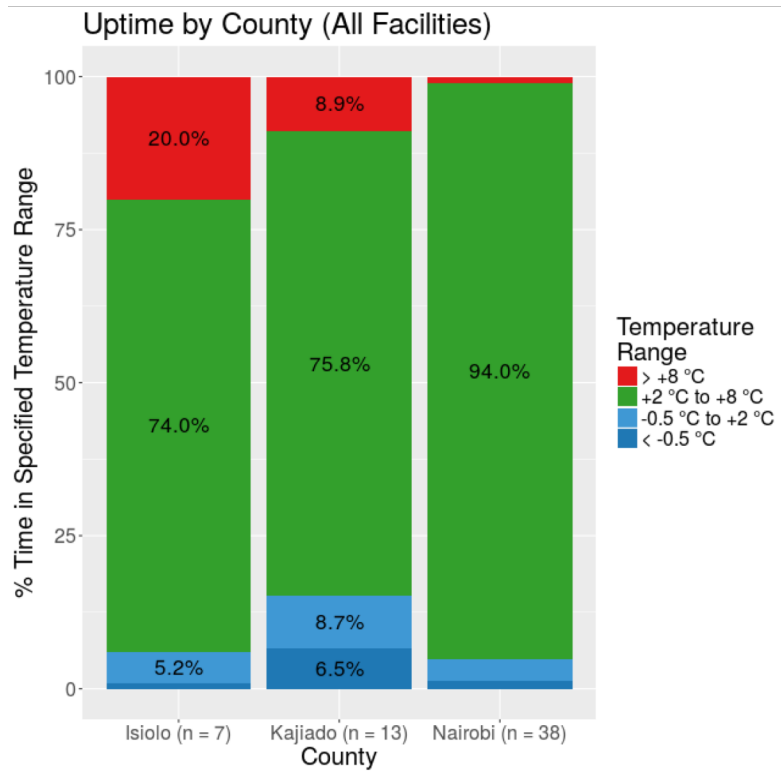


**GLOBAL
HEALTH**
SUPPLY CHAIN SUMMIT

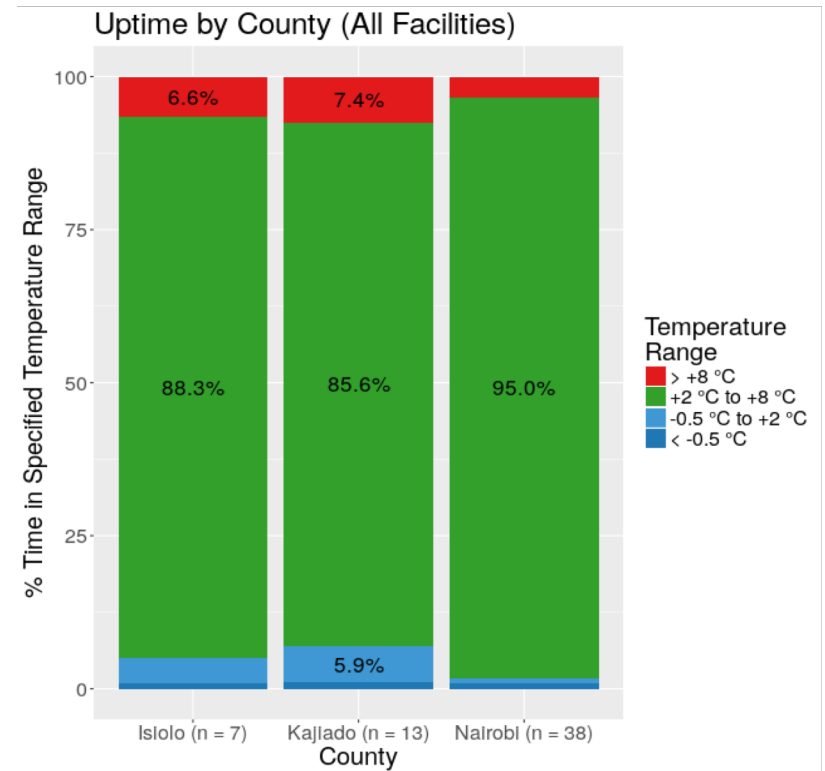
Uptime Improved

Key Finding 1: Improved uptime performance during baseline period vs. intervention period

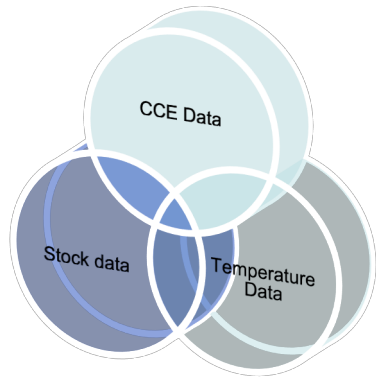
BASELINE



INTERVENTION



Successes

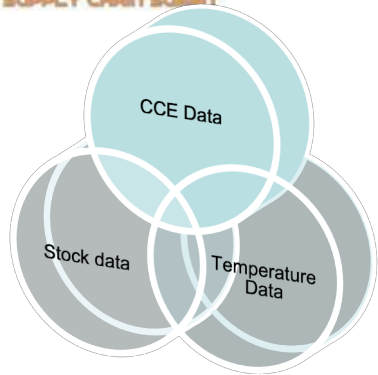


- Managers now have access to performance metrics and statistics that previously took days to calculate and present.
- Better accounting for stocks, spare parts and cold chain equipment in Kenya.
- Cold Chain Equipment Inventory can be updated in real-time, previously this was done across 60 days.
- Realtime stock level information has been used to plan for PCV dose change, IPV and bOPV introduction.
- Noticeable reduction in stockouts at health facility levels through improved efficiencies in logistics planning and internal vaccines distribution.



GLOBAL
HEALTH
SUPPLY CHAIN SUMMIT

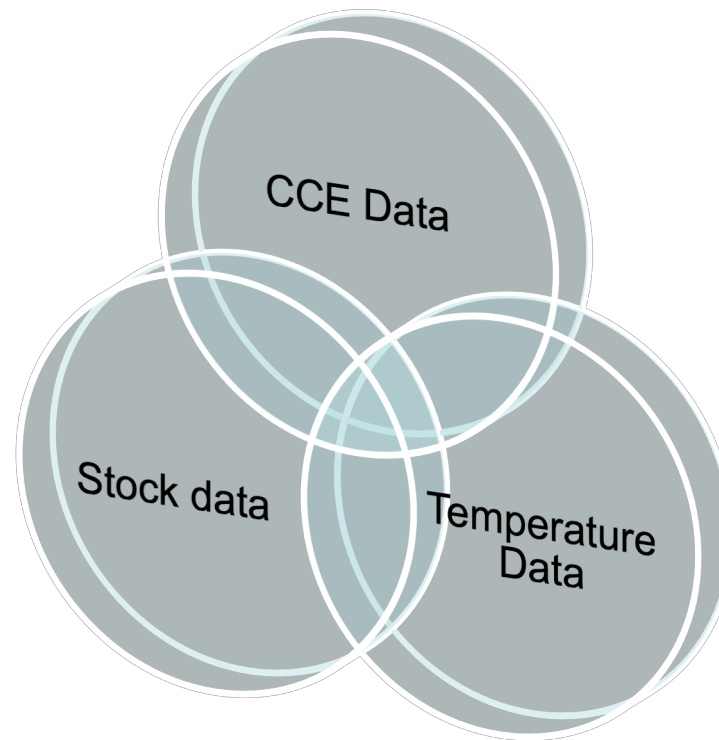
Successes (continued)



- Temperature monitoring and stock at hand data shows the quantity of vaccines at risk.
- Guides procurement of Cold Chain Equipment based on the power profile of a region.
- Improved planning for repair and maintenance of Cold Chain Equipment.
- Improved teamwork among various cadres of healthcare workers and data-informed decision making.

Data Integration

- Integration collates data from different sources in one place; i.e. RTM dashboard, DHIS and CHANJO®.





ASANTENI