



The Alliance for
Malaria Prevention



Alliance pour la
Prévention du Paludisme

Campaign Digitalization Meeting

Day 1 – 10 April 2025

Réunion sur la numérisation des campagnes

Jour 1 – 10 avril 2025

Meeting will begin shortly – la réunion va bientôt commencer



The Alliance for
Malaria Prevention



Alliance pour la
Prévention du Paludisme

Campaign Digitalization Meeting

Theme 1: Data for decision making

Réunion sur la numérisation des campagnes

Thème 1: Data pour la prise de décision

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Meeting will begin shortly – la réunion va bientôt commencer



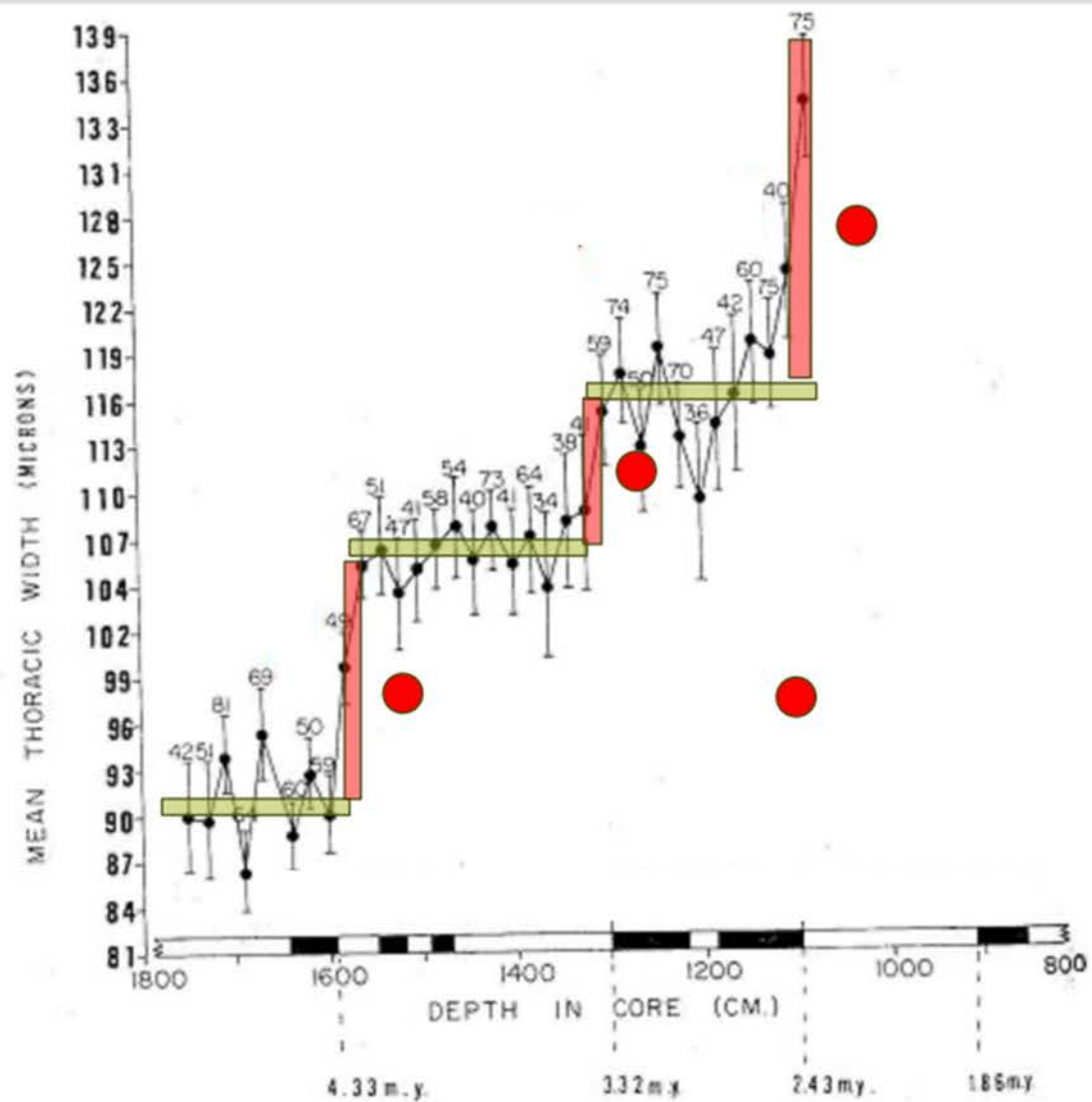
Digitalizing ITN Distribution: Shaping the Future Amid Resource Constraints

Opening Remarks, April 10 2025, AMP Digitalization Meeting

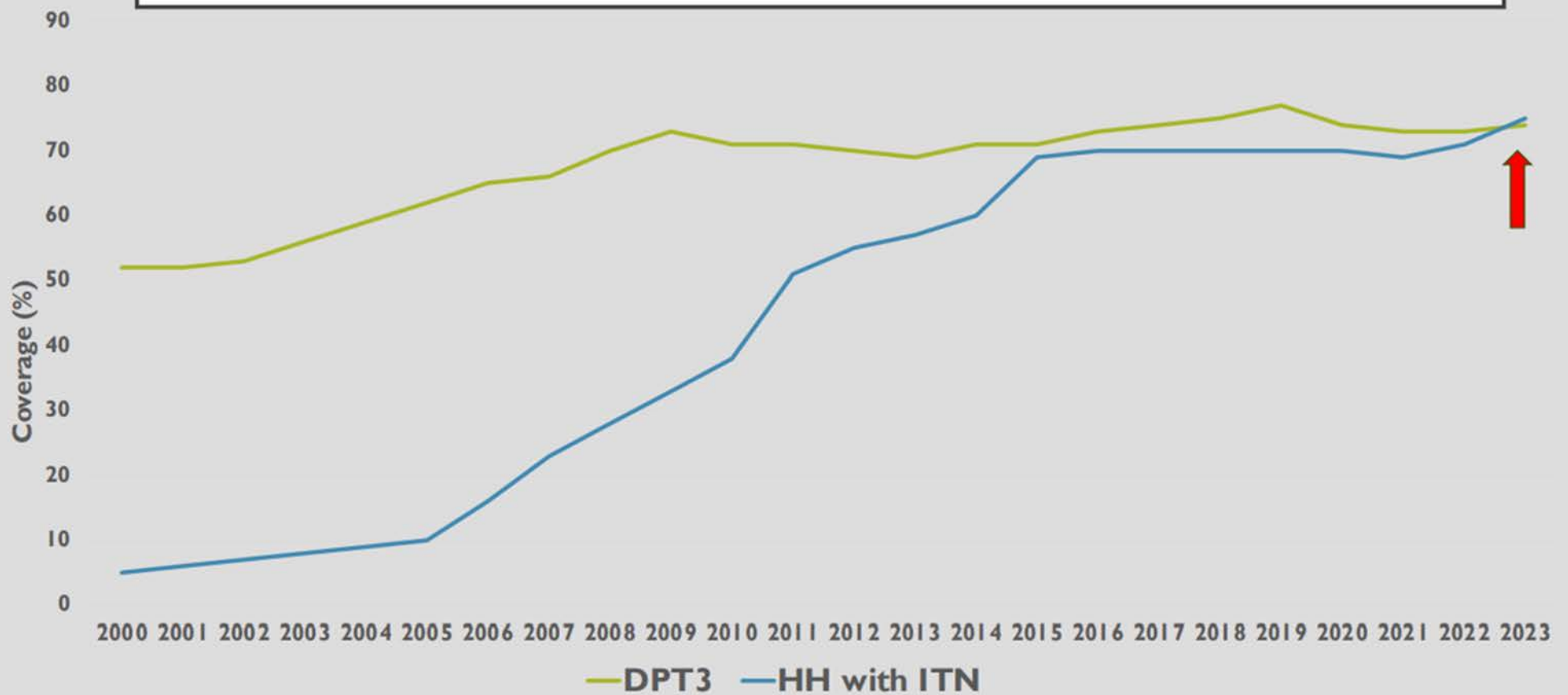
Sidharth Rupani

In-Country Supply Chain Team, Supply Operations

The Global Fund to fight AIDS, TB, and Malaria

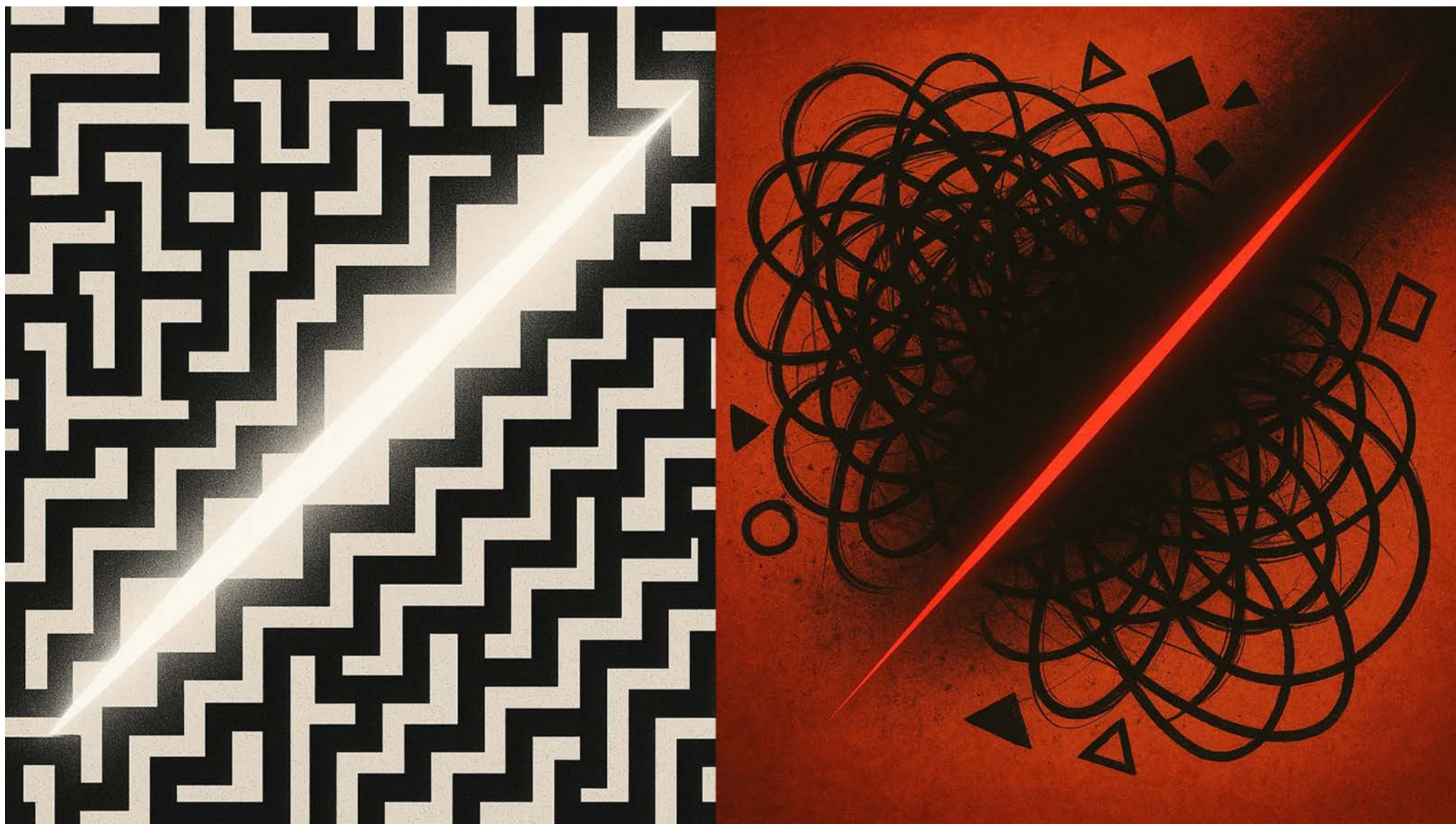


PERFORMANCE OF HEALTH INTERVENTIONS, AFRO











**ESSENTIAL
ENABLER**



**NICE-TO-HAVE
ADD-ON**



**IMPROVISE
ADAPT
OVERCOME
~~~  
PLANS CHANGE  
DON'T CHANGE YOUR  
VISION!**



**malaria  
consortium**

*disease control, better health*

## **Deploying DIGIT HCM in Kebbi: How interactive dashboards and customised reports transformed data-informed decision-making and improved key SMC campaign processes**

Dorcas Essien, Malaria Consortium Nigeria

Alliance for Malaria Prevention Campaign Digitalization Meeting 9–11 April 2025, Nairobi, Kenya



# Contents

Section 1: Malaria Consortium

Section 2: Introduction — Background and context

Section 3: SMC campaign in Kebbi state, Nigeria, using DIGIT HCM application

Section 4: Achievements

Section 5: Challenges and lessons learnt

Section 6: Conclusion and recommendations

## About Malaria Consortium

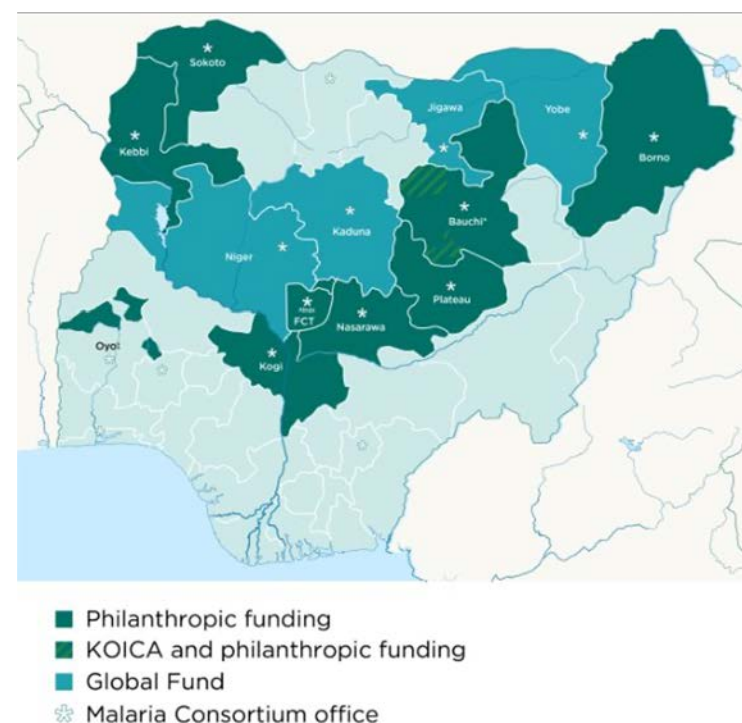
Malaria Consortium is one of the world's leading non-profit organisations specialising in the prevention, control and treatment of malaria and other communicable diseases among vulnerable populations.

Our mission is to save lives and improve health in Africa and Asia through evidence-based programmes that combat targeted diseases and promote universal health coverage.

# Seasonal malaria chemoprevention

## (SMC)

- SMC is a community-based malaria prevention strategy for high-burden, seasonal areas, providing antimalarial medicines during peak transmission.
- Community distributors deliver SMC medicines door-to-door to children (3–59 months) in four or five cycles, spaced 28 days apart.
- SMC implementation relied on traditional paper-based data collection, causing accountability issues, reporting delays and poor data quality.
- Manual methods were labour intensive, error prone and slowed data analysis, impacting monitoring and decision-making.
- Malaria Consortium began the incremental rollout of campaign digitalisation across the states where we work in 2022



# Why digitalise SMC?



Greater accountability — transparency on how data have been collected, where and by whom



Reduced time between data collection and analysis, enabling effective use of data for decision-making to improve campaign management in real time



Real-time stock monitoring to prevent drug shortages and reallocate excess



Faster tracking of adverse medication effects to allow rapid follow-up



Aggregated checklists for better supervision



Improved data storage and flow from community to national level



Optimisation of campaign investment — data reusable in future campaigns and other community health initiatives



# DIGIT in Nigeria

SMC digitisation in Nigeria is not new — other platforms (including RedRose, DHIS2 and Reveal) have been used previously.

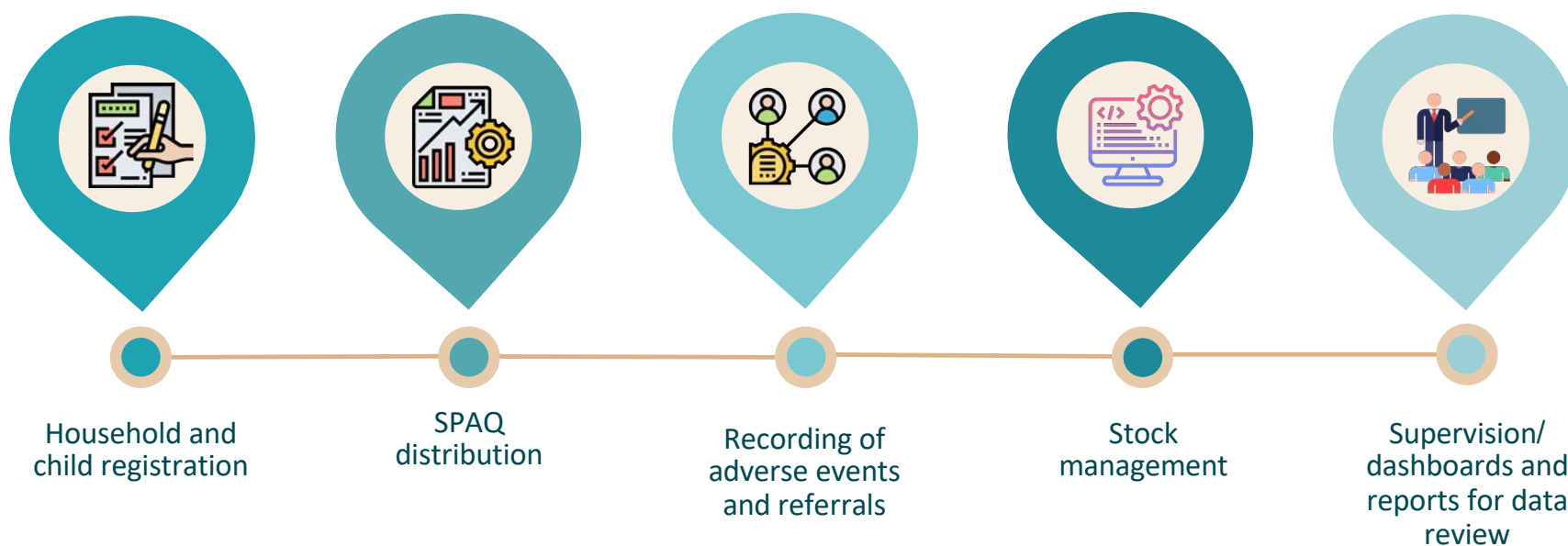
DIGIT HCM was successfully introduced during the fourth cycle of the 2024 SMC round in Kebbi, using a 'bring your own device' (BYOD) operating model across 21 local government areas (LGAs) in October 2024.

This was the first use of a digital solution to support SMC implementation in Kebbi state, with strong stakeholder engagement throughout — from national and state malaria programmes to key partners.

Introduction of the tool followed software development lifecycle (SDLC) phases — requirements, design, implementation, testing and deployment — to ensure reliability, scalability and user-centred outcomes.

Aims: Test the feasibility of using DIGIT in Nigeria using a BYOD model and gain learnings to inform future scale-up.

## DIGIT for SMC — key components



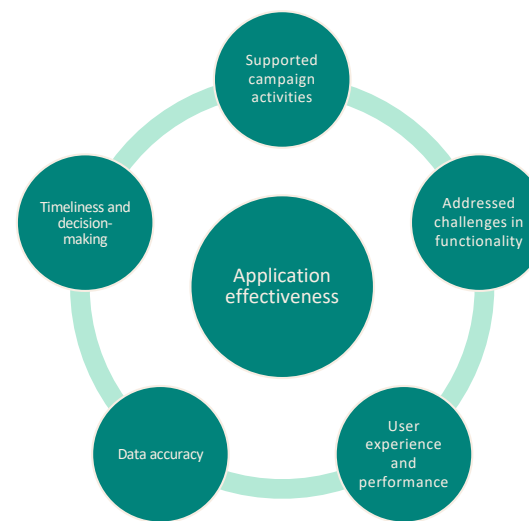
# Post-campaign digitalisation evaluation

We conducted a performance evaluation to examine the DIGIT HCM application's deployment

The evaluation assessed key stakeholders' overall satisfaction with the application



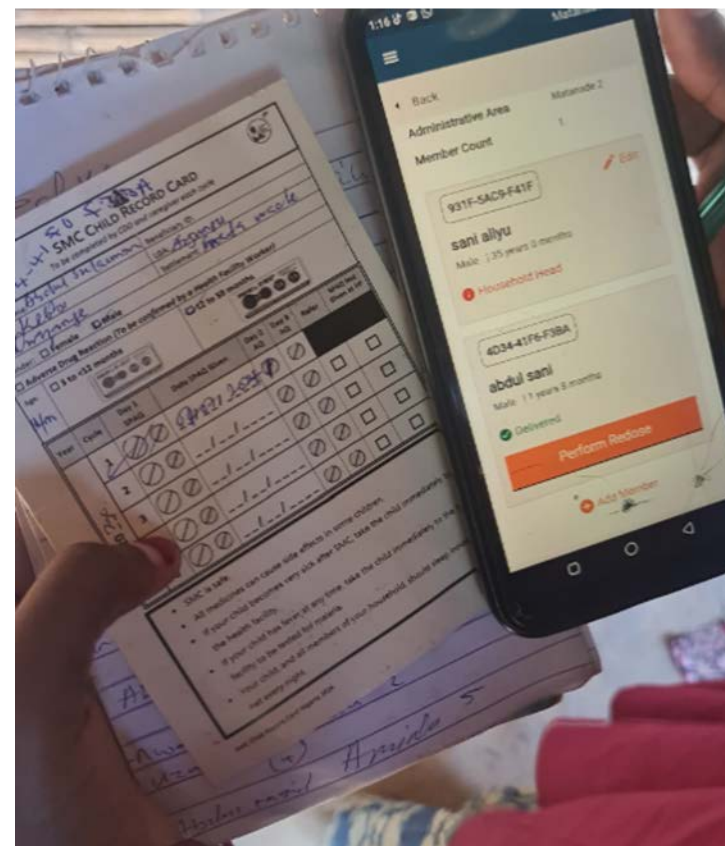
A key objective was to determine how effectively the application enhanced key campaign processes



The evaluation employed a mixed-methods approach, collecting data through structured surveys and user feedback from 460 respondents across five user groups: **community distributors, health facility workers, supervisors, logisticians and data managers.**

# Highlights and key results

- **7,200 application users** trained across 21 LGAs
- **First implementation globally** of DIGIT HCM using BYOD operating model
- **User acceptance score of 95 percent**, based on feedback, indicating strong acceptability of the application
- **Users embraced fully digital approach** by day 2, with no option to revert to paper
- **Cross-organisational technical ‘help desk’** established to troubleshoot technical issues during campaign implementation
- **Timely and available data** at all levels for reporting and informed decision-making during and after campaign
- **Campaign reached over 1.3 million children**
- **Achieved 91.1 percent administrative coverage**
- Shift to digital tools **improved reporting accuracy**, reducing reported coverage of SMC distribution from over 102 percent in cycles 1–3 to a more accurate 91 percent in cycle 4.



56 percent of community distributors and 98 percent of health workers reported having a good experience with the application and relying on it to improve the quality of their work (e.g. accuracy of records, speed of drug distribution)



# Strengthened data oversight improves response times

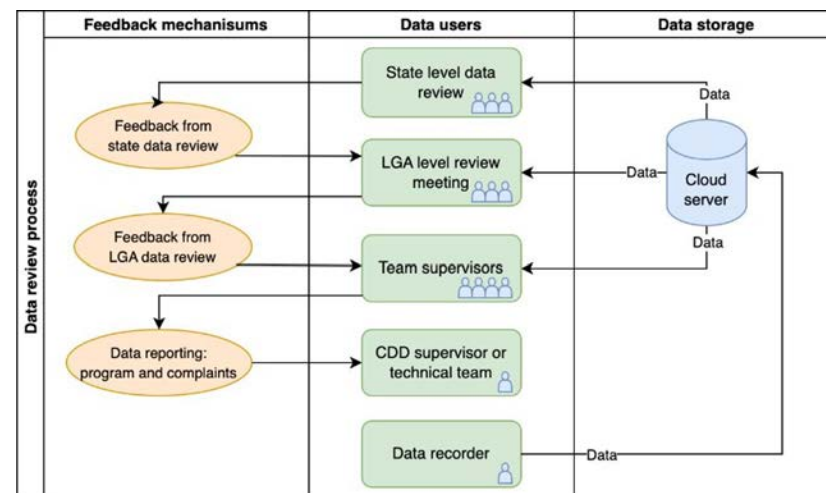
## Team performance monitoring and supervision

- **Daily team performance tracked via key performance indicators on the dashboard:** children reached, commodities status, referrals, supervision and gaps requiring interventions
- **Issues reported via the complaint module:** technical, internet, user account, performance and data-related — routed to appropriate teams for action via central helpdesk.

## Anomaly detection for data integrity

- **Proactive error identification:** Anomaly report flagged data collection inconsistencies, e.g. multiple registrations in a short timeframe and a high number of refusals on day 1, triggering immediate investigations
- **Efficient resolution:** Campaign data managers used dashboard insights to reroute anomalies to the right supervisors, ensuring same-day action/correction
- **Outcome:** Improved responsiveness to field issues and enhanced data accuracy through real-time performance tracking, structured issue resolution and timely correction of data anomalies.

## SECTION 4: ACHIEVEMENTS



User responses indicated that the application was effective in enhancing supervision, with high satisfaction reported across most groups — 98 percent of community distributors, 100 percent of health workers and logisticians, and 67 percent of data managers.

## Use of geospatial maps for campaign monitoring

- Targeted action:** Improved data-driven decision-making enabled supervisors to pinpoint geographic trends, investigate anomalies and address issues such as high-refusal areas or clustered administration.

**Impact:** Targeted revisits improved household reach in previously missed areas, reduced refusal rates and ensured more balanced coverage across community.

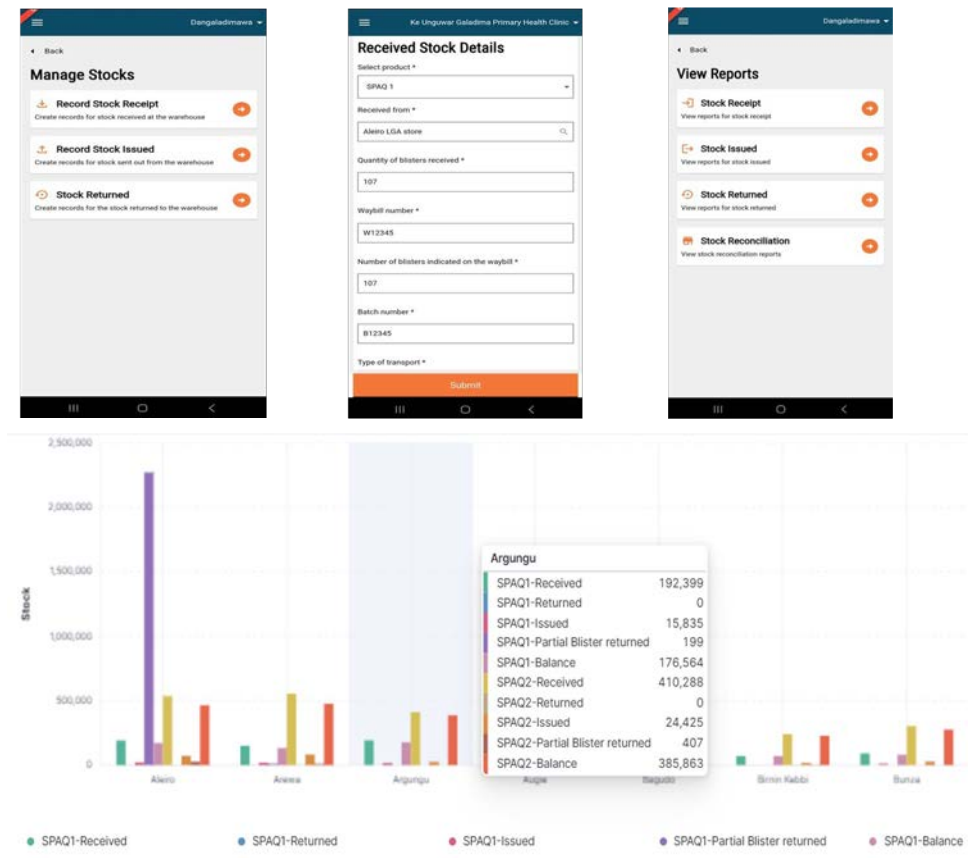
# Real-time commodity management

- Real-time commodity tracking on the dashboard provided visibility across supply chain indicators, such as quantity supplied, quantity issued and quantity used.
- Commodity reconciliation, such as wastage, excesses, losses and unused, was accounted for through the use of custom reports and dashboards at all levels.
- The platform provides end-to-end accountability of commodity management.

**Targeted action:** Logisticians leveraged real-time dashboard insights and custom reports to conduct commodity reconciliation, flag anomalies such as wastage or excesses, and implement timely stock adjustments to prevent service disruptions.

**Impact:** Real-time visibility via the dashboard enabled early detection of stock issues, ensuring consistent stock availability and improved supply chain efficiency.

"It helped for easy commodity data accountability "  
Community distributor supervisor



## Data use challenges



Data completeness: Many community distributors were reluctant to synchronise data on an ongoing basis (possibly trying to reduce their data usage). This impacted the completeness of data at various level for decision-making.



Reporting timeliness: Significant concerns regarding internet connectivity in some LGAs impacted on timely data synchronisation.



Underused dashboard and reports: Inconsistent use of the dashboard was noted in some locations, impacting informed decision-making during the campaign.

# Key lessons learnt



**Conduct network assessments:** Perform detailed network availability assessments across all LGAs to optimise deployment strategies and plans for alternative methods, ensuring timely data synchronisation to drive timeliness and completeness of data for decision-making.



**Enhance training programmes:** Ensure all campaign implementers are trained in effective data use — covering dashboards, geospatial maps interpretation, custom report generation and data interpretation to drive data-informed decision-making.



**Enhance feedback and communication mechanisms:** Establish a structured system that ensures timely, consistent data sharing across all levels. This will improve issue reporting, promote data-driven responses and strengthen real-time decision-making during campaigns.



**Continuous enhancements to DIGIT's capabilities:** Empower programme teams to update KPIs and tailor dashboards to meet specific needs beyond default configurations by introducing low-code dashboard customisation.

# Key recommendations



**Strong leadership and government engagement** is paramount and promotes **data ownership and efficient data use**.



**Effective partnerships**, coordination and communication between stakeholders is critical for: ensuring **shared vision on data access** at various levels; facilitating **effective collaboration on data use**; and timely escalation and **resolution of issues**.



**Sustainable** campaign digitalisation approaches require multi-stakeholder partnerships and collaborations.



**Inclusive training** is essential — all relevant stakeholders across the campaign chain should be trained to use the dashboard and reports to enable effective data-driven decision-making.



**Structured data review meetings** improve outcomes — having a clear format and focus during daily review meetings ensures coordination and attention to key campaign priorities.



**Data reuse:** Continuing to reuse existing data registries for future campaigns will allow us to build on previous enumeration data, reducing data redundancy across multiple campaigns and providing robust data for informed decision-making.



# Thank you

[www.malariaconsortium.org](http://www.malariaconsortium.org)

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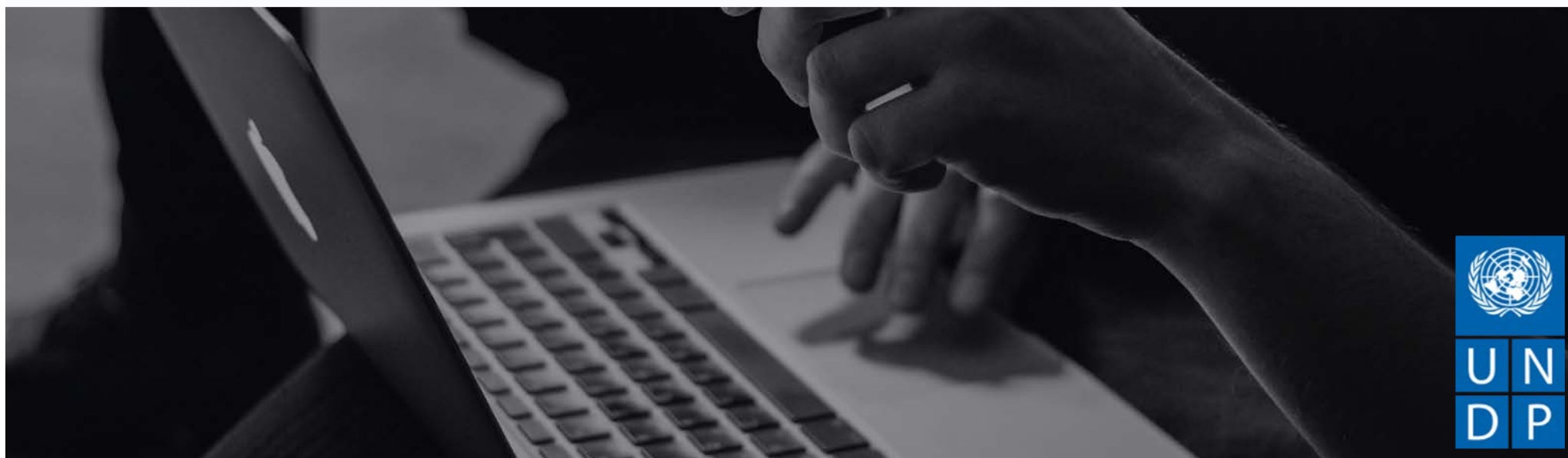


PROMOTING PEOPLE-CENTERED DIGITAL HEALTH TRANSFORMATION

# UNDP WORK ON DIGITAL HEALTH

## OVERVIEW

Dr Manish Pant  
Policy Specialist, Digital Health  
Angela Anna De Tommasi  
Programme Advisor, GFPHST  
Aicha Mohamed Ali, Head of  
Programme and M&E, UNDP Burundi  
Angela Marques, Programmes  
Specialist, GFPHST



# UNDP DIGITAL HEALTH FRAMEWORK

INTEGRATED WITHIN THE UNDP HIV AND HEALTH STRATEGY 2022-2025 WITH THREE INTERLINKED AND MUTUALLY REINFORCING ACTION AREAS

## UNDP HIV AND HEALTH STRATEGY 2022-2025



Scaling up the use of digital health technologies and helping to reduce barriers and inequities to access them

## DIGITAL HEALTH INTERVENTIONS



### UNDP DIGITAL STRATEGY 2022-2025

Embedding digital across all UNDP programming



### UNDP STRATEGIC PLAN 2022-2025

Building inclusive, ethical and sustainable digital societies

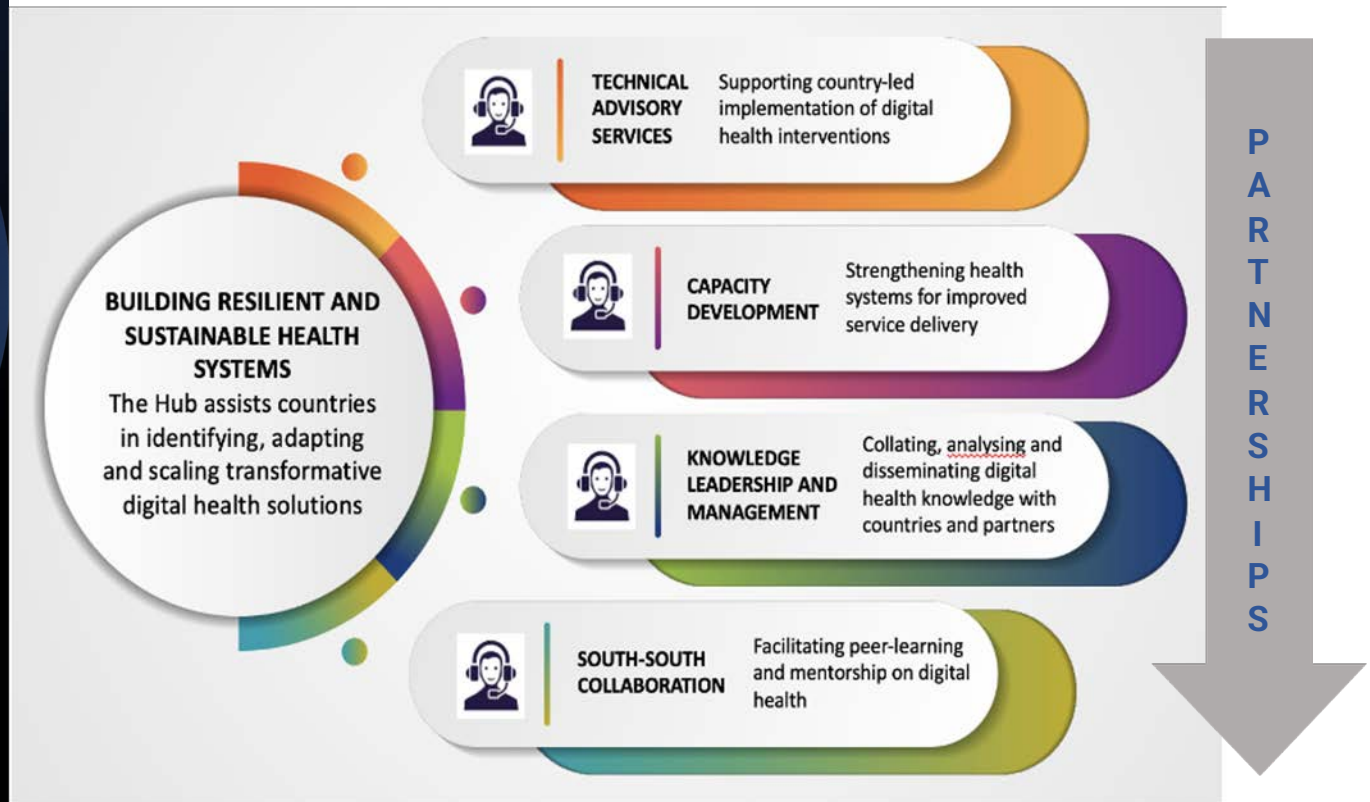
## ACTION AREAS



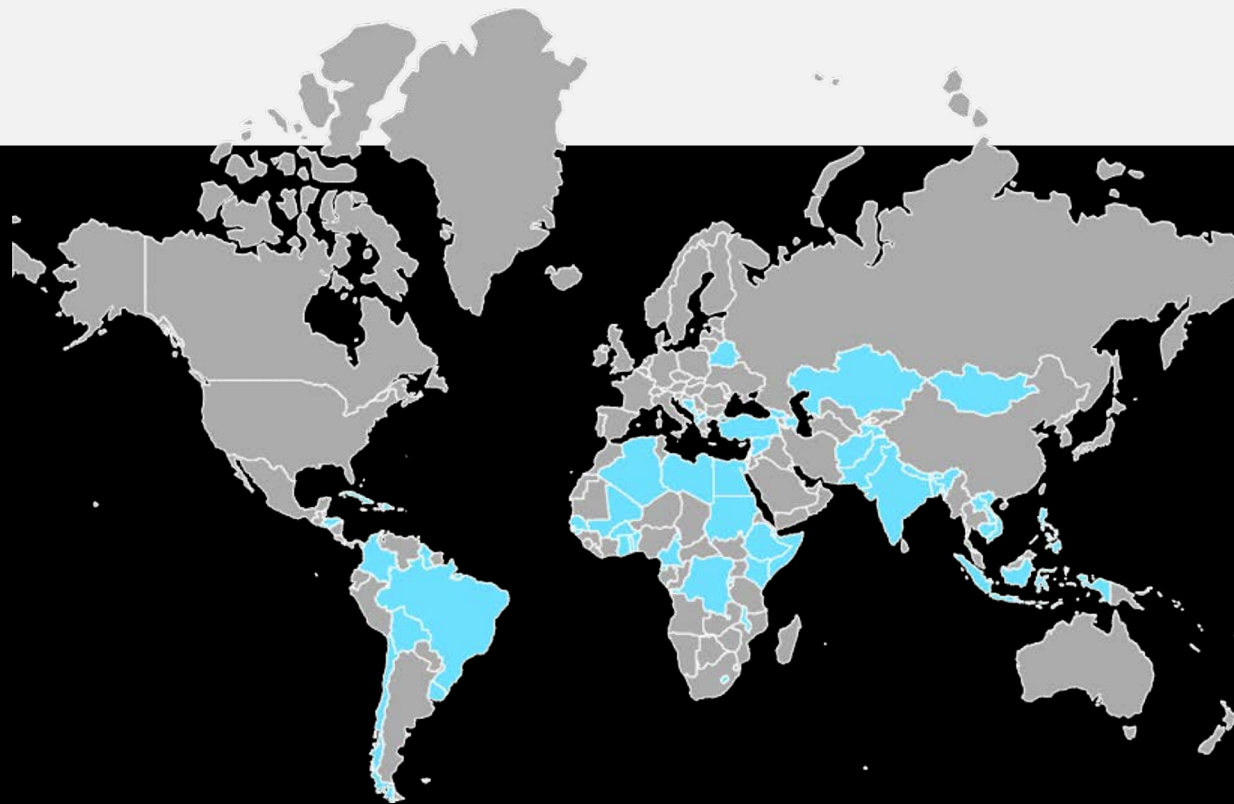
1. Reducing inequalities and exclusion that affect health and drive epidemics
2. Promoting effective and inclusive governance for health
3. Building resilient and sustainable systems for health

# UNDP DIGITAL HEALTH FOR DEVELOPMENT HUB

## What The Hub Does



# Coverage of UNDP's Digital Health Interventions 2025



90

COUNTRIES

207

INTERVENTIONS

25

HEALTH FOCUS  
AREAS

# UNDP Digital Health Offer

Key strategic directions that underpin Hub's policy and program interventions

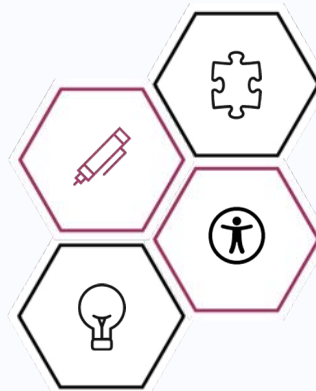


## Digital Health Transformation

Integrate DH support as part of country's digital transformation through strengthened governance, capacity development and interoperable digital health solutions to be used across all national health programs.

## Digital Foundations in Health

Work with open-source digital health solutions aligned to WHO standards, that can be offered as DPGs and DPLs across countries, facilitating sustainable local digital ecosystems.



## Digital Innovations in Health

Promote innovative solutions in health like AI, digital wallets, virtual care, verifiable digital credentials etc, to strengthen systems at the nexus of climate, environment and health.

## Inclusion and Human Rights

Support digital health technologies that protect human rights and address challenges of privacy, discrimination, ethics, gender and equity.



# UNDP Digital Health Guiding Principles

## Place human rights at the centre



Promote digital platforms and services that have a people-centred design, protect human rights and meet health needs

## Leave no one behind



Advocate on inclusive and gender-sensitive approaches to digital transformation to reduce inequity and the digital divide

## Contribute to shared global frameworks



Ensure alignment with principles for digital development, the UN Charter and the Universal declaration of human rights,

## Promote open digital standards



Promote digital public goods for health that are based on open standards, open source, open data and interoperability

## Strengthen local digital ecosystems



Develop solutions with local leaders, companies and innovators that reflect local diversity and knowledge

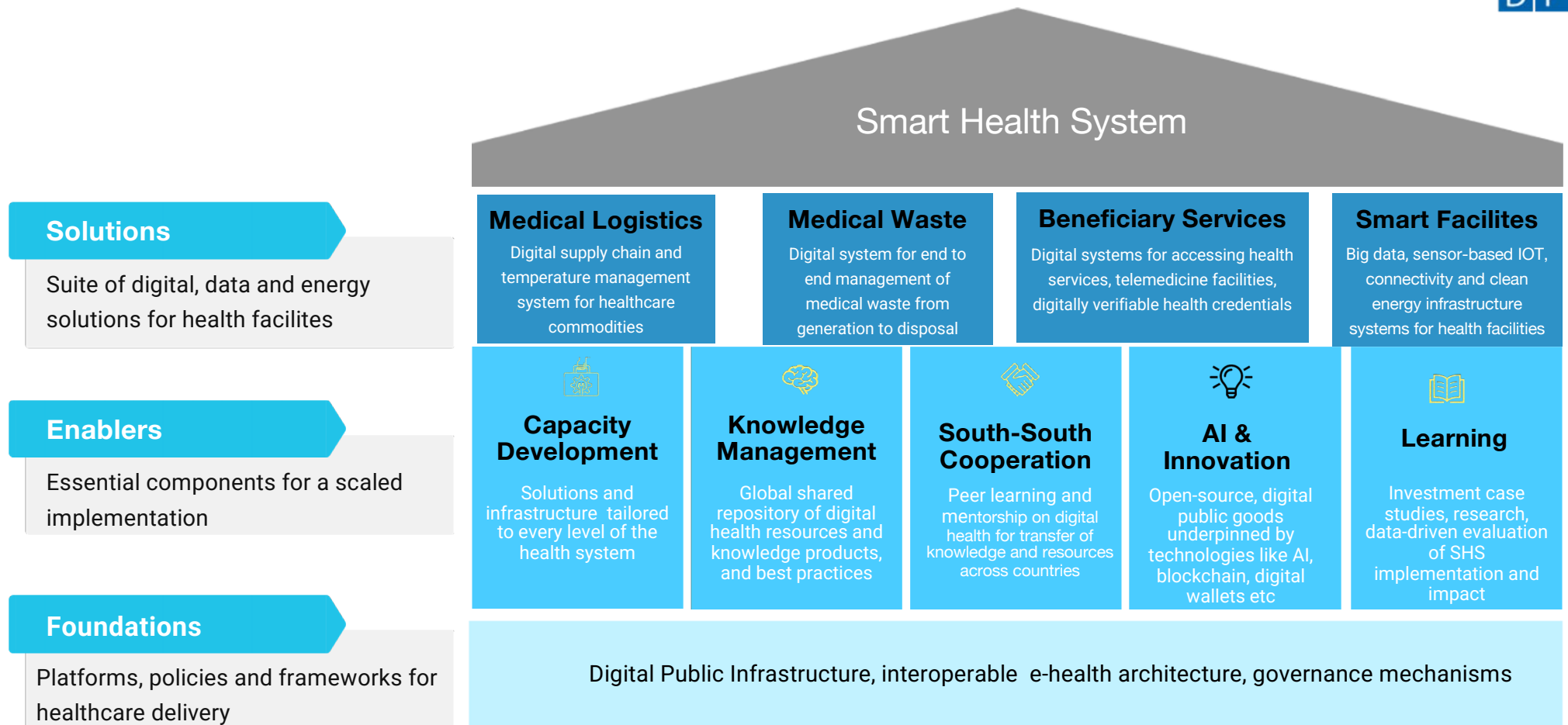
## Leverage strategic partnerships



Pursue partnerships with governments, communities of developers, academia, donors, private sector and UN agencies on digital solutions in health

# Supporting National Digital Health Transformation

UNDP's Approach to Building Resilient Health Systems



# Addressing the Challenge of Malaria in Chad



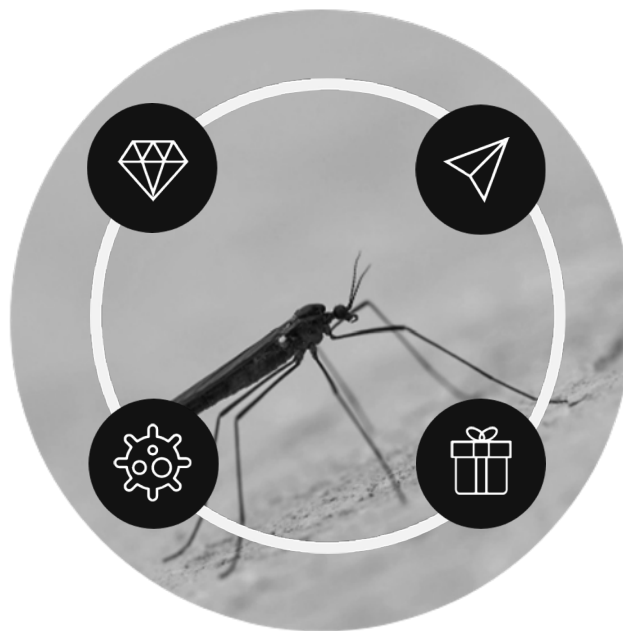
UNDP partnered with Chad's Ministry of Health on digitizing the campaign for mass distribution of long-lasting insecticidal mosquito nets (LLINs)

## High Transmission Areas

Two-thirds of Chad's population live in high-risk zones with 1.7 million cases and 2,700 deaths in 2022.

## Paper-Based Limitations

LLIN distribution using paper forms compromised coverage tracking, stock management, and data quality.



## Weak Health System

Fragile and vulnerable to epidemics and outbreaks

## Obstacles to Effective Response

Lost or damaged paper forms led to poor data quality, inability to review and analyse ground information.

# Campaign Implementation Process

A systematic approach to digitizing LLIN distribution for enhanced efficiency and data accuracy



## Process Optimization

Conversion of paper-based workflows into standardised digital procedures across all campaign phases



## Capacity Building

Cascade training approach with simplified materials to effectively transfer knowledge from central teams to field personnel



## Digital Platform Integration

KoboToolbox for offline household data collection with DHIS2 and PowerBI dashboards enabling real-time monitoring and decision-making



## Pilot Testing

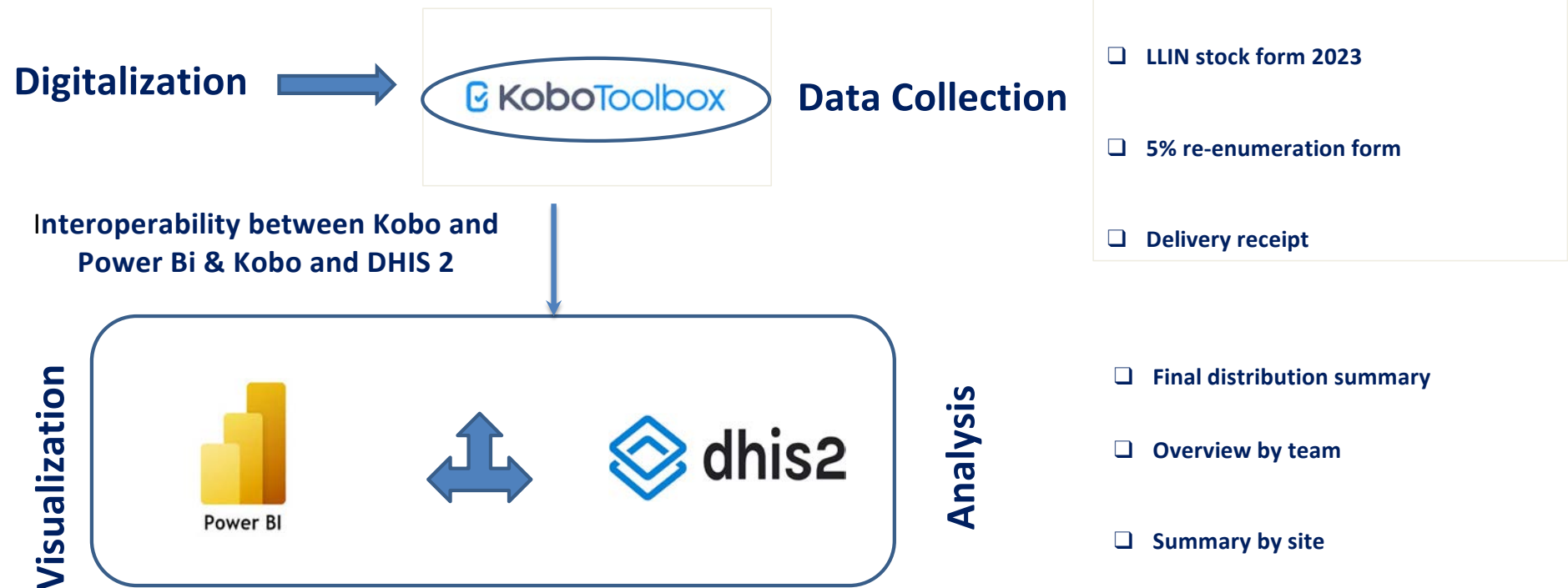
Targeted testing in one district (2,671 households) to evaluate collection methods before wider rollout



## Interventions Scale-up

Province-by-province implementation with tracking of bednet distribution progress

# Digitalization system implemented





# Implementation Challenges



## LIMITED INTERNET CONNECTIVITY

Remote areas had poor internet access, which delayed data uploads.



## MITIGATION

Used offline data collection and set up sync points in areas with better connections.



## END-USER SKILL GAPS

Health workers had trouble using tablets and district health teams were less engaged.



## MITIGATION

Provided focused training, simple guides, and used district technicians as mentors.



## DATA QUALITY PROBLEMS

Multiple form updates caused version confusion. Data in paper registers and tablets didn't always match.



## MITIGATION

Set up central checking systems and improved workflow process



# Main Achievements For The 2023 Campaign

17

provinces

Supported with the distribution of mosquito bed nets

3.9

million

Households counted and geolocated for the campaign.

9.4

million

Bed nets distributed.

150

thousand

Additional bed nets provided to refugees from Sudan



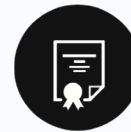
## SUPPLY CHAIN MANAGEMENT

LLIN stock data at all levels allowed staff to anticipate potential shortages and quickly respond with stock replenishments.



## REAL-TIME DASHBOARDS

Allowed program monitoring and data-driven decision making.



## PROGRAM MANAGEMENT

Effective supervision of staff engaged in enumeration and distribution activities.

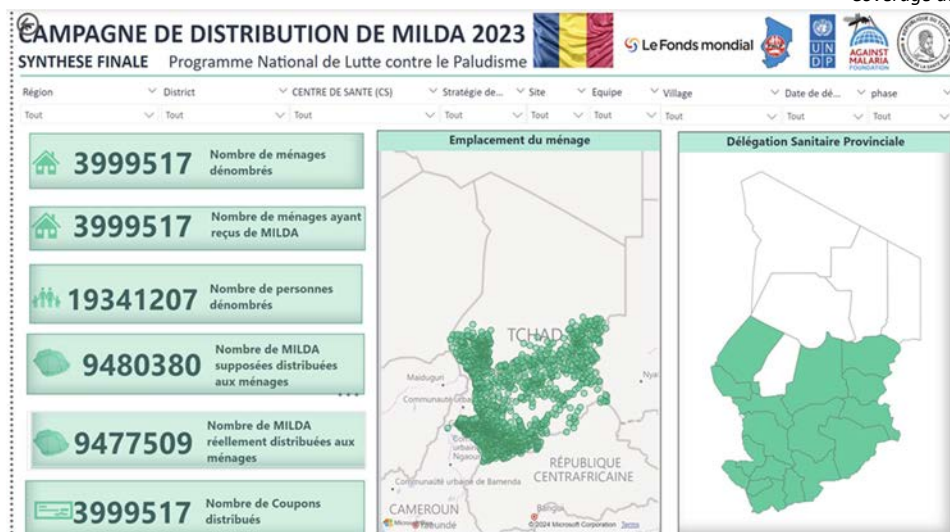
# Data visualization (1)

Results by province by data source Tablet via register

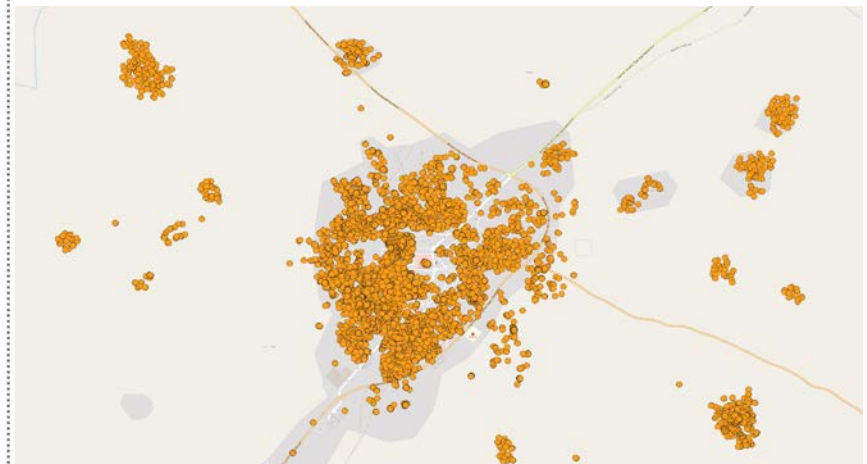
| Phase | Provinces         | Données registres |                  |                          | Données tablettes |                  |                          |
|-------|-------------------|-------------------|------------------|--------------------------|-------------------|------------------|--------------------------|
|       |                   | Ménages (#)       | MILDA (#)        | Personnes dénombrées (#) | Ménages (#)       | MILDA (#)        | Personnes dénombrées (#) |
| 1     | HADJER-LAMIS      | 271,126           | 629,270          | 1,265,928                | 259,820           | 623,487          | 1,266,350                |
| 1     | MANDOUL           | 287,034           | 655,260          | 1,238,343                | 277,763           | 642,212          | 1,240,470                |
| 1     | MOYEN-CHARI       | 243,829           | 556,517          | 1,109,060                | 239,738           | 555,754          | 1,118,624                |
| 1     | SALAMAT           | 113,950           | 266,554          | 521,953                  | 112,631           | 267,161          | 543,731                  |
| 2     | LOGONE OCCIDENTAL | 318,620           | 754,982          | 1,515,160                | 320,755           | 756,760          | 1,539,960                |
| 2     | LOGONE ORIENTAL   | 370,102           | 866,621          | 1,763,618                | 359,276           | 862,913          | 1,766,304                |
| 2     | TANDJILE          | 271,782           | 606,951          | 1,189,772                | 260,116           | 596,339          | 1,185,121                |
| 3     | CHARI-BAGUIRMI    | 236,474           | 554,994          | 1,121,693                | 233,544           | 552,566          | 1,135,625                |
| 3     | MAYO-KEBBI EST    | 301,224           | 696,770          | 1,349,187                | 295,752           | 692,341          | 1,421,349                |
| 3     | MAYO-KEBBI OUEST  | 213,637           | 515,569          | 1,063,519                | 217,280           | 524,670          | 1,109,603                |
| 4     | BATHA             | 193,369           | 457,713          | 987,809                  | 195,628           | 468,225          | 977,615                  |
| 4     | GUERA             | 231,415           | 539,003          | 1,083,625                | 226,256           | 531,876          | 1,079,008                |
| 4     | KANEM             | 132,049           | 304,871          | 599,313                  | 133,412           | 311,174          | 610,803                  |
| 4     | LAC               | 226,706           | 530,477          | 1,093,327                | 224,274           | 535,206          | 1,104,477                |
| 5     | OUADDAI           | 357,357           | 848,306          | 1,729,367                | 329,742           | 787,824          | 1,647,120                |
| 5     | SILA              | 176,636           | 437,135          | 888,617                  | 160,280           | 398,926          | 837,875                  |
| 5     | WADI FIRA         | 211,909           | 492,832          | 908,073                  | 153,250           | 370,075          | 757,172                  |
|       | <b>Total</b>      | <b>4,157,219</b>  | <b>9,713,825</b> | <b>19,428,364</b>        | <b>3,999,517</b>  | <b>9,477,509</b> | <b>19,341,207</b>        |

| Provinces         | Couverture Ménages (Registre) | Couverture MILDA (Registre) | Couverture Population (Registre) | Couverture Ménages (Tab) | Couverture MILDA (Tab) | Couverture population (Tab) |
|-------------------|-------------------------------|-----------------------------|----------------------------------|--------------------------|------------------------|-----------------------------|
| HADJER-LAMIS      | 99%                           | 95%                         | 95%                              | 95%                      | 94%                    | 95%                         |
| MANDOUL           | 105%                          | 101%                        | 94%                              | 102%                     | 99%                    | 95%                         |
| MOYEN-CHARI       | 106%                          | 100%                        | 99%                              | 104%                     | 100%                   | 100%                        |
| SALAMAT           | 102%                          | 100%                        | 98%                              | 101%                     | 100%                   | 102%                        |
| LOGONE OCCIDENTAL | 102%                          | 101%                        | 100%                             | 103%                     | 102%                   | 102%                        |
| LOGONE ORIENTAL   | 110%                          | 107%                        | 109%                             | 107%                     | 107%                   | 109%                        |
| TANDJILE          | 102%                          | 95%                         | 93%                              | 98%                      | 94%                    | 92%                         |
| CHARI-BAGUIRMI    | 109%                          | 106%                        | 107%                             | 108%                     | 106%                   | 109%                        |
| MAYO-KEBBI EST    | 113%                          | 108%                        | 105%                             | 111%                     | 108%                   | 110%                        |
| MAYO-KEBBI OUEST  | 106%                          | 107%                        | 110%                             | 108%                     | 109%                   | 115%                        |
| BATHA             | 111%                          | 110%                        | 116%                             | 112%                     | 113%                   | 115%                        |
| GUERA             | 98%                           | 124%                        | 134%                             | 96%                      | 122%                   | 133%                        |
| KANEM             | 82%                           | 79%                         | 77%                              | 83%                      | 80%                    | 79%                         |
| LAC               | 110%                          | 107%                        | 110%                             | 109%                     | 108%                   | 112%                        |
| OUADDAI           | 153%                          | 136%                        | 154%                             | 141%                     | 126%                   | 147%                        |
| SILA              | 147%                          | 88%                         | 153%                             | 133%                     | 80%                    | 144%                        |
| WADI FIRA         | 108%                          | 101%                        | 96%                              | 78%                      | 76%                    | 80%                         |
| <b>TOTAL</b>      | <b>109%</b>                   | <b>104%</b>                 | <b>107%</b>                      | <b>105%</b>              | <b>102%</b>            | <b>107%</b>                 |

Coverage data for the three key indicators in number and percentage

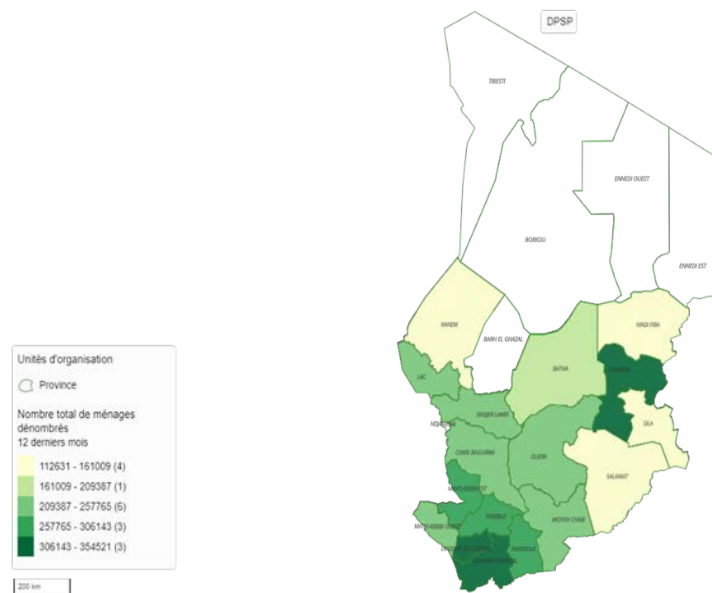


Dashbord Power BI data 5 phases

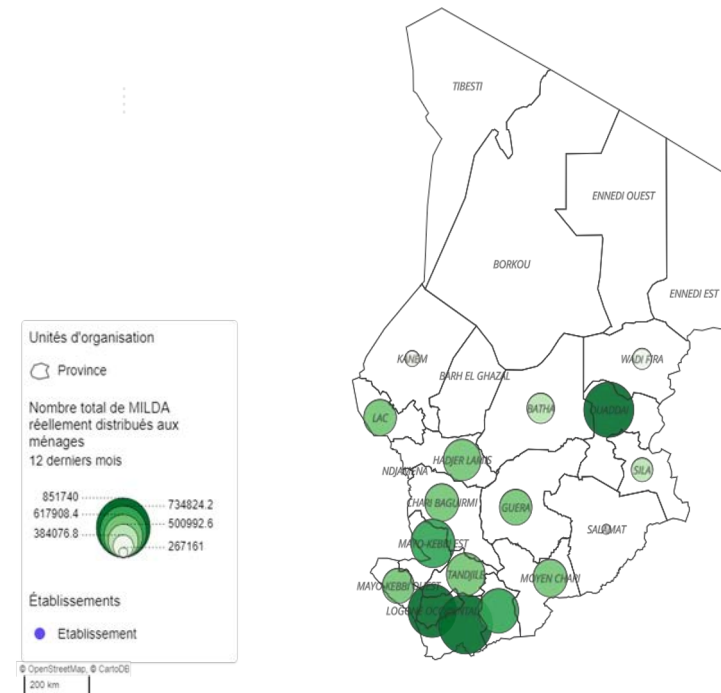


Overall view of households having received LLINs CS example Massakory1 and 2

# Data visualization (2)



Source: DHIS2 of the MSPP



Overall view of households having received LLINs in the 17 provinces of the CDM

# Key Learnings From Our Experience

1

## Program Workflows And SOPs are Essential

Clear workflows help ensure collective understanding of roles for all involved.

Finalize digital solutions only after the program SOPs are well defined.

2

## Leverage Existing Digital Solutions For Last Mile

Deploy offline-capable solutions and cloud-based dashboards for real-time monitoring

Ensure that digital solutions are interoperable.

3

## Local Technical Support Is Needed

On-site technical assistance improves field team efficiency, especially in connectivity-challenged areas.

Deploy technical experts locally with offline problem-solving capabilities.

4

## Multiple Support Methods Work Better Than One

Technology adoption improves with diversified learning approaches for the end-user.

Implement tiered training, learning guides, mentorship models.

5

## Stakeholder Ownership Drives Success

Local leadership has better knowledge of their issues and challenges.

Collaborate with all partners, prioritizing field workers.





# Future SMART Partnership(s)

Building on the key learnings and to address identified main challenges - UNDP's HIV and Health Group, through its Digital Health for Development Hub (DH4DH) and Global Fund Partnership and Health Systems Team (GFPHST), established a [global partnership agreement with the eGovernments Foundation](#). The HIV and Health Community of Practice hosted an [information session](#) to provide details about the global partnership and [eGov's](#) digital health service offer.



Currently **Burundi** is running the pilot for digitalization of their 2025 Malaria mass campaign with Guinea-Bissau starting to plan theirs planned for 2026. Through Country Office to Country Office engagement, both countries promote peer exchanges (virtual and in-country missions) to learn and adapt faster towards a successful implementation. A webinar will be organized in next months for other countries to enroll in the **Digital Journey**.

## Next-generation partnerships:



### Country Enablement:

Strengthening our corporate offer to support countries in being future ready aligned with next UNDP Strategy  
Building opportunities with optimized resources, reskilling, developing a sustainable data infrastructure for increased transparency, traceability and accountability.



### Flagship Initiatives:

Establishing Global Agreements that can be use immediately without further procurement processes for adaptation to the new world context, stepping up for implementation readiness while preserving quality and compliance.  
Identifying flexible mechanisms to engage the (local and cloud management) partners to promote a healthy flow on the cascade implementation.

# THANK YOU

For more information

<https://digitalhealthfordevelopment.undp.org/>





The Alliance for  
Malaria Prevention



Alliance pour la  
Prévention du Paludisme

## Discussion Questions & Answers

## Discussion Questions et réponses

### Remote participants:

Kindly use the Zoom Q&A feature to submit comments and ask questions, specifying the name of the speaker to whom the question is directed.

### Participants à distance :

Nous vous prions d'utiliser la fonction Q&A sur Zoom pour soumettre vos commentaires et poser vos questions, en précisant le nom de l'orateur à qui la question est adressée.



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For technical difficulties / Pour les problèmes techniques: please use the Zoom Chat and/or email [info@tiseh.com](mailto:info@tiseh.com)





The Alliance for  
Malaria Prevention



Alliance pour la  
Prévention du Paludisme

# Coffee Break

## Pause café

We will return shortly!  
A tout de suite!



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MINISTRY OF HEALTH

# From Data to impact: how real-time Insights improve health campaigns.”

James Kiarie,

SMEOR, NMCP, Kenya





# Outline

- Process of mass net data collection before digitization
  - Use of paper-based registers and summaries
  - Uploading of ward summaries into DHIS
  - Inefficiencies in the manual system
- Current Mass Net campaign
  - The components of the campaign digitized
  - Benefits of the digitization







# Process of mass net data collection before digitization

## During Household Registration

- The Community team undertaking household registration would populate the household register manually as they walked from house to house.
- The household register was summarized into a Sublocation summary which in turn summarized into a Ward summary.
- The Ward summary was uploaded into DHIS with minimal visibility of data at lower hierarchies.





# Process of mass net data collection before digitization

## During ITNs Distribution

- Distribution of Nets was done through fixed distribution posts. The household registers were merged to form the Post Register for Nets issuance
- Household heads would queue at fixed posts collect nets and sign against their details in the register
- Posts data would aggregate to fill out a daily Post distribution summary which would be submitted to the ward level for aggregation and at sub county would populate the Ward summaries for distribution in each Ward.
- The sub county team would upload distribution summaries for each ward





# Household Net Register

MOH HOUSEHOLD NET REGISTER

County: \_\_\_\_\_  
 Sub-county: \_\_\_\_\_ Ward: \_\_\_\_\_ Name of Post: \_\_\_\_\_  
 Location: \_\_\_\_\_ Sub-location: \_\_\_\_\_ Village: \_\_\_\_\_ Form 1a  
 Community Health Volunteer: \_\_\_\_\_ Phone number: \_\_\_\_\_  
 Village Elder: \_\_\_\_\_ Phone number: \_\_\_\_\_  
 Sheet number \_\_\_\_\_ of \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_  
 Day of Campaign: \_\_\_\_/\_\_\_\_/\_\_\_\_  
 Not for use prior to day of the campaign

| TO BE FILLED BY COMMUNITY TEAM OR VOLUNTEER |                            |                                              |                               | Registration                          |                             | Subtraction |                           | TO BE FILLED BY THE FIELDWORKER |               |          | Day of Campaign not collected |
|---------------------------------------------|----------------------------|----------------------------------------------|-------------------------------|---------------------------------------|-----------------------------|-------------|---------------------------|---------------------------------|---------------|----------|-------------------------------|
| No.                                         | Name of household head (a) | National ID number of the household head (b) | Mobile Phone number of HH (c) | Number of people in the household (d) | Number of nets required (e) | Voucher (f) | Number of nets issued (g) | Collected by (name) (h)         | ID number (i) | Sign (j) |                               |
| 1                                           |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 2                                           |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 3                                           |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 4                                           |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 5                                           |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 6                                           |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 7                                           |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 8                                           |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 9                                           |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 10                                          |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 11                                          |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 12                                          |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 13                                          |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 14                                          |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 15                                          |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 16                                          |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 17                                          |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 18                                          |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 19                                          |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| 20                                          |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |
| Total                                       |                            |                                              |                               |                                       |                             |             |                           |                                 |               |          |                               |

Class 1 Distribution point  
 Class 2 Ward  
 Class 3 Sub-location

Signature  
 During Distribution  
 Area Chief name  
 Date  
 Sign and stamp

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_





# Populated Register

**MORI HOUSEHOLD NET REGISTER**

Sub-County: Nakuru East County: Nakuru Ward: Menegai Name of Post: Keretina Hospital  
 Location: Keretina East Sub-location: Keretina East Village: Karetina West Page 14  
 Community Health Volunteer: Kenneth Kibet Phone number: 072662442 Guard number: \_\_\_\_\_  
 Village Elder: Samuel Kibet Phone number: 0726429287  
 Date of entry: \_\_\_\_\_ Day of entry: 1 2 3 4 5 6 7 8 9 10

| No.   | Name of household head (s) | National ID number of the household head (s) | Mobile Phone number of HH (s) | Number of people in the household (s) | Number of nets required (s) | Number of nets owned (s) | Number of nets needed (s) | Estimated by (s) | Signature (s) | Age (s) |
|-------|----------------------------|----------------------------------------------|-------------------------------|---------------------------------------|-----------------------------|--------------------------|---------------------------|------------------|---------------|---------|
| 1     | OMARI Nyahe                | 249779580                                    | 071153500                     | 5                                     | 3                           | 2                        | 1                         |                  |               |         |
| 2     | Elangi Tani                | 11090183                                     | 072273402                     | 4                                     | 2                           | 1                        | 1                         |                  |               |         |
| 3     | Emili Masera               | 2093408                                      | 071637658                     | 6                                     | 3                           | 2                        | 1                         |                  |               |         |
| 4     | Eric Kibet                 | 11462962                                     | 072272916                     | 5                                     | 3                           | 2                        | 1                         |                  |               |         |
| 5     | Peter Mwangi               | 9262816                                      | 072220602                     | 6                                     | 3                           | 2                        | 1                         |                  |               |         |
| 6     | Abdi Sam                   | 2262395                                      | 07221951                      | 5                                     | 3                           | 2                        | 1                         |                  |               |         |
| 7     | Andrew Wamari              | 1919745                                      | 072834206                     | 5                                     | 3                           | 2                        | 1                         |                  |               |         |
| 8     | John Sam                   | 620523                                       | 072186100                     | 3                                     | 3                           | 2                        | 1                         |                  |               |         |
| 9     | Leah John                  | 2312461                                      | 072100001                     | 7                                     | 3                           | 2                        | 1                         |                  |               |         |
| 10    |                            |                                              |                               |                                       |                             |                          |                           |                  |               |         |
| 11    |                            |                                              |                               |                                       |                             |                          |                           |                  |               |         |
| 12    |                            |                                              |                               |                                       |                             |                          |                           |                  |               |         |
| 13    |                            |                                              |                               |                                       |                             |                          |                           |                  |               |         |
| 14    |                            |                                              |                               |                                       |                             |                          |                           |                  |               |         |
| 15    |                            |                                              |                               |                                       |                             |                          |                           |                  |               |         |
| 16    |                            |                                              |                               |                                       |                             |                          |                           |                  |               |         |
| 17    |                            |                                              |                               |                                       |                             |                          |                           |                  |               |         |
| 18    |                            |                                              |                               |                                       |                             |                          |                           |                  |               |         |
| 19    |                            |                                              |                               |                                       |                             |                          |                           |                  |               |         |
| 20    |                            |                                              |                               |                                       |                             |                          |                           |                  |               |         |
| Total |                            |                                              |                               | 45                                    | 26                          |                          |                           |                  |               |         |

Copy 1: Distribution point  
 Copy 2: Ward  
 Copy 3: Sub-location

Signature: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Sign and stamp: \_\_\_\_\_





# Ward Summary

**MOH HOUSEHOLD NET REGISTER - Villages Household Registration summary**

County: KIRINYAGA Sub-county: MWEA EAST Ward: KITINE

Location: MAGUTA Sub-Location: THURAKU Date: 24 OCT 2020

Name of PHO: MOSES SUBUK Phone number: 0724 11X23

Sheet number: 1 of 1

Form R1

| No.          | Name of Ward (a) | Name of Village (b) | Number of households Registered (d) | Population reached (e) | Number of nets required to serve households registered (f) | <del>Number of Posts</del><br>name of distribution post where the |
|--------------|------------------|---------------------|-------------------------------------|------------------------|------------------------------------------------------------|-------------------------------------------------------------------|
| 1            | KITINE           | Village A           | 40                                  | 217                    | 114                                                        | Post X                                                            |
| 2            | KITINE           | Village A           | 22                                  | 131                    | 64                                                         | Post Y                                                            |
| 3            | KITINE           | Village A           | 36                                  | 144                    | 75                                                         | Post Z                                                            |
| 4            | KITINE           | Village B           | 60                                  | 271                    | 141                                                        | Post F                                                            |
| 5            | KITINE           | Village C           | 40                                  | 184                    | 46                                                         | Post F                                                            |
| 6            |                  |                     |                                     |                        |                                                            |                                                                   |
| 7            |                  |                     |                                     |                        |                                                            |                                                                   |
| 8            |                  |                     |                                     |                        |                                                            |                                                                   |
| 9            |                  |                     |                                     |                        |                                                            |                                                                   |
| 10           |                  |                     |                                     |                        |                                                            |                                                                   |
| 11           |                  |                     |                                     |                        |                                                            |                                                                   |
| 12           |                  |                     |                                     |                        |                                                            |                                                                   |
| 13           |                  |                     |                                     |                        |                                                            |                                                                   |
| 14           |                  |                     |                                     |                        |                                                            |                                                                   |
| 15           |                  |                     |                                     |                        |                                                            |                                                                   |
| 16           |                  |                     |                                     |                        |                                                            |                                                                   |
| 17           |                  |                     |                                     |                        |                                                            |                                                                   |
| 18           |                  |                     |                                     |                        |                                                            |                                                                   |
| 19           |                  |                     |                                     |                        |                                                            |                                                                   |
| 20           |                  |                     |                                     |                        |                                                            |                                                                   |
| <b>Total</b> |                  |                     | <b>198</b>                          | <b>952</b>             | <b>495</b>                                                 |                                                                   |

Ward PHO / MOSES SUBUKIA Phone number: \_\_\_\_\_



Date 24TH OCT 2020

Sign and stamp \_\_\_\_\_




Copy 1 Sublocation  
Copy 2 Ward  
Copy 3 Sub-county




# Mass Net DHIS

**DHIS 2**


Search apps





Kirinyaga South Sub County

- Gathigiriri Ward**
- Murinduko Ward
- Nyangati Ward
- Tetere Ward

**Data Entry** 

Organisation Unit

Gathigiriri Ward

Data Set

Massnet\_ MOH HOUSEHOLD NET REGISTER -- Daily Distribution Pc ▼

Period

2020-12-28 ▼

Prev year

Next year

Massnet Distribution Posts

Kamucege Pry Distribution Post ▼

Massnet\_ MOH HOUSEHOLD NET REGISTER -- Daily Distribution Post Summary (summary 1b)

Filter in section

default

Number of households served


Number of nets issued

Population served


Complete

Incomplete

Run validation



Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

 Gathigiriri Ward - 2020-12-28 - Number c





# Inefficiencies in the manual process

## During Household Registration

- Too much paperwork and too many summaries before uploading into DHIS
- Lack of visibility of household registration data at lower hierarchies.
- Time lag of upto a week from the completion of household registration to the submission and uploading of the ward household registration summaries
- Arithmetic errors due to voluminous pages for aggregation





# Inefficiencies in the manual process

## During ITNs Distribution

- Difficult to determine the actual ITNs need for each distribution post resulting in interpost post transfer of ITNs to serve the population registered.
- Too much paperwork for distributed nets summary data.
- Time lag between completion of registration and tabulation of summaries and uploading in DHIS
- Logistical challenges of determining the quantity of ITNs to be allocated to each distribution Post especially if quantity determined at macro planning differed from quantity after registration.
- The inadequate ITNs led to capping resulting in high remainder of ITNs after distribution period in some Posts.



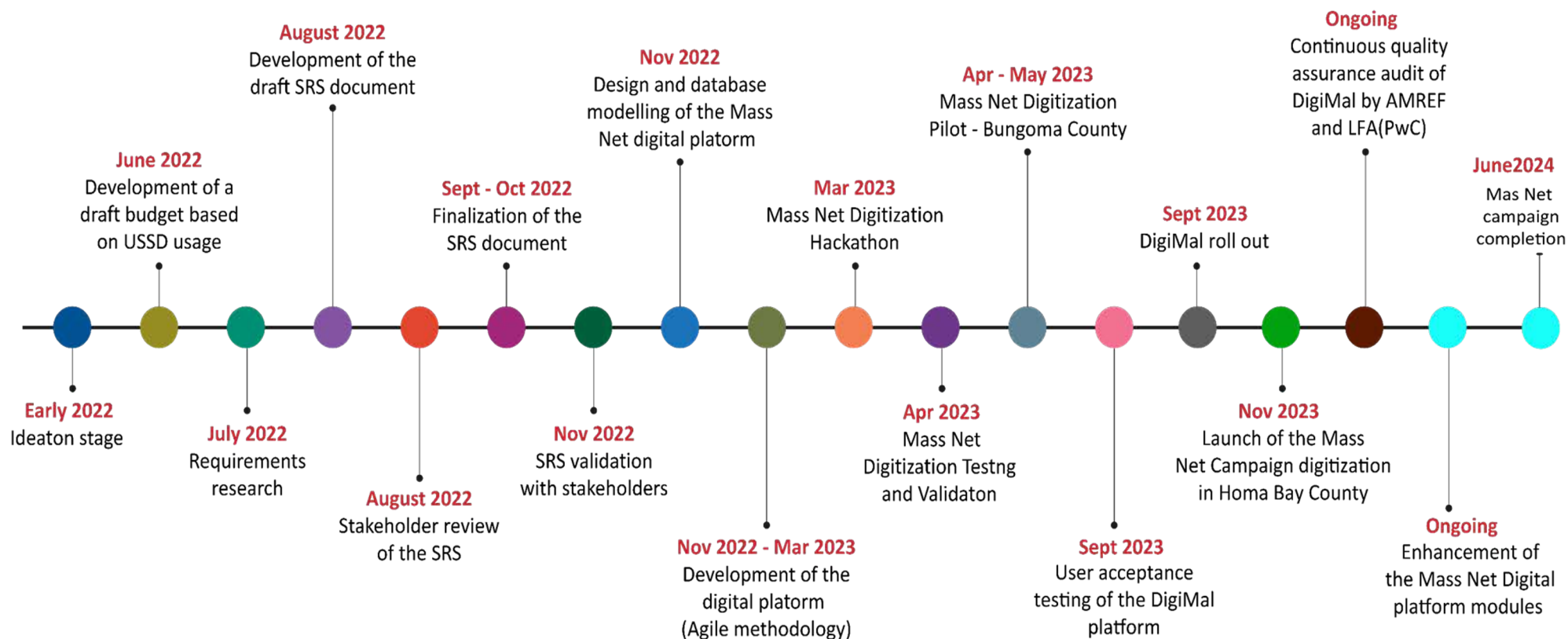


## Current Mass Net campaign - Digitized campaign



Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

# The Digitization of mass net process



Division of National Malaria Programme – Komesha Malaria, Okoa Maisha



## The components of the campaign digitized

- 1. Masterlist management
- 1. Events and Activities management
- 1. Household Registration and Distribution of Nets data
- 1. Inventory management
- 1. Payroll management





## Events and Activities management

### MassNet GF Events

Search by name code, venu...

Nakuru County ▾

Select Sub County ▾

Select an Event ▾

Pending Generation ▾

| Event Name                                                         | Event Code | Location      | Venue                                      | Payroll Status | Action                                                |
|--------------------------------------------------------------------|------------|---------------|--------------------------------------------|----------------|-------------------------------------------------------|
| Regional distribution review meetings                              | M909033    | Nakuru County | Waterbuck Hotel                            | Paid           | <a href="#">View Event</a> <a href="#">View Train</a> |
| National Report Writing                                            | M422218    | Nakuru County | Waterbuck Hotel                            | Paid           | <a href="#">View Event</a> <a href="#">View Train</a> |
| Regional distribution review meetings                              | M765953    | Nakuru County | Waterbuck Hotel, Nakuru                    | Paid           | <a href="#">View Event</a> <a href="#">View Train</a> |
| Regional distribution review meetings                              | M307560    | Nakuru County | Bontana Hotel                              | Paid           | <a href="#">View Event</a> <a href="#">View Train</a> |
| Regional microplanning meetings                                    | M412618    | Nakuru County | Buraha Zenoni Hotel and Resort - Nakuru    | Paid           | <a href="#">View Event</a> <a href="#">View Train</a> |
| County engagement for data collection and validation - Residential | M257130    | Nakuru County | KAL RO Dairy Research Institute - Naivasha | Paid           | <a href="#">View Event</a> <a href="#">View Train</a> |



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## Masterlist management

- List of all names of persons (those likely to be involved in the campaign);
- Organization categorization (MOH, CHMT, NGAO) ;
- Campaign role; Phone number (Mpesa registered) and
- User Level (National, County, SubCounty)
- Participants validated Job Groups
  - Ability to incorporate new users during campaign implementation
  - Mapping roles to specific campaign tasks





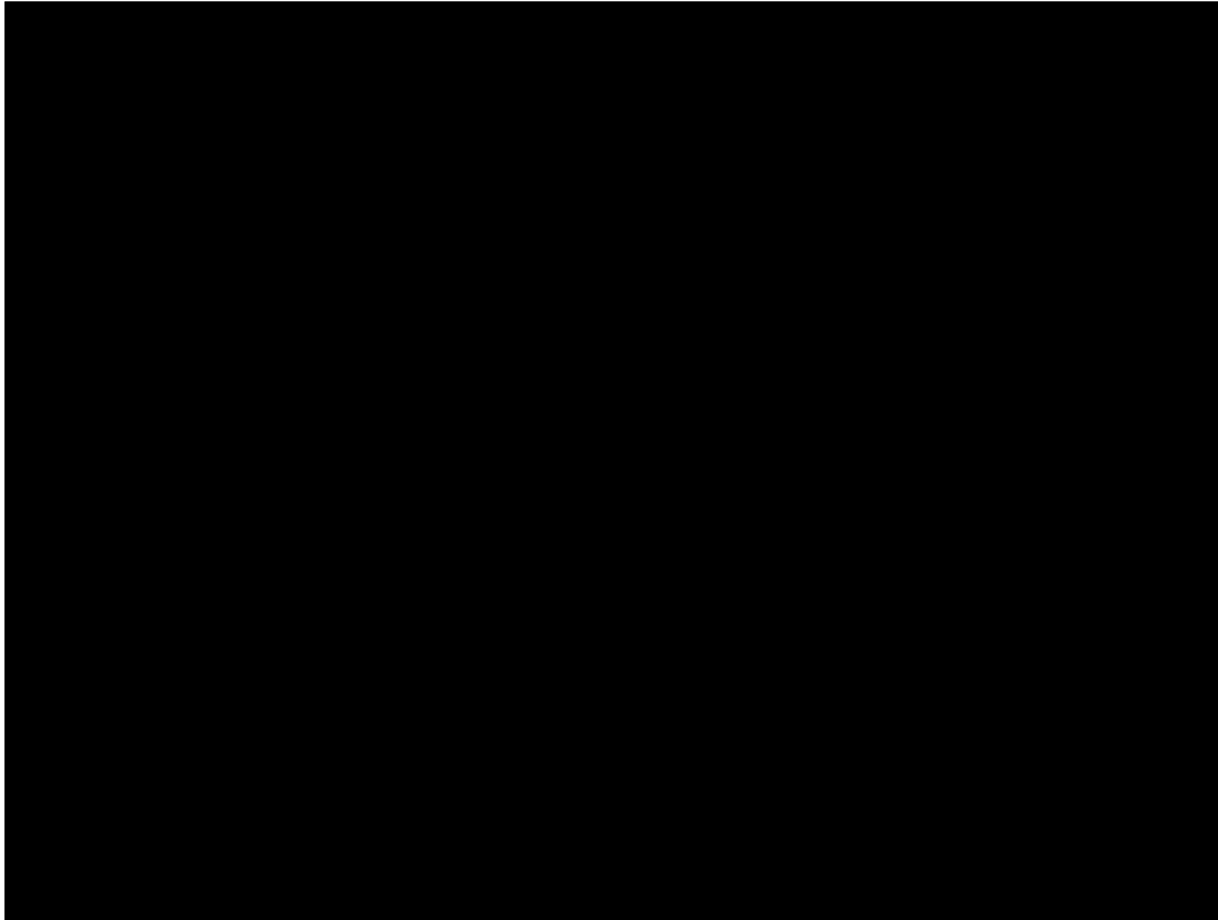
## Nets Distribution Process



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## Nets Distribution Process





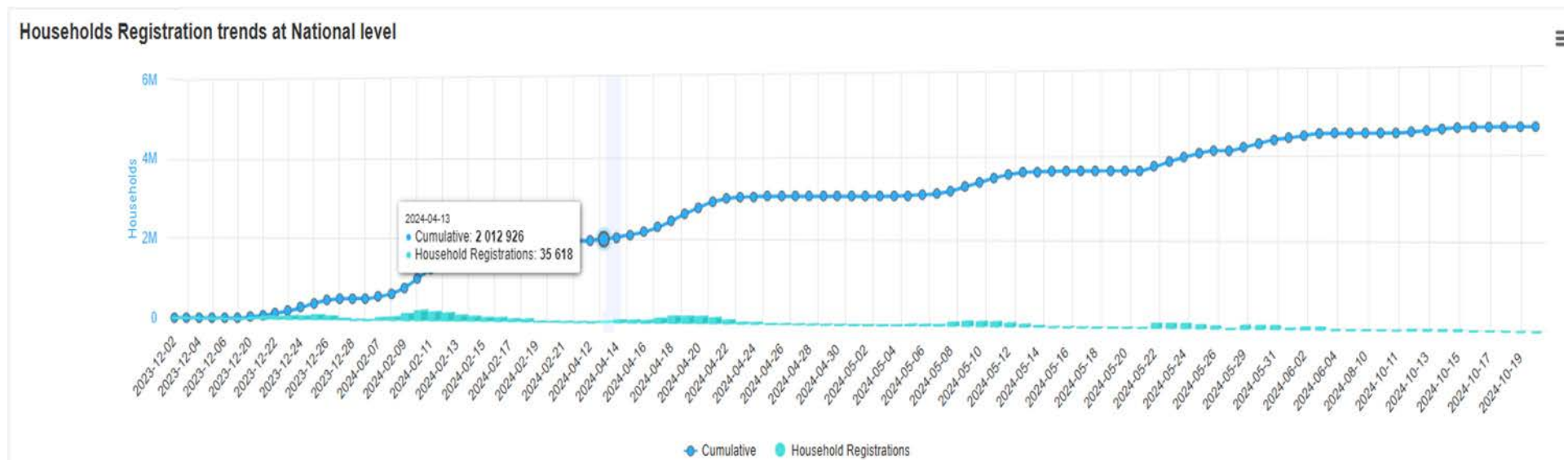
# Data Summaries



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# Household Registration summary





# Household Registration Summary

Households Registration trends at County level

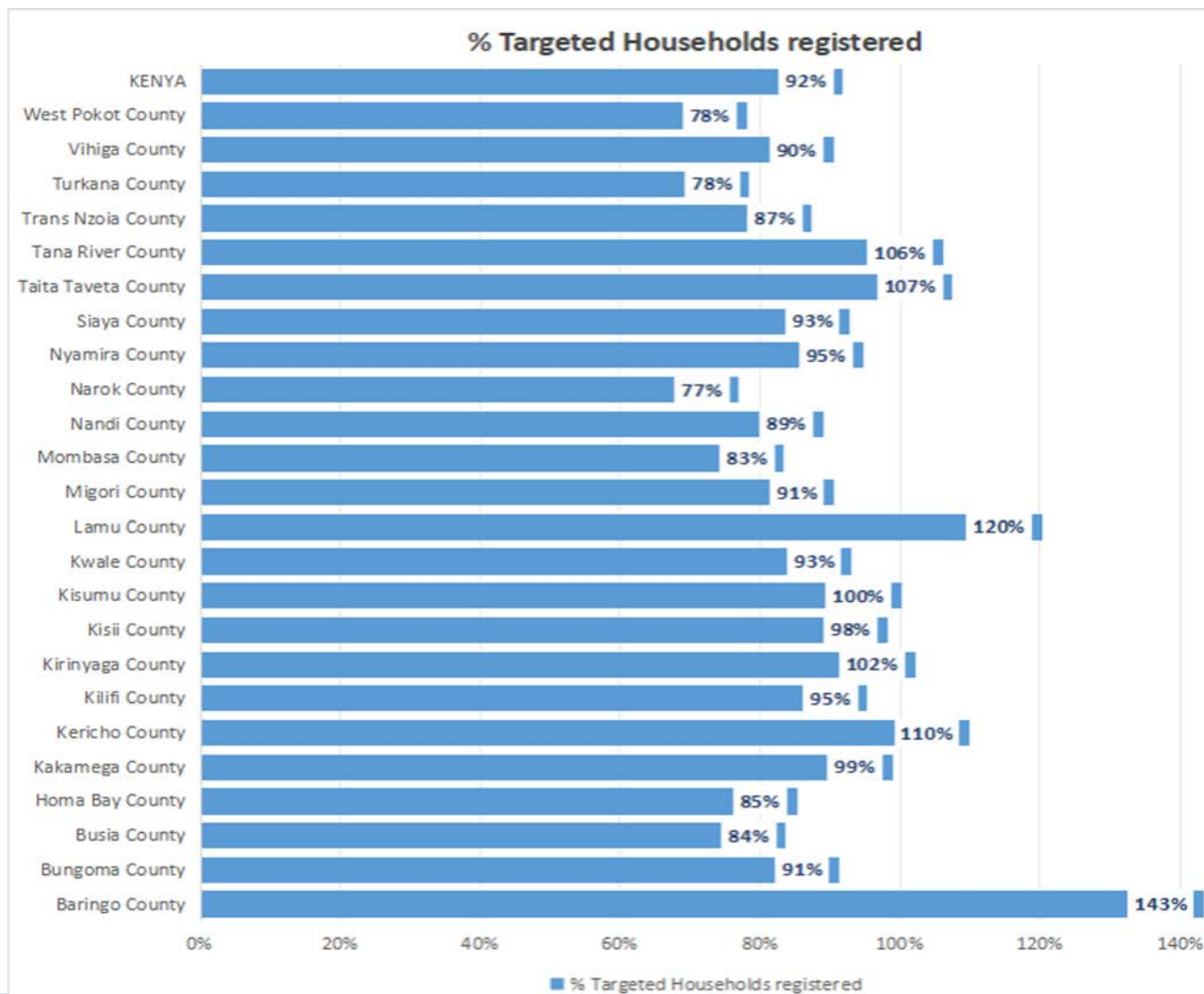


Powered by HealthIT KE



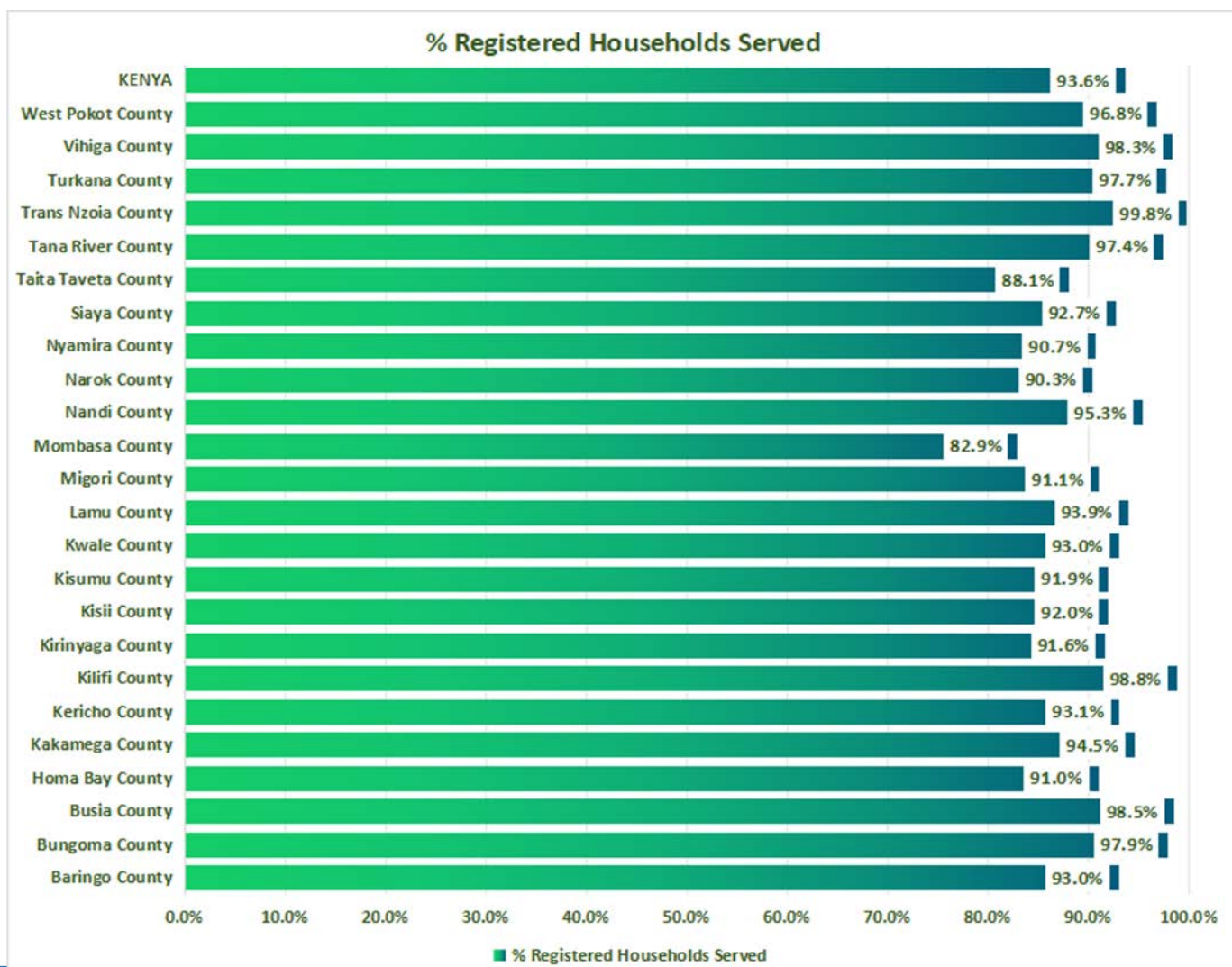
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## Challenges and proposed Solutions

Tedious tasks in the build up to campaign masterlist generation

**Simplify the masterlist generation and process of onboarding new**

Internet and mobile network disruptions (low network coverage)

**Deployed the Android Digital App with offline data capture;**

Digital Literacy gaps among Village Elders and CHPs

**synchronized data later**

Households without requisite registration documents (ID cards)

**Customized easy to comprehend short videos for key Digital tasks**

**Allowed for merger of households (validated Households data after registration)**





## Benefits of the digitization

Digital accessed through a multiple platforms

- Web      Useful for better graphical visualization and platform navigation
- Mobile android App      Useful in places with limited Network / Internet coverage because of offline capabilities
- USSD      Critical campaign components undertaken using basic phones (HH Registration; User Registration; Event registration; Nets Distribution)





## Benefits of the digitization

Realtime data available to data consumers

- Registration of Households data
- Order management of ITNs
- ITNs Issuance data (to fixed distribution Posts; to Household heads)

Minimized the lag between household registration and distribution

Eliminated capping of Nets - Allocation based on registration need





# Appreciation

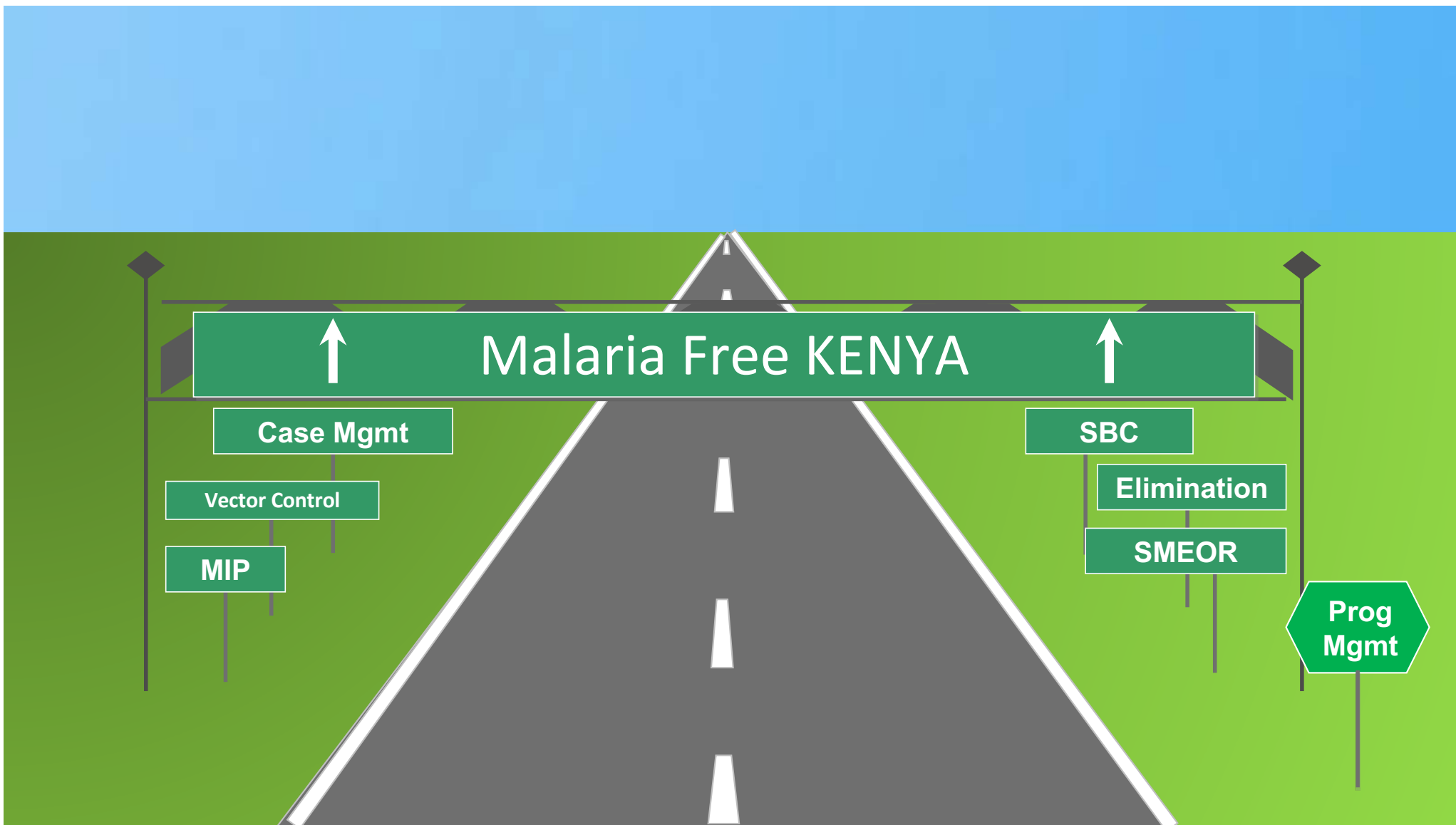


PMI Kinga Malaria

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha









**REAL TIME DATA VALIDATION AND ANALYSIS IN UGANDA'S DECENTRALISED MALARIA IRS  
CAMPAIGN LEVERAGING ODK AND DHIS2 FOR IMPROVED DECISION MAKING**

10-APRIL-2025

**TAREMWA ARNOLD**  
MOH UGANDA



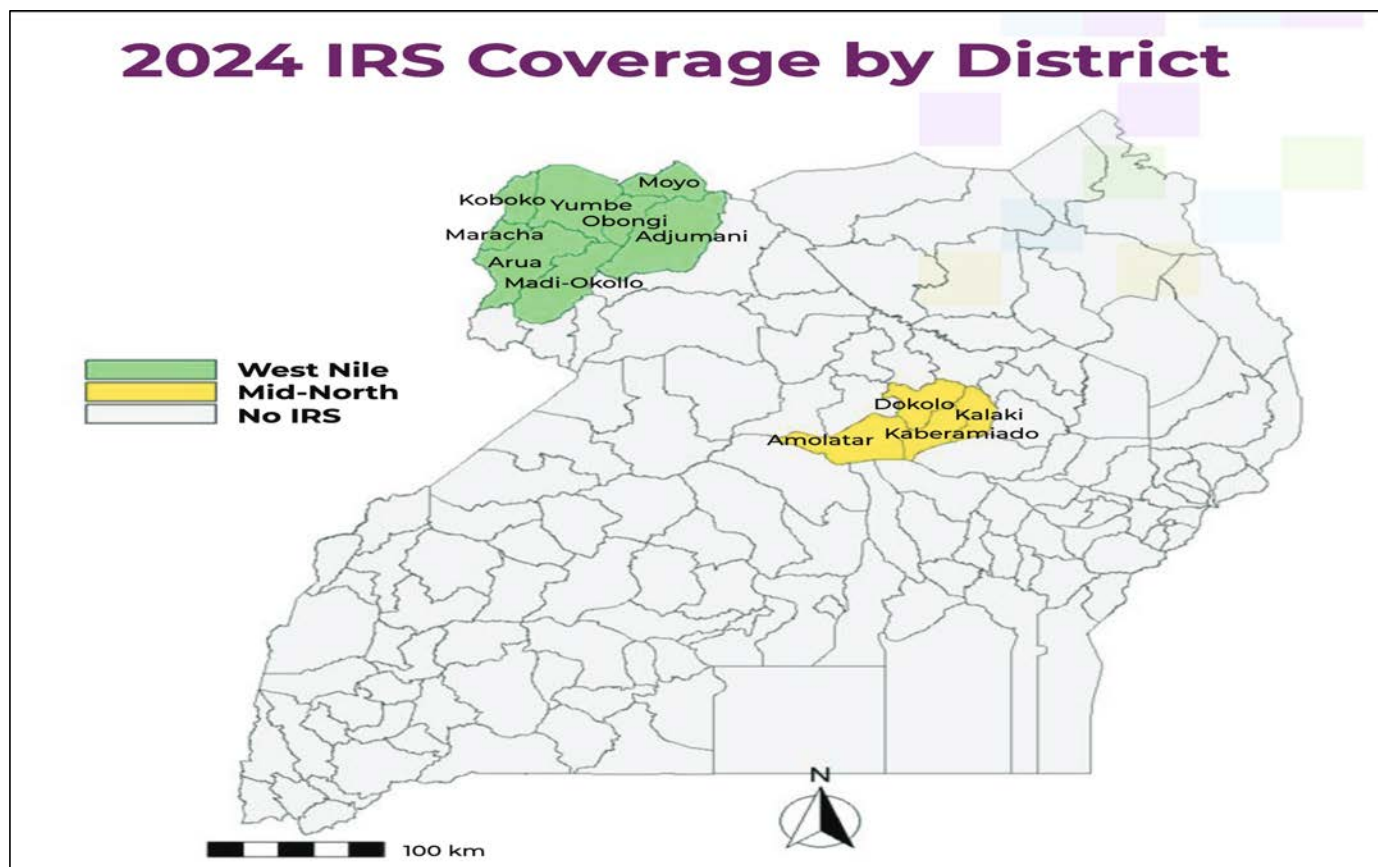
# Introduction

- ❖ Uganda contributes the world's third highest global burden of malaria cases (4.8%) and is the tenth leading contributor to the global malaria deaths (2.7%).
- ❖ As a result, the GOU together with various implementation partners is implementing Indoor Residual Spraying (IRS).





# IRS Coverage(West Nile & Mid North) in Uganda





# Goal And Main Objective of IRS

## Goal

To contribute to the reduction of morbidity and mortality due to malaria in Uganda

## Main Objective

To reduce, and ultimately interrupt malaria transmission by reducing vector survivorship, density, and human–vector contact, in a manner that is safe for human health and the environment in targeted populations



# Challenges of Paper Based Approach of IRS

- ❖ Earlier on hard copies of IRS spray cards were being used and verification by MOH representatives was only conducted physically at the respective district health offices. The key challenges associated with this paper based approach included;

Delayed Data Transmission

Data Entry Errors

Cumbersome Data Management

Limited Real-Time Oversight

Poor Data Quality Assurance

Low Accountability







## Approach of IRS Data Collection

❖ IRS data is collected for each sprayed house by the spray operator and captured on IRS spray cards. The data on the spray cards includes key indicators such as:

Number of structures found

Structures sprayed

Structures not sprayed (with reasons)

Population protected

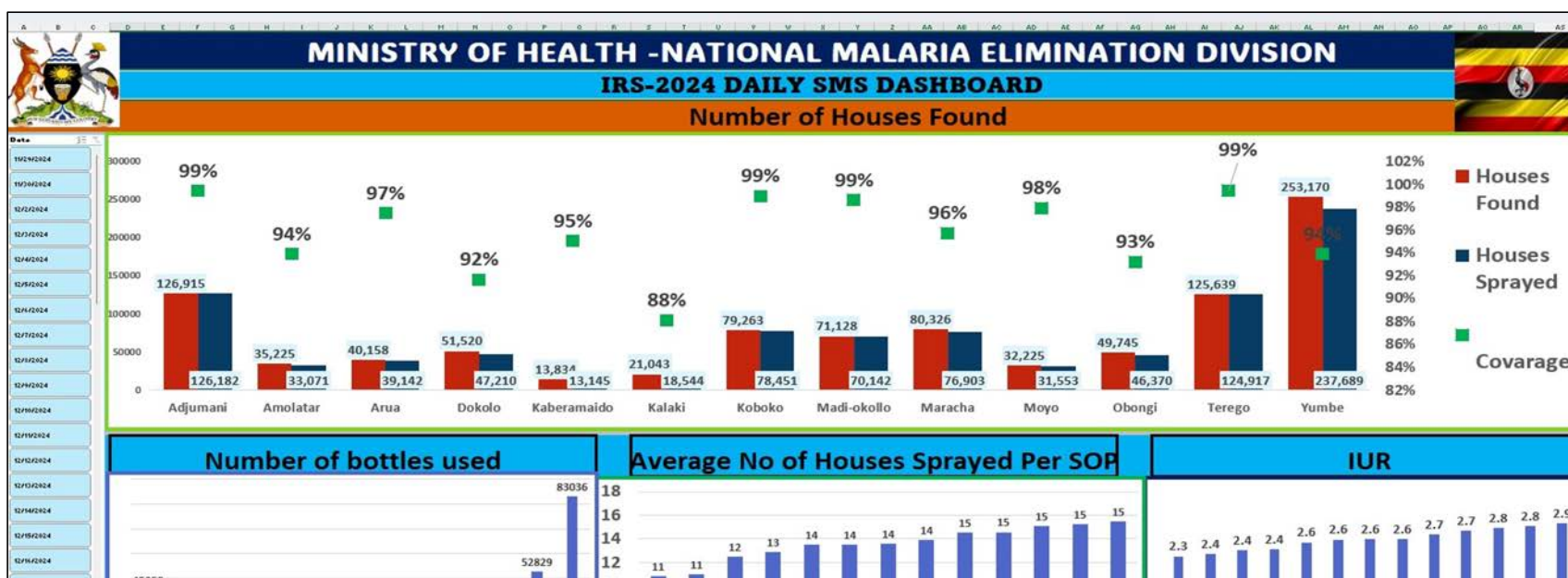
❖ As part of digitalisation, the process of data verification of the IRS has been moved into ODK and DHIS2.





# IRS Data Digitalisation At Sub County Level

- The spray cards are compiled at the end of each spray day and the site supervisor at the sub county level makes a summary of the key IRS indicators from all the forms at his or her sub county daily (in form of a short message service/SMS) to ODK that is then viewed by the district biostatistician on an SMS dashboard as shown below.



## Insights into Action

### What Happens

The SMS Dashboards display graphs, charts and maps of;

geographical coverage  
spray status trends  
population protected  
refusal rates



### Decision Making Impact

- ❖ Enables identification of areas lagging and deployment of more resources or conducting of targeted community sensitization.
- ❖ Helps compare sub-county performance and identify systemic issues like low acceptance rates.



# IRS Data Digitalisation at District Level

- The spray cards/forms are on that next day taken to the district by the site supervisor and entered directly into the computer by the data entry clerks. The district biostatistician validates the entered data daily.
- This data is then accessible through an Open Data Kit (ODK) platform where cleaning is done before being synchronized into DHIS2 on a daily basis.

ODK Central

Projects

en

lrsteam@gmail.com

IRS - District

Forms

IRS 2024 Data Entry

Overview

Versions

Submissions72,036

Public Access1

Draft

Create a new Draft

Settings

Closed

Submissions

New

API access

Analyze via OData...

Filter

2 of 2

Submitted at

5 of 5

10 of 64

Refresh

Download 72,036 Submissions...

Submitted by

Review State

Columns shown

|       | Submitted by | Submitted at     | State and actions | start               | end                 | District        | Subcounty                    | Parish | Village |
|-------|--------------|------------------|-------------------|---------------------|---------------------|-----------------|------------------------------|--------|---------|
| 72036 | IRS 2024     | 2025/02/12 13:29 | Received          | 2025/02/12 13:26:51 | 2025/02/12 13:29:46 | Koboko District | Ludara Subcounty             | Lima   | Anyar   |
| 72035 | IRS 2024     | 2025/02/12 13:26 | Received          | 2025/02/12 13:22:22 | 2025/02/12 13:26:23 | Koboko District | Ludara Subcounty             | Lima   | Anyar   |
| 72034 | IRS 2024     | 2025/02/12 13:24 | Received          | 2025/02/12 13:20:27 | 2025/02/12 13:23:59 | Koboko District | Western Division (Koboko MC) | Godia  | Godia   |
| 72033 | IRS 2024     | 2025/02/12 13:19 | Received          | 2025/02/12 13:15:34 | 2025/02/12 13:19:56 | Koboko District | Western Division (Koboko MC) | Godia  | Anjiri  |
| 72032 | IRS 2024     | 2025/02/12 13:15 | Received          | 2025/02/12 12:55:40 | 2025/02/12 13:15:13 | Koboko District | Western Division (Koboko MC) | Godia  | Anjiri  |





# Timely Data Corrections for Enhanced Accuracy

- ❖ Since data from each sprayed structure is entered into mobile devices using ODK, Supervisors and district biostatisticians are able to flag errors or inconsistencies (e.g., inflated structure counts or duplicate entries).

## Decision-making Impact

- ❖ This enables instant feedback to spray teams to correct mistakes before they escalate.
- ❖ For example, if a site reports more structures sprayed than found, the system can flag this anomaly, prompting district teams to investigate on the same day.





## IRS Data Digitalisation at National Level

- All IRS data is housed in DHIS2 and directly managed and owned by the Ministry of Health's Division of Health Information.

| District             | Houses Found   | Houses Sprayed DHIS2 | IUR        | Acceptance rate | Insecticide Bottles Used-DHIS2 | Allocated Bottles | Target (Houses) | Progress   | Houses Sprayed SMS | Progress SMS | Gap       |
|----------------------|----------------|----------------------|------------|-----------------|--------------------------------|-------------------|-----------------|------------|--------------------|--------------|-----------|
| Adjumani District    | 125,789        | 125,325              | 2.7        | 99.6%           | 45,810                         | 54,441            | 132,187         | 95%        | 126,182            | 95%          | 1%        |
| Amolatar District    | 34,879         | 32,129               | 2.7        | 93.3%           | 11,969                         | 21,517            | 35,440          | 91%        | 33,071             | 93%          | 3%        |
| Arua District        | 33,727         | 32,753               | 2.3        | 98.0%           | 14,274                         | 17,199            | 37,997          | 86%        | 39,142             | 103%         | 17%       |
| Dokolo District      | 55,184         | 47,889               | 2.6        | 87.7%           | 18,559                         | 24,954            | 41,100          | 117%       | 47,210             | 115%         | -2%       |
| Kaberaido District   | 15,379         | 13,993               | 2.5        | 91.9%           | 5,513                          | 8,441             | 15,393          | 91%        | 13,145             | 85%          | -6%       |
| Kalaki District      | 21,179         | 18,500               | 2.7        | 89.0%           | 6,938                          | 12,480            | 21,308          | 87%        | 18,544             | 87%          | 0%        |
| Koboko District      | 74,509         | 73,788               | 2.2        | 99.1%           | 34,053                         | 29,512            | 81,500          | 91%        | 78,451             | 96%          | 6%        |
| Madi-okollo District | 61,830         | 61,464               | 2.3        | 99.5%           | 26,881                         | 29,305            | 70,124          | 88%        | 70,142             | 100%         | 12%       |
| Maracha District     | 70,008         | 67,204               | 2.4        | 96.5%           | 28,349                         | 27,783            | 71,358          | 94%        | 76,903             | 108%         | 14%       |
| Moyo District        | 32,119         | 31,551               | 2.4        | 98.5%           | 12,976                         | 12,675            | 35,524          | 89%        | 31,553             | 89%          | 0%        |
| Obongi District      | 49,723         | 46,712               | 2.9        | 94.4%           | 16,329                         | 17,536            | 49,101          | 95%        | 46,370             | 94%          | -1%       |
| Terego District      | 112,095        | 111,678              | 2.2        | 99.5%           | 50,577                         | 53,496            | 112,459         | 99%        | 124,917            | 111%         | 12%       |
| Yumbe District       | 266,629        | 254,450              | 2.7        | 96.2%           | 93,621                         | 91,546            | 265,482         | 96%        | 237,689            | 90%          | -6%       |
| <b>Grand Total</b>   | <b>953,050</b> | <b>917,436</b>       | <b>2.5</b> | <b>96.9%</b>    | <b>365,849</b>                 | <b>400,885</b>    | <b>968,973</b>  | <b>95%</b> | <b>943,319</b>     | <b>97%</b>   | <b>3%</b> |





## Leveraging Digital Tools for Instant Insights and Decision-Making

- ❖ Digitalisation of the IRS campaign using tools like ODK (Open Data Kit) and DHIS2 has fundamentally shifted how data is captured, validated, analyzed, and visualized.
- ❖ Unlike the paper-based system that caused long delays in identifying issues, digital tools now allow for real-time validation and visualization, enabling rapid, evidence-based decision-making at sub-county, district, and national levels.





## Before Vs After IRS Digitalisation

| Aspect            | Paper Based System   | Digital System(ODK+DHIS 2)      |
|-------------------|----------------------|---------------------------------|
| Data Transmission | 7-10 days            | 24-48 hours                     |
| Error Detection   | Post Campaign        | Real Time                       |
| Data Use          | Delayed reports      | Daily Decision making           |
| Visualisation     | Manual Summaries     | Live dashboards,charts and maps |
| Accountability    | Hard to trace errors | Traceable by user and time      |



# Key Benefits from Data Digitalisation of IRS

This entire digitalisation creates a multi-layered data architecture that is:

- ❖ **Timely:** Data moves from the household to national dashboards within 24hours .
- ❖ **Responsive:** Managers can act immediately on data to correct campaign weaknesses.
- ❖ **Integrated:** The final data resides in DHIS2, contributing to national health intelligence.
- ❖ **Sustainable:** Full MOH ownership reduces dependency on parallel systems or donor-specific tools.



## **Conclusion – Real-Time Data as a Game Changer**

- ❖ Digitalisation of the IRS campaign and the integration of real-time validation and visualization tools like ODK and DHIS2 have transformed decision-making from reactive to proactive.
- ❖ From managing spray operator performance to reallocating resources and informing national policy, these tools empower health managers to respond faster, smarter, and more effectively in the fight against malaria.







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## Discussion Questions & Answers

## Discussion Questions et réponses

### Remote participants:

Kindly use the Zoom Q&A feature to submit comments and ask questions, specifying the name of the speaker to whom the question is directed.

### Participants à distance :

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## Campaign Digitalization Meeting

Theme 2: Outcomes and evidence of digitalization

## Réunion sur la numérisation des campagnes

Thème 2: Résultats et justificatifs de la digitalisation

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Meeting will begin shortly – la réunion va bientôt commencer



## Le rôle de la digitalisation dans l'amélioration de la qualité des données pour les campagnes de distribution de MILD au Mali

**Boubacar Sidiki Maiga, CRS Mali**

Réunion annuelle des partenaires de l'APP 2025

10 – 11 avril 2025 Nairobi | Kenya





## Contexte et Historique

- De 2011 à 2020, le Mali a organisé des campagnes de distribution de masse de moustiquaires imprégnées d'insecticide (MII) pour atteindre une couverture universelle
- Ces campagnes ont permis une distribution récurrente dans toutes les régions du pays, avec un passage moyen tous les trois ans
- Toutefois, l'utilisation des données de la campagne notamment du dénombrement pour assurer une distribution de efficace demeure un défi.

## Défis rencontrés avant la digitalisation

01

### Qualité des données

Collecte manuelle entraînant des erreurs et des incohérences.

02

### Gestion des stocks

Difficulté à suivre en temps réel la disponibilité et la distribution des MII.

03

### Délais d'attente

Processus long pour l'enregistrement

04

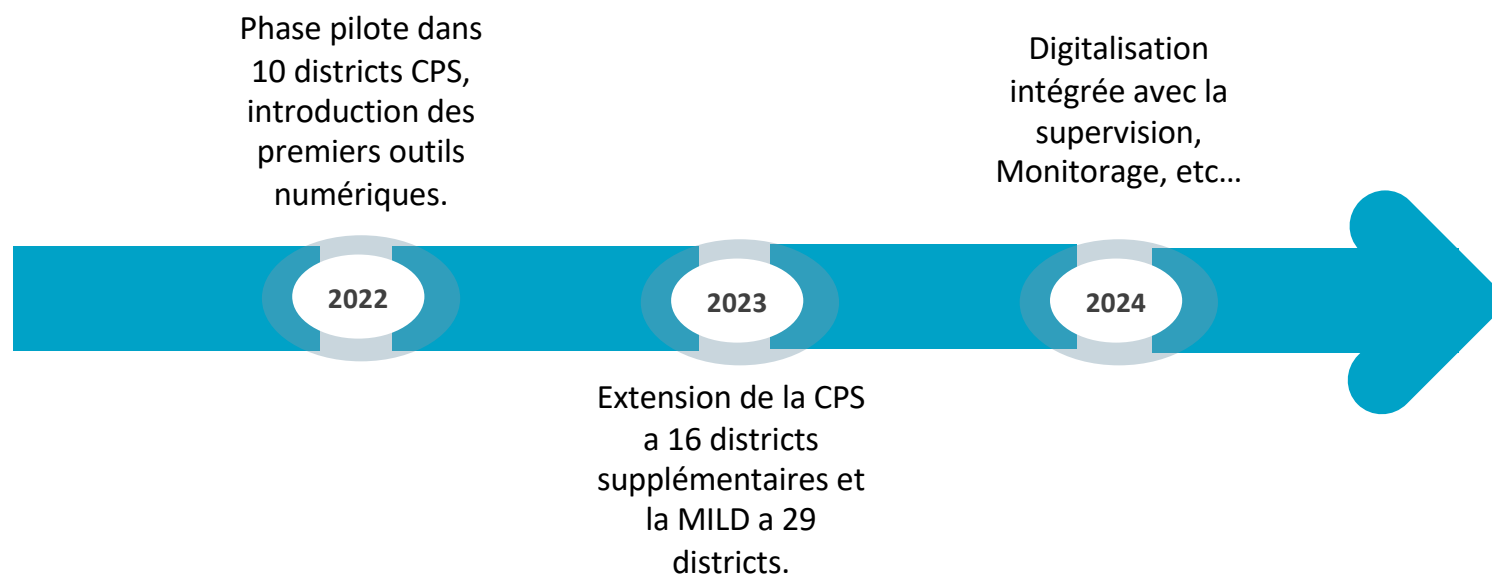
### Remontée des données

Zones inaccessibles



Ce qui a motivé le PNLP avec l'expertise de CRS de passer à la digitalisation de la CDM 2023

## Experience dans la digitalisation



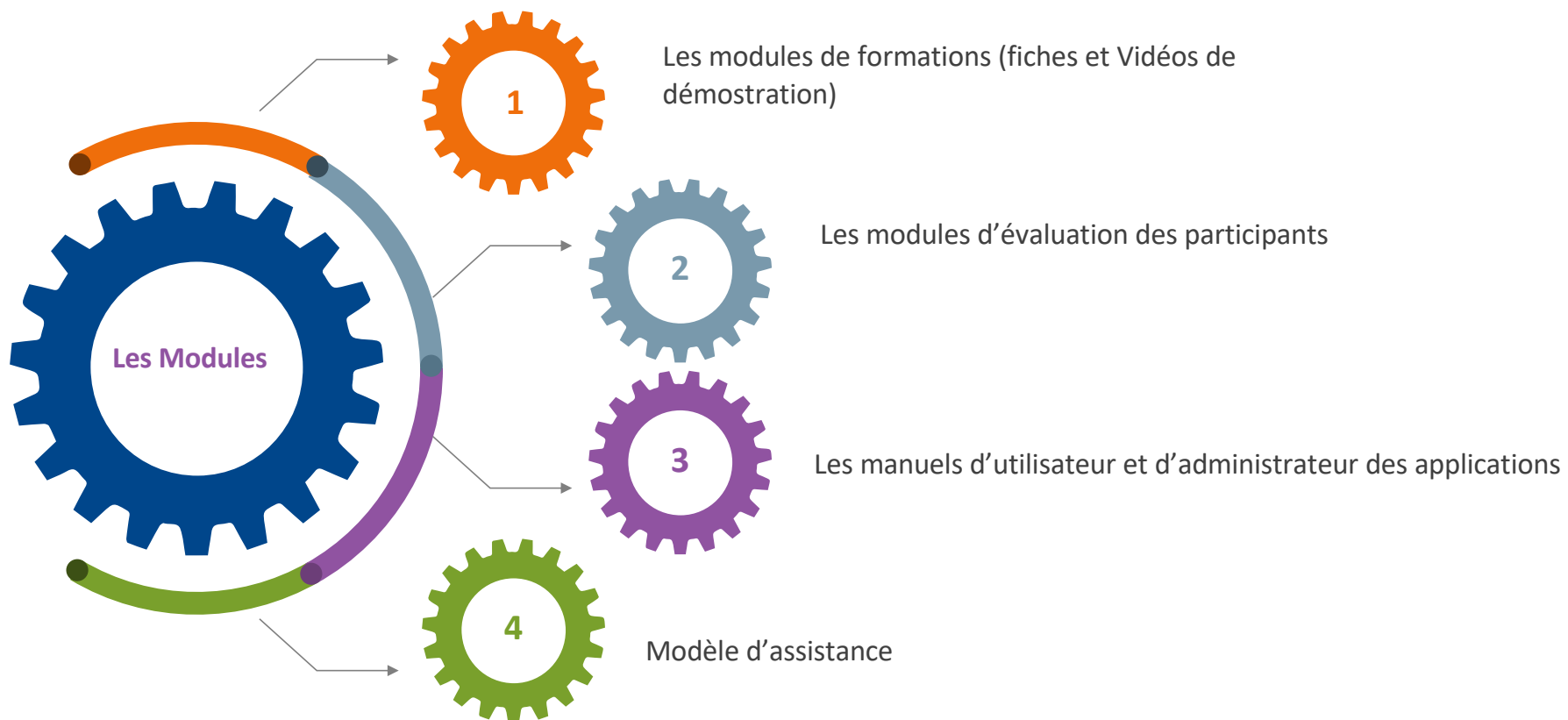
**2022-2024** : Utilisation des infrastructures de **Bluesquare** pour la collecte et l'analyse des données.

**2025** : Transition vers **DHIS2 national**, assurant une meilleure intégration avec le système de santé existant

## Plateforme et Application



## Les Modules





## Approches innovante mises en place dans la digitalisation

Collecte de données via  
smartphones



Système de code QR  
unique

Analyse géospatiale des  
ménages



Suivi et évaluation en temps  
réel



Intégration d'un système  
d'alerte automatisé  
Création des tableaux de bord

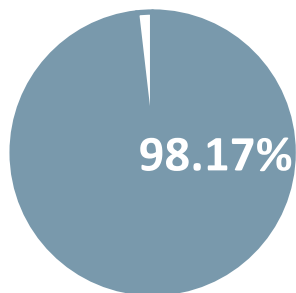


## Les résultats clés

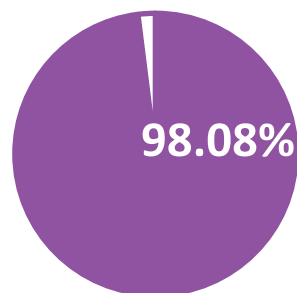


## Les résultats clés

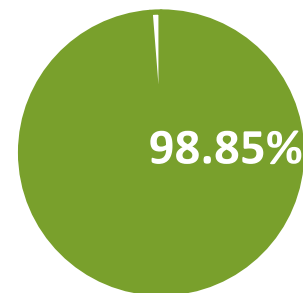
Taux de couverture en  
ménage



Taux de couverture en  
Population



Taux de distribution



# Leçons apprises

## L'optimisation des outils

La phase test des outils avant la campagne a permis d'améliorer sa performance et d'anticiper sur certaines difficultés que les équipes pouvaient rencontrer

## La supervision mixte (digitale et physique)

Priorisation des participants ayant eu des difficultés lors de la formation et sur la base des données de couverture a permis d'assurer une supervision ciblée et efficace

## La formation continue

Un programme de formation progressif et adapté a été indispensable pour maximiser l'impact de la digitalisation.

## Un renforcement des capacités locales

L'implication des acteurs locaux dans chaque district favorise une meilleure appropriation de la digitalisation et garantit une assistance technique plus réactive

# Leçons apprises

## La transparence et la qualité des données

Grâce à la digitalisation, les rapports en temps réel améliorent la réactivité des équipes terrain.

## La standardisation des processus

Une harmonisation des procédures de collecte et de gestion des données permet un déploiement plus rapide et efficace dans de nouveaux districts.

## Amélioration continue - Solution alternative

Génération et attribution des codes ménages en cas de perte de coupon pour la distribution



## Défis dans la digitalisation

Indisponibilité des réseaux téléphoniques et Internet

Souvegarde des coupons pour la distribution des MILD

Collecte des données en mode hors connexion et gestion des TEI (Tracked Entity Instances)

Limitations liées à DHIS2 et performances des serveurs

Inaccessibilité de certaines zones en raison des inondations





## Recommandations

Poursuivre la digitalisation avec les leçons apprises notamment l'évaluation du processus réalisée

Créer des extensions spécifiques pour DHIS2 afin de répondre aux besoins, augmenter la capacité des serveurs

Améliorer l'application pour stocker plus efficacement les données et les synchroniser automatiquement dès qu'une connexion est disponible.

**Merci !**





**GOVERNMENT OF SIERRA LEONE**

**Ministry of Health**

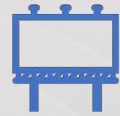
**National Malaria Control Program**



# **OUTCOMES AND EVIDENCE OF DIGITIZATION FROM SIERRA LEONE'S 2023/24 ITN DIGITALIZATION MASS CAMPAIGN**

**A DATA-DRIVEN APPROACH  
TO MALARIA PREVENTION**





# Introduction

**Malaria is endemic in Sierra Leone, with stable and perennial transmission in every part of the country.**

**In 2022, 3,151 people were reported to have died of malaria in Sierra Leone.**

**The NMCP saw the need to be more innovative and efficient in the delivery of its core malarial prevention intervention and began planning for its first ITN digitalization mass campaign.**

**ITNs represent one of the most effective malaria prevention tools due to its demonstrated effect on malaria vector.**  
**Between 2006 to 2024, 21,128,790 ITNs has so far been distributed.**

**Mass campaigns remain the best method for rapid scale-up of ITN coverage and it is implemented every 3 years.**

**In 2023, the Global Fund (GF) and USAID/PMI funded the distribution of 5,345,236 ITNs (PBO & Dual A.I.) nationwide.**

**The campaign was in two-phases: Door-to-door household registration followed by fixed/outreach/mobile-point distribution, to deliver 1 net to every 2 persons using digital technology.**

**The ITN digitalization mass campaign was implemented by the National Malaria Control Program (NMCP) in collaboration with CRS, UNICEF, WHO, HEP and support from AMP, RBM/CRSPC, Breakthrough Action and other partners.**

# CHALLENGES OF PAPER-BASED APPROACH

- ✓ **Fraudulent mobilization and distribution by some of the campaign personnel**
- ✓ **Errors in data collection**
- ✓ **Delays in data reporting and analysis**
- ✓ **Transparency and accountability issues**
- ✓ **Lack of clarity and misunderstanding of the campaign process by campaign personnel and stakeholders**
- ✓ **Untidy ITN logistics process**





# WHY DIGITALIZATION?

To enhance innovation and efficiency in delivering its core malaria prevention intervention, the NMCP implemented its first digitalized ITN mass campaign.

- ✅ To improve efficiency, accuracy, and accountability in ITN distribution
- ✅ To allocate and manage campaign personnel and resources better
- ✅ For effective and real-time communication and access to campaign personnel and swift data access for analysis.

By the end of February 2024, over 4.8 million ITNs were distributed across the country tracked digitally.



# DIGITALIZATION PROCESS FLOW

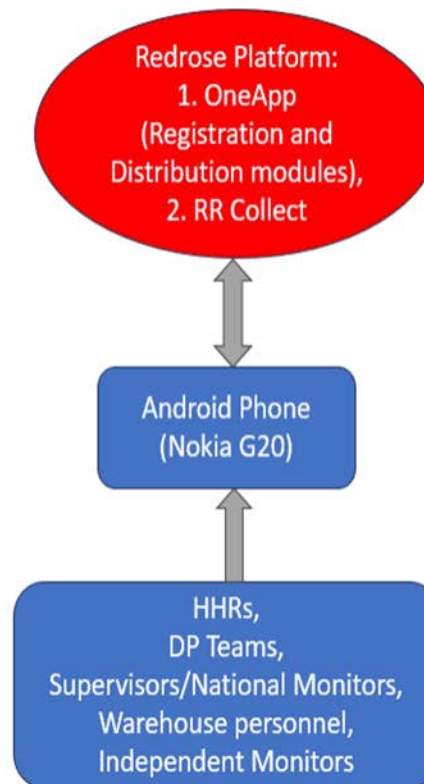
The NMCP in collaboration with CRS its co-PR, partnered with Redrose to provide the digitalization solution for the ITN campaign.

A digitalization solution platform was developed and customized for SL ITN mass campaign.

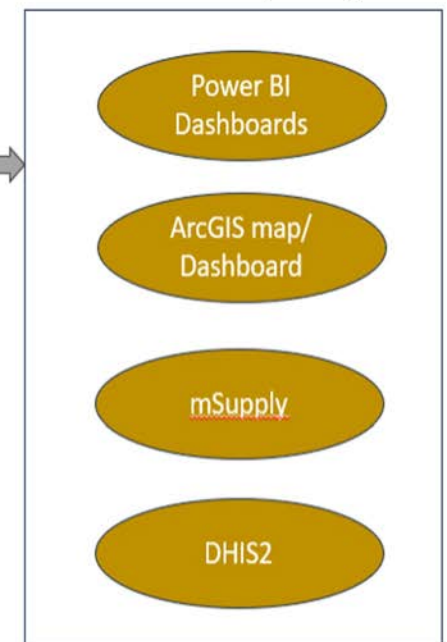
The platform hosted the One App, and the RR collect digital forms which were installed in an android device procured for the campaign implementation process.

The platform was also link to some visualization and country managed storage platforms.

## DATA FLOW DIAGRAM



## VISUALIZATION/STORAGE PLATFORMS



# UNBOXING OF DIGITALIZATION TOOLS & DEVICES

Unboxing & configuration of the campaign devices

Capacity building for ICT4D consultants to support the digitization of the ITN campaign





# WHAT WAS DIGITALIZED?

The campaign activities that were digitalized includes:

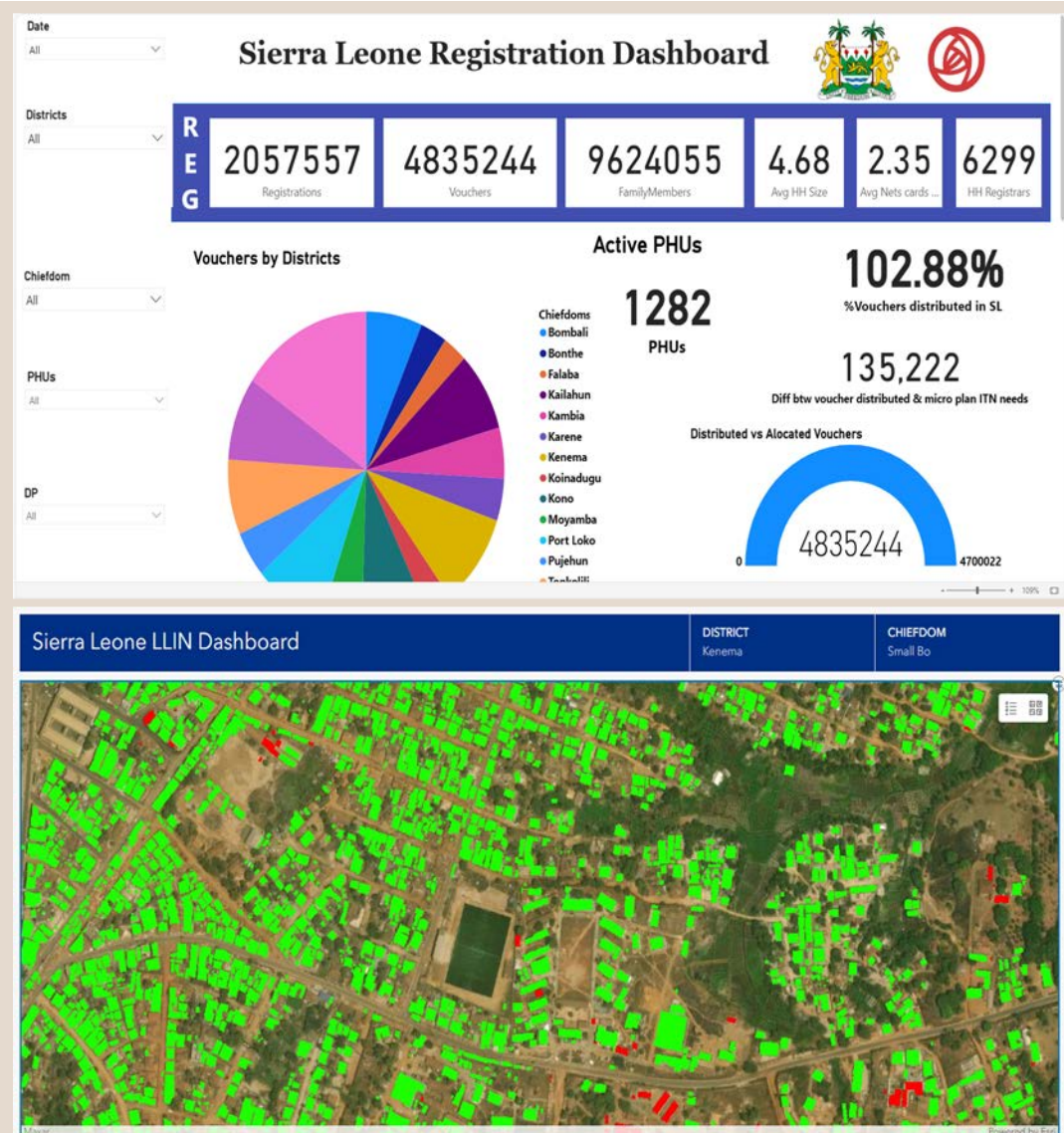
- ✓ **Some components of the microplanning – training venue and warehouse assessment.**
- ✓ **Training attendance tracking** – Ensured accountability and verification of personnel including GPS locator tracking of training venue
- ✓ **Household registration** – Ensured household registration process was strictly followed owing to the device prompt's commands and a time delay for SBC messaging to be delivered.
- ✓ **ITN distribution** – Ensured accountability in the issuance to ITNs to household's recipients owing to the device prompt's command.
- ✓ **ITN movement** – Ensured ITN accountability and tracking across all storage location down to the last mile.
- ✓ **Monitoring and supervision** – Ensured real-time data output for monitoring and supervision leading to spot-on troubleshooting during in-process monitoring.

The image shows a hand holding a smartphone displaying a digital form titled "Supervised Receive Stock". The form is structured with several sections, each with a red header and a text prompt. The "Commodity" section has a text input field containing "Bed Net (pcs)". The "Amount" section has a text input field containing "50". The "Source" section has a text input field containing "DMS - BO" and a QR code icon. The "Waybill # (Optional)" section has a text input field containing "23456". The "Comment (Optional)" section has a text input field. The background is a blurred outdoor setting.

| Section              | Field                | Value         |
|----------------------|----------------------|---------------|
| Commodity            | Commodity            | Bed Net (pcs) |
| Amount               | Amount               | 50            |
| Source               | Source               | DMS - BO      |
| Waybill # (Optional) | Waybill # (Optional) | 23456         |
| Comment (Optional)   | Comment (Optional)   |               |

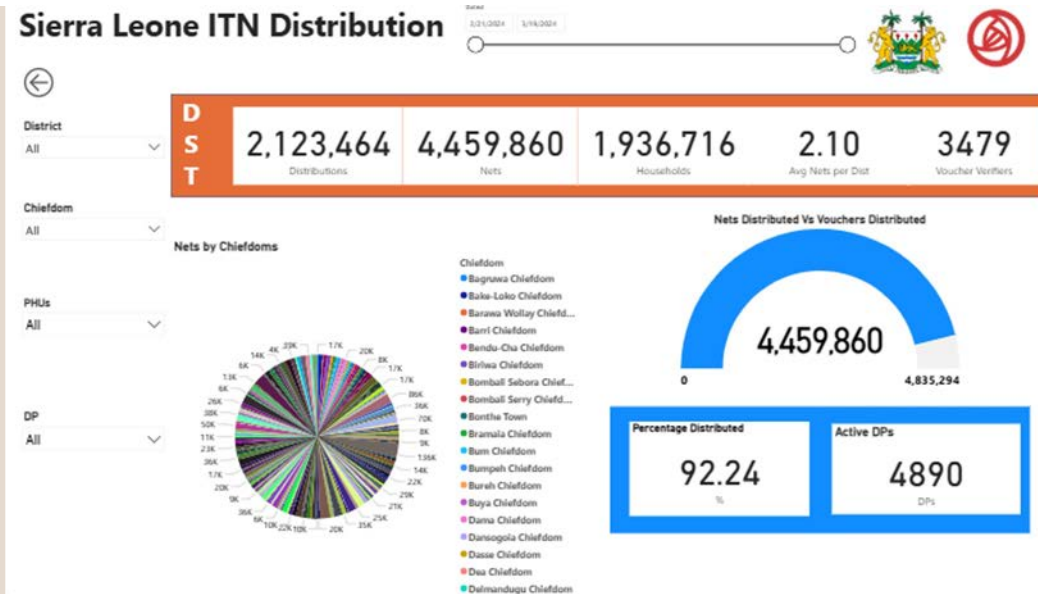
## KEY OUTCOME & BENEFITS

- ✓ Digitalization enabled real-time monitoring of the entire campaign process from anywhere in the world through the various digital visualization dashboards.
- ✓ It eliminated fraudulent mobilization and distribution, a common challenge with the paper-based system.
- ✓ Resources optimization backed by data informed ITN pre-positioning of ITN at distribution points.
- ✓ Coverage visibility was significantly enhanced, with real-time data and dashboards enabling efficient tracking and verification of areas yet to be reached or covered.
- ✓ Monitoring and supervision were data-driven, allowing for the identification of underperforming or inactive campaign personnel, who were easily tracked and provided with additional support (e.g. 6329 HH registrars trained and deployed but 6299 were active as seen on the dashboard) this couldn't have been detected by paper-based approach.



# KEY OUTCOME & BENEFITS

- ✓ The need for mop up day(s) was targeted and data driven against the blanket mop-up practice of the paper-based approach.
- ✓ Errors of inconsistencies were minimized with digitalization, while data storage and call-up for future planning is made easier.
- ✓ Enabling faster decision-making and quick issue resolution due to real-time data collection and analysis.
- ✓ 17,400 local capacity built on campaign digitalization and health system optimization.





### Distributions by DP


| District     | Distributions    | Nets             | Households       | Avg Nets per Dist | Recorders   | Distributors |
|--------------|------------------|------------------|------------------|-------------------|-------------|--------------|
| Bombali      | 145,720          | 301,629          | 132,895          | 2.07              | 227         | 231          |
| Bonthe       | 76,083           | 145,523          | 66,137           | 1.91              | 179         | 188          |
| Falaba       | 68,557           | 130,813          | 56,403           | 1.91              | 112         | 120          |
| Kailahun     | 186,372          | 378,357          | 168,700          | 2.03              | 250         | 253          |
| Kambia       | 110,995          | 243,228          | 104,159          | 2.19              | 186         | 193          |
| Karene       | 90,452           | 198,073          | 83,064           | 2.19              | 157         | 158          |
| Kenema       | 211,255          | 441,027          | 193,840          | 2.09              | 356         | 367          |
| Koinadugu    | 70,133           | 140,682          | 63,711           | 2.01              | 129         | 130          |
| Kono         | 158,103          | 349,755          | 145,812          | 2.21              | 283         | 297          |
| Moyamba      | 108,110          | 224,285          | 100,147          | 2.07              | 215         | 219          |
| Port Loko    | 185,394          | 384,922          | 170,141          | 2.08              | 319         | 340          |
| Pujehun      | 106,162          | 218,509          | 94,026           | 2.06              | 230         | 235          |
| Tonkolili    | 167,695          | 355,025          | 154,231          | 2.12              | 232         | 248          |
| WAR          | 161,254          | 339,265          | 144,998          | 2.10              | 218         | 233          |
| WAU          | 277,179          | 608,767          | 258,452          | 2.20              | 386         | 395          |
| <b>Total</b> | <b>2,123,464</b> | <b>4,459,860</b> | <b>1,936,716</b> | <b>2.10</b>       | <b>3479</b> | <b>3607</b>  |





# EVIDENCE OF IMPACT


 **Campaign visibility** enabled by the digital dashboards and coverage maps

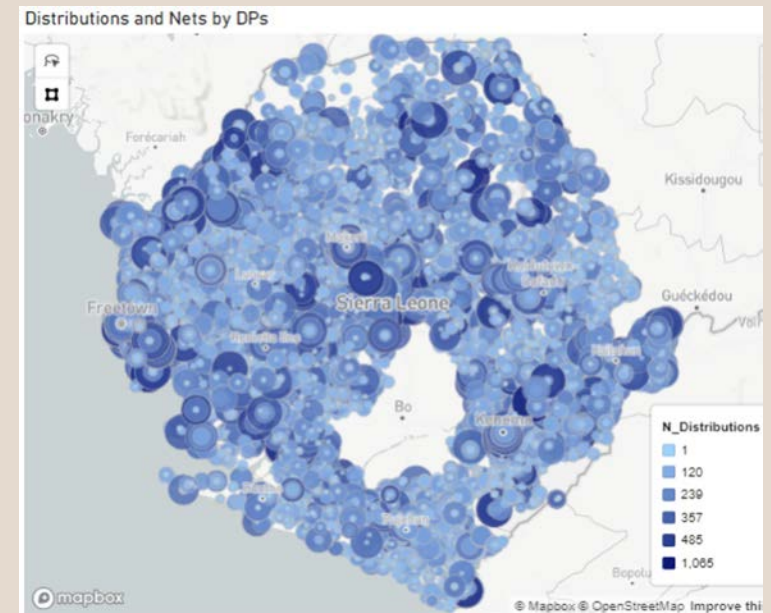
 **Increased Coverage & Efficiency** leading to an optimized household registration and ITN distribution processes as is evidently seen from the visual coverage maps and distribution dashboard.

 **Data-Driven Decision-Making** informed by real-time insights and data collection

 **Long term cost efficiency** by the reduction of operational expenses from paper, printing, logistics)

 **Sustainability** for future ITN campaigns through the digitalization solutions and the ease of data access

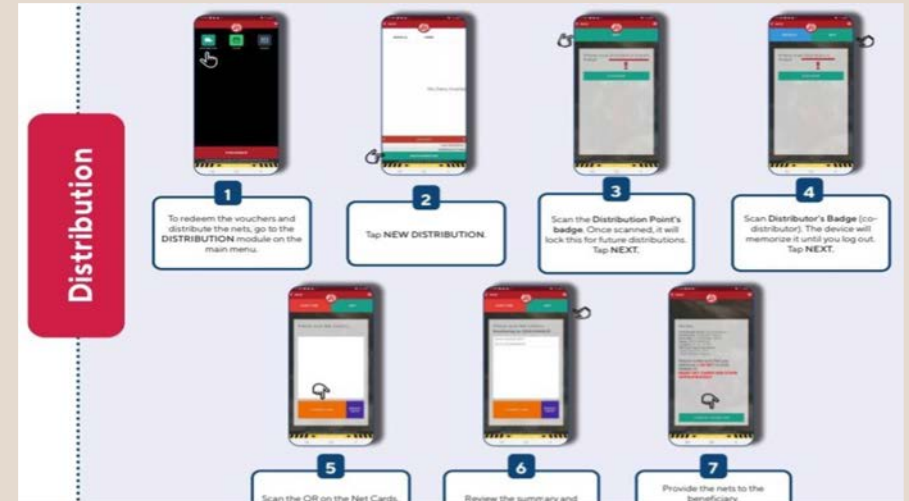
 **Digitalization Perception Survey** back by an end-process survey revealed that 93% of all respondents agreed that digitalization is the way forward for health interventions.





## LESSONS LEARNED & FUTURE RECOMMENDATIONS

- ✅ Strengthened and innovative training and capacity-building efforts with the use of digital job aid and tutorial videos.
- ✅ Data transmission via device synchronization in limited network coverage areas was challenging as such data sync spots were identified in some chiefdoms, while buffer devices were required for device swap to be carried out in some other chiefdoms with no network coverage for data synchronization to be done to enable data-driven decision making and supervision.
- ✅ Mobile network providers had a challenge subscribing data into procured SIM cards as such campaign personnel had to use their personal devices to hotspot the campaign devices to facilitate the device synchronization for real-time data upload. Involving entities such as mobile network providers in the National Task Force would enable them understand the nature and gravity of their services as stakeholders in the campaign process.
- ✅ Tracking and reconciliation of waybills used for prepositioning of ITNs are cumbersome and sometimes incomplete, hence a need to digitize waybills since the ITN movement process is digitally tracked.
- ✅ Complete integration of the digital solution with the in country digital health system (DHIS and m-supply) is important for a sustainable and strengthened health system delivery.



## Digitization transformed ITN distribution in Sierra Leone

It enable visualization of the campaign process and a profound sense of appreciation of the intervention by all stakeholders especially the MoH.

Evidence shows higher efficiency, better accountability, and improved coverage

Continued investment in digital solutions will enhance malaria prevention efforts

**THANK YOU!**  
**TENKI!**

**COMMENTS, CONTRIBUTIONS &  
QUESTIONS**







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## Discussion Questions & Answers

## Discussion Questions et réponses

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Campaign Digitalization Meeting –  
Friday Afternoon Workshops



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## Campaign Digitalization Meeting

Réunion sur la numérisation des  
campagnes

Lunch Break

Pause-déjeuner

We will return shortly

A tout à l'heure



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