COOPER/SMITH

HIV VIRAL LOAD RESULTS RETURN PROJECT (VLRR)

LabCoP Presentation

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UNITY AND FREEDOM

BILL & MELINDA GATES foundation

AGENDA

1 | Cooper/Smith Overview

2 | Malawi's Digital Health Ecosystem

3 | VLRR Background

4 | Proposed Pilot Solution

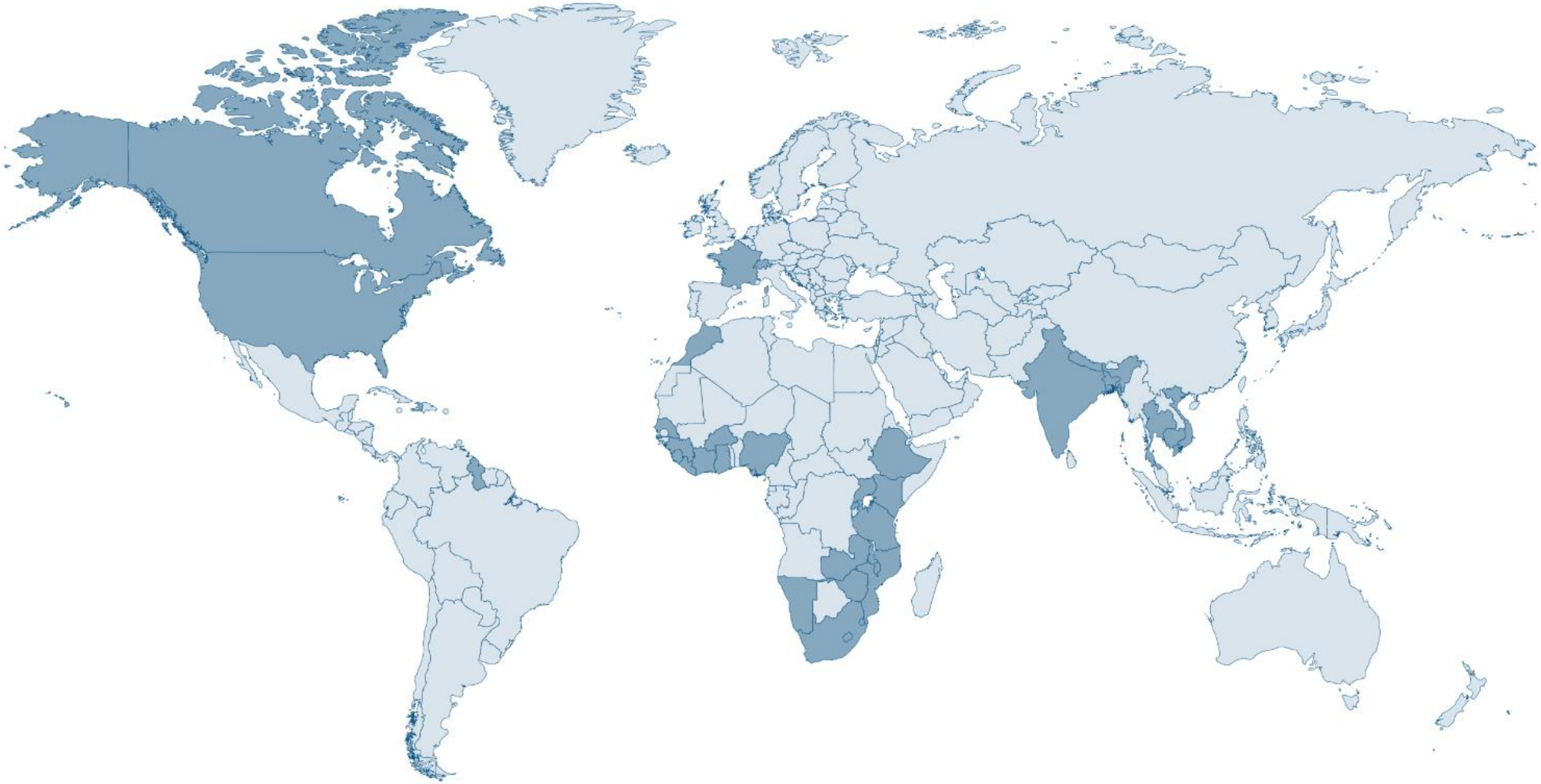
5 | Monitoring & Application Adaptation

6 | Application Uptake

7 | Scale-up & Sustainability

8 | Questions & Discussion

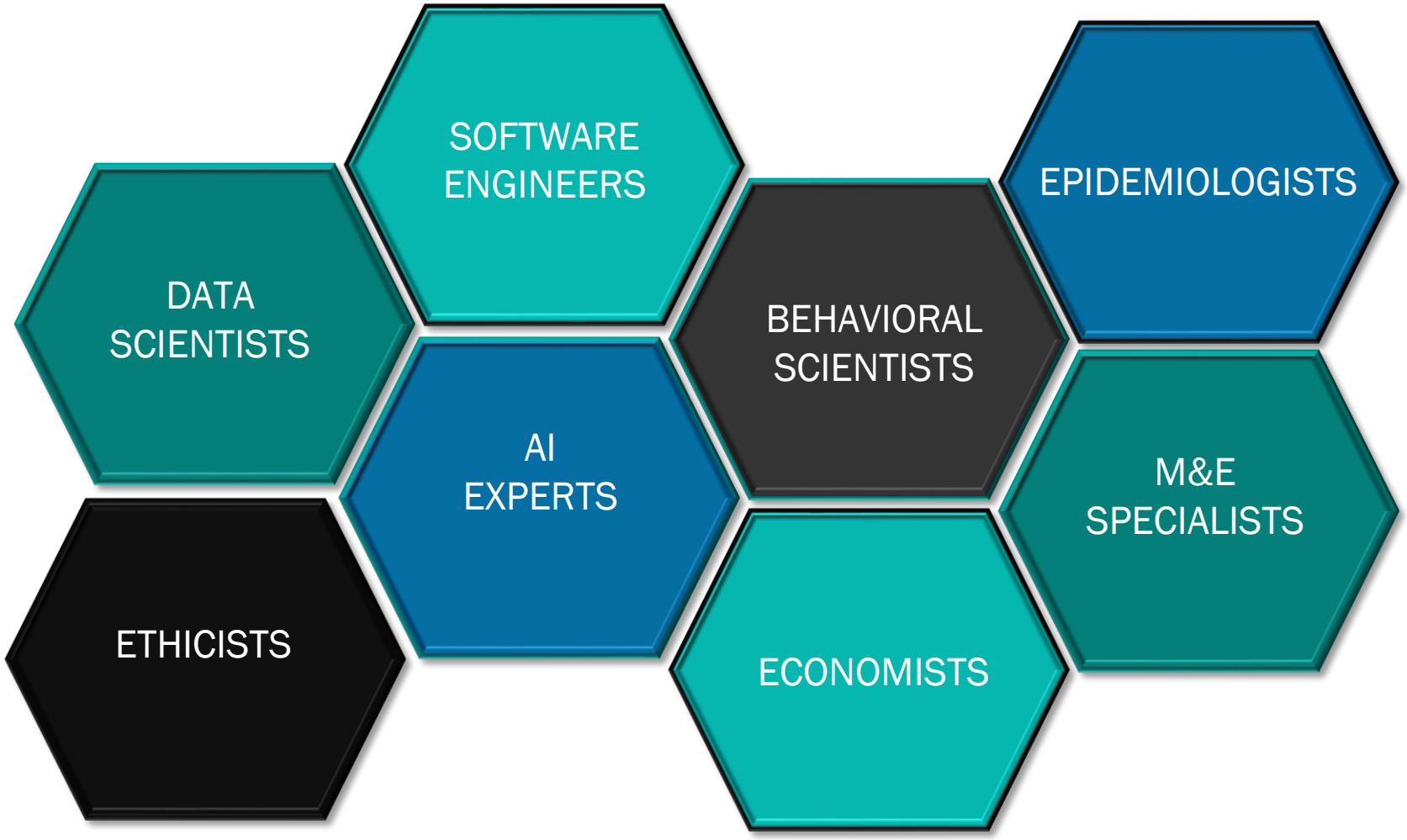
1 COOPER/SMITH OVERVIEW



COOPER/SMITH

We use **hard data** to **increase efficiency** & **effectiveness** of development programs worldwide.

WE ARE A DIVERSE TEAM



COOPER/SMITH

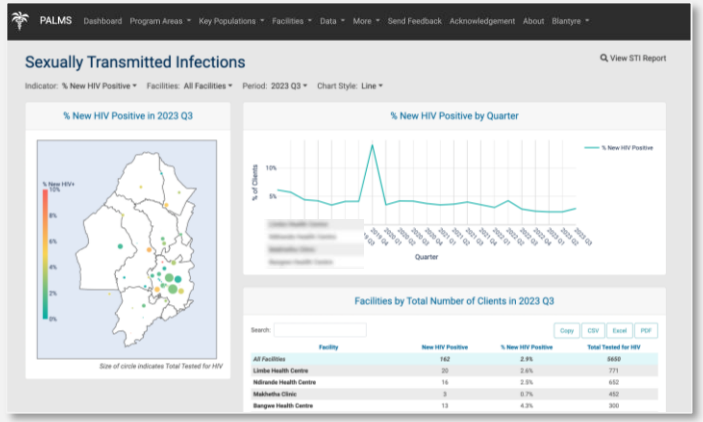
COOPER/SMITH

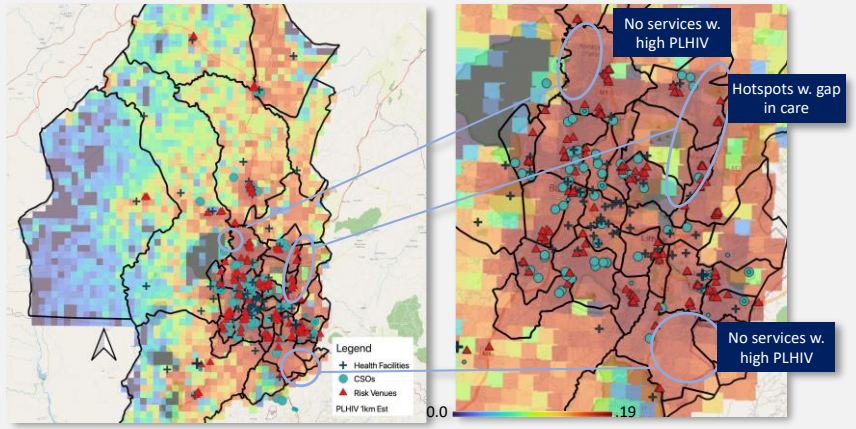
We provide:

- User-driven, sustainable data solutions to improve decision-making
- Novel analytics to inform policy, program, and clinical practice
- Access to and use of health financing data
- Contributions to public goods

So that:

Front line health workers can better anticipate health needs & respond to shocks





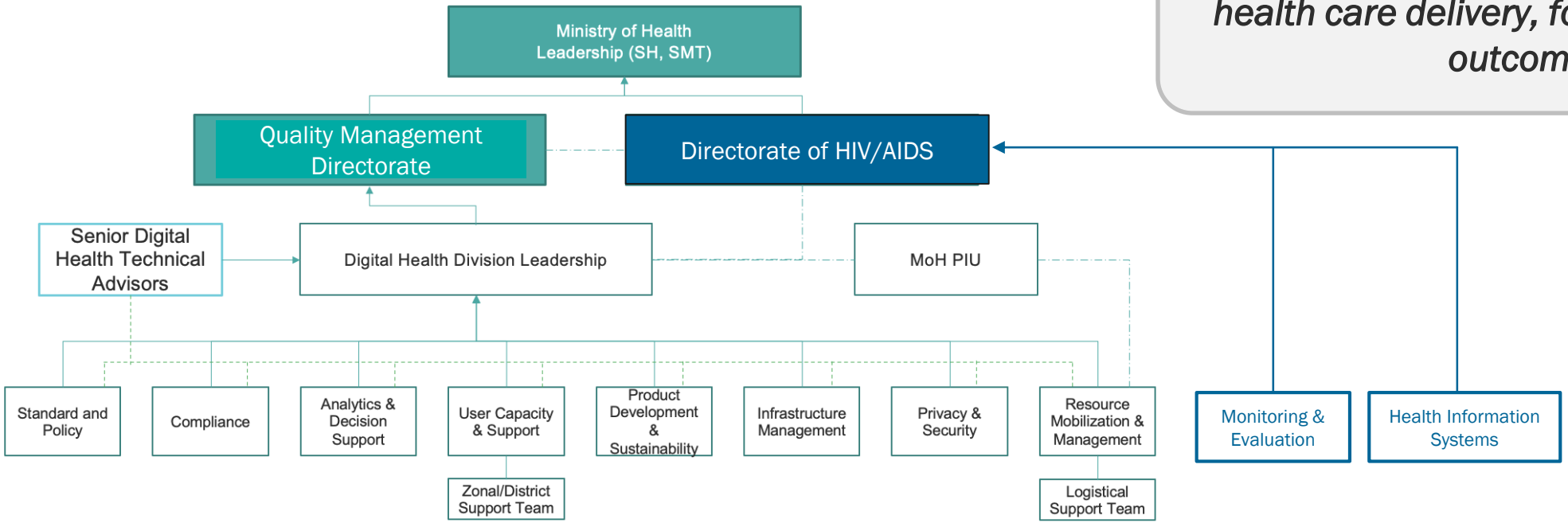
National and district governments better understand service & care needs for their populations

2

MALAWI'S DIGITAL HEALTH ECOSYSTEM

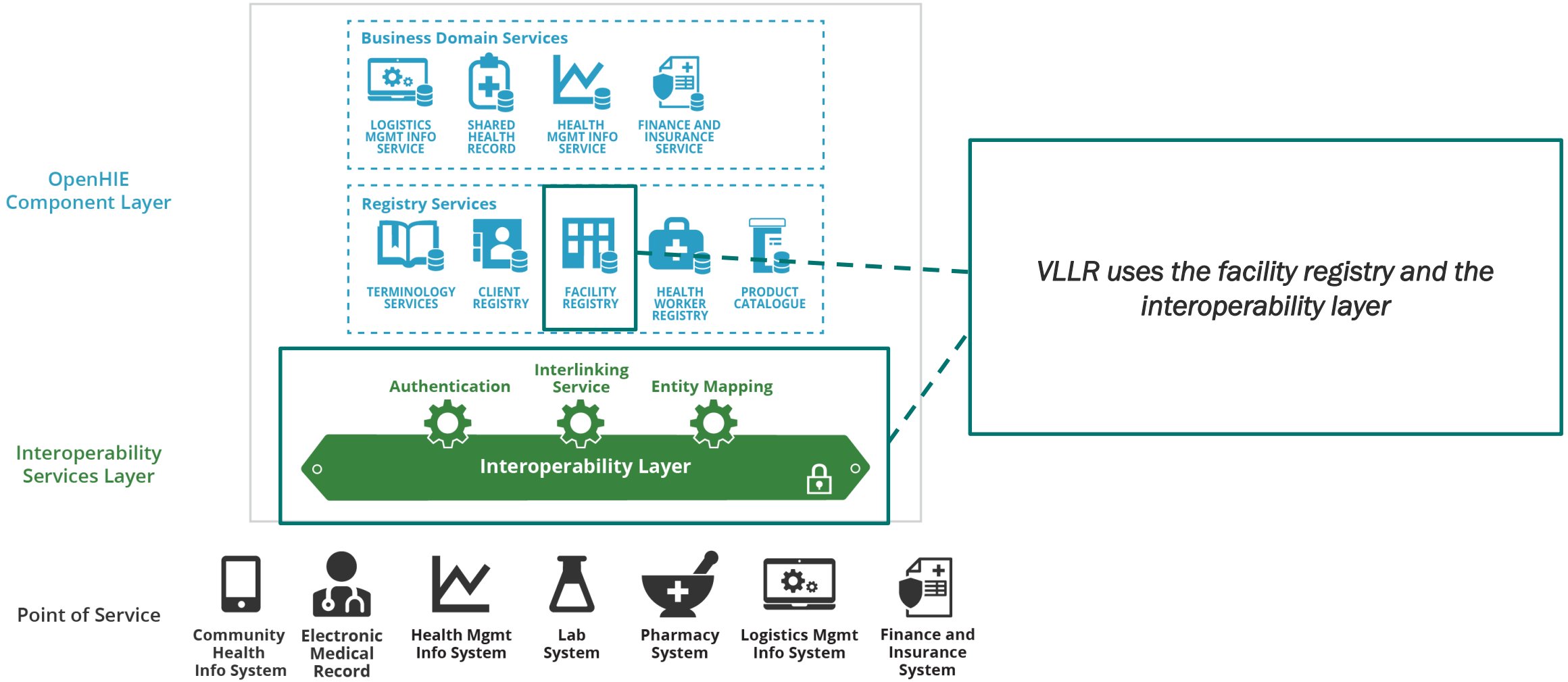
Establishing the MOH's Digital Health Division (DHD)

Enabling efficient, equitable, timely health care delivery, fostering improved outcomes.



The Department of HIV/AIDS (DHA) and the Digital Health Division (DHD) lead to the development, implementation, and maintenance of VLRR. These structures are key to scaling up and sustaining VLRR.

OPENHIE: Sustainable Digital Health Architecture



3 VLRR BACKGROUND

Overarching Problem - Viral Load Results Return - Malawi

Long Turnaround Times - Significant delays in transportation, processing, and result transmission due to a physical process of sample collection and results delivery from 14 labs to 800+ health facilities

Distance to Clinics - In rural areas especially, clients face long distances and transportation issues to their nearest health facility to retrieve their viral load results

Clinic Visits - Long ART clinic visit intervals: the patient may not receive results for months. This could result in delays in updating treatment regimen, meaning more people are unsuppressed and a higher risk of transmissions

VLRR Objectives

Grant start: Sept. 2020
Grant end: June 2024

Enhance clinical management & outcomes for people living with HIV by providing a digital, user-friendly application, backed by a sustainable, reliable architecture so results can be accessed at any time, in any location.

1. Increase the number of clients and healthcare providers accessing viral load results through an enhanced, user-friendly workflow.
2. Reduce the turnaround times of patients and HCPs receiving viral load results return through a digital application
3. Clients do not experience Gender-Based Violence (GBV) nor are there concerns currently around GBV while using the VLRR platform

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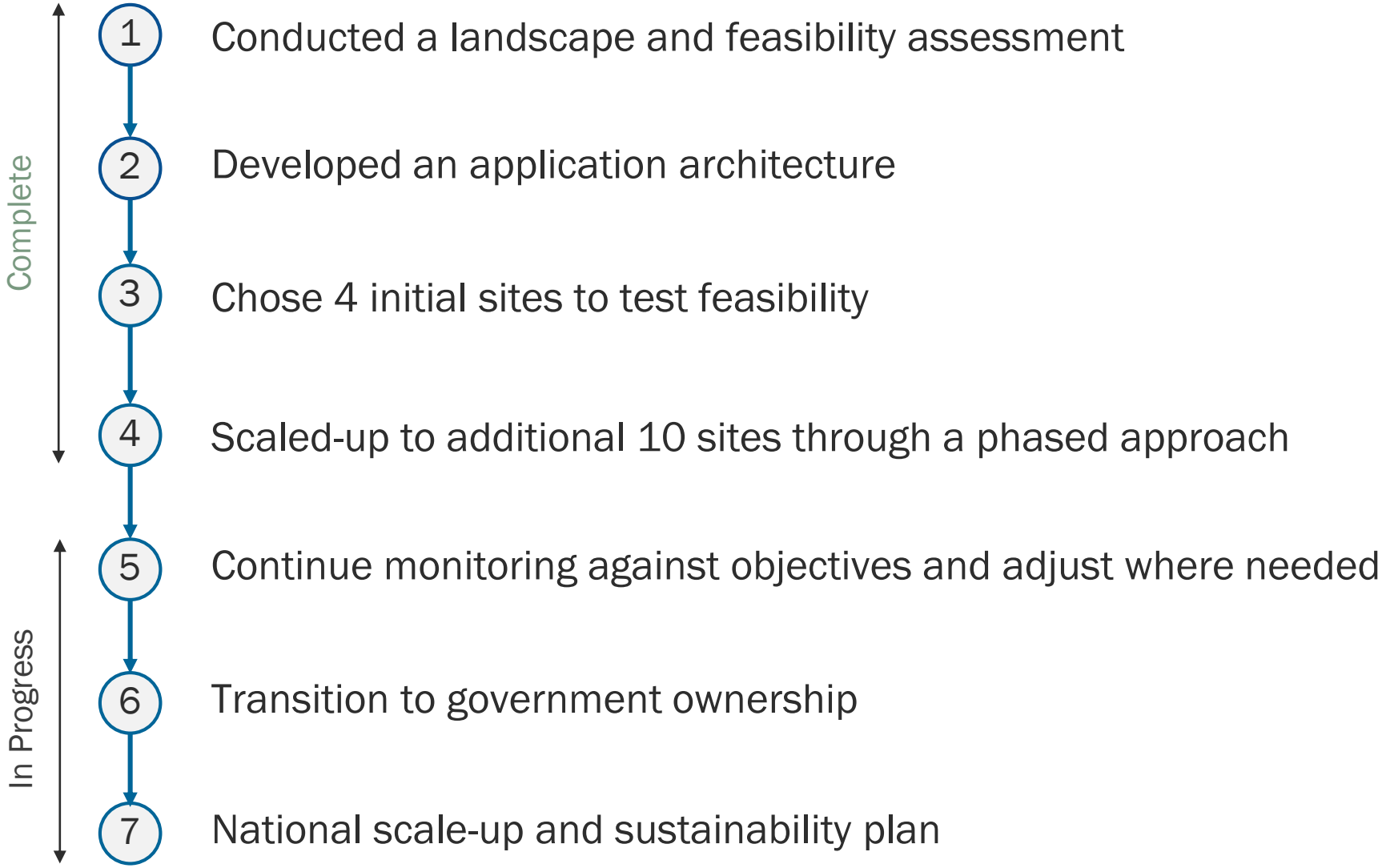
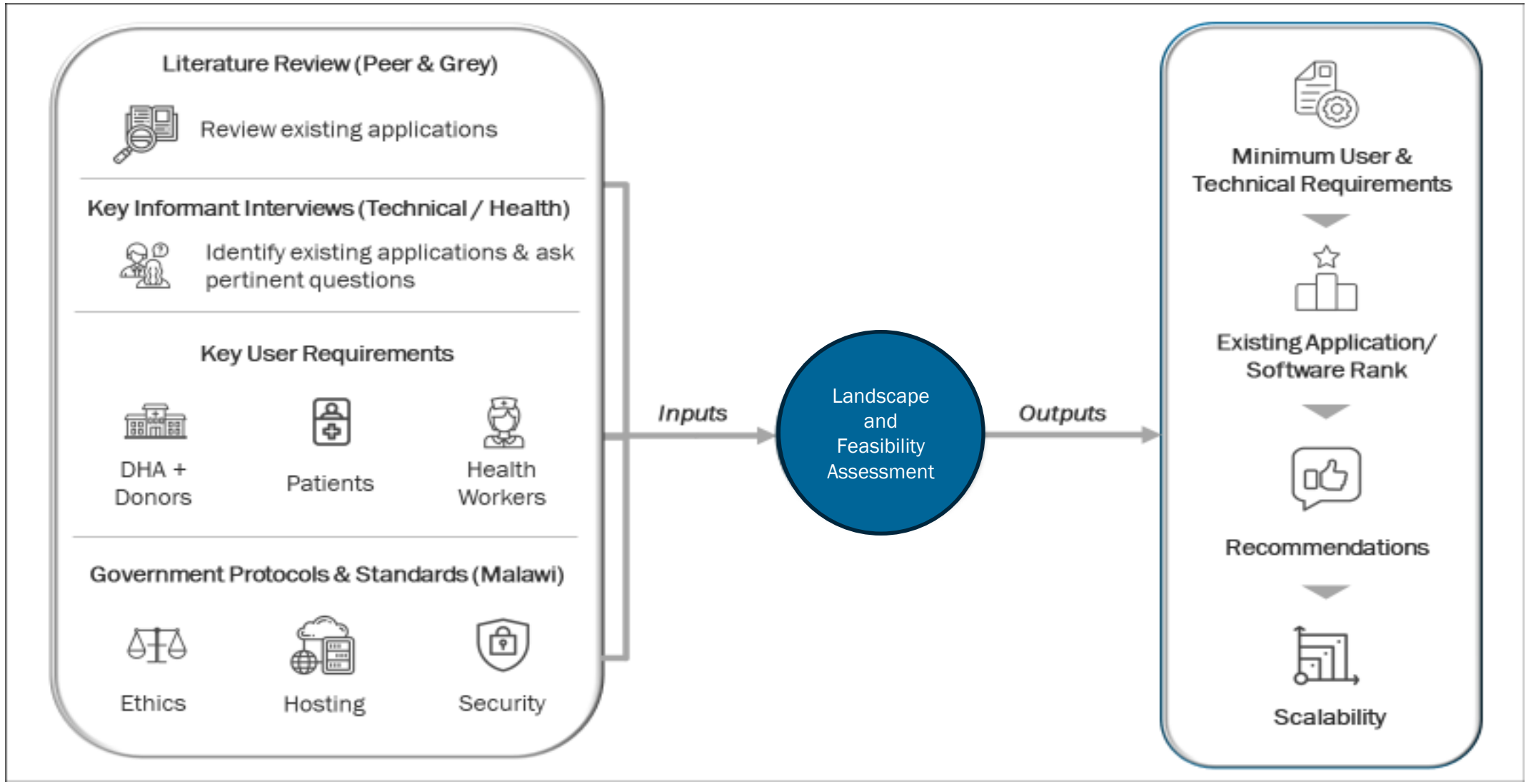
PROPOSED SOLUTION

VLRR Development

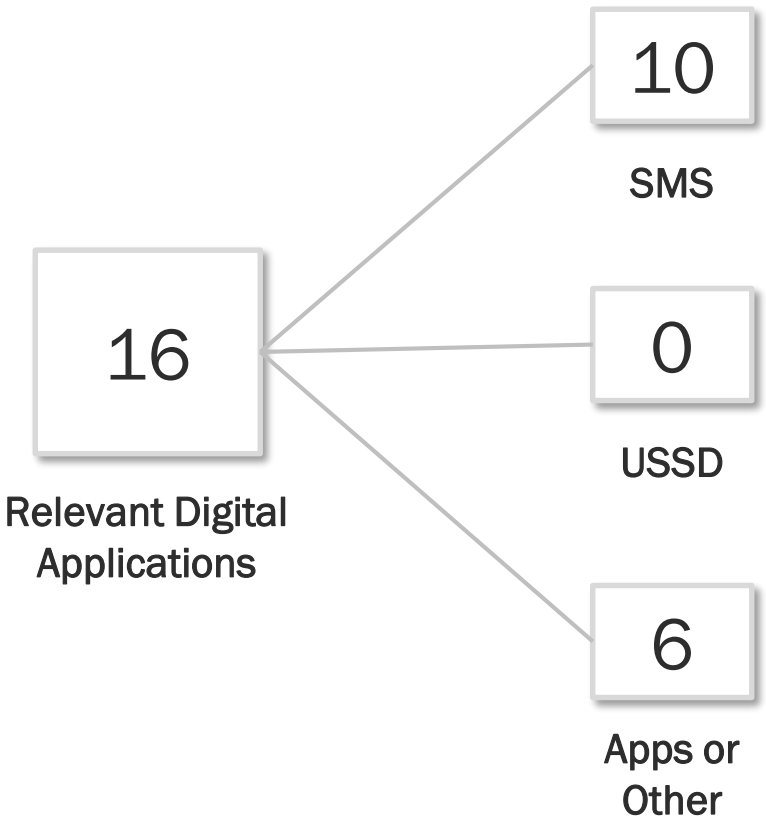
VLRR Solution Development – Steps Implemented



Landscape and Feasibility Assessment

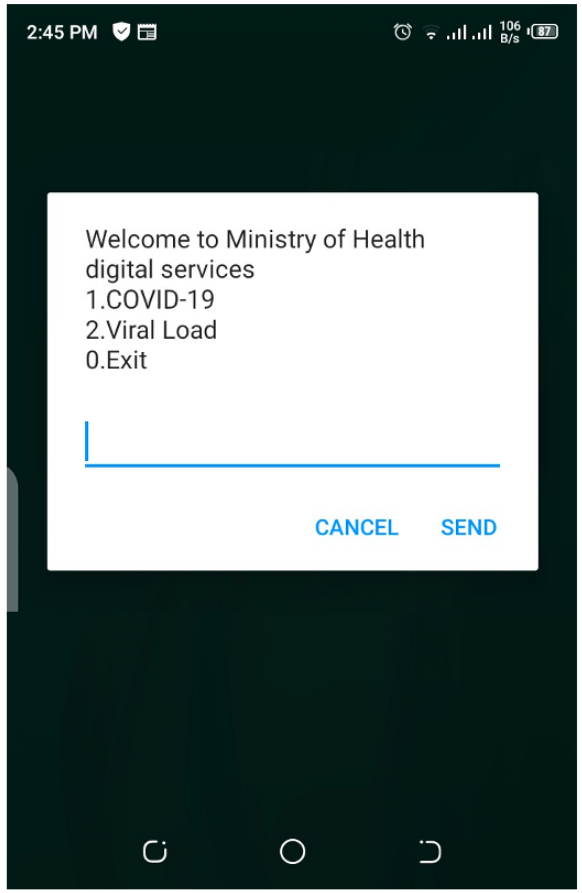


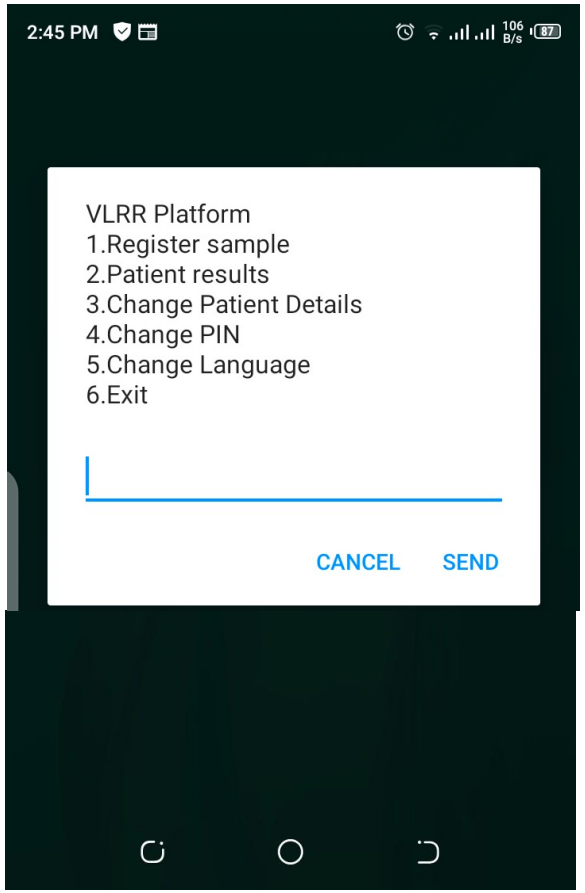
Landscape Assessment: Literature Review



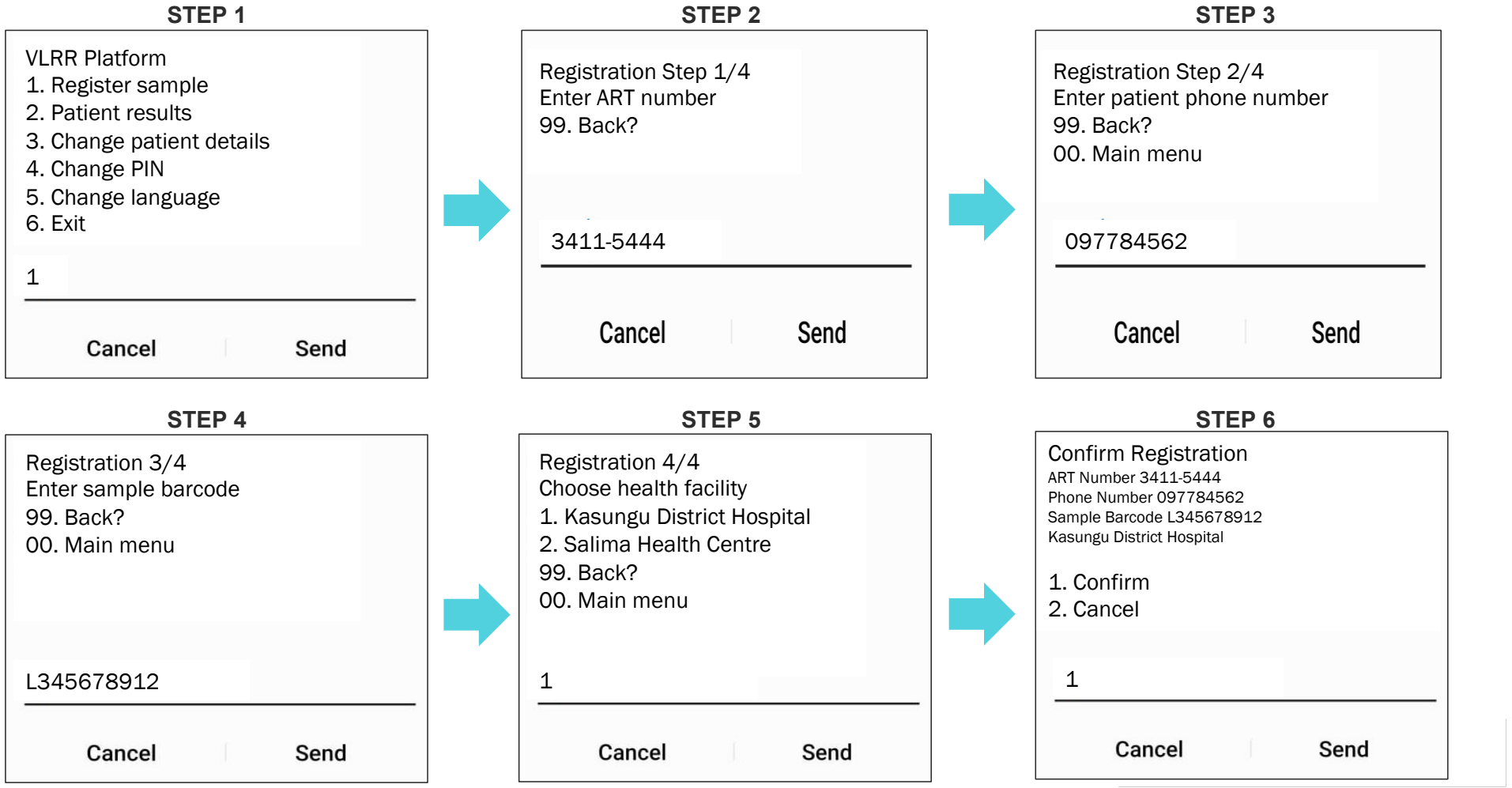
- The literature demonstrated success with smartphone applications like iThemba
- In Malawi, ***smartphone ownership is limited,*** and we wanted to ensure **usability for both smartphone and feature phone users**
- Stakeholders expressed ***concerns around privacy and confidentiality with an SMS only results return process***
- We developed a workflow process that ***uses both SMS and USSD*** to protect privacy and allow usage on all phone types

The Solution: Application Architecture

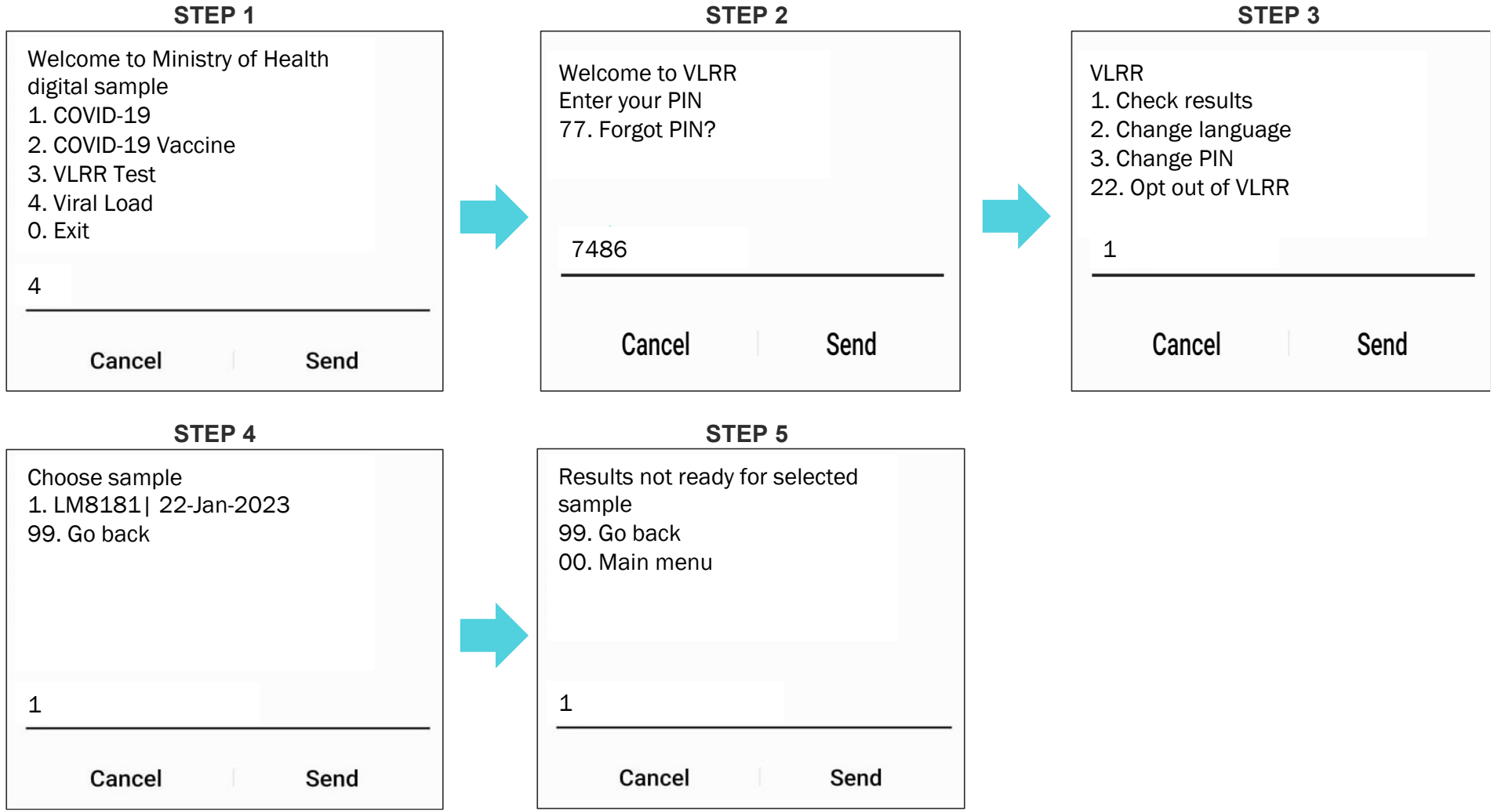




Healthcare Provider - Registering a Sample



Client - Viewing a VL Result



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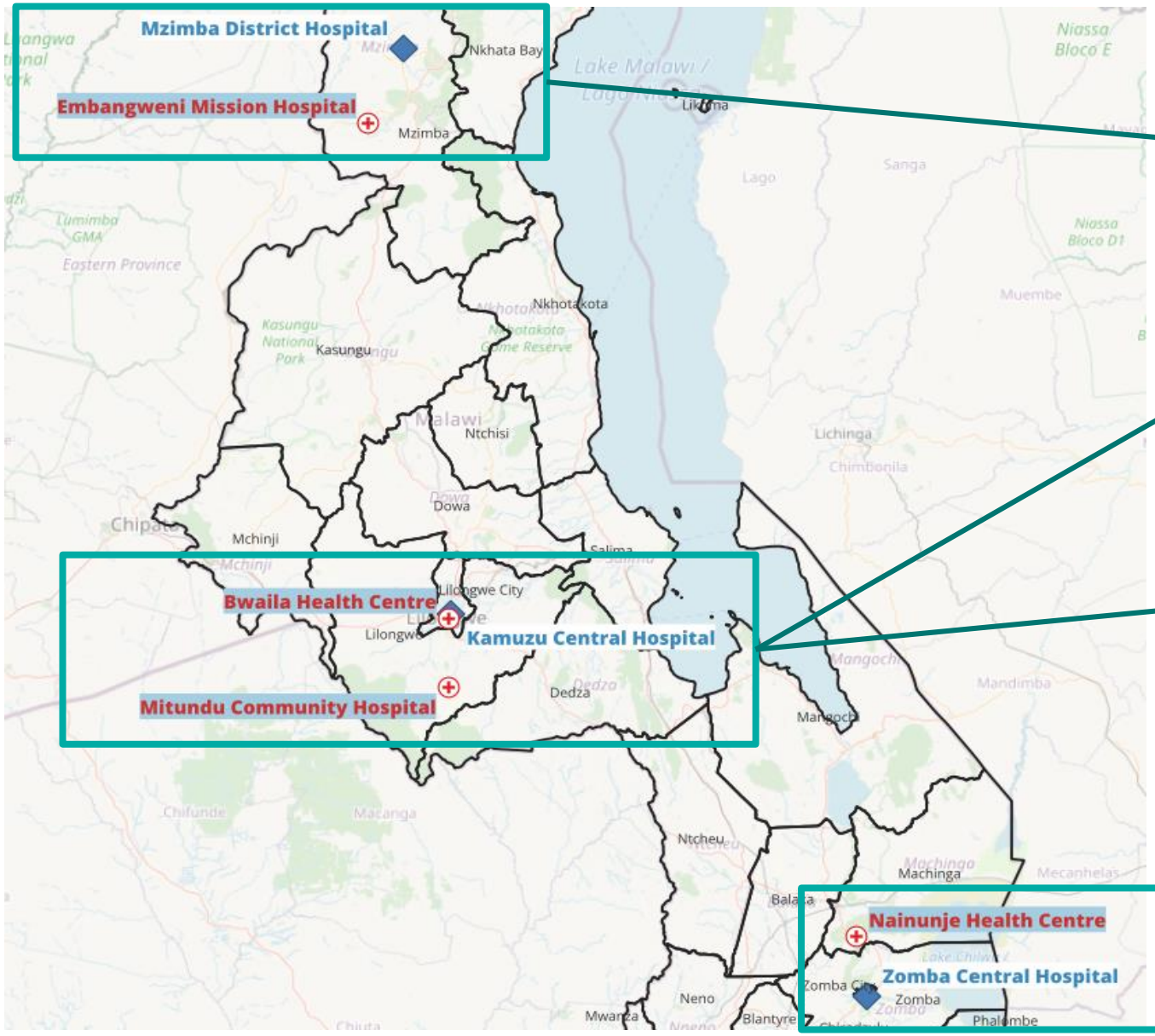
SOLUTION IMPLEMENTATION

VLRR Sites

Four Initial Sites to Test Feasibility

4 initial sites in rural and urban health facilities across 3 districts



1. **Embangweni Mission Hospital**
   Lab: Mzimba DH | Rural | Mzimba
2. **Bwaila Health Centre**
   Lab: Kamuzu CH | Urban | Lilongwe
3. **Mitundu Community Hospital**
   Lab: Kamuzu CH | Rural | Lilongwe
4. **Nainunje Health Centre**
   Lab: Zomba CH | Rural | Machinga

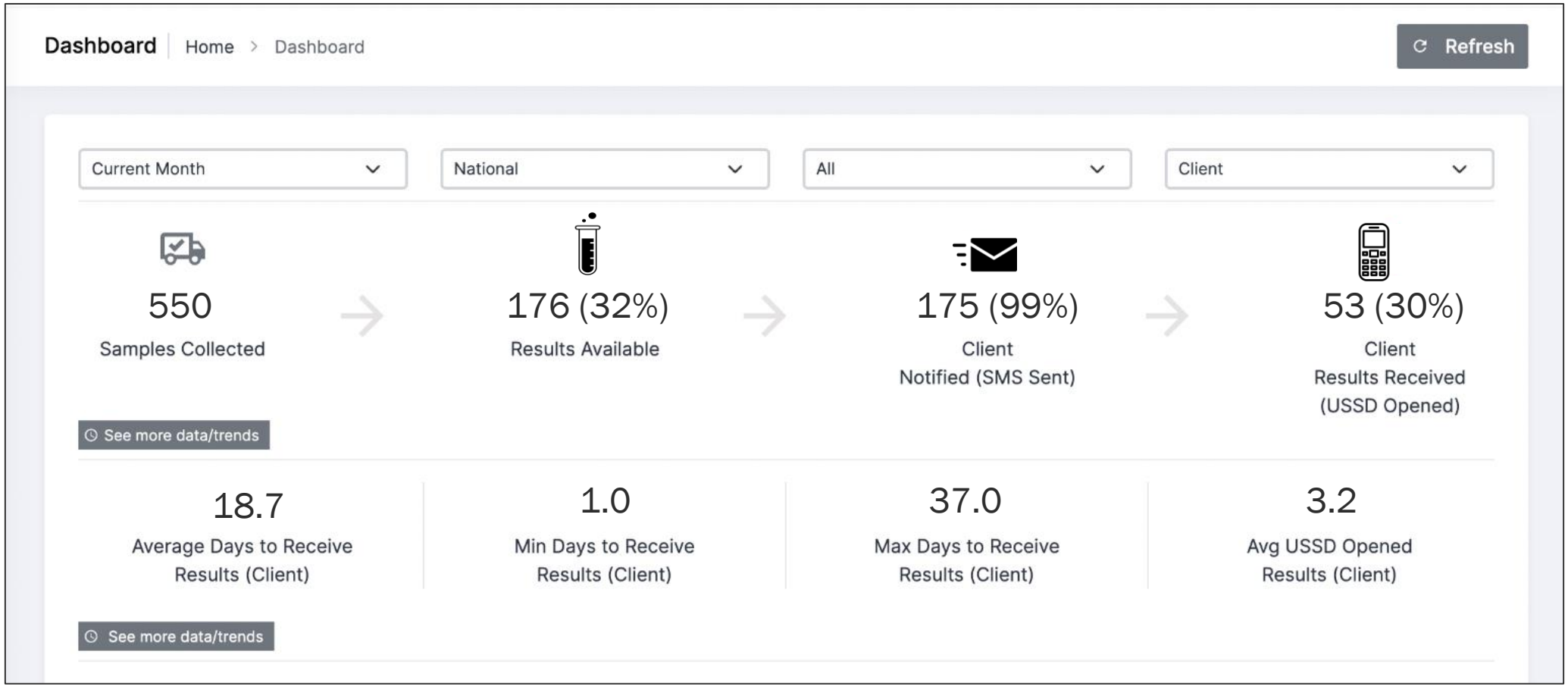
Scale-up to 10 Additional Sites - Phased Approach

Phase	District	Site	Area Class
One: November 2nd, 2023	Kasungu	Bua HC (CLM/MANERLA+ Site)	Rural
	Dedza	Lobi HC (CLM/MANERLA+ Site)	Rural
	Nkhata-Bay	Nkhata-Bay DH	Semi-Urban
	Zomba	Matawale HC	Urban
	Mulanje	M'biza HC	Rural
Two: January 30th, 2024	Salima	Khombedza HC	Rural
	Rumphi	Rumphi DH	Semi-Urban
	Chiradzulu	St. Joseph Nguludi MH	Semi-Urban
	Neno	Neno DH	Rural
	Mchinji	Mchinji DH	Semi-Urban

5 MONITORING AND APPLICATION ADAPTATION

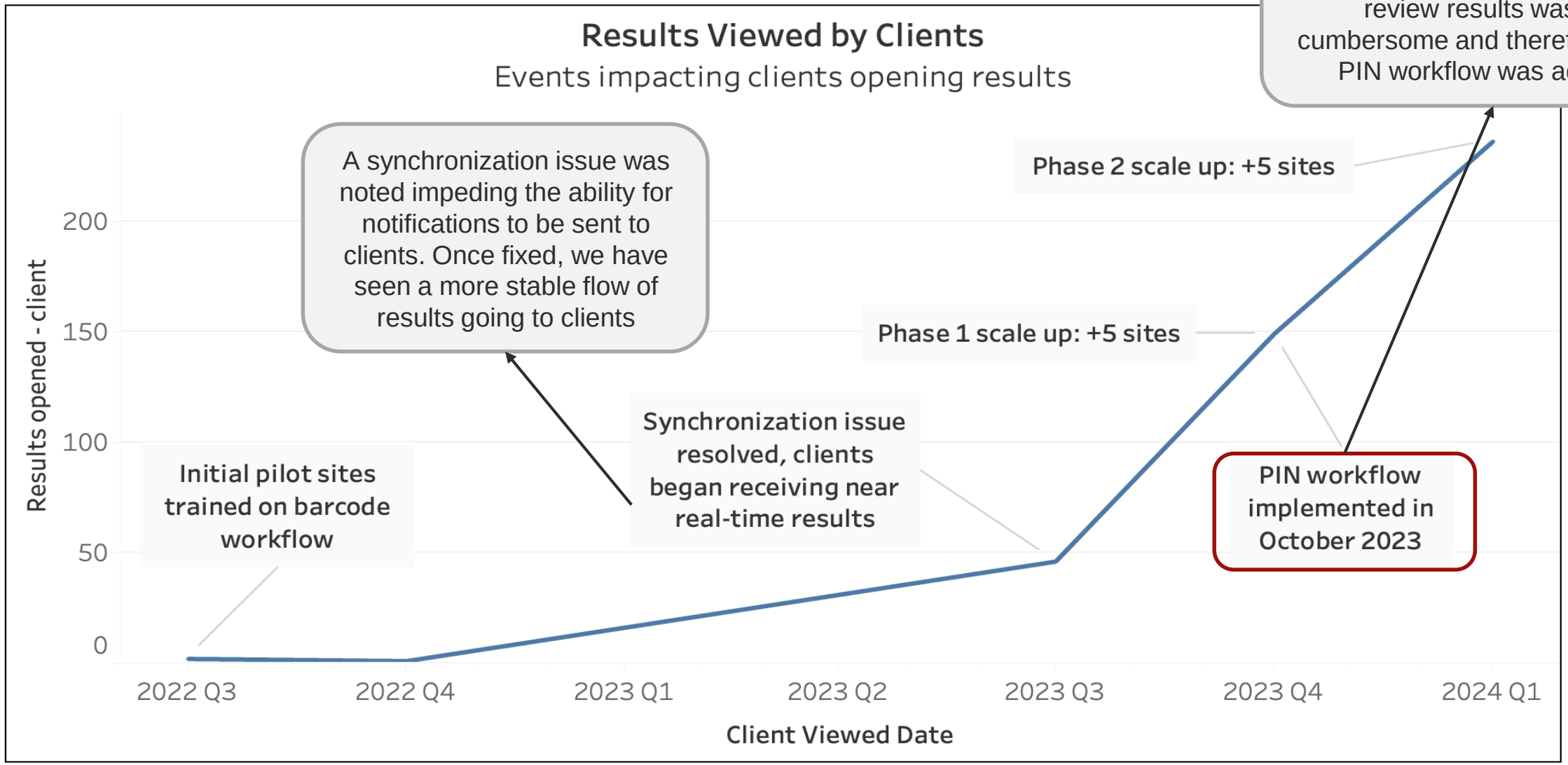
Ongoing monitoring

M&E Dashboard - Robust Monitoring Against Objectives



*Data is for illustrative purposes only

Adjust the Solution - When Needed



6 APPLICATION UPTAKE

Comparison to VLRR objectives

Measuring Success Against Project Objectives

1

Increase the number of clients and healthcare providers accessing viral load results through an enhanced, user-friendly workflow

2

Reduce the turnaround times of patients and HCPs receiving viral load results return through a digital application

3

Clients do not experience GBV nor are there concerns currently around GBV while using the VLRR platform

1 Percentage of Results Opened by HCPs and Clients

VLRR Open Rates By Key Events

	Post Synchronization resolution *(Jul 1 to present)*	Post PIN workflow implementation *(Oct 31 to present)*
HCP	46%	53%
Client	24%	27%
*Overall**	*56%*	*63%*

*uniquely opened by either a client or HCP

Low-Middle Income Country (LMIC) - Open Rates

To our knowledge 0 applications have implemented a combined SMS and USSD approach. This will therefore serve as a baseline for all future applications in LMICs

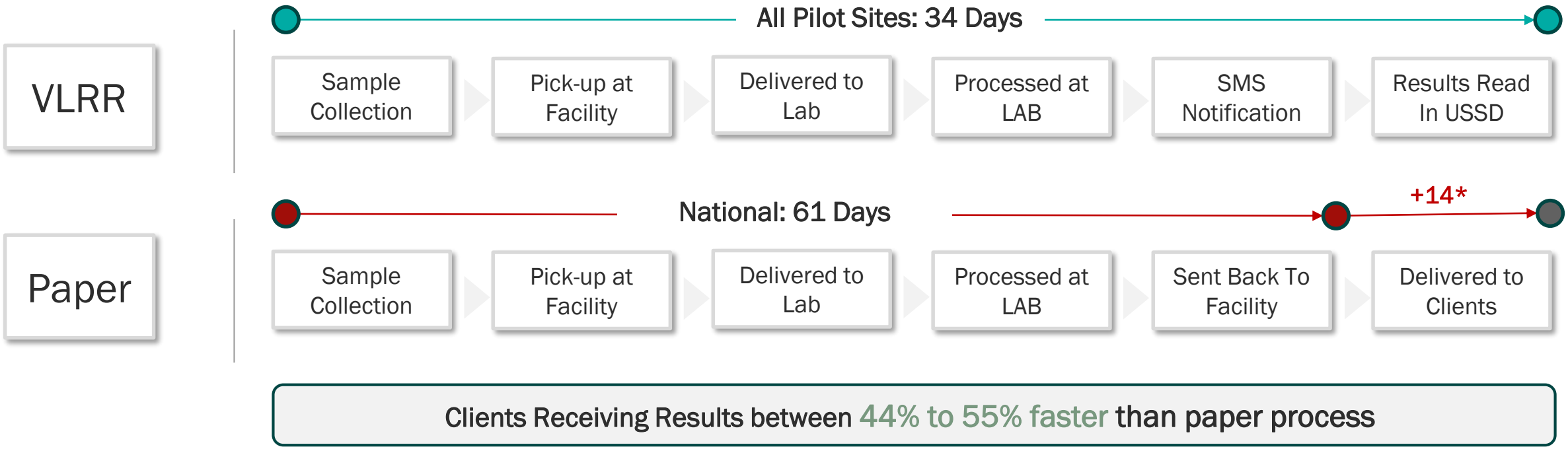
High-Income Country (HIC) - Open Rates

5 studies showed an open rate between 20.8% - 39.5% for web-based or mobile applications. This is encouraging given the resource limitations in the LMIC we are working in.

VLRR is setting open rate standards for applications leveraging a combined USSD and SMS platform. Our open rates are also on par or higher than digital health results return applications in HICs.

2 Reduction in Turnaround Time

Comparing turnaround time to standard of care:



*Estimated number of days for a client to come back to facility and be given their result

Relevant Literature

- In Zambia, the mean turnaround times for delivery of a test result to a caregiver of a tested infant, was 66.8 days (SD: 38.8) pre-implementation and 35.0 days (SD: 31.2) post-implementation.
- In Zambia and Zimbabwe, 85% of results were returned back to the health facility within 60 days

3 GBV Evaluation Outcomes

No concerns around using the VLRR or have experienced GBV because of VLRR

Successes

- Clients stated a preference for VLRR saying it is convenient and saves them time and money
- Privacy is maintained due to the PIN workflow and information is presented in a way that a casual observer would not notice

Challenges

- Poor network coverage resulting in longer times to get access to results
- Patient literacy leads to the potential of others reading sensitive information

Measuring Success Against Project Objectives

Increase the number of clients and healthcare providers accessing viral load results through an enhanced, user-friendly workflow

With VLRR, clients and HCPs are opening results between 24% and 46%.

We are setting the standard for LMICs + are on par or better than applications in HICs

Reduce the turnaround times of patients and HCPs receiving viral load results return through a digital application

On average, results are getting back to clients and HCPs 44% - 55% faster than the paper-process

Clients do not experience GBV nor are there concerns currently around GBV while using the VLRR platform

Clients have not experienced GBV nor are there concerns currently around GBV while using the VLRR platform

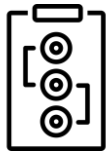
7

NATIONAL SCALE-UP & SUSTAINABILITY

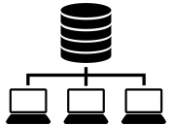
Key next steps and where VLRR is today

Next Steps - Malawi

Transfer ownership to the Digital Health Division within the MOH for long-term maintenance and sustainability *(in current VLRR grant deliverables)*



Finalize national scale-up and sustainability plan *(in current VLRR grant deliverables)*



Department of HIV and AIDS within the MOH is eager to integrate the VLRR platform with existing digital and point of care systems to further enhance user experience *(outside current VLRR grant deliverables)*

National Scale Estimates - VL Tests

National estimates using VLRR data

Clients

19% - 28% → * 675,000 yearly tests → 130k - 190k

% of results opened in VLRR (range)

test results opened digitally

130,000 - 190,000 tests would be read digitally 44-55% faster by clients

HCPs

22% - 42% → * 675,000 yearly tests → 148k - 284k

% of results opened in VLRR (range)

test results opened digitally

148,000 - 284,000 test results read digitally 28-41% faster by HCPs

Note: ~ 260,000 (38%) test results are likely never delivered to a client with the paper-based system. VLRR ensures clients and HCPs always have access to these.

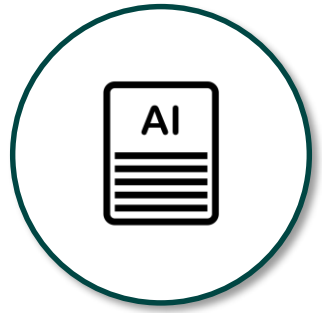
Additional Use Cases

With minimal changes to the existing workflow, the application can also be used for:

Additional confirmatory lab tests (e.g., TB, Malaria, cervical cancer)

Two-way communication channel (HCP & Clients)

Secure way to bring consented clients back to ART care (LTFU)



Use precision nudging to send reminders to clients to check their results

VLRR - What We Know Today

1. Clients and HCPs are continuing to open results at a higher rate
2. Clients report reduced travel time to clinics and are not concerned about GBV
3. HCPs have seen a decrease in traffic on clinic days, reducing their workload
4. Results are being transmitted to clients faster
5. VL tests are not susceptible to being lost and can be accessed at any time
6. VLRR is a cost-effective platform that can be scaled with minimal costs
7. Application is built using open-source code and can be scaled to different use cases (e.g., Malaria, TB, HPV) or to a different country

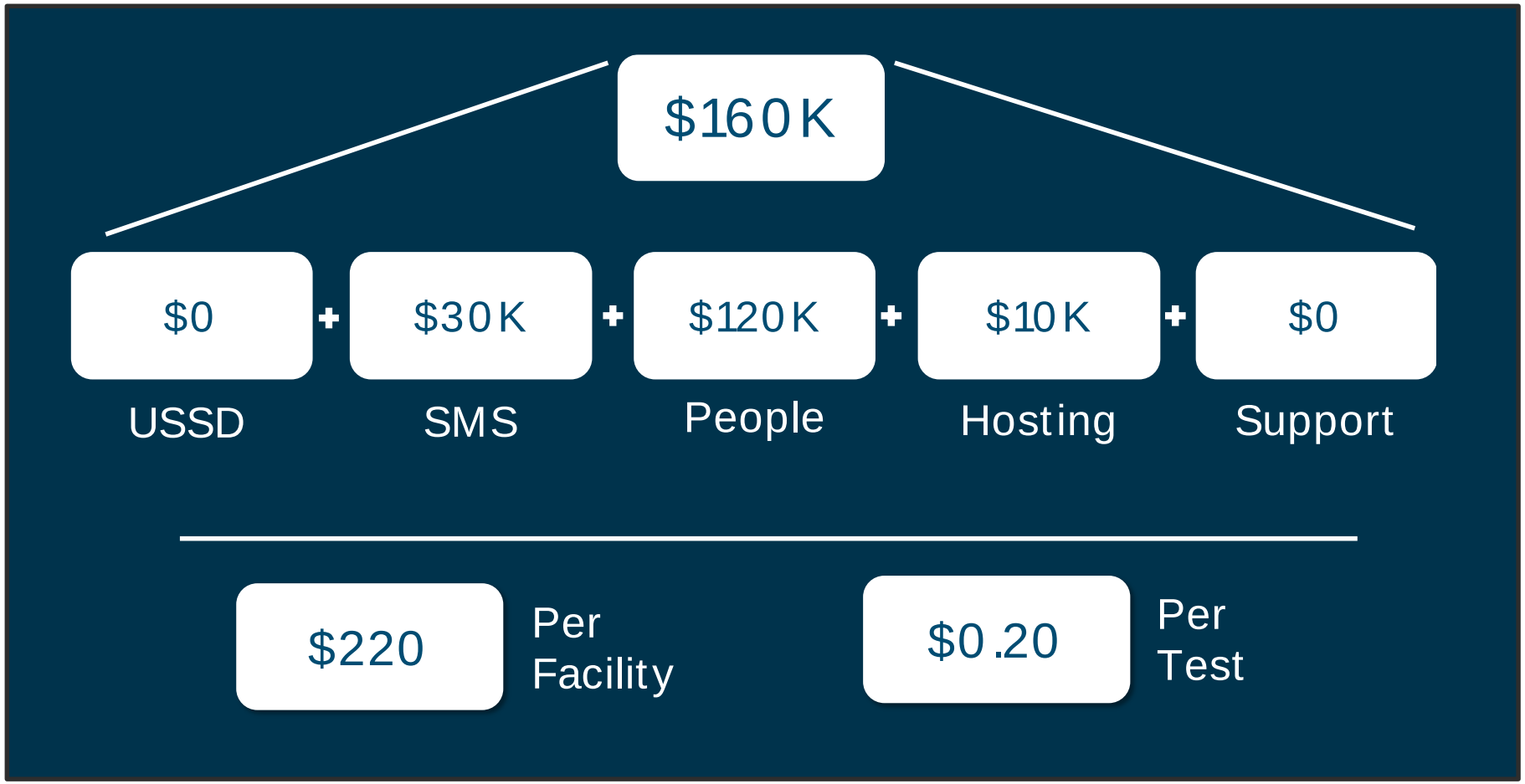
8

QUESTIONS & DISCUSSION

APPENDIX

VLRR Scale Up Costs

Given the investment into VLRR, the yearly recurring costs for the VLRR platform would be minimal



*Does not factor a one-time training cost of ~$300k for all sites (~720) in Malawi

Additional Benefits of the Platform

- Built using open-source code, allowing it to be easily transitioned to the digital health division under the Ministry of Health
- Reduces the bottlenecks caused by redraws from missing tests at labs
- Flexible architecture allows for integration with other tests (e.g., cervical cancer, TB) and systems (e.g., EMR)