TB DIAH

TUBERCULOSIS DATA, IMPACT ASSESSMENT AND COMMUNICATIONS HUB

The Digital Transformation of TB Surveillance Systems: Practical Lessons and Country Perspectives

December 14, 2023

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Tuberculosis Data, Impact Assessment and Communications Hub

TB DIAH

TUBERCULOSIS DATA, IMPACT ASSESSMENT
AND COMMUNICATIONS HUB

- Part of the Global Accelerator to End TB
- Global, five-year (2018-2025) associate award, $36M cooperative agreement
- Small team of M&E and TB experts working to clarify TB data in way that helps USAID monitor its TB investments in its TB priority countries
- Helps countries use data to share their story

What Does TB DIAH Do?

1 Surveillance (Data)

Result 1: Strengthen the collection, analysis, and use of routine and surveillance TB data

2 Reporting (Information)

Result 2: Improve performance-based (M&E) frameworks and information gathering processes: tools, methods, and technical guidance to meet user needs

3 Communications (Knowledge)

Result 3: Strengthen reporting and communication to address knowledge gaps and share methods, tools, and approaches

What Does TB DIAH Do?

WORK STREAMS

PBMEF

Performance-based M&E Framework

- Contains the 10 core and extended indicators to help Missions track progress against TB targets and manage USAID's TB investments—all in one place

MESSA

M&E and Surveillance Systems Assessment

- An overview of M&E and surveillance systems in each USAID TB priority country

ARC

Assessment of Data Collection, Reporting and Analysis Capacity

- Measures a country's capacity to collect, report, and analyze PBMEF indicators

STEP

Surveillance System Strengthening Plan

- Systematic and multi-faceted assessment of a country's TB M&E and surveillance system
- Identifies strengths and gaps across the system, examines the quality of the data, and develops the implementation of a costed action plan

QTSA

Quality of TB Services Assessment

- Provides periodic data to inform NTPs, USAID missions, and other stakeholders of the current state of quality of TB care and what strategic investments and actions may be needed to improve TB services

What Does TB DIAH Do?

WORK STREAMS

D2AC

TB Data-to-Action Continuum

- Measures the progress of countries as they work toward improving their TB M&E and surveillance systems

COEs

Centers of Excellence

- Establish Centers of Excellence to test and model best practices in TB M&E and surveillance

NTPW

National TB Programs Websites

- Work with priority countries' NTPs to adapt their websites and increase their transparency scores using the Stop TB Partnership's Governance of TB Programs criteria

TBDIAH.org

TBDIAH.org - Data Hub and Repository

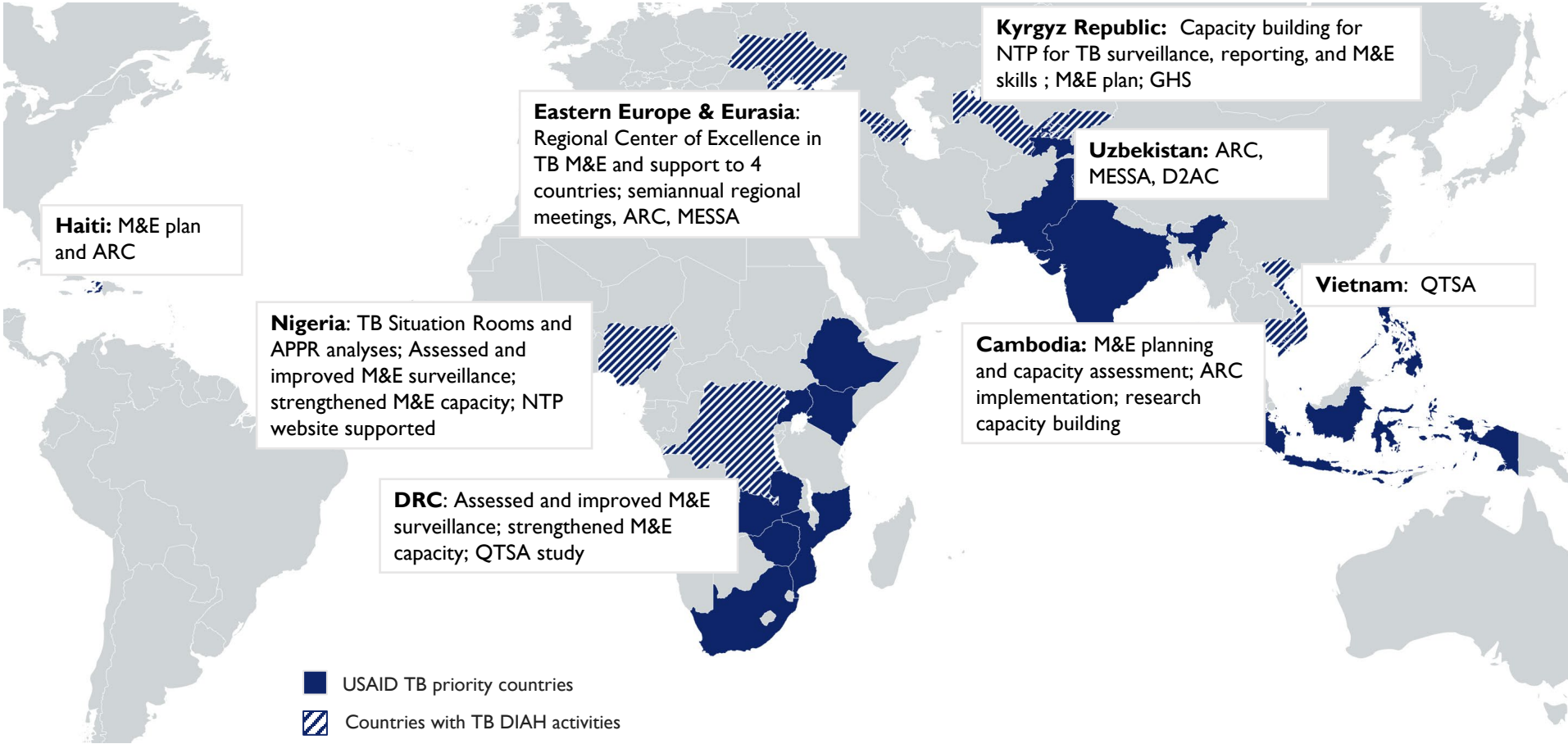
- A one-stop shop website offering public and secure work areas to support USAID TB program managers, technical advisors, and country stakeholders with data analysis and reporting, and access to tools, resources, and guidance to contextualize and apply data to their programming

E-Learning

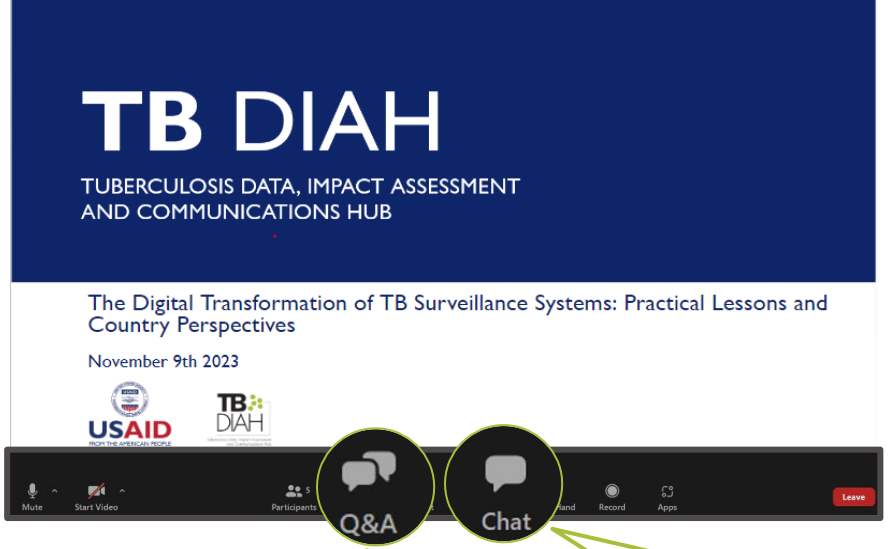
E-Learning – training.tbdiah.org

- Online courses for frontline workers, community health staff and in TB Contact Investigation, finding cases among those living with HIV, and TB Monitoring & Evaluation (M&E)

Where Does TB DIAH Work?



HOUSEKEEPING



Please **use the Q&A for all questions.**

Please **tell us who you are and where you're from in the chat.**

Questions will be addressed during and at the end of the webinar.

The webinar is being recorded and a link to the recording and presentation will be shared with all attendees and registrants tomorrow by a Zoom link and email.

Thank you for joining our discussion on the digital transformation of TB surveillance systems today!

Olusegun Abiodun Hassan

Maka Danelia

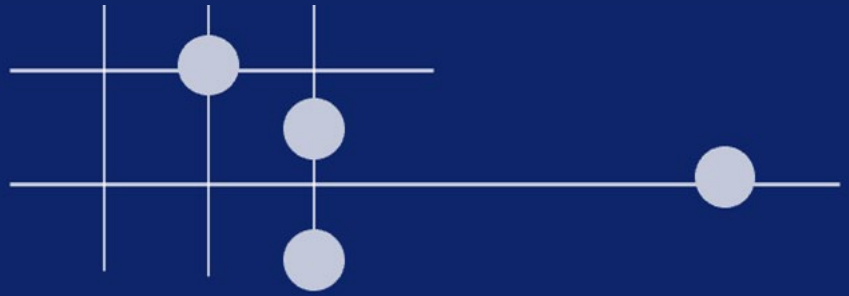
Ngak Song

Tariq Azim

Meredith Sliver

Manyobvo Machipanda

Yanira Garcia-Mendoza



Introduction

Webinar Objective and Overview

- **Today's objective:**

  To share and learn about the practical considerations for a country attempting to transition its TB surveillance system from a traditional paper-based model to a digital system.

- **Today's format:**

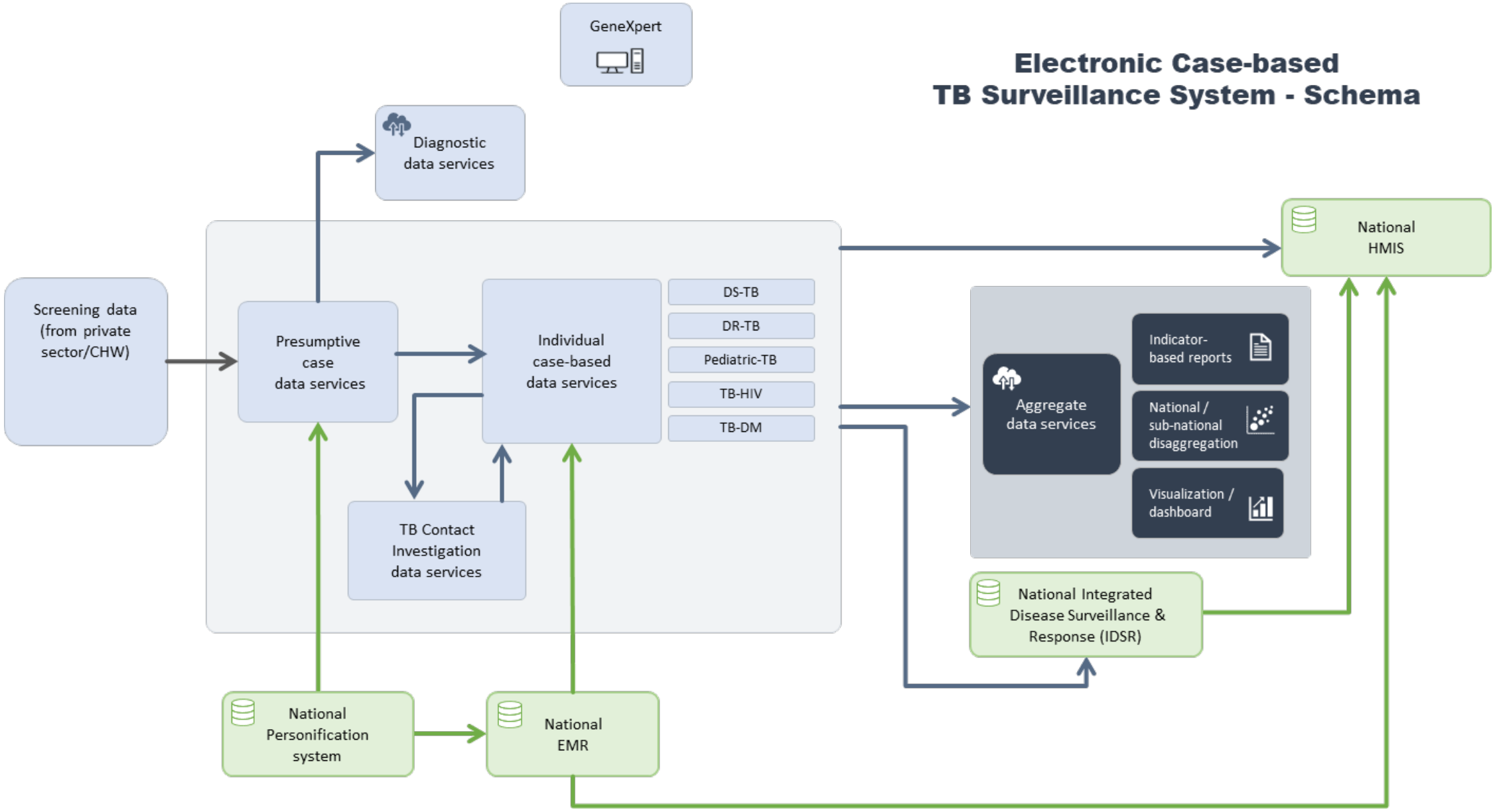
  ✓ Presenters will share examples of the digitization experience from Nigeria, Georgia, Cambodia, and the Kyrgyz Republic, sharing strategies and solutions that can guide a country towards that transition in a systematic manner.

  ✓ The audience will be asked questions to spark discussion about the transition process, including the challenges faced and the solutions developed as a result.

What is TB Surveillance?

- TB surveillance is the ongoing systematic collection, analysis, and interpretation of TB data. It is:
  - ✓ Essential to planning, implementation, and evaluation of public health practice.
  - ✓ Closely integrated with the timely dissemination of the resulting information to those responsible for preventing and controlling/eliminating the disease.

What is Case-Based TB Surveillance?



Webinar Agenda

1.5 hours

- Country presentations
  - ✓ Progress on adapting electronic TB surveillance system in Nigeria
  - ✓ How Georgia shaped the enabling environment to create a robust health management information system (HMIS)
  - ✓ Digital transformation of TB surveillance system in Cambodia: creating a detailed roadmap
- A strategy and potential solutions towards a digital transition
- Q&A
- Wrap Up

Poll Question: 1

- When thinking about creating a digital TB surveillance system, what would be some of your key considerations?

Progress in Adopting Electronic TB Surveillance: NETIMS Assessment in Nigeria

Overview: Transition to NETIMS in Nigeria

Paper-Based System

- Early part of TB program
- Paper records at facility and LGA levels
- Limited data demand and use
- Minimal facility coverage

Paper-Based/Excel-Based System

- Increased data demand and use led to this transition
- Paper records at facility and LGA levels; Excel used at state and national level
- This was marred by
  - Data stored in formats that limit use
  - Under reporting of key indicators
  - Delay in reporting
  - Difficulty in data collation and completeness

Hybrid Paper & Electronic

- e-TB manager deployed for DR-TB case management and later expanded to DS-TB case management
- Introduction of other electronic platforms (DHIS2 Gx-alert, EWORS, EPCON, Comm Care, MATS, TB STARR)
- Aggregate data reporting on Excel
- Paper-based recording at facility level

Rationale for NETIMS Assessment

Challenges faced by NETIMS users:

- ✓ **Integration Issues** : Multiple systems that are not well integrated.
- ✓ **Data Quality:** Timeliness, completeness, accuracy of data from the electronic system, and limited granularity.
- ✓ **Limited National Coverage:** Insufficient national coverage of electronic data collection and management at the facility level.
- ✓ **Irregular Data Export:** Data export from e-TB Manager to DHIS 2 is irregular and incomplete.
- ✓ **Sub-optimal data use:** Limited use of data for programmatic decision making at sub-national levels.

NETIMS Assessed

E-TB Manager — National

- This is the Central TB Program data repository; Designed to collect TB program data from presumptive to treatment outcome; Has web and mobile applications; Open source; Comprehensive architecture; Is not functioning as a single reporting tool for the TB program as it is not integrated with all NETIMS platforms, but API exists with GxAlert.

DHIS2 — National

- This is the National Health Information System data repository; Data exchange exists between e-TB Manager and DHIS2.

MATS (Mobile Application for TB Screening) — 22 States (out of 36)

- Effective for screening and notification; Has web and mobile apps (Android offline/mobile app); Open source; Clean design and interface; Supports outbound data API.

EWORS (Early Warning Outbreak Recognition System) — National

TBSTARR — 16 States

- Simple, intuitive user interface; Effective for screening and notification; Has web and mobile applications; Closed source.

GxAlert — National

- GxAlert performs a unique function in directly accessing test results from GeneXpert lab machines and notifying them.

CommCare — 14 States

- Widely used data collection platform; Android offline/ Mobile App; Contains patient records and case management capabilities; Supports entire TB Care cascade (Screening/notification, Diagnoses, Treatment Follow Up); Supports bi-directional data transfer APIs; Used extensively internationally for TB case management; Open source.

EPCON — 4 states

NETIMS Assessment: Key Findings

Device Usage Patterns:

- ***e-TB Manager Users:*** Tablets
- ***TB STARR, MATS, and CommCare users:*** Personal mobile phones;
- **GxAlert users-** Personal computers.

Challenges in creating individual profiles on the e-TB manager.

1

Human Resources:

- Shortage of Human Resources for eTB manager implementation.
- Non-availability of key roles: System Administrator, Software Developer, Health Informatics, System Engineer, and Database Administrator.

2

e-TB Manager Functionality

- Suboptimal status of e-TB Manager functionality.
- Less than 50% user data input capability.
- System's inability to generate custom reports.

3

Outdated Deployment Technology:

- Use of outdated technology for Local e-TB Manager deployment.
- Lack of mainstream support.

4

Smart Tools for Active Case Finding - EWORS and EPCON:

- EWORS and EPCON offer smart tools for proactive case identification and contact tracing, employing hotspot heat-mapping, and alerting features.

5

Overlapping Functions - MATS and TBSTARR:

- MATS and TBSTARR share similar functions, potentially causing overlap.

6

Compatibility Challenge-Commcare:

- Commcare shares capabilities with e-TB Manager but may be challenging to integrate domestically.

7

Unique Functionality - GxAlert:

- Direct access to GeneXpert lab results and real-time notifications.

8

Security Vulnerability - Lack of SSL Certificates:

- The absence of SSL certificates in e-TB Manager and MATS poses a security risk.

9

NETIMS Assessment: Recommendations

Improving functionality of e-TB manager

- Enhancing functionality
- Integration and platform enhancement
- Engage a local IT firm

01

Strengthening data exchange and interoperability

- Streamlining NETIMS platforms
- Adopting modern integration approaches
- Facilitating central data collection with e-TB Manager

02

Enhancing integration of NETIMS platforms

- Securing applications with SSL certificates
- Retain stable apps and their functionalities
- User Acceptability Test for National Screening Tool

03

NETIMS Assessment: Recommendations

Addressing operational and infrastructural issues

- Establishing a health informatics community for TB program
- Improving internet connectivity

04

Implementing local content

- Develop roadmap for alternative case-based electronic platforms using NETIMS criteria, potentially replacing e-TB Manager and other systems with overlapping functions

05

Poll Question: 2

- What governance structures and processes would you ensure for implementing digitized TB surveillance?

Development of a New Health Management Information System in Georgia

Georgia's Old HMIS: Strengths and Weaknesses

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Strengths

- Comprehensive
- Reliable
- Data Quality-Assured
  - ✓ There are dedicated and trained staff
  - ✓ A supervision checklist includes detailed variables covering every TB programmatic activity and is completed at each visit per facility
  - ✓ Data validation occurs across various data sources: TB paper-based registries (TB-03), laboratory registries, the National Center for TB and Lung Disease (NCTLD) database, random individual treatment cards, and patient and doctor interviews
  - ✓ Supervision checklists from each facility are entered into an Excel spreadsheet for further analysis

Weaknesses

Data collection at the TB care sites are purely paper-based

Database adaptation is not possible

There is no automation of the business process

The databases have duplicated records

Real-time data exchange is problematic

Georgia's New HMIS

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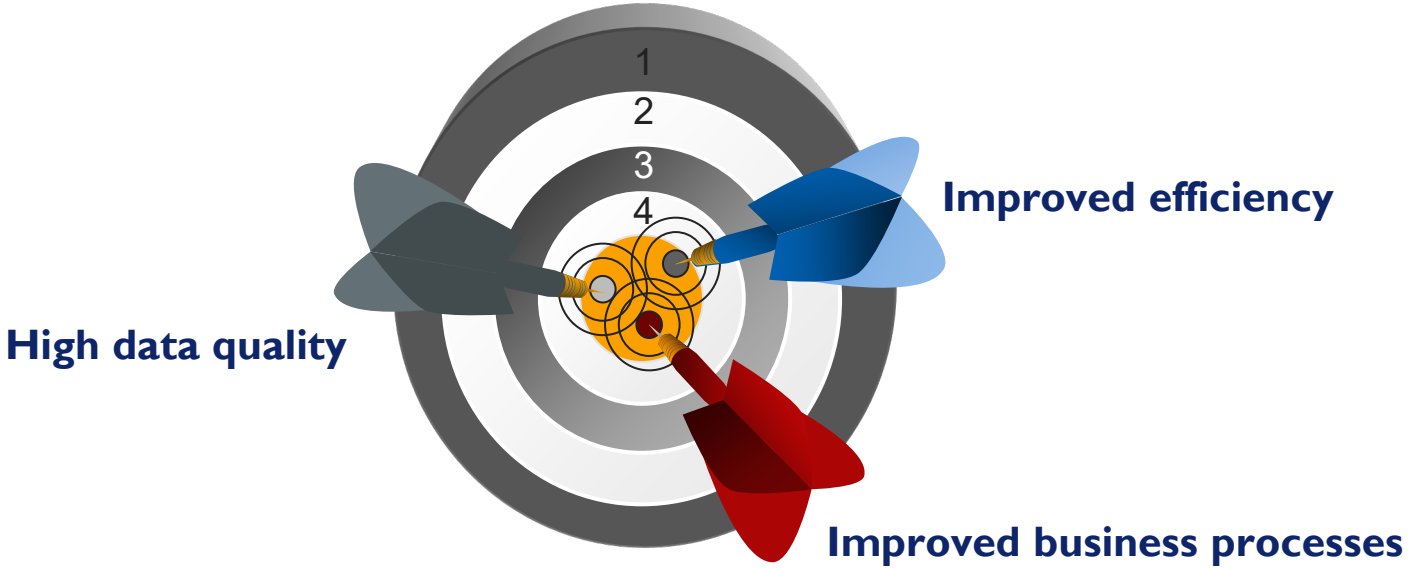
Objectives

Develop a new HMIS

- Based on state-of-the-art technology
- Best applicable to country needs

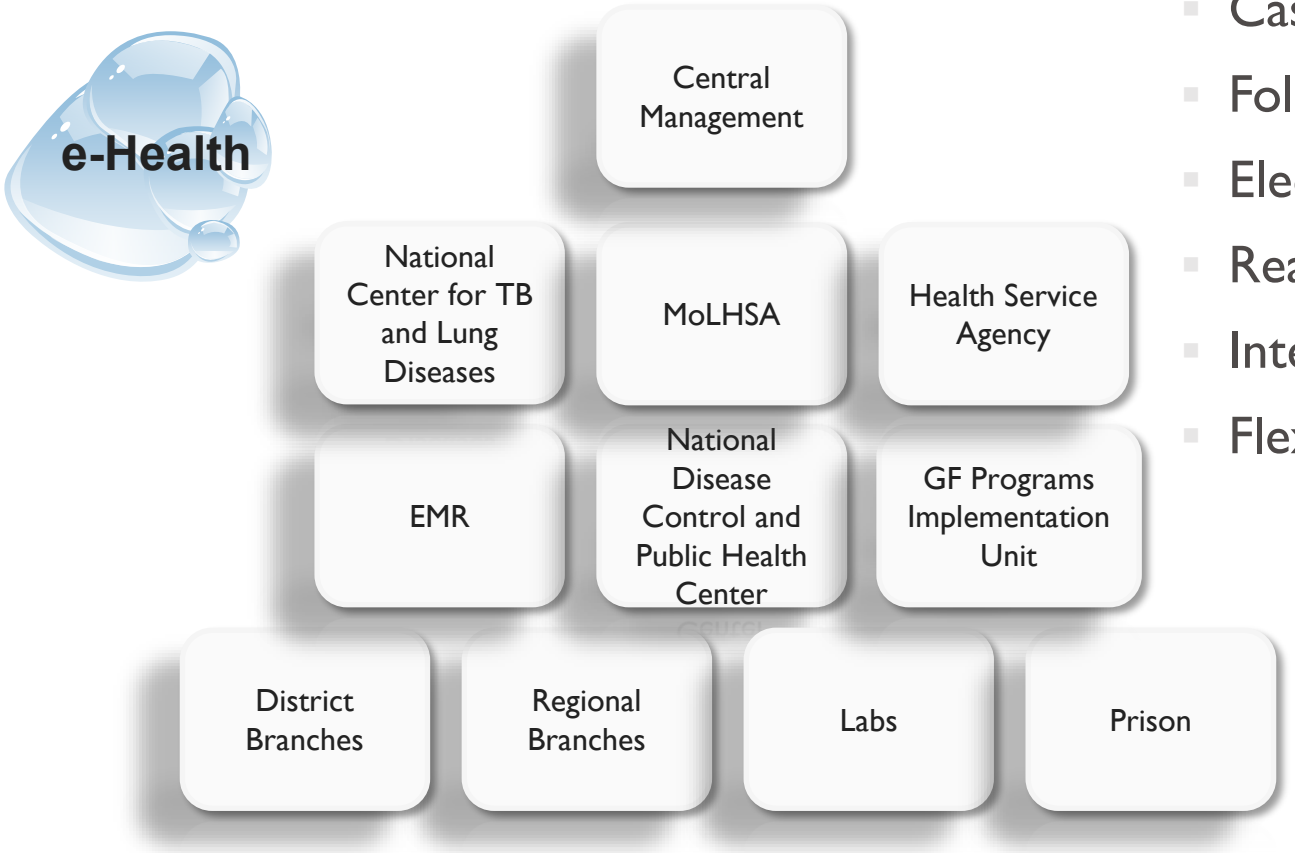


Decision-Making

Deciding to roll out a new HMIS entailed:

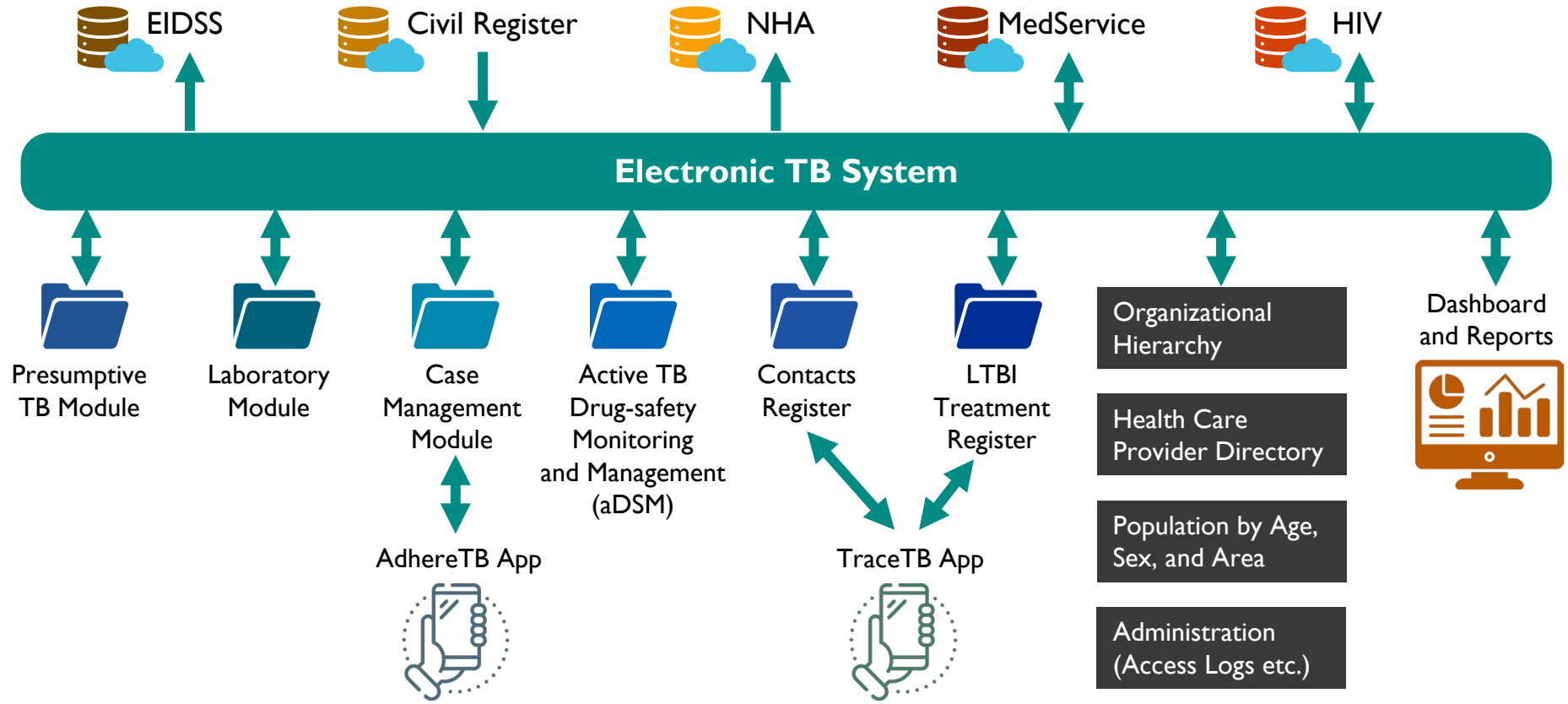
- Country dialogue
- Development of a task force
- WHO consultancy/mission
- Selection of the optimal approach to ensure integration and sustainability
- Development of an implementation plan

New HMIS



- Case-based
- Follows the patient pathway
- Electronic
- Real-time
- Integrated
- Flexible

New Health Management Information System (HMIS)



Implementation Process

- Started at pilot sites
- Orientation sessions were held for public and private healthcare facility management staff
- Comprehensive training was provided
- Ministerial order was issued mandating electronic reporting
- Implementation process has been backed up by the state TB program and the Global Fund program

Implementation Challenges

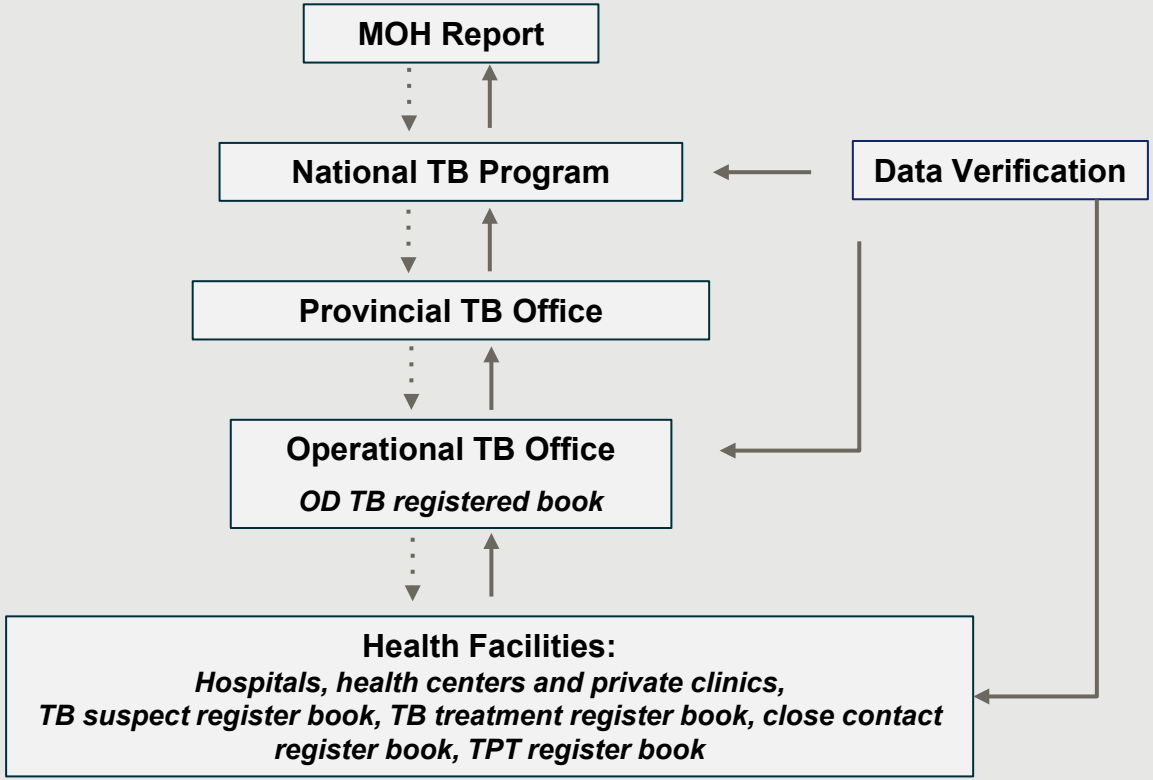
- Too many different players involved
- "Classroom" training is not sufficient; continuous support is needed
- Adaptation of new technology particularly difficult for aging staff
- Staff has to cope with duplicated workload
- The countrywide roll out revealed the need for some system adaptation
- Several district-level facilities require additional equipment and IT support

Poll Question: 3

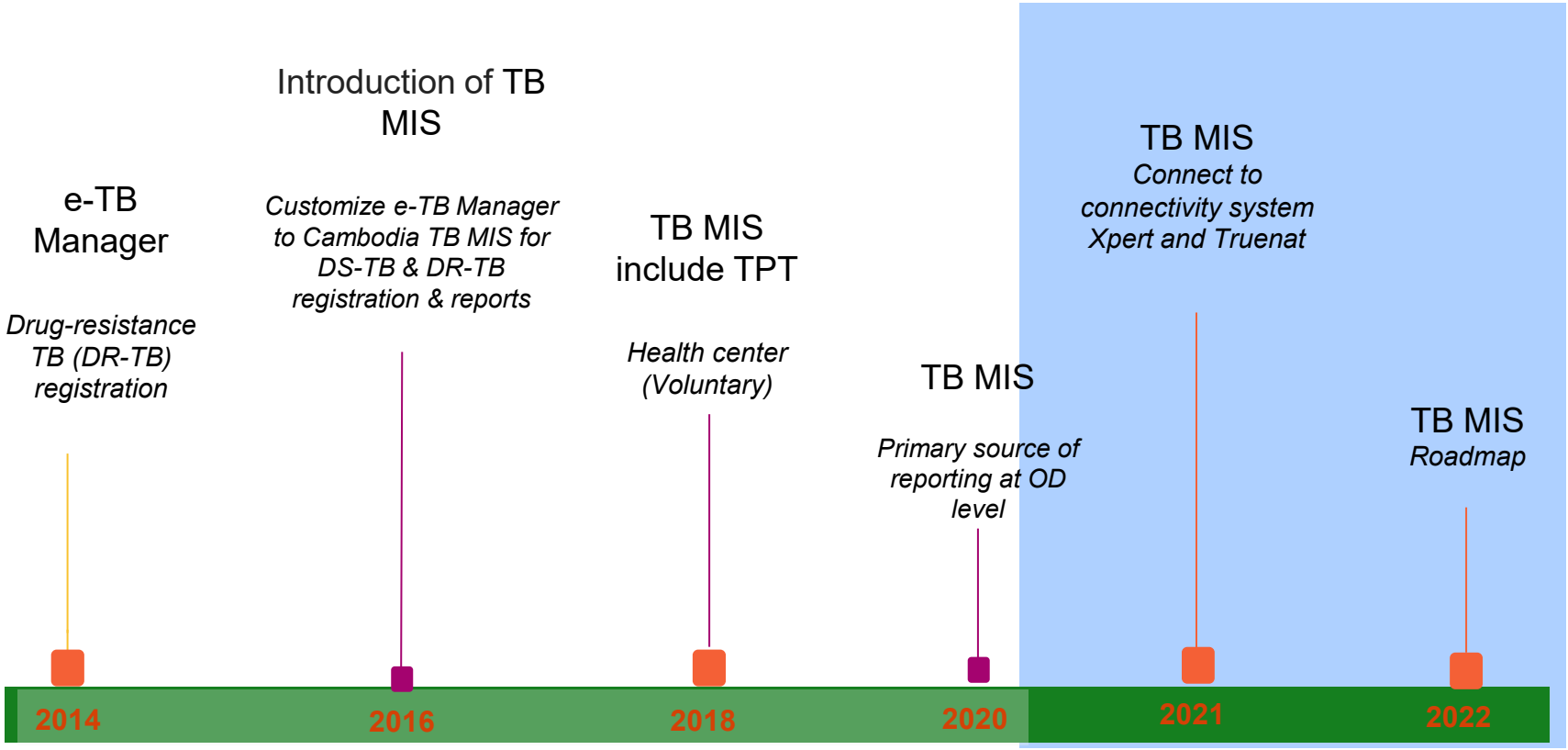
- What operational aspects of TB surveillance digitization would you prioritize if your country decided to transition to a national, digital, case-based TB surveillance system?

Cambodia's Experiences on Transitioning from Paper-Based to Case-Based Digital TB Surveillance System

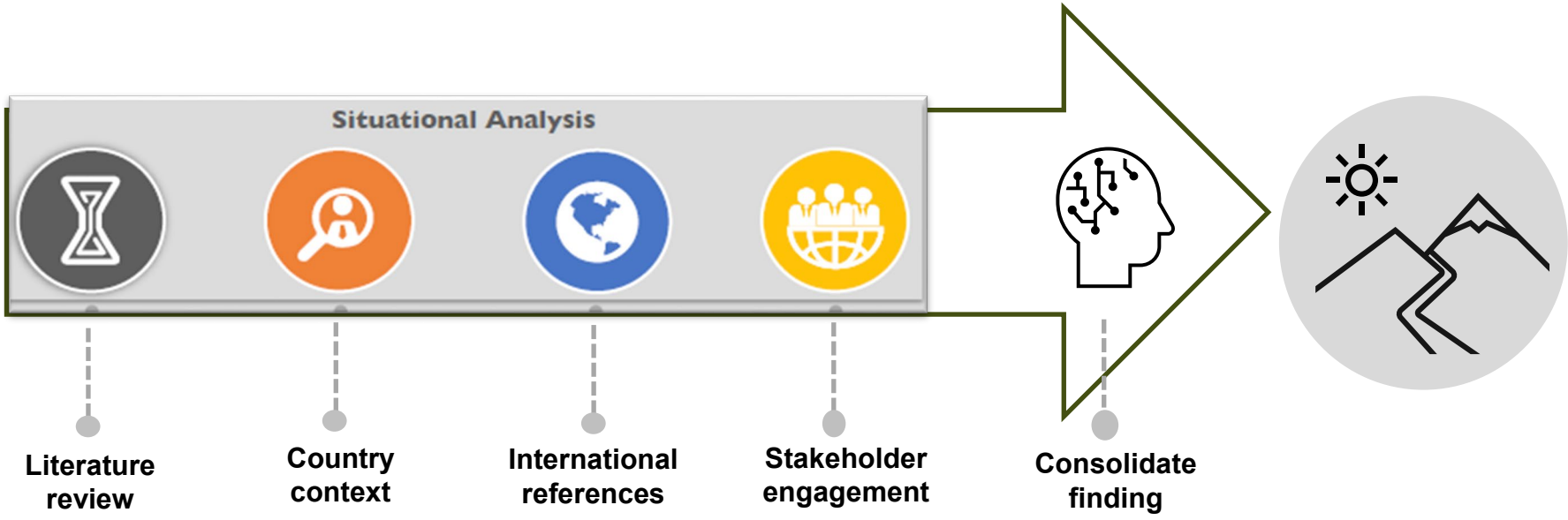
TB Surveillance System



Evolvement of TB MIS System



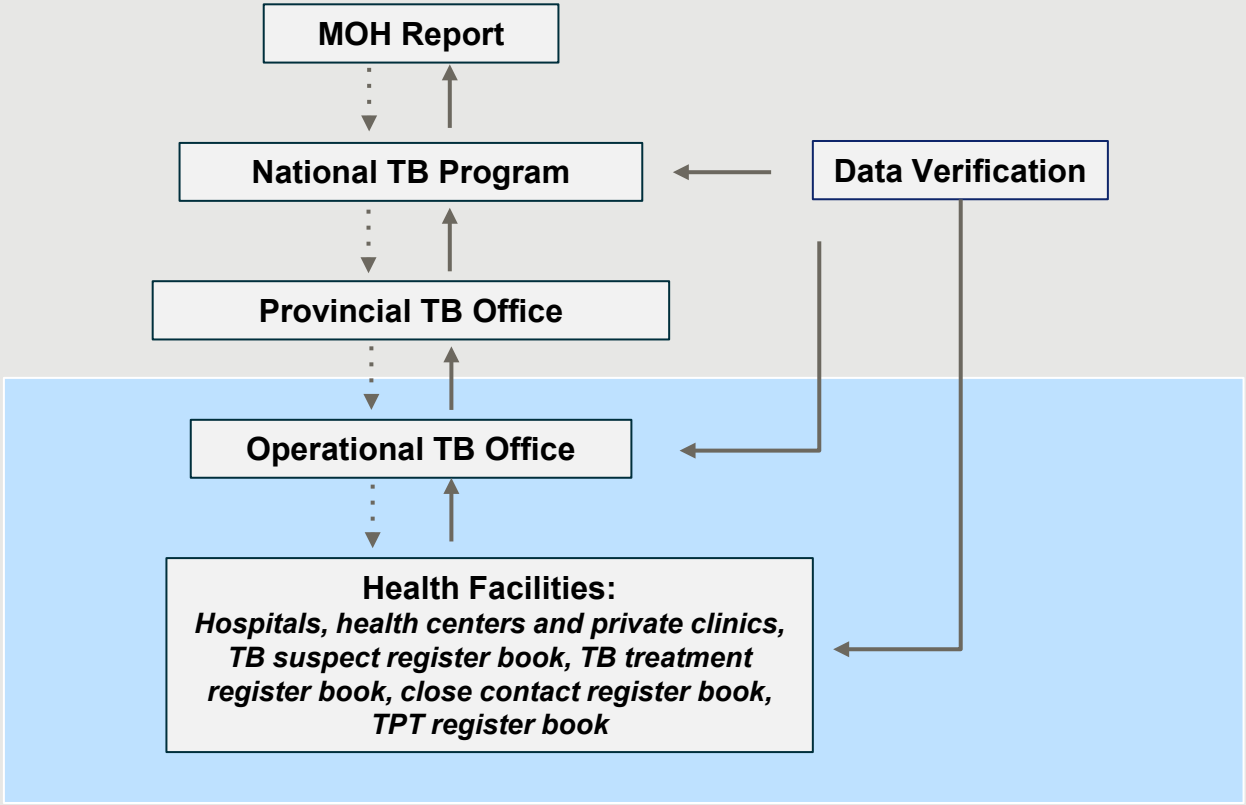
Process of TB MIS Roadmap Development



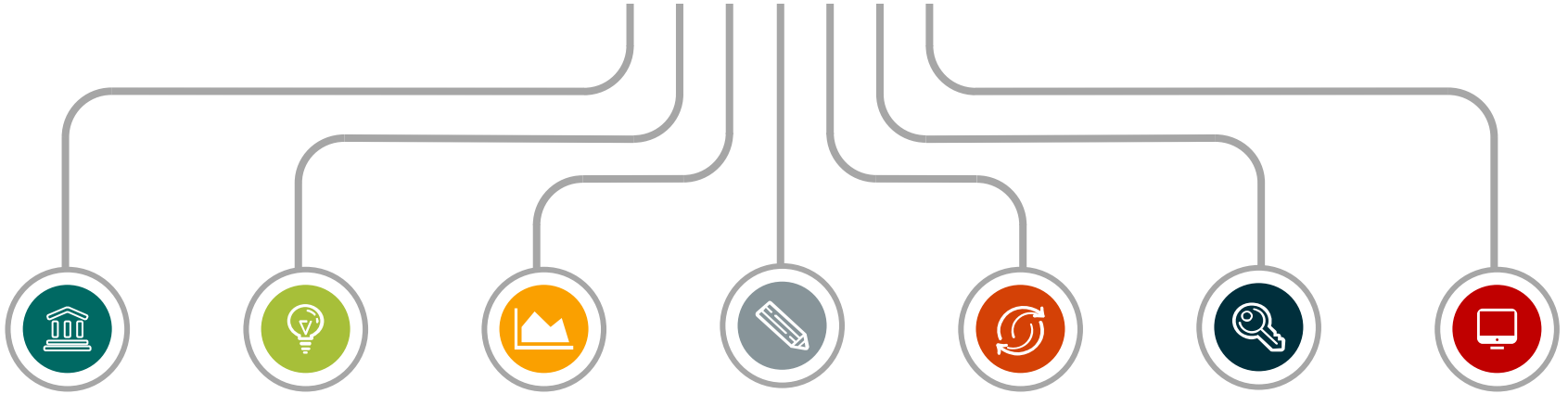
Maturity of TB MIS System

Strategic Alignment	• No clarity	• Strategic guideline or plan available	• Capture and analyze learnings to re-align	• Complete buy-in from top-bottom
Digital Journey of TB MIS	• Manual or Excel driven	• Decentralized standalone application	• Fully integrated and interoperable application	• Fully integrated out-of-box component of National HMIS
ICT Enabled Human Resource	• Lack of ICT capacity	• Improving capacity through focused training programs	• Mandatory ICT enablement for existing and newly hired resources	• ICT certified human resource
Business IT Alignment	• None	• Basic Digitization	• Digitally transformed environment	• ICT centric environment
Innovation	• No clarity or plan	• Currently exploring features	• Incorporated emerging features	• R&D established and fully operational
Collaboration and Integration	• Resistance	• Ad Hoc need driven	• Open to collaborate and/or integrate but unavailability of standards or mechanism	• Fully compliant with national guidelines on interoperability
Value Management	• No visibility	• Visibility at the top management level	• Visibility and recognition at top- mid level management	• Everyone from bottom-up sees and recognize the value
Governance	• Ad Hoc (manual)	• Formal working groups or taskforce	• Steering committee	• Real-time data driven governance
Risk Mitigation	• No plans	• Server-end is fully compliant	• Application and entire infrastructure is covered	• Top Priority and compliant to industry standards
Partners	• None	• Memorandum of Understanding (MoU)	• Donor Funded	• PPP *Ultimate Goal

Focus Areas for TB Roadmap Development



Key Priorities to Improve Cambodia's Digital Case-Based Surveillance System



Leadership and Governance

Strengthen institutional leadership and governance

Strategy and Investment

Operate and sustain TB MIS initiative

Standards and Interoperability

Reliable data collection and exchange of TB information through MIS

Legislation, Policy, and Compliance

Develop and implement policies, guidelines, and framework to encourage adoption of TB MIS and data protection

Workforce

Improve skills, capacity, and competencies of healthcare workforce

Infrastructure

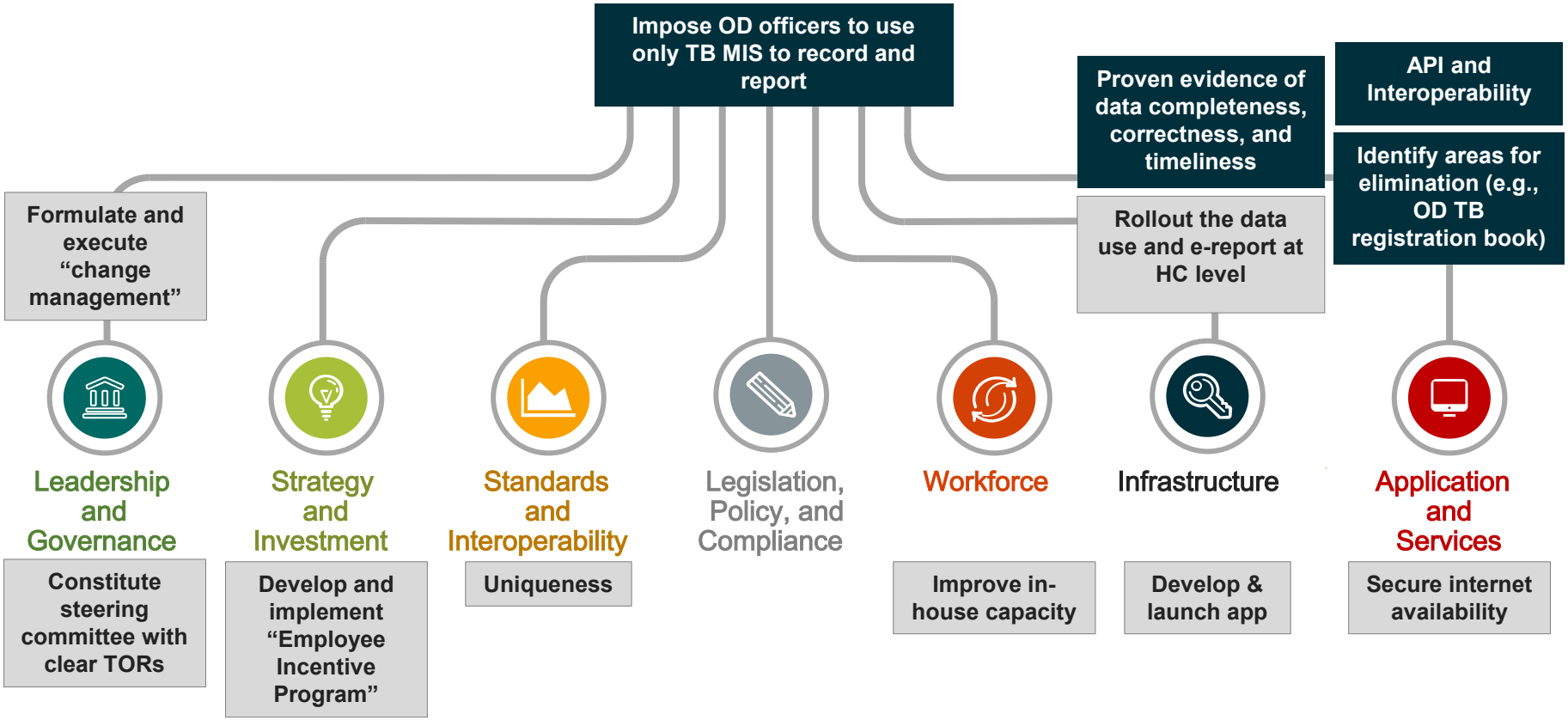
Develop, scale-up, and enable sustainable ICT infrastructure

Application and Services

Maintain, improve, and upgrade TB MIS application to align with the industry trends

**National eHealth Strategy Toolkit by WHO & International Telecommunication Union*

Steps to Transitioning Toward Case-Based Digitalization



*National eHealth Strategy Toolkit by WHO & International Telecommunication Union

Summary: Country Presentations

Key considerations when contemplating digitization

- Domestic requirements and system functionality
- Domestic technology environment

Governance challenges

- Numerous players
- Electronic TB MIS adjustments as roll-out progresses
- Ensuring ICT equipment & infrastructure
- Policy support & guidance on smooth transition without burdening staff; users and ICT staff within the government structure

A plan to address operational aspects of a digital transition

- Establishes governance structures
  - ✓ Involves multiple stakeholders with clear partnership agreements
  - ✓ Establishes Task Force, TWG, Steering Committees to institutionalize collaboration, cooperation and communications
  - ✓ Taps into international consultancies
- Ensure ICT architecture aligned with TB program's business architecture
- Allows ICT research and development
- Directs investments toward national priorities and long-term sustainability

A Strategy and Solutions Towards a Digital Transition

STEP: Surveillance and Tuberculosis Monitoring and Evaluation Strengthening Plan

Purpose: Support the strengthening of a country's TB M&E and surveillance system with a focus on creating a robust case-based electronic surveillance system.

Result: A fully costed action plan "costed STEP" and identified blueprints for technical implementation of specific areas for action.

STEP

STEP Process:

Landscape Analysis

- Desk review
- Key Informant Interviews (KIIs)
- Direct observational site visits

STEP Workshop

- Validate data from landscape analysis
- Build stakeholder consensus on priority actions for the costed STEP

STEP Process output:

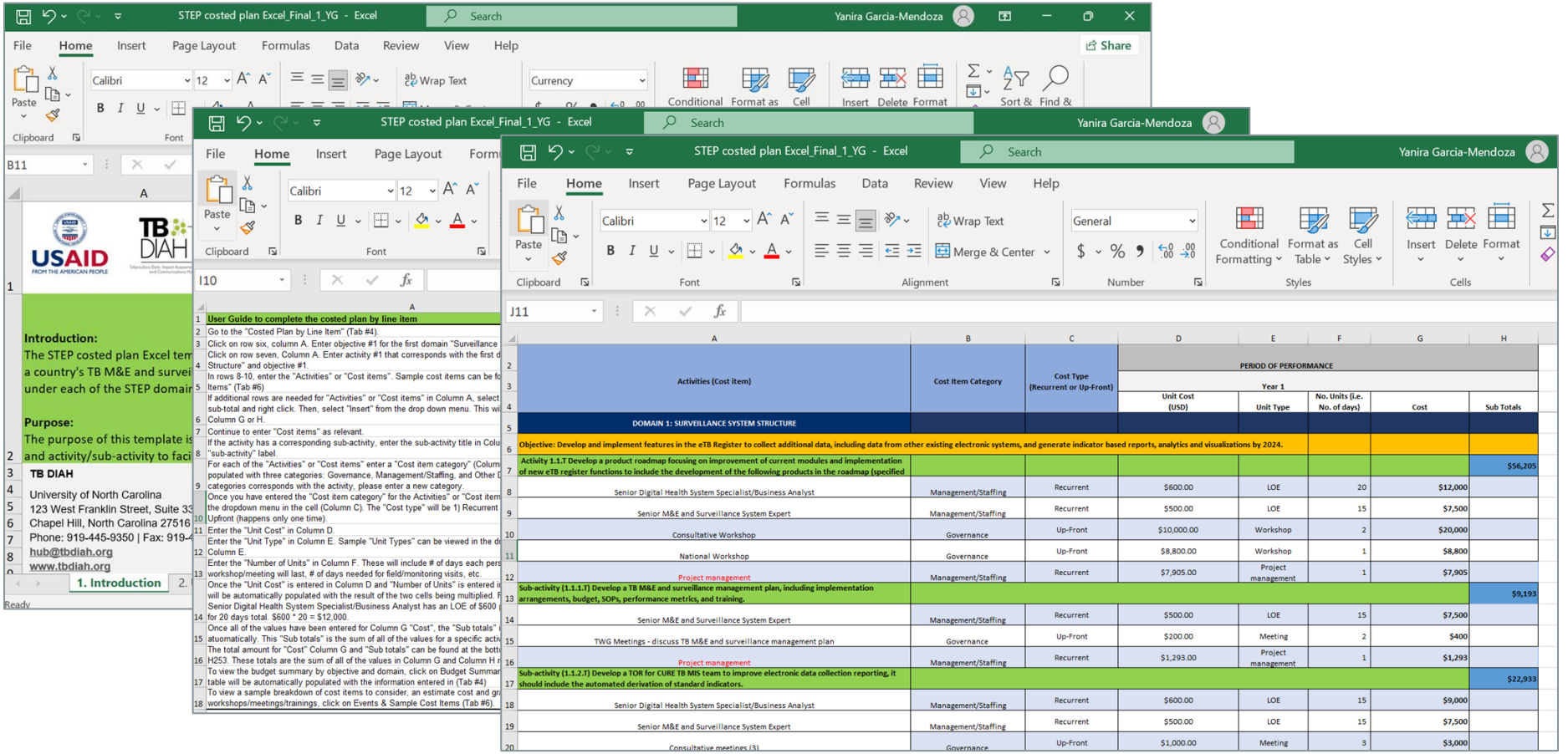
- ✓ Gap map highlighting strengths and weaknesses
- ✓ Costed implementation plan "costed STEP"

Introducing STEP Tools

STEP Questionnaires

Questionnaire	Domain	Subcomponents
1	TB Surveillance System Structure	1.1 Overview of major components of TB surveillance system 1.2 Overview of other sub or parallel systems 1.3 ICT 1.4 Interoperability with other relevant systems 1.5 Reporting processes and data flow
2	TB MIS Enabling Environment	2.1 Surveillance system governance and leadership 2.2 Surveillance system management
3	TB MIS Information Generation and Dissemination	3.1 Data sources 3.2 Data management 3.3 Analysis and use 3.4 Information products, communications. and dissemination
4	TB MIS Performance	4.1 Data quality 4.2 Data use 4.3 ICT

STEP Costed Tool



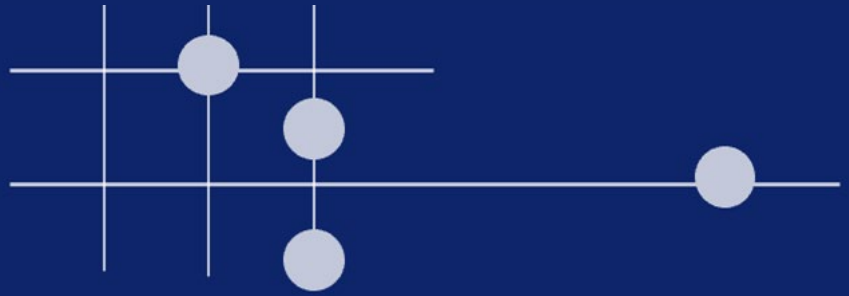
Example of STEP Process: Kyrgyz Republic

STEP Process (July 2022-September 2023)

- ✓ Landscape analysis
  - 19 documents were reviewed (e.g., National Strategic Plan)
  - 34 KIIs were conducted (MOH, NRL, DDPSSES)
  - Direct observational site visits (Oblast TB Center, PHC unit TB units, TB hospital)
- ✓ Workshop (November 10-11, 2022)
  - 36 participants, total of 9 organizations represented (NCPh, DDPSSES, USAID)

Example of STEP Output: Kyrgyz Republic

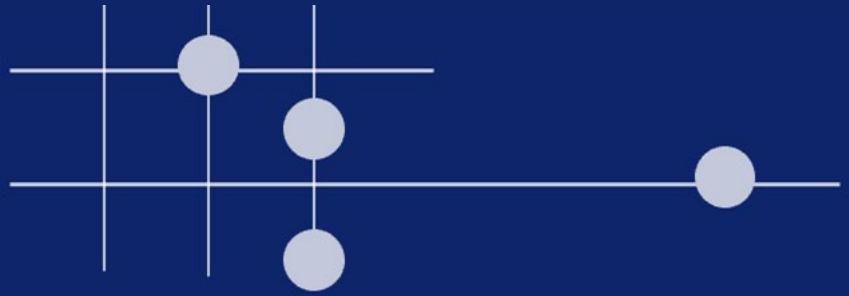
- **STEP Output:**
  - ✓ Utilized the STEP costing template
  - ✓ STEP team costed identified activities and sub activities from the STEP implementation plan
    - 6 objectives were identified under the four STEP domains
    - 15 activities
    - 24 sub-activities



Q&A

Wrap Up

- The future is digital case-based TB surveillance
- STEP helps to systematically transition to a robust and integrated digitized TB surveillance system by:
  - ✓ Engaging stakeholders
  - ✓ Addressing ICT standards
  - ✓ Establishing relevant governance structures and processes
  - ✓ Tailoring to domestic needs
  - ✓ Costing to guide investment and sustainability



Thank You!

Live Links

TBDIAH.org	http://www.tbdiah.org
PBMEF	https://www.tbdiah.org/resources/publications/navigating-tuberculosis-indicators-a-guide-for-tb-programs/
QTSA	https://www.tbdiah.org/assessments/quality-of-tuberculosis-services-assessments/
D2AC	https://www.tbdiah.org/assessments/d2ac/
Data Analysis & Visualizations	http://hub.tbdiah.org

For more information

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