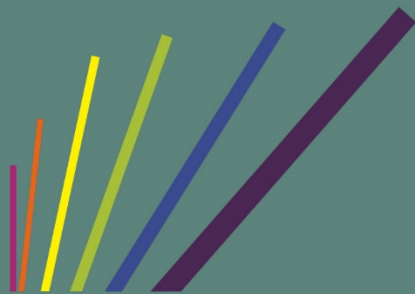


User Guide



Health Information System

Stages of Continuous Improvement Toolkit

User Guide



Health Information System Stages of Continuous Improvement Toolkit

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This publication was produced with the support of the United States Agency for International Development (USAID) under the terms of MEASURE Evaluation cooperative agreement AID-OAA-L-14-00004. MEASURE Evaluation is implemented by the Carolina Population Center, University of North Carolina at Chapel Hill in partnership with ICF International; John Snow, Inc.; Management Sciences for Health; Palladium; and Tulane University. Views expressed are not necessarily those of USAID or the United States government.

MS-19-158

ISBN: 978-1-64232-120-3



ACKNOWLEDGMENTS

Many people and groups contributed to the development of this toolkit. First, we acknowledge the United States Agency for International Development (USAID) for its support and guidance.

We thank the core team at MEASURE Evaluation and the United States Centers for Disease Control and Prevention (CDC) for their work leading the development of this toolkit:

- Xenophon Santas (CDC)
- Manish Kumar (MEASURE Evaluation, University of North Carolina [UNC])
- James Kariuki (CDC)
- Elizabeth Millar (MEASURE Evaluation, UNC)
- Abby Cannon (MEASURE Evaluation, UNC)

We thank those who provided important guidance and expertise that helped shape the development of the toolkit, in particular:

- Tobias Mettler, Associate Professor, University of Lausanne, Switzerland, for his expert input and insights from the beginning of this work. He was instrumental in shaping our thinking and approach to the design and implementation of the toolkit in Uganda.
- The Health Data Collaborative Digital Health and Interoperability Working Group, especially Paul Biondich (Regenstrief University), Adele Waugaman and Bill Weiss (USAID), and Garrett Mehl (World Health Organization [WHO]), as well as members of the maturity model subgroup

We also thank the following people for their technical review and input: Kavitha Viswanathan and Wendy Venter (WHO); the CDC Division of Global Health and Tuberculosis Health Information System (HIS) team (Eric-Jan Manders, Linda Mattocks, Janise Richards, Mark DeZalia, Jan MacGregor, Nicolas De Kerorguen, Amitabh Prasad Adhikari, Dana Dolan, Fred Sieling, Thomas Hutton, Kenneth Blaylock, and William Lober), the MEASURE Evaluation Learning Agenda Technical Advisory Group, including Heidi Reynolds and Jason Smith (MEASURE Evaluation, UNC); David Boone, Hiwot Belay, Stephanie Mullen, and Derek Kuñaka (MEASURE Evaluation, John Snow, Inc.); Sam Wambugu, Shannon Salentine, and Christina Villella (MEASURE Evaluation, ICF); Eva Silvestre (MEASURE Evaluation, Tulane University); Scott McKeown (MEASURE Evaluation, Management Sciences for Health); Jennifer A. Nelson, Inter-American Development Bank; Marcelo D'Agostino, Pan American Health Organization; Ahmed Zaghloul, medical epidemiologist, Africa-CDC; and Patricia N. Mechael, principal and policy lead, HealthEnabled.

We acknowledge the participants in the Inaugural 2018 Open Health Information Exchange (OpenHIE) Community Meeting (Arusha, Tanzania, 2018) participants of HIS Stages of Maturity Workshop at the 2018 Pan-African Health Informatics (HELINA) Conference (Nairobi, Kenya, 2018) and the Inter-American Development Bank Regional Policy Dialogue on Digital Transformation of the Health Sector in Latin America and the Caribbean, (Washington, DC, USA, 2018) for their insight and feedback.

We thank Uganda's Ministry of Health leadership, particularly Caroline Kyozira and Jamiru Mpiima, for their technical review and for facilitating initial implementation of the toolkit. We thank Tom Oluoch, of the CDC, and Alex Tumwesigye, of John Snow, Inc., for their contributions to the assessment process and adaptation of the toolkit to this context. We also thank all workshop participants for their valuable contributions to the assessment process and feedback on the toolkit.

We thank Dr. Franco Inshallah Franco, Sarah Nyafwono, and Patrick Zzimula of BRAC Uganda for their feedback on this user guide, as well as Lauren Hart (MEASURE Evaluation) for her significant contribution to the user guide. Mathew Mainwaring graciously programmed the automated charts, graphs, and tabs in the toolkit. Joanna Diallo (I-TECH, University of Washington) also provided feedback on the toolkit, with a special focus on gender.

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ABBREVIATIONS

CDC	United States Centers for Disease Control and Prevention
HDC	Health Data Collaborative
HIS	health information system(s)
HISSM	Health Information System Strengthening Model
ICT	information and communication technology
LA	Learning Agenda
M&E	monitoring and evaluation
MOH	Ministry of Health
OpenHIE	Open Health Information Exchange
RHIS	routine health information system(s)
SOCI	Stages of Continuous Improvement
USAID	United States Agency for International Development
WHO	World Health Organization

INTRODUCTION

Strong health information systems (HIS) are essential for a country to meet its health goals. A strong HIS should be well-defined, comprehensive, functional, adaptable and resilient, and scalable (MEASURE Evaluation, 2018a). The system should be able to collect, manage, analyze, and disseminate health data in a timely manner, so that managers can make decisions, track progress, and provide feedback on HIS performance to improve data quality and use. To accomplish these tasks, HIS stakeholders must know the state of their system on the continuum to a strong HIS and understand what is needed to continuously improve HIS performance.

The goal of the HIS Stages of Continuous Improvement (SOCI) Toolkit—available here:

<https://www.measureevaluation.org/his-strengthening-resource-center/stages-of-his-progression/what-are-the-stages-of-progression-to-a-strong-his-and-how-are-they-measured-1>—is to answer the question: “What are the critical factors for HIS developments and continuous improvement?” A stages model (also known as a maturity model), by definition, describes the stages through which systems can evolve to reach greater capability, capacity, and functionality, and defines priorities to improve system performance (Carvalho, et al., 2016). The SOCI toolkit was specifically developed to guide continuous HIS improvement efforts in low-and-middle-income countries (Kumar & Millar, 2017), but this tool could also be adapted for use in high income countries. See the Useful Resources section at the end of this guide for more on stages models and HIS strengthening.

Improving an HIS is a continuous, nonlinear, and dynamic process that happens across stages (MEASURE Evaluation 2018b). The HIS SOCI Toolkit helps countries or organizations to assess and strengthen their HIS. It measures the status and goals of an HIS across five stages, identifies gaps, and supports the development of roadmaps to improve HIS capabilities related to processes, people, and systems essential for achieving a country’s health outcomes. Each stage has defined metrics across multiple domains, components, and subcomponents that characterize progression across the stages; this is explained later in this guide.

The Health Information System (HIS) Stages of Continuous Improvement (SOCI) Toolkit consists of:

- HIS Stages Measurement Scale
- The HIS SOCI Workbook (including the HIS SOCI Assessment Tool, data analysis and visualizations, and an improvement roadmap)
- This User Guide

HIS SOCI Assessment Toolkit

Purpose

The HIS SOCI Toolkit serves the following purposes:

- Establishes a systematic basis of measurement for describing HIS components
- Facilitates users’ ability to set goals for an HIS to progress
- Informs the development of improvement plans to realize the next stage toward a stronger HIS

The resulting scores, as determined by individual assessments and group consensus, will identify the current status of the HIS subcomponents and present these results alongside the identified goals for the HIS. The

measurement scale can be used to identify where gaps between current and desired status exist and to develop concrete steps to address those gaps.

Audience

The HIS SOCI Toolkit is designed for national-level HIS planning and continuous improvement. This toolkit can be used by ministries, HIS units, and governing bodies or authorities, as well as nongovernmental organizations seeking to assess an HIS at the national level and inform investments for HIS strengthening. The toolkit could also be adapted for use at the subnational level. The assessment process should be driven by someone with a leadership role in the HIS, such as the HIS director. Having this buy-in and commitment is key to ensuring completion of the HIS SOCI Toolkit and institutionalization of the results. The process should include stakeholders from across the health system and at various levels of the health system with expertise in one or more of the HIS components (Table 1).

User Guide

Purpose

This guide is a practical reference for anyone implementing the other two elements of the HIS SOCI Toolkit. It provides step-by-step instructions for implementation, from initial stakeholder engagement through dissemination of results.

Audience

This guide will be useful to anyone planning and leading the implementation of the HIS SOCI Toolkit: HIS and/or monitoring and evaluation (M&E) managers, officers, or leaders who are interested in assessing the status of an HIS. Those managing implementation are responsible for contacting all potential participants in the assessment and compiling and analyzing their responses to the assessment. The same people are also likely to be the ones who plan and facilitate a group workshop, where the assessment will be completed and a roadmap developed.

BACKGROUND

This section provides an overview of the HIS SOCI Toolkit, as well as information on why and how it was developed.

Description of the HIS SOCI Toolkit

The five stages of progression toward a strong HIS, as described in the HIS SOCI Toolkit, are (1) emerging/ad hoc, (2) repeatable, (3) defined, (4) managed, and (5) optimized. The SOCI Toolkit establishes a systematic basis of measurement for describing HIS components, setting goals for future levels of maturity, and informing the development of improvement plans to realize the next stage of progress toward a strong HIS. Each stage is measured across five HIS domains, and the domains are further differentiated into 13 components and 39 subcomponents (see Table 1 for HIS core domains and components). The domains and components are derived from and map to elements of the WHO International Telecommunication Union Strategy of the World Health Organization (WHO) (WHO, 2012), the Health Metrics Network Assessment (WHO, 2005), MEASURE Evaluation's Health Information Systems Strengthening Model (HISSM)¹ (MEASURE Evaluation, 2017a), and the Demand and Readiness Tool for Assessing Data Sources in HIS (Greenwell & Wambugu, 2017).

Table 1. HIS core domains and components

HIS Core Domains	HIS Components
HIS Leadership and Governance	<ul style="list-style-type: none">• HIS strategic plan or HIS strategy• Policy, legal, and regulatory framework and compliance• HIS leadership and governance organizational structures and functions
HIS Management and Workforce	<ul style="list-style-type: none">• HIS workforce capacity and development• Financial management
HIS ICT Infrastructure	<ul style="list-style-type: none">• Operations and maintenance• Communication network• Business continuity
HIS Standards and Interoperability	<ul style="list-style-type: none">• Standards and guidelines• HIS core services• Interoperability (data exchange)
HIS Data Quality and Use	<ul style="list-style-type: none">• Data quality assurance and data management• Data availability and data use processes and products

¹ The SOCI HIS core domains are derived from and consistent with the three domains of the Health Information Systems Strengthening Model (HISSM): enabling environment, information generation, and HIS performance. The difference in presentation between the HISSM and SOCI reflects the collaborative, consensus-building process that was used to develop both the HISSM and SOCI.

Development of the Toolkit

MEASURE Evaluation is a five-year cooperative agreement funded by the United States Agency for International Development (USAID). One mandate of MEASURE Evaluation is to help countries improve HIS governance, management, and performance. MEASURE Evaluation is learning from all of its HIS activities, with a special focus on implementing activities to build the evidence base on HIS strengthening, as requested by USAID. In July 2014, USAID asked MEASURE Evaluation to build an evidence base on HIS interventions that are effective and useful. In response, the project developed the HIS Learning Agenda (LA), whose purpose is to explore what works to strengthen HIS through a response to three questions (Figure 1). The HIS SOCI Toolkit was developed to help answer the second question: *What are the stages of progression to a strong HIS and how are they measured?*

Figure 1. HIS Learning Agenda



The HIS SOCI Toolkit was developed by a team of HIS experts from MEASURE Evaluation and the United States Centers for Disease Control and Prevention (CDC). The stages were developed in a collaborative, iterative process, with regular input from global HIS experts. The core group first conducted a survey of the literature on maturity models and reviewed existing HIS models and frameworks. The team then gathered input from HIS experts across MEASURE Evaluation and the University of Lausanne, Switzerland. The team also reviewed existing MEASURE Evaluation tools and models to identify and map components and subcomponents of the HIS stages. Through the Health Data Collaborative's digital health and interoperability

working group, MEASURE Evaluation and CDC were able to combine two pieces of existing work to create what is now the toolkit. This process involved a side-by-side comparison and subsequent merging of two stages models to create what is now the HIS measurement scale.

After drafting the initial HIS measurement scale, the team validated the content with the Digital Health and Interoperability Technical Working Group of the Health Data Collaborative (HDC). Members of the Community Data subgroup of the HDC, the Open Health Information Exchange (OpenHIE), Ministry of Health representatives, and other HIS experts provided additional feedback at the OHIE Conference in Tanzania, held July 31–August 2, 2018.

For background information on the tool and its use, please see: <https://www.measureevaluation.org/resources/publications/fs-18-309>

SETTING THE STAGE

This section outlines the steps to be taken before one conducts an HIS SOCI Assessment.

Stakeholder Engagement

Before beginning the HIS SOCI assessment, it is important to engage with key stakeholders working with the HIS. This will help identify the role the assessment will play in strategic planning and guide the process of the assessment. Working with key stakeholders from the beginning is also important for ensuring that the results are used after the assessment is completed. Key stakeholders will differ by country and context but will include the HIS leadership at the Ministry of Health and other HIS leaders internal and external to the government.

Defining the Scope

Another early step involves determining the scope of the assessment. Which HIS or what elements of the HIS are being assessed? Will you assess a specific system for a specific data source? Or will the assessment take an overarching view of the HIS and multiple data sources or systems? The scope will also help determine which stakeholders should be invited to participate.

It should be noted that this toolkit takes a holistic view of HIS. This may include routine HIS, health management information systems, civil registration and vital statistics, and other data sources. The tool's measurement scale considers processes, people, and functional and operational capabilities that support the collection, management, and use of health information to support the health system.

Uganda example

One of the first steps in conducting the SOCI assessment for the MOH in Uganda was to define what was meant by HIS in their context. For Uganda, HIS is defined as a system providing information support to decision making at all levels of the health system. It incorporates information generated both by population-based data sources (census; Uganda Demographic and Health Survey; vital registration; surveys) and institution-based data sources (health management information system; surveillance). This understanding of the purpose and function of the HIS informed the assessment's scope.

Gender in HIS

Gender is a central component of health equity and it is essential to examine and address gender explicitly in HIS. Having data to better track and understand sex and age differences will ensure that health systems do not perpetuate inequalities, but instead foster greater equality. The HIS SOCI tool includes attention to gender in multiple key locations, and we encourage teams to take a deeper look into gender when possible. Please see Appendix 3. Tool Customization for more information on gender in HIS and other customizations.

Choosing an Approach

The HIS SOCI Assessment Tool can be administered multiple ways, including (1) self-administered, (2) externally administered, or (3) a hybrid of self- and facilitator-administered (Table 2). There are benefits and drawbacks to each of these methodologies with regard to self-reporting bias, more or less documentation verification, objectivity, and country ownership and buy-in. We recommend the third approach—the hybrid approach—to minimize the drawbacks of self-reporting bias and documentation burden and to maximize local ownership and objectivity. The current HIS SOCI Toolkit is designed with this approach in mind.

In the hybrid approach, the assessment is spearheaded by an external facilitator. We recommend a local expert outside the country's HIS department, such as a local university, research organization, or implementing partner supporting HIS work. Please note that an external facilitator does not require an international expert; in fact, a local HIS expert is encouraged.

Table 2. Assessment approaches

	Description
Approach 1: Self-administered	The assessment is led and completed by those working directly with the HIS, likely all within the HIS department. This could be done through aggregating individually completed assessments or by using a consensus-building group process.
Approach 2: Externally administered	The assessment is led and completed by someone/a group of people external to the country's HIS department.
Approach 3: Hybrid	The assessment is spearheaded by an external facilitator collaborating with the country's HIS department.

Timing

The assessment can be completed at any time, but prior to annual HIS strategic planning is an ideal time to chart progress. Reassessment can then be conducted at regular intervals to measure HIS performance progress and review targeted improvement goals. The assessment tool can also be implemented to ensure that the HIS is working to achieve its purpose. The frequency with which you choose to repeat the assessment will depend on many different factors. Below are a few questions to consider as you plan for a timeline for implementing the HIS SOCI Toolkit and for the frequency with which you will repeat the assessment.

- Does the existing HIS strategic plan set in motion interventions needed for the HIS to achieve its purpose?
- How long have you been implementing the existing HIS strategic plan? If you implement the SOCI assessment now, has enough time passed that responses to the assessment will reflect implementation of the current strategic plan?
- How long have key HIS interventions been implemented? Has enough time passed for improvements from these interventions to be reflected in an assessment?
- How often will you be able to allocate the necessary resources to implement the HIS SOCI Assessment Tool?

- When will an assessment need to be completed in order to inform the next round of strategic planning?
- Are there important opportunities for advocacy when you might share results of the assessment?

Answers to these questions will help you determine a timeline for implementation. A general recommendation is to implement the assessment every two years or as needed based on HIS strategic planning cycles.

Time Required to Implement

The time required to conduct the assessment depends on the approach and scope. An in-person assessment can typically be conducted with a group of stakeholders during a one- to two-day workshop. Planning for the assessment process should begin at least one month in advance, to allow time to identify and contact relevant stakeholders, arrange logistics of the assessment process (place and time for the workshop, if it is to be held in person), and begin a desk review to identify relevant policy, regulatory, or planning documents that should be considered or circulated. We recommend at least weekly meetings with the leadership team and facilitators to discuss planning, scope, and assessment participants. Table 3 is an example of the time that might be needed to implement the toolkit.

Table 3. Estimation of time required to implement the HIS SOCI Toolkit

Activity		Time required	Participants	Notes
Planning/leadership meetings (Steps 1–3)		2–3 hours weekly for 4–5 weeks (8–15 hours total)	Leadership team including facilitator	This will depend on the scope and implementation method of the planned assessment
Conducting the assessment (Step 4)		2–3 hours, one time (Allow at least 30 minutes per domain)	All participants, as identified in assessment background section	This can be done in a group setting or individually. This could be done as part of the workshop or prior to it. Allow additional time in group settings for facilitation.
In-person stakeholder workshop		1–2 days	All participants	Time suggestions broken down below
	Consensus building process (Step 4)	2 hours	Assessment participants in plenary	This is needed only if the assessment is conducted in a workshop/group format.
	Compilation of responses in workbook (Step 5)	1–2 hours	Facilitator or leadership team member	This will need to be done to compile individual responses for an average score. If consensus is built using group process, this step may not be required.
	Action planning (Step 6)	3–4 hours	Relevant stakeholders	The participants for this portion will depend on how the assessment is

				implemented. In a workshop, all participants may take part.
Dissemination of findings (Step 7)		8 hours+	The leadership team along with relevant government or organizational stakeholders	This may involve presenting the findings to a technical working group or government officials or ministries, or writing a report detailing the assessment results.

Familiarize Yourself with the HIS SOCI Workbook

Before you get started using the tool to gather information, it is a good idea to familiarize yourself with the contents of the Excel-based workbook. The workbook is divided into seven worksheets (Table 4).

Table 4. Description of worksheets

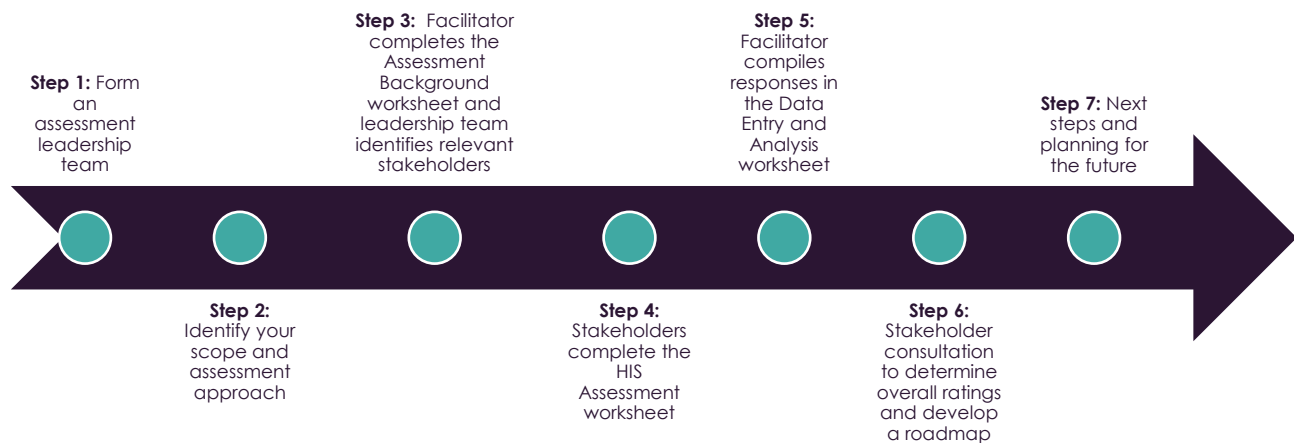
Worksheet Name	Description
Stages Measurement Scale*	This worksheet provides a detailed description of each HIS subcomponent across all five stages. It is an important reference document for use during completion of the assessment.
Assessment Background	This worksheet provides important information on the HIS and is to be completed once by the facilitator/leader of the assessment.
HIS Assessment Tool*	The HIS Assessment worksheet is the data collection sheet for the assessment. This sheet should be completed separately by each participant in the assessment process (e.g., if you have 10 stakeholders completing the assessment, you will end up with 10 completed HIS Assessment worksheets). The assessment asks the respondent to complete the current status and goal status for each HIS subcomponent.
Data Entry and Analysis	Once all respondents have completed the HIS Assessment worksheet, the facilitator will compile the responses using the Data Entry and Analysis worksheet.
Data Visualization	This workshop provides automated charts showing the aggregated scoring results for current status and goal status of each HIS domain and component.
Improvement Roadmap	The Improvement Roadmap worksheet is a template for planning activities that map directly to gaps identified on the HIS Assessment worksheet.
Glossary*	The Glossary lists relevant terms with their definitions.

* Starred worksheets should be included in the workbook sent to each respondent. See Step 3 for more details on this process.

IMPLEMENTATION OF THE TOOLKIT: STEP-BY-STEP

This section takes you through use of the toolkit step-by-step.

Figure 2. Overview of the HIS assessment process



Step 1. Form an assessment leadership team

It is vital to identify the leadership team who will oversee the assessment process. These individuals will be responsible for the planning process, determining the scope of the assessment, selecting the best approach for conducting the assessment, and identifying key stakeholders who should be involved. If a facilitator has not yet been identified, one should be appointed as part of Steps 1 or 2.

Step 2. Identify the scope and assessment approach

The first step in completing the assessment is to determine which approach you will use (see Table 2 for three options). It is also possible to customize the tool and approach to fit your specific context and purpose. If you choose to customize the approach, be sure to implement it transparently and consistently, to achieve objective and useful results (see Appendix V). The rest of this user guide assumes that you have adopted the hybrid approach we recommend, but these instructions can also be easily adapted to any of the three approaches shown in Table 2 or customized to your needs.

Uganda example

Uganda chose to take a group approach to the assessment process. During a two-day workshop, participants were asked to join a group representing one of the five domains in which they had the most expertise. Each group then discussed and built consensus, to determine the current and goal status for each subcomponent of that domain. Results from each group were shared, discussed, and finalized in plenary.

Step 3. Facilitator completes the Assessment Background worksheet and identifies relevant stakeholders

Once you have identified the approach you will take for completing the assessment, the next step is to complete the Assessment Background worksheet. This should be completed by the HIS SOCI facilitator, collaboratively with the HIS leadership team.

Substep 3A

The first three questions ask which HIS you are assessing (e.g., health management information system; routine health information system) and the purpose of the HIS (e.g., to collect health information to support and monitor decision making for the national HIS).

Record your answers to the following questions. This will provide background information to inform the assessment process.

- 1 Which HIS are you assessing?

- 2 What is the purpose of the HIS you will assess (e.g., to monitor and review implementation of maternal and child health [MCH] services)?

Please attach any supporting documentation describing the HIS purpose.

Substep 3B

The next question asks about the main challenge you hope to address with this assessment (e.g., to improve monitoring and review of MCH services).

3 What is the main challenge you hope to address with this assessment (e.g., to improve monitoring and review of MCH services)?

Substep 3C

The next question asks about the area covered by the HIS, with responses recorded in the table below.

For “Total number in the country,” record the total number of facilities, districts/counties, and regions in your country. Under “Approximate number covered by the HIS,” record the total number of regions, districts/counties, and facilities covered by the HIS, which you named in Substep 3A.

- 4** Please provide the following information regarding the area covered by the HIS to be assessed.

Only complete the boxes that apply to this HIS.

	Total Number in the Country	Approximate Number Covered by the HIS	Approximate Number of Staff* Associated with HIS at Each Level (As Applicable)	Comments
Region				
District/county				
Facility				

*Note: His staff are considered to be those who spend at least 50% of their time on HIS, including data management, analysis, and use.

For “Approximate number of staff associated with HIS of each level,” include the total number of staff who spend at least 50 percent of their time on the HIS at each level of the health system—facility, district/county, and region. Finally, add any comments in the last column. This may include key people to talk to at each level, areas requiring confirmation, and other comments.

Substep 3D

The final step in completing this worksheet is to identify people who should be part of the assessment process. This is vital to capture an accurate result of the status of the HIS and to ensure that the results are relevant and used. The leadership team should consider each of the five HIS domains in selecting assessment participants. Each component and subcomponent should also be considered, to identify HIS, human resource, information and communication technology (ICT), or other personnel with knowledge of key documents, policies, or direction. This is a crucial early step in assessment planning. The leadership team should also consider including personnel from all relevant levels of the health system, including subnational and district levels, where appropriate.

- 5** Identify key organizations and stakeholders that should be included in the assessment process (e.g., relevant ministries, donors, nongovernmental organizations [NGOs], etc.).

Names of individuals will not be included in the final analysis or report.

	Surname (Last Name)	First Name	Organization	Domain or Subcomponent of Expertise	Comment
1					
2					
3					
4					
5					

6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

Include the name and organization for each person. It may also be helpful to include contact information in the comments section, because the next step in the assessment process will involve reaching out to each of these stakeholders for their help in completing the assessment. Stakeholders may be staff from the ministry, implementing partners, or any other organizations

supporting the HIS. *Note: This worksheet is numbered 1–15, to accommodate up to 15 key organizations and stakeholders. The correct number of data collection worksheets will self-populate based on this table. If there are more than 15 respondents, it will be necessary to manually add rows and sheets to the Excel workbook or consider grouping respondents.*²

As you complete this section, consider the HIS domains, components, and subcomponents and make sure there is someone with specific knowledge about each of these areas included on the list. To do this, you can use the “Domain or subcomponent of expertise” column to note areas of expertise for each person identified. Once your list is complete, note gaps exist in experience related to the subcomponents and domains.

Once the background worksheet is complete, click “start.” This will automatically create the correct number of assessment worksheets to match each participant listed. You can then move on to Step 4. Note that you can add additional participants, up to 15, and click “Start” again without deleting the data already recorded. “Cancel” will clear all the data and the assessment worksheets. Use this function if you would like to start over or begin a new assessment.

Uganda's approach

The Uganda assessment workshop included a large number of participants, and it was most useful to group them by the domain in which they were most knowledgeable. Each group focused on a specific domain.

Groups could be constructed similarly, based on the assessment scope and needs.

² Note: The data analysis tab is built to give a “Total” score derived from up to 15 responses. Responses in excess of 15 will not be included in the total score. Average scoring would need to be done manually.

Step 4. Collect data

The next step is to complete the HIS Assessment worksheet. Each person or group completing the assessment will complete a separate copy of the HIS Assessment worksheet. The list of stakeholders completed in the Assessment Background worksheet will be the list of respondents for this portion of the assessment.

In addition to identifying the full list of potential respondents, you also need to identify the best format for gathering responses. Options include emailing each respondent a copy of the tool, completing the tool during an interview with an individual respondent, or having respondents complete a paper copy of the tool. You may use one or more of these approaches to complete the assessment, tailoring the strategy to the stakeholders involved.

- A. For **email data collection**, modify the full tool workbook to include only the necessary worksheets. These are noted with a star in Table 4 and are (1) the Stages Measurement Scale, (2) one HIS Assessment worksheet, and (3) the Glossary. (Note: You will first need to make a copy of the assessment to modify. You will then need to generate an HIS assessment tab before modifying other worksheets. You will do this in the Assessment-Background tab by adding text in the Surname column and selecting the “Start” button. You can then remove the background tab and the assessment tab will remain.) We also recommend sending each respondent the Excel workbook with a filename that matches his/her first and last name. When you send the workbook, include the handout included in Appendix 1 as a separate document.
- B. If you choose to use **interviews with stakeholders** to complete some or all of the assessment, we suggest printing the Stages Measurement Scale for the respondent to use as a reference during the interview.
- C. For respondents **completing the tool on paper**, send or print each handout from Appendix 1 the Stages Measurement Scale, and the assessment data collection sheet.

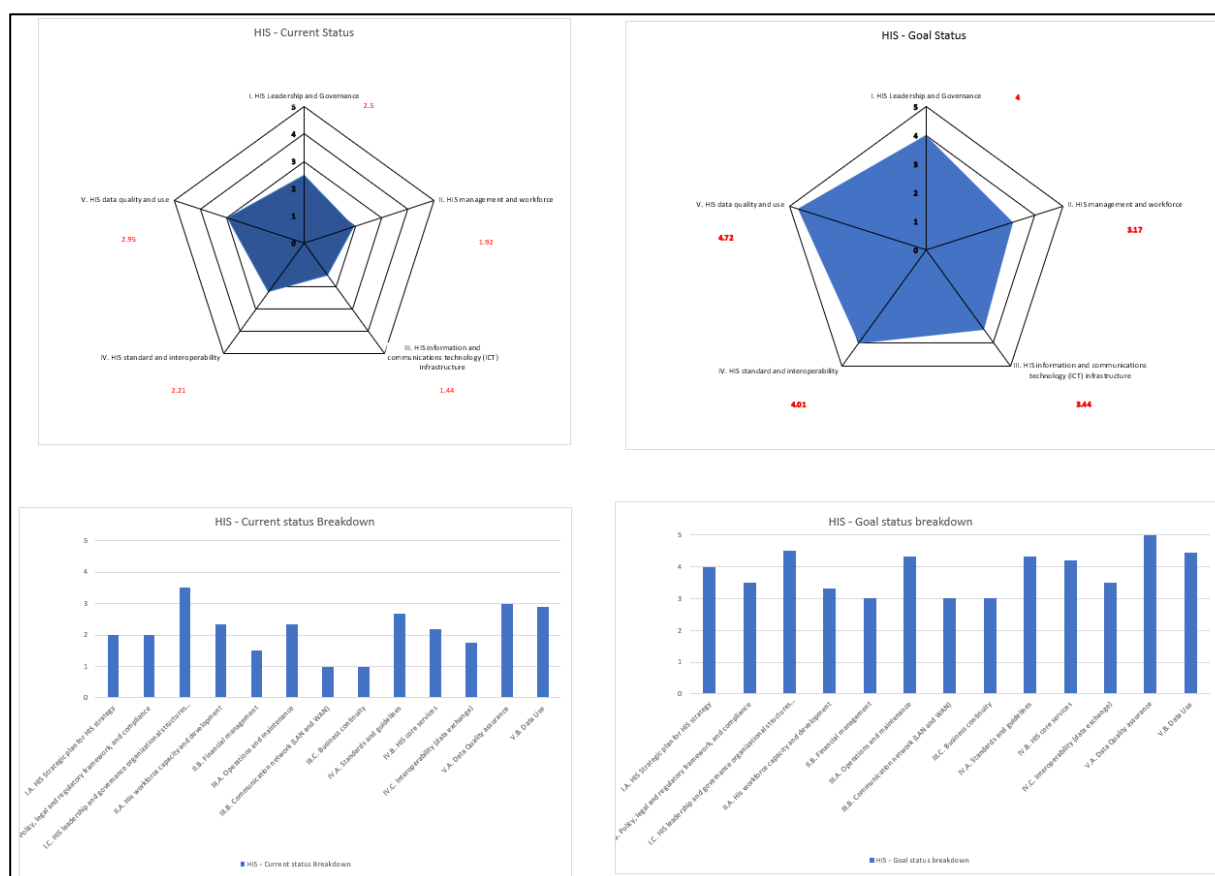
A few notes about completing the HIS Assessment:

- In addition to noting the perceived current status and goal status for each of the HIS subcomponents, respondents are asked to provide documentary evidence for their responses. It may be important to draw respondents’ attention to this in advance of your meeting so that they will have gathered relevant documents for inclusion.
- Let respondents know that the “Not Applicable” response can be used either when this subcomponent is not relevant to the country’s HIS or if this subcomponent is outside the scope of practice for the respondent.
- At the end of each interview, or when emailing respondents, ask for recommendations of additional respondents to include in the assessment process.

Instructions: For each HIS subcomponent, respondent should select both current status and goal status of the HIS at hand from the available drop-down lists. Please refer to the measurement scale for measurement criteria of each subcomponent. If the particular subcomponent is not applicable in the context of the HIS being assessed, respondent should indicate "0"=no answer/not applicable. Once responses have been recorded, please save the file with respondent role and/or last name in the new file name.						
Respondent name: Date: Phone: Email: Organization: Title:						
				The current status should describe the HIS "as-is."	The goal status should consider the needs of the health system and where the HIS needs to be, in order to meet these needs.	
Code	HIS subcomponent	Definition/meaning	Current states: 0 = Not Applicable 1 = Emerging/Ad hoc 2 = Repeatable 3 = Defined 4 = Managed 5 = Optimized	Goal states: 0 = Not Applicable 1 = Emerging/Ad hoc 2 = Repeatable 3 = Defined 4 = Managed 5 = Optimized	Please provide documentary evidence of application (indicate whether accompanying document is attached or provide URL below)	Comments
I. HIS Leadership and Governance						
I.A. HIS strategic plan or HIS strategy			Current Status	Goal Status		
IA.1	HIS strategy	An HIS strategic plan sets out, in the context of the health priorities of the country, a vision for management and use of health information (electronic or other), a plan of action for delivering the vision, and arrangements for monitoring and evaluation. A country/organization may have either an eHealth strategy specific to electronic HIS, a broader HIS strategy, or documented strategies for each (eHealth and HIS).				
IA.2	M&E plan	A framework for regular evaluation (both formative and summative) of HIS activities and implementations to measure progress on milestones and goals in the delivery of healthcare services and ensure alignment of HIS activities with HIS strategy and desired impact on service delivery.				
1.B Policy, legal, and regulatory framework, and compliance						
1B.1	Existence of HIS policies and legislation	Documented HIS policies and legislation that outline a deliberate system of principles to guide decisions and achieve HIS outcomes. This framework designates an appropriate entity to oversee adherence to procedures and policies related to data management, data sharing and use, privacy and security, and business process continuity.				
1B.2	Policy compliance enforcement	Specified mechanisms and regulatory agency to ensure adherence to organizational policies, procedures, and best practices related to HIS, including standards for data exchange, messaging, and security. It also means adherence to applicable laws, relevant industry standards, and internal policies (e.g., codes of conduct).				

At the bottom of the worksheet are two spider charts and two bar charts that will automatically populate based on the responses to the assessment. These will allow a respondent to easily visualize his or her answers. If desired, for simplicity these can be removed for individual respondents and then used only for visualizing responses in the aggregate later in the process. See Figure 3 for examples of charts from generic data.

Figure 3. Charts in the HIS Assessment worksheet



Step 5. Enter data and analyze them

Once all responses to the HIS Assessment have been received, the Excel workbook will automatically carry over the responses from the HIS Assessment worksheet into the Data Entry and Analysis worksheet. If there are multiple Excel files because the respondents entered their own responses in separate files, the facilitator will need to re-enter or copy and paste the responses into the HIS Assessment worksheets or it may mean transferring responses from paper if the respondents completed paper versions of the tool.

As shown in the screenshot below, each respondent will correspond to a column and column number for both current status and goal status. Facilitator(s) will add additional columns as needed. Once all the responses are entered using the dropdown menus, the spreadsheet automatically calculates an average score for each subcomponent.³

³ Note: If a score of "0-Not applicable" is entered, this subcomponent will not be factored into the scoring.

The current status should describe the HIS "as-is."					The goal status should consider the needs of the health system and where the HIS needs to be in order to meet these needs.			
Code	HIS Subcomponent	Current Status: 0 = Not Applicable 1 = Emerging/Ad hoc 2 = Repeatable 3 = Defined 4 = Managed 5 = Optimized			Goal Status: 0 = Not Applicable 1 = Emerging/Ad Hoc 2 = Repeatable 3 = Defined 4 = Managed 5 = Optimized			
Respondent 1 2 3 Total					Respondent 1 2 3 Total			
I.	HIS Leadership and Governance	2			3			
I.A.	HIS Strategy	2			3			
I.A.1	HIS Strategic planning	1-Emerging/ Ad hoc	2-Repeatable	1.5	0	2-Repeatable	3-Defined	2.5
I.A.2.	M&E Plan	3-Defined	2-Repeatable	2.5	0	3-Defined	4-Managed	3.5

Step 6. Stakeholder consultation to determine overall ratings and develop roadmap

After compiling the responses from all stakeholders, the next steps to finalize the outputs of the assessment are to (1) determine the overall ratings for each subcomponent and (2) develop the roadmap. We recommend completing both steps by holding one stakeholder meeting.

Planning for the stakeholder meeting should be a collaborative process between the facilitator and the leader(s). The preliminary results of the assessment should be reviewed by the leader(s) and facilitator in advance of the meeting. Appendix 2 presents a sample agenda for a one-day consultation, with materials needed for each session.

A few important steps for preparation include:

- ☐ **Prepare an agenda for the meeting.** (See Appendix 2 for a sample agenda.) This will help to clearly articulate the purpose and objectives of the meeting to attendees in advance of the meeting.
- ☐ **Identify invitees.** This may be all of the people who completed the HIS Assessment or a subset. There may also be invitees who were not included in the HIS Assessment itself but who are important stakeholders to include for the roadmap.

The specific objectives of such a meeting are to:

1. Present preliminary results of the HIS Assessment
2. Reach consensus around both current and goal scores for each subcomponent
3. Complete the Roadmap
4. Discuss and finalize next steps

The sections below go through each objective and provide recommendations on how they could be met during the one-day consultation.

Present preliminary results of the HIS Assessment

In order to set the stage for the consensus process, it is important to present the preliminary findings from the HIS Assessment. For this, you may want to prepare a short presentation with an overview of results by domain and component. A place to start is on the Chart tab of the HIS Assessment Tool. This provides an automatically generated bar chart for all responses by domain and component.

Figure 4. Example of an automatically populated graph showing results by domain

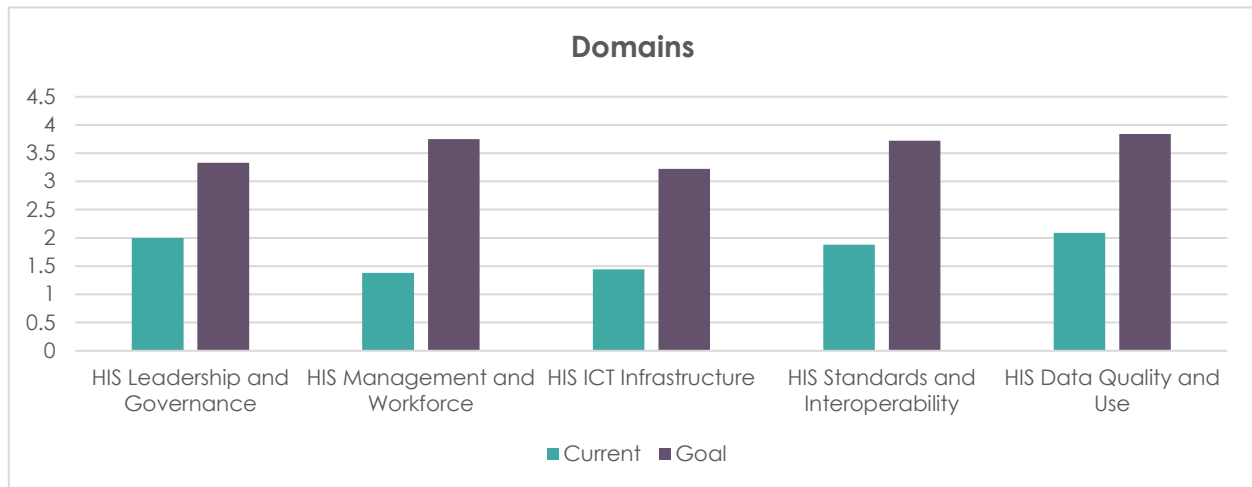
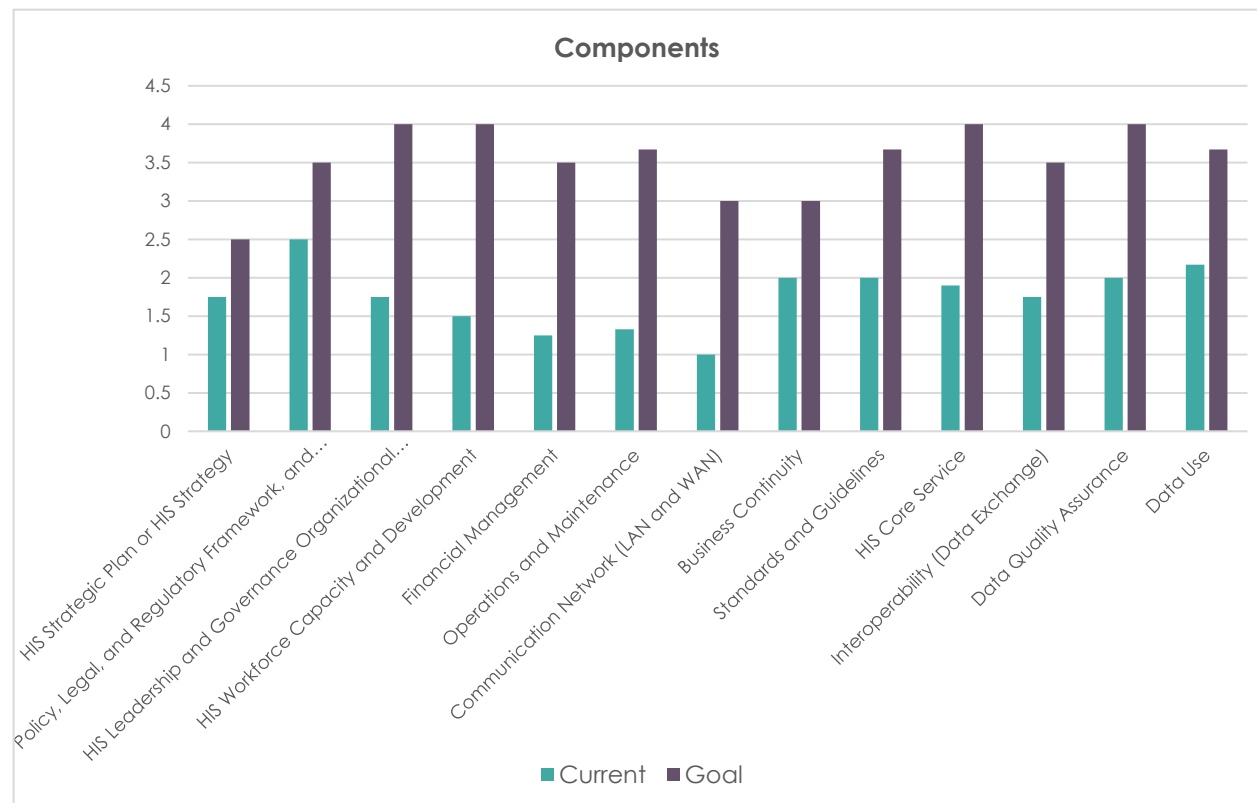


Figure 5. Example of a graph showing results by component



Reach consensus on current and goal scores for each subcomponent

Once the preliminary results have been presented, the next step is for the group to review the stage identified for each component in the preliminary results. It may be useful to have handouts with the preliminary results included. The number of participants attending the meeting, as well as the time and resources available, will help determine the method you choose for facilitation. Below are some ideas for moving from the preliminary results to consensus.

1. Break up participants into small groups and assign each group a domain. Each group will then discuss all subcomponents under that domain and report their recommendations for any changes to the full group. The full group will then have a chance to discuss the recommendations, as needed.
2. If the size of the group allows, the facilitator can walk through each subcomponent in plenary, ask the group to respond with any disagreement on the score given, and have them discuss an agreed-upon score.
3. Present the stage for each subcomponent on the wall with a projector or charts. Distribute green, blue, and red dot stickers to each participant. Have them place a green sticker next to all components with whose stage they agree. Have them place a red sticker if they feel the stage should be lower, and a blue sticker if they feel the stage should be higher. Alternatively, you could have participants write their preferred stage on a sticky note and stick it next to the subcomponents with which they disagree.

Next, the facilitator will use the information from the stickers/sticky notes to facilitate a discussion. This allows the facilitator to easily identify subcomponents for which there is less agreement and to focus discussion on these areas.

Complete the roadmap

As part of the one-day workshop, participants will develop a roadmap based on the current and goal stages of their HIS. To complete the roadmap, the group will identify activities mapped to gaps identified by the assessment. Each activity will also include an identified person responsible, resources required, and a list of documents or other means to monitor progress. Additionally, a timeline should be included for each activity.

Ideally, these activities will address the areas where the current and goal status do not align. A list of these areas is an important output of the consensus process. Subcomponents to prioritize should be identified in consensus. Here are a few options for determining priorities:

- Post subcomponents around the room and distribute three to five stickers to each participant. (The number of stickers will depend on time and the number of participants, with fewer stickers for larger groups.) Allow participants to move around the room and place a sticker under any subcomponents they feel should be prioritized.
- In plenary, ask participants to identify priority subcomponents and generate a list. Participants could then hold a vote to determine the top priorities.

Improvement Roadmap						
	Activity	Gap Addressed	Who is responsible	What resources are needed	Documentation/ means of verification	Timeline
1	Example: Identify key program indicators for monitoring and reviewing progress at sub-district, district and national levels.	Lack priority program indicators to monitor and review progress at various levels	Program manager/officer/appropriate personnel in the program management team	Financial support to conduct one day consultation and publish document, availability of key stakeholders, program indicator documents	Document describing indicators and review schedule	
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

Below are several facilitation options for completing the roadmap. Choose the best option for your group based on the number of participants and time available. The assessment workshop should be shared with and vetted by appropriate leadership and HIS stakeholders and further refined to align with HIS priorities and available resources.

Small group work, followed by plenary

Especially with a larger group, it may be beneficial to break up into smaller groups for initial discussions around activities to include in the roadmap. Each group could be assigned a domain to address or subcomponents for which there was a discrepancy between the current and goal stages. Following small group work, each group should present recommended activities in plenary. If more activities are suggested than are feasible, the facilitator can have participants vote for their preferred activities by raising their hands or using stickers or sticky notes, or by using group discussion to prioritize the most important activities.

World Café, followed by plenary

World Café group work is similar to the activity above, except that small groups start out with one domain to discuss and then rotate through to the other domains. For example, the group could be broken up into five groups, one for each of the five domains—Leadership and Governance, Management and Workforce, ICT Infrastructure, Standards and Interoperability, and Data Quality and Use. Each group sits together and records their ideas on a chart, outlines recommended activities, and fills in the corresponding information for timeline, person responsible, etc.

Next, the groups all rotate together. For example, everyone who had been discussing Leadership and Governance stands up and walks to the chart for Management and Workforce, everyone who had been discussing Management and Workforce moves to ICT Infrastructure, and so on. These groups then review the notes from the previous group and add to or revise them as they see fit. This rotation continues until each group has had a chance to discuss every domain. Finally, the facilitator wraps up, presenting the work of the groups and asking for any final edits or comments.

Although the group work portion of this method takes longer, the closing plenary discussion is likely to be shorter, because every person will have had a chance to contribute to each domain.

Plenary alone

Finally, if you have a small group, the facilitator can simply lead the group through the development of the roadmap. As with the previous methods, it may be useful to vote on the final activities to include in the roadmap by raising hands or placing stickers/sticky notes on preferred activities written on a chart or other paper.

Discuss and finalize next steps

Once the roadmap is developed, it is important to discuss next steps with stakeholders and leaders for their input, approval, and finalization. This also includes how best to disseminate the roadmap and assessment findings, follow-up and monitoring plans for the roadmap, and plans for repeating the assessment. This is an important time to gather feedback on implementation of the HIS SOCI Toolkit, to inform future assessments.

Step 7. Next steps and planning for the future

Following the consultation, the facilitator and/or leadership team are responsible for any immediate next steps, including circulating the completed assessment and roadmap to key stakeholders. The roadmap should identify people responsible for implementing key actions and a means of tracking their implementation. It may be necessary to designate or set up a committee to follow up and report on related progress.

Other next steps may be planning for future implementation of the HIS SOCI Toolkit or sharing assessment findings. It is important to identify how and when to check on progress of the roadmap activities before ending the workshop.

CONCLUSION

The HIS SOCI Toolkit is meant to be implemented through a collaborative and transparent process in order to assess the current status of an HIS and inform a path forward for improvement. This is why the involvement of all relevant key stakeholders and early engagement of HIS leadership are crucial.

This SOCI was designed with the intention of repeating the assessment to both monitor progression across the HIS Stages of Continuous Improvement and to continue to inform the development of HIS activities aimed at improving the HIS health outcomes. By continuing to bring people together to identify areas of need and interventions to meet those needs, this tool will help not only make real changes to the HIS but also improve the quality of service provision.

USEFUL RESOURCES

- For more information on the interoperability of HIS: [Health Information Systems Interoperability Maturity Toolkit](#)
- For resources on HIS strengthening, including the HIS strengthening model, see [Health Information Systems Strengthening Resource Center](#)
- [MEASURE Evaluation's HIS Learning Agenda](#) has framed our approach to HIS strengthening.
- To learn how this toolkit relates to other assessment tools in the field of digital health, see [Global Digital Health Resources and Maturity Models: A Summary](#).
- [Global Digital Health Resources and Maturity Models: A Summary](#) maps HIS tools and resources to domains of HIS strengthening. This was specifically created for the Health Information Systems Interoperability Maturity Toolkit.
- [The National eHealth Strategy Toolkit](#) guides governments, ministries, and other stakeholders in the development and implementation of a national eHealth vision, action plan, and monitoring framework.

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APPENDIX 1. HANDOUT FOR RESPONDENTS COMPLETING THE HIS ASSESSMENT

How to Complete the HIS Assessment Worksheet

Thank you for participating in the HIS SOCI Assessment. This is an important tool to help understand the current status of our HIS, set goals for improvement, and inform planning for interventions to help reach those goals.

First, save the file with your last name as the filename. Note that responses will only be published and presented in aggregate—once recorded, your response will no longer be associated with your identity.

Next, open the Excel workbook. You will see three tabs at the bottom of the document: (1) Stages Measurement Scale, (2) HIS Assessment, and (3) Glossary. Start by familiarizing yourself with the content under each of these tabs.

Worksheet Name	Description
Stages Measurement Scale	This worksheet provides a detailed description of each HIS subcomponent across all five stages. It is an important reference document for use during completion of the assessment.
HIS Assessment	The HIS Assessment worksheet is the main component of the assessment. The assessment asks the respondent to complete the current status and goal status for each HIS subcomponent.
Glossary	The Glossary provides a list of relevant terms with definitions.

The second tab, HIS Assessment, is where you will record your answers. The HIS SOCI Toolkit views the HIS as being comprised of domains, each domain as comprising two to three components, and each of those components as made up of subcomponents.

HIS Core Domains	HIS Components
Leadership and Governance	<ul style="list-style-type: none">• HIS strategic plan or HIS strategy• Policy, legal, and regulatory framework and compliance• HIS leadership and governance organizational structures and functions
Management and Workforce	<ul style="list-style-type: none">• HIS workforce capacity and development• Financial management
ICT Infrastructure	<ul style="list-style-type: none">• Operations and maintenance• Communication network• Business continuity
Standards and Interoperability	<ul style="list-style-type: none">• Standards and guidelines• HIS core services• Interoperability (data exchange)
Data Quality and Use	<ul style="list-style-type: none">• Data quality assurance and data management• Data availability and data use processes and products

To complete the HIS Assessment, you will be asked to provide two ratings per HIS subcomponent. The ratings are: (1) emerging/ad hoc, (2) repeatable, (3) defined, (4) managed, and (5) optimized. To see how these ratings are defined for each subcomponent, refer to the Stages Measurement Scale. The Stages Measurement Scale includes a description of each subcomponent at each stage. See the example below for HIS Strategic Planning:

HIS Subcomponents	Emerging/Ad Hoc (1)	Repeatable (2)	Defined (3)	Managed (4)	Optimized (5)
1. HIS strategic planning	There is awareness of the need to develop an HIS and/or eHealth strategic plan or update the existing one, but the planning process is at an early stage. Planning is mostly focused on small or short-term projects.	Strategic plans are current and developed by subject matter experts but not vetted with all key stakeholders. Strategic plans are developed by different bodies focusing on specific domains and may not include all relevant HIS activities.	There is an established strategic planning process which involves key HIS/eHealth stakeholders and is formally approved by the Ministry of Health. There is a current HIS/eHealth strategic plan that includes standards, legislation, and appropriate technical and service delivery aspects, as well as ensures that there are financial and human resources to deliver them.	A budgeted eHealth and/or HIS strategy is aligned with and integrated in the national health plan/strategy and is aligned with the health sector M&E plan. Implementation is monitored, and there is a set schedule for periodic review and updating for corrective action by a designated government-led work group.	A continuous improvement planning process is maintained. HIS/eHealth strategic planning is responsive to changing health domain needs/priorities reflected in the health sector plan and the M&E plan.

For each subcomponent, you will choose a rating for the current status and the goal status. The current status reflects the HIS as it is and the goal status takes into account the needs of the health system and where the HIS needs to be, in order to meet these needs. The example below shows a selection of Emerging/Managed for Current Status and Managed for Goal Status.

<div style="display: flex; justify-content: space-between;"> <div> <p>The current status should describe the HIS "as is."</p> </div> <div> <p>The goal status should consider the needs of the health system and where the HIS needs to be in order to meet these needs.</p> </div> </div>						
Code	HIS Subcomponent	Definition/ Meaning	Current Status: 0 = Not Applicable 1 = Emerging/Ad hoc 2 = Repeatable 3 = Defined 4 = Managed 5 = Optimized	Goal Status: 0 = Not Applicable 1 = Emerging/ Ad hoc 2 = Repeatable 3 = Defined 4 = Managed 5 = Optimized	Please Provide Documentary Evidence of Application (indicate whether accompanying document is attached or provide URL below)	Comments
For each subcomponent below, select the stage of your HIS as it is currently and the desired goal.						
I. HIS Leadership and Governance						
I.A. HIS Strategy						
			Current Status	Goal Status		
I.A.1	HIS strategic planning	An HIS strategic plan sets out, in the context of the health priorities of the country, a vision for management and use of health information (electronic or other), a plan of action for delivering the vision, and arrangements for M&E. A country/ organization may have either an eHealth strategy specific to electronic HIS, a broader HIS strategy, or documented strategies for each (eHealth and HIS).	3-Defined	4-Managed		

Once you have gone through all of the subcomponents, you will save your spreadsheet and return it to the assessment facilitator.

Thank you again for taking the time to complete this tool. Your contributions are much appreciated.

[Include contact information for returning the completed assessment here]

APPENDIX 2. SAMPLE AGENDA: STAKEHOLDER CONSULTATION

Health Information System Stages of Continuous Improvement Assessment Workshop

[Place]

[Date]

Day 1 HIS Assessment Workshop Location		
8:30–8:45	Registration and light breakfast	All
8:45–9:30	Welcome and introductions	Assessment leadership team
9:30–10:00	Workshop overview	Facilitator
10:00–10:30	Purpose of HIS assessment	Assessment leadership team
10:30–10:45	Tea break	All
10:45–11:45	Introducing the HIS Stages of Continuous Improvement Toolkit <ul style="list-style-type: none"> Discuss assessment approach 	Facilitator
11:45–12:00	Assessment leadership team	Assessment leadership team
12:00–1:00	Individual review of tool	All
1:00–1:45	Lunch	All
1:45–3:30	Group work	All
3:30–3:45	Tea break	All
3:45–5:00	Plenary discussion on group assessment	Facilitator, all
Day 2 HIS Assessment Workshop Location		
8:30– 8:45	Light breakfast	All
8:45–9:00	Welcome and overview of the day	Facilitator
9:00 – 9:30	Presentation of assessment findings	Facilitator, all
9:30 – 10:30	Discussion of findings and prioritization of action items	All
10:30 – 10:45	Tea break	All
10:45 – 1:00	Action plan and identify priorities	All
1:00 – 1:45	Lunch	All
1:45 – 3:00	Review priority action items and roadmap	All
3:00 – 4:00	Closing and next steps	All

APPENDIX 3. TOOL CUSTOMIZATION

The HIS SOCI Toolkit is adaptable and customizable, with its flexibility built into the assessment approach and process. The toolkit was built specifically for a national-level approach to HIS strengthening, which should be acknowledged during use of the toolkit. It takes a holistic approach to assessing leadership, governance, management and workforce, ICT infrastructure, interoperability and standards, and data quality assurance and data use procedures and practices. On the other hand, it does not assess the specific capabilities of an mHealth or eHealth technology, nor does it measure HIS data quality and data use outcomes.

When considering a specific application of the tool, the assessment leadership team should thoroughly review the measurement scale to determine if all subcomponents are applicable to the scope of the specific HIS assessment. For example, if the scope of the assessment is a community-based information system, the subcomponent *IV.A.4. Unique person identity management* may not apply to the HIS being assessed.

IV. HIS Standards and Interoperability					
IV.A. Standards and Guidelines					
4. Unique person identity management	There is a basic understanding of the need for unique person identification. Use of unique person identification is limited to a program or local setting.	Programs are able to share unique identifiers developed and assigned by other programs.	Unique person identifiers that can be used across facilities and services are implemented and are used nationally.	Unique person identification is a core HIS service that includes the ability to use multiple identifiers or other person data to share information. Unique person identifiers are implemented and used across the health system. There is an established process for assigning unique person identifiers and for unique person identification.	Assignment of unique identifiers is integrated to the planning process of new initiatives.

For such a subcomponent, “0—Not Applicable” may be selected in the tool. Choosing 0 in the assessment worksheet will not negatively affect the overall component score, as the 0 will not be factored into the average for “Standards and Guidelines,” nor will it be factored into the overall domain score.

In the event that some subcomponents are identified as irrelevant, notify assessment participants that they will not need to choose a score for those subcomponents.

Other customizations: Gender

Gender is considered in a number of subcomponents in the HIS measurement scale. The areas where we have highlighted sex-disaggregated data or the importance of gender equity in selecting team members are by no means exhaustive but are meant to remind users that gender equity should be considered at every step. We encourage users to more fully integrate gender when possible—ensuring that it is discussed in planning meetings, participant selection, and the plenary workshop to ensure participants understand why gender is important in health data and health information systems, and that the impact of gender is examined throughout the team’s assessment results and goals.

It is also important to note that in several instances we have written “sex disaggregation, where applicable” to acknowledge that sex disaggregation might not be applicable to some situations, such as for commodities or laboratory data. For any indicators being collected at the individual or service delivery level, sex disaggregation does apply and should be included. We also note that we use the language “sex disaggregation” because the majority of HIS data are collected according to the binary biological sex of male and female. Some systems are starting to collect nonbinary data to allow for gender nonconforming populations, such as transgender people. We recommend considering allowing for nonbinary data collection during system and platform redesign and updates; this would enable health information systems to monitor health data of all populations, particularly high-risk populations.

More information about sex and age disaggregation in HIS can be found here:

<https://www.measureevaluation.org/resources/publications/fs-17-215>

<https://www.measureevaluation.org/resources/newsroom/news/factors-that-affect-collection-and-use-of-sex-and-age-disaggregated-data>

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This publication was produced with the support of the United States Agency for International Development (USAID) under the terms of MEASURE Evaluation cooperative agreement AID-OAA-L-14-00004. MEASURE Evaluation is implemented by the Carolina Population Center, University of North Carolina at Chapel Hill in partnership with ICF International; John Snow, Inc.; Management Sciences for Health; Palladium; and Tulane University. Views expressed are not necessarily those of USAID or the United States government.
MS-19-158
ISBN: 978-1-64232-120-3

