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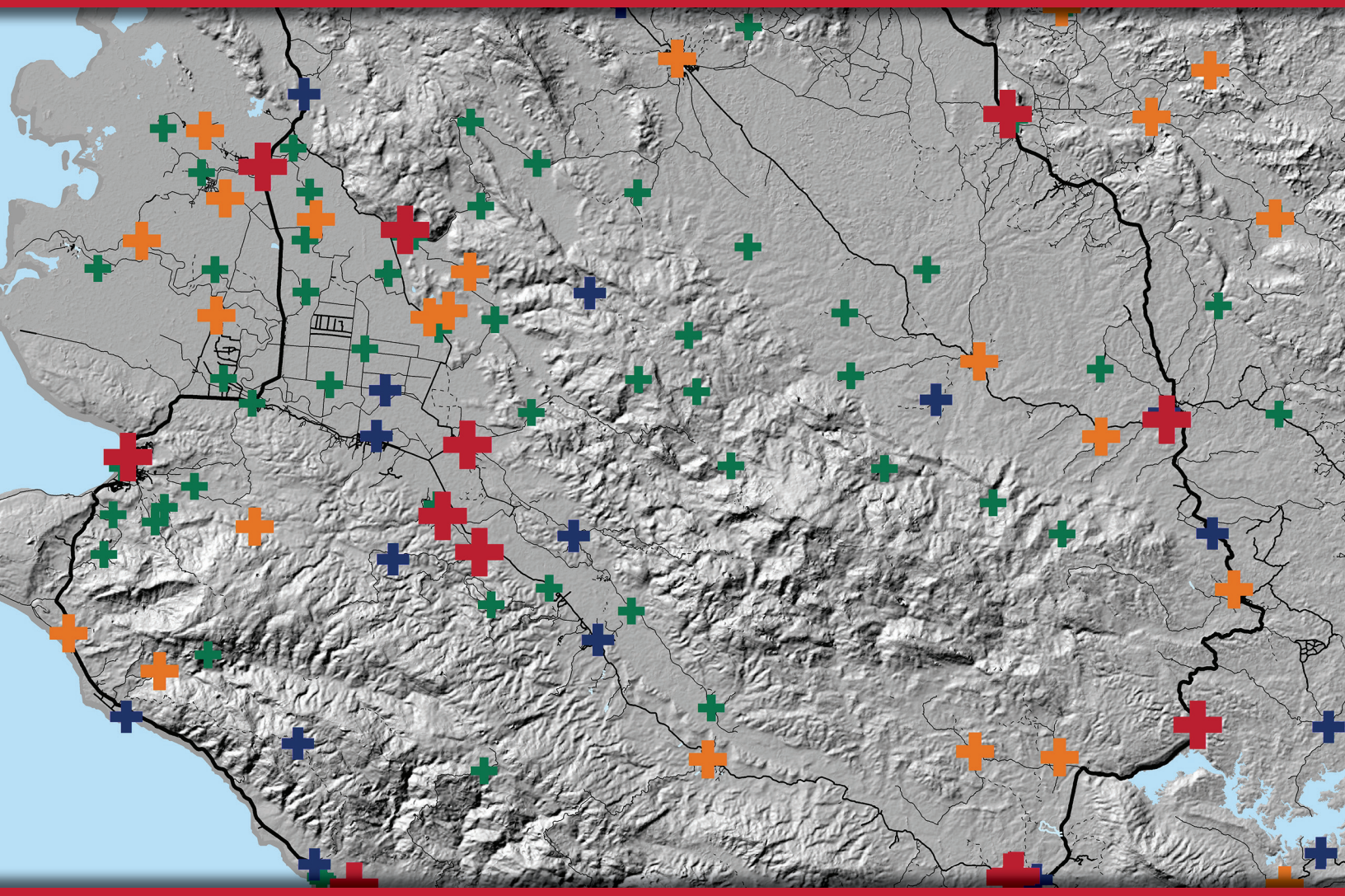
Guidance for countries wanting to strengthen their MFL

Module 9: Maintaining the MFL



May 2017

DRAFT

MAINTAINING THE MFL

This module describes the procedures that need to be implemented to maintain the Master Facility List (MFL) and keep it up to date. The module provides guidance on updating and verifying existing facility data in the MFL and making adjustments to the types of data collected. The module also covers aspects of maintenance related to the facility registry service that houses the MFL. It discusses issues that need attention during the planning phase, and describes the management and staffing needs for proper maintenance.

Checklist of things to do before using this module	Module where information is located
☐ Understand the purpose and value of an MFL	**Introduction to the MFL Module and Key Considerations Module**
☐ Establish a Steering Committee to oversee MFL development process	**MFL Governance Module**
☐ Understand the Context within which the MFL will be implemented	**MFL Assessment Module**

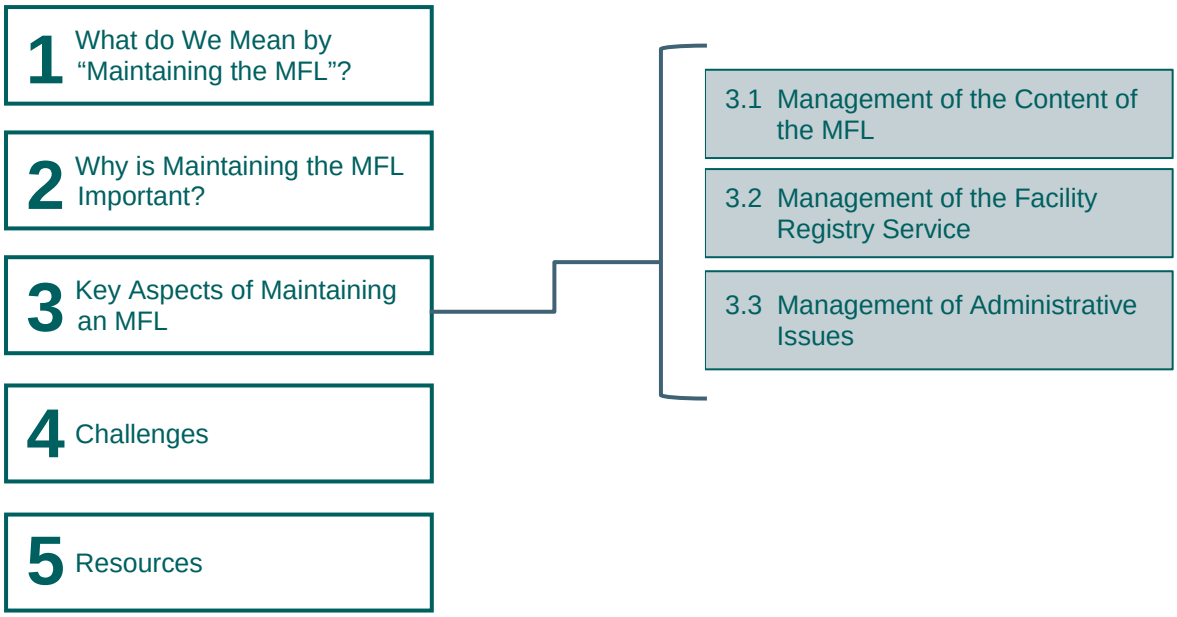
Key audiences for this module:

- MFL Steering Committee
- MFL Technical Working Group (TWG) tasked with developing MFL maintenance procedures
- MFL managers who overseeing implementation of these processes

Note: words in **bold** are defined in the glossary.

Figure 1: Maintaining the MFL – Module Outline

(Press Control and click on any of the boxes to be taken directly to that section)



1. WHAT DO WE MEAN BY "MAINTAINING THE MFL"?

After the MFL is established—meaning a dataset exists, has been validated, and is housed on an appropriate software solution—it must be maintained over the long-term. Maintaining the MFL involves implementing procedures that ensure that the data are updated, accurate and complete, and that the data continue to meet the needs of stakeholders. It is important that well-defined, feasible processes, standard operating procedures, funding, and human resources are in place to maintain the MFL and enable sustainability.

Maintaining the MFL involves the following components:

1. Management of MFL content to ensure that the data are current, reliable, and useful to data users:
   - Updating (i.e., adding or changing) the data for individual facilities
   - Auditing existing MFL data regularly to verify its continued accuracy
   - Reviewing the data elements included in the MFL and making adjustments as needed

2. Management of the MFL **facility registry service** (i.e., the software that houses the MFL data):
   - Troubleshooting problems that inevitably arise
   - Responding to new user requirements when they arise
   - Supporting integration with additional information systems over time

3. Management of administrative activities related to the MFL:
    - Ensuring that adequate leadership is available to oversee the maintenance process, resolve conflicts, manage expectations, and handle queries that arise
    - Establishing and implementing maintenance standard operating procedures (SOPs)
    - Ensuring that there is sufficient staff to maintain the MFL
    - Ensuring that there is adequate funding for maintenance

2. WHY IS MAINTAINING THE MFL IMPORTANT?

Maintaining the MFL is important because facility data can quickly become outdated. New facilities open for operation while others close, facilities may be upgraded, and the types of services offered by facilities change periodically. Ultimately, maintaining the MFL is important because if the data are not of high quality (i.e., accurate, current, complete, and relevant) the information will not be useful to data users. If an MFL is perceived to be outdated, incomplete, or inaccessible, it ceases to be a valuable tool and stakeholders will revert to developing their own parallel facility lists.[1]

3. KEY ASPECTS OF MAINTAINING AN MFL

3.1 Management of the Content of the MFL

Maintaining the MFL requires implementing procedures that ensure that the data are accurate and current, and that the data continue to meet the needs of stakeholders. Three procedures are fundamental to maintaining an MFL content.

- Updating the MFL data—MFL data sources or users propose changes to the MFL (such as adding or deleting facilities, or editing data about a facility) and **data curators** verify and approve the changes that are submitted. This procedure can be thought of as a "push system" whereby data updates are pushed by data sources or users to the MFL.

- Auditing the MFL—Persons in charge of the MFL periodically conduct checks of the MFL data to verify continued accuracy. This procedure can be thought of as a "pull system" whereby data are pulled from the MFL for verification.

- Reviewing the data elements included in the MFL—A consultative mechanism is in place to determine whether the data elements included in the MFL continue to meet the needs of data consumers; adjustments are made to the data elements as needed.

[1] See the *Introduction to the MFL Module*.

Updating MFL Facility Data

Updating the MFL content entails adding or changing MFL data. The process of updating the MFL has three possible outcomes: (1) data for a new facility are added, (2) data for a listed (but no longer active) facility are archived, and (3) data for a listed facility are changed or updated.

1. *New facility added*—If a facility not already included in the MFL is determined to exist, it should be added to the MFL. If a regulatory authority is responsible for issuing health facility licenses, this authority should be included in the updating process. New facilities should be communicated by the authority to the appropriate MFL data curator for addition to the MFL. However, if such an authority does not exist or if the MFL includes health facilities that fall outside of the authority's control (e.g., private facilities operated by NGOs or FBOs), other methods, such as a periodic facility census, or obtaining data from local data sources might be needed to gather accurate and complete information about new facilities.

2. *Facility data archived*—If it is determined that a facility does not exist, has shut down, or was a duplicate record the data for that facility is archived within the MFL. It is important to archive the facility record rather than delete it so a record can be maintained. If the facility never existed, its operational status should be set to "Invalid" or "Does not exist". If the facility did exist but is closed or no longer operational, its operational status should be set to "Closed". If the facility consists of a duplicate record, select one record to keep and one to archive. The archived record should set its operational status to "Duplicate" and a note should be included referencing the facility record being kept and the correct facility identification number.

3. *Facility data changed*—Information for a facility may change over time (e.g., name change, change in services provided, and change in contact details). Such changes necessitate updating the facility's entry in the MFL. A record of the changes made should be kept (we discuss this process in greater detail in sections that follow).

The updating process can be *centralized*, *decentralized*, or *federated*.

- *Centralized updating process*—Data are collected and submitted to a central body for review, validation, and approval. The central body is the "data curator." Local bodies such as district health offices are data sources.

- *Decentralized updating process*—Data are collected and submitted to a local or regional body (e.g., to district health office) for review, validation, and approval. The local body is the "data curator."

- *Federated updating process*—In a federated system, various separate databases contribute facility data to the MFL (e.g., a facility licensing authority and pharmacy registries). Updates

are submitted to and validated by the owners of those databases prior to submitting the data to the MFL. It may be necessary for the MFL data curators to validate the data again at the central level if there are concerns over data quality. In such cases, newly proposed facilities can exist with a status of 'pending' until approved at the central level. This would allow pending sites to still be shared, visible and referenced with discretion.

Data Sources for MFL Content Updates

There are two important questions for consideration regarding data sources for maintaining the MFL. First, what are the sources of the data updates, and second, who can submit change requests to the MFL?

A variety of sources can provide information for updating the MFL, including the following:

- Individuals who are familiar with facilities and are typically the "first to know" about changes in data or circumstances. These persons can include (1) district- or county-level health officials who have oversight for a number of facilities, (2) implementing partners who collaborate with facilities, (3) institutions coordinating commodities and logistics systems, and (4) employees of the facilities themselves.

- A broad group of data consumers who become aware of the need for data updates through their interactions with facilities. Typically, this group includes researchers and the general public. Opening data submission to a wider audience may increase submission of detailed data but will likely require additional work verifying all data submissions, especially if the persons submitting have not been trained in how to collect accurate data on facilities.

- Facility licensing authorities that provide information on licensed facilities. This direct source of information about facilities covers newly licensed facilities as well as those that have been upgraded (or downgraded) or have closed.

- Facility censuses or surveys (e.g., SPA, SARA) that identify new information about facilities. This source requires an individual who is skilled in comparing data reported in a national survey/census with data in the MFL. The person notes where discrepancies in facility data exist and determines what information needs to be updated. This process, which requires comparison of large datasets is time consuming, particularly when a large number of facilities are involved.

Regardless of the sources of data used to update the MFL it is advisable that the persons collecting the data have adequate training to understand the format and specifications for the different MFL data elements.

CASE STUDY: TRAINING DATA SOURCES

Philippines. Data validation workshops provided a forum to train subnational DOH officers on the process of updating the MFL. The workshops included the opportunity for attendees to improve their skills in collecting geographic coordinates of facilities using Google Maps and GPS devices.

Submitting Data for MFL Content Updates

Depending on the technology available and the type of data source used, the submission process can be done in different ways.

- *Web interface.* The facility registry service can be set up to receive and process change requests through a web interface.
    - *Online*—If the facility registry service is connected to the Internet, the data source may submit data online directly through this service for the data curator to review and verify. If curators are decentralized, online updates that they make can immediately be visible centrally. Online web interfaces work well in areas where internet connectivity is reliable and regular.
    - *Offline*—It is possible to set up programs that allow data sources to submit change requests offline, when their device is not connected to the Internet. In this case the information can be entered, but the update cannot be sent for validation and approval until an internet connection is established. Offline web interfaces work well in areas where internet connectivity exists but is intermittent.
- *Mobile data collection form.* The facility registry service can be set up to receive and process change requests submitted via mobile technology. A special program and mobile data collection form is set up on a mobile device such as a basic cell phone, a smart phone, or a tablet. The data source enters and sends the MFL data update from the mobile device. The program can be designed to work online or offline. In places where network coverage is not reliable or is nonexistent; data can be entered offline, and sent at a later time when the data source travels to a place where network coverage is regained.
- *Email*—Data can be entered by data sources onto a pre-formatted form and sent via email to a specially designated email address. This approach requires the data curator to monitor email and extract and upload or enter data into the MFL when it is received.
- *Paper form*—Technology-wise, paper forms are the simplest way to submit updates for validation and review and are best suited for areas where network coverage is poor or

nonexistent. They are also a good choice if setting up an electronic submission system is not feasible (e.g., because of time, funds, human capacity). While paper forms are "simple," they do pose a number of challenges: (1) they have to be printed and distributed, (2) they have to be physically transported from point A to point B, (3) the information on them has to be entered into a computer, and (4) they can get lost or damaged. However, as funds, technology, and human capacity become available, paper forms can be transitioned to mobile or web-based submission systems.

CASE STUDIES: UPDATING DATA CONTENT

Philippines. After having been tested using Google Drive spreadsheets, the updating mechanism of the National Health Facility Registry (NHFR) is now directly integrated into its web-based platform (http://nhfr.doh.gov.ph) and users can submit requests for updates online. In the NHFR, there are four request categories for updating the Facility Registry: (1) new facility; (2) potential duplicate(s); (3) update of information in a particular field; and (4) closed facility. Once a request for update has been submitted, the NHFR team at the national level validates the request through document review. At this point, the name of the user who submitted the request is captured by the system, providing for user accountability and allowing the NHFR team to follow up should there be questions or clarifications.

Tanzania. District-level health staffs update the data in the facility registry in real time and implement changes directly into the system. Each district has two persons who have been formally trained to update the facility registry. If the district staff has any questions or concerns when they are proposing the updates, the Ministry of Health staff is available to assist them.

Kenya. Kenya used the structure of their existing health reporting system to design a maintenance system for the MFL. The MFL data can be updated on an ongoing basis, with updates made in real time, as needed. The Sub County Health Records and Information Officers are responsible for entering updates into the MFL system, using a standardized form. For tracking purposes, the system keeps a record of who makes the updates.

Reviewing, Validating, and Revising Changes to Facility Data

Any MFL data change requests that are submitted need to be reviewed and validated by a data curator to ensure that they are accurate, valid, and complete. Communication between data sources and data curators—if they are different people—is important for carrying out this step. Communication can take place inside the facility registry service software (through chat features) or by other means (e.g., via phone or email). If necessary, the reviewer can contact a facility directly to ensure the information submitted is correct. Validation may take place at the national or subnational level, depending on the structure of the updating process (centralized or decentralized).

Verification of the facility geo-coordinates should include looking up the geo-coordinates on a map to determine whether the coordinates are *consistent* with other facility data. For example, are the facility's geo-coordinates a match for the reported administrative area? Also, determine whether the geo-coordinates are *feasible.* For example, the coordinates do not place the facility in a body of water or outside the country. Having up-to-date shape files of administrative areas is helpful in this process.[2]

If the change request is for adding a new facility, the data curator should ensure that the facility is not already in the MFL and assigned a unique identifier. Due diligence must be done to ensure that a new site request is not an existing site under a different name, potentially using the local vernacular or different language.

If the data curator uncovers issues during the process of reviewing and validating the data, he or she should ensure that the issues are resolved before the data are approved. In most cases, the data curator should contact the person who submitted the data, alerting the submitter to the issue, and asking him or her to clarify or correct the issue and resubmit the data.

CASE STUDIES: REVIEW AND VALIDATION PROCESSES IN KENYA AND TANZANIA

Kenya. National-level Ministry of Health (MOH) staff charged with the management of the MFL are responsible for validation and approval of the updates to the MFL. When data validation questions arise, the MOH calls the responsible Sub County Health Records and Information Officers to confirm data and resolve any discrepancies. Additionally, when necessary, the MOH conducts site visits to validate data. Although the validation process takes place at different levels, only the Sub County-level personnel are allowed to make definitive changes and updates to the MFL database. This limitation of access prevents confusion regarding change authorization, and prevents national-level personnel from being able to make changes without Sub County awareness.

Tanzania. The Department of Curative Services (DCS) reviews the proposed updates, validates the information, and either accepts or rejects the updates. While the DCS has the lead in validation, it receives assistance from the Information and Communication Technology (ICT) Unit and the Department of Policy and Planning (DPP) Health Management Information System (HMIS) Section. If there are any questions about the proposed updates, the DCS will follow up with the district staff member who proposed the updates because the district-level staff members have more up-to-date facility information from the facility data collection form.

[2] See the *Geocoding the MFL Module*.

Approval

Once validated, the MFL updates need to be approved. Approval usually occurs at the central level, but it may occur at a lower level (e.g., district health office) in a decentralized system. Standard operating procedures need to be clear on the matter of who has the authority to approve changes. Once the changes are approved, they can be made in the MFL database.

Documentation of Changes Made

All additions and changes should be adequately documented. For new facilities, a "date added" field in the MFL can be used to track when a facility entry is added to the MFL. Changes made to existing MFL entries should be tracked to ensure that information is not permanently lost and a history of MFL contents is available for reference.

Ideally, a tracking mechanism is built into the MFL facility registry service to automatically record changes and the date on which they were made.[3] However, if no such tracking mechanism exists, changes can be tracked separately—either on paper or electronically. A log file should contain the following minimum information to permit changes to existing entries:

1. Facility ID
2. Facility name
3. Facility location
4. Data element that was changed
5. New value
6. Old value
7. Date of change
8. Name and position of person who submitted the change
9. Name of person who approved the change
10. Type of change, i.e., "correction" or "real-life change."

A correction means the old value was incorrect and was never valid. A "real-life" change means that the old value was valid in the past but is now being updated due to a change in the actual facility status.

Frequency of Updates

Updating MFL content is a continuous process. Change requests should be allowed at any time, and validation should be ongoing to avoid backlogs. It is advisable to send data sources periodic reminders, urging them to submit known changes and updates. Experience from different countries suggests that data sources may not always be submitting MFL updates.

[3] See the *Establishing a Facility Registry Service Module*.

If continuous updating is not feasible, the verification and updating process can be linked to another regular activity (e.g., delivery of medical supplies, supervision visits) to ensure that it does happen and that the frequency is standardized.

In general, facility surveys or censuses are not ideal sources for regular MFL updates because of their high cost and infrequent implementation. However, a large scale survey or census may be necessary to update the MFL if you have substantial data gaps, if you want to add new data fields for which no current data exist or if substantial time has passed since the last validation and you doubt the accuracy of the data in the MFL.

Geocoded Data—A Special Case

Collecting geo-coordinates and updating the data requires special consideration because there are specific methods associated with the collection of this data. Using new methods or equipment to collect geo-codes may result in different results than the original data. If conflicting data emerge, you will need to consider the source, how well trained the data collectors were and the precise methods and equipment they used, before you make a determination as to their accuracy. The *Geocoding the MFL Module* provides detailed information about collecting and verifying location data for the MFL.

Audit the MFL Content (Also Referred to as "Pull Verification")

It is important to note that the verification of changes submitted by data sources (or "pushed" data) is different from data verification done through an audit. Verification of "pushed" changes means that data sources have identified and reported data that need to be updated or added, and the data curators are verifying that the suggested changes are accurate. This process focuses on "known" changes and relies on data sources to be proactive in reporting changes.

An audit, or "pull verification," is the process of periodically checking all, or a sample of, existing MFL content to ensure that the data are valid and entries are not missing. Pull verification should be done periodically (e.g., the entire database is checked annually), or on a rolling basis, in which case a subset of facilities are selected each month for verification. This type of audit process is an opportunity to uncover data that are outdated, incorrect, incomplete, or missing.

The audit process can result in changes similar to those in the updating process (i.e., a facility entry is added, a facility entry is archived, a facility entry is edited). There is also a fourth possible outcome: a facility entry is current, complete, and valid (i.e., it requires no change). If this last outcome is the case, any such entries should be indicated as such (i.e., "no-change") with the date of verification during the verification process. The verification date is important because it provides a record of when the entry was last reviewed and assessed to be valid.

One approach to the data verification is to provide data sources (e.g., district health officers or facility staff) with forms prepopulated with facility information currently in the MFL. For example, every quarter, the district health management team members can be asked to review all of the MFL entries for the health facilities in their district to identify missing facilities, gaps in data, or incorrect information. The data sources can then make any necessary corrections to the forms and send them back.

As with the content updating process, the audit process can be linked to another regular activity, such as supervision visits. One challenge to keep in mind with such a linkage, however, is that while supervision visits may occur regularly according to policy, in actuality they may be far more variable. Furthermore, supervision visits may not even occur in private facilities. If special site visits are required to verify data, the visits must be included in the budget.

Reviewing the MFL Data Elements

In addition to keeping data for individual facilities current, it is important to make sure that the types of data collected on facilities continue to be relevant to users. It is therefore important to have a regular review of the status of data elements in the MFL. The following questions are examples of the issues considered in the discussions:

- Are all of the data elements currently being collected useful to data consumers?
- Are any data elements missing that are important to data consumers?
- Are all of the data element definitions still relevant?
- Have there been changes in the classification of facilities or the administrative units that need to be incorporated into the MFL?

An inclusive way to answer these questions is through a technical working group (TWG) comprised of key MFL stakeholders, including leadership, facility registry service developers, data curators, and data consumers. TWG meetings can be informed by interviews or surveys of stakeholders not in the TWG. The TWG should meet regularly (e.g., annually) to develop, discuss, and reach consensus on propositions for new MFL data requirements, such as (1) the addition of a new data element, (2) changing the characteristics of a data element (e.g., definition, attributes), and (3) archiving data elements that are not needed or are no longer relevant. Propositions that are supported by the TWG can then be proposed to the MFL steering committee for final approval.

When deciding whether to change the structure of the MFL, it is important to consider the implications of change for data consumers and data curators. The following are some questions that highlight major concerns.

- Will the change require revision of the content updating and validating processes (e.g., data collection and submission forms or facility registry service interfaces)?
- Will the change require additional data curator training?
- Will the change affect data that are already in the MFL?
- How much time would a developer need to make the change?
- Are there adequate funds to cover implementation of structural changes and any associated needs (e.g., training, updates to job aids, guidelines and SOPs)?
- Is there a data encoding standard that can be used (e.g., ISO)? Can custom encoding be avoided?
- How will the change affect integration with other systems?
- Is it possible and appropriate to store the new data elements in other systems that are interoperable with the MFL, rather than having to change the structure of the MFL database?

3.2 Maintaining the Facility Registry Service

The facility registry service that houses and shares the MFL data requires ongoing support and maintenance. Here we provide an overview of the long-term maintenance issues related to the facility registry service that need to be considered. More detail is provided in the *Establishing a Facility Registry Service Module* and the *Sharing the MFL Module*.

Routine Management and Troubleshooting

MFL managers need to plan on having a small team of information technology (IT) specialists available to manage and troubleshoot issues around the use of the facility registry service. The following are examples of the kinds of activities for which these teams will be responsible.

- Managing updates used for the facility registry service and handling any compatibility issues that arise during these updates
- Ensuring data security
- Backing-up the MFL data periodically, if this is not an automated function
- Ensuring that the server is fully operational, if the facility registry service is hosted locally
- Assisting users (whether data curators or data consumers) with troubleshooting issues such as inability to log in, difficulties downloading data, etc.
- Troubleshooting issues related to integration and interoperability with other systems

Responding to New User Requirements

It is inevitable that new user requirements will emerge that need to be addressed. The MFL must have a mechanism to collect, prioritize, and respond to these new requirements on a regular basis. New requirements can range from needing to sort data in a different way, to more complex matters such as creating a new program to enable mobile data entry and submission. In addition, there are likely to be new requirements linked to the integration and interoperability of the MFL with other systems, especially in a context of rapidly evolving

technology. *While the cost of such changes may be difficult to predict, it is important to plan for a future in which human and financial resources need to be mobilized to meet new requirements.* It is helpful to know which local and international partners can be called on for support in these efforts.

Thorough Assessment of the Facility Registry Service

Periodically, a thorough assessment of the facility registry service should be conducted to determine whether it continues to meet user needs and what changes, if any, should be considered. Some questions to ask are listed below. The *MFL Assessment Module* contains additional information useful for this purpose.

- Is the MFL facility registry service easy to use?
- Is the technology reliable?
- Are there new software solutions that may be more appropriate?
- What are they key challenges users face with the facility registry service?

3.3 Management of Administrative Issues

It is a good idea to start planning for MFL maintenance early in the conceptualization process. And, even when the MFL already exists, it is not too late to establish and implement standardized maintenance processes and procedures. The following are key issues of administrative management that relate to maintenance of the MFL.

- Ensuring that adequate *leadership* is available to oversee the MFL maintenance process
- Establishing and implementing *standard operating procedures* for maintenance of the MFL
- Ensuring that there is sufficient *trained staff* to maintain the MFL
- Ensuring that there is adequate *funding* for maintenance of the MFL

Leadership

Leadership is a key factor throughout the process of establishing an MFL but, on the issue of MFL maintenance, it is of particular importance during two stages in the process:

1. *During the planning stage*—Leadership is needed to facilitate development of a comprehensive approach, including detailed procedures for carrying out MFL maintenance. It is important to do this as early as possible in the planning stage so that after the MFL is established, the necessary pieces—processes, guidelines, staff, and funding—are in place to ensure that the MFL can be adequately maintained. Leadership during this stage requires close consultation with stakeholders, staff at different levels of the health system, and software developers, to reach consensus on what maintenance processes are feasible and can be implemented in the particular context.

   "Champions" who understand the importance of ongoing MFL maintenance and are in a position to advocate for it are important stakeholders to involve in planning for MFL

maintenance. Their efforts will help ensure that different agencies support the process and that the MFL remains relevant and up to date for data consumers.

2. *After the MFL is established*—It is important to designate an MFL manager or administrator who provides overall leadership for the MFL and oversees implementation of day-to-day MFL maintenance processes. The MFL maintenance responsibilities of this person are the following:

    - MFL standard operating procedures (SOPs) are adhered to and updated as necessary
    - Maintenance processes in place are implemented appropriately
    - Staff tasked with updating or validating MFL data are adequately trained and perform their assigned tasks correctly
    - Adequate MFL funding is in place for implementation of maintenance procedures
    - New user requirements are collected, prioritized, and addressed
    - Issues and problems that arise are quickly identified and resolved
    - Stakeholder meetings are held regularly to discuss aspects of MFL content and the continued relevance of the MFL in a context of changing information needs

MFL leadership responsibility should be in the hands of a person who has a managerial position within the institution housing the MFL. This person should have sufficient authority to (1) ensure proper implementation of the maintenance tasks associated with the MFL, and (2) make decisions about resources and staff changes as needed, if results are not met.

The steering committee (described in the *MFL Governance Module*) will continue to have oversight of the MFL. The committee should receive periodic reports on the performance of the MFL and be alerted to any problems that arise or new developments that are needed. Members of the steering committee can be helpful in identifying technical support and finances for new developments for the MFL.

Maintenance Guidelines (Standard Operating Procedures)

To ensure that managing the MFL is standardized and transparent, a set of procedures should be developed outlining how the institution charged with the MFL will handle on-going maintenance of the MFL. Guidelines, standard operating procedures, and job aids should all be developed so that maintenance processes are well-defined and easily implemented. In the process of developing these guidance materials, a number of important questions will need to be answered. (The answers to some of these questions will depend to a large extent on the type of software used for the facility registry service and how it is configured.[4] The questions that need to be dealt with most commonly are the following:

[4] See the *Establishing the Facility Registry Service Module*.

- Which unit within the implementing agency or organization is responsible for maintenance of the MFL?
- How often will the MFL be updated (e.g., quarterly, on an on-going basis)?
- What processes will be used to update MFL content and who will implement them (e.g., is the process centralized or decentralized; at each level, who is responsible for the specified tasks)?
- What are the mechanisms for submitting MFL content updates (e.g., web-based interfaces, mobile applications, paper forms)?
- Where will the data for updating the content come from (e.g., national health facility regulatory body, sub-national MOH staff, private organizations, other data consumers)?
- How often will the content of the MFL be audited?
- What processes will be used to verify MFL content and who will implement them (e.g., is the process centralized or decentralized; at each level, who is responsible for the specified tasks)?
- Who will be responsible for the technical maintenance and on-going development of the facility registry service (e.g., how will changes to the data elements be handled; how can the facility registry service be further developed to make maintenance processes easier; how will issues encountered when updating the MFL be handled)?
- Who will conduct trainings for data sources and **data curators**, and how often will the trainings be held?
- What sort of supervision and data curator support processes will be implemented?
- Will reminders be sent to data sources and data curators to ensure that they submit updates and perform data validation? If so, how and when?
- Who has authority to make decisions about sharing the MFL data?
- How are questions, data requests, and conflicts handled, reported, and resolved?
- Who will provide the training, technical assistance, and supervision needed to properly maintain the MFL?

Maintenance Workforce

Throughout this module we have described the roles and responsibilities of the persons involved in maintaining the MFL. The following list describes the roles related to MFL maintenance that require permanent staffing:

MFL manager or administrator—Person responsible for overall leadership of the MFL (see leadership section above).

Data curators—Persons involved in managing the MFL data. They have the authority to verify and authenticate changes to health facility data.

Data sources—Persons who provide information on facility data updates or changes. They can include employees of the Ministry of Health, but can also include staff from other government agencies and NGOs, as well as the general public.

Information technology specialists—Persons who maintain the facility registry service and aid in its on-going development.

Trainers—Persons in charge of training the data sources and data curators to perform their MFL maintenance tasks.

Supervisors—Persons who provide supervision for data sources and data curators.

Other staff—MFL maintenance requires persons who perform a range of tasks such as answering questions about the MFL, responding to data sharing requests, collecting new user requirements, and helping to track finances. These tasks may be assigned to the MFL manager, to data curators, or to other staff, depending on the resources available.

Key MFL maintenance staff are situated or sit within the institutional and unit charged with the MFL. Persons supporting the MFL maintenance process may also reside in other central offices, administrative units (e.g., province, region, district, and health zone), facilities themselves, or even NGOs, CBOs, and other local partner organizations.

The exact composition of this workforce will depend on whether the updating and verifying processes are centralized or decentralized and, perhaps, how many MFL entries there are to keep up to date. When defining the MFL maintenance processes, consideration should be given to the following issues:

- What MFL maintenance tasks need to be completed and at what levels?
- What skills are required to perform the MFL maintenance tasks?
- How many people are needed to accomplish the MFL maintenance tasks?
- What trainings do data curators need to be effective in performing their roles?

- What do information technology staff need to ensure that the software and data platform are reliable?

Thinking through these considerations will help to ensure that an adequate number of appropriately trained staff will be available to maintain the MFL.

Among those who have had the experience of implementing an MFL it is the opinion that, particularly at higher levels, permanent staff with 100% level of effort (LOE) should be involved in MFL maintenance; however, this ideal situation is not always feasible. At a minimum, MFL-related maintenance tasks should be included in staff members' official job descriptions and, during recruitment for MFL-related positions, minimum qualifications that acknowledge MFL maintenance activities should be clearly laid out. Additionally, at least two people should be trained for each position at each level, to ensure continuity if someone changes positions, leaves the organization, or is simply out of the office.

In some places, MFL-related maintenance responsibilities are incentivized (e.g., tied to funds or commodities) to increase the likelihood that they are performed. This may be especially effective for data sources, encouraging them to submit known updates in a timely fashion. However, incentives may not be needed if maintenance tasks are included in a person's job description. In such cases, failure to perform these important tasks will be reported on the person's employment record and may be grounds for termination.

Funding for Ongoing Maintenance

MFL funding must be a recurring line item in the national budget; MFL maintenance cannot depend on external resources. If the establishment of the MFL is funded by donors, funding will likely be reduced after the establishment phase is completed. Therefore, MFL maintenance must be recognized as an essential part of the government's strategic plan, even if that plan requires simplified maintenance processes and minimal costs to achieve sustainability. Availability of long-term funding for the maintenance of the MFL should be considered when selecting the facility registry service, and developing the operating procedures for updates which can affect maintenance costs.

4. CHALLENGES

Maintaining the MFL Challenges	
Challenge	**Potential solution**
Staff turnover and training needs	• Train multiple persons on all tasks required to maintain MFL • Staff agree to remain in their position for minimum amount of time

Maintaining the MFL Challenges	
Challenge	**Potential solution**
Addition of new data elements to MFL	• Understand the implications of adding data elements to MFL (e.g., where the data come from, whether new data collection is required, how it affects the facility registry service and integration with other systems). Determine what issues might arise, and how those issues will be dealt with • Work with a developer to make the changes to the facility registry service • Develop a feasible and realistic budget and timeline
Lack of infrastructure	• Know what infrastructure is available before developing maintenance processes and guidelines • Determine whether infrastructure updates are feasible and when they are likely to happen • Consider implementing various maintenance processes (e.g., different mechanisms of submitting data) to accommodate a range of situations
Changes to political or administrative areas (e.g., district boundaries)	• Create new data elements for the new administrative units. Archive the old administrative units so users can compare the location of facilities in the old administrative areas with the location in the new administrative areas. • Do not use unique identifiers that are tied to administrative units
Cost of maintenance/ sustainability	• Consider the costs of maintenance and sustainability in the planning phase (e.g., conduct an assessment to determine estimated costs) • Consider the cost of NOT maintaining the MFL; this likely means that many institutions and organizations will maintain their own facility lists, resulting in cost duplication. • Ensure that there is high level buy-in for maintenance of the MFL • Ensure that funds for the MFL are specified as a line item in the national budget
Lack of compliance in reporting	• Have guidelines or policies in place—such as an administrative order—which mandate that updates are timely and accurate

6. RESOURCES

- Kenya Master Facility List Administrative Documents (include maintenance procedures, roles and responsibilities of different actors and user guides)
- Tanzania Health Facility Registry Curation Tool User Guide

ACKNOWLEDGEMENTS

The MFL Resource Package was developed with extensive input from a team of persons who have been involved in various capacities in the development or management of MFLs in different countries. The content builds off of previous MFL guidance developed by the World Health Organization, MEASURE Evaluation and Open HIE. This MFL Resource Package seeks to expand and update the guidance and make it accessible to a wide audience. Development of this Resource Package included a literature review, a series of in-depth interviews with key informants, a three-day meeting attended by various experts in this area to discuss in detail the content and structure of the guidance document, and a thorough review process.

Cristina de la Torre and Clara Burgert from ICF led the development and drafting of this guidance document. Lwendo Moonzwe, and Kirsten Zalisk (from ICF) and Aubrey Casey (formerly from ICF) helped to draft the MFL Resource Package, organize resources, and document discussions during the three-day meeting. Andrew Inglis (formerly from MEASURE Evaluation/JSI) and Scott Teesdale (from InSTEDD) helped draft sections of the MFL Resource Package.

Lynne Franco led a team at EnCompass to conduct a series of in-depth interviews to inform the content of the Resource Package, and subsequently helped facilitate the three-day meeting to review the guidance proposed for the MFL Resource Package.

The following tables list persons who contributed to the MFL Resource Package by attending a three-day meeting, participating in in-depth interviews, contributing resources, reviewing drafts or providing information for the case studies.

Table 1: Persons who participated in the three-day meeting to review the content and structure of the Resource Package.

Meeting Participants	Affiliation
Tariq Azim	MEASURE Evaluation/JSI
Noah Bartlett	USAID, Bureau for Global Health
Clara Burgert	The DHS Program/ICF
Aubrey Casey	The DHS Program/ICF
Niamh Darcy	RTI
Anita Datar	Health Policy Project/Futures Group
Cristina de la Torre	The DHS Program/ICF
Mark DeZalia	PEPFAR/CDC
Lynne Franco	The DHS Program/EnCompass
Erick Gaju	MOH Rwanda
Nate Heard	US Department of State

Meeting Participants	Affiliation
Andrew Inglis	Deliver Project/JSI
Denise Johnson	MEASURE Evaluation/ICF
James Kariuki	PEPFAR/CDC
Esther Kathini	MOH Kenya
Carl Leitner	iHRIS/Capacity Plus/IntraHealth
Lwendo Moonzwe	The DHS Program/ICF
Annah Ngaruro	MEASURE Evaluation/ICF
Kola Oyediran	MEASURE Evaluation/JSI
Jason Pickering	Consultant/DHIS2
John Spencer	MEASURE Evaluation/UNC
Charity Tan	MOH Philippines
Scott Teesdale	Open HIE/InSTEDD
Kavitha Viswanathan	WHO
Sam Wambugu	MEASURE Evaluation/ICF
Kirsten Zalisk	The DHS Program/ICF

Table 2: Persons who contributed through interviews or review of the MFL Resource Package Modules.

Name	Affiliation at time of participation
Ian Wanyeki	Health Policy Project/Futures Group
Elaine Baker	Health Policy Project/Futures Group
Bernard Mitto	Health Policy Project/Futures Group
Vanessa Brown	PEPFAR/Department of State
Robert Colombo	WHO
Steeve Ebener	Gaia Geo Systems
Mike Gehron	PEPFAR/Department of State
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Brian Taliesin	Digital Health Solutions/PATH
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The MFL Resource Package was undertaken with support from the United States Agency for International Development (USAID) and the President's Emergency Plan for AIDS Relief (PEPFAR) through The DHS Program.