HIS Geo-Enabling Toolkit

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In collaboration and with the support of:

ADB
## Revision history

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The document also benefited from the development and implementation in Myanmar of the UNICEF Guidance on the Use of Geospatial Data and Technologies in Immunization Programs: Overview and Managerial Considerations for In-Country Strengthening.

Purpose and audience

The purpose of this Health GeoLab Collaborative toolkit is to support the geo-enablement of the in-country Health Information System for the health sector to fully benefit from the power of geography, geospatial data and technologies.

The audience for this toolkit includes all the stakeholders contributing to the strengthening of the Health Information System (HIS) in general and the technical capacity of the health sector to manage and use geospatial data and technologies in particular.

Please note that some of the sections in this guide require basic understanding of concepts pertaining to the management and use of geospatial data and technologies. These concepts are described in the reference material generated by the Health GeoLab Collaborative in collaboration with other partners\(^1\).

Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>GDTU</td>
<td>Geospatial Data and Technologies Unit</td>
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<td>GIS</td>
<td>Geographic Information System</td>
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<td>HGLC</td>
<td>Health GeoLab Collaborative</td>
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<td>HIS</td>
<td>Health Information System</td>
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<td>KHP</td>
<td>Key Health Program</td>
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<td>NSDI</td>
<td>National Spatial Data Infrastructure</td>
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<td>SDG</td>
<td>Sustainable Development Goal</td>
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<td>UHC</td>
<td>Universal Health Coverage</td>
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<td>WHO</td>
<td>World Health Organization</td>
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1 https://healthgeolab.net/resources/reference-materials/
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Glossary

**Action plan:** Document describing in great detail exactly how strategies will be implemented to accomplish the objectives that have been set.

**Business process:** A business process or business method is a collection of related, structured activities, or tasks that in a specific sequence produces a service or product (serves a particular business goal) for a particular customer or customers.

**Common Geo-Registry:** IT solution that allows the simultaneous hosting, management, regular update, and sharing of the authoritative lists for the geographic objects core to public health.

**Data:** Facts and statistics collected for reference or analysis

**Data management:** All the disciplines related to managing data as a valuable resource. This covers, but is not limited to: data collection, cleaning, validation, documentation as well as the generation of data products (graphs, tables, and maps)

**Geo-enable:** Apply geospatial capabilities to a business process in order to establish the authoritative spatial location of business data, and enable contextual spatial analysis.

**Geo-enabled HIS:** An Information System that fully benefits from the power of geography, geospatial data and technologies through the proper integration of geography and time across its business processes.

**Geographic data:** Information describing the location and attributes of things, including their shapes and representation. Geographic data is the composite of spatial data and attribute data.

**Geographic feature:** Man-made or naturally-created features of the Earth.

**Geographic information:** Spatial and/or geographic data organized and presented to create some value and to answer questions

**Geographic Information System (GIS):** An integrated collection of computer software and data used to view and manage information about geographic places, analyze spatial relationships, and model spatial processes. A GIS provides a framework for gathering and organizing spatial data and related information so that it can be displayed and analyzed.

**Geographic object:** Whereas features are in the real world (mountain, river, church, etc.), geographic objects are computer representation of features

**Geography:** The field of science devoted to the study of the lands, the features, the inhabitants, and the phenomena of Earth.

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2 The source of the definitions included in this glossary can be consulted here: https://bit.ly/2q27s0I
Geospatial data: Also referred to as spatial data, information about the locations and shapes of geographic features and the relationships between them, usually stored as coordinates and topology.

Geospatial technologies: Refers to equipment used in visualization, measurement, and analysis of earth's features, typically involving such systems as Global Navigation Satellite System (GNSS), Geographical Information Systems (GIS), and remote sensing (RS).

Global Navigation Satellite System (GNSS): A satellite navigation system with global coverage.

Health Information Systems: A system that integrates data collection, processing, reporting, and use of the information necessary for improving health service effectiveness and efficiency through better management at all levels of health services. HIS is a much broader term than HMIS and includes HMIS, Patient Management Registration System (PMRS), Logistics Management Information System (LMIS), Human Resources Information System (HRIS), Financial Management System (FMS), etc.

Information: Facts provided or learned about something or someone.

Information System: Organized system for the collection, organization, storage, and communication of information.

Master list: An authoritative (officially curated by the mandated governmental agency) complete, up-to-date, and uniquely coded list of all the active (and past active) records for a given geographic object (e.g. health facilities, administrative divisions, villages).

Registry: IT solution that allows storing, managing, validating, updating, and sharing a master list.

Remote Sensing (RS): Collecting and interpreting information about the environment and the surface of the earth from a distance, primarily by sensing radiation that is naturally emitted or reflected by the earth's surface or from the atmosphere, or by sensing signals transmitted from a device and reflected back to it. Examples of remote-sensing methods include aerial photography, radar, and satellite imaging.

Strategy: Approaches that will be used to reach the objectives that have been defined.

System: A set of detailed methods, procedures, and routines created to carry out a specific activity, perform a duty, or solve a problem.

Vision: Vivid picture of where you want to be in the future.
1. Background

The Health GeoLab Collaborative (HGLC) is a collective of institutions and individuals sharing the same vision for low- and middle-income countries in Asia and the Pacific to fully benefit from the power of geography, geospatial data, and technologies to reach the health-related Sustainable Development Goal of healthy lives and well-being for all (SDG 3)\(^3\).

The HGLC uses the 4Ts (Training, Tooling, Testing, and Teaming) approach to strengthen in-country capacity. The present document has been developed as part of this approach and with the objective to be used by the largest number of users possible.

This toolkit is a living document made to evolve based on the inputs received from the users. Please do not hesitate to contact us at info@healthgeolab.net if you have any suggestions for improvement.

Please also contact us using the same email address should you use this document as part of your activities and would like to have your institution recognized as one of the document’s users.

2. Introduction

Being able to contextualize any piece of information in both space and time is a key capacity that the Health Information System (HIS) should have in order to support all three main functions of a country’s public health system: (1) assessing and monitoring the health of communities and populations at risk; (2) assuring that all populations have access to quality, timely, and cost-effective care; and (3) formulating public health policies designed to solve identified health problems and priorities.

Despite the foundational importance of the above, these two dimensions are generally among the most poorly captured in the HIS, leading to health programs not being able to fully benefit from what geography as the science, geospatial data as the content, and geospatial technologies as the tools have to offer to address public health priorities such as Universal Health Coverage (UHC) under the umbrella of the Sustainable Development Goal of healthy lives and well-being for all (SDG 3).

The present toolkit has been designed by the HGLC as the instrument to help countries address this gap through the implementation of the HIS geo-enabling framework. It is meant to be generic enough to be used by any stakeholder willing to strengthen the level of geo-enablement of the HIS in any given country.

The content of this toolkit builds on the experience gained through the implementation of the HIS geo-enabling process in Cambodia, Myanmar, and Vietnam thanks to ADB’s support. It also greatly benefited from the development and implementation in Myanmar of the joint UNICEF-Health

\(^3\) [www.healthgeolab.net](http://www.healthgeolab.net)
GeoLab Collaborative guidance on the use of geospatial data and technologies in immunization programs [1].

While designed to be implemented at the level of the HIS as defined in the glossary, this toolkit can be adapted to be applied to a program specific information system. The above mentioned guidance is a good example of such adaptation.

3. The HIS geo-enabling framework

A geo-enabled HIS is an information system that fully benefits from the power of geography, geospatial data and technologies through the proper integration of geography and time across its business processes.

The HIS geo-enabling framework is composed of nine (9) elements that need to be in place for an HIS to be considered as geo-enabled, namely (please refer to the glossary for an explanation of the concepts listed here):

1. A clear vision, strategy(ies), and action plan for the management and use of geospatial data and technologies have been defined.
2. A governance structure supporting the vision, strategy(ies), and action plan has been established.
3. Sufficient technical capacity has been developed.
4. Geospatial data specifications, standards, and protocols have been defined and are being implemented to ensure the availability and quality (completeness, uniqueness, timeliness, validity, accuracy, and consistency) of geographic information across the whole data lifecycle.
5. The master lists for the core geographic objects (health facilities, administrative divisions and villages, and reporting divisions) and their associated geography have been developed, made accessible, and an updating mechanism put in place for each of them through the use of a common geo-registry.
6. The appropriate geospatial technologies have been identified and are being used in accordance to good geospatial data management practices.
7. Use cases supporting health program (communicable diseases surveillance, malaria elimination, health service coverage, disaster management, etc.) towards reaching SDG 3 are being implemented and documented.
8. Policies supporting and enforcing all of the above as well as geospatial data accessibility have been released.
9. The necessary resources to ensure long term sustainability have been identified and secured.

These elements are core common assets covering four key stages of the HIS business process (Figure 1). It is important to note here how these different stages support each other towards an operational use of geography, geospatial data and technologies to support the implementation of health programs. Please refer to Roth et al. [2] and Ebener et al. [3] for a detailed description of the benefits gained through the implementation of this framework.

Annex 1 provides the benchmarks expected to be reached for each of the nine (9) elements in the framework. These benchmarks represent the reference being used to conduct the assessment described in the next section of this toolkit.
4. In-country implementation of the HIS geo-enabling framework

The implementation of the HIS geo-enabling framework takes place through a simple 6-step process (Figure 2). These steps are as follows:

- Step 1: Assess the level of geo-enablement of the health information system
- Step 2: Define the strategy(ies) and activity(ies) to be implemented to fill the gap(s) identified during the assessment
- Step 3: Develop or modify the action plan aiming at geo-enabling the HIS
- Step 4: Implement the action plan
- Step 5: Assess and document the result of the action plan implementation
- Step 6: Restart from step 1 on a regular basis

The following sections describe each of these steps in detail and provide tools to support their implementation in countries.
Figure 2 - In-country HIS geo-enabling framework implementation process and tools provided here to support it
4.1 Step 1 - Assess the level of geo-enablement of your Health Information System (HIS)

- **Objective:** Identify potential gaps across the nine (9) elements of the HIS geo-enabling framework
- **Expected deliverable:** A report giving the picture of the current situation with the list of the gaps
- **Estimated duration of implementation:** 1 week
- **Amount of resources needed:** Limited
- **Person to be involved:** Head of the geospatial data management and technology unit if any, representatives from key health programs (health information system, communicable diseases, planning, emergency management, and immunization), development partners, external facilitator

**Supporting tool:**
- a. HIS geo-enabling benchmarks (Annex 1)
- b. Quick assessment questionnaire (Annex 2)
- c. Additional information and documents to be collected in complement to the quick assessment questionnaire (Annex 3)
- d. Resources illustrating the first 7 elements of the HIS geo-enabling framework (Annex 4)

Assessing the level of geo-enablement of the HIS is the foundation of the overall HIS geo-enabling process. It is therefore critical to conduct such assessment with the utmost care and level of details, especially if it is being conducted for the first time. Not conducting such assessment might actually result in wrong assumptions and therefore loss of time and resources.

At this end of this first step, the entity or person conducting the assessment should have a clear picture of the gaps that exist against the benchmarks to be reached for the HIS to be considered as geo-enabled (Annex 1). The absence of gaps would signify that your health information system is geo-enabled!

The quick geo-enabling assessment questionnaire reported in Annex 2 has been developed to facilitate this exercise. This questionnaire is organized according to the nine (9) elements of the HIS geo-enabling framework (see Annex 4 for resources illustrating the first seven (7) elements of the framework). To have a complete picture of the situation, it is also important to collect the information and documents listed in Annex 3.

The assessment can either be conducted by the Ministry of Health (self assessment) or facilitated on site by an external party. In both cases, the person conducting the assessment may either interview each considered health program separately or to organize a workshop during which these same programs will have been invited to attend. The latter presents the advantage of allowing the information being collected to be directly cross-checked between programs.

While other programs can, of course, be involved, the assessment should at least cover the following Key Health Programs (KHPs) as being the main providers and potential users of geospatial data and technologies [1, 2, 3, 4, 5]:

- **Health Information System (HIS):** Natural guardian of the national level geospatial data management and technologies unit.
- **Planning**: Physical accessibility to health care is an important component of UHC which depends on the spatial distribution of the population in need, the spatial distribution of services that are being provided, and the environment that the patients have to cross to reach them.

- **Communicable diseases**: Being able to contextualize cases in both time and space is key to surveillance, monitoring, and elimination of communicable diseases.

- **Immunization**: Base microplanning maps are essential to ensure that all the targeted population is covered during an immunization campaign.

- **Emergency management**: Geospatial data and technologies are critical instruments across the whole emergency management cycle (mitigation/preparedness, response, recovery).

As much as possible, the person facilitating the assessment would have already conducted an internet search to collect as many information as possible prior to the on site visit. This does not only help in saving time but also in providing some background information that can be used during the interviews.

The assessment also represents an opportunity to inform the Ministry of Health and its partners about recent development in the field of geospatial data and technologies and to illustrate how they are being used to support health programs.

The product resulting from the assessment will be a report describing the current strengths, gaps, and opportunities for each of the nine (9) elements of the HIS geo-enabling framework. Such report can be complemented by a visual similar to the one represented in Figure 3. This kind of visual is particularly useful in comparing the result of the assessment between different health programs or countries (example reported here).

![Figure 3 - Visual representation of the HIS geo-enabling assessment result (extracted from [3]).](image-url)
4.2 Step 2 - Define the strategies and activities to be implemented to fill the gap(s) identified during the assessment

- **Objective:** Define a strategy and activities for each of the gaps identified during the assessment
- **Expected deliverable:** A document defining the strategies to be followed and associated activities to be conducted in order to address the gap(s) identified during the assessment
- **Estimated duration of implementation:** up to 1 week
- **Amount of resources needed:** Limited
- **Person to be involved:** Head of the geospatial data management and technology unit if any, representatives from key health programs (health information system, communicable diseases, planning, emergency management, and immunization), development partners, external facilitator
- **Supporting tool:**
  a. Non exhaustive list of strategies, recommended stakeholders to be involved, and level of implementation for activities aiming at filling the identified gap(s) (Annex 5)

This next step in the process consists of identifying a strategy and associated activities to fill each of these gaps based on the result of the assessment conducted in the previous step.

At the end of this second step, the Ministry of Health should have clear strategies and activities to be able to develop a plan of action (see Section 4.3).

Annex 5 has been designed to support this exercise and is organized as follows:
- A list of potential gaps identified during the assessment are provided for each of the framework element
- A strategy, or set of strategies, are proposed for each of the identified gap
- The minimum list of stakeholders to be involved as well as the level of implementation for the activities to be conducted are then recommended

It is first important to indicate that the content of this table is certainly not exhaustive and that additional gaps and strategies might be identified during the implementation of the HIS geo-enabling process. It should nevertheless contain the major gaps that could be expected.

The details of the activities to be conducted in order to implement the strategy(ies) are not provided in this Annex due to the different forms these activities can take depending on the context in which they are being implemented. As a reference, Table 1 gives a list of common types of capacity building activities to be considered. Such activities will therefore have to be defined.
Annex 5 nevertheless provides the minimum list of stakeholders to be involved and the recommended level of implementation for the activities to be conducted.

The present toolkit considers two levels of implementation:

1. **National**: Implemented national wide, starting with the central before the sub-national level for the former to serve as trainers for the latter
2. **Pilot**: Implemented on a limited part of the country's territory

While some of the activities listed in Annex 5 are recommended for implementation at the national or pilot level only, most of them are offering both options and this is because the final choice will greatly depend on the country-specific context and on the size of the gap versus the availability of resources (financial, human, and physical) and organizational support to fill such gap (Figure 3).

![Figure 3](image)

**Figure 3** - Recommended activity implementation level based on the size of the gap and the availability of resources to fill it

The product resulting from this step will be a report or a table providing a strategy together with a list of associated activities, including the list of involved stakeholders and level of implementation, for each of the gaps identified during the assessment (Step 1).
4.3 Step 3 - Develop or modify the action plan aiming at geo-enabling the HIS

- **Objective:** Develop or modify the action plan for the activities identified during step 2
- **Expected deliverable:** HIS geo-enabling action plan
- **Estimated duration of implementation:** 1 week
- **Amount of resources needed:** Limited
- **Person to be involved:** Head of the geospatial data management and technology unit if any, representatives from key health programs (health information system, communicable diseases, planning, emergency management and immunization), development partners, external facilitator
- **Supporting tool:**
  a. Example of action plan (Annex 6)

The strategies and activities identified during the previous step need to be organized into an action plan in order to be implemented. Such action plan should at least contain:

- The long term vision
- The objectives
- The gap(s), strategies, and activities defined during the previous steps of the HIS geo-enabling process
- A timeline covering all the activities with the mention of:
  - The target group
  - The person/entity in charge of the activity
- A detailed budget broken down by activity
- An Evaluation and Monitoring plan schedule

At the end of this third step, the Ministry of Health should have a clear action plan containing all the information it needs for a successful implementation.

Experience shows that it is important to take the following into account when developing the action plan and this to ensure not only a successful implementation but also long term sustainability:

- Make sure that the action plan in general and the use cases in particular address public health priorities included in the National Health Plan.
- Build on already existing action plan(s), taking the results of the HIS geo-enabling assessment into account.
- Think about the sustainability of the technical capacity or common assets developed during the implementation of the action plan.
- Be as inclusive as possible by engaging in the process not only the key health programs identified during the assessment but also development partners who might currently be supporting project with a geo-enabling component or interested in doing so.
- Leverage local MOH champions who have understood the value of the geo-enablement and have a clear view on their needs for geospatial data and technologies.
- Have at least one focal point officially nominated for each MOH entity and the partners involved in the implementation of the action plan.
- Use local capacity (national consultant, universities, private companies, etc.) as much as possible, not only because this reduces costs but allows also a closer follow up on the implementation as well as helps in addressing potential language issues.
• Prefer long term coaching to one-off training sessions
• Start by strengthening the central level before the sub national level in order for the central level to then serve as trainers and point of contact for the sub-national level
• Use the implementation of the use cases as the context to strengthen the technical capacity of the MOH.
• Get the MOH staff to do as much of the work as possible with the support of the national and international consultants. This will contribute to the strengthening of their technical capacity and to experience firsthand potential data and process related issues.
• Do not be too ambitious at first even if the resources are available. Better cut the action plan into few phases if needed and go for a full scale implementation only once enough local capacity has been established at the central level. The implementation of a pilot project also has the advantage of giving a clearer picture on the activities, resources, time, etc. needed to expand the implementation to the whole country.
• Do not implement action plan spanning further than 12 months (8 to 9 for a pilot project) in order to have the opportunity to regularly assess and adjust the plan if needed.
• Anticipate unexpected delays in the implementation of the activities and try to come up with a timeline that would be flexible enough to absorb them as much as possible.

While the final action plan can be prepared under the form of a narrative report, presenting it in a tabular form might make it easier to digest. The fictive action plan reported in Annex 6 has been developed using the latter format and taking the above bullet points into account.

The context considered at the origin of the action plan presented in Annex 6 is a country that would find itself at the earliest stage of its HIS geo-enabling journey, meaning that important gaps have been identified during the assessment and the need to demonstrate the benefits of the geo-enablement remains. As such, the action plan focuses on three (3) main objectives (technical capacity strengthening, demonstration of the benefits, and making the case for its extension) and six (6) of the nine (9) elements of the HIS geo-enabling framework. Please nevertheless note that developing such an action plan allows addressing the first element this framework.

What would still need to be added to Annex 6 is a complete budget. This budget should not only cover the cost of the activities reported in the action but also things such as (other recommendations relating to costing can be found in [1]):

• Salary for the national and international consultants as well as field data collectors when it applies
• Travel for the international, and in some cases, national consultant(s)
• Allowance for the MOH staff attending the meeting, workshops and training if not located in the same city as well as for field data collectors when it applies
• A good internet bandwidth at the MOH
• Online common drive (Dropbox for example) for the sharing of data among the members of the technical working group
4.4 Step 4 - Implement the action plan

- **Objective:** Complete the activities defined in the action plan
- **Expected deliverable:** Those listed in the action plan
- **Estimated duration of implementation:** 9-12 months
- **Amount of resources needed:** Limited to significant, depending on the activities included in the action plan
- **Person to be involved:** All the parties involved in the implementation of the action plan
- **Supporting tool:** None for this step

The activities included in the action plan are being implemented in this step of the process as long as the necessary resources are available. If this is not the case, this step will first have to leverage the resources in question.

Once this is the case, the same implementation guidelines that would be followed for other projects apply here as well. The following should nevertheless be emphasized as important issues to be addressed before the implementation of the HIS geo-enabling action plan:

- Make sure that all parties involved have a clear understanding of the action plan in general and of each of the activities it contains in particular.
- Get a focal point to be officially nominated for each of the parties involved in the action plan implementation.
- Develop and give access to a shared contact database for the focal and other key person from the ministry to facilitate communication.
- Clearly define the roles and responsibilities of each involved parties (focal points, consultants, development partners, etc.). Develop terms of reference when necessary and ensure that someone is in charge of the specific activities to take place during the action plan implementation (see next set of bullet points).
- Define the mode of communication between parties taking potential language issues into account. This is particularly important when parties are in different locations during the course of the implementation (international consultant for example).
- Establish an online common working space (using Dropbox for example) to facilitate the sharing of files among the MOH staffs and the consultants.

Then during implementation itself, it is important to:

- **Keep track of the action plan implementation:** This is to ensure that the implementation remains on track based on the establish timeline and that the activities do not go outside the approved scope of the action plan.
- **Manage the financial resources:** Independently from specific actions required by the development agencies funding the implementation of the action plan, it is crucial for someone to keep track of the overall flow of financial resources.
- **Manage potential risks:** Internal or external events may occur during the implementation of the action plan and could threaten its success. It is therefore important to be able to identify risks as early as possible. Once identified, the risks need to be qualified according to their probability of occurrence and their impact on action plan objectives and action being taken to mitigate them.
- **Ensure proper flow of communication among the involved parties.** Regular on-site visits and teleconference in between these visits are important to keep all parties informed and address the previous items listed here.
4.5 Step 5 - Document and assess the result of the action plan implementation

- **Objective:** Evaluate and showcase the result of the action plan implementation
- **Expected deliverable:** Implementation report, marketing material, after action review
- **Estimated duration of implementation:** 1 month
- **Amount of resources needed:** Moderate
- **Person to be involved:** All the parties involved in the implementation of the action plan
- **Supporting tool:**
  - a. Example of story maps (mentioned in the text)
  - b. After Action Review guides (mentioned in the text)

Documenting the result of the action plan implementation is important not only as a justification of the work that has been accomplished but also as marketing material to:

- Demonstrate the benefit of the geo-enablement, especially in the context where the organization was not convinced in the first place.
- Leverage resources to either ensure the sustainability of what has been established, support the extension of the pilot project to the whole country, or finance the next round of HIS geo-enabling activities.

While each donor or development agency will have its own requirement in terms of reporting, it can be useful to complement such type of document with visually appealing presentations. Among existing options, story maps happened to have a high impact during the implementation of the HIS geo-enabling process in both Myanmar and Cambodia due to the possibility it offers to not only present dynamic maps but also being accessible from any device through the internet. Here are the links to the two story maps in question:

- Myanmar: [http://arcg.is/neSvX](http://arcg.is/neSvX)
- Cambodia: [https://arcg.is/C4fjD](https://arcg.is/C4fjD)

Conducting an after action review is another activity that should take place after the implementation of the action plan. An after action review (AAR) is a knowledge management tool that is being applied during or after the implementation of a project to assess what happened and learn from this. During this kind of exercise, all the parties involved in the implementation meet to answer a set of questions that allows discussing successes and failures in an open way. Here is a non-exhaustive selection of short documents describing what an ARR is about and how to conduct one:

4.6 Step 6 - Restart from step 1 on a regular basis

- **Objective:** Ensure that the process to be implemented on a regular basis until the HIS has been geo-enabled
- **Expected deliverable:** Start of a new cycle of the HIS geo-enabling process
- **Estimated duration of implementation:** 1 day
- **Amount of resources needed:** Limited
- **Person to be involved:** Head of the geospatial data management and technology unit if any, representatives from key health programs (health information system, communicable diseases, planning, emergency management, and immunization), development partners
- **Supporting tool:** None for this step

Several rounds of activities might have to be conducted before reaching the point where the Health Information System is geo-enabled in a sustainable manner.

In addition to that, several elements are meant to change over time, including public health priorities, geospatial technologies, or even the strategy that the government follows regarding information management.

In view of the above, it is important to regularly update the previous version of the assessment in order to have an updated picture of the geo-enablement level of the HIS and identify the gaps that remain.
References


### Annex 1 - HIS geo-enabling benchmarks

<table>
<thead>
<tr>
<th>Element of the framework</th>
<th>Benchmarks</th>
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<tbody>
<tr>
<td><strong>1. Vision, strategy(ies), and action plan</strong></td>
<td>1.1 The MOH has a vision, strategy(ies), and plans regarding the management and use of geospatial data and technologies</td>
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</table>
| **2. Governance structure** | 2.1. The MOH has established a governance structure to handle issues pertaining to the management and use of geospatial data and technologies  
2.2. All the health program and the stakeholders involved in the management and use of geospatial data and technologies in health are part of the governance structure  
2.3 The MOH is on board of the National Spatial Data Infrastructure (NSDI) |
| **3. Technical capacity** | 3.1. The MOH has a central level geospatial data management unit with enough technical capacity to: a) ensure guardianship over the defined guidelines, standards and protocols; b) support the development, maintenance, regular update and sharing of the master lists for the geographic objects core to public health and immunization; c) support the implementation of the guidelines, standards, protocols, and master lists across all health programs and information systems; and d) providing services to the HIS unit and beyond if needed.  
3.2 The key health programs have enough technical capacity to support the implementation of their activities with the support of the central level unit |
| **4. Data specifications, standards and protocols** | 4.1. The NSDI has defined the geospatial data and technologies related specifications, standards and protocols that should be used by all governmental agencies  
4.2. The MOH is using the geospatial data and technologies related specifications, standards and protocols across all key health programs |
| **5. Master lists and common geo-registry** | 5.1. The MOH has a complete, up-to-date, uniquely coded, and geo-referenced (for point type objects) master list for each of the geographic objects key to public health (health facilities, administrative divisions and villages, reporting divisions.  
5.2 These master lists are simultaneously hosted, maintained, regularly updated, and shared through a common geo-registry.  
5.3. The government maintains, regularly updates, and share shapefiles containing the boundaries of the administrative and health reporting divisions  
5.4. All the above master lists, and especially their officially recognized codes, are being integrated in all the information systems and used for data collection, reporting, and monitoring across all health programs |
| **6. Availability of geospatial technologies** | 6.1. The central level geospatial data management and technologies unit has access to the necessary geospatial technologies (GNSS, GIS) to support its mandate  
6.2 The key health programs have access to the appropriate geospatial technologies (GNSS, GIS) to support the implementation of their activities |
<table>
<thead>
<tr>
<th>Element of the framework</th>
<th>Benchmarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Use of geospatial technologies</td>
<td>7.1. Geospatial data and technologies are recognized as being important and their full potential is being used to support the implementation of key health programs towards reaching SDG 3</td>
</tr>
<tr>
<td>8. Policies supporting the geo-enabling process</td>
<td>8.1. A policy/policies enforcing the following has/have been released:</td>
</tr>
<tr>
<td></td>
<td>a) The mandate over the guardianship on geospatial data specifications, standards, and protocols as well as over the development, maintenance, update, and sharing of master lists for the geographic objects core to public health through the use of a common geo-registry;</td>
</tr>
<tr>
<td></td>
<td>b) The use of the developed specifications, standards, protocols, and master lists by all the stakeholders in the health sector.</td>
</tr>
<tr>
<td>9. Resource for sustainability</td>
<td>9.1. The MOH have the necessary human and financial resources to ensure the long term sustainability of their geospatial data and technologies related activities</td>
</tr>
</tbody>
</table>
Annex 2 - HIS geo-enabling quick assessment tool

Full Name of the respondent: ______________________________

Full name of the institution and Department: ______________________________

Address: ____________________________________________

City/Town: __________________________________________

State/Province: _______________________________________ 

Country: ____________________________________________

Email address: ________________________________________

Phone number: ________________________________

Question 1: Has the Ministry of Health defined its vision, strategy(ies) and action plan regarding the management and use of geospatial technologies to support its programs? Please check what applies

☐ The vision, strategy(ies) and action plan have been defined, they are being captured in official documents

☐ The vision, strategy(ies) and action plan have been defined but have not yet been captured in official documents

☐ The Ministry is in the process of defining its vision, needs, strategy and plan

☐ No vision, needs, strategy or plan have been defined yet

☐ Other (please specify) __________________________________

Question 2: Has a governance structure been established in the MOH to handle issues pertaining to geography, geospatial data management and geospatial technologies?

☐ Yes ☐ Partially ☐ No

Can you please indicate which type of structure has been established and who are the members when applicable (board, committee, working group, ...)?


Question 3: Does the MOH have staffs trained on the management and use of geospatial data and technologies in the following MOH entities? If yes, indicate the year when they received their last training.

<table>
<thead>
<tr>
<th>Health Information System</th>
<th>Yes</th>
<th>No</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communicable diseases</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immunization</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please indicate here any additional information you think relevant about this topic


Question 4: Has the Ministry of Health determined geospatial data and technologies related specifications, standards and protocols? Please check what applies

☐ Specifications, standards and protocols have been determined, are captured in an official document (guideline) and are aligned with the National Spatial Data Infrastructure (NSDI)

☐ Specifications, standards and protocols have been determined, are captured in an official document (guideline) but they are not aligned with the NSDI

☐ Specifications, standards and protocols have been determined but are not captured in an official document

☐ Specifications, standards and protocols are in the process of being determined

☐ Specifications, standards and protocols have not been determined yet

Please indicate here any additional information you think relevant about this topic

Question 5: Please enter "Yes", "No" or "NA" (Not applicable) in each cell of the matrix below to indicate the current status for the different core master lists (health facilities, administrative divisions, villages, reporting divisions):

<table>
<thead>
<tr>
<th>Available (Indicate the name of the government entity in charge if &quot;Yes&quot;)</th>
<th>Complete</th>
<th>Up-to-date (Indicate the year of last update if &quot;No&quot;)</th>
<th>Uniquely coded (only one coding scheme used across the MOH)</th>
<th>Precisely geo-referenced (latitude/longitude)</th>
<th>Enforced use (Policy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reporting divisions</td>
<td></td>
<td></td>
<td></td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Administrative divisions</td>
<td></td>
<td></td>
<td></td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Villages</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please indicate here any additional information you think relevant about this topic:

Question 6: Which GIS software and GPS devices are being accessible? Please indicate "NA" (not available) when necessary

<table>
<thead>
<tr>
<th>GIS software</th>
<th>GPS devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>ArcGIS (version)</td>
<td>QGIS (version)</td>
</tr>
<tr>
<td>Health Information System</td>
<td></td>
</tr>
<tr>
<td>Planning</td>
<td></td>
</tr>
<tr>
<td>Communicable diseases</td>
<td></td>
</tr>
<tr>
<td>Emergency management</td>
<td></td>
</tr>
<tr>
<td>Immunization</td>
<td></td>
</tr>
</tbody>
</table>

Please indicate here what technology(ies) you are missing in order to be able implementing your activities:

23
**Question 7:** Please fill each of the cell with a "Yes" or a "No" to have a better idea on the recognition and use of geospatial data and technologies in the MOH.

<table>
<thead>
<tr>
<th>The following MOH entity</th>
<th>...recognizes the importance of geospatial data and technologies</th>
<th>...currently uses geospatial data and technologies</th>
<th>...uses it at its full potential</th>
<th>...has documented use cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Information System</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communicable diseases</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immunization</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Question 8:** Has the Ministry of Health released a policy recognizing: 1) the governance structure and technical capacity that has been established; 2) enforcing the use of the determined geospatial data specifications, standards, protocols and master lists?

- [ ] Yes
- [ ] No

Please provide here information about the policy in question if it exists or is in the process of being released.

**Question 9:** Does the Ministry of Health have all the necessary information and/or resource to ensure the sustainability of its GIS activities?

- [ ] Yes
- [ ] No

If no, what information and/or resources are needed?

---

**Title:** HIS Geo-enabling Toolkit
Annex 3 - Additional information and documents to be collected in complement to the quick HIS geo-enabling assessment

<table>
<thead>
<tr>
<th>Framework element</th>
<th>Information and documents to be collected</th>
</tr>
</thead>
</table>
| **1. Vision, strategy(ies), and action plan** | - A copy of the existing MOH vision, strategy(ies), and/or action plan pertaining HIS geo-enabling and/or the management and use of geospatial data and technologies  
- A copy of the current national health plan/strategy with a clear definition of the current public priorities  
- A copy of the current key health programs specific plan/strategy |
| **2. Governance structure** | - Document describing the structure, role, members, and mode of operation of the established governance structure  
- Existence of a National Spatial Data Infrastructure (NSDI) in the country and information about it (governmental entity in charge, members, objectives, activities, etc.) |
| **3. Technical capacity** | - Information about the central level Geospatial Data and Technologies Unit (location in the MOH organogram, composition, etc.)  
- Information about the latest training received by MOH staffs (date, venue, content, name of the institution who conducted the training, etc.) |
| **4. Data specifications, standards and protocols** | - A copy of the existing document(s) containing the specifications, standards, and protocols used by the MOH |
| **5. Master list and common geo-registry** | - Structure of different coding schemes used in the MOH and in the master lists  
- Description of the updating mechanism for each master list  
- Availability of a shapefiles for the administrative divisions and this across time  
- Availability of a shapefiles for the reporting divisions and this across time  
- Information about the platform used as common geo-registry for the simultaneous storage, management, validation, updating, and sharing of the different master lists if any (software used, entity in charge, etc.) |
| **6. Geospatial technologies** | - Date of purchase of the GNSS enabled device. Are they functional? |
| **7. Use cases** | - The already documented use case (pager, report, etc.)  
- Description of ongoing projects containing a geospatial data and technologies component |
| **8. Policy** | - A copy of the existing policy(ies) |
| **9. Resource for sustainability** | - A copy of existing workplan, proposal submitted to donor, budget, etc.  
- List of development partners interested in or already contributing to strengthening the management and use of geospatial data and technologies in the country |
Annex 4 - Resources illustrating the first seven (7) elements of the HIS geo-enabling framework

<table>
<thead>
<tr>
<th>Framework element</th>
<th>Information and documents to be collected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Vision, strategy(ies), and action plan</td>
<td>• Myanmar National Health Plan 2017-2021(^4)</td>
</tr>
<tr>
<td></td>
<td>• Cambodia Health Information System master plan 2016-2020(^5)</td>
</tr>
<tr>
<td>2. Governance structure</td>
<td>• Example of TOR for the establishment of a TWG</td>
</tr>
<tr>
<td>3. Technical capacity</td>
<td>• Generic TOR for the position of geospatial data manager/GIS technician (Annex J in [1])</td>
</tr>
<tr>
<td>4. Data specifications, standards, and protocols</td>
<td>• Geospatial data management guideline for the Ministry of Health of Cambodia(^6)</td>
</tr>
<tr>
<td></td>
<td>• Health GeoLab Collaborative guidance documents(^7)</td>
</tr>
<tr>
<td>5. Master list and common geo-registry</td>
<td>• Guidance on the establishment of a common geo-registry for the simultaneous hosting, maintenance, update, and sharing of master lists core to public health [6]</td>
</tr>
<tr>
<td></td>
<td>• Master Facility List Resource Package: guidance for countries wanting to strengthen their MFL [7]</td>
</tr>
<tr>
<td>6. Geospatial technologies</td>
<td>• Health GeoLab starter kit for ArcMap, ArcGIS Online, and Survey123(^7)</td>
</tr>
<tr>
<td>7. Use cases</td>
<td>• Health GeoLab Collaborative knowledge repository(^8)</td>
</tr>
</tbody>
</table>

\(^4\) https://healthgeolab.net/KNOW_REP/Myanmar_National_Health_Plan_fourpager_eng_15Dec.pdf  
\(^5\) https://healthgeolab.net/KNOW_REP/KhM_HIS-MasterPlan_Nov17.pdf  
\(^7\) https://healthgeolab.net/resources/reference-materials/  
\(^8\) https://healthgeolab.net/resources/knowledge-repository/
Annex 5 - Non exhaustive list of strategies, minimum list of stakeholders to be involved, and recommended level of implementation for activities aiming at filling the gap(s) in the HIS geo-enabling framework

<table>
<thead>
<tr>
<th>Framework element</th>
<th>Potential gap</th>
<th>Proposed strategies to fill the gap</th>
<th>Stakeholders to be involved</th>
<th>Recommended level of implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Vision, strategy and action plan</td>
<td>The MOH has not yet defined/ finalized its vision, priorities and action plan regarding the management and use of geospatial data and technologies in health.</td>
<td>Define and document the MOH vision, strategy and action plan for geospatial data and technologies in line with the NGSF in place.</td>
<td>MOH (GO), development partners.</td>
<td>X</td>
</tr>
<tr>
<td>2. Governance structure</td>
<td>The MOH has not established a governance structure that handles issues pertaining to the management of geospatial data and technologies.</td>
<td>Establish such governance structure at the MOH level.</td>
<td>MOH (GO), development partners.</td>
<td>X</td>
</tr>
<tr>
<td>3. Technical capacity</td>
<td>Key programs do not have sufficient technical capacity to support the implementation of their activities.</td>
<td>Support the development of such entity within the MOH with the objective to also support key programs.</td>
<td>MOH (GO), development partners.</td>
<td>X</td>
</tr>
<tr>
<td>4. Data specifications, standards and protocols</td>
<td>There is no data in place and the MOH has not yet defined any data specifications, standards or protocols.</td>
<td>Define and document the data specifications, standards and protocols.</td>
<td>MOH (GO), development partners.</td>
<td>X</td>
</tr>
<tr>
<td>5. Master data and common geography</td>
<td>The HIS does not have a health facilities master list.</td>
<td>Establish the health facilities master list.</td>
<td>MOH (GO), development partners.</td>
<td>X</td>
</tr>
</tbody>
</table>

MOH (GO): Governmental entity in charge of the NGSF
MOH (GO), National Mapping Agency, National Statistical Agency
MOH (GO), development partners, private sector and academic
MOH (GO), development partners, academic sector
<table>
<thead>
<tr>
<th>Framework element</th>
<th>Potential gap</th>
<th>Proposed strategy[es] to fill the gap</th>
<th>ADJUST</th>
<th>Recommended level of implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Accessibility of geospatial technologies</td>
<td>The MCI central unit does not have access to the necessary geospatial technologies to support its mandate. The key programs do not have access to the necessary geospatial technology to support their activities.</td>
<td>Equip the central unit and with the appropriate geospatial technologies taking advantage of existing public-private partnership, when applicable. Equip the key programs with the appropriate geospatial technologies taking advantage of existing public-private partnerships where applicable.</td>
<td>X</td>
<td>National/Halt</td>
</tr>
<tr>
<td>7. Use cases</td>
<td>The MCI does not recognize the importance of geospatial data and technologies. The importance of geospatial data and technologies is recognized but their potential is not fully used across health programs. The research-based data needed to support the activities of key health programs is not available or disseminated.</td>
<td>Promote and demonstrate the benefits of using geospatial data and technologies in the health sector (cumulative research projects, building awareness, national stakeholder seminars, etc.). Implement a use case-based pilot project to demonstrate the benefits of geospatial in the MCI. Demonstrate the benefits of geospatial data and technologies that are currently not being used by the key health programs. Support the implementation of activities similar to those reported for the RIFI program in administrative divisions and villages reaching. Support the documentation of the use cases (five pages documents for example).</td>
<td>X</td>
<td>Development partners, private sector, academia</td>
</tr>
<tr>
<td>8. Policy</td>
<td>The MCI does not have such policy/policies in place.</td>
<td>Encourage the development and enforcement of such policies/policies. Integrate the sharing of experiences and lessons from countries with more developed geospatial data and technologies into policy framework.</td>
<td>X</td>
<td>MCI (MCTI, MPHIC), development partners</td>
</tr>
<tr>
<td>8. Resource for sustainability</td>
<td>The MCI does not have the necessary resources to sustain its activities.</td>
<td>Demonstrate the benefits of geo-enabling the MCI for the MCI to sustain resources on the long term. Encourage the MCI to include resources for geospatial data and technologies in their regular budget. Support resource mobilization based on a clear plan, time line and budget.</td>
<td>X</td>
<td>MCI (MCTI, MPHIC), development partners</td>
</tr>
</tbody>
</table>
Annex 6 - Fictive HIS geo-enabling action plan

Long term vision
By 20..., the necessary geospatial data, technologies and services are available, of quality and accessible in a coordinated way to support the implementation of the National Health Plan 20...-20... towards achieving Universal Health Coverage

Action plan objectives
1. Strengthen the technical capacity of the MOH at the central level, so that it comes to the management and use of geospatial data and technologies.
2. Demonstrate the benefits of geo-enabling the HIS through a pilot project covering two use cases.
3. Make the case to extend the pilot project to the rest of the country and institutionalize the capacity that has been developed down to the sub-national level.

Implementation period
January 20... - August 20...

Project Manager
Anthony G.

Framework element 2: Governance structure

<table>
<thead>
<tr>
<th>Act. #</th>
<th>Activity description</th>
<th>Target group</th>
<th>Responsible</th>
<th>Start Date</th>
<th>End Date</th>
<th>Budget (USD)</th>
<th>Deliverable</th>
<th>M&amp;E Indicator</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Hold a half-day meeting to present the results of the HIS geo-enabling assessment, discuss and finalize the plan of action and establish the technical working group for the use case pilot project</td>
<td>MOH health programs</td>
<td>international consultant</td>
<td>14 Jan 20...</td>
<td>14 Jan 20...</td>
<td>$600</td>
<td>Meeting executive summary</td>
<td>The meeting executive summary has been released by 20 Jan 20...</td>
<td>Not started</td>
<td>A translator will be needed during the meeting. The travel cost of the international consultant is not included in the budget. The executive summary might need to be translated.</td>
</tr>
<tr>
<td>2.2</td>
<td>Develop the terms of reference for the technical working group</td>
<td>MOH health programs members of the technical working group</td>
<td>National consultant</td>
<td>14 Jan 20...</td>
<td>15 Jan 20...</td>
<td>$0</td>
<td>TOR</td>
<td>The final TOR for the technical working group has been released by Jan 31 20...</td>
<td>Not started</td>
<td>This cost for developing the document is covered under the national consultant salary.</td>
</tr>
</tbody>
</table>

Framework element 3: Technical capacity

<table>
<thead>
<tr>
<th>Act. #</th>
<th>Activity description</th>
<th>Target group</th>
<th>Responsible</th>
<th>Start Date</th>
<th>End Date</th>
<th>Budget (USD)</th>
<th>Deliverable</th>
<th>M&amp;E Indicator</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Identify the MOH staff to be trained on geospatial data management and technologies</td>
<td>MOH health program members of the Technical working group</td>
<td>National consultant</td>
<td>15 Jan 20...</td>
<td>15 Feb 20...</td>
<td>$0</td>
<td>MOH staff officially nominated</td>
<td>The MOH staff have been nominated by 15 Feb 20...</td>
<td>Not started</td>
<td>The MOH staffs to be nominated need to have a good level in computer skills and applied knowledge of data management.</td>
</tr>
<tr>
<td>3.2</td>
<td>Hold the first onsite training (3 days) to introduce the concept behind HIS geo-enabling, the geospatial data management chain and the technical process that will be followed during the use case pilot project</td>
<td>Nominated MOH staffs from the Key health program members of the Technical working group</td>
<td>International consultant</td>
<td>1 Mar 20...</td>
<td>3 Mar 20...</td>
<td>$4,000</td>
<td>Training material</td>
<td>The training has been conducted by 3 Mar 20...</td>
<td>Not started</td>
<td>A translator will be needed during the training.</td>
</tr>
<tr>
<td>3.3</td>
<td>Conduct the second onsite training (3 days) to install the GIS license that has been purchased and teach the MOH staff on how to use them</td>
<td>Nominated MOH staffs from the Key health program members of the Technical working group</td>
<td>National consultant</td>
<td>25 May 20...</td>
<td>27 May 20...</td>
<td>$3,000</td>
<td>Training material</td>
<td>The training has been conducted by 27 May 20...</td>
<td>Not started</td>
<td>The national consultant will ensure the translation during the training.</td>
</tr>
<tr>
<td>3.4</td>
<td>Hold the third onsite training (5 days) to practice the geospatial data management processes on the data collected for the use case pilot project</td>
<td>Nominated MOH staffs from the Key health program members of the Technical working group</td>
<td>National consultant</td>
<td>10 Jul 20...</td>
<td>15 Jul 20...</td>
<td>$5,000</td>
<td>Training material</td>
<td>The training has been conducted by 15 Jul 20...</td>
<td>Not started</td>
<td>The national consultant will ensure the translation during the training.</td>
</tr>
<tr>
<td>3.5</td>
<td>Conduct the fourth and last onsite training (5 days) to develop the analysis for the use case pilot project and create the story map</td>
<td>Nominated staffs from the Key health program members of the Technical working group</td>
<td>National consultant</td>
<td>20 Aug 20...</td>
<td>25 Aug 20...</td>
<td>$5,000</td>
<td>Training material</td>
<td>The training has been conducted by 25 Aug 20...</td>
<td>Not started</td>
<td>The national consultant will ensure the translation during the training.</td>
</tr>
</tbody>
</table>
HIS Geo-enabling Toolkit

### Framework element 4: Data specifications, standards and protocols

**Current gap:** The MOH has not yet defined any data specifications, standards or protocols.

**Strategy:** Use the technical working group established for the pilot project as the venue to define these specifications, standards and protocols.

<table>
<thead>
<tr>
<th>Act. #</th>
<th>Activity description</th>
<th>Target group</th>
<th>Responsible</th>
<th>Start Date</th>
<th>End Date</th>
<th>Budget (USD)</th>
<th>Deliverable</th>
<th>M&amp;E Indicator</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Hold a one day workshop to develop the geospatial data specifications and identify the standards and protocols needed to support the geo-enabling of the HIS</td>
<td>MOH key health programs members of the Technical working group</td>
<td>International consultant</td>
<td>15 Jan 20.</td>
<td>15 Jan 20.</td>
<td>$1,000</td>
<td>Workshop executive summary</td>
<td>The workshop executive summary has been released by 20 Jan 20.</td>
<td>Not started</td>
<td>A translator will be needed during the workshop. The travel cost of the international consultant is not included in the budget. The executive summary might need to be translated.</td>
</tr>
<tr>
<td>4.2</td>
<td>Develop a draft guideline that will contain the data specifications developed during the workshop as well as the proposed standards and protocols to be followed by the MOH</td>
<td>MOH key health programs members of the Technical working group</td>
<td>International consultant</td>
<td>15 Jan 20.</td>
<td>15 Feb 20.</td>
<td>$50</td>
<td>Draft version of the guideline</td>
<td>The first version of the guideline has been released by 15 Feb 20.</td>
<td>Not started</td>
<td>The cost for developing the document is covered under the international consultant salary. The guideline might need to be translated.</td>
</tr>
<tr>
<td>4.3</td>
<td>Hold a half day meeting to present and finalize the first version of the guideline with the members of the technical working group</td>
<td>MOH key health programs members of the Technical working group</td>
<td>National consultant</td>
<td>20 Feb 20.</td>
<td>20 Feb 20.</td>
<td>$100</td>
<td>Final version of the guideline</td>
<td>The final version of the guideline has been released by 25 Feb 20.</td>
<td>Not started</td>
<td>The national consultant will ensure the translation during the workshop.</td>
</tr>
</tbody>
</table>

### Framework element 5: Master lists and common geo-registry

**Current gap:** The MOH have neither a master list for the geographic objects core to public health (health facilities, administrative divisions and villages) nor a common geo-registry to manage them.

**Strategy:** a) Develop the health facilities master list for the regions covered by the use case pilot project; b) assess if the HMIS platform could serve as common geo-registry.

<table>
<thead>
<tr>
<th>Act. #</th>
<th>Activity description</th>
<th>Target group</th>
<th>Responsible</th>
<th>Start Date</th>
<th>End Date</th>
<th>Budget (USD)</th>
<th>Deliverable</th>
<th>M&amp;E Indicator</th>
<th>Status</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Hold a one day workshop to develop the geospatial data specifications and identify the standards and protocols needed to support the geo-enabling of the HIS</td>
<td>MOH key health programs members of the Technical working group</td>
<td>International consultant</td>
<td>14 Jan 20.</td>
<td>14 Jan 20.</td>
<td>$500</td>
<td>Workshop executive summary</td>
<td>The meeting executive summary has been released by 20 Jan 20.</td>
<td>Not started</td>
<td>A translator will be needed during the workshop. The travel cost of the international consultant is not included in the budget.</td>
</tr>
<tr>
<td>5.2</td>
<td>Hold a half day workshop to define the data dictionary and associated classification tables for the health facilities master list</td>
<td>MOH key health programs members of the Technical working group</td>
<td>National consultant</td>
<td>15 May 20.</td>
<td>15 May 20.</td>
<td>$500</td>
<td>Data dictionary and classification tables</td>
<td>Data dictionary and classification tables released by 20 Jun 20.</td>
<td>Not started</td>
<td>The national consultant will ensure the translation during the workshop.</td>
</tr>
<tr>
<td>5.3</td>
<td>Collect all available health facility database (MOH and partners) for the region selected for the use case pilot</td>
<td>MOH key health programs members of the Technical working group</td>
<td>National consultant</td>
<td>15 May 20.</td>
<td>15 Jun 20.</td>
<td>$50</td>
<td>Health facility databases</td>
<td>Database collected by 15 Jun 20.</td>
<td>Not started</td>
<td></td>
</tr>
<tr>
<td>5.4</td>
<td>Combine the available health facilities databases according to the defined data dictionary and classification tables</td>
<td>MOH key health programs members of the Technical working group</td>
<td>National consultant</td>
<td>15 Jun 20.</td>
<td>15 Jul 20.</td>
<td>$50</td>
<td>First version of the health facilities master list for the selected region</td>
<td>Master list available by 15 Jul 20.</td>
<td>Not started</td>
<td></td>
</tr>
<tr>
<td>5.5</td>
<td>Apply the assessment matrix to the HMIS platform to see if it could be used as common geo-registry</td>
<td>HMIS Unit</td>
<td>Head of the HMIS unit</td>
<td>1 Jun 20.</td>
<td>15 Jun 20.</td>
<td>$50</td>
<td>Resulting assessment matrix</td>
<td>Assessment matrix delivered by 20 Jun 20.</td>
<td>Not started</td>
<td></td>
</tr>
</tbody>
</table>
### HIS Geo-enabling Toolkit

#### Framework element 6. Availability of geospatial technologies

**Current gap:** The MOH unit has some ArcView 3.3 licenses that need to be upgraded and does not have any GNSS-enabled devices to allow for field data collection.

**Strategies:** Equip the central level unit with the appropriate geospatial technologies taking advantage of existing public-private partnership implementation level: National (Central level).

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<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Purchase an Erii bundle for each of the MOH nominated staff</td>
<td>Nominated MOH staffs from the Key health programs members of the Technical working group</td>
<td>International consultant</td>
<td>15 Jan 20.</td>
<td>20 May 20</td>
<td>$3,750</td>
<td>Erii bundles</td>
<td>M&amp;E Indicator</td>
<td>Not started</td>
<td>The purchase of the Erii bundles is sponsored by WHO</td>
</tr>
<tr>
<td>6.2</td>
<td>Purchase 30 GNSS tablets to support field data collection</td>
<td>Nominated MOH staffs from the Key health programs members of the Technical working group</td>
<td>International consultant</td>
<td>15 Jan 20.</td>
<td>20 May 20</td>
<td>$6,000</td>
<td>GNSS-enabled tablets</td>
<td>M&amp;E Indicator</td>
<td>Not started</td>
<td>The purchase of the tablets is sponsored by ADB</td>
</tr>
<tr>
<td>6.3</td>
<td>Purchase a laptop for each of the MOH nominated staff</td>
<td>Nominated MOH staffs from the Key health programs members of the Technical working group</td>
<td>International consultant</td>
<td>15 Jan 20.</td>
<td>20 May 20</td>
<td>$7,500</td>
<td>Laptop computers</td>
<td>M&amp;E Indicator</td>
<td>Not started</td>
<td>The purchase of the laptops is sponsored by ADB</td>
</tr>
<tr>
<td>6.4</td>
<td>Get Erii to send copies of the GIS tutorial for Health</td>
<td>Nominated MOH staffs from the Key health programs members of the Technical working group</td>
<td>International consultant</td>
<td>15 Jan 20.</td>
<td>20 May 20</td>
<td>$0</td>
<td>Erii GIS tutorial</td>
<td>M&amp;E Indicator</td>
<td>Not started</td>
<td></td>
</tr>
<tr>
<td>6.5</td>
<td>Activate the ArcGIS desktop and online licenses</td>
<td>Nominated MOH staffs from the Key health programs members of the Technical working group</td>
<td>National consultant</td>
<td>25 May 20.</td>
<td>27 May 20</td>
<td>$0</td>
<td>Operational licenses</td>
<td>M&amp;E Indicator</td>
<td>Not started</td>
<td>Licenses activated by 27 May 20.</td>
</tr>
</tbody>
</table>

#### Framework element 7. Use cases

**Current gap:** The importance of geospatial data and technologies is recognized but their potential is not fully used across health programs.

**Strategies:** Implement a use case based pilot project to demonstrate the benefits of geo-enabling the HIS in general and geospatial data and technologies in particular implementation level: Pilot.

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</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>Define the public health priorities/questions/outcomes that the pilot project will aim at answering through its implementation</td>
<td>Key health programs members of the Technical working group</td>
<td>International consultant</td>
<td>14 Jan 20.</td>
<td>14 Jan 20</td>
<td>$0</td>
<td>Defined use cases</td>
<td>M&amp;E Indicator</td>
<td>Not started</td>
<td>Will be done during the half day meeting planned for 14 Jan 20.</td>
</tr>
<tr>
<td>7.2</td>
<td>Define the technical process that will be followed (from data collection to analysis and interpretation)</td>
<td>Nominated MOH staffs from the Key health programs members of the Technical working group</td>
<td>National consultant</td>
<td>1 Mar 20.</td>
<td>3 Mar 20.</td>
<td>$0</td>
<td>Documented technical process</td>
<td>M&amp;E Indicator</td>
<td>Not started</td>
<td></td>
</tr>
<tr>
<td>7.3</td>
<td>Compile the geospatial and statistical data necessary to implement the different use cases</td>
<td>Nominated MOH staffs from the Key health programs members of the Technical working group</td>
<td>National consultant</td>
<td>15 May 20.</td>
<td>15 Jun 20</td>
<td>$0</td>
<td>Compiled data</td>
<td>M&amp;E Indicator</td>
<td>Not started</td>
<td>Compilng data might require to interact with other Ministries</td>
</tr>
<tr>
<td>7.4</td>
<td>Clean and organize the data that has been collected</td>
<td>Nominated MOH staffs from the Key health programs members of the Technical working group</td>
<td>National consultant</td>
<td>15 Jun 20.</td>
<td>15 Jul 20</td>
<td>$0</td>
<td>Cleaned dataset</td>
<td>M&amp;E Indicator</td>
<td>Not started</td>
<td>Database ready by 15 Jul 20.</td>
</tr>
<tr>
<td>7.5</td>
<td>Conduct the different GIS analyses</td>
<td>Nominated MOH staffs from the Key health programs members of the Technical working group</td>
<td>National consultant</td>
<td>20 Aug 20.</td>
<td>25 Aug 20</td>
<td>$0</td>
<td>Maps presenting the results of the GIS analysis</td>
<td>M&amp;E Indicator</td>
<td>Not started</td>
<td>Maps delivered by 25 Aug 20.</td>
</tr>
<tr>
<td>7.6</td>
<td>Present the results to the MOH</td>
<td>Key health programs members of the Technical working group</td>
<td>National consultant</td>
<td>30 Aug 20.</td>
<td>30 Aug 20</td>
<td>$0</td>
<td>Presentation</td>
<td>M&amp;E Indicator</td>
<td>Not started</td>
<td>The presentation might have to be available in the local language</td>
</tr>
</tbody>
</table>
