

# Core Geo-registries for Health Information Exchanges Design Workshop (Phnom Penh, 12-13 June 2017) Draft Executive Summary



**InSTEDD**  
Innovative Support to Emergencies  
Diseases and Disasters



*Prepared by: InSTEDD & AeHIN GIS Lab - June 20, 2017*

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## Acknowledgements

The workshop was supported by a number of different collaborators interested in supporting the goal of better geo-registry data and services. We thank the following individuals and their organizations for supporting the workshop activities:

- **Chair:** Dr. Veasnakiry Lo, Director MOH/DPHI
- **Funder:** Asian Development Bank (ADB)
- **Hosts:** InSTEDD iLab Southeast Asia
- **Facilitators:** AeHIN GIS Lab, InSTEDD and Open Concept Lab

Our gratitude also goes to all the participants who have actively contributed their experience, skills and knowledge to the discussions during the workshop.

# Background and Objective

## **Background**

Geography and time are intrinsically linked to public health and therefore present across its three main functions<sup>1</sup>: (1) assessing and monitoring the health of communities and populations at risk; (2) assuring that all populations have access to appropriate and cost-effective care; and (3) formulating public policies designed to solve identified health problems and priorities.

Despite the foundational importance of the above data, geography and time are generally among the most poorly captured dimensions in the country's Health Information System (HIS) and this simply because capturing and regularly updating the above mentioned dynamic and relationships is difficult.

While part of this issue can be addressed through the development, maintenance, update and use of master lists for the geographic objects core to public health (health facilities, administrative and reporting divisions down to the village level), there is a need for a technology solution -- a common registry -- to simultaneously host, maintain, update and openly share these master lists, hierarchies and flows together with their associated geography stored in a GIS readable format.

Unfortunately, the master lists in questions are often incomplete, out-of-date, when they are simply not lacking and the tools currently being used to maintain them do not allow the simple and easy management of each of the above mentioned geographic objects.

To fill the gap, the Asian eHealth Information Network (AeHIN) GIS Lab, with the support of the the Asian Development Bank (ADB), has included the need for such master lists and common registry to be established and maintained into the framework they have developed and are now implementing across Asia and the Pacific in collaboration with partners including but not limited to WHO, UNICEF and InSTEDD for the health sector to fully benefit from the power of geography, geospatial data and technologies. This framework is referred to as the HIS geo-enabling framework.

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<sup>1</sup> <http://www.who.int/topics/en/>

## Objective and desired outputs

The objective of the workshop was to define the workflows, requirements and rules any platform should comply to in order to effectively and simultaneously host, maintain, update and openly share master lists for the geographic objects core to public health (health facilities, communities/settlements, administrative and reporting divisions).

### Desired Outputs

1. A specification of the fields/attributes for the master lists to be integrated in the common registry.
2. A description of the important user stories for hierarchies and master lists to be managed and used (e.g. functionalities, rules and requirements)
3. A depiction of how the administrative hierarchies, master lists and location data can be integrated and work together. (e.g. workflows and sequence diagrams.)

Workshop Summary

These outputs are meant to serve as a the reference for the development of a guidance document that could be used by governmental agencies and their partners to assess if existing platforms already comply to these requirements and rules, support the filing of any gaps if they exist or support the design of new platforms meant to serve as common registry if no solution already exists.

## Participants

Twenty three participants from the Ministry of Health, the Ministry of Interior, NGOs and other implementing partners attended the workshop (complete listing in [Annex A](#)) representing a diverse set of stakeholders in Cambodia that are interested in better data, services and collaboration around geospatial services.

## Agenda

### Day 1: Morning sessions

**Session 1: Welcome and Introductions** was lead by Dr Veasnakiry Lo, Director of the Department of Planning and Health Information (DPHI) at the Ministry of Health of Cambodia who welcomed the participants and emphasized the importance of the

workshop and its direct contribution to the implementation of the HMIS master Plan 2016-2020.

**Session 2: Background, Objectives and Terminology** ([Slides](#)) was lead by Steeve Ebener - AeHIN GIS Lab, and sought to help participants to understand the background and objectives of the workshop before clarifying the terminology that would be used during the two days. This included both the lexicon around different types of data and services for the geo-registries as well as several key technical terms that all stakeholder may not have had a common definition for.

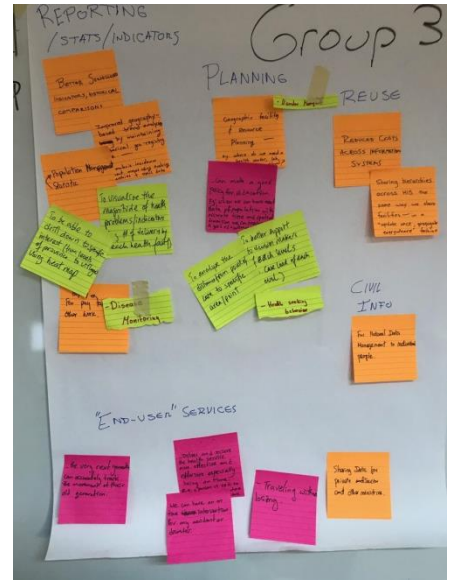
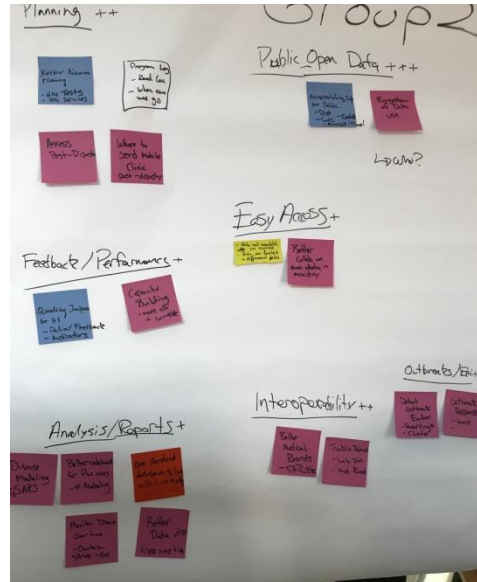
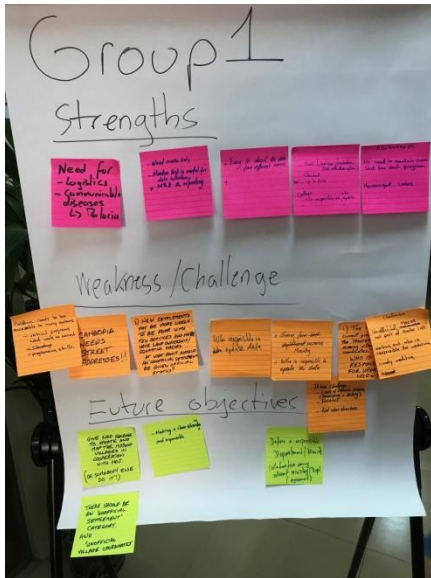
**Session 3: Current Status of Master Lists in Cambodia** ([Slides](#)) was lead by Sokna Sek - MOH Cambodia - DPHI, who gave in-depth background on the current situation and challenges observed in the country when it comes to the core geographic objects included in the HIS master plan 2016-2020. Mr Sokna then talked about the DPHI platform that could potentially be used as common registry before sharing the way forward with the participants

**Session 4: Objectives, Strengths & Challenges** ([Slides](#)) was lead by by Scott Teesdale - InSTEDD and other facilitators. Each of the facilitators led a small group with the objective to describe how master lists would contribute to their respective area of work and the challenges they have been encountering in this regards. The group was able to clearly articulate the importance of having master lists for health facilities and hierarchical datasets current, with easy processes to keep them current and share them through the use of a common registry. They also identified diverse use cases and justification for better collaboration within the health system among which we can mention:

- Better health system strengthening, management and training of staff.
- Improved data sharing / comparability of vertical public health systems operating at health facilities for better reporting, planning and data visualization.
- Improved data sharing between medical records, lab results and
- Simple data accessibility for partners and the general public; to reduce redundancies in data collection / management
- Better disease surveillance and response; disaster response.

The main challenges listed by the participants concerned the questions of the responsibility over the updates; data sharing and open access as well as the need for human and financial resources to ensure sustainability. The need to address the question of informal settlements was also mentioned.

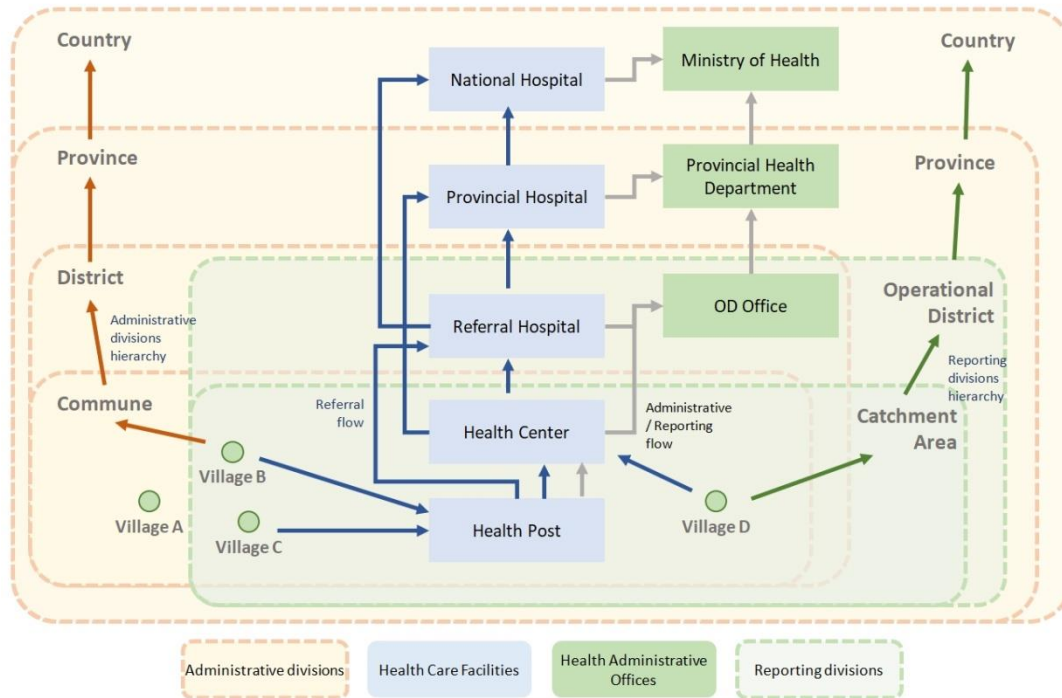
When it comes to the way forward, the need to define responsibilities, to improve collaboration and to offer services were mentioned as the most important next steps in the



process

## Day 1: Afternoon sessions

**Session 5: Identify Objects and Define Hierarchies** ([Slides](#)) was lead by Steeve Ebener - AeHIN GIS Lab and Jon Payne - OCL, to work with the full group on the different geographies objects and relationships (hierarchies and flows) that were important to be included in the common registry. A number of different objects (boxes in the graph) with interdependent relationships (arrows) were identified for Cambodia and depicted in the following initial graphic. One of the most striking results that came from this activity, apart from the complexity of the graph itself, was the need for interconnected collaboration required between the Ministry of Health and the Ministry of Interior.

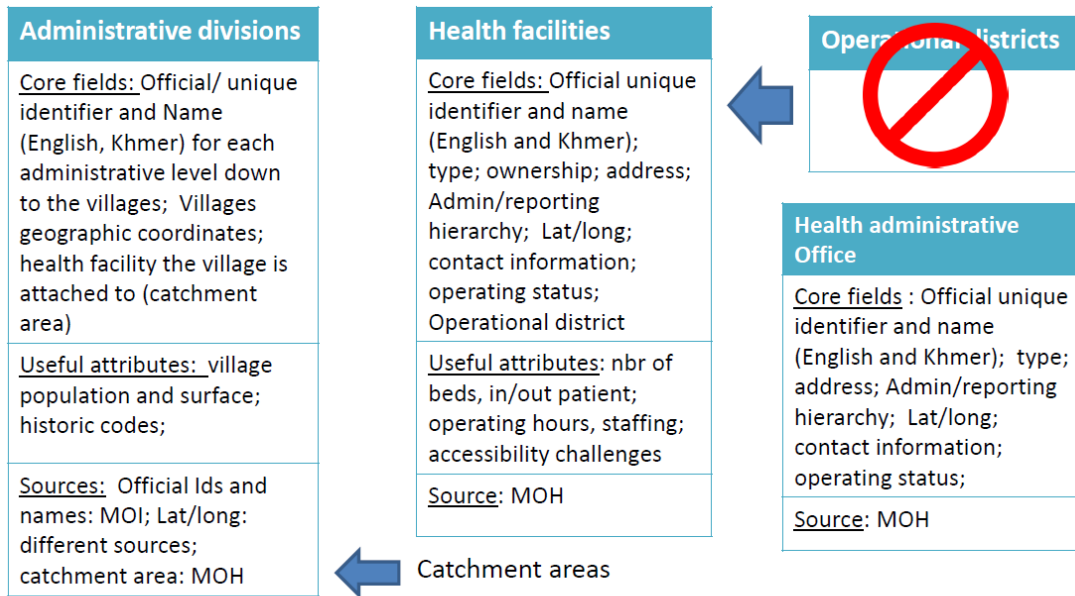


**Session 6: Define the Fields for Each Master List** ([Slides](#)) was lead by Scott Teesdale - InSTEDD and worked with small groups of stakeholders to define the types of fields that were important for inclusion in the master lists for the geographic objects core to public health identified during the previous session and this in order to:

1. Uniquely identify, locate and contact (when applicable) each active record in the master list;
2. Be able rebuilding the hierarchies and flows that have been identified.

The data that was collected here (see summary in the figure below), forms the basis for an eventual data specification for the common registry. Interestingly we can notice that, in the case of Cambodia: 1) the Operational Districts (health reporting divisions) can directly be captured in the health facility master list and does therefore not require for a separated master list; 2) That it is nevertheless necessary to develop and maintain a master list of health administrative offices to rebuild the hierarchies and flows; 3) That the concept of catchment area can be captured in the administrative division master list as long as this one goes down to the village level.





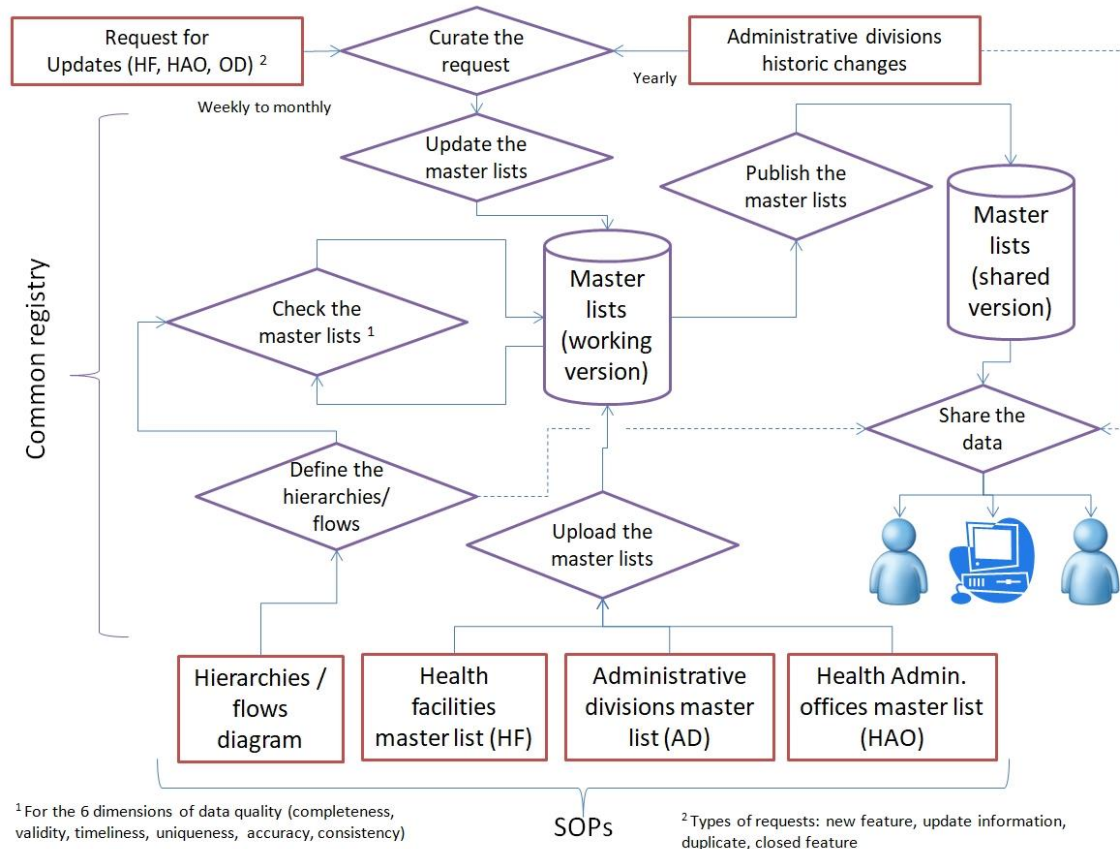
For each field in the different master lists: source and validity time stamp

The data specification for health facilities closely aligned with past WHO and OpenHIE guidance for the scope of what data is required vs. optional for health facilities. The specification for the different hierarchical trees also surfaced an important aspect of functionality to better track how nodes within a tree structure evolve over time - and helped to clarify that the current approach to identifiers of these hierarchies are inadequate.

**Session 7: Define a Data Workflow** ([Slides](#)) was lead by Steeve Ebener - AeHIN GIS Lab and was the last session of the day. The session sought to build on the previous discussion to come up with the workflow and processes that the common registry should support. The different aspects of this flow and processes (captured in the figure below) could be categorized into the following:

1. **Administrative functions for setting up** the common registry to include defining the fields, permissions and loading the current data sets into the system.
2. **The routine maintenance** of the master lists which includes both the simple data collection / curation for each list but also the resolution of the cascading updates that occurs when an object with related dependencies is updated.
3. **Access for both users and systems** that want to consume this data through an API, a data download, or other end-user tools or interfaces.





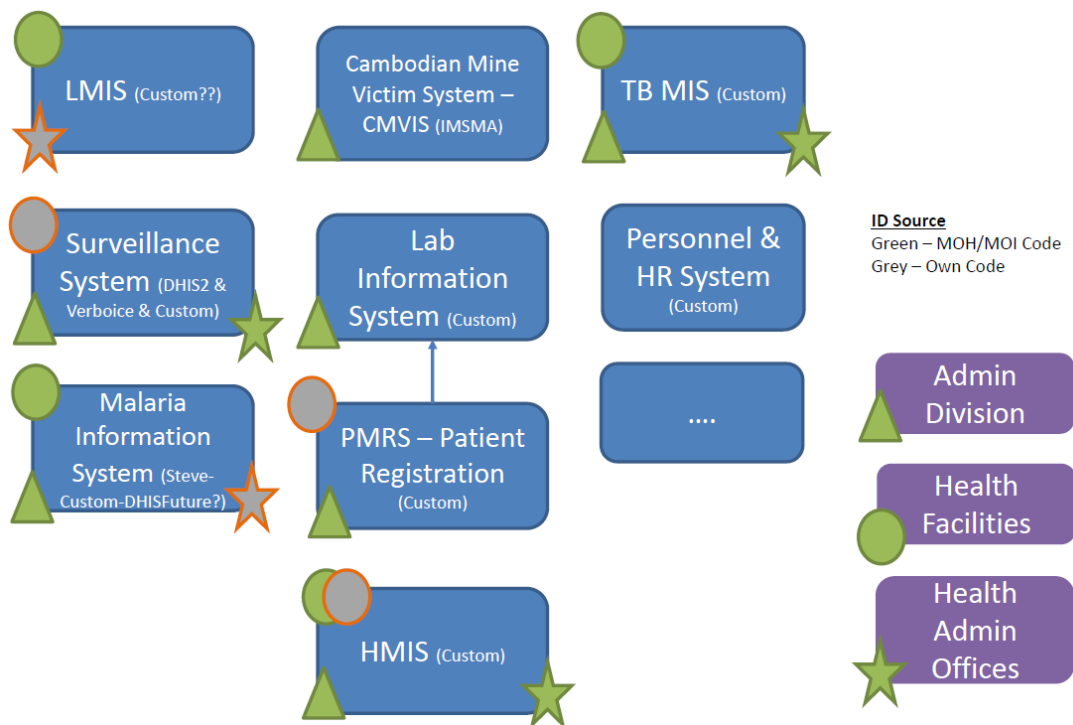
## Day 2: Morning sessions

**Session 8: Recap of day 1** ([Slides](#)). The second day started with a recap of the first day and highlighting its main outcomes as follow:

1. A common understanding on the objectives of the workshop and the terminology being used
2. A description of the current situation and challenges observed in Cambodia.
3. A list of objectives, strengths, challenges and way forward generated by stakeholders from Cambodia, grouped by use case areas and roughly prioritized in terms of importance.
4. A summary of the key geographic objects and the relationships (hierarchies and flows) between them and also the data elements important to capture and maintain for each of them.
5. A first draft of the workflows and processes needed to setup and support the maintenance, update and sharing of the different master lists through the common registry.

**Session 9: Define Functionality, Rules and Requirements** ([Slides](#)) was lead by Martin Verzilli - InSTEDD, to help take the draft processes and workflow started the previous day, and clarify the different triggers or events that might cause one of the processes to engage in the common registry. Also, it sought to describe when one of these processes happen what actors, systems or entities would be affected by these kinds of changes. The main goal of this session was to collect different user stories that articulate requirements for how the common registry would operate.

**Session 10: Strategies With Current Technologies** ([Slides](#)) was lead by Scott Teesdale - InSTEDD, and explored the source of the health facilities, administrative divisions and health administrative offices lists and coding scheme currently being integrated in some of the information system currently running within the health sector in Cambodia. This exercise then looked at the IT solution hosting the systems in question. The results of this exercise is captured in the following figure.

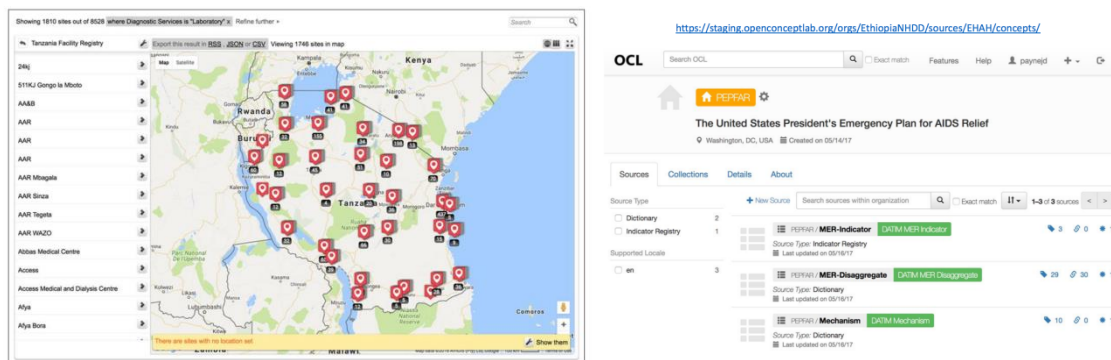


The discussion then looked at identifying if the current technologies could support the workflow, rules and requirements that had been discussed the previous days. Through the course of this session it was found that each of the known systems have some subset of

the masterlists, but largely were missing one or more types of functionality, IDs or key data and also operating in a siloed fashion. Also, for each system when changes to an object that had heavy dependencies occurred (e.g., political hierarchy), systems were struggling to carry out manual activities to try and keep their lists current.

## Day 2: Afternoon sessions

**Session 11: Resource Map (Slides) and Open Concept Lab (Slides)** was lead by Scott Teesdale and Jon Payne, who each provided a demo and presentation about how these existing open source tools could support the establishment of a common registry for the hosting, management, update and sharing of the master list core to public health moving forward. Specifically, that Resource Map has been used as a facility registry in multiple countries and OCL is being used to manage terminologies and metadata, both of these tools within the framework of OpenHIE.



**Session 12: Review of Guidance Document Content and Structure** was lead by Steeve Ebener - AeHIN GIS Lab, to share the current vision regarding the content and the structure guidance document meant to capture the generic workflow, requirements and rules any platform should comply to in order to effectively and simultaneously host, maintain, update and openly share master lists for the geographic objects core to public health.

This document will build on the outputs of the present workshop and will be using Cambodia as an example.

**Session 13: Way Forward and Closure** was lead by Steeve Ebener - AeHIN GIS Lab to share the next steps around how the facilitators will draft the present executive summary for the workshop and develop the guidance document to help guide the assessment or future creation of common registries in the region.

## Conclusion

Despite an ambitious agenda, the workshop reached its initial objectives thanks to the active engagement of the participants and the lively discussions that took place over the two days.

To summarize, the workshop has:

1. Confirmed that the availability of master lists for the geographic objects core to public health and of a common registry to facilitate their hosting, management and sharing together with the observed relationships (hierarchies and flows) are an important area of focus in general and for Cambodia in particular.
2. Allowed to collect the necessary material that will be used as the starting point for the development of the guidance document aiming at defining the workflows, requirements and rules any platform should comply to in order to effectively and simultaneously host, maintain, update and openly share master lists for the geographic objects core to public health
3. In the case of Cambodia in particular:
  - a. Highlighted the current challenges in maintaining and using these types of data and pointed to a gap in the current digital infrastructure.
  - b. Emphasized the need for all the partners to collaborate on the development and maintenance of these master lists and the common registry
  - c. Confirmed the need to further assess if the existing IT solutions currently implemented or to be developed in Cambodia should be extended, or whether other tools should be used to provide a more comprehensive solution.

## Next steps

As the workshop wrapped up, two main next steps were identified to finished documenting the findings from the workshop. Specifically, this included:

1. An executive summary for the workshop, to describe the activities and outputs from each of the sessions - the present document.
2. An advanced draft for the mentioned guidance document by the end of June 2017.

Each of these documents will go through a review process with participants of the workshop as well as outside members, prior to being finalized.

## Annex A: List of Participants (alphabetical order)

Full name	Position/Function	Institution	Email Address	Phone
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Soun Sokros		Ministry of Planning	sokros.soun@gmail.com	(855)77 767695
Steeve Ebener	Manager	AeHIN GIS Lab	steeve.ebener@aeHINGISlab.net	
Steve Mellor	Consultant	ADB	smellor@ozemail.com.au	
Veasnakiry Lo	Director	MOH/DPHI	veasnakiry@gmail.com	(855) 12810505

Yang Daravuth	Deputy Director	Department of Drugs and Food, MOH	yangdaravuth@gmail.com	(855)12885105
Yin Malyna	Deputy Director General	Ministry of Interior	Malyna@ncdd.gov.kh; malynacambo@icloud.com; malynacambo@yahoo.com	(855)11682222

## Annex B: Agenda

<b>Day 1: 12 June 2017</b>			
<b>TIME</b>	<b>ACTIVITY</b>	<b>OUTPUT</b>	<b>FACILITATOR</b>
8:30 - 9:00	Registration		
9:00 - 9:30	Welcome Remarks, round of Introduction and expectations from the participants	- Group Background - Participants expectations	Dr Veasnakiry Lo - MOH/DPHI Scott Teesdale - InSTEDD
9:30 - 10:00	Background, terminology and objective of the workshop	- Agree to common definitions and goals for the workshop	Steeve Ebener - AehIN GIS Lab
10:00 - 10:15	Coffee break		
10:15 - 10:45	Current situation regarding master lists and core geo-registries in Cambodia	- Summary of the current situation when it comes to core geo-registries in Cambodia	Sokna Sek - MOH/DPHI
10:45 - 12:00	Group Work: Discuss Master Lists and Core Geo-Registries Objectives, Strengths, and Challenges	- List of group objectives for how the master lists and core geo-registries data will be used; their related strengths and weaknesses	Scott Teesdale - InSTEDD
12:00 - 1:00	Lunch		
1:00 - 2:00	Plenary: Identify the objects, define the hierarchies and the geographic relations between the different objects	- List of the key objects and hierarchies - Define each hierarchies structure/levels	Steeve Ebener - AehIN GIS Lab / Jon Payne - OCL

2:00 - 3:00	Group Work: Define the fields to be included in each master list.	<ul style="list-style-type: none"> <li>- List of the minimum set of fields for each master list</li> <li>- Identify linkages between fields</li> <li>- Document how each field will be used; level of importance</li> </ul>	Scott Teesdale - InSTEDD
3:00 - 3:15	Coffee break		
3:15 - 4:30	Plenary: Define the general data workflow from the moment the master lists are ready.	Data workflow from data upload to data sharing	Steeve Ebener - AeHIS GIS Lab

<b>Day 2: 13 June 2017</b>			
<b>TIME</b>	<b>ACTIVITY</b>	<b>OUTPUT</b>	<b>FACILITATOR</b>
8:30-9:00	Summary of day 1, agenda and objective of day 2	<ul style="list-style-type: none"> <li>- Recap of day 1</li> <li>- Confirm plan for day 2</li> </ul>	Scott Teesdale - InSTEDD / Steeve Ebener - AeHIN GIS Lab
9:00 – 10:30	Group Work: Define the functionalities, rules and requirements for each step of the data workflow	Functionalities, rules and requirements	Martin Verzilli - InSTEDD / Jon Payne - OCL
10:30 – 10:45	Coffee Break		
10:45 – 12:00	Plenary: Other Strategies to simultaneously manage the master lists for the core geographic objects	<ul style="list-style-type: none"> <li>- Identify of other ways to solve the requirements identified</li> <li>- Including identifying other platforms or standards that could be useful</li> <li>- Pro's and Con's of the other strategies</li> </ul>	Scott Teesdale - InSTEDD
12:00 - 1:00	Lunch		
1:00 - 2:00	Resource Map and Open Concept Lab: Current Status and Discussion of Option as a Solution	<ul style="list-style-type: none"> <li>- Current Status</li> <li>- Exploration of Work Needed to Support Requirements</li> <li>- Begin Configuration w/ real data</li> </ul>	Scott Teesdale - InSTEDD Jon Payne - OCL



		- Q/A	
2:00 - 3:00	Structure and proposed content for the guidance	- Table of content - Identification of key activities and deliverables	Steeve Ebener - AeHI GIS Lab
3:00 - 3:15	Coffee Break		
3:15 - 4:00	Way forward and closure of the workshop		Channé Suy Lan - iLab