eTool Final Report

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Overview

Objective	Deliverable	Result
1. Support the development of Ona surveys to be used to in the field to collect data on newly deployed equipment, as well as to update data on existing equipment already in circulation	Data collected in the field will be visible in the eTool	Survey forms reviewed and available on Ona.
	Document instructions for collecting data using the Ona forms using ODK Collect	Instructions given to laboratory staff and used to collect equipment information.
2. Support the deployment of an ASLM administered reporting platform	The eTool will be available to users through an internet browser	The eTool is hosted on Digital Ocean, a could infrastructure provider.
	Users will be authenticated before viewing the eTool	Users prompted for credentials at the eTool home screen.
	Reports and instructions will be provided in the form of pdf documents where appropriate	Present document outlines administrative considerations and processes.
3. Develop a final report describing activities	Create necessary documentation to describe activities	Present document

Data Collection

Summary:

To support data collection on mobile platforms as well as PC even where internet connection is not possible. We have created data collection forms using Ona, an open source survey platform. Surveys can be referenced using the mobile application which can be used in the absence of internet connection, ODK Collect. Response data is stored on Ona and referenced in the eTool code. Currently developed survey links are referenced below.

New Equipment Registration

Equipment Activity Form

Request Calibration

Request Maintenance

Outstanding Considerations:

Thus far, the only data collected by laboratory personnel was with the New Equipment Registration form given our limited interaction with laboratory staff. This registration form was meant to capture the state of either new equipment in the lab or equipment already present in the lab that was not already

captured in eTool data. The other forms are meant to capture information on maintenance activities as well as give laboratory staff the ability to request either calibration or maintenance.

eTool User Guide

Summary:

The eTool is currently being hosted at http://104.248.226.50/eTool using a Linux image hosted on Digital Ocean. Users will be prompted for credentials at the link above. Users must be added by system administrators and developers. Report viewers can be added by users with 'sudo' access using the following commands below.

cd /etc/nginx

sudo htpasswd /etc/nginx/.htpasswd exampleuser

Below is a description of the reports in th eTool itself. The report below documents key descriptive information about the current state of the equipment data. Charts are provided to describe the number and percentage of pieces of equipment requiring either calibration or maintenance.
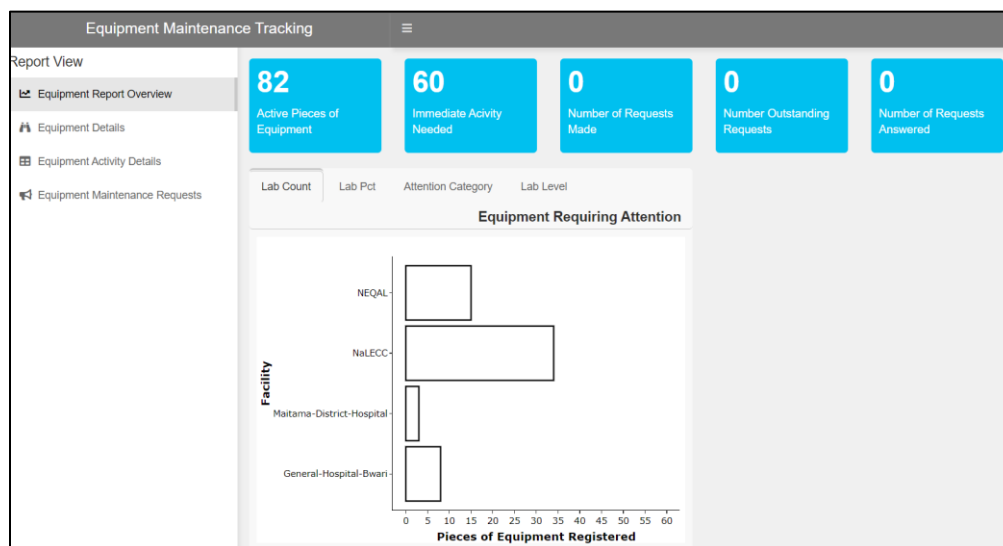
This report shows information about the current state of equipment documented in the eTool. Information about each piece of equipment is shown including maintenance status, location, and type of equipment described. Equipment ID's are highlighted in red if responses indicate the need for equipment calibration or maintenance soon. Data can be filtered using the selectors at the top of the report.

Report View

- Equipment Report Overview
- **Equipment Details**
- Equipment Activity Details
- Equipment Maintenance Requests

Choose Equipment ID(s): `1, 16, 17-01-1313, 17-01-173, 2, 20, 22, 2: ▾`

Choose Equipment Type(s): `analytical-balance, autoclave, barometer, ( ▾`

Choose Facilitie(s): `General-Hospital-Bwari, Maitama-District-I ▾`

⬇ Download Data

Enter Equipment Information

Detailed Equipment Information

Equipment ID†	Manufacturer	Facility	Facility Level	Equipment Type	Ownership Type	Warranty	Frequency Maintena	Frequency Calibration	Date Active	Retirement Flag²	Service Provider	Most Recent Calibration	Most recent Maintena	Last Updated
1	NA	Maitama-District-Hospital		autoclave	Government	No	0	0	2000-01-01	No	NA			2020-11-24
16	AWARENESS TECHNOLOGY INC.	Maitama-District-Hospital		other	Government	No	180	90	2007-06-01	No	DARLEZ NIG. LIMITED			2020-11-24
17-01-1313	Hawsley	General-Hospital-Bwari		Centrifuge	Government	No	180	180	2017-08-25	No	Prolab	2020-05-07	2020-05-07	2020-12-01

This report describes focuses on equipment characteristics including warranty status and service providers. Additionally, expected calibration dates are included.

Choose Equipment ID(s): `1, 16, 17-01-1313, 17-01-173, 2, 20, 22, 2: ▾`

Choose Equipment Type(s): `analytical-balance, autoclave, barometer, ( ▾`

Choose Equipment Type(s): `A&D company Ltd, Accuscope, ALDATIS ξ ▾`

Choose Facilitie(s): `General-Hospital-Bwari, Maitama-District-I ▾`

⬇ Download Data

Enter Activity Information

Detailed Equipment Activity Information

Equipment ID†	Manufacturer	Facility	Facility Level	Equipment Type	Ownership Type	Warranty Status	Service Provider	Status	Purchased By	Manual Available	Date Active	Retirement Flag	Most Recent Calibration	Most Recent Maintenanc	Submitted by	Submission Date
1	NA	Maitama-District-Hospital		autoclave	Government	No	NA	functional	purchased	no	2000-01-01	No				2020-11-24
16	AWARENESS TECHNOLOGY INC.	Maitama-District-Hospital		other	Government	No	DARLEZ NIG. LIMITED	non-functional	purchased	yes	2007-06-01	No				2020-11-24
17-01-1313	Hawsley	General-Hospital-Bwari		Centrifuge	Government	No	Prolab	functional	purchased	yes	2017-08-25	No	2020-05-07	2020-05-07		2020-12-01

This report shows service dates for equipment. However, data has not been collected for requests yet.

Choose Equipment ID(s): `1, 16, 17-01-1313, 17-01-173, 2, 20, 22, 2: ▾`

Choose Facilitie(s): `General-Hospital-Bwari, Maitama-District-I ▾`

⬇ Download Data

Detailed Request Information

Equipment ID†	Calib Req Date	Date Submitted Calibration	Maintenance Req Date	Date Submitted Maintenance	Manufacturer	Facility	Equipment Type	Frequency Maintenance	Frequency Calibration	Service Provider	Last Calibration	Last Maintenance	Next Calib	Next Maintenance

† Red indicates equipment needs attention.

Request Calibration

Request Maintenance

Outstanding Considerations:

Additional work needs to be done for the laboratory staff to use the other forms to document equipment service.

eTool Development

Summary:

All relevant documents and development work are saved in GitHub in a project account linked below. The three most important repositories are highlighted below. The shiny-server repository is linked to the Digital Ocean image which is a Linux instance. A user with sudo access must run the commands below to make the eTool application code saved in the shiny-server repository available on the internet. The project GitHub password will likely need to entered in the Linux image after running the commands below.
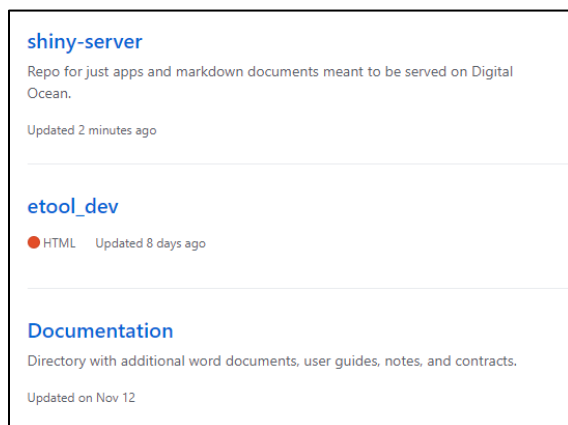
cd /srv/shiny-server

sudo git pull

[Repository Location](#)

etool_dev contains all development code, proof of concepts, and ad-hoc reports created during this project.

Lastly, the Documentation repository contains all binary files related to project planning and survey development during this project.

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shiny-server

Repo for just apps and markdown documents meant to be served on Digital Ocean.

Updated 2 minutes ago

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etool_dev

● HTML   Updated 8 days ago

Documentation

Directory with additional word documents, user guides, notes, and contracts.

Updated on Nov 12

Outstanding Considerations:

Updates referenced above will need to be done by someone with at least some technical knowledge.

Adding Users to the eTool

Summary:

A user with sudo privileges will need to run the commands below.

cd /etc/nginx

sudo htpasswd /etc/nginx/.htpasswd exampleuser

Outstanding Considerations:

This process is unlikely to scale well with a large user base. Additionally, an admin user with sudo privileges will have to create users as well as their passwords unless the user is physically present to do so on their own. General users cannot change their password with the above commands without sudo privileges which would be unwise to distribute to a large group of users. Users are also unable to change their password via the browser. A better authentication scheme would need to be implemented for larger scale use. The current approach is excellent for proof of concept projects such as this one.

Credentials

Credentials and handoff instructions will be coordinated once the contractor payment process is completed.