CCEI User Manual

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Cold Chain Equipment Inventory (CCEI) System

Chapter 1. Cold Chain Equipment Inventory (CCEI) System

1.1. Cold Chain Equipment Inventory (CCEI) System

The Cold Chain Equipment Inventory (CCEI) System can be used to manage the cold chain equipment requirements from health facilities and to monitor the working status of the equipments by tracking, thereby timely action can be taken in cold chain supply management.

1.2. Conceptual Framework

The CCEI application is developed to manage cold chain equipment in health facilities through routine data form equipments and a timely reporting of working condition of the equipment which plays a crucial role in cold chain management.

1.3. CCEI Architecture

The system is built on the two inputs data forms namely model data, equipment type/equipment data and two output data forms namely periodic and non-periodic data.

In the model data, the initial step is to define model type attributes, model type. This enables the system to provide fields to enter required data for model. Each model type will have its own model data. In other terms model data is attached to its model type. The definition of model type attributes, model type can be modified/updated when the actual model type is introduced or a new model comes in the market in future at any facility.

There are equipment type/equipment data with or without having model data. In order to capture equipment type data, define equipment type attributes and then add equipment type with its attributes. If the equipment type has model data, select the appropriate model type while adding equipment type and this enable to pull the data from the selected model type along with the data from equipment type. If the equipment type has no model data, then just define attributes and add equipment type with its attributes.

There are data related to equipment which need to be collected, processed and used for action. Every facility has some number of equipments and data needs to be captured from equipment. In order to monitor the working status of the equipment and its location (facility), periodic/non-periodic data is to be collected.

When it is periodic, equipment/facility wise dataset is designed and assigned to corresponding facilities. When it is non-periodic (for say, working status) data needs to be captured when there is any change in the process and this can be done using equipment type attributes. The user has to select the facility as the registering unit and the appropriate equipment type and the required data can be filled in equipment type attributes.

1.4. Data types in CCEI

Non-periodic data which is data recorded only when there is any change in the process. For example, working condition of the equipment in a facility will be recorded, when it is working well or Not working or under repair condition. These data are recorded using equipment type attributes.

Periodic data are data recorded periodically to monitor the equipment function, performance and its efficiency and to monitor for any requirements of equipments in health facilities.

1.5. Service Module: Cold Chain Equipment Inventory (CCEI)

1.5.1. Meta Data

In cold chain Equipment Inventory, the super user has to define the metadata in the application.

To define model, the super user has to create attributes for model and then add the attributes with its model. The model here for say refrigerator and freezers and the attributes are capacity, dimension etc. The super user can add more models.

The model indicates the model name, for say Electrolux FG 432. To add a new model, select the model type and then add model.

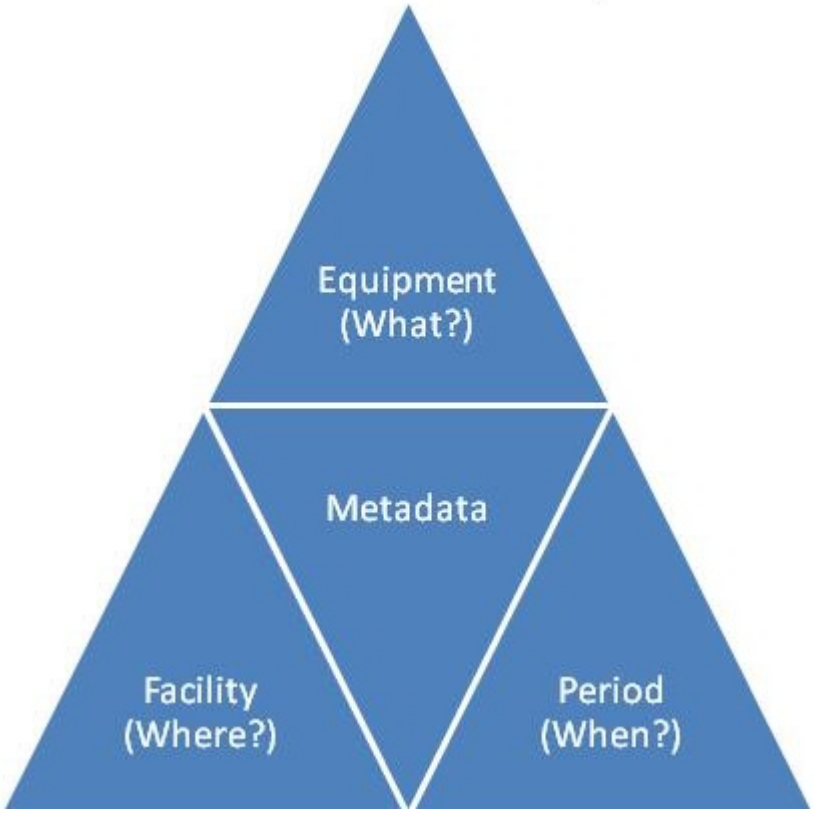
Equipment Type Indicates the equipment for say Refrigerator, Cold Box, Cold Room etc. Equipment type has a particular model but equipment have machine specific data with addition to the general data which is common among the models. In order to record the equipment specific data, the super user has to define attributes for the equipment for say Unique ID, Serial No, manufacturer etc. User can add many numbers of attributes for equipment.

To add a new equipment type for say it is refrigerator and freezers, add it and select model for refrigerator and freezer. It will enable to pull data from selected model and also additional data which are specific to refrigerator and freezer by using equipment attributes.

In summary metadata defines

- Data about model attribute
- Data about model
- Data about equipment type attribute
- Data about equipment type

1.5.2. Data flow



Periodic Data Flow monitors following :

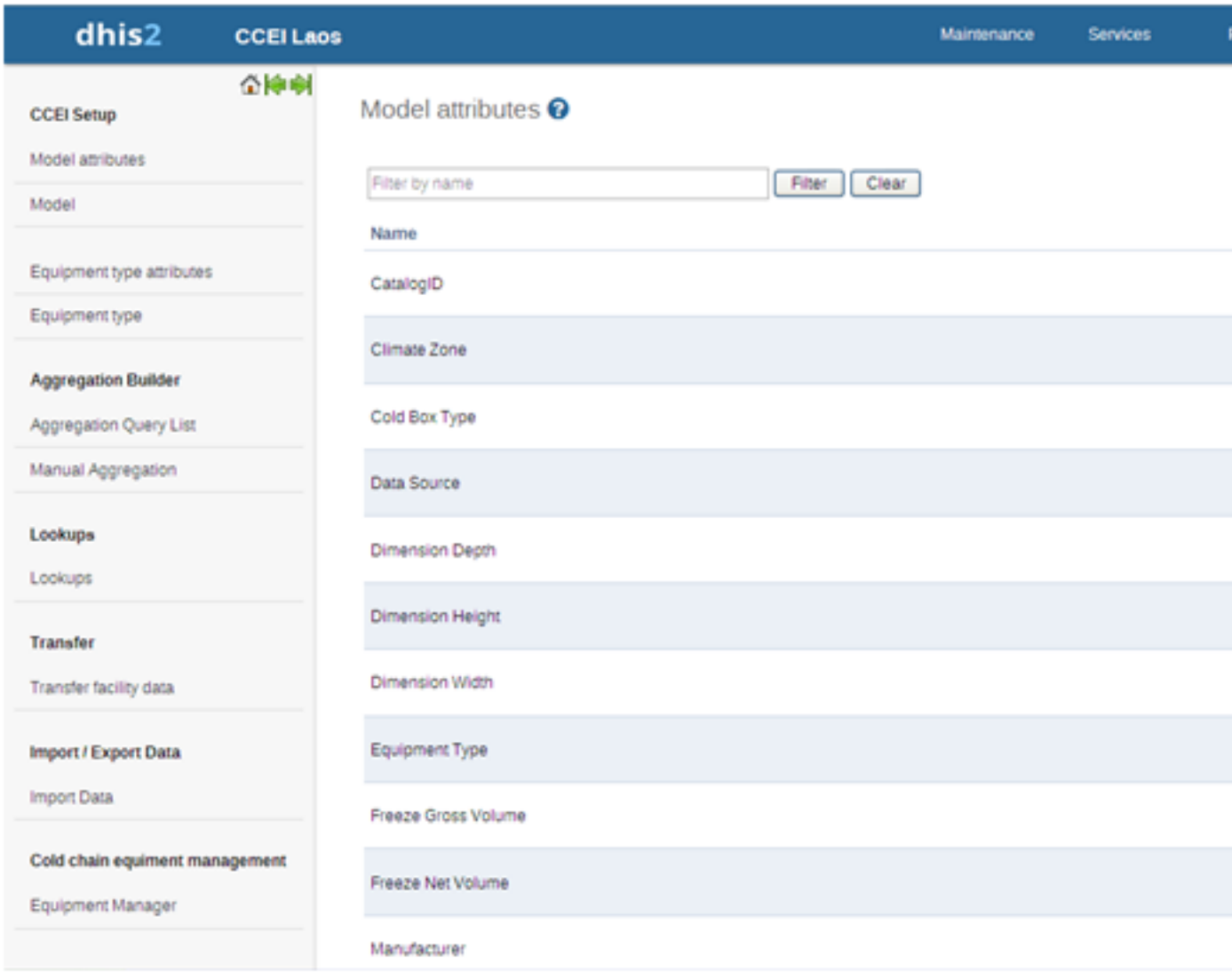
- Equipment: Monitor for any changes in equipment like temperature
- Facility: Monitor facilities for any requirements
- Period: Monitor any change of event timely

1.6. Model Attribute: Cold Chain Equipment Inventory (CCEI)

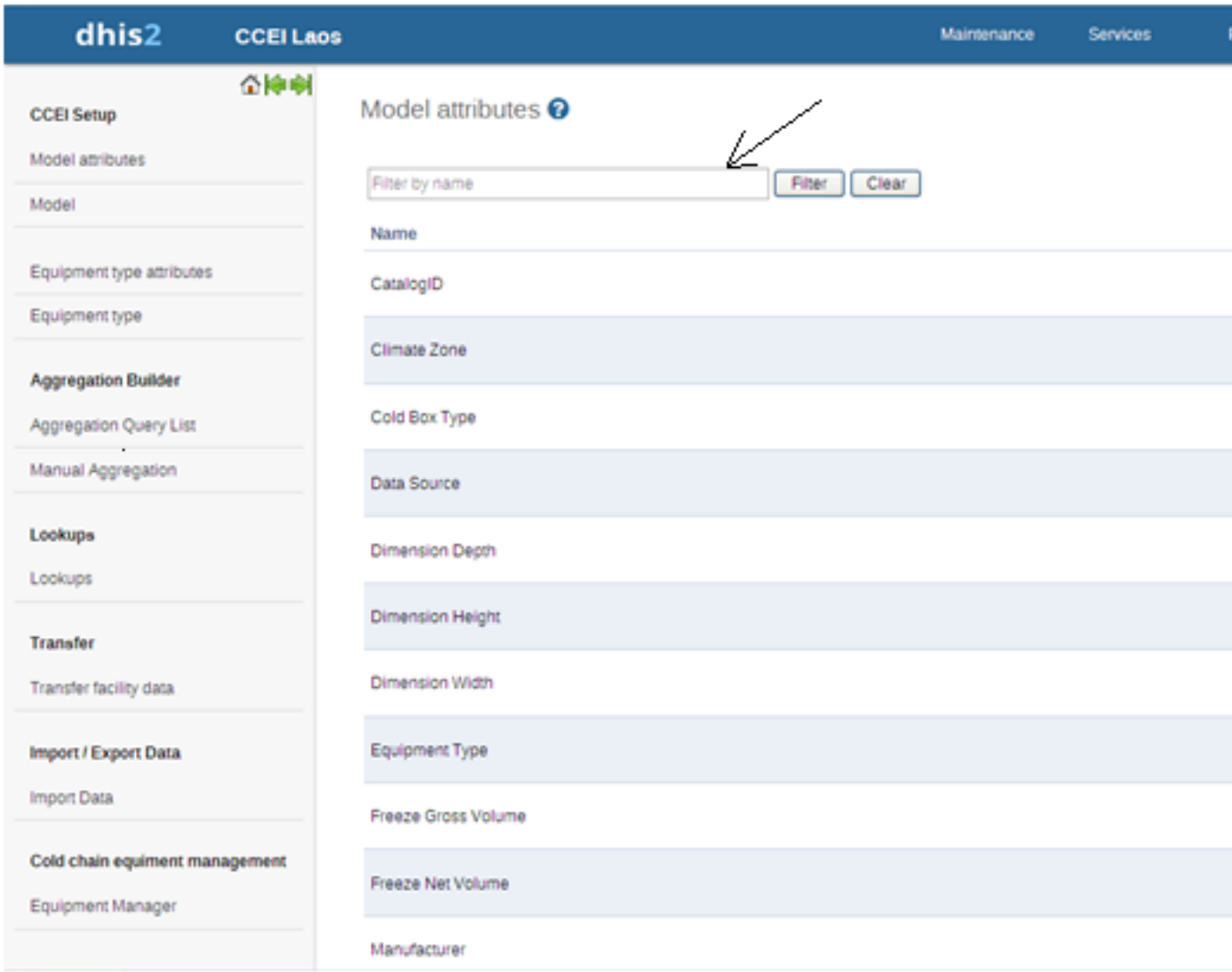
1.6.1. Model Attribute

To specify the model geometry and properties the user has to create model attributes where properties of each model defined.

To access Model Attribute user has to go to Maintenance -> dhis-web-maintenance-ccei -> Model attributes



1.6.2. Operations on Model Attribute



Filter Clear - Quick search and list the model type with edit and show details options

Add new - Add new model attribute

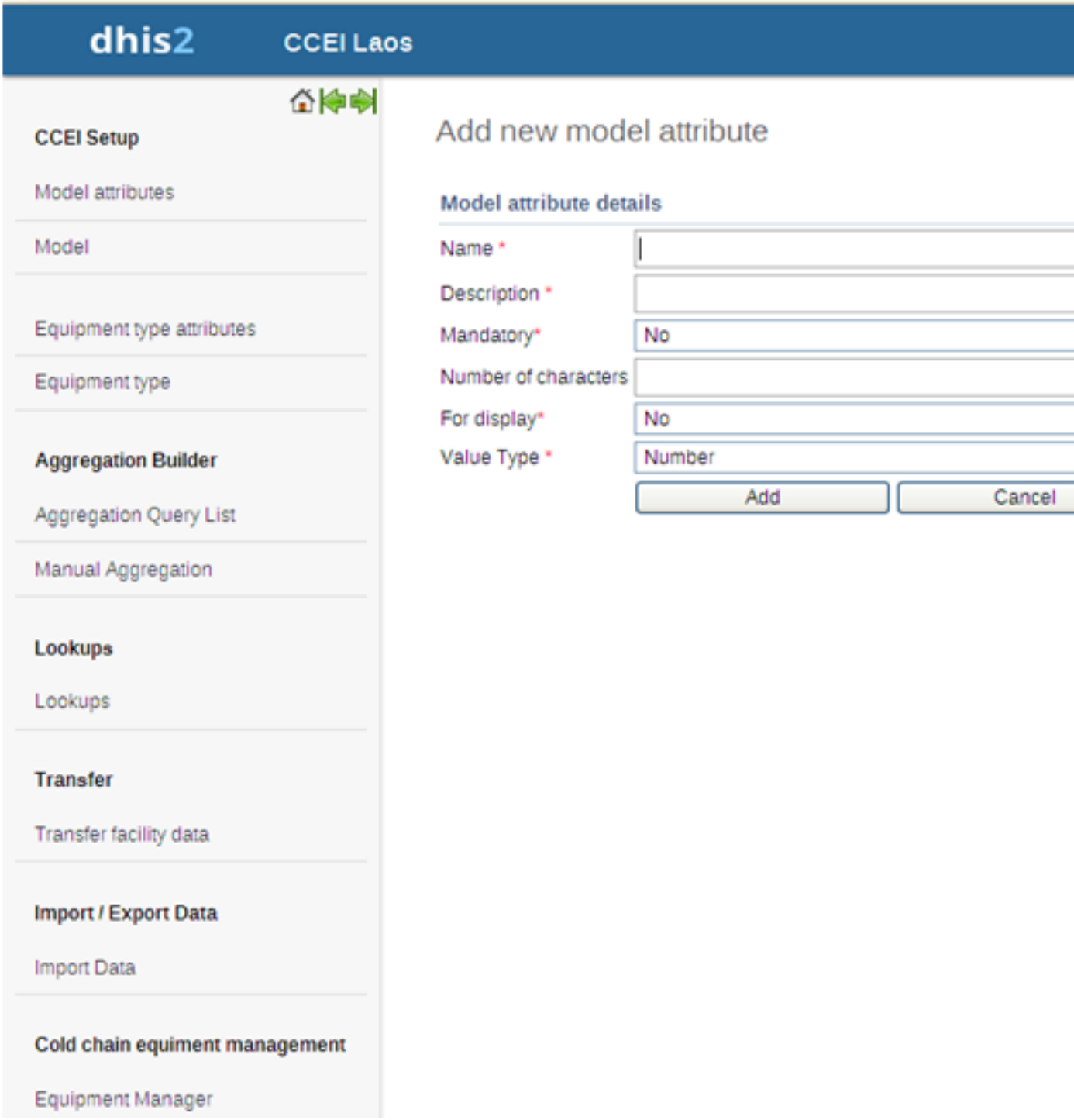
Edit - To edit model attribute

Delete - To remove model attribute

Show details - List shows name, description etc

1.6.3. Add a new model attribute

To add a new model attribute, the user has to click on 'Add new" button in the model type management page, user will be directed to the following screen as show below, where he/she can fill the details to add a new model attribute

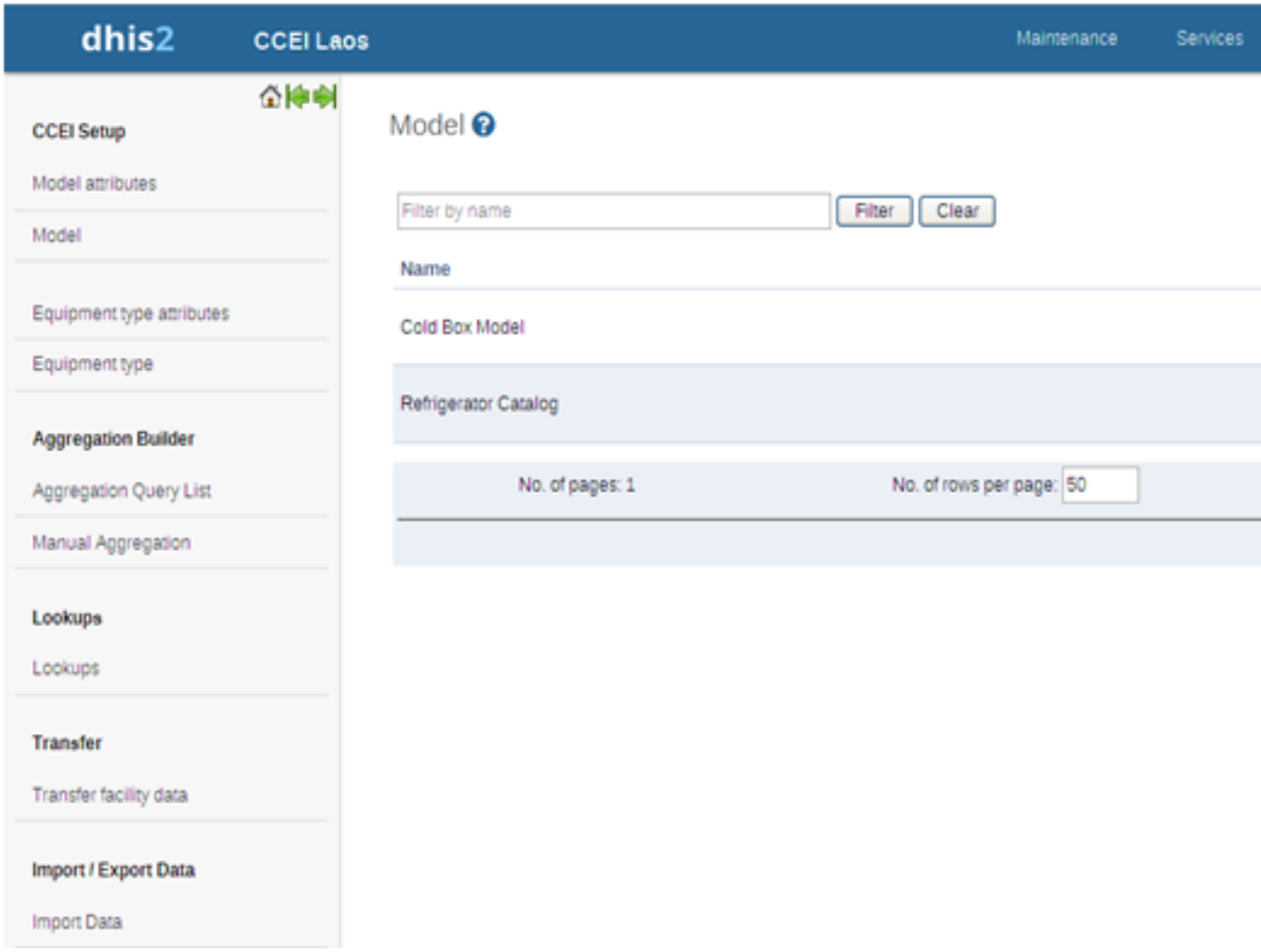


1.7. Model: Cold Chain Equipment Inventory (CCEI)

1.7.1. Model

Model consists of geometry and properties of each equipment model type. To define model, the super user has to create attributes for model and then add the attributes with its model. The model here for say refrigerator and freezers and the attributes are capacity, dimension etc. The model indicates the model name, for say Electrolux FG 432.

To access the model, user needs to click on the 'Model option' as seen on the extreme top left corner of the screen and user will get following screen



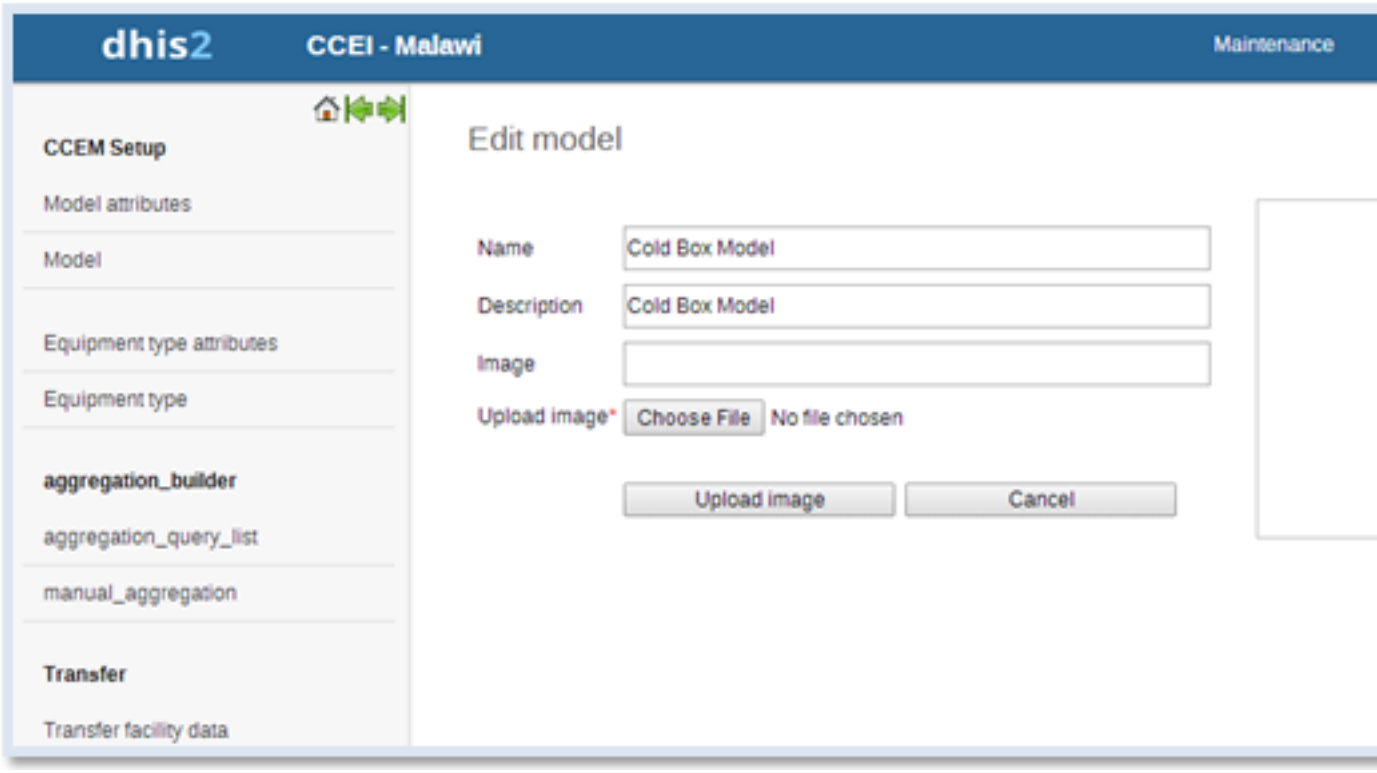
1.7.2. Operations on Model

Filter Clear - Quick search and list the model type with edit and show details options

Add new - Add new model attribute

To upload an image for the Model click on following button

Once user has clicked the Image, following screen will appear. User has to browse for the image of particular Model and click on Upload button, once the image is uploaded it will b edisplayed on the screen. The image uploaded once can later be updated by the same procedure.

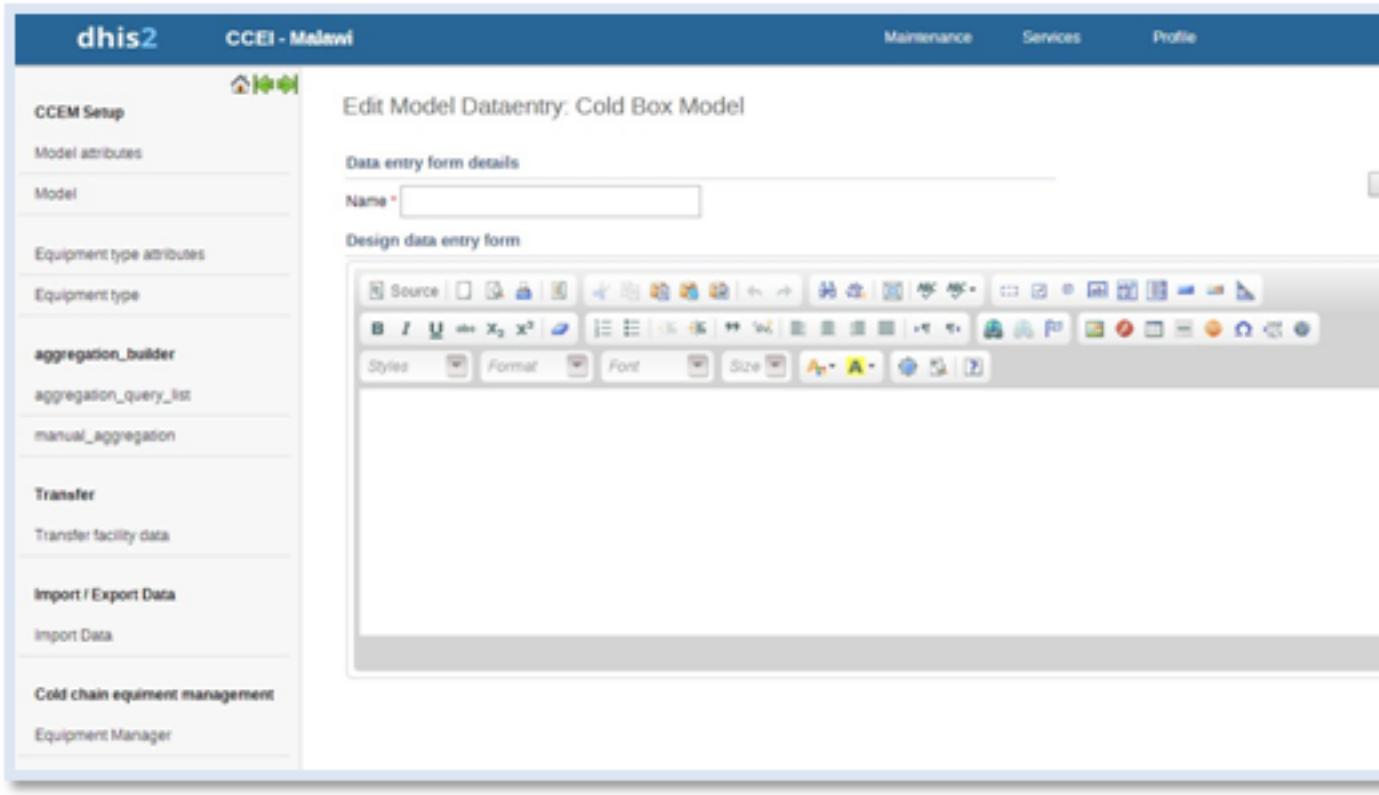


Edit - To edit model attribute

Delete - To remove model attribute

Design Data Entry Screen - Data needs to be entered against the model attribute for particular model, user can design data entry screen for data entry by clicking on following icon.

Once data entry screen design button is clicked follwing screen will appear to design data entry screen. User will get the list of all model attribute of selected Model by clicking on "Model Attributr" button on Top right corner

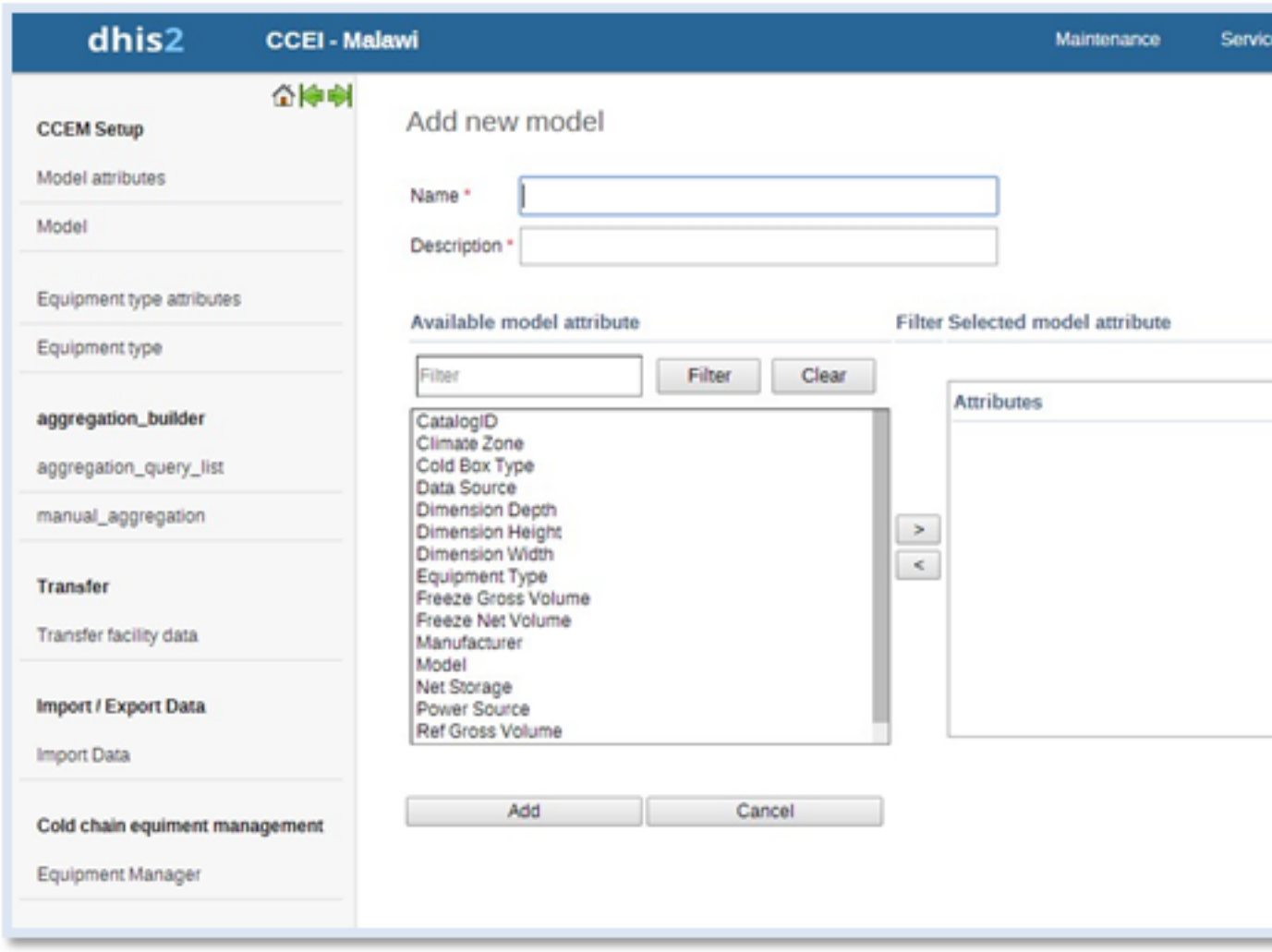


Model attributes can be grouped as sections. To make a group list, the user should click on the required icon

Show details - List shows name, description etc

1.7.3. Add New Model

To add new Model, user has to click on "Add new" button in model management page, once user has clicked on button he/she will be redirected to following page where user can fill detail to add new model.



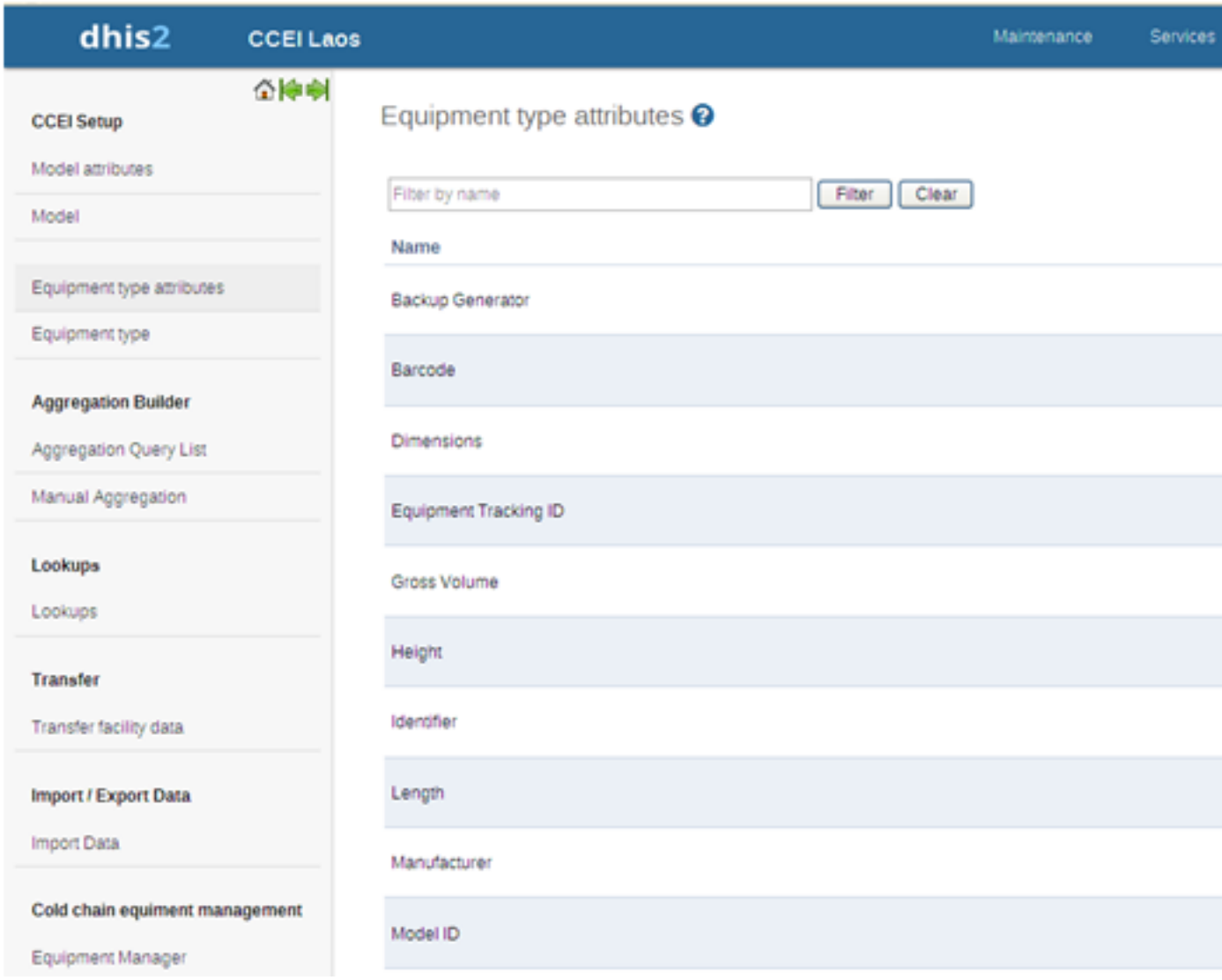
User will get the list of all available model attributes, user can select the model attribute from the list which he/she wants to use for the model.

1.8. Equipment Type Attribute: Cold Chain Equipment Inventory (CCEI)

1.8.1. Equipment Type Attribute>

Equipment type Attributes are the properties of Equipment type, in order to record the equipment specific data, the user has to define attributes for the equipment for say Unique ID, Serial No, manufacturer etc.

To access the Equipment Type Attribute user has to click Maintenance -> dhis-web-maintenance-ccei -> Equipment type attribute. After clicking on the link the user will be directed to Equipment type attribute management page



1.8.2. Operations on Equipment Type Attributes

Filter Clear - Quick search and list the Equipment Type Attributes with edit and show details options

Add new - Add new model attribute

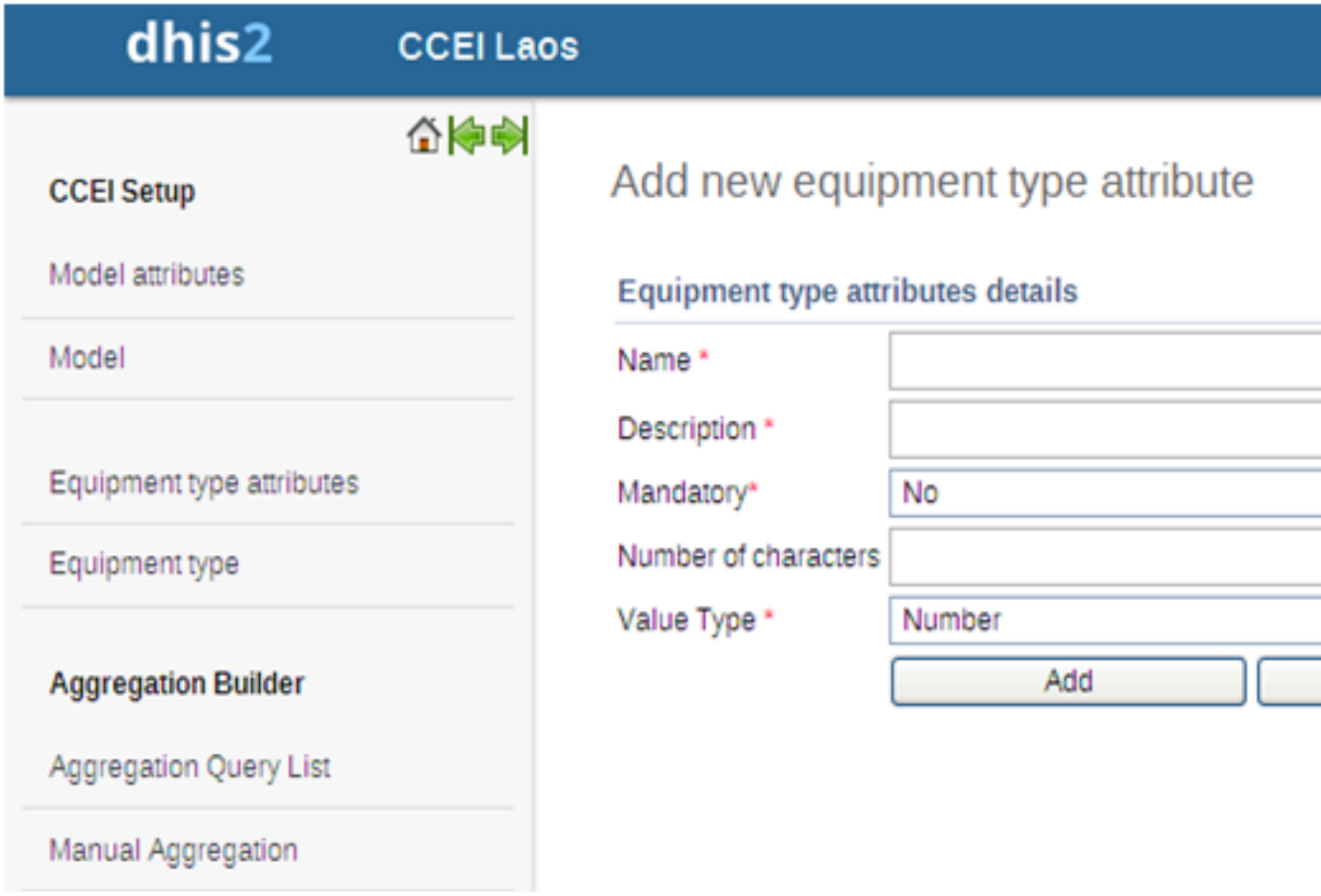
Edit - To edit model attribute

Delete - To remove model attribute

Show details - List shows name, description etc

1.8.3. Add new Equipment Type Attribute

User can add a new Equipment type Attribute by clicking on "Add New" button. After clicking "Add New" button user will get the following screen.



To create new equipment type attribute user has to enter following detail:

- Write the name for the attribute
- Write the description for the equipment type attribute
- Select the attribute mandatory as yes/no, based on whether the value to be entered is mandatory or not
- Specify the number of the characters
- Select the value type for the attribute as number, text etc

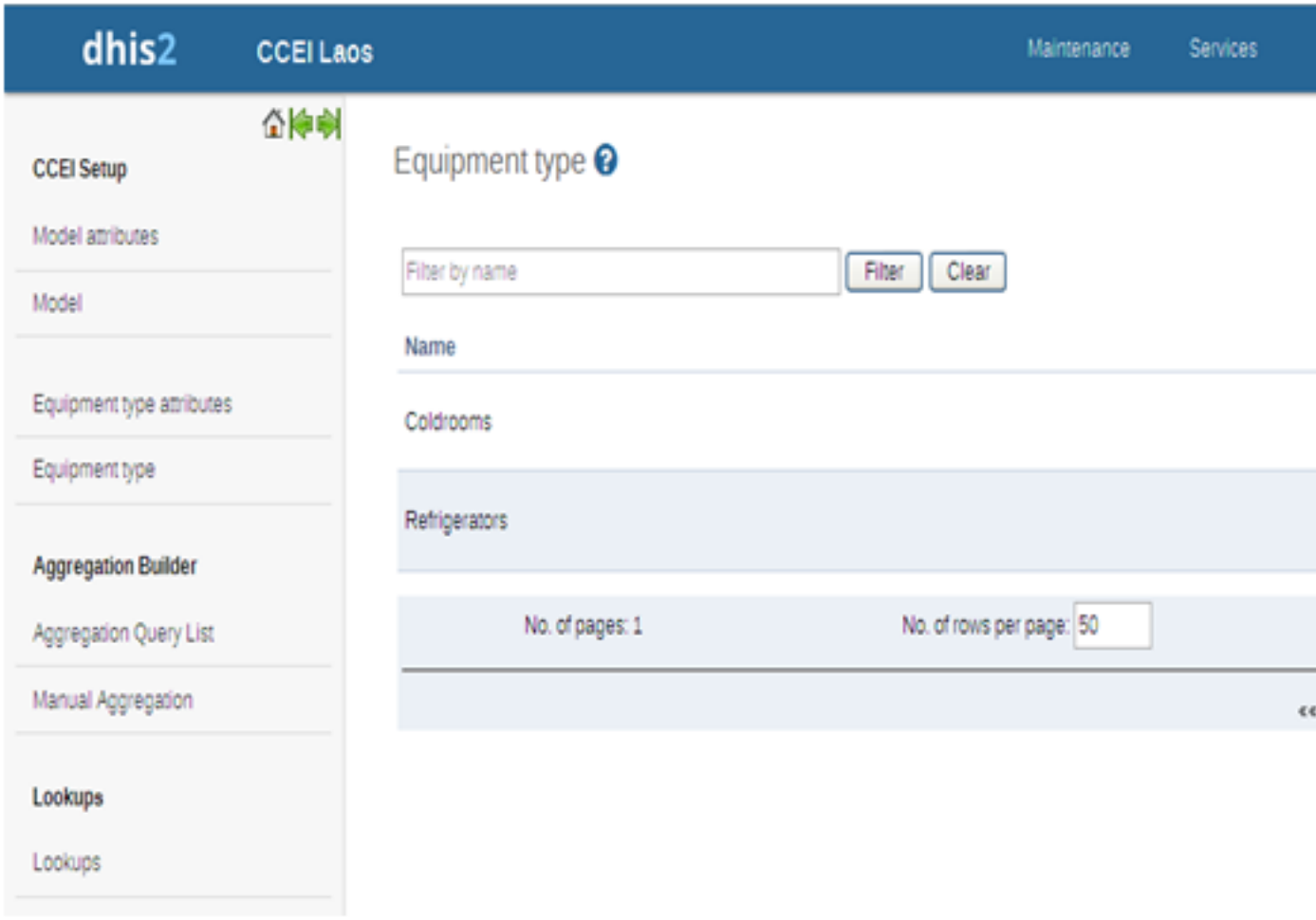
Please note that the user has to keep in mind the details need to be collected for the equipment type and the attributes should be created accordingly. Once the attributes are created, then the attributes need to be added to its particular equipment.

1.9. Equipment Type: Cold Chain Equipment Inventory (CCEI)

1.9.1. Equipment Type

Equipment Type Indicates the equipment for say Refrigerator, Cold Box, Cold Room etc. Equipment type has a particular model but equipment type have machine specific data with addition to the general data which is common among the models

To access the Equipment Type Attribute user has to click Maintenance -> dhis-web-maintenance-ccei -> Equipment type. After clicking on the link the user will be directed to Equipment type management page



1.9.2. Operations on Equipment Type Attributes

Filter Clear - Quick search and list the Equipment Type Attributes with edit and show details options

Add new - Add new model attribute

Edit - To edit model attribute

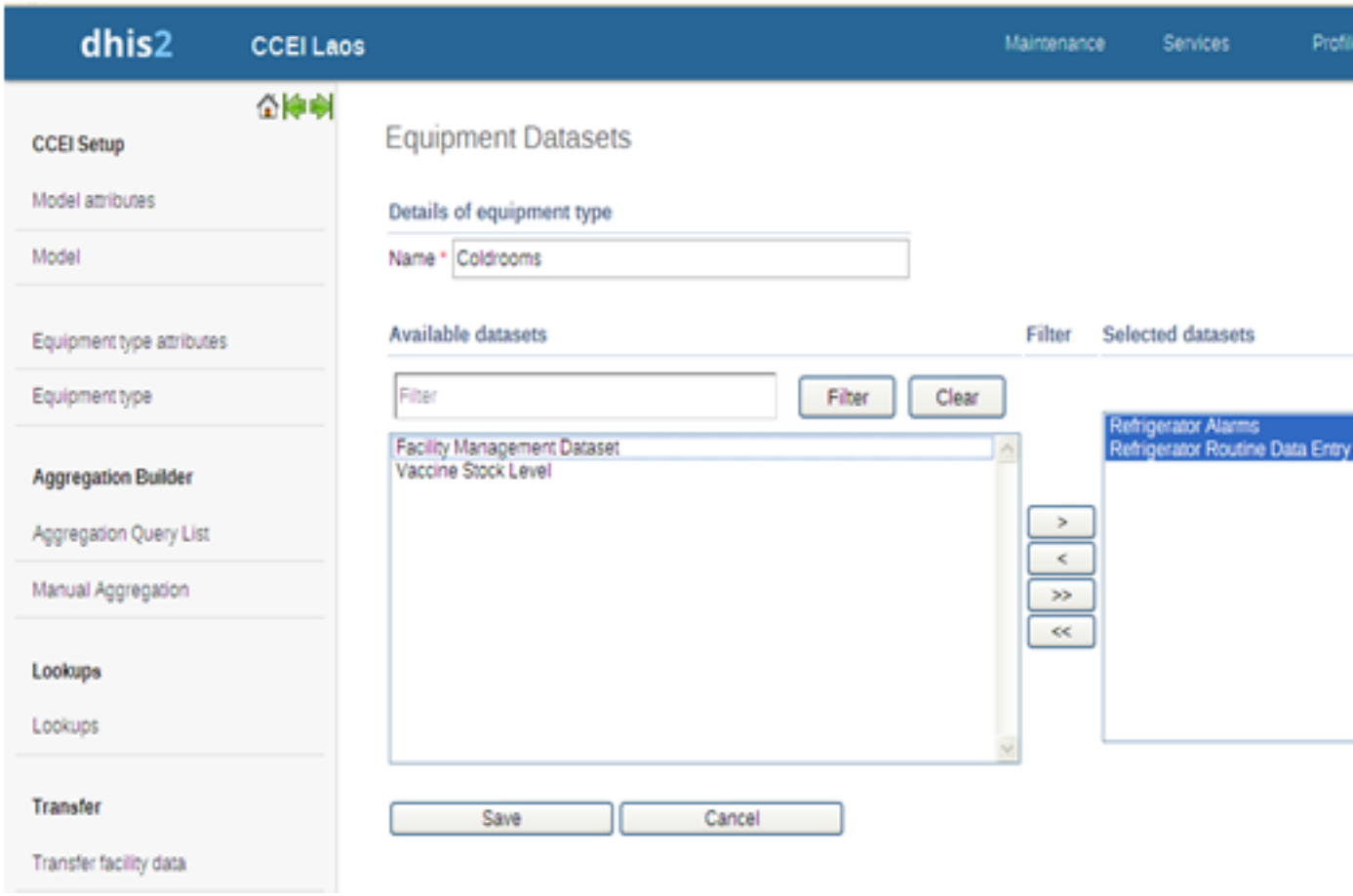
Delete - To remove model attribute

Show details - List shows name, description etc

Equipment Type: Dataset

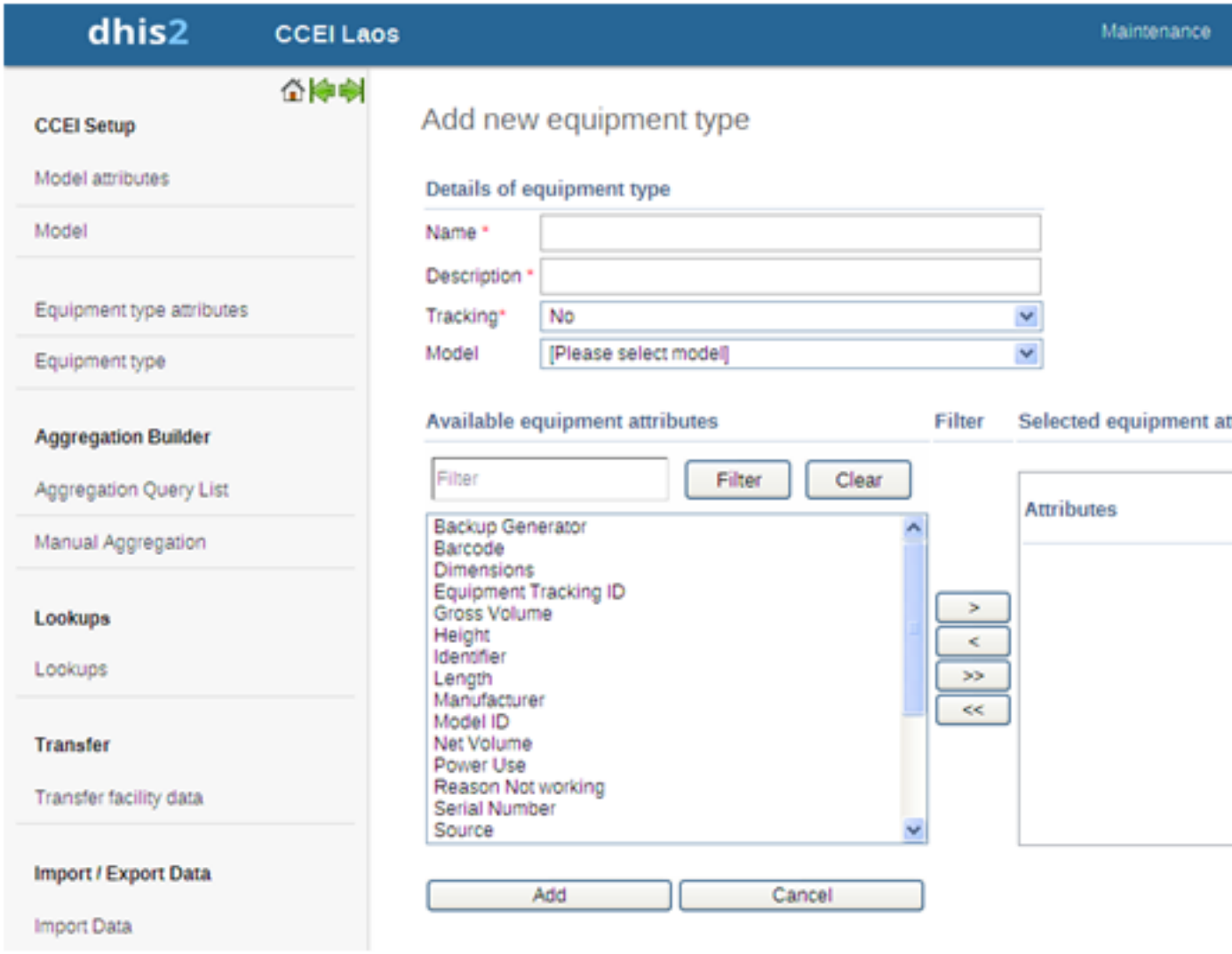
Periodic dataentry have to be done for Equipment Type, for dataentry user has to assign dataset to individual Equipment Type, this can be done by clicking on following button

Once clicked on above button user will be redirected to following screen



1.9.3. Add new Equipment Type

User can add a new Equipment type by clicking on 'Add New" button. After clicking "Add New" button user will get the following screen.



To create new equipment type user has to enter following detail:

- Write the name for Equipment Type
- Write the description for the equipment type
- Select whether the Equipment needs to be track or not
- Select the model from the list of availabel model list so that the properties of the selected model will be inherited to the Equipment
- Select the Equipment Type Attribute form the list of available attribute, user has to selet the attribute which are the members of this Equipment.

Once the Equipment Type Attributes have been selected then user can set the order of the attributes and user can select the attributes which needs to be displayed on user screen by checling particular attribute.

1.10. Aggregation Engine: Cold Chain Equipment Inventory (CCEI)

1.10.1. Aggregation Engine

Aggregation builder helps user to get quantitative data. It transforms metadata to populate data by aggregation query.

For Example

- In a facility number of refrigerators in use

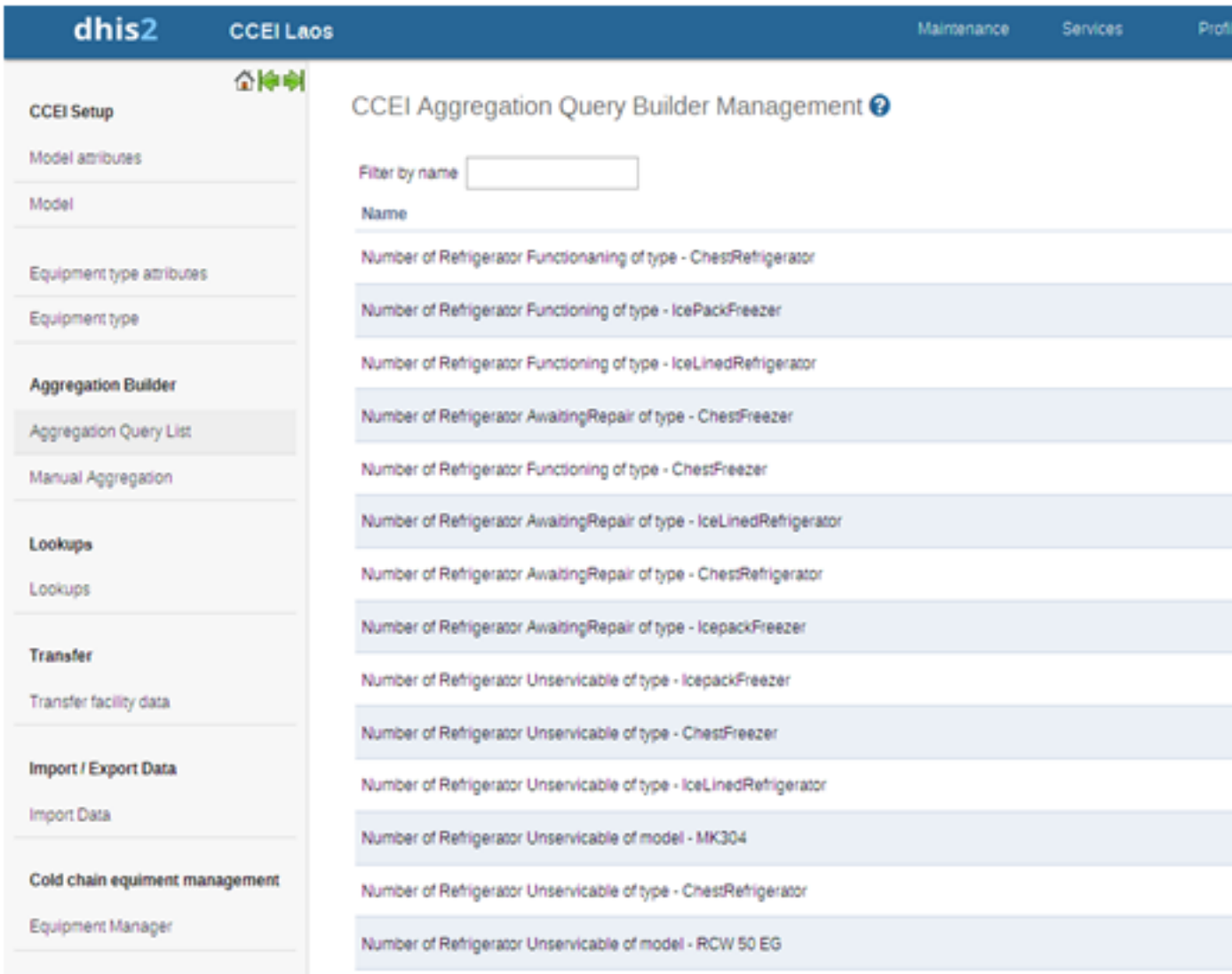
- In a facility number of refrigerators not in use
- In a facility number of refrigerators unserviceable
- In a facility number of refrigerators awaiting repair etc

To create a query the user has to select aggregation query list where query can be made to transform metadata to populate data and to get aggregate populate data the user has to select manual aggregation.

1.10.2. Aggregation Query List

This is the Aggregation Query List page where list of queries can be add, edit, translate, delete and details of a query can be seen.

To access the Aggregation Query List user has to click Maintenance -> CCEI Setup -> Aggregation Builder -> Aggregation Query List



1.10.3. Operations on Aggregation Query List

Filter Clear - Quick search and list the Aggregation Query List with edit and show details options

Add new - Add new Aggregation Query List

Edit - To edit Aggregation Query List

Translate - To translate an aggregation query list, the person has to select translate option by clicking the query

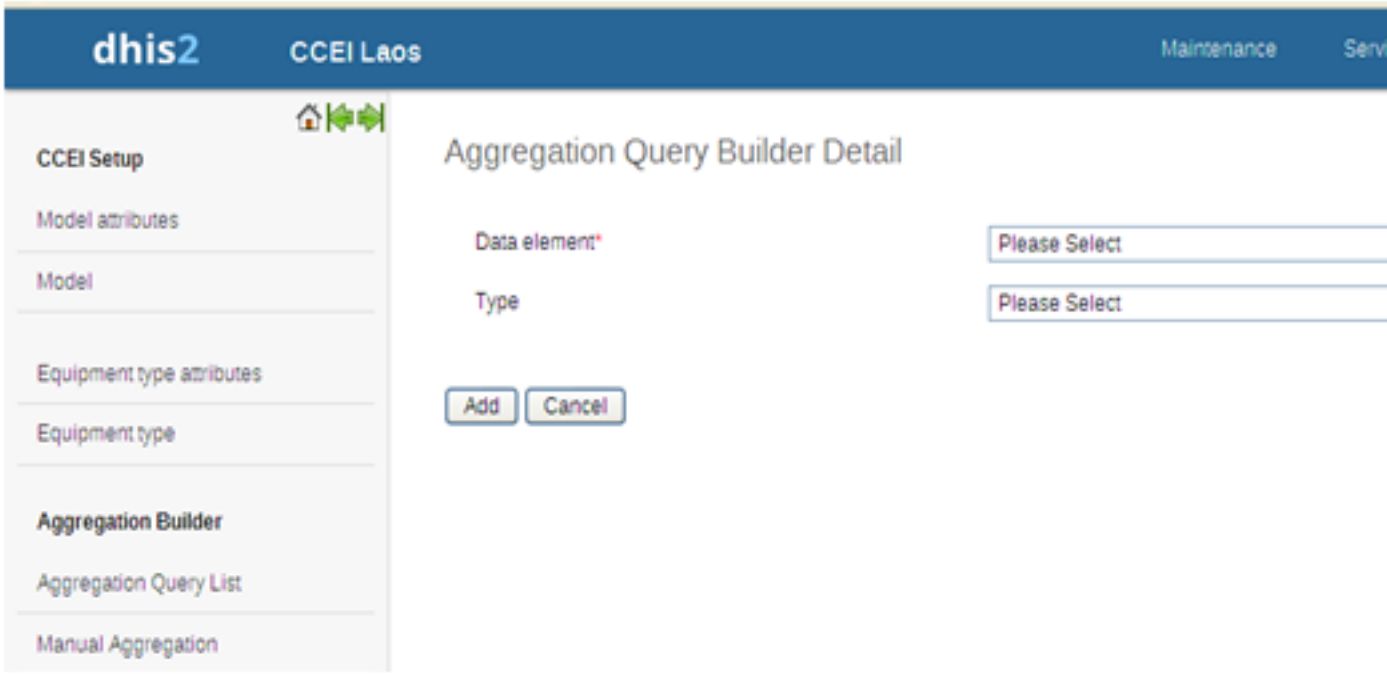
Remove - To remove Aggregation Query List

Show details - List shows name, description etc

1.10.4. Adding Aggregation Query

Please note that before creating the Aggregation Query user has to create a aggregated data element, which will further be used for Aggrgation Query

User has to click on Add New buttin to create a new Aggregation Query and user will be redirected to following page



User has to select the aggregated data element for creating Auery, so that the aggregated value generated by the query will be stored against the aggregated data element

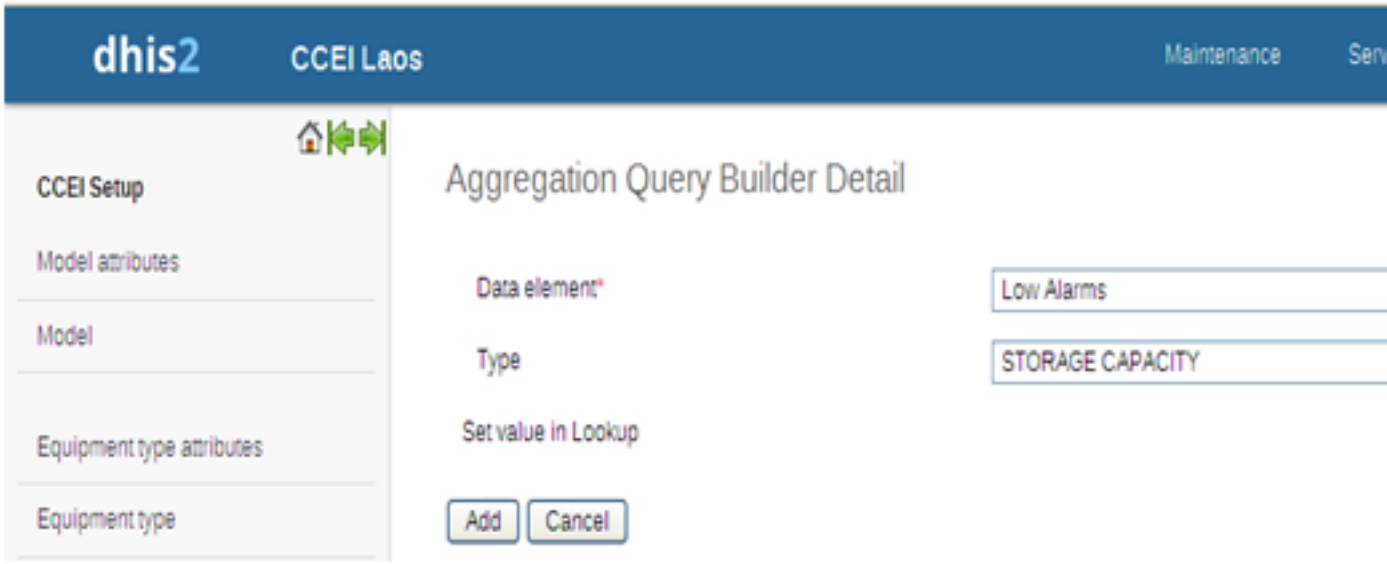
Once the data element have been selected then user has to select the type for different Use cases as shown below

1.10.5. Use Cases

Based on the type selected with the data element there will be some use cases for creating Aggregation Queries

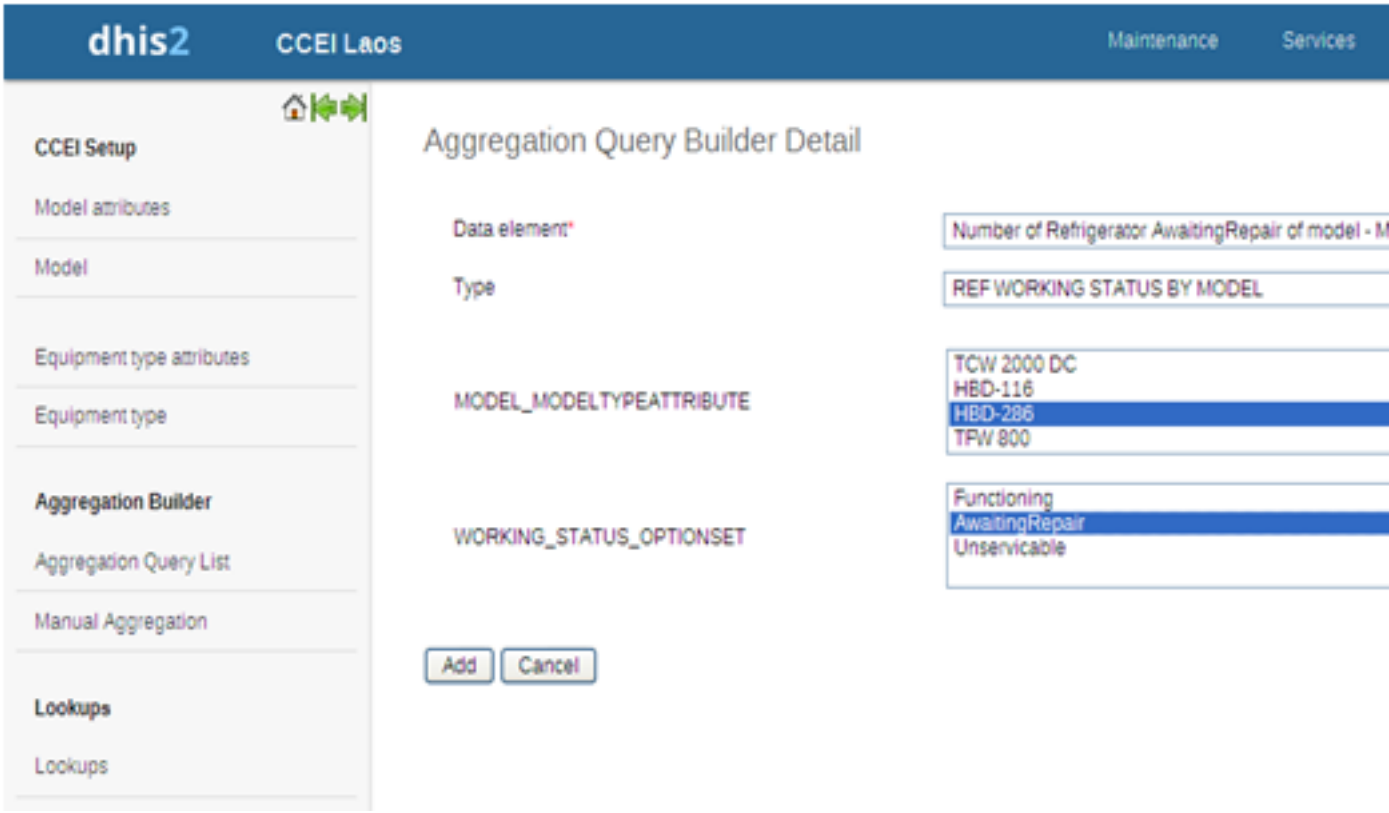
1.10.5.1. Storage Capacity

The user can get storage capacity of each facility by selecting the appropriate data element. This gives the user to know whether shortage or surplus or sufficient storage available in a health facilities of a state.



1.10.5.2. Refrigerator working status by model

The user can get refrigerator working status by model of aggregate populate data from the facilities of state whether functioning or awaiting repair or unserviceable



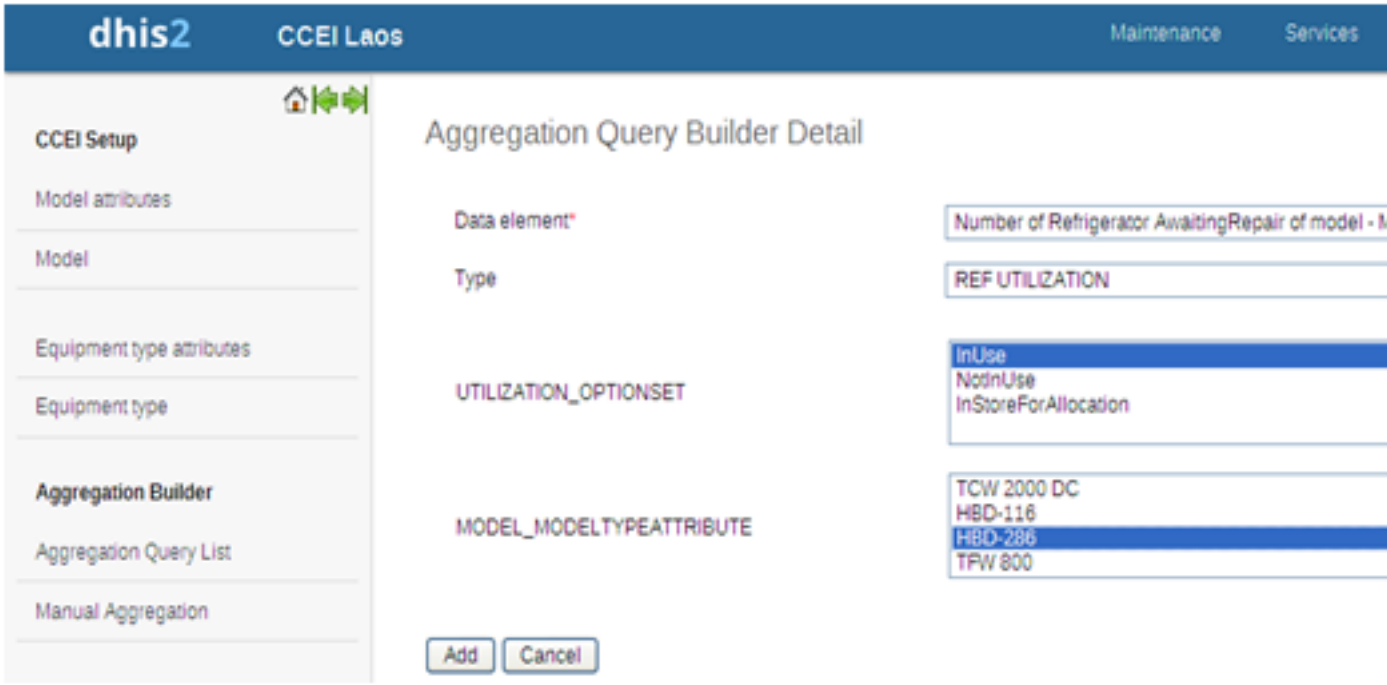
By selecting refrigerator status by model from type, all models of a refrigerator will be displayed and also working status option too. For each model type attribute three queries can be made like whether functioning or awaiting repair or unserviceable.

For Example

- No of refrigerator MK 304 are functioning
- No of refrigerator MK 304 are awaiting repair
- No of refrigerator MK 304 are unserviceable

1.10.5.3. Refrigerator utilization

The user can get utilization of refrigerators in an aggregate populate data of the health facilities of a state whether in use or not in use or in store for allocation. This gives user to evaluate the utilization of refrigerator by model



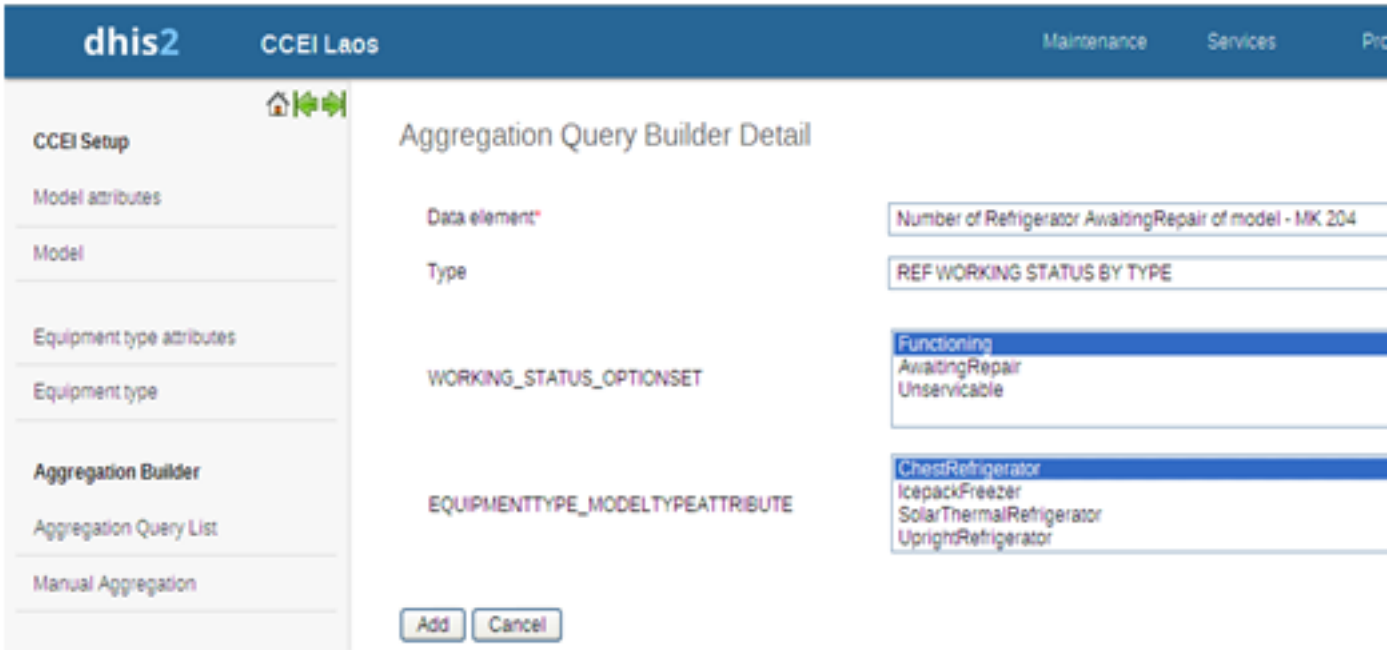
By selecting refrigerator utilization, the all models of a refrigerator will be displayed and also utilization option set too. For each model type attribute three queries can be made like whether in use or not in use or in store for allocation.

For Example

- No of refrigerator HBD-116 are in use
- No of refrigerator HBD-116 are not in use
- No of refrigerator HBD-116 are in store for allocation

1.10.5.4. Refrigerator working status by type

The user can get refrigerator working status by type of aggregate populate data from the facilities of state whether functioning or awaiting repair or unserviceable



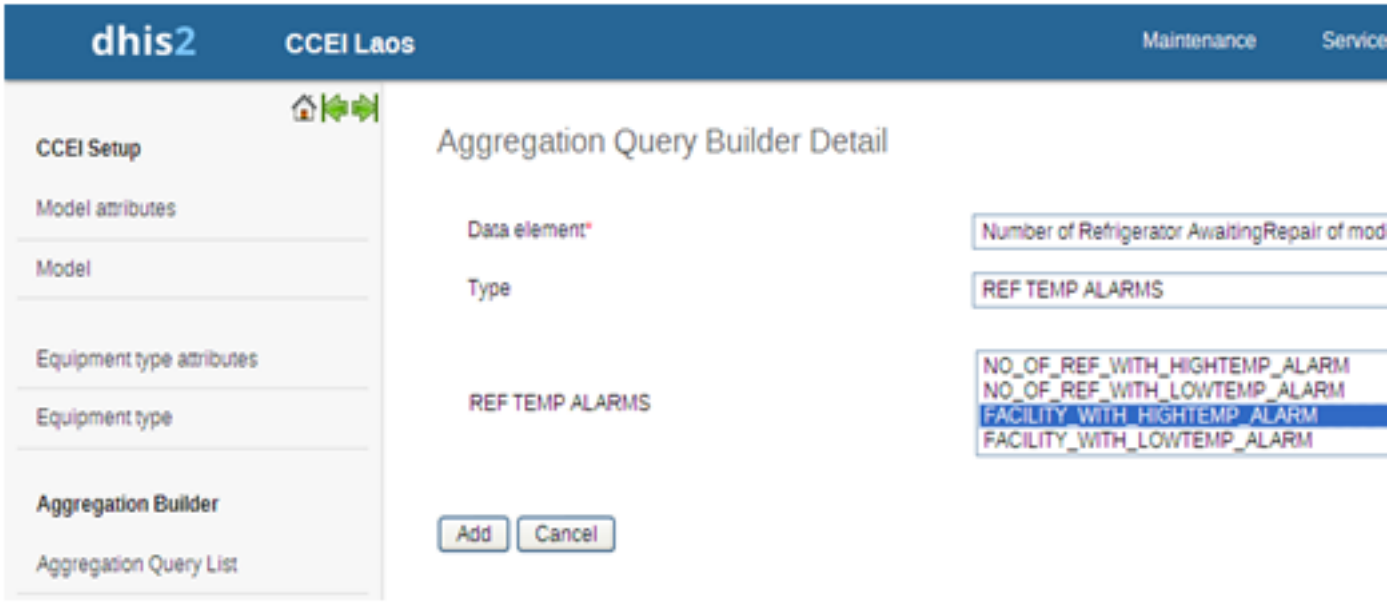
By selecting refrigerator status by type, the all model type attributes of a refrigerator will be displayed and also working status option too. For each model type attribute three queries can be made like whether functioning or awaiting repair or unserviceable

For Example

- No of Chest refrigerator are functioning
- No of Chest refrigerator are awaiting repair
- No of Chest refrigerator are unserviceable

1.10.5.5. Refrigerator temperature alarms

The user can get refrigerator temperature alarms whether high temperature alarms or low temperature alarms of the facilities and also number of refrigerators wise. This gives user to evaluate the temperature alarms by refrigerator and facility wise



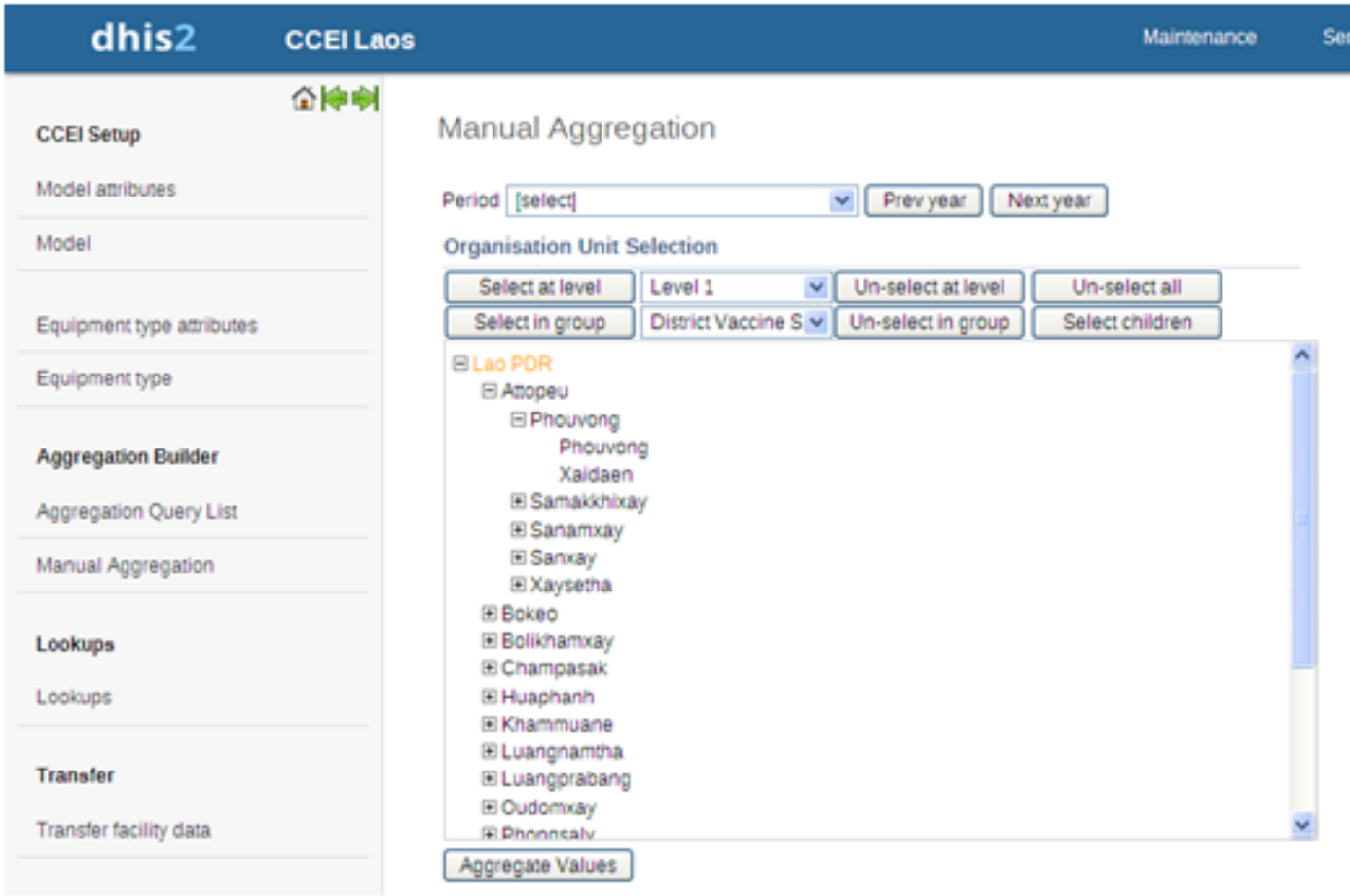
The options for the user to evaluate temperature alarms are

- No of refrigerators with high temperature alarm
- No of refrigerators with low temperature alarm
- Facility with high temperature alarm
- Facility with low temperature alarm
- Facility with temperature alarms

1.11. Aggregation of Data

Once Aggregation Queries are ready then its time to convert equipment data to aggregated data for the particular period

To get aggregate values of the health facilities, the user has to select Manual Aggregation under aggregation builder. The user will get the aggregated data of the equipments which can further be used for Other Analysis modules like GIS, Pivot tables and Data Visulizer



To get data aggregated user has to follow:

- Select the period from period list for which aggregation needs to be performed
- Select the facility or the parent facility from OrgUnit tree for which aggregation needs to be done, (In case if parent facility is selected then aggregation will run for whole child tree)
- Click Aggregate Values button to aggregate data