# Lantern designation method

For the deployment of the mobile lanterns, we need to be able to distinguish between 4 elements: households, lanterns, nodes, and data. These elements will need to be stored in a data store and tracked over time.

At the initial deployment of the system a lantern will be provided to a household. Each lantern will be installed with a sensor node, which will collect data from a number of sensors as a CSV. During the course of the deployment:

* The node may break and need replacing
* The lantern may break and need replacing
* We may want to switch households who own the lantern.

We require a unique identifier for a node, lantern, and household. Neither the solar lanterns or the nodes have specific serial numbers we can use, therefore, we will have to create these manually. For the household, where possible, we will link this to Practical Actions unique identifier on the surveys (This needs to be confirmed when we receive the surveys). We will also keep privately and securely a document that links the Household Id to the specific name and address of a person.

The CSV line that we transmit from a node will include the id of the node it originated from and a timestamp.

Taking inspiration from the Cogent-House system’s Location table which keeps track of the room and house and node is deployed in, we will keep a table of the following form

(with example data):

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| location Id | House ID | Lantern ID | Node ID | Deploy-ment DatE | Removal date | Reason for removal |
| 1 | 1 | 1 | 128 | 2018-06-20 | 2018-07-24 | Lantern battery no longer charging |
| 2 | 1 | 2 | 128 | 2018-07-25 | 2019-01-24 | Node is not transmitting over 3G |
| 3 | 2 | 1 | 150 | 2018-08-25 | 2019-08-25 |  |
| 4 | 1 | 2 | 250 | 2019-01-25 |  |  |
| 5 | 3 | 2 | 250 | 2019-06-20 |  |  |

In this example we can see:

* Row 1: The initial deployment of a node
* Row 2: The Lantern has malfunctioned, so has been replaced
* Row 3: Lantern 1 was fixed so was deployed in a new household
* Row 4: The Node has malfunctioned, so has been replaced
* Row 5: The Node and Lantern has been switched to a new household

When processing the data, we can use the node id, and timestamp to extract the household and lantern id’s.

Ideally the data would be tagged with the location id in-field, however 1) we may not have the people with the skills in-field to re-compile a node, 2) we cannot guarantee the node will be compiled with the location id, 3) we can’t guarantee the location table will be updated in a timely manner. Therefore, processing the table based on node id and time will reduce the points of failure.

The tracking of nodes, lanterns, households will need to be a manual process. However, for recording we would require an automated method, either Scene’s web interface or our own in-built application