

# **Functional Analysis Document**

## **For**

# **Sanitation Inventory - Tirupathi Municipality**

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## Revision History

Version	Date	Author(s)	History of Changes
1.0	21/02/2013	B.Gayathri	Initial version of document
1.1	23/06/2013	B.Gayathri	Included Android application functionality  Included 3 new fields in add/edit sanitation details,  one page and search screens
1.2	17/07/2013	B.Gayathri	Included Dashboard functionality
1.3	20/09/2013	B.Gayathri	Changes and improvements pertaining to implementation in multiple municipalities of state

## 1. Applicable Documents and References

- a. Excel Data file
- b. Transparent Chennai and District mapping websites

## 2. Introduction

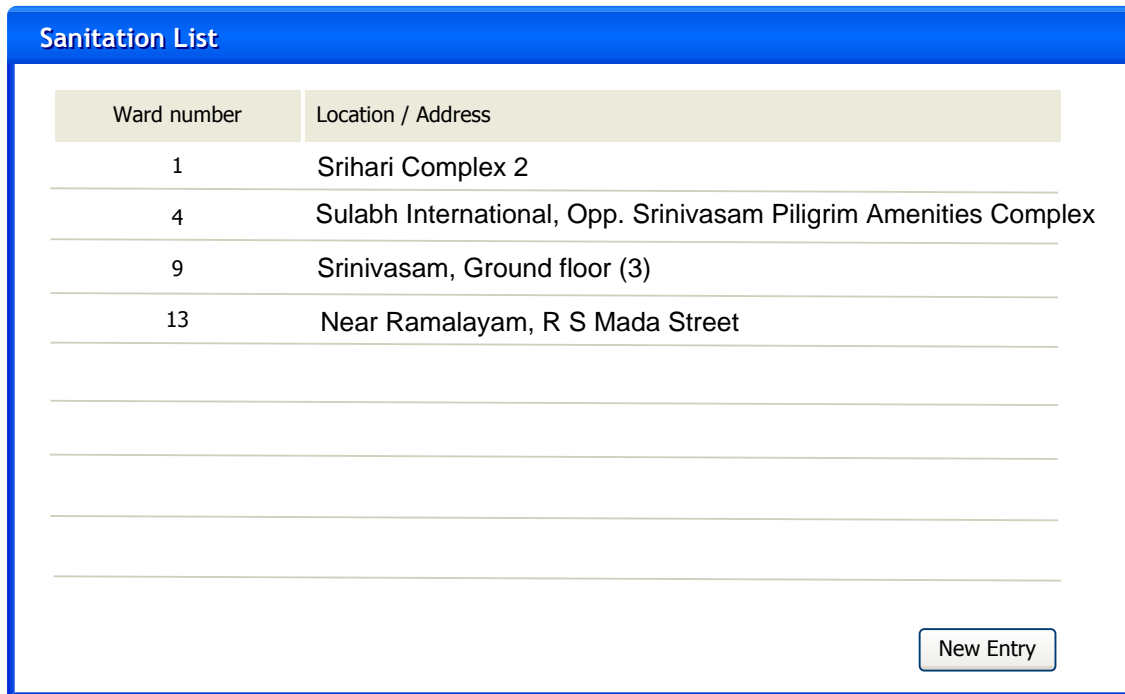
It has been proposed by IFMR to gather data and information related to sanitation services in the Municipality of Tirupathi in Andhra Pradesh state. The project activities include the collection of data, processing of data and disseminating the data through web application.

The web application will be developed using open source to provide the database with a repository of data collected from the survey. The website will also include GIS to meaningfully locate the desired data.

### 3. Data Entry

#### 3.1 Sanitation List

The screen displays all the saved locality of Toilets and the user can click any record to edit the data or click New Entry button to add new toilet details.



The screenshot shows a window titled "Sanitation List" with a table containing the following data:

Ward number	Location / Address
1	Srihari Complex 2
4	Sulabh International, Opp. Srinivasam Pilgrim Amenities Complex
9	Srinivasam, Ground floor (3)
13	Near Ramalayam, R S Mada Street

A "New Entry" button is located at the bottom right of the table area.

When a record is selected to edit/view, 3.2 will be displayed with all the details for the selected toilet locality and the user can view/edit the details.

When New Entry button is selected, 3.2 will be displayed and the user can add new details of sanitation.

### 3.2 Add/edit Sanitation Details

**Sanitation Details - Data Entry**

Ward Number <input type="text"/>	Constructed by <input type="text"/>	
Location/Address <input type="text"/>	Owned by <input type="text"/>	
Landmark <input type="text"/>	Operated & Maintained by <input type="text"/>	
Toilet type <input type="text"/>	Year of Construction <input type="text"/>	Last Updated on <input type="text"/>

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<p><b>Water availability</b></p> <p>Water available <input type="radio"/> Yes <input type="radio"/> No</p> <p>Source <input type="text"/></p> <p>Total hours <input type="text"/></p> <p>Seasonal Variation <input type="radio"/> Yes <input checked="" type="radio"/> No</p>	<p><b>Water storage (during scarcity)</b></p> <p>Collected from <input type="text"/></p> <p>No. of times collected <input type="text"/></p> <p>Collected by <input type="text"/></p> <p>Storage place <input type="text"/></p>
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<p><b>Toilet details</b></p> <p>Access to toilet is clean? <input type="radio"/> Yes <input checked="" type="radio"/> No</p> <p>Water disposal <input type="text"/></p>	<p>Toilet timings <input type="text"/> <input type="text"/> </p> <p>Period not in use <input type="text"/></p>	<p>Used as Toilet <input checked="" type="radio"/> Yes <input type="radio"/> No</p> <p>Used as (if No) <input type="text"/></p> <p>Used by <input type="text"/></p>
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<p><b>Collections</b></p> <p>Fees collected <input checked="" type="radio"/> Yes <input type="radio"/> No</p>	<p><b>Amt collected for</b></p> <p>Urination <input type="text"/></p>	<p>Defecation <input type="text"/></p> <p>Shower <input type="text"/></p>
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<p><b>Usage</b></p> <p>User type <input type="text"/></p>	<p>Average users/day <input type="text"/></p>	<p>Usage peak <input type="text"/></p> <p>Collection/day <input type="text"/></p>
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<p><b>Toiletries</b></p> <p>Type <input type="text"/></p> <p>Toilets for Women <input type="text"/></p> <p>Toilets for Men <input type="text"/></p>	<p>Urinals <input type="text"/></p> <p>Toilet seats <input type="text"/></p> <p>Showers <input type="text"/></p>	<p>Pit Latrine <input type="text"/></p> <p>Pour &amp; Flush <input type="text"/></p> <p>Flush toilet <input type="text"/></p>
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<p><b>Clogging</b></p> <p>Water clogging <input checked="" type="radio"/> Yes <input type="radio"/> No</p> <p>Clogging period (days) <input type="text"/></p>	<p>Complaint registered <input checked="" type="radio"/> Yes <input type="radio"/> No</p> <p>Period taken to fix the problem <input type="text"/></p>	
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<p><b>Electricity &amp; Maintenance</b></p> <p>Electricity Availability <input checked="" type="radio"/> Yes <input type="radio"/> No</p> <p>Caretaker Availability <input checked="" type="radio"/> Yes <input type="radio"/> No</p> <p>Caretaker Gender <input type="text"/></p> <p>Salary periodicity <input type="text"/></p>	<p>Electricity usage <input type="text"/></p> <p>No. of caretakers <input type="text"/></p> <p>Shift timings <input type="text"/> <input type="text"/> </p> <p>Cleaned by <input type="text"/></p>	<p>No. of hours available <input type="text"/></p> <p>Caretakers appointed by <input type="text"/></p> <p>Salary (Rs) <input type="text"/></p> <p>No. of cleaners <input type="text"/></p> <p>No. of times cleaned/day <input type="text"/></p>
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Remarks

**Field details**

<b>Field</b>	<b>Description</b>
Ward number	<ul style="list-style-type: none"><li>• Ward number has to be entered</li><li>• Mandatory</li></ul>
Location	<ul style="list-style-type: none"><li>• The name of the toilet along with address is entered in multiline text field</li><li>• Mandatory</li></ul>
Landmark	<ul style="list-style-type: none"><li>• The landmark of the location of the toilet is entered</li><li>• Not mandatory</li></ul>
Toilet Type	<ul style="list-style-type: none"><li>• The dropdown will be loaded with Public and Community</li><li>• The user has to select a type and it is mandatory</li></ul>
Constructed by	<ul style="list-style-type: none"><li>• The dropdown will be loaded with values – APSRTC, TMC (Tirupati Municipal Corporation), TTD (Tirumalai Tirupati Devasthanam) and Private.</li><li>• The user has to select a value. If Private is selected, the user has to enter the name of the private company who constructed the toilet.</li><li>• Not mandatory.</li></ul>
Owned by	<ul style="list-style-type: none"><li>• The dropdown will be loaded with values – APSRTC, TMC (Tirupati Municipal Corporation), TTD (Tirumalai</li></ul>

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	<p>Tirupati Devasthanam) and Private.</p> <ul style="list-style-type: none"><li>• The user has to select a value. If Private is selected, the user has to enter the name of the private company who owns the toilet.</li><li>• Not mandatory.</li></ul>
Operated and Maintained by	<ul style="list-style-type: none"><li>• The dropdown will be loaded with values – APSRTC, TMC (Tirupati Municipal Corporation), TTD (Tirumalai Tirupati Devasthanam) and Private.</li><li>• The user has to select a value. If Private is selected, the user has to enter the name of the private company who is maintaining the toilet.</li><li>• Not mandatory.</li></ul>
Year of construction	<ul style="list-style-type: none"><li>• The user has to enter the year in which the toilet was constructed</li><li>• Not mandatory</li></ul>
Total hours of water availability	<ul style="list-style-type: none"><li>• The user has to enter the water availability in terms of number of hours / day.</li><li>• Mandatory</li></ul>
Source	<ul style="list-style-type: none"><li>• The dropdown will be loaded with values – Bore water, Water tanker, From TMC through pipe</li><li>• The user has to select a value</li></ul>



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	<ul style="list-style-type: none"> <li>• Mandatory</li> </ul>
Seasonal variation	<ul style="list-style-type: none"> <li>• The user has to select yes / no based on the variation in water source due to change of seasons.</li> <li>• The default option is No</li> </ul>
Water collected from	<ul style="list-style-type: none"> <li>• The dropdown will be displayed with values – Water tanker, Hand pump and the user has to select a value</li> <li>• Not mandatory</li> </ul>
Water collected by	<ul style="list-style-type: none"> <li>• The user has to enter who is responsible in collection of water during scarcity</li> </ul>
Storage place	<ul style="list-style-type: none"> <li>• The dropdown will be loaded with values – Tanks, Tubs, Sump, Over head tank, Water tank and the user has to select an option</li> <li>• Not mandatory</li> </ul>
Number of times collected	<ul style="list-style-type: none"> <li>• The user has to enter the number of times the water is collected during scarcity.</li> <li>• Not mandatory</li> </ul>
Water disposal	<ul style="list-style-type: none"> <li>• The dropdown will be loaded with values – Underground Drainage System and Septic Tank</li> <li>• The user has to select a value and it is mandatory</li> </ul>
Toilet timings	<ul style="list-style-type: none"> <li>• The user has to enter the timings during which the toilet is functional.</li> </ul>

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	<ul style="list-style-type: none"> <li>• The time is picked from the time picker control and it is necessary to select the time along with AM/PM</li> <li>• Mandatory</li> </ul>
Used as toilet	<ul style="list-style-type: none"> <li>• The user has to select Yes / No to denote whether the location specified is used as toilet</li> <li>• Default value is Yes</li> </ul>
Used as (if not used as toilet)	<ul style="list-style-type: none"> <li>• If the location is not used as toilet, then the user has to enter for what other purpose it is functional / operated</li> <li>• Not mandatory, if used as toilet</li> </ul>
Period not in use	<ul style="list-style-type: none"> <li>• The user has to specify the number of days during which location is not used as toilet, if it is not functional</li> </ul>
Used by	<ul style="list-style-type: none"> <li>• The dropdown will be loaded with values – Men, Women and Both</li> </ul>
Fees collected	<ul style="list-style-type: none"> <li>• The user has to select Yes / No based on fees collection</li> <li>• Default value is Yes</li> </ul>
Amount collected for	<ul style="list-style-type: none"> <li>• If the fee is collected, then the user has to enter the amount in rupees for urination, defecation and shower individually</li> <li>• Mandatory if a fee is collected. Default value is 0</li> </ul>
User type	<ul style="list-style-type: none"> <li>• The type of user who is using the toilet is selected in the dropdown which will have values – Tourist and General</li> </ul>

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	<ul style="list-style-type: none"> <li>• Mandatory</li> </ul>
Average users / day	<ul style="list-style-type: none"> <li>• The average users using the toiler every day is entered</li> <li>• Mandatory</li> </ul>
Usage peak	<ul style="list-style-type: none"> <li>• The peak period of usage of toilet is selected from the dropdown which will be loaded with values – Morning, Evening and Night</li> <li>• Mandatory</li> </ul>
Collection / day	<ul style="list-style-type: none"> <li>• The collection amount is entered in terms of rupees</li> <li>• Mandatory</li> </ul>
Type of toiletries	<ul style="list-style-type: none"> <li>• The dropdown is displayed with values – Urinals &amp; Toilets, Urinals, Toilets &amp; Showers, Toilets &amp; Showers and Toilets and the user can select an option.</li> <li>• Mandatory.</li> </ul>
Number of Toiletries	<ul style="list-style-type: none"> <li>• The number of urinals, toilet seats and Showers (bath rooms) are entered individually</li> <li>• The number of each type of toiletries – pit latrine, pour &amp; flush and Flush toilet are entered individually</li> <li>• Mandatory. Enter 0 if not available</li> </ul>
Number of toilets for men and women	<ul style="list-style-type: none"> <li>• Enter the number of toilets that are exclusively used by men and women</li> </ul>

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Water clogging	<ul style="list-style-type: none"> <li>• The user has to specify if there is any water clogging</li> <li>• Default value is No</li> </ul>
Clogging period (days)	<ul style="list-style-type: none"> <li>• If there is water clogging, enter the clogging period in number of days</li> </ul>
Complaint registered	<ul style="list-style-type: none"> <li>• The user has to specify if there is any complaint registered for water clogging</li> <li>• Default value is No</li> </ul>
Period taken to fix the problem (days)	<ul style="list-style-type: none"> <li>• The number of days taken to solve the problem is entered</li> </ul>
Electricity	<ul style="list-style-type: none"> <li>• The user has to specify if there is electricity available for the toilets</li> <li>• Default value is Yes</li> </ul>
Electricity usage	<ul style="list-style-type: none"> <li>• The possible values loaded are Lights, cleaning and Pumping water from sump.</li> <li>• Not mandatory</li> </ul>
No. of hours available	<ul style="list-style-type: none"> <li>• Enter the availability of current in number of hours per day</li> <li>• Not mandatory</li> </ul>
Caretaker availability	<ul style="list-style-type: none"> <li>• The user has to specify if there is caretaker who is responsible for the toilet building</li> </ul>

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	<ul style="list-style-type: none"> <li>• Default value is yes</li> </ul>
Caretakers appointed by	<ul style="list-style-type: none"> <li>• If there is any caretaker available, the user has to enter who has appointed the caretaker</li> <li>• Not mandatory</li> </ul>
Caretaker Gender	<ul style="list-style-type: none"> <li>• The user has to choose male/female</li> <li>• Not mandatory</li> </ul>
Number of caretakers	<ul style="list-style-type: none"> <li>• Enter the number of caretakers available for the toilet building</li> <li>• Not mandatory</li> </ul>
Shift timings	<ul style="list-style-type: none"> <li>• The caretaker shift timings is specified</li> <li>• Not mandatory</li> </ul>
Salary	<ul style="list-style-type: none"> <li>• Salary in terms of rupees is entered</li> <li>• Not mandatory</li> </ul>
Salary periodicity	<ul style="list-style-type: none"> <li>• The possible values loaded are Daily, Weekly and Monthly</li> <li>• Not mandatory</li> </ul>
Cleaned by	<ul style="list-style-type: none"> <li>• The possible values are Cleaner, Caretaker</li> <li>• Not mandatory</li> </ul>
Number of cleaners	<ul style="list-style-type: none"> <li>• Enter the number of cleaners appointed to clean the</li> </ul>

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	<p>toilets</p> <ul style="list-style-type: none"><li>• Not mandatory</li></ul>
No. of times cleaned/day	<ul style="list-style-type: none"><li>• Enter the number of times the toilet is cleaned per day</li><li>• Not mandatory</li></ul>
Remarks	<ul style="list-style-type: none"><li>• Enter the general remarks about the functioning of toilet</li><li>• Not mandatory</li></ul>
Save	<ul style="list-style-type: none"><li>• On click of Save button, all the entered details should be saved in the database</li><li>• Validations should be checked after edit or new addition of details</li><li>• After save, navigate to 3.1 screen</li></ul>
Cancel	<ul style="list-style-type: none"><li>• The screen should be closed without saving the details</li><li>• Navigate to 3.1 screen</li></ul>
Delete	<ul style="list-style-type: none"><li>• The record should be deleted after it is confirmed by the user.</li><li>• Before deletion, confirmation message should be asked</li><li>• Navigate to 3.1 screen</li></ul>

**New Fields to be included in Data entry and one page report and search screens**

**Field details**

<b>Field</b>	<b>Description</b>
Last updated on	<ul style="list-style-type: none"><li>• The last updated date is to be captured and displayed for every toilet. While saving, the date should be updated in the database for the updated toilet</li></ul>
Access to toilet is clean	<ul style="list-style-type: none"><li>• The user has to specify if the access to toilet is clean</li><li>• Default value is Yes</li></ul>
Water availability	<ul style="list-style-type: none"><li>• The user has to specify if water is available in the toilet</li><li>• Default value is Yes</li></ul>

## 4. Search

The user can choose any input to search the sanitation details. It is logical to use the operand AND or OR to filter the search values to get appropriate results.



**Field details**

<b>Field</b>	<b>Description</b>
Ward number	<ul style="list-style-type: none"><li>• All the unique ward numbers are loaded in the dropdown along with “All” option</li></ul>
Type	<ul style="list-style-type: none"><li>• The dropdown is loaded with Public and Community</li></ul>
Owned by	<ul style="list-style-type: none"><li>• The dropdown is loaded with</li></ul>
Maintained by	<ul style="list-style-type: none"><li>• The dropdown is loaded with APSRTC, TMC (Tirupathi Municipal Corporation), TTD (Tirumalai Tirupathi Devasthanam) and Private.</li></ul>
Water availability	<ul style="list-style-type: none"><li>• Select Yes or No option</li></ul>
Water availability (in hrs)	<ul style="list-style-type: none"><li>• The dropdown is loaded with APSRTC, TMC (Tirupathi Municipal Corporation), TTD (Tirumalai Tirupathi Devasthanam) and Private.</li></ul>
Water source	<ul style="list-style-type: none"><li>• The user can select one to multiple options</li><li>• If “All” is selected, all the other options are selected/deselected</li></ul>
Water disposal	<ul style="list-style-type: none"><li>• The dropdown is loaded with Underground Drainage System and Septic Tank</li></ul>
Toilet access clean?	<ul style="list-style-type: none"><li>• Select Yes or No option</li></ul>
Toilet timing	<ul style="list-style-type: none"><li>• The time picker should display time along with AM/PM</li></ul>

Toilet used by	<ul style="list-style-type: none"> <li>The dropdown is displayed with Men, Women and Both</li> </ul>
Fees collected for	<ul style="list-style-type: none"> <li>The user can select one to multiple options</li> <li>If "All" is selected, all the other options are selected/deselected</li> <li>Should check in table where the value of fee &gt; 0, for the selected options</li> </ul>
User type	<ul style="list-style-type: none"> <li>The user can select one to multiple options</li> <li>If "All" is selected, all the other options are selected/deselected</li> </ul>
Average users	<ul style="list-style-type: none"> <li>The user has to enter range of average number of users as input</li> </ul>
Collection / day	<ul style="list-style-type: none"> <li>The user has to enter range of collection amount as input</li> </ul>
Toiletries	<ul style="list-style-type: none"> <li>The user can select one to multiple options</li> <li>If "All" is selected, all the other options are selected/deselected</li> <li>Should check in table where the value is &gt; 0, for the selected options</li> </ul>
Toilet type	<ul style="list-style-type: none"> <li>The user can select one to multiple options</li> <li>If "All" is selected, all the other options are selected/deselected</li> <li>Should check in table where the value is &gt; 0, for the</li> </ul>

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	selected options
Seasonal variation	<ul style="list-style-type: none"> <li>• Select Yes or No option</li> </ul>
Water storage (during scarcity)	<ul style="list-style-type: none"> <li>• The user can select one to multiple options</li> <li>• If "All" is selected, all the other options are selected/deselected</li> </ul>
Water Clogging	<ul style="list-style-type: none"> <li>• Select Yes or No option</li> </ul>
Electricity availability	<ul style="list-style-type: none"> <li>• Select Yes or No option</li> </ul>
Caretaker	<ul style="list-style-type: none"> <li>• Select Yes or No option</li> </ul>
Query option	<ul style="list-style-type: none"> <li>• The user can select And / OR option to query the sanitation details</li> <li>• If AND option is selected, the records should be fetched only if all the input vales match with database values</li> <li>• If OR option is selected, the records should be fetched if at least one input value matches with database value</li> <li>• For multiple options, always, the query should work only with AND condition within the values of the field, if there is more than one option (including All option) is selected</li> </ul>
Search	<ul style="list-style-type: none"> <li>• The result should be fetched based on the ward number and identity of toilet location in the map. The identity is represented by balloon. If the mouse is placed on a balloon is , the ward number, location and land mark are</li> </ul>

	<p>displayed.</p> <ul style="list-style-type: none"><li>• If the balloon is clicked, the one page report about the toilet of the selected locality should be displayed as in 4.1</li></ul>
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## 4.1 Sanitation Details – One page Report

Detailed Report			
<a href="#">&lt;&lt;Back</a>			
Ward Number	Constructed by		
Location/Address	Owned by		
Landmark	Operated & Maintained by		
Toilet type	Year of Construction	Last Updated on	
<b>Water availability</b>		<b>Water storage (during scarcity)</b>	
Water available	Collected from		
Source	No.of times collected		
Total hours	Collected by		
Seasonal Variation	Storage place		
<b>Toilet details</b>			Used as Toilet
Access to toilet is clean?	Toilet timings	Used as (if No)	
Water disposal	Period not in use	Used by	
<b>Collections</b>		<b>Amt collected for</b>	
Fees collected	Urination	Defecation	Shower
<b>Usage</b>			
User type	Average users/day	Usage peak	Collection/day
<b>Toiletries</b>			
Type	Urinals	Pit Latrine	
Toilets for Women	Toilet seats	Pour & Flush	
Toilets for Men	Showers	Flush toilet	
<b>Clogging</b>			
Water clogging	Complaint registered		
Clogging period (days)	Period taken to fix the problem		
<b>Electricity &amp; Maintenance</b>			
Electricity Availability	Electricity usage	No. of hours available	
Caretaker Availability	No. of caretakers	Caretakers appointed by	
Caretaker Gender	Shift timings	Salary (Rs)	
Salary periodicity	Cleaned by	No. of cleaners	
		No. of times cleaned/day	
Remarks			
<a href="#">&lt;&lt;Back</a>			

The one page report is similar to data entry screen, but the values are displayed as labels and editing is not possible. The user can just view the details in the one page report for the selected toilet locality.

On click of Back, the search screen is displayed and the user can change query options / select other locality in map to view details.

## 5. Android Application

It is imperative to update periodically, some fields related to sanitation, to improve the maintenance and quality of toilets. The caretaker of the toilet who is responsible for the toilet should be able to update the fields so that based on the update; the municipality officers would take necessary action to facilitate the usage of toilets.

It is not possible to use the web application through PC in every toilet and so it is proposed to develop an android application, where by the responsible person of the toilet would use Mobile phone to update the fields. Each caretaker of the toilet will be provided an Android mobile phone and using this, the user will be able to update the fields.

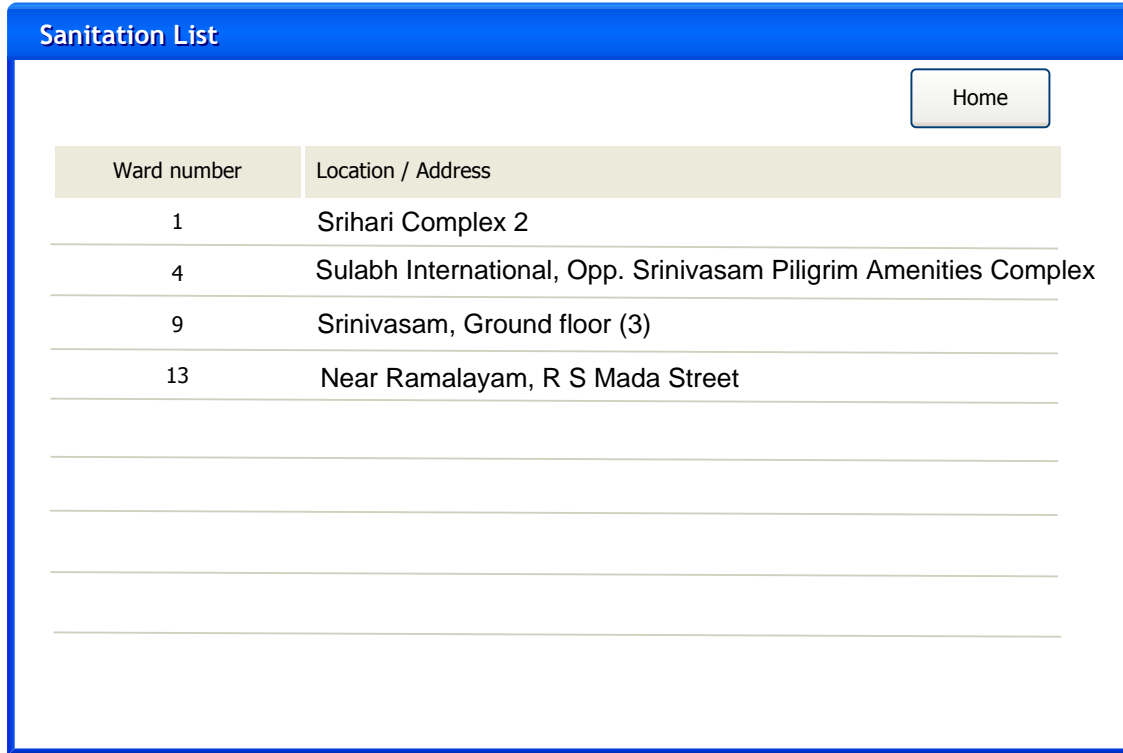
The android application will be available as link in the Tirupathi sanitation website and the user can click to download the application in the respective mobile. After download, it will be automatically installed in the mobile and the application will be available as an icon in the Android screen. The user has to tap the icon to use the android application.

### Home page

The home page will contain the title and the logo of the Tirupathi sanitation as in the web application. When the home page is tapped, the sanitation list will appear to update the toilet details

## 5.1 Sanitation list

All the toilets that are available in the database will be listed with ward number and location/address. The user has to tap a record to update the details.



Ward number	Location / Address
1	Srihari Complex 2
4	Sulabh International, Opp. Srinivasam Pilgrim Amenities Complex
9	Srinivasam, Ground floor (3)
13	Near Ramalayam, R S Mada Street

When home button is selected, the list screen will be closed and the home screen would appear.



## 5.2 Update Sanitation details

The screen appears when a record is selected from the sanitation list page. By default, the ward number, address/location and the last updated date should be displayed for the selected toilet.

**Update Sanitation Details**

Ward Number	Toilet Address	Last updated on:dd/mm/yyyy
Toilet Access clean? <input type="radio"/> Yes <input type="radio"/> No		
Water available? <input type="radio"/> Yes <input type="radio"/> No		
<b>Amt collected for</b>		
Fees collected? <input type="radio"/> Yes <input type="radio"/> No	Urination <input type="text"/>	Defecation <input type="text"/> Shower <input type="text"/>
Water clogging? <input type="radio"/> Yes <input type="radio"/> No		
Electricity Available? <input type="radio"/> Yes <input type="radio"/> No		
Caretaker Available? <input type="radio"/> Yes <input type="radio"/> No		
Cleaned by	<input type="text"/>	
Remarks	<input type="text"/>	

Save Cancel

- Toilet access clean, Water available, Water clogging, Electricity available, Caretaker available – for these fields, the user has to select yes / no. There is no default value and if only yes / no is selected, that field will be updated in the database. If yes/no is not selected

for any of these fields, no updated will be made for these fields in the database for the selected toilet

- Fees collected – if the option selected is yes, then the user can enter the amount collected for urination, defecation and shower and the amount should be mandatory. Else it is not applicable/not mandatory. Only if yes / no option is selected, the field will be updated in the database.
- Cleaned by – The possible values are Cleaner, Caretaker. The user can select a value. It is not mandatory. If value is chosen, the field will be updated in the database
- Remarks – the user can write details about the toilet, it is not mandatory. If any remarks is made, that will be updated in the database
- Save – the values of the fields are updated in the database and the screen will be closed. The list screen appears to choose other toilet
- Cancel – the screen will be closed and list screen appears.

## 6. Dashboard

The dashboard is proposed to develop to guide the officials of Municipality on the status or the activities of the public toilets. Through the android application, the toilet in-charge would update the status parameters of the toilet like cleanliness, clogging, availability of water/electricity etc and the same will get updated in the toilet database. The dash board screen displays in the table format, the parameters / activities / action taken for all the toilets. Also the details will be depicted in the map. The dashboard will be accessible only by super admin user.

### 6.1 Dashboard for Officials

The screen displays all the negative parameters of each toilet when updated through android application.

Dashboard

Toilet id	Location	Ward	Issue	Issue updated on	Issue Addressed	Issue addressed on	Remarks
					Yes		
					No		

For each toilet, it is possible to have more than one negative issue like unavailability of water or electricity, unclean, etc. Following are the parameters that have to be displayed in the dashboard table which have negative value for the toilets.

Access cleanliness, water availability, electricity availability, water clogging, care taker availability.

- In the table, toilet id, location, ward number are displayed. In the issue column, the parameter name is displayed if it has negative value.
- Issue - The parameter name should be displayed as Access is unclean, Water not available, Electricity not available, Water clogging problem, Care take not available respectively for each issue. It is possible that one toilet would have more than one problem. So it is necessary to display each issue in different row for each toilet in the table.
- Issue updated on – refers to the date on which the issue is updated in the android application or website
- Issue addressed – Each record is clickable and on click of the record, a popup appears where the user can enter remarks about the action taken on that issue and send mail to authorities to inform about the issue to take proper action to solve the problem.

The screenshot shows a mobile application interface for reporting a toilet issue. The title is "Toilet Location". Below the title is a button labeled "Inform issue through mail". Underneath is a text input field with the label "Remarks" and placeholder text "Enter Text" and "Enter More Text". The input field has a scrollable area with up and down arrows on the right side and left and right arrows at the bottom. Below the input field is an "Update" button.

By default, all the issues will have No status for issue addressed column. When mail is sent, the issue addressed column should be updated with Yes status. In the popup, the user can update remarks for the issue addressed.

- **Popup**

- The selected toilet name/location is displayed
- When the email button is clicked, email should be sent to the authority, whose email id is configurable. The email should contain the following details.
  - From email id – this email is also configurable
  - Subject – Issue in Toilet - Toilet location (value)
  - Body

To the concerned authority,

The toilet in “Toilet location” has issue and the issue needs to be addressed quickly. Please take action for the below mentioned issue.

Issue: Access is unclean / Water not available / Electricity not available / Water clogging problem / Care take not available

- Remarks – the user can enter remarks about the issue/issue addressed
- Update – on click of update button, the details should be saved in the database. The details are Toilet id, issue, issue updated on, issue addressed, issue addressed on and remarks. It is advisable to have history of each issue that is raised for the toilet. But while display in table/map we need to show only the latest update. After the issue is solved, the data will be updated in the database as positive flag and it will automatically updated in the database.

- View in map – the map will display only the toilet layer and all the toilet locations are depicted with circle icon. If the toilet has at least one negative issue, then the toilet location will be displayed as red color. If no issue is negative, then the toilet location should be depicted with green color. On click of green color, the location of the toilet should be displayed. On click of red color, apart from toilet location, the issue (one or more issues) should be displayed one below the other.

## 7. Changes/improvements for Implementation

### 7.1 Home page of Sanitation Inventory

We have developed the web and mobile application with GIS for the maintenance and monitoring of sanitation details of Tirupathi municipality. It is proposed to implement the same system for many municipalities of Andhra Pradesh state. For implementing common system, it is necessary to carry out some database and design changes so that the application can be used by the users of various municipalities as well as higher officials of the corporation who control the municipalities.

There will be new home page which displays only the title and logos of GAZ, IFMR and AP state / corporation logo. The new home page will contain login. Based on the user login, the corresponding municipality page (inner home page for each municipality) will be displayed which shows all the menus applicable for the login user.

The user should be provided with forgot password link where the user can just re-enter new password and save.

## 7.2 Manage Municipality

The purpose of the screen is to maintain different municipalities of the state for which sanitation inventory are to be maintained and monitored.

Municipality

The user has to enter the name of the municipality and save. The saved / updated municipality will be displayed in the grid. The user can click a municipality to edit the name. The name is mandatory while saving.

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The screen is accessible only to super admin who controls all municipalities. The screen will be visible if a super admin login the web application.

Note: Municipality table should contain State field. 'ALL' should be a default municipality which will be tagged for super admin user in user screen.

### 7.3 Manage Users

The purpose of the screen is to maintain the users of different levels in different municipalities.

**Users**

User name  Password

Municipality

User name	Municipality

The user has to enter the user name who is authorized to use the web application to update the inventory details. Municipality dropdown will be loaded with all the municipalities that are maintained in the database and the user has to select the municipality to which the user of the application belongs to. All the fields are mandatory.

The user name should be unique. Password should be of any character up to 8 characters.

The user who is mapped to 'ALL' municipality will be considered as Super Admin.

## 7.4 Dashboard – Redesign

The current dash board screen should be redesigned in such a way that it displays all the issues of all municipalities in one screen. By default, all the municipalities are displayed in button. When the user clicks a button (municipality), the dash board details of that municipality will be displayed as shown in the screen. When the user clicks the button again for the second time, the grid disappears. Likewise the user can select any button to view the data.

The screenshot shows a dashboard interface with a blue header labeled "Dashboard". It features two main sections, each with a button for a municipality and a corresponding data table. The first section is for "Tirupathi" and the second is for "Chittoor". Each table has columns for Toilet id, Location, Ward, Issue, Issue updated on, Issue Addressed, Issue addressed on, and Remarks. The "Issue Addressed" column contains "Yes" and "No" entries. Below these sections are three buttons for "Guntakal", "Nandyal", and "Ongole".

Tirupathi							
Toilet id	Location	Ward	Issue	Issue updated on	Issue Addressed	Issue addressed on	Remarks
					Yes		
					No		

Chittoor							
Toilet id	Location	Ward	Issue	Issue updated on	Issue Addressed	Issue addressed on	Remarks
					Yes		
					No		

Guntakal

Nandyal

Ongole

The screen is applicable only for the super admin user. The dash board that is available now in the current application will be displayed for each municipality, showing its own data.

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## 7.5 MIS Report

The report displays the total toilets in each municipality for all the parameters mentioned. When the number of a parameter is clicked, the details of the toilet like ward, toilet location, landmark and toilet type are displayed below. When each toilet is clicked, one page report of the toilet should be shown in the separate screen.

This report is applicable only for super admin.

MIS Report					
Municipality	Unavailability of water	Unavailability of electricity	Unavailability of caretaker	Access unclean	Water clogging
Tirupathi	3	2	1	4	5
Guntakal	0	2	0	2	2

## 7.6 GIS

Map would be different for each municipality depending on the shape files (for resources) available. By default, all the sanitation points will be displayed based on latitude and longitude stored in the database.

Each municipality will have separate map and the toilets and other resources (shape files) are displayed from the database based on municipality.

## 7.7 Android Application

Login should be provided in android application home page and based on the municipality the user belongs to, the details of the toilet will be displayed.

### General Note

1. State and Municipality fields should be added in all the tables applicable