

# Work Sampler Application



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**Contents**

- 1. Introduction..... 4
- 2. Key Benefits of using Work Sampling App..... 4
- 3. Solution Architecture ..... 4
- 4. Installation ..... 5
- 5.0 Android Client Application ..... 6
- 5.1 User Registration ..... 6
- 5.2 Create Study ..... 8
- 5.3 Start Sampling ..... 10
  - 5.3.1 Start Session..... 11
  - 5.3.2 Record Audio during a Session ..... 11
  - 5.3.3 Save Session..... 12
- 5.4 Save the captured data onto the mobile device ..... 12
- 5.5 Upload the captured data to the server ..... 13
- 5.6 User Tips ..... 13
- 5.7 Server Application ..... 14

## 1. Introduction

The Work Sampling application is an IT based mobility solution to reliably capture and digitize the work sampling information at remote locations. The mobility solution is designed to capture sampling data in near real-time. All the sampling sessions are saved on the mobile device. There is a provision for additional saving audio and photo data along with the sampling data.

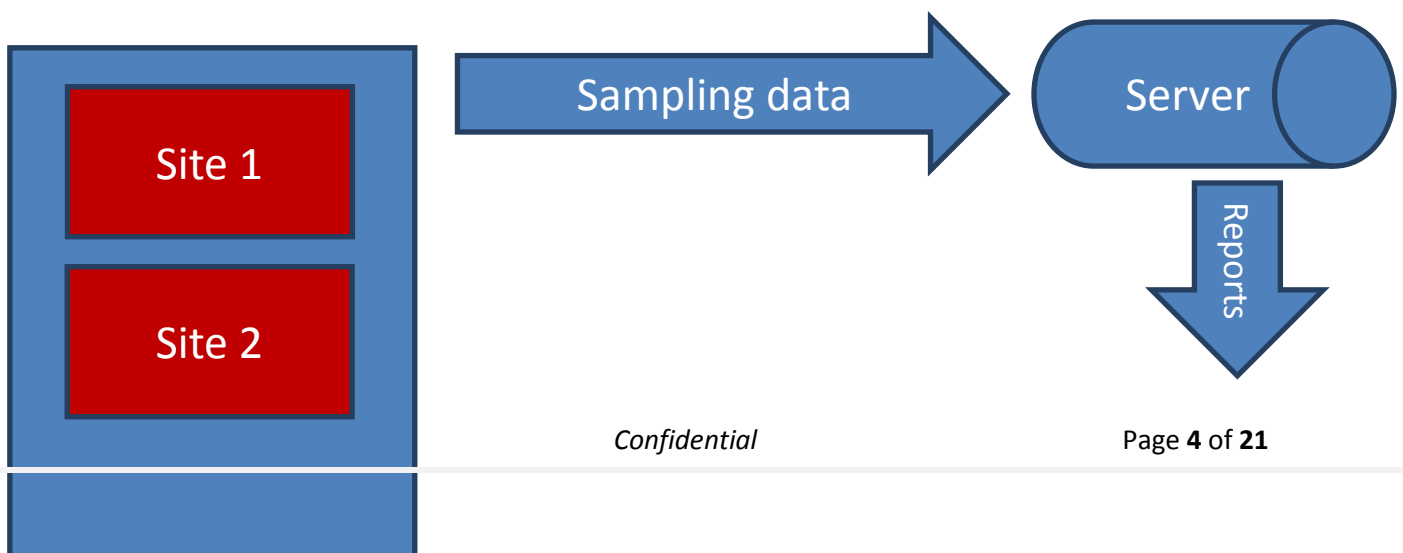
The application facilitates capture of work sampling in terms of sessions. The data captured by the mobile application is automatically uploaded if data connectivity is available, if not they are saved locally in the device's external microSD card. Whenever the device is connected to the internet through Wi-Fi, GPRS or 2G, data is uploaded to a centralized server and stored in a database.

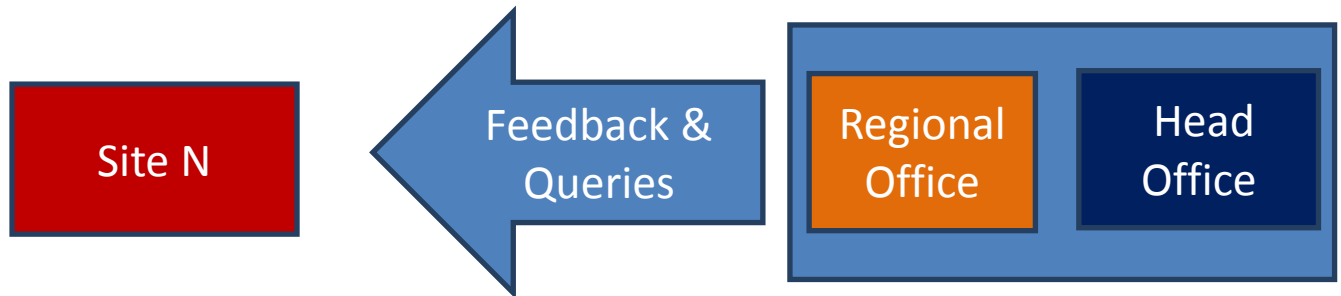
## 2. Key Benefits of using Work Sampling App

- Developed for the needs of work sampling spread across remote areas.
- Mobile application - Easy to install and access even in remote areas.
- Easy to use and intuitive
- Data entry through selection, text entry and photographs
- Sampling sessions saved on Server
- Study data Analysis on the Server

## 3. Solution Architecture

The solution comprises of a client and server application. The client is an Android application that runs on a mobile device and is used to capture the data on site. Multiple mobile devices can be used to capture data from each location as well. The server application runs on cloud, captures the uploaded data and stores it in a database. Reports are then generated from this centralized data repository. The overall data process flow is as depicted in Figure 1.





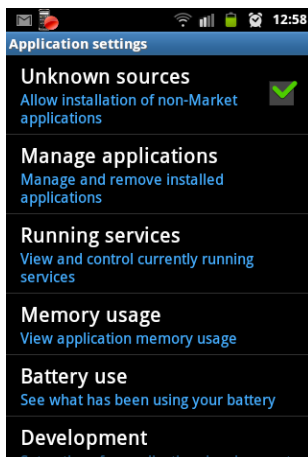
**Figure 1: Data Flow Diagram**

The client mobile application is designed for ease of use and data entry is done through drop-down selections and easy navigation with data validations. The sampling data is uploaded to the server through a web-service and is then inserted into the database in structured tables. The pictures are stored on the server hard disk. The stored data can be used to generate reports. These reports can be exported into Excel and PDF files for analysis purposes.

## 4. Installation

Supported Android OS: Version 2.3.3 and above.

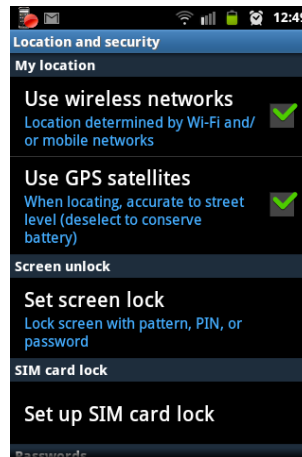
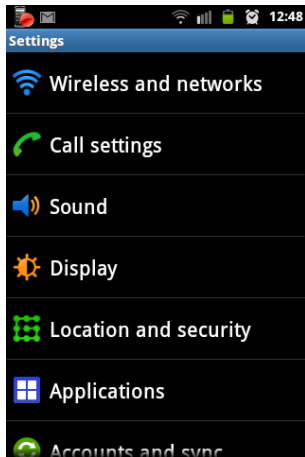
Preparing the mobile device: Enable Unknown Sources in the Security Settings.



Download the Work Sampler Android Client (WorkSampler\_V00\_08\_Apr20\_2015.apk) on the Android mobile device.

Installation: Now navigate to the directory where you have copied or downloaded your APK file. Mostly, it's stored in the "Downloads" folder on your Android device. Once in the directory, tap the APK icon and an installation dialogue box will pop-up. Hit the install button to install the APK on your Android.

The GPS needs to be enabled during the creation of the Study.

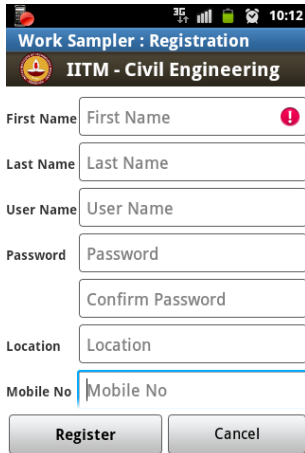


## 5.0 Android Client Application

The android client application can be used only by registered users. The first step is to register a user on the android mobile phone. This user gets created on the server as well with the same credentials. Any user can install this APK on their phone and register. Unless registration is complete they will not be able to use the Application. Same registration information is used for logging into the [WorkSampler Server](#) to view the reports.

### 5.1 User Registration

A new user has to be created on the mobile device using the client software.

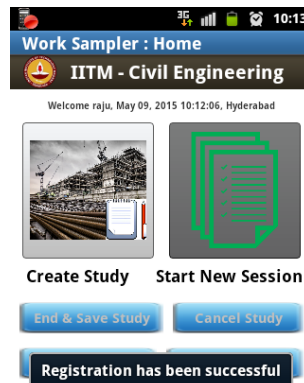
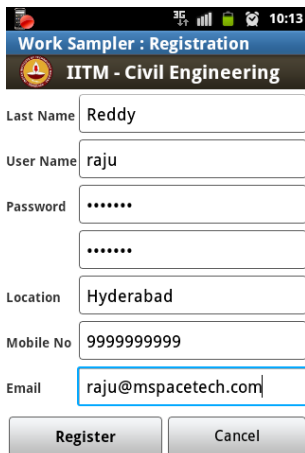


The user details include a six character password.

In case there is an error in any of the fields, a small red mark indicates it.

Hovering the mouse on the red mark shows the relevant help message.

For e.g. the password should be a minimum of 6 characters.

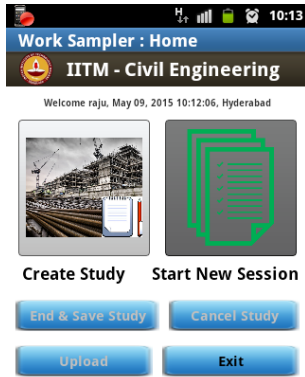


The Register button is enabled once all the details are filled in.

The subsequent invocation of the client software shows this newly created user logged in.

The same user gets created on the server.

Click on the "Work Sampling Application" icon on the mobile to start the Application.



The process flow is :

- Create a Study
- Start Sampling
  - The Sampling can be Direct (VA), Indirect (NVAN) and Idle (NVA).
  - Audio and photograph can also be recorded.
- Save the Session
- Repeat the Sampling process for multiple sessions.
- End and Save the Study
- Upload the recorded data.
- Exit the application

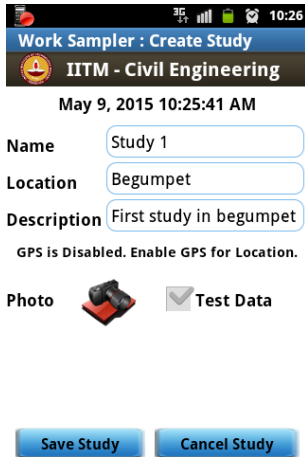
Multiple sessions can be recorded and saved for each Study. Multiple sessions can be recorded for the Study at different times.

Only one study is active at a time. To create another, user needs to save the Current Study.

Each session needs to be completed during the timeframe in which it is created.

## 5.2 Create Study





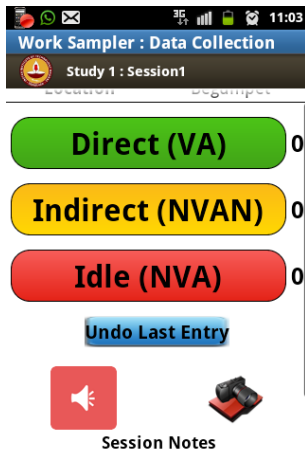
- Enter the details about the Study
  - Name
  - Location
  - Description
- All the fields have to be updated.
- The photograph feature is enabled once Name and Location are entered.
- Take a photograph of the site.
- GPS should be enabled and the GPS location should be updated before taking the Photograph
- The Save Study option gets enabled on taking a photo
- Test Data checkbox allows the user to differentiate between actual work sampling studies and studies done for testing purposes.
- GPS Info displays the GPS Location as Latitude and Longitude. During connection to the GPS, Satellite Count will be displayed that indicates the number of satellites that are connecting to this device.

The Latitude and Longitude of the place are updated and saved along with other details of the Study.



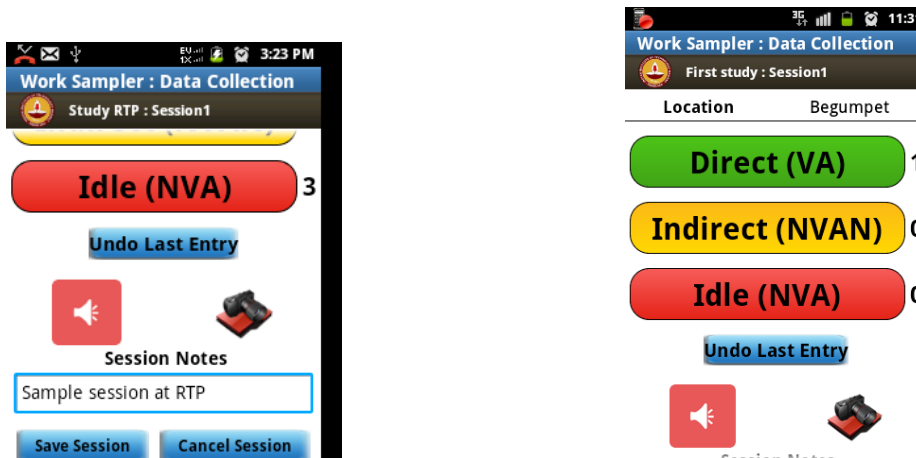
The Save Study button gets enabled when Photo and Location are completed. Once the Study is created, the "Start Sampling" icon is enabled in the Main screen.

### 5.3 Start Sampling



Sampling session can be started for the recently created Study.

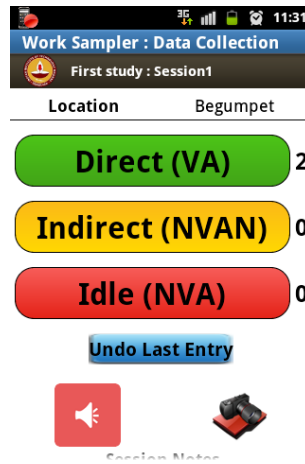
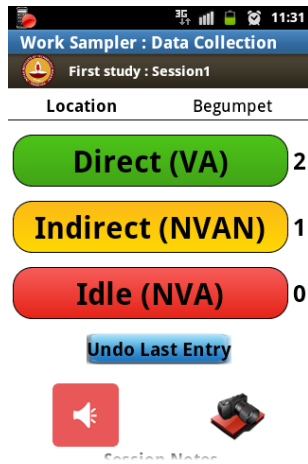
The Name of the Study and Session number and the Location of the Study are indicated on the top of each sampling session.



Session Notes allows the user to enter some description related to the work sampling session.

The number to the right of the Session Type button indicates how many Direct/Indirect/Idle sessions have been recorded in this Study.

### 5.3.1 Start Session



Each session can have multiple recordings of Direct/Indirect/Idle type.

Undo Last Entry cancels the last selected observation type. The count to the right of the observation type button indicates this.

Photograph can be taken by clicking on the icon.

Audio can be recorded in each session.

### 5.3.2 Record Audio during a Session



Click on the Record button to start audio recording.

The record button turns green and the label shows Stop.

Multiple such recordings can be created.

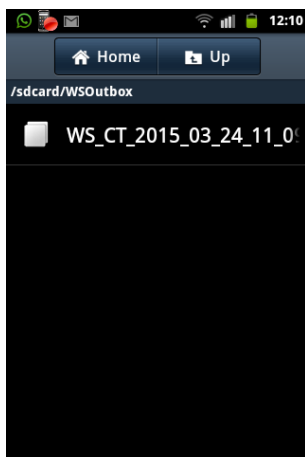
### 5.3.3 Save Session



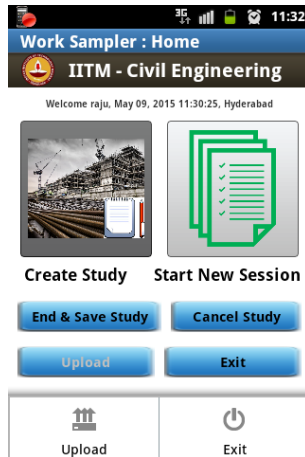
On clicking Save session, the recorded session data is saved.

## 5.4 Save the captured data onto the mobile device

The Save button will result in data being saved locally in the mobile device in a folder called WSOOutbox.

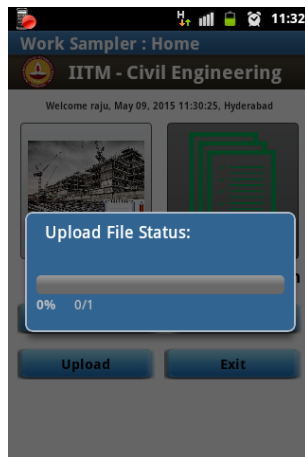


## 5.5 Upload the captured data to the server



On the Main Screen, the user has the ability to “Upload” the Study to Server once the study is complete. The user can upload the data using the Upload button or the Upload option menu item provided under Options.

The following “Upload File Status” will show the status of the upload.



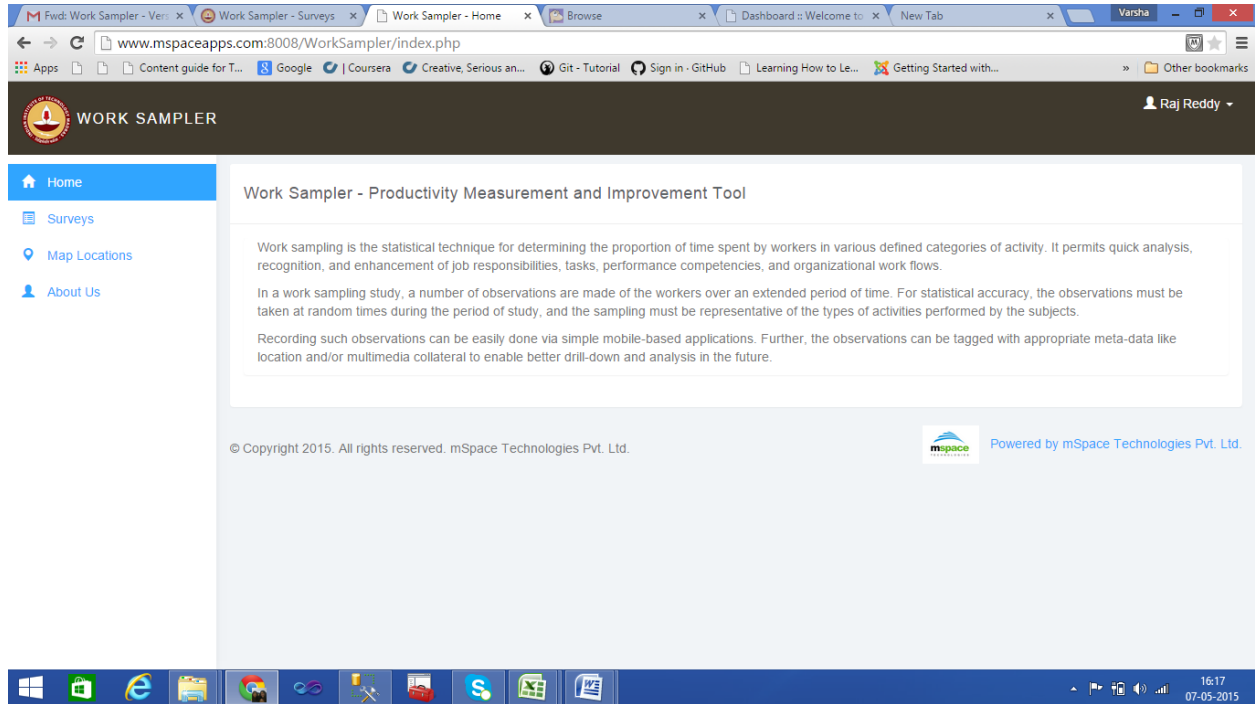
## 5.6 User Tips

1. Do not run other applications like Whatsapp, Facebook, RMRadio or any other Music apps on the mobile being used for this app.
2. Wait for the application to respond fully before moving to the next item.

3. Do not move the phone during a photo capture.
4. Report any errors or connectivity problems ASAP

## 5.7 Server Application

Login to the server using the given credentials (userid and password) or using the credentials of the user created on the mobile device.



Details of the Work Sampling Survey can be seen by invoking the Surveys Menu Option on the left side panel.

The screenshot shows a web browser window displaying the 'Work Sampler' application. The page title is 'Work Sampler Study Details'. A search bar is located at the top right of the table area. The table below lists several surveys with columns for Study Name, Date & Time, user, Study Location, and Study Description. Each row includes a set of icons for actions like view, map, export to Excel, and export to PDF.

| Study Name   | Date & Time         | user     | Study Location       | Study Description                          |         |
|--------------|---------------------|----------|----------------------|--|---------|
| testrip      | 04/09/2015 23:17:24 | iitmuser | Chennai              | testing                                    | [Icons] |
| TestK1       | 04/09/2015 23:33:37 | iitmuser | Kukatpally           | test 2                                     | [Icons] |
| HydTest      | 04/17/2015 00:30:46 | iitmuser | Chennai              | Demo                                       | [Icons] |
| test         | 04/17/2015 00:20:40 | iitmuser | Hyderabad            | jbgjgdfh                                   | [Icons] |
| teststudy111 | 04/17/2015 19:21:56 | iitmuser | Hyderabad            | testing                                    | [Icons] |
| TestStudy22  | 04/18/2015 01:25:32 | iitmuser | Delhi                | test                                       | [Icons] |
| Study 1      | 04/20/2015 07:32:29 | iitmuser | Hyderabad            | First study in the month of april.         | [Icons] |
| Study 1      | 04/20/2015 08:11:16 | iitmuser | Hyderabad location 1 | The first work sampling study at hyderabad | [Icons] |

There are four features available on each Survey

- View Study Details
- Google Map Location
- Export to Excel
- Export to PDF

## Details

The screenshot shows the 'WORK SAMPLER' web application interface. The main content area is titled 'testrtp Sessions'. It features a pie chart on the left, a metadata table on the right, and a session data table at the bottom.

| Session Name | Start Date          | End Date            | VA Count | NVAN Count | NVA Count | Session Remarks   |
|--------------|---------------------|---------------------|----------|------------|-----------|-------------------|
| Session1     | 04/09/2015 23:19:50 | 04/09/2015 23:19:50 | 28       | 12         | 7         | Sample Chennai s1 |
| Session2     | 04/09/2015 23:20:58 | 04/09/2015 23:20:58 | 25       | 16         | 7         | Sample session 2  |

Metadata details:

- Study Name: testrtp
- Date & Time: 04/09/2015 23:17:24
- User: iitmuser
- Device Id: A00000390E69E6
- Study Location: Chennai
- Study Description: testing
- Latitude: 17.5
- Longitude: 78.5
- Altitude: 500

Details shows the details of the selected survey

The Pie chart indicates the count of three sample types

- Value Added
- Non Value Added
- Non Value Added but Necessary

View Session Details



Session1 Data

|                  |                     |
|------------------|---------------------|
| Session Name:    | Session1            |
| Start Date:      | 04/09/2015 23:18:32 |
| End Date:        | 04/09/2015 23:19:50 |
| VA Count:        | 28                  |
| NVAN Count:      | 12                  |
| NVA Count:       | 7                   |
| Session Remarks: | Sample Chennai s1   |

View Session Images

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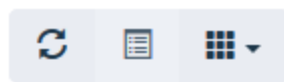
Shows the details of the Session

- Has a provision to play the audio that was recorded during the session
- Shows the photo captured during the session
- Each photo is stamped with time and location
- The Pie chart shows the three types of counts

**Export to Pdf** – The report can be exported to a pdf file for later storage and retrieval.

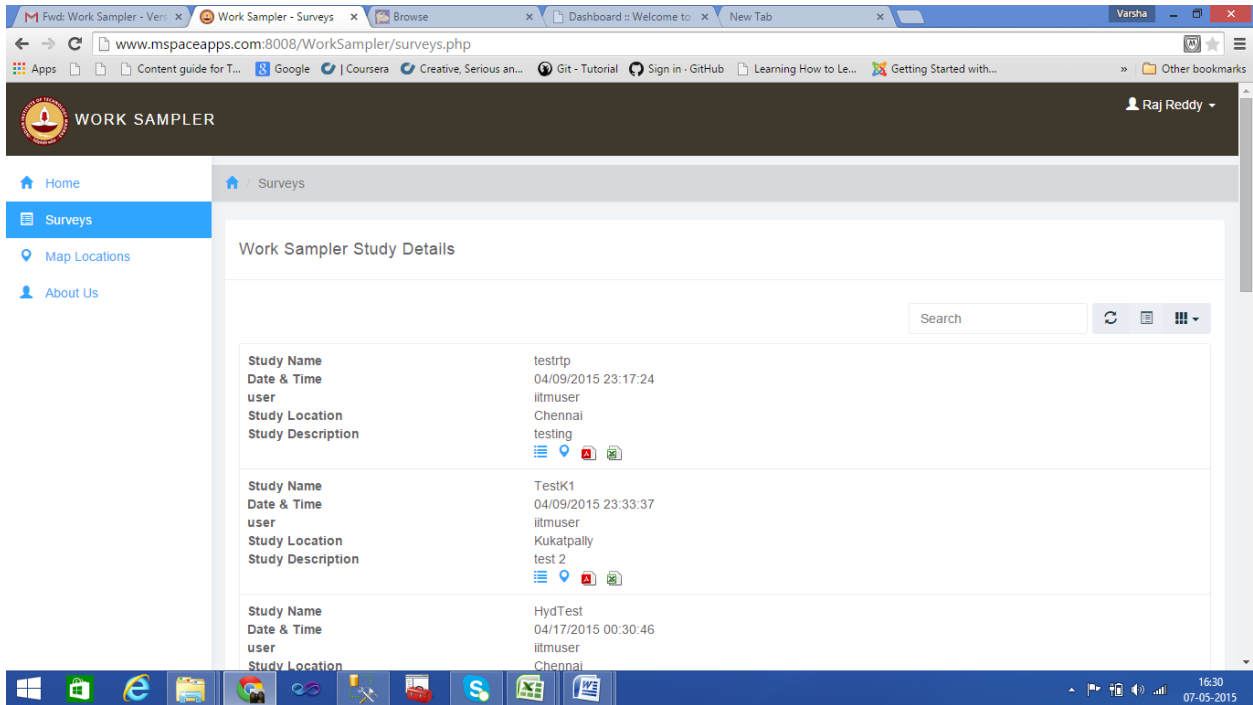
**Export to Excel** – The report can be exported to a excel file for later use.

**Report Menu** -

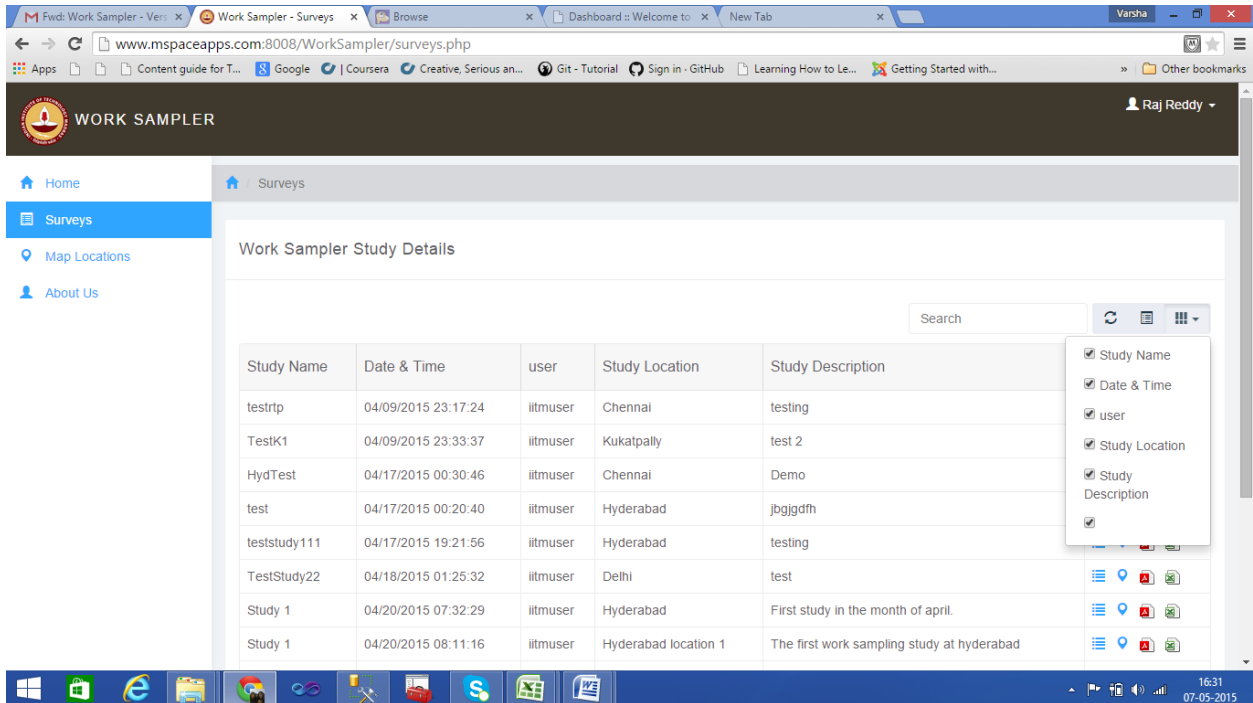


**Refresh** – refreshed the screen

**Toggle** - Toggle icon toggles the report view between a column view and a summary list view.

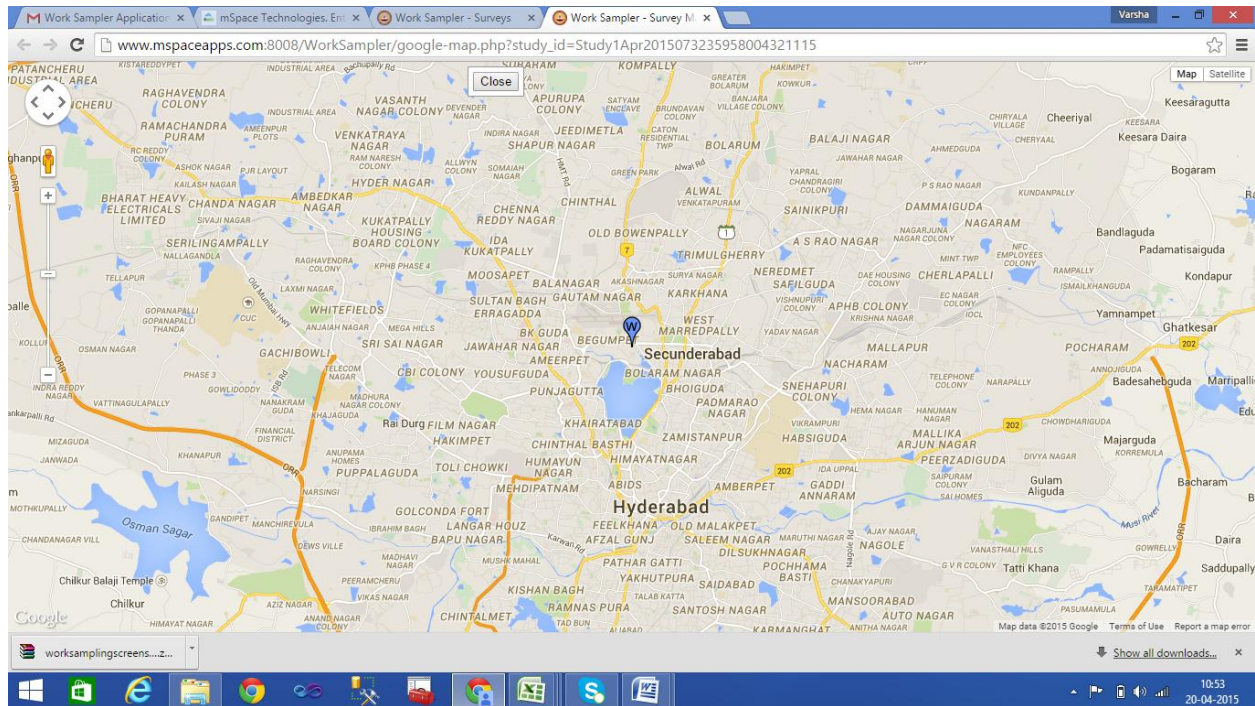


## Columns (Show/Hide)



The columns in the report can be masked/unmasked using this icon.

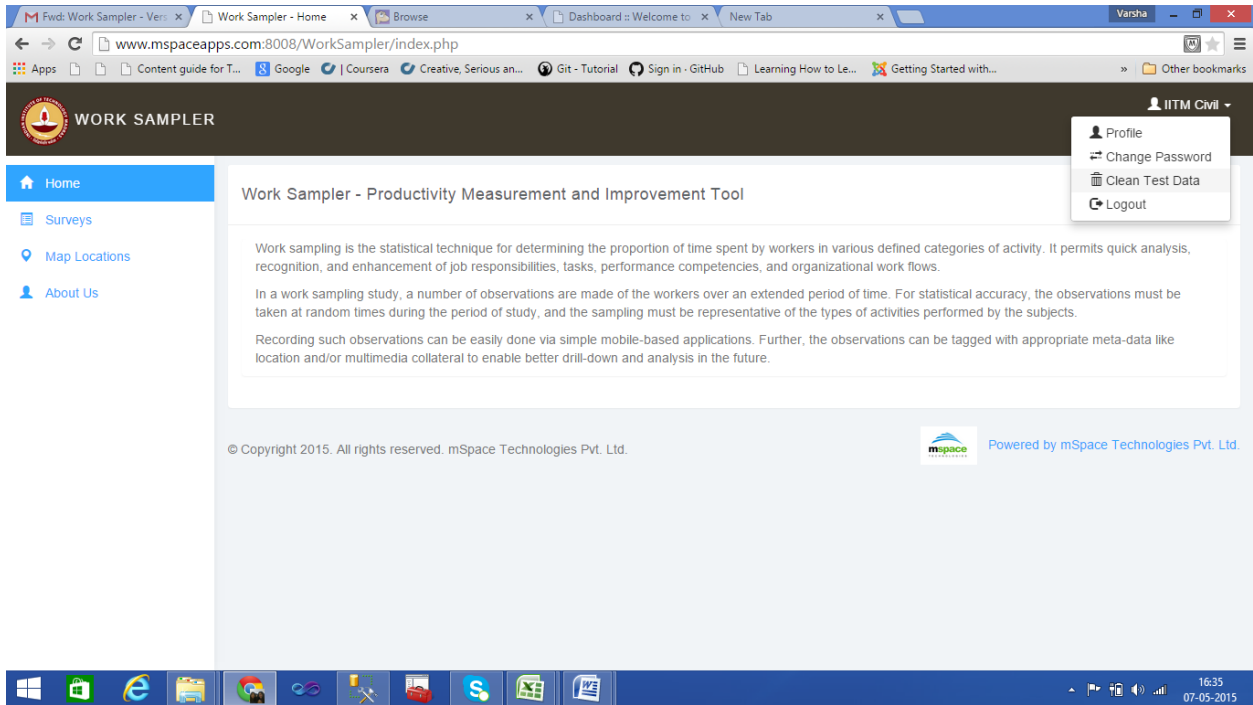
## Map Locations



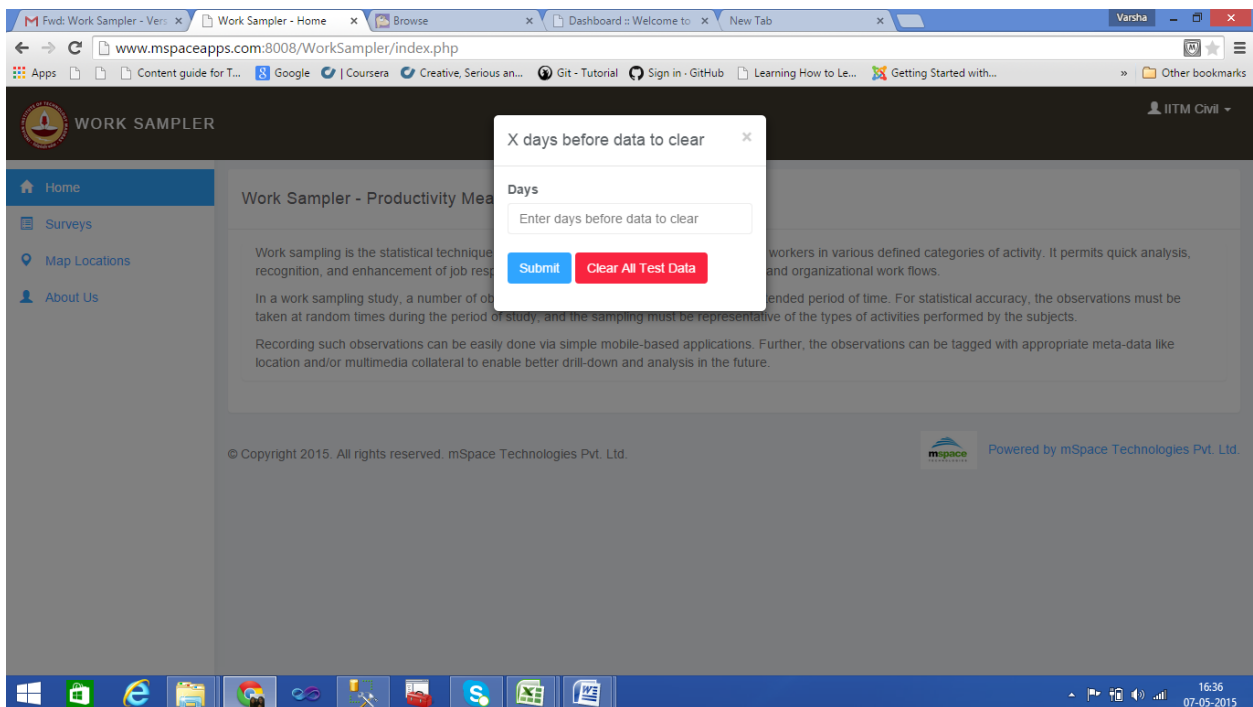
This shows the geographical map of the location where the survey has been carried out.

### Administrative functions on the Server

Test data can be cleaned up by the admin user with credentials provided separately.



The Admin can either delete all data or selectively delete older data by specifying the number of days.



## **About mSpace Technologies**

mSpace Technologies Private Limited is founded by former IIT and IIM graduates with over 80 man years of experience in conceptualizing and implementing Information technology solutions. We provide Mobile Business Advantage to businesses across verticals (Infrastructure, Logistics, Utilities etc) by providing the following quality services:

- Business Consultancy
- Mobile Strategy - Solution conceptualization
- Design and Build Mobile Applications and end to end solutions
- Managed Solution Design Expertise - Hosting and Maintenance

These solutions are aimed at tracking and optimizing any business process or activity spread across various geographies thereby allowing near real-time monitoring of operations. This results in not only major savings in time, material and management but can also be used to significantly optimize operations through analysis of the data collected.

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