***SAMPLE TRACKER K-T DOCUMENT***

***Introduction*** – This application is used in the Neuro Pathology Lab in NIMHANS Hospital for the efficient management and recording of the activities of the NP lab.

As this application deals with patient data, it is not accessible outside NIMHANS. We can use this application within NIMHANS network only.

URL is:

[http://10.11.3.3:8080/Sample Tracker/](http://10.11.3.3:8080/Sample%20Tracker/)

In the Home page there are 8 buttons with names - Receiving station, Grossing Station, Embedding Station, Sectioning Station, Reporting Station, Typing Station, Verification Station, and Dispatch Station

When a patient comes to NIMHANS for treatment or for doing any test, he/she has to register first in the hospital. For this, NIMHANS uses the application “EHOSPITAL” which keeps the data, of all the patients registered in NIMHANS, in the database. After registration, the patient has a unique hospital\_Id, also known as UHID.

For conducting any Neuropathology related test on the patient’s sample (samples can be cells, tissues of muscles, hair, tumor etc.…), patient has to obtain a request form from the doctor or the concerned person which has the UHID.

Once the sample of patient reaches the Neuropathology lab, sample is assigned unique “NP\_Number”. Doctors/concerned persons can track the status of the sample using the “NP\_Number”.

In the Neuropathology lab a sample undergoes different processes and finally report is generated based on the findings. Final output is “Report” which is given to the patient and also to the doctor as email or paper document.

Sample Tracker shows the status of a sample (In the superadmin page, Search page shows the status of sample when search with patient name or NP\_number, shows the pending cases in stations such as grossing, embedding etc.

***WORKFLOW:***

The user has to login first (from any station) for doing any activity. (New feature - There is separate login for faculty, resident and technician based on the roles.)

1. ***Receiving Station*** – Patient who comes to the NP Lab first goes to the Receiving Station with the sample and the request form. In the request form, before receiving at the Receiving Station, a sample has 2 ids - Sample\_Id, and UHID (Hospital\_Id). UHID is the number which is assigned to the patient while registering in the NIMHANS hospital. Sample\_Id is the Sample\_Request\_Id.

At the Receiving Station, the staff scans the UHID in the request form/ manually enter the UHID in the input field and clicks the submit button which fetches the patient details from the EHOSPITAL and displays in the corresponding fields in the Receiving Station page. If the EHOSPITAL server is down or takes long time to respond, a pop-up displayed about the EHOSPITAL issue and the user can enter the patient details manually to display in the fields.

After this, click on the “Verify” button which assigns “Np\_Number” to the received sample. After that, clicking on the “Proceed …” button displays a pop-up with message “Do you want to assign this Np\_Number”. Clicking on “Ok” button fetches the sample details from EHOSPITAL and displays as a table at the bottom. If the sample is new and there is no data from EHOSPITAL, then we can manually enter the sample details and display as table upon clicking Save button. There are option to clear the data and print the sample details. So in this station, Np \_Number is generated, the labels are created with Np\_number printed on them and then pasted on the bottle/sample containers for identification/further procedure.

1. ***Grossing Station*** – A Sample can be a part of muscle, tumor, liver biopsy, lip biopsy, hair etc. In the Grossing Station, samples are cut in to small pieces.
2. ***Embedding Station*** - The small samples are kept in paraffin wax for further investigation and examination. Technician marks “done” if this is done.
3. **Sectioning Station** – the paraffin block is cut(cur pieces are called sections) and the sections are placed on glass slides and stained(adding a pink color chemical to the section on the slide)
4. **Reporting Station** – Based on the findings, Report is generated by the faculty/resident. The faculty/resident writes the report in the request page. And marks “done” in the Sample Tracker Reporting Station. Faculty can edit the report if required. (New feature – faculty/resident can enter the report in the Reporting Station in the Sample Tracker. Select the required template - general, muscle, epilepsy - enter the report – clicking the submit button , saves the report with html tags in the local database as report draft.)
5. ***Typing Section*** – Office staff types the report in the correct format and saves in the EHOSPITAL page. Marks “done” in the Sample Tracker Typing Station.
6. ***Verification Station*** - Only the faculty can verify the report in the EHOSPITAL page. Here, the report is displayed for the entered “NP\_Number”. Once verification is done, edit report option is not available in the EHOSPITAL page. (New feature – after entering report from the Reporting Station for a particular NP\_Number in the Sample Tracker, in the Verification Station, that report is displayed. The faculty can edit the report and upon clicking this report is saved in the EHOSPITAL DATABASE.
7. ***Dispatch Station*** – This is the last Station. After dispatch of report to the patient, office staff marks “done” here. The office staff downloads a pdf version of the report of the patient and then sends to the concerned doctor of the patient as an email attachment. (New feature – Upload Pdf in this station in Sample Tracker will get the pdf file details of the report and the technician has to enter the email id of the concerned doctor and clicking on Send Pdf button sends the report in pdf form to the concerned doctor of the patient)

***Technologies Used:***

Frontend (browser): HTML, bootstrap, angularJS, jQuery

Backend: Java, JERSEY RESTFUL web services, MAVEN build, ORM (JDBC for connecting to the database)

Database: MySQL database

***Configuration files for browser version:***

1. /Sample\_Tracker/src/com.sample.Sample\_Tracker/model/Path.java

//NIMHANS SERVER

public static final String restApiPath="http://10.11.3.3:8080/EhospitalRest/rest/";

//local server

//public static final String restApiPath="http://localhost:8080/EhospitalRest/rest/";

1. /Sample\_Tracker/ /WebContent/js/values.js

//NIMHANS test version

var URL\_BASE="http://10.11.3.3:8080/Sample\_Tracker1/webapi/";

//localhost

//var URL\_BASE="http://localhost:8080/Sample\_Tracker/webapi/";

1. /Sample\_Tracker/src/com.sample.Sample\_Tracker/global/Database.java

//NIMHANS db pw

private static final String password = "thanks@123";

//local db pw

//private static final String password = "";

//NIMHANS db name

private static final String dbName = "sampleTrackerDBTest";

//local db name

//private static final String dbName = "sampleTrackerDB";

***ROLES:*** superadmin, faculty, resident, technician, doctor

***Superadmin:***

* Can see the list of all users
* Delete NP\_Number
* Can see the list of External Hospital – New feature which is not present in the existing live version - for samples from other hospitals
* Can create new and edit existing External Hospital
* Can see the list of External Samples(External Samples are the sample from other hospitals and there is another application called External\_Tracker for the external hospitals to keep track of their patient’s sample which are sent to NIMHANS NP LAB for the examination)
* Can send message to External Hospital about a particular external sample with NP\_Number
* Can see the message sent from an External Hospital about a particular external sample with NP\_Number

URL is:

<http://localhost:8080/Sample_Tracker/superAdmin.html>

Username: np\_super\_admin

Password: np@123#admin

***Faculty****:* – can receive sample, do grossing, embedding, sectioning, reporting and verification.

***Resident****:* - can receive sample, do grossing, embedding, sectioning, reporting.

***Technician****:* - can receive sample, do grossing, embedding, sectioning, typing, dispatch.

**SEARCH AND REPORT DISPLAY IN THE SEARCH PAGE:** In the home page of Sample Tracker, there is an option “Search” which opens a new page. Here, we can search for sample details based on NP\_Number or patient Name. (New feature - search with combination of doctor name, age range, gender, date range, biopsy type, specimen, hospital name, status and final impression). Also there are options called Activity logs, All Assets, All Transactions, All Ncs, All Cases, and All Users which serve different purposes.

We can view the report of a sample by entering the Np\_Number or Patient Name and then clicking on the “View Report” button in the Search Page. If Report is available in the EHOSPITAL, the REST call will fetch it from the EHOSPITAL and display in the pop-up which is displayed upon clicking the “View Report” button. Also the report is saved in the local database. Same report can be viewed in the verification station. This is a new feature in the Sample Tracker. Currently faculty/resident/technician has to login to the EHOSPITAL to enter report, verify report, type report and view report. Now this is implemented within the Sample Tracker itself.