System design document

Developed a “sensor data annotation user interface" tool for Open BAN application.

1. Technologies used: Frontend HTML, Java Script, Highcharts Library, Backend in Java.

2. Libraries used: JQuery, JQuery DateTime Picker, HighStocks (Highcharts).

3. Used jquery.ajax () method to send asynchronous/synchronous request to the server.

4. Data Format Used for exchange (to/from) server – JSON Format

**Various Components and their Usage:**

**Downloading Meter Reading Using UUID**   
You can download meter readings based on UUID. Enter the required uuid in the UUID Text Box and the file name you want to save the file with in the File Name text box.  
Your correct CSV (based on the uuid) will be downloaded and saved in the Data Directory at the server.

**Saving/Deleting Possible Annotation Names**Simple options to add and delete possible annotation names for particular data series.  
Used Ajax calls to send/receive data from server side.

**Loading Meter Reading for required Data Series**  
The Primary task of the interface. To load up data(meter readings) based on the Start Time and End Time defined by the user.  
  
**Saving/Deleting Annotations for a Data Series**

The main task of allowing the user to save and delete annotations (tags) for a particular data series was accomplished by using multiple ajax request. Data was send/recieve to/from the server in JSON format.

**Routing used in the project**

Home page

GET request to url - /  
Action Defined in Java Method - controllers.Application.index()

To retrieve the main Data Reading from the server(Loading meter reading for required data series)

POST request to url - /post

Action Defined in Java Method - controllers.Application.post()

To save new annotations for a particular data series

POST request to url - /save

Action Defined in Java Method - controllers.Application.save()

To show saved annotations for a particular data series

POST request to url - /show

Action Defined in Java Method - controllers.Application.show()

To delete saved annotations for a particular data series

POST request to url - /delete

Action Defined in Java Method - controllers.Application.delete()

To download Data Reading based on a UUID

POST request to url - /downloadReading

Action Defined in Java Method - controllers.Application.download()

To get the names of possible annotations for the data series

POST request to url - /annotations

Action Defined in Java Method - controllers.Application.annotations()

To get names of the available data series

GET request to url - /data

Action Defined in Java Method - controllers.Application.data()

To save a new possible annotation name for given data series

POST request to url - /saveAnnotations

Action Defined in Java Method - controllers.Application.saveAnnotations()

To delete a given annotation name for given data series

POST request to url - /deleteAnnotations

Action Defined in Java Method - controllers.Application.deleteAnnotations()

Map static resources from the /public folder to the /assets URL path

GET request to url - /assets/\*file

Action Defined in Java Method - controllers.Assets.at(path="/public", file)

**ServerSide methods and their purpose**

1. Method Name – index()  
   Purpose – To display/render Home Page
2. Method Name – download()

Purpose – To Download MeterReading and Make CSV file ServerSide

1. Method Name – saveAnnotatios()

Purpose – To save a new possible annotation name for given data series

1. Method Name – deleteAnnotations

Purpose – To delete a given annotation name for given data series

1. Method Name – data()

Purpose – To send names of the available data series

1. Method Name – save()

Purpose – To save data of the given annotation name for the data series

1. Method Name – show()

Purpose – To show all the saved annotations for the data series

1. Method Name – delete()

Purpose – To delete a particular data range of a given annotation (given data series)

1. Method Name – post()

Purpose – To send the main series data to be rendered in the HighChart.

1. Method Name – annotations()

Purpose – to send the names of possible annotations for the data series.

Some functions used:  
DateFormat : A dateformat variable(accepting return value from the function) to format the date into the correct format required to be send to Jquery UI Modal and its DateTimePicker function.  
Color Generator: Function to generate random (yet pleasant) colors for plot bands using HSL values.  
Also used Jquery UI plug-in for Dialog/Modal Box.