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## Fast Track Training Project

After completing the *Fast-Track* training period successfully, we made up groups to proceed with our fast track training project. Me, Fawsan, and Fasna made up a group of three members and selected a project from the “WSO2-Redmine”. We scheduled a meeting with Mr. Srinath Perera to discuss about the project details. He inspired us with the project idea and gave the approval for us to continue working on the project.

### Project Description

WSO2-Products, despite of having very powerful and efficient functionalities, do not consist of a killer mechanism to visualize data. This can lead potential customers to underestimate the eminent productivity of their products. Therefore a generic web tool (a *widget* as we may address) for visualizing data, without expertise knowledge on the subject, is a vital requirement. Our task, therefore, was to create a generic JavaScript library which can be used by open-source developers to draw charts with minimal effort.

### Getting Started – Inception Phase

The library will be a simple JavaScript library from a high level point of view. However doing this without the aid of external libraries is discouraged due to 3 *mundane* facts,

* Limited time frame
* Having to *reinvent the wheel*
* Neglecting the best open-source practices.

Nevertheless we have to be extra careful when selecting external libraries for a software project. We must ensure that the resource is trustworthy and able to perform the expected task. Considering all above mentioned facts, we agreed upon using **d3js** to lay the foundation for our tool.

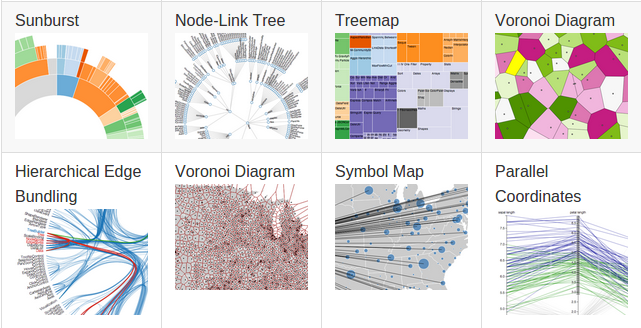
#### Why *we* chose d3js over other similar libraries?

The term 'd3' stands for *data driven documents*. It is a kind of low level JavaScript library for manipulating documents based on data. So to answer the question, 'why d3?',

* It provides several reusable and advanced functionalities, which would have consumed a lot of time, if attempted to write from scratch.
* It has gained a good reputation over time, even from experts, for its strongly written code base.
* A lot of samples are available for new developers to grasp the d3 environment.
* Neatly written documentations are also available.

Shown below are few samples from their official website, d3js.org





During this time period, I mainly focused on learning the core technologies that will be used for this project. *The-NewBoston'*s free video tutorial series (www.thenewboston.com) on JavaScript was pretty helpful. Additionally I followed few more videos to learn the d3 basics for svg manipulation.

Adapting to the JavaScript development environment was not much of a challenge as it is a scripting language used for web development which does not require any additional configurations to be installed. The only requirements were a *text editor* and a *web browser*.

The plan we made during the **Inception phase** of the fast track project can be summarized as follows,

* Project Idea : Build a generic tool for chart visualization
* Proposed Core Technologies: JavaScript, d3js, WebStorm IDE, Sublime Text IDE.
* Expected Delivery Date: 23/01/2015
* Proposed Core Deliverable(s): A generic JavaScript library
* Version Controlling: git via github

### Diving Deep - Elaboration Phase

After the initial stage, we started designing the tool. Considering the requirement explained in an earlier discussion, we identified the need to implement the following chart types in the initial version of the tool.

* Single Number diagram: A chart which summarizes the data set into a single number representation.

In our case, we will show the average, maximum, and minimum value.

* **Line Chart Diagram:** A two dimensional chart which shows the change in one dimension against a

unit change in the other as a continuous line.

* Bubble Chart: A chart that displays three dimensions of data in a two dimensional plain.
* Table: A Straight forward representation of the complete data set with custom styles.
* **Map Diagram:** A diagram which shows data specific to a location on the world map.
* Bar Chart: A chart that represents the correlation of data of one discrete variable against another

discrete/continuous variable using rectangle bars.

We discussed and analyzed above mentioned chart types giving thought to how each would be implemented without losing consistency and extensibility. We had to come up with some mechanism to accomplish these as well as other common non functional requirements.

Therefore we planned to create a *JSON* skeleton to which a data set will be modeled into, before sending to draw a chart.

“dataTable”: {

"metadata":{

"names":["Country","Area","GDP","Inflation","Life.expect","Military","Pop.growth"],

"types":['C', 'N', 'N', 'N', 'N', 'N', 'N','N']

},

"data": [

["Austria", 83871, 41600, 3.5, 79.91, 0.8, 0.03],

["Belgium", 30528, 37800, 3.5, 79.65, 1.3, 0.06],

["Bulgaria", 110879, 13800, 4.2, 73.84, 2.6, -0.8],

["Croatia", 56594, 18000, 2.3, 75.99, 2.39, -0.09],

["Czech Republic", 78867, 27100, 1.9, 77.38, 1.15, -0.13],

["Denmark", 43094, 37000, 2.8, 78.78, 1.3, 0.24]

]

}

#### Milestone Plan for the project

We prepared an on-line milestone plan for the project according to design considerations and sent it via email to Mr. Samissa for getting the approval. Shown below is the accepted milestone plan according t which we continued the project.



Terms used: javascript , d3js, svg, version controlling, git, github, webstorm, sublime text, WSo2, IDE, text editor, web browser, widget,json