GUI Design Using DLD for All Web Browser Interactions

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Abstract— Tell now we have seen only the use case, collaboration diagrams, and VLC/UI design process. The main goal of VLC/UI is to display and obtain needed information from the source. Whereas the Low Level Design has not yet clear for web based interactions. In this paper we proposed a new type of design using sequence diagram for web based design on browser side. UI also has to tell us how to complete the interfacing task. Say it uses Apache as web server to interact between Web-based main GUI on client side. The application of this concept is applicable to entire web based software development, Website development. Real time application like banking maintenance, library maintenance…etc our concept gives more reliable result.

Keywords- VLC/UI; ALM-MON; DLD; XSL.

I. INTRODUCTION

Web servers are used for the different application in daily life like most software development, Website development, Library Management, Enterprises resource management, etc. the website or software uses GUI interface. For this application the web based GUI is most important interacting tool. According to literature survey number of approaches available for GUI designs. In this paper let us discuss the web browser interface that is the GUI interface in detail, which can be the low level design. Here all the developers, managers, architects and each one who is directly or indirectly related with respect to web based GUI will think only for rich GUI. But they won't think for the detailed design of these interaction and synchronous or asynchronous communication through these components.

Here, it uses web server as and the GUI is a web-based design which includes applets using out of band connection, XSL files embedded with html files, XML and JavaScript (JS). This XSL and JS file connects to web server through HTTP connection where as applets connect through out of band connection.
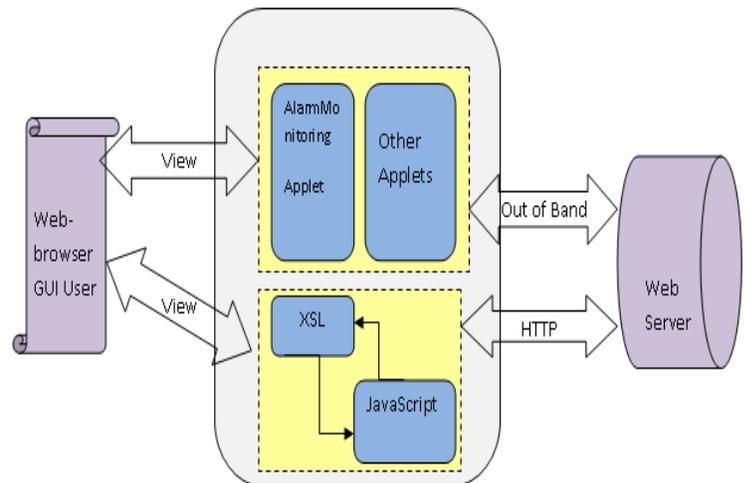

Figure 1: General Block Diagram

The above figure depicts the General block diagram of Web server cum client GUI. Each block in the above figure is explained below.

- Web browser GUI User: Web browser GUI where user can view and operate. This user can be ordinary user.
- Alarm Monitoring Applet: If user wants to monitor alarms then they can use this applet.
- Alarm Monitoring applet, say appears as a pop-up when a user clicks on ALM-MON button in Web browser

(this is one case or example). The alarms that occur can belong to any of the three severities like critical, major, and minor.

- XSL: The XSL(Extensible Stylesheet Language) block used to put .xsl files, this xsl files includes HTML tags inside to display the results read from XML files using XSLT(XSL Transformation) which were getting loaded to browser as the page loads.

- JavaScript: this block includes .js files which are used by XSL files. This JS files used to display Tree Structure, dynamic search, tabular form, pagination, etc. mainly JavaScript is used for even validation purpose. This Tree Structure, dynamic search, etc can be done through AJAX which is done through advanced JavaScript.

It explains, the interaction is between the web browser GUI and web server. The applets work using out of band connection with the server. Here the detailed design includes the block diagram and the sequence diagrams. These sequence diagrams are more important while designing the detailed design of say web site which uses all components like html pages, xml files, xsl files, JavaScript's etc. Here each component is considering as one separate entity to draw sequence diagram or to understand the architecture of that current page.

II.LITERATURE SURVEY

Kruchten etal propsed "The 4+1 View Model of Architecture" [2] describes This article presents a model for describing the architecture of software-intensive systems, based on the use of multiple, concurrent views. This use of multiple views allows to address separately the concerns of the various 'stakeholders' of the architecture: end-user, developers, systems engineers, project managers, etc., and to handle separately the functional and non functional requirements. Each of the five views is described, together with a notation to capture it. The views are designed using an architecture-centered, scenario driven, iterative development process.

Tim et al proposed "UML Model Mappings for Platform Independent User Interface Design"[11] describes While model based design of platform independent application logic has already shown significant success, the design of platform independent user interfaces still needs further investigation. Nowadays, user interface design is usually platform specific or based on C-level cross-platform libraries. In this paper, we propose a MDA like design approach for user interfaces based on the transformation of UML models at different levels of abstraction. This enables platform independent design of user interfaces and a clear separation of UI and application logic design while enabling full use of native controls in the actual user interface implementation.

Cloyd etal proposed" Designing User-Centered Web Applications in Web Time"[5] describes As designers struggle to develop Web applications "in Web time," they are under the added pressure of delivering usability. This author describes her company's successful transformation to user-driven processes for designing e-commerce applications. She also offers strategies for introducing human factors methods into a reluctant development organization.

Reiner et al proposed " Developing Adaptive and Self-Managed Graphical User Interfaces" [10] describes In this paper we present a structured approach for the analysis, specification and design of agent-based graphical user interfaces (GUI). A development process using design patterns as well as creative techniques is described. Performing interface design with our approach leads to a logical goal/task hierarchy that can be easily depicted by a society of agents. Furthermore an implicit partition of the GUI hidden in the given problem takes shape and gets connected with the particular agents.

III.EXPERIMENTAL RESULT

The methodology was tested initially without using these above features. The time requires to understanding the detailed design of say website was pretty more in earlier design. But by using this approach the required time in the design process a well the problems which can occur in feature can be reduced. This in turn reduces the time.

In the Figure 2 it has been shown the time required to do the design of user interface for web based design and for knowledge transfer before and after use of this approach.
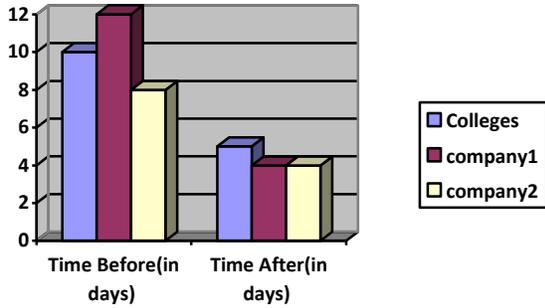
Figure 2: Experiment comparison bar chart

IV.DISCUSSION

The 4+1 View Model of Architecture[1] proposed the development view, which describes the static organization of the software in its development environment to analyze the user interface design. Whereas UML Activity Diagrams: Detailing User Interface Navigation[2] proposed how to use UML Activity Diagrams to capture and communicate the details of user interface navigation and functionality. But even using this concept it is very time consuming to design and understanding the whole concept with in limited time permit. In this concept it uses overall components which are directly or indirectly depended. Here we are using sequence diagram which makes the user to understand the overall design details very easily in less time duration.

Applet interaction on web page:

Applets will run on web page with the help of Java enabled web browsers. And applets wont connect with the same connection which is already existing one, applets creates its own out of band connection. This applet is a Alarm Monitoring Applet where one can view various types of alarm with different severities like critical, major, and minor.
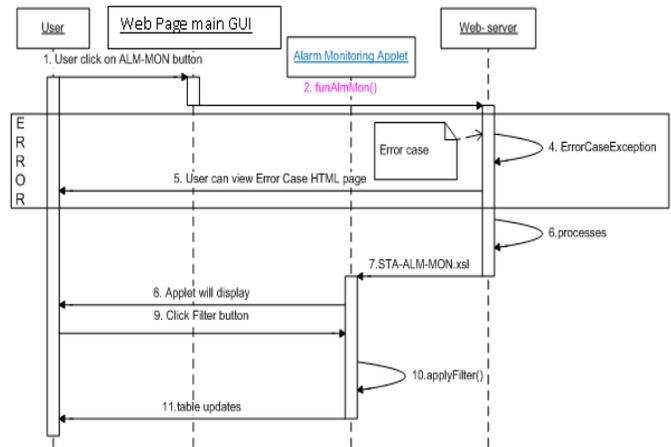
Sequence Diagram:

Figure 3 Sequence Diagram for Alarm Monitoring applet call

1. User clicks on ALM-MON button in Web page main GUI it will call funAlmMon() method in JavaScript. The request STA-ALM-MON command goes to Web server as HTTP request, processes this request. Then STA-ALM-MON.xsl file starts the applet to monitor the alarm status.
2. Exception: Due to some reason exception occurred while calling alarm monitoring applet then it will be handled as shown in sequence diagram in ERROR block. The error related HTML page is send as response to client UI.

Alarm Monitoring applet structure:
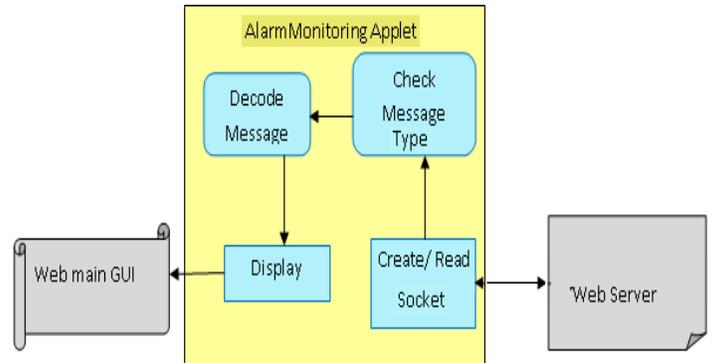The operation of Alarm Monitoring applet is show in blocks as in below diagram

Figure 4: Low Level/Detailed Design of AlarmMonitoring applet

Where Web main GUI is the place where the user interacts. It contains even four internal modules to read the input from the user, process it and send to Web Server through Create/Read Socket block.

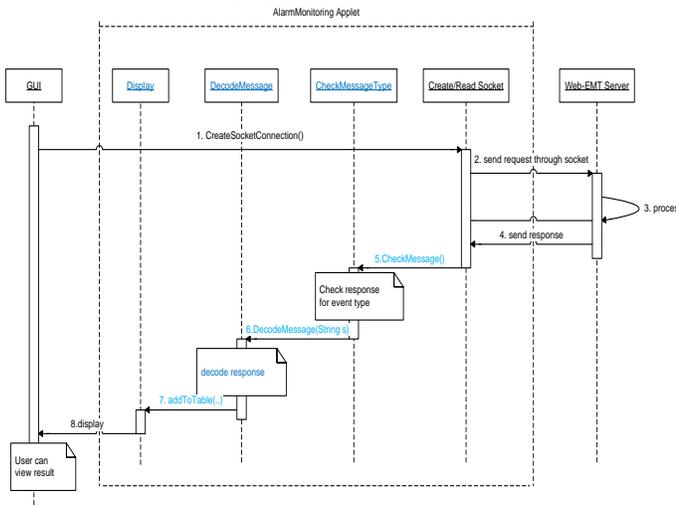Sequence Diagram of working of AlarmMonitoring Applet:

Figure 5: Alarm Monitoring Applet Sequence Diagram

Tree Based Command Selection Window:

Tree Based Command Selection detailed design includes Web-based GUI and JavaScript file to display in tree structure. In this tree structure for example the branches are Configuration, Software, Fault, Performance and Diagnosis. Each branch contains the leaves as their commands. New Java script needs to be written to support Tree structure.

First user login the Web site,
1. Web browser main GUI page will display
2. Go to command window in the main page and one can see the commands in tree like structured. Click on any branch of the tree.
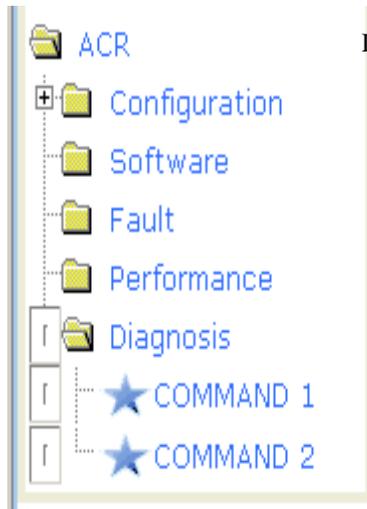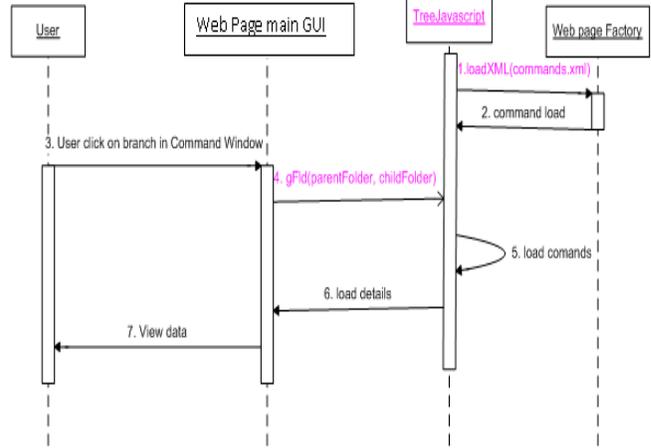

Figure 6 Tree Structure

Figure 7: Sequence Diagram for Tree Based Command Selection

Below sequence diagram shows the general flow in Tree Base Command Selection.

1. This tree structure will be created by using TreeJavaScript file. It calls the loadXML(..) method to search file form Web page factory created by Web server.
2. It read the command list from the XML file.
3. When user clicks on branch in command window to check the list of commands.
4. gFld(..) JavaScript method is called to load the commands
5. Tree JavaScript loads the commands
6. And load to command window of main page
7. User can view the list.

Search Tab for Dynamic Command Search

Dynamic Command Search is the new option it consist of text box and list box in it. OnKeyUp
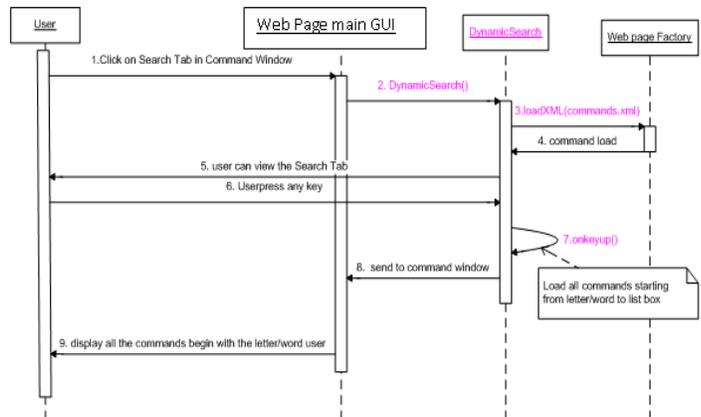

Figure 8: Sequence diagram for Dynamic search window

JavaScript method is called to check the commands related to particular branch. Wrong key press check is also taken care.

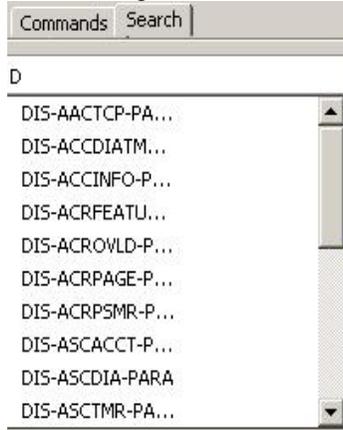1. Click on the Search Tab in the command window then user can view Dynamic Search tab as in below diagram

Figure 9: Window with Dynamic Search

2. DyanmicSearch() method is called in JavaScript
3. loadXML(commands.xml) JavaScript method is called while loading
4. loads all commands to an array
5. Dynamic Search Tab loads and user can view the same
6. If user presses any key
7. OnKeyUp() JavaScript method is called. This JavaScript checks the key pressed and checks the commands starting letter/word with input letter/word and gets the result
8. The result is send to list box in search tab
9. User can view the commands

Exception: If user presses wrong key then an alert box will display with "Wrong Key Pressed".

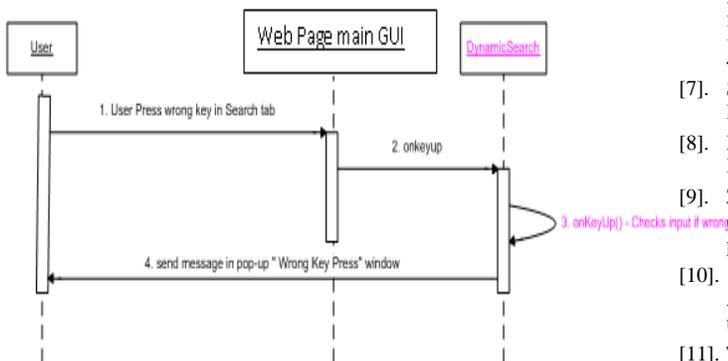The sequence diagram is shown below.

Figure 10: Sequence Diagram of Dynamic Search for error handling

1. If user presses the wrong key
2. The request will go to JavaScript
3. Here it checks for the write key press. If it is wrong it will send a alert to main page
4. The alert pop-up will be displayed to user by telling wrong key.

V.CONCLUSION

The new Web-LLD has been used with success on several minor and major projects with or without some alternations in the underlying technologies. It actually made the stakeholders or the designers to construct or design the detailed architecture in minimum amount of time. And even someone who have not involved in the design can easily understand the system very easily.

ACKNOWLEDGEMENT

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