

Mashup Technology - Integrating Google Maps and Open Source Softwares

B. Vijayalakshmi¹, P. Manonmani²

ABSTRACT

Mashups are a new kind of interactive Web application, built out of the composition of two or more existing Web service APIs and data sources. This technique provides a new platform for different data providers to flexibly integrate their expertise and deliver highly customizable services to their customers. To combine data from different sources potentially reveal person-specific sensitive information. In this paper, a novel approach to build mashup Architecture out of heterogeneous sources of streaming data of Mashup Architecture and an example application will be discussed in detail. The architecture design of mashups encompasses integration of heterogeneous data and/or compose new situational applications from existing infrastructure. We envisage that architecture integration patterns can be applied not only as architecture solutions to mashup development, but also to help develop practical mashup techniques.

Keywords: Mashup, Google map, API, SQL

I. INTRODUCTION

Mashup is a Web technology that combines information from more than one source into a single Web application. Web 2.0 has introduced new possibilities for a better human computer interaction via Rich Internet Applications (RIA) such as Mashups. This Mashup

provide a user-driven micro-integration of web-accessible data. Rich Internet Applications are Web-based applications that function as traditional desktop applications. Web browsers are required for access but unlike traditional applications, software installation is not required, but depending on the application we need to have ActiveX, Java, Flash, or similar technologies installed on the client machine. At the moment Mashups are mainly used for less important tasks such as customized queries and map-based visualizations; however they have the potential to be used for more fundamental, complex and sophisticated tasks in combination with business processes.

Software reuse and composition has reached the next evolutionary level with mashups, where software components delivered as a service on the Web and databases are published as a Web data and are combined in novel and unforeseen ways. Whereas the term mashup originates from the practice of sampling existing music and mixing it together, the software mashups are typically associated with software integration performed at the User-Interface layer [1]. In modern Web applications, the mashup are used by the Web browser as an integration platform for running interactive Web applications made out of different existing Web sites, applications, services, and data sources [2].

II. PIPE AND FILTER ARCHITECTURE

In this paper we present an approach, based on data processing pipelines, for the development and execution of the integration logic of mashups. Whereas the "pipe and filters" architectural style [3] goes back to early

1. Assistant Professor in PG Department of Computer Applications, Vidyasagar College of Arts and Science, Tirupur.
2. Assistant Professor in Department of Computer Applications, Sri G.V.G Visalakshi College for Women, Tirupur.

UNIX command line pipelines, it has seen a renaissance in recent mashup tooling. Our mashup composition environment also promotes the notion of flow as the main construct to visually represent service and data integration pipelines. In addition, it introduces a generalized approach to composition that makes it applicable to mash up heterogeneous software and data services. This can be illustrated by how to build a concrete mashup application. The application involves in mashuping various open source web technologies, Google Maps, API and SQL database.

2.1. BUSINESS USER:

The people who uses the web site are termed as business users. This may be involved in the particular business activities and may be interested in knowing about some details of the company by just viewing the locations in the map.

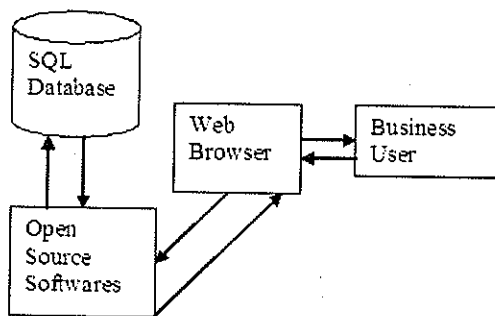


Figure 1 : Mashup architecture in our application using open source softwares and database

2.2. WEB BROWSER:

The web browser may be of any browser like internet explorer or firefox which is used to display the web page on the client machine. And it is the place where the user places the request of a web page.

2.3. OPEN SOURCE SOFTWARES:

The open source softwares in the mashup architecture are nothing but the developer can make use of the

softwares which is available already that can be integrated together to form a new mashup application. It may be JSP, servlet or google maps and their APIs. It is easy to integrate any open source softwares instead of developing a new one.

2.4. DATABASE:

Database are used to store the data needed for a particular application. This databases may be oracle, sql etc... The queries are used to retrieve the data from the database table. And this can be displayed in the user client machine in the browser. The arrow mark shows in the figure 1 are the direction of flow of data. The data which we sent from one component to other will be returned back again in the pipe and filter architecture.

III. MASUP TECHNOLOGY USED IN APPLICATION

The database SQL contains the cities and the sales details of a two-wheeler showroom which has the branches in many parts of India. The SQL table contains city name and current month total sales of the showroom in a particular city. The JSP file contains core logic of displaying the Google map with markers and information window. The marker and the data in the information window are dynamically generated using SQL functions. The information window displays the monthly sales detail in the information window corresponding to the selected city. The code snippets are used to display the marker and the information window which contains data based on the query executed in the SQL.

3.1 GOOGLE MAPS:

Google Maps was introduced by Google in 2005. It is one of the latest web mapping services which has been used in many areas including weather forecast, tourism, property management, chain stores etc. It also used to provide geospatial visualization of information and it is helpful for the user to analyze, plan and decision making by simply selecting the geographical location. This

provide easy understand by the user on just visualizing the data in the location of the map.

3.2 GOOGLE MAPS API:

It is used to embed Google Maps into web pages and customize them. The map is used to displays clickable markers in the locations which contains sales data in the data base. These marks can be clicked to display the sales information correspondingly to the respective city.

3.3 OPEN SOURCE SOFTWARES:

The open source softwares like JSP and servlet are used. The Apache Tomcat is used to host the Google Map JSP. The Java scripting language is used to create an interactive website which is implemented and embedded with Google maps. The java Standard Library Tags are used to implement SQL query to process and retrieve the data from the database. The SQL database is used to hold the data about the location in the map along with the related data to display while clicking the spot in the map.

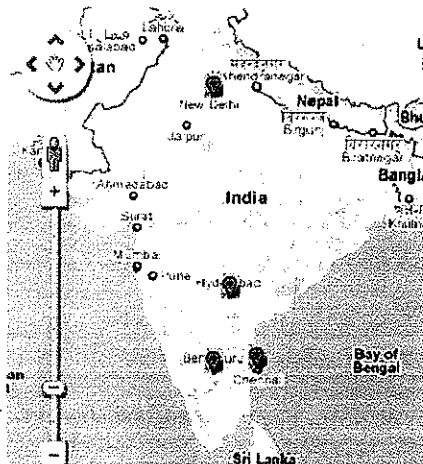


Figure 2: A Google map with added clickable Marker on specified location of the showroom

Figure 2 which shows above were an ordinary Google map which contains the added markers in the specified

location where the two-wheeler showrooms are located in the country. To add marker Google map APIs are used. This APIs are used to embed Google Maps into web pages and customize them. The map is used to display with clickable markers in the locations which contains sales data in the data base. These markers can be clicked to display the sales information correspondingly to the respective city.

The SQL database may contain three tables. In the first table details like the location of the city number, name of the city, latitude and longitude of the particular location in the map are stored. This will help when the user clicks the marker of a particular city, by retrieving the latitude and longitude of the spot. The second table contains detail about current month sales of the two-wheelers and the third table may contain details about the total sales of the two-wheeler for the past five year.

It is also possible to view further details by placing the hyperlink in the information window. In our application Sales Chart is the hyperlink in the information window which shows the details for the past five year.

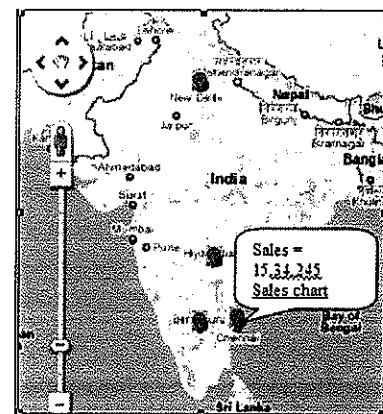


Figure 3: Shows the sales of the month in a showroom at the location Chennai

It is also possible to display a table instead of chart. This can be included in the map using google map APIs. The

map shown in our web site which has the showrooms in the location like Chennai, Bengaluru, Hyderabad and New Delhi. Figure 4 displays the map with the sales detail of the showroom in an information window, when a user clicks the marker specified in the location in hyperlink a new JSP window will opens which shows the Bar-chart. This Bar-chart contains data about the total sales of the two-wheeler during the year 2006 to 2010. So it is very easy for the user who doesn't need a detailed training to handle such a smart kind of applications. The information window contains detail about the sales of the two-wheelers in the current month on clicking the hyperlink Sales Chart shown in the information window. A new page is displayed with the Bar-Chart is a JSP page. The charts are displayed using the JFreeChart in the JSP page.

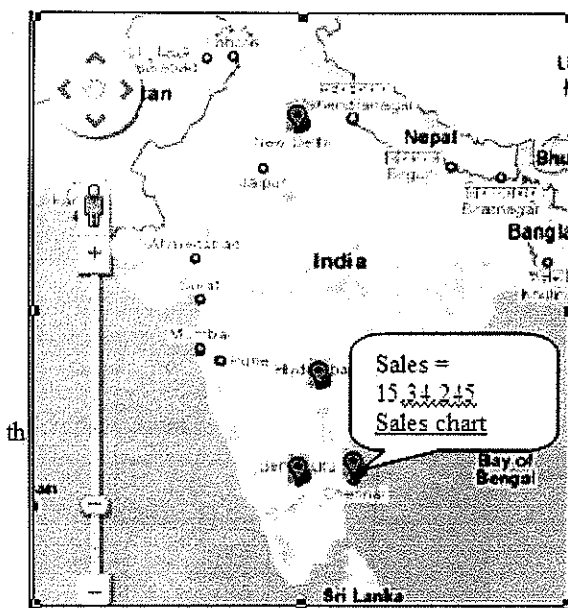


Figure 3: Shows the sales of the month in a showroom at the location Chennai

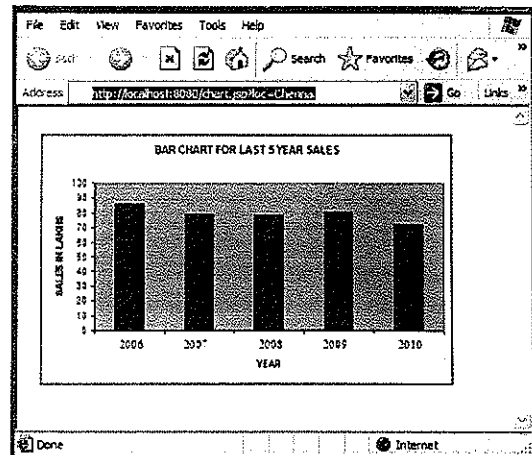


Figure 4: JSP page contains bar-chart on clicking the hyperlink Sales Chart from Google Map

IV. CONCLUSION

This paper advocates a mashup approach of integrating diverse open source software together to form an intelligent smart working business application. This business application is easy for the user to use and access the data. The mashup technology plays a vital role in building a business application. This intelligent mashup will integrate both the server and client side processing. It is easy for the user to integrate any business applications with google map, so that any new web pages can be displayed

REFERENCES

- [1] http://www.sitepoint.com/google_maps_api_jquery/
- [2] <http://www.webmashup.com/>
- [3] JAVA & XML, Brett McLaughlin, Justin Edelson, O'Reilly Media, 3rd Edition.
- [4] http://groups.google.com/group/google_maps_api/
- [5] <http://en.wikipedia.org/wiki/Mashup>
- [6] Core JAVA – Volume I Fundamentals, Cay S. Horstmann and Gary Cornell, Prentice Hall.

- [7] Yee R (2006), "Mashups IST – Data services", <http://dret.net/lectures/services-fall06/Mashups.pdf>
- [8] Thinking in JAVA, Bruce Eckel, Pearson Education, 3rd Edition.
- [9] JAVA: The Complete Reference, Herbert Schildt, Tata Mcgraw Hill, 7th Edition.
- [10] JAVA the Tutorial, Mary Compione, Kathy Walrath, Alison Huml, 3rd Edition.
- [11] Narayanan (2007) , "mashups: Emerging Application Development Paradigm for a Digital Journal", Journal of Universal Computer Science, Vol 13.
- [12] Jing Yuan Zhang and Hao shi (2007), "Geospatial Visualization using Google Maps: A case Study on Conference Presenters", 2nd International Multi Symposium on Computer and Computational Science".
- [13] Miah S.J., Gammack J (2009), "Mashup Technologies for Buliding End-User Enabled Business Portal", 3rd IEEE International Conference on Digital Ecosystems and Technologies.
- [14] <http://java.sun.com/products/jsp/docs.html>
- [15] <http://www.apl.jhu.edu/~hall/java/Servlet-Tutorial/>

Author's Biography



B. Vijayalakshmi received her B.Sc. (C.S), in 1999, M.Sc. (C.S), in 2001 from Bharathiar University, Coimbatore. She obtained her M.Phil, in the area of Mobile Computing. At present

she is working as an Assistant Professor in PG Department of Computer Applications, Vidyasagar College of Arts and Science, Tirupur.



P. Manonmani received her BCA degree in 2003 and MCA in 2006 from Bharathiyar University. She completed her M.Phil in 2010 in Madurai Kamaraj University. At

present she is working as an Assistant Professor in Department of Computer Applications, Sri G.V.G Visalakshi College for Women, Tirupur.