A Study on Integrating open Source Software and Google Maps using Mashup Technology

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ABSTRACT:

Mashup is a Web technology that combines information from more than one source into a single Web application. 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 existing 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

1. INTRODUCTION:

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. Web 2.0 has introduced new possibilities for a better human computer interaction via Rich Internet Applications (RIA) such as Mashups that 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].

2. 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 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 a study showing how to build a concrete mashup application. The application involves in mashuping various open source web technologies, Google Maps, API and SQL database.
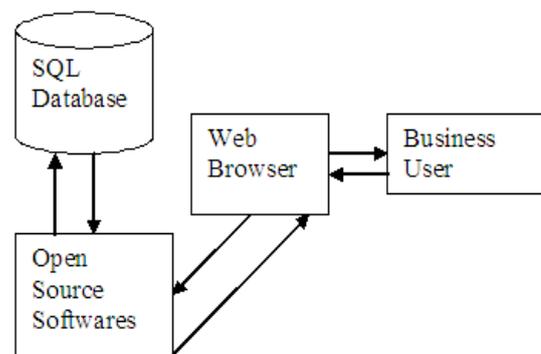

Figure 1 : Mashup architecture in our application using open source softwares and database

2.1. Business User:

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

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 palace 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 integreted together to form a new mashup application. It may be JSP, servlet or google maps and their APIs. It is easy to integreate any open source softwaresintead of developing a neew one.

2.4. Database:

Database are used to store the data needed for a particular application. This databases may be oracle, sql etc… The querys are used to retrive 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.

3. MASHUP TECHNOLOGY USED IN OUR EXAMPLE 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 snippet 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 introduces 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, 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.
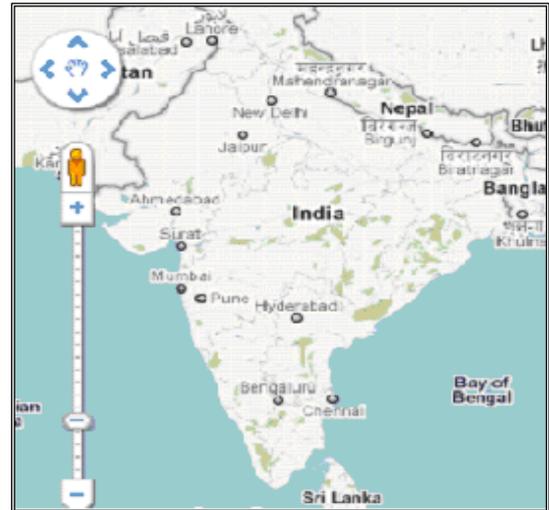

Figure 2: A Google map

Figure 2 which shows above was an ordinary Google map. Figure 3 shows the 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 key, 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 may contain detail about the type of the two wheelers and the third table may contain details about the total sales of the two wheeler of the month. It is also possible to view further details by placing the hyperlink in the information window. By clicking the hyperlink it is possible
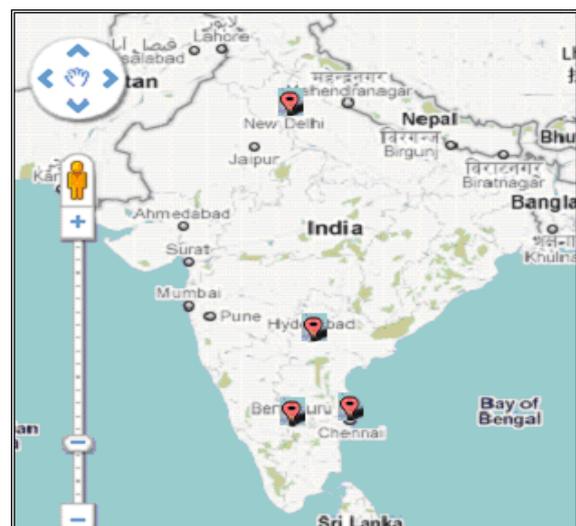

Figure 3: A Google map with added clickable Marker on specified locationof the showroom

Figure 4: Shows the total sales of the month in a shop of the location

to display the table or a bar chart contains sales of individual type of the two-wheeler in the showroom through a clickable marker in the map. 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 shop in a information window when a user clicks the marker specified in the location in Google map. Figure 4 shows the map with information window contains detail about the sales of the month. So it is very easy for the user who doesn't need a detailed training to handle such smart kind of applications.

4. 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.

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BIBLIOGRAPHY

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