MASHUP AS A FUTURE OF GEO-PORTAL

Umesh Chandra ¹, Kamal Jain ¹, S.K Jain ²
¹ Department of Civil Engineering, IIT Roorkee
² Department of Mathematics, Bits Mesra Ranchi

ABSTRACT

In the present study emerging concept of Web Mashup technology is used where we concentrate towards a new “Web Mashup architecture for Geo-portals” that reduce the data-dependency of Geo-portals. Geo-portals are the building block for providing spatial information to the web user; it provides a single interface for accessing diverse Geo-spatial services by using the data and web services provided by government and private agencies, that shows the diverse spatial data dependency, which is an extra burden for them, as these agencies require a well defined Service Oriented Architecture concept for their data and service usability.

Keywords: Architecture, Geographic Information System (GIS), Geo-portal, Geo-Spatial data, Service Oriented Architecture (SOA), Web Mashup

1 INTRODUCTION

Geo-portal is a type of web portal which is used to find and access geographic information on the web. Cromanpvoets, 2003 compares Geo-portal with shopping mall as it is a web based application where you can find services and data from diverse sources in one single platform [2].

Geo-portals depends on research institutes or research centres for providing Geo-Spatial information to them, but providing this information is not only costly but also a tedious job, as there is no perfect specification to follow and all the research institute needs to use a well defined Service Oriented Architecture concept, where they have to create their own database and use this database to provide services to third party uses by creating a simple Web Portal, so many times these research institutes deny or unable to provide this Geo-spatial data, which directly affect the future of the Geo-portals.
Keeping this problem in mind and with the emergence of advance technology like web 2.0 i.e. Web Mashups “Mashup site is a website that combines information, processing, or visualizations from several web sites to give the information to the user that it could not easily obtain by manually browsing the base web sites separately [4]” present study are thinking about to provide a cost effective solution by using the data directly from the third party website without imposing an extra burden of following SOA to them, it needs to redefine the general architecture for Geo-portals which can use the data already present on the web without fully dependent on third party web services, for providing a solution a Web Mashup based architecture for developing Geo-portals, is presented here, which is different from the General Service Oriented Architecture used by existing Geo-portals system given by Rose, 2004, in the sense, that it helps client application to use the publicly accessible third party web data which is not built for providing a third party solution by publishing their web services

The main objective of the present study is to give a simplified general Mashup architecture for the Geo-portals, which can use the data already present on the web without unauthorized access of the third party database for providing different GIS functionalities.

2 SERVICE ORIENTED ARCHITECTURE

Rose, 2004 architecture shown in Fig.1 is based on service oriented architecture concept, here government or private agencies used their database and published the web service for the general public uses, these services are used by the client application for providing relevant information to the end user by well formatted interface, but this information is bounded to the service provider only i.e. end user can only use or see that information which is provided by third party agencies without any choices.

![Fig.1. Service Oriented Architecture for Geo-portals.](image-url)
Table 1 shows a list of some existing Geo-portals with their data sources and associated services, it is clearly visible from the table for providing different services Geo-portals used the joint diverse spatial data provided by different agencies that need a costly and specific investment by these agencies which may affect the direct future of Geo-portals[1,3,5].

<table>
<thead>
<tr>
<th>Name</th>
<th>Data Sources</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Croatia Multipurpose Spatial Information System</td>
<td>10 government institutions and State-owned enterprises</td>
<td>Searching, ordering, and using Geospatial data, Applications, and Services</td>
</tr>
<tr>
<td>Lithuanian Geographical Information Infrastructure</td>
<td>Governmental bodies and Private sector</td>
<td>Searching, Ordering</td>
</tr>
<tr>
<td>Romanian INIS Geoportal</td>
<td>Centre for Geodesy, Cartography, Photogrammetry and Remote Sensing</td>
<td>Discover and select Geospatial information resources.</td>
</tr>
<tr>
<td>Kosmosnimki Geoportal</td>
<td>Earth Remote Sensing Data</td>
<td>Searching, Ordering etc.</td>
</tr>
</tbody>
</table>

Table 1. Some Existing Geoportals and their Data Dependency for Specific Services.

3 MASHUP ARCHITECTURE

There is always need of a system which can reduce this dependency of data, one of the solution is to develop a Geo-portal system which can use the diverse spatial and non-spatial data present on the internet for providing valuable information to the end user, as there are a lot of updated spatial and non-spatial data already present on the web which is provided free of charges by different existing agencies for various purposes.

Current study defined a Mashup architecture for the Geo-portal system as shown in Fig. 2, this architecture shows the general interface for Geo-portals which consists of two parts one for third party application and another for client application, former provided here is used by client for browsing third party web application, to find and access the spatial and non-spatial information present on third party website, user can select or pass attributes according to its requirement on the given interface, browsing application server process this request and sent back the result as a response.

Now client interface is enabled, this interface is used for utilizing the results obtained from a third party web site in a form which is most suitable for better decision making. The prime objective of this interface is to develop a way or method “how to interact and used the front end data of the third party web application” which is entirely dependent on the styles and formats used by them, it needs a deep understanding of third party file formats as well as various security issues like cross domain constraints. Secondly after getting third party data, client application requires rearranging this data and uses it in more advanced form for providing different GIS functionalities to the end user in real time.

The given architecture also shows the options for calling Map APIs (Google, Yahoo etc.) and third party web services (Weather Forecasting Services etc.) directly from the client application. User can use these services independently as well as with the data obtained from third party websites for providing answers for the more complex queries like “How many
hospitals are present in 20 km area”, Local Weather Forecasting etc. by creating buffers of different diameter on the freely available Map Api’s.

4 CONCLUSION

It is beneficial to use a Web Mashup architecture for developing a Geo-portal, it not only reduce the dependency of data by using the data already present on the web but also removes the extra burden of government and private agencies to follow the SOA concept. It also reduces the burden of managing and updating the raw data as it is already managed and updated by the service provider in their service domain.
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