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The Research of Network Shopping Platform Construction Strategy Based on Mashup Technology

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Abstract: Mashup can facilitate using the retrieved content from external data source to create new services. Using the feature in the study, Mashup technique is applied in network shopping search strategy, through the opening of the API, screen capture etc method, the different content sources is integrated. The merchandises in different websites can be displayed and redundance is eliminated using filters, change of the resource information is notified in time through the warning apparatus. This method can be convenient online shopping user, saving the user time, constructing a more efficient network shopping environment.

Key words: Mashup, web 2.0, network shopping

INTRODUCTION

Mashup is becoming one of research hotspot in network technology as a new data integration application technology based on Web. It has broken the situation of each site of Web1.0 isolated, to promote full reuse of existing resources and its expansion, thereby bringing better user experience and more flexible demand. Mashup attracted a large number of individual users, supported by the vast number of website developer and user (Ankolekar *et al.*, 2008). According to Wikipedia, Mashup is a new type of web service which is formed by stacks of plurality of support different web services applications. It uses the retrieval of content from an outside data source to create new services, source content which come from more than one data are combined, create a more value-added services. The external data source format which used by Mashup is varied, showing amazing compatibility, it is covered in public APIs, XML/RSS/Atom feeds, web services, HTML etc., (Jung, 2012). As a result of this lightweight integrated technology have more advantages in application in enterprises, so, Mashup technology shows good enterprise applications, using the Mashup, defined specific implementation of independent business logic fragment service and other existing services is aggregated by enterprises, so provides a flexible and powerful new

data view. In the enterprise Mashup has many applications: From historic stock quotation system to combine tracking data with order records of the UPS or FedEx etc express company, provide order status single view of electronic commerce website and so on. IBM portal server vendors offer such as StrikeIron graphical operation tool (Scotch *et al.*, 2008), to help users integration the data source from different parts, the realization is simple, personalized web application.

In a word, the promotion and application of Mashup mode will bring about technological revolution of software engineering research and development field, may establish a develop milestone of software development and network technology.

MASHUP TECHNOLOGY FOUNDATION ASSOCIATED WITH THE NETWORK SHOPPING NEW STRATEGIES

MASHUP means to create a new Web service by retrieved content from an external data source. Compared with the traditional network, MASHUP has features of reusability, lightweight etc. According to different calling data ways, MASHUP can be divided into the following two types: Calling API of the other sites (Application Programming Interface), calling external Web source (Web feeds) and it is not difficult to find that two

main MASHUP methods are respectively corresponding to processing of data and software service according to micro content classification. However, according to different position of data processing, MASHUP can be divided into the server MASHUP and client MASHUP (Ogrinz, 2010).

The server MASHUP is a MASHUP that is mainly implemented by writing and running Web programming refers to the server dynamic webpage programming technology (such as ASP, JSP, PHP). The request of MASHUP webpage arrives at the server, the program code is embedded or called, the MASHUP task is executed on the server. The results are delivered to browser in static webpage format then displayed.

The program of client MASHUP dynamic generates and updates the MASHUP webpage using AJAX technology at present. Website embeds JS code in the webpage for calling the MASHUP webpage. MASHUP webpage as dynamic webpage of client, after reaching terminal browser, embedding or calling Javascript program begin to work in a browser that supports Javascript, direct calling external data source.

Mashup has several different popular explanations, which lead people to confuse this term and its usage. This vocable from music industry, mashup is a combination of two or more songs, it creates a new experience. Typically, in this process, people will combine song tracks of a song with instrument background of another song together.

The definition is extended by the technology industry, so that it can contain a new type of application; two or more sources are combined into one integrated site by this type of application. This hybrid technology can be divided into two different types: Consumer mashup and enterprise mashup.

Consumer mashup generally associated with Web2.0. Their programming skills required less, because they rely on well-defined API and public Web site of source.

Usually a site takes part in mashup to create the content of the output. In the classic "display Craigslist list in the Google map", API of Google map is used to draw and present source obtained from the craigslist.com. A limitation of this method is that the resource must have "mashup ready".

Enterprise 2.0 mashup (sometimes refers to data Mashup) is more complex. In accordance with the deployment of the different solutions by company, enterprise mashup can appear in the following ways:

- Mashup alone was used by IT departments, to quickly deal with products. Application developers can use the internal resources and external resources to create data Mashup and use the traditional coding techniques to create user interface around them. Users do not directly involved in the construction

project, but IT department that can provide a faster solution can benefit to them

- The IT department creates a group of "mashup" component and provides a sandbox environment for end users so that they can be freely mixed, matching these components. If the user needs a new component, they have to ask the IT department for help them to create
- Deploy an environment of allowing anyone to create and combine of his or her own Mashup. This approach is the most difficult to manage, but perhaps the most influential. If you want to understand the challenge that is brought about with this approach, please considering Microsoft Excel used in many companies. Users can create applications based on spreadsheet and free to transfer them without the what, how to use or test center regulation. This frictionless creation and distribution model not only can quickly spread good solutions but also can quickly spread bad solutions

Whether mashup is used by the IT or business partner, or both, the flexible nature makes them become the key of Enterprise 2.0 operation. Unfortunately, they also have potential drawbacks. In order to the success of "deconstruct" the Google, "Harvard Business Review" pointed out a few defects which will hinder the open development culture to the success:

- When people spend more time on experience, damage to the productivity of other areas
- Groups lack of coordination, it leads to labor and repetitive wrong problem
- New products of continuous emergence may make institutions and their employees feel confused

Despite these potential risks, the author of the article indirectly recognized benign cycle of Enterprise 2.0. Because of the new resources are composed of a variety of products, these useful resources itself will become resources of the next generation useful products. The process and the reusability-that is the struggled targets of company in its application and the architecture for a long time is not significantly different. However, there are three main different points:

- In the Mashup era, "reuse" is no longer a concept in the ivory tower, no longer limited to the scope of application architect. Because the end users and developers can create solutions, each person will be devoted to reuse in practice
- The existing reuse methods need to do future development work in advance, to write extra program

and code and created open API and additional documents may never need to use. Because of the implement of Mashup reusability belongs to "be wise after the event", so their creators only need to build their own API, contains at least required function

- Traditional reuse tradition does not require the use of existing code or the database system itself is a reusable. This leads to realize a dead end. Mashup is implicitly reusable; this creates a potential association and the reorganization of the never-ending cycle

MASHUP is composed of three sections renegade on the logical and physical, respectively API/content supplier, MASHUP site and terminal browser (Shi and Zhu, 2010). API/content supplier is responsible for providing integrated content required by the MASHUP website, MASHUP server is responsible for the acquired or self-owned data service and software service is encapsulated into a standard component; respond to the application open call for resources. The terminal user browser is responsible for support of user alternation. At present, the most of MASHUP application is realized the data integration and service integration through opened? easy to understand and described Web service, even for simple Web Integration based only on the visual experience (such as portal technology). The architecture is represented by three-Tier hierarchical model. Presentation layer MASHUP mainly for the portal site and page personalized customization; Service layer MASHUP mainly focuses on software service (SaaS), such as the realization of commodity information and Googlemap Mashup, while data layer MASHUP mainly for data service (DaaS), such as data mining of multiple network authorization database.

Mashup technology is floorboard of Mashup application involved web services technology? open integration technology. In software engineering, the software structure is changed to call architecture. "Architecture" is more intenerate than "structure", is the new characteristics of software engineering on network era.

Mashup is an application form under large concept framework of Web 2.0, is a new software development mode, it is not a new technology. Mashup architecture is as following Fig. 1, is composed of three sections renegade on the logical and physical, respectively, content supplier, Mashup sites and Mashup users browser.

API/ content supplier is responsible for providing integrated content required by the Mashup site, usually

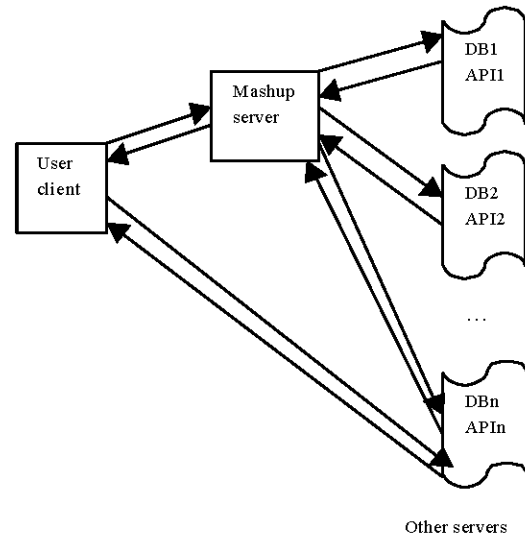


Fig. 1: Mashup system architecture

bring content to pass Web (such as REST, web Services and RSS/A TOM) protocol, using the API form to provide for foreign. The Mashup site is that Mashup place, Mashup server is responsible for the acquired or self-owned resources and services are encapsulated as standard components and managing these components and responding to application open call for resources and service. The client web browser is place of user interaction, the Mashup application select correlated resources to integrate to your own portal or other application system, the Mashup application results are presented on graphical model through the client browser.

NETWORK SHOPPING PLATFORM CONSTRUCTION STRATEGY BASED ON MASHUP TECHNOLOGY

With the improvement of Internet users acceptance on the network shopping, the rapid development of the third party payment tool, the development of China's online shopping market is accelerated apparently, many shopping ways such as: B2B platform, B2C platform, N2C platform as well as the independent network mall and group purchase website (Shi and Gruhn, 2010), more B2B website of current domestic shopping is Alibaba, China dome network, Zhuo purchase mall, ID style home furnishing furnishings network and so on, B2C platform is Jingdong Mall, dangdang.com, 100 goods store, Suning Tesco, N2C platform is Mail26 safe online shopping navigation, hao123 shopping navigation etc., M2C group

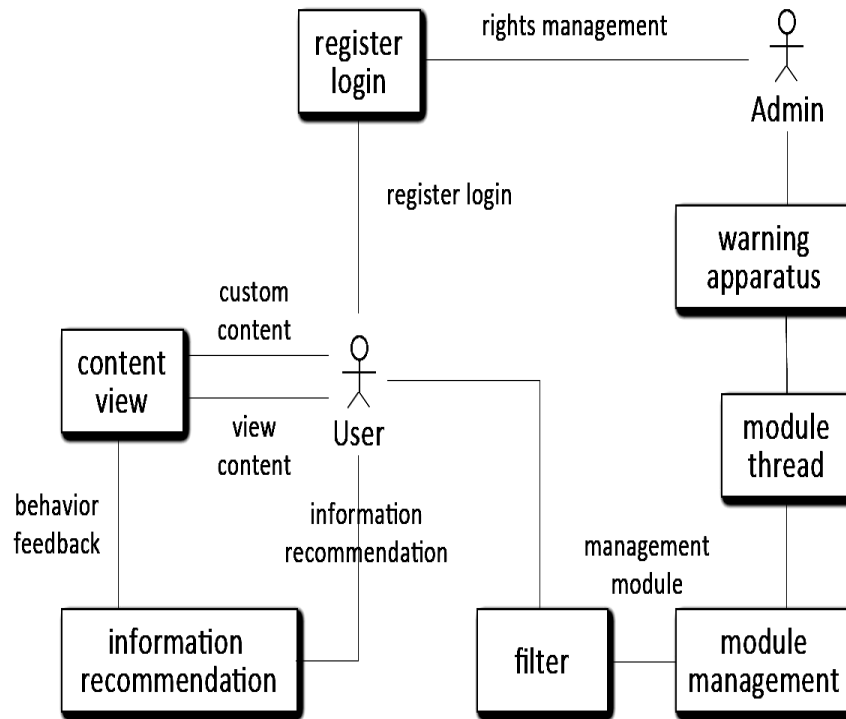


Fig. 2: Schematic diagram of online shopping system

purchase website has 58 city, shake hands handle net, beautiful round net, 24 coupons, brand sale channel is Taobao poly cost-effective, 29% off nets, vertical mall has VANCL, Martha Marceau. S2C (Shop to Customer in city)) site has 95 department store, the city shopping mall. With emergence of thousands of shopping website, let consumer get lost. Therefore, to provide online shopping information aggregation service platform for each online shopping user, to meet the shopping needs of different users, to integrate the existing shopping network resources in the Internet, it will help to save time for the user, to promote the development of the network shopping; it is a meaningful attempt in the online shopping network construction.

Online shopping system based on Mashup has seven parts is as following in Fig. 2: Register login, warning apparatus, module thread, module management, filter, information recommendation and content view.

Register login belongs to privilege management technology, privilege management technology is the key link of Web application project, because every computer has the browser, if not to establish authority management system, then a "illegal users" can be easy to access all the function of application Web projects through the

browser. Application in network shopping based on Mashup greatly improves safety.

Warning apparatus: Using intelligent monitoring agent to detect resource change and passing on appropriate notification. Price will be changed, time will be elapsed and new product will be issued, employee will be joined and leaved. Management cannot depend on outdated information, so it is important to keep consistent with all these change. Mashup has no use for adding value through regularly interact with end user. Through scheduling intelligent agent can automatically monitor all kinds of states and immediately inform sudden change to other objects through e-mail? mobile short message or other channels. The virtual observers are implemented through carrying through API enabling for expected resources and establishing a process that examines content changed or not. Warning apparatus can implement disposal of 20/80 problem of long tail on tens of thousands of resources and that not adding too much labor cost. Warning apparatus commonly tracks two data points: currently read and the moat new during historical read (may be inexistence, it shows lacking of forestall state). If the warp of two values is not during presetting

value, then it will be triggered a warning. Warning apparatus can implement monitoring and notification service with many other modes.

Module thread belongs to system management demand. The key technologies of module thread include resource acquisition methods, data encapsulation technology. With the development and wide application of Mashup, more and more information providers open their own API, provides resources for Mashup applications, so the Mashup application must first solve is how to get these open information resources. In general, the typical resource acquisition methods in the application of Mashup include web crawler technology, Web Feed mode, XML-RPC protocol, SOAP protocol and REST protocol. For some unpublished data of API, that can be collected by screen capture approach. In Mashup application, different sources, different structure data will be integrated together, in this process, the data package that need to solve are the main problems in Mashup application. The existing Mashup uses XML and JSON technology to package and transmit for data.

Module management belongs to the target user's demand. The key technology of module management is integrated display technology. The main goal of Mashup application is integrated by data resources or content, showing a variety of different applications to user, giving more friendly experience to user, therefore, in the Mashup application; integrated display technology is key technology of user experience. Integrated display technologies with widely application in Mashup include AJAX technology and Widget technology.

Filter: Life in the modern world, it seems that we may overwhelm at any time by increasing the warning, news and facts and figures forever. Information Overload (IO) is caused by increased connectivity and complexity of communication. Let us too busy to attend to all from so many areas of the transmitted information, so the time spent on data management is always increasing, but less time to understand the data. Currently we are unable to deal with the misery effectively. Spam filters can block unwanted e-mail messages but they cannot order by the importance degree of mail. Even the simplest query, search engine will provide tens of thousands of results. RSS source provides remain unbroken bother and often the same information from multiple sources. We solve the technical problem related to transmission of knowledge, but failed to solve the information classification of human needs. Because mashup can interact with sources of many responsible for information creating, so you can use them to help to solve the IO problem. Through the organization to those who compete for our attention data, we can

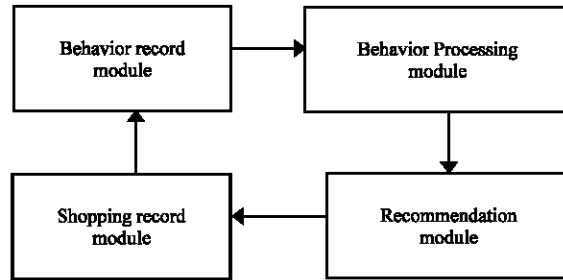


Fig. 3: Connection diagram of information recommendation module

regain control of it, choose how, when and where to interact with him. The result of effort provides "information security", but it is not the sense of the traditional password protection or customer information protection. This term means that, when we are not immediately concentrated on all things, we will make a person feel safe. Reasons for this confidence are that we realized that we can control our environment, not the environment control us. Filter mashup enable complex individual rules to use according to the specific situation. The activities include that the bad or irrelevant items are thrown away, the repeated communication is removed, abstract is created and conveyed and even the information is automatically transferred to different acceptor. Creating an information "organization chart", attention that get from each exchange directly relates to its importance, this is the purpose. And when combined with the good work habits, we fight with information overload and some continuous attention, mashup filter is a practical weapon.

Information recommendation belongs to system management requirement. It includes behavior record module, behavior processing module, recommendation module, shopping record module, as following in Fig. 3.

Behavior record module: This module records items collection and store collection and purchased goods of user; **behavioral processing module:** This module is responsible for processing user behavior data of recording module, getting each user preferences, listing priority of items according to the preference, ranking items according to priority, recommending to the user. **Recommendation module:** This module is responsible for real-time presenting items list that get from behavior processing module to the user and allowing the user to view all recommendation content. **Shopping record module:** This module is adding a new source of information, making records of purchased items.

To view the content belongs to the target users using demand. Through the front of several modules, the shopping resources that the user need have been sorted out, and then the resource is presented to the user, the user only needs to view the comparison, then shopping.

The example analysis:

The first step: The user carries on registration, writing his own data completely, setting up a username and password and then using the username and password to log in.

The second step: The user input goods that is needed to buy, system uses open API and screen capture method to aggregate all online shopping stores and price data of the goods, using XML and JSON technology to package and deliver data.

The third step: Using integrated display technology, the data that is sorted out is displayed to the user.

The fourth step: The system uses the filter to delete the same store, delete evaluation difference store? delete the high price shops for organizing data.

The fifth step: According to user preferences, recommending related items, for example, the user buys a T-shirt, jeans can be recommended to the user; or if the user booked a hotel dinner, related recreational activities can be recommended to the user.

The sixth step: Showing all these data to the user, providing view for users, giving users convenient.

The seventh step: The price of the goods is variance, such as some shops engage in some promotional activities during the holidays, using warning apparatus to inform users that the goods price is changed, adjustments have been made.

CONCLUSION

In the paper, the mashup technology in applied strategy of the network shopping still needs test and

improvement in the implementation, but with the passage of time and the continuous emergence of new technology, it also makes system to have greater improvement. In this study, the next step will focus on the following aspects:

- Each business module can be optimized, reducing the unnecessary data transmission in page flow, in order to reduce the data size of network transmission, further improving the efficiency of network transmission, and reducing system response time
- System is designed for international character set, carrying on the localization process for users in different countries, improving the range of platform user
- The safety aspect of WEB service can do further study

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REFERENCES

- Ankolekar, A., M. Krotzsch, T. Tran and D. Vrandeic, 2008. The two cultures: Mashing up Web 2.0 and the Semantic Web. *Web Semantics: Sci. Serv. Agents World Wide Web*, 6: 70-75.
- Jung, J.J., 2012. ContextGrid: A contextual mashup-based collaborative browsing system. *Inform. Syst. Frontiers*, 14: 953-961.
- Ogrinz, M., 2010. *Mashup Mode*. Machinery Industry Press, Peking.
- Scotch, M., K.Y. Yip and K.H. Cheung, 2008. Development of grid-like applications for public health using web 2.0 mashup techniques. *J. Am. Med. Inform. Assoc.*, 15: 783-786.
- Shi, Z.Y. and M.F. Zhu, 2010. Optimization of semantic MASHUP architecture applied in microlearning environment. *J. Jiangsu Univ. (Nat. Sci. Edn.)*, 31: 339-342.
- Shi, Z.Y. and V. Gruhn, 2010. A heuristic approach applied in business oriented management. *ISAI.*, 2: 188-191.