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Design and development on travel product marketing system based on cloud computing technology

Yilin Mao

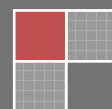
Zhengzhou Tourism College, Zhengzhou, 450009, (CHINA)

ABSTRACT

At present, product distribution system in the world tourism industry needs support from informational means. While organic combination among cloud computing technology, internet of things and mobile internet is the key to the construction for tourism product marketing system. In the current information & technology environment, the platforms for cloud computing which are frequently used mainly include three categories, which are namely Azure, EC2 and GAE platforms etc. Research in this dissertation is to carry out contrast analysis on these three platforms, and to indicate the one with more maturity is the GoogleAPPEngine (GAE) platform via related analysis. In this dissertation, resources provided by GAE platform are used as the basis, on which customer requirements and system feasibility are analyzed, while design and construction are also carried out with respect to main functions of tourism product marketing and customizing system. Main functional modules in the marketing of tourism products include: query on tourism products, digital map in products, interaction experience of products and function sharing, as well as basic functional modules: Member registration and My space. In order to guide users to purchase tourism products, corresponding information platform is provided in this research, so that customers could access information about tourism products easily. Tourism product marketing system is not only a new direction for developing China in an informational way, but an extension of current tourism information, which will create more values for tourism enterprises in the end.

KEYWORDS

Cloud computing technology; Tourism marketing system; Tourism information system; Cloud computing platform.



INTRODUCTION

Nowadays, the age for public tourism of the world has become increasingly closer with the development in social economy, and tourism career has become a main life style of modern people. During information times, with diversification of tourism information, and constant improving in requirements of people on tourism, traditional mode for marketing tourism products has failed to meet people's needs in information times. There're certain disadvantages in traditional mode for marketing tourism products, with excessive simplicity in product information, and poor integration among product data. In information times, the most efficient way to solve existing problems in tourism industry, is to improve information level of tourism products, and to establish a perfect marketing system for tourism products. In recent years, tourism development in China keeps improving together with information times, combines with cloud computing technology, based on existing technology, and creates intelligent tourism products marketing system, so as to realize integration among tourism marketing, management and service finally, via information & technology means, to make tourists visit information of products, and sell tourism products required by tourists. Main feature of cloud computing technology is to penetrate newly emerging issues into all fields of information industry gradually. With constant improving and developing in social economy at present, requirements on information & technology skills on cloud computing technology etc. are also improving. Design on marketing system for tourism products, is mainly to provide people with certain convenient conditions, so that they could query product information required via terminal internet device, which is easy for purchase and brings along certain benefits to enterprises.

Data model of cloud computing technology

There are three layers in with respect to the model of cloud computing technology, which are namely IaaS service layer, main function of which is to use fundamental facilities in this system as data service; PaaS service layer, which functions in service; SaaS service layer, main purpose of which is to use software as service in usage^[1], The cloud computing service model is shown as Figure 1.

(1) IaaS service layer

Main purpose of IaaS service layer is to carry out comprehensive application service with respect to data information in the system, and its ability to accessing computing resources via using remote service.

(2) PaaS service layer

Main function of PaaS service layer is to carry out product distribution via using remote system in cloud computing technology, and submitting a complete product delivery via customers on remote platforms.

(3) SaaS service layer

Main function of SaaS is to provide corresponding product marketing information via using internet. Generally speaking, both the purchaser and the vendor could use related technology software to carry out product marketing, while customers could use internet to carry out visit on product information, thus to make it easy regarding marketing operation, and selling more products in a short period of time.

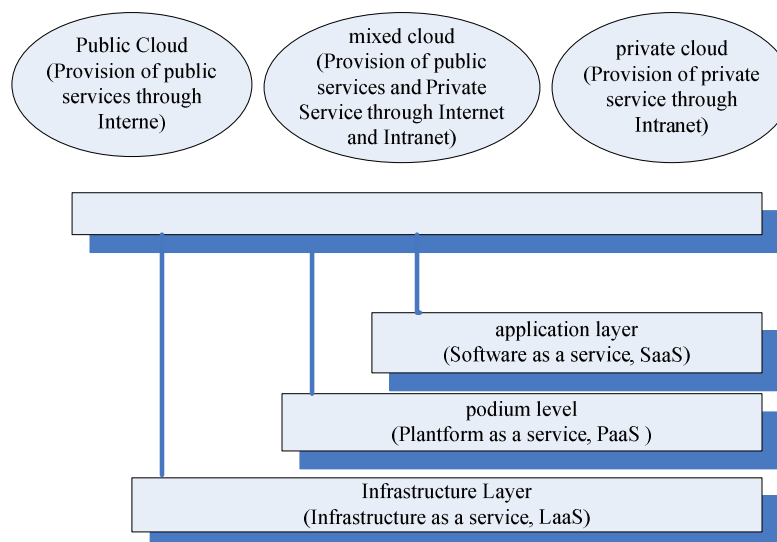


Figure 1 : Cloud computing service model

Analysis on related technology of cloud computing

(1) Storage technology for mass data information

Multiple data information storage technologies mainly include two kinds, which are namely structural data storage and non-structural data storage. Among which, structural data storage is mainly accomplished for saving data via distributed database technology, while storage method for non-structural data information is to utilize related distributed file resources to implement storage^[2].

(2) Virtual processing in cloud computing technology

Main function of processing of virtualization technology lies in realizing intercommunication between hardware and software in information technology in an all-round way, among which technologies mainly included are: Dividing single information resource into multiple virtual information resources, and carrying out integration on information resources, meanwhile, carrying out processing of virtualization technology based on objects in information resource.

(3) Data information management technology on cloud computing platform

For there're mass data information on cloud computing platform, processing is carried out via using distribution nodes in large quantities of servers, so as to make many application systems operate synchronously.

Main function of information data management technology in cloud computing platform is mainly to carry out organic combination on mass information services, so as to benefit the completion of tasks, while the most obvious feature of information data management technology in cloud computing platform lies in interactive usage between system intelligence and automation method, so as to make it easy for task completion^[3].

(4) Effect computing technology in cloud computing platform

Effect computing technology is the commercial resource mode for a kind of scientific and reasonable resource information, among which, users need to obtain corresponding information from information resources in cloud computing, and to understand related information about expenses.

Generally speaking, the largest function of effect computing in cloud computing is to bring along certain benefits to users, so as to obtain the largest benefits in the end.

CLOUD COMPUTING BASED TOURISM MARKETING SYSTEM DESIGN

Cloud computing based tourism marketing system is a complex application system including multiple subsystems. Each subsystems of the cloud computing tourism product marketing system can support the information age. The most effective way to solve problems in the tourism industry is to raise the level of information of tourism products, and establish improved the tourism product marketing system. In recent years, China's tourism continuously develops with the information age. Based on the existing technology, tourism is combined with cloud computing technology, creating intelligent tourism product marketing system, and ultimately achieving the integration of tourism marketing, management and service. By information technology, tourists can access to the product information, and the tourism products needed by tourists can be sold.

Tourism product marketing system

In the information age, with the diversification of tourism information and the increasing demands for tourism, tourism products marketing model under the traditional model has been unable to meet the needs of people in the information age. Traditional tourism product marketing model has some drawbacks, including single product information and poor integration of product data. The main purpose of cloud computing based tourism marketing system is to send the terminal to cloud terminal through IT, processing the data information^[4]. From the user's perspective, the user has multiple roles, is the user of cloud computing services in the system, and also the provider of cloud computing technology service information resources, which is the core of cloud service technology.

Selection of the cloud computing platform

In the current IT environment, there are three commonly used cloud computing platforms, namely Azure, EC2, GAE platforms, etc. This paper comparatively analyzes the three major platforms. Through the comparative analysis of three platforms, the relevant analysis shows that a more mature platform is Google APP Engine (GAE) platform. This paper is mainly based on the resources provided by the GAE platform. On this basis, in order to facilitate user to purchase the tourism products, the first is to provide the appropriate information platform to facilitate customer access to the tourism product information.

Demand analysis for tourism product marketing system

Customers are the main part of tourism product marketing system. In the whole process of marketing of tourism products, the largest beneficiary is the customer. With the continuous development of information technology, customers can search the information online with the terminal equipment, and collect some information about the tourism products.

MODULE ANALYSIS OF TOURISM PRODUCT MARKETING SYSTEM DESIGN

Design objective of tourism product marketing system

The main purpose of designing tourism product marketing system is to provide convenient product sales and services to users. The product information can be easily obtained through this system. In the design process of system, the following aspects of the system should be fully considered:

- (1) As for the cloud computing technology tourism product marketing system, the user interface is required to be simple and convenient to transact;
- (2) Each functional module of the system is required to be thorough, and users can obtain the information required in accordance with the design of the system, facilitating the product transaction;
- (3) Finally, ensure the security of the system. The cloud terminal of cloud-based tourism product marketing system stores a massive of information resources. If there has not higher system security, user information is easy to leak, and ultimately the product sales will be affected. Therefore, the security of system is the most important thing and prerequisite^[5]

Reasonable analysis on tourist product marketing system

For the consideration of rationality and feasibility analysis study of tourist product marketing product based on cloud computing technology, analysis study should be firstly started from system technology. The creation of the system is done through AppEngine of Google due to the fact that GAE platform is a mature cloud technical platform in the development of informatization.

Function module design of tourist product marketing system

The study designs and builds the major functions of tourist product marketing customized system, and major function modules in tourist product marketing includes information query of tourist products, digital map in products, interactive experience and share function of products, and also the basic function modules consist of register member and my space. The function module of tourist product marketing system is shown as Figure 2.

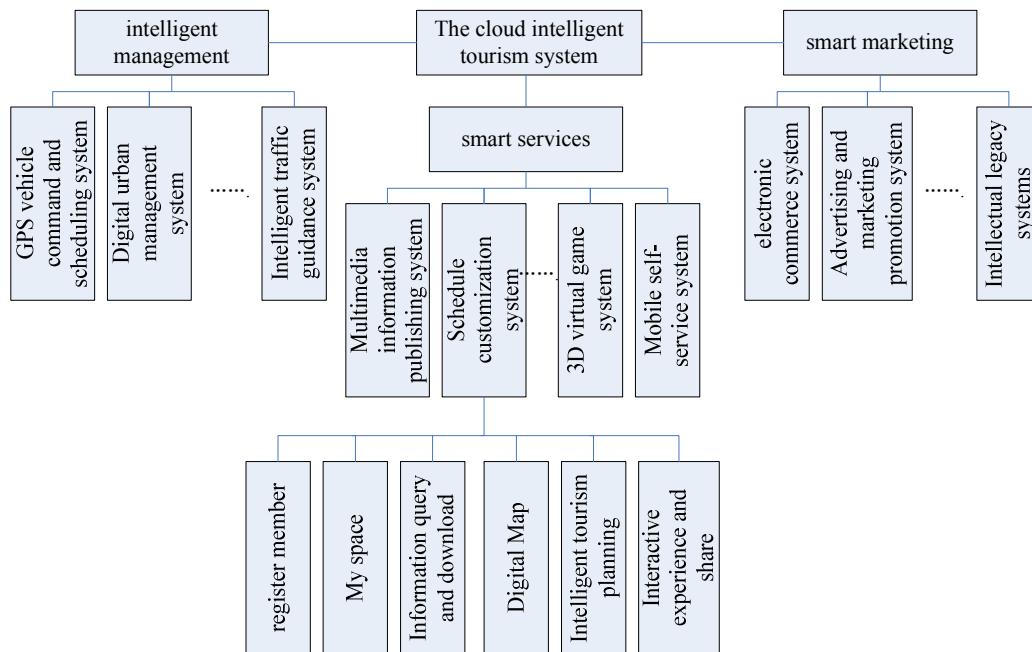


Figure 2 : Function module of tourist product marketing system

Business flow design of tourist product marketing system

Tourist product marketing system should design the user access, of which the user login state, tourist product information query and downloading should be designed. User login flow in tourist product marketing system is as shown in Figure 3.

When the user logs in tourist product marketing system, the system access address will be opened by a user, and now the system will judge the correctness of user information. If the user passes identity, proper tourist product information query can be done, of which information downloading flow of tourist products is shown in Figure 4. Tourism administrators and clients can make information query and purchase on the tourist products in which they are interested according to keywords.

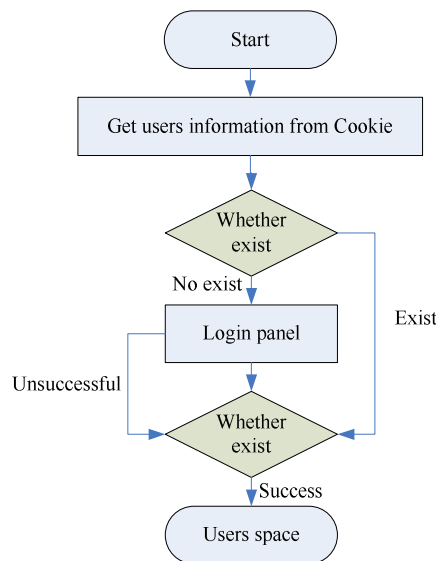


Figure 3 : User login flowchart in tourist product marketing system

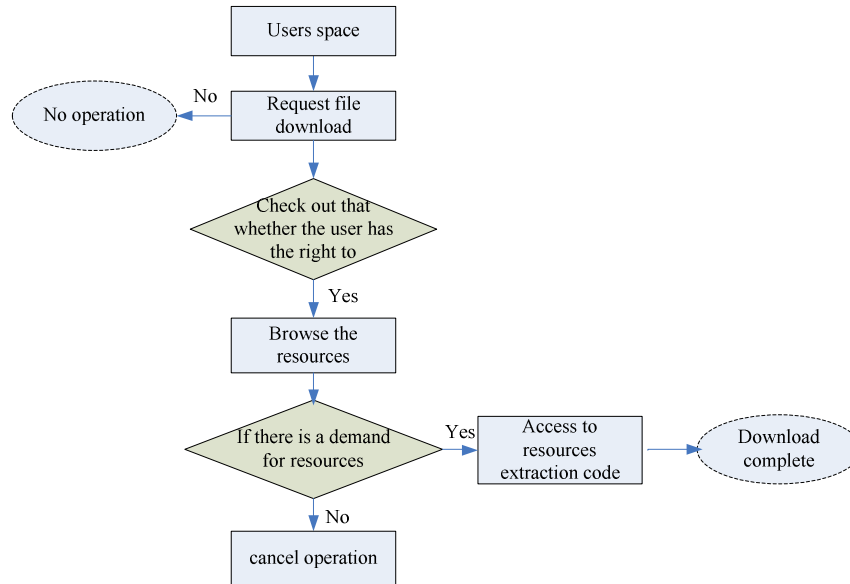


Figure 4 : Tourist product information query (downloading) flowchart of user

BUILD TOURIST PRODUCT MARKETING SYSTEM BASED ON CLOUD COMPUTING PLATFORM

Build tourist product marketing system

For tourist product marketing system based on cloud computing technology, building of cloud service is the core of the whole system, and the cloud should be high-efficiency in processing ability. The main purpose of cloud is to achieve product sales, of which it consists of three core steps, cloud, channel and terminal^[6], as shown in Figure 5.

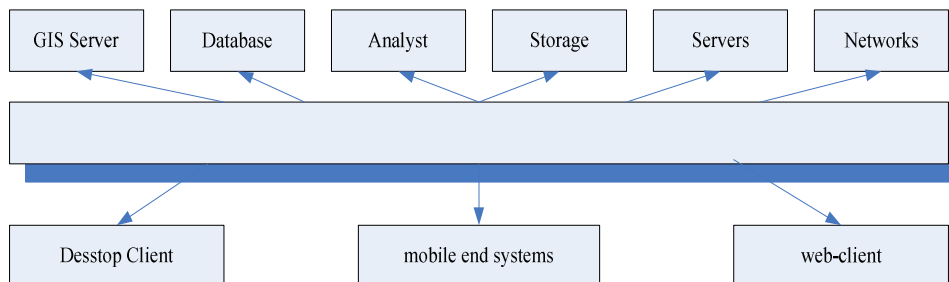


Figure 5 : Cloud structure of tourist product marketing

Achieve cloud function used in tourist product marketing system of cloud technology

As technology which is supported by GAE platform is Java language, the procedure can be developed by Java in the development process of the system to develop tourist product marketing system. Java takes advantages in specific Web procedure^[7], which is convenient for the system to build, that is, system design and development is mainly done by java in the design process of the system. The development tool of the whole system is Eclipse7.5. As the technology which is supported by GAE platform is java 5 and java6, Jdk1.6 and Appengine-java-sdk-1.6 are selected in the final system development environment from analysis of the detail demand of the whole system.

Eclipse software is unique, which is an application technology development platform based on Java. Source codes are easy to use^[8]. As for the features itself, it is only characterized by a framer and a group of services, and the major function of Eclipse is to make system design by plug-ins and modules. Information design in the system is shown in TABLE 1 below.

TABLE 1 : Statistics for regional information and tourist attraction recommendations

Regional information and attraction statistics				
	Area sum	Area I	Area II	Area III
Information	Area sum in tourist attractions	Sum of tourist attractions in area I	Sum of tourist attractions in area II	Sum of tourist attractions in area III

After table structure is designed and crated, the next step is to store attraction information in the table. Because data storage doesn't need regulated operation, data storage doesn't need Reduce process, and only data is stored in Map process. Map process steps include

- (1) Read table name from configuration information
- (2) Obtain table quotation
- (3) Read Map input file name
- (4) Read attraction information in input file content and store in the table once. Configuration codes are as follows:

```

JobClient jClient = new JobClient(conf);
ClusterStatus clusterStatus = jClient.getClusterStatus();
conf.setNumMapTasks(clusterStatus.getMapTasks());
conf.setNumReduceTasks(0);
JobClient.runJob(conf);

```

CONCLUSION

The design of tourism product marketing system is aimed at providing convenience for people to search for the needed product information through the terminal online equipment. The system is easy to buy and can eventually bring certain benefit to the company. Based on cloud computing technology, the tourism product marketing system can get fully prepared for the travel of customers and provide optionally handy space. With the constant improvement and development of the current social economy, the requirement for information technology method such as cloud computing technology is continuously increased. The tourism product marketing system is a new direction of developing China's information at present, as well as the extension of the current tourism informatization, and will eventually create more value for tourism enterprises.

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