Web Based Farmers Bulletin for Agricultural Development using PAP Approach

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Abstract— In the present era entire world is focusing on agricultural development because of increased population and decreased agricultural production. Reason for decrease in production of agricultural products differs from place to place. The main aim here is to support the farmers in their decision making on which mechanism to choose best for a better productivity at their arms reach. The proposed system focused to increase the profit of the farmer by increasing the efficiency of agricultural input and reducing the cost and risk of production. This can be achieved by providing timely advice to the farmer like, dynamic weather forecasting and use of knowledge engineering to extract best suitable Agricultural information from various source. The PAP (Preprocess Associate and Predict) architecture is used for performing knowledge extraction and prediction process. This technique can handle all type of information.

Index Terms— Agricultural Input, PAP

I. INTRODUCTION

All kind of agricultural processing systems are fully depended on one or more of the following agricultural information
1) Pest warning and pest control.
2) Fertilizer use in terms of amount and timing.
3) Choice of the crops to be based on soil .
 4) information on cost, profit, and risk   factors for various crops.
5) Scheduling of crop activities.
6) Weather information and the type of the crop to be raised by forecasting weather.
7) Marketing.
8) Strategic planning.
9) Harvesting.

There has been some influence on all the spheres of our life during the last decade because of the progress in information technology. Mass customization and personalized services are an example of recent developments in information technology. Huge information repositories can be maintained with help of these developments and they also improve the utilization and performance of livelihood

technologies such as agriculture, education, health and medical services. The living standards of rural population can be improved by building cost-effective IT based systems. Around two thirds of the population of India depends on agriculture for their livelihood and thus is the backbone of our nations economy. But sadly, the condition of farmers in India is one not to be envied. They must overcome many financial hurdles. The raising of capital to invest in seeds, fertilizers etc. is a monumental task for them. Most of them often take credit from banks and money lenders to make the investment. When they do this, they are staking their entire fortune on the good yield of the crop. If that does not happen then they are pushed into a crisis situation which can lead to severe stress and suicidal itentions. They not only face financial problems but also their lack of understanding of newer techniques. They are ignorant of the various advances in agriculture technology, like for example: the benefit of using some better and new varieties of hybrid crops which when cultivated gives an improved yield over the existing varieties or newer methods to control pests without resorting to stronger pesticides which might have harmful effects on their crop. So, to help the farmers to overcome this ignorance we proposed a decision support system which provides information and necessary guidance regarding new farming techniques by giving timely advice to the farmers.

So by providing the valuable advanced information for the cultivation of crops by making use of Computer and the Information technology and current advances in agricultural technology, the effect of the several factors that disturb the crop can be reduced.

II.   RELATED WORK

An Integrated Agriculture Information framework (IAIF) has been proposed to enable knowledge extraction from Multiple domain related repositories. IAIF has been designed and developed with the core aim of meaningfully representing combining, merging and aggregating the data present in existing knowledge repositories through the use of metadata and domain ontologies. The domain ontology serves to link the resources with the domain knowledge with the help of respective metadata[1]. Region-wide agriculture is facing several challenges, threatening its growth and sustainability. The physical and economic environment in which agricultural activities are undertaken is changing rapidly and getting complex [2]. The construction of

modern agricultural system is the direction of every countries agricultural development, while modern agriculture with characteristics of agricultural informatization and service internetizing needs the development of e-commerce. There are some problems in developing fundamentals and environment of agricultural e-commerce model. [5]

In recent years, many government and private organization efforts have been devoted to bring ebusiness technologies to agricultural domain. It is quite possible in agriculture marketing scenario that for a complete business process, an agricultural marketing activity can make the use of various existing business applications with loosely coupled and open computing environment. However, there is a need to develop a proper underlying infrastructure that links legacy business applications and provides an environment for a competitive business. Web service is an internet-based software component that can shield all sorts of heterogeneous business

Applications on basis of Service-oriented architecture standards. In this paper, a Web service composition framework (WSCF) is presented to offer the effective business integration for agriculture marketing. It models various business processes as Web services and the process-based Web services composition can be carried out a complete business process spanned across various existing business applications. We are following WSCF to achieve our objective in ongoing project e-agricultural business platform[6].

III. PROBLEM DESCRIPTION

As our work includes continuous updating of information and its timely retrieval as soon as it is possible because we want to make it a real time system, so it's very important to make the project reliable and minimized risk factors. Keeping the above domains under consideration, we will have to create a large database which keeps the agricultural information in the form of rows and tuples. The creation of database is the main problem here. In this database, information regarding market demand and supply, government regulations, weather forecasting, cereal crops suited according to the environment, soil study, pest control etc. type of information can be provided which requires study of farming and agriculture management. Also, its continuous updating is the main problem. We have made a provision for updating the various information by connecting the database server after its creation to an organization server like MY TODAY mob service which will update the information in the database whenever there is any change in the data values of the database in the market. And any request by database server can be sent through APACHE server to that organization. Here, organization will

work as the Expert system to modify the data and also generate some important data regarding crop selection. The information will be updated and then the updated information will be sent to users as requested. Also there are some problems in this part that the users which are usually

illiterate farmers will be able to get the information in English language or not. Implementing that information into various languages will create much problem. Our main aim here is to make all the information in the database to reach every farmer by NGO's. Possible agro database.
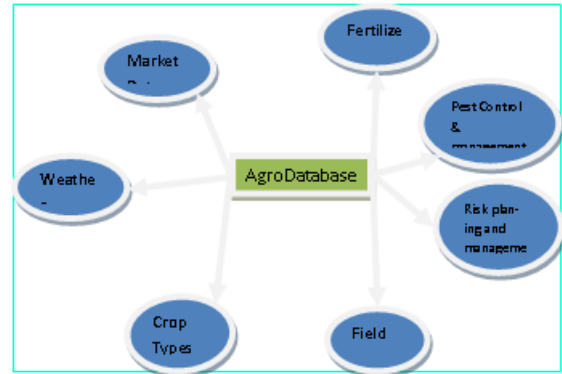

Fig.1 Agro database Framework

IV. METHODOLOGY

Proposed a framework here will work as a real time system and continuously update the information regarding agricultural data required by the farmers for efficient and higher productivity of crops. We are providing the various steps involved in this project in short as follows:

A. Creation of Agro Database

We are going to create a large database which contains the information regarding cereal crops and its types, weather information, field information, type of crop required in any particular climate, fertilizer data, market demand and supply data, crops cost and value data, risk management and pest control and management data. Other useful information can also be added in that database. This database is in tabular form and can be updated as required. User can retrieve data from this database and use that data to increase the productivity of crops. Database can be made such that new information and fields can be added into it easily.

(1) Connecting database to Internet

The database created can be connected to the Internet and installed as web server with website designed for the information to add or retrieve as well as for communication with users and farmers. Requests from farmers or users can be sent through PHP or JSP designed to Apache server. That apache server will further connect to the organization server like MY TODAY and direct the request to that server. Expert system in that organization will update the information as required and send it to the database server via Apache server. PHP or JSP tool can be used for the connection and communication between database server and organization server.

(2) PAP Server

Important role of this system depends on this PAP server. it consists of three tasks, namely

Preprocessing, Associating and predicting. Each of these tasks can be done as a pipelining or individual tasks based on the need. The following Architecture describes the overall PAP architecture and its use.
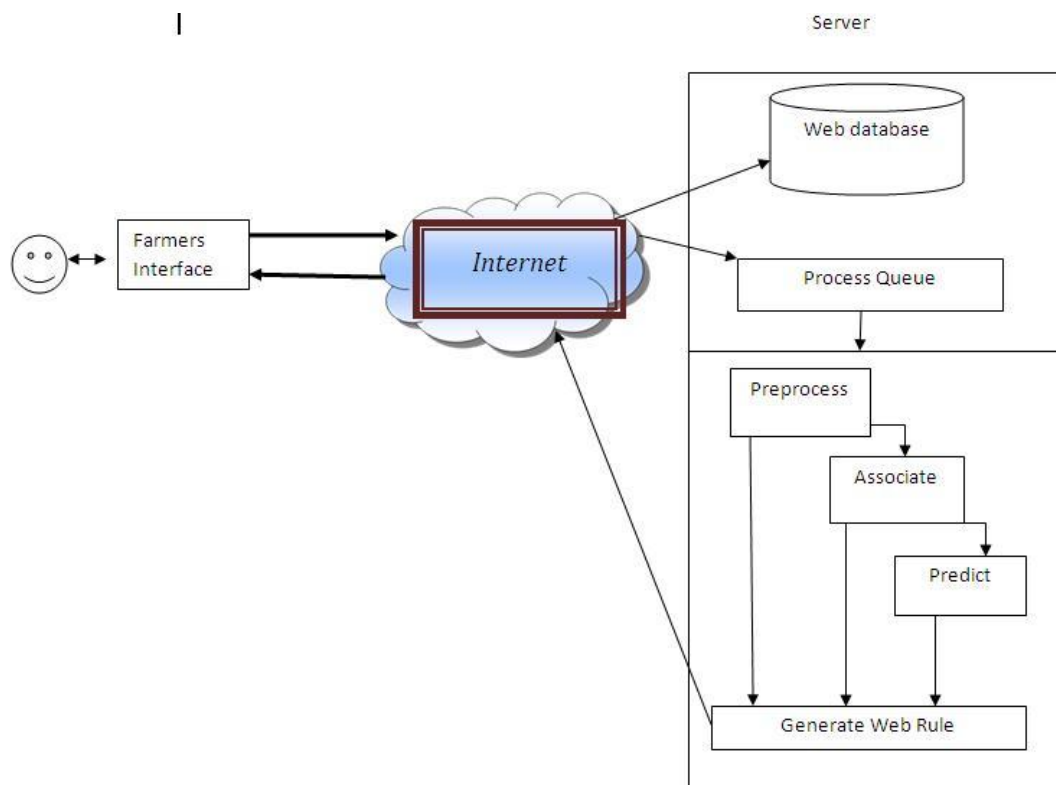

Fig. 2 PAP Architecture   *Good rainfall*   *Good climatic condition => money plants*

Preprocessing

Name implies that some task has to be done before the actual work. Since we are focusing on farmers decision making, we need to have lot of information from various sources. When we have such information with us, we can't store it as it is. Due to heterogeneity of information, it needs to be preprocessed(converting into application specific formats) before applying it to the original Agro database.

Associating

In most cases this process is going to be the heart of the system, when all Information is ready with the database this process will get request from the system and based on the request and training set and associating pattern already stored it will form the association among the items. This association is applicable for all set of items for example This is a simple association that gives you the result that, when ever good rainfall and climatic conditions exists then you can chose money plants.

Prediction

Most useful system for all other processes. Because when we want certain information that is not available in the Agro database, you can't proceed with the current task so this prediction process will helps you to predict the future with current and past history information.

V. CONCLUSION

I conclude the web based farmers bulletin will increase the income and decrease the risks. The motivation of web based service is a flexibility to ensure the sustainable development and integrate heterogeneous information among various sources for the next generation agricultural development. The results of the initial experiments of the references show that this mechanism not only possesses strong evaluating capabilities, and compensates the service oriented architecture modeling deficiency during the service composition, but also improves the decision making efficiency using PAP approach. I am currently working on the enrichment of our PAP Architecture methodology.

REFERENCES

[1] Semantic Web based Integrated Agriculture Information Framework by Muhammad

Shoaib, Amna Basharat, Second International Conference on Computer Research and Development-2010

[2] 2008 SAARC AGRINET(www.saarcagri.net*)* has been formed and that was the good initiative for making the Library of Agricultural Information.

[3] An ongoing research at MOTOROLA Corporation on the topic "Precision Agriculture- A smart farming technique " which aims at Information based Agriculture development.

[4] O. Folorunso, et al.. An Agent-based model for Agricultural Ecommerce System. Informantion Technology Journal, 2006,(2):230.

[5] Cui Hai-xia, Cui ling-yun Analysis of Agricultural Applications of E-commerce Model Based on Construction of Modern Agricultural System and "The paper is sponsored by the project of Hebei Agricultural University" IEEE-2010

[6] A Building an e-Agriculture Business Integration Platform with Web Services Composition by Jianqiang Hu, FengE Luo, Guiping Liao IEEE conference of information sphere-2008

[7] Network Computing for Agricultural information System by Seishi Ninomiya, Matthew Laurenson and Takuji Kiura.

[8] Developing agricultural models using MetBroker by Laurenson, M. R., A. Otuka and S. Ninomiya.

[9] S.Chaudhuri, Umeshwar Dayal, V.Ganti, Database Technology for decision support system, IEEE Computer.

[10] Role of Information Technology in Agriculture and its scope in India, S.C. Mittal.

[11] DEMBroker -Consistent access for software applications to digital elevation models by Lurenson, M. R. and S. Ninomiya.

[12] A model of decision-making and information flows for information-intensive agriculture by Fountas, S.