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Agro-Cloud: Information Providence Based on Monitoring Service Via New Computational Gist

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Abstract:- **Agriculture is a mandatory for a human being and it a backbone for Indian economy, without cultivation life resource of a human became a questioner. Considering these needs this paper concentrate on the agricultural fields for its development by providing needed information as a service to the farmers, who plays an important role in agriculture for food production with the help of a new computational idea that is cloud. With the assistance of monitoring the activities of the farmer in technical named as monitoring as a service. To attain this goal a cloud infrastructure was proposed with various servers that provide application for user interaction, database maintenance by a cloud admin like updating of recent information on bearing in mind with whether forecast, common crop diseases at various seasons and too sudden unpredictable crop affecting diseases, natural hazards etc., monitoring server used for nursing the farmers desires. Farmer's gets their information service to the personal digital assistance with the help of this proposed cloud infrastructure and predicted case report was generated on considering both the natural disasters and involvement of a farmer in this infrastructure.**

Keywords: Cloud Infrastructure, Information Service, Servers, Natural hazard.

I. INTRODUCTION

Cloud computing is evolving as a novel prototype for extremely scalable, fault tolerant, and compliant computing on enormous clusters of computers. Cloud architectures provide highly obtainable storage and compute capacity through dissemination and replication. Cloud computing as a developing technology is anticipated to restructure the information retrieval procedures in the near future. A typical cloud application would have a data owner outsourcing data services to a cloud, where the data is stored in a keyword-value form, and users could retrieve the data with several keywords.

The internet and central remote servers are used to maintain its applications based on cloud computing technology. Cloud computing allows user to access their file from internet without installation.Cloud computing technology more efficient by using the centralized data storage, bandwidth and processing time to retrieve the data. The concept of cloud computing represents a shift in thought, in those end users need not know the details of a specific technology. The service is fully managed by the provider. Users can consume services at a rate that is set by their particular needs. This on demand service can be provided at any time.

Agriculture in India has a significant history. Today, India ranks second worldwide in farm output. Agriculture and allied sectors like forestry and fisheries accounted GDP for 16.6% in 2009 and 50% of workforce. In India the total GDP in economic contribution also steady declining economic growth based on country's broad-based. And also agriculture is demographically playing a significant role in the social economic of India and broadest economic sector. India is the world largest agriculture statics in 2010 for producer of many fresh fruits and vegetables, milk, major spices, select fresh meats, select fibrous crops such as jute, several staples such as millets and castor oil seed. India is the second largest producer of wheat and rice, the world's major food staples. India is also the world's second or third largest producer of several dry fruits, agriculture-based textile raw materials, roots and tuber crops, pulses, farmed fish, eggs, coconut, sugarcane and numerous vegetables. India with world ranking for largest producers of nearly 80% of agriculture product items include cash crop such as coffee and cotton, in 2010. India is the world five largest producer's poultry meat and livestock fastest growth rate.

From 2008 one report claimed the population of India's is growing faster than its ability to produce wheat and rice. Some recent studies claim India also feed its growing faster population easily, also produced rice and wheat for global exports. If we reduce the stable spoilage of food developed its farm productivity to achieve by other developing countries like china and Brazil. In the year of June 2011, with monsoon season, nearly 85.9 million tons of wheat, time record accomplished by Indian agriculture, increasing of 6.4% from an earlier. New record in Indian hit 95.3 million tons nearly 7% increase from the last year. Lentils and some other types of production also gradually increased in this year. Indian farmer also increased in production of rice and wheat for every Indian population increased in 2011, production of rice 80 kilogram and 71 kilogram of wheat. Indian farmer also involved more in agriculture to increase the cultivating of rice

and wheat. Nearly 2.1 million metric of wheat in 2011 was export to Nepal and African regions all around the world.

India is also a faster growing industry among the fishery and aquaculture. Aquaculture harvest fish capture and marine capture fisheries. The second place in largest producer in aquaculture farmed fish producer, nearly 600,000 metric tons of fish products in India expected to nearly all the half of world's countries.

India has shown nationwide steady average increase annual in the kilograms per hectare for many agriculture items, over all the earlier years. This will be achieved by mainly come from Indian's green revolution, improving the power generation and road infrastructure, also gets the knowledge to reforms despite these recent accomplishments, Indian agriculture is the potential for all major productivity and total output gains, because only 30% to 60% of crop yields achievable in the developments, due to additional losses in the crop yield losses after harvest due to unorganized retail and less infrastructure cause India to high food losses in the world fishery. In order to help farmer on considering the needs and importance of an agriculture, a new system was proposed that provides a cloud infrastructure to provide an information to the farmer by using an features of a cloud computing.

ARCHITECTURE DIAGRAM

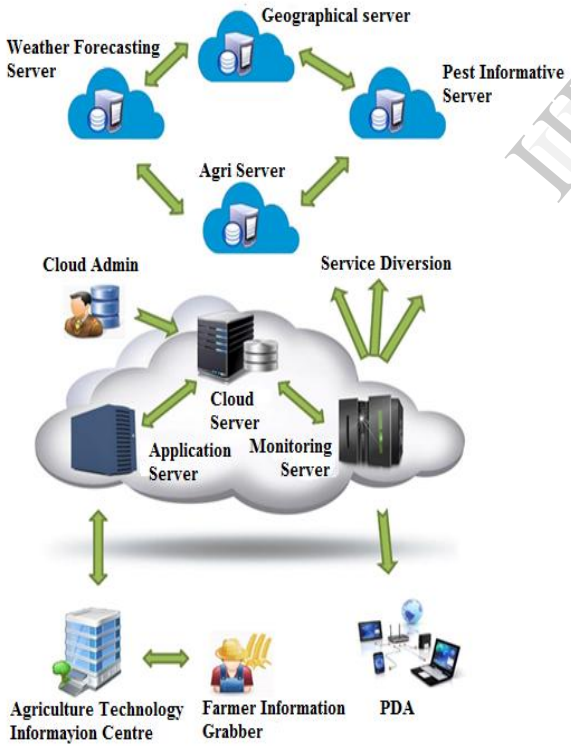

Fig.1. Overall architectural view of Agro-cloud system

Application server provides a needed graphical user interfaces and necessary applications for the information Graber for interaction purpose with the agro-cloud environment. Database server holds the information regards the agro-cloud user involvement which was provided by an application server, current information about the weather, varieties of crops, crop diseases, and frequent updated information. Monitoring server plays important roles in the agro-cloud because the related information regarding the cultivation was delivered to the farmer periodically based on the dynamic registration involved by them and the server connection was done by this server based on the past query, automated service prediction, the service may be of any cultivation related issues.

II. EXISTING WORK

The usage of the modern technologies is the only way to achieve the high food production. This modern technology must implement to increase the development in agriculture. Information communication and technology (ICT) is play major role in the agriculture to bringing, the latest bulletins regarding the crops, how to use the fertilizers costs, weather reports etc to farmer at rural areas. Now a day government also has taken steps to introducing modern agriculture technology in rural areas. To deliver all the modern schemes by offering telecom services like internet at low cost which will more helpful to the farmer to produce quality crops. Agriculture sector will have number of factors to affect production and quality differs from each crop. Since the environment of the farmland is under very complicated ecosystem on considering different kinds of factors from environment defect.

Agro-cloud system is available for farmers to give information in activities like cultivation, crop diseases etc., whether information updating etc as SaaS.There is no such a system like information providence for cultivating a new crop to farmer in cloud infrastructure without sensing device.

In existing system, information was provided to the farmer as SaaS. Sensing devices were used for gathering information about the crop require high cost. Consultant is required for collecting the information about the crop and farmers should have a basic knowledge for operating/interact with the application provided by the system.

III. PROPOSED WORK

Few Characteristics of cloud computing are elasticity, scalability etc. It will supporting many types of devices like web browser, mobile etc or any low price device used by the agriculture consumers of any type from farmer to agriculture experts. Cloud based data centers allows you to stored large number of data in securely also large complex calculations can be done by using the agriculture scientist of new inventions. In rural sides, agriculture departments give timely and accurate agriculture information, then the stake holders takes the correct planning, decisions to develop farm lands.

The fastest development in information technology is improved in agricultural science and education can improve the level of education and research capability by collecting the latest agriculture information resources and distributed same as the end users.

In our proposed infrastructure, we use a two cloud services (Monitoring as a service (MaaS), Information as a service (IaaS)) to monitor the activity of a farmer. We integrated various cloud servers to retrieve information

needed to build a cloud database instead of using any of a sensor in the cultivation fields is a main advantage of our proposed system.

Some advantage of proposed system are used to provide all the necessary information needed for farmer in the cultivation, monitors all the activities of a farmer and provide information according to the nature of soil and geographical location, preserve the soil mineral density by guiding the farmer via crop rotation, helps to protect the crop from various natural disasters, statistically improve the productivity of the farmer. By this infrastructure we can provide crop information to various farmers around the world.

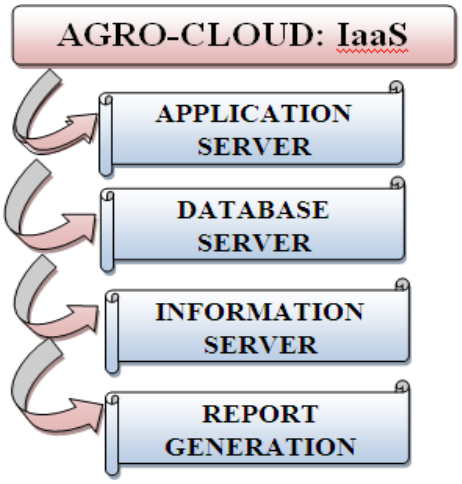

Fig.2. Modules involved in Agro-cloud system

A. *Application server*

This Server provides a needed graphical user interfaces and necessary applications for the information Graber for interaction purpose with the Agro-cloud environment. With the help of these interfaces an enrolment process was carried out by the user i.e. static and dynamic registration. This server gathers the related and required information during the registration process and transfers the data to the cloud storage database.

1) Static Registration: It is an initial registration process, here the farmer involves in basic registration like basic information about him with mandatory regional information if he is new to this environment. An individual id was generated for each and every new member who likes to gather information in the Agro-cloud. This registration process is said to be static because of avoidance in duplicate ID generation.

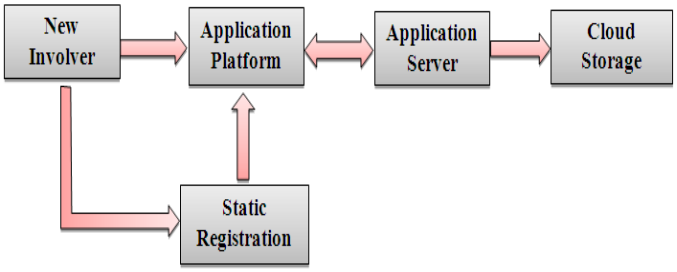

Fig.3. Static registration process by user

2) *Dynamic Registration:* It is frequent registration done according to needs of farmer. This registration carried out on considering certain criteria like needs of information on new crop cultivation, updating in existing information and deletion of existing registration process, if any obstacles occur regarding cultivation. Dynamic registration gathers information of crop name, crop ID provided by the server.

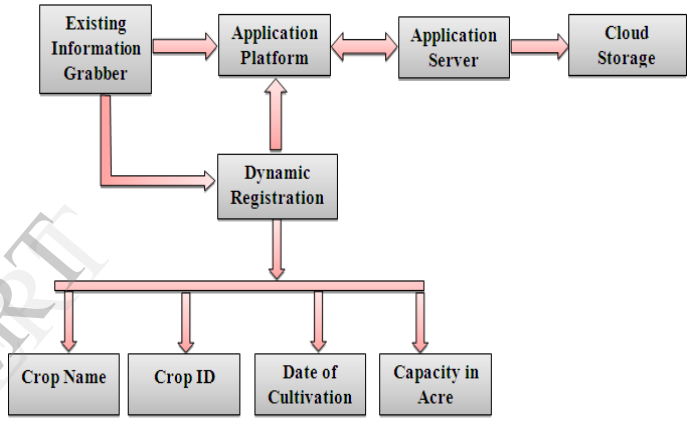

Fig.4. Dynamic registration process by user

B. *Database Server*

This server holds the information regards the Agro-cloud user involvements which were provided by an application server, current information about the weather, varieties of crops, crop diseases, and frequent updated information. The admin involves in monitoring this server, query requested by the user was processed here, it helps the monitoring server to predict the particular connective servers present in the cloud environment.

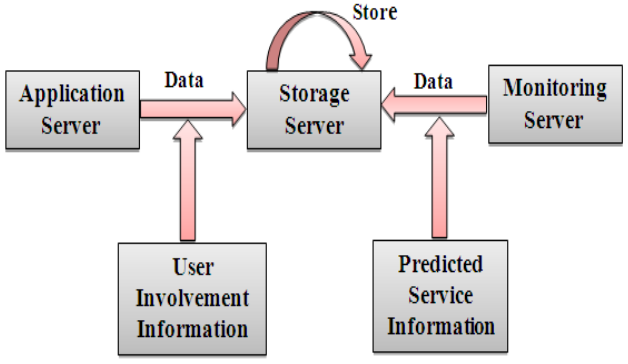

Fig.5. various processes involved by database server

1) *Data storage:* Data storage is the main function of the server, the gathered information from the neighbour server which present in the Agro-cloud infrastructure are stored and maintained here.

2) *Data management:* Frequent handling and processing of data are carried out in data management. It involves updating and deletion. This mentioned manipulation was performed based on the involvement of the user and cloud administrator who maintains the Agro-cloud infrastructure.

a) *Record Updating:* Updating of new user and already existing user information was involved here. The source for updating was provided by the information grabber who involved in this environment. Dynamic registration by a user leads to record updating.

b) *Record Deletion:* Deletion of records was involved if user get back her work after any new process registration the existing register information regards the cultivation was deleted with the knowledge of an user who involved in that registration.

C. Monitoring Server

This server plays an important roles in the Agro-cloud because the related information regarding the cultivation was delivered to the farmer periodically based on the dynamic registration involved by them and the server connection was done by this server based on the past query, automated service prediction, the service may be of any cultivation related issues.

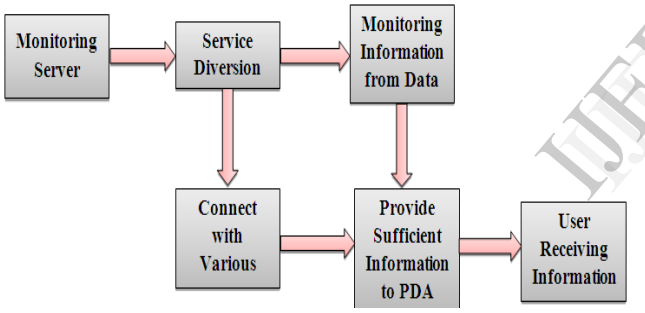

Fig.6. Monitoring steps involved by monitoring server

1) Monitoring Service: Monitoring service is online state monitoring, which continuously tracks certain states of information according to a farmers query deployable within the cloud. The information from various servers like weather forecasting server, crop information server, server having an information about various plant disease etc., are periodically updated to cloud storage database by using this service. If monitoring services detect to send a notification to the farmer's PDA can be done with the help of an information Providence system.

2) *Information Providence:* Provided information was related with new crops which may not be already known by the by the farmer and gives the knowledge of how new crops can be cultivated and what are all the mandatory steps involved was given out, pest related information (i.e.) the information regards common crop affecting disease and beyond the knowledge crop affecting diseases, notification of weather forecasting information and precautions for a natural hazards was delivered to the farmers to her personal assistance device.

D. Report Generation:

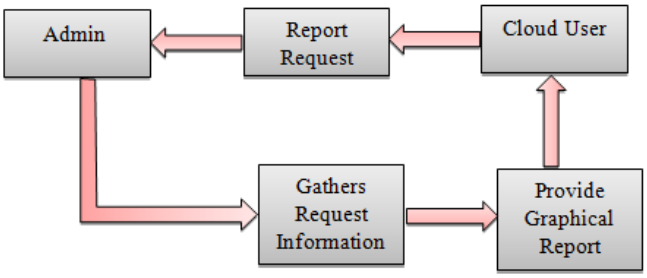

Fig.7. Over all farmers' involvement report

Report generation functionality is almost always present in database systems, where the source of the data is the database itself. Activity of farmers is automatically updated in the cloud database. Report generator will generate a report from a cloud database and output is in form of spreadsheet based on farmer's activity. Generated report is used to analyse the history of participants, reach of our project, number of beneficial farmers, rate of increased production etc. After analysing reports, the results are used to improve our software infrastructure and performance.

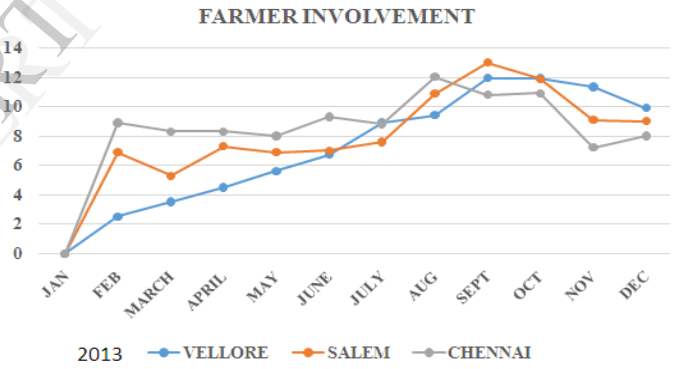

Fig.8. Farmer's involvement report generation

This graph shows that the farmer involvement for using our service according to various cities during every month. This graph shows that the farmer in the Chennai is participating more than the other and our service usage is significantly lower over the year.

1) Over All Farmer Involvement:

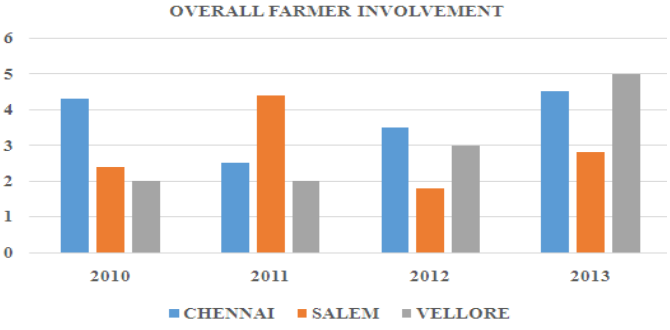

Fig.9. Over all farmers' involvement report

2) Over All Crop Information

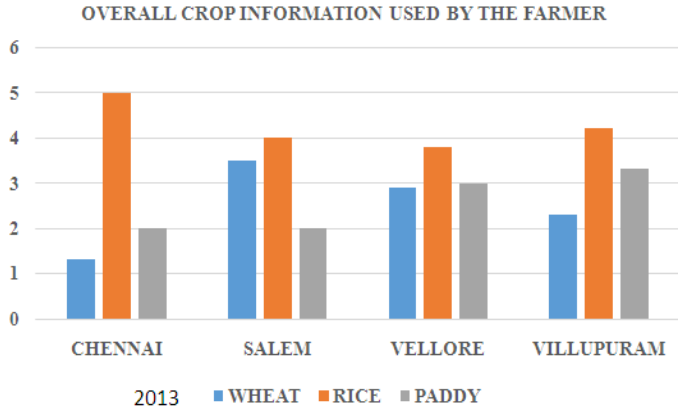

Fig.10. Over all crop used by the farmers report

IV. SIMULATION RESULTS

A. Admin Login

It is used for administrator to login into the cloud server to start or stop the services requested by the farmer. Only admin can able to modify a cloud database and so it provides security for grabber's data.

B. User Login

It is used by the user or information grabber to login to a cloud server to view information about current monitoring process and they can able to add or stop the services.

C. New User Form

If an admin wants to create a new user then the new user form will help to add a new user. After that the monitoring service is get started for the new user. Then the new user wants to start new process that contains crop information and some other information required to start a monitoring process.

Fig.11. New user registration form

D. Sql Server

It is a database server for our proposed infrastructure. All the information provided by the user are get manipulated in this server. The nature of a database is entered in the query field and then it acts as a server.

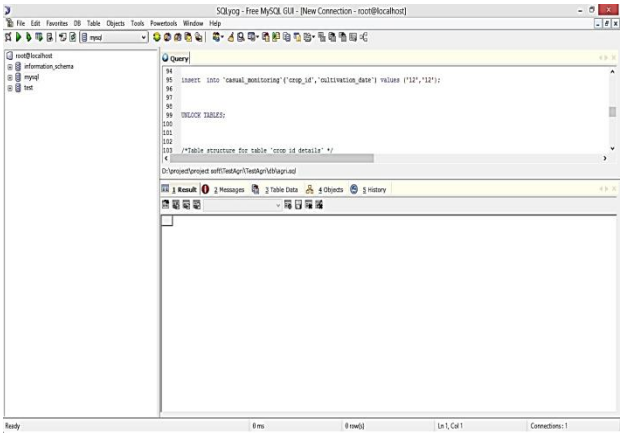

Fig.12. SQL data base

V. CONCLUSION

In our project on considering the existing systems disadvantage and on focusing the improvement in agricultural field, an effective cloud base system named Agro-cloud was proposed with inclusion of various servers to overcome the disadvantage in the existing system. The servers involved in our system performed their relevant works like database maintenance ,updating of information related to crops and new user involvement, monitoring of farmers activities is based on the requirements of the user and the relevant crop based information's are delivered to the farmers those who are all involved in our system. Because of this system various obstacles for the cultivations like crop disease, natural disasters information are given out in the arrangement of alerting the farmers to save the crop and to increase the productivity. A feature of report generation was involved in our project so that the yearly and monthly improvement, lose in the cultivation on considering the involvement of the farmer and natural hazards was given out with a visual graphical representation.

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