# Krishi-Services-Web Services Based solution for agricultural issues

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ABSTRACT- Web Service is an emerging technology for the agricultural field to improve crop productivity in aspect of quality and quantity. India is known as an agricultural country and majority of Indian population lives in rural areas.

The Indian Farmers are facing a lot of difficulties to increase production of crops. Now a day lots of research has been done in this area, but still farmers are unable to achieve upper-bound yield due to lack of knowledge about this research. So to overcome this problem we are proposing a novel framework that is "Krishi-Services" to make various services and information available at their door steps. For the development of country and the betterment of rural people in the remote area, we are using information technology to collect information from various online sources and thereby making farmers aware of recent technologies.

Keywords: GPRS, Wi-Fi, RSS, AIS, ICT

## I. INTRODUCTION

India's agricultural contribution is near about 13.7% of Gross Domestic Product in Indian economy. The intention of Krishi-service is to use qualitative approach for the benefit of farmers in terms of providing information related to good agricultural practices, prices, market demand and weather forecasting.

Web Service is providing an interface to use smart device application [2] like mobile phones offering GPRS (General Packet Radio Service), Wi-Fi, RSS (Rich Site Summary), and as these applications are so common even in rural areas now a days, so it is so easy to implement it practically in real life. Mobile Applications have seen a rapid growth and recent boom in mobile based web services can be used as means to provide regarding information across the globe. Therefore, it showcases an opportunity to circulate the information about agriculture within a click away through the increasing market of mobile networks and mobile applications.

Farmers can use our "Krishi-services" for the deployment of required services which can help them in most effective planning of their crop product activity right from the concerned agro experts with different geographical conditions and locations.

## II. RELATED WORK

In [1], AIS [Agriculture Information Service] provides details about the weather and market price of the crops. It also provides security as it allows only valid user to login into the system and thereafter providing decision making ability to the system which helps the system to understand the query of the user. To provide decision making ability they have used the concept cube, which use the nearest edge to decide the type of query and to decide which information is related to that particular query. As the decision system is based on nearest edge matching the information provided in the given query, decision system can sometimes give the irrelevant result as one edge is related to two queries. In [2], ICT (Information and Communication Technology) is used for making various services available in mobile phones by using various technologies such as GPRS, RSS and feeding various questions into the system that can be asked by the user related to a particular field. In [3] Authentication, decision making ability and information are incorporated into the system but the service is based on SMS (Simple messaging Service) which is not reliable. In [4] , Voice based services has been incorporated in Telephone system whereas radio based services provides on FM(frequency modulation).

## III. PROPOSED WORK:

In proposed system, we are providing decision making ability, authentication, weather forecasting, government policies by incorporating Smart Device Applications such as GPRS, RSS, WiFi using web services. This system uses information structure, which migrates from one query to another on the basis of type of query asked by the farmer. Each query will contain information related to it as shown by the colored bubbles. So system will give only the exact answer. The corner of the information structure, in figure 1 represents the types of the query. If point P describes about the question related to the farmers with coordinate (a, b) and let the function be

represented as Q (a, b). Let the physical area be P (a, b) i.e. P (a, b) = Q (a, b). Each type can be divided into external and internal category.
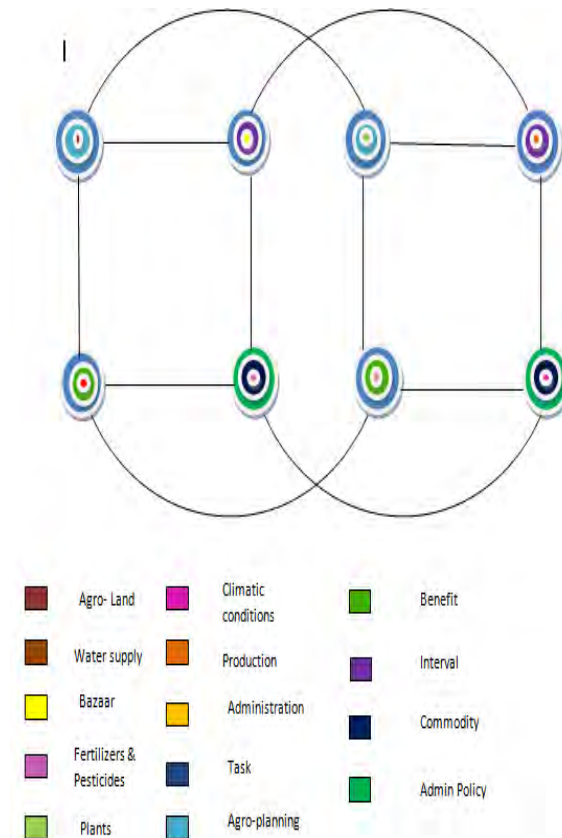


Figure 1. Information structure

External category will describe the physical characteristics and internal category can be accessed by farmer by interfering with the system. Proposed system that is Krishi service is based on external category to get complete information related to particular information point (as represented in cube). If the question asked by the farmer is considered as function P (a, b) and then to move from one query to another it is considering the nearest edge related to the point (a, b). So the amount of time to retrieve the information is decreased. External category includes information such as admin policy or government policy, Agro planning, Task, Benefit, Interval and commodity, whereas internal category includes results and rarely changeable information both depending on external category. These are listed as climatic condition, market details, agro-land, water supply, fertilizers and pesticides, plants, production and administration.

Information structure has divided the whole set of queries into eight parts (as listed above) and each query has information related to it as shown by each vertices. Each vertices has information related to it as shown by the bubbles, each bubble represents one information and system is moving from one query to another by looking the nearest queries linked with the edges of the vertices and if the query is not found then it will move to the query along the width of the structure and again it will look for the matching query. If query is not found after jumping along the width three times then it will return the result of wrong query.
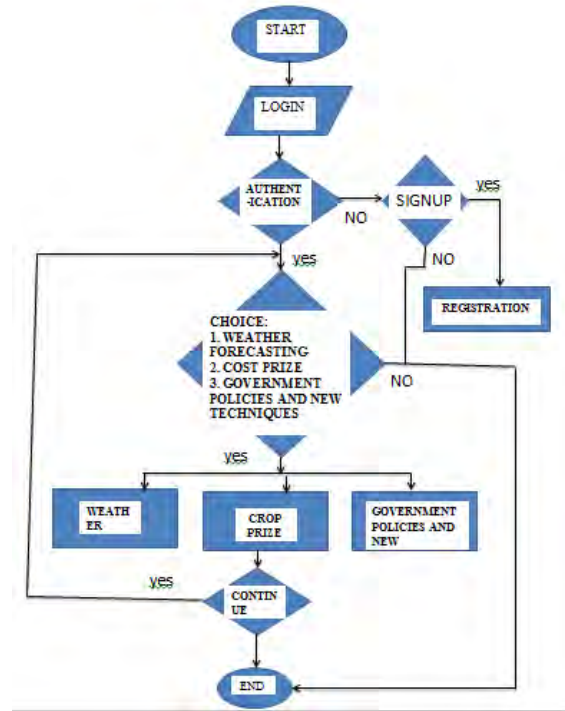
Figure 2.Control Flow Diagram for Krishi service

Control flow graph shown above shows the flow of control in Krishi system. First the authentication of farmer is done, to enter into the system farmer have to login and then system will check for valid user. If the farmer is a valid user then he will login to the system and use the services available, if the farmer is a new farmer, he can sign up and then login to the system; else he is an invalid user.

Secondly, after logging into the system user has to choose his action and decide whether he want weather report or crop price or government policies or other banking services. Krishi-service is providing decision making ability to the system which helps in deciding the system for which query which information has to be referred, we have distributed the queries in eight types which has some information related to it, as it is not migrating from one query to other query based on information edge, so there is no chance of irrelevant results.

## IV.    RESULTS AND DISCUSSIONS:

Krishi-Services have been implemented using Smart devices application in .Net provided by visual studio. First the user will login into the system by giving its details such as user name and password and then if the user is a valid user then he can choose his action whether he want to know about weather forecast or market details or government policies or want to use banking services. It's necessary to provide proper authentication so as to ensure that secure services have been granted as one of the services include banking services. This service is based on information structure; system will check the information related to each action to provide the necessary result.



Figure3: User Login and Services available

Above figure (3) shows the login and services available page of Krishi System. To know about the market details and weather report, Webservicex.net has been used, so that we can get current information.

Figure4: Market details (price and address)

Above figure (4) represents the market details page. In market details farmer can ask about the Krishi Kendra address and market price for particular crop.



Figure 5: Weather Forecast

Above figure (5) shows the weather forecast page, to know about the climatic condition of its location farmer is using this service.

User has to enter the necessary details and make use of the service. Some details like latitude and longitude are not available with a user so this information is also provided to the user, he is just supposed to give his location in terms of country name and city and he will get to know the exact latitude and longitude. Finally if he wants to discontinue with the services he can logout of the system.

## CONCLUSION

In modern era, there are many devices which provide agricultural services to the people in the rural areas but in our paper we are incorporating a unique approach towards the development and accessibility of various services for the people residing in remote area.

Further implementation can be done by incorporating different regional languages or image based approach. So that even an illiterate farmer can use Krishi-system without any external guidance.

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