Impact of Agriculture Areas Using Cloud Computing

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Abstract

Cloud computing is a network-based environment that focuses on sharing computations, storage, service, applications & other important computing resources. In modern era of cloud computing technology very helpful for centralized the all-agricultural related data bank (Soil-related, weather, Research, Crop, Farmers, Agriculture marketing, fertilizers and pesticide information) in the cloud. Latest technological development has through a dramatic change in every field and agriculture is no exception to it. Cloud computing technology impacted positively on agriculture field and related services they provide for users. In this paper, also discuss Computing model, characteristics, deployment model, cloud service model, cloud benefits and challenge of cloud computing in agriculture field.

1. Introduction:

An Increasing Development of IT and communications and growth of data sizes in the network, together with the emergence of new applications and computing needs, capacity and implements is exponentially Day-by-Day.

Cloud computing is a new approach which brings the information computing and storage from PCs into giant data centre, In these information needs as services via Internet. On the other hand, the third person needs to do his computational requirements, service efficiency, storage capacity and increasing the reliability in Agricultural area.
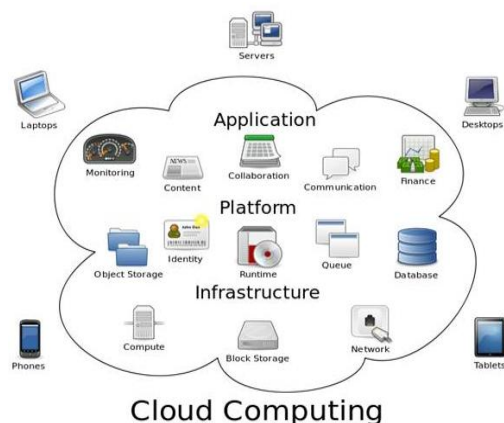
Cloud Computing

Cloud computing applications in agriculture is in the place of theoretical research and lack of mature cases. This technology is great significant to improve agricultural field construction, the combination of agricultural information and modernization.

Keywords: Cloud Model, Cloud Services, Agriculture

2. Cloud Computing Technologies

Now a day's witnessing a steady trend in the loss of agricultural land and biodiversity worldwide. Adding to this, adverse weather conditions induced by climate change and an increase in the world population struggling for scarce resources are projecting a grim picture of the future. It may be able to alter or even reverse this trend using technologies already in place. Cloud computing may prove to be a formidable asset.

There are practical applications for the use of cloud computing that create a whole ecosystem, from sensors and monitoring tools that collect soil data to agricultural field images and observations from human actors on the ground accurately feeding data repositories along with their GPS coordinates.

The structure of the cloud computing based agricultural system

An open and cloud-based system that captures and shares data from many types of precision agriculture controllers on a farm to lower costs and reduce environmental impact.

Additionally, Cloud technologies have launched for food and agricultural industries and are utilizing information communications technology to ensure plentiful food supplies in the future.

Cloud computing in agriculture continues to increase, so too will the number of questions about it. To answer the most frequently asked questions, I've identified the top five things you need to know before entering the cloud, according to IT experts:

a. Private or public

A private cloud, built using your resources in your data center, leaves you in control but also means you shoulder the management overhead. Public cloud services relieve you of that management burden but at the expense of some control.

b. Is security a concern

For a long time people were concerned about the security of cloud-computing platforms, but most of them are actually now much more secure than traditional approaches that they replace, according to experts.

c. What are the benefits

Many cloud-computing service providers claim they can significantly reduce the cost and complexity of owning and operating computers and networks. Cloud services can often be customized and flexible to use, and providers can offer advanced services that an individual company might not have the money or expertise to develop.

d. How can I ensure success

According to an April 2011 online survey by Baseline, two critical elements of a cloud strategy are not commonly recognized: attention to service levels and focus on integration. Also, IT leaders should obtain hands-on experience with cloud computing to learn its capabilities before implementing a company-wide solution.

e. Will the role of my IT department change

Cloud computing will not eliminate the need for an IT team, but many experts believe it will likely shift the role it plays within an organization. Before cloud computing, technical support spent much of its time monitoring and/or recovering all devices and systems to make sure they were available for business operations.

3. Agricultural Model

Farmers can also use the cloud to access information from predictive analysis institutes, whereby they can have an accurate prediction on products that are in demand by different markets and adjust production accordingly. There is also an incentive for farmers to

use knowledge-based repositories containing a wealth of information related to farming practices, crops input, agricultural innovations, pesticides, seeds, fertilizers, nutrients and weed resistance, as well as on equipment. All this comes along with expert advice from a wide range of sources, for example, on farming and processing of agricultural products. This scenario can also be extended to include access to consumer databases, supply chains and billing systems.
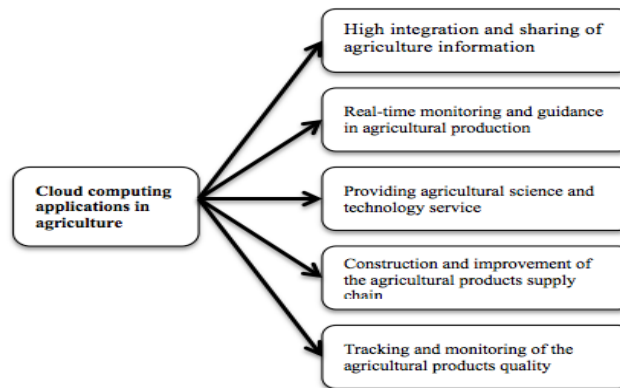
For many farmers and those in the agricultural sector, much of their livelihood involves giving up control to the forces of nature, But what if farmers could take back control with the help of technology. Cloud computing can be used to aggregate data from tools like soil sensors, satellite images, and weather stations to help farmers make better decisions about managing their crops. The cloud's analytic capabilities also aid farmers in understanding their production environment.

Meanwhile, farmers themselves are getting hands-on with the cloud. Farmers can then visualize their fields on the map and pinpoint exact areas that need more fertilizer or water. By providing decision support and automation, these cloud-based solutions help solve agricultural problems and increase the efficiency and productivity of farms.
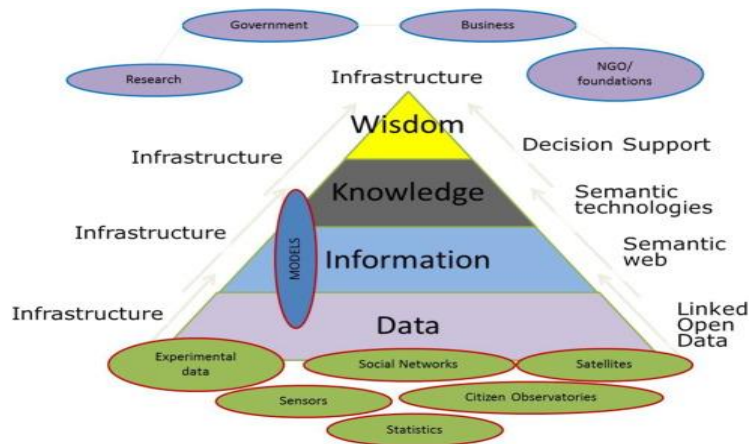
The current limitation for the adoption of cloud computing services is rural internet speeds, "Imagine having gigabytes of image data that takes hours, if not days to get uploaded to the cloud due to slow internet speeds." This slow round-trip time to and from the cloud can delay decision making, Data privacy and security remains the biggest concern with cloud computing services for agriculture.

Cloud computing requires detailed information about farm conditions and operations to travel to outside parties, including the cloud provider and third parties that help analyze the data. This can raise both privacy and security concerns for farmers, as they worry about who may gain access to information that reveals their farming strategies, their yield, their land, and their business operations.

Current Challenges in India

- Deficient production information
- Not enough sales and distribution information
- Poor knowledge about the weather forecast, pests and diseases.
- Poor ICT infrastructure and ICT illiteracy.

- ▪ Lack of awareness among farmers about the benefits of ICT in agriculture.
- ▪ Insufficient power availability in rural areas.

4. Cloud Services

In Rural India using the Cloud allows information technology to be infused into the smallest hamlet of India and makes access to information available to the poorest of the poor to give them a better life, by empowering them with knowledge derived through the laptop or mobile phone connected to the Cloud.

The Cloud makes the following services affordable and accessible at a low cost:

- ▪ Banks
- ▪ E-learning
- ▪ Tele-medicine
- ▪ Commodity/stock exchanges
- ▪ KYC and credit bureaus
- ▪ Indian agricultural information
- ▪ Citizen interface portals

India will benefit by taking the Cloud to Rural India because, The Cloud has potential to drive down costs of e-Governance, education, medical care and other Government computerization initiatives. The Cloud bridges the great divide between rich urban India and poor rural India, and gives the same level playing field to all Indians.
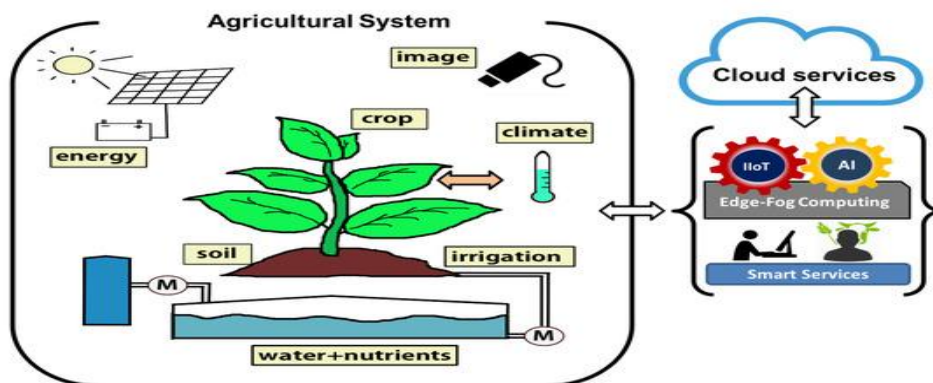
Although cloud computing is picking up the global market covering almost all the prime sectors, there is nothing much done in agricultural sector. Few countries like China, Japan, some parts of Africa, USA etc.

Benefits of Cloud Computing In Agriculture

- ❖ Data Readiness any time & any where
- ❖ Local and global communication
- ❖ Improve economic condition of the Nation
- ❖ Enhanced the GDP of the nation

- ❖ Ensure food security level
- ❖ Motivation of farmers and researchers
- ❖ Reduction of technical issue
- ❖ Rural-Urban movement
- ❖ Data availability at any time and at any location without delay
- ❖ Improve market price of Food, seeds, other product

5. Conclusion

The Cloud computing is a game changing phase of IT that is not only impacting the way computing services are and will be delivered but also the way in which users will use IT. An effective implementation of this model will encourage Agricultural sectors also, which will lead to optimal benefit of shifting towards cloud. This will definitely have a positive impact in the overall economic development of the nation. Therefore, it needs a mass awareness and promotion among the prime stakeholders to acquire the full potential of it and have a well established information base for the nation. This will in return lead to a well-connected world.

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