TEAM ID:PNT2022TMID49427

TEAM LEADER: PRIYADHARSHINI N

TEAM MEMBERS: AMBIKA.T

TEAM MEMBERS: NIHARIHA.P

TEAM MEMBERS: SINDHUPRIYA.G

COLLEGE:Government College of Engineering,Bodinayakanur.

Project Design Phase 1- Proposed Solution

**IOT Based Smart Farming**

***Smart Irrigation and Monitoring the Field***

**Abstract**

This dissertation presents an investigation into the problem irrigation to the field design and monitoring the field. A new method that uses the concepts of viewpoints and domain-specific languages is proposed to address this problem. The method process is formally described and case studies are presented. This proposal motivates the problem and outlines how the dissertation will address it.

**1. PROBLEM DESCRIPTION**

Problems of Irrigation:

The problems posed by the irrigation development programme in the country can be classified into three groups as follows:

**(I) Problems Relating to the Creation of New Capacity:**

The problems relating to the creation of new irrigation capacity in India have been large and varied in number.

Some of these can by spelled out as follows:

(1) Delay in the Completion of Major Irrigation Projects:

A number of major multi-purpose river valley projects that were expected to give a boost to the irrigation potential in the economy were started during the Second and the Third Plans, i.e., almost 40 -45 years age Quite a few of these projects have as yet to be completed.

Delay in the completion of these projects has been caused by a number of factors, some of which are:

a. a lack of thorough investigation before the start of projects,

b. changes in the size and nature of projects after starting work on them,

c. a lack of organisation to monitor the progress on the work, and

d. difficulties of getting adequate and timely requirements of such important materials as steel, machinery, cement, etc.

(2) Rising Costs:

The average cost per hectare of irrigation potential created has risen steeply from around Rs. 1,060 during the First Plan to projected over Rs. 38,800 presently. Among the factors that have reportedly contributed to such increase in real costs are the following: availability of comparatively better sites for construction in earlier plans; inadequate preparatory surveys and investigations leading to substantial modification in scope and design during the construction; the tendency to start far too many projects than could be accommodated within the lands available for irrigation; larger provision for measures to rehabilitate people affected as well as for preservation of environment and ecology; and adoption of more sophisticated but expensive criteria for irrigation project planning in conformity with requirements of external aid agencies.

(3) Inadequacy of Finance and Organisation:

Inadequacy of organization has manifested itself in different ways:

a. There is not enough of data in respect of water nor of soil which is the medium of using water,

b. There is too much centralisation of decision making which often has resulted in delay.

c. There is no organised machinery to deal with, the problem relating to the acquisition of land and resettlement of persons likely to be displaced by construction of storage reservoirs.,

d. There is a lack of apex organisation which draws plans of the development of water resources for multiple uses such as drinking and industrial uses, etc.

The recent response of the government has been to set up the Accelerated irrigation Benefit Programme. It will assist the states to accelerate the completion of unfinished, medium and major irrigation projects, and also to undertake reforms by revising user charges and setting up of water users associations.

**II) Problems Relating to the Existing Capacity:**

The problems relating to the existing irrigation projects can be divided into two parts:

(i) The problem of underutilisatiory and (ii) The problem of drainage, congestion, water logging, mal-distribution and wastage of water, etc

(1) Underutilisation of Potential:

The problem of underutilisation of the irrigation potential has been a serious problem confronting us since the First Plan itself. More man 10 per cent of the total irrigation potential remains un-utilised.

Underutilisation has been mere on account of causes like:

a. lack of coordination between the departments of agriculture and irrigation at the project formulation stage;

b. failure to carry out adequate soil surveys and assess suitability of the land and soil for irrigation;

c. failure to minimize conveyance losses and associated problems of water logging and soil salinity;

d. structural inadequacies with the main system and consequent, inability to deliver the right quantity of water at the right time to the irrigation outlets;

e. absence of field distribution system, water control structures and farm drainage facilities;

f. failure to formulate appropriate cropping patterns based on water availability and soil characteristics;

**(III) Problem of Floods:**

Rivers are the most effective natural drainage system, and any unplanned interference with them is bound to have its repercussions on the natural drainage and, therefore, on the incidence of floods in a country with the rainfall concentrated in short periods.

**2. PROPOSED SOLUTION**

The IoT technology has realized the smart wearable's, connected devices, automated machines, and driverless cars. However, in agriculture, the IoT has brought the greatest impact.

Recent statistics reveal that the global population is about to reach 9.6 billion by 2050. And to feed this massive population, the agriculture industry is bounded to adopt the Internet of Things. Amongst the challenges like extreme weather conditions, climatic changes, environmental impact, IoT is eradicating these challenges and helping us to meet the demand for more food.

Throughout the world, mechanical innovations such as tractors and harvesters took place and brought into the agriculture operations in the late 20th century. And the agriculture Industry relies heavily on innovative ideas because of the steadily growing demand for food.

The Industrial IoT has been a driving force behind increased agricultural production at a lower cost. In the next several years, the use of smart solutions powered by IoT will increase in the agriculture operations. In fact, few of the recent report tells that the IoT device installation will see a compound annual growth rate of 20% in the agriculture industry. And the no. of connected devices (agricultural) will grow from 13 million in 2014 to 225 million by 2024.

Due to lack of constant and reliable communication network infrastructure, an IoT solutions provider as well as the business owners had faced implementation challenges in remote or less developed regions. But, many network providers are making it possible by introducing satellite connectivity and expending cellular networks.

**Applicability of IoT in Agriculture:**

Smart Farming is a hi-tech and effective system of doing agriculture and growing food in a sustainable way. It is an application of implementing connected devices and innovative technologies together into agriculture. Smart Farming majorly depends on IoT thus eliminating the need of physical work of farmers and growers and thus increasing the productivity in every possible manner.

With the recent agriculture trends dependent on agriculture, Internet of Things has brought huge benefits like efficient use of water, optimization of inputs and many more. What made difference were the huge benefits and which has become a revolutionized agriculture in the recent days.

IoT based Smart Farming improves the entire Agriculture system by monitoring the field in real-time. With the help of sensors and interconnectivity, the Internet of Things in Agriculture has not only saved the time of the farmers but has also reduced the extravagant use of resources such as Water and Electricity. It keeps various factors like humidity, temperature, soil etc. under check and gives a crystal clear real-time observation.

The following are the benefits of adopting new technology - Internet of Things in Agriculture:

1. Climate Conditions

2. Precision Farming

3. Smart Greenhouse

4. Data Analytics

5. Agricultural Drones

**3. EXPECTED RESULTS**

By using this Smart Irrigation and Monitoring the Field,

1)We can reduce the Manpower in the field work.

2)Reduce Cost.

3)Reduce Work Bourden.

4)Proper monitoring the field at any time anywhere.

**REFERENCES**

[1] K. Lakshmisudha et. al, “ Smart Precision Based Agriculture Using Sensors”, International Journal of Computer Applications (0975- 8887), Volume 146-No.11, July 2011.

[2] N Gondchawar & Dr. R.S.Kawitkar, “IoT Based Smart Agriculture”, International Journal of Advanced Research in Computer and Communication Engineering (IJARCCE), Vol.5, Issue 6, June 2016.

[3] M.K.Gayatri et. al, “Providing Smart Agriculture Solutions to Farmers for Better Yielding Using IoT”, IEEE International Conference on Technological Innovations in ICT for Agriculture and Rural Development (TIAR 2015).

[4] Chetan Dwarkani et. al, “Smart Farming System Using Sensors for Agricultural Task Automation”, IEEE International Conference on Technological Innovations in ICT for Agriculture and Rural Development (TIAR 2015).

[5]www.google.com