Volume : 5 | Issue : 1 | JANUARY 2016 • ISSN No 2277 - 8179

Research Paper

Water Resource Management Information System by Technologies

Engineering

KEYWORDS : Electronics instruments, knowledge base,Expert System.

Sanjay Singh — Assistant Professor ,HCST,Mathura

Shikha Singh — Assistant Professor, AEC Agra

ABSTRACT

Electronics & Information technology (IT) are the recently more utilized in water resource management.. Various Electronics instruments play critical role for analysing, handling and processing the water resources. The Various software has been developed for environment and health care which is user friendly and help in better understanding for the topic. A lot of techniques are used under Electronics and IT for development and measurement tools to acquire, store, processing, analyse and visualize satellite data which is used for observation, and protection of environment. By creating knowledge base we can store lot of information related to water management from expert and different data sources. In this paper we presented methodologies to manage the information system for water resource management. By the use of expert system people can optimum utilize the water resources. By the use of data warehouse we can create a large database from different sources and it will help the people to know how they can utilize water resources properly.

Introduction

Information management is the electronically collection of information from one or more source and the distribution of that information to one or more audience. Information management is the application of Electronics and information technology to support the major functions and activities of Agriculture, Water-Soil sector. Today it is widely accepted that managing the information resource is very important. Information management supports the process of collection, manipulation, storage, distribution and utilization of resources. By managing information in information system optimum use of resource is possible. To optimum use of water resources awareness is necessary by managing the information system we can utilize the optimum use of water resources. It should be noted that water quality is often very poorly monitored and weakly presented in knowledge bases, putting such sectors as environment and health at a disadvantage in situations where basic knowledge is required.

Building a knowledge base into an effective tool requires consistent, routine work over large areas and many years. It also requires the development of working relations and data exchange between sector institutions representing either impacts on water resources or use of water resources. Thus it is important that data collection staff work in a co-ordinated fashion with those working on water resource assessment, so that data continues to be relevant to current problems, adequate for the assessments and so that data users can rely on the quality of the data As we know that knowledge base is fundamental to water resources assessment and subsequent decisions. It is essential that policy makers appreciate the importance of reliable and representative data, create the necessary institutional responsibilities and make appropriate allocations of financial and human resources reflecting local needs. Prioritisation of data needs based on key water issues and assessment of risks and damages can help to develop political support and resources. When data needed for water resources assessment are electronically collected by a number of different organizations , their systems need to be compatible in terms of standards, quality assurance, electronic access and transfer.

Methodology

In this paper we focus on following methodologies:

Expert System: An expert system is computer software that attempts to act like a human expert on a particular subject area. An expert system is a computer program that simulates the judgment and behavior of a human or an organization that has expert knowledge and experience in a particular field. Typically, such a system contains a knowledge base containing accumulated experience and a set of rules for applying the knowledge base to each particular situation that is described to the program. Sophisticated expert systems can be enhanced with additions to the knowledge base or to the set of rules.

Expert systems are often used to advise non-experts in situations where a human expert in unavailable (for example it may be too expensive to employ a human expert, or it might be a difficult to reach location).

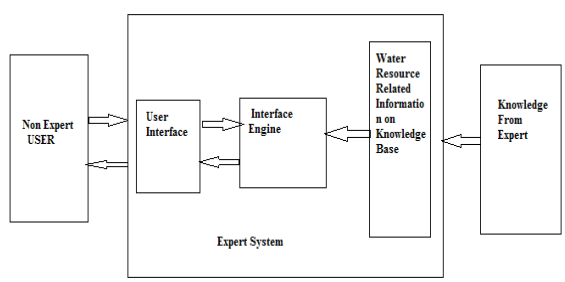


Figure: Expert System

The non-expert user queries the expert system. This is done by asking a question, or by answering questions asked by the expert system. The inference engine uses the query to search the knowledge base and then provides an answer or some advice to the user.

Through this method we can create knowledge base in which we can store information from expert ,by the use of this information people can optimum utilize the water resources .

How Do Expert Systems Work?

An expert system consist three parts:

A **user interface** is the system that allows a non-expert user to query (question) the expert system, and to receive advice. The user-interface is designed to be a simple to use as possible.

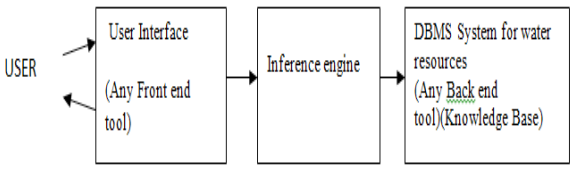
A **knowledge base** is a **collection of facts and rules**. The knowledge base is created from information provided by human experts .Here we can collect the expert information related to water resource.

An **inference engine** acts rather like a search engine, examining the knowledge base for information that matches the user›s query.

Volume : 5 | Issue : 1 | JANUARY 2016 • ISSN No 2277 - 8179

Expert system is method through which we can create a database in which we can store information about water resources from different expert.

Figure: Expert System for Water Resource Management



Data warehousing

Data warehousing concept is particularly useful for developing DSSs. A data warehouse is typically a read-only dedicated database system created by integrating data from multiple databases and other information sources. A data warehouse is separate from the

organization's transactional databases (i.e., OLTPdatabases). It differs from transaction systems in that it covers a much longer time horizon (several years to decades) than do transaction systems. It includes multiple databases that have been processed so that the warehouse's data are subject oriented and defined uniformly (i.e., "clean prearranged data").It contains non-volatile data (i.e., read-only data) which are updated in planned periodic cycles, not frequently. It is optimized for answering complex queries from direct users (decision makers) and applications. The transactional databases are designed to answer who and what type questions, they are not very good in answering what-if, why and what-next type questions. The reason is that data in transactional databases are not necessarily organized to support analytical processing.

A data warehouse accesses data from several different databases, processes (de-normalize, re-organize and integrate) data, develops relationships between different data according to user queries and then stores the data .

There are exceptional opportunities in the information systems to analyze these datasets and extract the useful information to execute and determine how we can utilize the water resources. The data warehousing and data mining applications are the most emerging technologies which are endorsed that information to be easily and efficiently accessed while building and deploying data driven analytics for better knowledge in assisting the right decision making activities. By data warehouse we can collect information from different sources and this information can be helpful to knowing the people how they can optimum utilize the water resources.

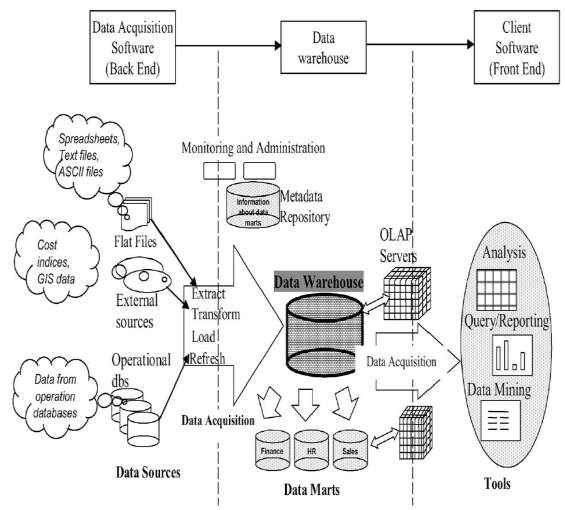
2.4 Architecture for Data warehouse for optimum utilization of water resources

Data warehouse architecture based on three layer .At the first layer called bottom layer or data source there we can collect the information from different sources, if we are developing software for water resource management then at this layer we will collect information related to water resources.

Second layer is Middle layer or data warehouse where we manage and structured the information, In this layer information is collected in structured way.

Third layer is top layer or client software where user can fetch information ask question and analysis the data.

Figure: Data warehouse architecture for water resource management



3 Conclusions

The role of IT in water management is very crucial concept. Information technology can be useful to aware the people that how they can proper utilize the water resources. If the people are aware then we can stop the wastage of water and we can utilize the water resources more. This paper presented two methods to manage the information system through which any people can extract the knowledge of water resource.

REFERENCE

1: Bryan S. Todd ," AN INTRODUCTION TO EXPERT SYSTEMS ",Technical Monograph ISBN 0-902928-73-2 ,February 1992. 2. Yan Li," A Data Warehouse Architecture supporting Energy Management of Intelligent ElectricitySystem" Proceedings of the 2nd International Conference on Computer Science and Electronics Engineering (ICCSEE 2013). | 3. John Durkin,"Application of Expert Systems in the Sciences"The Ohio Journal of Science,December, 1990,p 171-179 |