Good article review about gis solutions for environmental management

Technology, Development

Graphical Information Systems or GIS has been a used as a major tool in successfully managing the protection programs and restoration of the environment. This has been proven because of the interdependency of the ecosystem we live in and the impact of what humans do to the environment. Government and private organizations and citizens who are putting efforts to protect and restore the environment we lived in are currently faced with numerous complex challenges because of this interdependency. A technology like the GIS is a welcome intervention.

What is really GIS and how can it help in managing the environment? How are environmentalist and scientists helped by the technology? GIS is actually an offshoot of the rapid computerization that the world is experiencing. The Federal Department of Forestry and Rural Development of Ottawa, Canada is credited with the development of world's first operational GIS during the 1960s. This system was used to manipulates, store and analyze data pertaining to the determination of land capability and the collection of mapping information on soils, recreation and forestry of Canada's land. This GIS has also the capabilities for measurement, scanning and overlay. Likewise, it also supported the national coordinate system but the most notable feature was the presence of overlay that promoted spatial analysis especially for convergent geographic data. This specific GIS was designed to be implemented for mainframe, however, it was never commercially available.

Commercialization of the GIS only started in the 1880s when numerous organizations began developing GIS software that were also available for sale. Some of these companies include Intergraph, Computer Aided Resource

Information System, Earth Resource Data Analysis System and the Environmental Systems Research Institute (ESRI). There was a notable improvement on the features of these systems because aside from carrying with them the features of the first generation GIS, it also provided additional features that the separation of spatial and attribute information and a more improved method of organizing data through a more well-designed database structure.

The first desktop based GIS product was published in 1986 by the name of Mapping Display and Analysis System (MIDAS) which later renamed to MapInfo. This specific product was runs in a Windows Platform that was capable of transferring the research results of the software into the business environment. In the 20th century, the technological advances enabled GIS to be available over the internet and a more standardized format emerged. Later on, in the attempt for standardization, it has been a protocol among GIS developers to use open-source systems and make them web-based.

Like any other information system, GIS is an integration of the basic components of information systems like the hardware, software and data. These components are used to capture, manage, analyze and display whatever available geographical information that can be used as reference. Further, a GIS makes it easy for scientist or environmentalist to interpret, view or visualize the data collected by the system as it is capable of making analysis with regards to relationships, patterns and trends of the data collected. These interpretations are brought out in the form of maps, reports, charts and other visual representations. With this, the researchers find it easy to answer relevant questions and solve the problems. For

environmental managers, the use of GIS is a helpful technology that can give them support and information they need. GIS applications are also varied depending on the needs of the users. (Coppock, 2000)

One of the most successful companies who that ventured on developing GIS is ESRI. The GIS that is being maintained by the company provides solutions to organizations that makes use of GIS data improving accuracy of data while also improving the data collection. This in turn results in a more improved decision making for the users. Likewise, because of the capability to streamlined work processes, there is an increase productivity with better data analysis and presentation results. ESRI’s GIS is also capable of providing models for dynamic environmental phenomena while being able to predict scenarios especially for environmental impact studies. With the web-based application of GIS, maps can already be disseminated and shared across the Internet. (National Geographic, 2014)

GIS is an application that can be used to analyze environmental phenomena from the bottom of the earth until the atmosphere. The ESRI GIS is capable of getting hydrographic data, land features, urban development data, jurisdiction boundaries, desired population density, vegetation and land-use type and land and air quality. Because their system has database sharing capabilities and readily available over the web, information is easily shared among private sector, public sector and other interested groups where the information provided can either be thematic, temporal or predictive in nature.

In the private sector, a GIS installed in a tablet PC can help farmers in looking for vegetation management solutions which later helps them

determine which part of their farms are best for certain crops thereby increasing their yields. ESRI is capable of providing these data ARCPAD product. On the part of the public sector, e-government portals utilize GIS to be able to provide real-time environmental maps on the internet. There have been several environmental organizations on the internet that utilizes the GIS portals to display different kinds of environmental maps that are readily viewable on the online. (ESRI, 2014)

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