

Soil Database Query System

Scenario

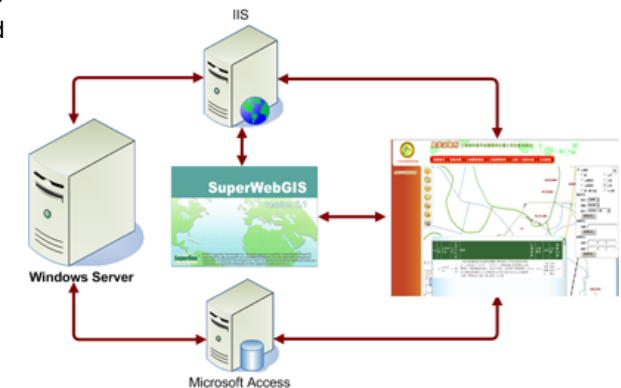
Since the pedology was firstly studied in the late 19th century, many countries around the world have paid attention to the collection of soil data. In Taiwan, the soil survey of the whole island was begun in the early 20th century. However, the techniques of soil survey have not been improved for a long time so that soil maps could not be drawn well. Furthermore, in Taiwan, there is no specific unit in charge of soil survey, no professional training for staffs, and poor working environment; as a result, the data of the soil survey cannot be updated continuously. Therefore, users' confidence in the soil survey is affected as well. Additionally, the problem of lack of attribute items in soil survey happened in many countries in the world confronted Taiwan as well. For example, the lack of environment background, vegetation data, land use data, unit of soil classification, etc caused the survey data to be underutilized. Also, the application value was greatly reduced.

The survey results generated in different times and from different units may contain diverse items, dissimilar precision of soil map, and cover various areas. Therefore, there are still deficiencies in the current soil survey data indeed. To solve the problem of the insufficient soil data, Ministry of Economic Affairs, Taiwan planned to digitize the soil maps of Taiwan and build up a database to record the attributes of the maps. Therefore, the content of the soil survey can be standardized; with the integrated soil database, surveyors can analyze and apply the associated data to benefit the land use and social economic development.

Solutions

Soil Database Query System adopts the WebGIS framework to enable users to query online via the Internet. As to the database, Soil Database Query System applies Microsoft Access as the database platform and refers to the structure of SSURGO soil database to collect and archive data. The collected data include the digital soil maps, attribute data, etc and these data are displayed in GIS. In addition, as the system was being built up, the standards relevant to the soil survey and analysis were defined to ensure the accuracy of the survey results.

In terms of map server, Soil Database Query System utilizes SuperWebGIS as the map server of the system to publish electronic maps and kinds of spatial data with which users can query the maps and have advanced spatial data analysis.



Solutions

- Utilize SuperWebGIS software as the map server to build up a WebGIS to delivery map services for the public through the Internet.

Results

Soil Database Query System is the web geographic information system constructed by SuperWebGIS. General users only need to apply web browsers to query and display soil data of Taiwan without downloading or installing any other system objects.

Soil Database Query System provides 6 functions, and users can choose the appropriate functions to satisfy their requirements.

1. **Promotion Overview:** The function describes the origins of the plan, goal, promotion overview, data content, data type, application fields, collaborative organizations, etc. Thus, users can clearly understand the origins and the goal of the Taiwan soil database information.
2. **Promotion Results Query:** The function mainly allows users to query the introduction to the database system, soil database standards, soil survey standards, soil cadastral standards, Taiwan soil maps, soil series database, and also users can download the standards related to soil.
3. **Soil Survey Reports:** Taiwan soil surveys can be categorized into 3 types, flat land, hill side, and forest land. Therefore, users can apply the function to download the reports of flat land soil, hillside soil, and forest soil. Moreover, the survey reports also contain the risk assessment of soil erosion which can be the references to prevent the disaster.
4. **Soil Interpreted Data Query:** Soil interpreted data include paddy production distribution maps, drainage maps, soil liquefaction maps, crop suitability maps, soil texture maps, soil organic matter maps, soil pH maps, and so on. With the maps, users can clearly recognize the spatial distribution of each type of soil data in different areas.

5. **Soil GIS Query System:** The system allows users to apply road, landmark, and coordinates to position; when the map is zoomed to town levels, the system will display the soil map of the area. Furthermore, users can query the detailed attribute data of the soil in a specific area by clicking the map.

6. **Soil GIS Query System:** The function provides a platform for users to share the information.

After the soil survey process is improved and standardized, the applications of the new soil database not only include land plan and use, crop suitability plan and productivity, improvements of problematic soils but also contain the prevention of soil erosion and collapse, creature habitats, water resource management, forest management, assessment of environment affection, earthquake risk assessment, etc. Consequently, the application value of the soil data can be significantly raised.

Being displayed with GIS concept, the spatial data and soil data can be integrated.

The powerful spatial query function can effectively enhance the convenience of the system. Moreover, the combination of internet and GIS help users to access the spatial soil maps more easily, to publish the data from soil databases, and to share the data more efficiently.



The function, providing basic GIS tools, can assist users in navigating the map and understanding the detailed soil data of assigned location.

Results

- Soil Database Query System is an integrated platform providing complete Taiwan soil data based on WebGIS technology for querying.
- With the establishment of Soil Database Query System, the application value of the soil data can be significantly raised.

Software Used

- SuperWebGIS
- Windows Server
- Microsoft Access