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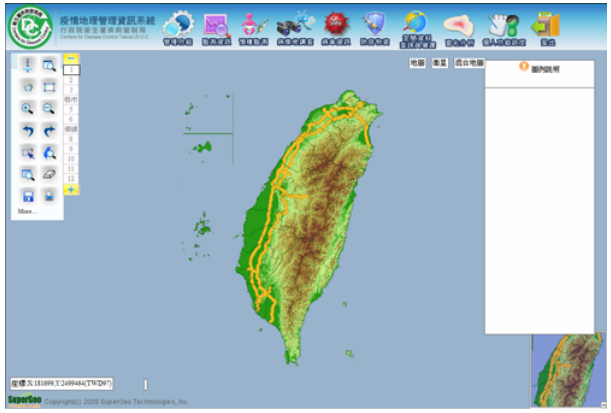
GIS Software & Solution

Epidemic Information Management Geographic Information System

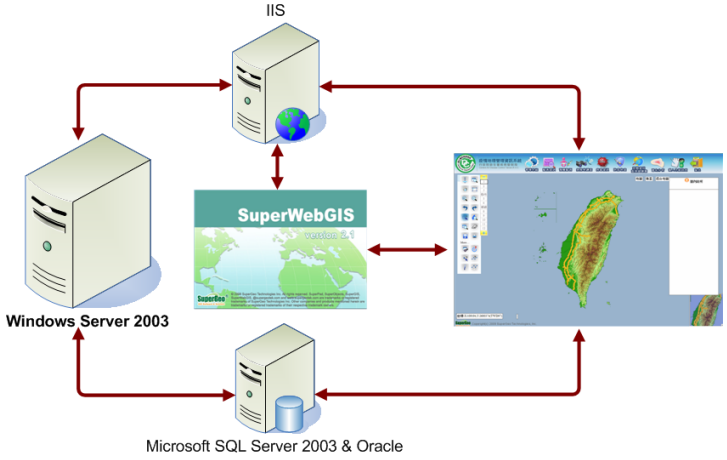
Scenario

Center for Disease Control, Department of Health, Executive Yuan is the competent authority that is responsible for the prevention and cure of domestic communicable diseases. The center is in charge of the prevention of all kinds of communicable diseases and informing the epidemic cases and surveillance. Also, the center has the most complete reported epidemic information in Taiwan. Because all kinds of communicable epidemic resources are distributed and spread spatially, numerous foreign disease control organizations, which work with GIS to do the transmission and spatial analysis of communicable disease, have great performance. As a result, with WebGIS architecture as the foundation the Center for Disease Control has developed a set of Epidemic Information Management Geographic Information System since 2001. The system now turns out to be the best helper to control the domestic epidemic information as well as the spatial distribution after the functions are extended several times. More, it can efficiently provide the real-time and valid epidemic information for the competent authorities, medical organizations and the public.



Solutions

Epidemic Information Management Geographic Information System is a query system combined the database technology with the WebGIS architecture. Developed with .NET technology, the system is mainly used to help the related staff to query and map various epidemic information. Epidemic Information Management Geographic Information System, a WebGIS, adopts SuperWebGIS as the map server platform to publish the epidemic information and map saved in geodatabases to the Internet. Users can query information through common browsers without installing any plug-ins. In terms of databases, Epidemic Information Management Geographic Information System adopts the Microsoft SQL Server 2003 and Oracle as the tools to save, maintain and manage the communicable disease information.



Solutions

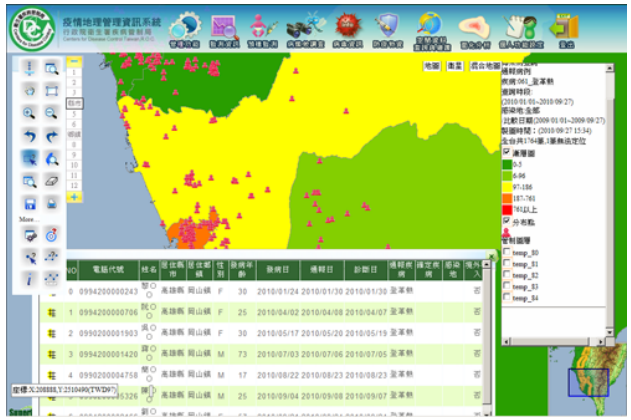
- The project is a query system combined database technology with the WebGIS architecture.
- The project adopts SuperWebGIS as the map server platform to publish the data saved in the geodatabases to the Internet.

Results

Epidemic Information Management Geographic Information System is a query system using Web-GIS as the architecture, and the system effectively integrates various related databases to assist the Center for Disease Control in entirely controlling the epidemic information in Taiwan.

Epidemic Information Management Geographic Information System has six functions to deal with epidemic information.

1. Surveillance information: The function is aimed at offering the related units to quickly query the information about notifiable diseases, syndrome and severe complications, inoculation rate, symptom report and etc.
2. Inoculation Surveillance: The function mainly offers the query of inoculation rates based on several types of conditions, like era, areas, communicable disease vaccines and etc. The results would be displayed in graduated charts to facilitate researchers to clearly realize the spatial distribution of each inoculation rate, control the spreading of communicable diseases and apply to other applications.
3. Investigation of Vector Mosquito: The main purpose of this function is to offer the staff with query function to realize the multiplication state of the various vector mosquitoes by different period of time, area, occasion and index, expecting to control the spread of communicable diseases. In addition, the function also allows users to download the results in Excel file for other advanced applications in more documents.
4. Virus Information: The function is aimed at helping the staff to quickly query the distribution status of all kinds of virus in different areas and different periods of time, and then displays the virus distribution with visualized effect in graduated chart. Moreover, the staff can query with the related information and distribution status of the communicable disease cases and read the query results in graduated chart.
5. Goods and Materials for Disease Prevention: This function assists Center of Disease Control in controlling the information of inventory, stock quantity, using quantity or so of the goods and material for disease prevention, snake antivenin, medicines for prevention and vaccines in each city and county or medical care unit. The materials and medicines can be allotted and distributed in the most effective way.
6. Mapping Analysis: The function has two kinds of menus: Weather Mapping Analysis and Disease Spatial Statistic Analysis. The change of climate is a crucial factor in the process of transmission of communicable diseases. Therefore, Weather Mapping Analysis provides the statistic analysis of various climate factors, such as temperature, rainfall, humidity and pressure for disease researches as reference. Disease Spatial Statistic Analysis provides Kriging method and IDW method to do statistic analysis, particular for statistic analysis of enterovirus, influenza-like illness, diarrhea and etc. The analysis results will be clearly displayed via the mapping.



Surveillance Information provides many types of options, such as notifiable diseases, syndrome and severe complications, inoculation rate, symptom report and etc. for the related units to query.

Results

- Epidemic Information Management Geographic Information System, a query system based on Web-GIS architecture, integrates the various related databases and displays the spatial distribution of epidemic information on the web.

Software Used

SuperWebGIS

Windows Server 2008

Microsoft SQL Server 2003 and Oracle

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