

Satellite Image Data Management System

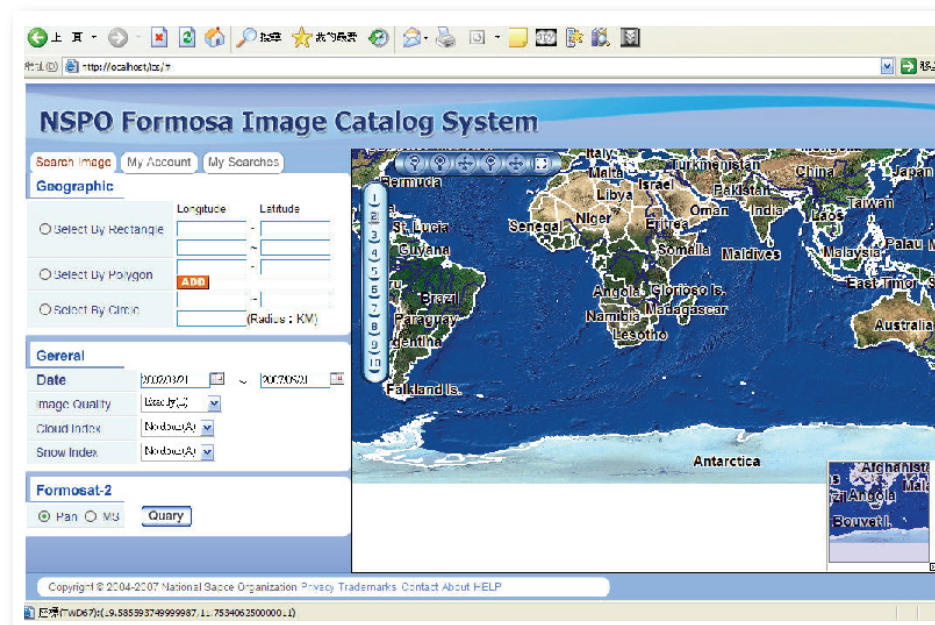


Challenges

- A system with powerful processing capability is required to handle the requests for processing large quantities of attribute data and calculating and displaying images.
- Process images or the Internet with high efficiency.

Goals

- Build up an online system with GIS interface to allow users with special requests to perform image query, purchase, map manipulation and other functions online and also effectively process and display huge files.



The Satellite Image Data Management System interface

Scenario

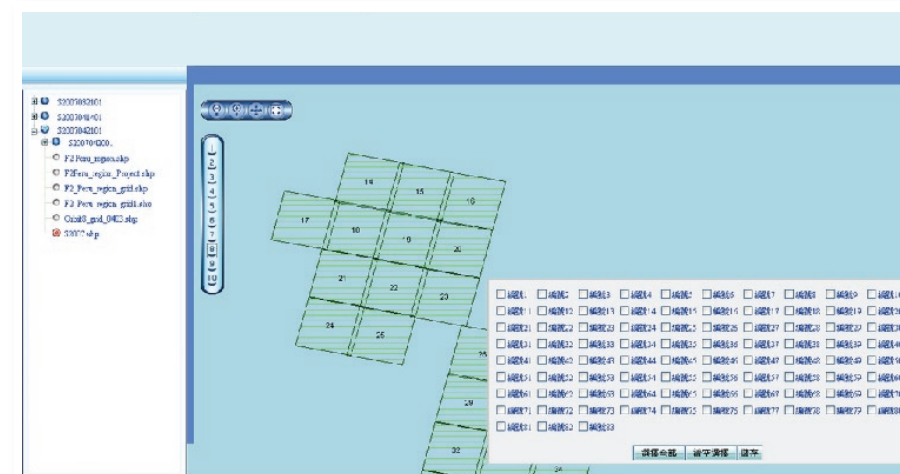
National Space Organization is the key unit to enforce space programs in Taiwan. The organization is given the responsibilities of supervising, directing, enforcing and managing related space science plans. The ground system of the organization takes charge in manipulating FORMOSAT series satellites (FORMOSAT-1, FORMOSAT-2 and FORMOSAT-3) such as launch support, manipulation of satellite identity, remote sensing and receiving, and processing and delivering science data. The key mission of FORMOSAT-2 is to accomplish surface remote sensing and to observe lightning in the upper atmosphere for scientific purposes. The intention of remote sensing is to capture satellite images.

However, if the general public wants to attain the satellite images, they must purchase from distribution centers established by the National Space Organization. As the Internet environment is growing more and more popular nowadays, National Space Organization wishes to allow the public to find out the needed image data quickly, accurately and directly through a single searching interface, which has to be able to offer online query, online

map manipulation and be integrated with other databases. Plus, if the public wants to purchase satellite images, it is available for purchase online with the system. With the online query system, users are offered the progress of image shooting and report so they can accurately control the progress of image output. This program is therefore established to accomplish all the goals mentioned above.

Challenges

In recent years, the related technologies of taking satellite images have accumulated very swiftly, causing the quality of image data display to greatly improve. However, it also results in a strong need for a powerful system with high processing capabilities to process the attribute data and calculate and display images. Moreover, in order to manipulate file display and data query smoothly via WebGIS on the Internet, the performance of image processing under such an environment would be one of the toughest issues that is needed to overcome.



The scheduling function interface

Goals

The goal of this program is to provide through the online Satellite Image Query System a way for the colleagues of the organization and users with special requests to perform image query, purchase, management and other functions according to the limited authority. Moreover, the system is equipped with an easy-to-use GIS interface to allow users to manipulate the map online. Besides the various functional manipulations of this system, since the image files processed by the system all are large in size, the enhancement of processing performance is also highly emphasized.

Solutions

The operation of the system can be divided into two parts: image shooting scheduling as the system base and WebGIS manipulation as the system surface. In the aspect of system base, with the characteristic of spatial data processing capability of SuperGIS, a scheduling function for taking surface images is then customized to arrange the shooting schedule for the images that users want to purchase. As for the system surface on WebGIS manipulation, the program

uses SuperWebGIS to build up an online system and adopts the Internet Map Cache Service of SuperWebGIS to handle the web images' browsing speed. Besides, with the GIS manipulation functions provided by SuperWebGIS, users are enabled to run some simple GIS manipulations on the web.

Results

Large data quantity and complex process flow are the difficulties that needed to be overcome in building up this system. Through planning and creating the customized functions, many complex procedures have been simplified. In addition, in order to make all the related databases work more effectively, those existing databases owned by related organizations, including Oracle and Sybase, are integrated together through GIS architecture; therefore, users can perform queries via one single interface. Finally, via the application of Internet Map Cache Service of SuperWebGIS, developers can increase the number of GIS functions to the system in accordance with their needs so that users can run many spatial data queries smoothly.

Solutions

- With the spatial data processing capability of SuperGIS, a function that can operate the procedures of taking satellite images is customized.
- A website with GIS interface, which allows users to run some simple GIS manipulations, is designed with SuperWebGIS architecture. The website uses Internet Map Cache Service of SuperWebGIS to increase the browsing speed of web images.

Results

- Through planning and creating the customized function, large quantities of data and complex processes are much simplified
- Through GIS architecture, all databases owned by the organization are integrated together so that each database can perform more effectively
- The powerful functions of SuperWebGIS allow developers to easily increase many GIS functions to the system in accordance with their needs and offer users a smooth way to perform all kinds of spatial data queries when manipulating the map.

Products

- SuperGIS 2
- SuperWebGIS 2