Forestry 3D visualization solutions

Business case

Liao Ning Provincial forestry resource management 3D system

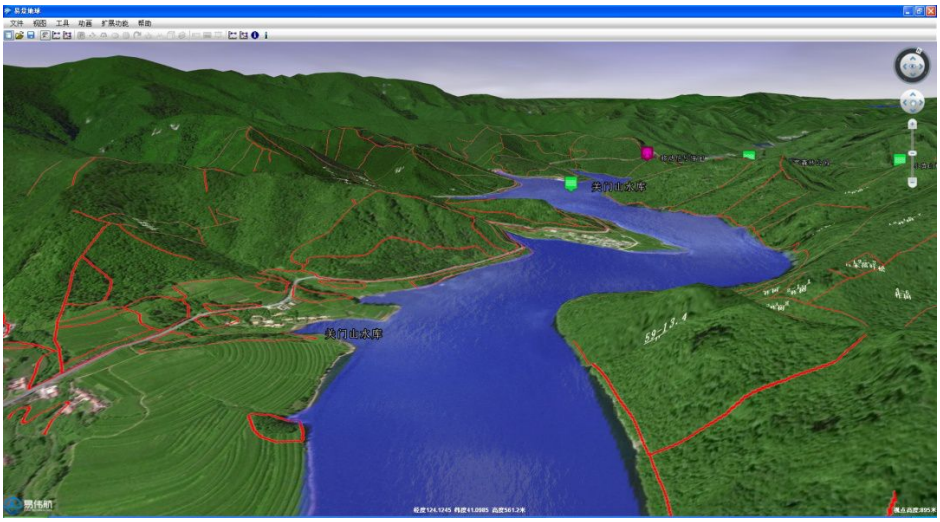
National photo (Jiang Xi) project

Si Chuan post-disaster reconstruction of forestry visualization system

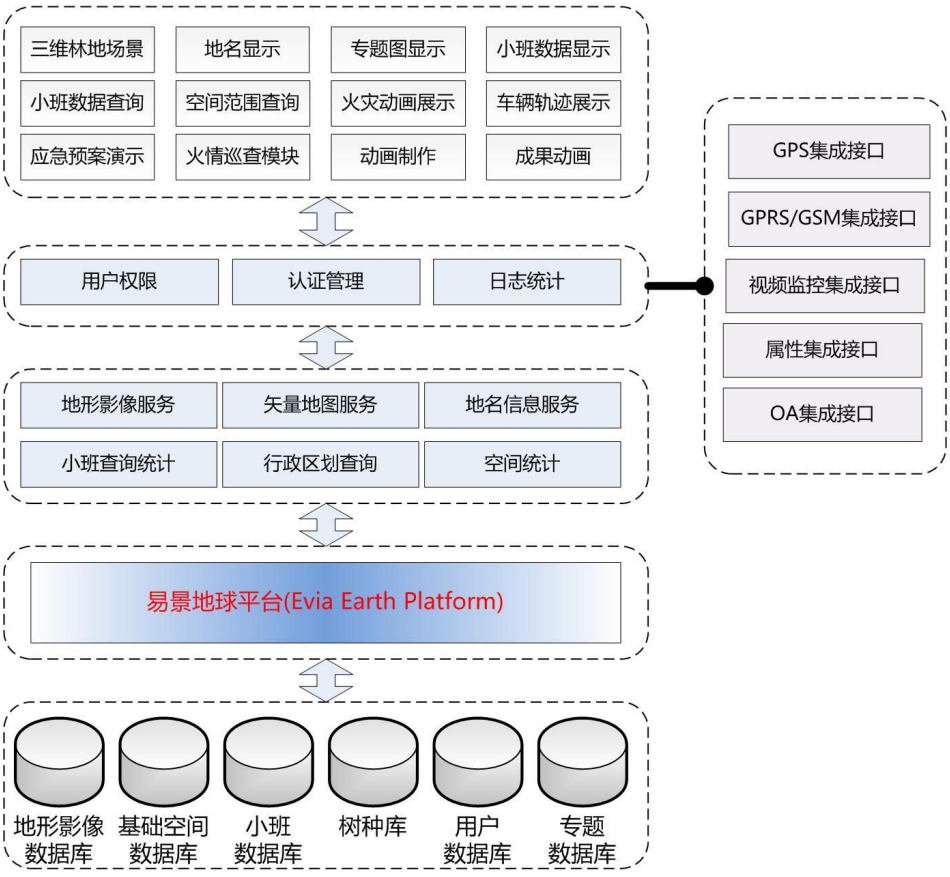
3D visualization of forestry system introduction

Forestry information refers to the forestry information production, information exchange, information transmission, information processing, information management and information analysis technology. Digital forestry is based on RS, GIS, GPS and related part of the field of three independent technical and other high technology field (network technology, database technology and communication technology) constitute a new comprehensive technology. Using 2D GIS and 3D virtual scene simulation technology of characteristics and advantages can integrate the 2D GIS and the 3D virtual scene simulation to applied in forest resource management information visualization and analysis. Considering 2D, 3D platform's maturity, expansibility and security, 2D use Arc GIS platform of ESRI company and 3D use 3D EVIA Earth platform of Bei Jing Yi Wei Hang technology company, to total factor map, forestry map, resource distribution map , small classes and other kinds of terrain model, in order to introduce the forest information of 3D virtual

simulation system. Through the message communication between 2D GIS and 3D virtual simulation of the interaction, realize visualization management of forest resources small classes data, fire spread ,3D tree species and others business.



System architecture:



System feature

1. Huge amounts of spatial data and attribute data of integration management

2. Visual display of forestry resources

3. Virtual display technology performance such as forest, rivers and mountains

4. Visual dynamic simulation of the fire scene

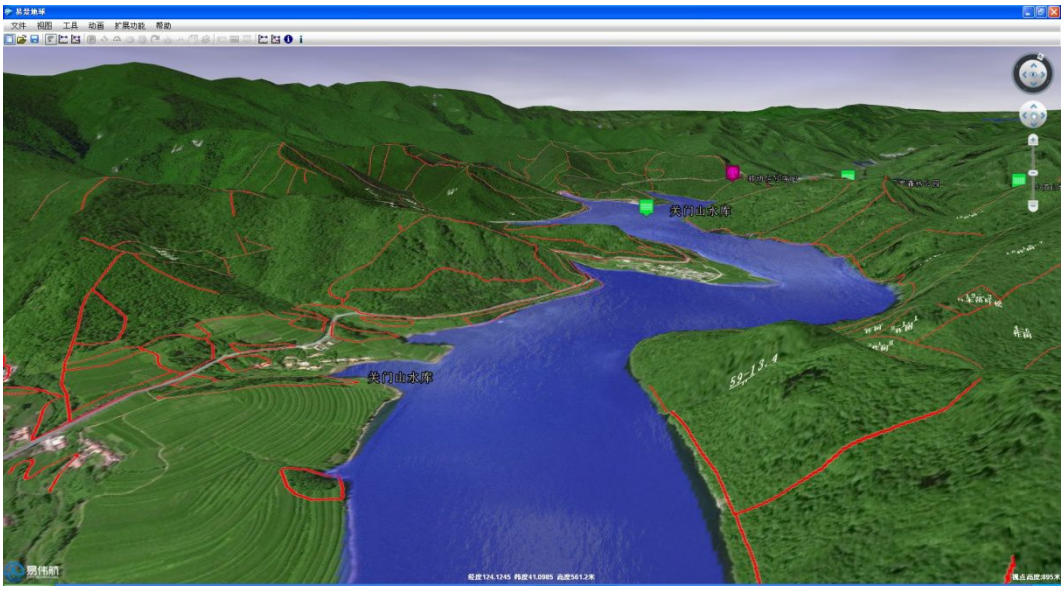
5. Opening platform integrate SMS/MMS, GPS, GPRS, video monitoring and other module

6. Fine tree growth cycle performance

System function

Visual management of huge amounts of data

Forestry 3D visualization platform make spatial data using in spatial database technology, huge amounts of spatial data compression technology, image fusion technology and computer graphics to realize terrain , images, vector data, model ,etc of the visual display , as shown in figure:



Forestry 3D visualization platform can achieve forestry data visualization, including operation and browse from keyboard and mouse for scene, viewpoint navigation and scene reset function.

Scene browse: To realize zoom, rotate, double-positioning, etc operation of 3D scene by use keyboard and mouse.

Viewpoint navigation: Realize the key point in the scene of the save, management and positioning.

Scene reset: Make scene back to the initial point of view.

2D, 3D linkage roaming

LiaoNing forestry construction of internet of things is based on the integration of 2D, 3D GIS system, so it is important to realize 2D, 3D system linkage operation and seamless integration. EVIA 3D Earth platform for Yi WeiHang company developed with independent intellectual property of 3D GIS platform product, and formally based on this advantage, can be based on 3D GIS platform open and modify the

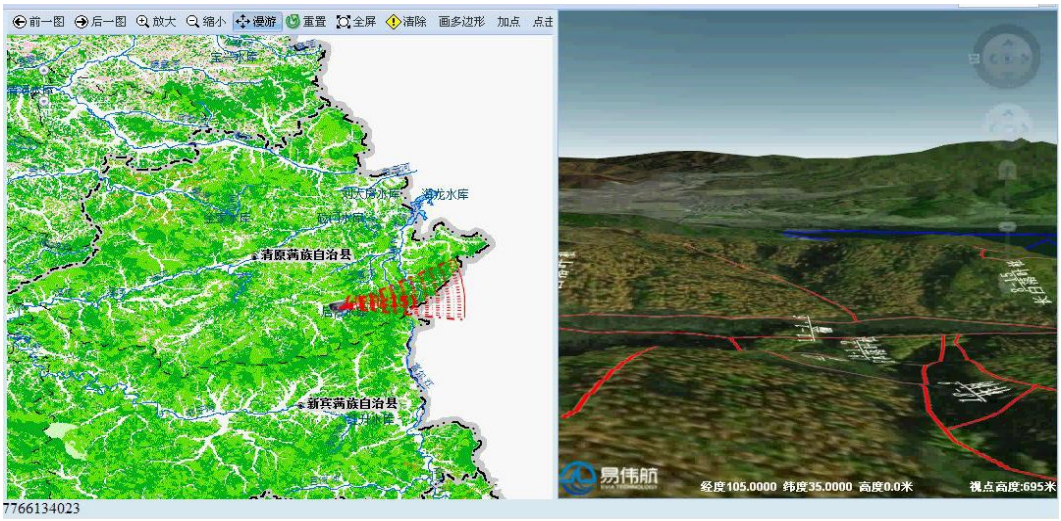
bottom interface, finally using the message mechanism to realize the linkage of the 2D, 3D system operation and browsing.

Function:

1. 2D maps and 3D scene browsing linkage operation.

2. 2D, 3D view of the operating linkage.

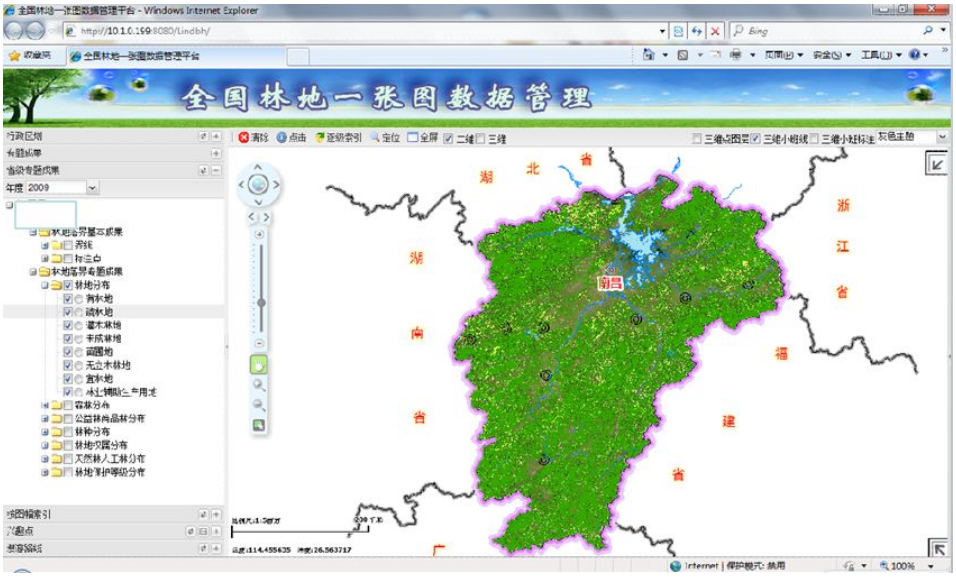
In the realization of 2D, 3D GIS platform of basic functions such as zoom and positioning , at the same time also can achieve the effect of 3D view change and the linkage of the 2D perspective, implementation effect as shown in figure:

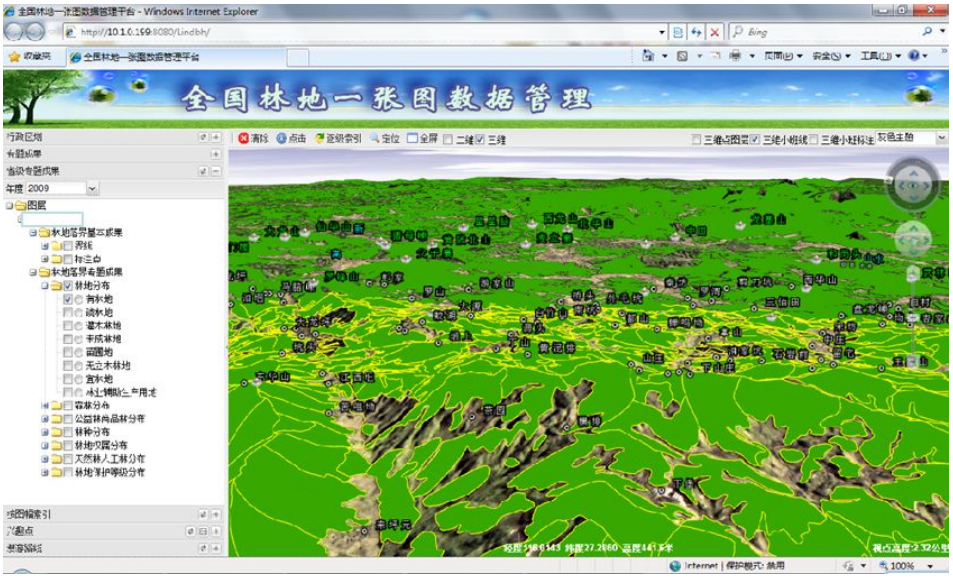


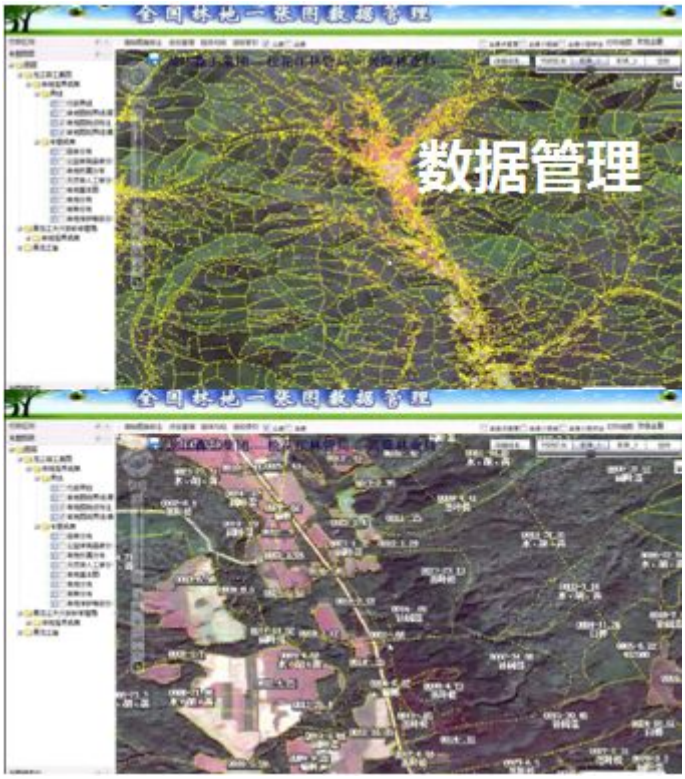
In 3D GIS system, when fixe viewpoint adjust the viewing angle, viewpoint sight and orientation can interact in real time in the 2D system, finally realize the real 2D, 3D linkage operation.

Woodland data management

Support in 2D, 3D map to achieve woodland data visualization, query location, updates and other data management, interface shown in figure:


全国林地一张图数据管理
南昌


全国林地一张图数据管理



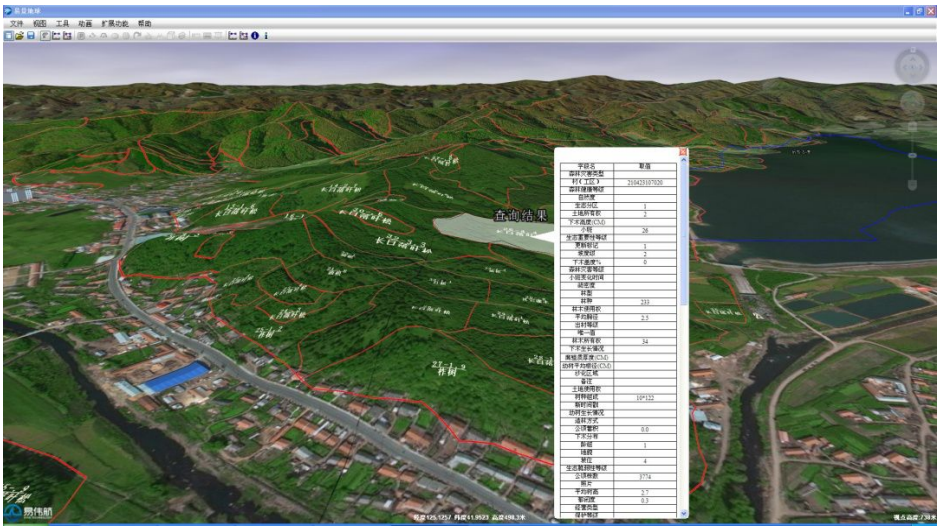
Spatial data attribute data integration

Spatial data and attribute data integration in the core part of 3D forestry visualization platform, by the spatial data and attribute data seamless connection, can realize query, linkage, analysis and management of the spatial data and attribute data.

Click small pop-up properties (HTML or database link) of class data, thematic data in query 3D forestry scene.

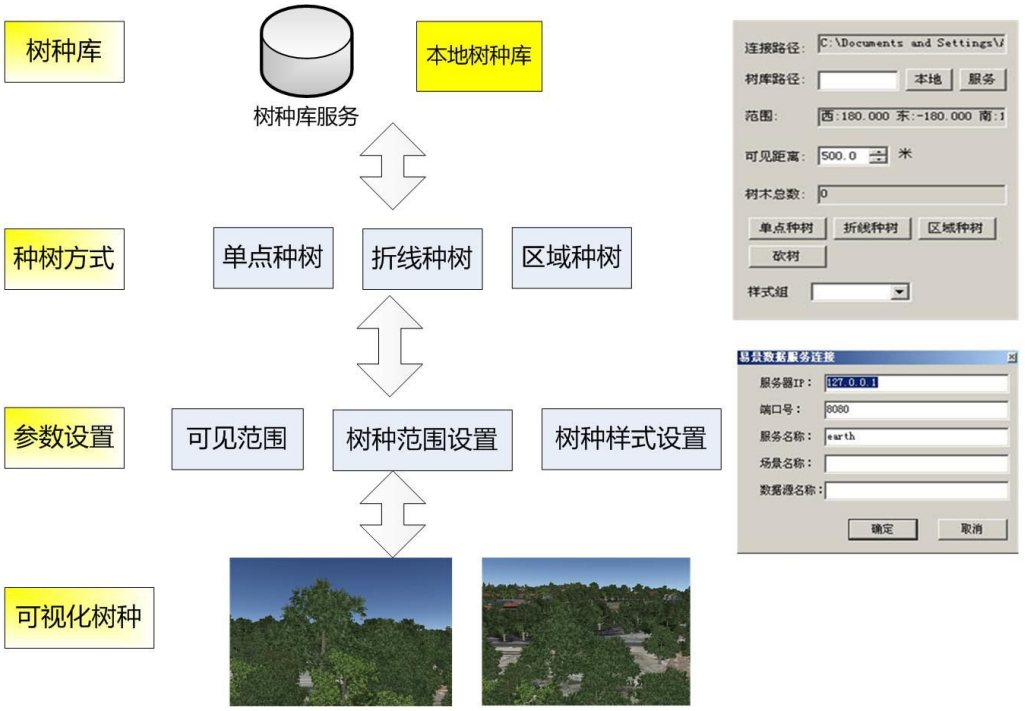
The correlation properties of trend analyze and comparative analyze. (according to the needs of the business)

Implementation effect as shown in figure:

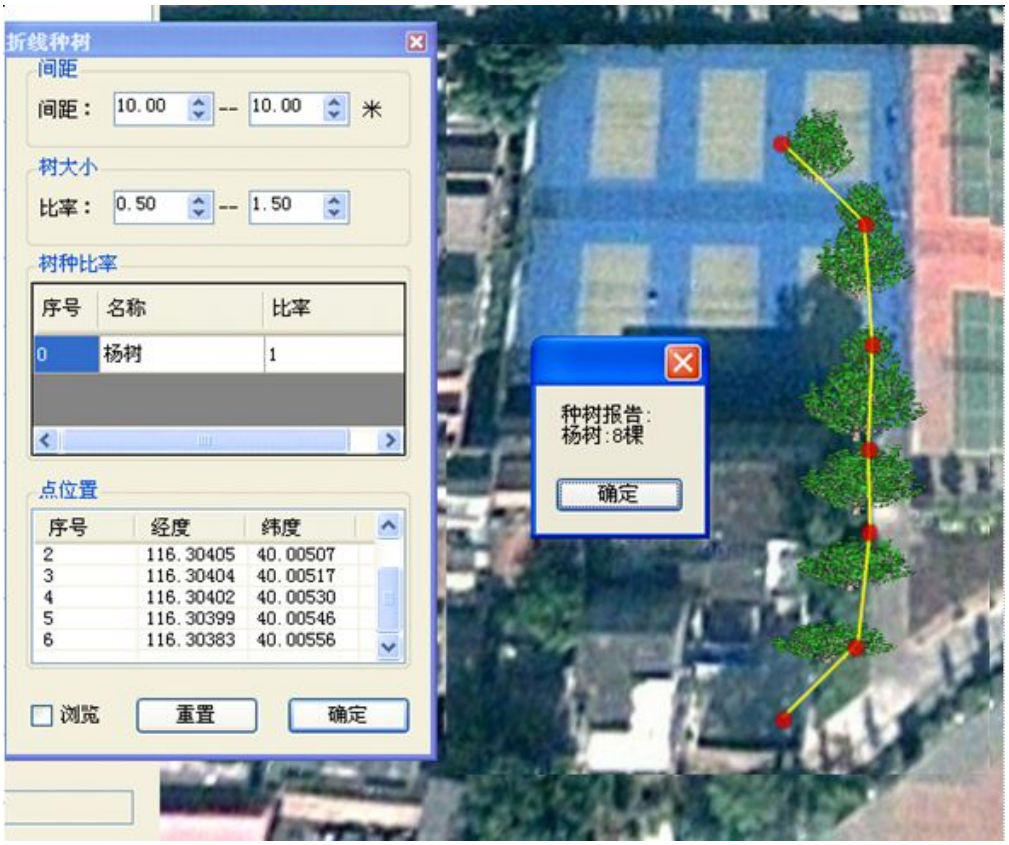


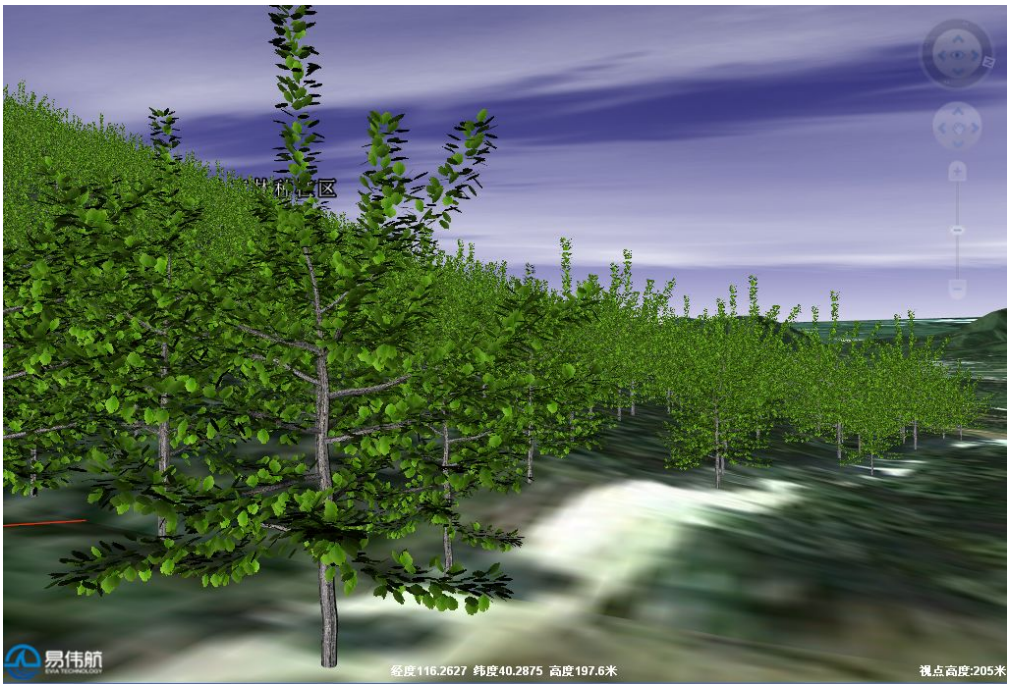
3D visualization of trees

Currently we offer three kind of forestation: point, line, area. The process is as follows:



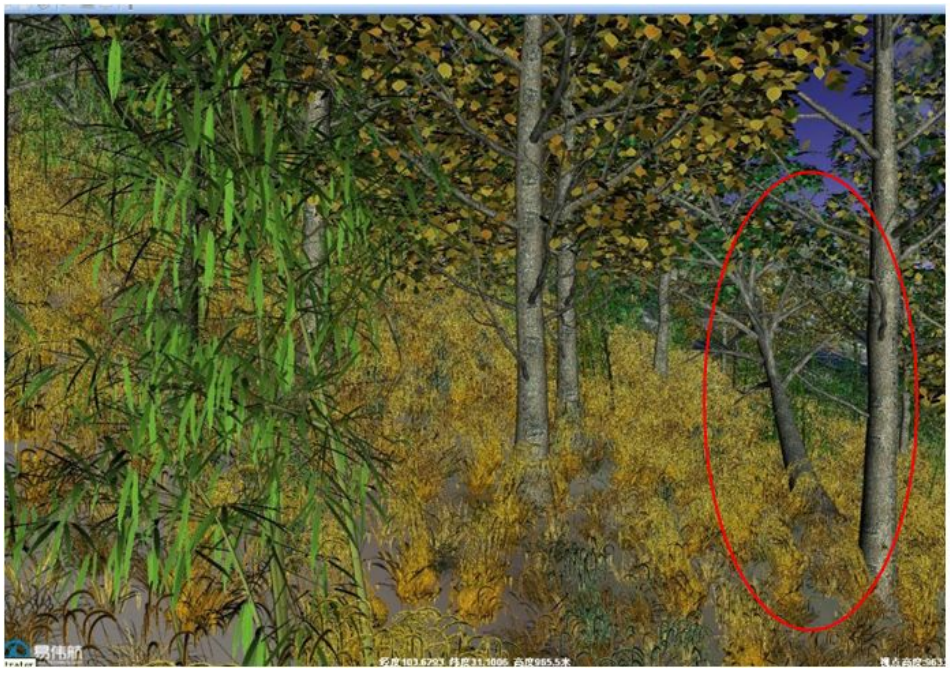
Planting trees results as show in figure:


折线种树
间距
间距：
10.00
--
10.00
米
树大小
比率：
0.50
--
1.50
树种比率
序号
名称
比率
0
杨树
1
点位置
序号
经度
纬度
2
116.30405
40.00507
3
116.30404
40.00517
4
116.30402
40.00530
5
116.30399
40.00546
6
116.30383
40.00556
浏览
重置
确定
种树报告:
杨树:8棵
确定


易伟航
经度116.2627 纬度40.2875 高度197.6米
视点高度:205米

Fine forest performance

Forest resources of fine performance, including trees, growth cycle, deadwood, grass, can be precise performance, such as shown in figure:



Small class data integration

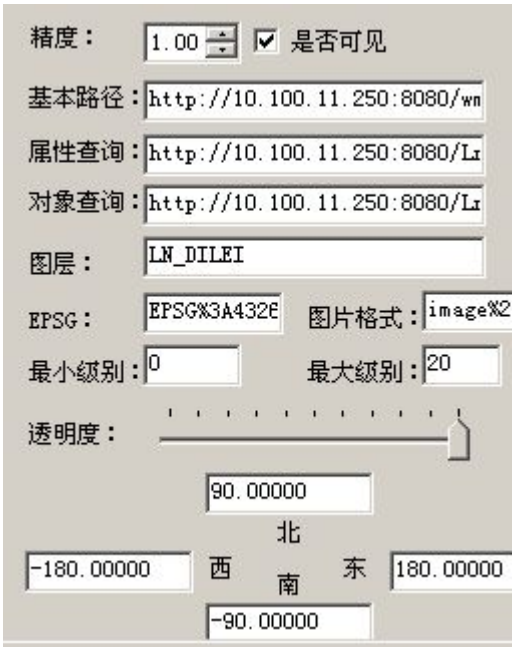
Small class is the smallest unit of conducted forest management and organization timber production. In the operational areas, we divide

them into a small class, which site conditions stand factors, cutting way, management measures and ecological system are the same. Small class boundaries is given priority to with natural divisions according to the ecological system. A small class size is about 5 hectares, most should not exceed 20 hectares.

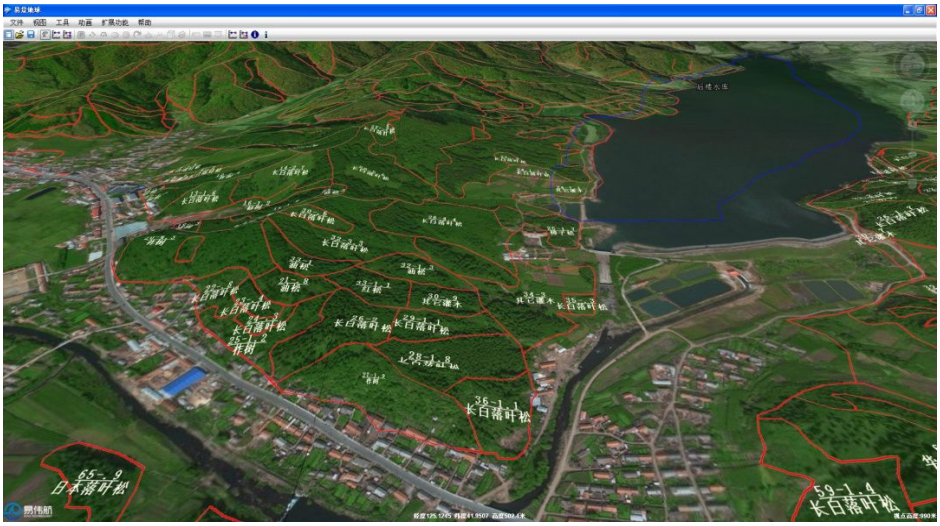
Small classes have same the internal characteristics, and the adjacent areas have obvious difference, it is the basic of the forest resources inventory and business use. Small division is necessary to consider natural features, but also consider the economic characteristics. (level of intensive operations) so the management of 3D forestry platform is to achieve the management of the basic unit, functions including:

WMS service support massive data

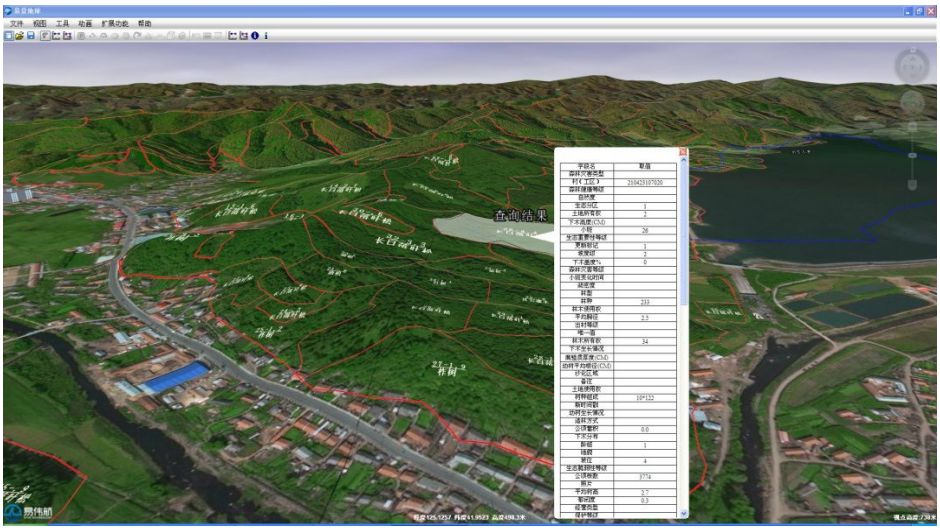
Small WMS service settings as shown in figure:



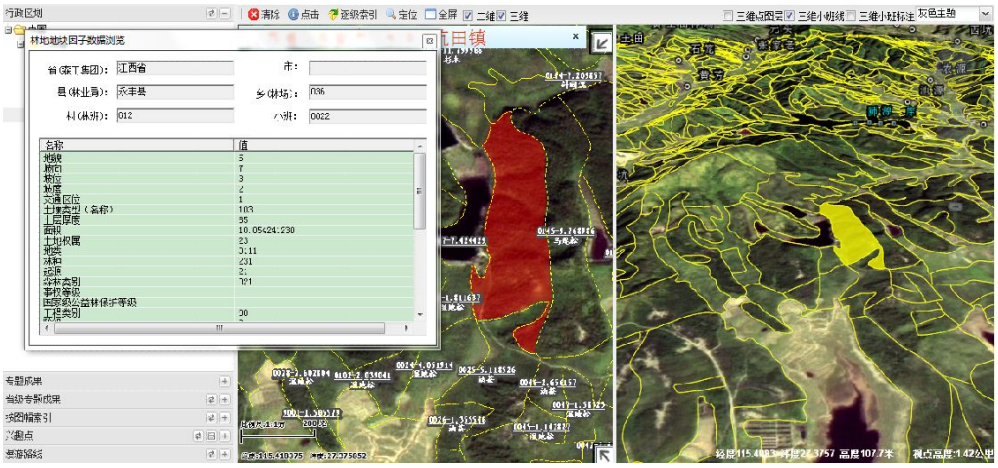
Call display effect of small class WMS services in 3D platform as shown in figure:



Support attribute, click on the query and the selected small class highlighted



2D, 3D small class query

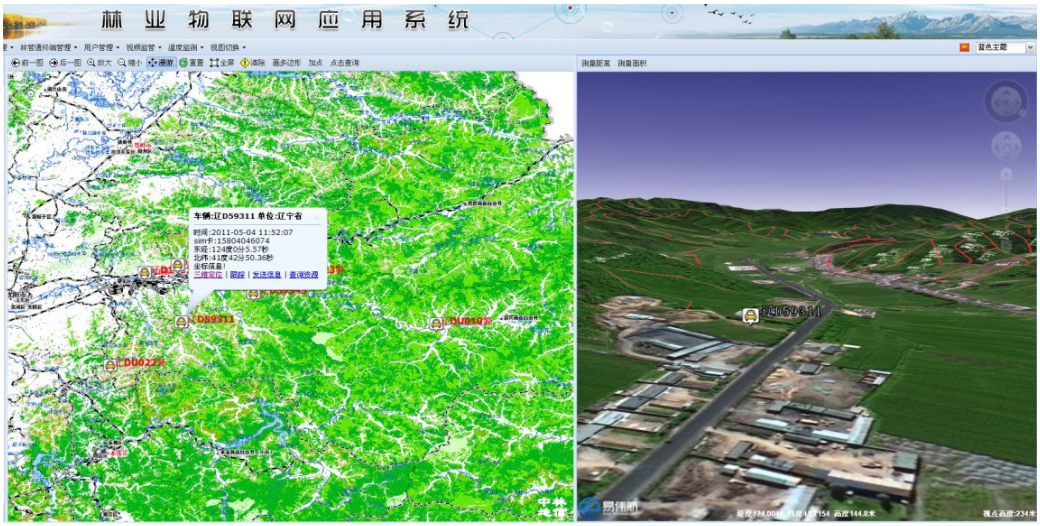


Spatial analysis

Traffic regulation

In forestry field data acquisition, fire inspection, emergency vehicle regulation in the system using GPS monitoring scheduling is the best solution, including vehicle positioning, vehicle communication and vehicle trajectory save/playback, and other functions.

GPS information integration

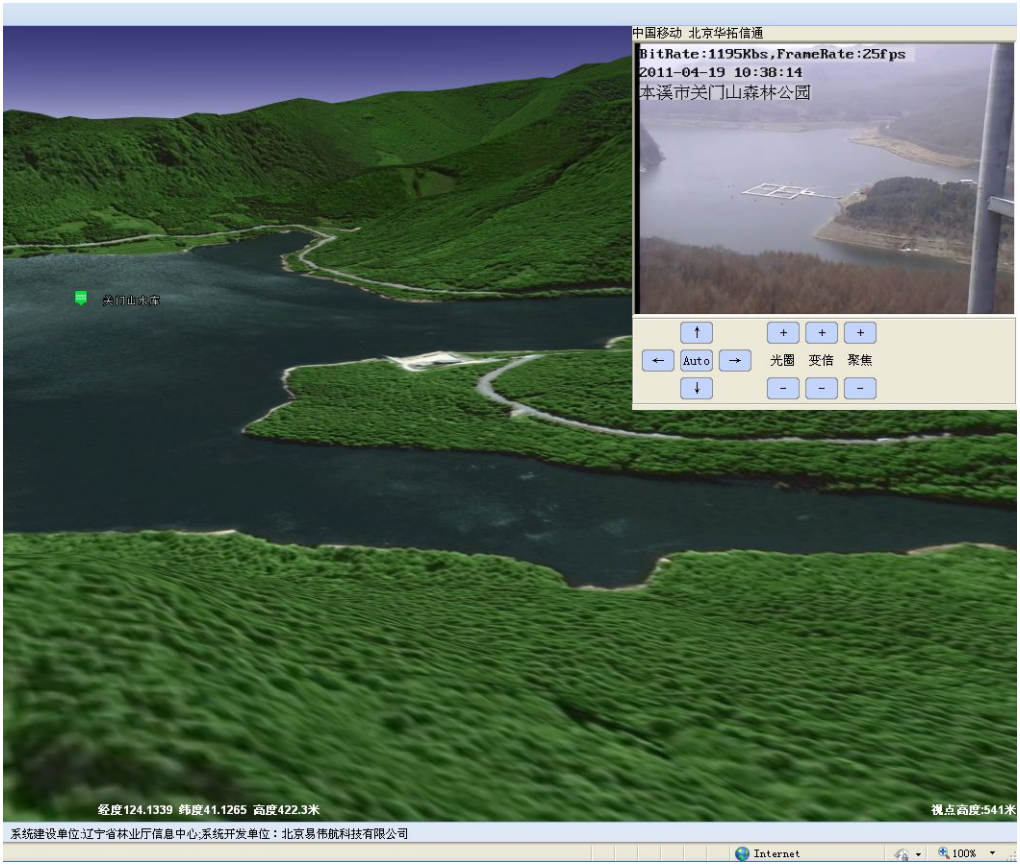


Vehicles track management

Video surveillance integration

Using EVIA 3D Earth platform video integration interface, realize the success of the existing video surveillance system function , including the

opening of video, video parameter adjustment (scaling, angle, aperture, focus), and other function of integration, functional interface as shown in figure:



SMS, MMS integration

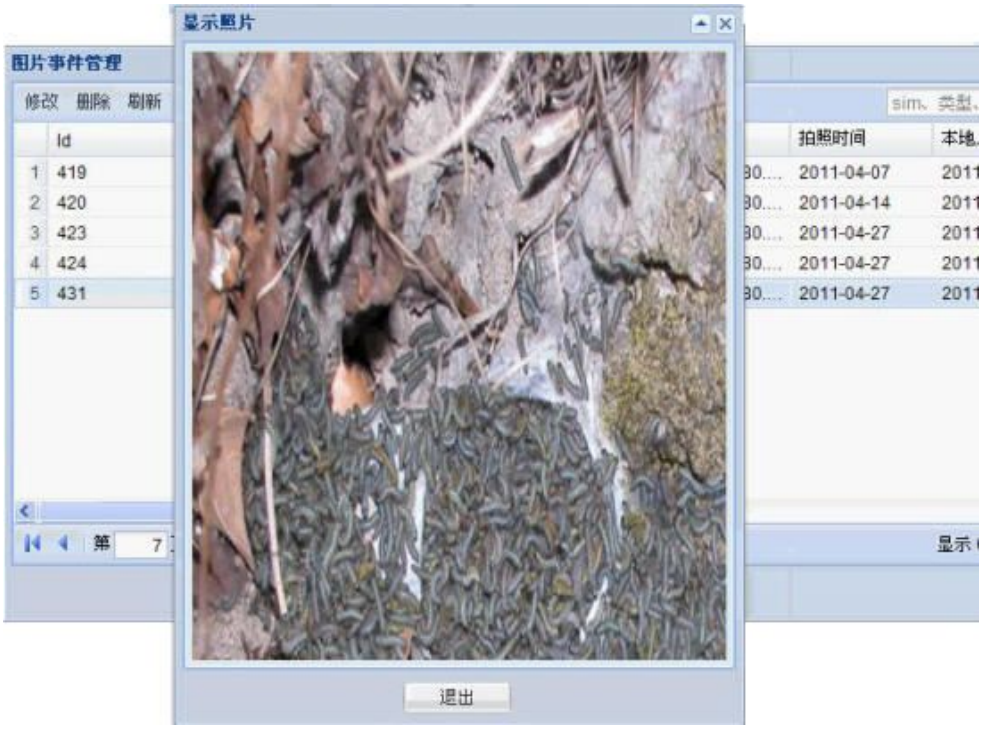
Using SMS/MMS integration of EVIA Earth platform can realize GPRS/GSM short interest integration, insulator function:

1. Support sent SMS online editing.

2. SMS real-time alerts.

3. SMS, MMS list management.

Achieve functional screenshot figure:



Dynamic simulation of the fire scene visualization

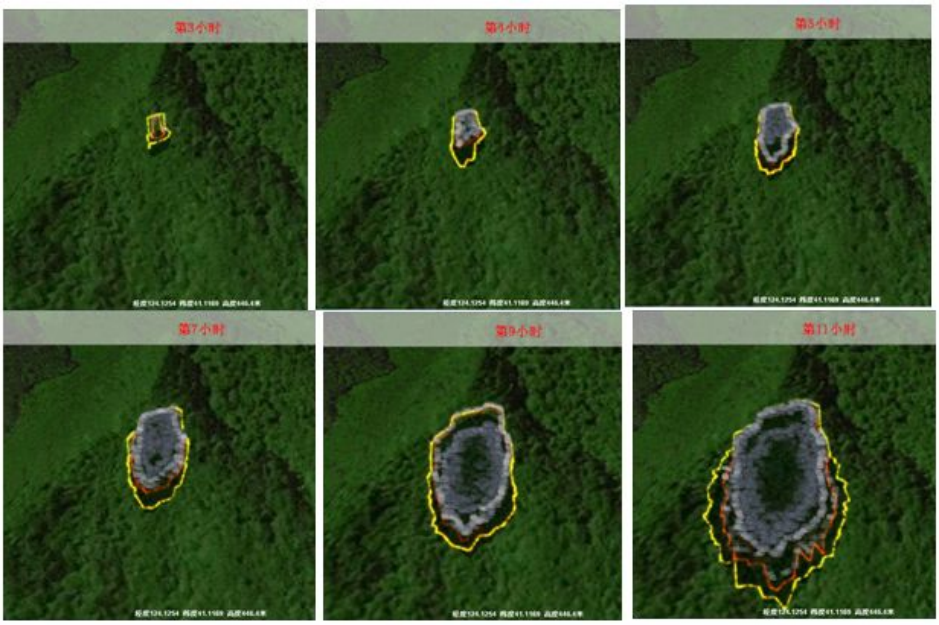
Forestry visualization platform according to the fire spread model calculation results, can realize 3D simulation of the display platform, as shown in FIG. features are as follows:

1. According to simulate fire diffusion process visualization.

2. 360° view of fire scene.

3. Combined with real terrain, slope, weather, wind speed, humidity.

4. 3D visualization of terrain combined with video monitoring information fully reflect the scene of the fire.



Emergency rescue

Branch of fire emergency situation occurred and other surrounding the situation of the personnel, vehicles and equipment, constituting the implementation scheme, simulation and comparison, system, as shown in the diagram below 4 functional features:

1. Real landform, water show.

2. The spatial distribution of emergency equipment, vehicles, personnel and the query.