

# Web Development Training

Lecture: Amber Li

# Content

- **iServer Introduction**
- **iPortal Introduction**
- **iClient for JavaScript Introduction**
- **iClient 3D For WebGL Introduction**

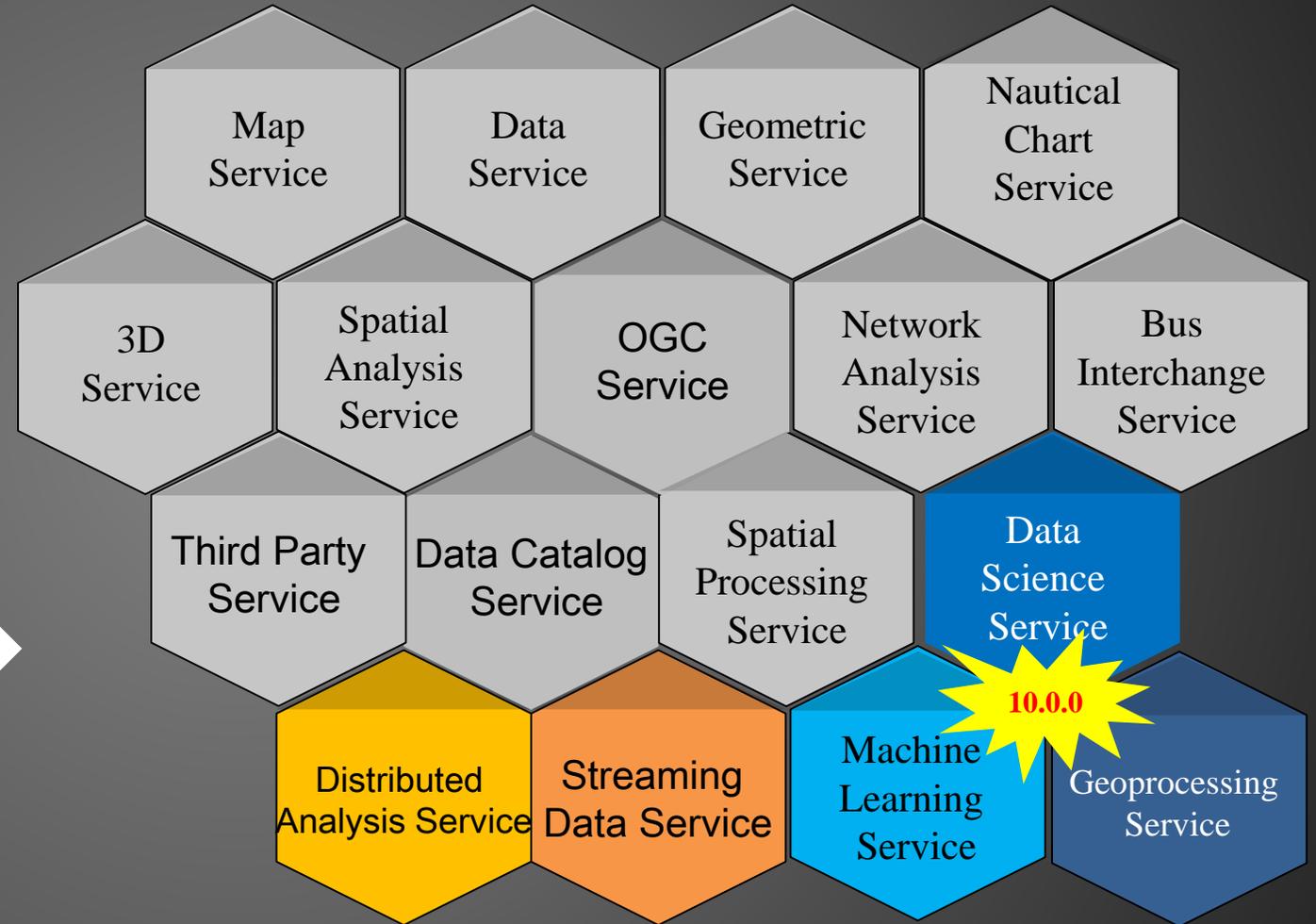


▶ PART 01

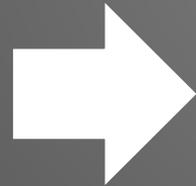
➤ **iServer Introduction**

# SuperMap iServer





Strong Functions  
High-performance  
Distributed  
Stable and Reliable



# GIS Services

## Map Services

Map browsing, zooming, panning  
Map measurement, map query  
Thematic mapping



## Data Services

Query on datasources and datasets  
Online editing (addition, deletion and modification) on datasets



## Spatial Analysis Services

Clip, erase, delete, identity, intersect, union, update, XOR for geometric objects and datasets  
Buffer analysis, spatial relation, linear referencing  
Extract contour lines



## Network analysis services

Optimal path analysis, travelling salesman analysis, multiple travelling salesmen analysis  
Service area analysis, location-allocation analysis  
Closest facility analysis



# GIS Services

## Traffic Transfer Analysis

Traffic transfer scheme analysis  
Bus stop query



## Address Matching Services

Query places with address keywords,  
query places with position information



## 3D/Network Analysis Services

3D data publishing  
3D data query  
Network analysis



## Geometry Services

With no need of map/data services  
Measure area, distance, and transform  
coordinates



# GIS Services +

## Distributed Analysis Services

Distributed map visualization  
Distributed cluster based on Spark



## Real-time Data Services

Real time data analysis and processing



## Data Catalogue Services

Indexing data  
Managing data

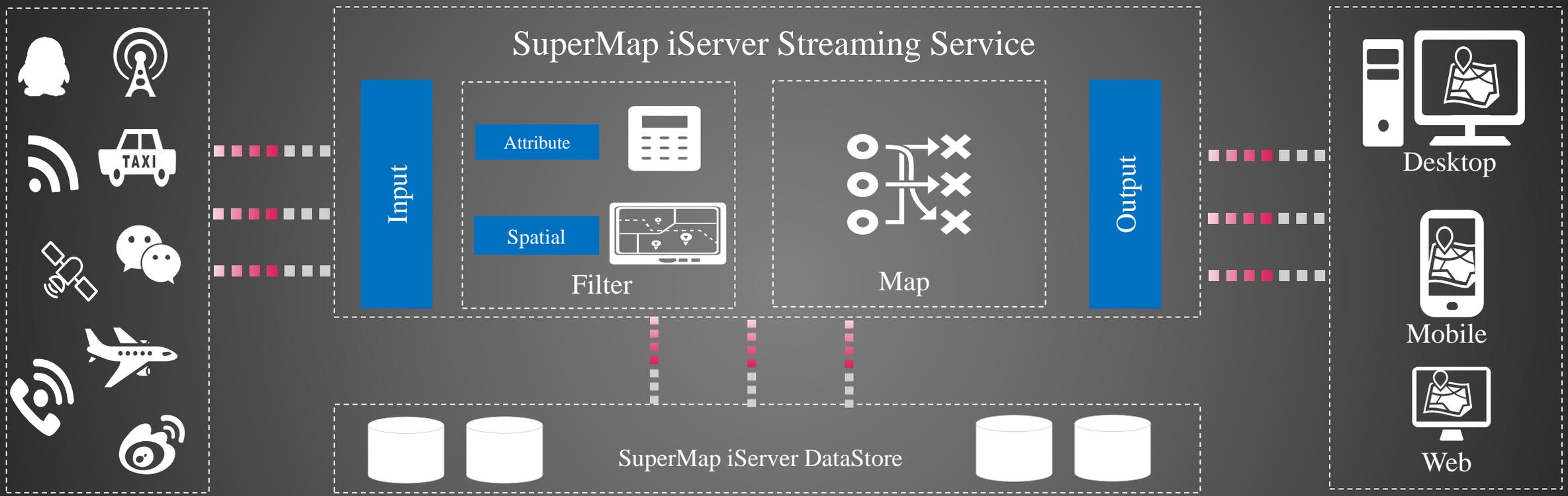


## Data Stream Services

Real time data transfer  
Provide server propagation and client  
subscription function based on  
WebSocket protocol



# SuperMap iServer Streaming Data Service



*SuperMap GIS 10i*

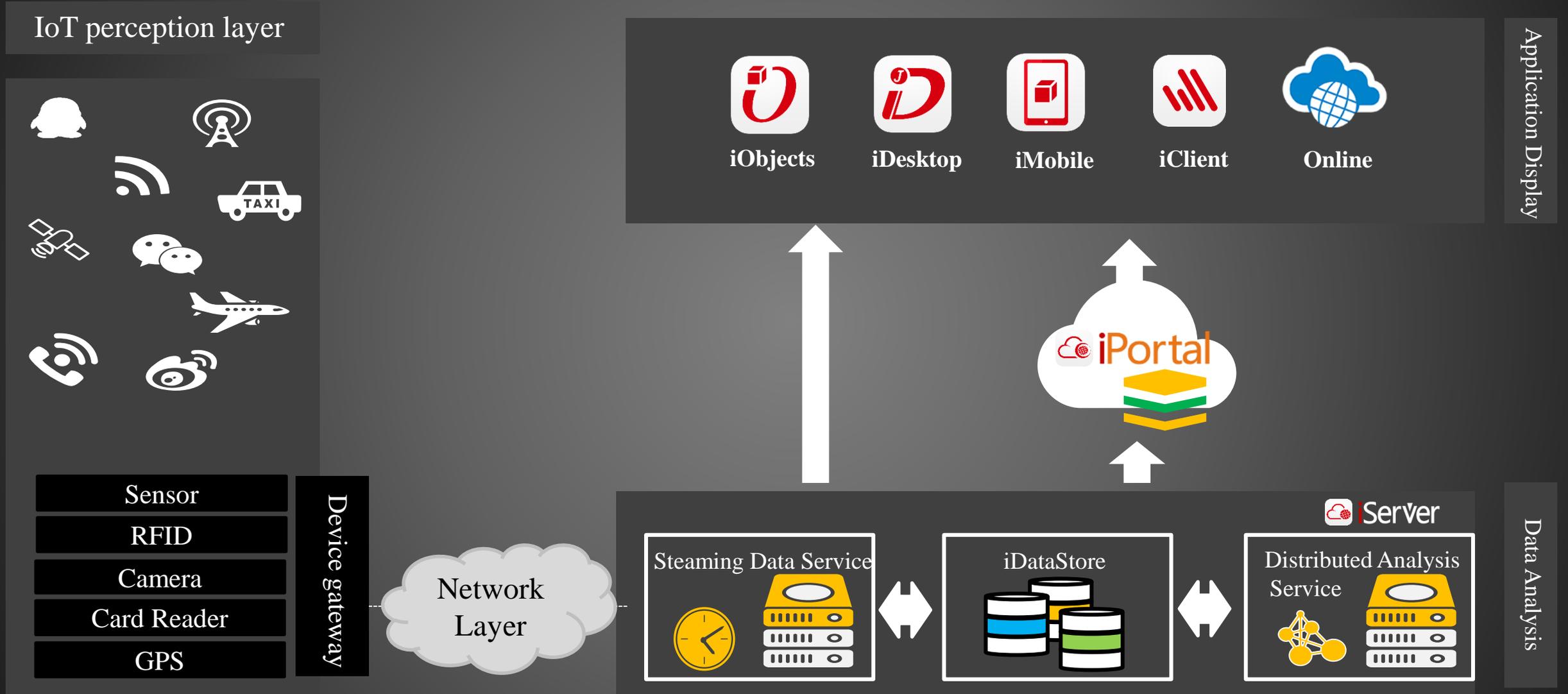


# Data Streaming Visualization

轨迹点总数

2,512,348,862

# SuperMap Big Data GIS + IoT

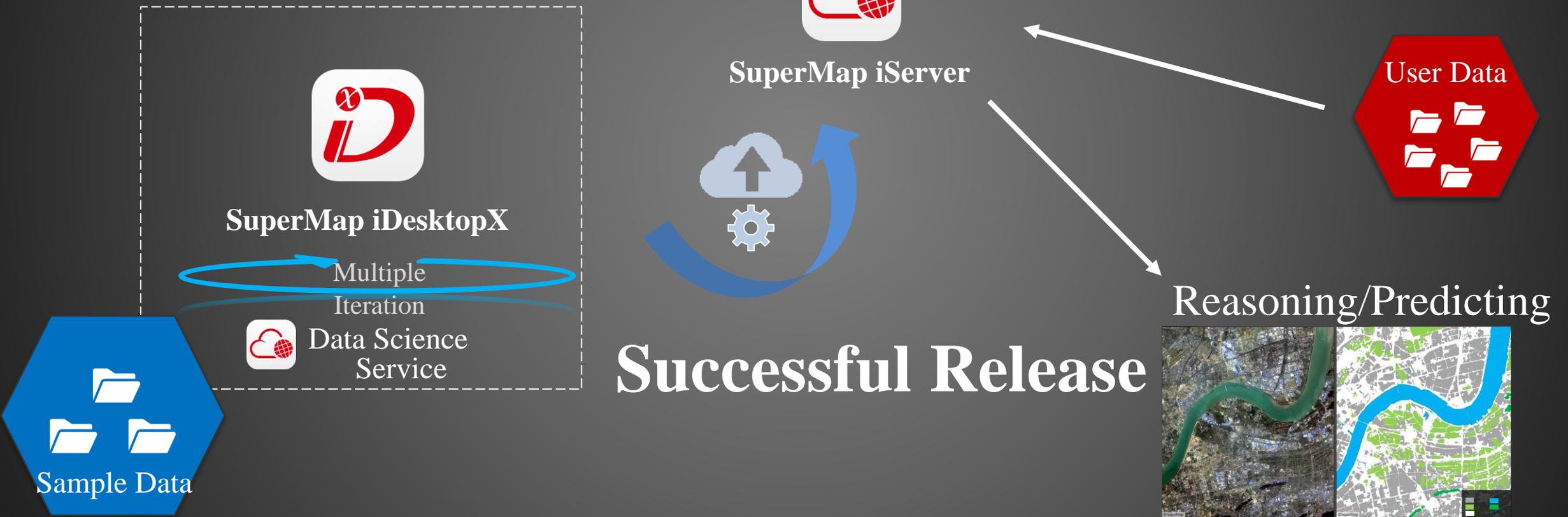


# SuperMap iServer Machine Learning Service



## Model Training

## Model Application



## Machine learning service

- Binary Classification
- Land Classification
- Object Detection
- Scene Classification
- Spatial Density Clustering

影像数据源:

影像数据集:

模型文件:

模型治理  
**SuperMap iServer Machine Learning Service**

10.0.0

# Service Management Capabilities

Home Services Clusters Logs Security Monitoring Backup Task License Settings admin Help English

### Shortcuts

- Quickly publish services
- Manage service instances
- Configure clusters
- Distributed tiles
- Manage security
- Backup and restore
- View and configure logs
- Open SuperMap iServer Help

### Server performance: 0 requests/sec [View details](#)

### Cluster server load: 0 requests/sec [View details](#)

### Service access statistics [View details](#)

- Service instances:** A pie chart with a large green segment (approx. 70%), a blue segment (approx. 15%), a purple segment (approx. 10%), and a small pink segment (approx. 5%).
- Service types:** A pie chart with a large purple segment (approx. 85%), a small pink segment (approx. 10%), and a very small blue segment (approx. 5%).
- User access:** A pie chart with a large green segment (approx. 60%), a blue segment (approx. 25%), and a small pink segment (approx. 15%).

# Support Personalized GIS Services - Extension Development



- **Allow to construct industrial service components for all service layers**



- **Construct custom business components quickly**
- **Realize dynamic linkage, integration of services layers**



- **Manage custom services easily**

# Product Packages

- SuperMap official website
  - [https://www.supermap.com/en/html/SuperMap\\_GIS\\_ProductPackages.html](https://www.supermap.com/en/html/SuperMap_GIS_ProductPackages.html)
- Product Packages
  - Install packages :
    - SuperMap iServer 10i for Windows (64 bit) (Setup package)
    - SuperMap iServer 10i for Windows (32 bit) (Setup package)
  - Zip packages :
    - SuperMap iServer 10i for Windows (32 bit) (ZIP package)
    - SuperMap iServer 10i for Windows (64 bit) (ZIP package)
    - SuperMap iServer 10i for Linux (64 bit)
  - WAR package :
    - SuperMap iServer 10i (war package)
  - Deploy packages:
    - SuperMap iServer 10i for Windows (64 bit) (deploy package)
    - SuperMap iServer 10i or Linux (64 bit) (deploy package)



PART 02



**iPortal Introduction**



## Application Center

# Resource Portal Based on SuperMap iPortal

### Resource Center

Searching	Integration	Management
Sharing	Application	Checking
Sorting	Developer License	GIS Management

### User Center

User Management	Role Management	Sign In
User Authentication	Organizational structure	Log Management
User Joint	Auth2.0	Authority Management



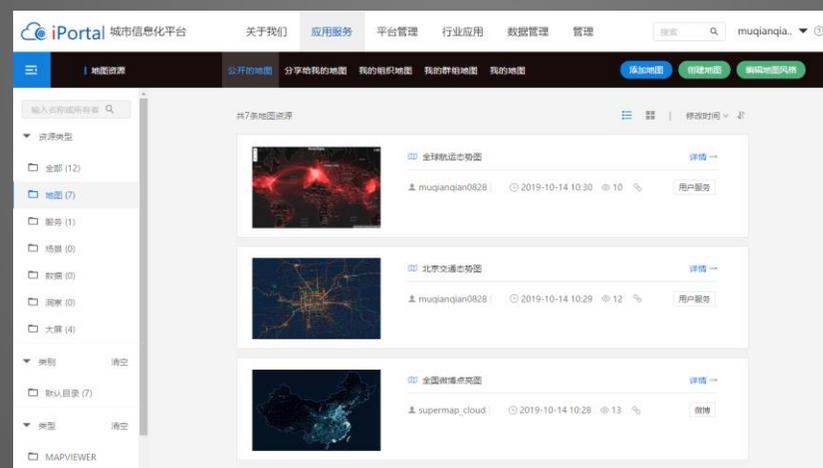
10.0.0

# SuperMap iPortal

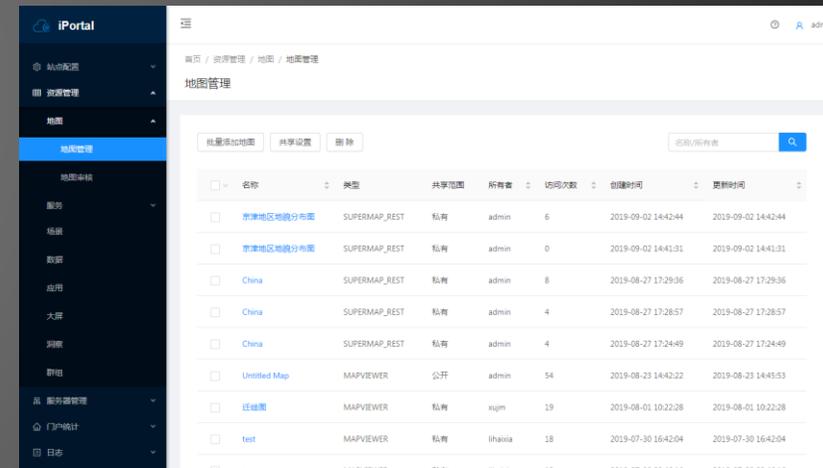
## New Design Based on Modern WebUI



New Portal Homepage

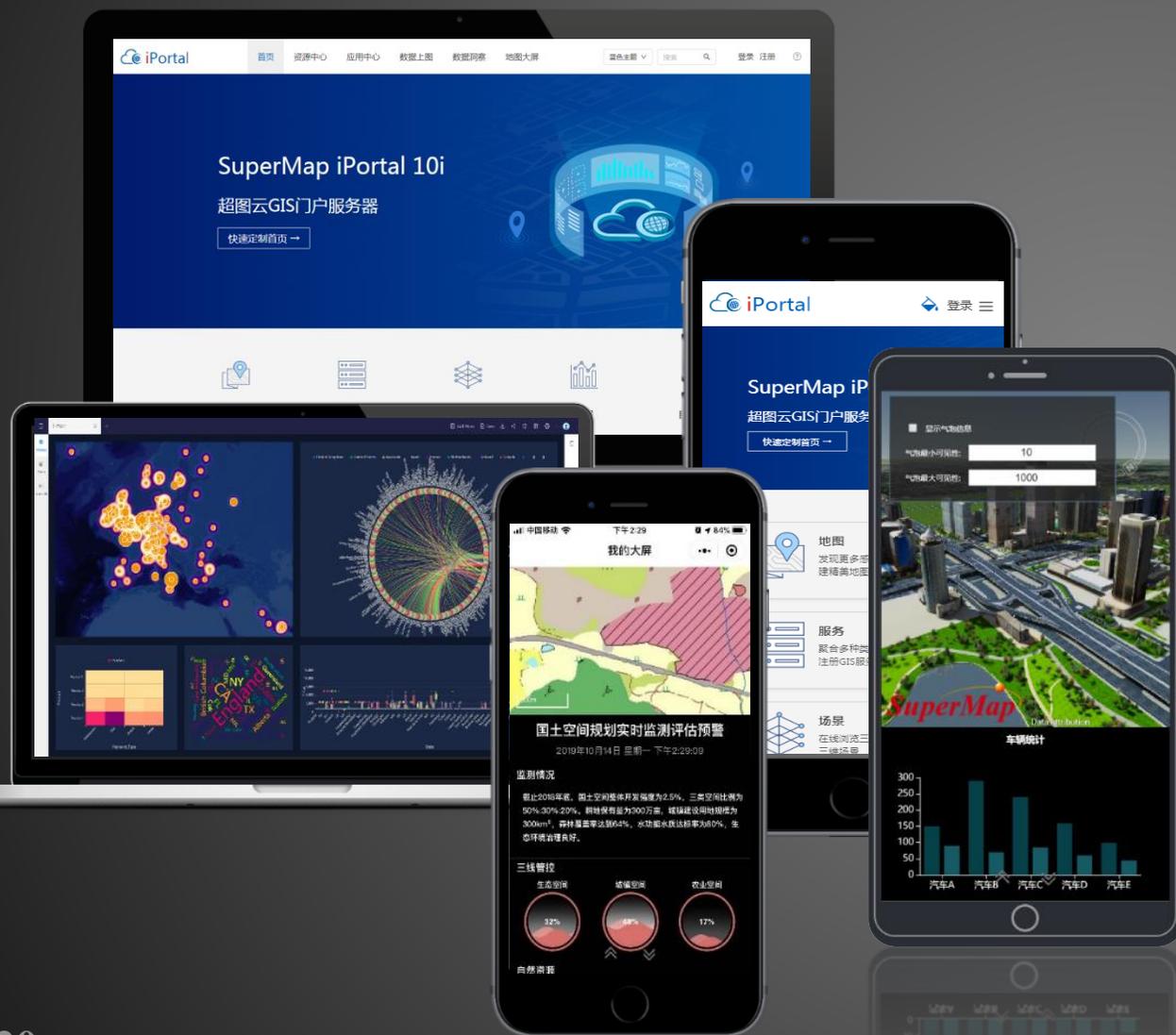


New Resource Center



New management page

# Adaptive UI for Multi-terminal



- Page layout adaptation for mobile device
- Interactive adaption for mobile devices
- Touch screen operation
- *No code*

# Portal Platform - Out of Box



*NO code* - Portal Construction



*NO code* - WebApp Construction

# NO Code Customization



# Multiple Access Control



公开的服务 分享给我的服务 我的组织服务 我的群组服务 我的服务

注册服务

服务资源

请输入名称

资源类型

全部 (7)

地图 (6)

服务 (1)

场景 (0)

数据 (0)

洞察 (0)

大屏 (0)

类型 清空

SuperMap REST

ArcGIS REST

WMS

WFS

选择

共享设置

删除

修改时间

共1条服务资源



JingJinJi



admin

2019-10-21 16:14

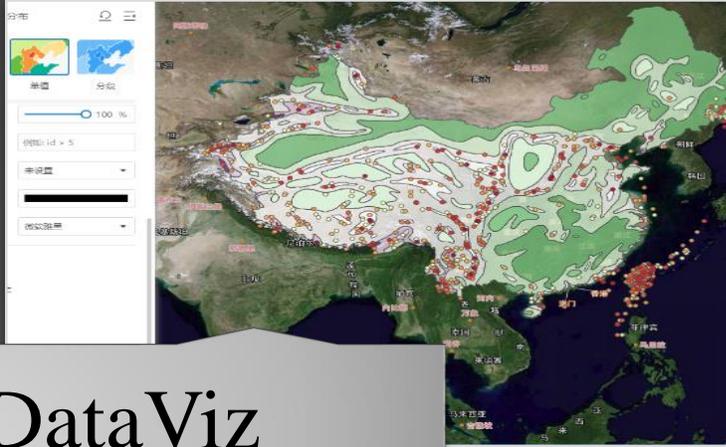
0

JingJinJi

1

User Management, Rights Management, Role Management, Organization Management,...

# WebAPP - *Out of Box*



Data Viz



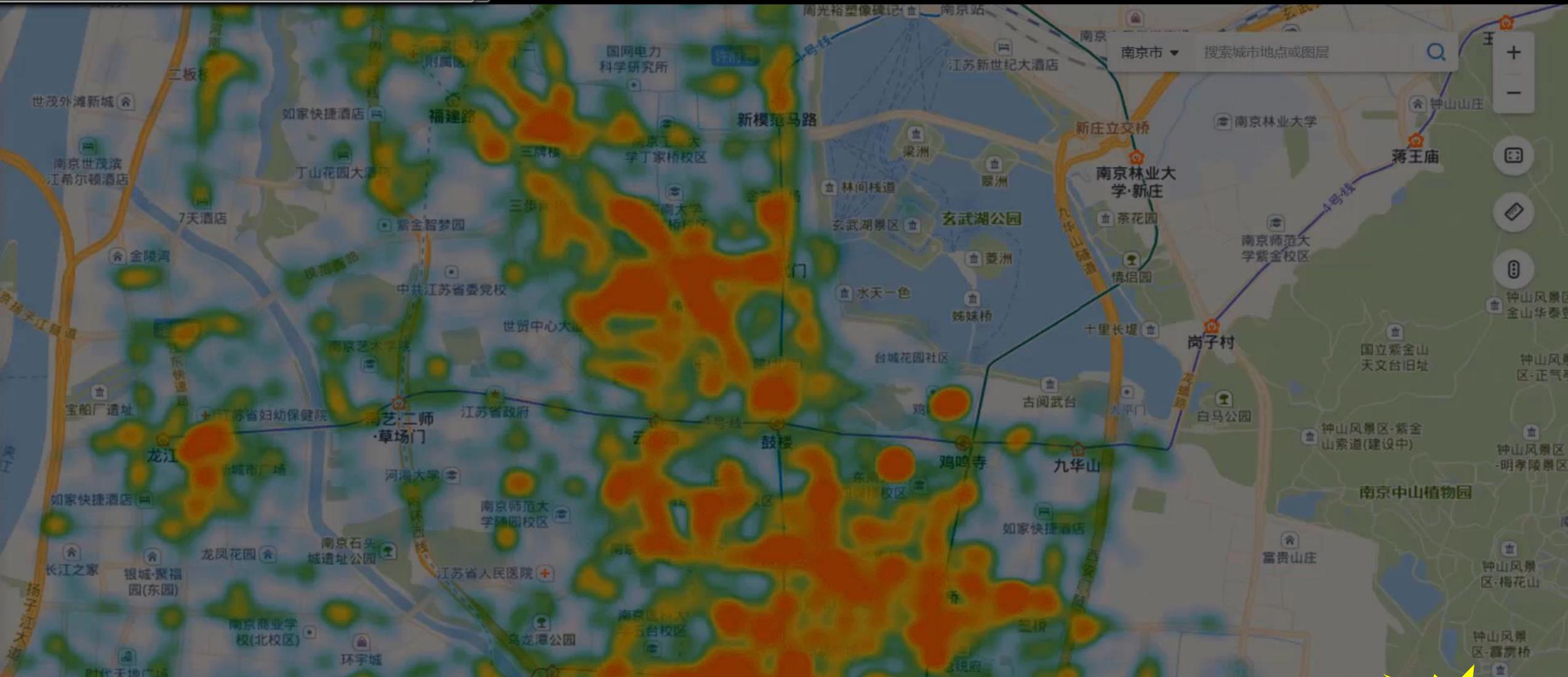
DataInsights



3D Earth



MapDashboard



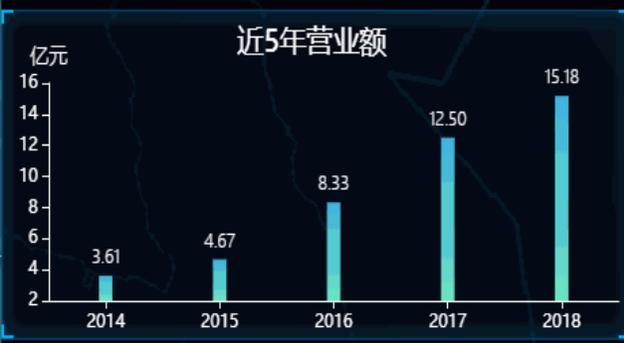
## DataViz: Support Streaming Data and Migration Map

10.0.0



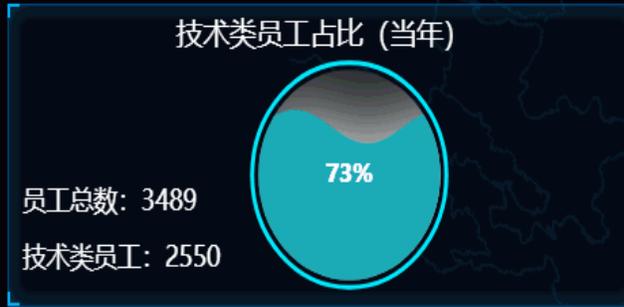


3D Earth: Cool 3D Visualization



股票代码: 300036

**17.8元**



**SuperMap许可**

云在线许可数 (正式): **89,558** 个

云在线许可数 (试用): **32,017** 个

出货模块许可数: **271,118** 个

**地图慧**

大众用户数: **11,030**

企业版用户数: **2,156**

国内签约伙伴: **11** 家

代理商国家: **10** 个

在线接口调用次数: **523,527,514** 次

**生态伙伴**

基础软件代码行数: **1,000,000** 行

自动化测试用例: **63,975** 个

**软件**

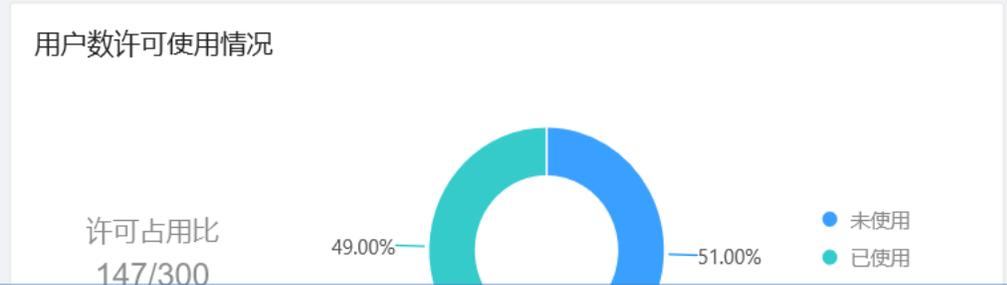
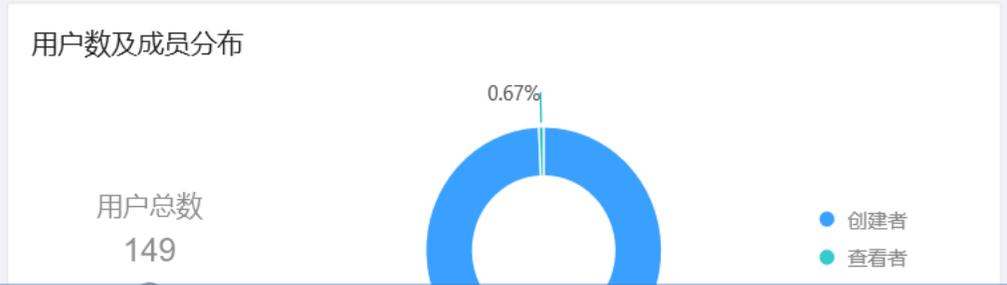
# MapDashboard: New Component Design, Creating Applications Quickly

- iPortal
- 概览
- 站点配置
- 资源管理
- 服务器管理
- 门户统计



概览 / 门户统计 / 门户总览

### 门户总览



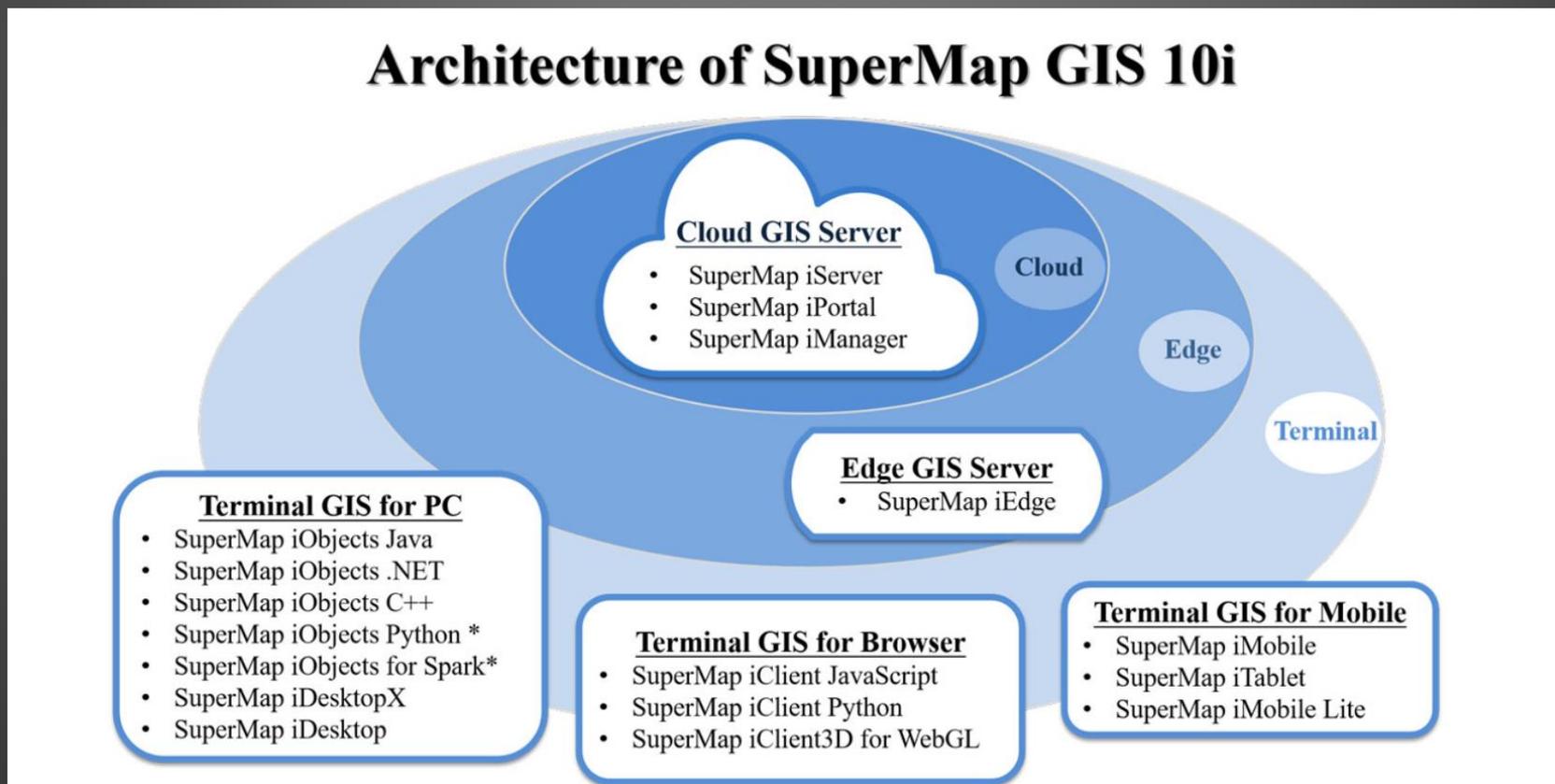
# Backend Statistics



# Dashboard Practice

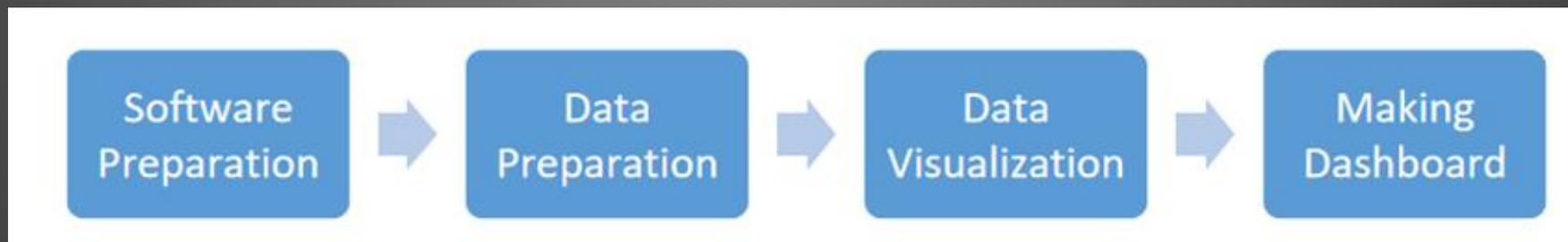
# System Requirements

- Server: Windows/ Windows Server/ Linux SuperMap iPortal & SuperMap iServer
- PC: Data processing SuperMap iDesktop



# Data Requirements & Data Preparation

- Daily update of virus in each area
- Administrative Boundary Data (District/ Neighbors)



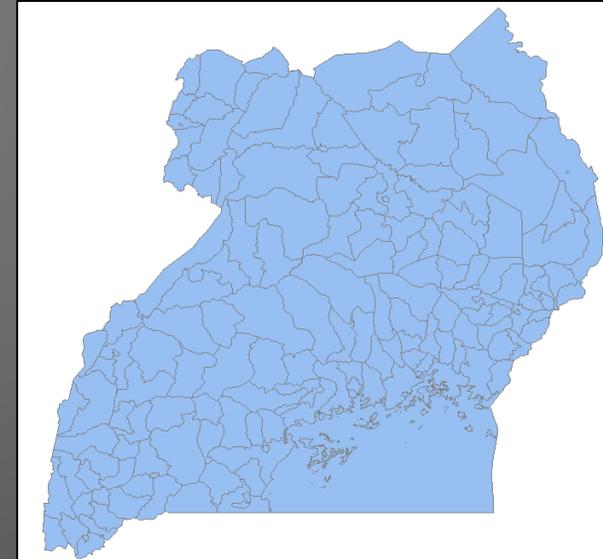
序号	ID_0	ISO	NAME_0	ID_1	NAME_1	TYPE_1	ENGTTYPE_1	Cases_Monday	Recovery	Cases_Tuesday
1	239	UGA	Uganda	1	Adjumani	District	District	1	1	1
2	239	UGA	Uganda	2	Apac	District	District	1	1	1
3	239	UGA	Uganda	3	Arua	District	District	2	1	2
4	239	UGA	Uganda	4	Bugiri	District	District	2	1	2
5	239	UGA	Uganda	5	Bundibugyo	District	District	2	1	2
6	239	UGA	Uganda	6	Bushenyi	District	District	2	1	2
7	239	UGA	Uganda	7	Busia	District	District	2	1	2
8	239	UGA	Uganda	8	Gulu	District	District	2	1	2
9	239	UGA	Uganda	9	Hoima	District	District	2	1	2
10	239	UGA	Uganda	10	Iganga	District	District	5	1	5
11	239	UGA	Uganda	11	Jinja	District	District	3	1	3
12	239	UGA	Uganda	12	Kabale	District	District	1	1	1
13	239	UGA	Uganda	13	Kabarole	District	District	1	1	1
14	239	UGA	Uganda	14	Kaberamaido	District	District	1	1	1
15	239	UGA	Uganda	15	Kalangala	District	District	1	1	1
16	239	UGA	Uganda	16	Kampala	District	District	50	30	60
17	239	UGA	Uganda	17	Kamuli	District	District	1	1	1
18	239	UGA	Uganda	18	Kamwenge	District	District	1	1	1
19	239	UGA	Uganda	19	Kanungu	District	District	1	1	1
20	239	UGA	Uganda	20	Kapchorwa	District	District	10	2	20
21	239	UGA	Uganda	21	Kasese	District	District	1	1	1
22	239	UGA	Uganda	22	Katakwi	District	District	1	1	1
23	239	UGA	Uganda	23	Kayunga	District	District	9	1	9

➤ Daily update of virus in each area

➤ Boundary data



District

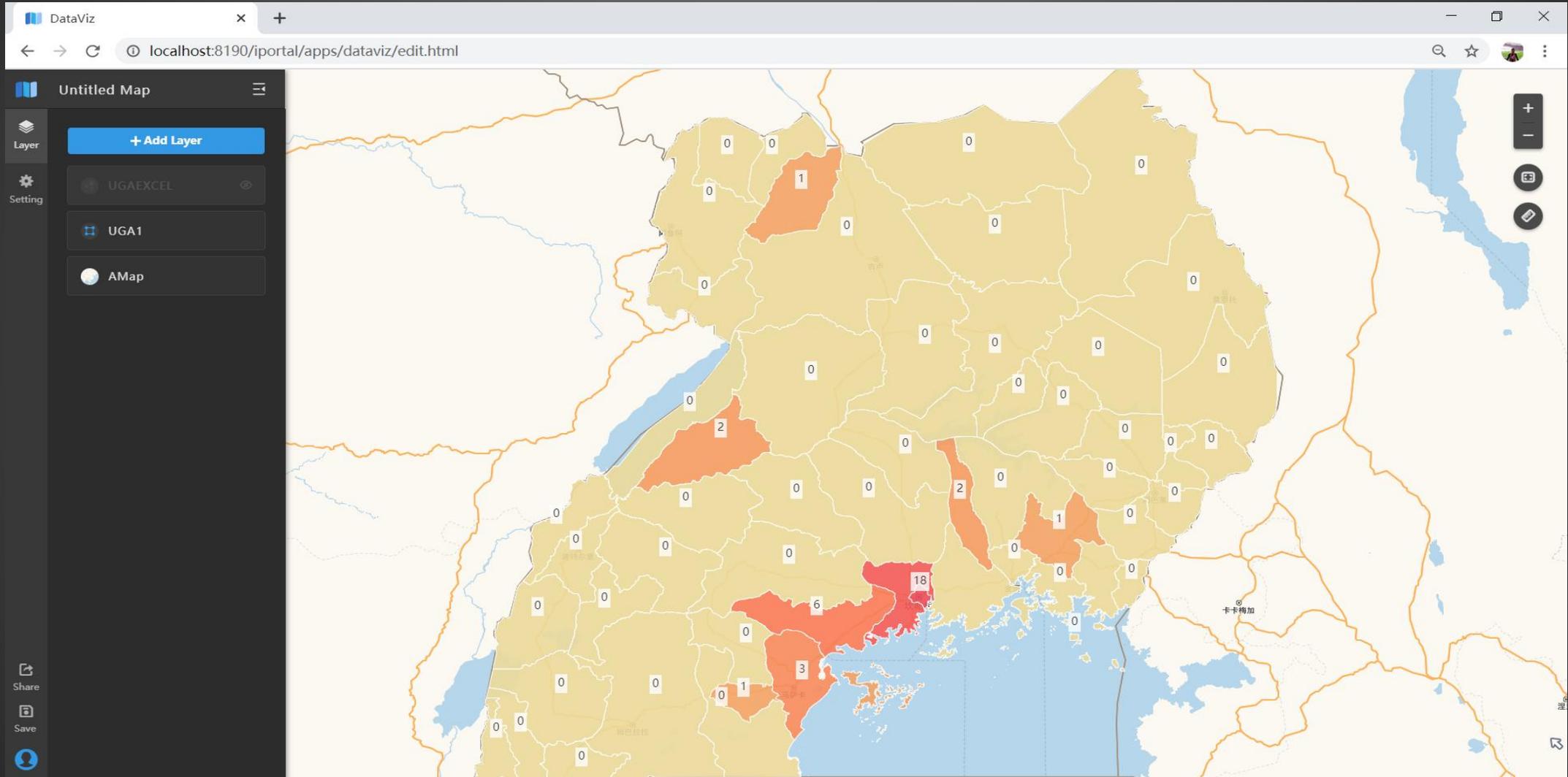


Neighbors

# Data Visualization - iDesktop

The screenshot displays the SuperMap iDesktop 10i software interface. The main window shows a thematic map of Uganda with a 'Cases' expression. The map is divided into administrative regions, with some regions highlighted in orange and others in light yellow. The 'Theme Map' panel on the right shows the 'Expression' set to 'Cases', 'Graduate By' set to 'Constant', and 'Datum Value' set to '0.410714'. The 'Style Settings' panel shows 'Show Zero' and 'Show Negative' options, and the 'Offset Settings' panel shows 'Offset Unit' set to 'Map Distance Units'. The 'Layer Manager' panel on the left shows the current map layers, including 'UGA\_adm1\_edit@Uganda#3'. The 'Workspace Manager' panel shows the project structure, including 'UGA\_adm1\_edit' and 'UGA\_adm1\_edit\_1\_3857'. The 'Toolbox' panel at the bottom right shows various mapping tools. The status bar at the bottom displays 'Objects: 0', 'Scale: 1:3,465,346.73815058', 'Longitude: 35°18'1.49'', 'Latitude: 1.409109', and 'Geographic Coordinate System: ...'. The system tray at the bottom right shows the time '14:22' and date '2020/4/4'.

# Data Visualization – iPortal Online Mapping



# Customized Dashboard - Decision Support

The screenshot displays the SuperMap MapDashboard interface. The main map shows a geographical view of Uganda with various districts labeled: Adj... (Adjuta), Bundibugyo, Kasese, Bushenyi, Katumu, Ntungamo, Kabale, Hoima, and Sembabu. A 'Select Map' dialog box is open, showing the 'Service' tab. The dialog contains the following information:

- Public Maps | My Maps | Internet Maps | **Service**
- URL: `http://localhost:8090/iserver/services/map-DemoMap/rest/maps/UGA`
- Example:
- iServer REST Map Service URL: `http://[server]:[port]/iserver/services/[component]/rest/maps/{mapName}`

The 'Map Property Settings' panel on the right side of the interface shows the following configuration:

- Map Name: UGA
- Map: Select Map
- Center Point
  - Longitude: 32.2846
  - Latitude: 1.4536
- Level: 6.14
- Rotation Angle: 0.00
- Inclination: 0.00
- Sub-components: >
- Sub-layers: >
- Tianditu Sub-components: >
- Width: 888 Pixel
- Height: 672 Pixel

# Customized Dashboard - Various of Charts

**MapDashboard**

Map Manager

Temp... Com...

Measure Legend Data Query

POI Search Open File

**Charts**

Column Bar Scatter

Line Doughnut Pie

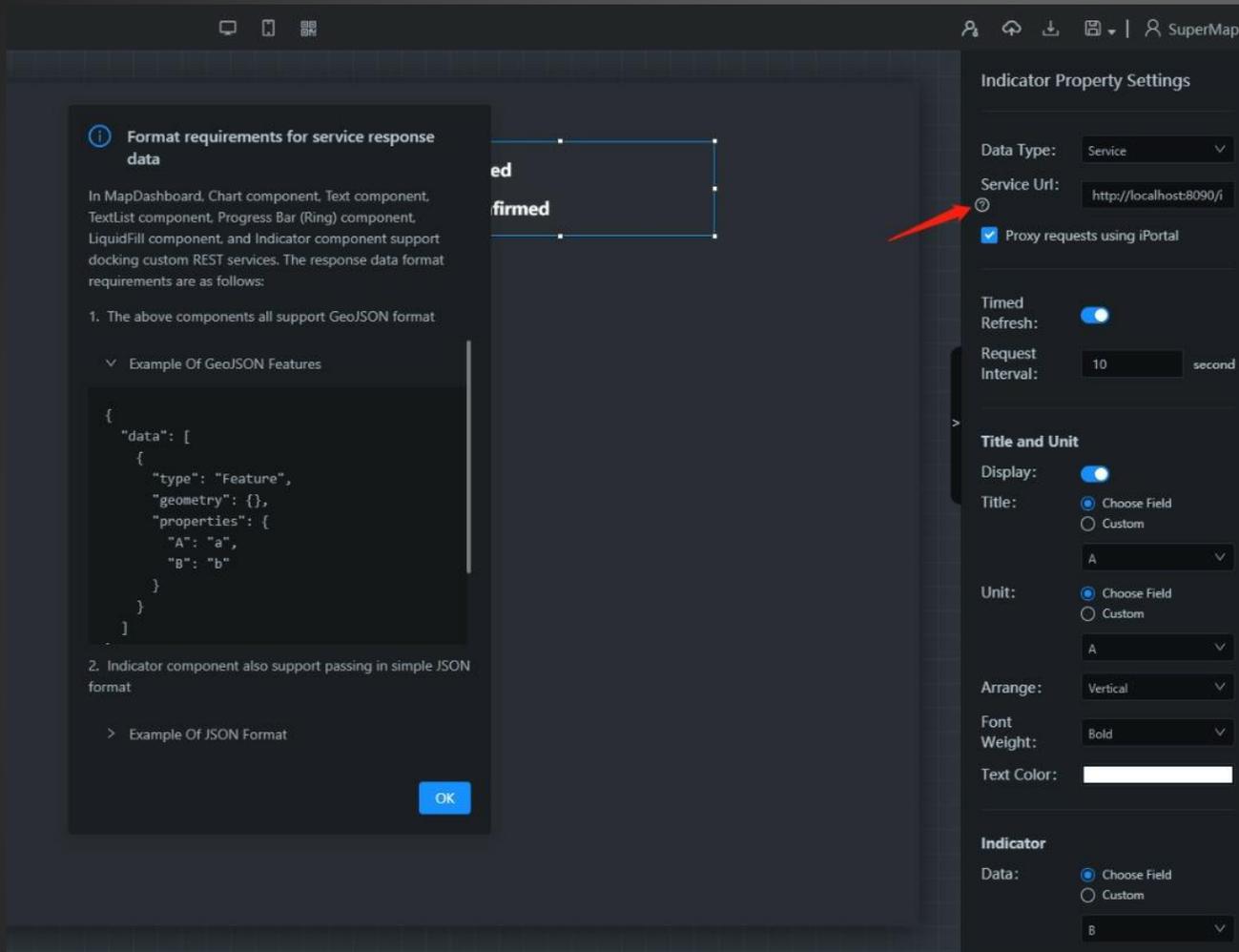
Radar Liquid Fill ProgressBar

Ring ProgressBar

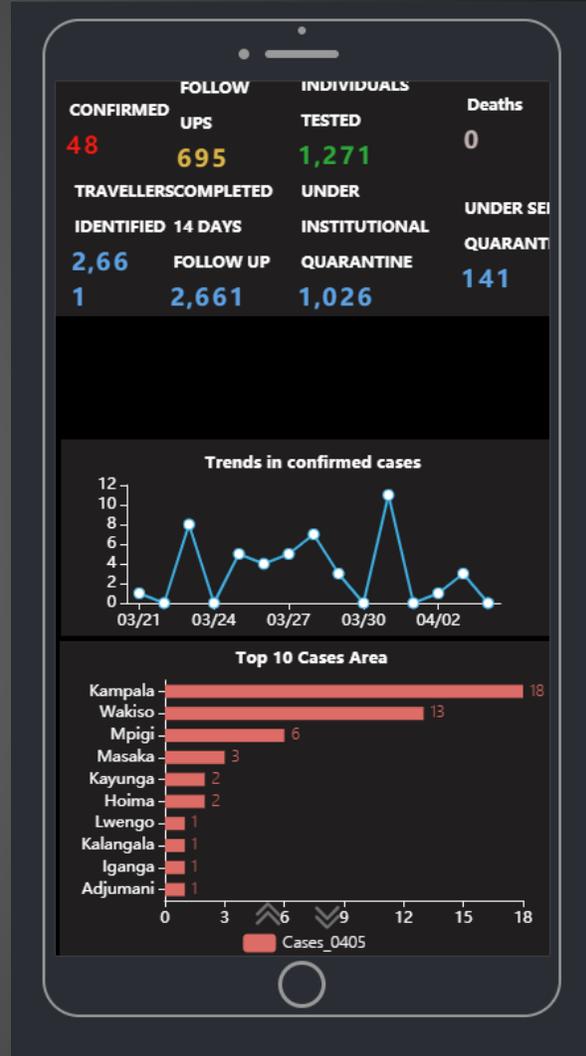
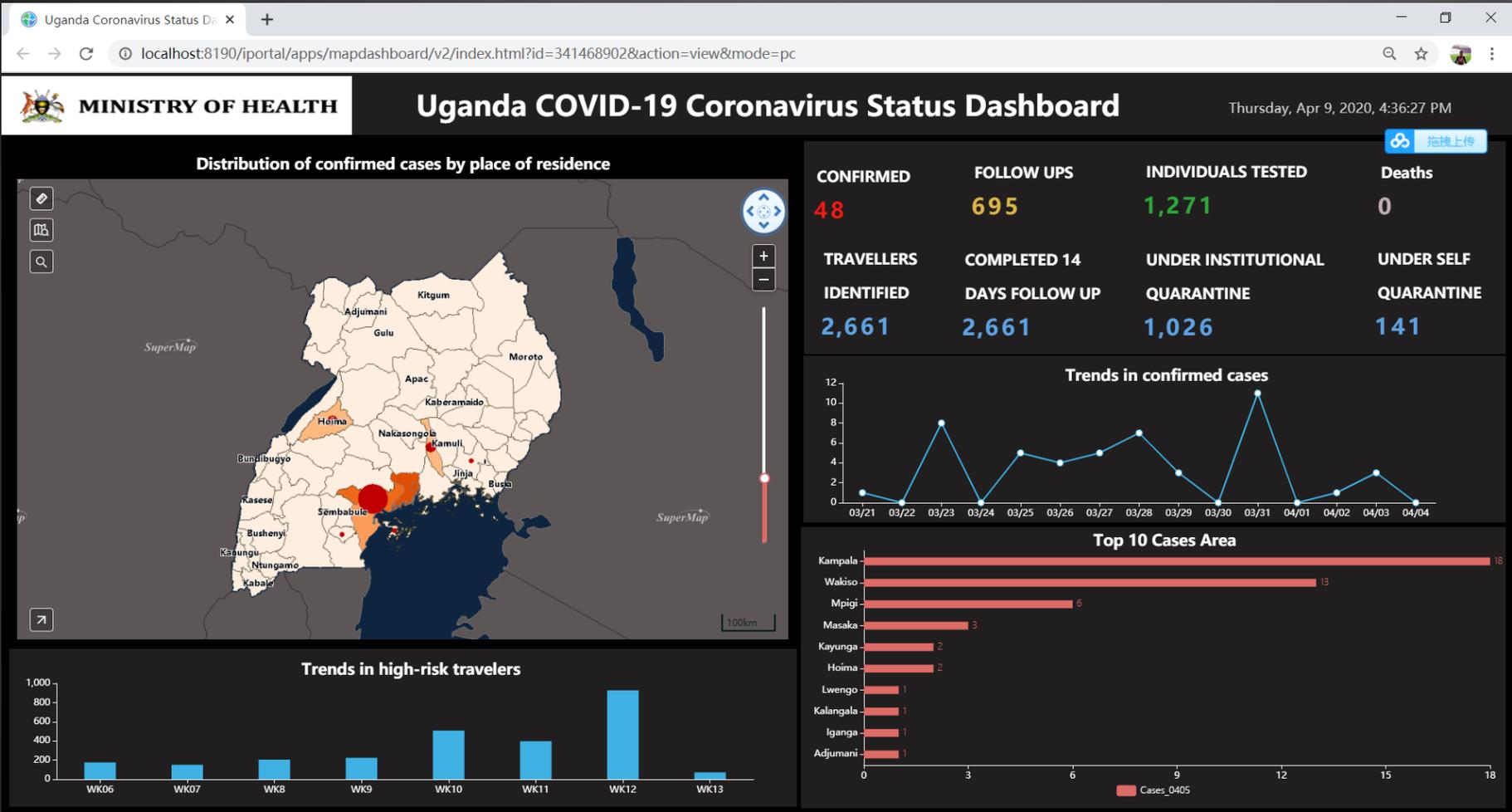
Common



# Customized Dashboard – Connect to Web Service



1. Put Test.Json file in iserver-webapps-iserver
2. Start iServer, go to <http://localhost:8090/iserver/test.json> to check the web service.
3. Strat iPortal, go to dashbord, put the url in the box.



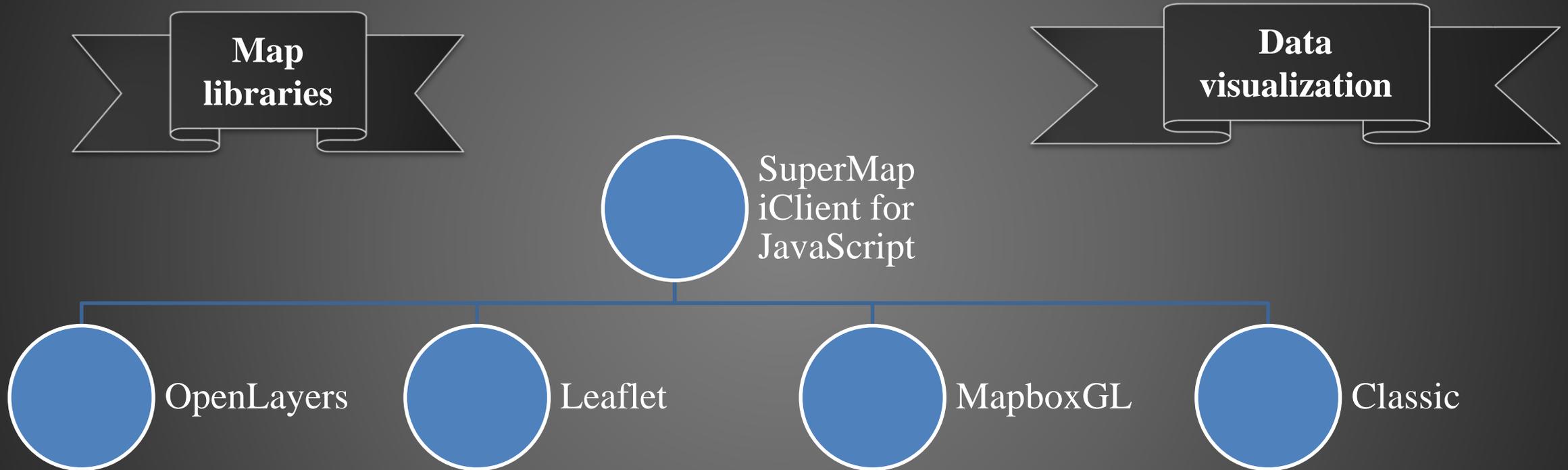


PART 03



**iClient For Javascript**  
**Introduction**

# SuperMap iClient for JavaScript Introduction



# SuperMap iClient for JavaScript Introduction

## □ Map JS map libraries

### OpenLayers 3/4

- HTML5 - WebGL
- Vector Layers

### *Leaflet*

- Lightweight & mobile-friendly
- practical examples are abundant, and application experience in the community is rich

### MapBox GL JS

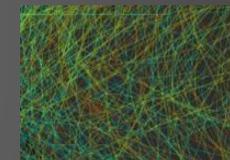
- WebGL
- Vector Tiles
- MapBox Styles

### OpenLayers 2

## □ Viz JS visualization libraries



- Data driven visualization library
- High community activity
- MapBox GL JS already has example cases



### ECHARTS

- Intuitive, vivid, interactive chart library
- Many simple but cool map visualization examples are provided in the version 3.0

### MapV

- An opensource library for big data visualization based on Baidu Map



Polymaps



heatmap.js

**WebGIS?**

# How to select map libraries

Indicator		Map base libraries and corresponding open source libraries			
		for Leaflet	for OpenLayers	for MapBoxGL	iClient Classic
		<a href="#">Leaflet</a>	<a href="#">OpenLayers 3/4</a>	<a href="#">MapBoxGL</a>	<a href="#">OpenLayers 2</a>
Whether closed-source risk exists		No	No	No	No
Advantages		Abundant lightweight plugins	HTML5OL-Cesium	Display effects of MVT vector tiles	Large user base, high stability
Disadvantages		Plugin stability	Less heavy plugin	3857 coordinate system supported only	Framework out of date
Performance		High	Medium	High	Low
Stability		High	Medium	Medium	High
Extensibility		Perfect	Good	Bad	Good
Community activity	Stars	19,763	2,988	2,275	1,487
Software maturity		High	Medium	Medium	General
Community ecological chain		Perfect	Good	Starting stage	Good
Learning cost		Medium	High	Medium	High



**Visualization Libraries?**

# iClient For JavaScript Getting Started

## —Leaflet

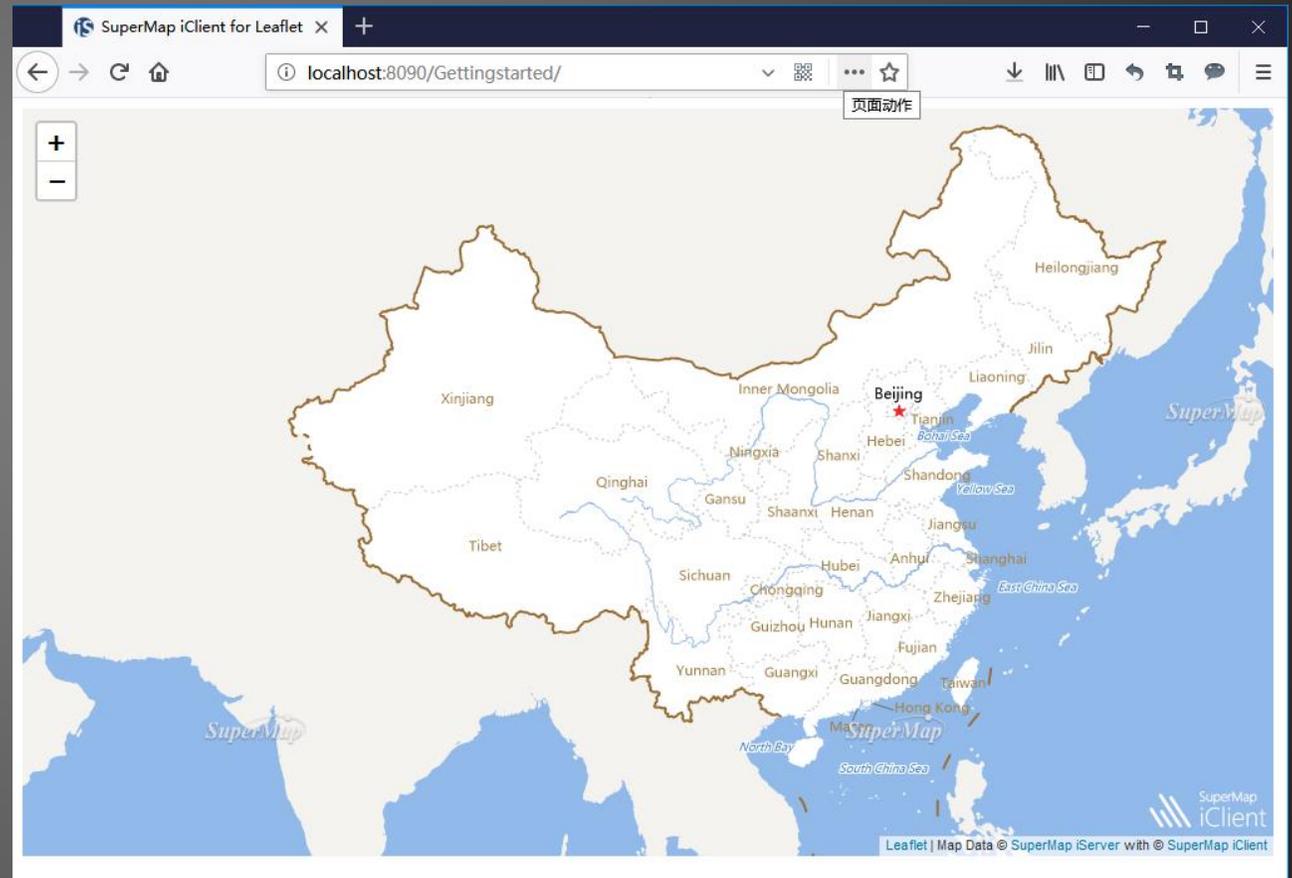


- Publish GIS data through the internet as a service and browse the service at the client side

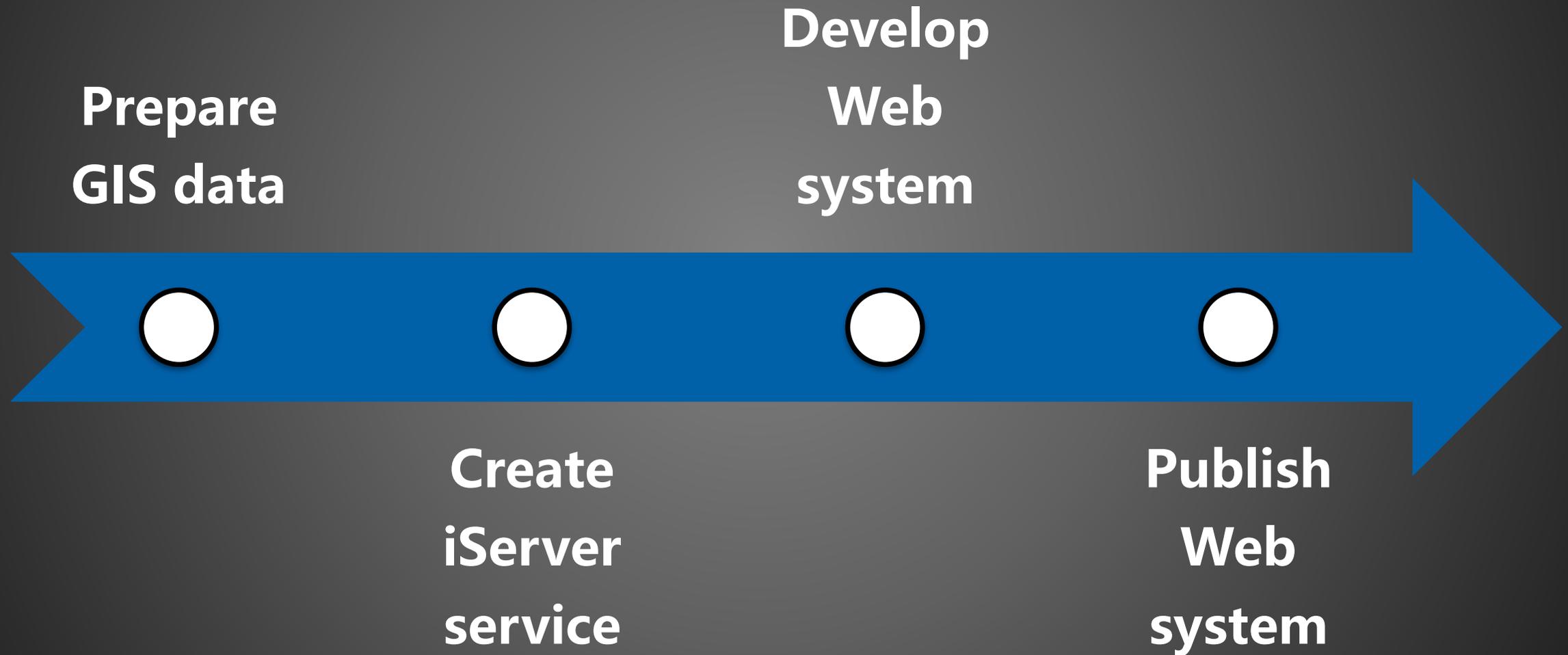
Note: “SuperMap iClient for JavaScript” is abbreviated as “JS” in the course

# System Target

- Publish a web system
  - Functions: Browse a map

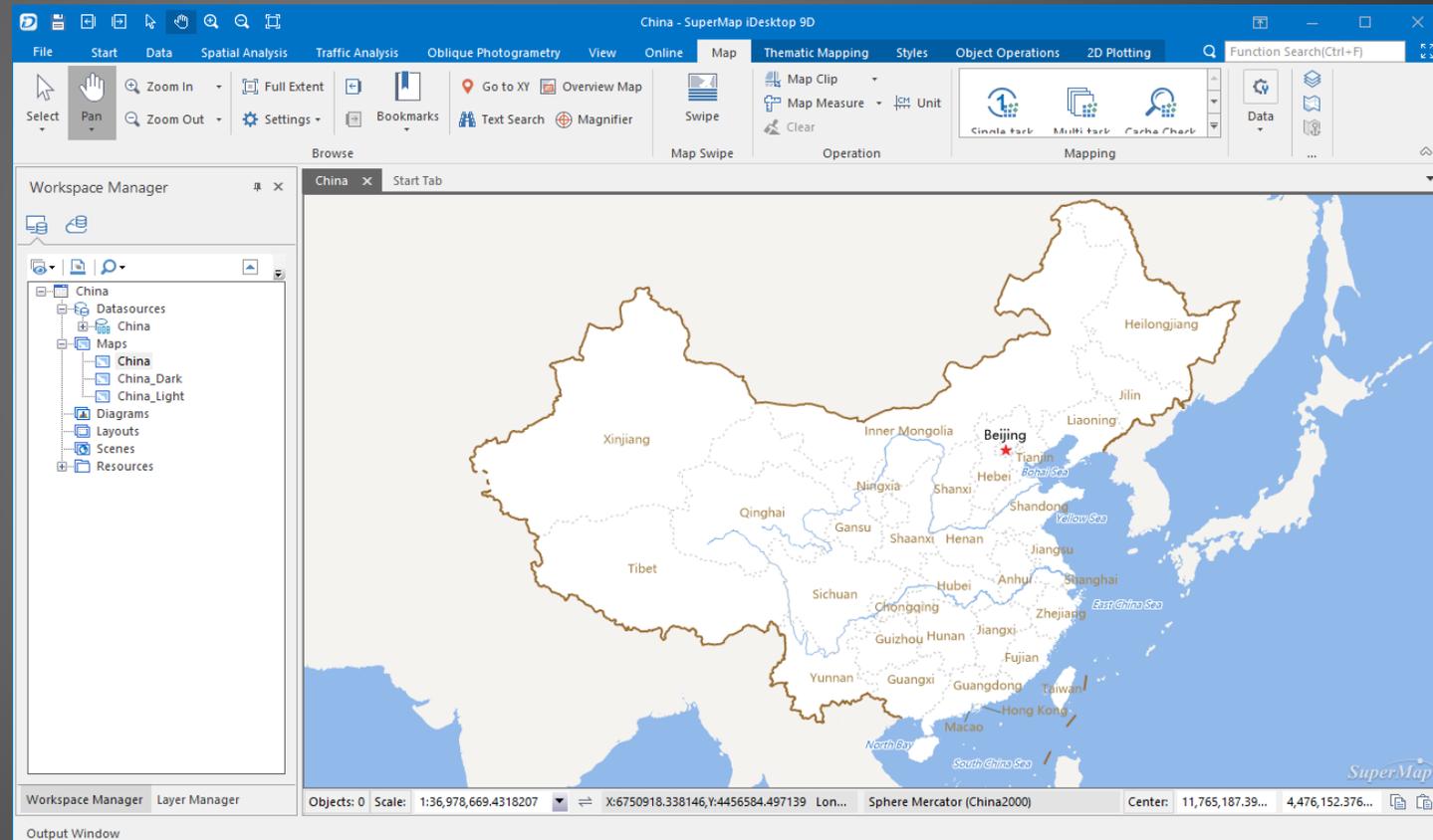


# Steps



# Step 1: Prepare GIS Data

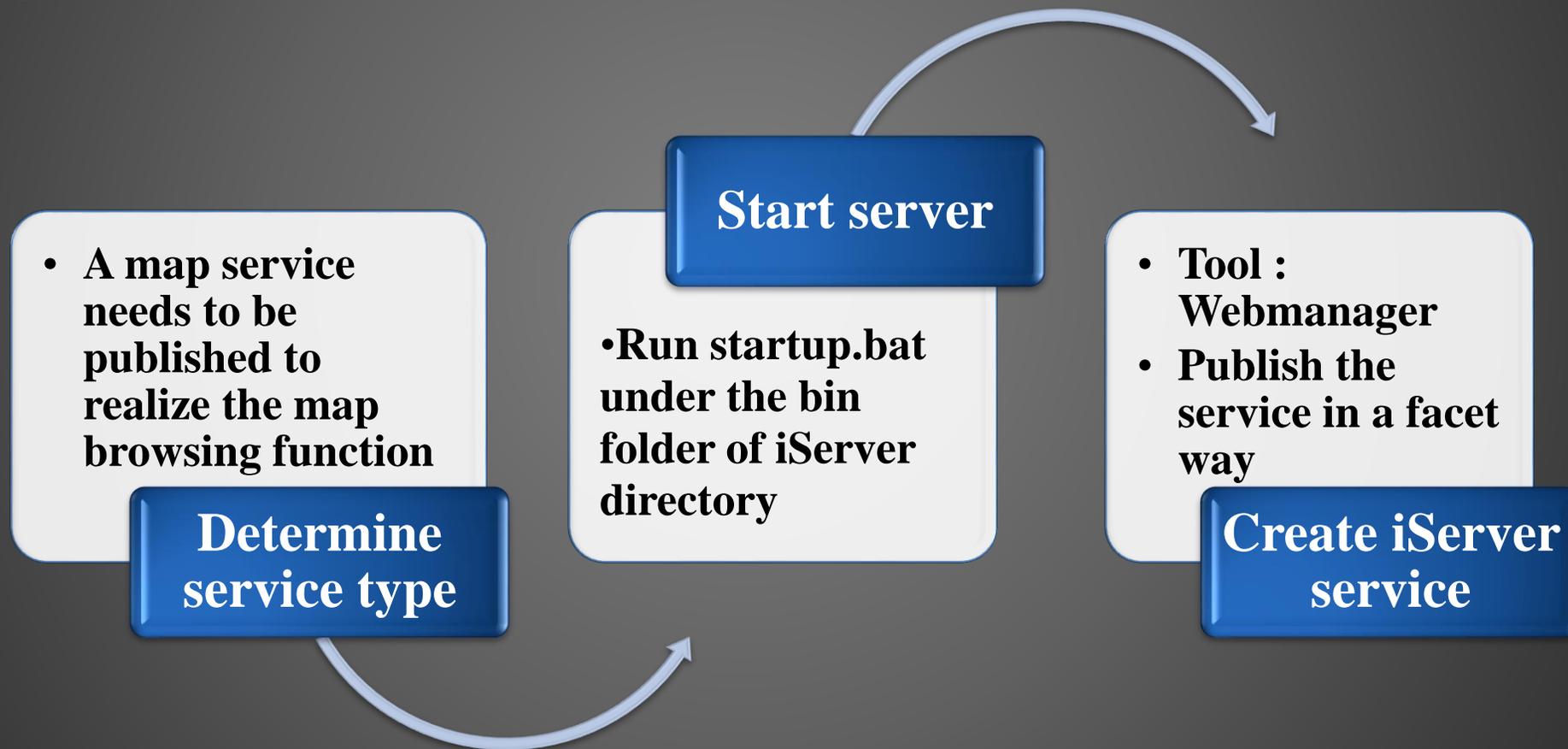
- Prepare GIS data with SuperMap iDesktop
  - Map: World



Note: Sample data of iServer-- China.smwu is used in this course

# Step 2: Create iServer Service

- Contents



# Step 2: Create iServer Service

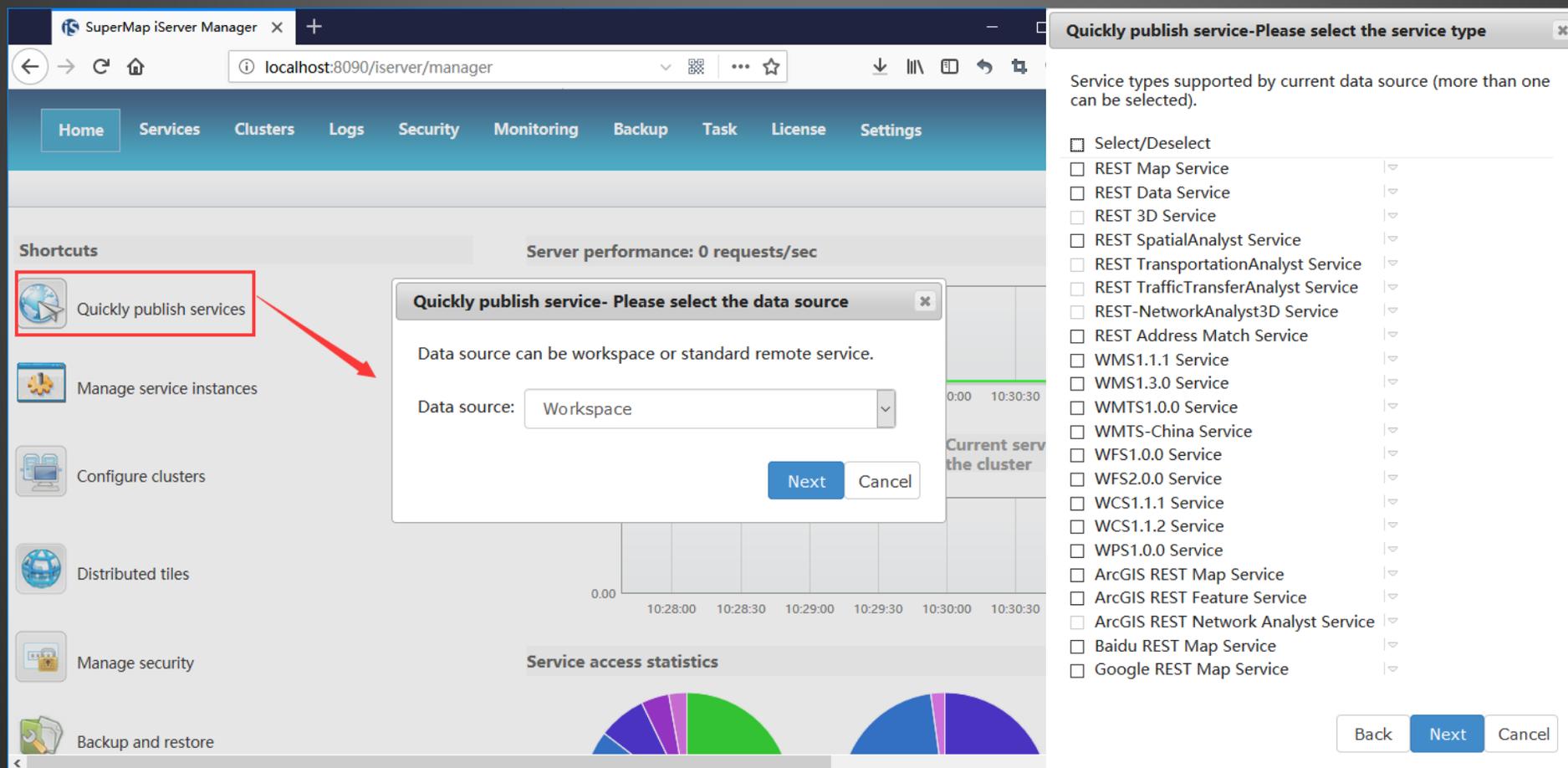
- Start iServer
  - Method 1: Run startup.bat under the bin folder
  - Method 2: Start > Programs > SuperMap > SuperMap iServer > Start iServer Service

```

iServer D:\SuperMap\iServer\supermap-iserver-9.0.1-win64-zip
11-Jan-2018 11:32:01.876 信息 [localhost-startStop-1] org.apache.catalina.startup.HostConfig.deployDescriptor Deploying
configuration descriptor [D:\SuperMap\iServer\supermap-iserver-9.0.1-win64-zip\conf\Catalina\localhost\RealspaceSample.x
ml]
11-Jan-2018 11:32:01.892 信息 [localhost-startStop-1] org.apache.catalina.startup.HostConfig.deployDescriptor Deployment
of configuration descriptor [D:\SuperMap\iServer\supermap-iserver-9.0.1-win64-zip\conf\Catalina\localhost\RealspaceSamp
le.xml] has finished in [16] ms
11-Jan-2018 11:32:01.892 信息 [localhost-startStop-1] org.apache.catalina.startup.HostConfig.deployDescriptor Deploying
configuration descriptor [D:\SuperMap\iServer\supermap-iserver-9.0.1-win64-zip\conf\Catalina\localhost\SuperMapRealspace
.xml]
11-Jan-2018 11:32:01.892 信息 [localhost-startStop-1] org.apache.catalina.startup.HostConfig.deployDescriptor Deployment
of configuration descriptor [D:\SuperMap\iServer\supermap-iserver-9.0.1-win64-zip\conf\Catalina\localhost\SuperMapReals
pace.xml] has finished in [0] ms
11-Jan-2018 11:32:01.892 信息 [localhost-startStop-1] org.apache.catalina.startup.HostConfig.deployDirectory Deploying w
eb application directory [D:\SuperMap\iServer\supermap-iserver-9.0.1-win64-zip\webapps\iserver]
11-Jan-2018 11:32:12.358 信息 [localhost-startStop-1] org.apache.jasper.servlet.TldScanner.scanJars At least one JAR was
scanned for TLDs yet contained no TLDs. Enable debug logging for this logger for a complete list of JARs that were scan
ned but no TLDs were found in them. Skipping unneeded JARs during scanning can improve startup time and JSP compilation
time.
11-Jan-2018 11:32:39.341 信息 [localhost-startStop-1] org.apache.catalina.startup.HostConfig.deployDirectory Deployment
of web application directory [D:\SuperMap\iServer\supermap-iserver-9.0.1-win64-zip\webapps\iserver] has finished in [37,
449] ms
11-Jan-2018 11:32:39.341 信息 [localhost-startStop-1] org.apache.catalina.startup.HostConfig.deployDirectory Deploying w
eb application directory [D:\SuperMap\iServer\supermap-iserver-9.0.1-win64-zip\webapps\ROOT]
11-Jan-2018 11:32:39.356 信息 [localhost-startStop-1] org.apache.catalina.startup.HostConfig.deployDirectory Deployment
of web application directory [D:\SuperMap\iServer\supermap-iserver-9.0.1-win64-zip\webapps\ROOT] has finished in [15] ms
11-Jan-2018 11:32:39.387 信息 [main] org.apache.coyote.AbstractProtocol.start Starting ProtocolHandler ["http-nio-8090"]
11-Jan-2018 11:32:39.387 信息 [main] org.apache.catalina.startup.Catalina.start Server startup in 38381 ms
  
```

# Step 2: Create iServer Service

- <http://localhost:8090/iserver/manager/>



The screenshot displays the SuperMap iServer Manager web interface. The main navigation bar includes Home, Services, Clusters, Logs, Security, Monitoring, Backup, Task, License, and Settings. A sidebar on the left contains shortcuts for 'Quickly publish services', 'Manage service instances', 'Configure clusters', 'Distributed tiles', 'Manage security', and 'Backup and restore'. The 'Quickly publish services' shortcut is highlighted with a red box and an arrow pointing to a modal dialog titled 'Quickly publish service- Please select the data source'. This dialog contains the text 'Data source can be workspace or standard remote service.' and a dropdown menu for 'Data source' currently set to 'Workspace', with 'Next' and 'Cancel' buttons.

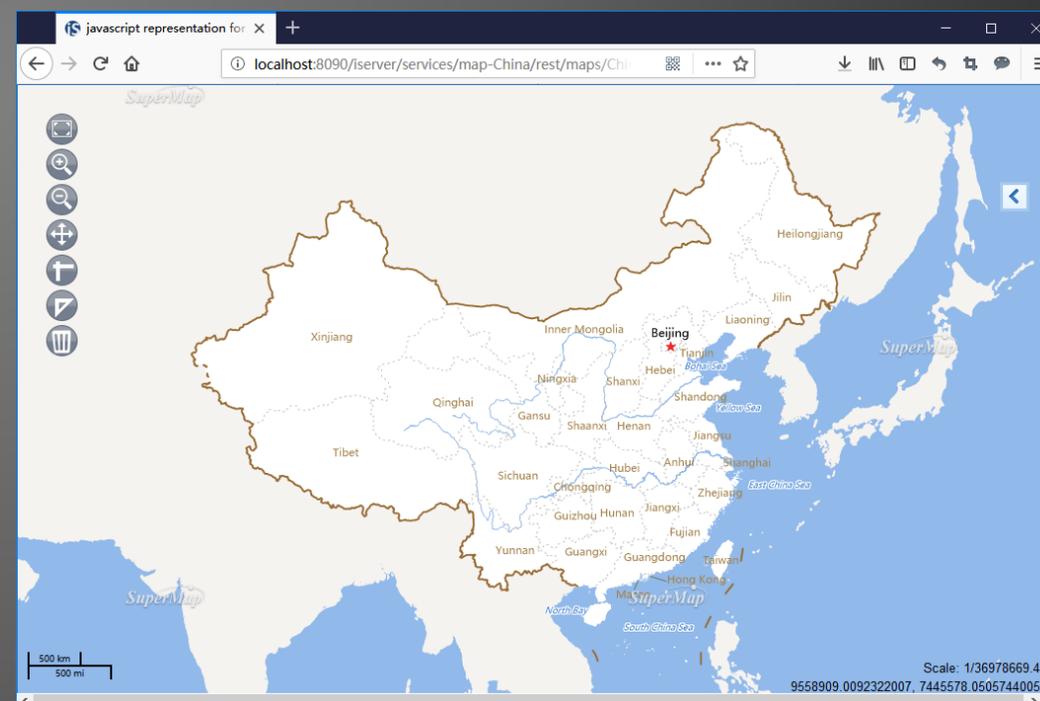
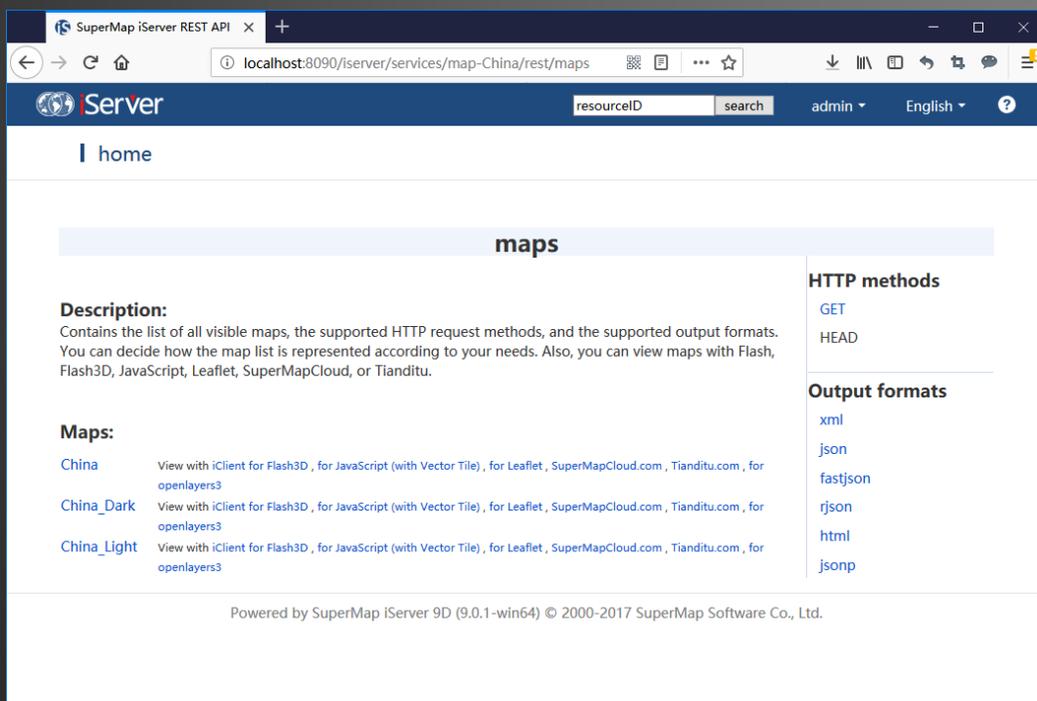
Overlaid on the right side of the interface is another modal dialog titled 'Quickly publish service-Please select the service type'. It contains the text 'Service types supported by current data source (more than one can be selected).' and a list of service types, each with a checkbox and a dropdown arrow:

- Select/Deselect
- REST Map Service
- REST Data Service
- REST 3D Service
- REST SpatialAnalyst Service
- REST TransportationAnalyst Service
- REST TrafficTransferAnalyst Service
- REST-NetworkAnalyst3D Service
- REST Address Match Service
- WMS1.1.1 Service
- WMS1.3.0 Service
- WMTS1.0.0 Service
- WMTS-China Service
- WFS1.0.0 Service
- WFS2.0.0 Service
- WCS1.1.1 Service
- WCS1.1.2 Service
- WPS1.0.0 Service
- ArcGIS REST Map Service
- ArcGIS REST Feature Service
- ArcGIS REST Network Analyst Service
- Baidu REST Map Service
- Google REST Map Service

At the bottom of this dialog are 'Back', 'Next', and 'Cancel' buttons.

# Step 2: Test iServer Service

- Open Web browser
  - Map service address: `http://localhost:8090/iserver/services/map-China/rest/maps/China`

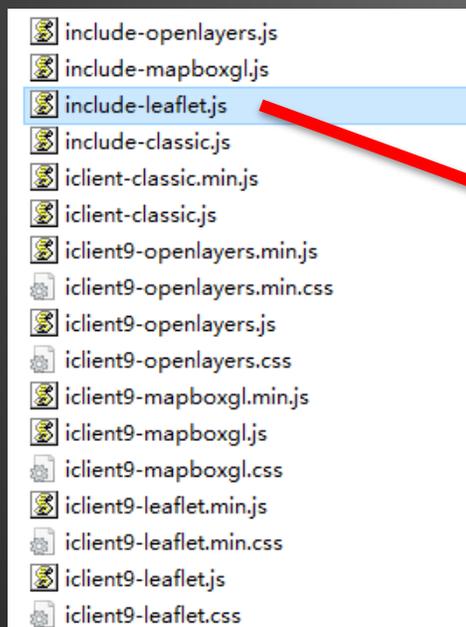


## Step 3: Develop Web System

- Development Tool—SuperMap iClient
  - Libraries for the client GIS development tool
  - Acquire iServer services
  - Development tool for Web systems
- SuperMap iClient Location
  - [iServer installation directory]/iClient directory
- This example employes SuperMap iClient for JavaScript
  - SuperMap iClient for JavaScript product package
  - [iServer installation directory]/iclient/forJavaScript

# Step 3: Copy Script Library Files

- Create the GettingStarted folder
- Copy script library files to the new folder
  - dist folder – Core library files for development frameworks
  - libs folder – Third-party technology libraries (under web folder)



```

35 function load() {
36     var includes = (targetScript.getAttribute('include'
37     ) || "").split(",");
38     var excludes = (targetScript.getAttribute('exclude'
39     ) || "").split(",");
40     if (!isArray(excludes, 'leaflet')) {
41         inputCSS("../..../web/libs/leaflet/leaflet.css");
42         inputScript("../..../web/libs/leaflet/leaflet.js"
43         );
44     }
45     if (isArray(includes, 'mapv')) {
46         inputScript("../..../web/libs/mapv/mapv.min.js");
47     }
48     if (isArray(includes, 'turf')) {
49         inputScript("../..../web/libs/turf/turf.min.js");
50     }
51 }
  
```

# Step 3: Create an HTML Page

```
<html>  
  <head>  
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" >  
    <title>SuperMap iClient for JavaScript</title>  
  </head>  
  
  <body >  
  
  </body>  
</html>
```

# Step 3: Add Script Library Reference

```
<html>
  <head>
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8" >
    <title>SuperMap iClient for JavaScript</title>
    <script src="dist/include-leaflet.js"></script>
  </head>
  <body>
  </body>
</html>
```

## Step 3: Add DIV for Map Control

```
<html>
.....
<body onload=onPageLoad()>
    <div id="map" style="width:800px;height:500px;">
    </div>
</body>
</html>
```

# Step 3: Create map object and set properties such as center, scale, etc.



```
<head>
.....
<script type="text/javascript">
    var map,layer,
    // Set GIS service address for browsing
    url = "http://localhost:8090/iserver/services/map-China/rest/maps/China";
    function onPageLoad() {
        // Cerate map object
        map=L.map("mapDiv",{center:[0,0],maxZoom:18,zoom:2,crs:L.CRS.EPSG3857}
        }
    </script>
</head>
```

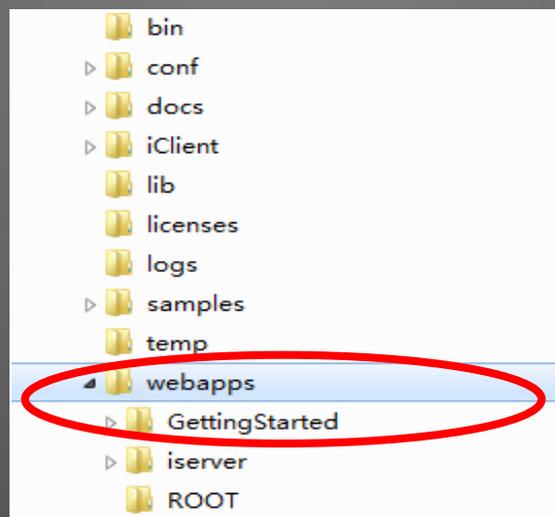
## Step 3: Add iServer layer to Map

```
<head>
.....
<script type="text/javascript">
  var map,layer,
  // Set GIS service address for browsing
  url = "http://localhost:8090/iserver/services/map-China/rest/maps/China";
  function onPageLoad() {
    // Create map object

map=L.map("mapDiv",{center:[0,0],maxZoom:18,zoom:2,crs:L.CRS.EPSG3857});
    L.supermap.tiledMapLayer(url).addTo(map);
  }
</script>
</head>
```

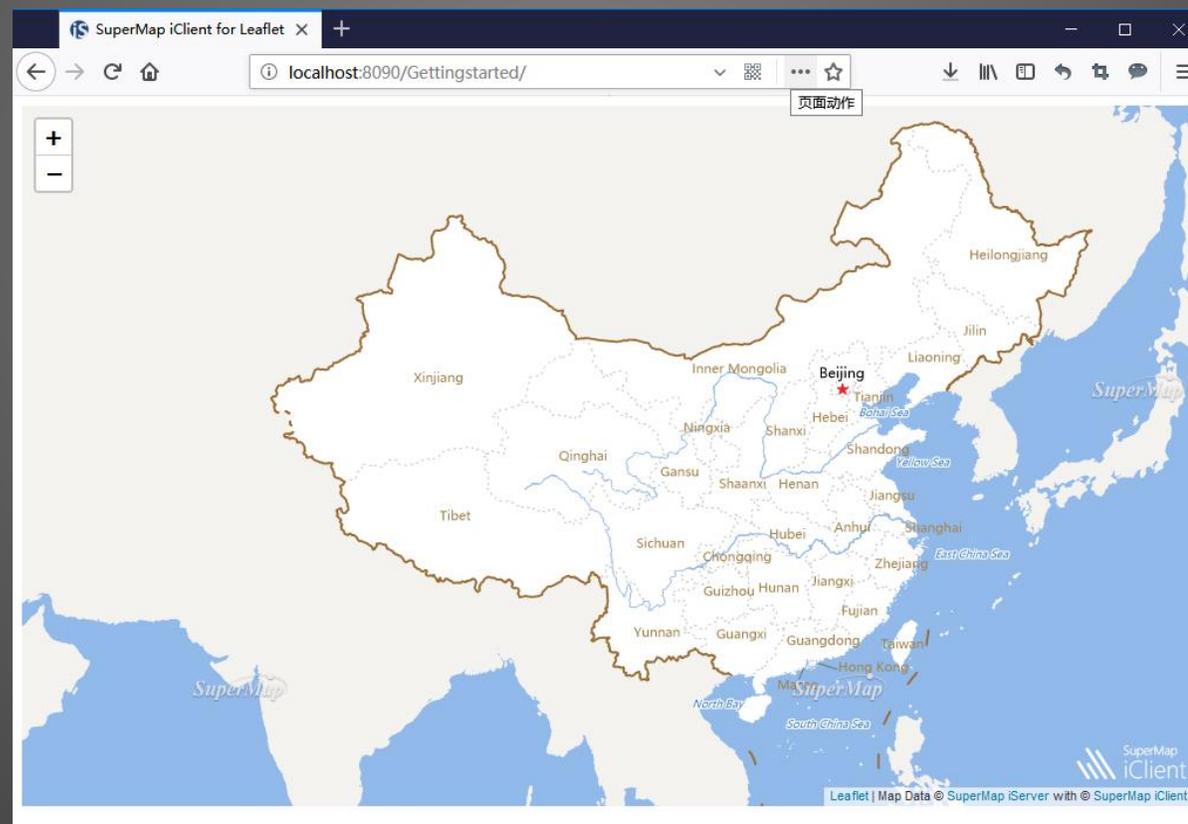
# Step 4: Publish Web System

- System deployment and debugging (Tomcat)
  - Copy the GettingStarted folder to the webapps directory of Tomcat
    - Tomcat in SuperMap iServer is employed in this example
    - Copy the GettingStarted folder to [SuperMap iServer root directory]/webapps



# Step 4: Publish Web System

- Browse for debugging <http://localhost:8090/GettingStarted/>





▶ PART 04

➤ **iClient 3D For WebGL**

**Introduction**

# Plugin-free 3D Client: iClient3D for WebGL



SuperMap iClient3D for **WebGL** 



Lightweight

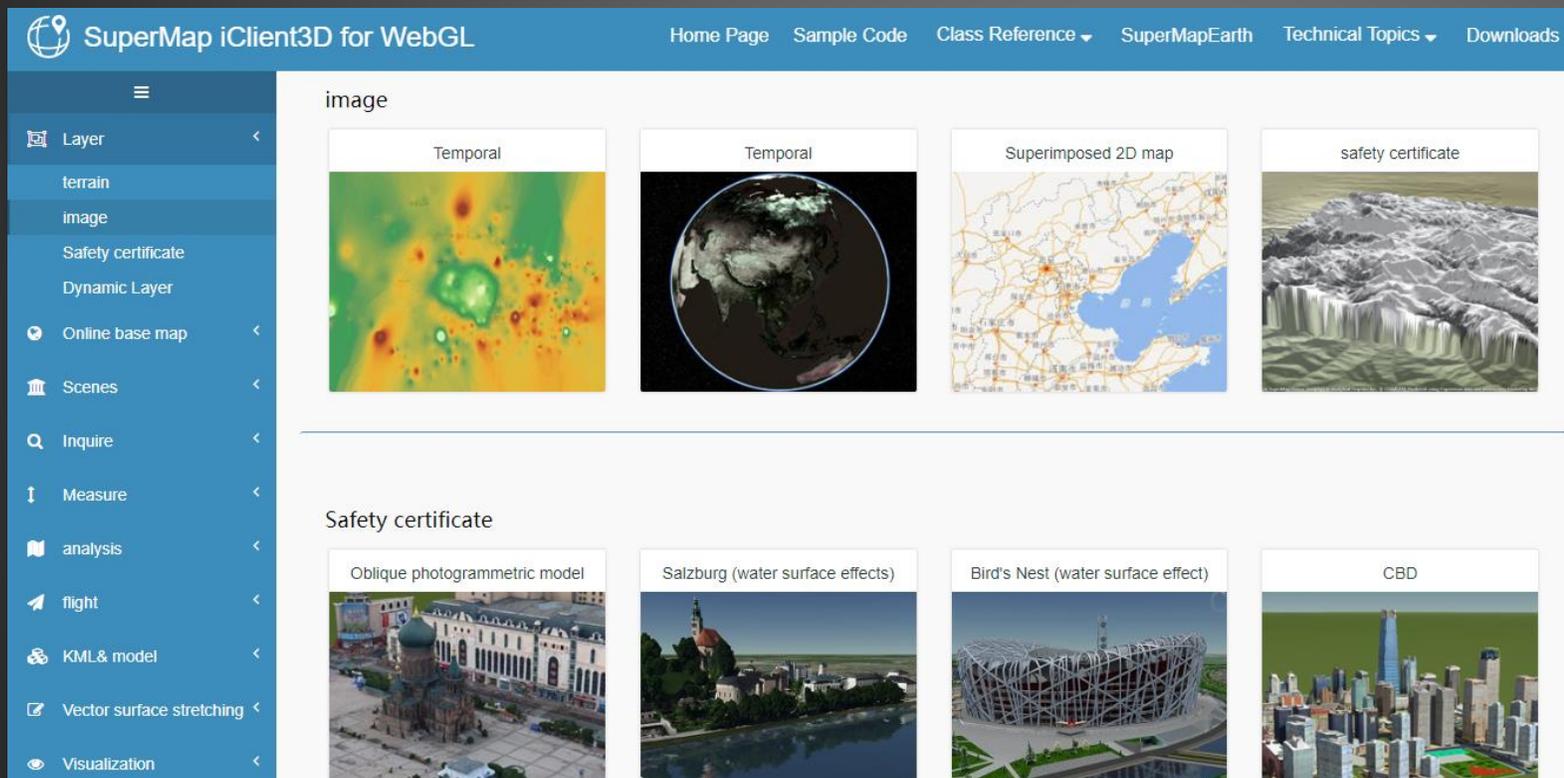
Plugin free

Easy for development 

Easy for extension

# SuperMap iClient WebGL

## Cloud GIS network client development platform for 3D



- Platform Independent  
Cloud GIS Network Client  
for 3 Dimensional data  
visualization and analysis
- Based on **Modern Web  
Technology**
- Integrate **Leading Map  
Library and Visual Library**
- **A Superior Practice of Open  
Source Products**

# iClient for WebGL And Relevant Products



# Product Features

Support multi-source GIS spatial data

Capability of massive data

Overall 3D GIS function

# Multi-source GIS spatial data

## 2D Data

Topography,  
image, map

Vector  
(parameteri-  
zation,  
symbolizati-  
on

## Manual Modelling

Max

BIM

## Use the devices

Oblique  
photography

Point Cloud

Street  
view,  
panorama  
, video

Location  
&  
Internet  
of things

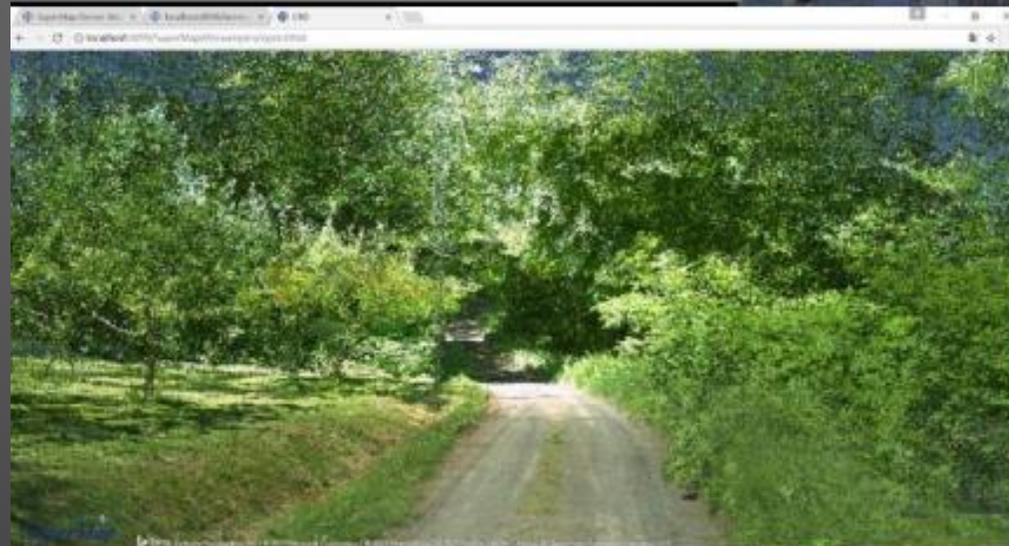
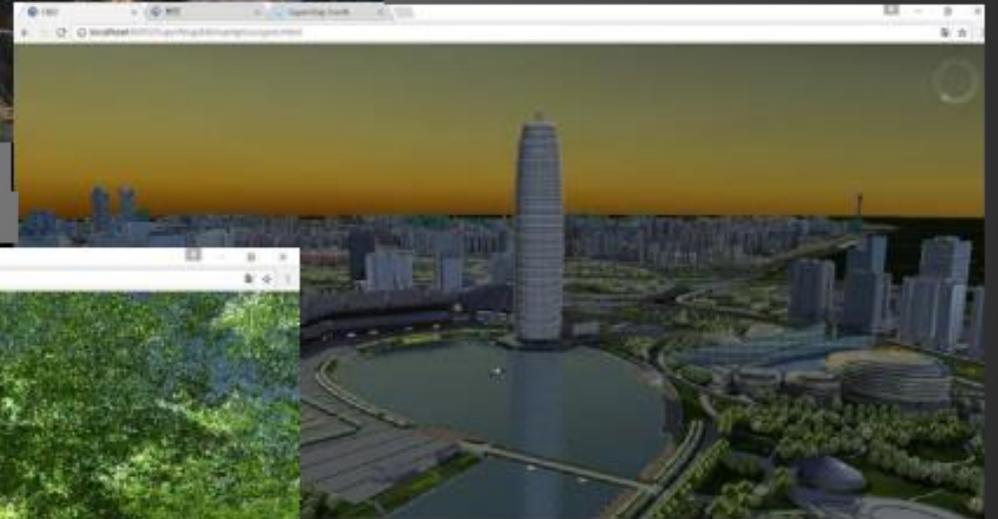
## Others

Effects  
Data

Volume  
Data

# Type Of Layer

- Topography
- Image
- **S3M layer**
- KML layer
- Dynamic layer



# Product Features

Support multi-source GIS spatial data

Capability of massive data

Overall 3D GIS function

# Capability of Massive Data

- Support topography and image data at TB level
- Support vector ground features and text label of over 10 million objects
- Support fine city-level models (over 400 sq.km.)
- Support oblique photography data at TB level
- Support loading and display of millions of pipelines
- Support smooth browsing of various scenes in scales of globe, urban area, neighborhood and indoor area

# Dynamic Layer Efficient and real-time dynamic data



# Dynamic layer : 8000+ dynamic objects real-time render



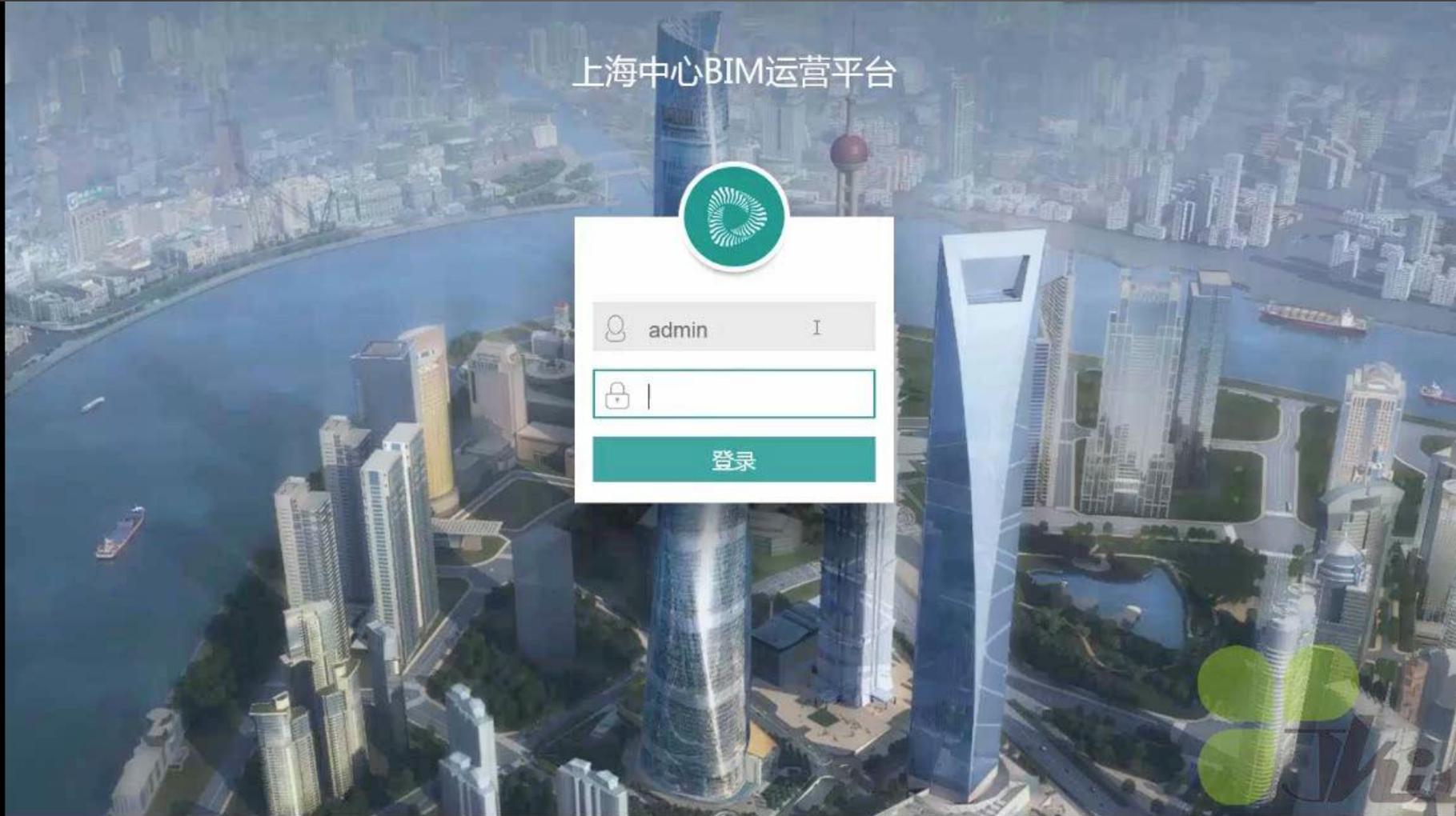
# Global topography and image data



# Oblique photography model



# BIM (building information modelling data)



登录平台

# Point Cloud Data



## Key technologies of WebGL Client performance experience

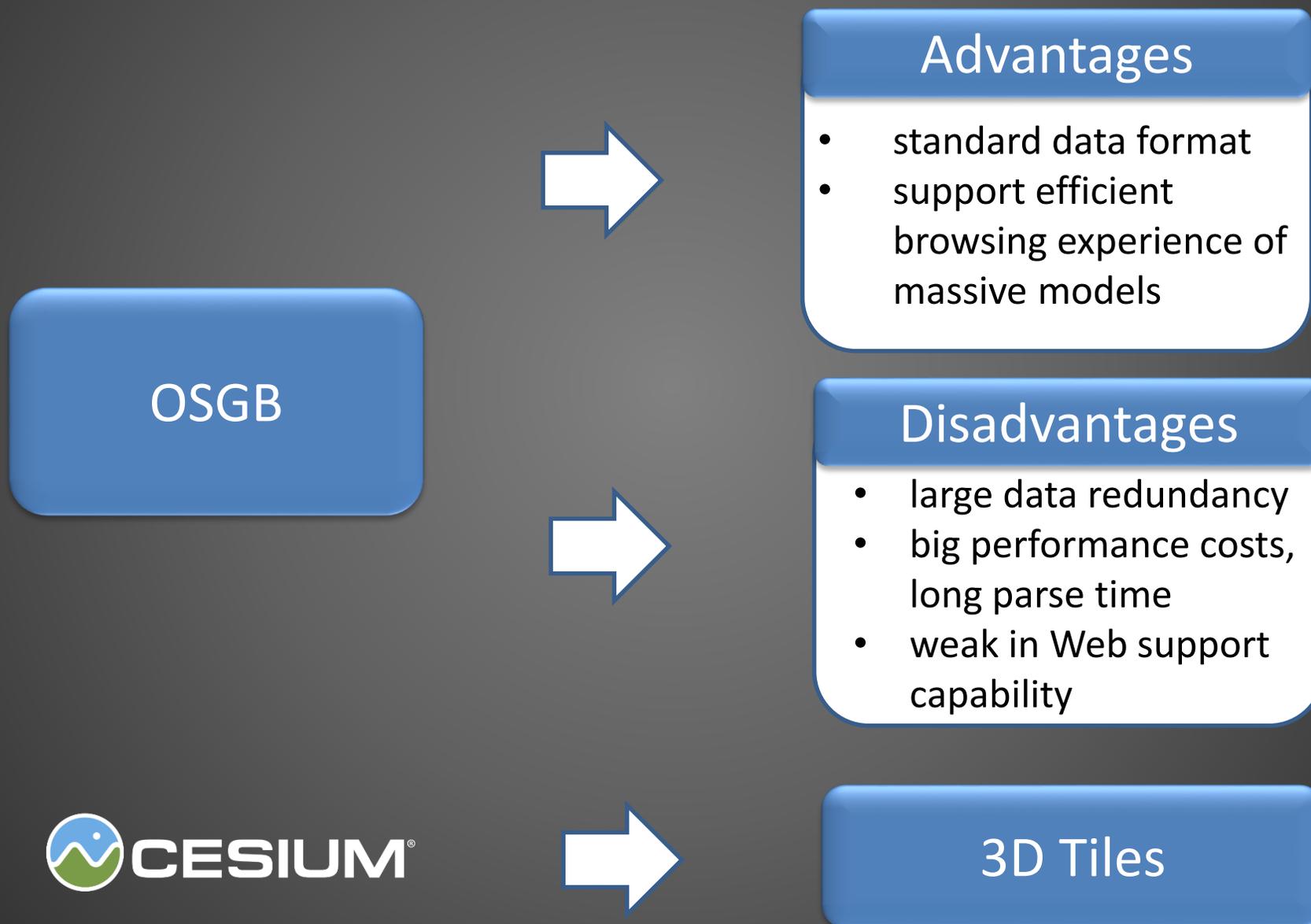
Spatial 3D Model (S3M) 3D spatial data specification

Provide data specification of massive 3D data in Webapplication

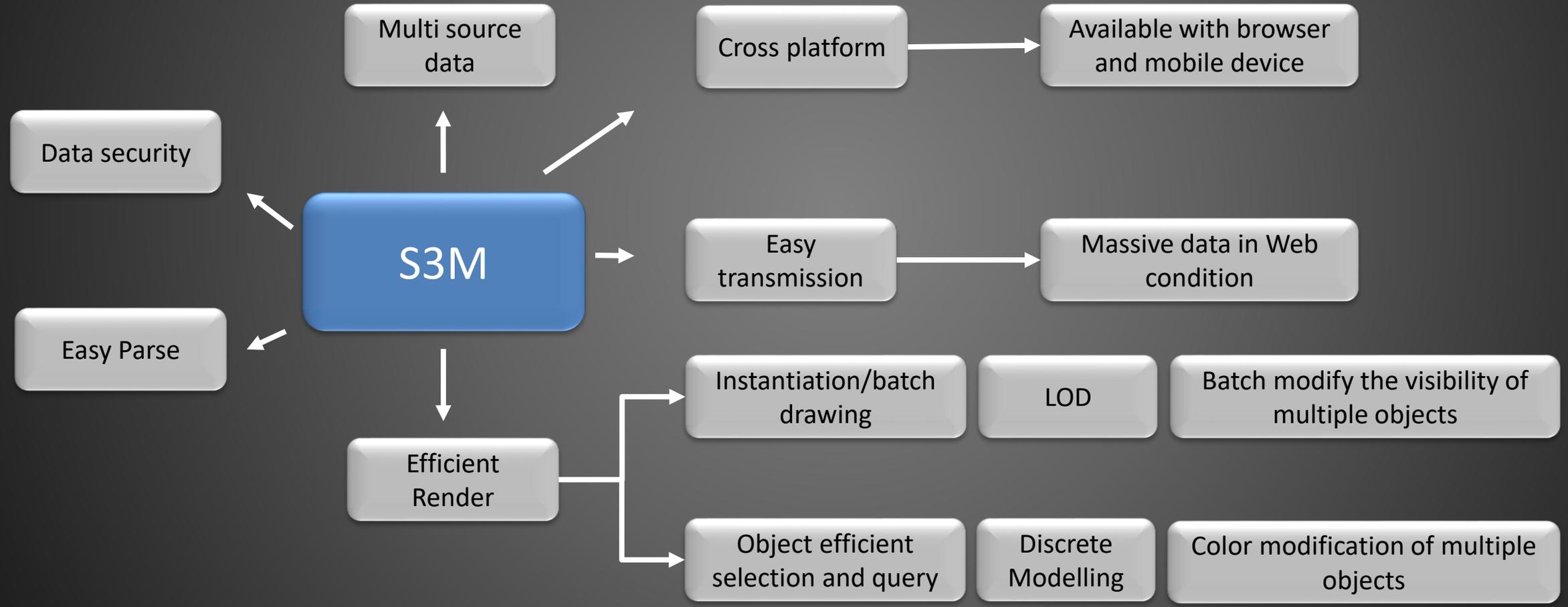
Realize massive online data high-efficiency in transmission, render and analysis

Forming comprehensive application solution

# Current 3D data standard



# S3M Advantages



# S3M Data Supports

Oblique  
Photography

BIM

Point Cloud

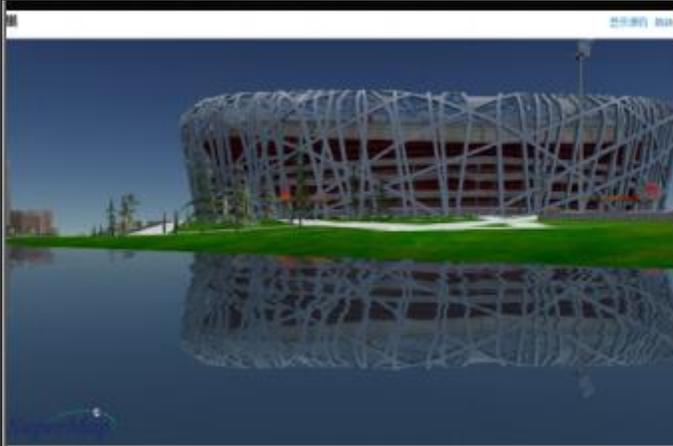
Fine Model

Underground  
Pipeline

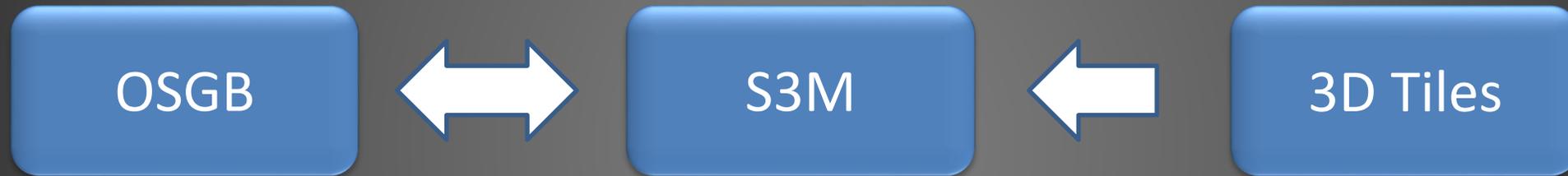
Point , Line and  
Polygon

3D Field

Water Surface



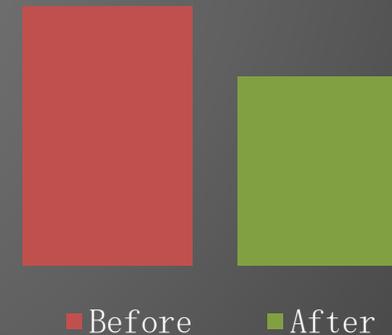
# Promote the interaction between 3D data



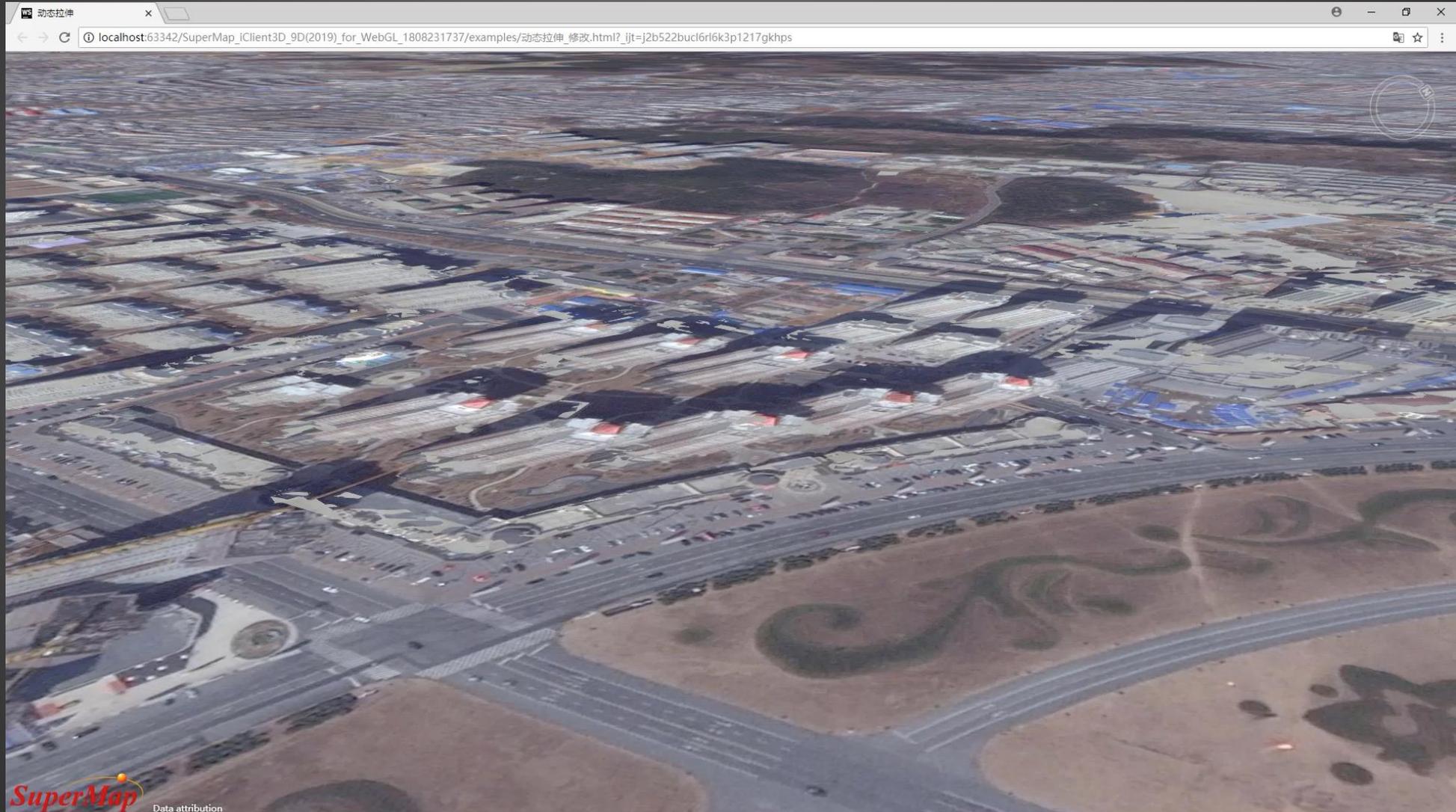
# Memory optimization of S3M Layer

- Memory Usage is Reduced by 30%
- Memory Footprint is Reduced by 20%

Video Memory



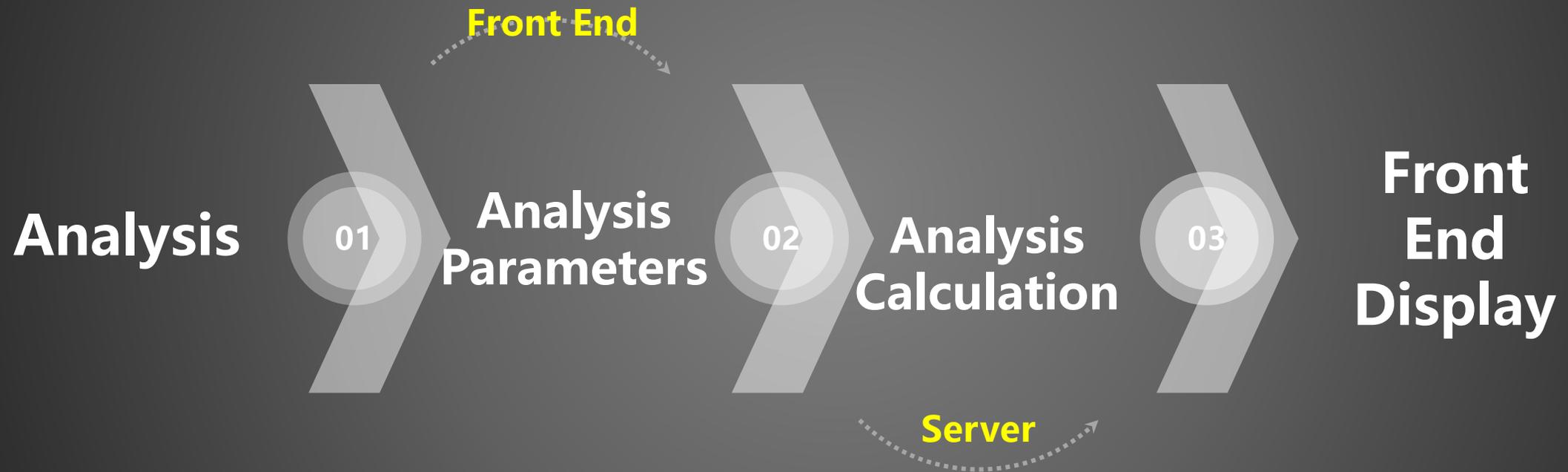
# Dynamic



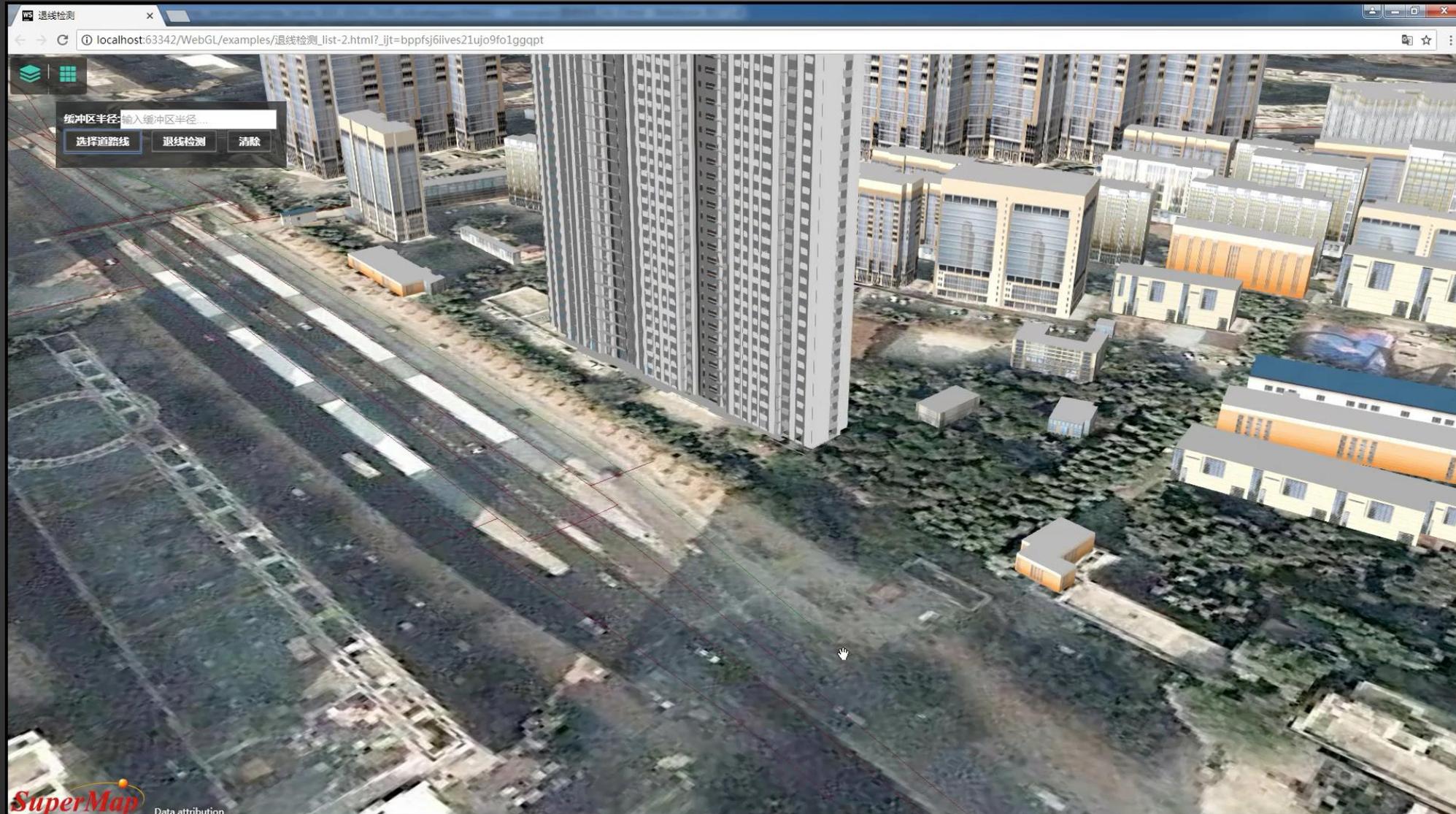
# Dynamic



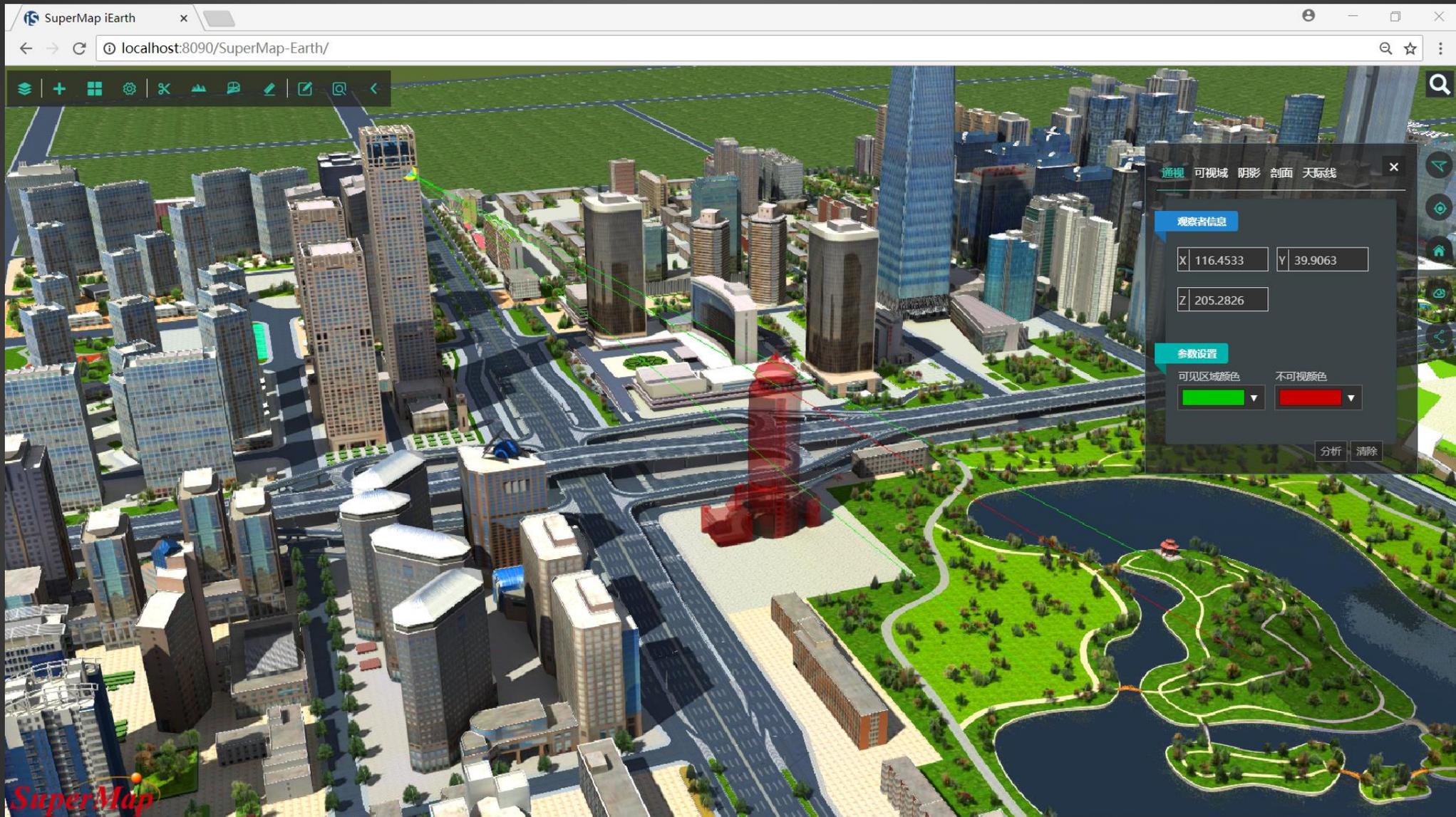
# Full-featured: Interaction with Server



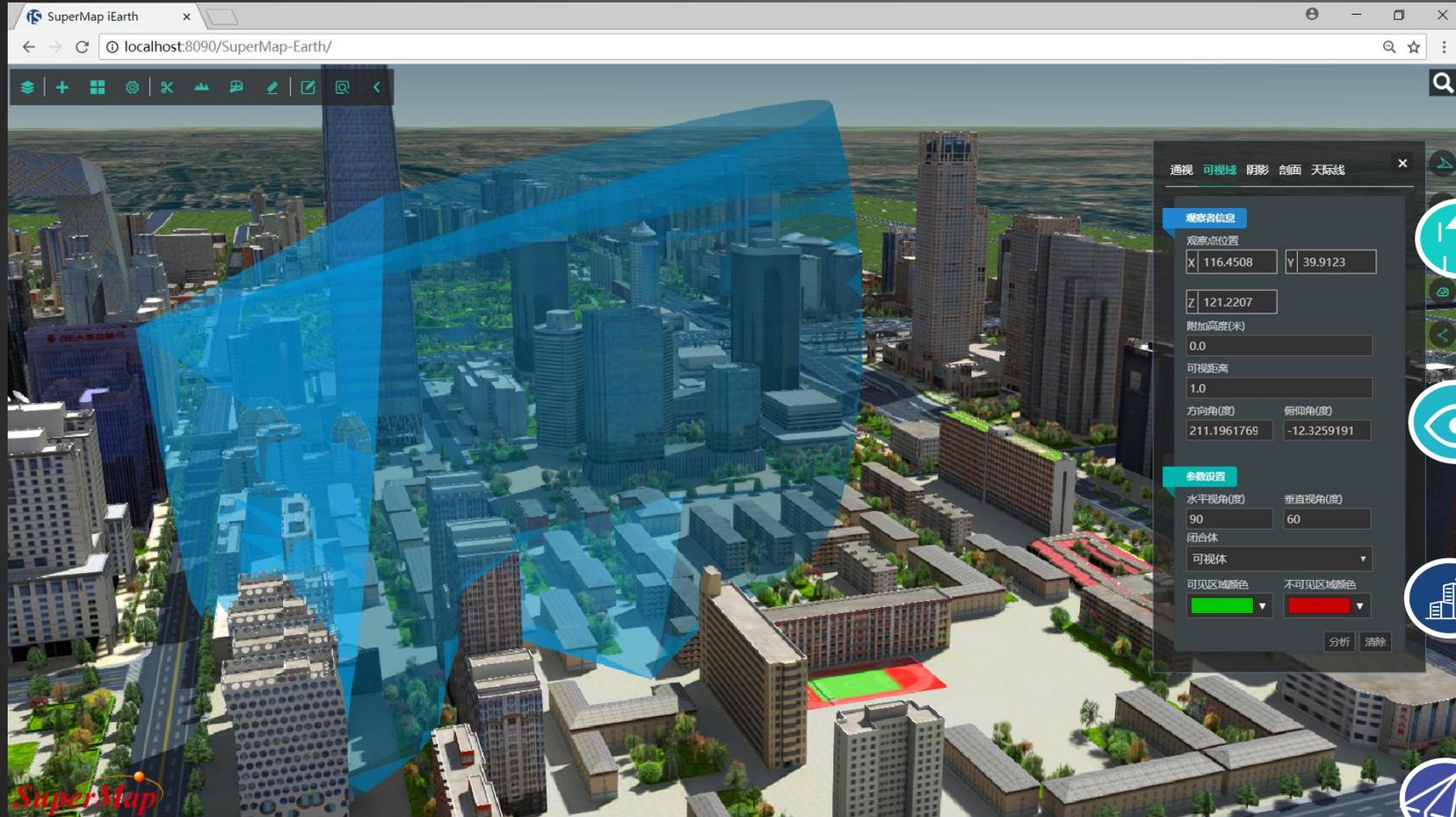
# Spatial Query: Three Dimensional Buffer



# Three Dimensional Spatial Analysis



# Viewshed Analysis



- Three Dimensional Object(solid)
- Generate Viewshed Object
- Generate Non Viewshed Object
- Return Obstacle Point Object

# Other functions

- Connect to iServer to get model volume and surface area
- Connect to iServer to get model plane projection
- Connect to iServer to do cut fill
- Connected with RTSP video streaming criterion
- S3M layer supports excavation
- S3M layer supports overlaying images within the specified range
- S3M layer supports setting maximum(minimum) visible height and distance of layers
- Camera supports rotation around points
- Military Standard

# Abundant Online Resources Accumulation of Product

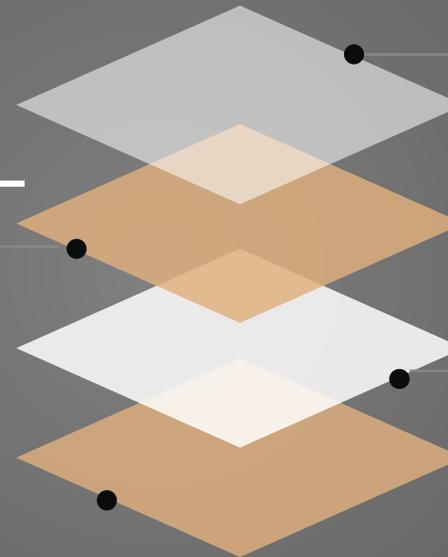
- Official Website Address:
- <http://iclient.supermapol.com/introduction/3dwebgl.html>
- Product introduction:
- <http://iclient.supermapol.com/en/web/introduction/3dwebgl.html>
- Online Example:
- <http://iclient.supermapol.com/en/examples/3dwebgl/examples.html>
- API Documentation:
- <http://support.supermap.com.cn:8090/webgl/Build/Documentation/index.html>

# SuperMap iEarth

SuperMap iClient3D for WebGL

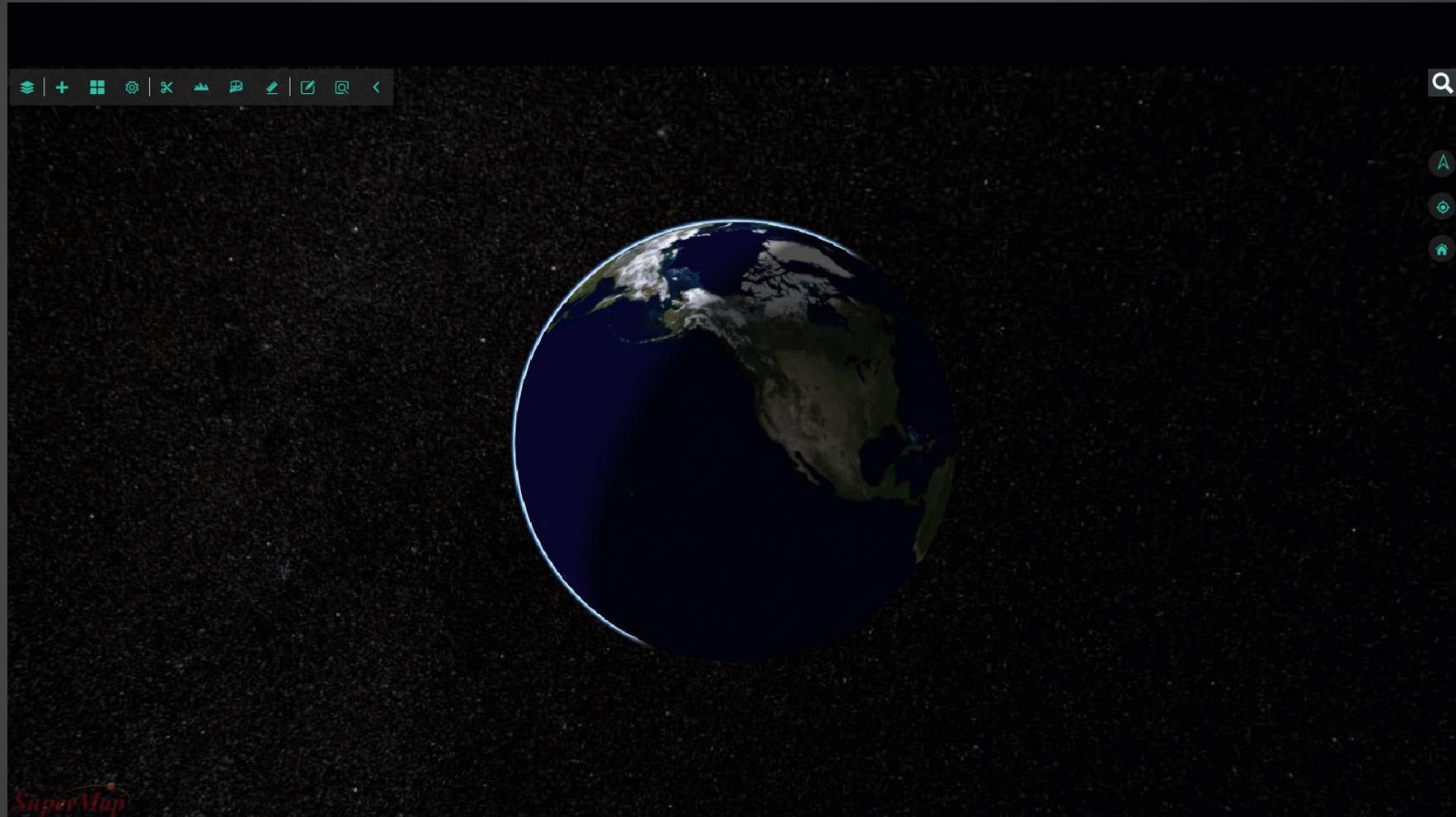
SuperMap iEarth

Experience 3D GIS application on browser or mobile phone without any development



Mac OS

# SuperMap iEarth



<http://supermapol.com/earth>

# Download Address

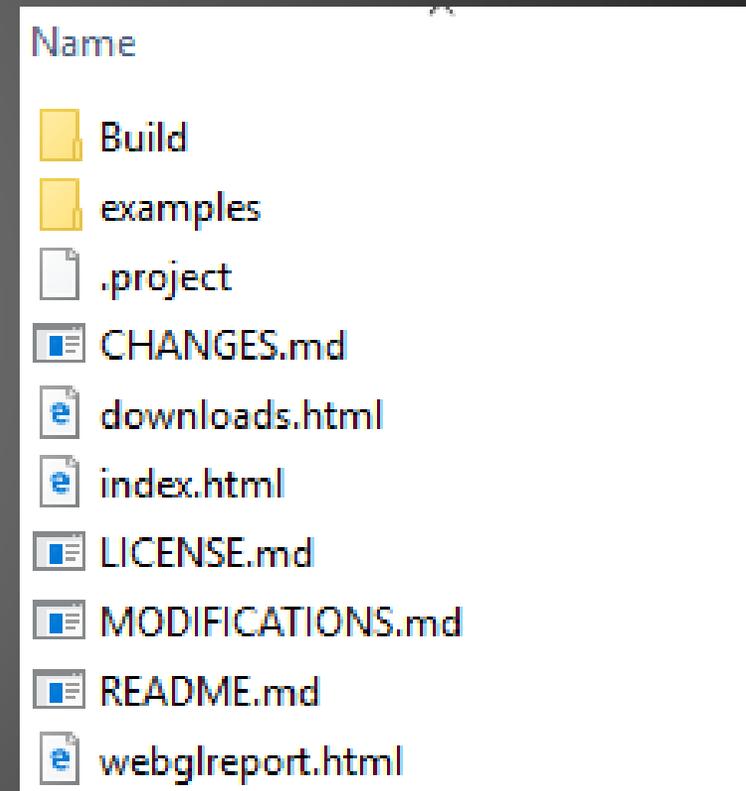
[https://www.supermap.com/en/html/SuperMap\\_GIS\\_ProductPackages.html](https://www.supermap.com/en/html/SuperMap_GIS_ProductPackages.html)

**SuperMap iClient 9D(2019) SP1**   **Online Help WebGL**   **Online Help Javascript**

<b>SuperMap iClient3D 9D(2019) SP1 for WebGL</b>	<b>66M</b>	<b>Download</b>
<b>SuperMap iClient JavaScript 9D(2019) SP1</b>	<b>75M</b>	<b>Download</b>

# Installation Directory

- Sample Code
  - The sources code assists developers to quickly build applications
- Script Libraries for Development
  - Build\Cesium directory
- Index.html
  - Home page , which integrates the sample code, class reference instructions, and technical documents
  - Non-plugin WebGL client development kit introduction

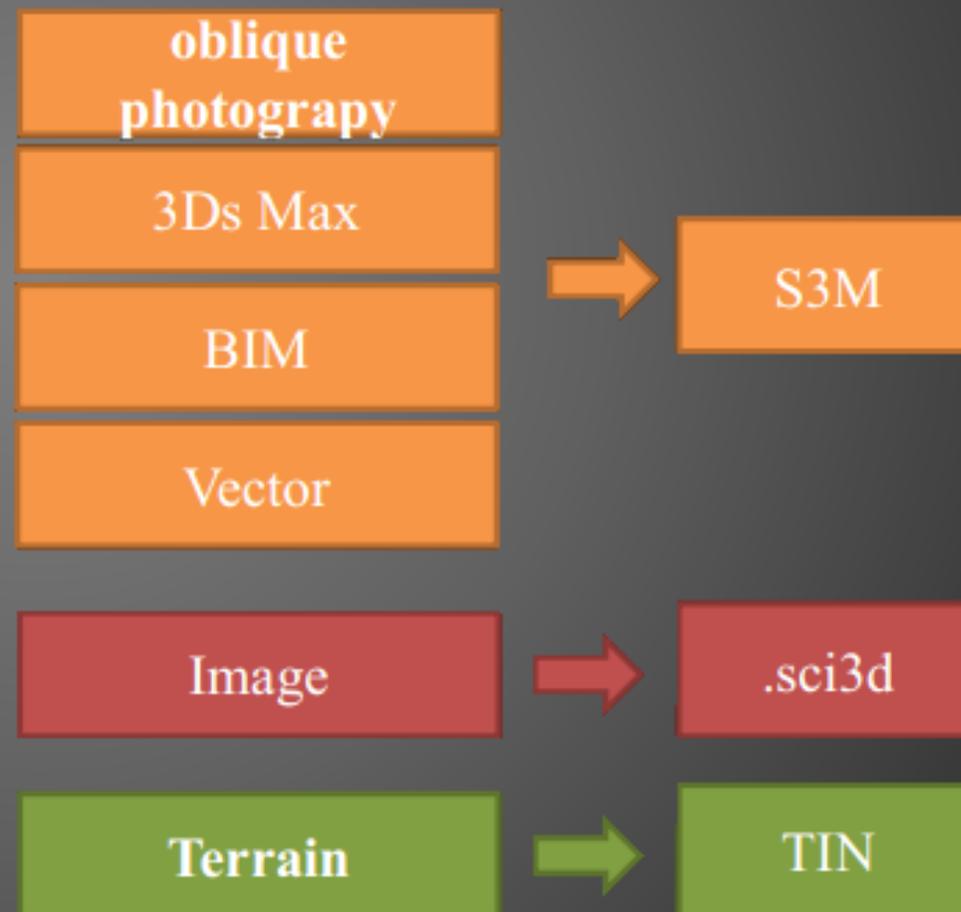


# Preparation before development



# 3D Data producing

- **Configure appropriate workspace**
  - **Generate cache**
  - **Save workspace**



# 3D service publishing

- 3D service resolution:
  - Service type: REST
  - Service address: for example  
<http://servername:8090/iserver/services/3D-beijing/rest/realspace>
  - 3D resources included:
    - datas – acquires 3D data information and 3D data cache
    - scenes – acquires information for all scenes, including the information for layers in the scene
    - symbols – acquires 3D symbol resources

# 3D service publishing

- url addresses required for non-plugin WebGL client development kit:



# Realization of 3D data loading function

Steps :

- 1) Including a script library
- 2) Adding container for 3D scene
- 3) Obtaining 3D scene objects
- 4) Adding the 3D data to the layer of the scene

# Realization of 3D data loading function

- 1) Include a script library
  - Create a project directory-helloWorld
  - Copy Build, examples\js folders of SuperMap iClient 3D for WebGL to the project directory
  - Open the js\main.js file to modify the reference path for Cesium

```
} else{
    require.config({
        paths: {
            'Cesium': '../Build/Cesium/Cesium',
            'Zlib': '../Build/Cesium/Workers/zlib.min'
        },
        shim: {
            Cesium: {
                exports: 'Cesium'
            },
            Zlib : {
                exports : 'Zlib'
            }
        }
    });
}
```

# Realization of 3D data loading function

- 1) Including a script library
  - Create HTML file
    - Create a HTML file—helloWorld.html in the project directory
    - The code is as follows:

```
<!DOCTYPE html>
<html>
<head lang= "en" >
  <meta charset= "UTF-8" >
  <meta http-equiv= "x-ua-compatible" content= "IE=Edge,chrome=1" >
  <title>hello, world</title>
</head>
<body>
</body>
</html>
```

# Realization of 3D data loading function

- 1) Include a script library
  - Add references to script libraries

```
<!DOCTYPE html>
<html>
<head lang= "en" >
  <meta charset= "UTF-8" >
  <meta http-equiv= "x-ua-compatible" content= "IE=Edge,chrome=1" >
  <title>hello, world</title>
  <link href= "./Build/Cesium/Widgets/widgets.css" rel= "stylesheet"/>
  <script type= "text/javascript" src= "./js/require.min.js" data-main= "js/main"> </script>
</head>
<body>
</body>
</html>
```

# Realization of 3D data loading function

- 2) Adding container for 3D scene
  - Add DIV element
  - Instance a Viewer object

```
<!DOCTYPE html>
<html>
<head lang= "en" >
  <meta charset= "UTF-8" >
  <meta http-equiv= "x-ua-compatible" content= "IE=Edge,chrome=1" >
  <title>hello, world</title>
  <link href= "./Build/Cesium/Widgets/widgets.css" rel= "stylesheet" />
  <script type= "text/javascript" src= "./js/require.min.js" data-main= "js/main" ></script>
  <script type= "text/javascript" >
    function onload(Cesium){
      var viewer = new Cesium.Viewer( 'sceneContainer' );
    }
  </script>
</head>
<body>
  <div id= "sceneContainer " style="width:100%;height:100%"></div>
</body>
</html>
```

# Realization of 3D data loading function

## 3) Obtaining 3D scene objects

```
<!DOCTYPE html>
<html >
<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>getting started</title>
<link href="css/widgets.css" rel="stylesheet">
<script type="text/javascript" src="js/require.min.js" data-main="js/main"></script>
<script type="text/javascript">
    var viewer,url;
    function onload(Cesium) {
        viewer = new Cesium.Viewer('cesiumContainer');
        var scene = viewer.scene;
    }
</script>
</head>
<body>
    <div id="cesiumContainer" style="width:100%; height:100%"></div>
</body>
</html>
```

# Realization of 3D data loading function

- 4) Adding the 3D data to the layer of the scene
  - Interface: scene --3D scene object

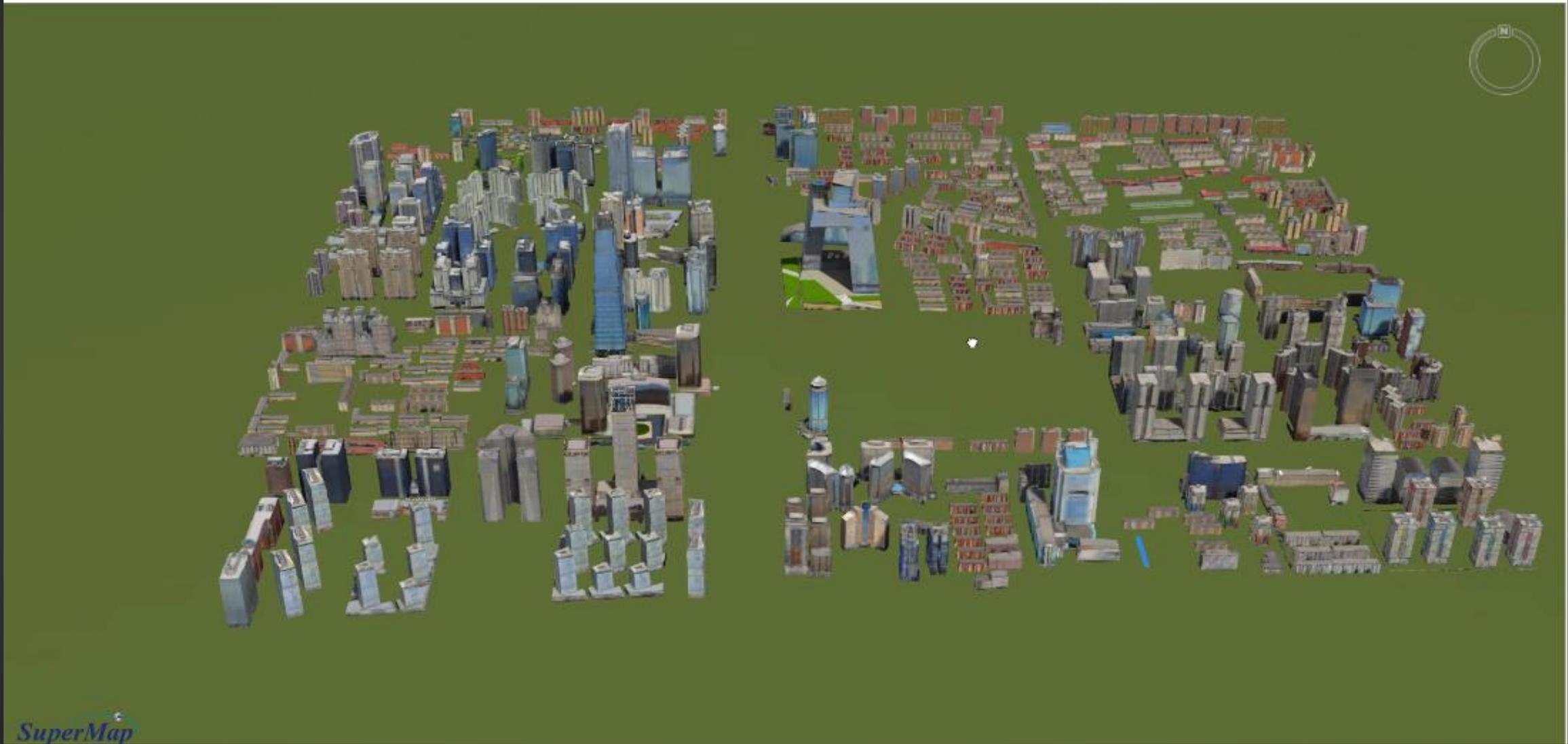
```
scene.addS3MTilesLayerByScp(url, options)
```

```
url : http://localhost:8090/iserver/services/3D-CBD/rest/realspace/datas/Building@CBD/config
```

# Realization of 3D data loading function

- 4) Adding the 3D data to the layer of the scene  
– Interface: scene --3D scene object

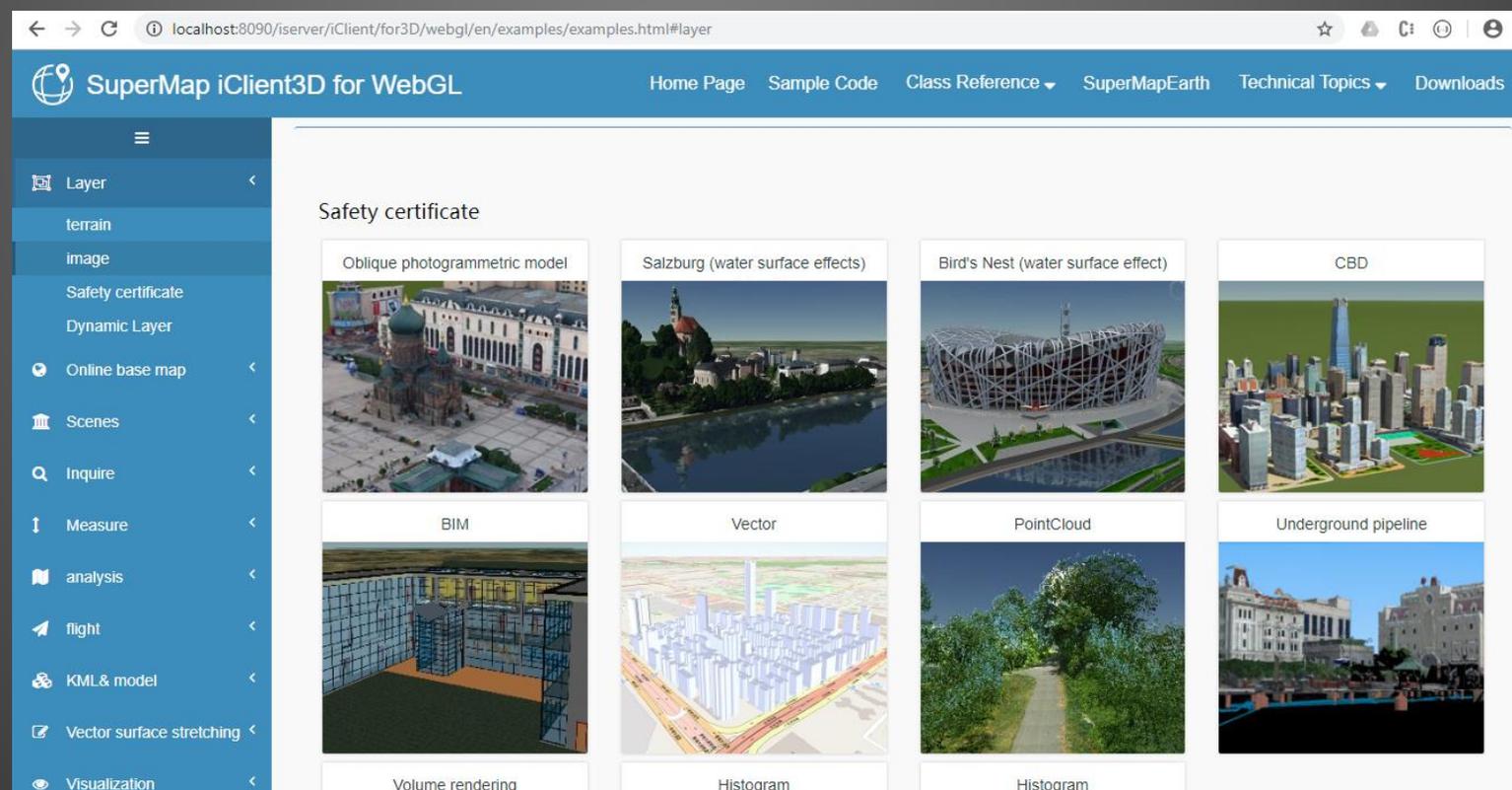
```
var viewer,url;
url = "http://localhost:8090/iserver/services/3D-  
osgb/rest/realspace/datas/jinjiang/config";
function onload(Cesium) {
    viewer = new Cesium.Viewer('cesiumContainer');
    var scene = viewer.scene;
    var widget = viewer.cesiumWidget;
    try{
        var promise = scene.addS3MTilesLayerByScp(url,{  
name : 'jinjiang'});
        Cesium.when(promise,function(layer){
            scene.camera.setView({
                destination : Cesium.Cartesian3.fromDegrees(118.548,24.803, 600)
            });
        },function(e){
            if (widget._showRenderLoopErrors) {
                var title = 'An error occurred while rendering. Rendering has stopped.';
                widget.showErrorPanel(title, undefined, e);
            }
        });
    }
}
```



# Explore Local iClient for WebGL Samples

1. Start iServer
2. Open url

[http://localhost:8090/SuperMap\\_iClient3D\\_10i\\_for\\_WebGL\\_EN/index.html](http://localhost:8090/SuperMap_iClient3D_10i_for_WebGL_EN/index.html)



---

Thank you

---