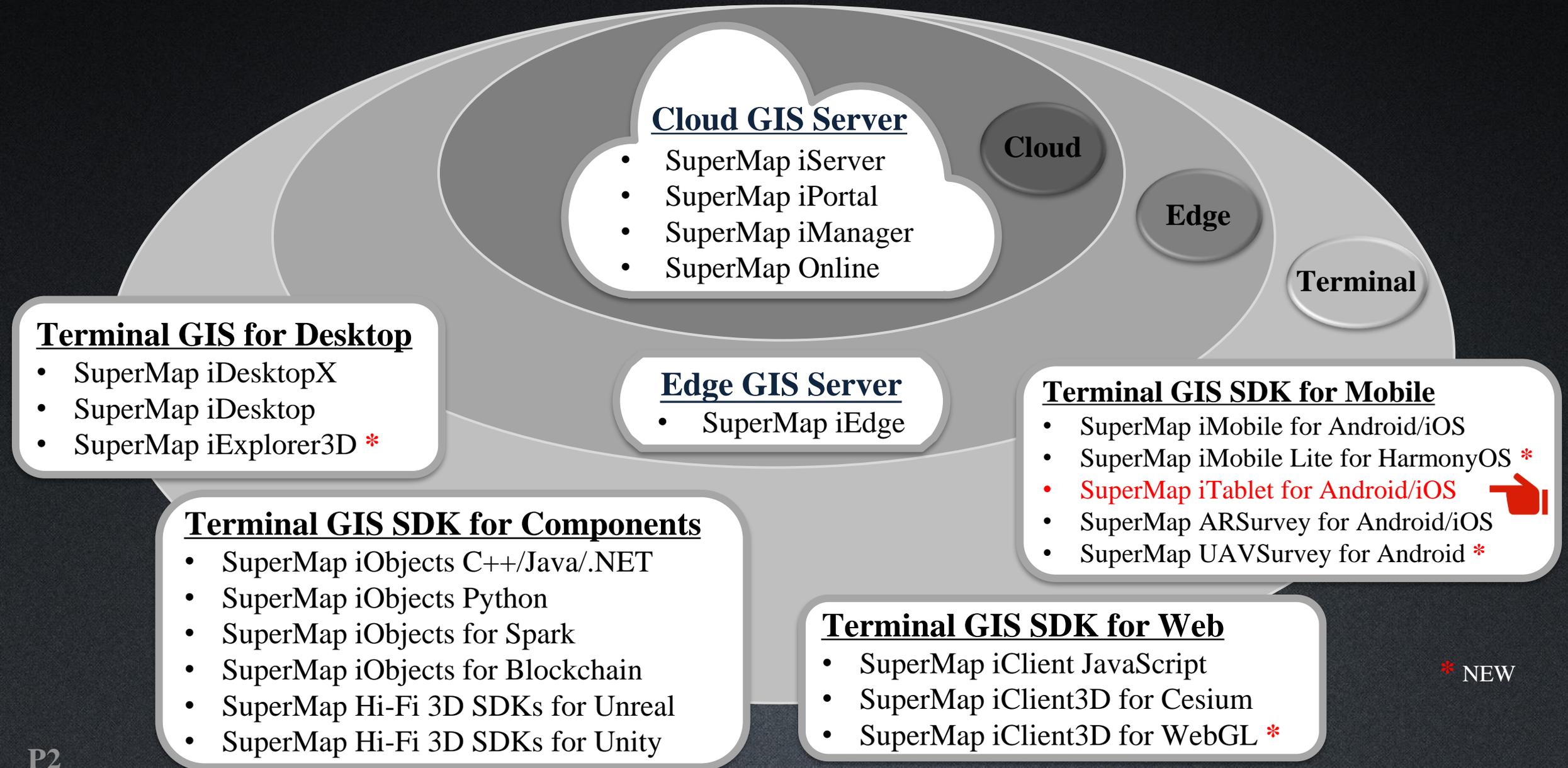


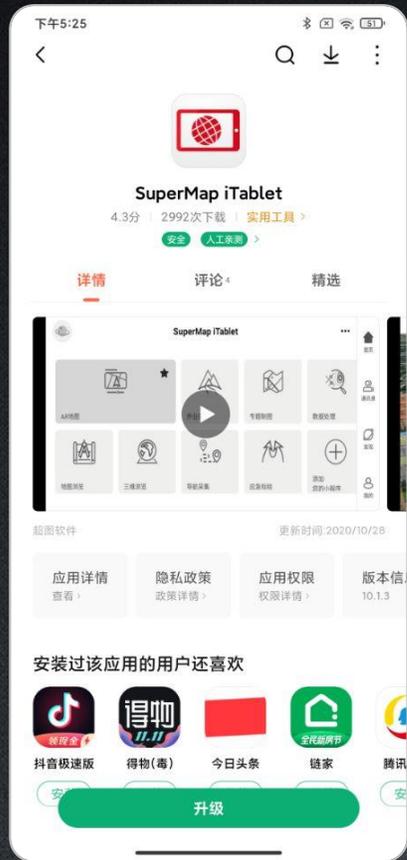
# Topic: AR Application and Collaborative Data Collection of iTablet Product

Speaker: Hutong Fan

# SuperMap GIS 11i Architecture



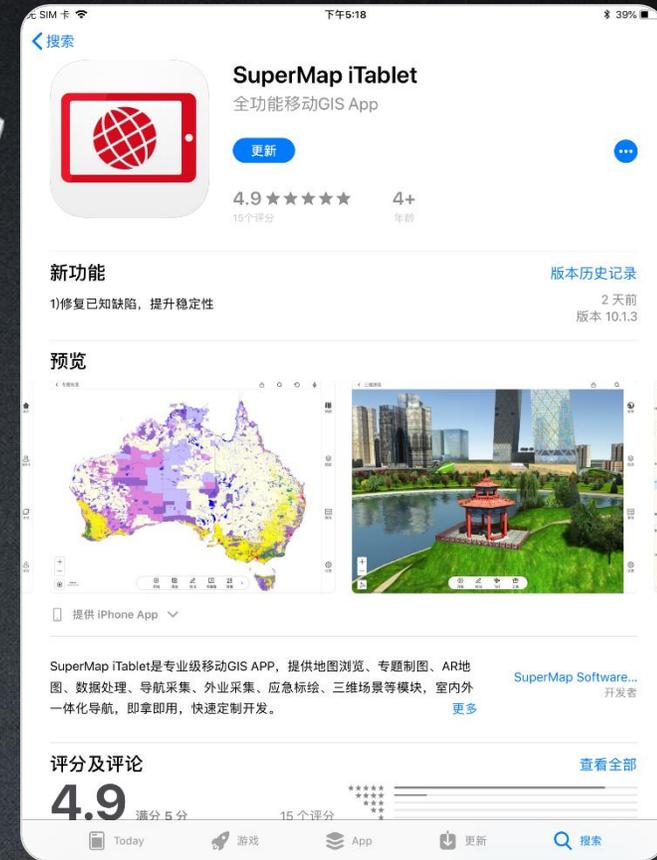
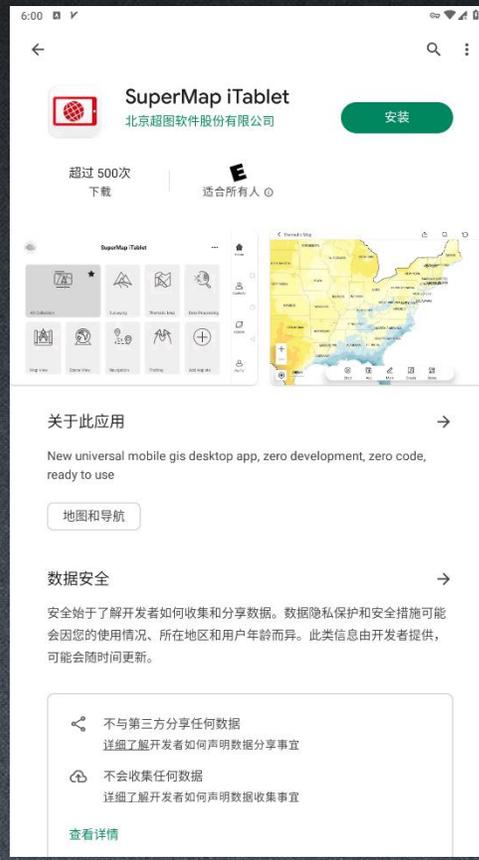
# Android & iOS System Supported



Android App Stores

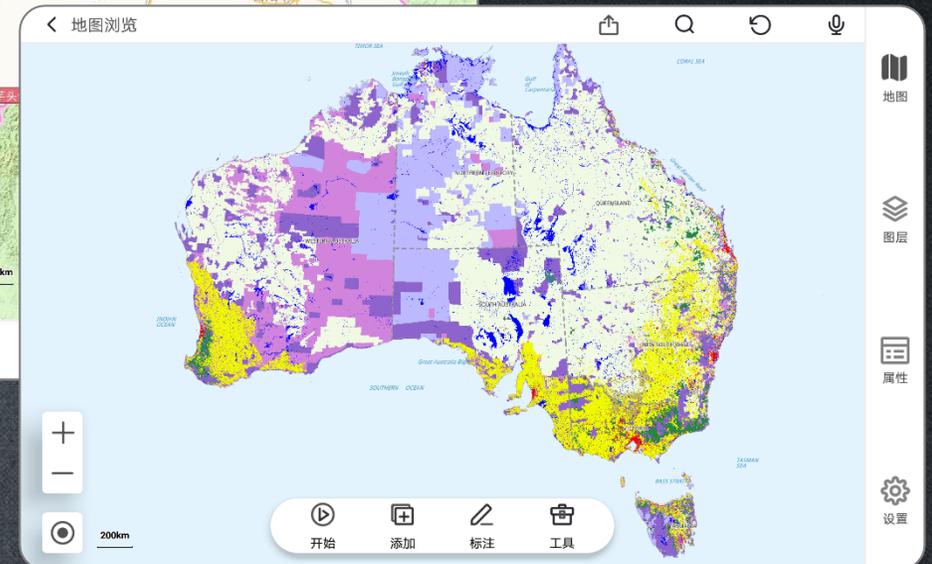
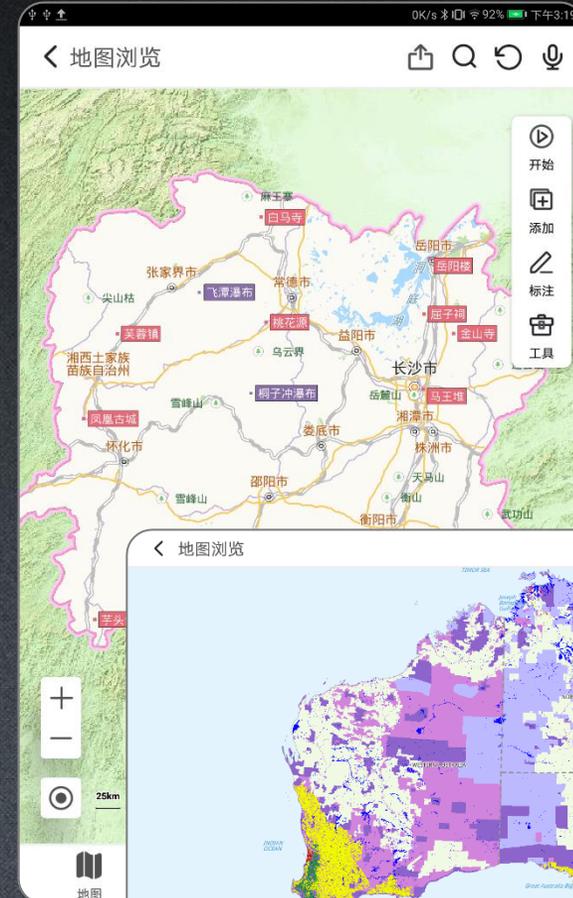
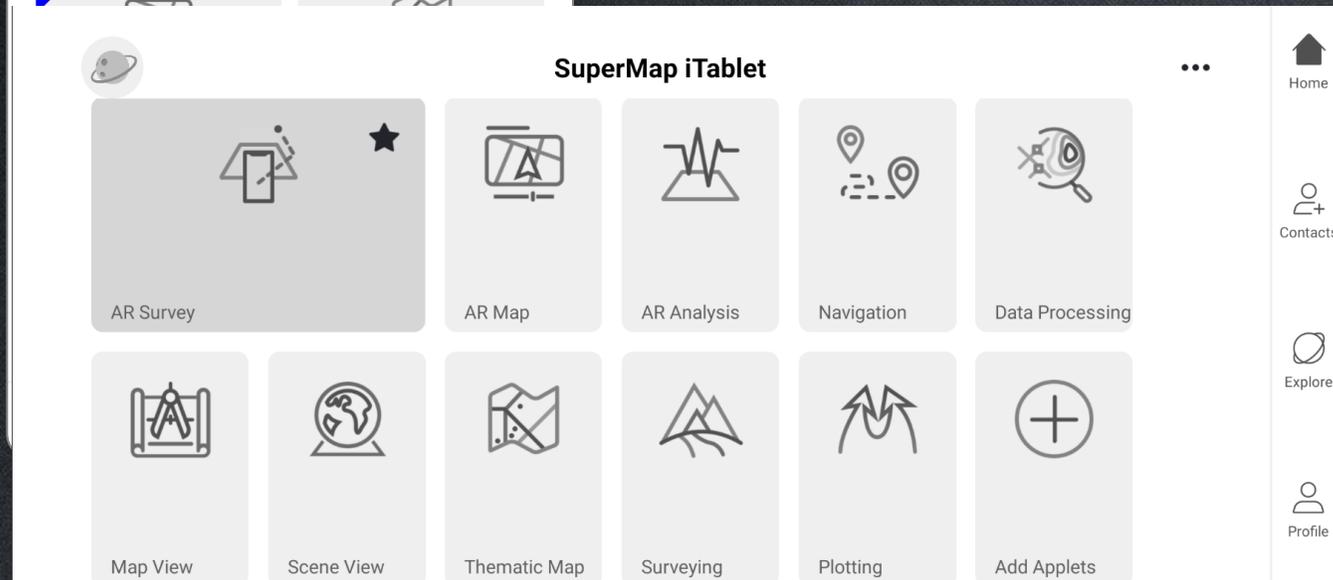


Google Play



App Store

# Great Interface Adaptability



# Function Modules



 **SuperMap iTablet**   Home

 AR Survey	 AR Map	 AR Analysis	 Navigation	 Data Processing	
 Map View	 Scene View	 Thematic Map	 Surveying	 Plotting	 Add Applets

 Contacts  
 Explore  
 Profile

# Function Modules



## AR Survey

- ✓ AR measurement, Mapping, Acquisition

## Map View

- ✓ Browse and Mark up Maps

## Scene View

- ✓ Browse Multiple Types of 3D Scenes

## AR Map

- ✓ AR Mapping, AR Navigation, etc.

## Thematic Map

- ✓ Internally Installed Map Tamplets

## AR Analysis

- ✓ Object Identification, Classification, etc.

## Surveying

- ✓ Universal Surveying Tool

## Navigation

- ✓ Compilable Road Network

## Plotting

- ✓ Emergency Mapping and Editing

## Data Processing

- ✓ Data Analysis, Map Registration

# CONTENTS



**Data Preparation (BIM)**



**AR Map Effect Presentation**



**Co-work Surveying Task**



**Customized Development**



# 1. Data Preparation (BIM)

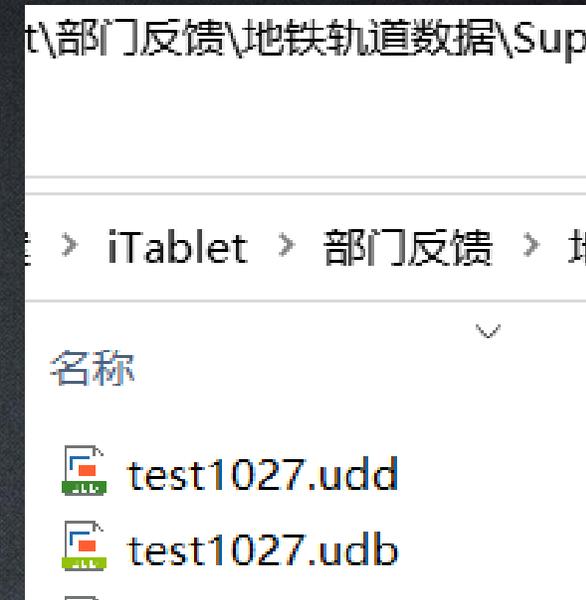
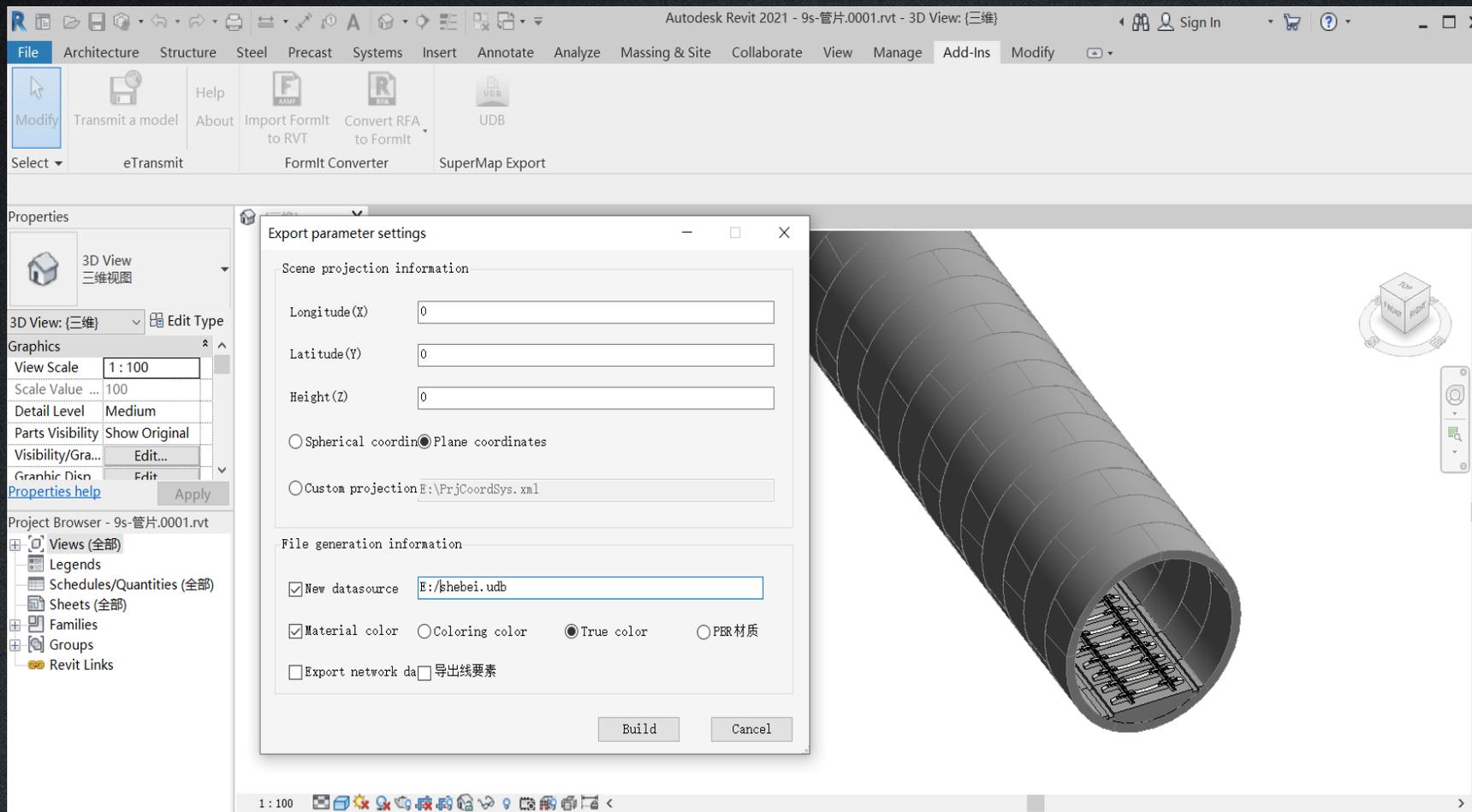
---

Use Revit as example, prepare for the AR example data;  
Support the 3D – BIM models from Revit, Catia, Bentley,  
IFC, Civil3D, and etc.

# Format Conversion --- Revit

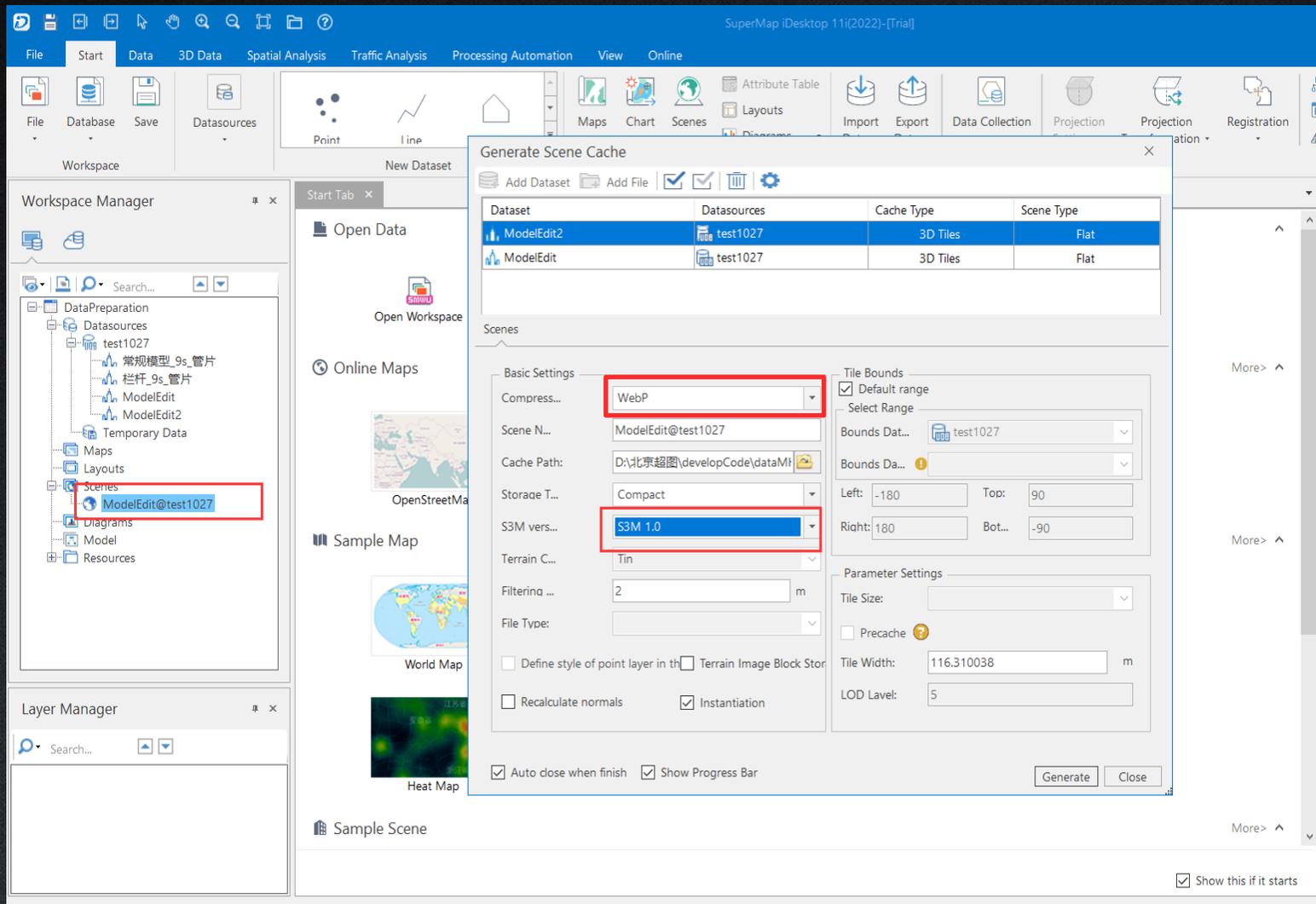


With the help of plug-in in Revit, we can convert \*.rvt data format to \*.udb and \*.udd (file datasource).



Export \*.udb format

# Generate BIM 3D Cache



Import models into the newly created scene.

Generate scene cache with the selection in the drop-list by right click on the scene file.

Compressed Type select: WebP;  
S3M version select: S3M 1.0

# Generate BIM 3D Cache



首数据 > SuperMapData > cache > ModelEdit@test1027

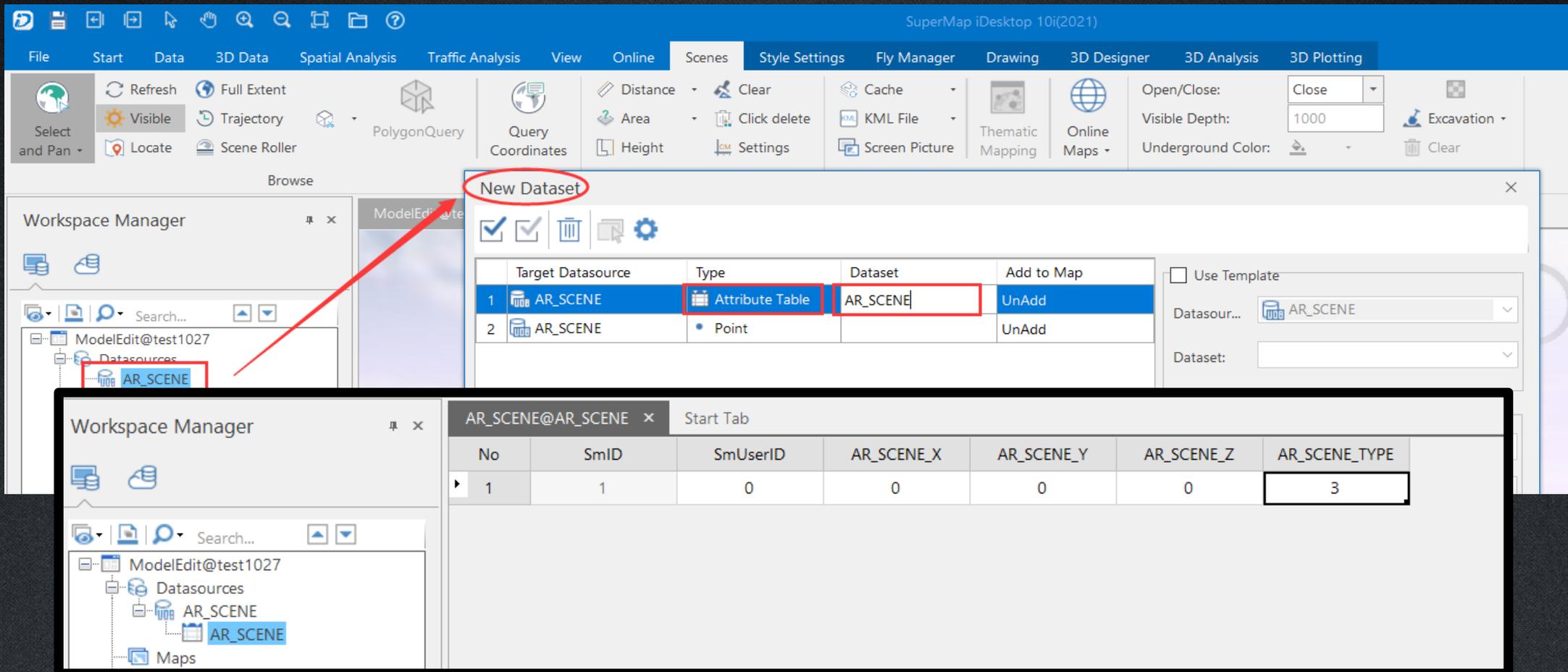
名称	修改日期
ModelEdit@test1027	2022/10/28 星期五 1
ModelEdit2@test1027	2022/10/28 星期五 1
ModelEdit@test1027.bru	2022/10/28 星期五 1
ModelEdit@test1027.lsl	2022/10/28 星期五 1
ModelEdit@test1027.sxwu	2022/10/28 星期五 1
ModelEdit@test1027.sym	2022/10/28 星期五 1

Generated 3D Cache Files

# Add Attribute Table Dataset

Open the workspace file which was created with 3D cache.

Create a new file datasource & Create a new attribute table dataset named “AR\_SCENE” under that datasource. Construction the fields and input the corresponding attribute data.



The screenshot displays the SuperMap iDesktop 10i(2021) interface. The 'New Dataset' dialog is open, showing a table with two rows. The first row is selected, with 'Attribute Table' in the 'Type' column and 'AR\_SCENE' in the 'Dataset' column. A red arrow points from the 'AR\_SCENE' dataset in the 'Workspace Manager' to the 'New Dataset' dialog. Below the dialog, the 'AR\_SCENE@AR\_SCENE' attribute table is shown with the following data:

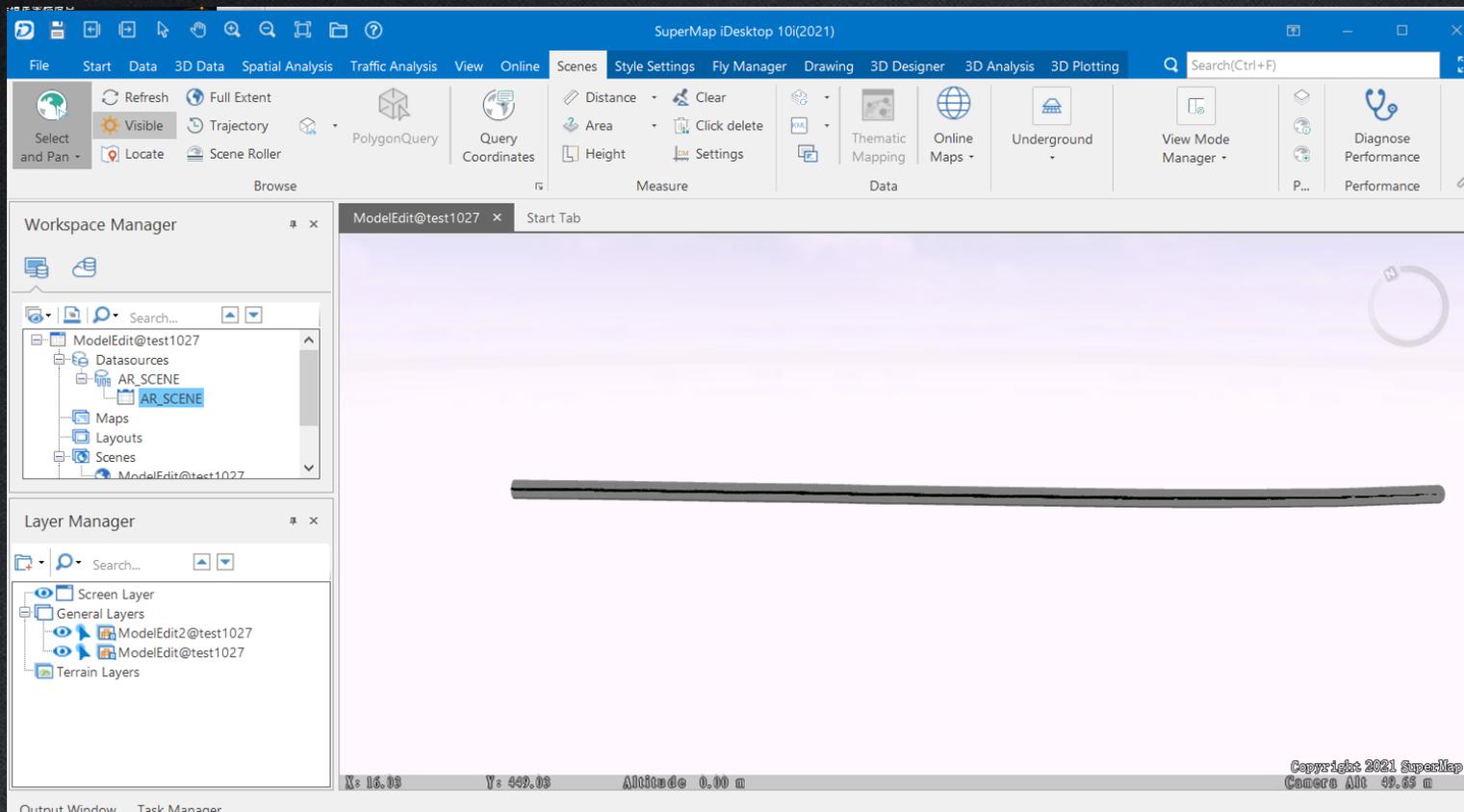
No	SmID	SmUserID	AR_SCENE_X	AR_SCENE_Y	AR_SCENE_Z	AR_SCENE_TYPE
1	1	0	0	0	0	3

# Save the Workspace



Save the file datasource and workspace.

Process all the 3D BIM models according to the procedure above.



名称	修改日期
guanpian.udb	2022/10/...
guanpian.udd	2022/10/...
jicheng.udb	2022/10/...
jicheng.udd	2022/10/...
shebei.udb	2022/10/...
shebei.udd	2022/10/...

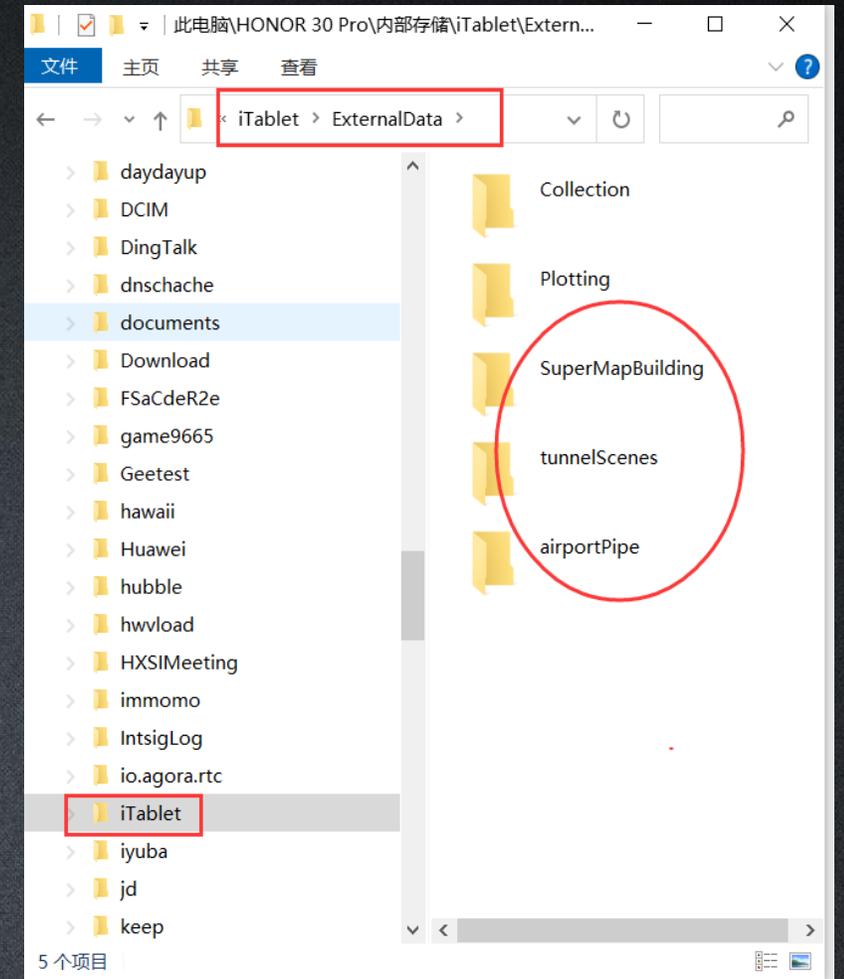
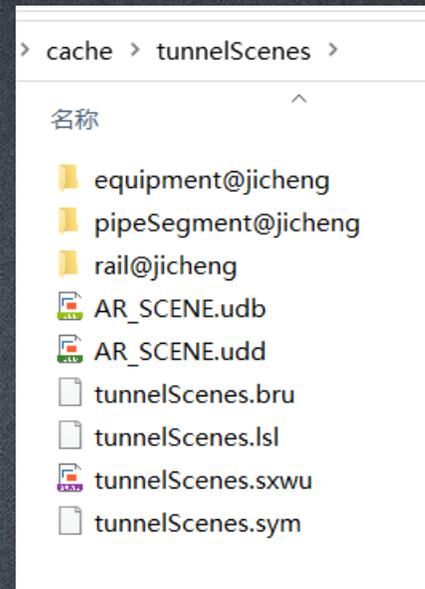
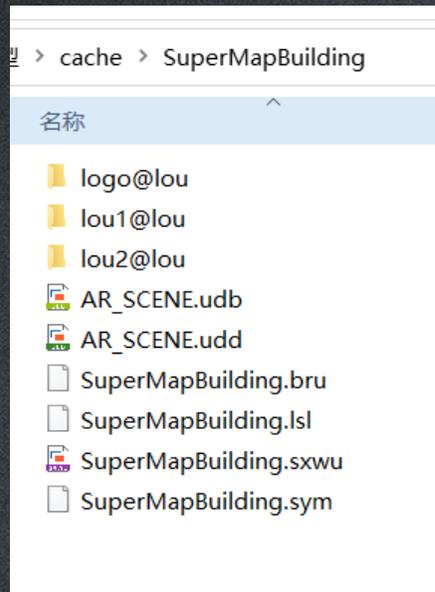
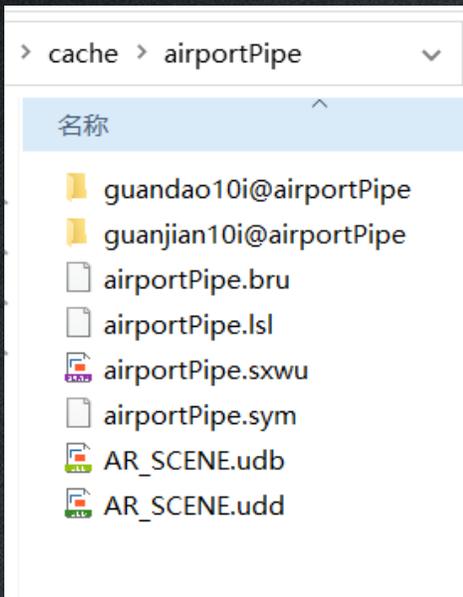
Example of data preparation

# Copy Offline Data



Mobile device link to the computer and allow copy files.  
(Huawei android phone in this example)

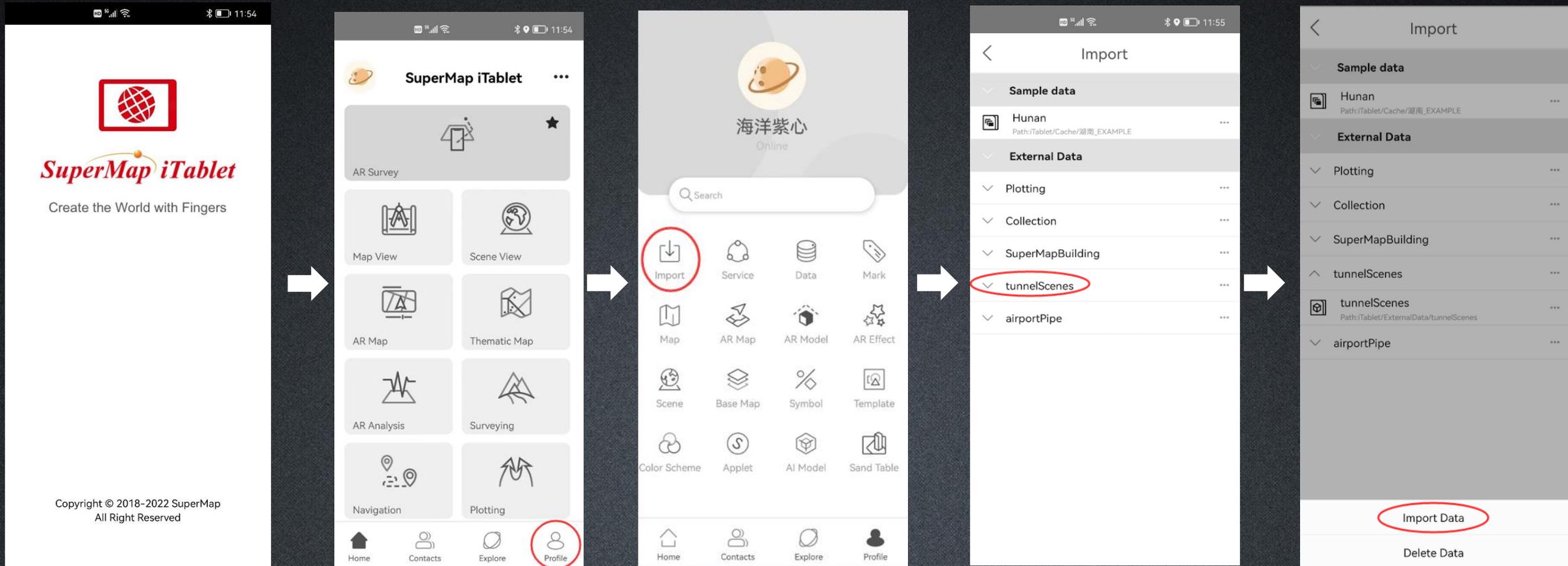
Copy the created workspace with 3D cache (airportPipe, tunnelScenes, SuperMapBuilding) to the “iTablet/ExternalData” directory of the device.



# Load Offline Data



First, log into the SuperMap iTablet, and set the license. Import the workspace with created 3D cache data.



# Publish Online Data Service



Based on iServer product.

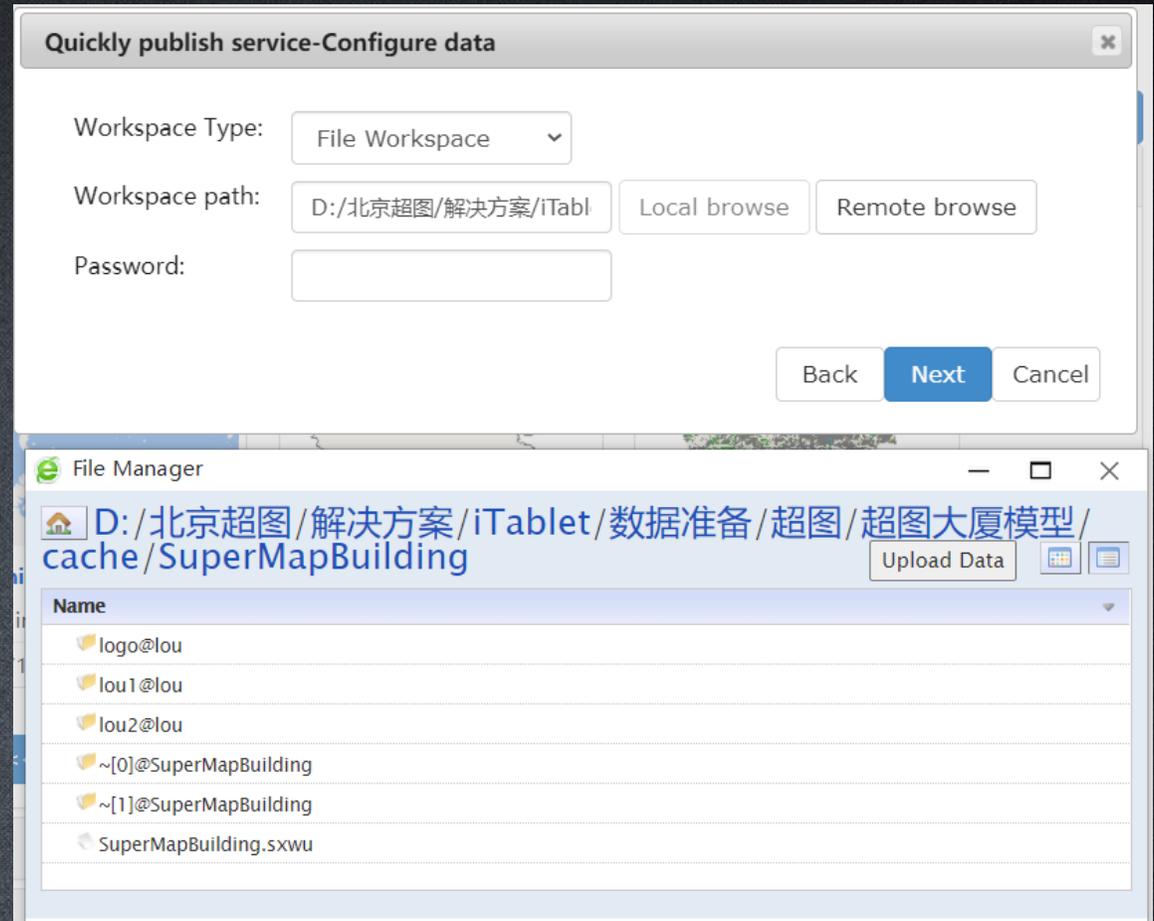
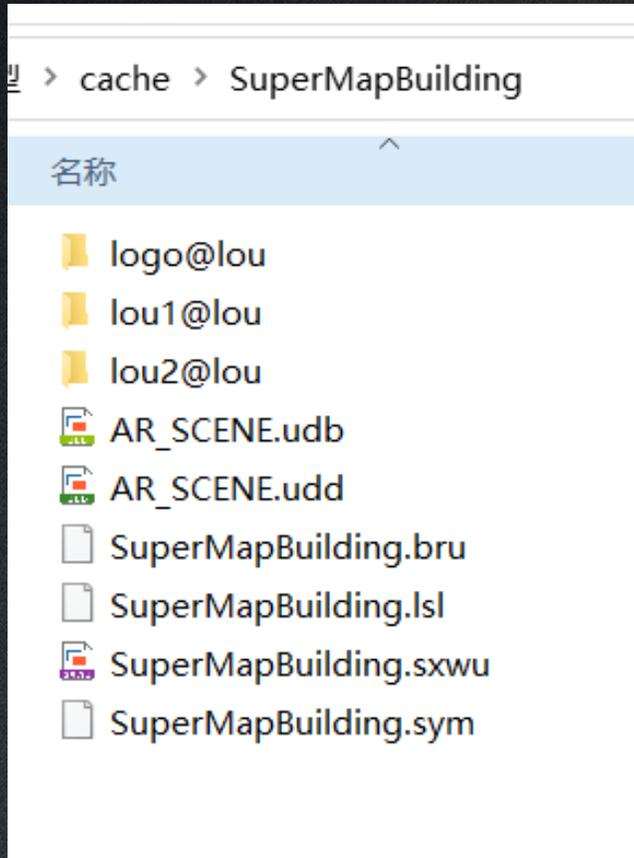
Click on the “Quickly publish services”. Select Workspace as Data source.

The screenshot displays the iServer Manager web interface. The main navigation bar includes 'Home', 'Services', 'Clusters', 'Logs', 'Security', 'Monitoring', 'Backup', 'Task', 'License', and 'Global Settings'. The 'Services' section is active, showing a list of services under 'Map Services' and 'Data Services'. A modal dialog box titled 'Quickly publish service- Please select the data source' is open in the foreground. The dialog contains the text 'Data source can be workspace or standard remote service.' and a dropdown menu for 'Data source:' with 'Workspace' selected. 'Next' and 'Cancel' buttons are at the bottom of the dialog. In the background, a blue button labeled '+ Quickly publish services' is highlighted with a red rectangle.

# Release REST 3D Service



Use remote browse to the directory of generated 3D scene cache.  
Select Workspace as Data source.

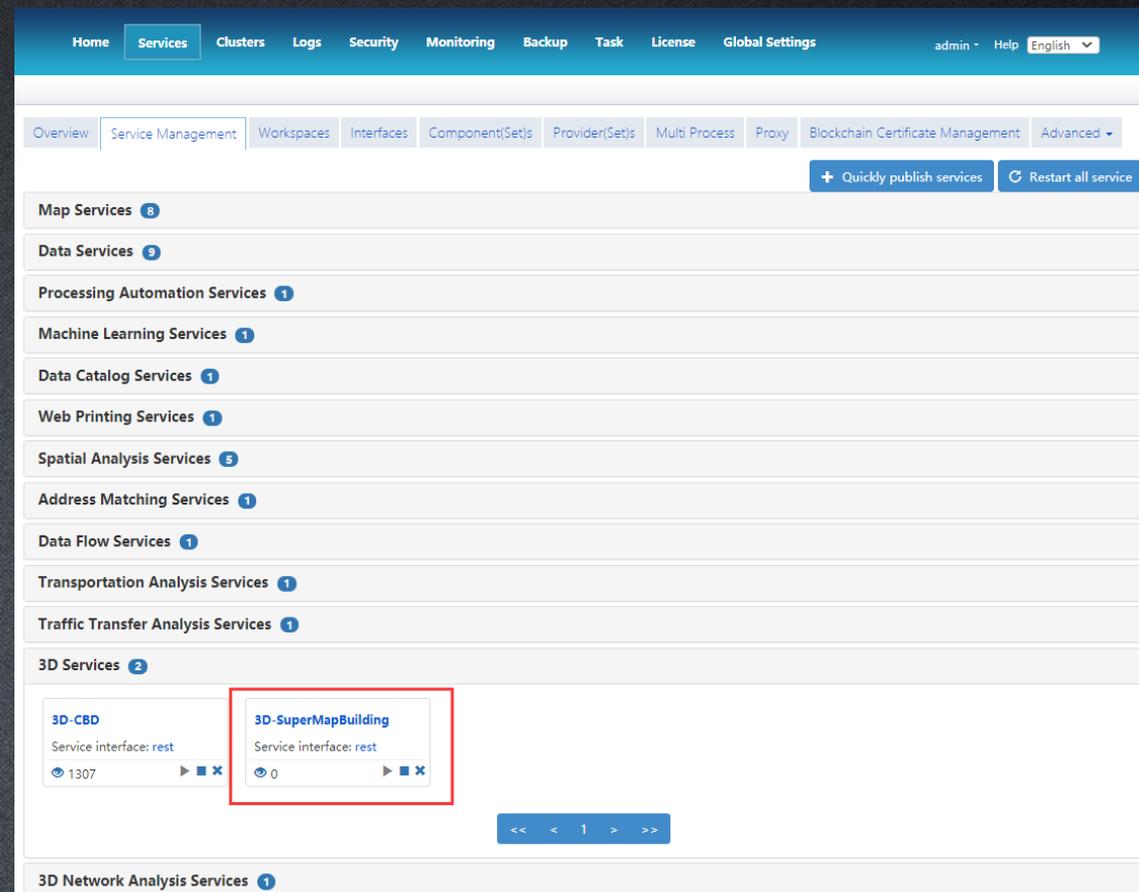
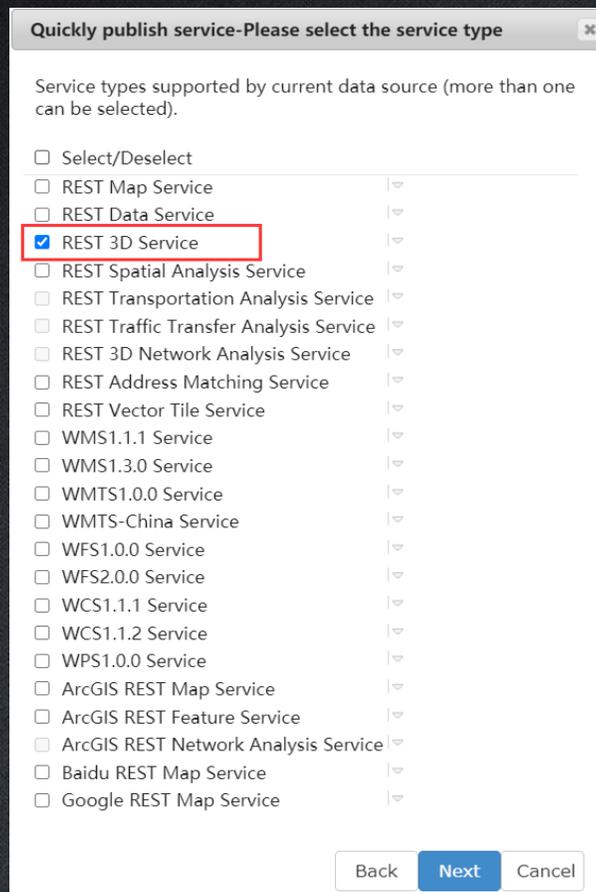


# Release REST 3D Service



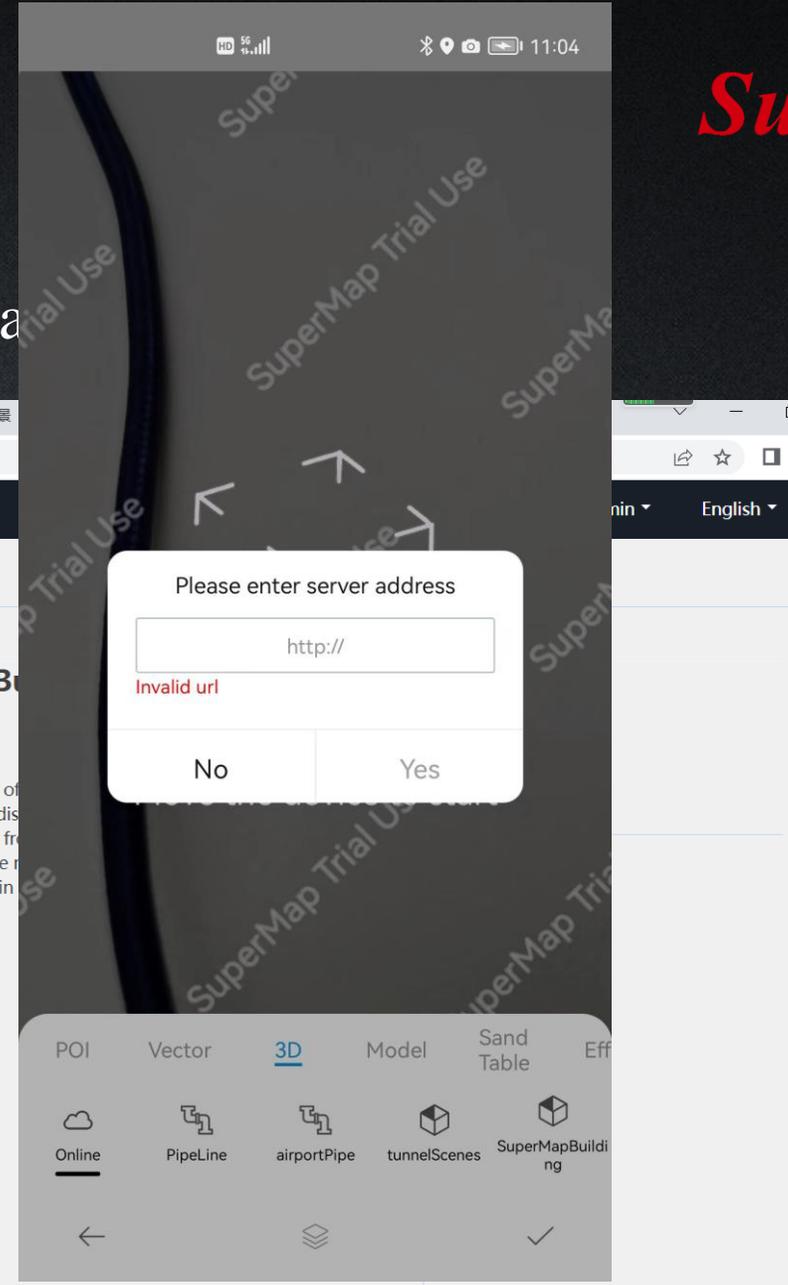
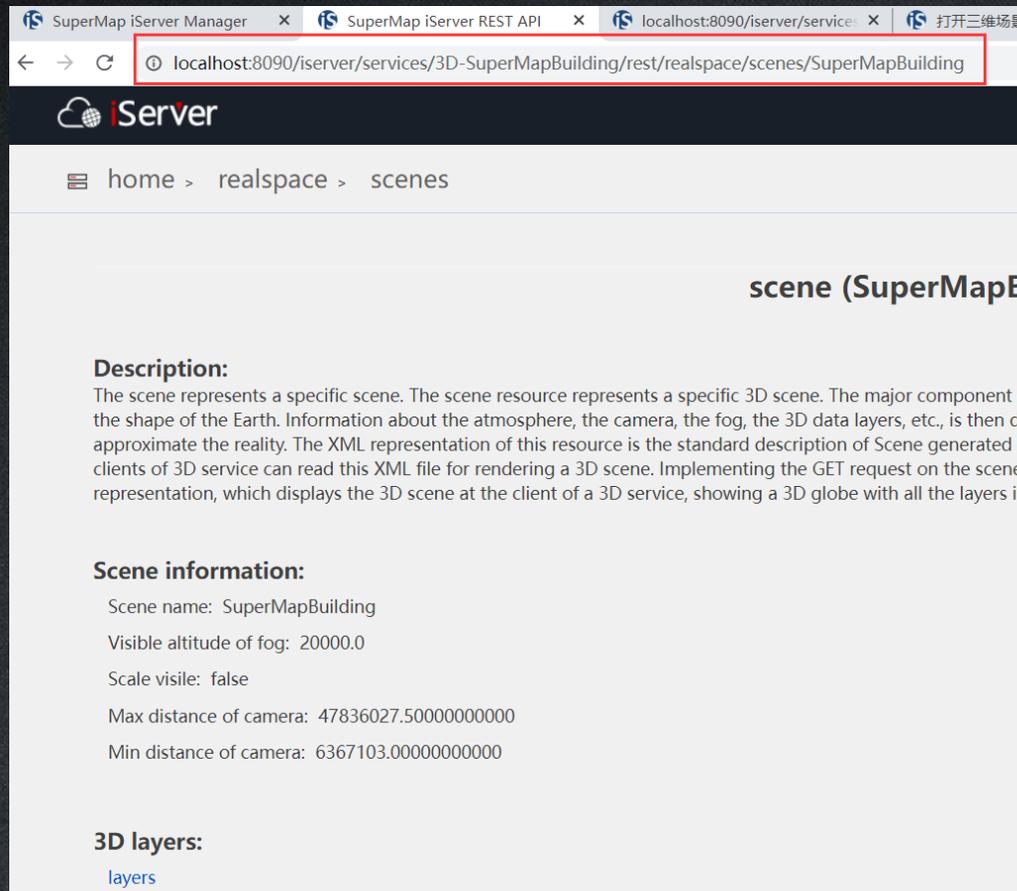
Select the REST 3D Service type.

The published 3D Service will appear after successful publication.



# REST 3D Service Address

http://ip:8090/iserver/services/3D-SuperMapBuilding/rest/realspace/scenes/SuperMapBuilding





## 2. AR Map Effect Presentation

---

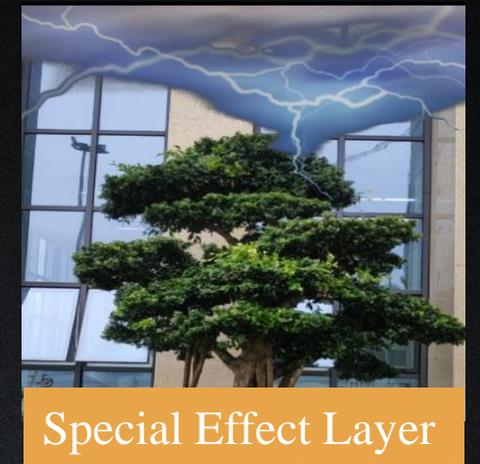
# What is AR Map?

It is a new type of map for live view, data query, real-time interactive editing and other capabilities.

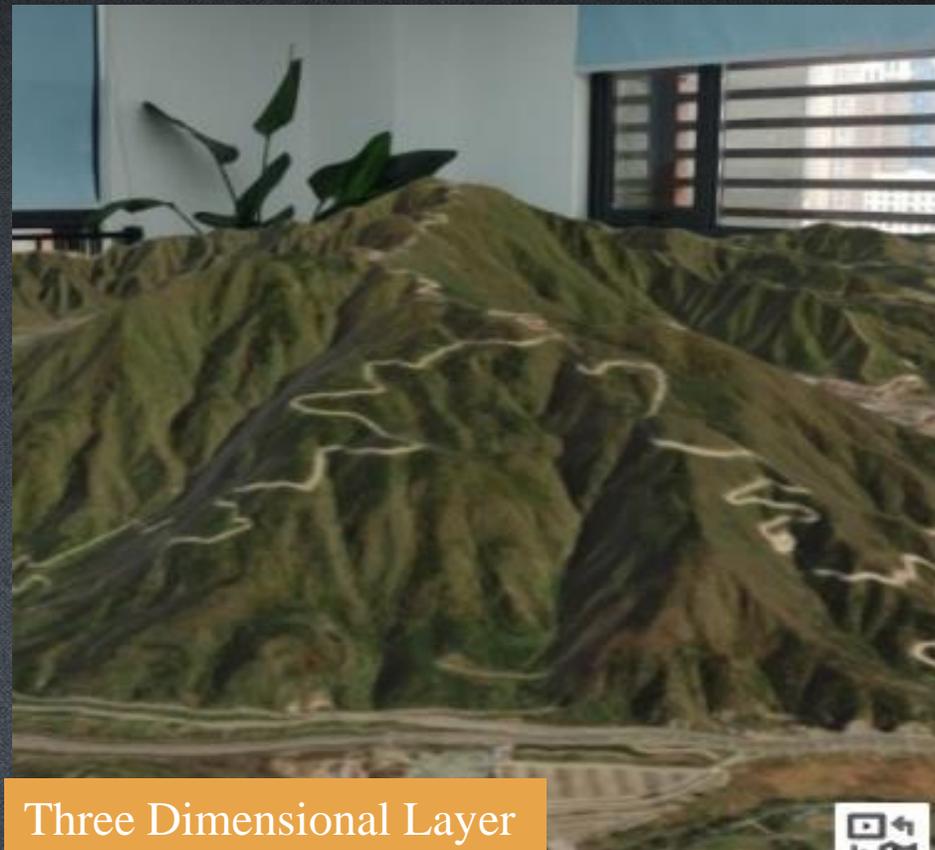
iTablet support full process AR map creation: element creation, addition, editing; export sharing, and multi-device terminal browsing.



Model Layer



Special Effect Layer



Three Dimensional Layer



POI Layer

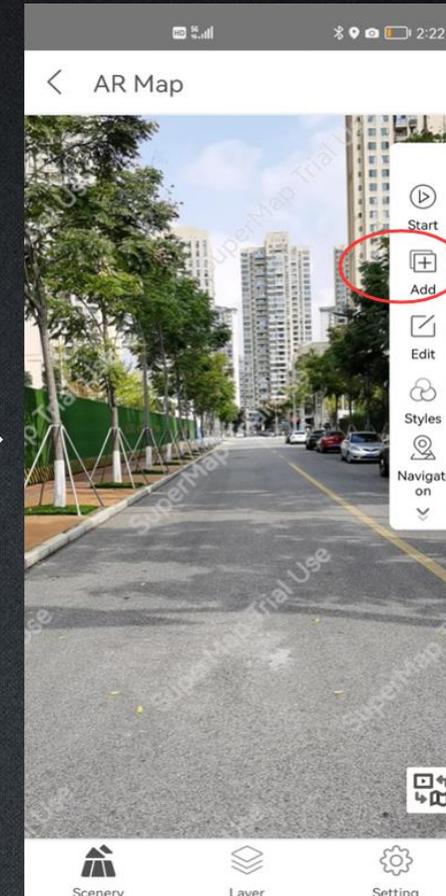
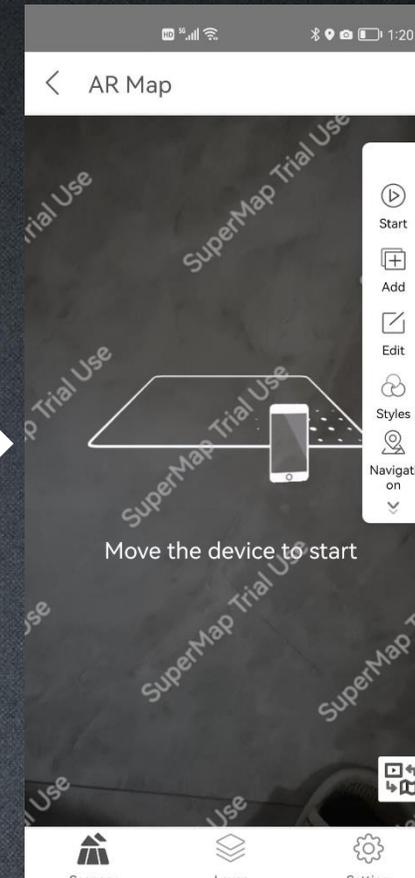
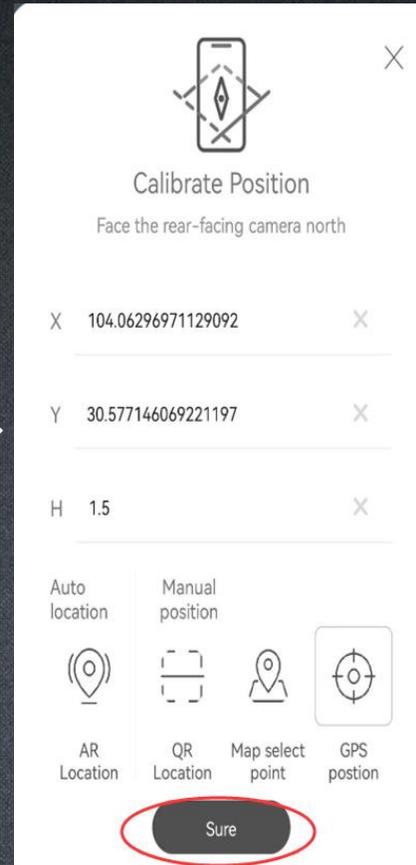
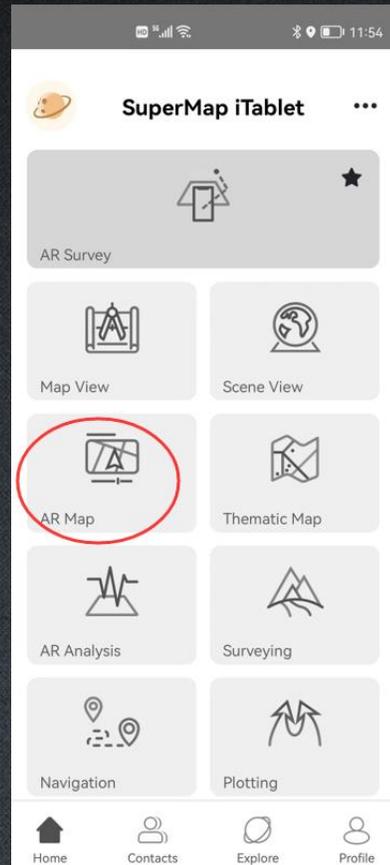


Vector Layer

# Create a New AR Map with BIM Model



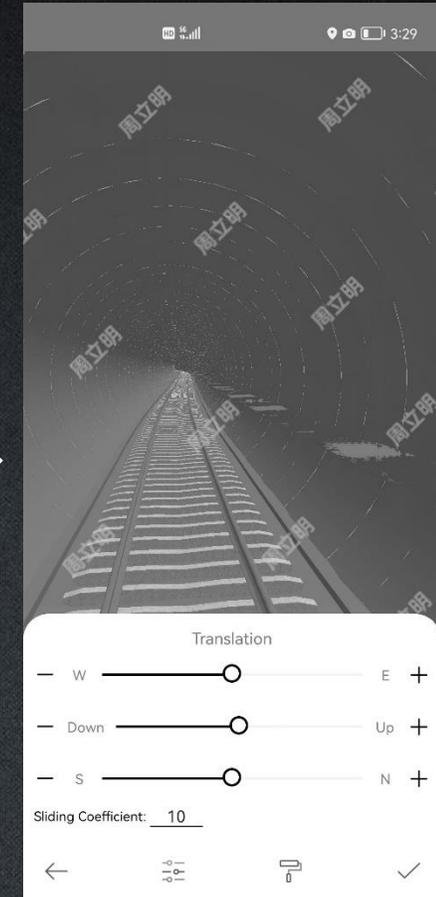
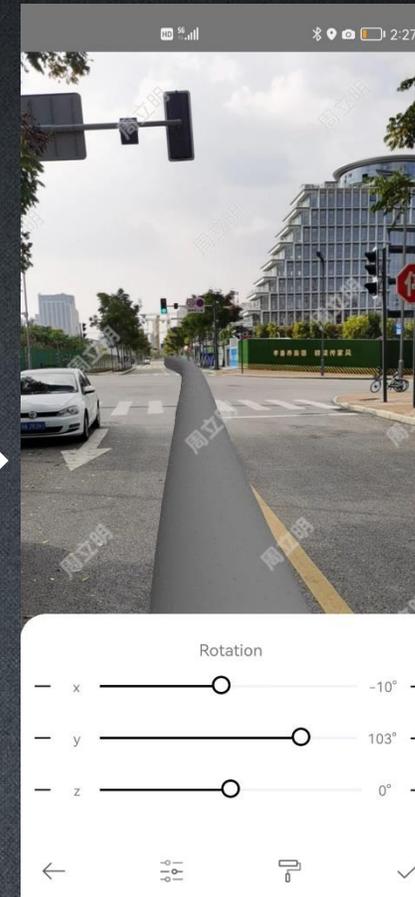
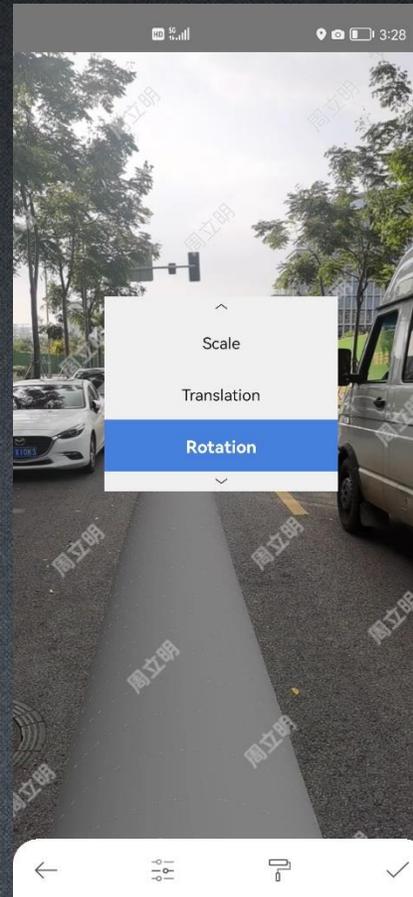
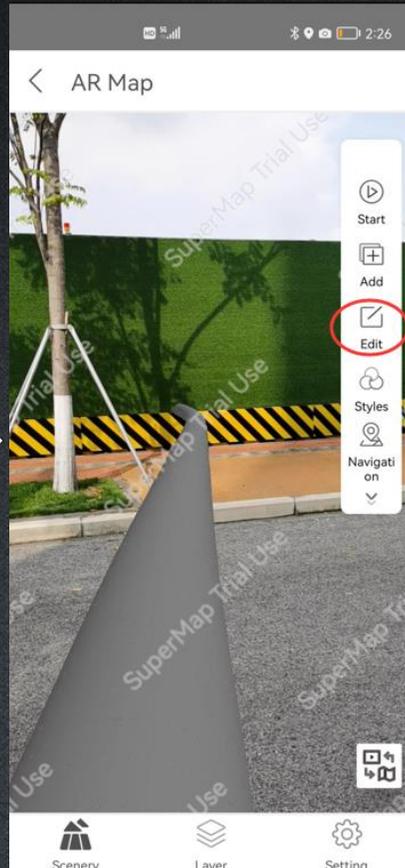
AR Map – Calibrate Position with GPS – Identifying the horizontal surface (keep the device vertical and rotate slowly) – Add the BIM model



# Create a New AR Map with BIM Model



Select the model – Edit the scene – Rotate the model – Pan the model



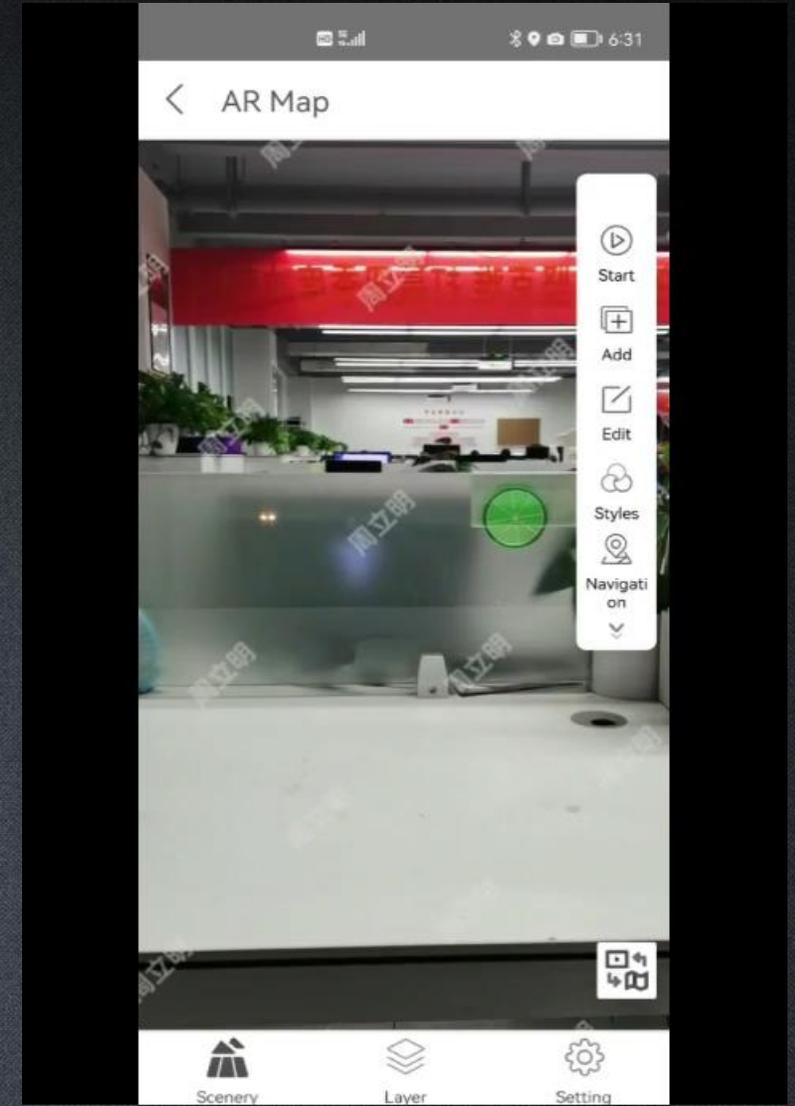
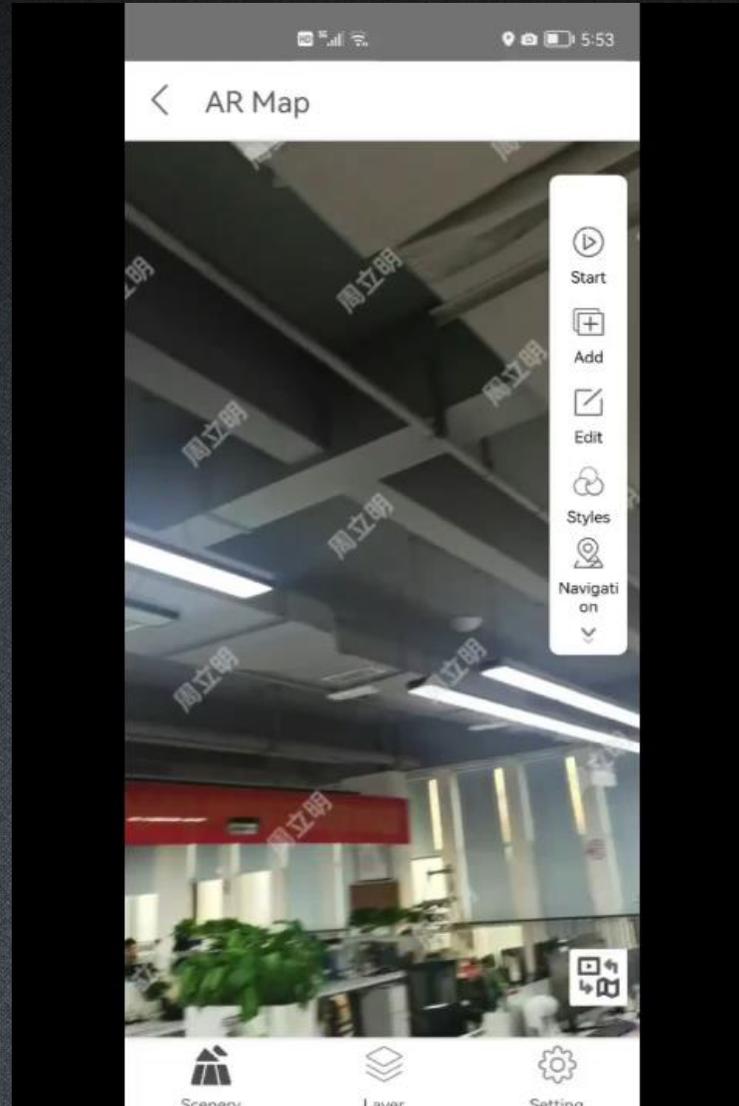
# New Way of Positioning



\* Image Positioning



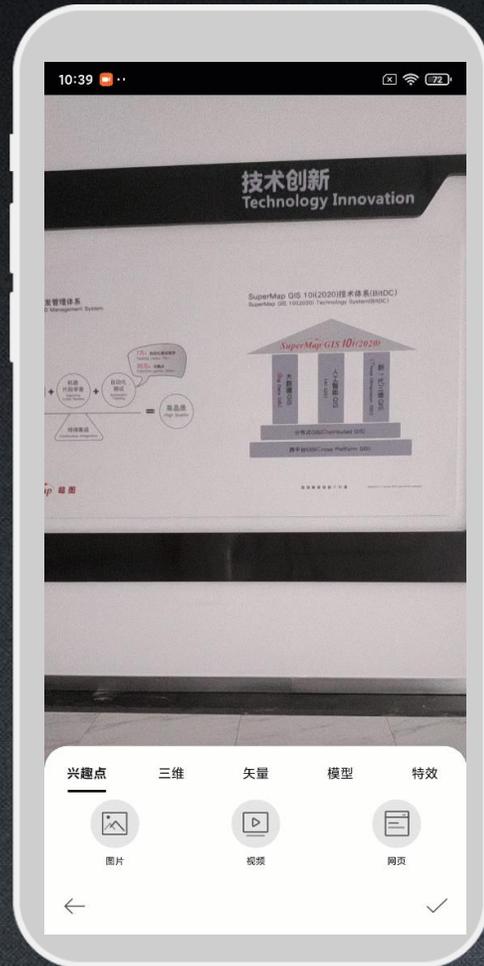
# Effect Demonstration (Tunnel, Pipeline Network, Buildings)



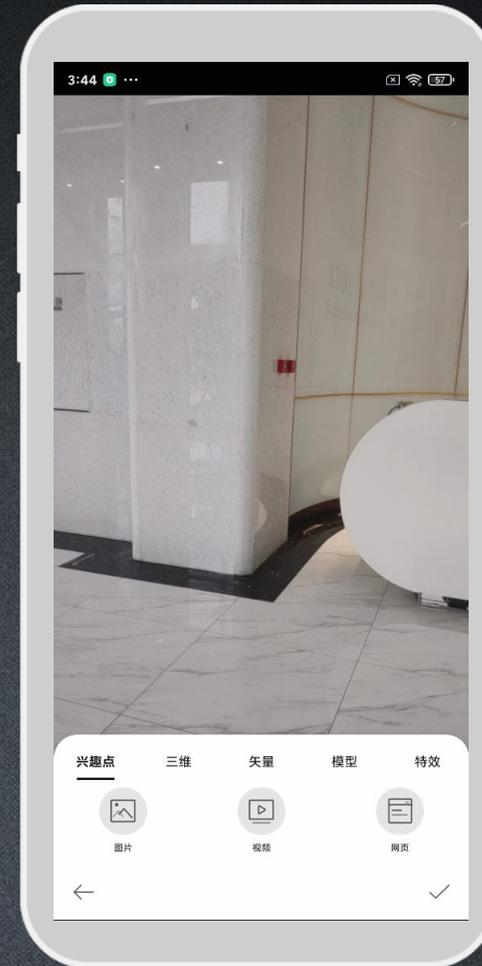
# Effect Demonstration (Add Video and Webpage)



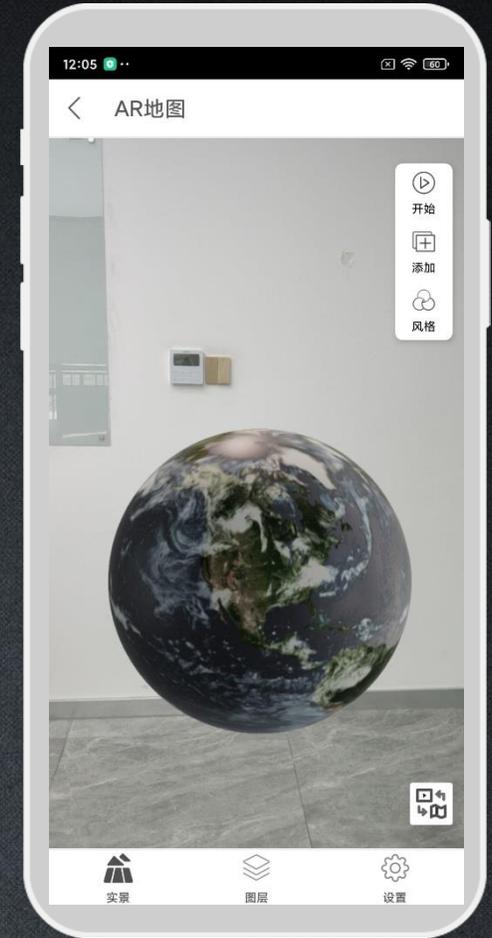
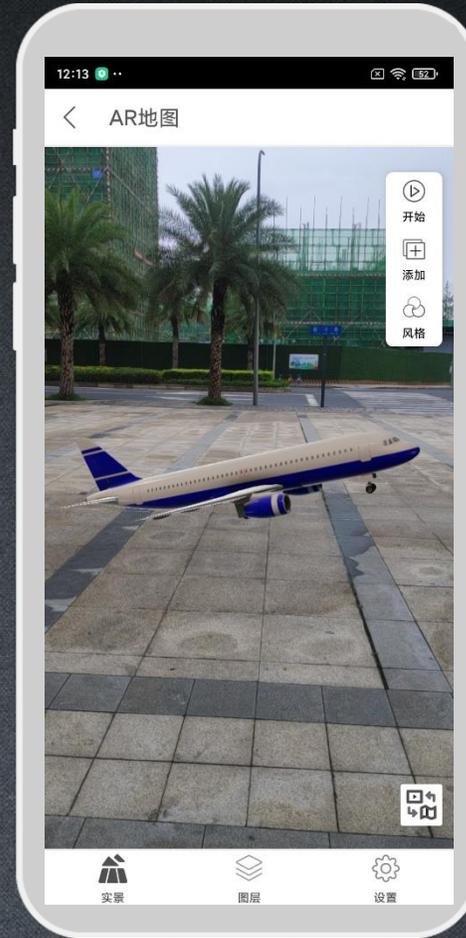
➔  
Add  
Video



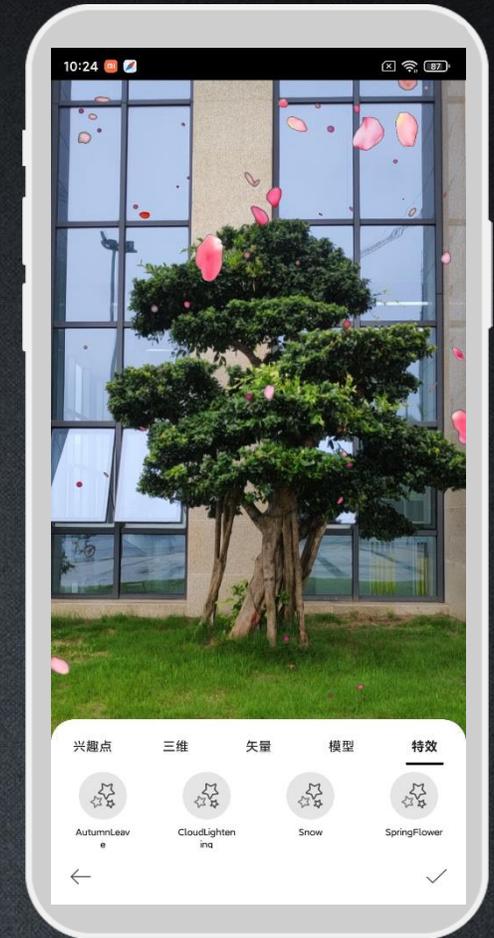
➔  
Add  
Webpage



# Effect Demonstration (Add Model)



# Effect Demonstration (Add Special Effect)





## 3. Co-work Surveying Task

---

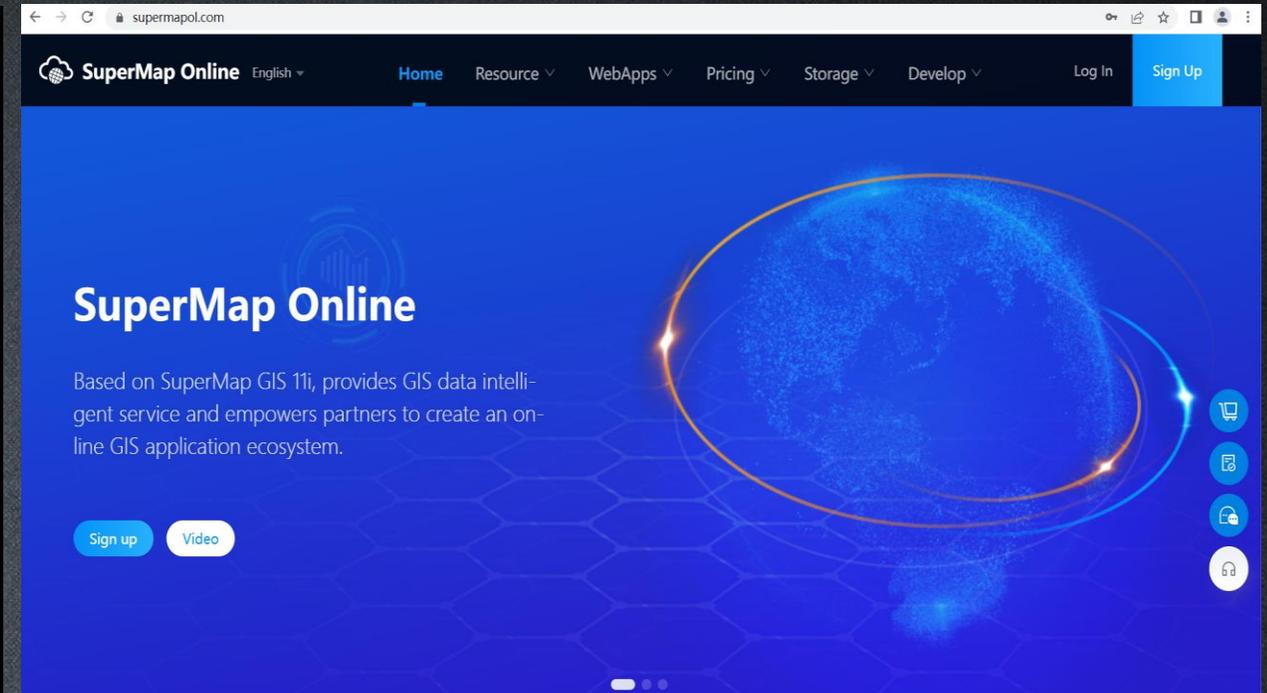
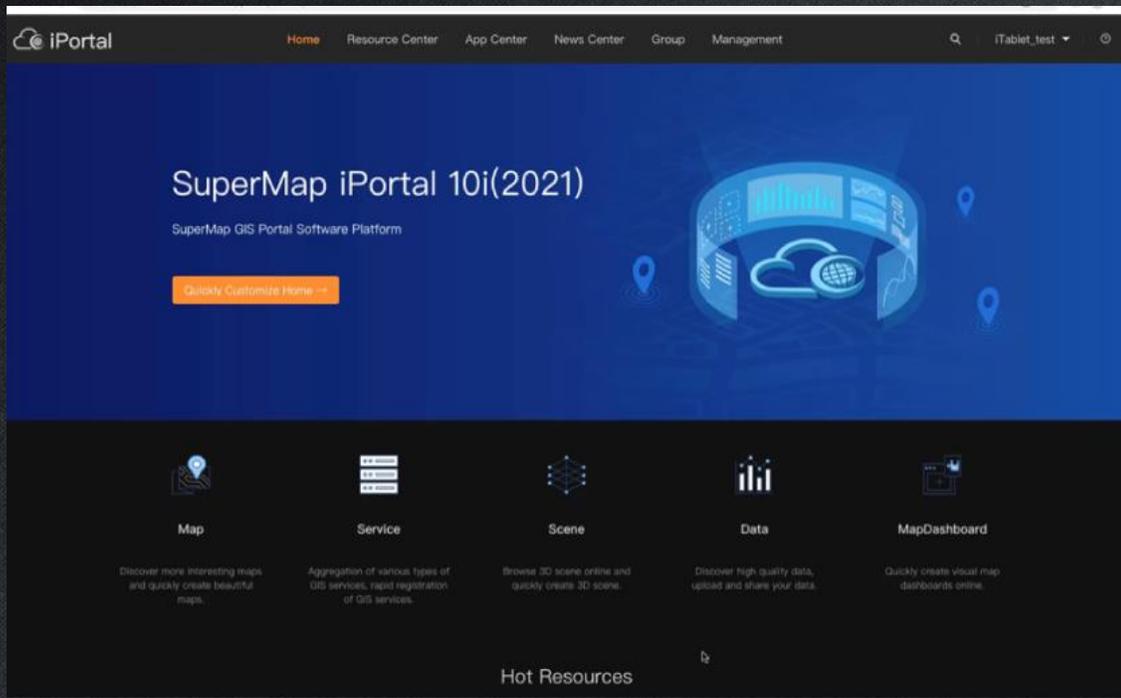
- Dedicated server or cloud services based;
- Perform cowork surveying task after publishing the Surveying information layer.

# Dedicated Server / Cloud Services



We Provide 2 ways to publish co-work data service:

1. Based on the iPortal server, create a surveying user group and publish data service.
2. Create a surveying user group on SuperMap Online cloud service and publish data service.



Use iPortal server to build a dedicated server

<https://www.supermapol.com/>

# Create Group



In this example, we create a surveying co-work group based on the SuperMap online service and then invite group members.

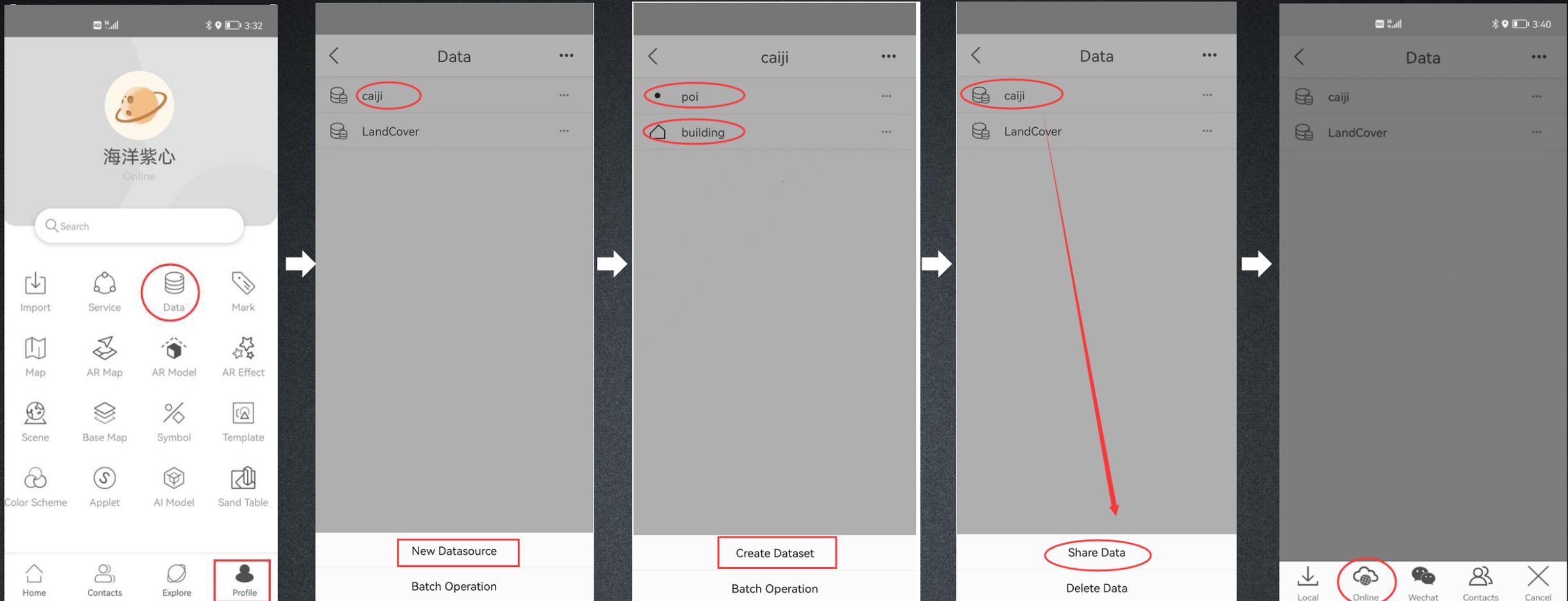
The screenshot shows the group management page for 'CaiJiGroup\_America'. At the top left, there is a back arrow and the group name. Below this is a group profile card with a SuperMap logo, the group name, and three action buttons: '+ Invite Member' (blue), 'X Dismiss Group', and 'Setting'. The profile card also displays the creator's name '海洋紫心', the creation time '2022-11-02 14:23', and the group ID 'CaiJiGroup\_America'. Below the profile card, it shows 'Resource Contributor: All members', 'Type: Public', and 'Description: CaiJiGroup\_America'. A navigation bar contains tabs for 'Map', 'Service', 'Scene', 'Data', 'Insight', and 'MapDashboard'. Below the navigation bar, it shows '0 Maps in total' and a search bar for resources in the current group. On the right side, there is a 'Group Members (1)' section with a search icon and one member listed: '海洋紫心(Creator)'.

The 'Invite Member' dialog box is shown on the right. It has a title bar with 'Invite Member' and a close button. Below the title bar is a search input field labeled 'Input username' with a search icon. A list of users is shown below the search field, with the first user '1017666 (卧轨的火车)' selected with a blue checkmark. Below the list is a 'Reason' label and a large text input area. At the bottom right, there are two buttons: 'Close' and 'Send Invitation'.

# Data Preparation



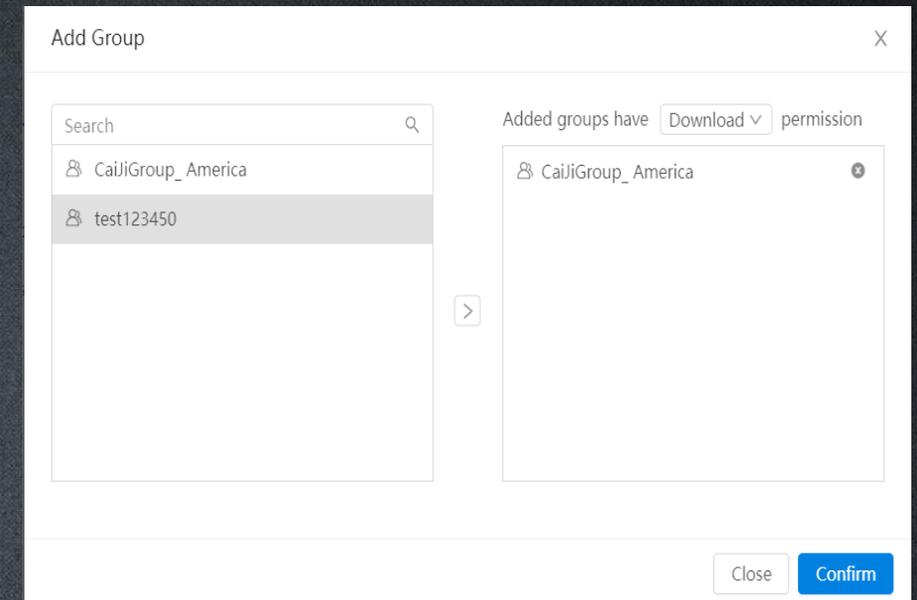
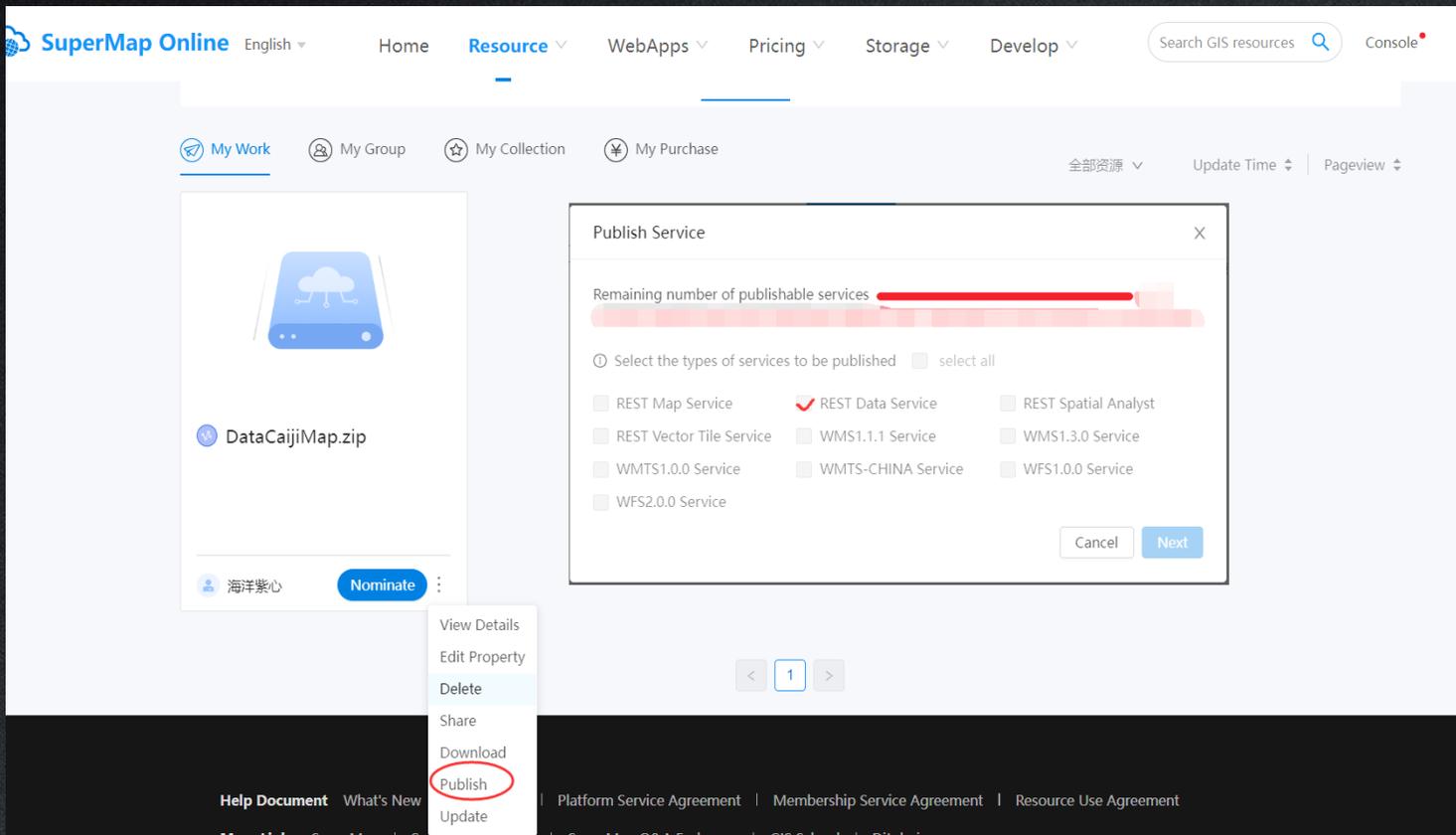
Create new a Datasource and a Dataset (Point, Region) on iTablet and share them to the SuperMap online;



# Publish Data Services, Share to Groups



Publish data REST service on the SuperMap Online service, share with the created surveying co-work group.

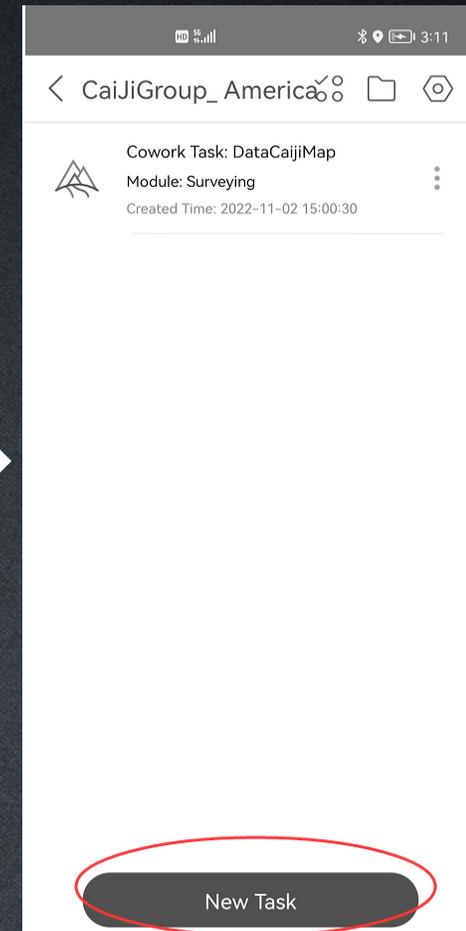
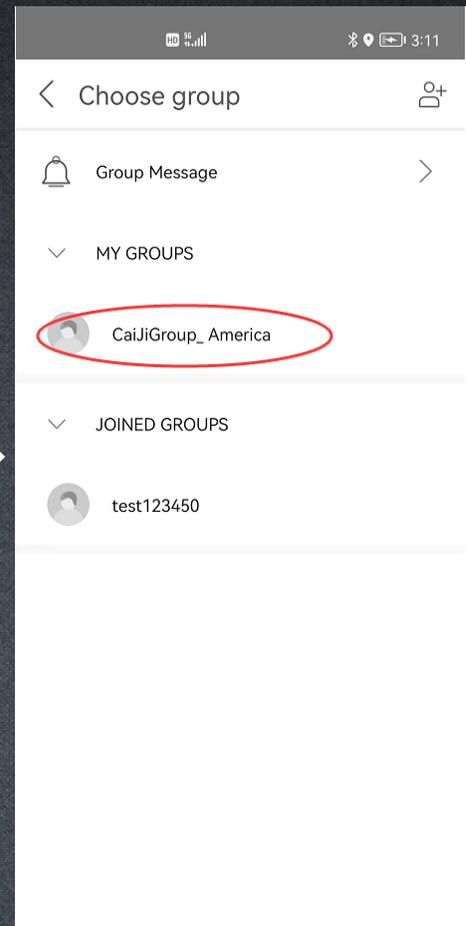
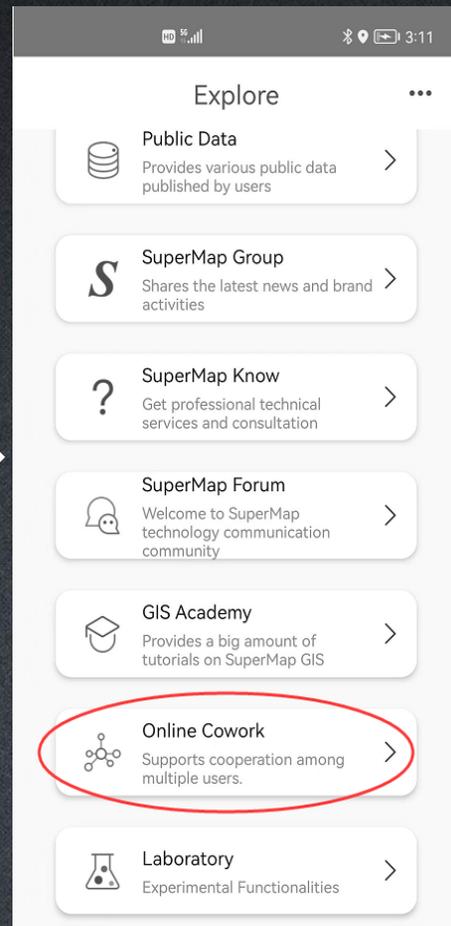
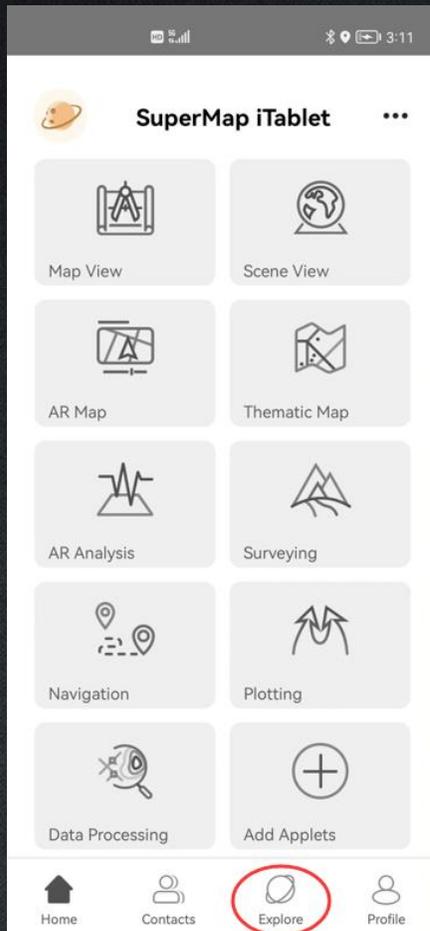


# Create Online Co-work Task



Create online surveying co-work task on iTablet.

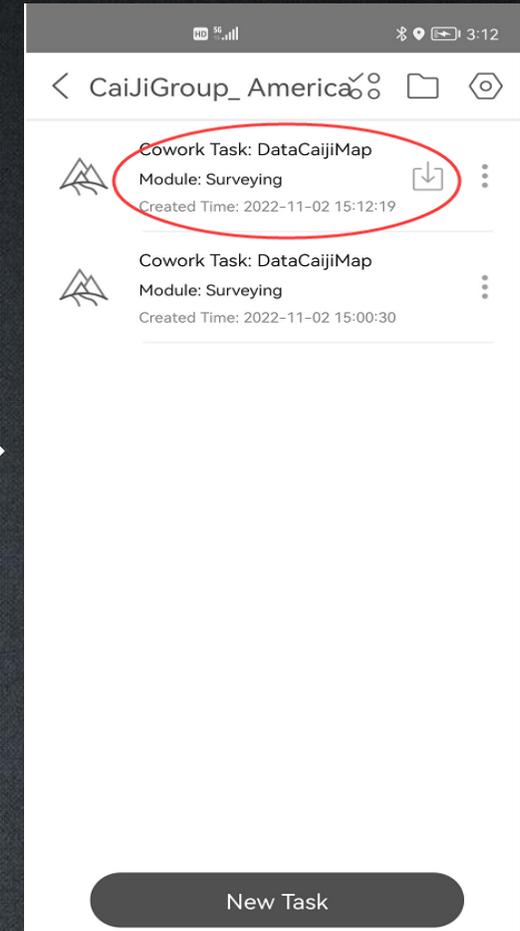
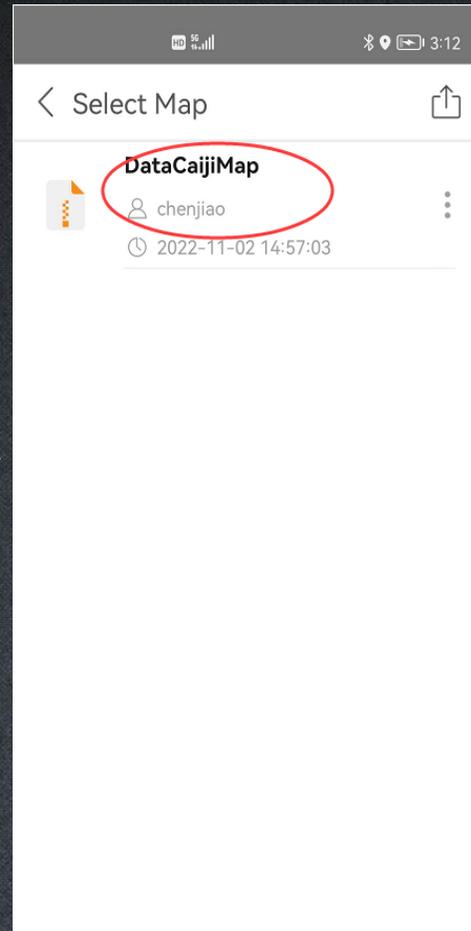
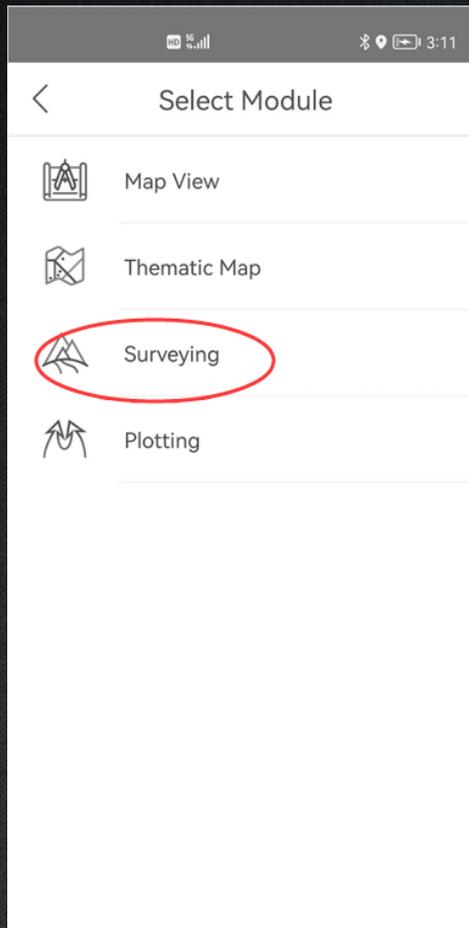
Choose the specific group, click on the New Task.



# Create Online Co-work Task



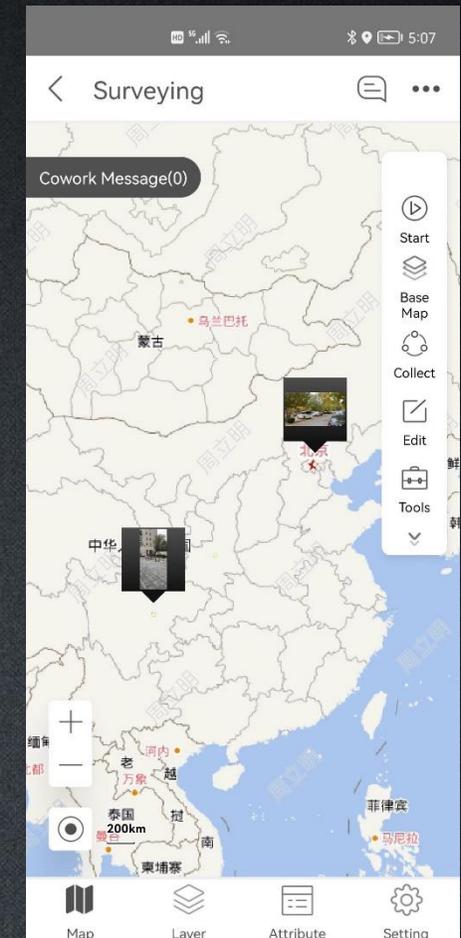
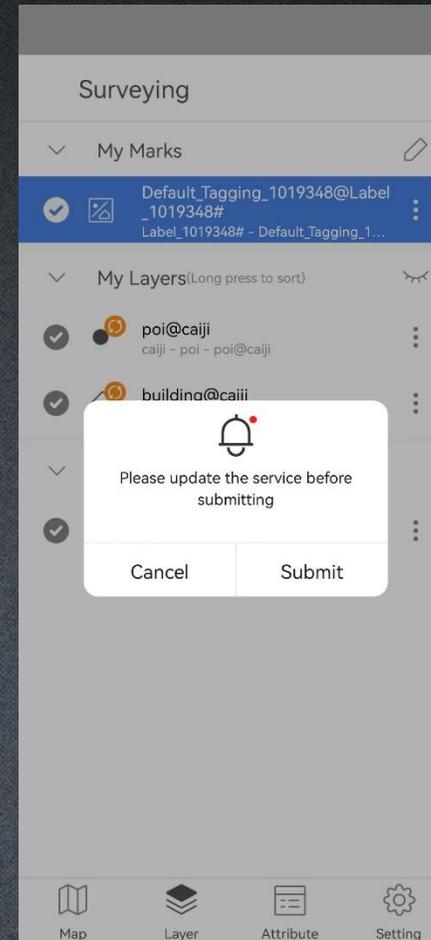
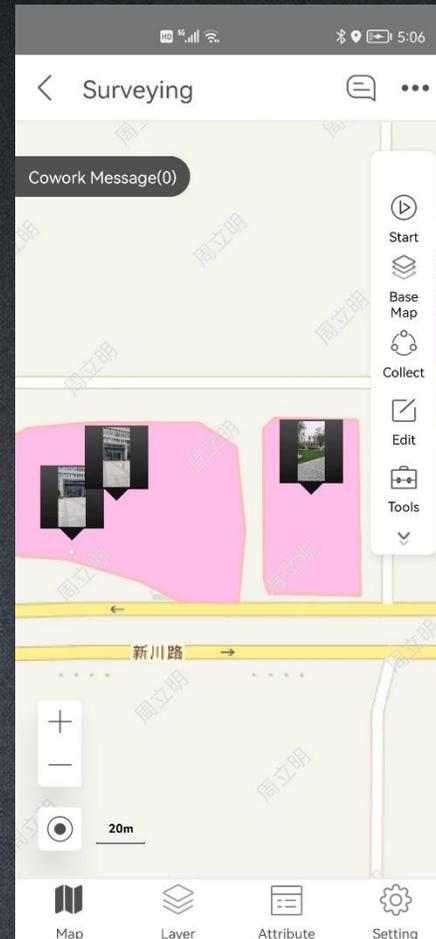
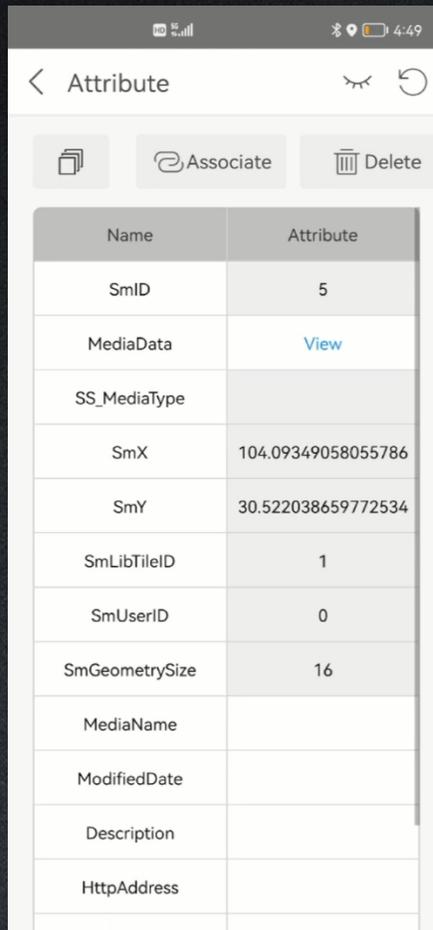
Choose Surveying on the iTablet – Select Map – Choose Co-work Survey Members – Confirm – End of create co-work task



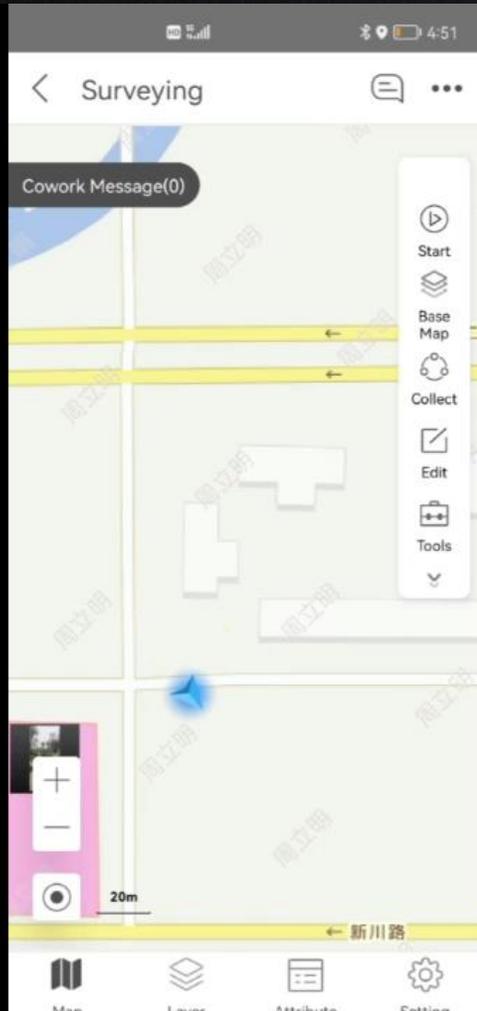
# Surveying Process



Choose Surveying Module – Surveying – Update Service – Submit the Survey Result -- Update service on the device of other users

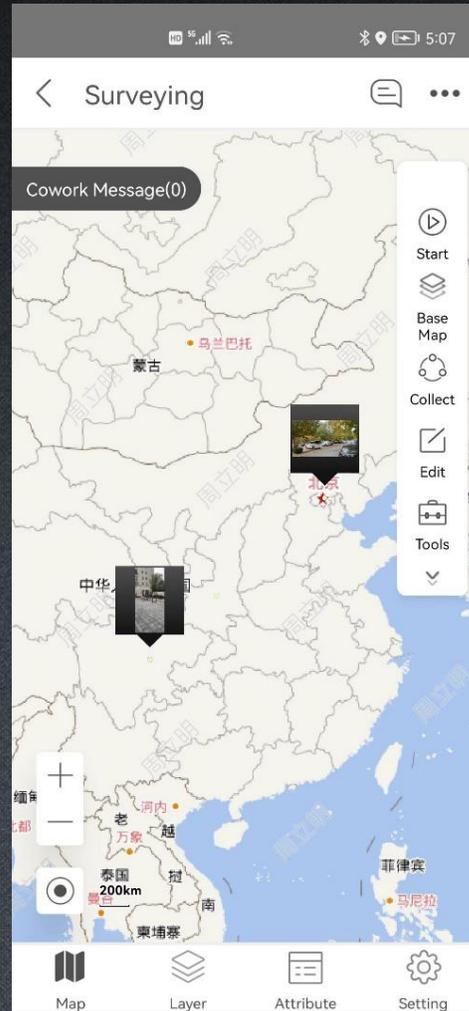


# Surveying Result

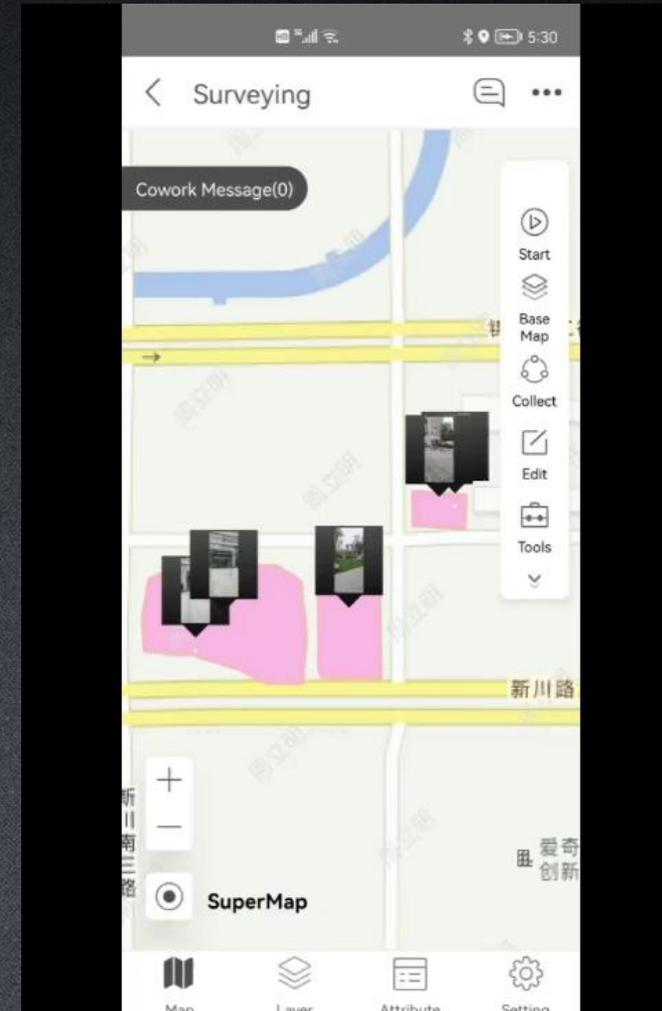


Co-work Surveying Task

P37



Co-work Surveying Result



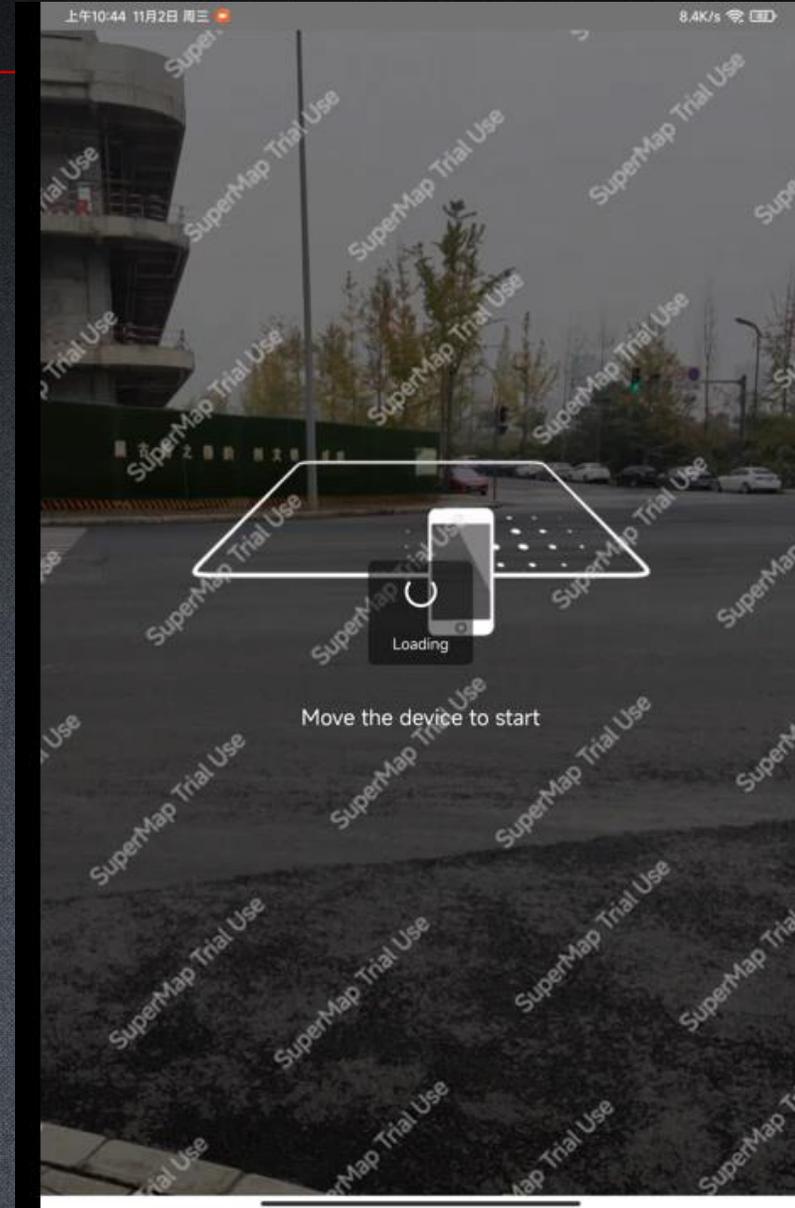
Data Service Synchronization & Consolidation

# AR Modeling Result

AR modeling application:

Display AR modeling results based on the coordinate data collected from the field collection process.

This is the example of the combination with AR map and real-world survey result.





## 4. Customized Development

---

Customized interface based on the iTablet;

Rebuild the base framework for business customization

# Customized interface



## 1. Build React Native environment

- Reference: <https://reactnative.cn/docs/getting-started/>
- react-native: v0.57.4; node: No higher than v12.10.0
- If you are copying the project for the first time, you need to backup the node\_modules, after installation of npm, re-copy the node\_modules into the iTalbet directory

## 2. App Icon and Launching Page

App icon and launch page need to be modified in the native code

### *Android:*

- Icon                    AndroidManifest.xml (MyProject/android/app/src/main/AndroidManifest.xml)
- <application> android:icon="App图标文件路径" </application>
- Launching Page    /layout/launch\_screen.xml

### *iOS:*

- Icon                    Images.xcassets
- Launching Page    launchScreen.storyboard

# Configuration File Structure



- Home page module customization (mapModules), mainly for the configuration of map function modules.
- Home page customization (tabModules)
- Interface configuration in App Tabs
- FunctionToolbar customization on the right side of the map.
- .....

字段名称	字段解释	字段类型	可选参数	是否必填
name	App标题	String		是
alias	App简称, 用于内部部分内容	String		是
version	config版本号	String		是
language	默认语言	String	CN, EN	否
about	关于的配置	Object	{ isShow: boolean, // 是否显示 url: String, / 关于的html链接, 待做 }	否
login	登录的方式	Array	["Online", "iPortal"]	否
tabModules	App Tabs中的界面配置	Array	["Home", "Friend", "Find", "Mine", Exmaple, ...] // Example为定制界面	是
mapModules	地图功能模块的配置	Array	[见表2]	是
infoServer	消息服务	Object	{ "url": //消息服务下载文件 地址 "fileName": //消息服务下载文件名称 }	若 tabModule s包含 Friend则 是, 反之否
mineModules	我的 功能配置	Array	[ {key:"IMPORT"}, //导入 {key:"MY_SERVICE"}, //服务 {key:"DATA"}, //数 据 {key:"MARK"}, //标 注 {key:"MAP"}, //地图 {key:"SCENE"}, //场 景 {key:"BASE_MAP"}, //底图 {key:"SYMBOL"}, //符号 {key:"TEMPLATE"}, //模板 {key:"MyColor"}, //色 带 ]	是

# Common Components



	Common Components	Description
1	Container	Interface containers
2	Header	Navigation bar
3	BubblePane	Pop up alert box
4	MTBtn	Image button with text
5	Input	Input box, display clear button when there is a value
6	Row	Multi-type lines Text + (Input boxes, radio boxes, numbers, text buttons)
7	SurfaceView	Drawing Board (eg: Box selection and cutting), Get the point location
8	TableList	List of Tables
9	Progress	Bar/Circular Progress Bar
10	CheckBox	Checkbox
11	SearchBar	Search box
12	MenuDialog	Finger-slide menu in the middle of the interface
13	FingerMenu	Fixed fiinger-slide menu
14	PopModalList	Bottom pop-up list
15	LinkageList	Secondary Linkage Menu
16	MediaPager	Media browsing components

# Business Customization



## 1. Initialization Demo

- Download git clone: <https://github.com/iMobileforJS/SMMobileDemo.git>
- To initialize the project, run “yarn install” in the project root directory (i.e. SMMobileDemo\ directory). Run the command “pod install” in the SMMobileDemo\ios directory

## 2. Download Related Packages and Demonstration Data

Address: <https://pan.baidu.com/s/1V9S3j6eL0-qvyVYrZHCTYw> Extraction Code: 6xzc

### *for Android:*

Data: Navigation\_EXAMPLE.zip, Save into /SMMobileDemo/android/app/src/main/assets/

aar Package: imobile\_for\_reactnative.aar & mediapipe\_hand\_tracking.aar

Save into /SMMobileDemo/node\_modules/imobile\_for\_reactnative/android/libs/

### *for iOS :*

Data: Navigation\_EXAMPLE.zip, Save into /SMMobileDemo/ios/assets/

Framework Library: SuperMap.framework

Save into /SMMobileDemo/node\_modules/imobile\_for\_reactnative/ios/iPhoneOS.sdk

# Business Customization



## 3. Project Configuration

- Android permission and permission configuration, according to the actual use of functions, add or delete permission items.
- Android 6.0 and above versions need to dynamically apply for permission to call in js

## 4. Run the Demo for Android

- Connect device, start service, install demos, and configure map location SDK permissions

## 5. Run the Demo for iOS

- Open the project in Xcode, connect the device, run the installation directly

## 6. Example of Conducting Navigation based on “imobile\_for\_reactnative”

```
import React from 'react'  
import { SMMMapView, SMap, FileTools, WorkspaceType }  
from 'imobile_for_reactnative'  
export default MapView extends React.Component {.....}
```

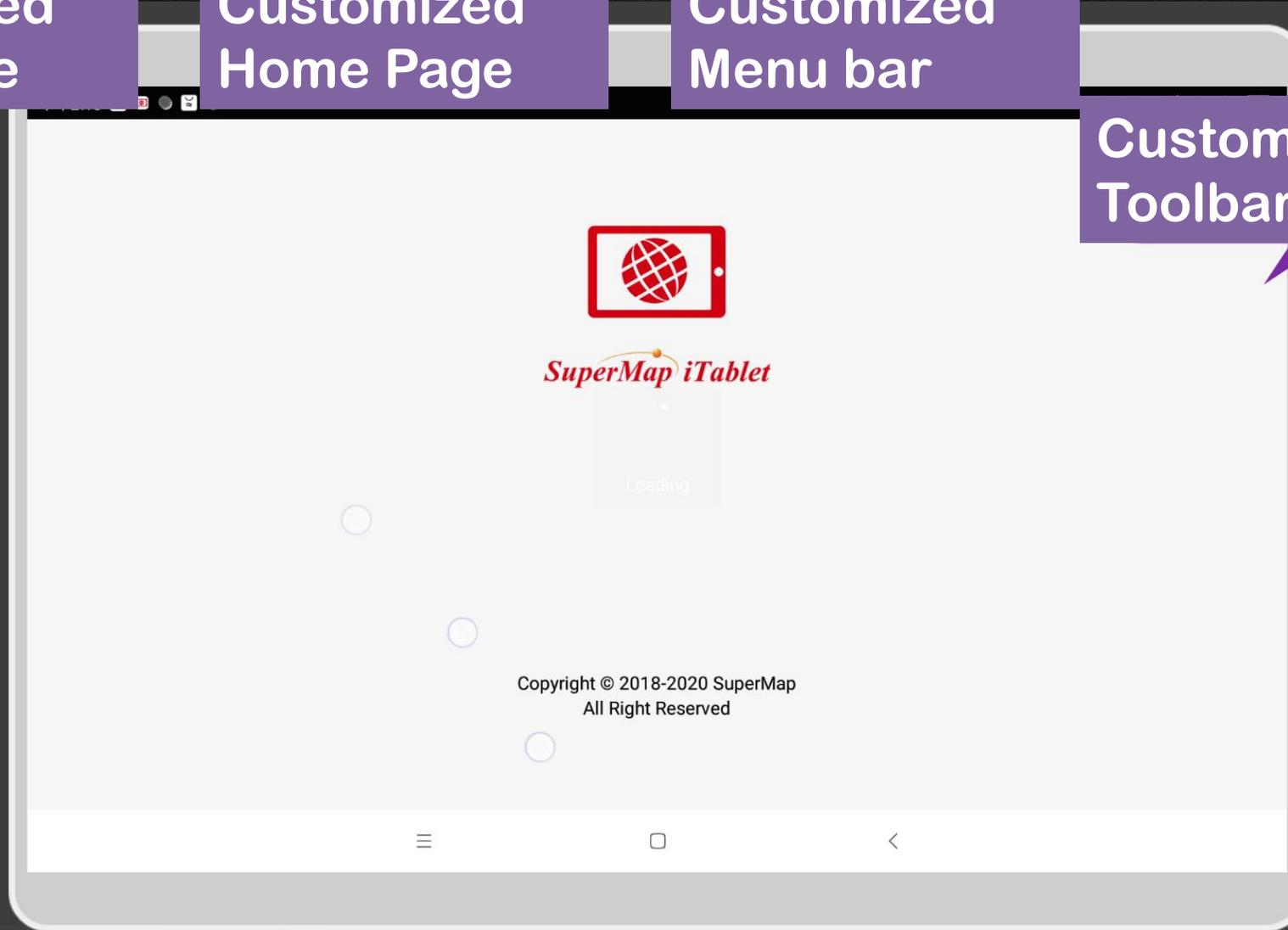
# Customized Start Page and Interface

Customized  
Start Page

Customized  
Home Page

Customized  
Menu bar

Customized  
Toolbar



**Thank you**

