

Topic: AR Application and Collaborative Data Collection of iTablet Product

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5th International Workshop on GIS Technology and Application

SuperMap GIS 11i Architecture

Terminal GIS for Desktop

- SuperMap iDesktopX
- SuperMap iDesktop

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SuperMap iExplorer3D *

Terminal GIS SDK for Components

- SuperMap iObjects C++/Java/.NET
- SuperMap iObjects Python
- SuperMap iObjects for Spark
- SuperMap iObjects for Blockchain
- SuperMap Hi-Fi 3D SDKs for Unreal
- SuperMap Hi-Fi 3D SDKs for Unity

Cloud GIS Server

- SuperMap iServer
- SuperMap iPortal
- SuperMap iManager

Edge GIS Server

SuperMap iEdge

• SuperMap Online

Terminal GIS SDK for Mobile

Edge

- SuperMap iMobile for Android/iOS
- SuperMap iMobile Lite for HarmonyOS *

Terminal

- SuperMap iTablet for Android/iOS
- SuperMap ARSurvey for Android/iOS
- SuperMap UAVSurvey for Android *

Terminal GIS SDK for Web

- SuperMap iClient JavaScript
- SuperMap iClient3D for Cesium

Cloud

SuperMap iClient3D for WebGL *



Android & iOS System Supported



Android App Stores

Google Play



App Store

Great Interface Adaptability SuperMap



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Function Modules





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



Data Preparation (BIM)





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Co-work Surveying Task







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).

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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



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ModelEdit2@test1027	2022/10/28 星期五 1
ModelEdit@test1027.bru	2022/10/28 星期五 1
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🔚 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 fileds and input the corresponding attribute data.

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Save the Workspace

Save the file datasource and workspace. Process all the 3D BIM models according to the procedure above.

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Output Window Task Manager										



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.







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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.



SuperMap

Release REST 3D Service



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

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Release REST 3D Service



Select the REST 3D Service type. The published 3D Service will appear after successful publication.

×

Quickly publish service-Please select the service type						
Service types supported by current data s can be selected).	source (more than one					
Select/Deselect						
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REST Data Service	\bigtriangledown					
REST 3D Service	\bigtriangledown					
REST Spatial Analysis Service	\bigtriangledown					
REST Transportation Analysis Service	\bigtriangledown					
REST Traffic Transfer Analysis Service	\bigtriangledown					
REST 3D Network Analysis Service	\bigtriangledown					
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Overview Se	ervice Managerr	ent Wo	orkspaces	Interfaces	Component(S	iet)s Prov	vider(Set)s	Multi Proc	cess Proxy	Blockchain Certificate Management Advance
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Web Printin	ıg Services 💽									
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3D Services	2									
3D-CBD Service inter	rface: rest	3D- Ser	SuperMap	Building ce: rest						
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REST 3D Service Address

http://ip:8090/iserver/services/3D-

SuperMapBuilding/rest/realspace/scenes/SuperMa

C O localhost:8090/iserver/services/3D-SuperMapBuilding/rest/realspace/scenes/SuperMapBuilding

Co Server

⊨ home > realspace > scenes

scene (SuperMapB

Description:

The scene represents a specific scene. The scene resource represents a specific 3D scene. The major component of the shape of the Earth. Information about the atmosphere, the camera, the fog, the 3D data layers, etc., is then dis approximate the reality. The XML representation of this resource is the standard description of Scene generated freclients of 3D service can read this XML file for rendering a 3D scene. Implementing the GET request on the scene representation, which displays the 3D scene at the client of a 3D service, showing a 3D globe with all the layers in

🚯 SuperMap iServer Manager 🗙 🊯 SuperMap iServer REST API 🗙 🚯 localhost:8090/iserver/service: 🗙 🚯 打开三维场景

Scene information:

3D layers:

Scene name: SuperMapBuilding Visible altitude of fog: 20000.0 Scale visile: false Max distance of camera: 47836027.50000000000 Min distance of camera: 6367103.00000000000





103.0000000000





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.



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







*

Effect Demonstration (Tunnel, Pipeline Network, Buildings)









Effect Demonstration (Add Video and 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:

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



Use iPortal server to build a dedicated server

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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.

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SuperMap	CaiJiGrou	p_ America				+ Invite Member	X Dismiss Group	鐐 Setting	Invite Member	×
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Map	Service	Scene	Data	Insight	MapDashboard	Gro	up Members(1)	Ą.	Reason	
0 Maps in t	otal				Search resources in current group Q Modif	ied Time ∽ ↓	每洋紫心(Creator)			Close 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.

SuperMap Online English - Home Resource	✓ WebApps ✓ Pricing ✓ Storage ✓ Develop ✓ Search G	IS resources Q Console•		
My Work (2) My Group (2) My Collection	on ¥ My Purchase 全部资源 ∨ Upd	late Time 💠 📔 Pageview 🗘		
	Publish Service X			
A	Remaining number of publishable services		Add Group	Х
	Select the types of services to be published select all		Search Q	Added groups have \square Download \lor permission
	REST Map Service REST Data Service REST Spatial Analyst		\Lambda CaiJiGroup_America	\Lambda CaiJiGroup_America 🛛 🕲
UataCaijiMap.zip	REST vector The service WMIST.1.1 Service WMIST.3.0 Service WMITS1.0.0 Service WMIST.CHINA Service WFS1.0.0 Service		8 test123450	
	WFS2.0.0 Service			
	Cancel Next			\triangleright
▲ 海洋紫心 Nominate :				
Edit Property Delete				
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Help Document What's New Update	Platform Service Agreement Membership Service Agreement Resource Use Agreement			Close Confirm

Create Online Co-work Task



Create online surveying co-work task on iTablet. Choose the specific group, click on the New Task.

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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	是否必慎
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 }	柘
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 tabsModule s包含 Friend则 是,反之否
mineModules	我的 功能配置	Arrary	[{"key":"IMPORT"}, //导入 {"key":"MY_SERVICE"}, //服务 {"key":"DATA"}, //数 描 {"key":"MARK"}, //标 注 {"key":"MAP"}, //地图 {"key":"SCENE"}, //场 景 {"key":"SYMBOL"}, //底图 {"key":"TEMPLATE"}, //模板 {"key:""MyColor"}, //色 带]	是

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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 { SMMapView, SMap, FileTools, WorkspaceType } from 'imobile_for_reactnative' export default MapView extends React.Component {.....}

Customized Start Page and Interface



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Thank you