

# SUPERMAP COMMUNICATIONS

[www.supermap.com](http://www.supermap.com)

June 2021 | Issue 01

## Explore the Future of GIS Industry

Join the SuperMap  
GIS Contest

Dimension Upgrading  
of Cadastral Data -  
SuperMap Helps the  
Digital Construction  
of 3D Cadastral in  
Turkey

How to Import  
BIM Data into GIS  
Platform

Photo by Song Guanfu

## ***Who is SuperMap?***

SuperMap was founded in 1997, focusing on the research, development and application services of GIS related software technology. It consists of SuperMap Software (parent company, stock code: 300036), wholly owned subsidiaries, and holding subsidiaries, as well as domestic branch offices and agencies. The total staff number of SuperMap is more than 4000 and the annual revenue reached 260 million USD (1.7 billion RMB).

1997  
Founded

## ***How has SuperMap Performed So Far?***

As a GIS software manufacturer, SuperMap has made a great effort on the development of GIS platform. It now has the 3rd largest share in global GIS market, while the 1st largest share in Asian GIS market (from ARC Advisory Group). It has three business lines of platform software, application software and cloud service, and more than 1000 echo partners to empower the informationization of governments and enterprises in industries. Now, SuperMap ranks 1st in Chinese GIS market and has developed distributors and partners in over 40 countries and SuperMap GIS end users in over 100 countries.

100+  
Countries'  
Users

1000+  
Partners

## ***What will SuperMap be?***

With “Innovate IT Value with Geo-intelligence” as the mission and “Create Cutting-edge Technologies, Line up Every Corner of the Planet with Geo-intelligence” as the vision, SuperMap will keep providing advanced GIS technologies and products to more global users.

3000+  
Employees

***SuperMap***

# Better Communications for Stronger Collaborations

After years of our global interaction with esteemed users and enthusiasts through our social media platforms and multilingual website, SuperMap has decided to launch the English version of SuperMap Communications, a quarterly magazine which provides an in-depth and comprehensive perspective to the latest developments in the SuperMap GIS technology. This magazine was brought to life with the primary goal of establishing better connections with a more diverse audience. We also aim to promote cooperation with international partners, foster a network that shares ideas more openly and effectively, and tell the stories of the people behind SuperMap.

As I write these opening words, I can't help but go on a trip down the memory lane of SuperMap Communications. It has been 15 years since the Communications launched its inaugural issue in Chinese. Throughout the years, it has been a resource hub for the thriving geospatial industry in China, showcasing a variety of topics that range

from innovative geospatial solutions to expert interviews.

SuperMap Communications has also been a witness to the rapid development of SuperMap. Since its establishment, SuperMap has been dedicated to the technological and scientific innovation of Geographic Information Systems and has developed a full line of GIS software products. The products have been widely used in almost every field related to geospatial applications in the country, playing a great role in the geospatial industry. Now, SuperMap is the leading GIS software company in China.

The fast-developing information technology (IT) industry is creating an enormous impact on both GIS technology and GIS applications. In recent years, SuperMap has made a great effort on the development of the GIS platform with Big Data, Cloud Computing, AI, and Blockchain technologies. On top of that, we have developed a 3D GIS platform, which is not only for 3D visualization, but also for 3D GIS operations, such as spatial query and analysis.

These new developments have profoundly changed how developers and users approach GIS applications.

Apart from developing full-range products, we constantly seek to communicate with the GIS community by providing regular training courses for partners and clients and supporting GIS education in colleges and universities. The SuperMap GIS Contest, 9.15 GIS Festival and Collaborated GIS Labs are some examples of our effort to communicate with the younger generation who are just starting to learn about GIS. In 2018, we started to organize the SuperMap GIS Contest for overseas students, and we hope more students will join the contest this year.

Through SuperMap Communications, we seek to strengthen the ties between developers, researchers, experts, and practitioners. We hope the SuperMap Communications could help us communicate better, embrace openness, and cooperate for mutual benefit.



Chairman of SuperMap  
ZHONG Ershun

钟耳顺

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SUPERMAP COMMUNICATIONS

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SuperMap GIS



SuperMap



SuperMap\_GIS



SuperMap GIS



supermap\_gis

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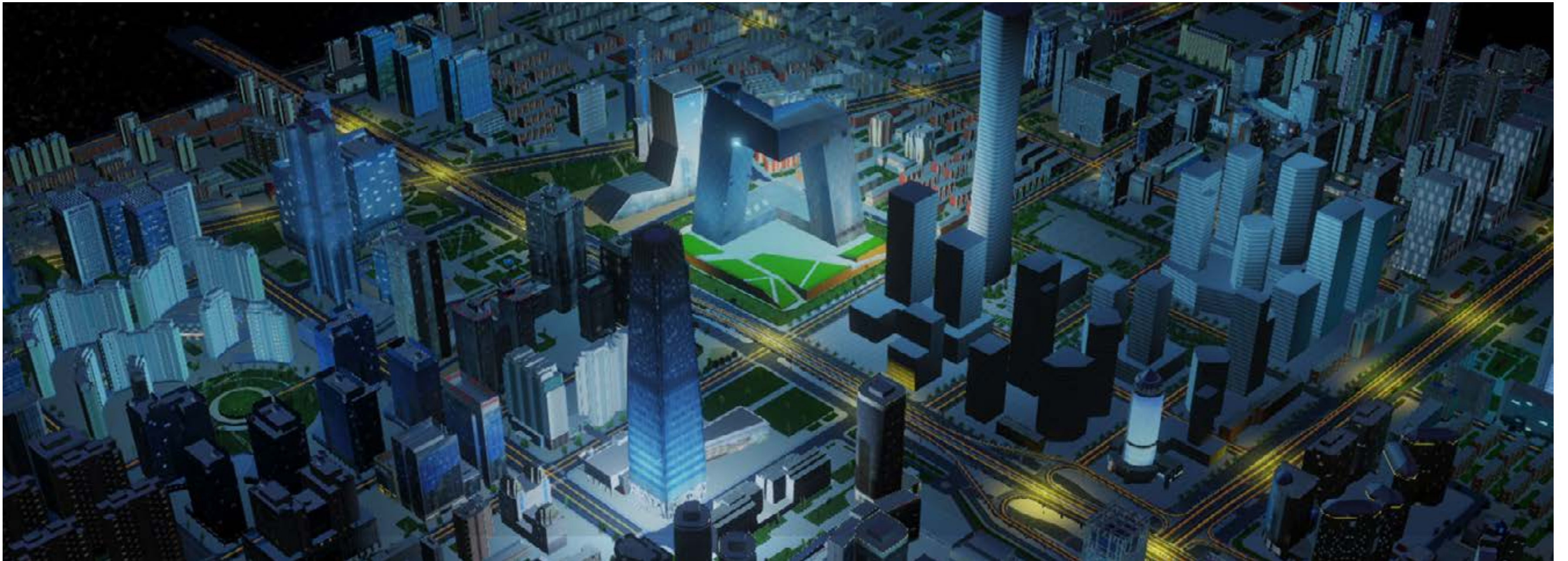
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FOCUS

# Explore the Future of GIS Industry

**Join the SuperMap  
GIS Contest**



# 2021 SuperMap GIS Contest

## The 19th SuperMap GIS Contest

Opens to the college and university students in everywhere of the world.



SuperMap encourages all the college and university students to create and share innovative GIS projects. To give you the opportunity to strengthen your skills, you are invited to enter The 19<sup>th</sup> SuperMap GIS Contest.

This Contest is open to the college and university students in everywhere of the world who can use SuperMap technology to present innovative projects with a unique GIS vision. The contest will give you opportunities to stimulate the enthusiasm of learning GIS technology, strengthen the application skills of programming, cultivate innovative ability and collaborative spirit. You can at the same time have the chance to give back to the community and contribute to the rapid and high-quality development of the GIS industry.

The contest is organized by The Geographical Society of China, China Association for Geographic Information System, SuperMap Software

Co., Ltd., and supported by HUAWEI and International Federation of Surveyors (FIG). All the college and university students can enter this contest by team or individual, and each team should consist of 1-4 students and up to 2 instructors.

Four categories are set for the contest. They are Mapping, Application Analysis, Paper and Development. Our invited judges will select first, second and third-place winners for each category on the principle of openness, fairness and justice. Every winner will get the corresponding certificate and bonus.

If you are interested in this contest, please note that the Registration starts from **March 31, 2021**, and the Submission Deadline will be on **August 31, 2021**.

More detailed information about the registration, requirements and technical training can be

found on the official website: <http://www.giscontest.com/en>.

For any questions, please feel free to contact Ms. Emma via [zhangyuanyuan@supermap.com](mailto:zhangyuanyuan@supermap.com)

## Categories

**Mapping Group:** Free topic selection. It requires to create a specific thematic map through data processing and mapping methods.

**Application Analysis Group:** Free topic selection. It requires to solve the real needs of industrial application and daily life through the analysis and mining of spatial data.

**Paper Group:** It requires to be an academic and application research based on GIS, such as application cases, industrial solutions, 2D and 3D integration application, current development status and trend research, the application of emerging technologies such as big data and AI(artificial intelligence), development skills and experience, etc.

**Development Group:** Free topic selection. It requires to design and develop application systems with the current mainstream IT technology and reflect the application value of GIS in various fields.

## Judging

The invited judges will select first, second and third-place winners for each category on the principle of openness, fairness and justice.

For Mapping, Application Analysis and Paper group, judges will select first, second and third-place winners directly.

For Development group, judges will select a finalists first, and then select first, second and third-place winners from the finalists by an oral defense.



# Background

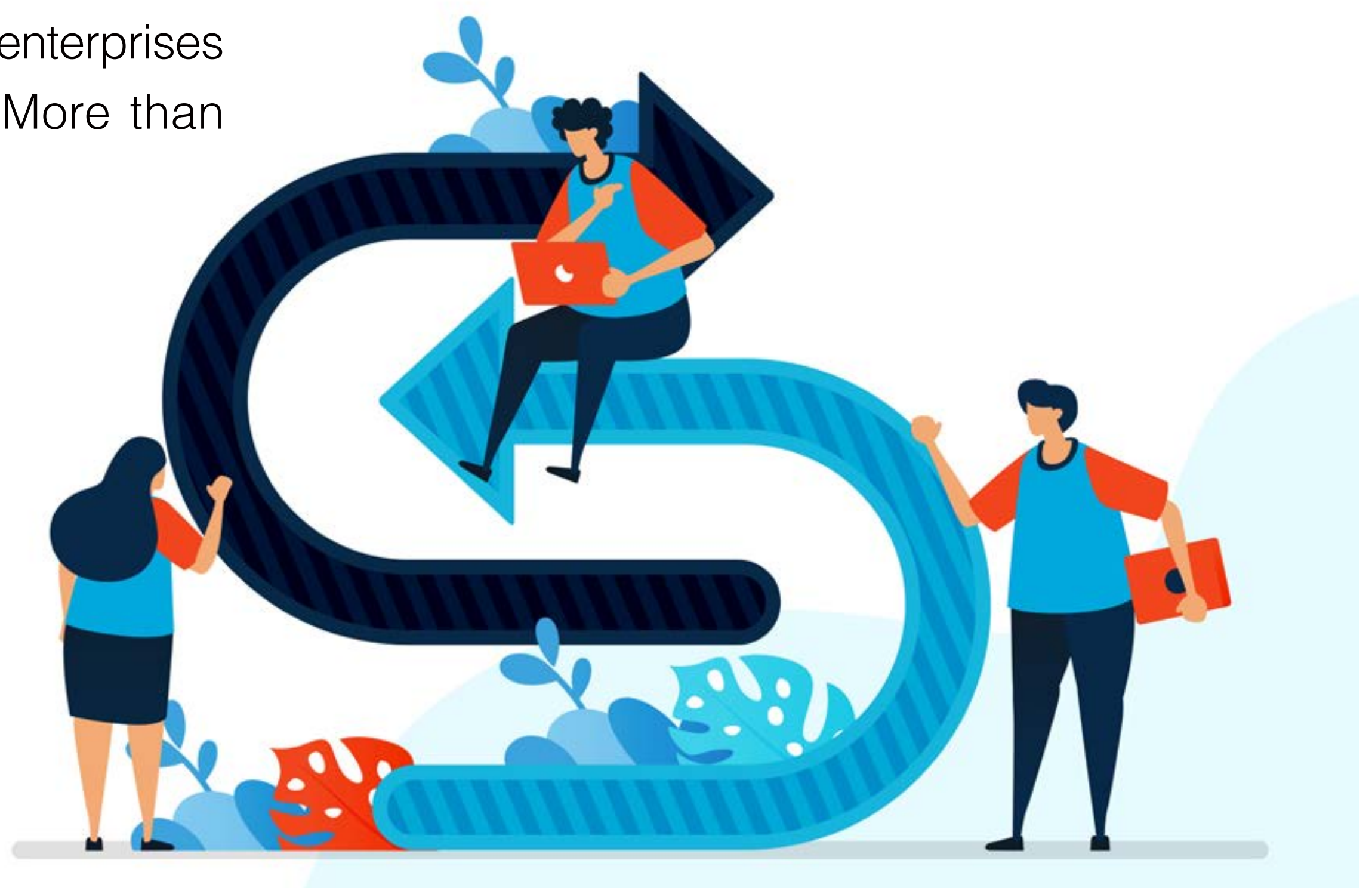
The SuperMap GIS Contest is an innovative technology contest that focuses on GIS (Geographic Information System) field and opens to all college and university students. It provides an open competition platform with a rigorous and innovative competition system and a fair and authoritative stage.

The contest aims to provide more practice and display opportunities for students majoring in GIS, develop their spatial thinking ability, enhance their GIS skills, promote students enrollment, improve university teaching and scientific research, and trains a large number of outstanding talents for the sustainable development of the GIS industry.

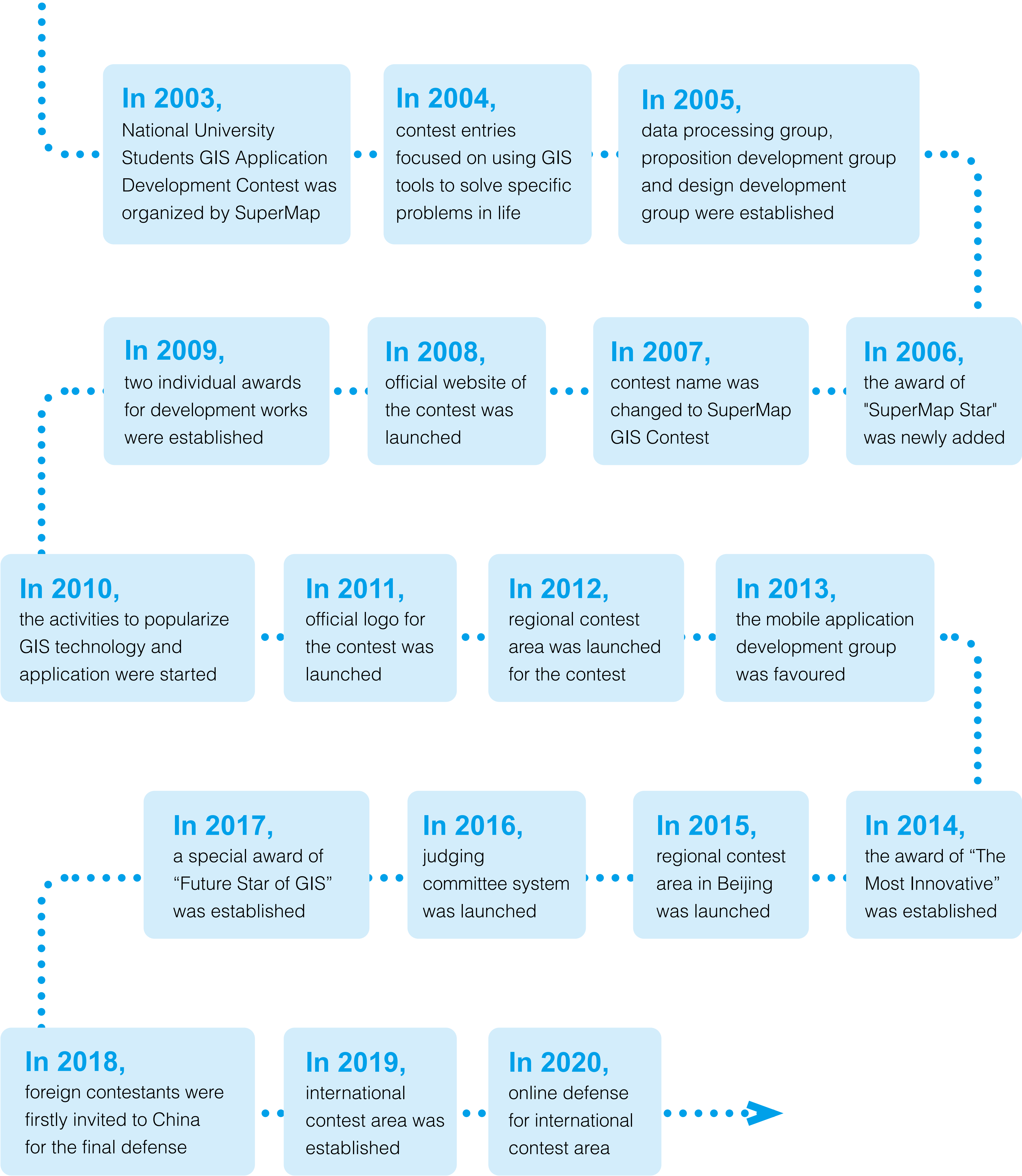
SuperMap GIS Contest, as the earliest GIS competition in China, has been strongly supported by authoritative organizations at home and abroad (such as the Geographical Society of China, China Geographic Information Industry Association, FIG, etc.) and large enterprises (such as Huawei) during 18 years. More than

30,000 students from over 200 domestic colleges have participated in the contest, which extensively attracted attention from teachers, students, GIS experts, and many GIS practitioners. It has become a stage for GIS professionals to compete over years of efforts.

In recent years, the contest has paid particular attention to provide more opportunities for GIS students and young GISers from all over the world to learn and demonstrate advanced GIS theories. In the past two years, over 600 groups of students from 63 countries around the world were gathered to learn, communicate, innovate, and practice together, and nearly 300 works were received from them. Moreover, excellent works among them were picked out to participate in onsite or online award evaluation, which stimulated the enthusiasm of learning GIS technology and contributed to the development of GIS talents worldwide.



# Milestones



# Message from Instructors

**A**fter 16 years of hard work, the SuperMap GIS Contest has become one of the most authoritative, fair, professional and influential competitions for college students in GIS industry. In addition to domestic colleges and universities, many international teams participated actively. This is also the vivid proof of the growing influence of this contest.

Through SuperMap GIS Contest, more and more GIS students have learned more about new technologies and applications in the professional field. Those improved their practical application level of professional

theories and the ability to solve hot issues in the industry and society.

We hope that more domestic and international partners will participate in the SuperMap GIS Contest, and we also look forward to more and more creative works appearing on this stage. Let us gather in this grand event, discuss works, make friends, explore together, and constantly climb new heights of geographic information science. We also wish the SuperMap GIS Contest a better and better future!

**Instructor from Wuhan University, China**

SuperMap GIS Contest has made outstanding contributions to the training of GIS talents in the industry. This professional competition can highly develop students' GIS practical ability, as well as campus education.

It was in 2007 when we firstly participated in this contest. Although we did not win any awards at that time, we never gave up. Until now, we have participated in SuperMap GIS Contest for 12 years. As a team leader, in the past 12 years, I have seen the fairness and openness of the competition, which made us teachers and students have great admiration.

As teachers, it is our responsibility to train outstanding students. The contest itself is not only a competition for development ability, but also a competition for teamwork, personal character and overall quality. This places high demands on the contestants. I believe that there will be more and more universities participating in such international competitions, and the competition will become more and more challenging. At the same time, GIS human resources will become better and better!

**Instructor from Liaocheng University, China**

# Message from Winners



We won the challenge prize in the 18th SuperMap GIS contest last year. At first we did not know about SuperMap GIS, after knowing about that during the lockdown, we did several sessions organized by SuperMap GIS on mapping and other application of SuperMap. We would like to pay our heartiest gratitude to Qin Zhang who took all the sessions and provided us with all the technical support. We would like say our special thanks to Nusrat Zahan Jarin who provided us all the information related to the contest and helped us during the submission time. Thank you SuperMap for aiding us in our Geospatial journey.

**Anika Nawar Mayeesha & Md. Zayed Abdur Razzak,  
University of Dhaka**

I would like to Share my experiences about GIS contest and various webinar which have been organized by SuperMap Software Company. In the last SuperMap contest, I won the 3rd position for the Mapping Category. I used SuperMap iDesktop 10i in this process which is very easy to use. Overall, I would like to say that It is very innovative and creative platform. I believe, in the near future, it will also help us to solve various GIS related works and aspects.

**Jobaida Akter Kakon, University of Dhaka**



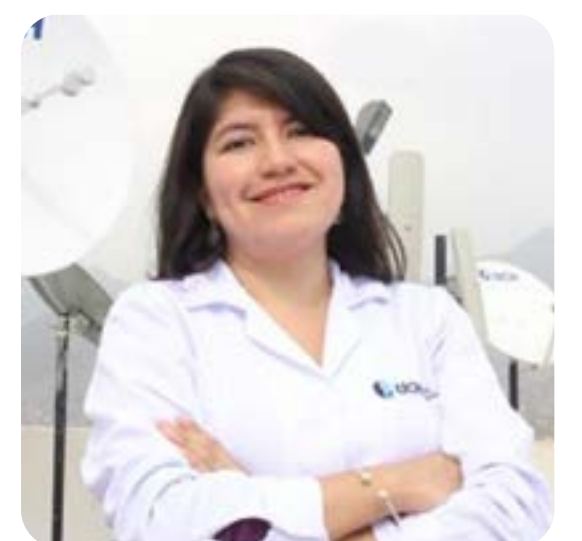


I want to share my Experiences regarding the 18th SuperMap GIS Contest. I achieved the second position in the development category of this contest. Well, to be frank, at first, I really had no idea about the software and how to get things done with this. Then, I heard about the mini classes organized by SuperMap technical team where there were recorded videos, live Q n A and assignments after every classes. This really introduced me to all the SuperMap tools and helped me to complete my project. Even after the classes ended when I was in the middle of my project, all I had to do was to ask for their help and they were really happy to help. To talk a little bit about the software, yes I admit that it took some time for me to get acquainted with the new software, but at the end I would like mention that it is a really good software where we can achieve the result we need in a much efficient way. So to sum up my experiences in this competition, it was really very good. I welcome and urge everyone to take part in this competition, to broaden our knowledge in the geospatial analysis world and help make a better world.

**Bishal Roy, Begum Rokeya University, Rangpur**

It was the first time that we used SuperMap technology to make maps, and we liked that the environment of the tool was very intuitive, in addition to the fact that as a developer, you could have all the data of your different layers very organized, in that sense, it was a tool very friendly for GIS development.

**Natalia Indira Vargas Cuentas, Business on Engineering and Technology S.A.C. - BE Tech (Peru)**



# Training

In order to bring participants a better understand and familiarize with the competition process, rules and software operations, we carry out a series of training courses and guidance for different groups. Those courses adopt a theoretical explanation + practical demonstration mode to guide the participants in technical operation, help them learn, master and practice SuperMap GIS technology, and complete their own works.

In 2020, under the difficult situation of COVID-19, we organized more than 20 online training in English, French, Spanish, Turkish and Russian, which provided all contestants with a series of guidance, including competition introduction, software instruction, technical guidance, ability improvement, topic selection assistance, work appreciation, etc. It encouraged contestants to practice and improve GIS skills while proficient in applying GIS software.

In 2021, we also organized online training camp for all categories. From May 17, 3 weeks of training for all categories will bring you:

- 16 topics covering all categories
- Quickly master SuperMap GIS software
- Improve your GIS development skills, covering the whole process knowledge + practical skills from theoretical explanation, data processing to secondary development
- Interactive communications to solve the problems in creating works

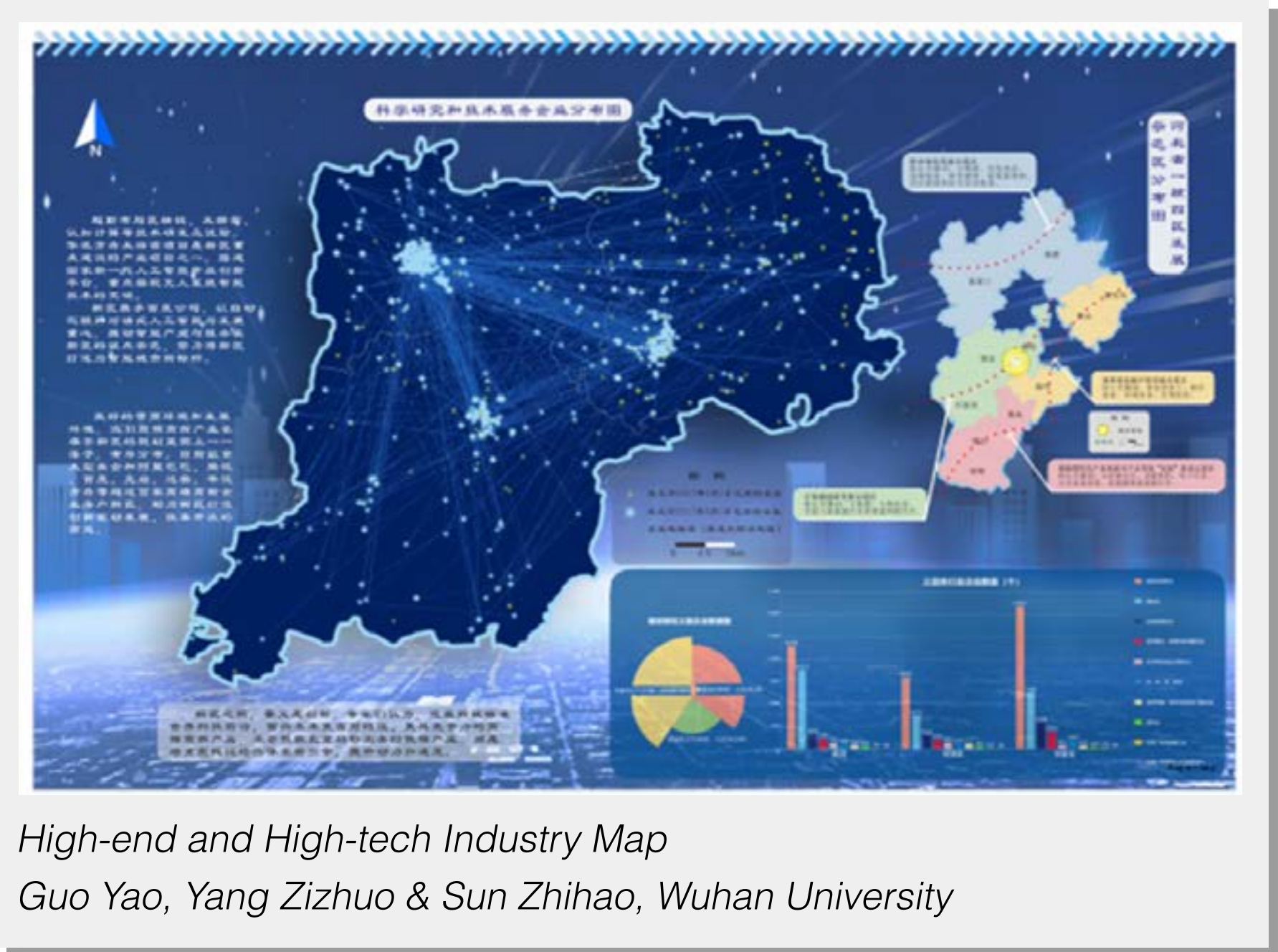
## Topics:

General Introduction of 2021 SuperMap GIS Contest	
Mapping Group	<ul style="list-style-type: none"> <li>• iDesktop Installation and Basic Concept</li> <li>• iDesktop Data Processing</li> <li>• iDesktop Symbolization and Thematic Mapping</li> <li>• iDesktop Map Layout and More Topics for Mapping</li> </ul>
Application Analysis Group	<ul style="list-style-type: none"> <li>• Data Preparation and Importing</li> <li>• Spatial Analysis</li> <li>• Network Analysis</li> <li>• Statistic Analysis</li> <li>• More Topics and Awarded Works over the Years</li> </ul>
Development Group	<ul style="list-style-type: none"> <li>• Preparation for Development</li> <li>• Map Display and Measurement</li> <li>• Query and Search</li> <li>• Modify Features on Web</li> <li>• Create and Delete Features</li> <li>• Generate 3D Scene and Publish 3D Service</li> <li>• Develop 3D GIS Web Application</li> </ul>

Contestants can find relevant training videos on Youtube SuperMap Channel (SuperMap GIS) as well. If you missed the live training or some key points, please kindly learn again on Youtube or feel free to contact us via [global@supermap.com](mailto:global@supermap.com).

# Works Gallery

## Mapping Group



High-end and High-tech Industry Map  
Guo Yao, Yang Zizhuo & Sun Zhihao, Wuhan University



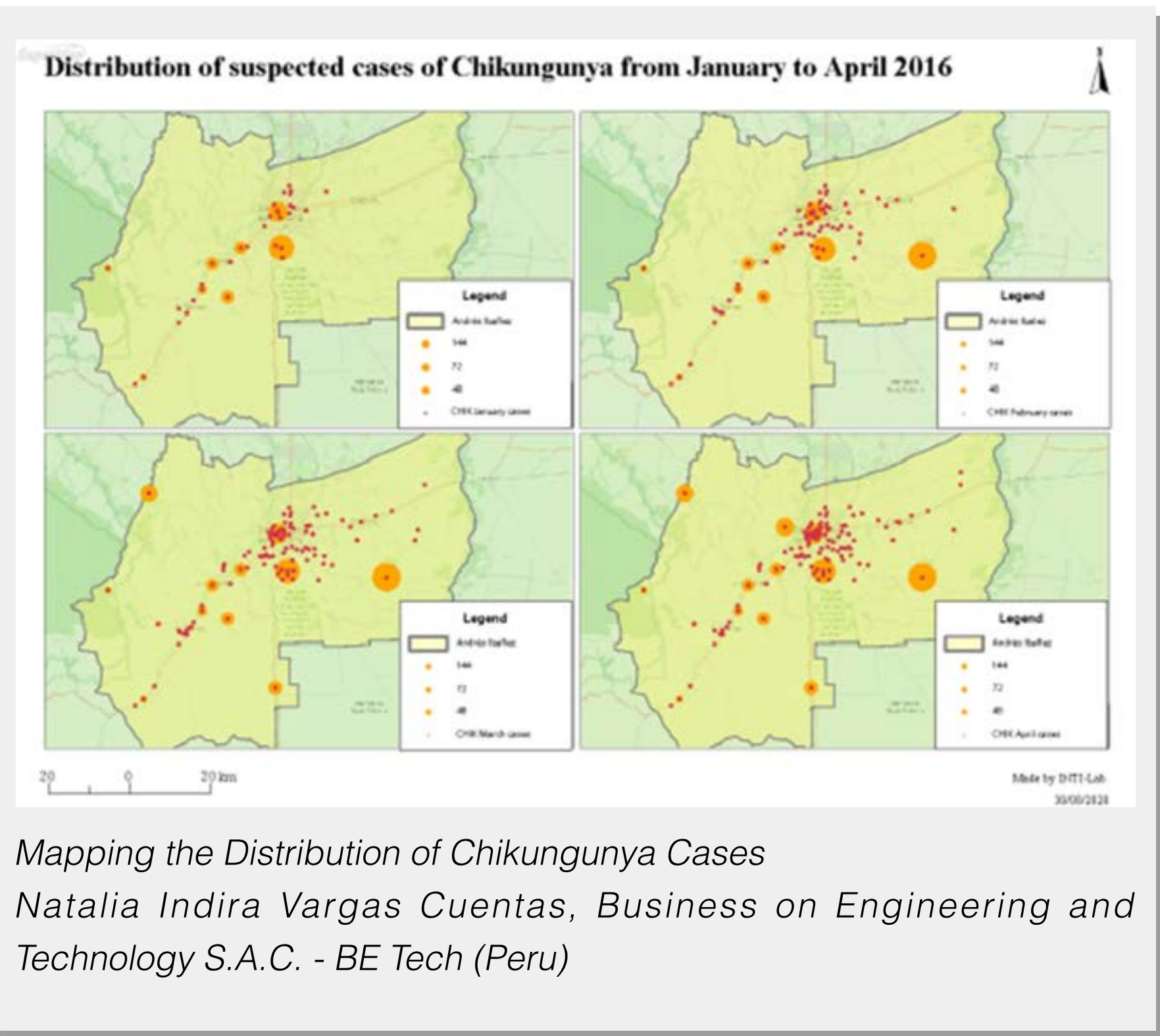
Terrain Map of Quancheng  
Wang Yanfeng, Zhou Zhilu, Liu Siyuan & Wang Ping, Shandong Water Conservancy Vocational College



Cartografía territorial de los sentimientos de las víctimas del conflicto armado en Colombia representado en el cine arte  
Heberto Rincón Rodríguez, Universidad de Caldas (Colombia)



Earthquake Activities in Turkey And Surrounding Areas, 2003-2019  
ELIF ERKEK, Eskisehir Technical University (Turkey)

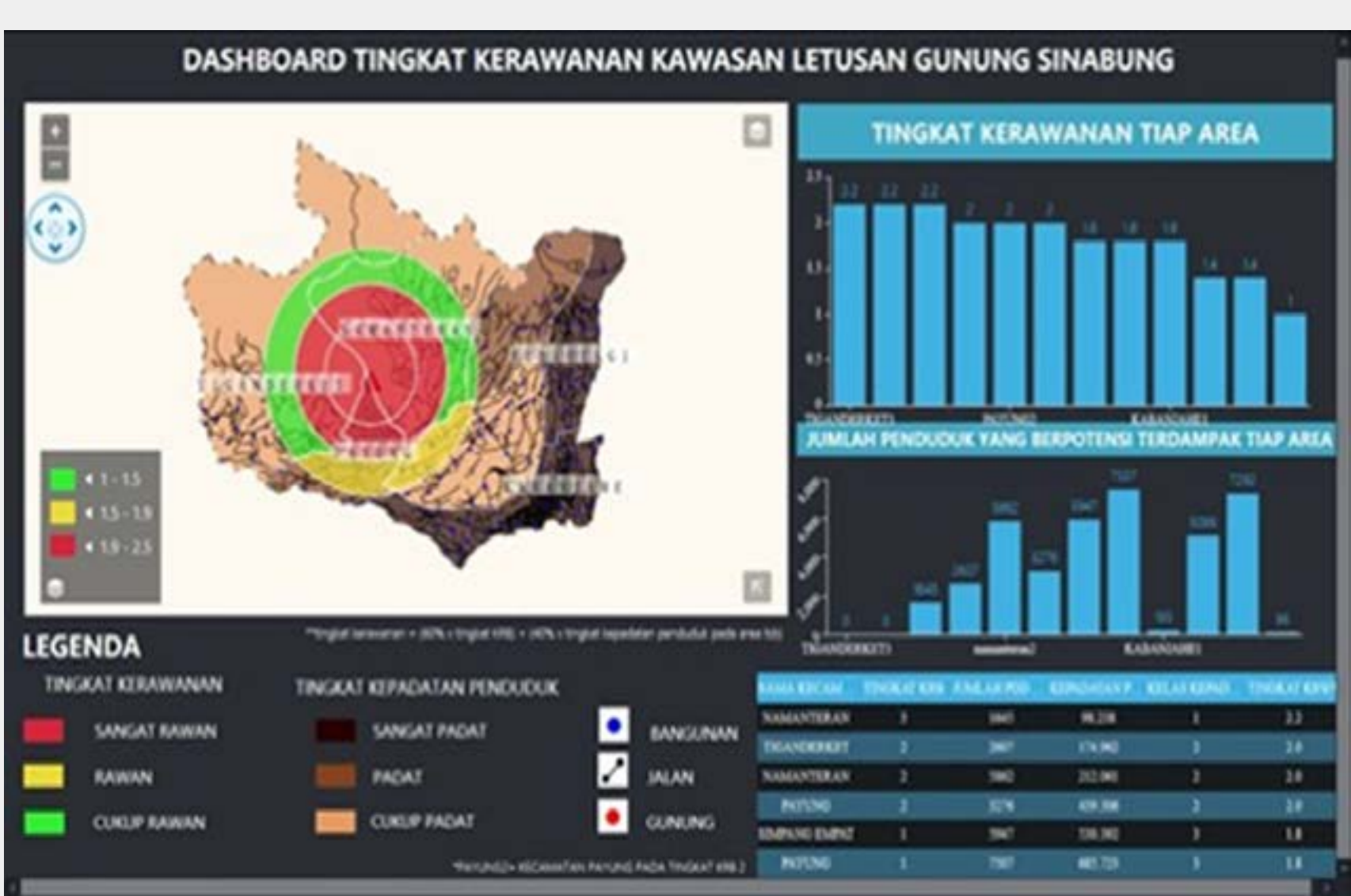


Mapping the Distribution of Chikungunya Cases  
Natalia Indira Vargas Cuentas, Business on Engineering and Technology S.A.C. - BE Tech (Peru)

Application Analysis Group



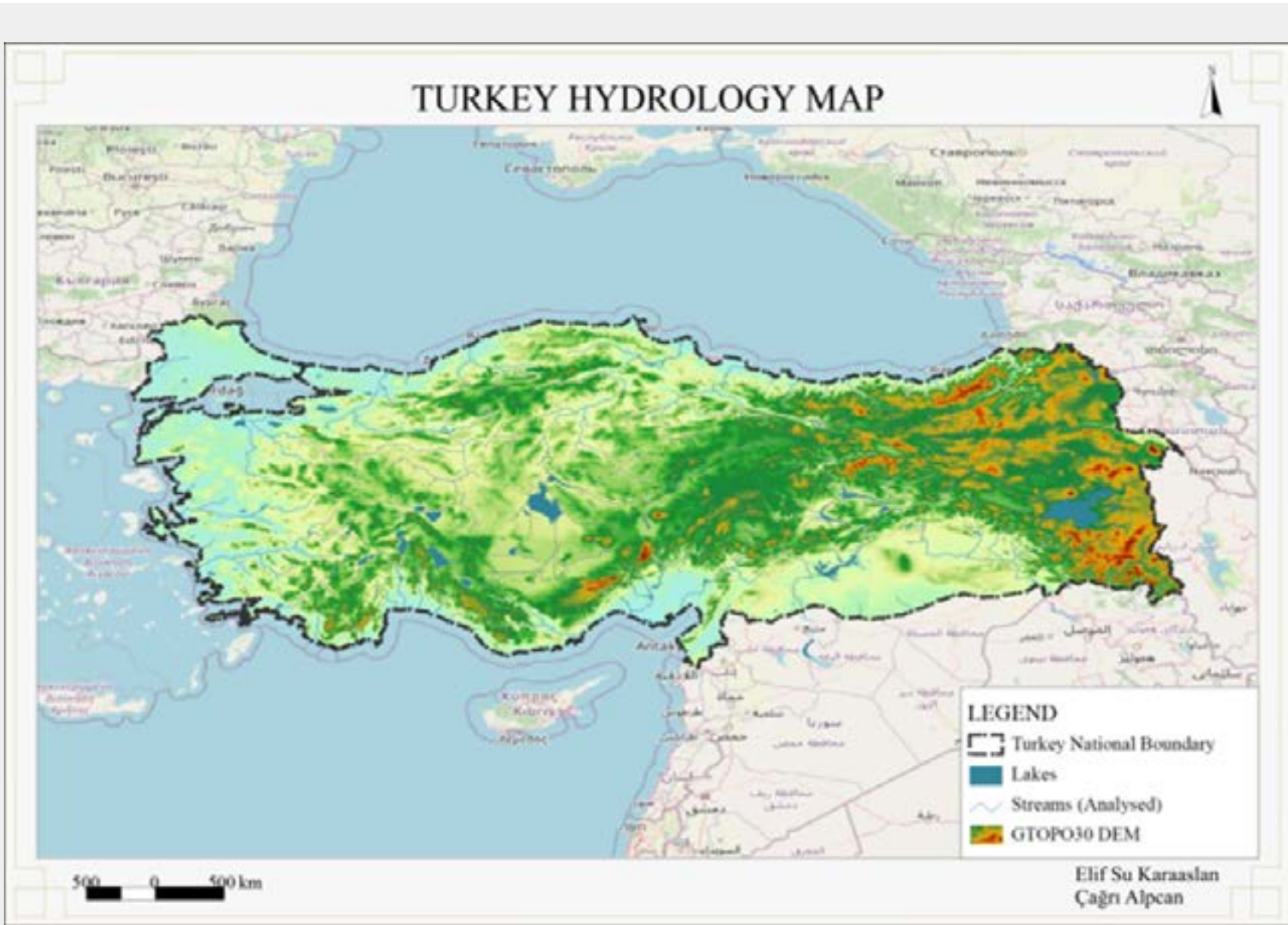
Location Analysis of Retailer Dispersion based on GIS and AHP  
Fu Yuanhao, Bao Yuhui, Pu Haochen & Xiao Jin, Hubei University



Determination of the Vulnerability Level of Volcanic Eruption Areas Using Analytic Hierarchy Process (AHP) Method  
Alfian Bima Nur Sa'id & Rahmat Hidayat Siregar, Gadjah Mada University (Indonesia)



Research and prediction analysis on coupling coordination of urbanization in Suzhou  
Xuhui & Zang Xiaoyu, Liaocheng University

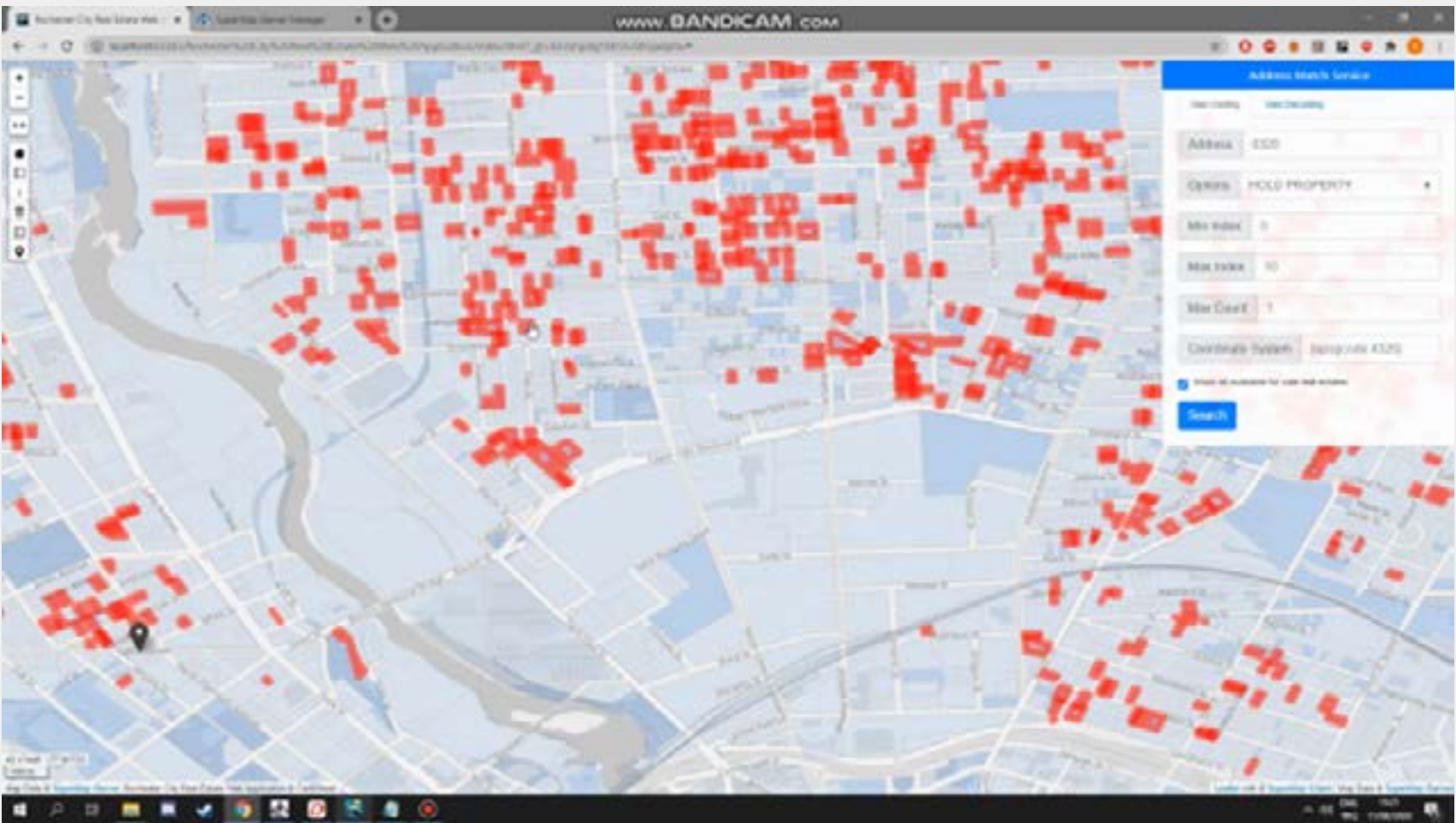


Hydrological Analysis of the Topographical Structure of Turkey by Using Gtopo30 Dem Data  
ELIF SU KARAASLAN & ÇAĞRI ALPCAN, Dokuz Eylül University (Turkey)




SuperMap Oblique Photography Technology and AI GIS Technology  
Mohsen Hossein Pour, Islamic Azad University (Iran)

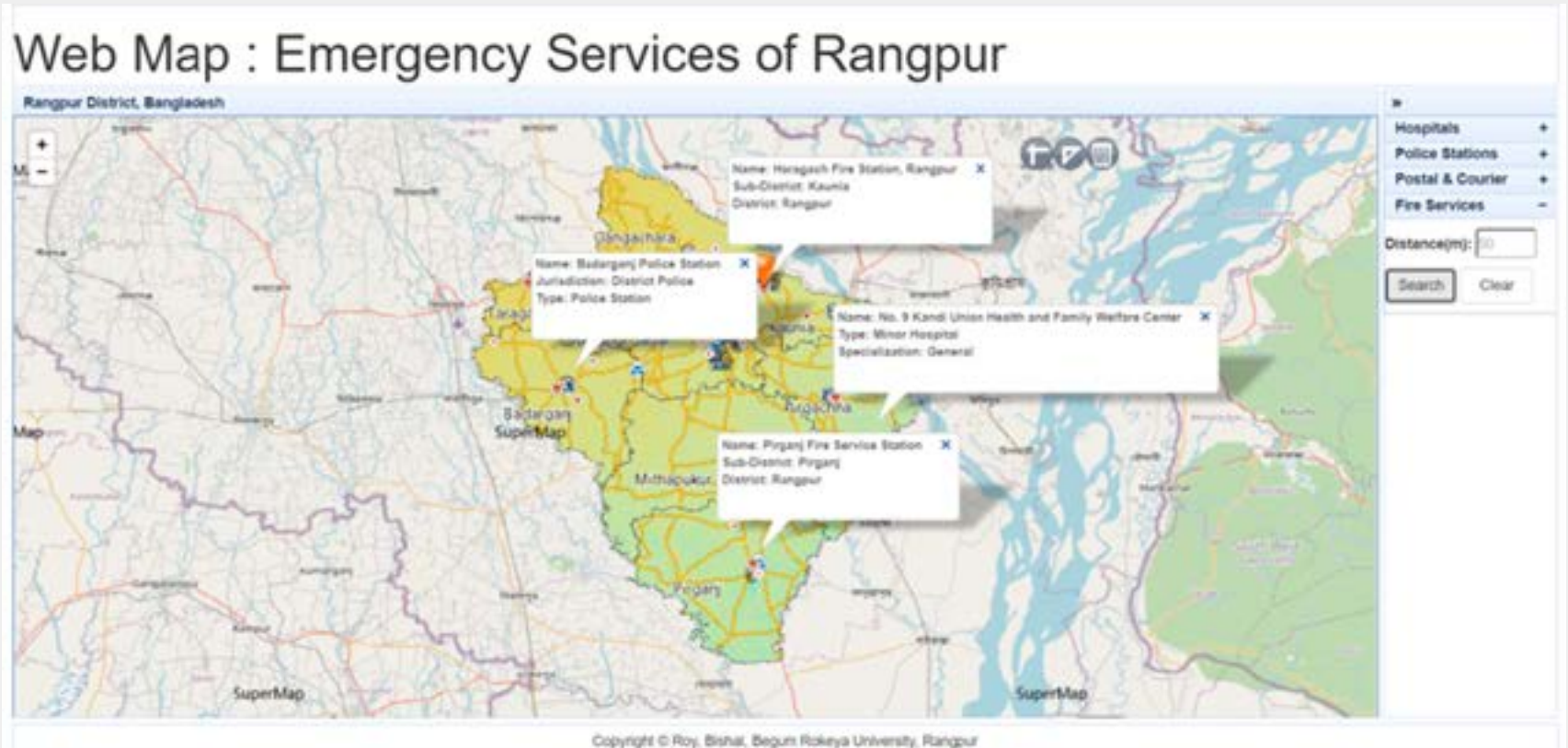
## Development Group




Rochester City Real Estate Interactive Map Web Application  
RECAI ALPER EMEK & GÖRKEM ACAR, Akdeniz University (Turkey)



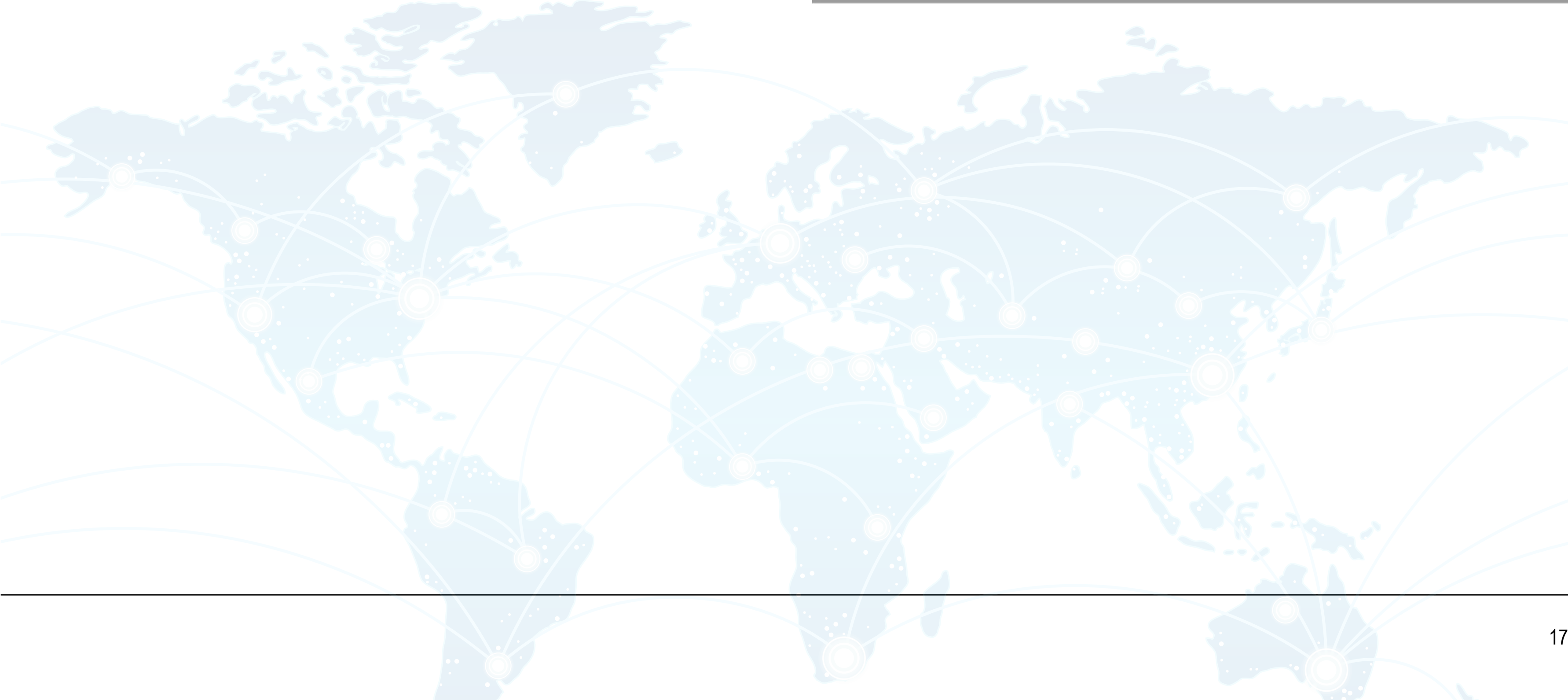
Real-time Heat Map Contact Tracing  
Simulation WEBMAP with Supermap iClient 10i  
Rogério Baptista de Sousa, University of Brasília (Brazil)



Emergency Services in Rangpur using SuperMap iServer  
Bishal Roy, Begum Rokeya University, Rangpur (Bangladesh)



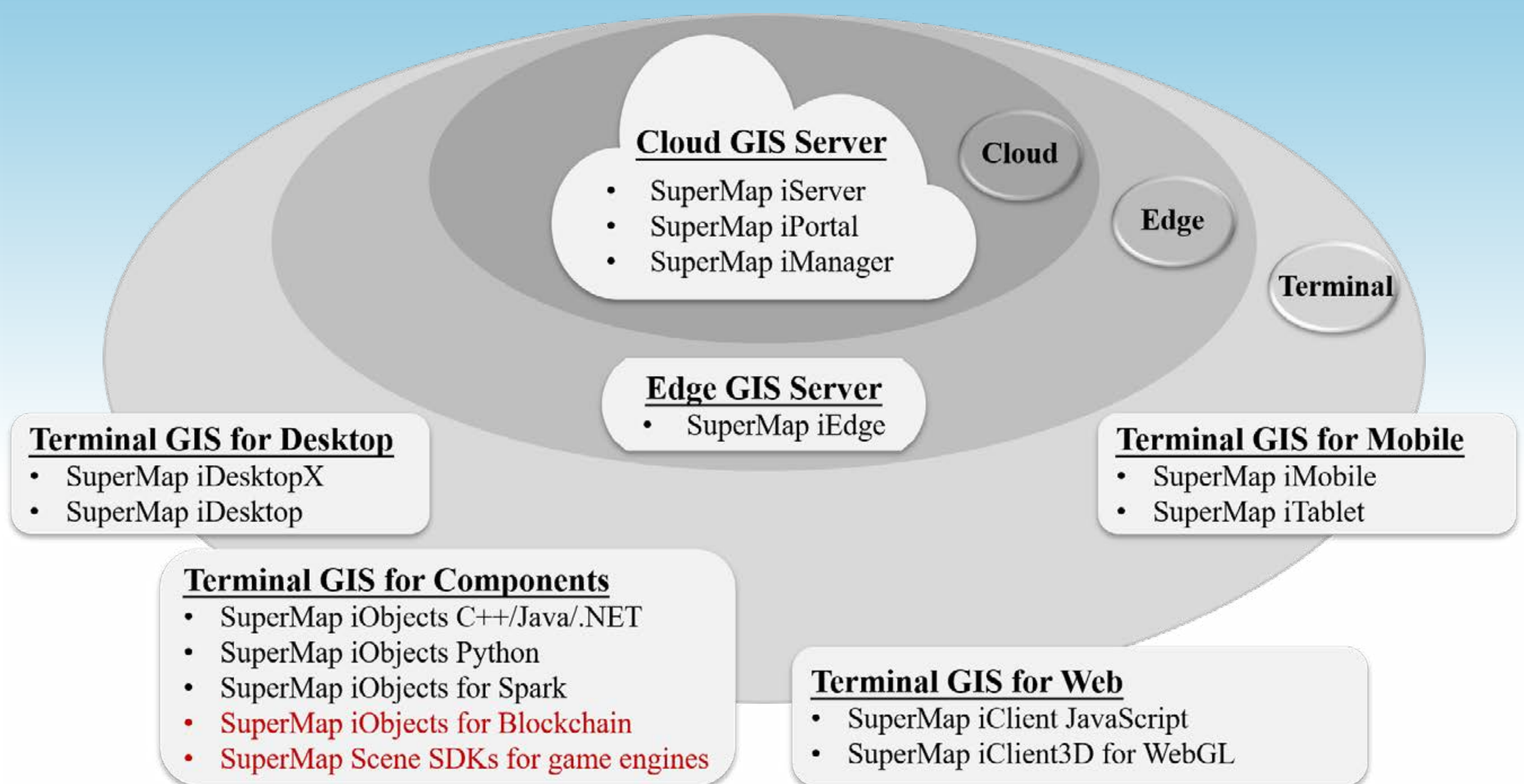
Digital Community WebGIS System By Atikur Rahman  
Atikur Rahman, Jahangirnagar University (Bangladesh)



## Products:

# What is SuperMap GIS

SuperMap GIS is developed by SuperMap Software Co., Ltd. It is a complete package of GIS platform software, including Desktop GIS, Service GIS, Component GIS, Mobile GIS platforms, spatial data production, processing and management tools. Furthermore, it is a good GIS software brand with full angles and strong functions which can meet different requirements for a wide range of industries.



SuperMap iServer: *Full-featured Application Server for Cloud GIS*

SuperMap iPortal: *Portal for Cloud GIS*

SuperMap iManager: *Operation Manager for Cloud GIS*

SuperMap iEdge: *Server for Edge Computing GIS*

SuperMap iObject: *Full-featured Components GIS SDKs*

SuperMap iDesktop: *Full-featured Customizable Desktop GIS*

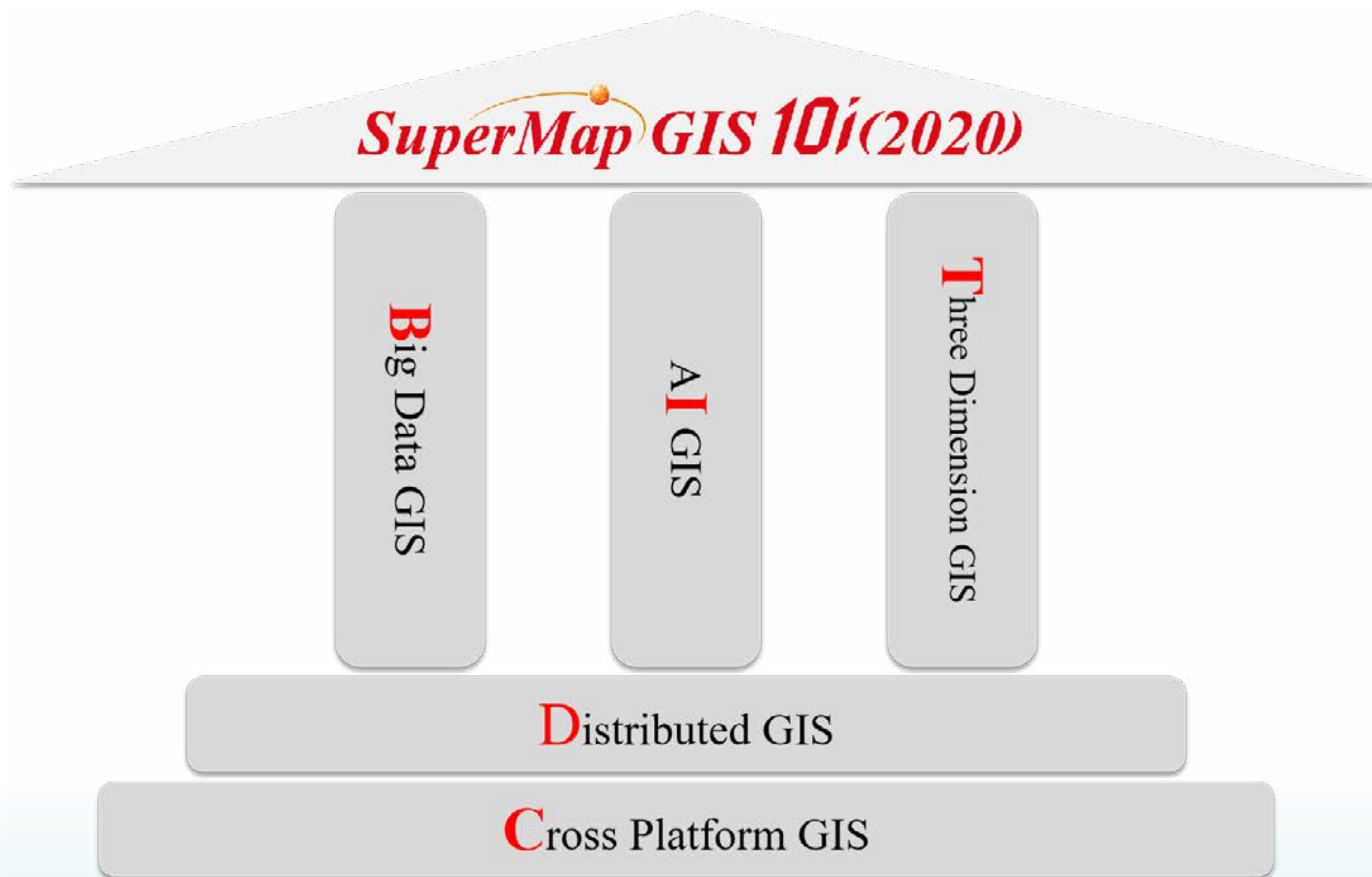
SuperMap iMobile: *Native SDKs for Mobile GIS*

SuperMap iTablet: *Native App for Mobile GIS*

SuperMap iClient: *Web GIS APIs for Browsers*

## Technologies:

SuperMap GIS 10i(2020) integrates AI GIS technology, and further innovates Big Data GIS, 3D GIS, Distributed GIS and Cross Platform GIS to establish a five key technologies system of “BitDC” for GIS platform software.



### Big Data GIS:

Supports distributed technologies, Spark distributed computing architecture and streaming data processing and analysis

### AI GIS:

It is the integration of AI and GIS.

### 3D GIS:

Integrates new IT technologies, such as WebGL, VR, AR, and 3D Printing, brings a more realistic and convenient 3D experience

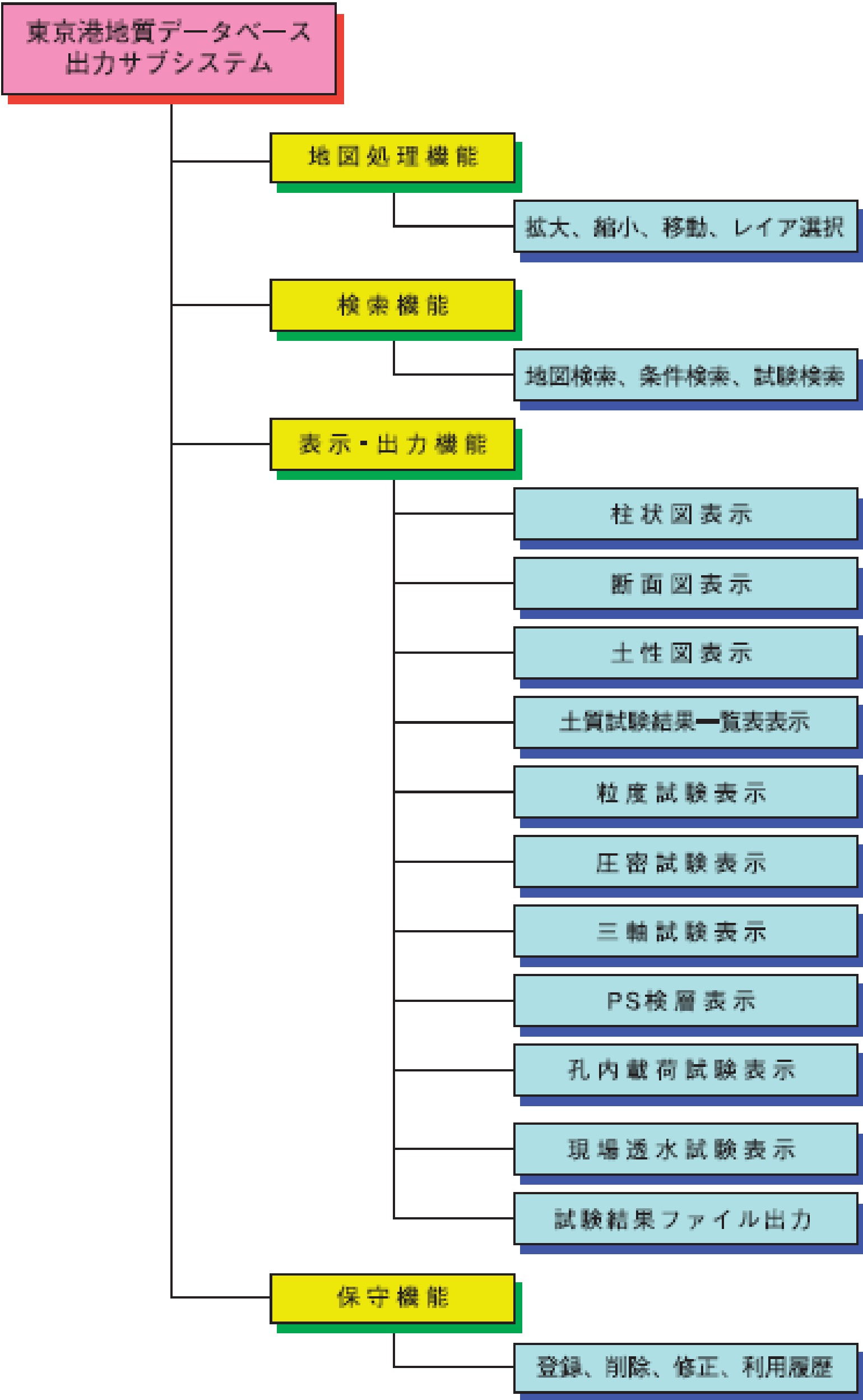
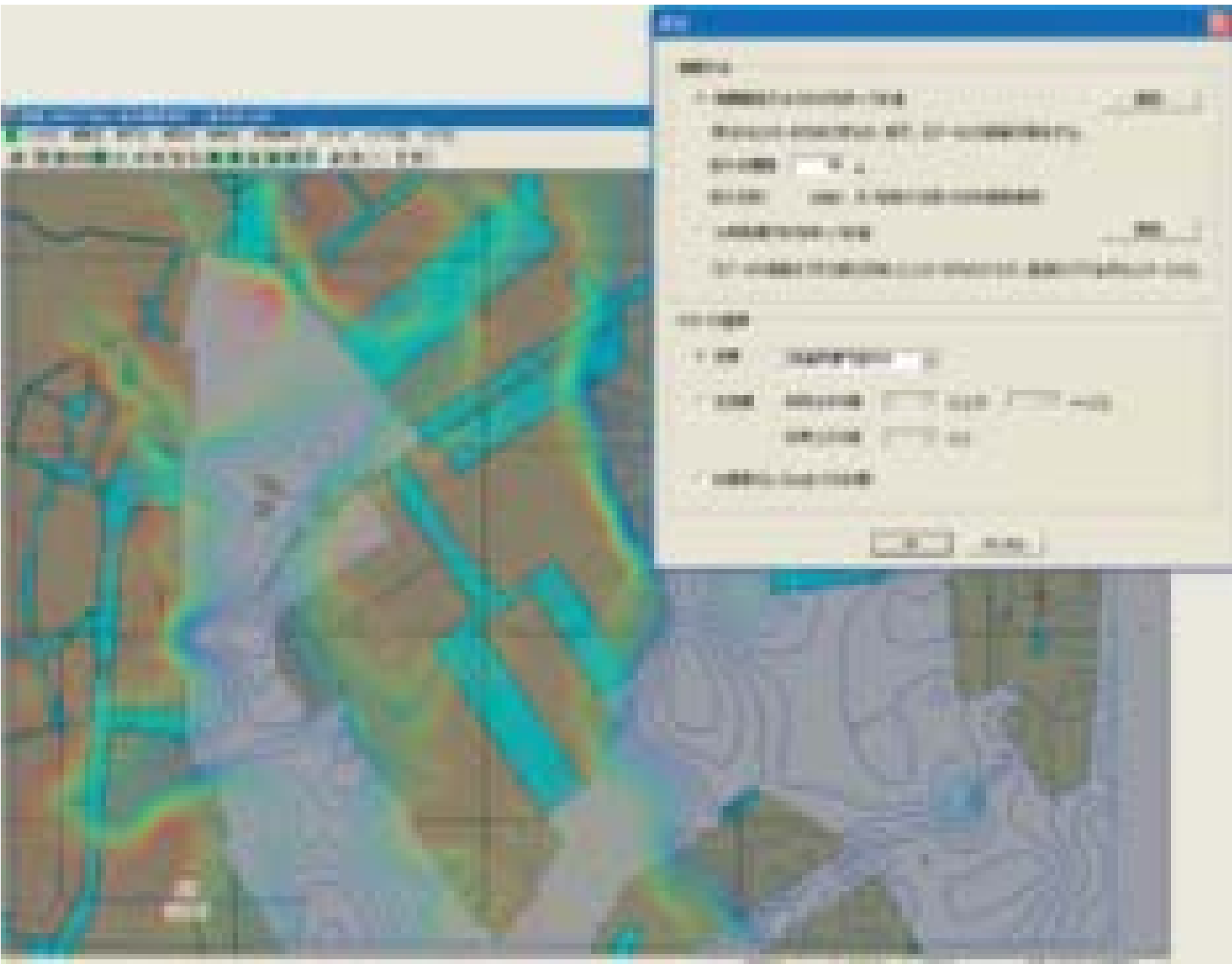
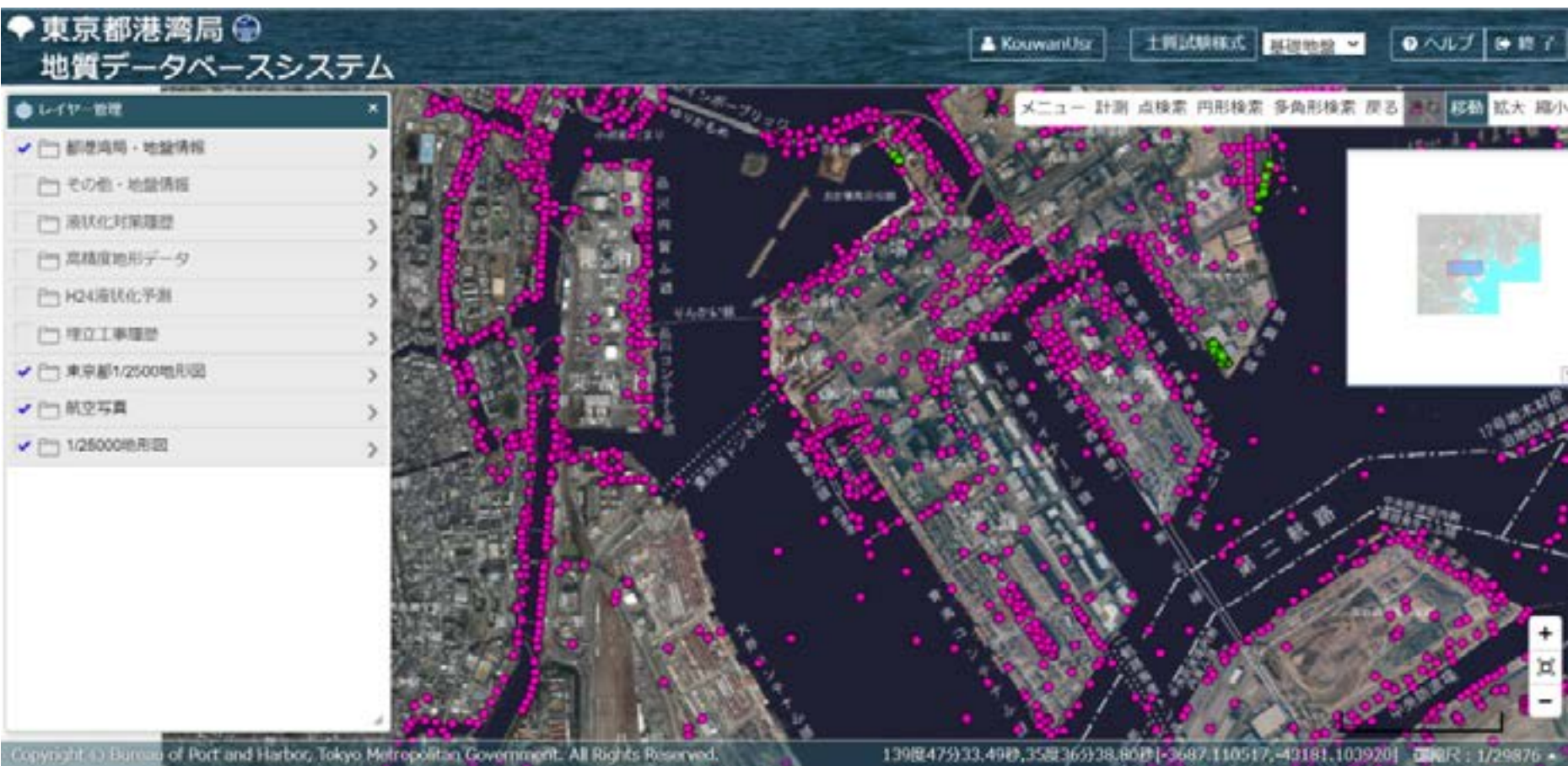
### Distributed GIS:

Builds a new distributed collaborative model of cloud, edge and terminal integrated GIS.

### Cross Platform GIS:

Supports multiple CPU architectures and operating systems

# Geological Database and WebGIS Service for Tokyo Metropolitan Government Bureau of Port and Harbor



The geological database for Tokyo Metropolitan Government Bureau of Port and Harbor has been put into use since the late 1980s. In order to meet the needs of new era, SuperMap GIS platform was used to rebuild this database in

2019. Through SuperMap iSever, data collectors can directly upload data, and data users can directly use data. So since 2021, has been used to provide web services, which greatly improves the work efficiency.

# JR East Niigata Station Viaduct Project Safety Management



In Summer of 2020, during the safety construction management experiment of JR East Niigata Station Shinkansen and common line viaduct expansion project, SuperMap 3D platform was used to manage BIM data, Beacon and Wifi, and automatically divide dangerous areas, and issue warnings when construction personnel approach the dangerous areas. The system is currently being promoted on railway and power stations.

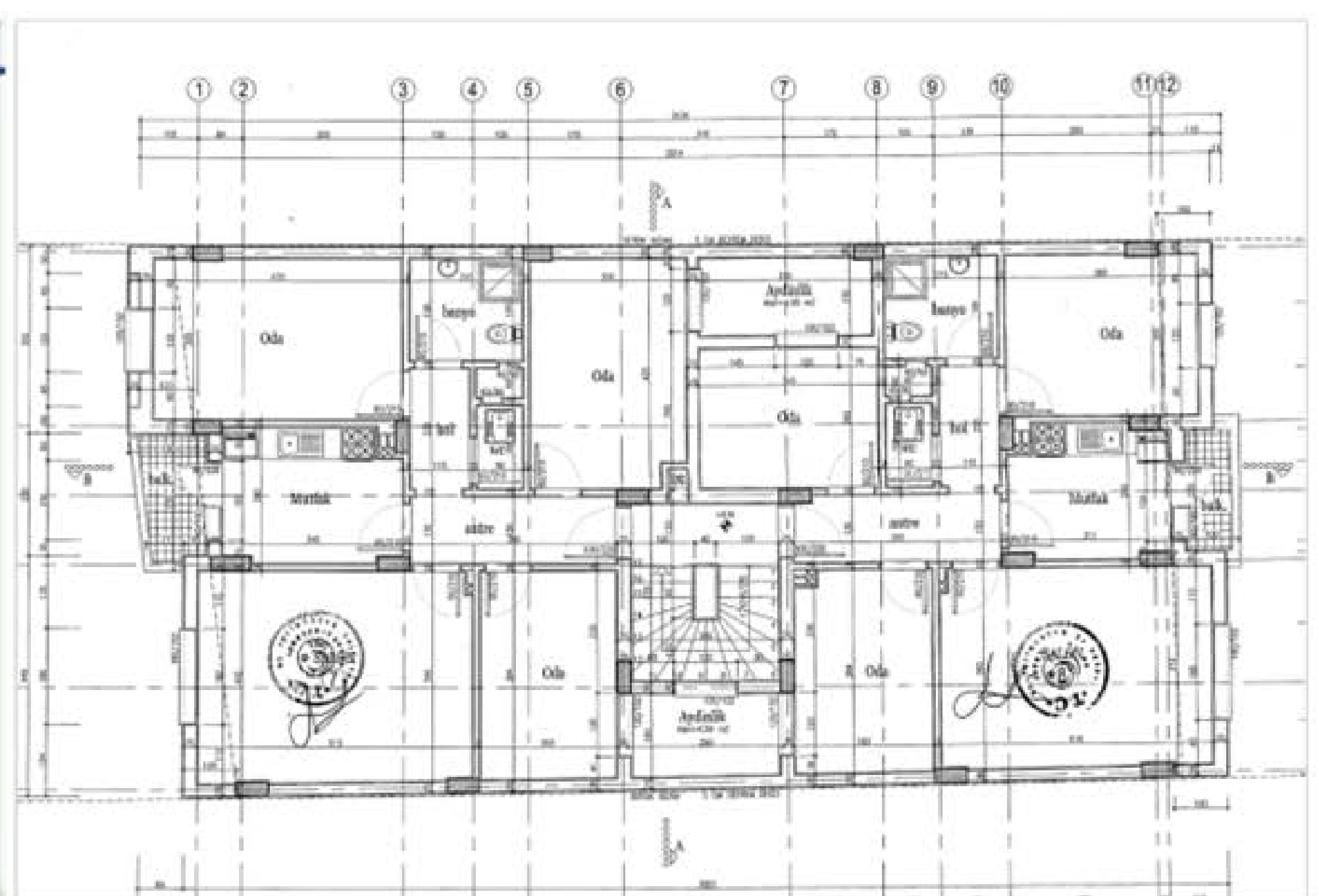
# Dimension Upgrading of Cadastral Data - SuperMap Helps the Digital Construction of 3D Cadastral in Turkey

## General Introduction

The Turkey 3D cadastral project is the first cadastral project that SuperMap formally participated in Europe. SuperMap developed a special vectorization tool for General Directorate of Land Registration and Cadastre of Turkey, and established and optimized the workflow of conversion from 3D model to CityGML. It reduced the workload of manual processing, improved the efficiency of data processing, reduced human resources input, saved time and economic costs, and provided strong support and guarantee for Turkey to establish a national 3D cadastral database.

## Background

Turkey has a strong industrial foundation. It is one of the world's emerging economies, and one of the fastest growing countries in the world. Turkey ranks 6th in the world in the ranking of house property price growth index in the fourth quarter of 2019. With the year-on-year house property price growth rate of 11.1%, Turkey becomes one of the best performing housing markets in the world. With the rapid economic development, the construction of residential, industrial and commercial facilities in major cities of Turkey is also proceeding rapidly. After years of practice, the Turkish



cadastral registration system is considered as one of the most efficient systems. Many offices can complete house transaction registration within one day, but there are still many problems that need to be resolved.

The biggest problem is that there are a large number of paper house registration and drawing data in the current cadastral information management, which makes it difficult to view the information of each house in the building in a 3D manner. It has been unable to meet the needs of digital and 3D cadastral management at this stage. Therefore, the cadastral management departments of Turkey hope to establish a 3D cadastral database and formulate standardized data standards, adopt the international general spatial data exchange format CityGML, and use a 3D model to display the structure and house registration information of each building hierarchically, thereby improving the efficiency of cadastral management.

## Overview

This project started at the end of 2019. It customized and developed a full-process cadastral data processing tool based on SuperMap iDesktop, which can quickly complete the batch cutting of drawing images, fast vectorization, batch registration and 3D modeling. The generated results include the detailed data of the internal and external walls, rooms, balconies, floors, doors and so on, so as to facilitate the fine 3D management in the later stage.

Meanwhile, SuperMap provided a complete solution of format conversion. Users can output the 3D model as OGC international standard spatial data exchange format CityGML through a one-click workflow, which is convenient for later data interaction and further application.

## Highlights

### 1. Deep customized development to improve data processing efficiency

Under the support of desktop team from SuperMap Institution, SuperMap provided users with deep customized tools for developing data processing and vectorization based on SuperMap iDesktop. It reduced the repetitive operation and realized the efficient digitization of paper drawings.

- **Automatic data database building based on template**

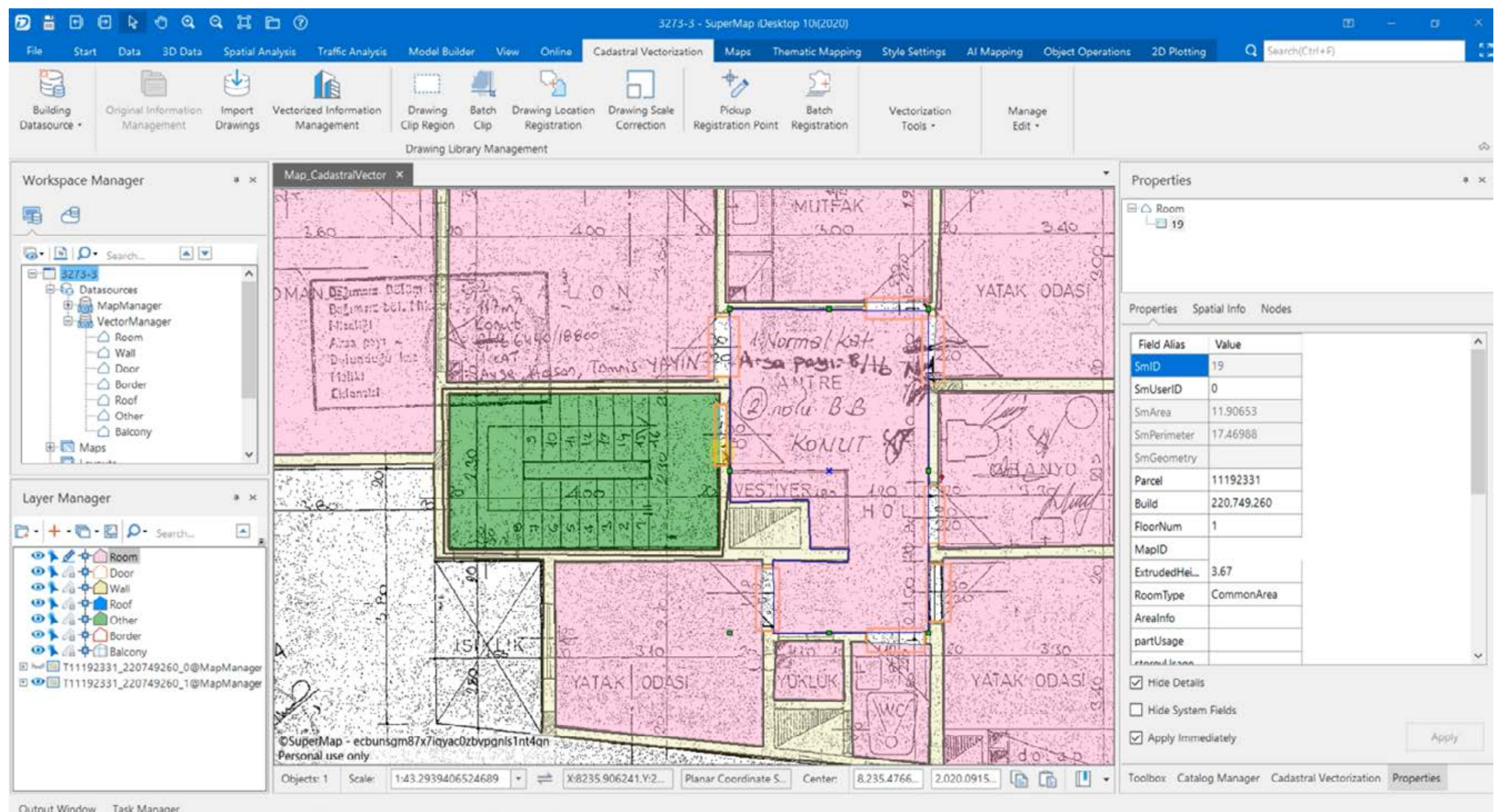
According to the user-specified name, data set type, coordinate system and other parameters, the workspace, data source, data set and coordinate system information are automatically created.

- **Batch cutting and registration**

Based on the original drawing data of the house, the house drawings can be cut and registered in batches

- **Quick vectorization tool**

In view of the unique housing structure shape and outline in this project, a customized drawing tool was developed to realize the one-click drawing of the wall. It reduced the number



*Cadastral vectorization interface of SuperMap iDesktop*

of mouse clicks for drawing, and improved the standardization of drawing vectors

- **Floor batch copy modeling**

It supports floor batch copying and modeling, which can copy multiple houses of the same type in batches and complete 3D modeling

- **Template attribute entry**

According to the needs of users, the template for the entry of room attribute information is customized, and the entry of attribute information can be quickly completed in the vectorization process at the same time, which can avoid the duplication of work.

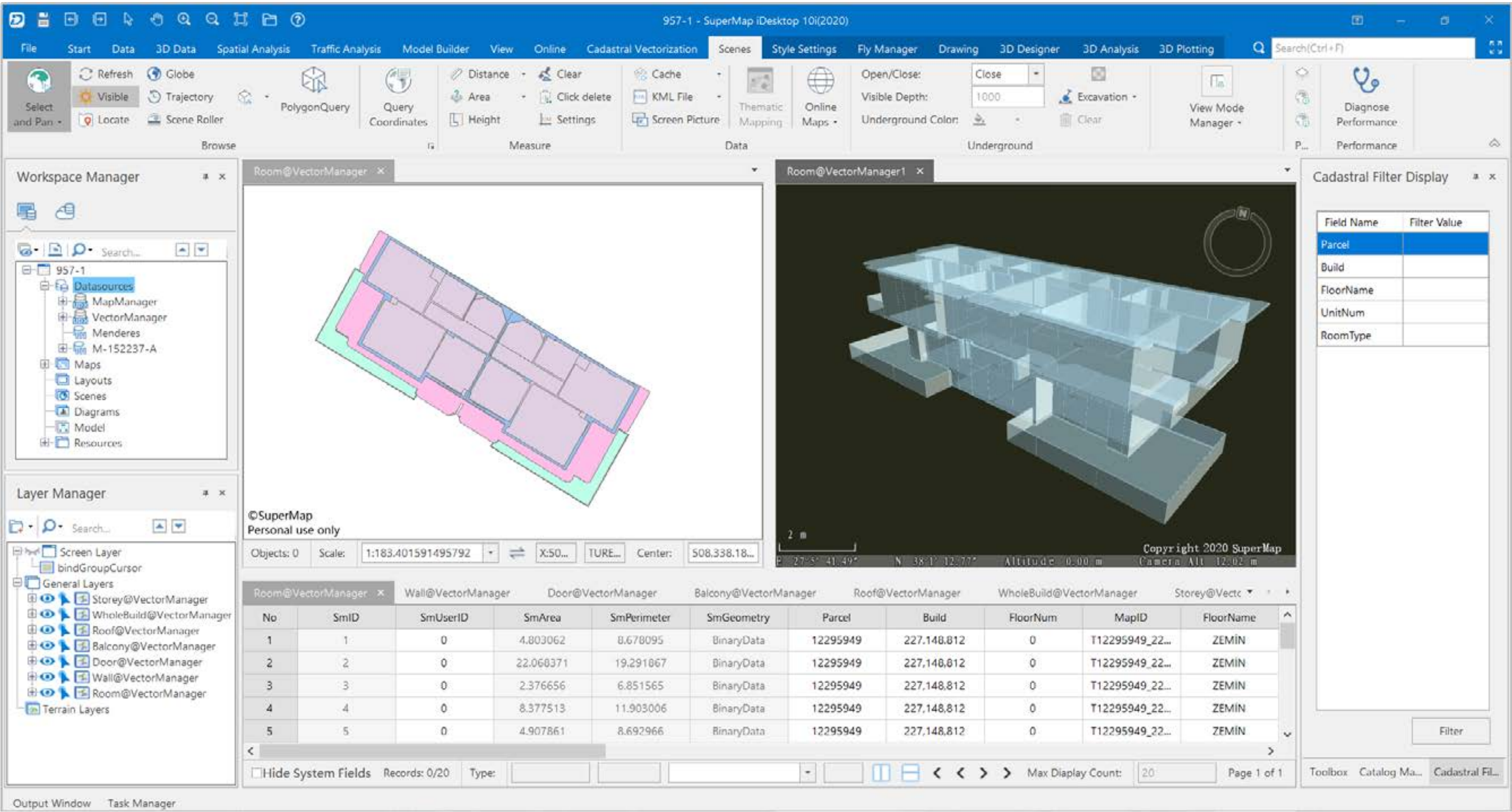
- **Automatic data checking**

Provides comprehensive data checking

tools. Users can use this tool to set constraint conditions for attribute information and spatial information. It can automatically complete data checking and topology processing, and further ensure the accuracy and authenticity of the paper-based information to the digital information.

## **2. 2D & 3D integration technology ensures the quality of data production**

Based on the 2D and 3D integration technology of SuperMap, the plane data can be rendered into a 3D effect for display in real time in the vectorization process, and the 2D data and the 3D model can also be associated and displayed without switching them, which is convenient for users to find errors in time in the



2D &3D linkage display

vectorization process. It improves the accuracy of vectorization and ensures the quality of data production.

3. A complete data conversion process meets the requirements of international standard data exchange format

The General Directorate of Land Registration and Cadastre of Turkey not only sets strict standards for the quality of data production, but also has higher requirements for the efficiency of data processing. The data standard needs to be based on the standard CityGML data structure, it also adds a customized attribute information. In order to reduce the workload

during processing, FME software was used for data conversion in this project. It established and optimized a one-key data conversion workflow based on MyFME plug-in, and realized the result of directly converting the 3D model data set into the CityGML format. Users do not need to care about the intermediate processing after inputting the source data, but can directly obtain the results that meet the requirements. It greatly simplifies the process of data conversion and improves the efficiency of data processing.

3D Kadastro

EK C - CityGML / Veri Modeli /

### Bina Dış Duvarlar

Bina dış duvarları surface olarak tutulacaktır. Surface'e alt name ve geometri tanımlamaları boundedBy içerisinde yapılmalı ve lod2MultiSurface içerisinde xlink ile adreslenmelidir. Dış duvarlarda yeni alan her bir kırılmı için ayrı bir yüzey oluşturulmalıdır.

**Bina için aşağıdaki surface tipleri kullanılmalıdır :**

**WallSurface :**  
Bir bina, bina parçası veya installation için dış yüzeyi belirlerken kullanılır.

4 wallSurface'dan oluşan 4 boundedBy oluşturulmalı, her yüzey için bir wallSurface

15 wallSurface'dan oluşan 15 boundedBy oluşturulmalı, 3 wallSurface binanın düz duvarları için (önceki örnekteki gibi), 12 wallSurface ise 12 parçadan oluşan silindirik bölge için

24 wallSurface'dan oluşan 24 boundedBy oluşturulmalıdır.

5 wallSurface ve 1 outerFloorSurface'dan oluşan 6 boundedBy oluşturulmalıdır.

**OuterFloorSurface :**  
Bir binanın çatı olmayan dış yatay yüzeylerini belirlerken kullanılır.

3D Kadastro

EK C - CityGML / Veri Modeli /

### Ground Surface

Binanın toprak (veya su) ile kesiştiği alt sınırındaki yüzeydir. (Bina temeli)

Binanın alt kısmında tek bir yatay yüzey olarak oluşturulmalıdır.

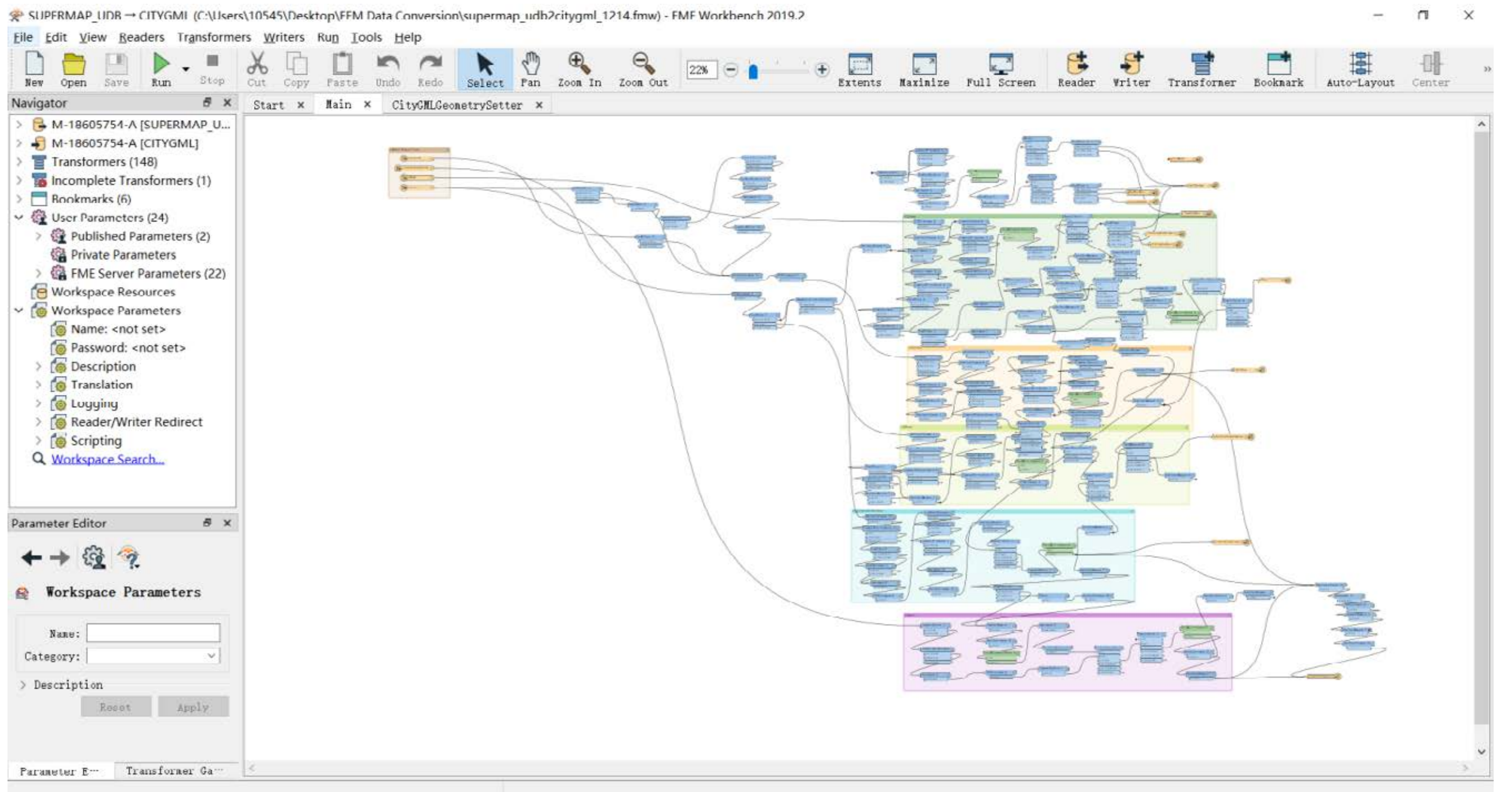
**GroundSurface yüzeyinin yüksekliği belirlenmesi gereken yöntem:**

- Terrainle binanın birden fazla yükseklikte kesiştiği noktada, kesişen noktalar arasında en düşüğü seçilmelidir.
- Farklı yükseklikleri barındıran eğri bir yüzey oluşturulmamalıdır.
- Yalnızca fotogrametrik model için hazırlanmalıdır.
- Ground surface yalnızca taban yüzeyinden oluşmalıdır. Kalınlıklar belirtilmemelidir.

Şekil 1

Bodrum Olması Durumunda	Arazi ile birden fazla nokta ile kesişmesi durumunda yapılması gereken	Arazi ile birden fazla nokta ile kesişmesi durumunda yapılmaması gereken
Şekil 2	Şekil 3	Şekil 4

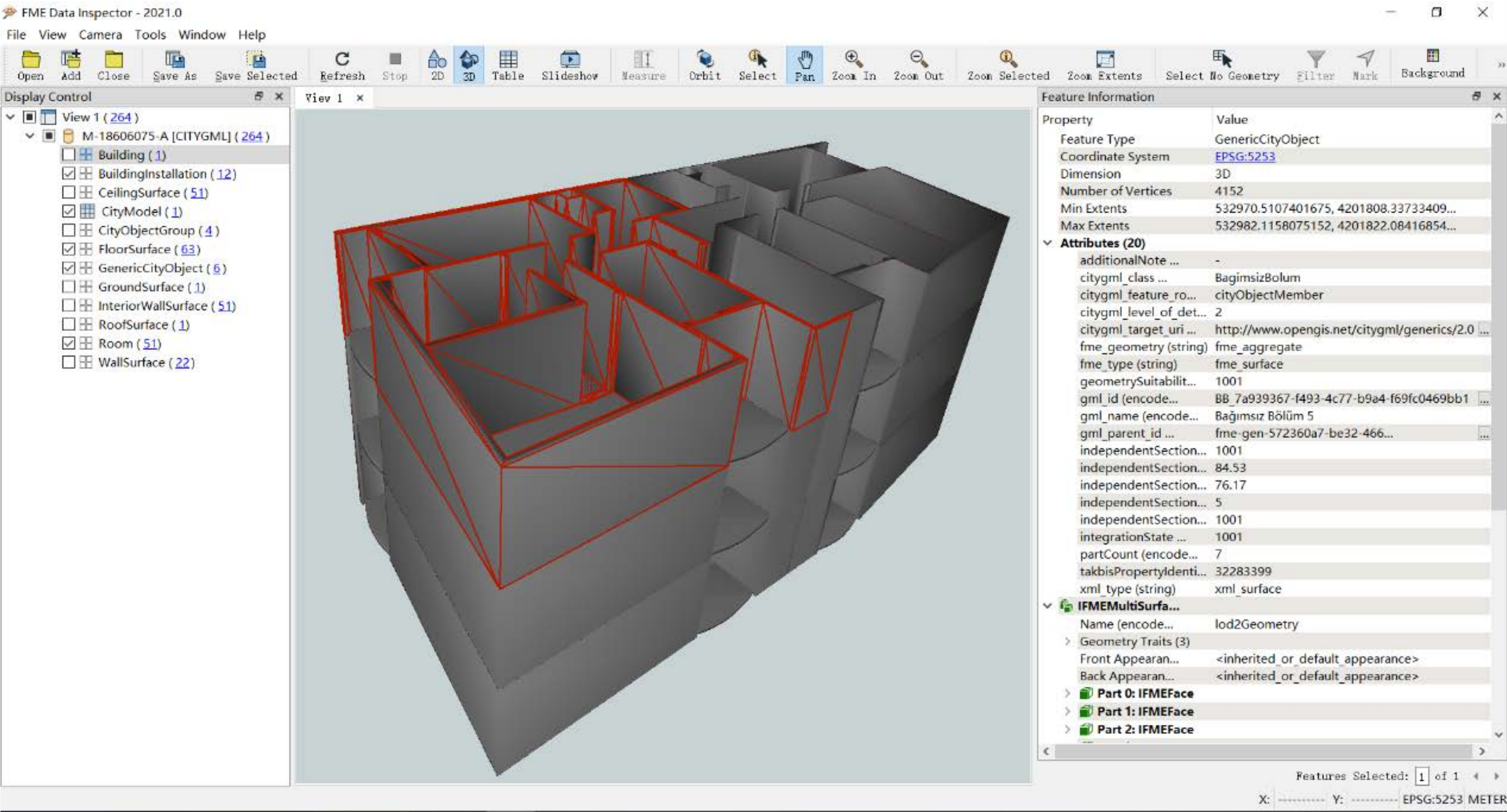
Data processing workflow:



CityGML data structure:

```
2 <gml:boundedBy>
3   <gml:Envelope srsName="EPSG:5253" srsDimension="3">
4     <gml:lowerCorner>532969.7229287365 4201797.730854186 22.8517912914753</gml:lowerCorner>
5     <gml:upperCorner>532982.6230504932 4201823.066898142 34.672498425192515</gml:upperCorner>
6   </gml:Envelope>
7 </gml:boundedBy>
8 <core:cityObjectMember>
9   <bldg:Building gml:id="MB_fa08576c-4c3d-454c-a490-de8825cabdb8">
10     <gml:name>Mimari Bina 18606075-A</gml:name>
11     <gen:stringAttribute name="constructionID">
12       <gen:value>18606075-A</gen:value>
13     </gen:stringAttribute>
14     <gen:intAttribute name="takbisPropertyIdentityNumber">
15       <gen:value>18606075</gen:value>
16     </gen:intAttribute>
17     <gen:stringAttribute name="blockNumber">
18       <gen:value>3155</gen:value>
19     </gen:stringAttribute>
20     <gen:stringAttribute name="parcelNumber">
21       <gen:value>5</gen:value>
22     </gen:stringAttribute>
23     <gen:stringAttribute name="tenderRegistrationNumber">
24       <gen:value>2018/605818</gen:value>
25     </gen:stringAttribute>
26     <gen:stringAttribute name="blockName">
27       <gen:value>-</gen:value>
28     </gen:stringAttribute>
29     <gen:stringAttribute name="architecturalPlanID">
30       <gen:value>204206576_2019-02-21-16-13-5291F950-187A-4BA2-98A4-F76937DD1998.tif</gen:value>
31     </gen:stringAttribute>
32     <gen:stringAttribute name="additionalNote">
33       <gen:value>1001</gen:value>
34     </gen:stringAttribute>
```

CityGML data 3D model display:



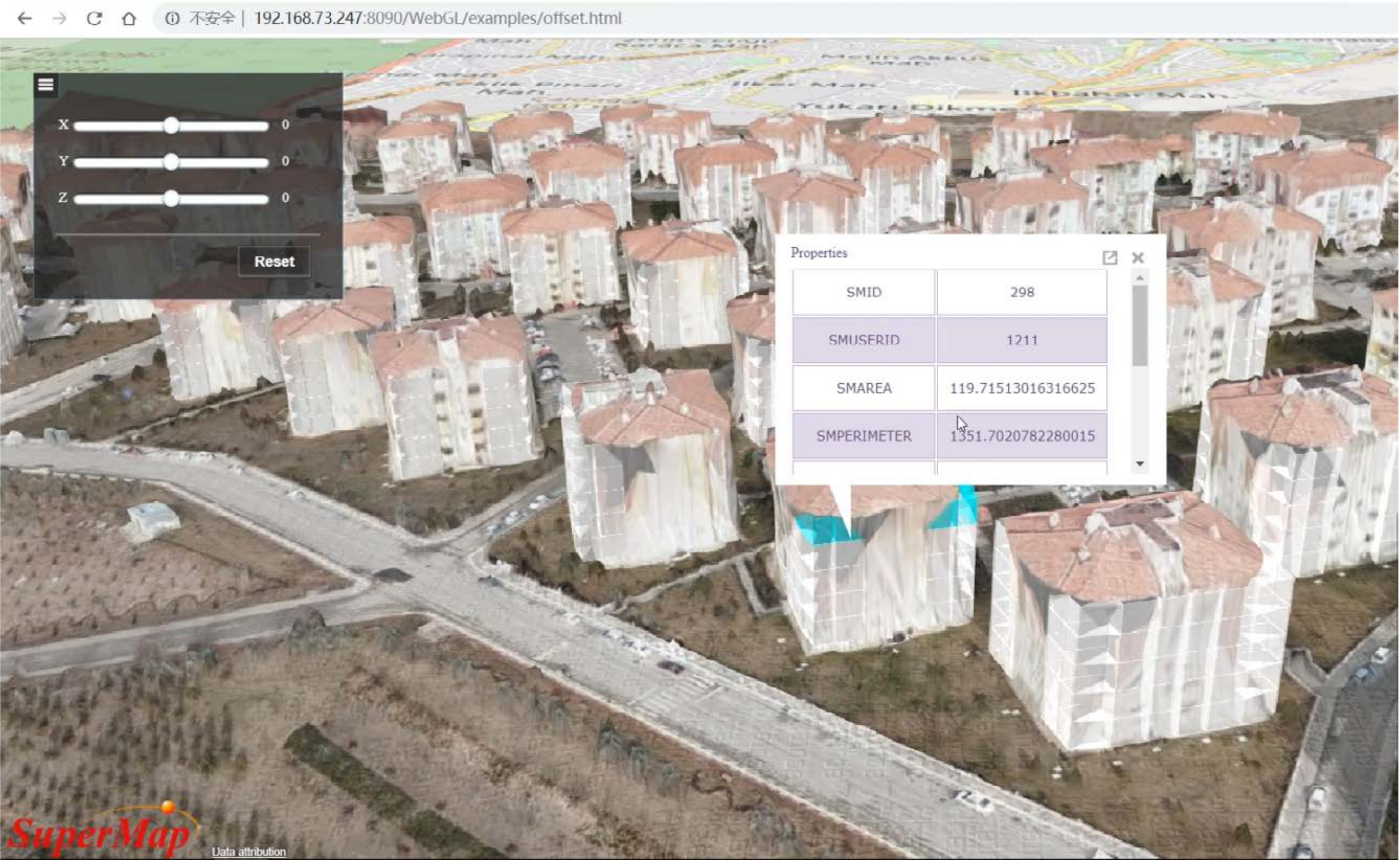
CityGML data 3D model display

4. The integration of multi-source 3D data provides a wealth of options for later applications

Based on the multi-source 3D data fusion capability of SuperMap and the SuperMap iClient 3D for WebGL product, the house 3D model data and the oblique photography modeling data can be superimposed and displayed on the WEB side, so as to achieve the effect of intuitive display as cadastral data. Meanwhile, the customized development can be carried out according to the needs of cadastral business, such as attribute information query, 3D spatial analysis and other functions, which enriches the application of data.

Significance

According to the Turkish 3D cadastral data standard, the project optimized the vectorization and modeling process of 3D cadastral data, and innovated the way of data conversion. The technology of batch data processing and modeling reduces labor costs and optimizes resource utilization. The improvement from 2D to 3D realizes refined and 3D management of cadastral, improves the level and efficiency of Turkish cadastral management, and also enriches the data types of geographic databases, which creates a solid foundation for the later construction of 3D digital cities.



The effect of superimposed display of model and oblique photography

## Conclusion

Turkey 3D cadastral project is the first cadastral project that SuperMap formally participated in Europe. It fully meets the international general data exchange format standards and is another successful practice of SuperMap on the road to internationalization. It marks the landing of SuperMap in the European market, and at the same time provides valuable experience and a solid foundation for the further development of the European market in the future.

With the continuous development of 3D GIS technology and the continuous in-depth integration of new-generation information technologies such as big data, AI (artificial intelligence), 5G and blockchain, there will be more in-depth research and application in 3D cadastre, real estate registration management, and land space planning. SuperMap will continue to be committed to the promotion of the international market, and will provide users from all over the world with more choices, so that Chinese technology can be more used in overseas market.

## Remarks: CityGML

*CityGML is an open standardized data model and exchange format to store digital 3D models of cities and landscapes. It is the extendible international standard for spatial data exchange issued by the Open Geospatial Consortium (OGC) and the ISO TC211. It defines ways to describe most of the common 3D features and objects found in cities (such as buildings, roads, rivers,*

*bridges, vegetation and city furniture) and the relationships between them. It also defines different standard levels of detail (LoDs) for the 3D objects, which allows the representation of objects for different applications and purposes, such as simulations, urban data mining, facility management, and thematic inquiries.*



# How to Import BIM Data into GIS Platform



**Building Information Modeling (BIM for short)**, is defined by the national standard GB/T51212-2016 “Uniform Standard for the Application of Building Information Modeling” as follows: “It is the process and general term of design, construction, and operation, based on the physical and functional characteristics digital expression of construction projects and facilities during their whole life cycle.”

**B**IM data includes not only common buildings, but also structures such as powerhouses, dams, power stations, etc., as well as linear shape infrastructure such as: roads, railways, tunnels, pipe corridors, pipelines, etc. With the popularization of BIM technological applications, especially the further development of BIM+GIS applications, there has been higher requirements for the performance of real-time browsing of BIM data in 3D scenes in the industry. Therefore, the need of simplifying BIM data is increasingly strong.

Currently, BIM data mainly comes from BIM software. As we all know, there are many

types of BIM modeling software in China and overseas, and each software has its own storage format.

**1. IFC** is an information exchange standard format defined by the Industry Foundation Class (IFC) standard, which stores information about the entire life cycle of a project. Currently, the commonly used BIM software supports the output of BIM data in IFC format.

**2. RVT** is the BIM data format used by Autodesk Revit software. Revit software is currently the mainstream software for BIM modeling. its project file .rvt is currently widely used with a large number of users.

**3. DGN** is a data format used by MicroStation products of Bentley and it adopts binary storage.

**4. 3DXML** is an open BIM data format launched by Dassault Systems. It is a lightweight data format based on XML with small size and high compression ratio, which enables it to provide faster file transfer speed and shorter storage time.

**5. DWF** (Design Web Format, A Graphics Format for Web) is a highly compressed and lightweight file format developed by Autodesk.

## **I. Three ways to import BIM data into GIS platform.**

Currently, BIM data is imported into GIS platform software in three ways:

### **1). The first method is to import BIM data into GIS platform software through on a self-developed BIM plug-in.**

This method is based on the secondary development of the data interface provided by BIM software, that is to convert BIM data to GIS database based on the native support of the BIM software.

### **2). The second method is to realize the data interaction between BIM and GIS through the intermediate data format.**

The method is to generate IFC format data from BIM data according to the IFC standard or

convert it into model data formats such as FBX, OBJ, OSG, etc., which can be directly read by GIS software. It is an easy-to-use method, and common used BIM software supports the export of data in IFC. However, this method may cause problems such as data loss, poor data quality, and excessive data conversion time.

### **3). The third method is using GIS software to directly read BIM data.**

It supports the access of BIM data by GIS software itself, which not only saves time and effort, but also guarantees the quality of BIM data during reading process. However, currently due to the product mode restriction of the BIM software, there are fewer BIM data formats that can be directly read by GIS software.

In order to better retain the geometric information and attribute information of BIM, the first method is commonly used to import BIM data into the GIS platform.

## **II. Three main principles to import BIM data into GIS platform.**

BIM software usually adopts parametric modeling. However, the API provided by BIM software can only obtain the triangulated mesh after triangulation. Therefore, when importing BIM data into GIS platform, in order to better preserve the accuracy, topology and semantic integrity of BIM data; meet the requirements of subsequent various index calculations and spatial analysis, and achieve simplifying

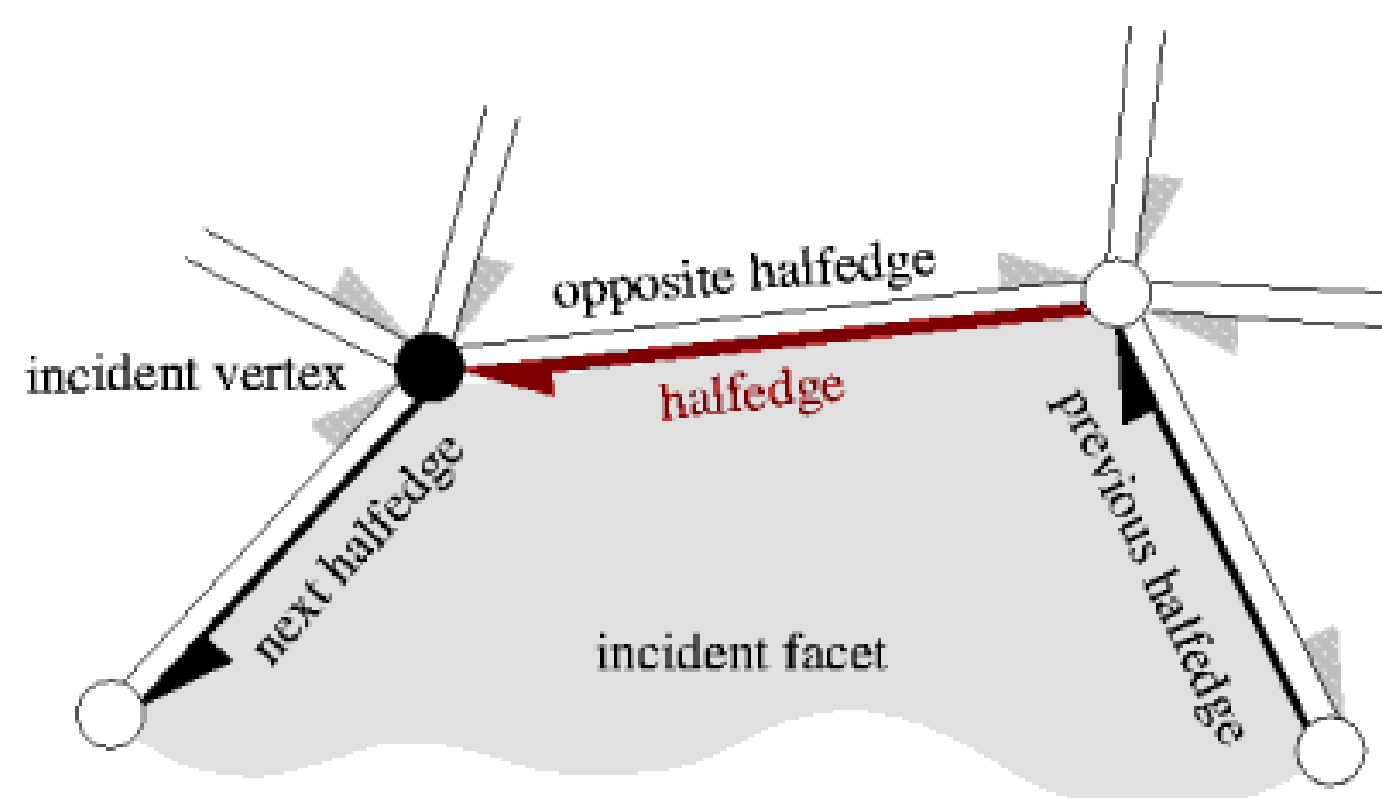


Figure 1 Halfedge Data Structure

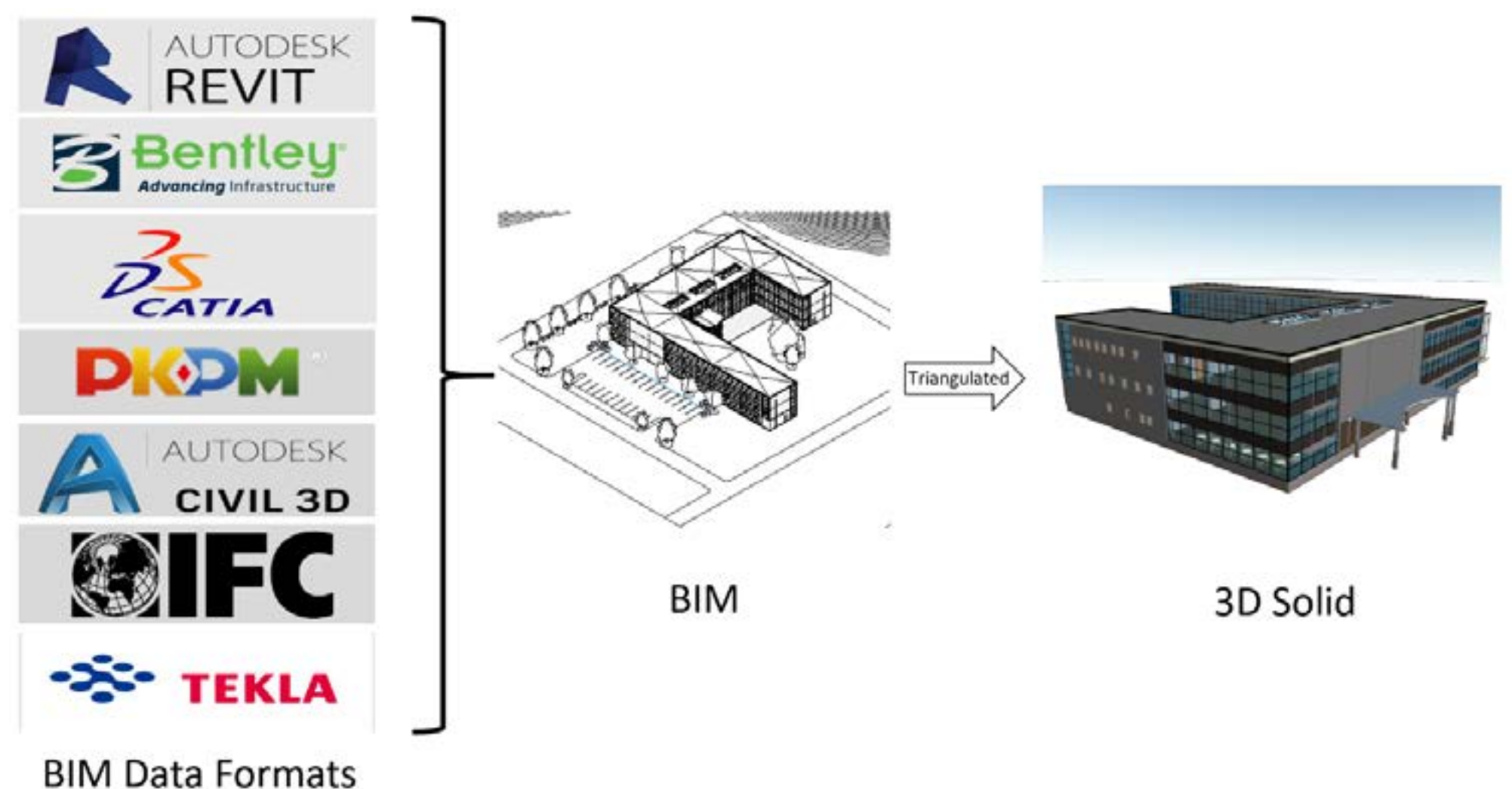


Figure 2 BIM model expressed by high-precision and topologically closed 3D solid

process of BIM data, the following three principles need to be followed:

**1). It is usually expressed by a high-precision, topologically closed 3D solid data model to better retain the accuracy, topology and semantic integrity of the BIM data.**

The 3D solid data model defines a homogeneous solid space through a high precision, topologically closed triangular mesh surface. The triangulated surface boundary of the solid space is a directed, closed 2D manifold (2-Manifolds), its topological relationship is expressed by Halfedge Data Structure. it is

an edge-centric data structure (Figure 1). Each edge is composed of two half-edges in opposite directions, and each half-edged stores an incident vertex and incident triangle.

With the help of 3D solid model, various operations such as 3D spatial query and analysis of BIM data in GIS platform software can be realized.

**2). Adopt LOD (Level of Detail) for simplifying BIM data.**

The parametric BIM model can construct triangulation networks with different levels of

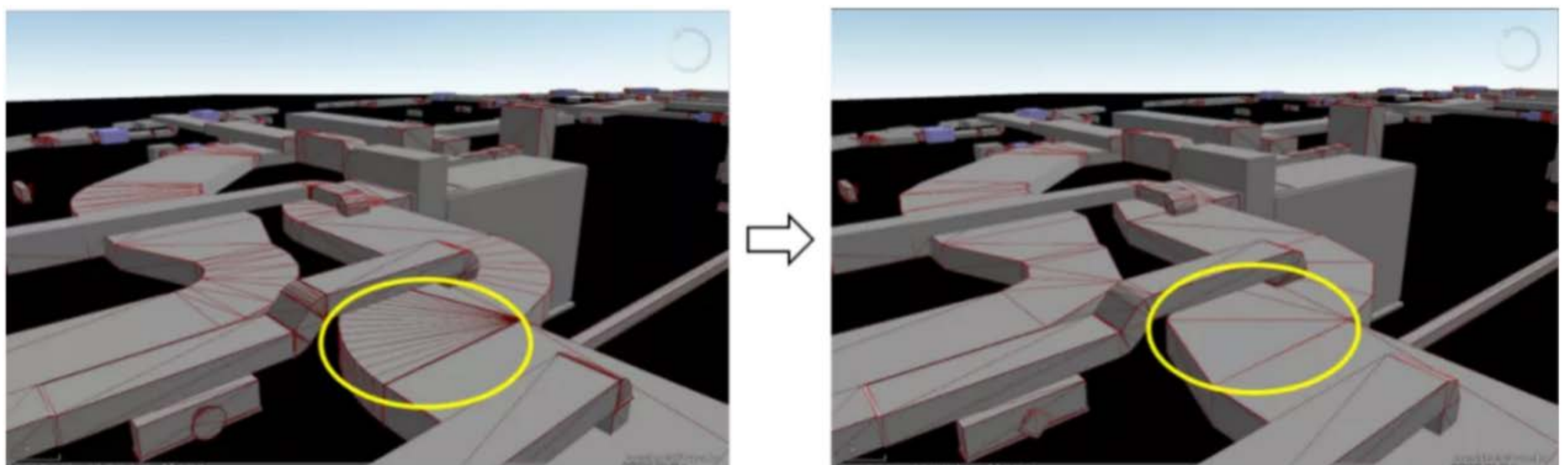


Figure 3 BIM data with different LODs

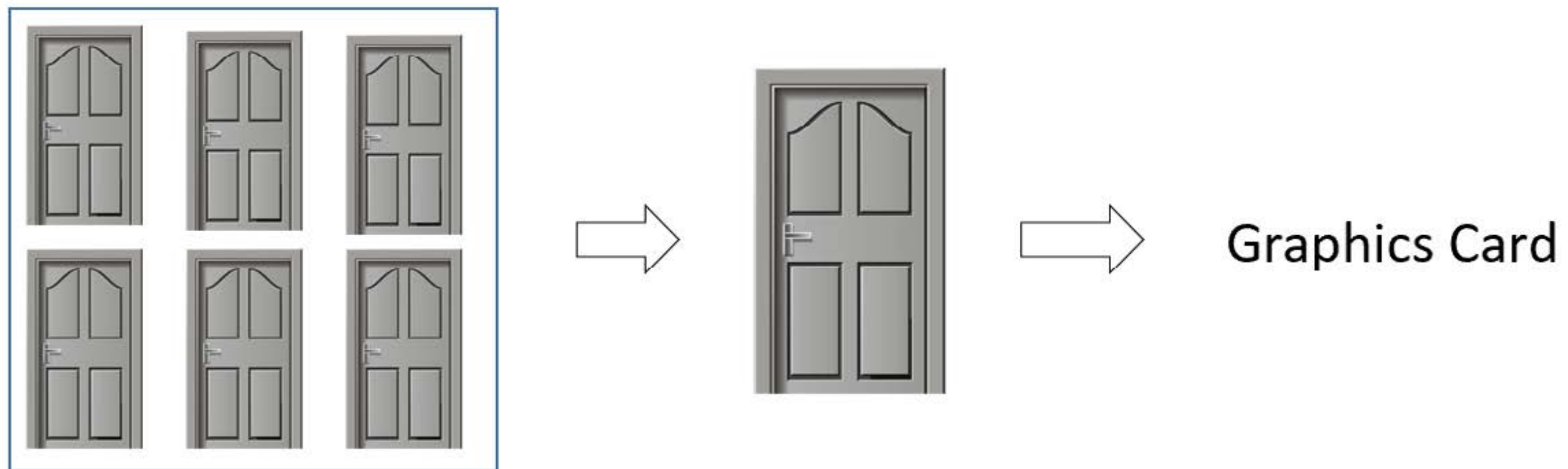


Figure 4 Instantiation

detail when triangulating, that is, the parametric curved surface can be triangulated into triangulation networks with different levels of detail.

### 3). The instantiation can be used to reduce the redundancy of model data.

Instantiation can be used to store BIM data that is placed in different positions or postures, adopting geometric model + posture/position matrix storage, and the same geometric model can be stored only once, which reduced disk storage space. Instantiation can also be used when drawing, which can reduce the rendering pressure of the graphics card and improve the rendering efficiency.

BIM data in different fields have different levels of complexity. According to the actual application requirements, there will be more flexible methods for simplifying BIM data.

## III. Conclusion

In recent years, the integrated applications of BIM and GIS have been used extensively and deeply. How to import BIM data into GIS platform to realize information interaction has become the primary problem to be solved. In this article, SuperMap proposes a technical solution that has been currently widely used in the industry. In the future, SuperMap will cooperate with more partners to provide more effective solutions for the development and application of "BIM+GIS".



## 2021 SuperMap Sales Kickoff Meeting



On February 26, 2021, the 2021 SuperMap Sales Kickoff Meeting was grandly held in Chengdu, China. With the theme of "Fight in 2021, we win!" the meeting looked back at the results in 2020, and looked at the way forward for 2021. SuperMap management executives, heads of the business units, outstanding sales representatives gathered at Howard Johnson Agile Hotel Chengdu to jointly strengthen the sale skills and add knowledge for the new year's business target.

Also on February 28, 2021, the SuperMap International Kickoff Meeting was held at SuperMap Chengdu building. The whole SuperMap international team and the SuperMap international agents and partners from all over the world attended the meeting online and offline, telling their stories, sharing their experience in 2020 and plans in 2021.

Mr. Wanghaitao, Vice President of SuperMap said, "SuperMap values every international employee, as well as every country and every market opportunity. SuperMap has the vision that 'Create Cutting-edge Technologies, Light up Every Corner of the Planet with Geo-

intelligence', every SuperMap international employee helps SuperMap to pursue this vision and they are the indispensable members in this journey. "Also, he expresses his sincere thanks to all members, thanks for their efforts and contributions to SuperMap and SuperMap international market during these hard times.

In the year of 2020, SuperMap international team has completed many achievements and good results, and has tried the best to expand SuperMap international market scope and enrich the color of world business map. In SuperMap, we are trying to build a more excellent international team and to develop a more prosperous international market, and SuperMap will continue to provide more technical, financial and human supports.

The meeting brings all teams and members closer and to help sales employee set New Year sales goals and fortify the determination of hardworking. In the last, SuperMap wishes all of you can achieve still greater achievements in your career. Let's cheer together in the New Year and achieve more brilliant results.

## SuperMap Demonstrates the Possibilities of SaaS to Bolivian Guests



On March 4, 2021, Mr. Marco Antonio Cabero from Bolivia visited SuperMap with his entourage. Account Managers of SuperMap international and Account Director of Dituhui (a subsidiary of SuperMap) had an in-depth exchange and discussion on the products, success stories and services provided by SuperMap and Dituhui with them.

During the visit, the guests showed their interests in SuperMap and Dituhui products and services, and had strong willingness to conduct cooperation and seek more possibilities with SuperMap in the further. They initially reached a cooperative intention and agreed on the time and content of the next meeting to be discussed for further progress. This meeting is also a new attempt for Dituhui in providing SaaS services and supporting overseas companies.

# Discussion Cooperation between SuperMap and Thailand Board of Investment

On the afternoon of March 18th, in response to the national "One Belt One Road" development initiative, and further promoting China-Thailand economic and trade cooperation, Mr. Xu Peilu, Secretary General of Sichuan Foreign and Trade Chamber, Mrs. Donlaporn Ajavavarakula, Director of Shanghai Office of Thailand Board of Investment, and Li Lei, Assistant Director of Shanghai Office of Thailand Board of Investment, visited SuperMap Chengdu Building. Wang Haitao, President of SuperMap International, and colleagues from SuperMap International Asia-Australia Center gave warm welcome.

Wang Haitao, President of SuperMap International, introduced the current development and international deployment plan of SuperMap, and demonstrated the communications on GIS technologies, brand promotion, and Thailand market development of SuperMap. The representatives of Thailand Board of Investment expressed their affirmation and appreciation for the cooperation between SuperMap International and the Thailand. During the meeting, Mr. Xu Peilu, Secretary General of Sichuan Foreign and Trade Chamber said, "this visit will help promote the in-depth understanding between the Thailand Board of Investment and SuperMap, and provide an opportunity for further cooperation between the two parties. During the epidemic, it also provides the most direct and effective communications platform for Chinese enterprises and international governments and organizations."

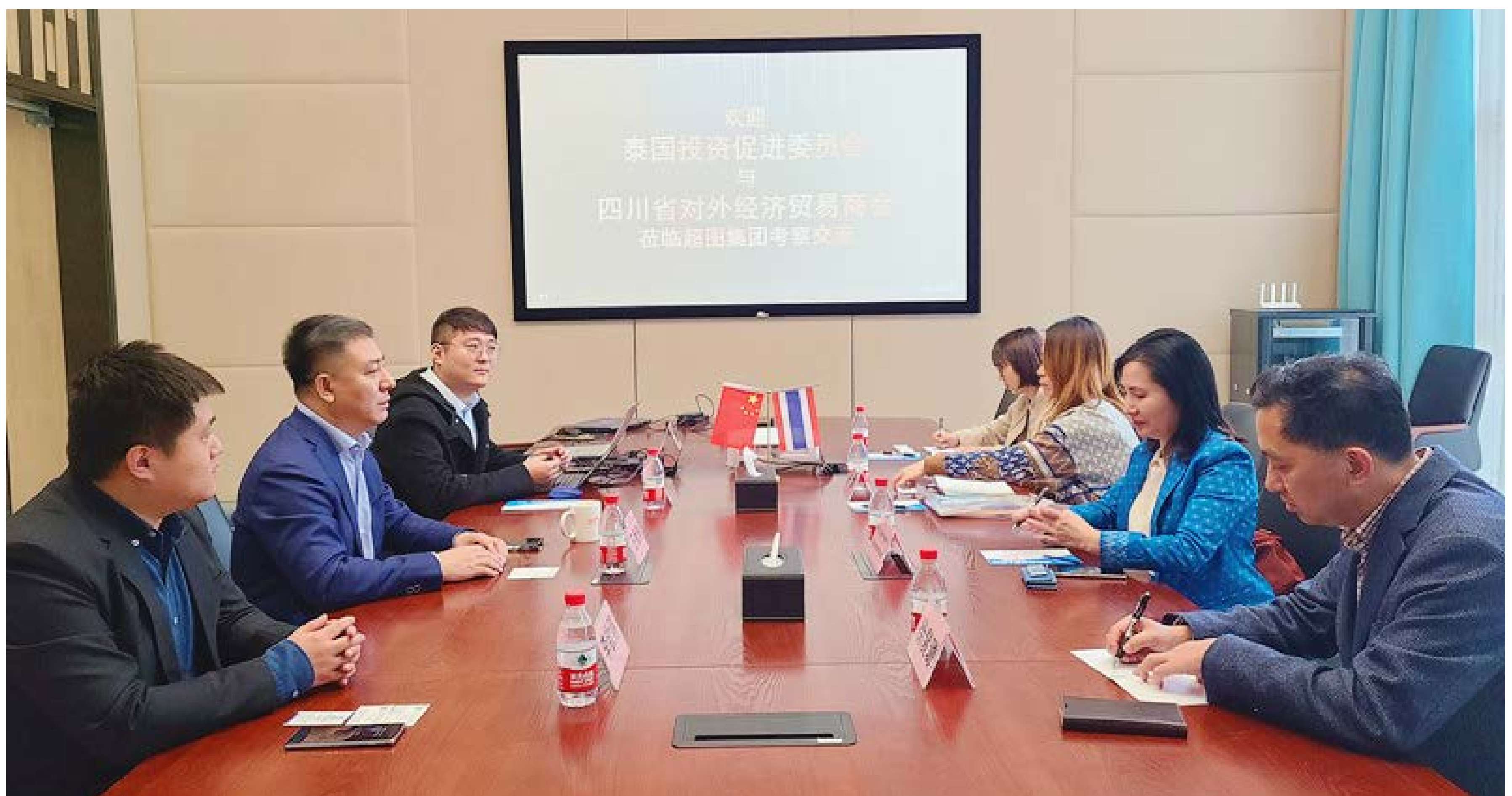


After the whole introduction and discussion, Mrs. Donlaporn Ajavavarakula, Director of the Shanghai Office of the Thailand Board of Investment, said, “the Thailand Board of Investment welcomes Chinese companies to cooperate in Thailand in the fields of business and education, and is also willing to provide relevant policy support and cooperation incentives for Chinese high-tech enterprises represented by SuperMap to further develop its market in Thailand.”

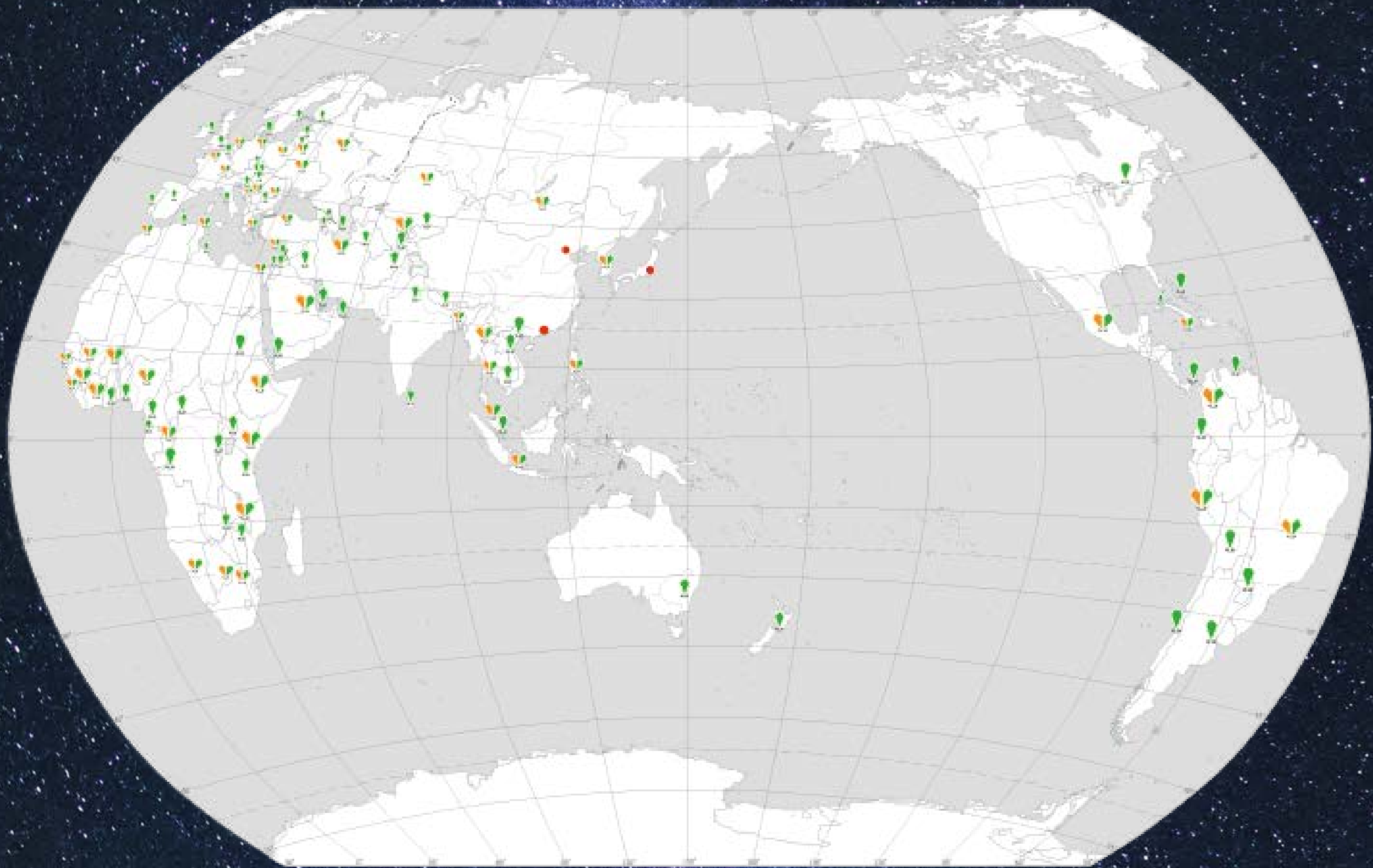
During this visit, the representatives of the three parties introduced their respective cooperation ideas and needs, discussed the direction and content of cooperation, and answered the problems encountered by Chinese enterprises in developing Thailand market. The visiting representatives highly praised SuperMap’s

achievements in international work and the international future development plan. They said that they will work hard to promote the in-depth cooperation between SuperMap International and Ministry of Agriculture of Thailand, Ministry of Education of Thailand and top Thailand universities, and will also strengthen the mutual assistance on exchanges and cooperation in personnel training between the two parties.

Wang Haitao said, “as a Chinese high-tech enterprise with an international perspective, SuperMap is looking forward to further cooperation with the Thailand Board of Investment, which will help SuperMap International to develop the Thai market more effectively, and better serve the Thai government, enterprises, and universities.”



# Global Distributors and Users



● HQ & Branch Offices

📍 Distributors

📍 Customers

SuperMap has developed distributors and partners in over 40 countries and SuperMap GIS end users in over 100 countries. We are looking for more partners from all over the world to build a global partner echo system.