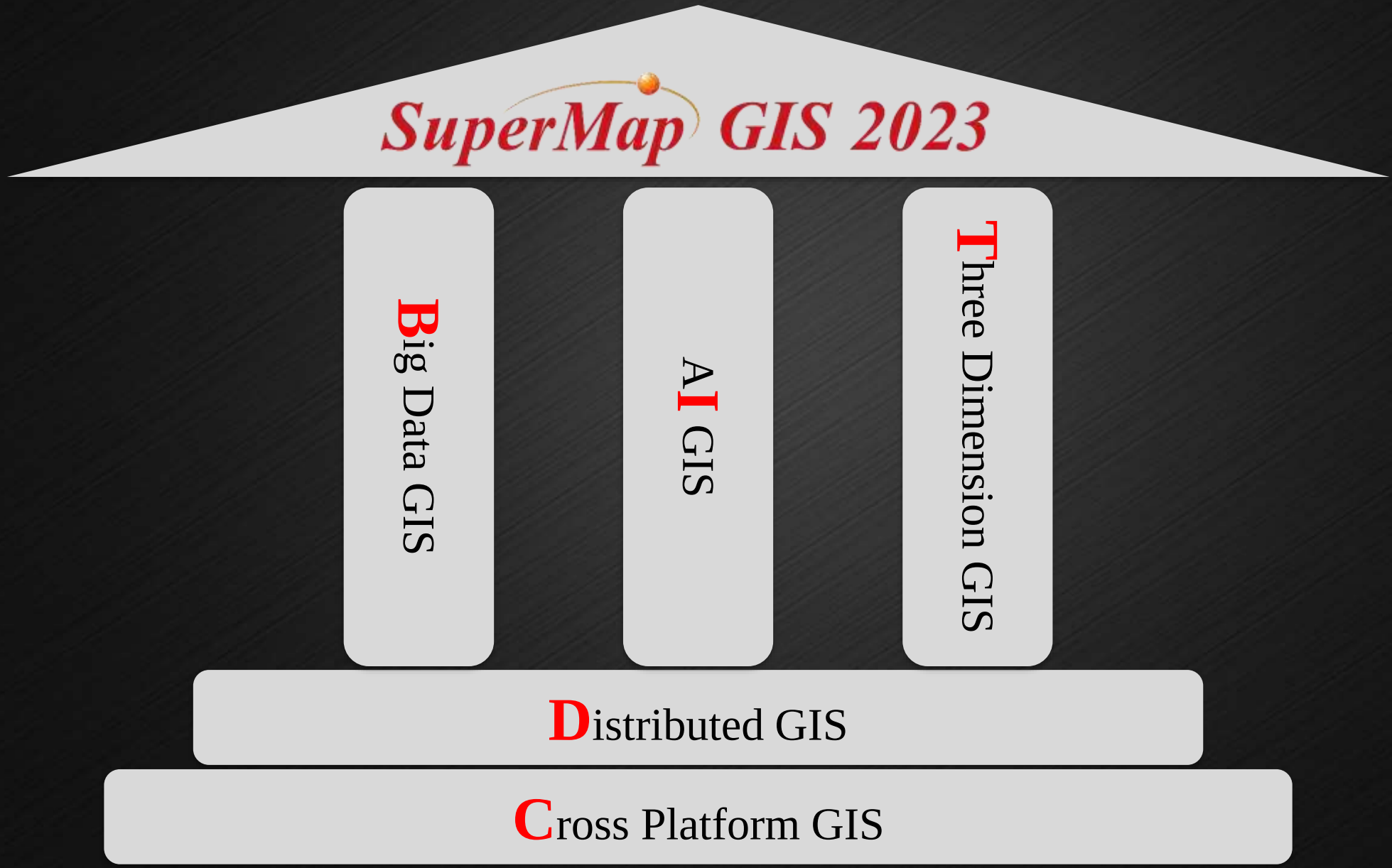
GISTC 空间智能 因融至慧 | 2023地理信息软件技术大会
2023 Geospatial Information Software Technology Conference

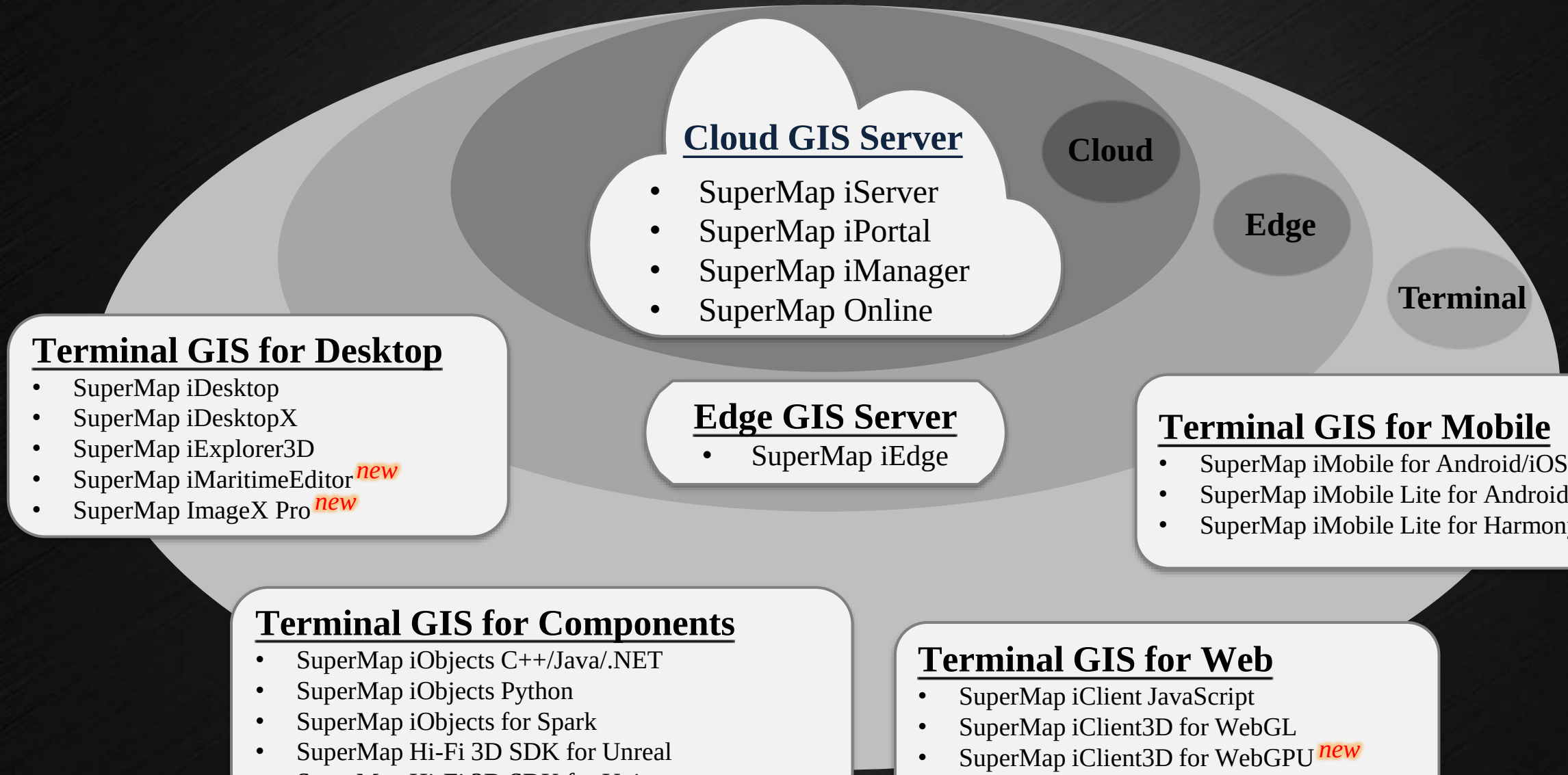
New Progress in SuperMap GIS 2023

Hu Chenpu
General Manager of Terminal Product Department
SuperMap R&D Institute
June 2023, Beijing

SuperMap GIS 2023 Technology System



SuperMap GIS 2023 Product Series



Cloud GIS Server

- SuperMap iServer
- SuperMap iPortal
- SuperMap iManager
- SuperMap Online

Terminal GIS for Desktop

- SuperMap iDesktop
- SuperMap iDesktopX
- SuperMap iExplorer3D
- SuperMap iMaritimeEditor *new*
- SuperMap ImageX Pro *new*

Edge GIS Server

- SuperMap iEdge

Terminal GIS for Mobile

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

Terminal GIS for Components

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

Terminal GIS for Web

- SuperMap iClient JavaScript
- SuperMap iClient3D for WebGL
- SuperMap iClient3D for WebGPU *new*
- SuperMap iClient3D for Cesium

New Progress in SuperMap GIS 2023

1. Newly released: SuperMap ImageX Pro
2. Newly released: SuperMap iMaritimeEditor
3. A new generation of 3D GIS system
4. More stable, effective, and flexible cloud GIS software
5. Fully upgraded desktop GIS software

1

Newly released: SuperMap ImageX Pro

An overview of SuperMap ImageX Pro

A desktop software for remote-sensing data (DOM,DSM,DEM) processing

Multisource satellite remote sensing images

- Enhance image
- Correct radiation
- Correct Geometry
- Generate DOM
- Generate DSM
- Filter DSM
- ……

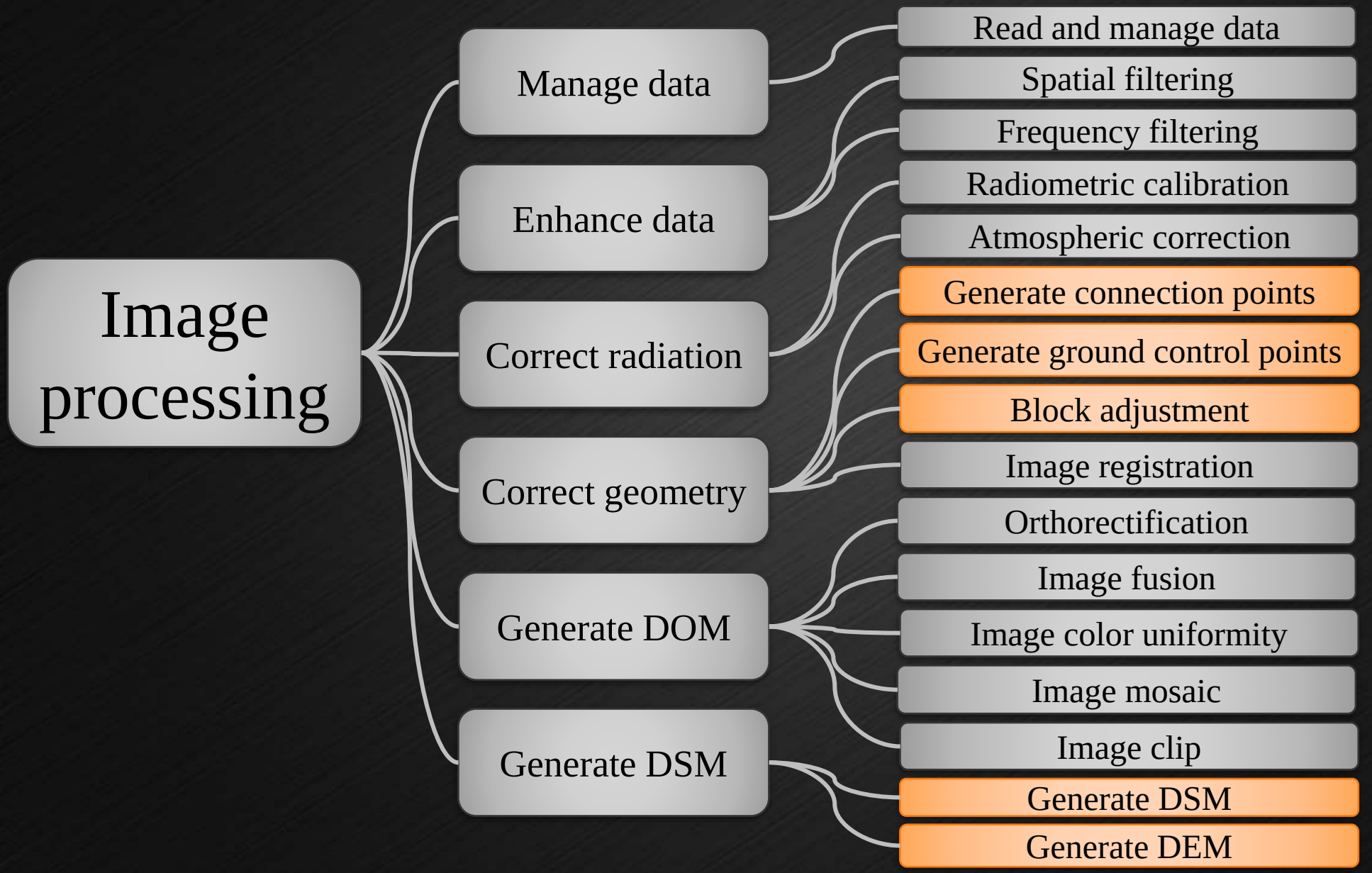
Image processing

DOM/DSM/DEM

- Natural resources
- Ecosystem
- Smart agriculture
- Smart hydrology
- Emergency
- Smart city
- ……

Industrial application

Deeply integrated artificial intelligence



Automatically eliminate non-ground points based on AI semantic information to improve adjustment accuracy

Provide stereo relative matching model based on AI model, automatically filter the height of buildings and woodland in DSM

DOM generation procedure

Panchromatic image

Reference data

Generation connection points and control points

Edit connection points and control points

Multispectral image

Block adjustment(RPC)

Image registration

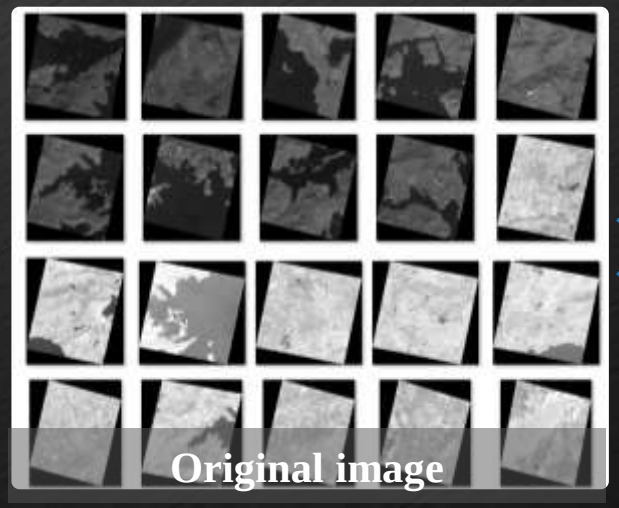
Orthorectification

Image fusion

Image color uniformity

Image mosaic and clip

Orthoimage DOM



Original image

Generated DOM data

Provided Pre-trained Models

Extract water body

data volume: 10,000 1024*1024 image blocks

resolution: 0.2~1m

model precison: F1=0.93, IoU=0.88

Extract buildings

data volume: 470,000 512*512 image blocks

resolution： 0.5-2m

model precison: F1=0.92, IoU=0.85

Provided Pre-trained Models

Extract roads

data volume: 10,000 1024*1024 image blocks

resolution: 0.1~1m

model precison: **F1=0.83, IoU=0.71**

Extract greenhouse

data volume: 3,000 512*512 image blocks

resolution: 1m

model precison: F1=0.95, IoU=0.9

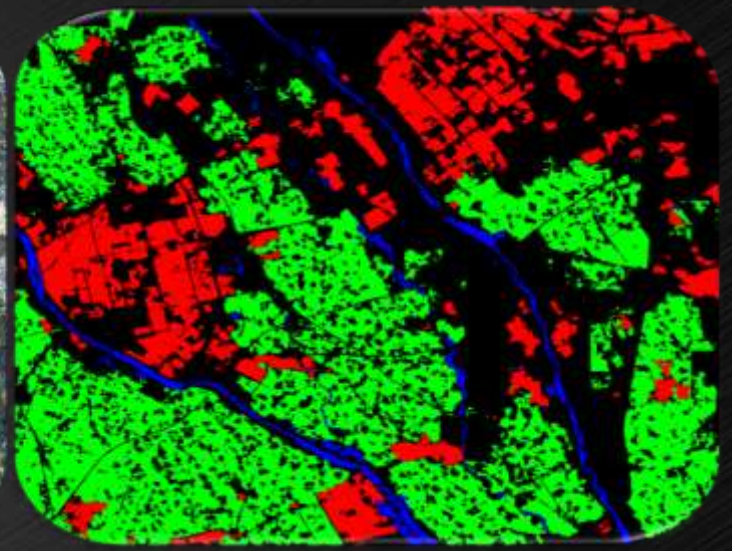
Provided Pre-trained Models

Classify features

data volume: 25,000 1024*1024 image blocks

resolution: 4m

model precison: **F1=0.9, IoU=0.82**



Extract cultivated land

data volume: 140,000 512*512 image blocks

resolution: 0.5-2m

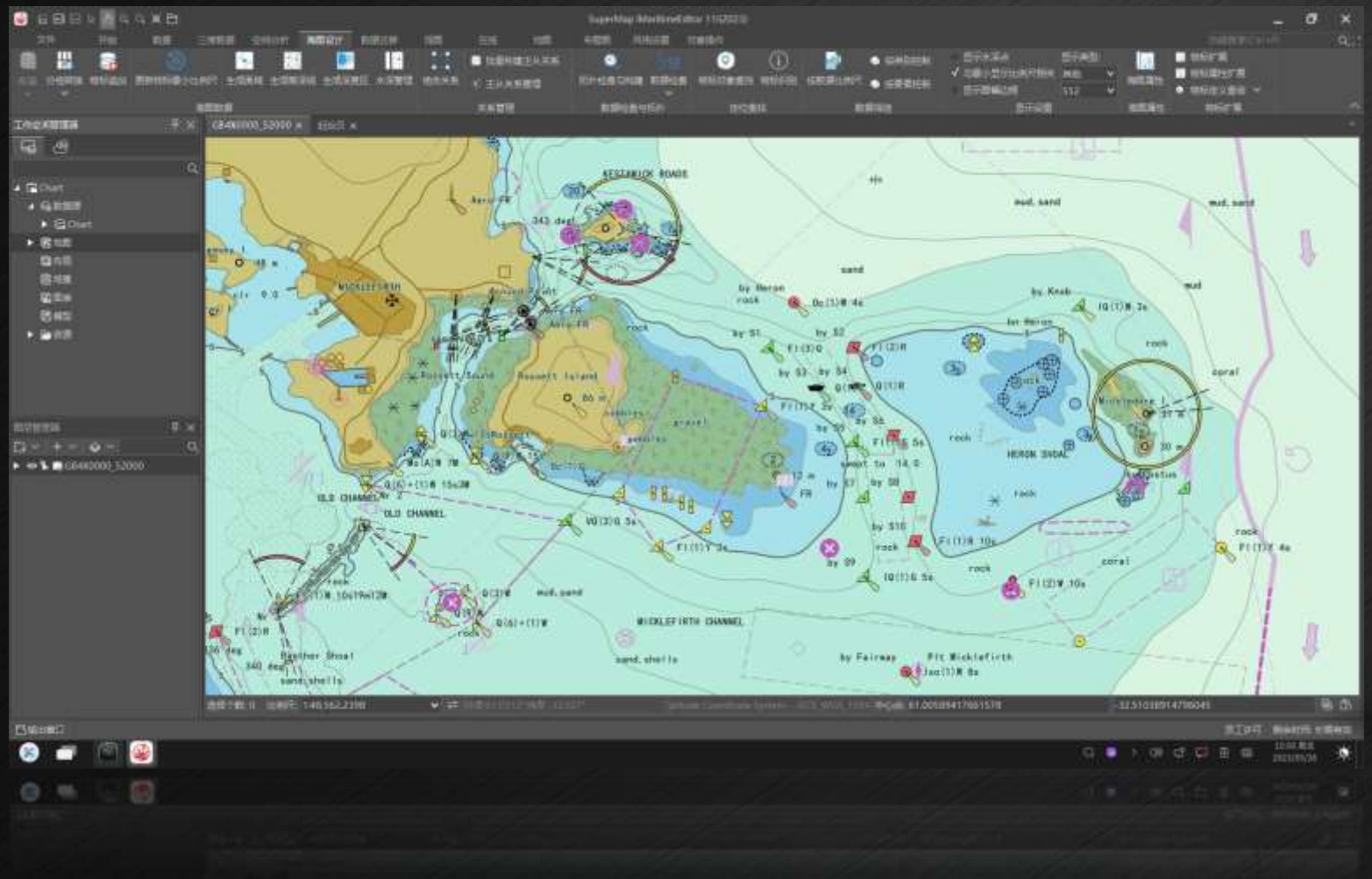
model precison: F1=0.94, IoU=0.89

2

Newly released: SuperMap iMaritimeEditor

SuperMap iMaritimeEditor

A cross-platform desktop software for electronic chart production



S57 standard

Extension

S52 specification

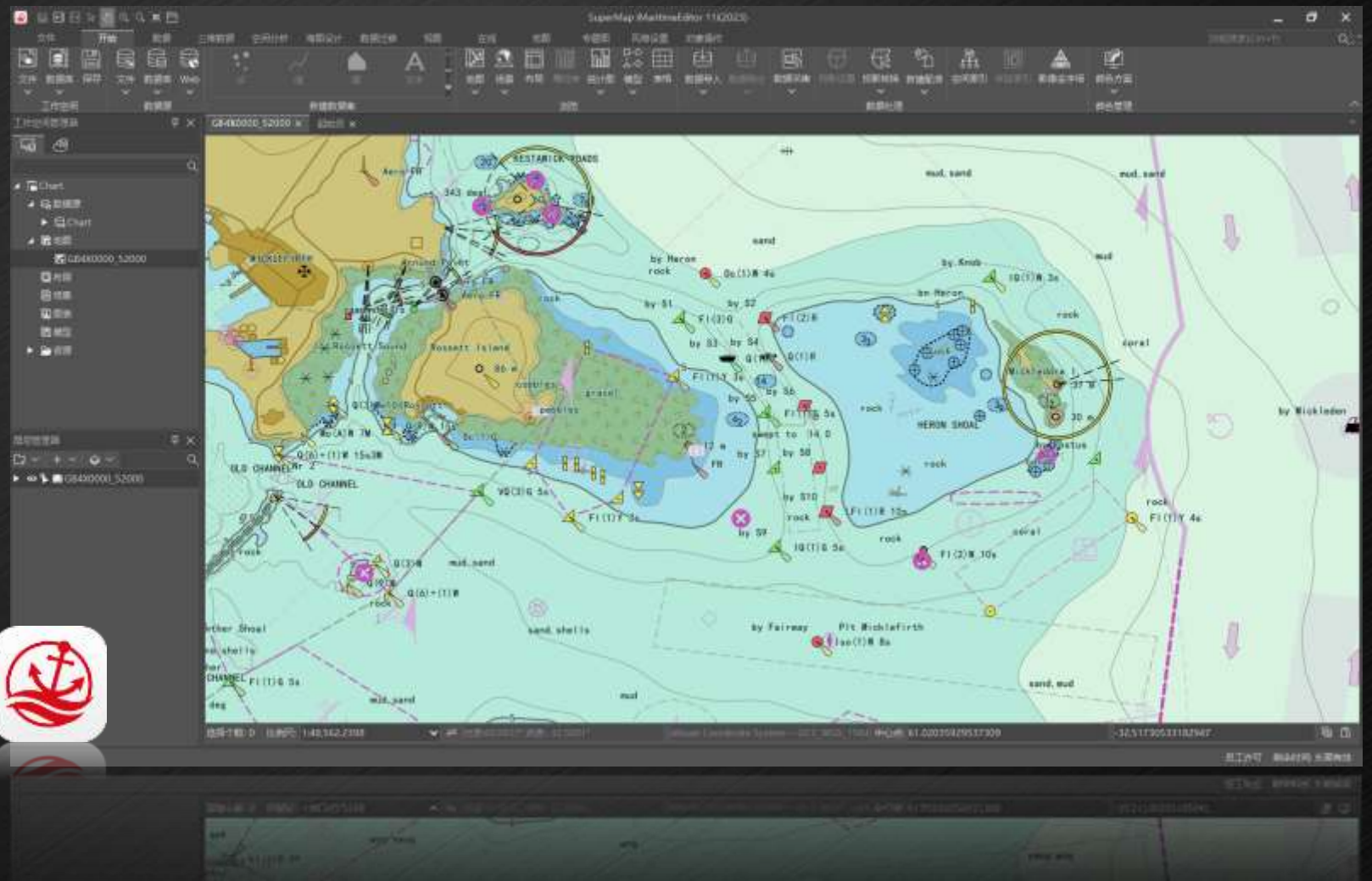
S58 validation checks

S57 Standard: Data Management

- Import S57 files (*.000, *.001, *.002, etc.) in bulk

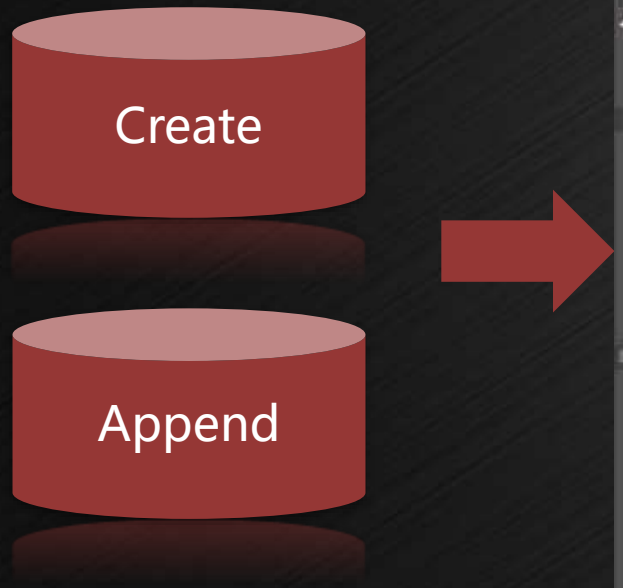
S57
*.000

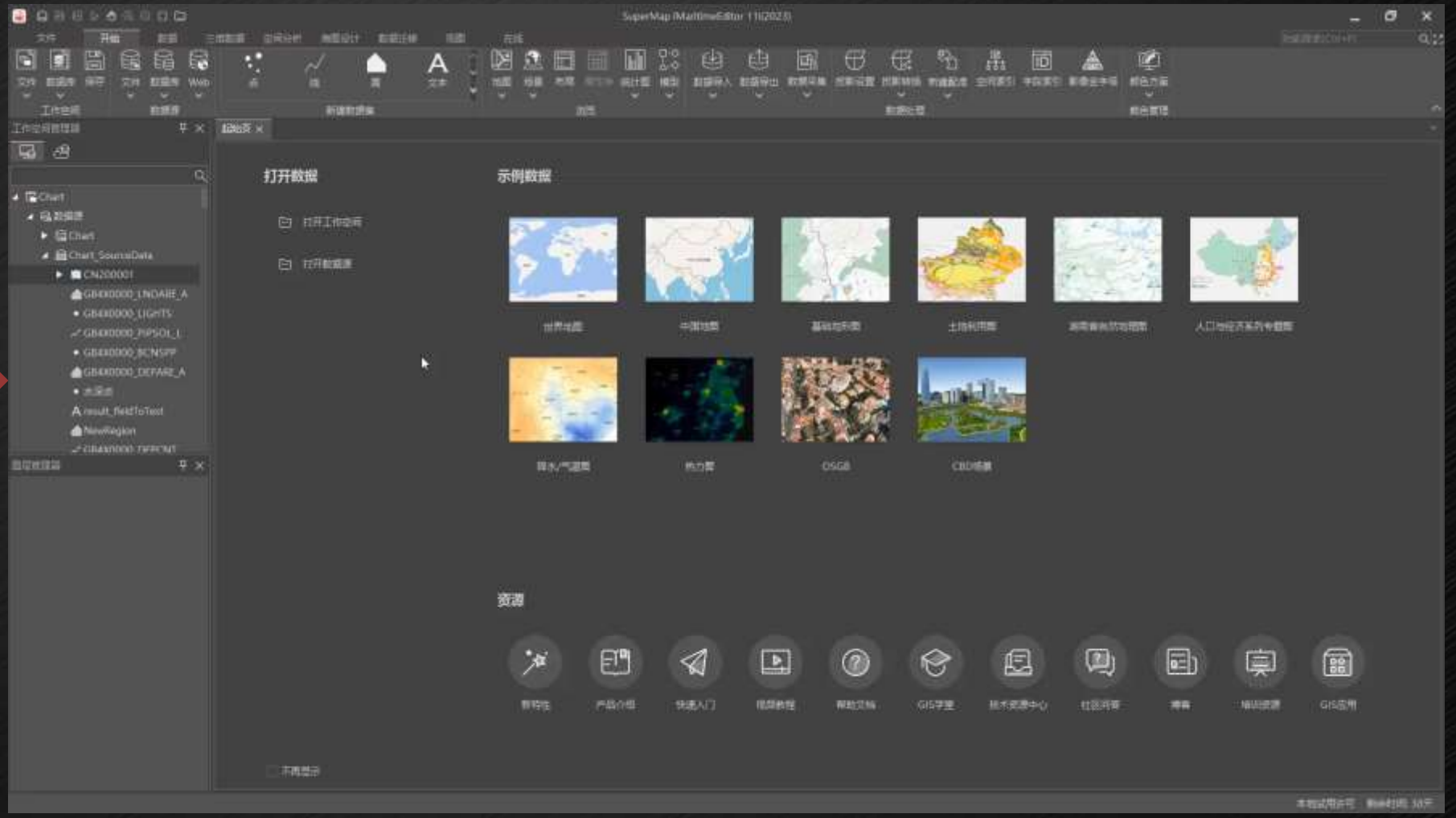
S57 updates
*.001, *.002...



S57 Standard: Data Management

- Create feature objects and append feature objects from common GIS data





S52 Specification: Data Visualization

- Follow S52 specification to display chart data.

Display types

Color modes

Water depth colors

S52 Specification: Data Visualization

- Overlap land data and nautical data

Nautical chart overlaps electronic map

Nautical chart overlaps image

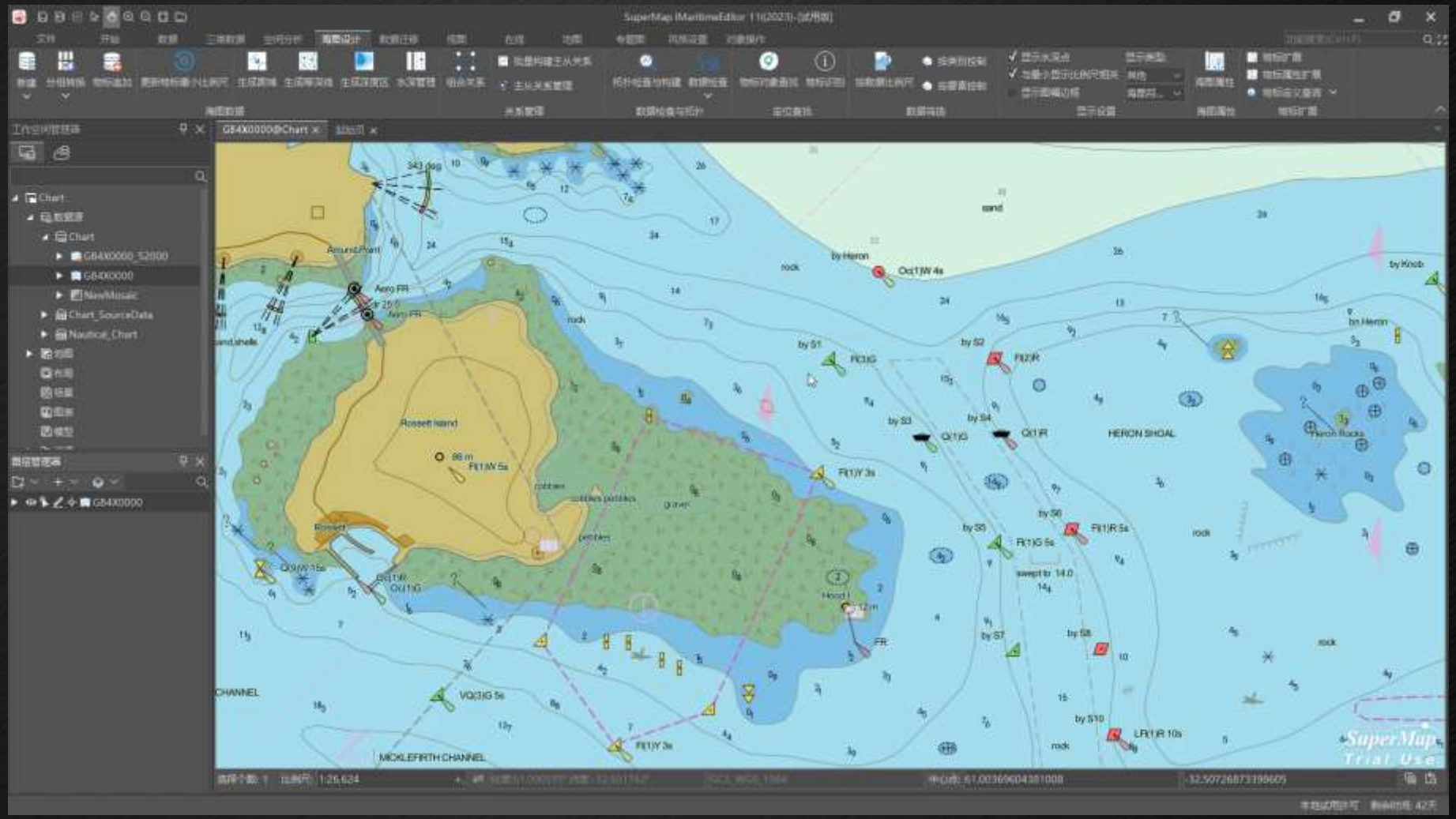
S58 Validation Checks plus Topological Checks

S58 validation checks

SuperMap topological checks

Display results and check error information

Interactively fix data errors



3

A new generation of 3D GIS system

GISTC

Innovation 1: Game Engine plus GIS

3D GIS

Game engine

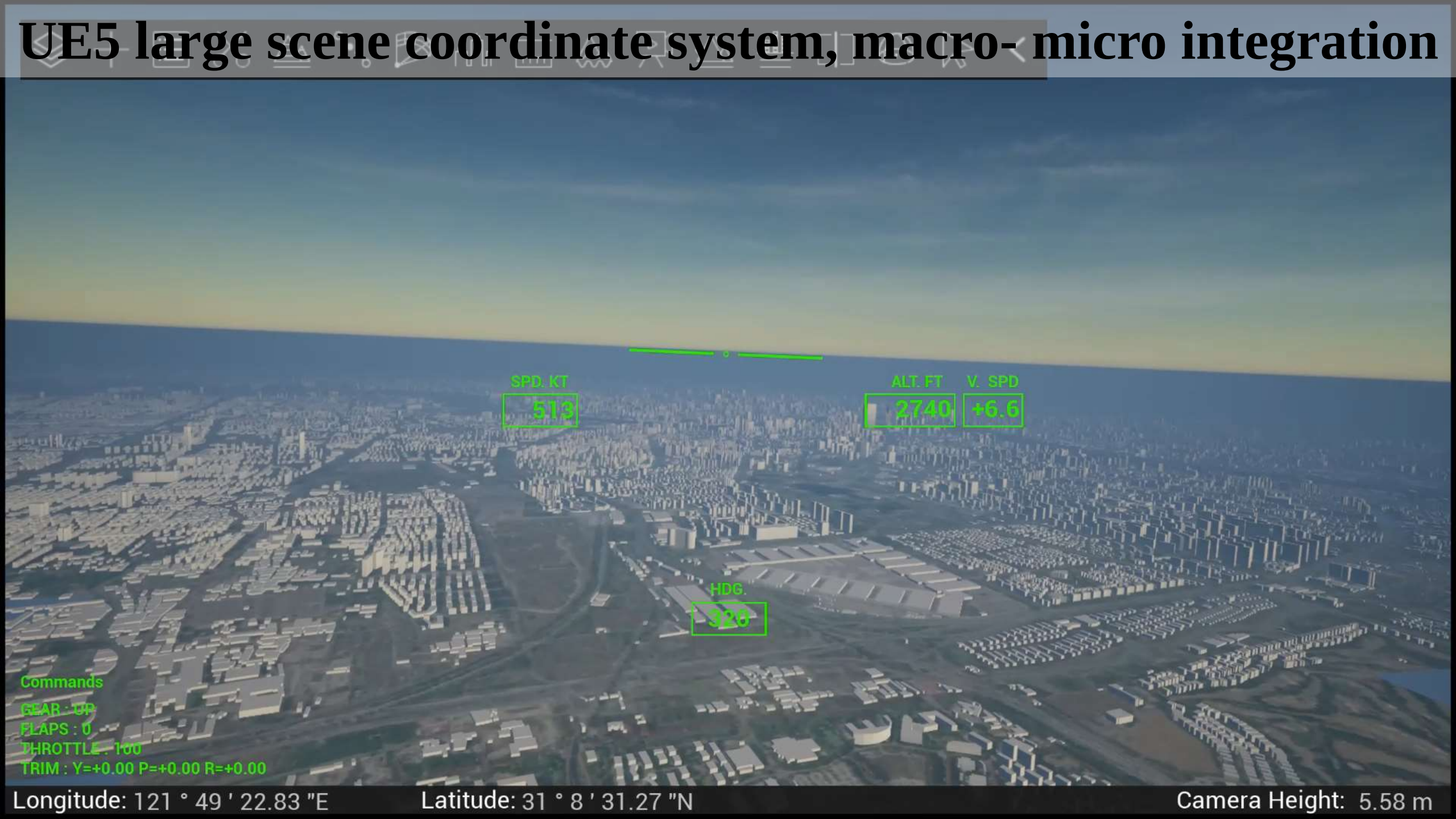
SuperMap 3D GIS Game Engine
Development Platform
(UE, Untity3D)

Geospatial data
Real geographic coordinates

3D geographic environment
Realism, immersion

digital twin, metaverse

UE5 large scene coordinate system, macro- micro integration



Innovation 2: Hi-Fi 3D SDK

Game engine (UE4/UE5、Unity、HMS Core 3D Engine)

SuperMap 3D GIS plugin

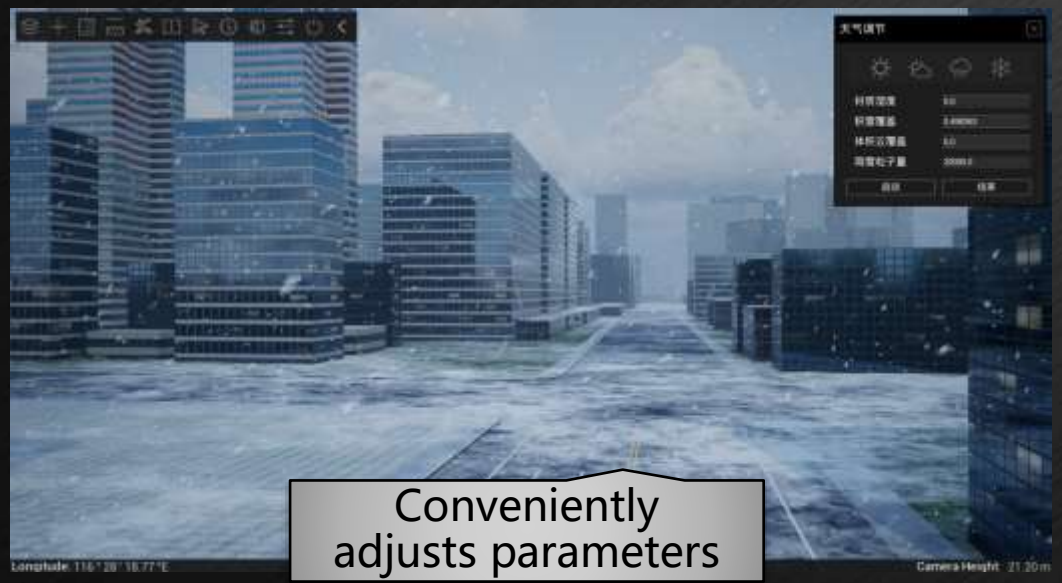
SuperMap Hi-Fi 3D SDK

Innovation 2: Hi-Fi 3D SDK

Innovation 3: SuperMap iExplorer3D

Directly loads 3D data

Carries a huge scene

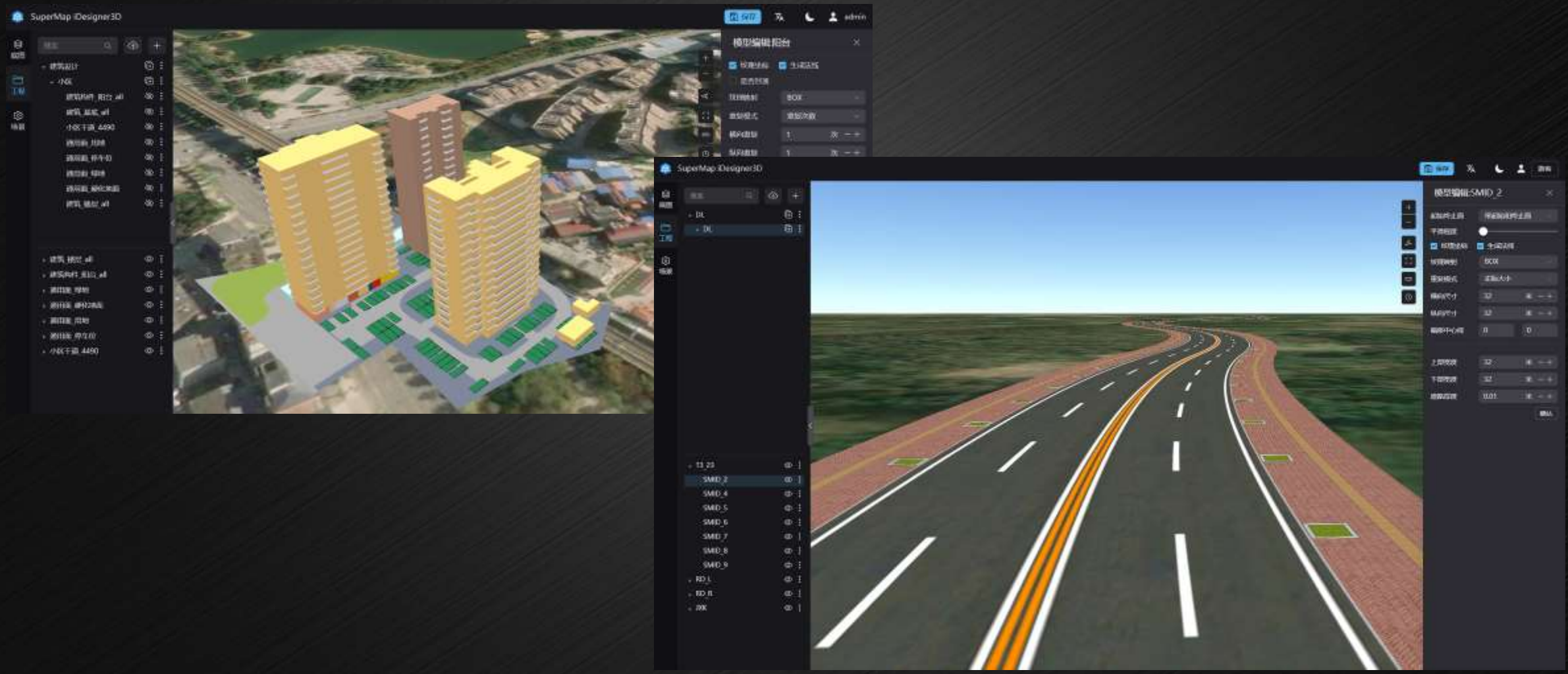


Conveniently adjusts parameters

Supports cloud rendering

Innovation 4：SuperMap iDesigner3D WebApp

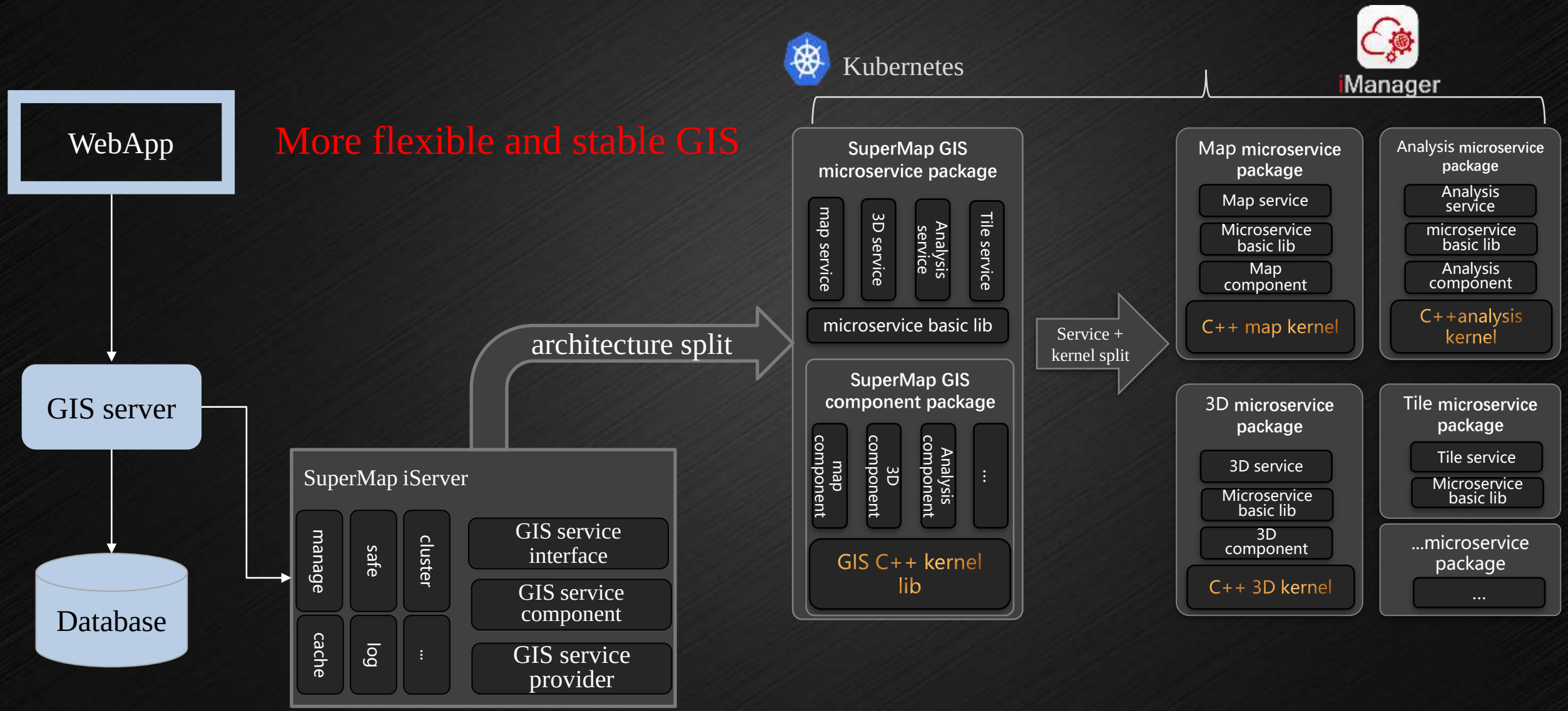
Construct and edit architectural models and road models online



4

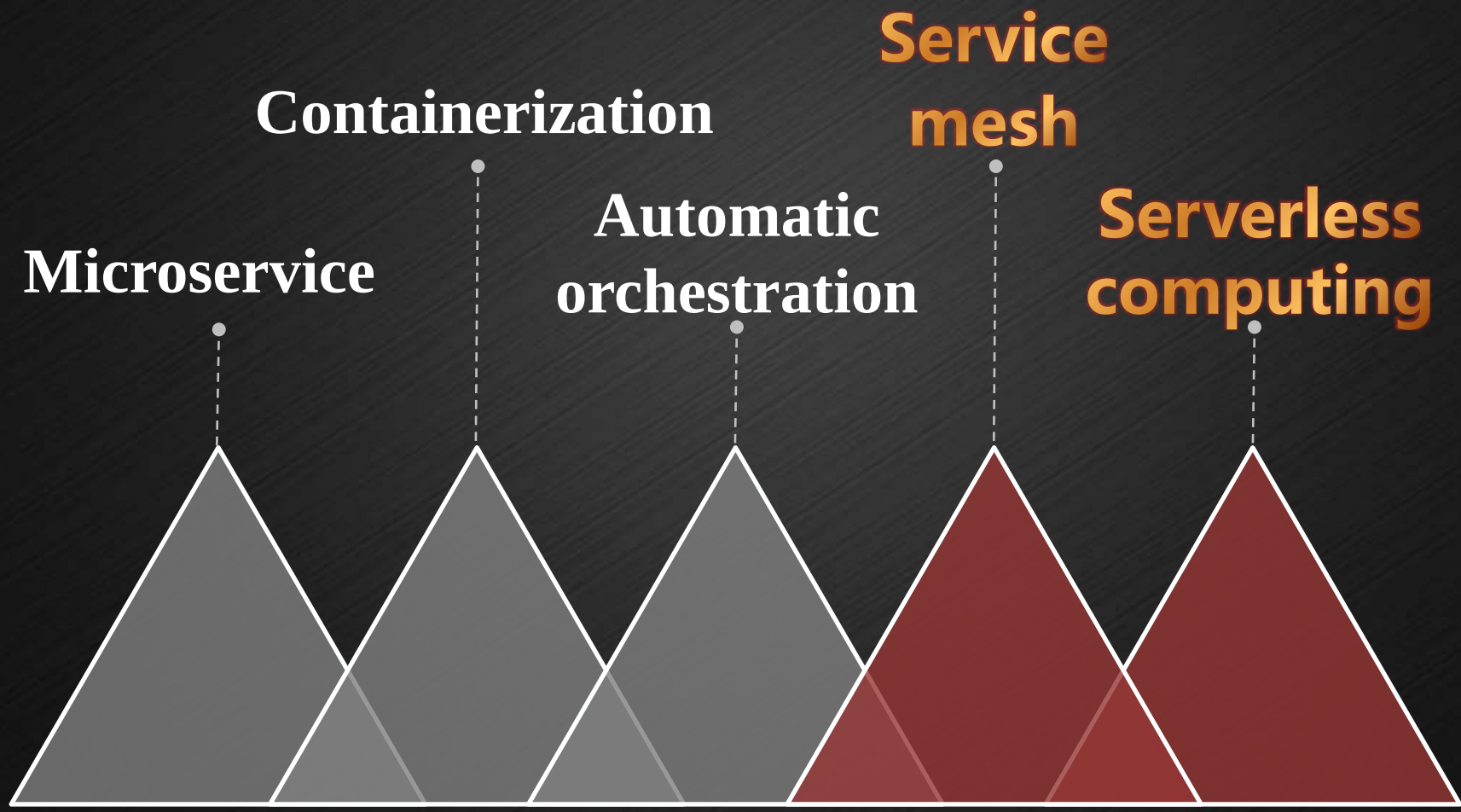
More stable effective cloud GIS software

SuperMap Cloud-native GIS Technology

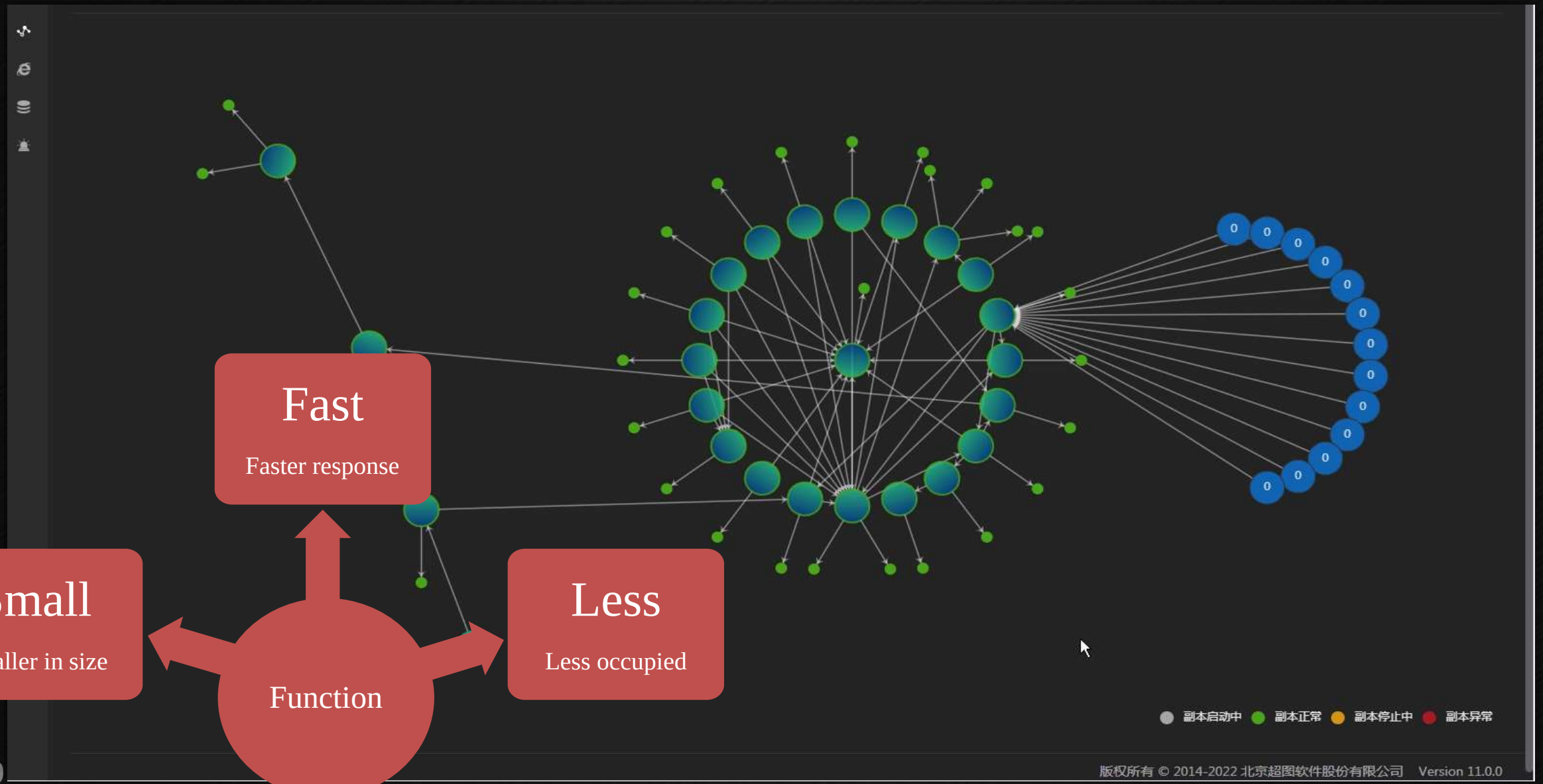


GIS server with traditional architecture

Cloud-native GIS 1.0 to 2.0



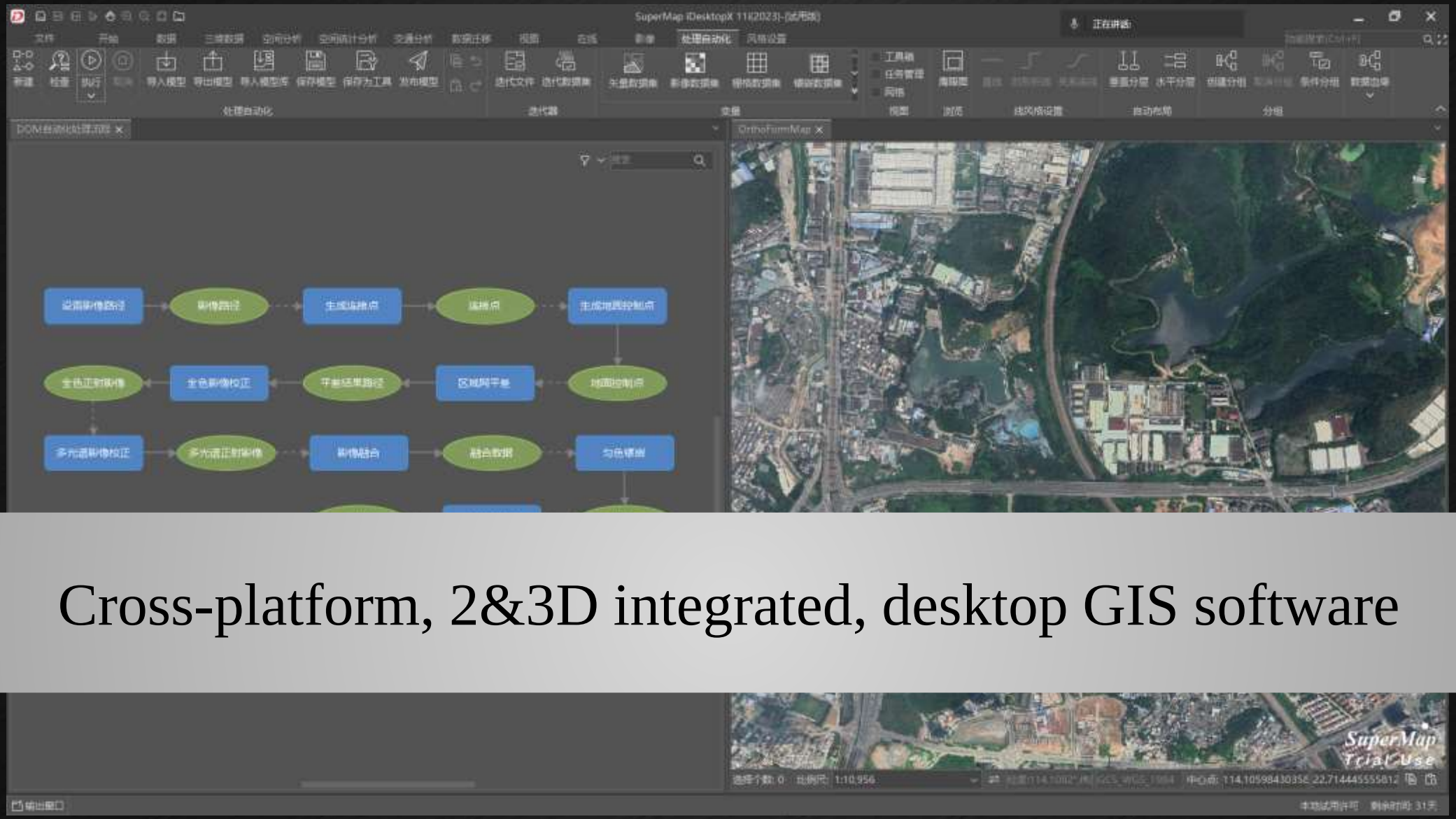
GIS Service plus GIS Serverless Computing



5

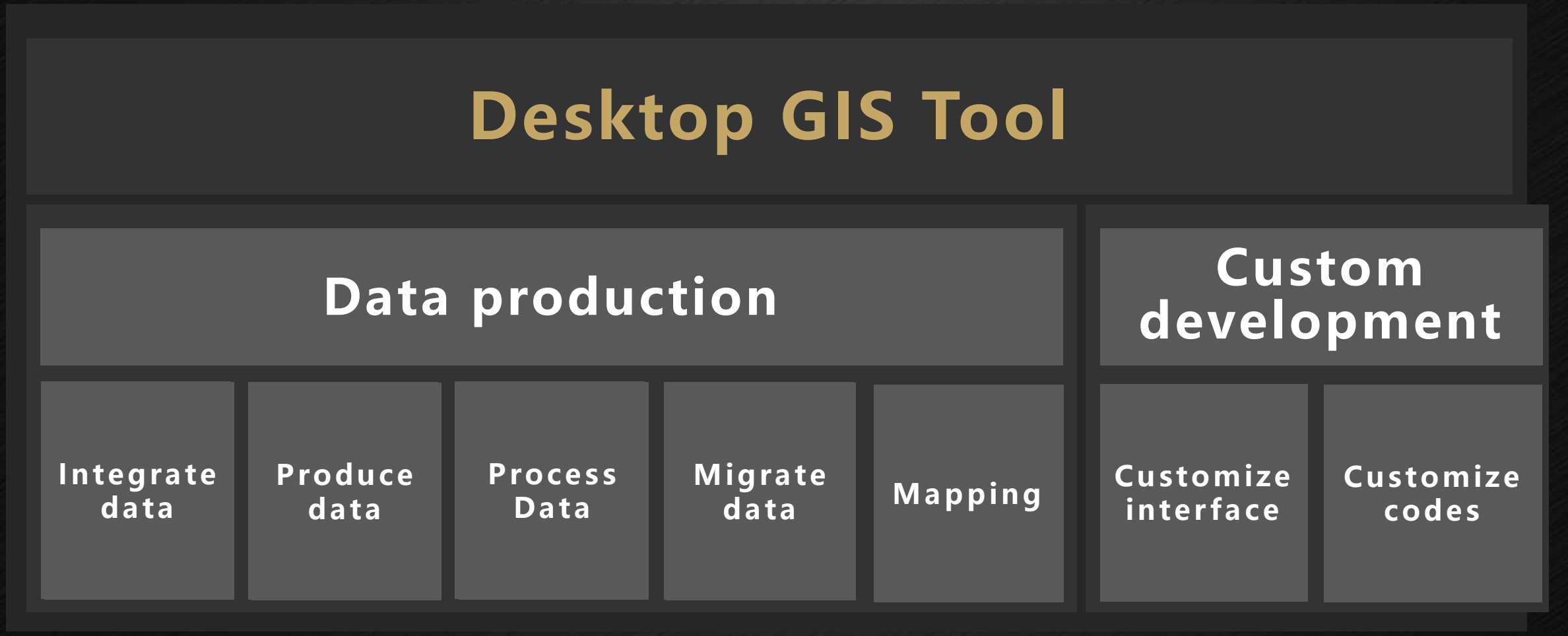
Fully upgraded desktop GIS software

SuperMap iDesktopX 2023



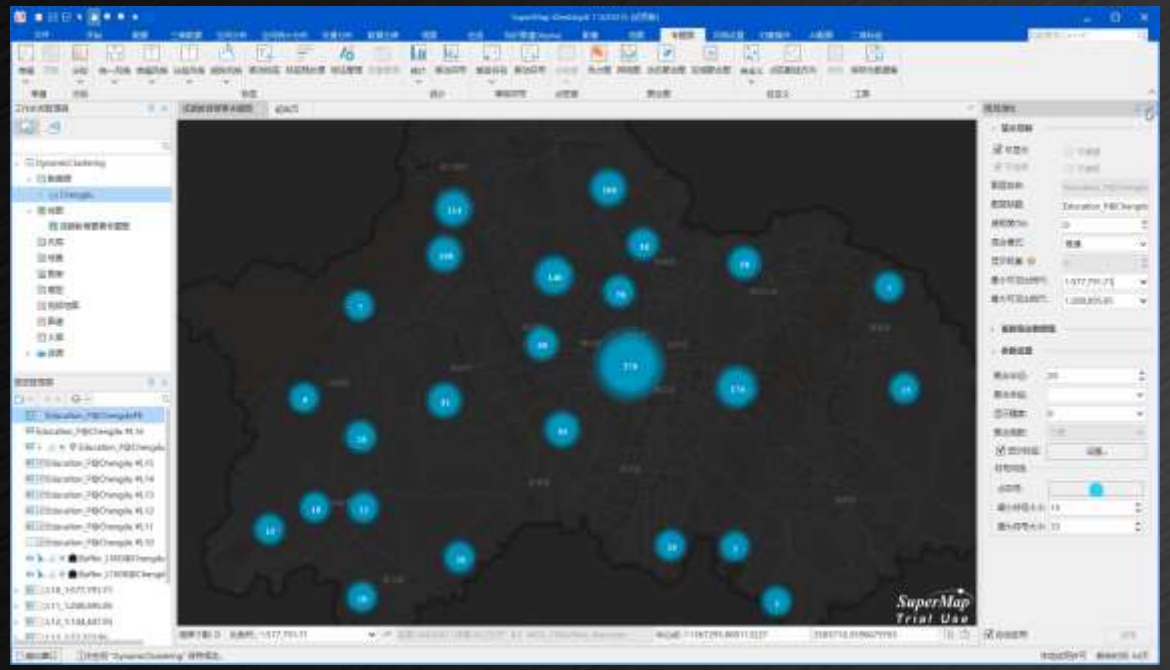
Cross-platform, 2&3D integrated, desktop GIS software

Product Positioning

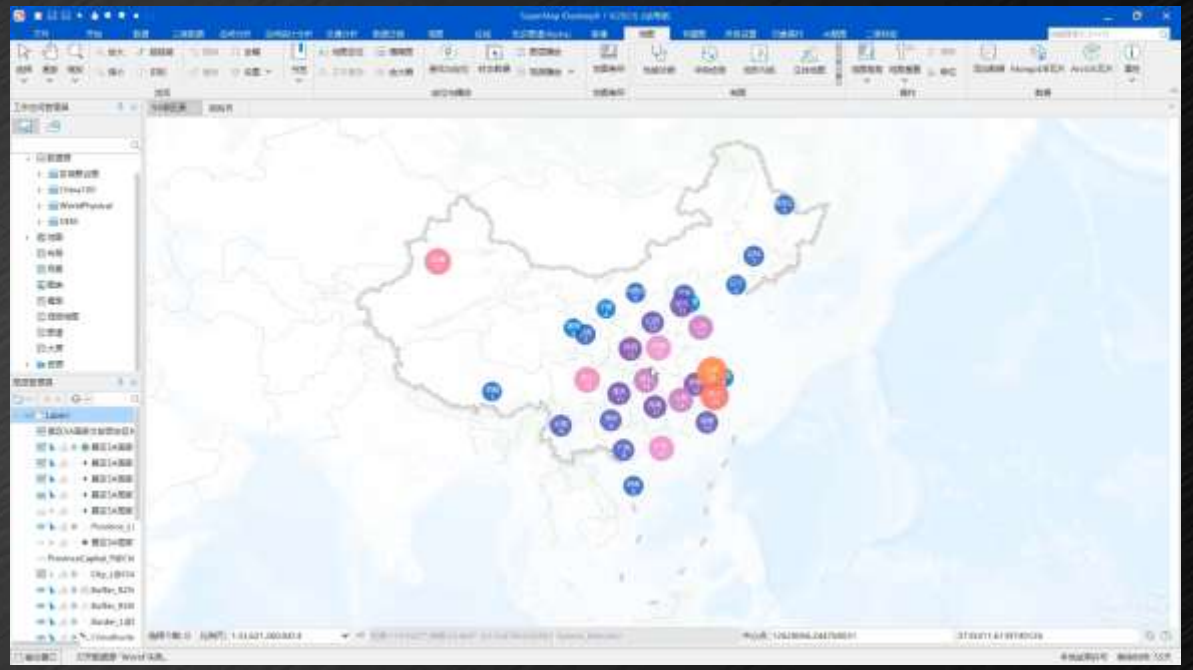


What improvements have we made?

Improvements: Dynamic Aggregation Map



Dynamic Aggregation Map
Dynamically describes the characteristics of data distribution, density and trends through the size of markers

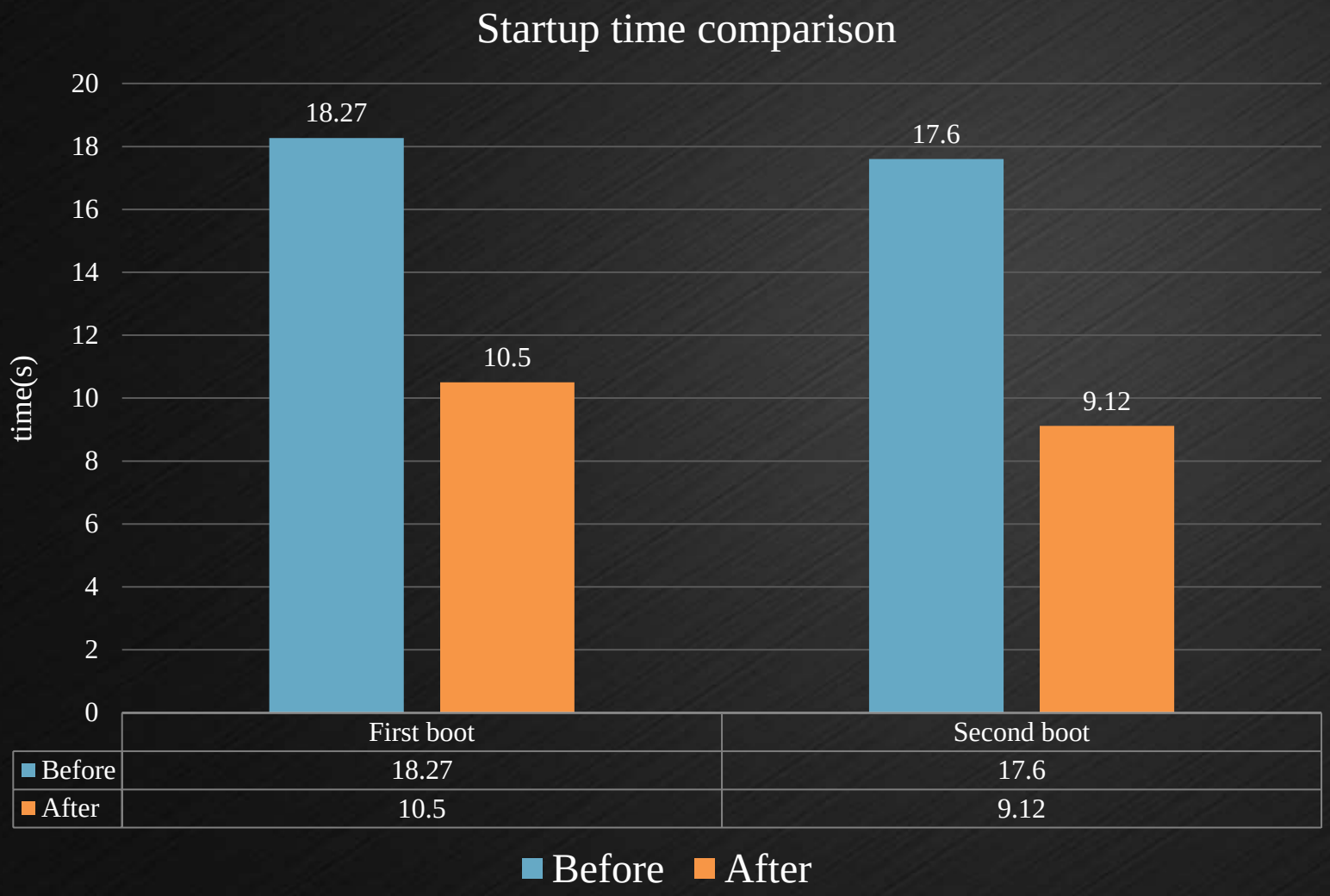


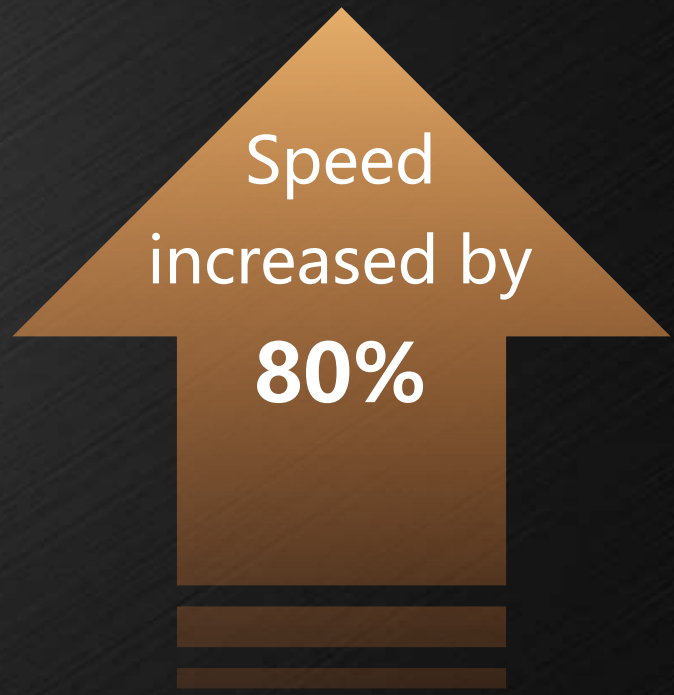
Regional Aggregation Map
Describes the characteristics of aggregated data in a given area by sizes and colors of symbols

Improvements: Cartograms

Improvements: Startup Speed

Speeded up the application startup process

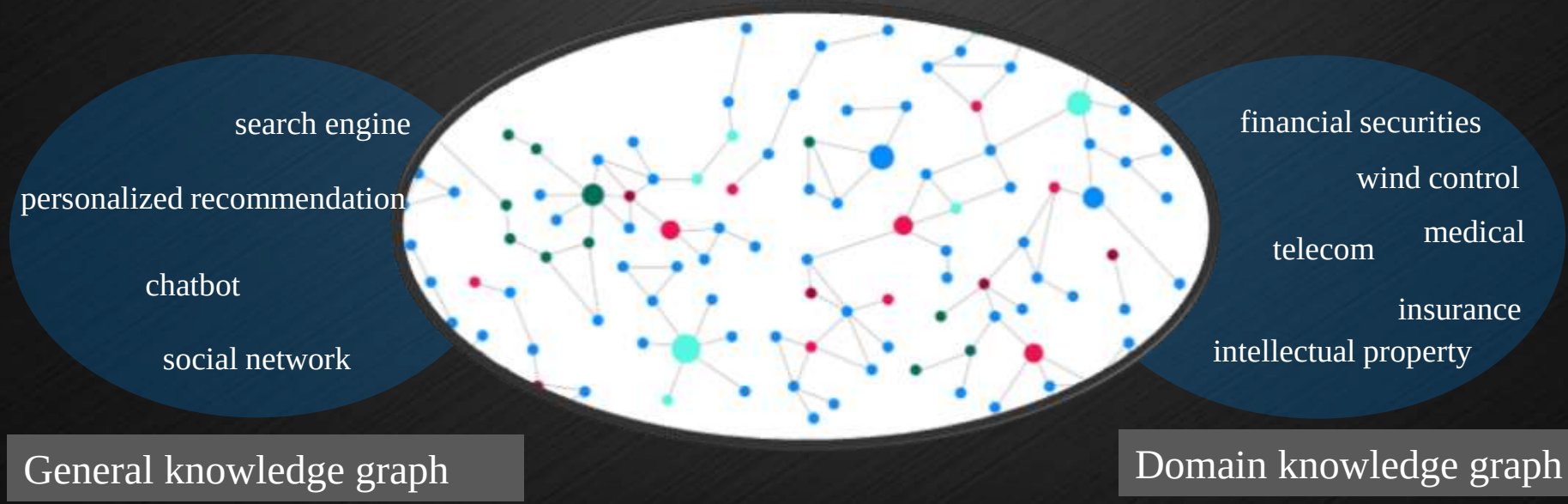




What new features are included in SuperMap iDesktopX 2023?

Knowledge Graph

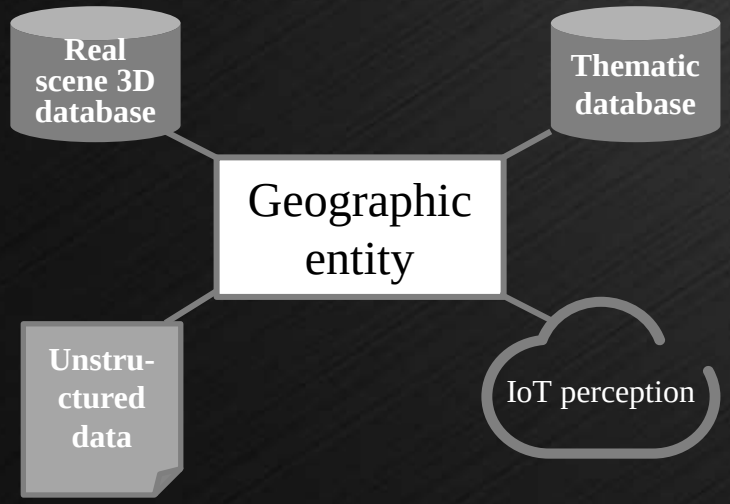
- A display form of knowledge, associating everything into a semantic network.
- Entities are displayed by nodes, and relationships are displayed by edges.
- Compared with traditional structured data, knowledge graphs are more efficient in querying and exploring data associations.



Integration of Knowledge Graph and GIS

1 Integrate and manage multi-source heterogeneous data

Establish semantic associations between different data types and different databases, form a complete domain relationship network, and facilitate the integration and management of multi-source heterogeneous data



2 Spatial expression of relationships

The attributes, graphics, and spatial distribution can be shown on the map, but the relationship between entities cannot be displayed. SuperMap provides the combination of maps and knowledge graphs ability.

Integration of Knowledge Graph and GIS

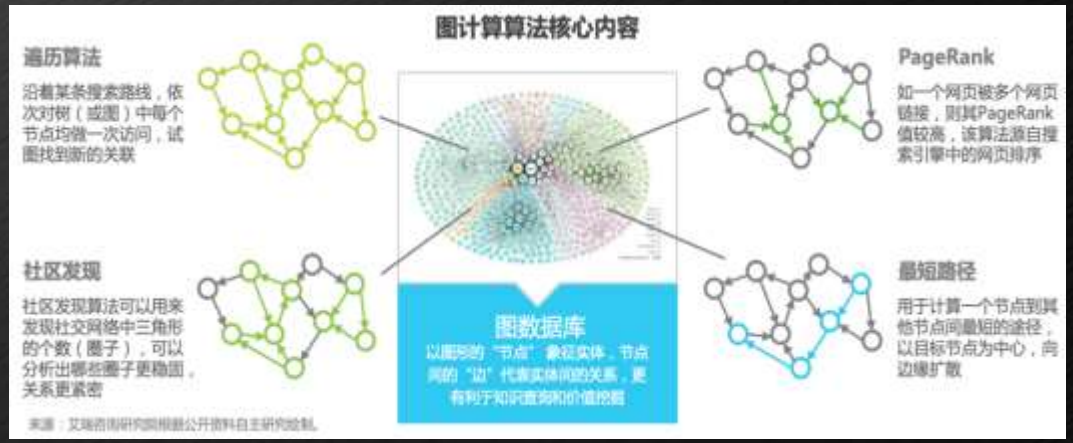
3 Efficient query performance

A large number of relational queries, recursive queries, and multi-layer spatial queries, graph database query is faster.

multi -hop	relation database	graph database	returned records number
2	0.016s	0.01s	2500
3	30.267s	0.168s	110000
4	1543.505s	1.359s	600000
5	Undone	2.132s	800000

4 Provides knowledge services

SuperMap iDesktopX provides knowledge services. graphic analysis, relational queries, and reasoning tools help mine information, extract knowledge, and make decision



Review

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Thank You All!

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