SuperMap

SuperMap GIS 11i (2022)

SuperMap Software Co., Ltd.


"Innovate IT Value
with Geo-intelligence."
"Create Cutting-edge Technologies Constantly,
Light up Every Corner of the Planet
with Geo-intelligence!"

About SuperMap GIS 11i (2022)

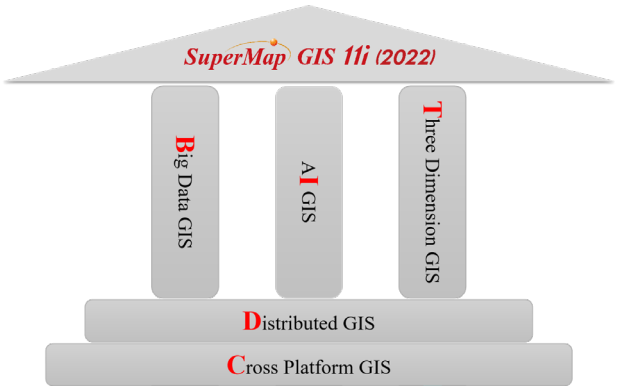
SuperMap GIS is a complete package of GIS platform software for 2D and 3D integrated spatial data acquisition, storage, management, analysis, processing, mapping and visualization, as well as a development platform for various industries.

After more than 20 years of technology development, SuperMap has built a cloud-edge-terminal integrated SuperMap GIS product architecture, including cloud GIS server, edge GIS server, terminal GIS, providing offline deployment and online services (SuperMap Online).

In SuperMap GIS 11i (2022), SuperMap has further improved the five key technologies system (BitDC) of GIS platform software. They are big data GIS, AI(artificial intelligence) GIS, new 3D GIS, distributed GIS and cross-platform GIS technology, which enriched and innovated GIS theory and technology, and empowered the informatization of various industries.

SuperMap GIS 11i (2022) Technologies

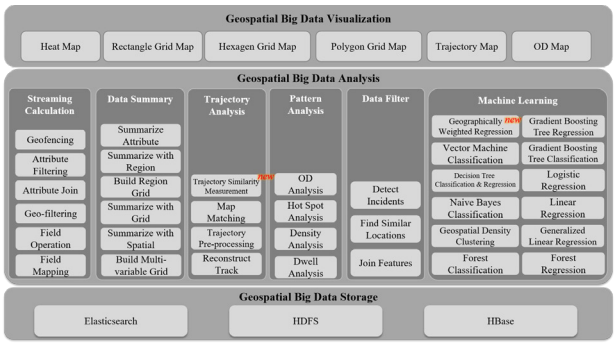
In SuperMap 11i(2022), SuperMap further innovates the five technology systems of GIS platform software (BitDC), they are big data GIS, AI(artificial intelligence) GIS, new 3D GIS, distributed GIS and cross platform GIS.



SuperMap GIS 11i(2022) Technology System (BitDC)

01 Big Data GIS

The big data GIS system includes the storage and management of geospatial big data, geospatial analysis, streaming data processing and visualization technology, dedicates to providing a comprehensive support for big data GIS infrastructure software and services, and making more users easily manage geospatial big data "gold mine".



Big Data Technology System

• Provides geospatial big data storage engines

◇ Provides HBase and HDFS engines for large scale raster data.

◇ Provides Elasticsearch engines for streaming data.

◇ Supports customized extensible geospatial big data storage engine.

• Strengthens analysis capability of geospatial big data

◇ Kernel level extended Spark geospatial data model.

◇ Supports 6 categories covering 30 kinds of geospatial big data analysis operator.

◇ Supports track similarity measurement and geographic weighted regression big data analysis operators.

• Provides plentiful and cool visualization of geospatial big data

◇ Integrated open source map development library (OpenLayers, Leaflet, MapboxGL JS) and visualization library (ECharts, MapV, DECK.GL).

◇ Provides 2D / 3D and dynamic / static visualization.

◇ Provides spatial big data visualization technologies such as scatter map, heat map, honeycomb map, grid map, trajectory map, O-D map, flow map, etc.

• Supports multiple distributed computing resource management

◇ Provides built-in spark clusters and external spark cluster.

◇ Supports Hadoop cluster YARN mode.

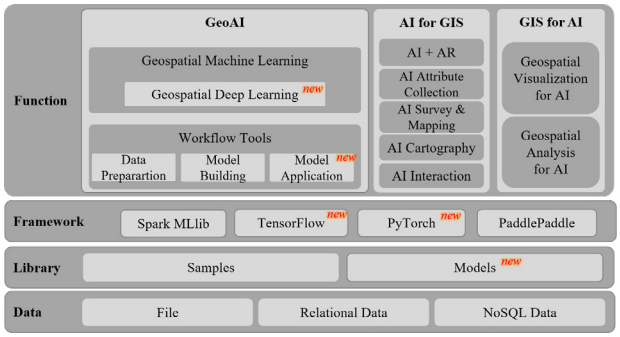
02 AI(Artificial Intelligence) GIS

AI GIS is the integration of AI and GIS. It includes the following features:

1) Combines GeoAI and relevant process tools.

2) Enhances the function and interactive user experience of GIS software based on AI technology, and improves the intelligence of GIS software.

3) Management, visualization and analysis of GeoAI results based on GIS.



AI(Artificial Intelligence) GIS Technology Architecture

• Improves AI GIS function of all products

◇ Improves server machine learning service, and newly supports various geospatial machine learning functions, such as general change detection.

◇ Supports desktop AI marking function, broken road detection model and Yolo V5 model.

◇ Supports general change detection of component terminal, and supports multiple new deep learning model like SFNet.

◇ Improves mobile AI+AR analysis, AI attribute acquisition, AI mapping, etc.

• Improves AI GIS workflow tools

◇ Supports image sample management in the data preparation stage.

◇ Supports post-processing tools for image analysis reasoning results, such as polygon aggregation, building regularization, etc.

◇ Enhances model evaluation ability in model application stage.

• Improves geospatial sampling and statistical inference function

◇ Supports simple random sampling, systematic sampling and stratified sampling.

◇ Supports geospatial random sampling, geospatial stratified sampling and sandwich sampling.

◇ Supports SPA model and B-Shade model.

• Supports various geospatial machine learning functions

◇ Cluster analysis: supports geospatial hotspot analysis, geospatial density clustering, k-means clustering, shift mean clustering, etc.

◇ Classification analysis: map matching, address element identification, forest-based classification, etc.

◇ Regression analysis: geosimulation, geographically weighted regression, Spatiotemporal geographical weighted regression, forest-based regression, etc.

• Supports various deep learning model

◇ Image analysis target detection: Cascade R-CNN, Faster R-CNN, RetinaNet.

◇ Binary classification of image analysis: FPN, DeepLabv3+, U-Net, D-LinkNet, SFNet.

◇ Image analysis ground-object classification: FPN, DeepLab V3+, U-Net, SFNet.

◇ Image analysis scene classification: EfficientNet.

◇ Image analysis object extraction: Mask R-CNN.

◇ Image general change detection: DSAMNet, Siam-SFNet.

• Upgrades deep learning framework

◇ Upgrades TensorFlow framework from version 2.3 to 2.6 and Pytorch framework from version 1.8 to 1.10.

◇ Upgrades CUDA to version 11.3, and supports RTX30.

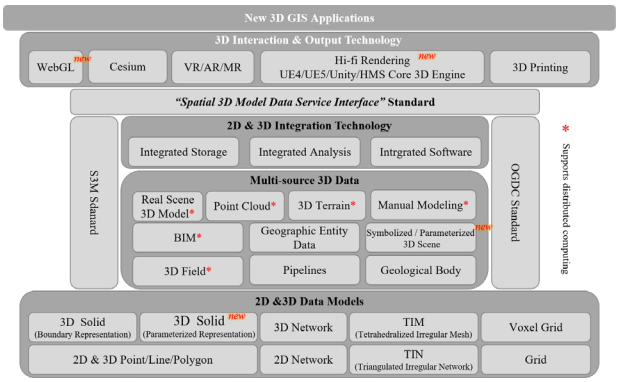
• Improves mobile AI

◇ Improves AI attribute acquisition, AI mapping and mobile AI+AR analysis.

◇ Supports geo-fencing, speed limit analysis and video segmentation.

03 3D GIS

It is based on 2D & 3D integrated GIS technology, further develops the computing and analysis capabilities of geospatial data model, combines oblique photogrammetry, BIM, point cloud, 3D field and other multi-sourced heterogeneous data, and sets an open "Geospatial 3D Model Data Format" (S3M) standard and "Geopatial 3D Model Data Service Interface" standard to promote the opening and sharing of spatial 3D data. Based on distributed processing automation tools, the efficient whole-process management of 3D data such as manual modeling data, BIM, real 3D model, point cloud, terrain can be realized. It integrates IT technologies of WebGL, VR, AR, AI, 3D printing and etc. to bring a more realistic and convenient 3D experience, promote 3D GIS to achieve outdoor and indoor integration, macro and micro integration, and aerospace/surface/underground integration, and empower the application of full space new 3D GIS.



SuperMap New 3D GIS Technology System

• S3M format upgrades to version 3.0

◇ Supports geometry compression(Meshopt) and texture compression(KTX2.0), Greatly reduce the amount of data to meet the efficient application of multiple terminals.

◇ Supports OBB(Oriented Bounding Box), and supports more accurate frustum cutting and scheduling switching, which improves uploading and downloading performance.

◇ Supports LOD switching mode Geometric_ Error.

◇ Supports mask texture based on PBR, and supports game engine material function.

◇ Vertex extension attribute supports storing semantic information at the vertex level.

◇ Supports skeletal / skin animation.

◇ Improves extensibility and compatibility.

• Newly upgraded high fidelity 3D GIS SDK

◇ Supports UE5 engine.

◇ Newly releases high fidelity 3D scene browser software SuperMap iExplorer3D.

◇ Large world coordinates (LWC) supports ue5 to improve the rendering accuracy of large scenes.

◇ URP 3D GIS plug-in (Unity) fully supports universal rendering pipeline (URP).

◇ Supports access to more types of GIS data, and support OGC services such as wmts/wms.

◇ Greatly reduces the memory occupation, solves the problem of 3D scene roaming jam, and improves the carrying capacity of large-scale scenes.

◇ Provides more functions of 3D GIS analysis, query and measurement.

◇ Improves the ability to quickly beautify 3D geographical scenes.

◇ Supports cloud rendering to the web, improves the open source JavaScript API, and supports low code development.

• Improves 3D geospatial data model

◇ Supports parameterized 3D model.

◇ CSG modeling tool based on Python script, which supports the construction of parameterized 3D objects.

◇ Supports exporting parameterized 3D objects to IFC format data.

• Supports BIM data customized processing tool set based on geographic processing automation (GPA)

◇ Supports GPA tools for batch and customized processing BIM data, and supports automatic processing business flow of BIM data, such as IFC/ GIM/RVM/RVT/DWG/DGN/3DXML/NWD/SKP.

• Greatly improves the loading and browsing performance of large-scale 3D tile data

04 Distributed GIS

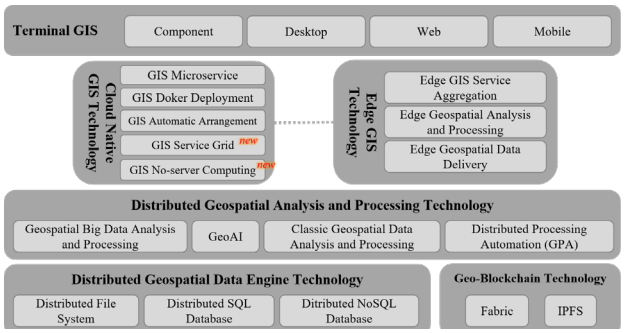
It includes distributed geospatial data engine technology, geo-blockchain technology, distributed geospatial analysis and processing technology, cloud native GIS technology and edge GIS technology, and supports the storage, management, analysis, processing, visualization and publication of massive classic geospatial data and geospatial big data. Thus, it can realize the major breakthrough of GIS in high-availability, high-concurrency, high-performance, high-capacity and high-credibility to build a new distributed collaborative model of cloud, edge and terminal integrated GIS.

• Distributed geospatial data engine technology

◇ Supports distributed geospatial file system, including HDFS, DSF, etc.

◇ Supports distributed SQL geospatial database.

◇ Supports distributed NoSQL geospatial database, including MongoDB, Elasticsearch, HBase, etc.



Distributed GIS Technology Architecture

• Geo-blockchain technology

◇ Supports federated storage of blockchain geospatial data Fabric and IPFS.

◇ New blockchain certificate service management capabilities.

• Distributed geospatial analysis and processing technology

◇ Provides kernel level extended Spark geospatial data model.

◇ Supports more than 200 kinds of distributed processing automation modeling tools.

◇ Provides more than 70 kinds of distributed geospatial analysis operators.

◇ Supports distributed spatial analysis operators, such as layer overlay analysis, surface aggregation, and GeoSOT grid division.

◇ Supports distributed analysis, such as equal division resampling, image stretching (image maximum stretching, image standard deviation stretching, image histogram equalization stretching, image percentage truncation stretching), all / specify isoliness extraction and curvature calculation.

◇ Provides the high-performance distributed dynamic rendering capability.

• Cloud native GIS technology

◇ Realizes the full microservice of map, 3D, big data,AI and stream data functions.

◇ Supports docker deployment and provides rolling upgrade, elastic scaling and error recovery of GIS node.

◇ Provides general automatic layout based on Kubernetes, which can realize the real time monitoring of all microservice resources.

◇ Integrated service grid technology supports gray publish, access control, service measurement, and service tracking.

◇ Integrates serverless technology, and supports spatial analysis tasks and geographic processing automation tasks to run in a functional manner.

• Edge GIS technology

◇ Provides edge GIS products to build cloud, edge and terminal integrated application system.

◇ Supports pre-proxy, service aggregation, data distribution and analysis processing of edge GIS.

05 Cross Platform GIS

Since 2001, based on the standard C++ to reconstruct the GIS kernel, a set of native cross platform GIS technology system which has high performance and supports multiple CPUs, operation system has been established.

Now, SuperMap GIS supports multiple CPU, like x86, ARM, MIPS, SW-64, etc. It can also run on Linux, Windows, Android and iOS with high-performance.

• Supports multiple CPU architectures

◇ CPUs: x86, ARM, MIPS, SW-64, etc.

• Supports multiple operation systems

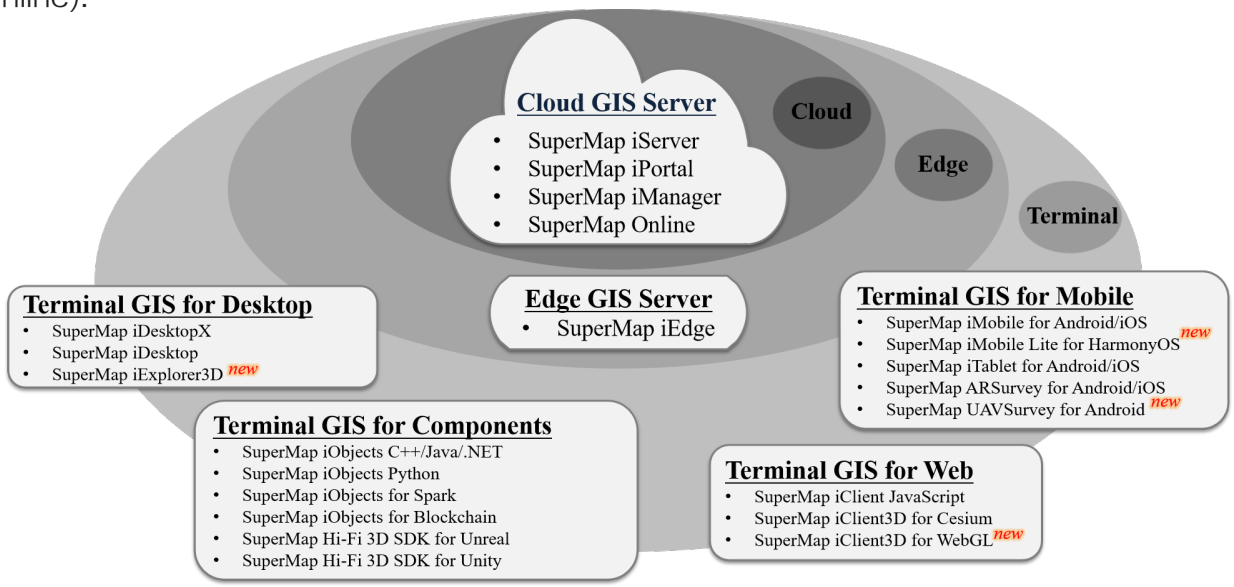
◇ Operating systems: Linux, Windows, Android, iOS, etc.

• Supports multiple database

◇ Supports database series: file type, relational type, NoSQL, etc.

• All products support cross platform

SuperMap GIS 11i(2022) includes Cloud GIS server, Edge GIS server, Terminal GIS, etc., and provides two delivery methods of offline deployment and online services (SuperMap Online).



SuperMap GIS 11i(2022) Product Architecture

Cloud GIS Server

SuperMap iServer

Cloud GIS application server is based on high-performance cross platform GIS kernel. It provides full-featured GIS service publishing, management and aggregation functions, and provides multi-level expansion and development.

It provides powerful web services for geospatial big data, GeoAI and 3D to support massive vector/raster data "slice-free" publishing.

It deeply integrates microservice and docker layout, provides a variety of SDKs to build cloud native GIS system with micro service architecture.

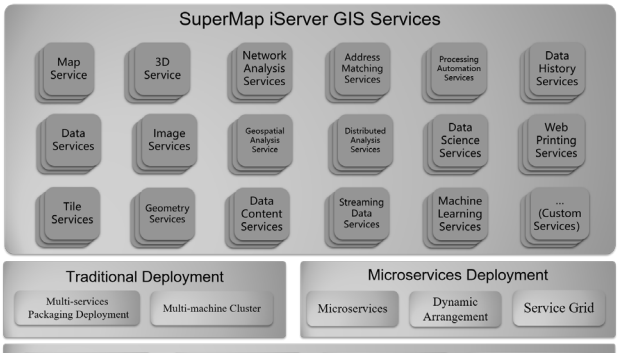
Product features

• Flexible deployment, elastic scaling, high availability

◇ Supports classic deployment modes such as single machine multi-process and multi-machine cluster, with high performance and high availability.

◇ Supports microservice architecture and docker deployment mode, convenient deployment, fine-grained scaling, and resource saving.

◇ Provides full-featured GIS microservices such as maps, data, distributed analysis, 3D, machine learning, streaming data, etc.



SuperMap iServer Service System Architecture

• All-round extensible GIS service publishing and aggregation

◇ Provides 2D and 3D spatial data publishing, management, editing, analysis and processing.

◇ Provides domain geospatial service extension mechanism, including service capability, interface, security, cluster, etc.

◇ Supports aggregation SuperMap platform services, tripartite services, OGC services and online map services.

◇ Supports rapid publish of large-scale image (raster) data, and supports STAC-API specifications.

◇ Provides processing automation service, and supports more than 900 kinds of analysis tools including vector, grid, 3D, image, GeoAI and spatiotemporal big data.

• Dynamic management of service instances with high performance

◇ Supports GIS service delay initialization, and iServer starts in seconds in the case of 100,000 level stock service.

◇ Supports the active destruction of free GIS service instances to effectively reduce the occupation of system resources.

◇ Supports the control of the maximum number of online GIS service instances to improve the system availability.

• Multi-level distributed storage, computing and processing

◇ Supports node dynamic accessing, intelligent scaling and automatic synchronization between nodes.

◇ Supports MPP distributed relational database, distributed NoSQL database and distributed file system.

◇ Provides distributed geospatial analysis, distributed data processing, streaming data real time processing, etc.

◇ Supports the publishing, querying, editing and historical tracing of blockchain spatial data.

• Accessing, processing and efficient publishing of geospatial big data

◇ Provides distributed analysis service, and supports distributed processing and geospatial analysis of vector and raster data.

◇ Provides streaming data service, and supports real time accessing and distributed processing of streaming data with 100 thousands/sec level.

• 3D data publishing, editing and analysis

◇ Provides data publishing of 3D point, line, polygon, body, field, as well as oblique photogrammetry model, BIM and point cloud.

◇ Provides online editing capability of 3D data to edit attribute and geospatial information.

◇ Provides geospatial computing of 3D intersection, union and difference, and measurement and calculation of volume and surface area.

◇ Provides 3D geospatial analysis of sunshine, skyline, visualization, 3D buffer, etc.

• GeoAI supports the whole process

◇ Provides machine learning services, and supports GeoAI analysis operator of target detection, ground object classification, object extraction, binary classification, decision tree regression, etc.

◇ Provides work flow of covering sample production, model training, model evaluation, model reasoning, etc., and supports online interactive geospatial data scientific exploration based on Notebook.

• Web map printing

◇ Supports GeoPDF which is printed as A0/A1 map.

◇ Supports secondary editing of geospatial/text information in printing results.

◇ Provides extensible layout template for transportation, land, etc.

SuperMap iPortal

It is a cloud GIS portal platform for integrating, searching, sharing and managing GIS resources. SuperMap iPortal has advanced technology and capabilities, such as quick website building without code, multi-source heterogeneous services registration, and multi-source service authority control, etc.

SuperMap iPortal provides plentiful Web applications, including thematic mapping, GeoAI image analysis, distributed geospatial analysis, 3D visualization, dashboard creation and display.

As the user center, resource center and application center of cloud & terminal integration GIS platform, the cloud portal site of GIS can be quickly built.

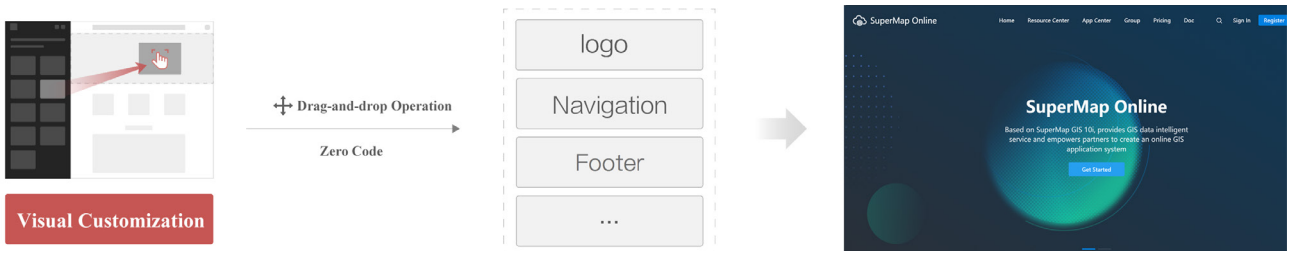
Product features

• Customizable GIS portal

◇ Provides zero code customization, and visual operation can easily switch portal style.

◇ Provides full code customization to deeply build a dedicated GIS portal.

◇ Multiple built-in GIS function modules can be flexibly configured, and can also be deeply customized and developed to quickly respond to business needs.



Portal Building with SuperMap iPortal

• Rich GIS resource integration and management capabilities

◇ Supports the registration and access of various OGC services, internet maps and REST services of mainstream heterogeneous GIS platforms.

◇ Supports Excel, CSV, UDB, SuperMap workspace, Shapefile, SMTiles, TPK, GeoJSON data uploading and displaying.

◇ Supports multiple ways to retrieve GIS resources, such as fuzzy search, classification filtering, geospatial range filtering.

◇ Supports unified control of multi-source GIS Service permissions.

◇ Supports GIS resource quota and GIS resource sharing and collaboration with multiple users and terminals.

• MapStudio(beta) WebApp

GIS applications running on the Web can provide GIS portal users with convenient and efficient GIS capabilities. It is used for rapid mapping, spatial analysis, and spatial data editing on the Web. At the same time, based on vector tile rendering technology, it provides a smooth map browsing experience.

◇ Supports basic mapping and thematic mapping through data-driven.

◇ Provides national administrative division map and template, and supports division drilling.

◇ Supports overlay analysis, grid summary and area summary analysis.

◇ Supports the creation and editing of spatial data.

◇ Supports rich and flexible vector mapping.

◇ Supports 3D map making without uploading models.

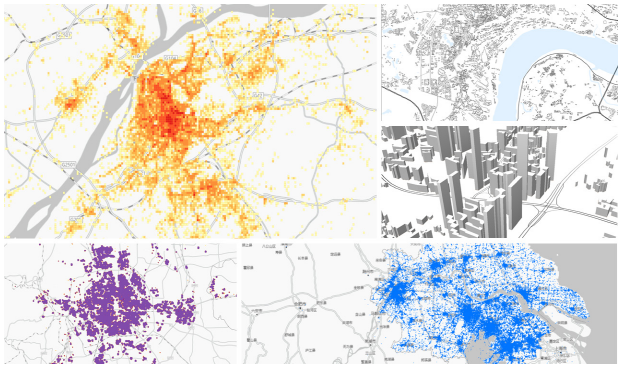
• MapDashboard WebApp

Geological data visualization dashboard application can display the analysis based on location in the way of intuitive and interactive visualization, which can help decision making, visualization trend analysis, real-time monitoring and spatio-temporal playback analysis.

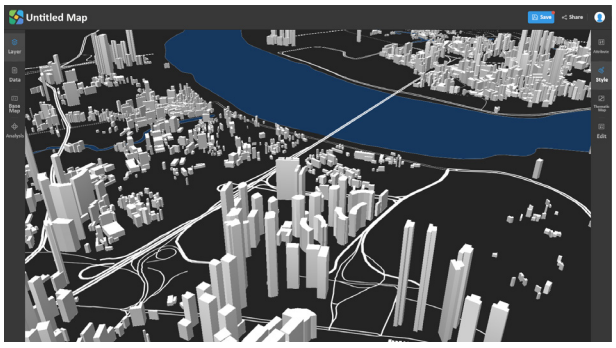
◇ Supports a variety of industry templates and creative templates such as comprehensive water detection and prediction, urban flood control early warning and detection.

◇ Supports low code editor and online expansion development of large screen applications.

◇ Rich material library, including background material, gif material, etc.



MapStidio(beta) WebApp



MapStudio(beta) WebApp 3D Map

• DataViz WebApp

It is a lightweight and high-efficient data visualization application, providing thematic map making, streaming data visualization and map printing, which can realize Web map making and sharing.

• DataInsights WebApp

Through interactive operation, geospatial data analysis Web application can realize online visualization and analysis of geospatial data, integrate SuperMap iServer distributed analysis and data science service, and support extension to help users dig the value of geospatial data.

SuperMap iManager

It is a comprehensive GIS operation and maintenance management platform which can be used for application service management, infrastructure management, and big data management. It provides cloud native GIS solutions based on Kubernetes to one-click create, manage and maintenance big data, AI and 3D GIS system based on cloud native technology.

It can monitor multiple GIS data storage, computing, service nodes or other Web sites, and monitor the occupancy of hardware resources, map access hotspots, node health and other indicators to achieve integrated operation and maintenance management of GIS system.

Product features

• Convenient sites building

◇ Provides one-click deployment of GIS systems and big data sites.

◇ Provides rapid creation of spatial data science environment and spatial blockchain environment.

◇ Provide a one-click deployment computing environment: Spark cluster, Hadoop YARN cluster.

◇ Provides a one-click deployment storage environment: HBase, PostGIS, PostgreSQL, HDFS, MySQL, Redis, Elasticsearch, etc.

◇ Provides a one-click deployment steam data environment: Kafka cluster.

◇ Provides UI customization, grouping, and expands third-party industry application site.

◇ Provides Helm deployment.

◇ Supports one-click creation of MinIO environment.

• Easy to use GIS microservice management

◇ Realizes GIS microservice monitoring, elastic scaling and error recovery.

◇ Provides service CPU adjustment and memory specification.

◇ Supports rolling update of designated service.

◇ Provides service topology map of GIS site.

◇ Provides capability of GIS cloud site backup and recovery.

◇ Provides capability of GIS site resource restriction.

◇ Integrated service grid technology supports gray publishing, access control, service measurement, and service tracking.

◇ Supports GIS cloud spatial analysis tasks and geographic processing automation tasks to run in a way of function.

• Full featured monitoring capability

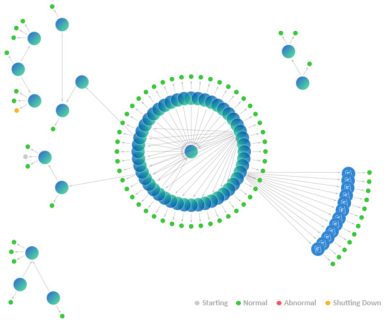
◇ Provides monitoring of hardware resources occupancy and service resources utilization.

◇ Provides intelligent alarm.

◇ Provides alarm rule management of general monitoring and database monitoring.

◇ Provides statistical report.

SuperMap iManager Hardware Resources Monitoring



Topology Map of GIS Site Microservice

Edge GIS Server

SuperMap iEdge

Edge GIS platform, which is deployed near the client or the data source side, is to achieve near-by service publishing and real-time analysis and calculation, reduce response latency and bandwidth consumption and reduce the pressure of cloud GIS center. It provides efficient service publishing capabilities and supports the rapid publish of massive vector data.

It can be used as the edge node between the cloud and application terminals of GIS. By using service proxy aggregation and cache acceleration technology, it can effectively improve the terminal access experience of cloud GIS, and provide the ability of intelligent content distribution and efficient edge analysis and calculation, and help to build a more efficient and intelligent "cloud-edge-terminal" GIS application system.

Product features

• Edge pre-proxy and acceleration

◇ Proxy standard services: SuperMap REST service and OGC service.

◇ Proxy internet services: Google map service, etc.

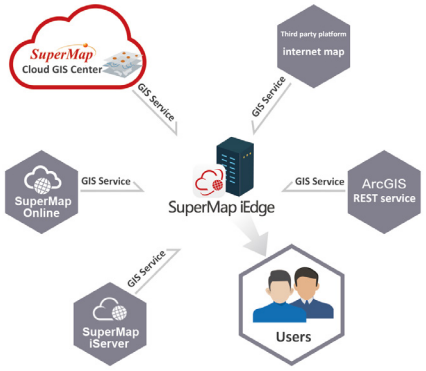
◇ Proxy services published by third-party: open source platform and business platform.

◇ Efficient service acceleration mechanism to greatly improves service throughput and reliability.

• Edge service aggregation

◇ Map aggregation: aggregates multiple maps from different sources into one map.

◇ Data aggregation: aggregates multiple data from different sources into one data source.



Multi-source Service Proxy and Aggregation

• Edge content distribution

◇ Efficient and reliable distribution technology: distributes GIS data of cloud GIS center to edge nodes quickly and securely.

◇ Flexible and convenient distribution methods: automatically distributes by region and level without any manual operates, and newly adds append distribution mode.

◇ Plentiful distribution data types: local files, vector and raster tiles, WebP tiles, 3D terrain and model tiles.

◇ Powerful service distribution capabilities: SuperMap REST map service, SuperMap REST 3D services, vector tiles services, OGC standard services, third-party services.

• Edge analysis processing

◇ Edge dynamic mapping: based on local data, PostGIS data and HBase data rendering.

◇ Edge data query: based on local data, PostGIS data and HBase data space query.

◇ Edge processing and analysis: measurement, coordinate transformation, geospatial relations, geospatial computing.

• Edge cloud native distribution mode

◇ Creates iEdge cluster with multi-node based on K3s technology, which improves the efficiency of proxy service.

◇ All nodes share the same service configuration and backup for each other, which improves the stability of proxy service.

◇ Provides automatic scaling mechanism based on CPU threshold, which considers both performance and resource utilization.

Terminal GIS for Components

SuperMap iObjects Java

It is a large-scale full-component GIS development platform, providing cross-platform and 2D and 3D integration capabilities. It is suitable for Java development environment.

SuperMap iObjects C++

It is a large-scale full-component GIS development platform, providing cross-platform and 2D and 3D integration capabilities. It is suitable for C++ development environment.

SuperMap iObjects .NET

It is a large-scale full-component GIS development platform, providing 2D and 3D integration capabilities. It is suitable for .NET development environment.

SuperMap iObjects Python

It is a convenient GIS script language pack and provides data organization, transformation, mapping, processing and analysis, and machine learning. It is suitable for Python development environment.

Product features

• Data Management

◇ Supports more spatial database engine types.

◇ Supports more third-party file formats for import and export.

◇ Supports for printing vector dataset records, and supports for setting the number of records displayed in vector datasets.

◇ Supports memory data source creation.

• Data processing

◇ Supports vector topology operations of topology processing, topology checking, topology faceting, etc.

◇ Supports vector data processing methods of smooth, resampling, clipping, geospatial connection, integration, etc.

◇ Supports raster data processing methods of vector and raster conversion, resampling, algebraic operation, reclassification, etc.

◇ Supports vector data processing such as polygon aggregation, creation of random points, building regularization, calculation of vertical feet from point to line, etc.

◇ Supports erasing and filling of raster or image datasets.

◇ Supports vector, raster, and numerical data to calculate natural discontinuities.

◇ Supports multiple geometric object methods: proportional transformation (zooming) of geometric objects, automatic cutting of objects.

• Mapping

◇ Supports thematic map making.

◇ Provides plentiful raster layer color table, and supports custom color table, transparent color, etc.

• Geospatial analysis

◇ Supports map simulation, including cellular automaton based on artificial neural network and principal component analysis.

◇ Supports area tabulation raster analysis.

◇ Supports topology logic diagram for network data sets viewing.

◇ Improves address matching module.

◇ Improves the overlay analysis function: supports intersecting and merging multi-layer overlay analysis, and overlay analysis of self-intersection.

• Geospatial statistic analysis

◇ Supports geospatial general characteristics analysis of geospatial autocorrelation, geospatial stratification heterogeneity, etc.

◇ Supports geospatial interpolation methods of Kernel density, inverse distance weighting, Kriging, etc.

◇ Supports geospatial pattern explorations of geospatial point pattern, geospatial hotspot, etc.

◇ Supports geospatial sampling and statistical inference of SPA, B-SHADE, etc.

◇ Supports Least square regression, geographically weighted regression and other geospatial regression algorithms.

• Complete workflow of AI GIS

◇ Supports sample data production.

◇ Supports model training.

◇ Supports model reasoning.

◇ Supports inference post-processing.

◇ Supports model evaluation.

• Machine learning

◇ Supports image data analysis, including binary classification, target detection, scene classification, ground objects classification, objects extraction, etc.

◇ Supports image data analysis, including target detection, image classification, etc.

◇ Supports structured data classification based on gradient boosting classification.

◇ Supports spatio-temporal regression analysis.

SuperMap iObjects for Spark

It is a big data GIS software development component based on distributed technology. It provides various big data distributed management and analysis functions, and it is suitable for Spark development environment.

Product features:

• Distributed data storage

◇ Supports reading raster data stored on S3, OSS, OBS, FTP, and NFS.

◇ Supports reading raster data in GeoTiff and img format which supports plug-in tfw.

◇ Supports HBase, Elasticsearch, HDFS and DFS distributed storage and management.

• Distributed geospatial analysis

◇ Supports trajectory analysis algorithms such as trajectory preprocessing, dwell analysis, trajectory similarity measurement, etc.

◇ Supports grid analysis functions such as equal division resampling, curvature calculation, isoline extraction, etc.

◇ Four new image stretching tools.

• Distributed geospatial machine learning operators

◇ Supports distributed geospatial density clustering.

◇ Supports distributed generalized linear regression.

◇ Supports the classification and regression based on forest.

◇ Supports geographically weighted regression.

• Distributed streaming data processing

◇ Supports access to multi-transport protocols of streaming data.

◇ Supports the real time processing algorithms of multiple streaming data.

◇ Supports push processing results to Elasticsearch database, as well as updating and appending.

◇ Supports SuperMap iServer configuration processing progress.

SuperMap iObjects for Blockchain

Geo-blockchain is the blockchain with spatial data management capabilities.Geo-blockchain products integrate blockchain technology with spatial data management technology, which help users build an enterprise blockchain network platform to achieve high security, tamper proof and traceability of spatial data storage and management, and provides a secure network environment for digital asset registration, trading, sharing and other multiple scenarios, and provides intelligent management in time and space.

The geo-blockchain capability is integrated with SuperMap product system, mainly covering SuperMap iObjects for Blockchain, SuperMap iDesktopX, SuperMap iServer, and SuperMap iManager.

Product features:

• Blockchain geospatial data storage

◇ Supports joint storage of Fabric and IPFS.

◇ Supports point, line and polygon data on chain.

◇ Supports text, image and video data on chain.

• Blockchain geospatial data management

◇ Supports query, editing and thematic map blockchain geospatial data.

◇ Supports history tracing of blockchain geospatial data.

◇ Supports channel, member, organization and certificate management of Fabric.

◇ Supports blockchain certificate management capabilities supports certificate issuance, locking, unlocking, and cancellation.

• Automatic synchronization of data cache

SuperMap Hi-Fi 3D SDKs

It is a programmable, extensible and customizable development platform based on the deep integration of the new 3D GIS technology with unreal Unreal Engine4/Unreal Engine5 and Unity game engines. It supports local / online browsing of massive GIS spatial data, supports measurement, clipping, 3D spatial analysis and 3D spatial query, provides hi-fi 3D effects and new application experience, and supports the rapid customization and development of industrial application systems such as digital twin and smart city.

SuperMap Hi-Fi 3D SDK for UE

Product features:

• Compatible with ue4.25, ue4.26, ue4.27 and ue5 versions.

• Dynamic loading of large-scale 3D GIS data

◇ Large world coordinates (LWC) which supports ue5 can improve the rendering accuracy of large scenes.

◇ Greatly reduces the memory occupation, solves the problem of 3D scene roaming jam, and improves the carrying capacity of large-scale scenes.

◇ Optimizes the scheduling strategy of S3M layer and terrain / image layer, and improves the performance of data download and loading.

◇ Supports rendering image and vector data in real-time rasterization, and solves the number limit of image layers loaded at the same time.

◇ Supports OGC service like WMTS / WMS.

• 3D GIS analysis, query and measurement

◇ 3D spatial analysis such as viewshed analysis (visible line), opening analysis.

◇ Supports the flight management and open the flight path file created in the desktop.

◇ Supports layer operation functions such as model object explicit and implicit control, model object frame selection, S3M layer excavation expression, terrain excavation, oblique photography 3D model monomer expression, etc.

Hi-fi 3D Geographical Scene based on SuperMap Hi-fi 3D GIS Plug-in(UE)

• 3D GIS data beautification tool

◇ S3M data like stretched building blocks and BIM, and supports game engine materials to achieve hi-fi rendering.

◇ Fine modeling and monomer oblique photography model, supports assigning material functions through mask texture to achieve night scenery and other effects.

◇ Supports point, line, polygon data plug-in with assets like trees, and supports shine upon materials and adding material functions.

◇ Map tiles support assigning material functions through mask, and support more special effects.

◇ Supports one-click and batch export of standard PBR materials to S3M data, and quickly copy the beautified effect of the game engine.

• Hi-fi rendering of 3D geographical scene

◇ Supports the simulation of real sunshine and weather effects, and supports various post-processing effects such as floodlight, screen space reflection, dynamic blur, etc., so as to achieve hi-fi rendering of 3D geographical scenes.

SuperMap Hi-Fi 3D SDK for Unity

Product features:

• Fully supports URP

• 3D GIS analysis, query and measurement

◇ 3D spatial analysis such as viewshed analysis (visible line), opening analysis.

◇ Supports the flight management and open the flight path file created in the desktop.

◇ Supports layer operation functions such as model object explicit and implicit control, model object frame selection, S3M layer excavation expression, terrain excavation, oblique photography 3D model monomer expression, etc.

• 3D GIS data beautification tool

◇ Supports point, line, polygon data plug-in with assets like trees, and supports shine upon materials and adding material functions.

Terminal GIS for Desktop

SuperMap iDesktop

It is a desktop GIS application and development software with 2D & 3D integrated data management and processing, editing, mapping, analysis, 2D &3D plotting and other functions. It supports charts, online map service access and cloud resource collaborative sharing, which can be used for production, processing, analysis of geospatial data and rapid customization development of industrial application systems.

SuperMap iDesktopX

It is a 2D and 3D integrated desktop GIS software platform, and supports the mainstream operating systems like Linux, Windows, etc. It provides geospatial data production and processing, distributed data management and analysis, mapping, service publishing, processing automation modeling, machine learning, video analysis and other functions. It can be used for data production, processing, analysis and mapping.

Product features:

• Data management

◇ Supports PostGIS, Oracle, MongoDB database engine.

◇ Supports distributed engines of HBase, DSF, PostGIS, etc.

◇ Supports importing of more than 70 kinds of data formats and exporting more than 30 kinds of data formats.

◇ Supports the creation of mosaic datasets to manage massive image data stored locally, FTP, NAS, and cloud.

◇ Supports the tools for sending stream data, and can connect with iserverstream service.

◇ Predefines more than 1600 coordinate systems, and supports coordinate system customization, and can preview the applicable scope of coordinate system.

• Data processing

◇ Provides more than 200 data processing functions such as fusion, thinning, clustering, resampling, grid update, etc.

◇ Provides topology functions such as topology check, topology network construction, topology polygon construction, line topology processing, etc.

◇ Supports symbolization of collected data and automatic vectorization of lines and polygons.

◇ Supports recalculation of length, perimeter and area of vector line and polygon data sets.

◇ New topology checker, which can interactively and quickly repair topology errors.

◇ Supports projection conversion, and provides 11 kinds of projection conversion methods such as 2D four-parameter and 3D seven-parameter.

◇ Supports coordinate system back-calculation conversion model parameter values, and supports 10 coordinate system conversion models.

• Mapping

◇ Supports the production of single value, segment, label, label matrix and more thematic maps.

◇ Supports adding legends and drawings to the map.

◇ Supports playing temporal data and multi-version tiles in the map dynamically, and supports GIF output in playing status.

◇ Supports the production of point, line and fill symbols, supports 3D symbols, and supports the import and export of symbols.

◇ Supports the retrieval and use of online mapping resources, including symbols, color schemes, etc.

◇ Supports intelligent map rendering based on the picture style, and supports adjustment of map brightness, contrast, saturation, etc.

◇ Supports setting the display weight of text / label thematic map layers, which is convenient to adjust the display order of layers.

◇ Supports map performance diagnosis, which can simultaneously detect the performance of the entire map at multiple scales.

◇ Supports mapping tools such as map tiling, map grid, standard map frame, SOT index map, etc.

• Map tiles

◇ Provides technical solutions for the whole process of map tiles from production to release.

◇ Supports multitask generation of tiles in MongoDB, local original and local compact format.

◇ Provides tile management functions such as tile merging, extraction, update, inspection, format conversion, etc.

• Map layout

◇ Supports wizard layout, pre-defining different types of layout templates.

◇ Supports adding maps, legends, charts, tables, compass, etc. in the layouts.

◇ Supports map grid creation, which can add multiple kilometer grids or latitude and longitude grids to the map.

◇ Supports the creation of map series and atlas printing.

• Statistic chart

◇ Supports more than 10 chart forms such as histogram, scatter plot, and area chart.

◇ Supports the conversion between charts and thematic maps.

◇ Supports the linkage of charts, maps and attribute tables.

• Geospatial analysis

◇ Provides vector analysis functions, such as buffer analysis, overlay analysis, proximity analysis, etc.

◇ Supports interpolation analysis, and provides interpolation methods such as Kriging and inverse distance weight.

◇ Supports hydrological analysis, and provides river correction DEM, calculation of watersheds, extraction of river networks, catchment points, etc.

◇ Provides contour/polygon extraction, surface analysis functions such as slope, aspect, fill and excavation, etc.

◇ Supports traffic network analysis, facility network analysis and dynamic segmentation.

• Geospatial statistic analysis

◇ Supports measurement geographic analysis of center elements, average center, median center, direction distribution,etc.

◇ Provides analysis mode functions of geospatial autocorrelation, high and low value clustering, average nearest neighbor analysis, etc.

◇ Supports clustering distribution functions of hot spot analysis, clustering and outlier analysis, etc.

◇ Supports spatial relationship modeling functions, such as ordinary least squares method and geographic weighted regression analysis.

◇ Provides spatial sampling and inference functions, such as BShade sampling, random sampling, single-point geographic estimation, BShade prediction,etc.

• Machine learning

◇ Supports image analysis workflow based on deep learning, including tools of sample making, model training, model evaluation, model reasoning, etc.

◇ Supports the management of image and image sample libraries, and prepares sample libraries for model training of image, image, and video analysis.

◇ Automatically generates picture sample library, and automatically marks the target objects in the picture based on the existing model.

◇ Supports AI annotation, and makes whole picture annotation or point selection annotation based on the existing model.

◇ Supports generating image samples as sample libraries for YOLO v4 and YOLO v5 models.

◇ Supports image analysis, such as change detection, target detection, binary classification, and ground object classification.

• Processing automation modeling

◇ Provides more than 900 kinds of tools for data processing, classification transformation, geospatial analysis, geostatistical analysis, machine learning and distributed geological processing.

◇ Supports generating image samples as sample libraries for YOLO v4 and YOLO v5 models.

◇ Supports model grouping to manage the tools in the model in groups.

◇ Supports local execution, which can execute from the specified node, and execute to the specified node.

◇ Supports editing and viewing model metadata.

◇ Improves the cancellation function, and supports immediate cancellation during execution process.

◇ Supports in-line variable function, and can identify variables and transmit variable values through "%".

◇ Supports iterative files and iterative data sets, and can obtain data circularly according to specified conditions.

◇ Supports variable and can provide data sets or parameters as global variables to different tools.

◇ Supports data processing tools such as raster mosaic, equal division resampling, protective decomposition, GeoSOT 2D/3D encoding, etc.

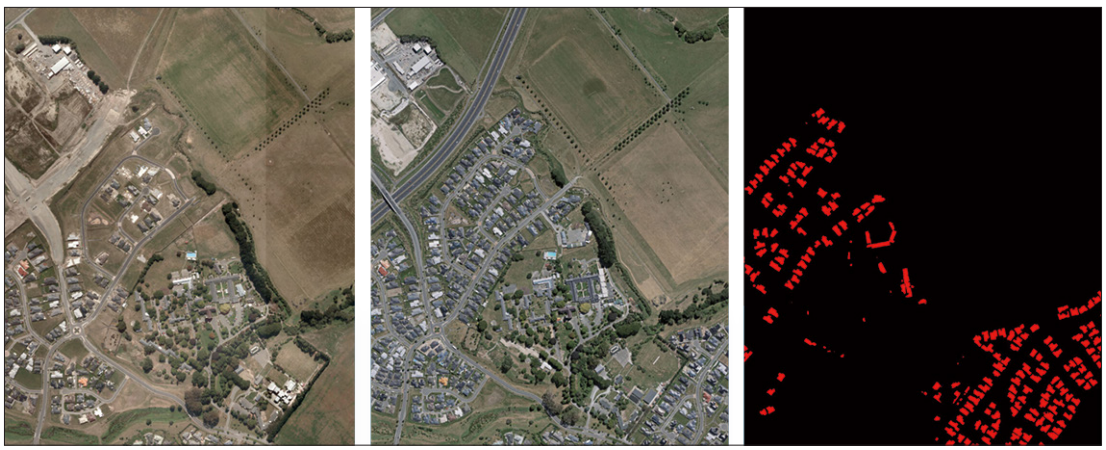
◇ Supports big data analysis tools such as point/line trajectory similarity measurement, geographic weighted regression analysis, curvature calculation, image stretching, etc.

◇ Supports adding judgment conditions and preconditions for tool connection relationships.

◇ Supports recently used tool list and tool favorites.

◇ Supports model publish as service, and supports using models published by desktop in SuperMap iServer.

◇ Supports automatic layout, which can automatically lay out the model in the window in the horizontal/vertical direction.



Change Detection

• Geo-Blockchain

◇ Supports attributes and geospatial query based on blockchain geospatial data.

◇ Supports thematic map making based on blockchain spatila data.

• Map dashboard

◇ Supports adding maps, videos, text, pictures, statistical charts to the dashboard.

◇ Supports the adjustment of the display order, position and size of dashboard controls.

◇ Supports element operation history, and supports cancel and resume.

◇ Supports element switch, and exchange the content in the display element panel.

◇ Supports video list elements, and can switch to display different videos through the list.

• Cloud & terminal collaboration

◇ Supports access to online map services such as OGC, SkyMap, OpenStreetMap, WorldTerrain and SuperMap REST.

◇ Supports one-click publishing of maps, tiles, and 3D scenes as SuperMap iServer services.

◇ Supports online data and services management in SuperMap Online and SuperMap iPortal.

◇ Supports sending text messages, data, maps, videos to mobile GIS App.

◇ Supports big data online analysis of geographic data in HDFS and SuperMap iServer directory services.

• Python

◇ Supports the management of Python environment and dependent package by Conda.

◇ Supports Python custom development tools and expands the functions of toolbox.

◇ Provides Python component features of data processing, topology, interpolation, proximity analysis, etc.

• Map migration

◇ Supports the migration of ArcGIS data, maps, and services to the SuperMap platform.

◇ Supports the migration of layer styles, thematic layers, and annotation layers, and supports the migration of symbol libraries.

◇ Migration function supports maps, legends, scales and north arrows in ArcGIS layout.

◇ Supports the migration of compact tiles / tile packages and publishing as ArcGIS map services.

◇ Supports importing of EDB data, and supports map creation based on EPS data.

◇ Supports MapGIS data migration.

Data and Map Migration

• AR map

◇ Supports creating video dataset, which can manage online and offline multi-channel video.

◇ Improves the function of accessing video streaming, and supports the connection of video streaming data with HLS (m3u8), RTSP, RTMP, http-flv, http-mp4 protocols.

◇ Improves the UAV access and spatialization functions, and supports the conversion of flight records into camera parameters, position offset.

◇ Supports batch registration of videos and adds geological geospatial attributes to videos based on map.

◇ Supports dynamic registration of videos, which can make dynamic registration of video position with video playback.

◇ Supports video overlay display with 2D and 3D vector data, and the thematic maps can be made based on vector data.

◇ Supports adding video to the scene and integrating with 3D data stereo embedded.

◇ Improves video rendering performance, and videos which overlay hundreds of thousands of vector data can be rendered smoothly.

◇ Improves the video enhancement function, and supports the display of pictures, gifs, and videos at the designated location of the video.

◇ Supports multiple video effects, like flowers falling, leaves falling, raining, dark clouds, lightning, snowing, etc.

◇ Supports video enhancement, including warm & cool colors, brightening and sketch, and supports adjustment of video hue, saturation and brightness.

◇ Supports video analysis function of target detection, target recognition, target tracking, speed analysis, geofence analysis, etc.

◇ Supports Yolo V5 series machine learning algorithm, which can predefine broken road detection model, and supports model customization.

• 3D

◇ New distributed processing tool that can convert S3M to 3D Tiles.

◇ New BIM data batch processing GPA tool, supports the automatic BIM data processing business flow in the format of ifc/gim/rvm/rvt/dwg/dgn/3dxml/nwd/skp, and supports adding to the existing 3D services to realize the automatic business flow of the server.

◇ Multiple new GPA tools, including: generating normals for oblique photography model warehousing, TIN addition, BIM batch warehousing, batch generation of model cache with the same name, model cache saving to layer group, data import module (supports importing .Ifc,.3dxml data).

◇ Supports CityGML layer.

◇ Optimizes the AI extraction model window function, and supports material types setting.

◇ Supports the creation and editing of 3D point symbols, 3D fill symbols, and 3D line symbols.

◇ Optimizes the functions of batch generation of 3D model cache, generation of TIN cache, generation of model cache, 3D Tiles converting to S3M, oblique photography model storage, model flattening, vector surface stretching to generate model cache, etc.

◇ Optimizes the linear stretch function, and supports modifying the material name and setting the texture field.

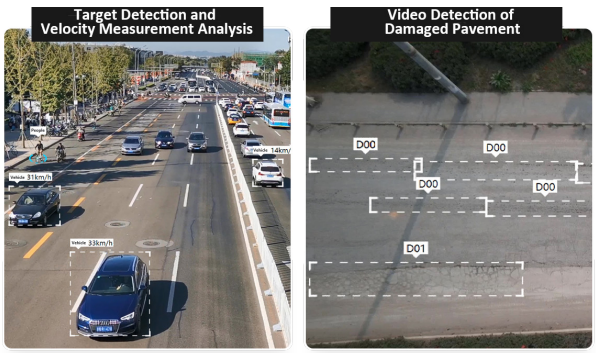
◇ Optimizes the material editor function, and supports batch editing of materials.

◇ Optimizes the scheduling strategy of S3M layer and terrain image layer, which greatly improves the performance of 3D tile data loading and browsing.

◇ S3M cache supports geometry compression (Meshopt) and texture compression (KTX2.0), which greatly reduces memory usage and improves 3D tile data loading and browsing performance.

◇ Scene service setting function supports 2D surface data as scene clipping area.

◇ Optimizes the function of opening the server service scene, support setting the key source and key.



Video Map

• Nautical chart (only supported by iDesktop)

◇ Electronic nautical chart data conversion based on IHO S-57 standard.

◇ Electronic nautical chart data display based on IHO S-55 standard.

◇ Electronic nautical chart data check based on IHO S-58 standard.

◇ Supports integrated display of sea and land, and real 3D display and release of nautical chart.

• Customized development

◇ Provides extended development templates to support interactive construction of secondary development projects.

◇ Provides rich sample code, including adding tabs, grouping, controls and tools, etc.

◇ Supports work environment designer, which can quickly customize system UI.

◇ Supports toolbox extension development, which can be extended through Java and Python.

◇ Provides a plugin manager to support dynamic loading, uninstalling and sharing of plugins.

SuperMap iExplore3D

It is a 3D scene browsing software developed based on UE5 and the SuperMap Hi-Fi 3D GIS development platform (SuperMap Hi-Fi 3D SDK for Unreal). It supports access to online/offline massive multi-source heterogeneous spatial data, supports high-fidelity rendering of 3D geographic scenes, and provides support for applications such as digital twin and smart city.

Product features:

• Supports simulating real sunlight and weather effects, and supports various post-processing effects such as floodlight, screen space reflection, and dynamic blur to achieve hi-fi rendering of 3D geographic scenes.

• Supports loading local/online massive multi-source heterogeneous spatial data

◇ Supports loading GIS data in S3M format: manual modeling data, real 3D data, point cloud data, BIM data.

◇ Supports loading point / line / polygon data.

◇ Supports loading terrain and image data.

◇ Supports loading online data: SuperMap Terrain service, BingMaps service, OpenStreetMap service, STK Terrain service, public services such as Sky Map Image, Sky Map Terrain, and OGC services such as WMTS/WMS.

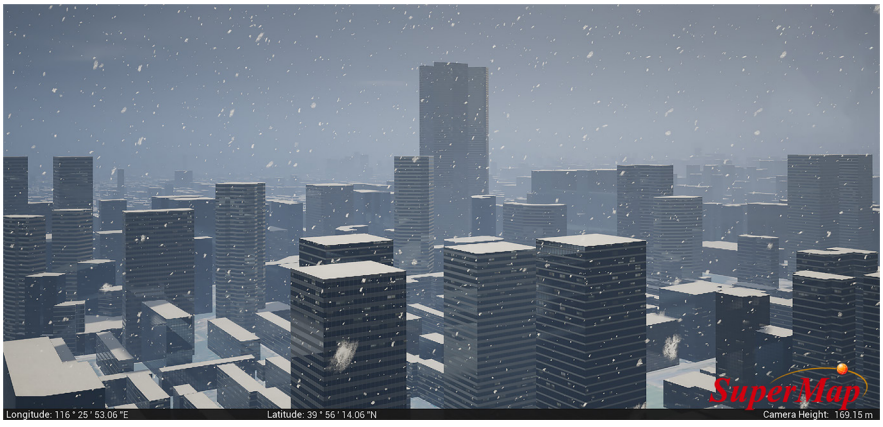
◇ Supports direct loading of oblique photography 3D model data in OSGB format.

• Supports loading local/online massive multi-source heterogeneous spatial data

• Supports attribute query of S3M cache

• Supports flight management functions and supports opening flight path files created in the desktop

• Supports measurement



Quickly Simulates Weather Effects in SuperMap iExplorer3D

Terminal GIS for Web

SuperMap iClient JavaScript

The cloud GIS web client development platform is based on the modern Web technology. It is the unified Javascript client for the SuperMap cloud GIS and online GIS platform products.

Product features

• Integrates the commonly used maps and chart libraries

◇ Map development library supports: Leaflet, OpenLayers, MapboxGL-JS, iClient Classic.

◇ Chart development library supports: ECharts, D3, MapV, DECK.GL.

◇ Supports component-based development under the Vue/React framework, including: map components, rich geographic visualization components, chart components, and basic GIS components, etc.

◇ The architecture design adopts the MVVM pattern (Model-ViewViewModel), and is compatible with other frameworks, such as Angular and native H5 development.

◇ The component has more than 100 themes, and the theme style of all components can be switched with one click.

• Big data visualization

◇ Provides unified API and visualization for distributed analysis service and data flow of SuperMap iServer.

◇ Supports various temporal and static visualization effects: scatter plots, thermograms, honeycomb plots, trajectory plots, O-D plots, flow diagrams, 3D architectural drawings, wind maps, etc.

• Vector tiles

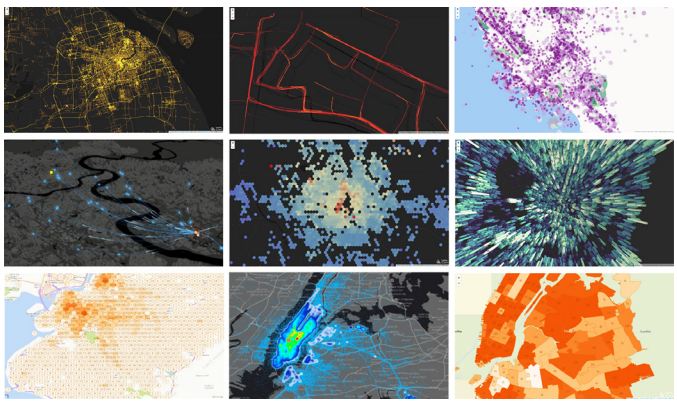
◇ Supports MVT and standard coordinate systems like Web Mercator, WGS84, CGCS2000 and local coordinate system.

◇ Supports interactive and style configuration, including query, selection, highlight, etc.

• Client computing

◇ Integrates turf.js, and supports client computing like geospatial, topology, equivalence, measurement, etc.

◇ Client can achieve high performance analysis and calculation without interaction with server.



Visualization Effects

SuperMap iClient3D for WebGL

It is a 3D client development platform based on WebGL technology, which can be used to build 3D GIS applications with plug-ins free, cross-operating systems and cross-browser.

Product features

• Full data

◇ Supports loading multi-source and heterogeneous data such as images, terrain, manual modeling, real scene 3D, point cloud, BIM, 3D point/line/polygon, etc.

◇ Provides dynamic layers to support the drawing and dynamic display of spatial real-time big data.

◇ Supports loading various image services such as Sky Map, Bing Maps, SuperMap online map, etc.

◇ Provides vector tile layers, supports MVT vector tile data.

◇ Supports efficient visualization of voxel grids.

• Full functions

◇ Supports terrain excavation and modification.

◇ Supports terrain slope and aspect analysis, contour analysis, inundation analysis, etc.

◇ Supports 3D geospatial analysis and analysis result output: through-view analysis, visual field analysis, skyline analysis, sunshine analysis, profile analysis, openness analysis, etc.

◇ Supports 3D spatial query based on GPU.

◇ Supports Boolean operation of 3D volume.

◇ Supports 3D spatial relationship determination.

◇ Supports distance, height, and area calculation.

◇ Supports plane cutting, area cutting, cube box cutting, etc.

◇ Supports the drawing and node editing of geometric objects such as points, lines, polygons, and bodies.

◇ Supports displaying video files and RTSP live video streams to the model surface or the earth's surface.

◇ Supports real-time sectioning, real-time cutting and real-time excavation of geological bodies, and supports real-time expression of geological bodies through explosion and exaggeration.

◇ Supports split-screen display.

◇ Supports online drawing and real-time editing of models.

◇ Supports vector object selection and attribute query, and supports setting color and visibility according to attribute field value.

• High-fidelity

◇ Supports for more realistic physical materials.

◇ Supports standard PBR materials exported by game engines, and copying 3D scenes beautified by game engines.

◇ Supports for stronger particle systems.

◇ Supports light and shadow effects such as physically based atmospheric scattering (PBDS), ambient light map maps (IBL), shadows, etc.

◇ Improves the effect of simulating rainy and snowy days.

◇ Supports post-processing effects like ambient light occlusion, MSAA, depth of field effects, screen space reflections, etc.

• Low code development

◇ Supports Vue2.0/3.0 components.

Supports the Standard PBR Material Exported by Game Engine to Copy the 3D Scene Beautified by Game Engine

Screen Space reflection effect

SuperMap iClient3D for Cesium

It is a 3D GIS network client development platform based on WebGL technology and Cesium open source framework. It can be used to build 3D GIS applications without plug-ins, cross operating systems, and cross browsers.

Product features

• Full functions

◇ Improves the view fusion function, and enhances the display effect of the real 3D model based on aerial photos.

◇ Supports overlaying multiple map services on oblique photographic models.

◇ Improves inundation analysis, considering terrain connectivity, and also supports water reflection effects.

◇ New model explosion effect of S3M layer.

◇ Supports wet and slippery roads effect in rainy days and snow effects in snowy days of S3M layer.

◇ New dynamic stretching effect of the model in S3M layer, which can also be dynamically stretched according to the camera distance.

◇ Supports the direct loading of data in 3D model formats such as .x and .dae based on WebAssembly technology, which realizes rapid comparison and selection of planning schemes.

◇ Supports loading standard PBR material collection files and material map files exported by game engines in batches and applying them to S3M layers.

◇ Supports the extraction effect of surface and geological layers after surface excavation.

◇ Image layer supports polygon clipping.

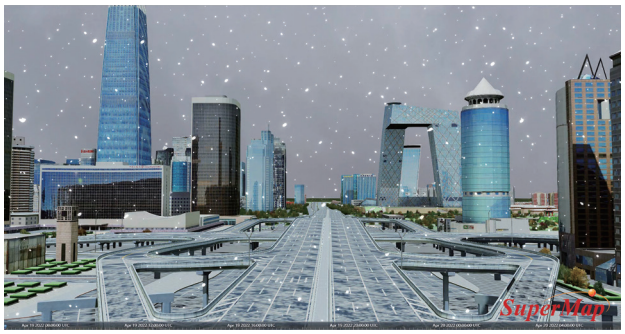
• Low code development

◇ Supports Vue2.0/3.0 component.

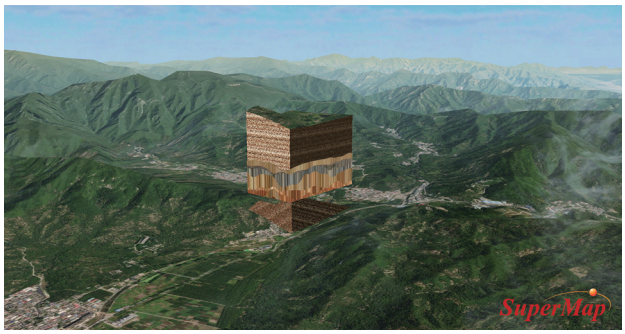
• Plug-in development

◇ New Cesium plugin supports the creation and use of S3M layers in open source Cesium.

Model Explosion



Snow Effect Simulation



Screen Space reflection effect

Terminal GIS for Mobile

SuperMap iMobile

It is a mobile GIS software development platform based on map browsing, data collection, data analysis, and route navigation and combined with AR maps, emergency plotting, mobile 3D, cloud collaboration, etc. It is used for rapid development of online, offline, 2D, 3D mobile GIS applications, and provides advanced, professional and intelligent mobile GIS services for professional data collection product developers, industry mobile GIS product developers, and application mobile GIS product developers.

Product features

• Map display

◇ Supports 2D map in WebP format.

◇ Improves online map resolution, and sky map download and display performance.

◇ Supports access to map services, data services, and functional services published by iServer/Online.

◇ Supports OGC services, WMTS services, REST map services and data services.

◇ Supports third-party map services such as Sky Map, OSM, etc.

◇ Supports importing more than 20 common vector, raster, and text data.

◇ Supports for raster map tiles and vector map tiles.

• AR Map

◇ Compatible with ARCore and AREngine engines, and they can be automatically switched according to the device.

◇ Supports AR space widgets for adding models, atlases, sandbox sets, charts, etc.

◇ Supports setting AR space widget style, position, size, rotation angle, etc.

◇ Upgrades high-precision AR positioning and expand applications in navigation, acquisition, analysis, etc.

◇ Supports AR point cloud, dot, and trajectory data collection.

◇ Supports AR intelligent recognition like target recognition, license plate recognition, stereo recognition, etc.

◇ Supports AR 3D visual field analysis and section analysis.

• UAV map

◇ Supports UAV flight control, real-time access to UAV flight videos.

◇ Supports real-time fixed-point evidence and photographing.

◇ Supports UAV video data collection, including point, line, surface data.

◇ Supports UAV map measurement, including length, area and height.

• Data collection

◇ Supports the collection of vector data such as points, lines, and surfaces through gestures and GNSS.

◇ Supports collection and editing of attribute tables.

◇ Supports the collection of multimedia data such as pictures, videos, and sounds.

◇ Supports graphic editing tools such as cutting, merging, erasing, etc.

• Thematic mapping

◇ Supports thematic map types such as segment, label, single value, etc.

◇ Supports more than 10 kinds of charts such as area chart, ladder chart, line chart, scatter chart, rose chart, etc.

◇ Supports heat maps, grid heat maps, density maps, aggregation maps, relationship maps.

• Data processing

◇ Supports vector analysis such as buffer analysis, overlay analysis, network analysis, etc

◇ Supports terrain analysis such as slope, aspect, surface area, and volume.

◇ Supports data registration and projection conversion.

• Navigation map

◇ Supports self-collection of road data for path analysis and navigation between two or more points.

◇ Supports indoor cross-floor path analysis and navigation.

◇ Supports indoor and outdoor integrated path analysis and navigation.

◇ Supports editing and compiling road network, and the compiled road network directly participates in route planning and navigation.

• 3D

◇ S3M data such as 3D models and 3D pipelines support PBR materials.

◇ Supports KTX2.0 texture compression to realize the use of the same set of S3M data for different terminals.

◇ 3D AR supports the acquisition of depth information in the real world, so that the real world and virtual scenes can be occluded from each other, which better realizes the fusion of virtual and real.

◇ 3D AR supports the ability to place 3D models, and placing 3D models without scanning real-world planes.

◇ Supports HUAWEI AR Engine.

AR Real Scene Map

SuperMap iTablet

It is a full-function mobile GIS APP and developed based on SuperMap iMobile for RN framework. It supports AR, map, acquisition, 3D, cartography, plotting, analysis, navigation, cloud-terminal integrated data interaction and expansion development. It is convenient for users to process, analyze and collect GIS data on the mobile terminals. It can be found and downloaded from App Store and other Android stores.

Product features

• Custom extension

◇ Upgrades ReactNative to version 0.67.4, which can support Android 11 and above systems.

◇ Supports custom development mode, support one-click environment deployment.

◇ Supports interface customization such as title customization, icon customization, homepage customization, etc.

◇ Supports both horizontal and vertical UI interfaces to achieve multi-size device adaptation.

• AR map

◇ Supports adding atlas, picture set, video set, sand table, chart set to AR scene.

◇ Supports setting the arrangement, display style, position, size, rotation angle of atlases and picture sets.

◇ Supports AR animation, and displaying models in sequence according to time, distance, and motion.

◇ Supports browsing model properties and editing property information in AR scene.

◇ Optimizes AR effects, adds multiple effects, and supports setting properties such as distance and time.

◇ Supports adding points of interest, vectors, special effects, models, 3D to make AR maps.

• AR mapping

◇ Supports AR enhanced positioning, AR position calibration can be completed be scanning a positioning code.

◇ Upgrades the positioning code, the positioning code has no location restrictions, it can be attached to the wall or the ground.

◇ Improves AR measurement and provides length, height, area, volume, and angle measurement.

◇ Improves AR mapping, and supports drawing points, lines, and polygon based on feature point clouds.

• Online collaboration

◇ Supports online collaboration in the form of data aggregation, support incremental data submission, update, editing.

◇ Supports administrator privileges, which can share all user functions in the service.

◇ Upgrades the basemap service. After the map is published as a public service, it can be directly switched and used in the basemap of each module.

• Map browsing

◇ Improves multi-source data import, and supports importing more than 10 kinds of commonly used GIS format data.

◇ Improves the labeling function, and supports editing labeling objects and modifying object styles.

◇ Improves layer management, and supports display and hide control of multimedia layers.

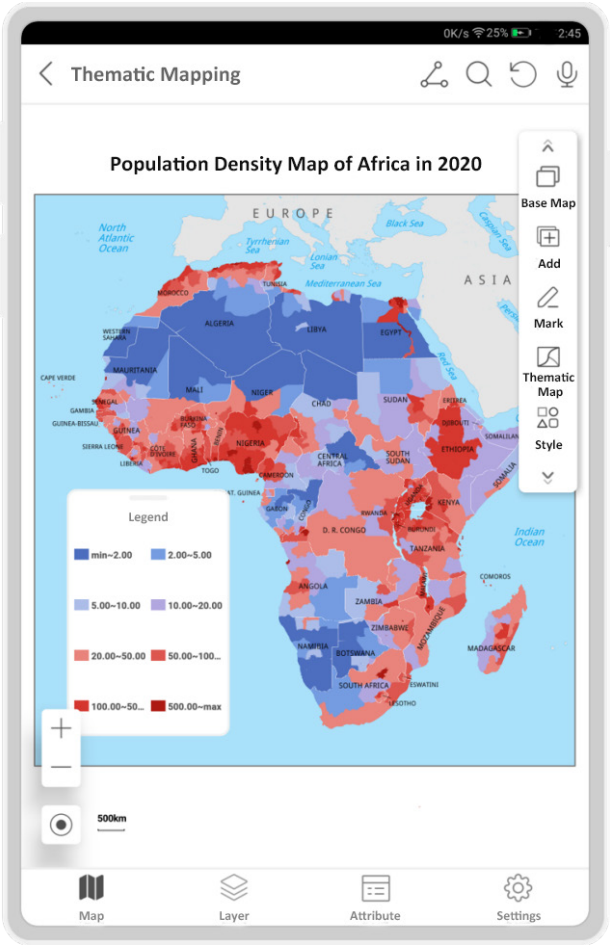
◇ Supports AI map, which can set map color according to the picture style.

• Thematic mapping

◇ Supports more than 20 thematic types such as area map, ladder map, rose map, etc.

◇ Predefineds more than 70 color schemes, and supports custom color matching.

◇ Supports adding map title, setting font, size, color, etc.



Subsection Thematic Map

• Field collection

◇ Supports satellite dotting, manual dotting and gesture drawing.

◇ Supports the collection of graphics, attributes, multimedia, etc.

◇ Provides graphics editing tools such as cutting, merging, erasing, etc.

• AR analysis

◇ Provides 4 analysis methods, including target recognition, vehicle collection, etc.

◇ Supports extended custom training model.

• Navigation collection

◇ Improves indoor and outdoor integrated navigation.

◇ Provides indoor and outdoor path analysis and navigation.

◇ Provides outdoor road network collection and constructs road network in real time.

• Data processing

◇ Supports 10 kinds of data analysis methods, such as path analysis, connectivity analysis, etc.

◇ Supports 4 kinds of data registration: linear registration, quadratic polynomial registration, rectangular registration and offset registration.

◇ Supports projection conversion, and can copy or reset the coordinate system.

• 3D browsing

◇ Supports loading 3D data like oblique photography, 3D terrain, fine models, etc.

◇ Supports browsing online scenarios, and browsing online services according to the specified address.

◇ Supports distance and area measurement.

Field Collection

SuperMap ARSurvey

It is a lightweight mobile GIS APP based on AR, and developed based on the SuperMap iMobile for RN framework. It supports AR real-scene measurement, AR data collection, AR map production, AR positioning, navigation, analysis, etc. It can be used for indoor and outdoor high-precision data collection, AR real-scene browsing, navigation , etc. It can be found and downloaded from App Store and other Android stores.

Product features

• AR drawing

◇ Supports adding atlas, picture set, video set, sand table, chart set to AR scene.

◇ Supports setting the arrangement, display style, position, size, rotation angle of atlases and picture sets.

◇ Supports AR animation, and displaying models in sequence according to time, distance, and motion.

◇ Supports browsing model properties and editing property information in AR scene.

◇ Supports drawing vector line and symbol line objects in AR scene, and setting line style.

◇ Supports adding bubble text in AR scene, and setting bubble layer style.

◇ Optimizes AR effects, adds multiple effects, and supports setting properties such as distance and time.

◇ Supports adding points of interest, vectors, special effects, models, 3D to make AR maps.

• AR mapping

◇ Supports AR enhanced positioning, AR position calibration can be completed be scanning a positioning code.

◇ Supports indoor high-precision data collection based on feature point cloud.

◇ Provides dot-type and track-type collection of points, lines and polygon.

• AR measurement

◇ Supports height, length, angle measurement.

◇ Supports area measurement of polygon, rectangle and circle.

◇ Supports volume measurement of cuboid and cylinder.

◇ Provides tactile vibration feedback when capturing and adding nodes.

• AR navigation

◇ Supports real-scene navigation through user-owned network data and POI data.

◇ Supports indoor navigation based on visual inertial navigation positioning.

◇ Provides a variety of AR guide signs.

• AR analysis

◇ Supports target recognition, identify ground objects according to the model.

◇ Supports target classification, classify ground objects according to the model.

◇ Supports vehicle collection, automatic identification of license plate number.

• Data management

◇ Supports 2D map and AR map management.

◇ Supports local data, symbols, scenes and dynamic models management.

◇ Supports sharing local data, maps, and symbols to SuperMap Online.

◇ Supports downloading and importing the data in the Online account.

AR Map Album

SuperMap UAVSurvey

It is an application software for UAV field collection and mapping, providing functions such as spatial data collection, field investigation, mapping, inspection, and monitoring based on UAV geographic video technology. It is mainly based on UAV video measurement and collection, UAV video and map fusion management, and it is ready to use and small in size.

Product features

• UAV map

◇ Supports access to UAV stock video and real-time access to UAV video.

◇ Supports gesture operations such as zooming and panning on the UAV map.

◇ Supports UAV video map and 2D map linkage.

◇ Supports UAV video overlay point, line, plane and other vector data.

• Real-time flight control

◇ Supports access to real-time flight video to control the travel and hover status of the UAV.

◇ Supports importing waypoint tasks and manually drawing flight routes.

◇ Supports real-time fixed-point photography for field adjustment and evidence.

• Data collection

◇ Supports the collection of vector data such as points, lines, and polygons.

◇ Supports collecting line and area objects by places.

◇ Supports data collection in two states of play and pause.

◇ Supports setting data style, such as color, line type, etc.

• Map measurement

◇ Supports map measurement, including height, length and area in UAV video map.

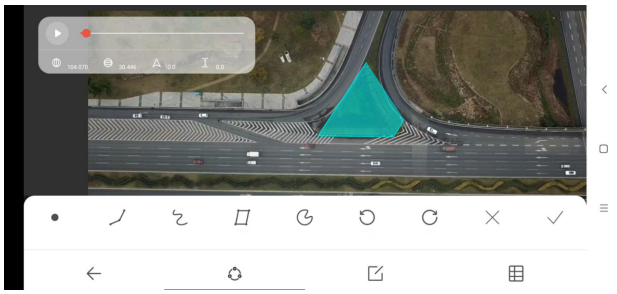
◇ Supports setting measurement style, such as polygon style and line style.

◇ Supports setting length and area units.

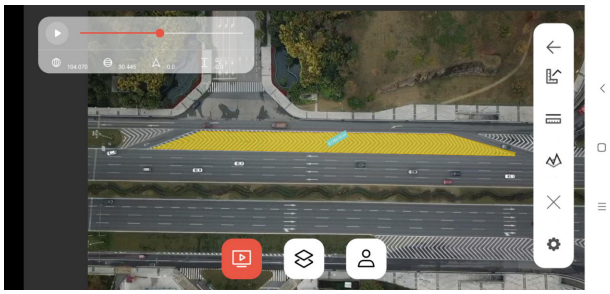
• Data management

◇ Supports UAV video management, including UAV parameters, attributes, etc.

◇ Supports layer management, dataset management, attribute management, etc.



UAV Data Collection



UAV Measurement of Ground Objects

Online GIS Platform

SuperMap Online

SuperMap online GIS platform (www.supermapol.com) helps users to achieve the security of GIS data on cloud, and provides a wealth of tools for data online display and analysis, a variety of SDKs to access the use of GIS data and rapid development of business systems.

Product features

• GIS cloud storage

◇ Storage and use: safety on cloud of 2D/3D data (SuperMap workspace, UDB, Excel, Shapefile, GeoJSON, etc), and can be browsed, queried, edited, analyzed through cloud application.

◇ Mobile office: download and share data through Web, PC and mobile terminals anywhere at any time.

◇ Easy maintenance: with its own GIS cluster, health monitoring and self-recovery capabilities, users do not need to care about deployment and operation and maintenance.

• Online application

◇ Various Web Apps: DataViz WebApp, DataInsights WebApp, Earth WebApp, map matching, MapDashboard WebApp, map studio, etc.

◇ Supports online interactive visualization and 2D and 3D data analysis.

◇ There is no need to install the cloud desktop experience version for online use, and the traditional desktop has a new cloud experience.

◇ Lightweight online GIS gadgets to quickly complete common GIS analysis and processing tasks.

• Online resource center

◇ It is a GIS resource platform focused on the creator, providing functions such as resource creation, listing, and transaction, and it reflects the whole process from creation to revenue, and experiences a different GISer online creation community.

◇ Provides a variety of selected, self-operated, and third-party resources for free use, including excellent resources like massive thematic data and services, large-screen templates adapted to various industries.

• Online cloud service subscription

◇ Improves online cloud service subscription model with clear version division and capability matrix, and matches with corresponding management tools.

• Platform software product subscription

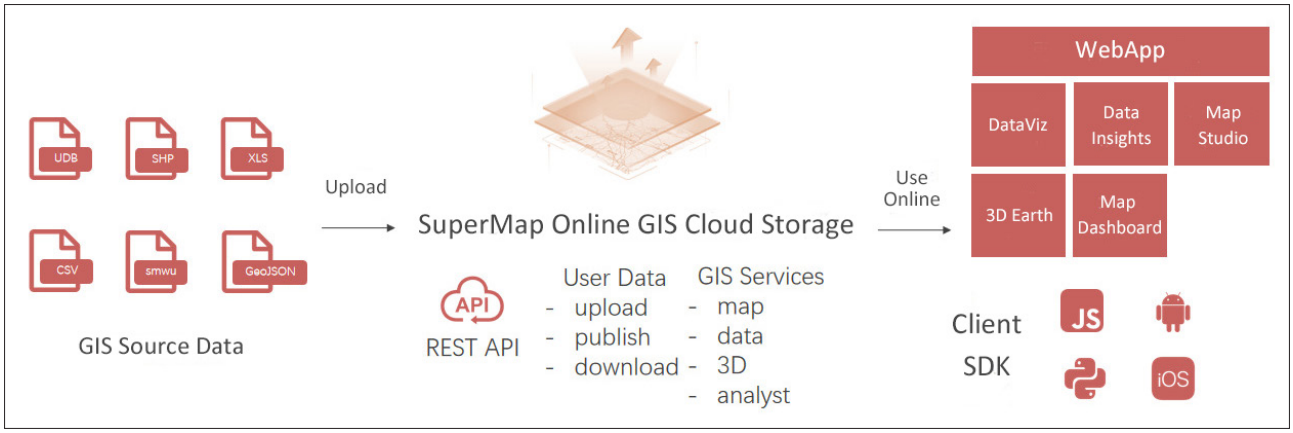
◇ Simply log in to the SuperMap Online account to use the platform product software, and subscribe to the usage time as needed.

• Online developer tools

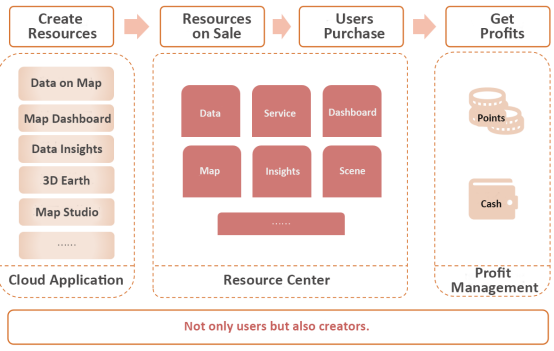
◇ Analysis API: 6 interfaces including national route navigation, geocoding, coordinate conversion, local search, etc.

◇ Storage API：including uploading and publishing data.

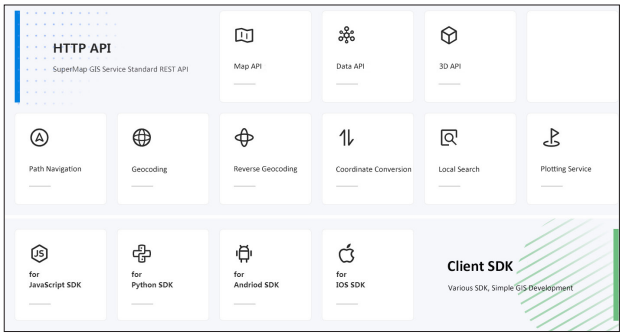
◇ Client SDK：JavaScript, Python , Android, iOS, etc. It is convenient to use data storage and analysis services to develop cool web applications.



GIS Cloud Storage Helps Data on Cloud Security



GIS Resource Creator Platform



GIS Cloud Development Helps
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