



GIS NEWSLETTER

January 2023

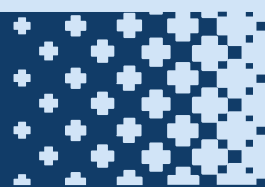


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Migrate folder, database, and server connections from ArcGIS Desktop to ArcGIS Pro

MIGRATING CONNECTIONS

Database and Server connections

The database and server connection files (.sde and .ags files) created in ArcGIS Desktop are generally stored in the following location:

C:\Users\

To make these available in ArcGIS Pro, browse to that folder in Windows File Explorer, select the files you want to add to ArcGIS Pro, and drag/drop them into your Favorites in either the Catalog pane or Catalog view.

Folder connections

For ArcGIS Desktop folder connections, the easiest way to make these available in ArcGIS Pro is to go to ArcCatalog, highlight the desired folder connections, and drag/drop them into your Favorites in either the Catalog pane or Catalog view.

Deploying connections

Your collection of favorites is maintained in a favorites file in your roaming user profile at this location: C:\Users\

[Click here for the detailed blog](#)

Additional Resources

Technical article: [How To: Import database and server connections from ArcGIS Desktop to ArcGIS Pro](#)

Quick-start tutorial: [Manage data](#)

Blog: [ArcGIS Pro Tips: This Might Just Be Your Favorite Tip Ever](#)

Help topics: [Project favorites](#); [Manage project favorites](#)



Protect and manage your ArcGIS Online content

ArcGIS Online includes capabilities that make it easy to manage and protect your items to ensure that you don't accidentally delete them, have others copy or download your data, make edits and other changes, or get unwanted comments. Here's an overview of the different ways you can protect and manage access to your content.

Prevent accidental deletion

You can use categories and tags to help identify key layers, maps, or other items that you don't want to inadvertently delete. But the most surefire way to prevent accidental deletion is to enable Delete Protection.

Manage map copying

You can specify whether others can save copies of your shared maps using the Save As property. By default, others you've shared the map with can make copies of your map by using Save as from the Contents (dark) toolbar.

Manage feature layer export

In the Settings tab of the feature layer item pages, Export Data allows users to export features in a variety of formats. By default, this setting is checked off.

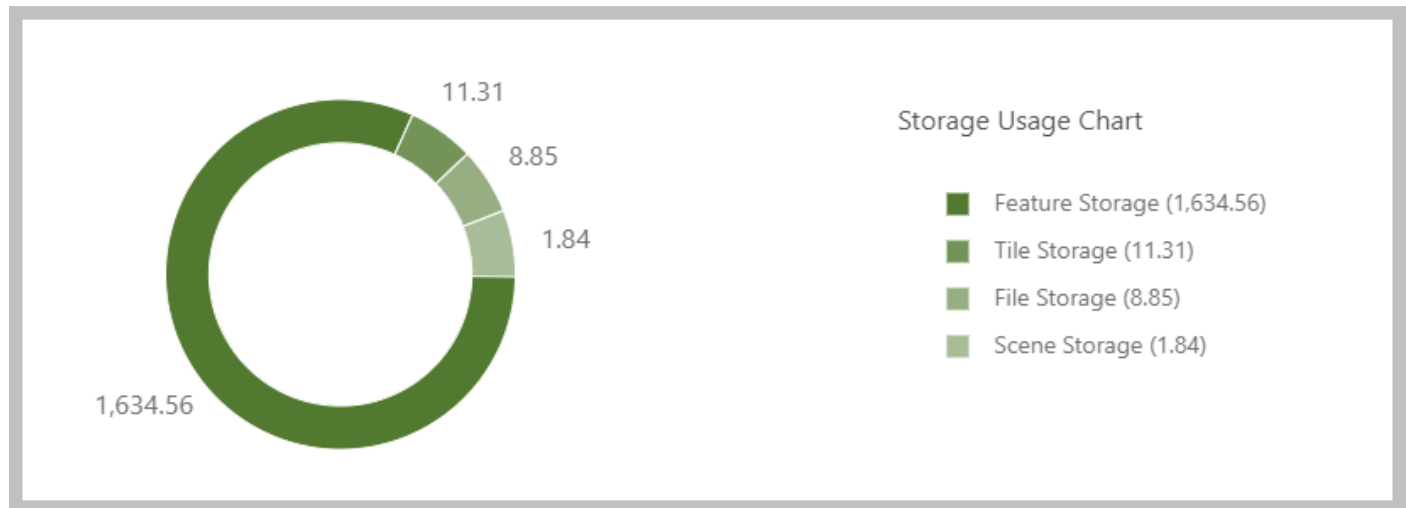
Protect your editable feature layers

Who can edit feature layers is controlled by both sharing and the layer settings. These settings include tracking who makes changes and what changes were made, what kind of editing is allowed (add, delete, update), if both attribute and geometry editing are allowed, whether editors can edit all features or just their own, and even who can see the features.

Enable or eliminate comments

Comments can be useful in getting feedback from users of your maps and other items.

For more details: [Click Here](#)



Understanding and managing ArcGIS Online credits

ArcGIS Online credits are the currency used across ArcGIS Online. They are consumed during specific transactions, such as performing analytics and storing features. ArcGIS Online and any ArcGIS product that interacts with ArcGIS Online, such as ArcGIS Pro, Insights for ArcGIS, ArcGIS Business Analyst, ArcGIS Enterprise, and Survey123 for ArcGIS, can use credits.

There are many ways ArcGIS Online users and administrators can maintain their credit budgets. Regardless of the ArcGIS product you are using, credits are managed through ArcGIS Online. This blog article will show you best practices for managing your credits. We will also share answers to questions users asked during our recent User Conference Spotlight Talk.

Tips for administrators

1. Turn on credit budgeting
 - Administrators can allocate credits to users by turning on credit budgeting. Turning this on:
 - Enables administrators to assign a specific quantity of credits to each user. Credit budgets can be assigned individually, through groups or roles, or during the invitation process.
 - Allows members to see their available credits on their profile page.
 - Gives members the flexibility to use credits any way they choose.
 - Creates an additional column of information within the Members tab that shows administrators how many remaining credits each member has.
 - Helps members avoid mistakes by preventing transactions that would consume a large number of credits.

2. Create custom member roles with privileges

When administrators know which tools members need, they can create and assign custom member roles with privileges to limit access to credit consuming tools.

Within the privilege settings, the "Premium Content" section defines the access each member role has to credit consuming tools and content including:

- Geocoding
- Network Analysis
- Spatial Analysis
- GeoEnrichment
- Demographics

Within the “Content” section, the administrator can control access to feature storage by preventing or enabling users to:

- Create, update, and delete
- Publish hosted feature layers
- Publish hosted tile layers
- Publish hosted scene layers

3. Monitor organizational usage

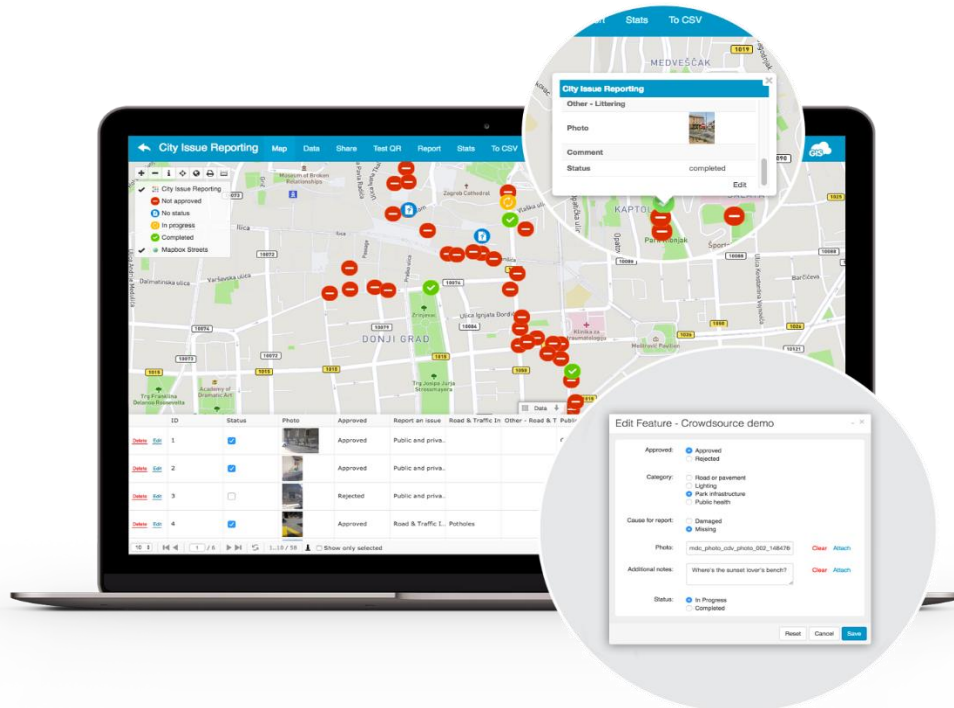
Administrators can monitor their members’ credit usage through tools on the Organization page Overview and Status tabs that enable them to:

- See a summary of their organization’s credit usage (Overview tab).
- Drill into charts that show credit usage over time and usage by type (Status tab).
- Access the Feature Storage Report for a detailed list of each feature layer, its size, who owns it, when it was created, and when it was last modified (Status tab).
- Download a CSV of credit usage (Status tab).

Tips for everyone

1. Monitor your usage
2. Know how many credits the transaction requires
3. Understand what consumes—and doesn’t consume—credits

For more details: [Click Here](#)



GIS for Crowdsourcing (Community engagement platform)

Introduction

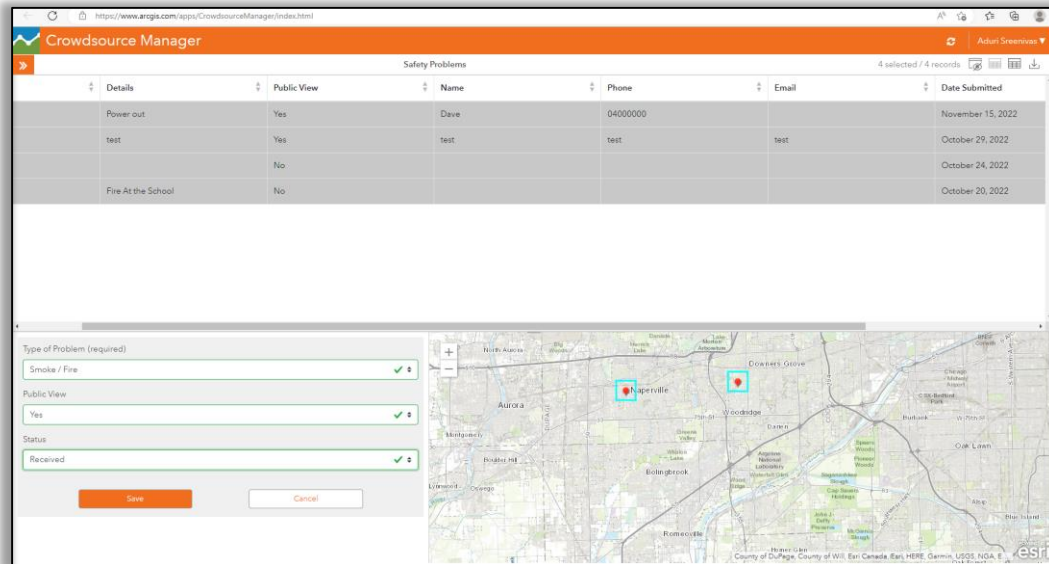
Crowdsourcing applications are a relatively new way of collecting data from people, and they have proven to be invaluable in the field of GIS (Geographic Information Systems). By using crowdsourcing applications, citizens can contribute their knowledge and opinions to help create maps, analyse spatial data, and build more accurate models about communities.

Crowdsourcing is a method for obtaining information through soliciting input from a large number of people, usually via the internet. Administrators control the information and decide whether it will be accepted and visible publicly, in a crowdsourced map portal. This technology is used in Smart Cities to increase the efficiency in public services provisioning.

Anonymous users (citizens, visitors, attendees, public...) can submit reports and surveys, including photos and comments, using Mobile or Web App. Citizens can review existing reports, comment or vote on reports and observations submitted by others.

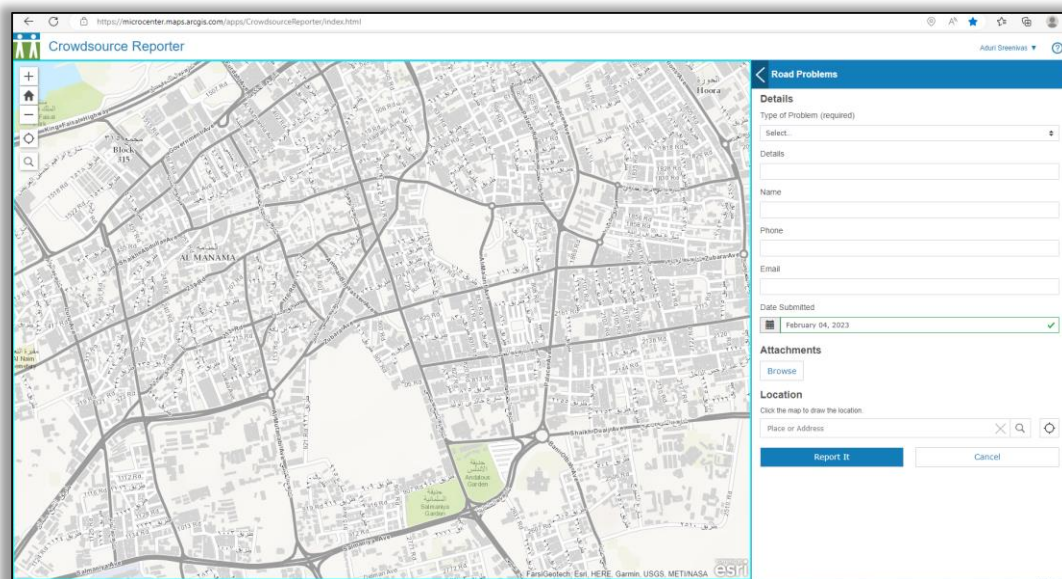
The principle behind crowdsourcing is simple. Once decision-makers understand what needs to be collected (potholes, crime, ideas, damaged regulatory signs) the next phase is to build a public-facing application that would allow the community to add data about what they see in the field. Acquiring feedback and ideas from large groups of people offers unparalleled substantial advantages to the organization.

Crowdsourcing Manager application allows users within an organization to review problems or observations submitted through data collection apps such as the Crowdsourcing Manager application. This application presents one or more maps that can be used to review problems or observations and update attributes of these reports such as status and assignment.



Crowdsourcing Manager application

The Crowdsourcing Reporter web application presents one or more maps that can be used to report a problem or observation. Users can anonymously submit new reports, review existing reports, and comment and vote on reports or observations submitted by other users. They also can authenticate with their ArcGIS credentials and track the status of problems or observations they have reported.



Crowdsourcing Reporter web application

Crowdsource Polling is a web application that allows users to submit comments or feedback on existing plans and proposals. The application is responsively designed to be used on tablets and desktop computers.

The Crowdsource Polling application presents a map that can be used to gauge sentiment on specific plans or proposals. Users can anonymously submit new comments and/or vote on the importance of the plan or proposal.

Community engagement platform

ArcGIS Hub is an easy-to-configure community engagement platform that organizes people, data, and tools through information-driven initiatives. Organizations of any type and any size, including government agencies, nonprofit groups, and academia, can maximize engagement, communication, collaboration, and data sharing using the ArcGIS Hub initiative-based approach.

With ArcGIS Hub, organizations can leverage their existing data and technology and work together with internal and external stakeholders to track progress, improve outcomes, and create vibrant communities.



The development of 3D City Models with BIM (Geo-enabling the BIM process)

Introduction

Virtual 3D city and landscape models are provided for an increasing number of cities, regions, states, and even countries. They are created and maintained by public authorities like national and state mapping agencies as well as private companies.

3D city models are used as an integrative information backbone representing the relevant urban entities along with their spatial, semantic, and visual properties. They are often created and maintained with full coverage of entire cities and even countries, i.e. all real world objects of a specific type like buildings, roads, trees, water bodies, and the terrain are explicitly represented.

CityGML defines a feature catalogue and data model for the most relevant 3D topographic elements like buildings, bridges, tunnels, roads, railways, vegetation, water bodies, etc. The data model is mapped to an XML-based exchange format using OGC's Geography Markup Language (GML).

CityGML is described at the conceptual level using UML class diagrams. These diagrams form the basis for the implementation-dependent realization of the model with a relational database system. City models are stored in the specification CityGML.

Design decisions in the model are explicitly visualised within the UML diagrams.

- Geometric-topological model
- Appearance model
- Thematic Model
- CityGML Core
- Building model
- Bridge model
- City furniture
- Digital Terrain Model
- Generic objects and attributes
- Land use
- Transportation objects
- Tunnel model
- Water bodies
- Vegetation objects

3D City Database (3DCityDB) is an Open Source package consisting of a database schema and a set of software tools to import, manage, analyse, visualize, and export virtual 3D city models according to the CityGML standard.

The 3DCityDB supports the commercial SRDBMS Oracle (with 'Spatial' or 'Locator' license options) and the Open Source SRDBMS Posts (which is an extension to the free RDBMS PostgreSQL). 3DCityDB makes use of the specific representation and processing capabilities of the SRDBMS regarding the spatial data elements.

Comparison of IFC & CityGML

CityGML and IFC are designed in different domains and developed independently to serve different purposes and use in different tools.

IFC focuses on the building element properties with more details than CityGML, but for single building. While in contrast CityGML models fewer details, but cover larger scale areas, even up to entire cities.

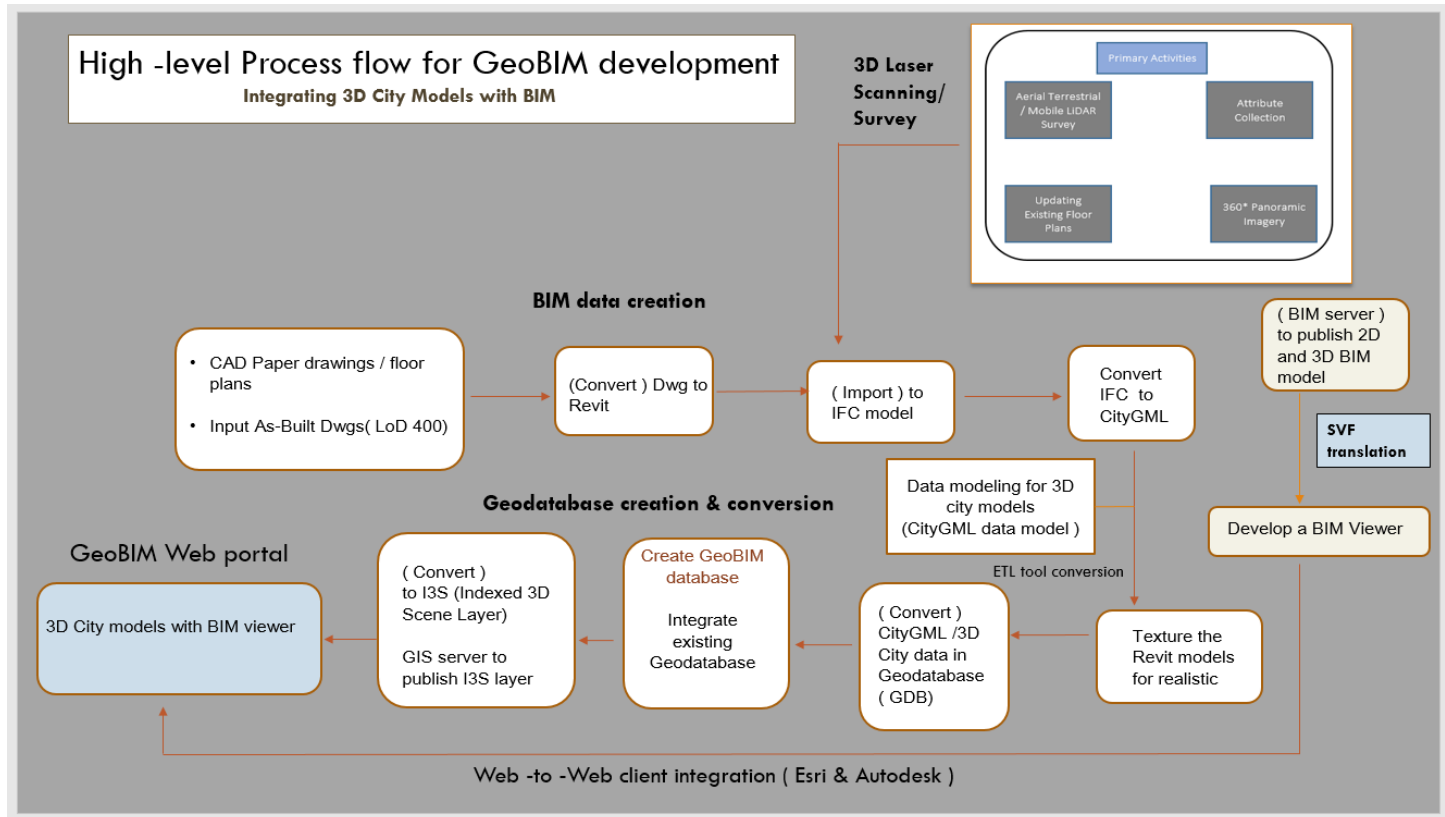
Integrating IFC data together with CityGML

The integration of these two technologies allows us to visualize 3D scenes from the CityGML perspective. This means we can have a clear picture of how our city looks like in 3 dimensions.

It also helps us to better analyze and understand the spatial relationships among buildings, streets, and other urban structures. With this technology, architects, engineers and urban planners can design more efficient cities that meet the needs.

An integration of 3D city models with BIM, coined as **GeoBIM**, facilitates improved data support to several applications, e.g., 3D map updates, building permits issuing, detailed city analysis, infrastructure design, context-based building design, to name a few.

GeoBIM also helps in better visualizing the 3d structure of a city by providing an immersive experience with advanced 3d mapping technologies.



Web -to -Web client integration (Esri & Autodesk)

The 3D City Models can integrate with BIM using Esri ArcGIS JavaScript API 4.X with Autodesk BIM 360 API's. Esri custom JavaScript applications is to link to systems such as Autodesk's BIM 360 and show end users their project or asset data and 3D GIS data in a single experience.

Esri provides extensive open access to content managed in ArcGIS Enterprise through GeoREST services that encompass data types (layers), analysis (geoprocessing), and content management capability. I3S Building Scene Layer is a great example in ArcGIS specifically for sharing BIM content over the web.

3D data processing for GeoBIM

- Building plans (Paper drawings), As-Built drawings (Convert 2D CAD files to BIM)
- 3D Laser scan to BIM
- Convert Revit to IFC, ETL tools transformation

- Develop the 3D City data schema based on the CityGML
- Convert to CityGML models to Geodatabase (for 3D City modelling)
- Create GeoBIM database for buildings (Architectural& MEP)
- Integrate existing Geodatabase, GIS layers (for 3D City modelling)

COTS & ETL customised tools

ETL tools transformation solutions provide an effective and efficient way to convert CAD->BIM->GIS data from one format to another without any data loss while maintaining integrity. It can be used for data analysis, customised ETL tools and more. Both (Commercial Off-The-Shelf) COTS and (Extract, Transform and Load) ETL tools help ensure that the data generated is accurate and consistent with what was expected from the original BIM model.

ArcGIS Pro tool has been converting CityGML-based 3D buildings to I3S (Indexed 3D Scene Layer). The I3S format, also called Scene Layer, allows users to publish and use 3D content on the web, mobile devices, and desktop. Scene Layer Packages (SLPK) are a scene layer file format that can be used to store, publish, and even directly read large 3D datasets.

Challenges in adopting a 3D City Model

Adopting a 3D City Model presents certain challenges that are unique to BIM and 3D GIS projects. It is important to consider these challenges in order to ensure successful implementation of these projects.

The primary challenge is the cost associated with creating and maintaining these models. Another key issue is the data interoperability; in order for 3D city models to be meaningful, they must be integrated with other types of data sources. Furthermore, user capacity and friendliness must also be taken into account when considering 3D city models; they must be easy to understand, use and operate if they are to reach their full potential.

Conclusion

3D City models help in providing for many different use cases as AEC, Smart city, Cultural heritage, Urban planning, Fire safety analysis, Facility management, Security, Building permit system, Real estate, Telecom wireless network analysis, Solar energy potential analytics etc.

GeoBIM technology combines the power of (BIM) and (GIS). It is used for building permit management, allowing for more efficient design, construction, and operations. This technology provides an easy-to-use platform to view different building elements in 3D space. It also allows users to create accurate and detailed documents such as floor plans, elevations, and site plans.

Moreover, GeoBIM also helps in better visualizing the 3D structure of a city by providing an immersive experience with advanced 3D mapping technology.

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