

**BIRGIT** BIM and GIS integration  
April 2025



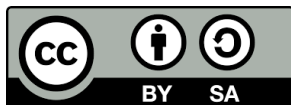
Co-funded by  
the European Union

## L2 BIM-GIS Integration overview

[oborsulic@unin.hr](mailto:oborsulic@unin.hr)

[vlado.cetl@unin.hr](mailto:vlado.cetl@unin.hr)

[sanja.samanovic@unin.hr](mailto:sanja.samanovic@unin.hr)



## LEARNING OUTCOMES

**At the end of this submodule, the participant is expected to be able to:**

- Explain the basic concept and main properties of BIM GIS integration.
- Understand different scale of BIM and GIS.
- Know particular properties of BIM and GIS.

## BIM-GIS integration – overview

**BIM-GIS integration** enables the **combination of attributes** and data from **two different perspective**; while BIM environment is more focused on 3D infrastructure information and data of a building with attribute information in detail, GIS data covers geographic aspect of the same area and its surroundings, underground utility network, semantic information and land usage information

## BIM-GIS integration – overview

BIM-GIS integration enables the combination of attributes and data from two different perspective; while **BIM environment** is more focused on 3D infrastructure information and data of a building with attribute information in detail, **GIS data** covers geographic aspect of the same area and its surroundings, underground utility network, semantic information and land usage information

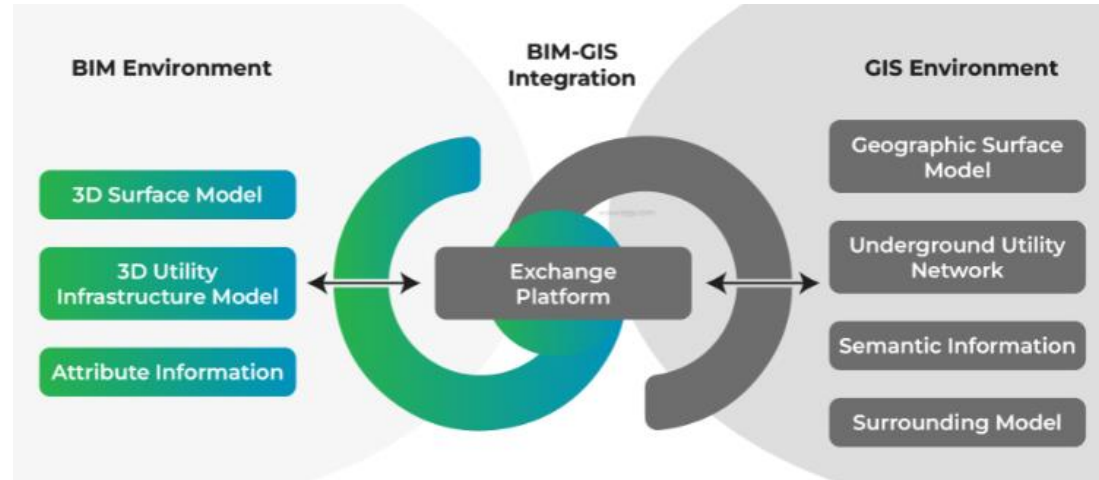


Image url: <https://www.tejy.com/integration-application-of-bim-and-gis-an-overview/>

## BIM-GIS integration – the difference on the scale concept

In **GIS**, scale typically refers to **map scale**, which is the ratio of the map's linear dimensions to the corresponding dimensions on the Earth's surface. For example, a map scale of 1:10,000 means that one unit of measurement on the map represents 10,000 units on the ground.

GIS often involves **generalization**, where geographic features are simplified or abstracted to fit within a particular map scale.

Scale in GIS can also refer to the **geographic extent** of a dataset or map. For example, a GIS dataset may cover a city, a county, a state, or a larger geographic area, each with its own scale.

In **BIM**, scale is often expressed through the concept of **Level of Detail (LOD)**. LOD defines the degree of detail and accuracy at which building elements are represented within a BIM model. LOD ranges from LOD 1 (basic geometric shapes) to LOD 5 (highly detailed, as-built models).

The advancement of BIM is that a BIM model can **represent individual** buildings, construction projects, or specific building elements since the scale within a BIM model is tailored to the project's scope, focusing on the **details relevant to that project**

## The most applicable scales of each GIS and BIM



Image url: <https://www.commercialdesignindia.com/insights/6112-gis-and-bim-integrating-two-of-the-most-disruptive-technologies>

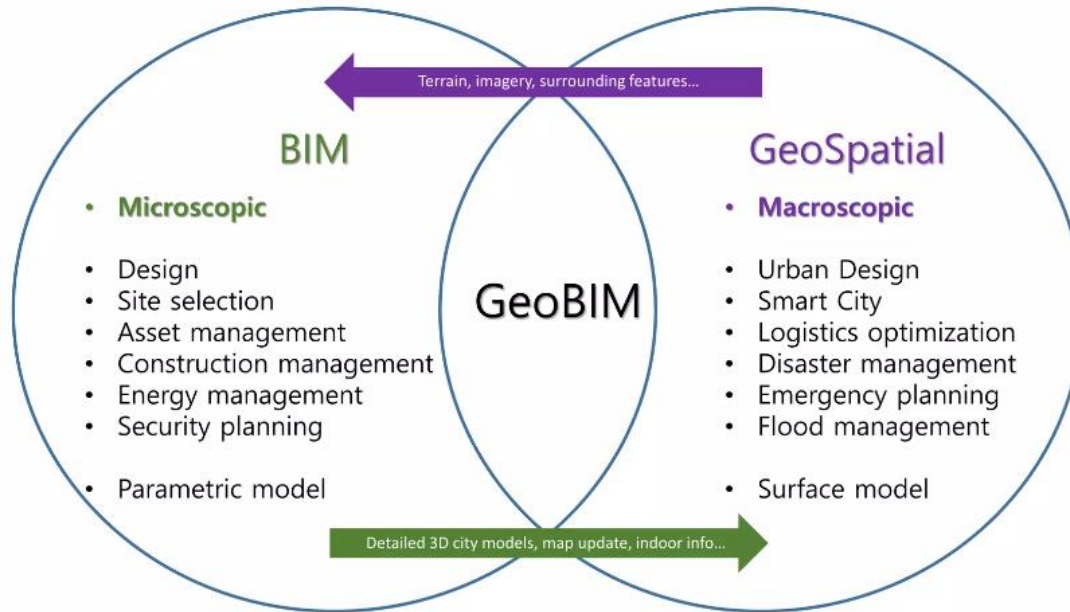


Image credit: Shanghee Shin, web url: <https://www.slideshare.net/endofcap/integration-of-bim-and-gis-from-ideal-to-reality>



## 1.2 Particular properties of BIM and GIS

**GIS**, with its proficiency in managing and analyzing geographic data, provides **contextual information**, such as location and topography, augmenting the spatial understanding within the integrated system.

**BIM**, characterized by its ability to capture and represent **detailed geometric and semantic information** about building elements, contributes to the richness and accuracy of the integrated dataset

**BIM's** emphasis on the entire life-cycle of a project complements GIS's geospatial analysis by incorporating **temporal dimensions**

The interoperability between BIM and GIS require leveraging their respective strengths

→ enables an enhanced decision-making, improved collaboration, and sustainable asset management throughout the lifecycle of built environments

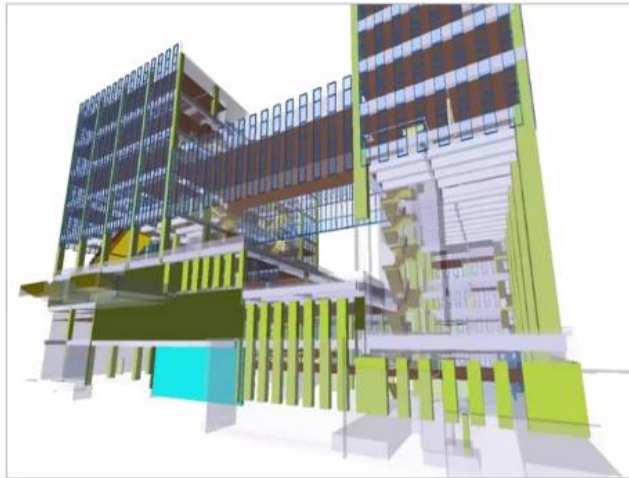
## BIM

- ✓ Detailed Building Information
- ✓ Design and Construction Focus
- ✓ Interoperability
- ✓ Lifecycle Management
- ✓ Parametric Modeling
- ✓ Quantitative Analysis
- ✓ Visualization and Simulation
- ✓ Construction Sequencing
- ✓ Integration with IoT and Sensors

## GIS

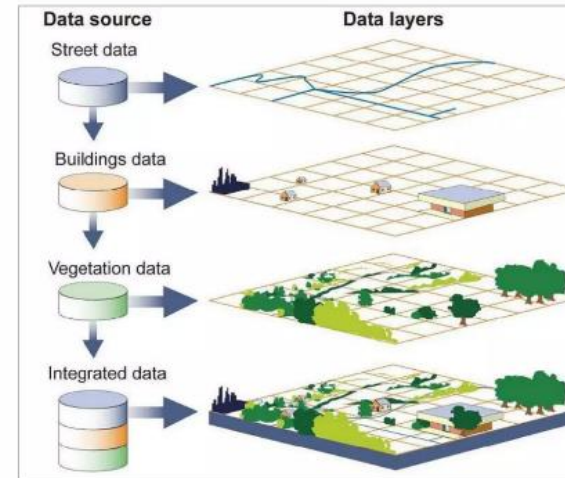
- ✓ Spatial Analysis
- ✓ Geospatial Data Integration
- ✓ Geographic Mapping
- ✓ Geodatabase Management
- ✓ Spatial Referencing
- ✓ Public and Environmental Data
- ✓ Emergency Response and Planning
- ✓ Zoning and Land Management
- ✓ Environmental Conservation
- ✓ Real-time Spatial Data
- ✓ Wide Range of Industries

## BIM-GIS integration – particular properties - EXAMPLE



<BIM>

VS



<GIS>

Image credit: Shanghee Shin, web url: <https://www.slideshare.net/endofcap/integration-of-bim-and-gis-from-ideal-to-reality>

## BIM-GIS integration – particular properties - EXAMPLE

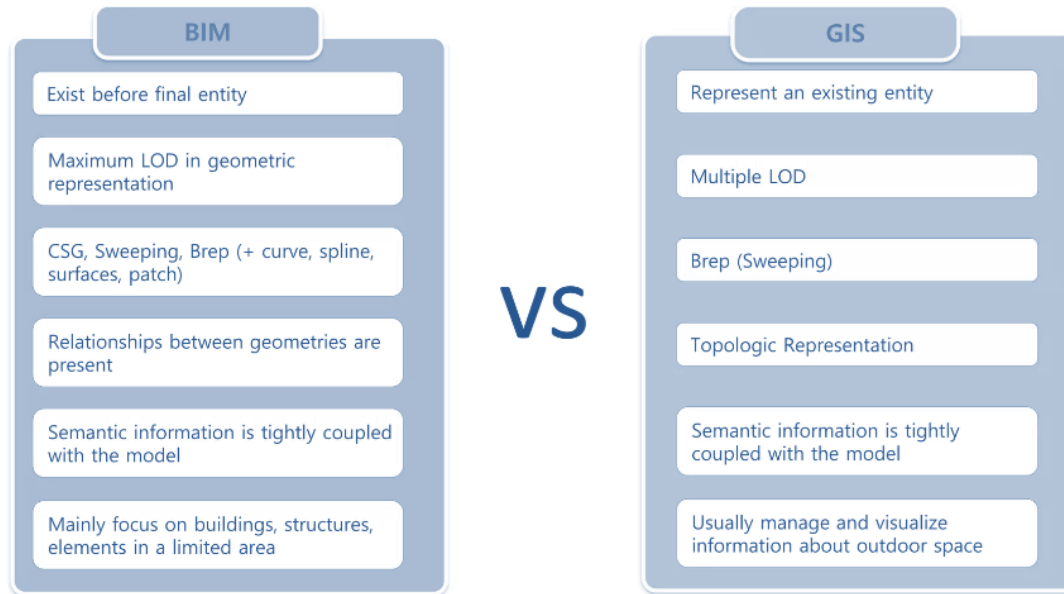


Image credit: Shanghee Shin, web url: <https://www.slideshare.net/endofcap/integration-of-bim-and-gis-from-ideal-to-reality>

**Thank you for your attention**



<https://birgitproject.eu/>

*Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.*