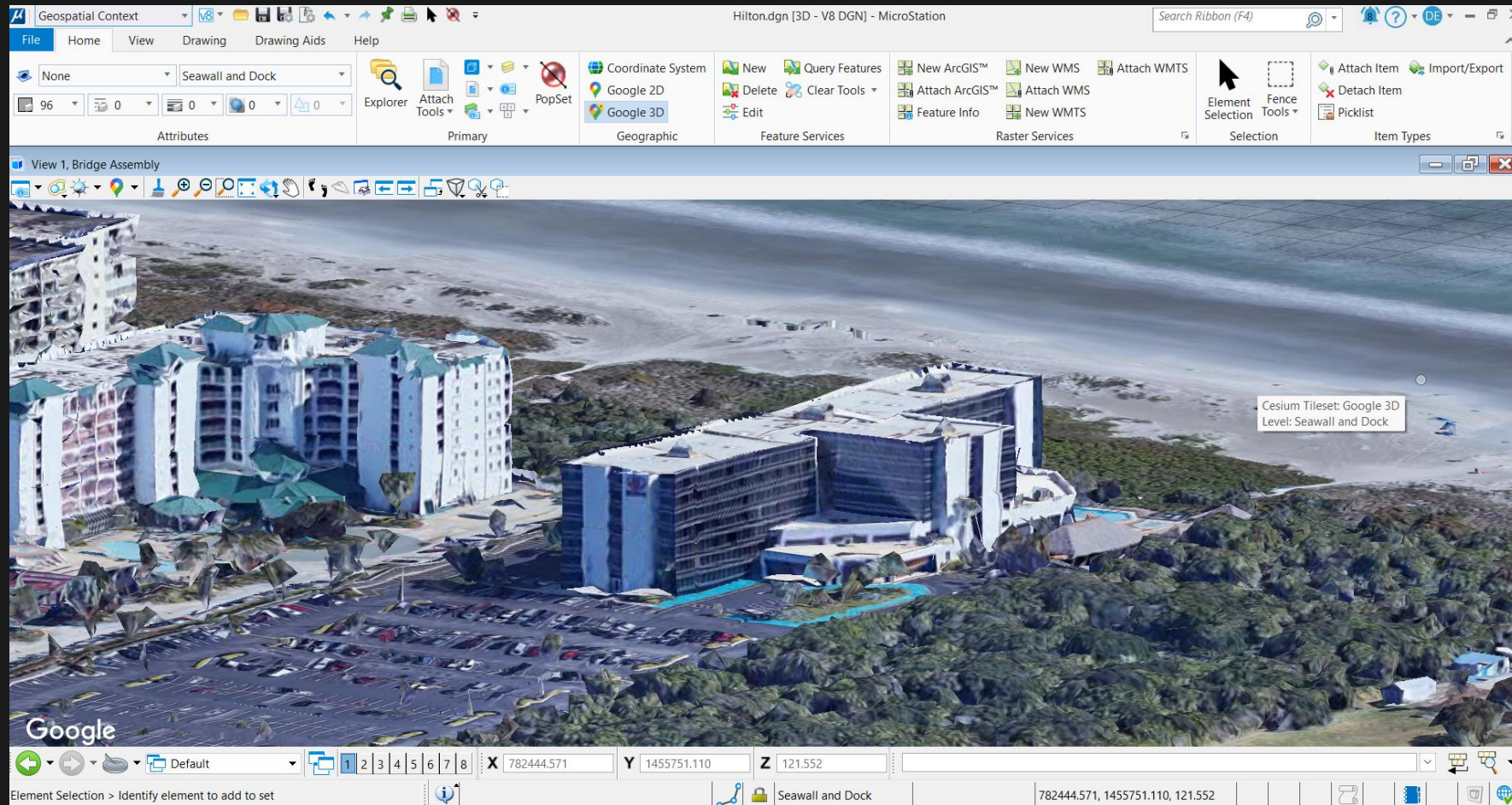


Geospatial 101: Design in context





MicroStation's Geospatial capabilities

Dan Eng - Product Expert

Tamicca Sellars – MicroStation Product Manager

Bentley®

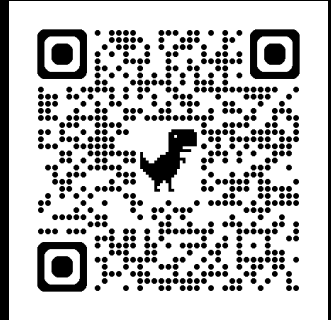
Presenters



Tamicca Sellars
MicroStation Product Manager

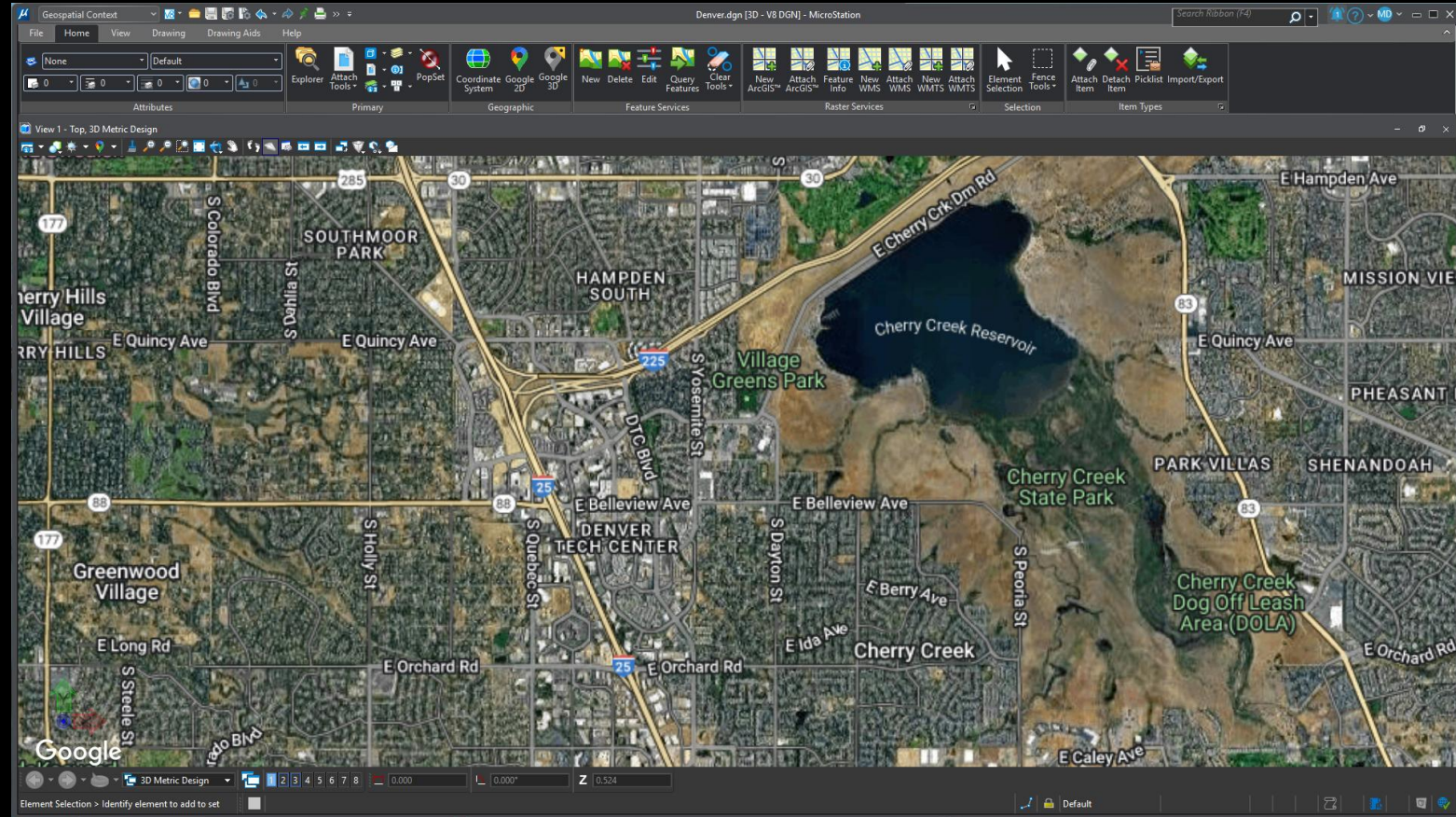


Dan Eng
MicroStation Product Expert

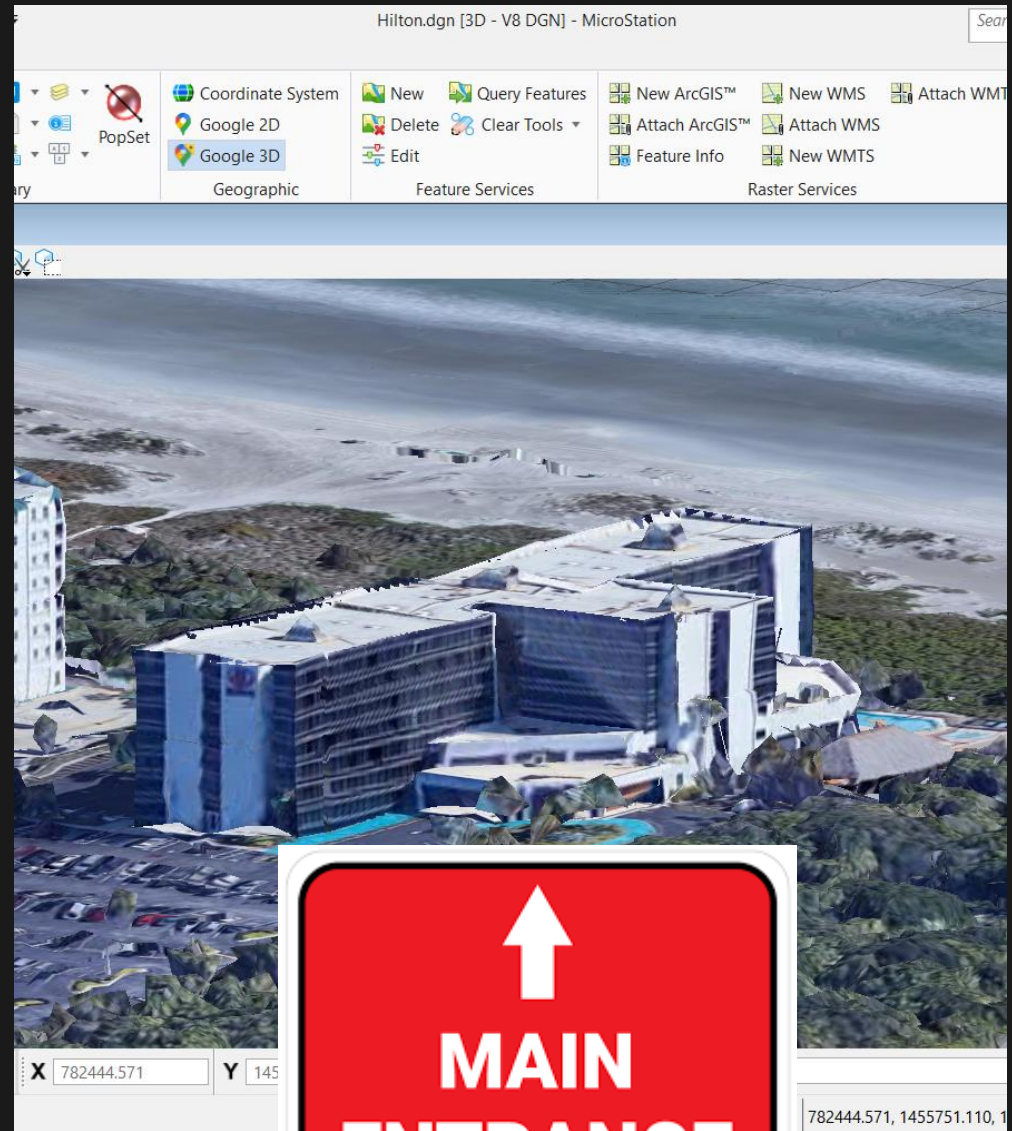


Agenda

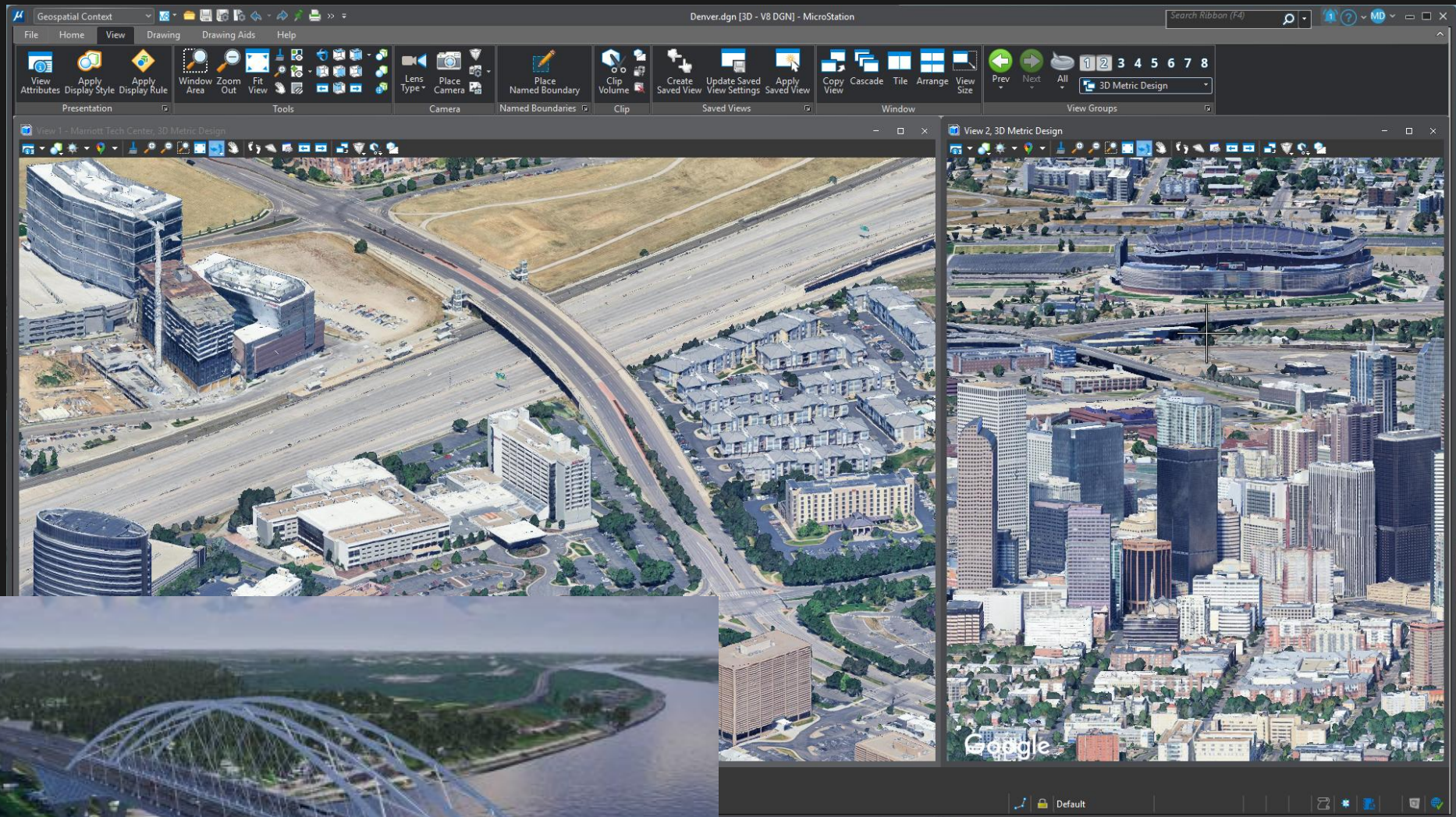
- Introduction: What is Geospatial
- Why designing in context?
- Importance of Coordinate Systems
- What's new in MicroStation 2025
- Q/A We want to hear from you



We are here!







Designing without understanding your surroundings is like working with blinders on!



Why Designing in Context with Geospatial data?



Bring informed contextual data to your designs



Expand the depth and breadth for evaluating your file and the environment around you



Feature rich data to help communicate your design



Evaluate your design with its surroundings



Aid with Informed decisions

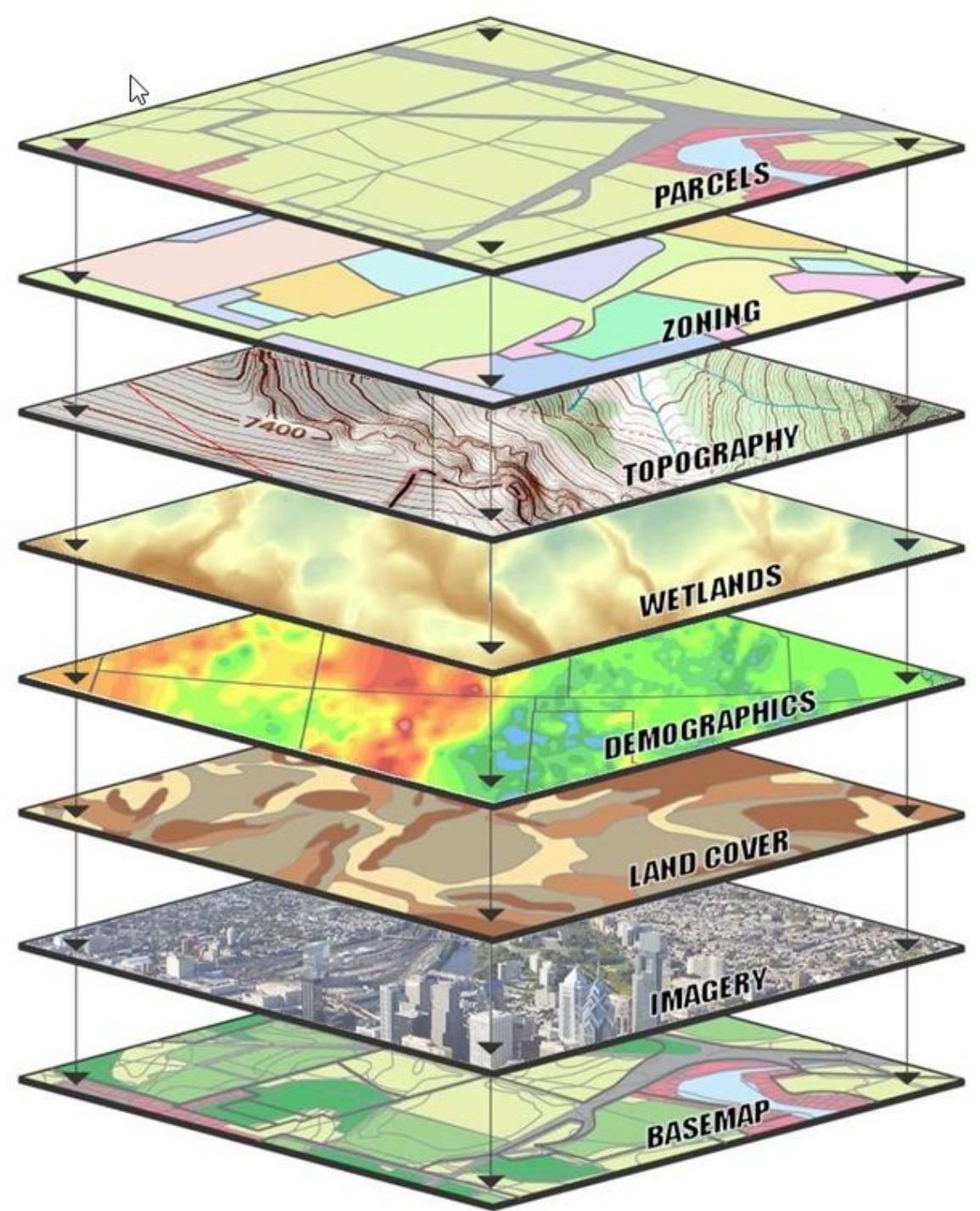


Insights into you location

What is Geospatial Data?

Information that includes geographic component (objects, structures, event or real-world phenomena), associated with a location on the Earth.

It is also called geospatial data, georeferenced data, as well as geodata or context data.

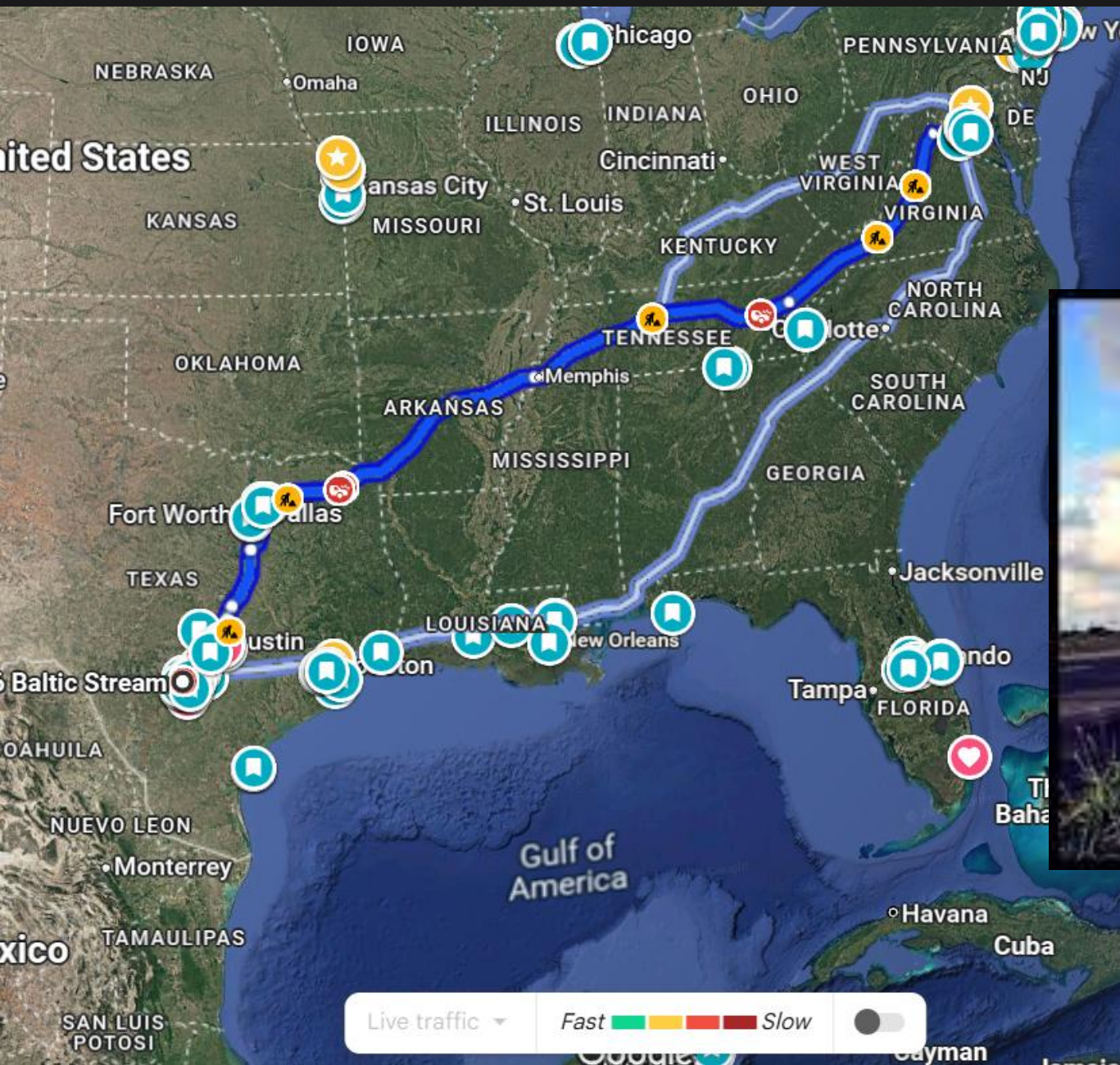


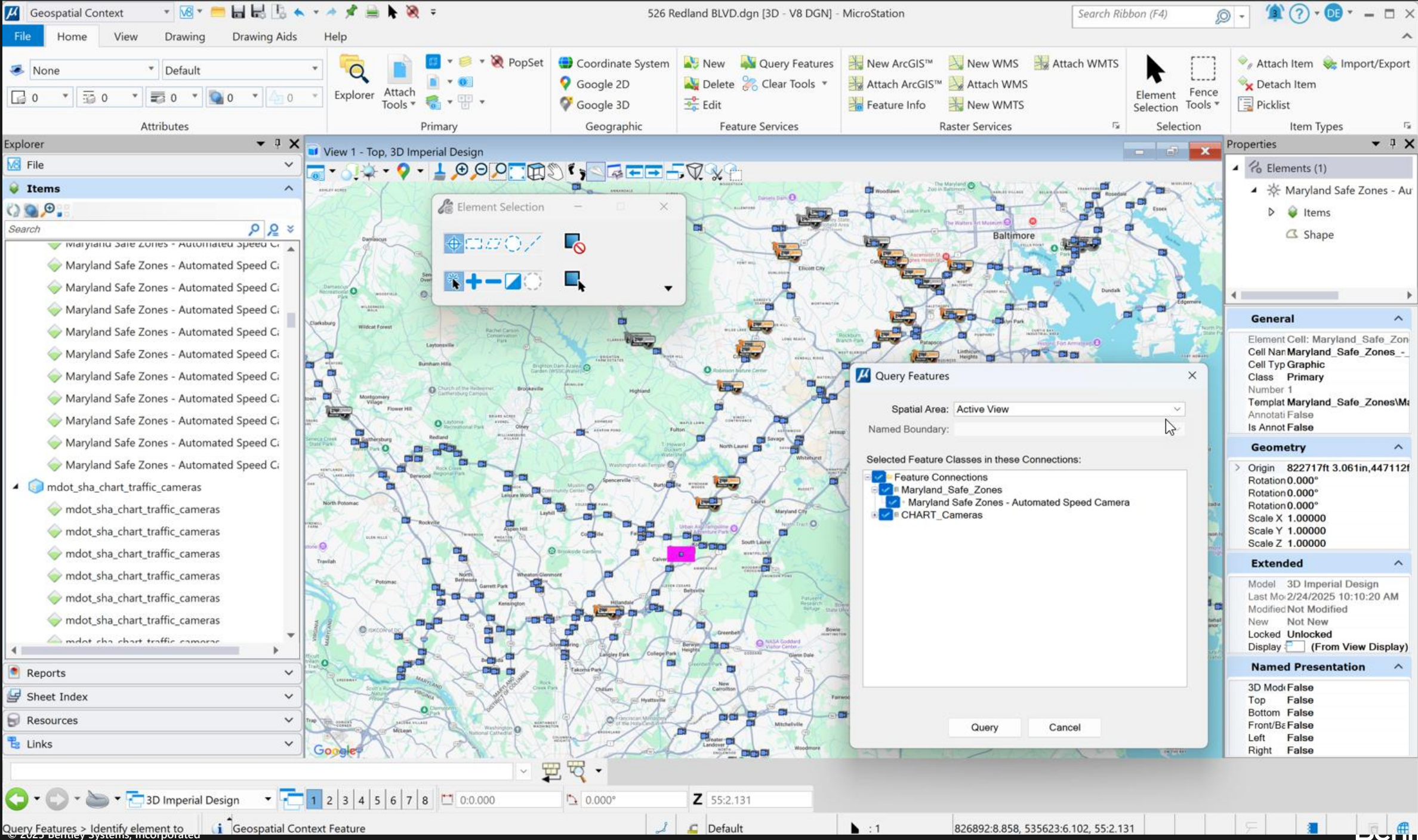
Who should use Geospatial tools?

Anyone who:

- wants to bring greater contextual information to their Infrastructure model
- wants to communicate their design better
- wants to expand their understanding of their design and the impact on the surrounding environment
- needs to plan based on historical geographical data



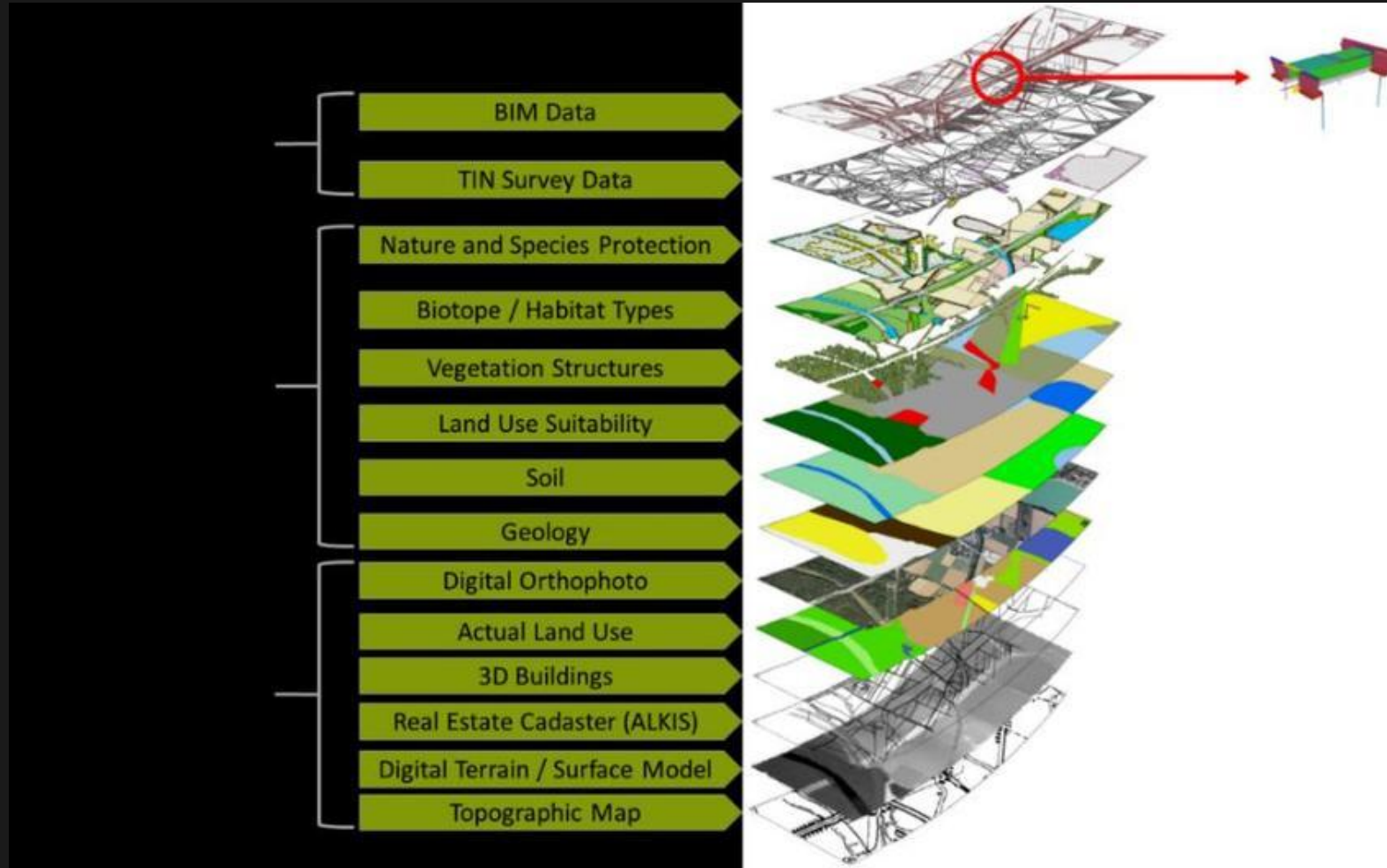




Importance of Coordinate Systems



Design in Context: Importance of Coordinate Systems

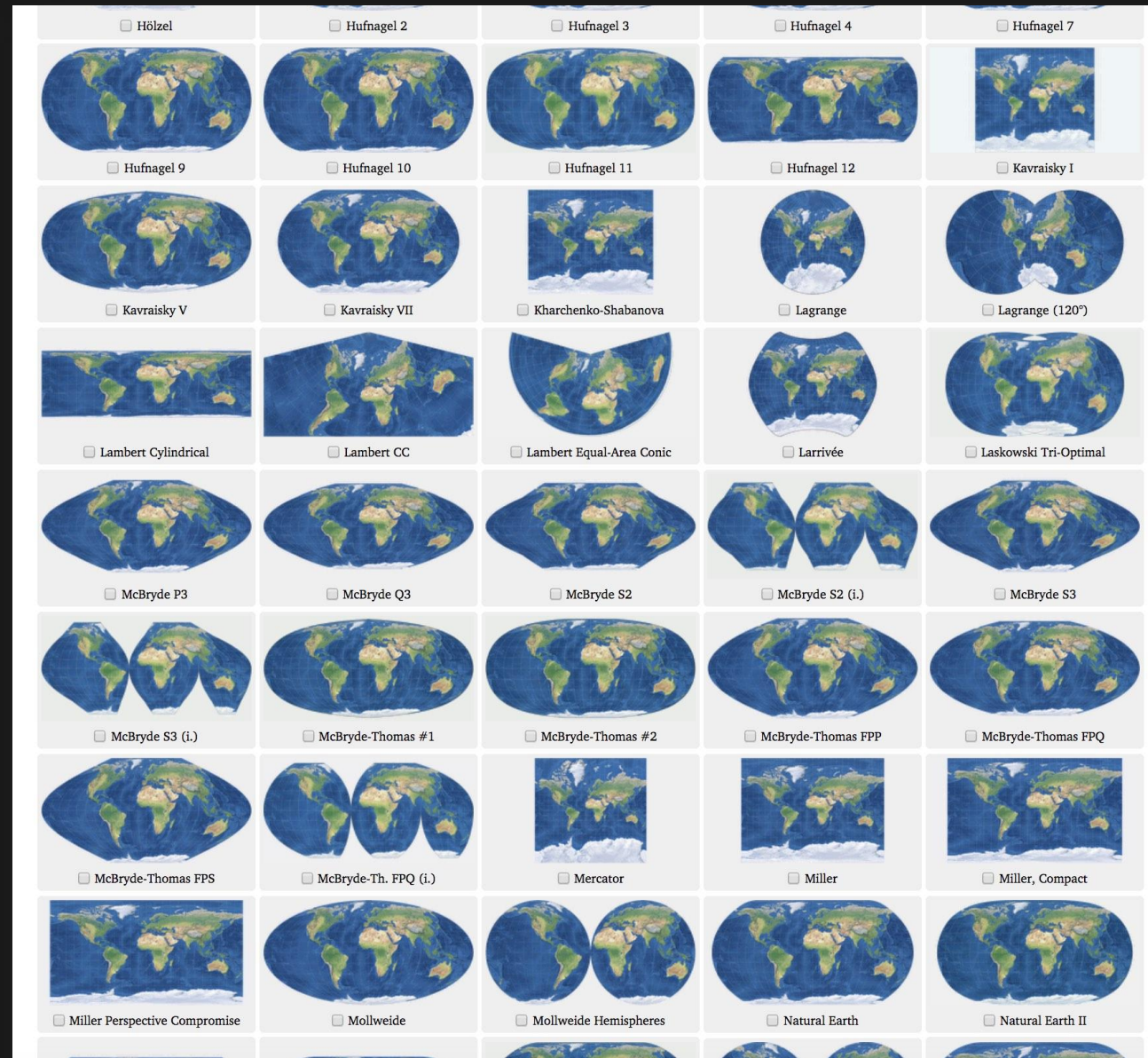


Combining data from various sources, leveraging coordinate systems, units, file formats, is the path to proper design in context and create digital twin.

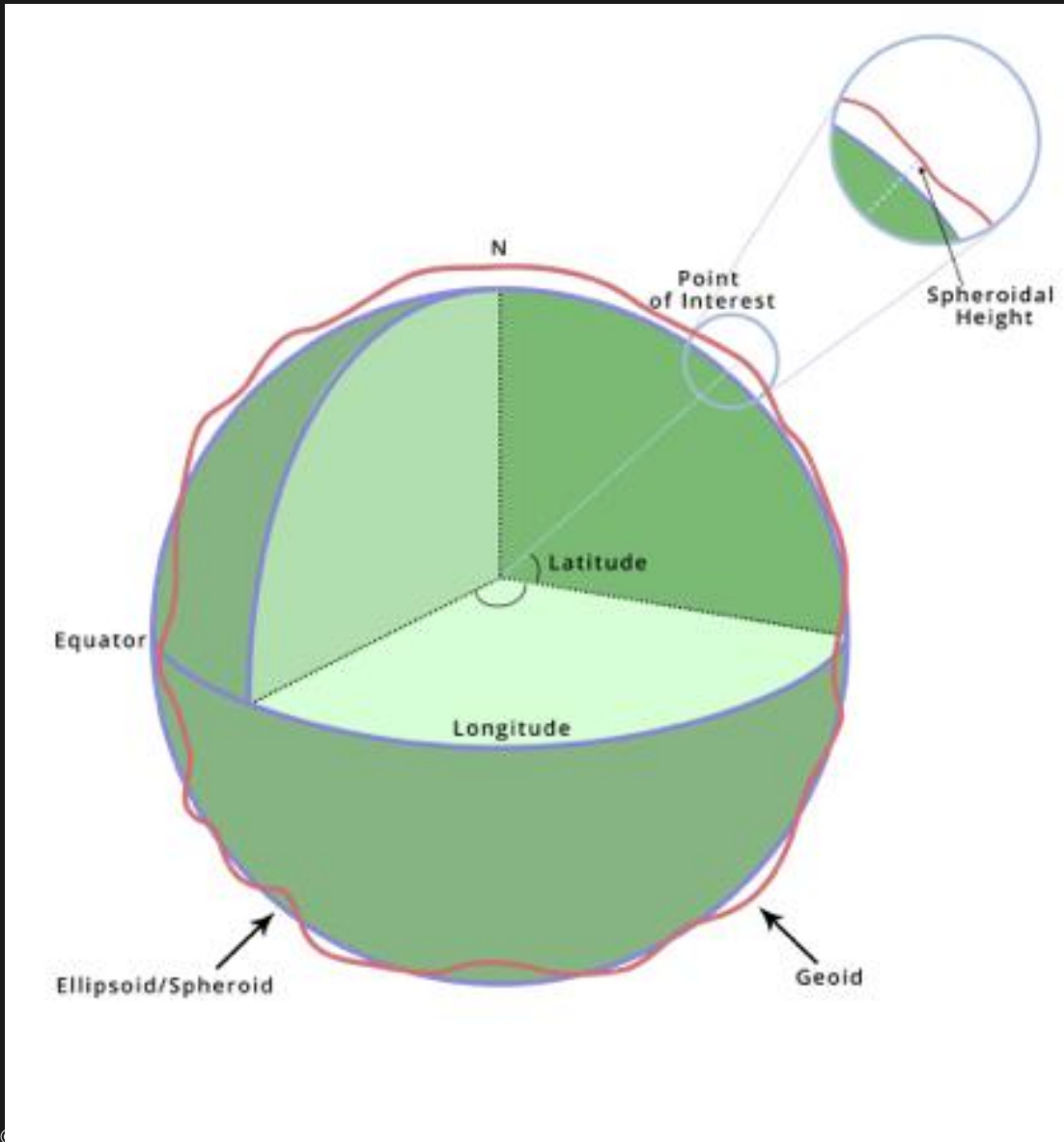
The Earth is not flat!



Projection methods: none is perfect



Importance of Vertical Datum

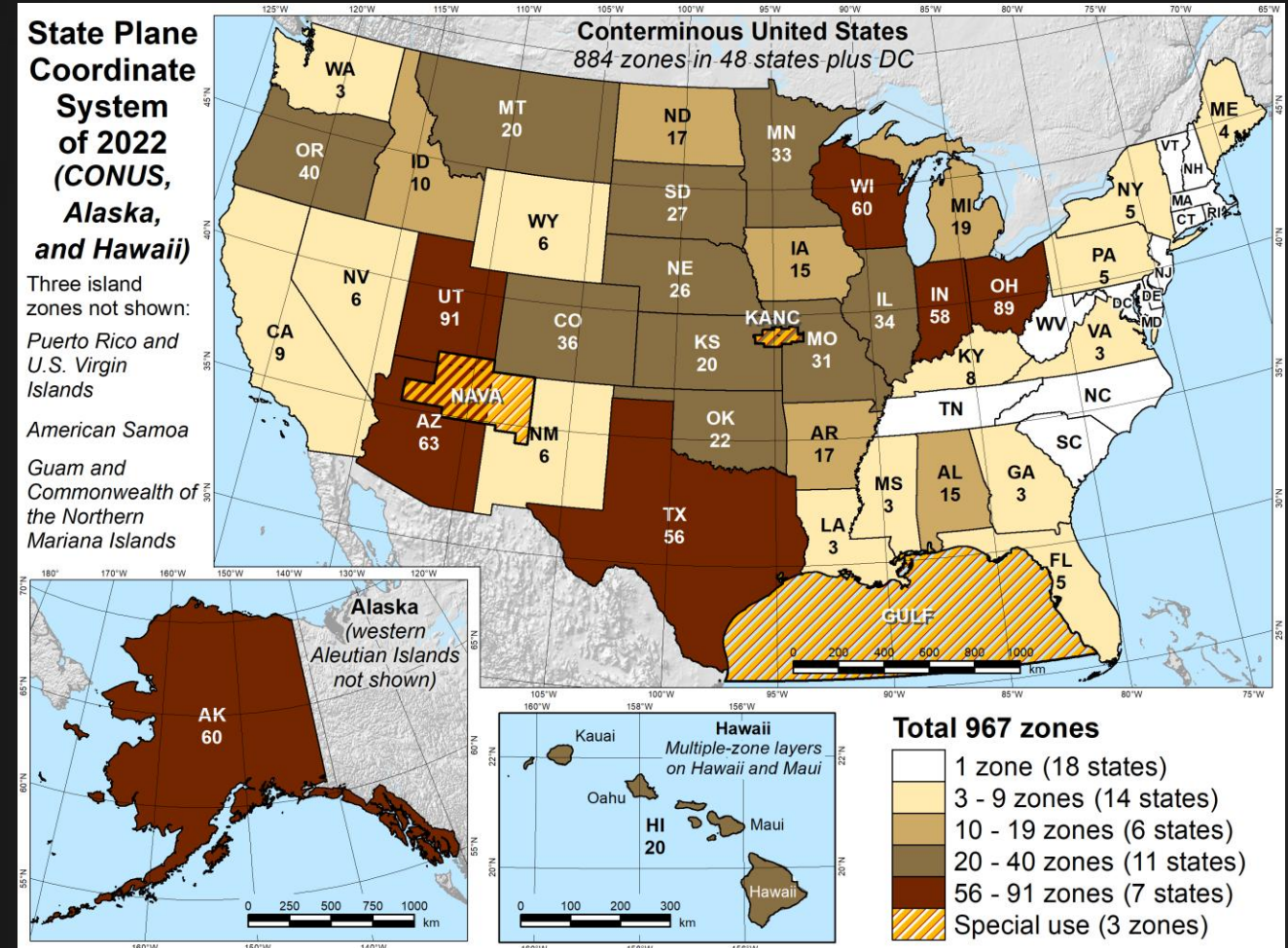


A datum is a reference system that defines the shape of the Earth (using an ellipsoid) and the origin and orientation of latitude and longitude lines. Essentially, it provides a framework for accurately measuring locations and elevations on the Earth's surface.


You think it is done? It's not!



The National Geodetic Survey (NGS) is in the process of modernizing the National Spatial Reference System (NSRS). NGS plans to replace all three North American Datum of 1983 (NAD 83) frames and all vertical datums of the NSRS, including the North American Vertical Datum of 1988 (NAVD 88), with four new terrestrial reference frames and one new geopotential datum to which all geodetic coordinates and derived coordinates within the NSRS will be referenced.



Need for custom coordinate systems

 **Idea** MSR-I-1017

PromoteDetails >ShareMoreClose


Add Amtrak Coordinate System EPSG 20050 to Library of Coordinate Systems

Created by Daniel Olausen in MicroStation Ideas Portal on Aug 31, 2022

Request the addition of ACS2021 (Amtrak Coordinate System 2021) to the Library of Coordinate Systems within Microstation. This coordinate system is a requirement for surveys along Amtrak Northeast Corridor from Washington DC to Boston MA.

Add RH2000 to the list of vertical coordinate systems

In Sweden the RH2000 (EPSG:5613) is used extensively. Could it please be added to the list of vertical coordinate systems?

 **Idea** MSR-I-1595

PromoteDetails >ShareMoreClose

A new NTV2 file for incorporation in to the Bentley GCS

Created by Steven Cooper in MicroStation Ideas Portal on Apr 3, 2024

Hi, we have a new NTV2 for inclusion in the GCS from Network Rail. The attach function below does not recognize a .zip. What is the best way to share the files with you? Kind Regards Steve.

Home / All ideas / MSR-I-2026

9

VOTE

Status

Future consideration

Categories

3D Modeling

Created by

Guest

Created on

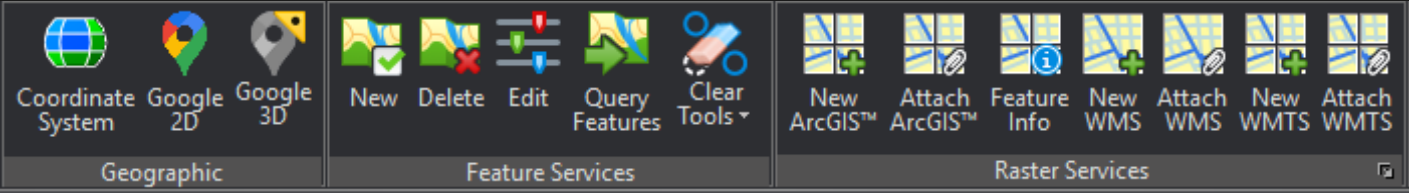
Aug 6, 2025

Add 5709 to the list of vertical coordinate systems

In the Netherlands 5709 (EPSG:5709) is used extensively. Could it please be added to the list of vertical coordinate systems?

Hor:	EPSG: 28992	https://epsg.io/28992
Vert:	EPSG: 5709	https://epsg.io/5709
Combined:	EPSG: 7415	https://epsg.io/7415

Geospatial Context tools in MicroStation



Integrating Geospatial Context with MicroStation®

Upgrade Your CAD Designs with MicroStation's Geospatial
Context Workflow

Geospatial Context: What's New in MicroStation 2025

**Google Maps
Integration**

**Google
Photorealistic 3D
Tiles Support
(Tech Preview)**

**Geospatial
Context in Python
API**

**Esri File
Geodatabase
Support**

Cell Fixed Size

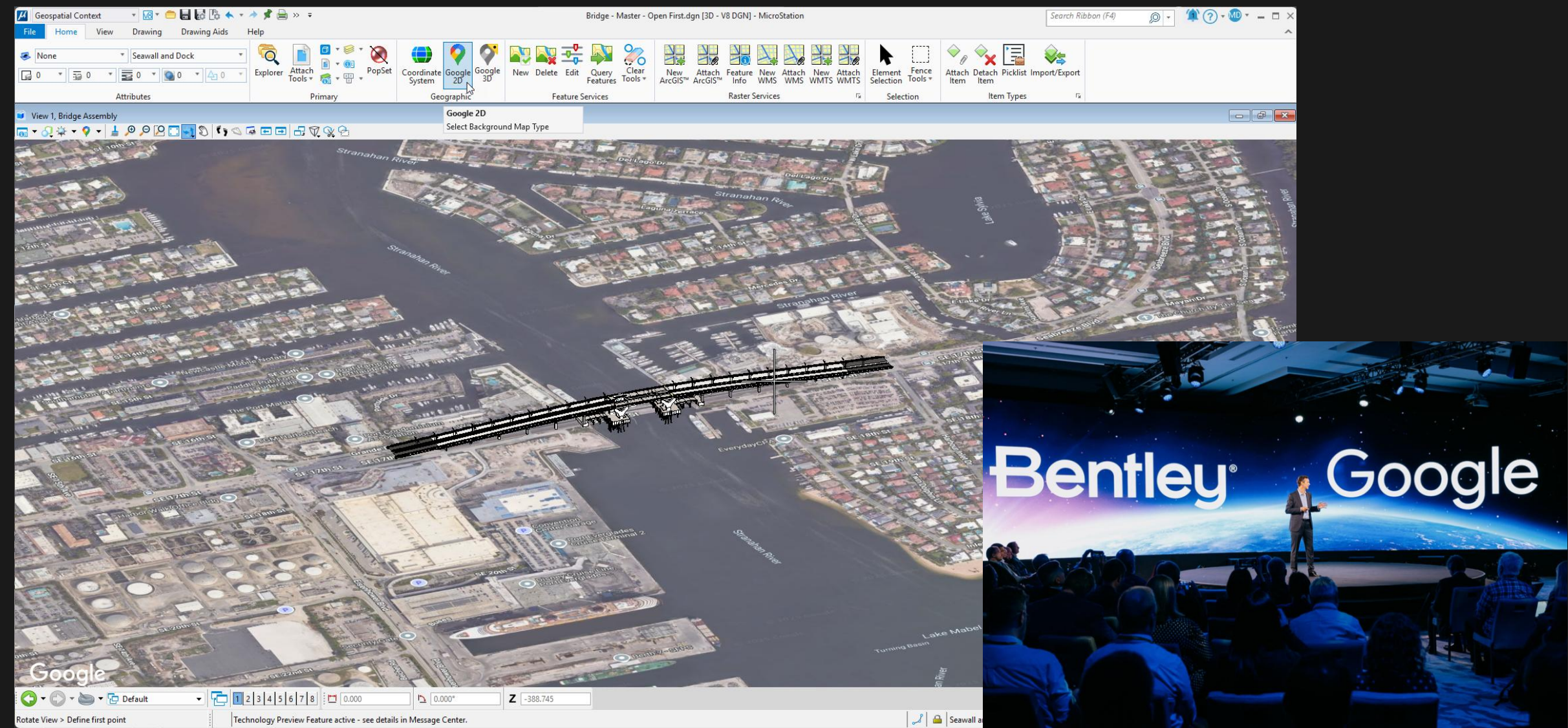
**OGC 3D Tiles
Support**

**New Vertical
Datum**

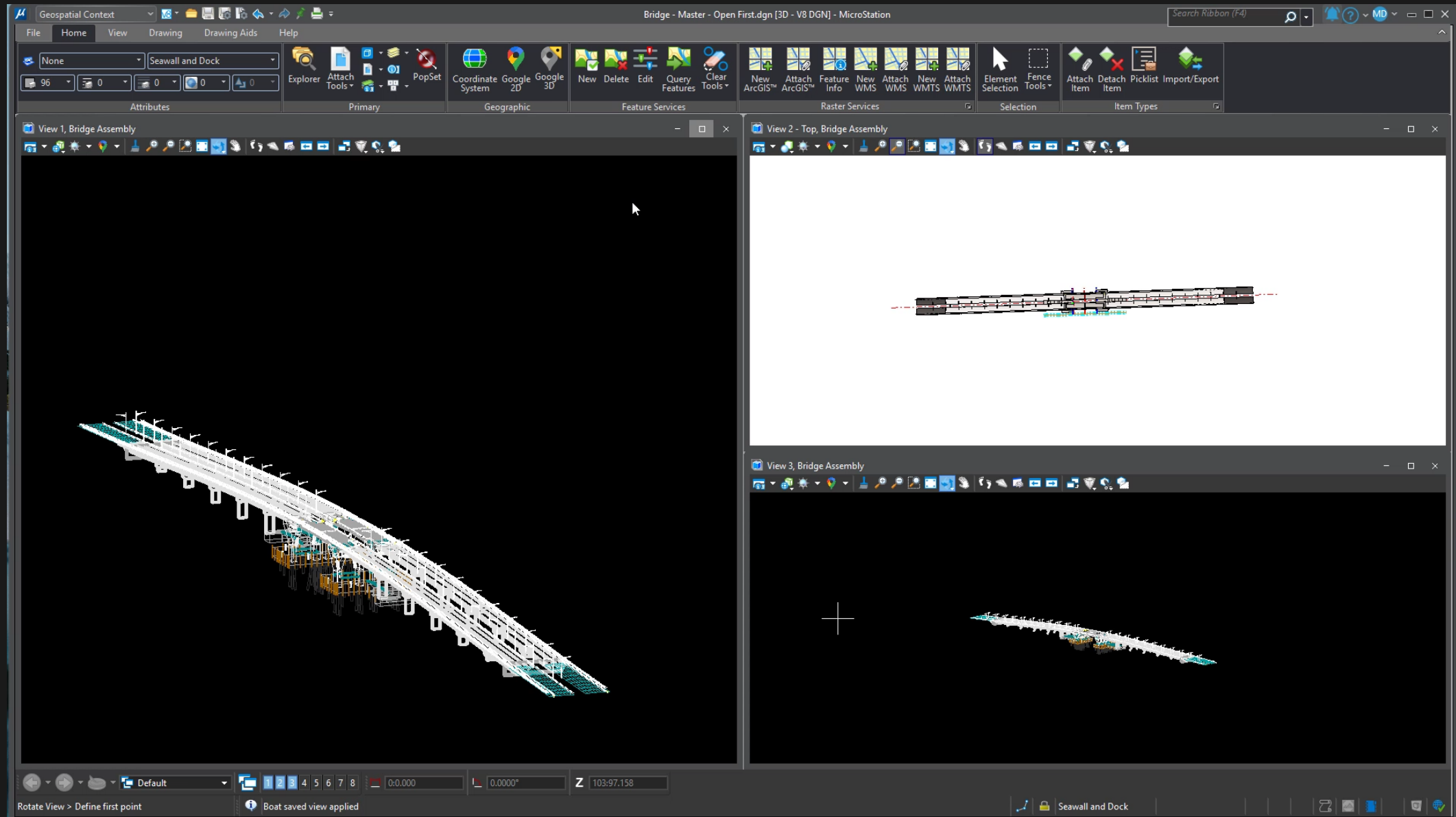
**New GCS icon for
quick access to
Coordinate
Systems**

**OGC API Feature
Service (Tech
Preview)**

Google Maps Integration



Google Photorealistic 3D Tiles Support (*Tech Preview*)



Geospatial Context Python API – Delivered Examples

The screenshot displays the Python Editor interface for the file `C:\ProgramData\Bentley\PowerPlatformPython\Examples\Microstation\GeospatialContext\AddGeographicCoordinateSystemToModel.py`. The interface is divided into three main sections:

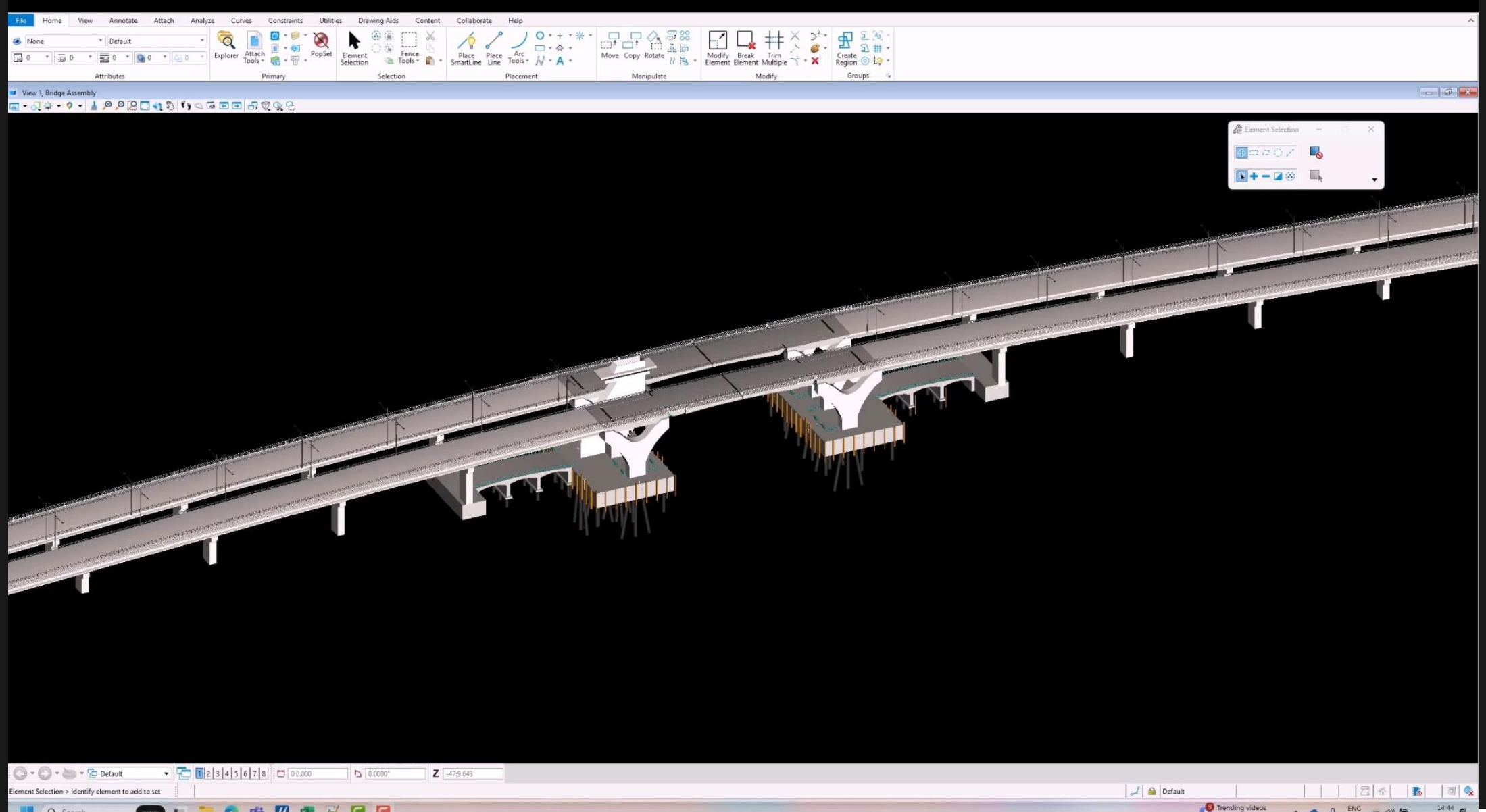
- Project Tree (Left):** Shows a hierarchy starting with `EC`, then `GeospatialContext`. The file `AddGeographicCoordinateSystemToModel` is selected and highlighted in blue. Other files listed include `ClearImportedFeatures`, `CreateCustomGCS_StLouisTM96`, `GDBExport`, `GDBImport`, `GDBImportAsCell`, `GeospatialContextConnection`, `GeospatialContextUtilities`, `GetDatasetLayers`, `GetGDBImportFeatureClasses`, `QueryAndDisplayProjectArea`, `QueryAndReportProjectArea`, `QueryServerConnection`, `QuerySpecificFeatureIn_Florida_NamedBoundaries`, `QueryWFSWithElementTemplate`, `RasterAttachArcGIS`, `SHPEXport`, `SHPIImport`, `SHPIImportAsCell`, and `SHPIImportWithDesignLink`.
- Code Editor (Center):** Contains the following Python code:

```
1 from MSPyBentley import *
2 from MSPyBentleyGeom import *
3 from MSPyECObjects import *
4 from MSPyDgnPlatform import *
5 from MSPyDgnView import *
6 from MSPyMstnPlatform import *
7
8 ...
9 Example adding Geographic Coordinate System (GCS)
10
11 1. Delete GCS in active model
12 2. Create a GCS in active model for Fort Lauderdale
13 3. Delete GCS in active model
14 4. Create a GCS in active model for Fort Lauderdale
15 5. Delete GCS in active model
16 6. Create a GCS in active model by well-known text
17 ...
18
19 def AddGCSByIdToActiveModel(epsCode):
20     """
21     Add a Geographic Coordinate System (GCS) to
22     If no Geographic Coordinate System (GCS) is
23     :param epsCode: The EPSG code of the GCS.
24     :type epsCode: int
```

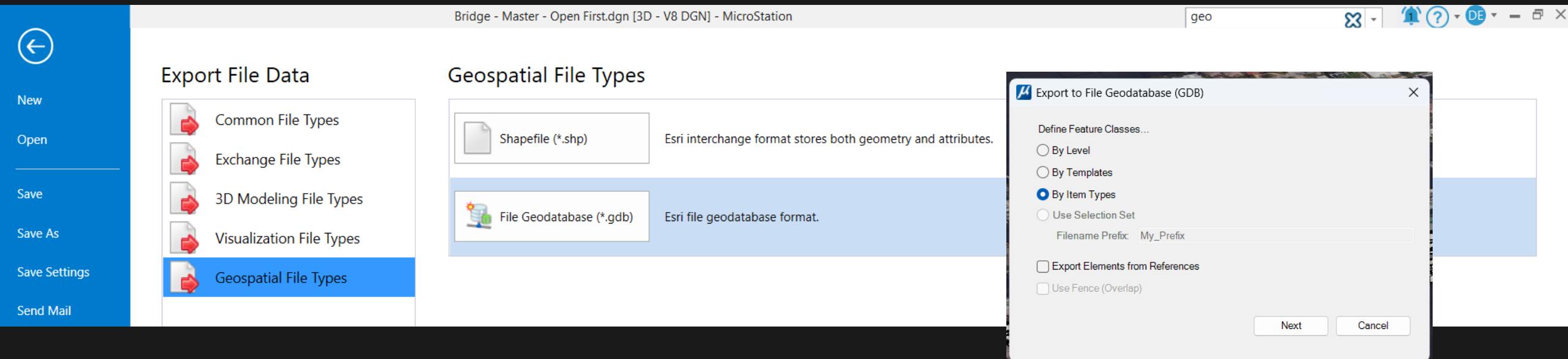
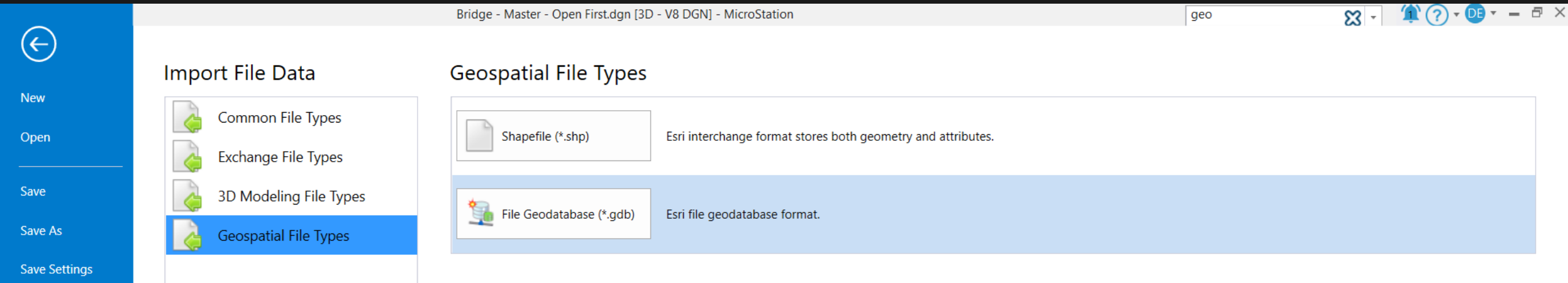
The code editor includes a toolbar with standard editing and development icons, and a zoom level set to 100%.

- Python Assistant (Right):** A chat interface with tabs for `Current Chat` and `Chat History`. It contains several example prompts under the heading `Geometry`:
 - "Try one of our prompts or ask your question below to get assistance"
 - "See all prompts"
 - "Can you write a script which creates a polyface mesh (mesh with facets defined by points) based on user-clicked points defining each facet?"
 - "Can you write a script which implements a tool to create a distance constraint between two selected shapes in 3D?"
 - "Can you write a script which creates a new named group and adds all..."
 - "Can you write a script which performs a flood operation from a user-clicked point to identify a closed..."At the bottom, there is a checkbox for `Include active document`, a text input field labeled `Ask Assistant`, a `Send` button, and a footer note: "Use Python Assistant as a guide. Python Assistant can make mistakes.[Technology Preview]"

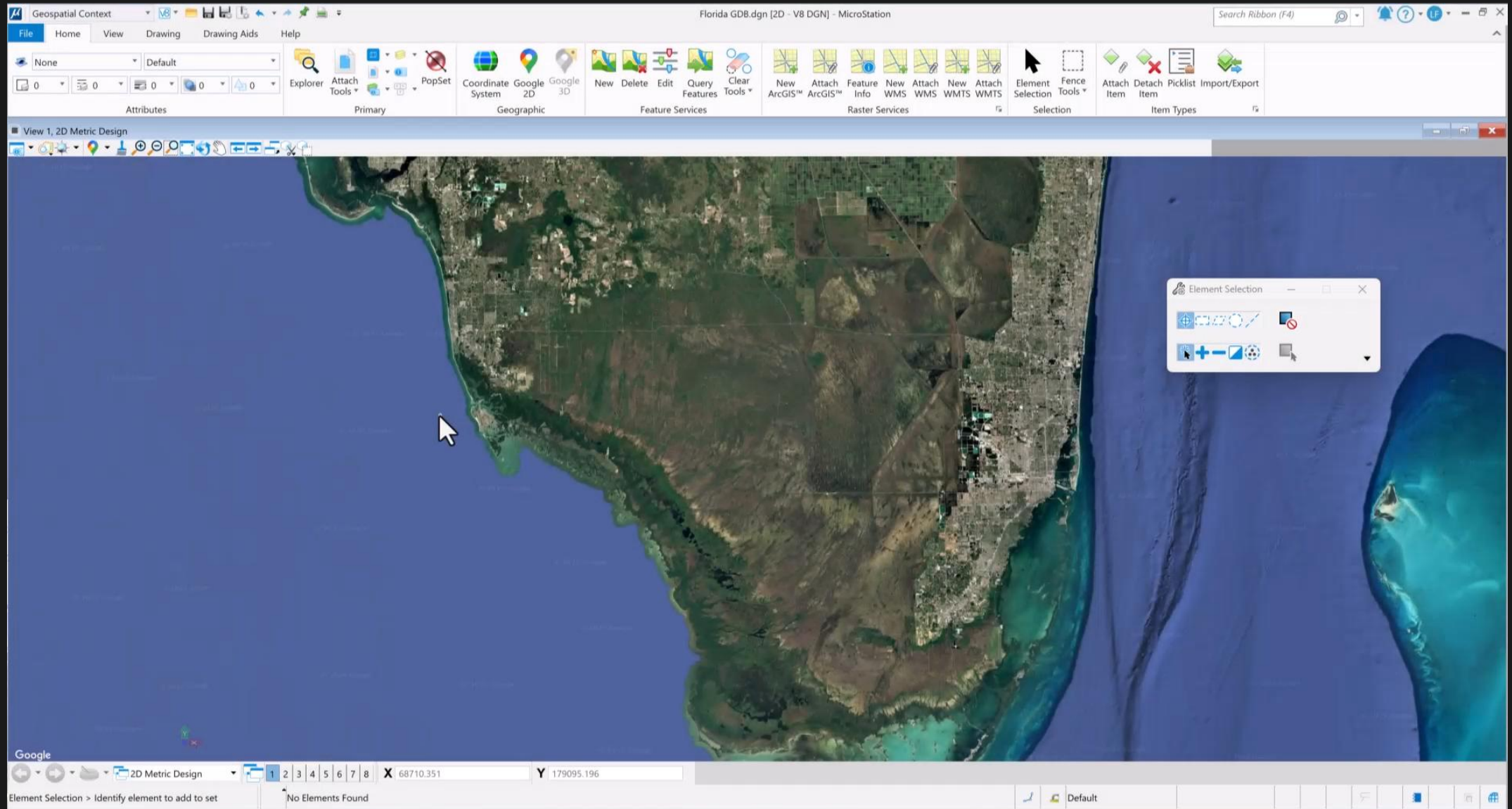
Geospatial Context Python API – Demo video



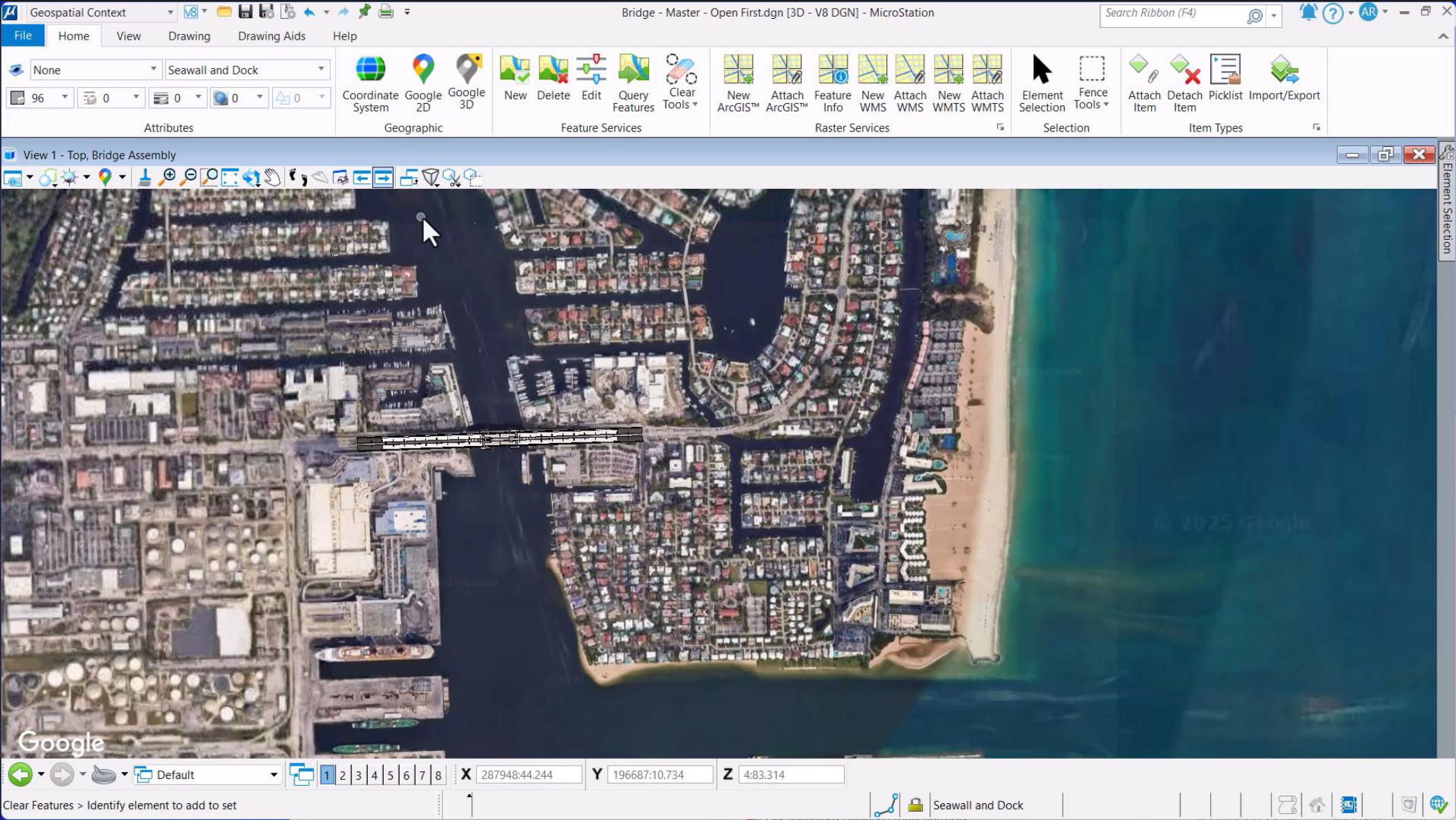
Esri File Geodatabase Support – Import/Export



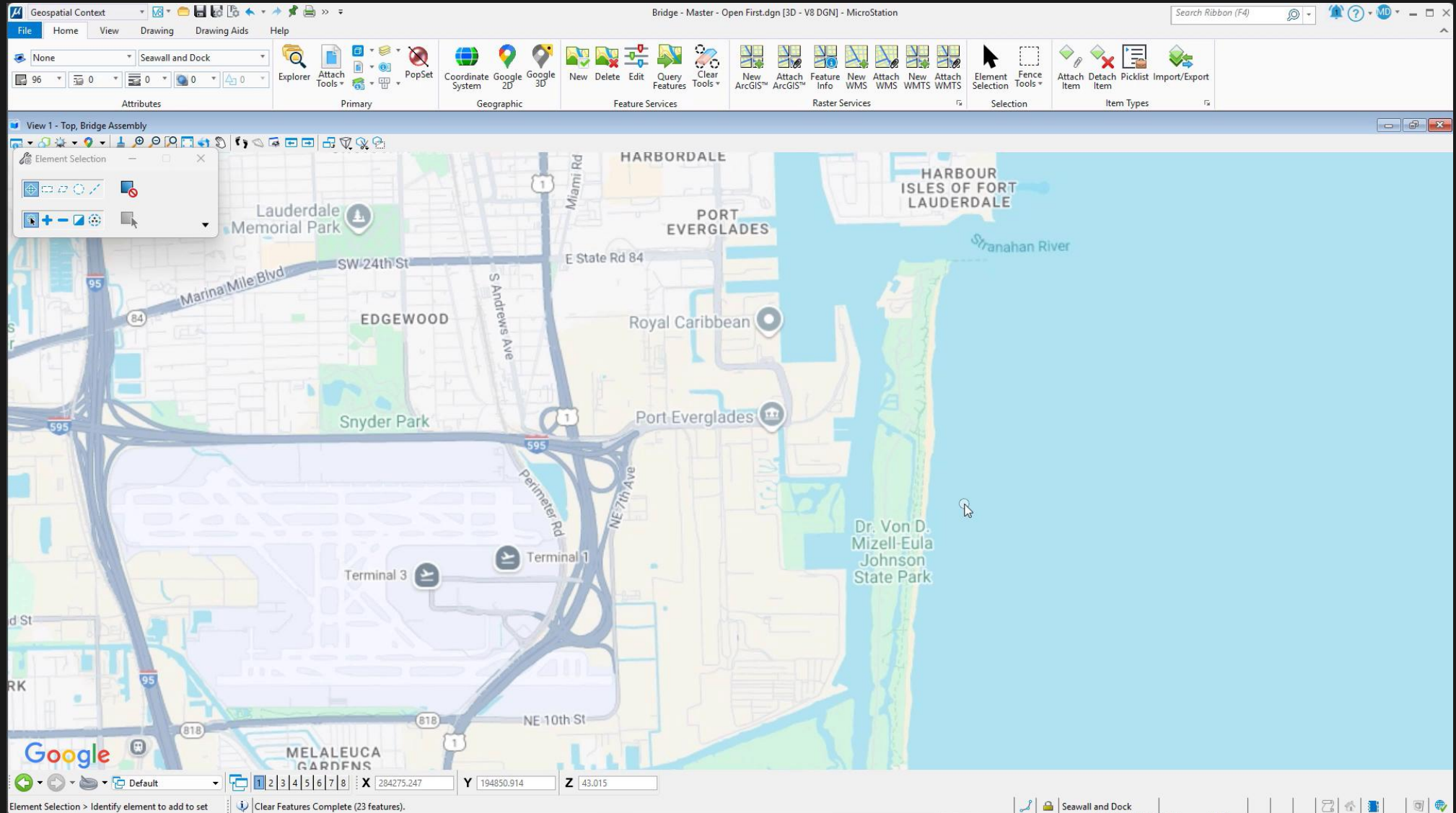
Esri File Geodatabase – Demo / Video



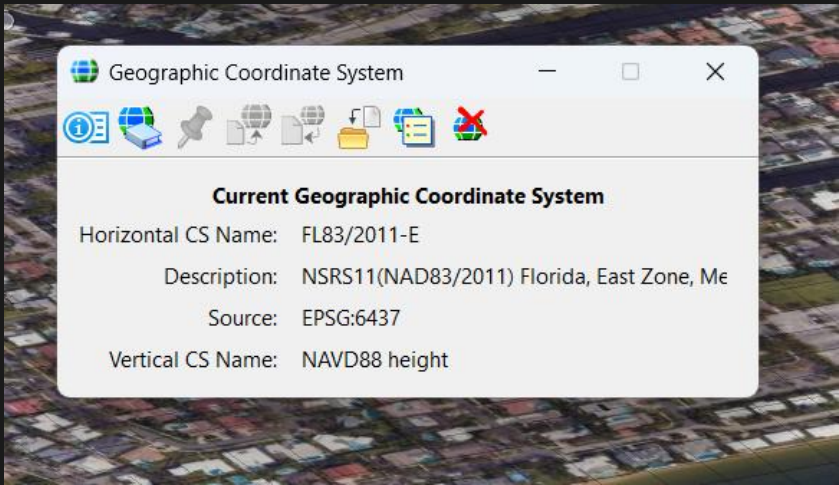
Cell Fixed Size



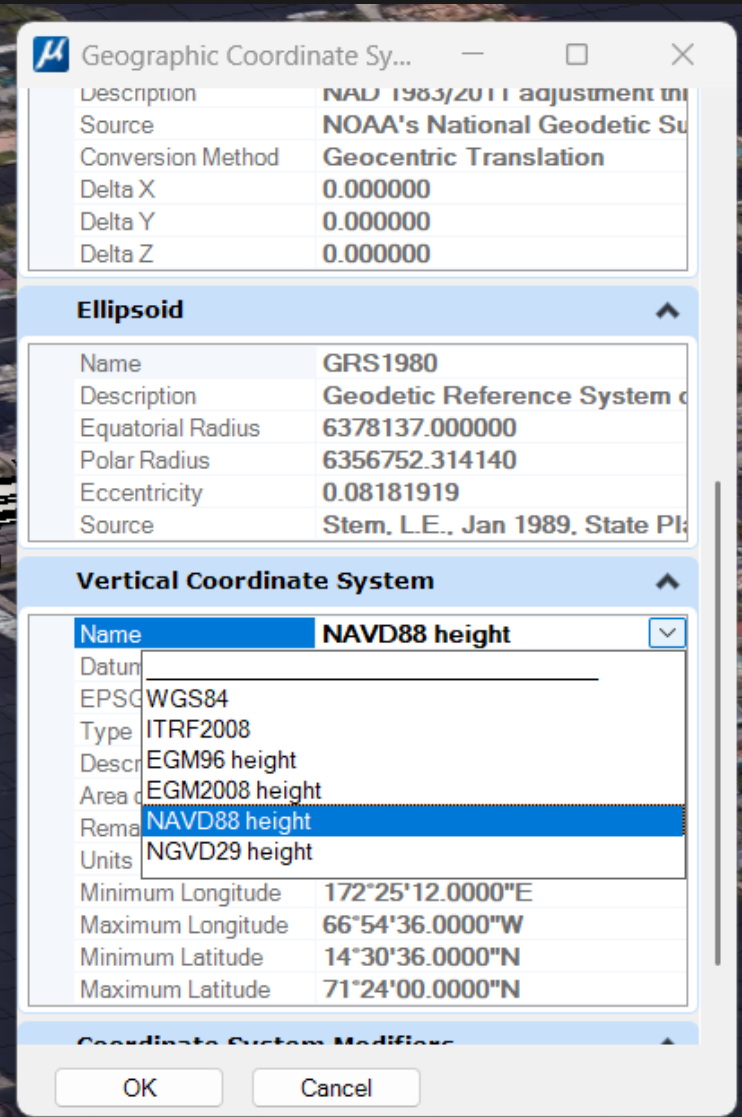
2025.00.00.01.62 - WFS Blynscsy integration



New Vertical Datums



The active model has geographic coordinate system FL83/2011-EF defined



OGC API Feature Services (*Tech Preview*)

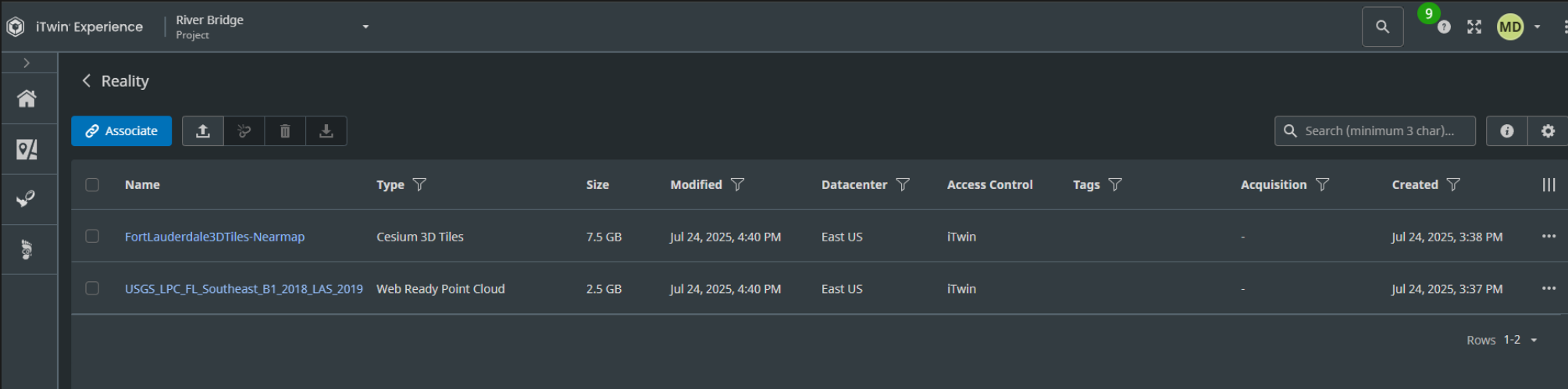


OGC API Features is the new, RESTful standard developed by the Open Geospatial Consortium (OGC) for accessing and managing geospatial feature data over the web. It is considered the evolution of the older Web Feature Service (WFS) standard.



Support OGC 3D Tiles format – The open standard for massive, 3D geospatial datasets

The 3D Tiles specification, an open standard initially developed by [Cesium](#), is used for streaming and rendering large-scale 3D geospatial datasets like buildings, terrain, and point clouds.



The screenshot shows the 'Reality' tab in the iTwin Experience interface. It features a table with columns for Name, Type, Size, Modified, Datacenter, Access Control, Tags, Acquisition, and Created. Two datasets are listed: 'FortLauderdale3DTiles-Nearmap' (Cesium 3D Tiles, 7.5 GB) and 'USGS_LPC_FL_Southeast_B1_2018_LAS_2019' (Web Ready Point Cloud, 2.5 GB).

Name	Type	Size	Modified	Datacenter	Access Control	Tags	Acquisition	Created
FortLauderdale3DTiles-Nearmap	Cesium 3D Tiles	7.5 GB	Jul 24, 2025, 4:40 PM	East US	iTwin		-	Jul 24, 2025, 3:38 PM
USGS_LPC_FL_Southeast_B1_2018_LAS_2019	Web Ready Point Cloud	2.5 GB	Jul 24, 2025, 4:40 PM	East US	iTwin		-	Jul 24, 2025, 3:37 PM



MicroStation Ideas Portal

Communities ▾ Forums Knowledge Base Login Resources ▾ Events Engage ▾

MicroStation

Resource Center



MicroStation



Knowledge Base
Articles



Release Announcements



MicroStation Forum



MicroStation Forum (日
本語)



MicroStation Forum
(Deutsch)



MicroStation Forum
(Español)



Announcements Forum



MicroStation Files



[Bentley Library]
Examples



[Bentley Library]
Utilities



[Bentley Library]
Standards ColorBooks



Coffee Corners



Events & Webinars



Watch MicroStation
YouTube Videos



MicroStation on
LinkedIn



Learn MicroStation



MicroStation Ideas


Accreditation









Dan Eng
Product Expert, MicroStation

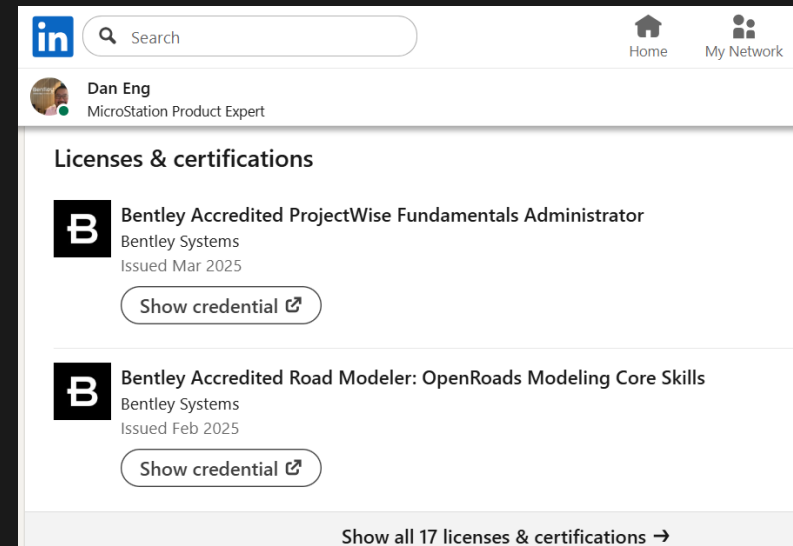
Bentley Systems, Incorporated
685 Stockton Drive, Exton, PA 19341, United States
<https://www.bentley.com>

Bentley®




Why Bentley Accreditation?

 <p>Bentley's Official Credential</p> <p>Get endorsed by Bentley for latest professional skills.</p>	 <p>Account Advantage</p> <p>Enhance employee skills required for AEC Projects to increase productivity.</p>	 <p>Skills That Matter</p> <p>Learn best practices and Bentley recommended workflows.</p>
 <p>Industry Recognition</p> <p>Get recognition in the industry with official credential from Bentley.</p>	 <p>Digital Badges</p> <p>Earn publicly verifiable digital badges which are easily shareable across your network.</p>	 <p>Career Advancement</p> <p>Advance your career with right skills set.</p>


A screenshot of a LinkedIn profile for Dan Eng, MicroStation Product Expert. The profile shows a search bar at the top, followed by the name and title. Below this is a section titled "Licenses & certifications" which lists two credentials: "Bentley Accredited ProjectWise Fundamentals Administrator" issued in March 2025, and "Bentley Accredited Road Modeler: OpenRoads Modeling Core Skills" issued in February 2025. Each entry has a "Show credential" button. At the bottom, there is a link to "Show all 17 licenses & certifications".

Dan Eng
MicroStation Product Expert

Licenses & certifications



Bentley Accredited ProjectWise Fundamentals Administrator
Bentley Systems
Issued Mar 2025
[Show credential](#)

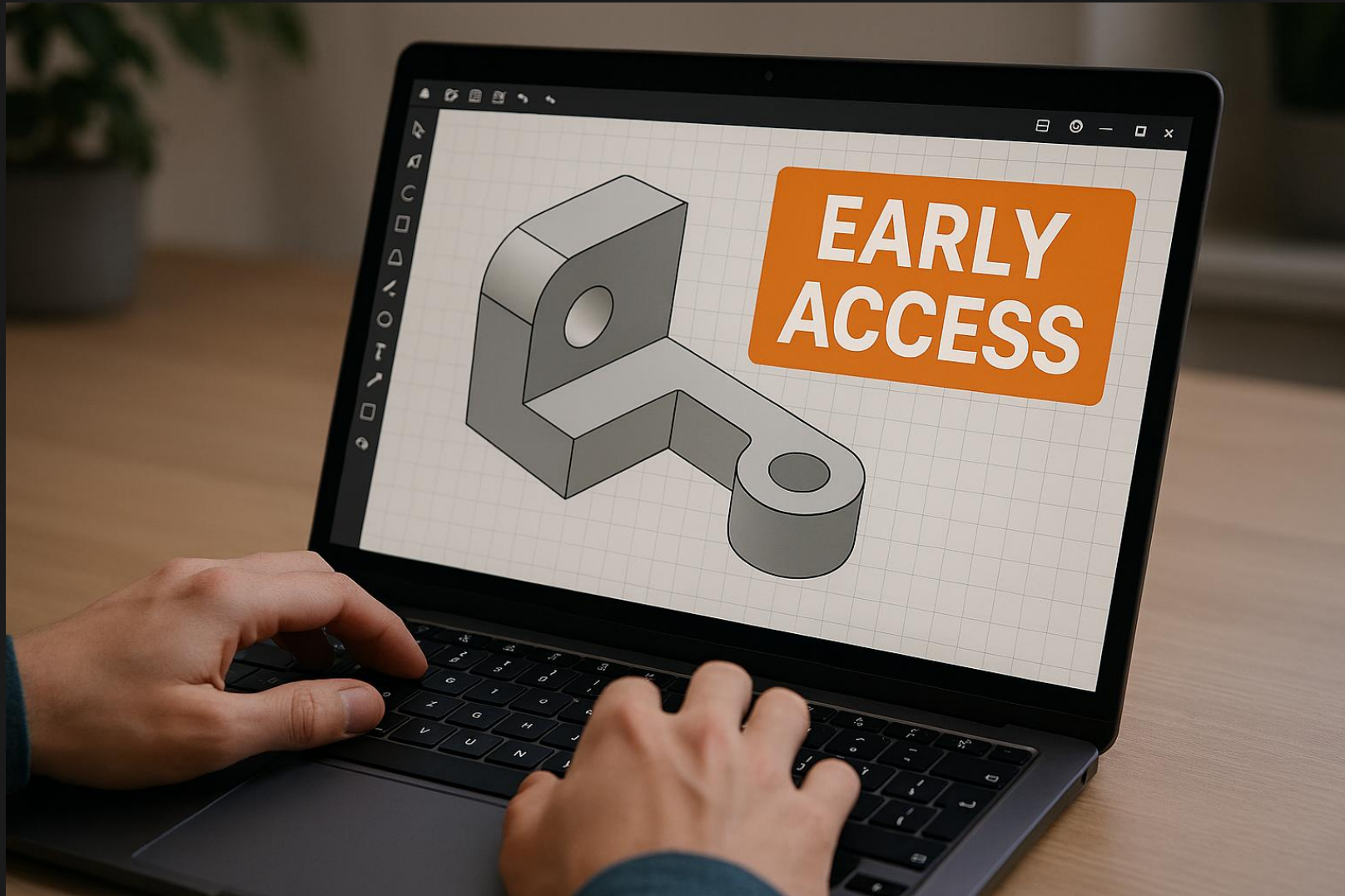


Bentley Accredited Road Modeler: OpenRoads Modeling Core Skills
Bentley Systems
Issued Feb 2025
[Show credential](#)

[Show all 17 licenses & certifications →](#)

Ways to Participate and interact with the MicroStation Team

- Early Access Program
 - Non-disclosure Agreement (NDA)
 - Must have a MicroStation license
 - Able to access Nutanix environment



Product Research

[Home](#) / [Product Research](#)

Join The Product Research Program!

Help Shape The Experience Of The Bentley Products You Use

Join Now

Why Product Research?

The challenges of infrastructure can be complex, but its software doesn't have to be. You are the expert in your field, and we need your help to stress-test our solutions against YOUR reality.

How Does It All Work?

The first step is to simply [tell us you're willing to participate](#). If there is a match between your expertise and an upcoming product research activity, we'll contact you and arrange a time to meet with a researcher. You'll attend the online session, try out the product, and provide your feedback. Our product teams then use your input to improve the experience of the product you use.



What Will We Do?

Product Research sessions are virtual 1-on-1 sessions between a user and a researcher. A typical session lasts ~45 minutes and might include testing a prototype or exploring workflows. No preparation required!



What Is In It For You?

Your voice influences what gets built into the products you use. Be heard, share your feedback with the product team and get a glimpse of potential solutions.

Interested? Join Us In A Lab.

Join Now

The background of the slide is a dark teal color with a complex, abstract network pattern. This pattern consists of numerous small, light blue dots connected by thin, white lines, creating a web-like structure that spans the entire frame. The dots and lines vary in brightness, with some appearing more prominent than others, giving the impression of a dynamic, interconnected system.

Questions or Comments?