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E-Dig Street Work Permit System (3D GIS Web Portal Development)

E-Dig Street Work Permit

E- Dig Street Work Permit (3D GIS System) is a new initiative for Municipality, Ministries, Urban planners, Architects and Designers to visualize the spatial impacts of their designs.

Aim is to promote innovative spatial planning in order to make the transformation from 2d data in into 3D GIS model.

The 3D GIS web Portal can be designed so that it will allow people to see how the urban environment would be affected by digging up or changing a specific street. A key feature of the 3D GIS portal is that it allows users to see and explore features without having any physical connection with them.

The goal of this Web portal is to help City planners and developers visualize what structures are being planned for a given area. With this web portal, they can work together to find best practices for future developments that have not yet been built.

Key modules

E-Dig Street Work Permit System is a comprehensive system consisting of various tools and applications to manage the excavation process.

- Municipality, Utility department to request the Street excavation permit
- Utility department and Ministries to approve / reject the permit request
- Permit Issuing authority to issue permit
- Contractors to manage the excavation project schedules
- Consultants to manage the work and prepare reports for each stage of the excavation process
- Inspectors to visit the site and inspect the excavation process and report any violations
- Lab testing companies to receive the quality testing requests and update the test results
- Traffic department officials to plan the traffic arrangements

3D GIS web-based solution that allows the various stakeholders to login to the system and perform activities based on their roles and privileges.
Once a request is checked and approved/rejected by the Municipality. They hold the right to go over the request to identify any conflicts or potential issues that may come up. During this process, Municipality will obtain the timeline for the work order from the contractor before finally approving or rejecting the permit.

E-Dig Street Work Permit system has a 3D GIS mapping module, which presents the users with municipality map along with Satellite imagery. Map module displays the existing and completed excavation projects. It also shows the important utilities. Key feature of mapping module is to validate the Street excavation request geometry with existing buffer zones where excavation should not be done, or it must be done with precautions.

Street Excavation Process

Street excavation process gets initiated while applying for a permit to excavate a street.
The Municipality submits a request to the permit issuing authority to excavate the street. The request eventually goes to all other infrastructure companies. These companies will go through the request and assess the impact on the utility infrastructure owned by each of them at the location where the excavation is to take place.

2D & 3D Data Representation in ArcGIS Pro

ArcGIS Pro, we can view 2D and 3D representations of the data at the same time by docking a map view and a scene view side-by-side.

ArcGIS Pro (3D Object Scene Layers)

ArcGIS Pro is the 3D GIS capabilities built into the app. You can visualize your data and see patterns that you might not notice in 2D. Two dimensional maps are what you think of as traditional maps, seen from a single birds-eye view.

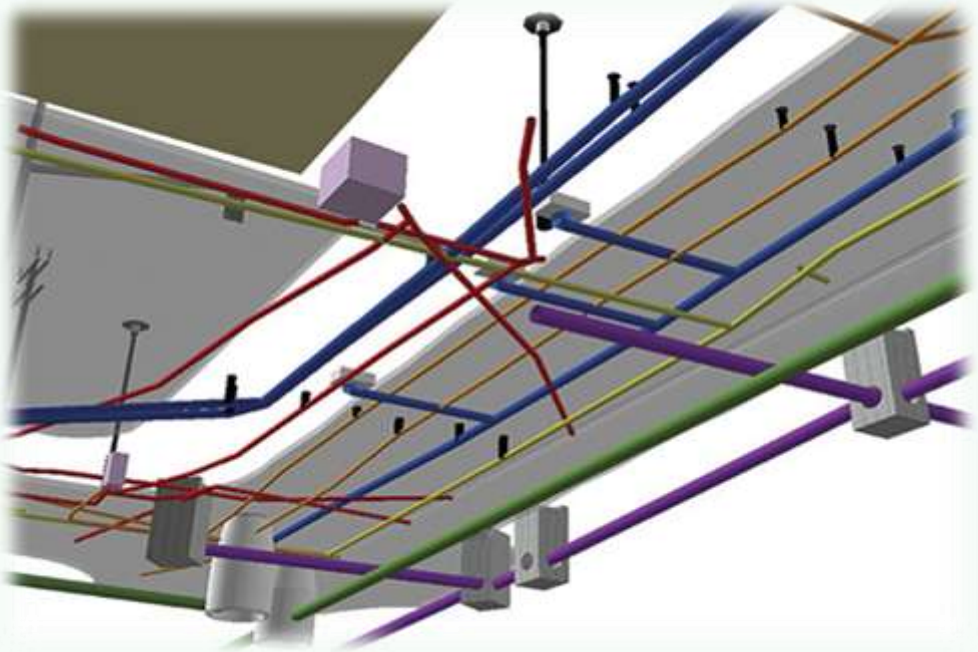
With a three-dimensional scene, the map area can be visualized from any angle, as if you were a bird flying through the scene rather than only looking down at it. 3D GIS allows you to visualize vertically stacked content, show complex concepts in an easy-to-understand format, and invite imagination and understanding.

3D Web Scenes

3D Web scene layers can be published from either a Scene layer package (. slpk) or an associated feature layer. We can interact with the data through pop-ups and can modify the symbology of the layer. Web scene layers with an associated feature layer provide richer statistics used for symbology, allow you to search and query for features not in the current view, and support editing workflows.

3D Subsurface Utilities

The usefulness of z values is not limited to above-ground assets. Subsurface utilities can also benefit from the additional context of 3D visualizations. When so much of your infrastructure is buried underground, it's more important to have accurate 3D models to provide a complete picture of what you cannot immediately see.
Gathering this data and making it readily shareable in the form of 3D GIS maps and visualizations can help improve interdepartmental collaboration.



Subsurface Utility Data Modelled in 3D

Using ArcGIS Pro, we can share 3D point, multipatch, building, LAS datasets, and voxel data as a web scene layer from a 3D scene.
The following are six scene layer types that can be shared from ArcGIS Pro:

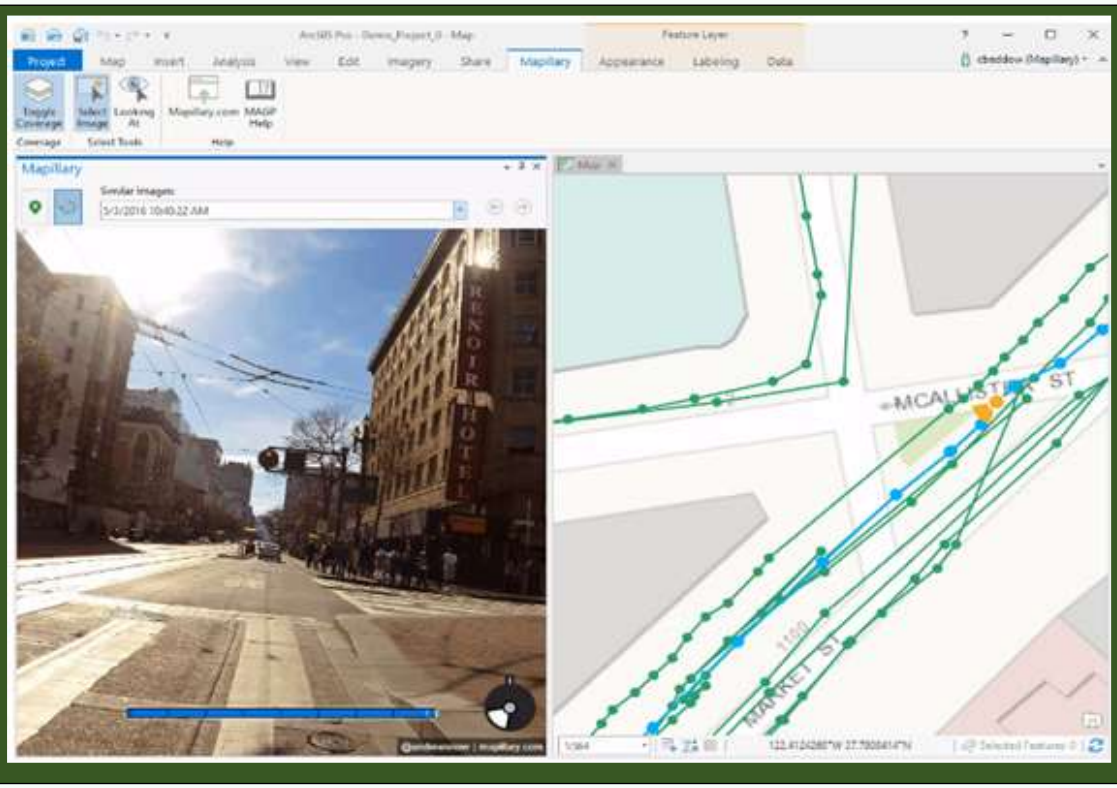
- Point scene layer
- Point cloud scene layer
- 3D object scene layer
- Building scene layer
- Integrated mesh scene layer
- Voxel scene layer

Street Level Imagery Using Mapillary with ArcGIS

We can keep the geospatial data up to date with a street-level perspective in ArcGIS tools. Capture images when and where you need them, using mobile phones, action cameras, and 360° cameras. We can upload and see the imagery come together on the map.

ArcGIS Pro—an add-in for Esri's ArcGIS Pro platform that makes Mapillary imagery and data available for use alongside your own geospatial data.

- View imagery directly alongside your own data in ArcGIS Pro
- View Mapillary imagery as visual reference,
- View, edit, and create features in street-level imagery,
- Compare imagery to see how places change over time.



Mapillary for ArcGIS JavaScript API

Add street-level imagery to applications for ArcGIS JavaScript API to view, create, and edit the data with the aid of relevant street-level imagery.

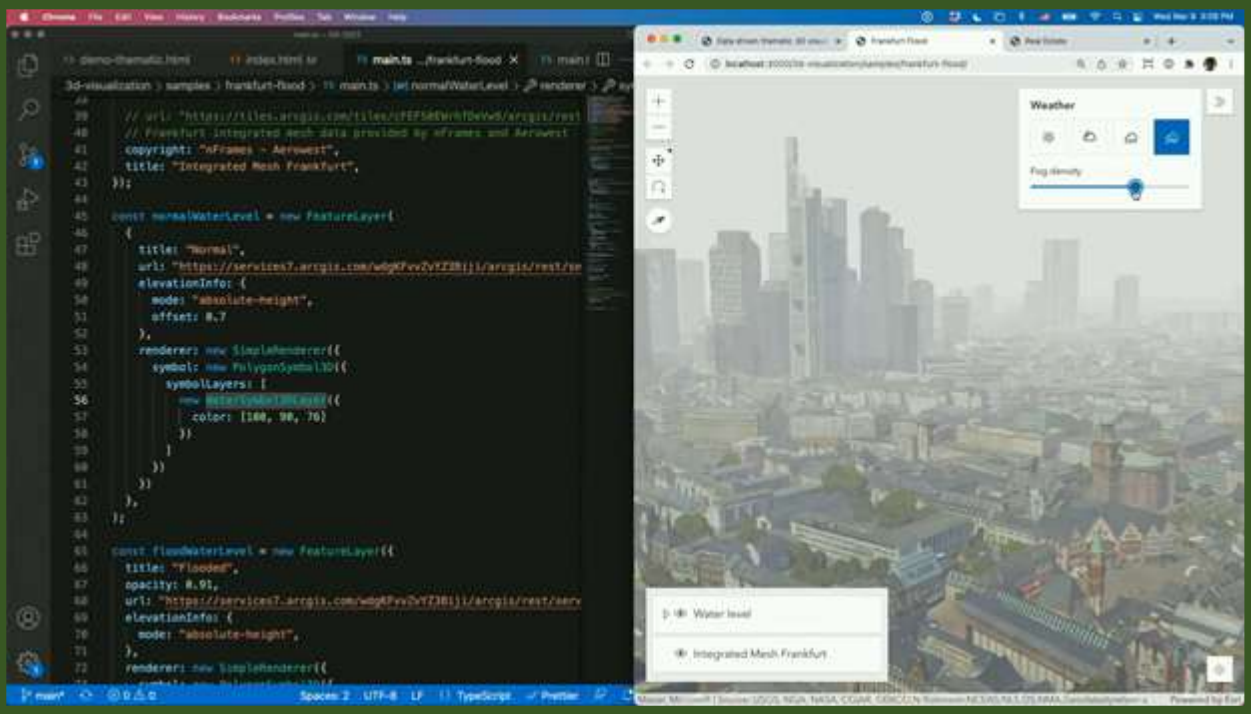
Mapillary Application Features

- Create your own street-level imagery with any camera, anywhere, and put places on the map through a collaborative street-level view of the world.
- Update maps with a new point of view with details that are not visible from aerial images.
- Automate and speed up mapping by using map features extracted with computer vision.
- Open up data to help everyone make better decisions about cities and roads, mobility and navigation, and autonomous driving.
- Web-based viewer that shows you photo-realistic images of real-world scenery and allows users to zoom through the images, resulting in an experience where it feels like one is moving through a real world.

ArcGIS Enterprise 3D GIS Web Application

(Interactive 3D Maps with the ArcGIS API for JavaScript4.23 & MapillaryJS)

The ArcGIS API for JavaScript library shall use to build 3D GIS applications. We can integrate it with other JavaScript libraries (MapillaryJS) and frameworks (in particular with larger 3D GIS web applications).



ArcGIS API for JavaScript: 3D Visualization

React is a popular open-source JavaScript library that is used for building reusable UI components for web applications.
3D GIS Web Portal applications architecture can be designed to share common component library. Map component library will develop that can be shared to the project modules.

Software & Technology

Technology

DGPS, Mobile LiDAR, Terrestrial LiDAR, AutoCAD, City Engine2021.1, ArcGIS Enterprise 10.9.1, Mapillary JS, ArcGIS JS API 4.23, Oracle 19C, ArcGIS Pro 2.9, Autodesk Revit/ BIM models.

Data Inputs

Utility Data Models, FARO 3D Survey data, 3D Scene layers, Point cloud data, 360 Panoramic Images, Satellite imagery, CAD Utility Drawings

02

How Oil and Gas Pipelines Are Getting a New Life in Carbon Capture

What some might call a great reversal is now under way.

A combined 27,962 miles of oil and gas pipeline crisscross the waters of the United Kingdom Continental Shelf (UKCS)—a powerhouse of petroleum production in Europe. Underwater fields surrounding the UK have yielded over 46 billion barrels of oil equivalent (BOE) since wells were first drilled there in the 1960s and 1970s.

Read It Here

03

Esri News – Esri User Conference

July 11–15, 2022 | San Diego Convention Center | San Diego, California

The ESRI User Conference 2022 brings together GIS and ESRI users from all over the world. The ESRI User Conference 2022 will be held in San Diego on 11-15 July 2022.

Read More for Registration

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Company’s strategic partnerships span to Oracle Gold partner, Esri Official Distributor, Microsoft Silver Partner, Autodesk Learning / Training Partner, Digital Globe (Satellite Imagery) Reseller , Monnit for IoT and Snappy Distributor for QMS & Digital Signage. With nearly 100 qualified staff & branch in Saudi Arabia, it aims to refine its capabilities to driveinnovative software solutions and expand the expertise in different corners of the