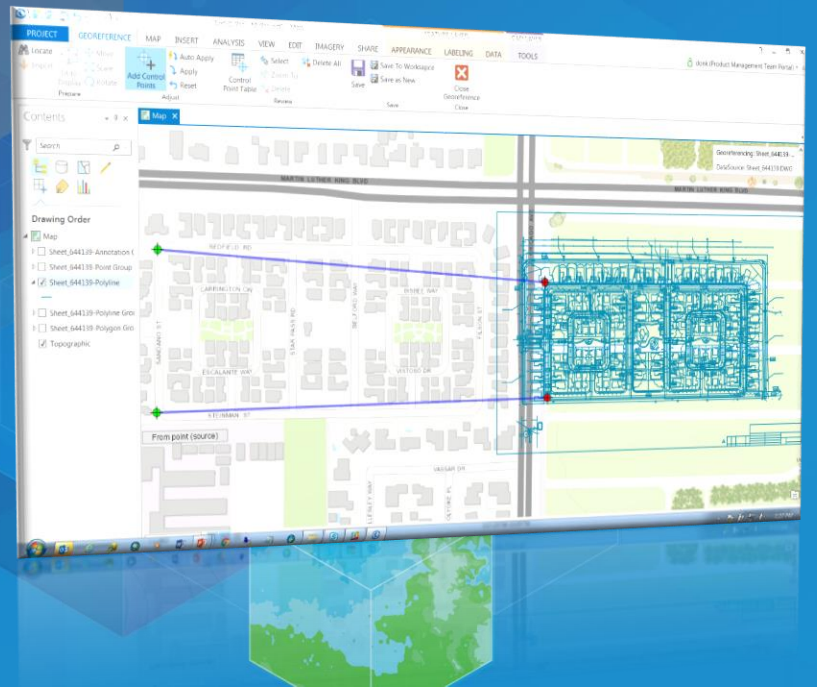
Strategies for Integrating CAD and BIM in ArcGIS

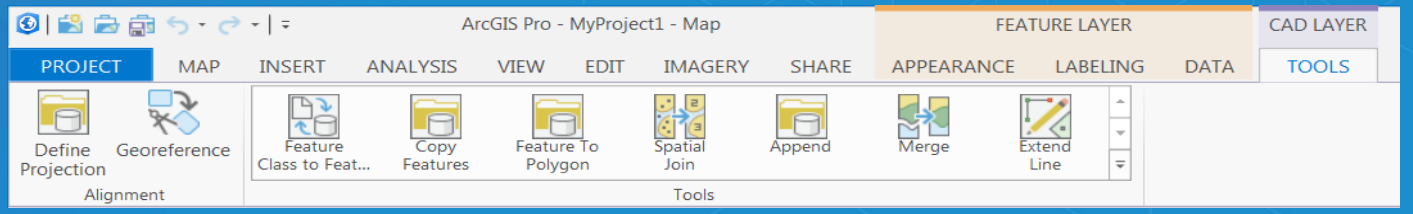
Don Kuehne
Esri 3D Product Manager: CAD/BIM/AEC

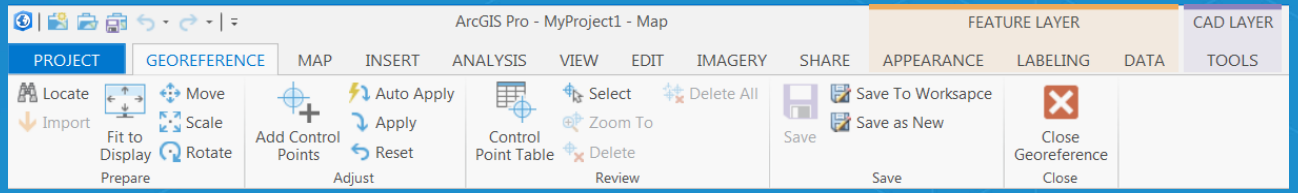
CAD

Digital Drawing

CAD in ArcGIS Desktop







CAD in Desktop

CAD as Data

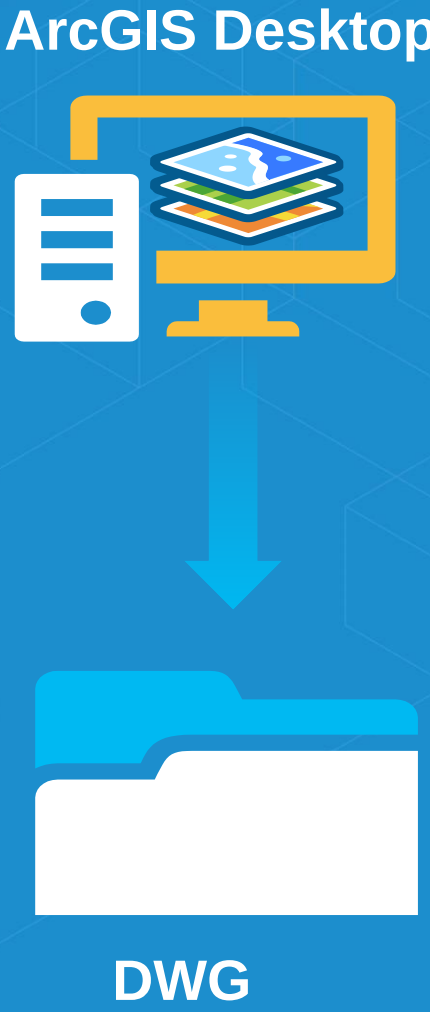
CAD as a Map

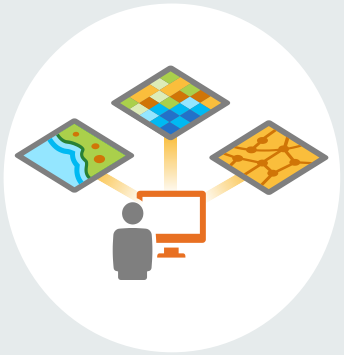
EXPORT TO CAD

Create and Append to CAD Files

ArcGIS data in AutoCAD files (MSC)

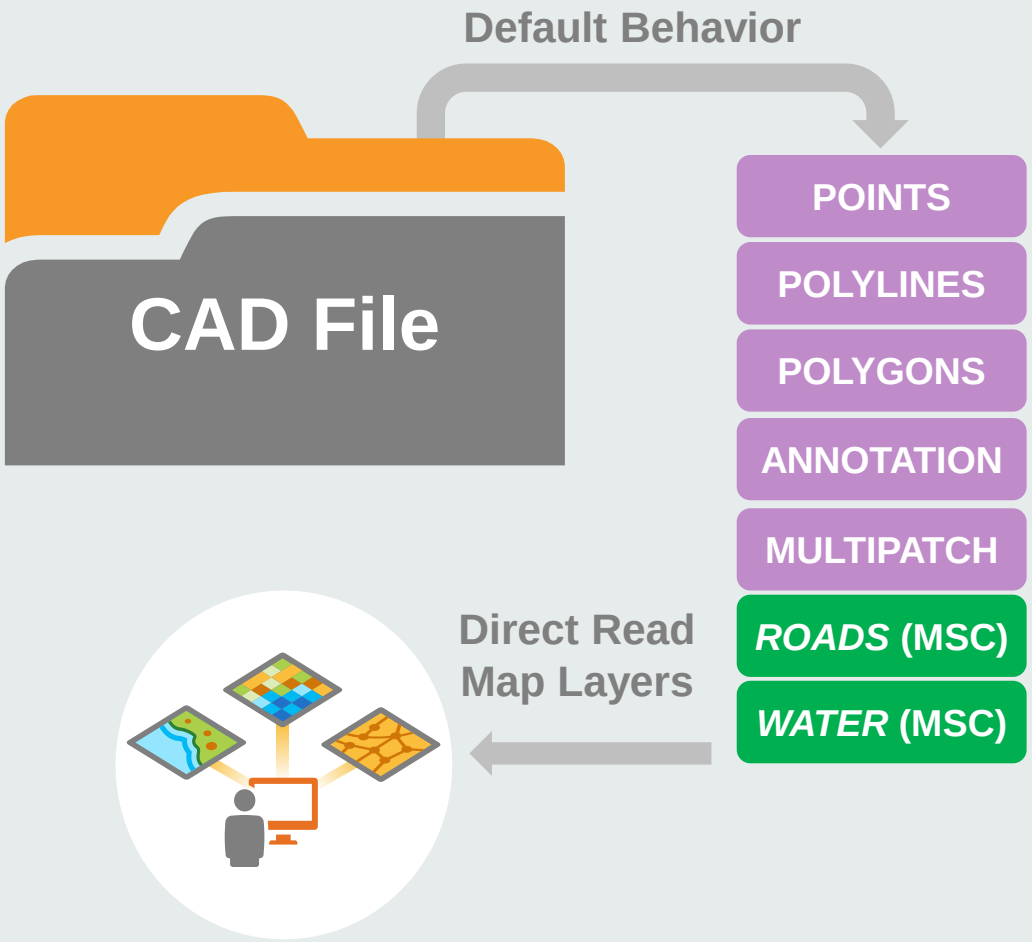
- Feature Classes
- Attributes
- Coordinate System
- Better than Shapefiles…





Adding CAD Data in ArcGIS Pro

CAD Reader



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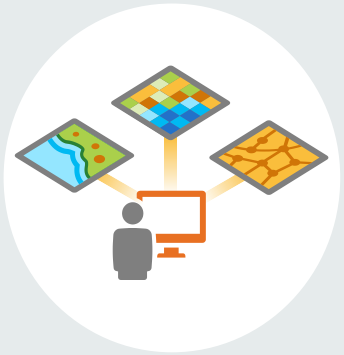
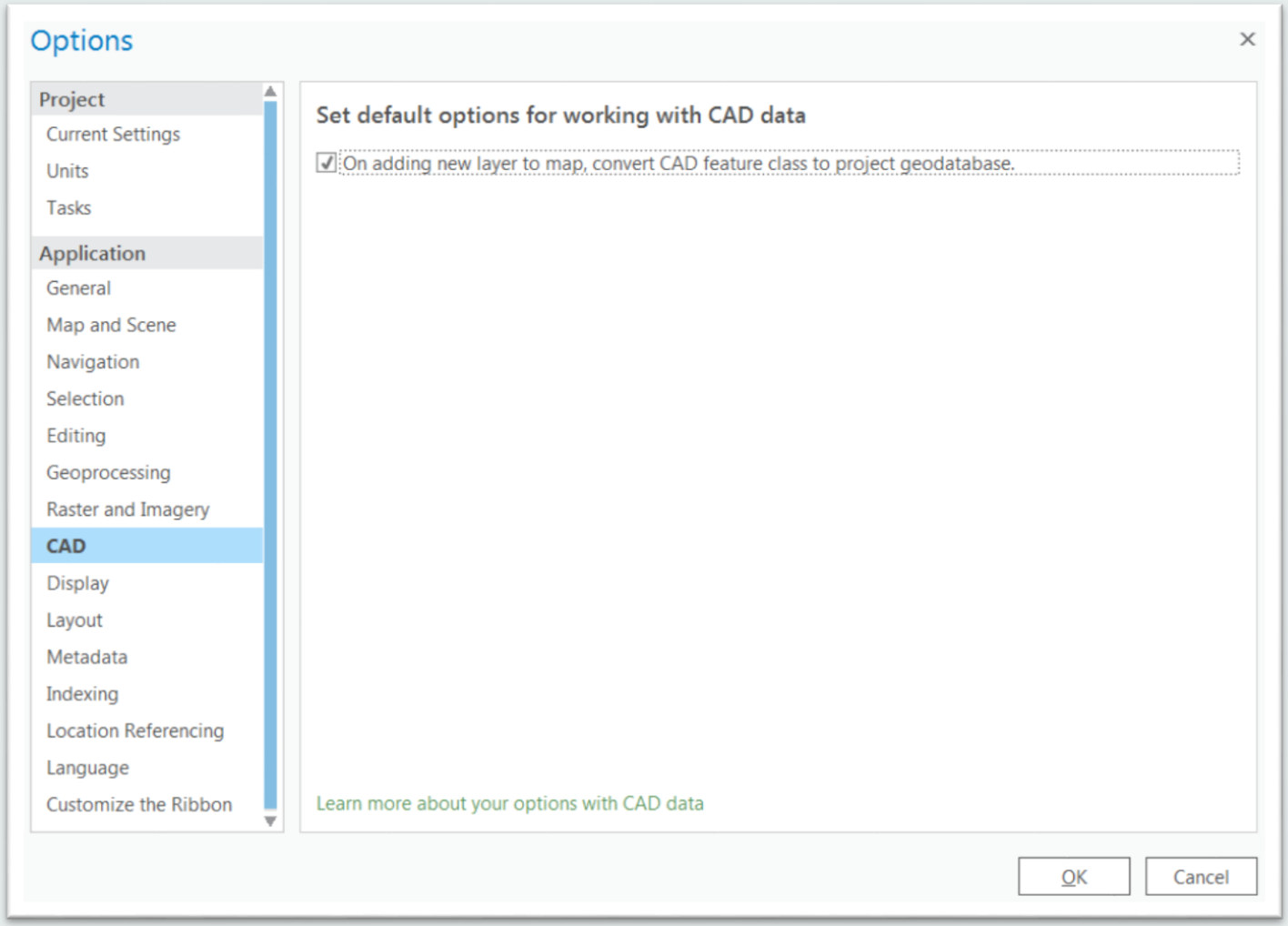
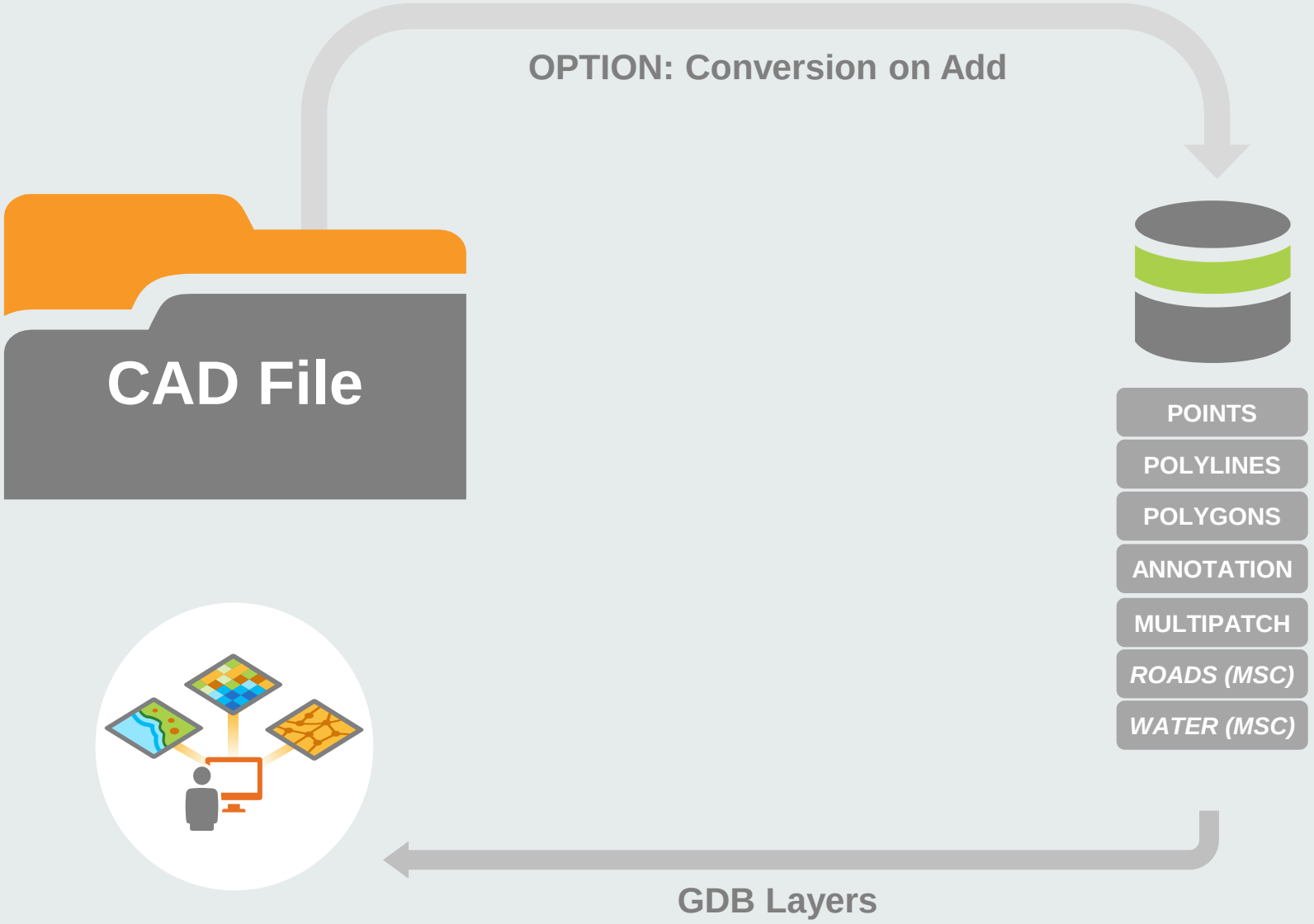




Adding CAD Data in ArcGIS Pro

CAD Reader



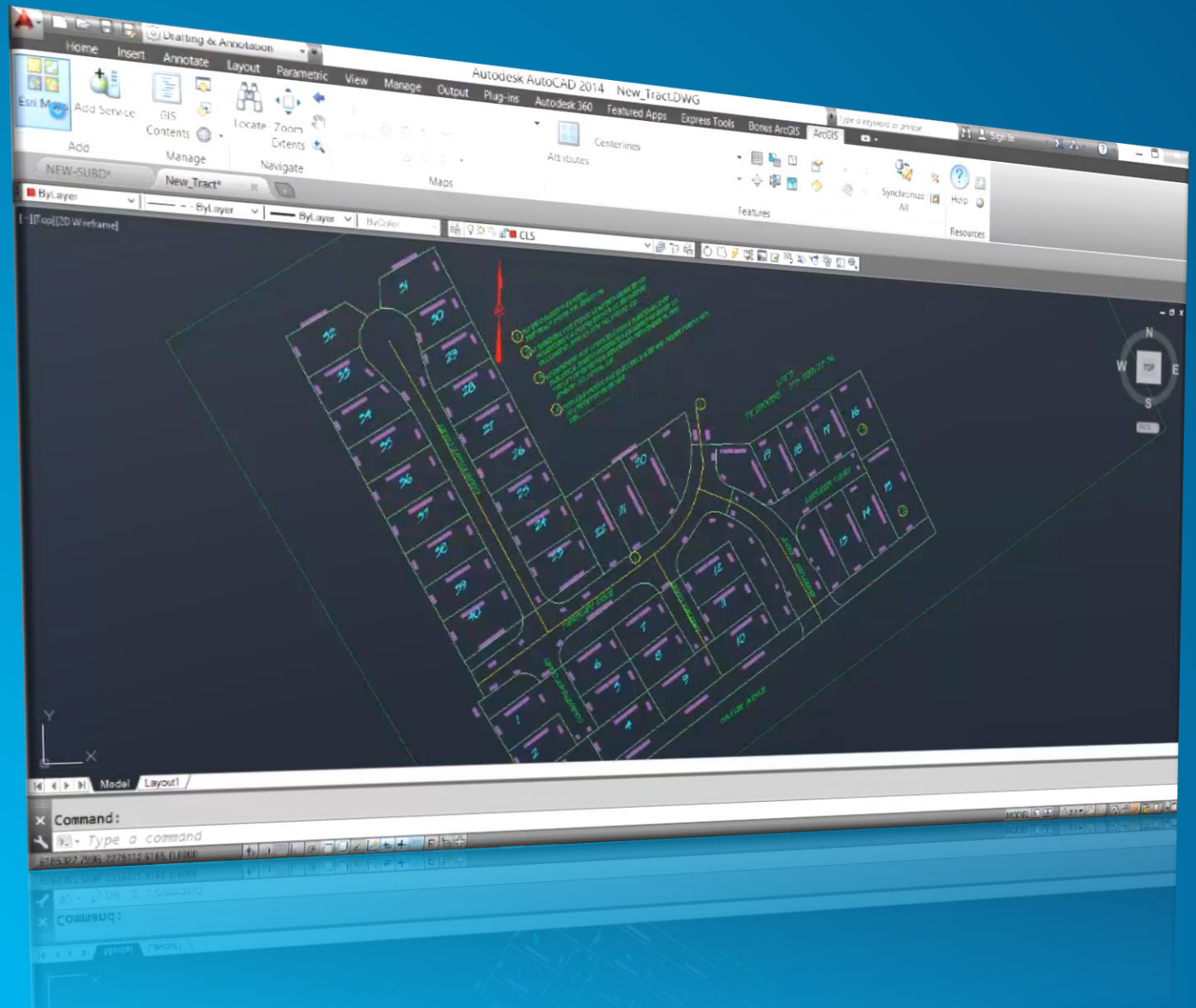
Adding CAD Data in ArcGIS Pro

CAD Reader

GIS and CAD

Interoperability Patterns

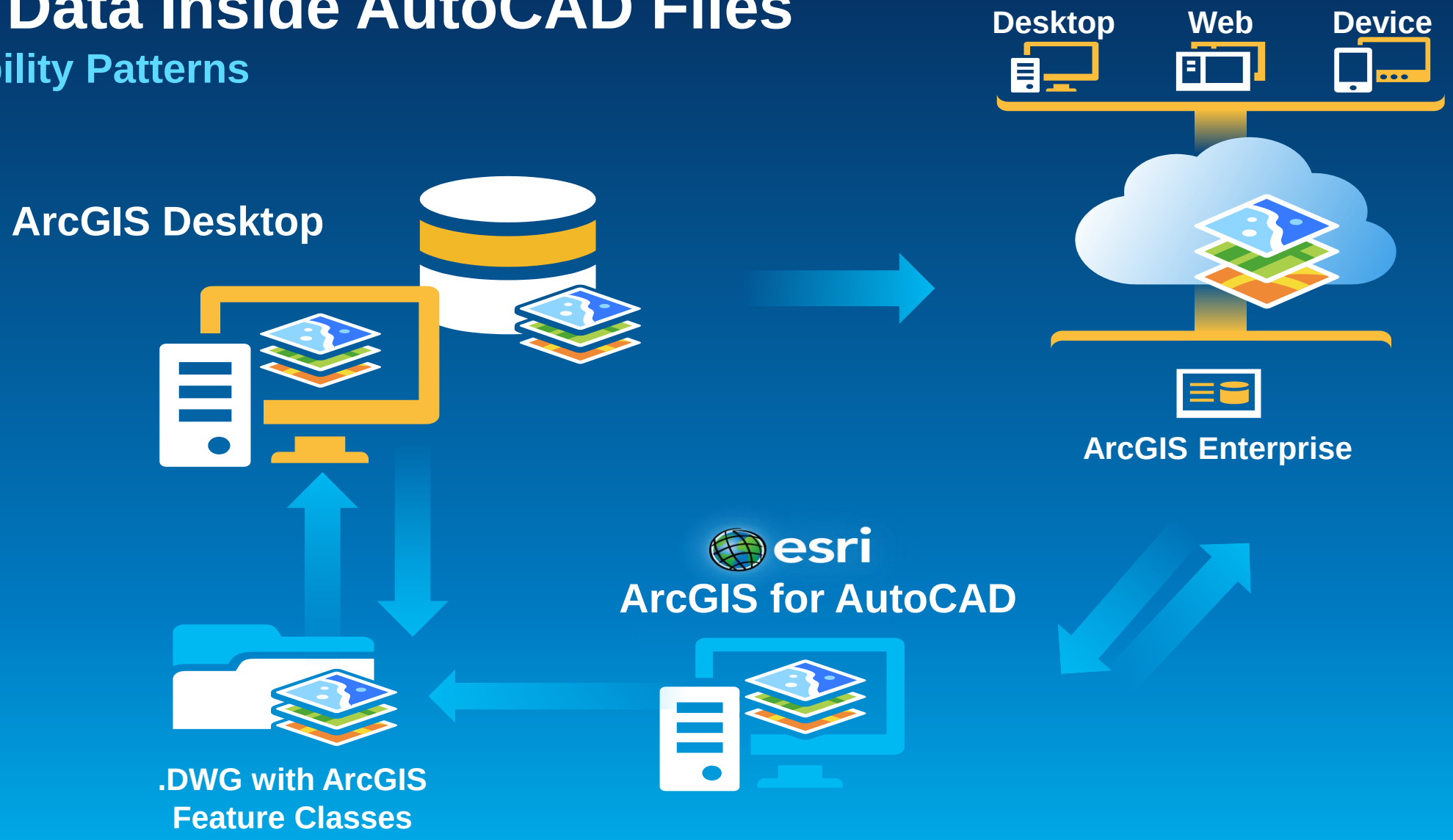
ArcGIS for AutoCAD



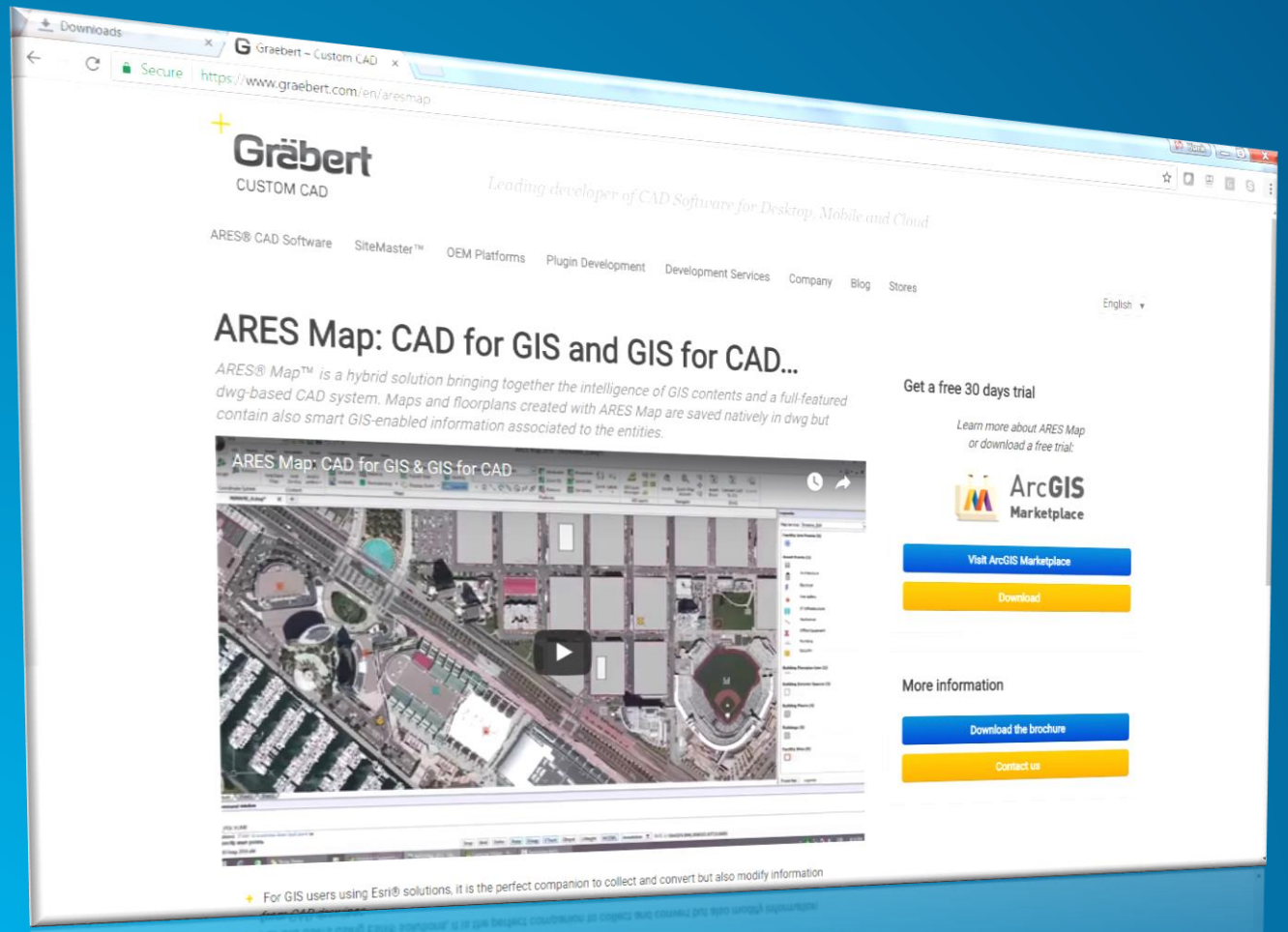
- Free Download
- Create GIS Data
- ArcGIS Web Services

ArcGIS Data Inside AutoCAD Files

Interoperability Patterns



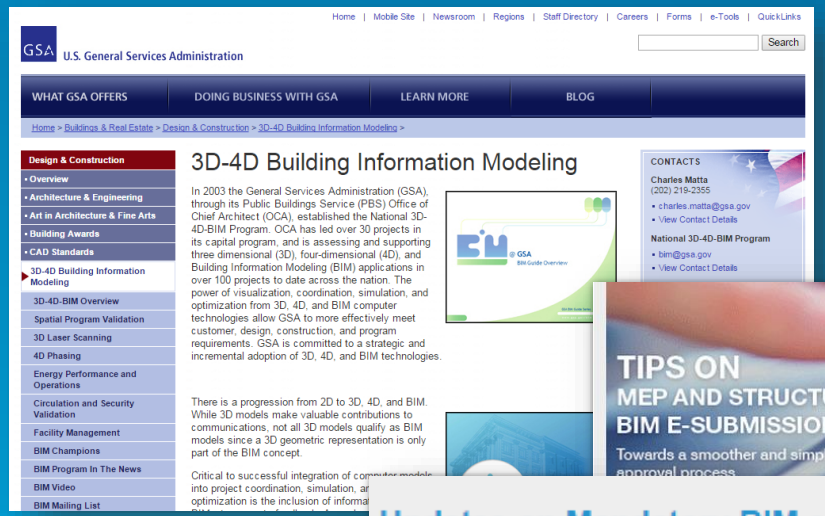
ArcGIS Services Pattern…

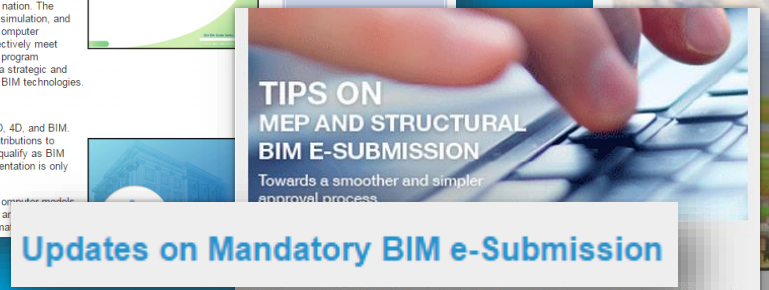


BIM

3D Virtual Construction

BIM is a process for increasing efficiency throughout the construction process





Updates on Mandatory BIM e-Submission

1. From July 2013, BIM e-Submission for regulatory approval would be made mandatory in three phases. New building projects with a Gross Floor Area (GFA) of more than 20,000 m^2, which are submitted to the Urban Redevelopment Authority (URA) for planning approval on or after 1 July 2013, are required to submit their architectural plans in BIM format.
2. From 1 July 2014, there will be mandatory structural and Mechanical, Electrical and Plumbing (MEP) BIM e-Submission for all new building projects with GFA of 20,000 m^2 and above (in 2013 and 2014).
3. From 1 July 2015, companies are also required to make architectural, structural and MEP BIM e-Submissions for all new building projects with a GFA of 5,000 m^2 and above (in 2015).

Article Talk

SOSI

From Wikipedia, the free encyclopedia

SOSI is a much used geospatial vector data format for predominantly used for exchange of geographical info

SOSI is short for **Samordnet Opplegg for Stedfestet Informasjon** (literally "Coordinated Approach for Spati expanded in English to **Systematic Organization of Spatial Information**).

The standard includes standardized definitions for geometry and topology, data quality, coordinate systems,

The open standard was developed by the Norwegian Mapping and Cadastre Authority. It was first published i

Russia following UK's lead with plans for BIM mandate

By Kim Slowey | September 16, 2016 print

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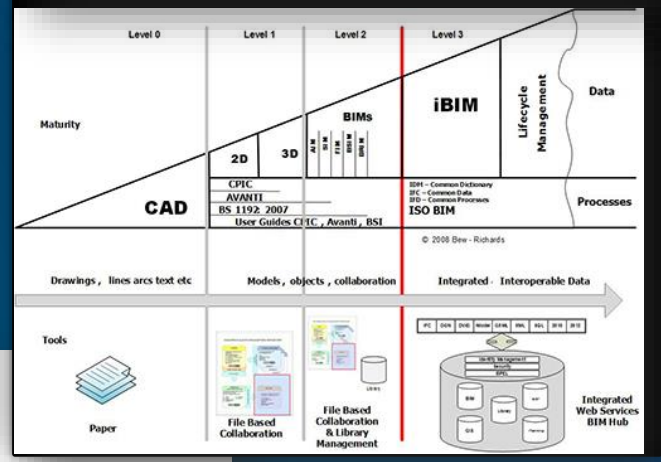
Cameron Gov't Requires BIM Construction Procurement for UK Public Projects by 2016

by Jeff Yoders *on* MAY 28, 2014
Style: Commentary *Category:* Manufacturing, Public Policy, Sourcing Strategies

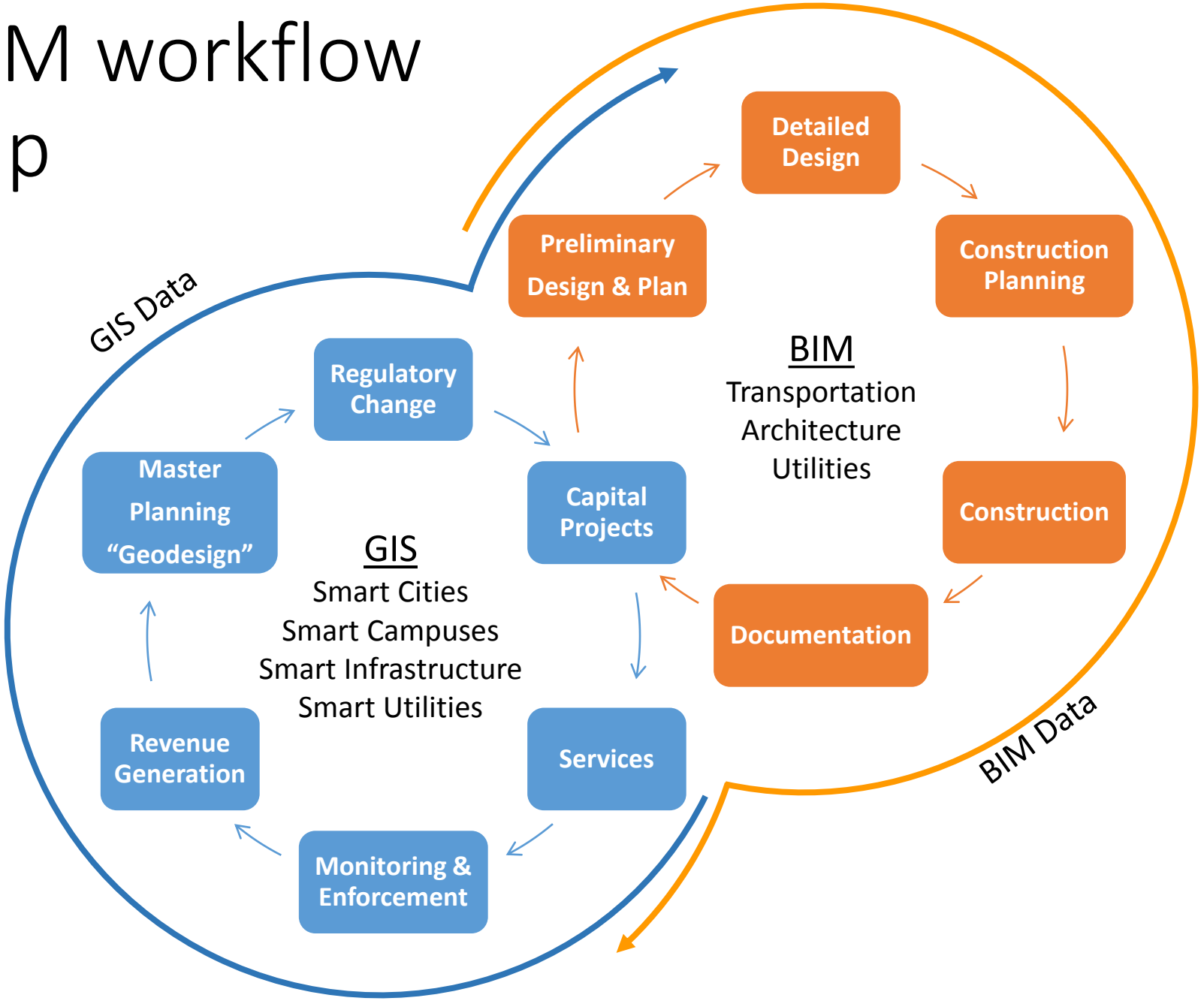
Across the pond, a revolution in construction procurement and supply chain logistics is happening with a goal of reducing greenhouse gas emissions and unlocking process efficiencies that can create better buildings and better-followed budgets.



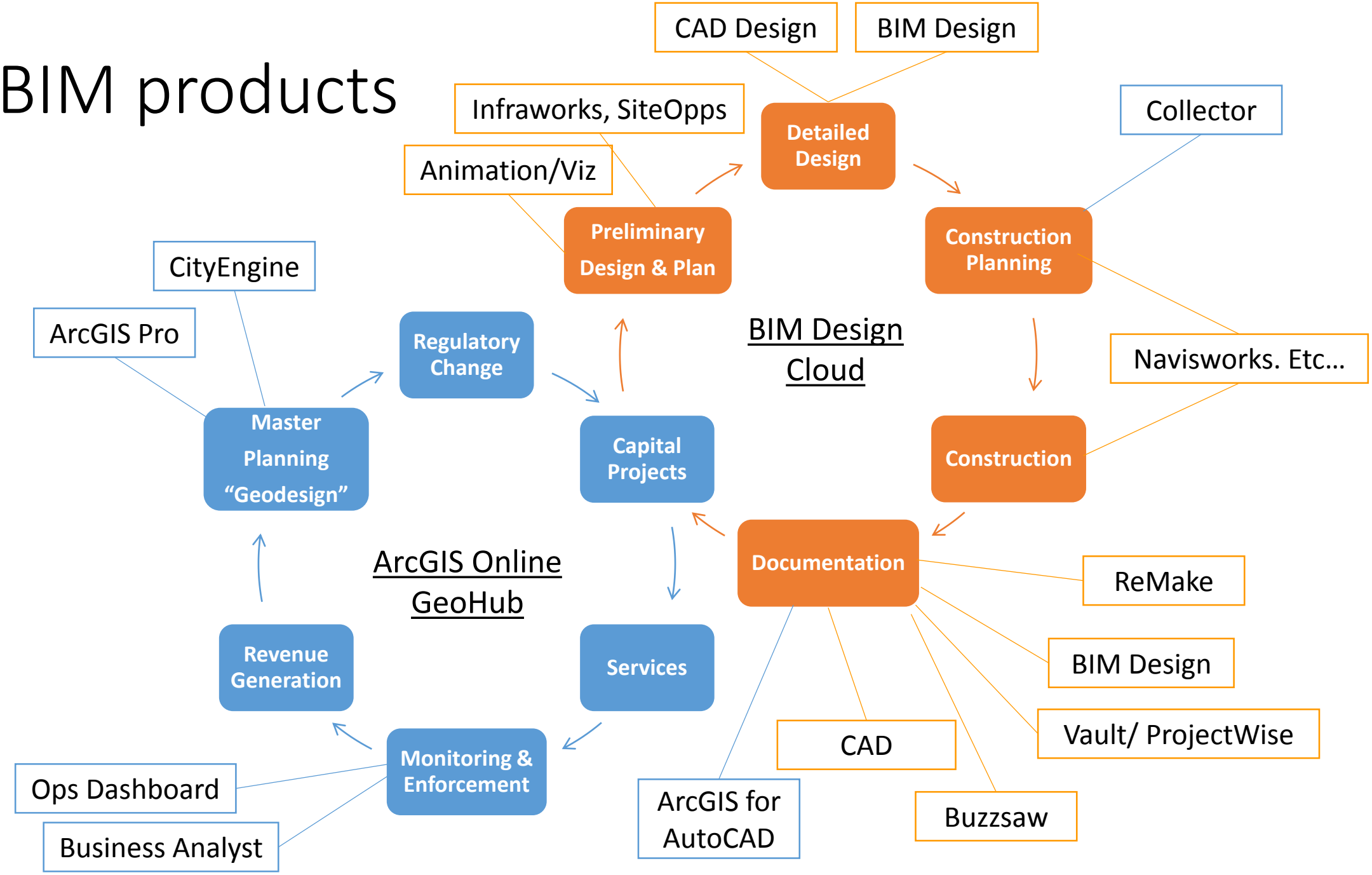
NEWS

FRANCE AND GERMANY MOVE FORWARD ON BIM ADOPTION

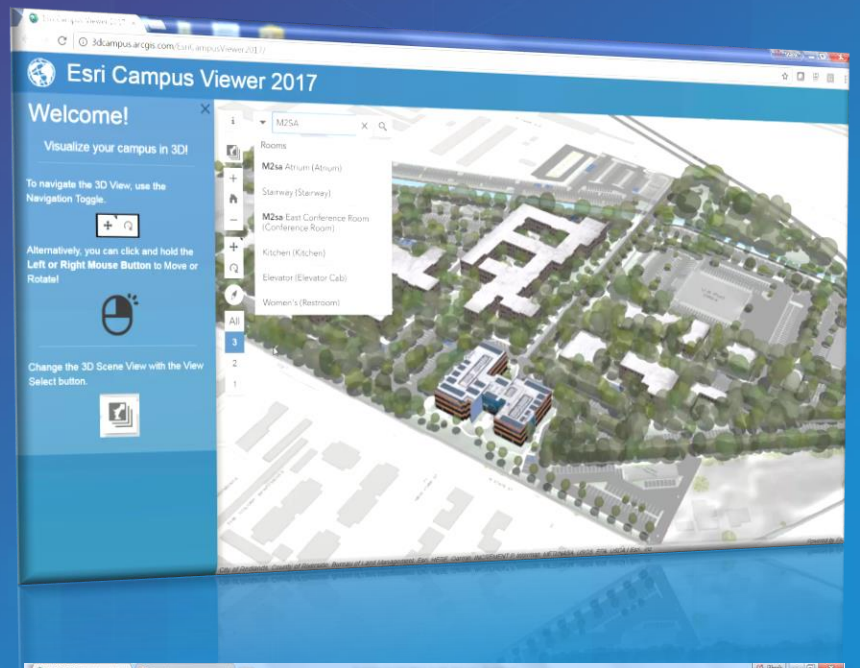
GIS-BIM workflow overlap

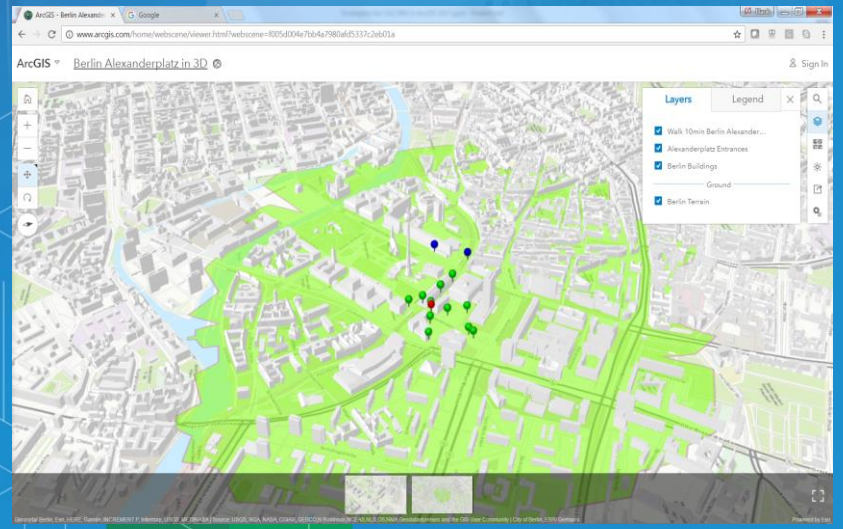


GIS-BIM products

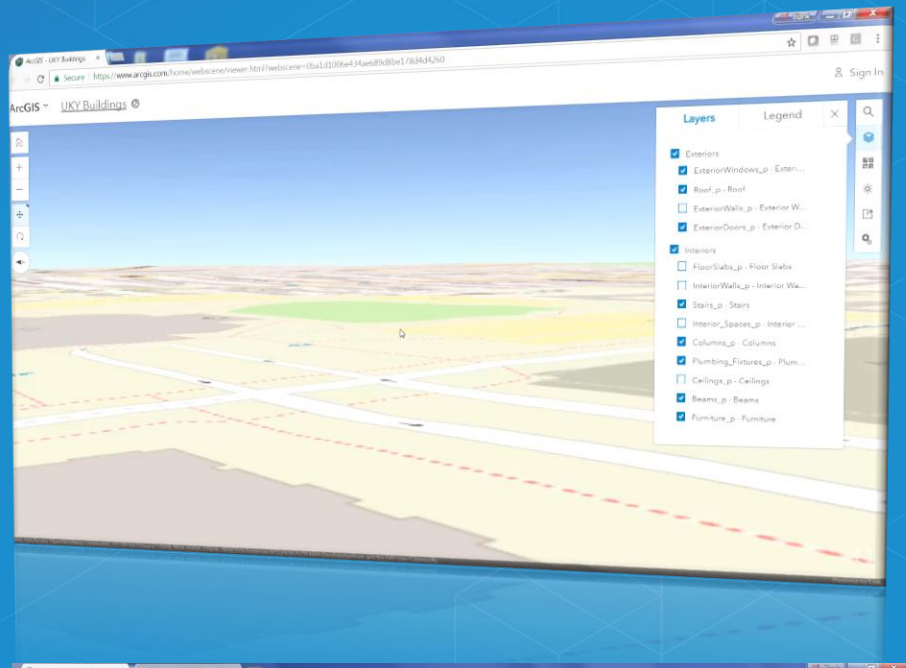


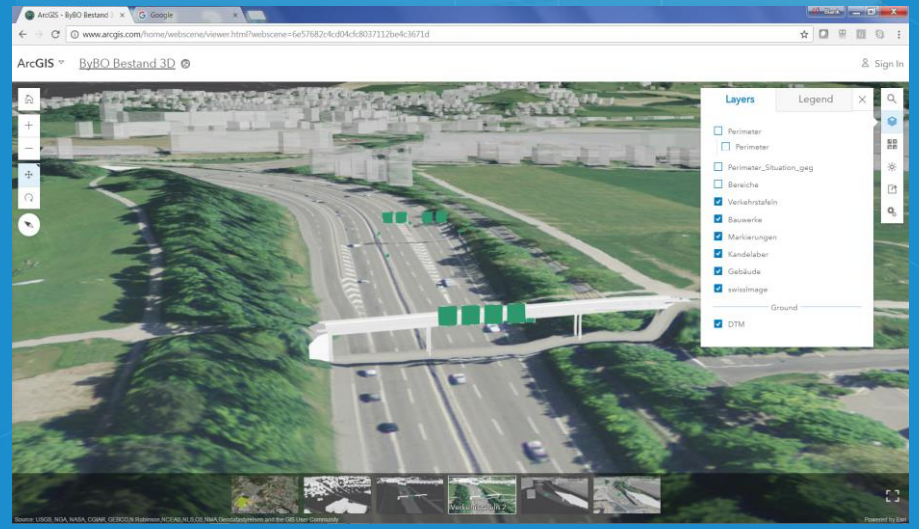
BIM as Features

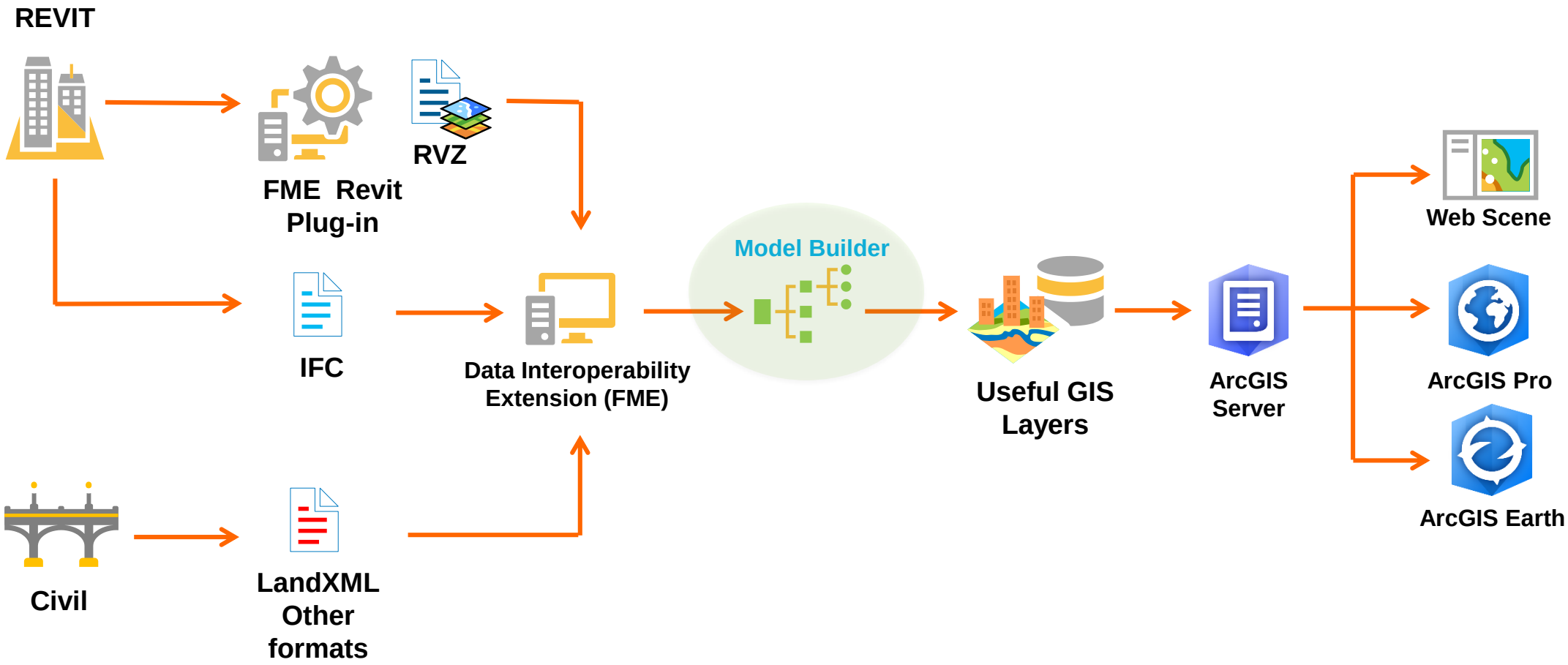




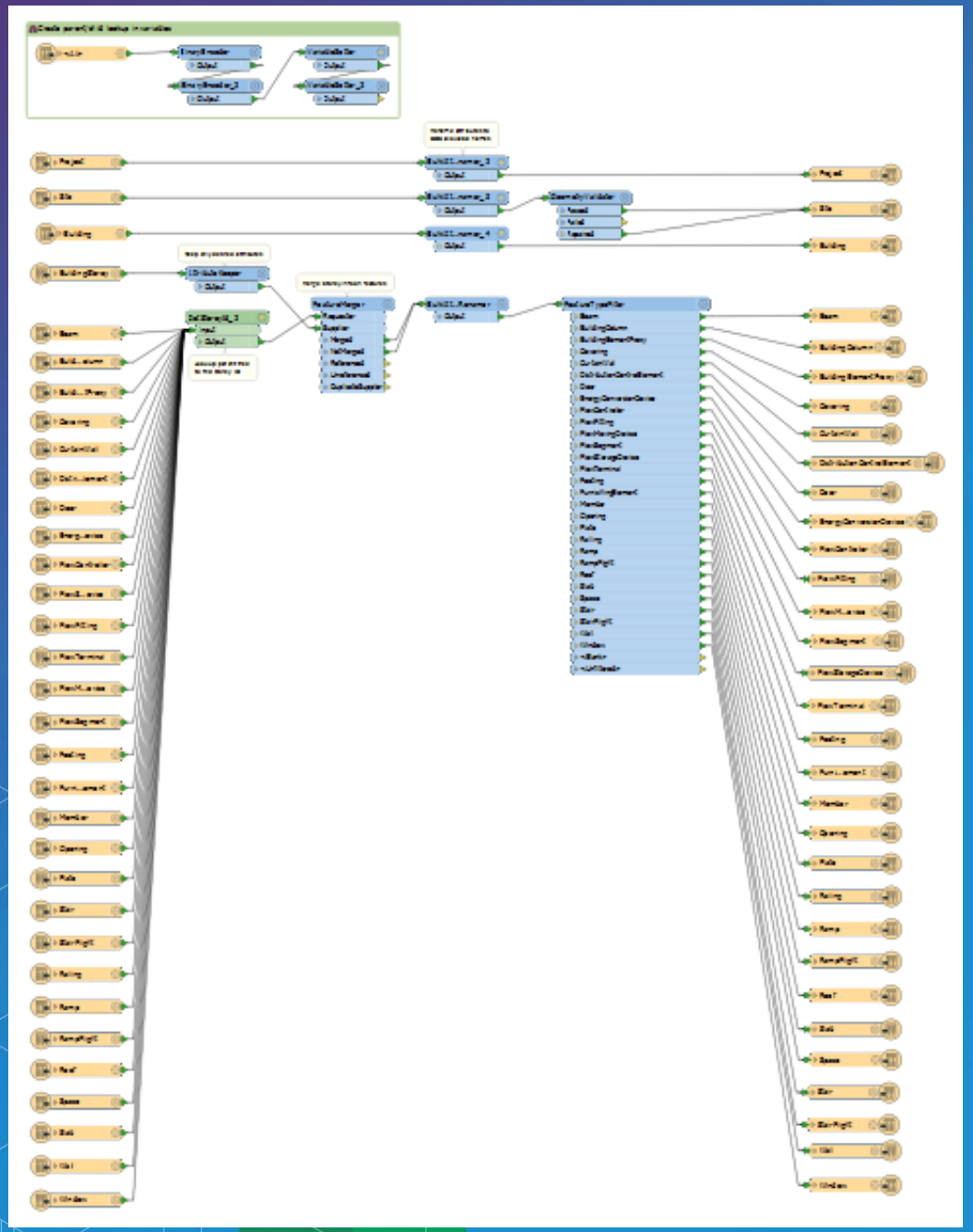
BIM Visualization



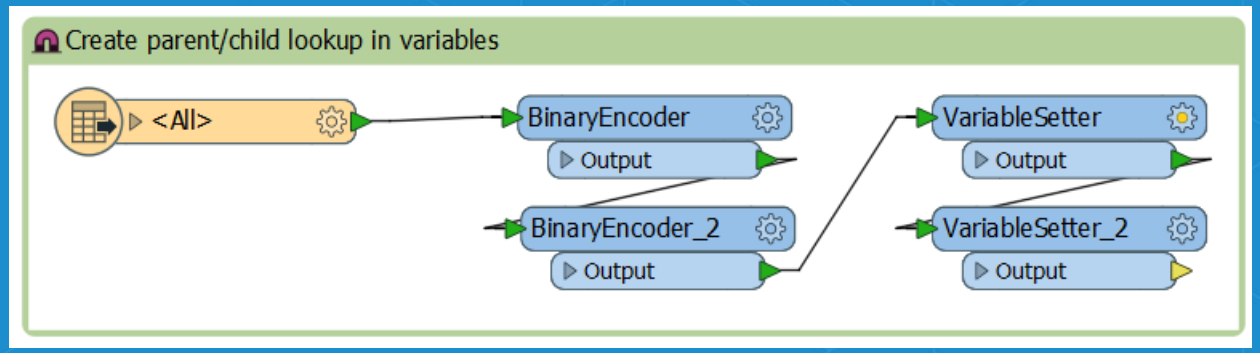




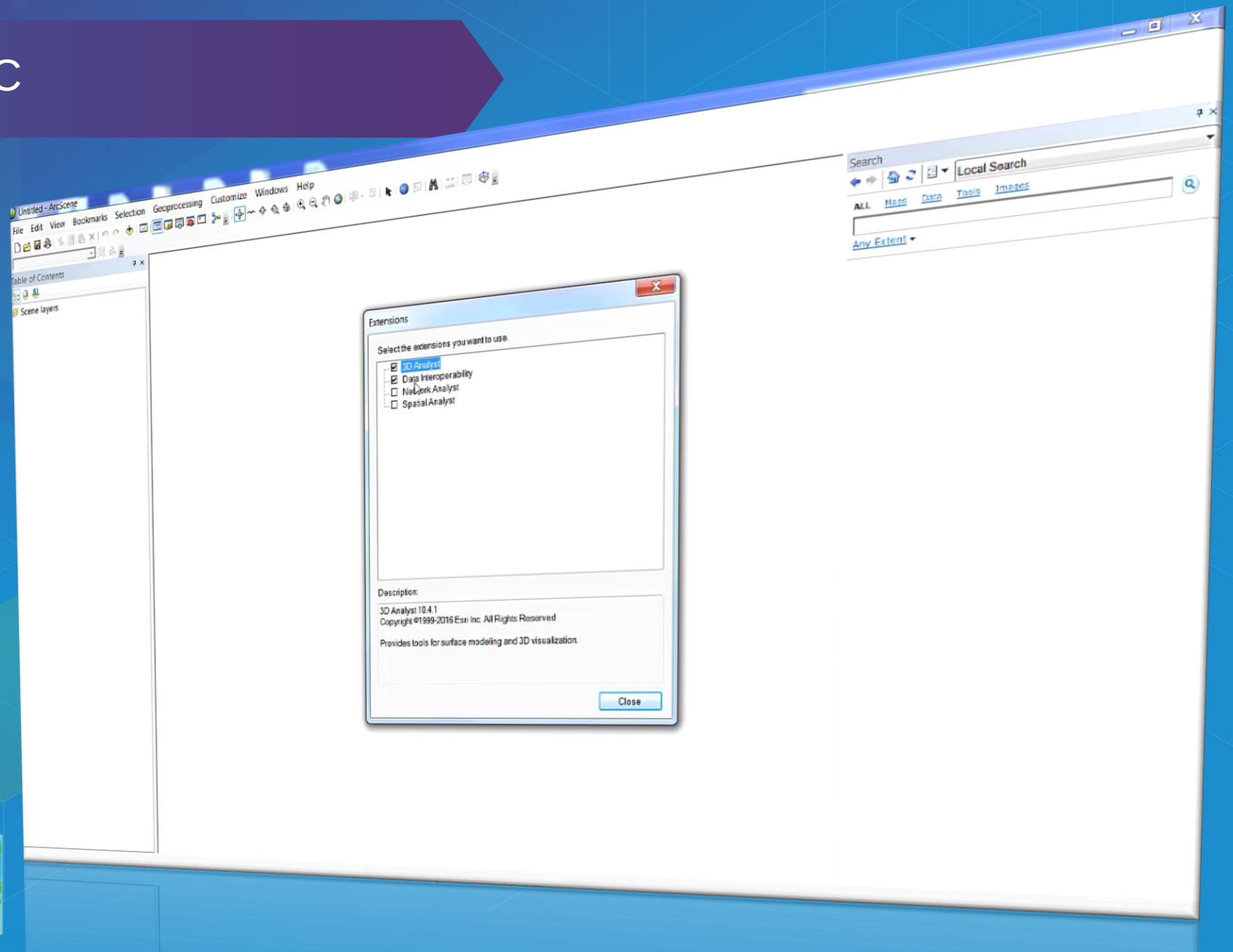
BIM to GIS Workflow Today



Advanced Workbench IFC with Attributes



Quick Import IFC



3D in the Platform

- Powered by services, accessible **across clients**
- Combine 2D and 3D in Esri Web GIS architecture
- 3D Layers Types
- Web Scenes as building blocks for 3D apps

- Create higher value visualizations, analyses, and information products using data and geoprocessing with 2D and 3D

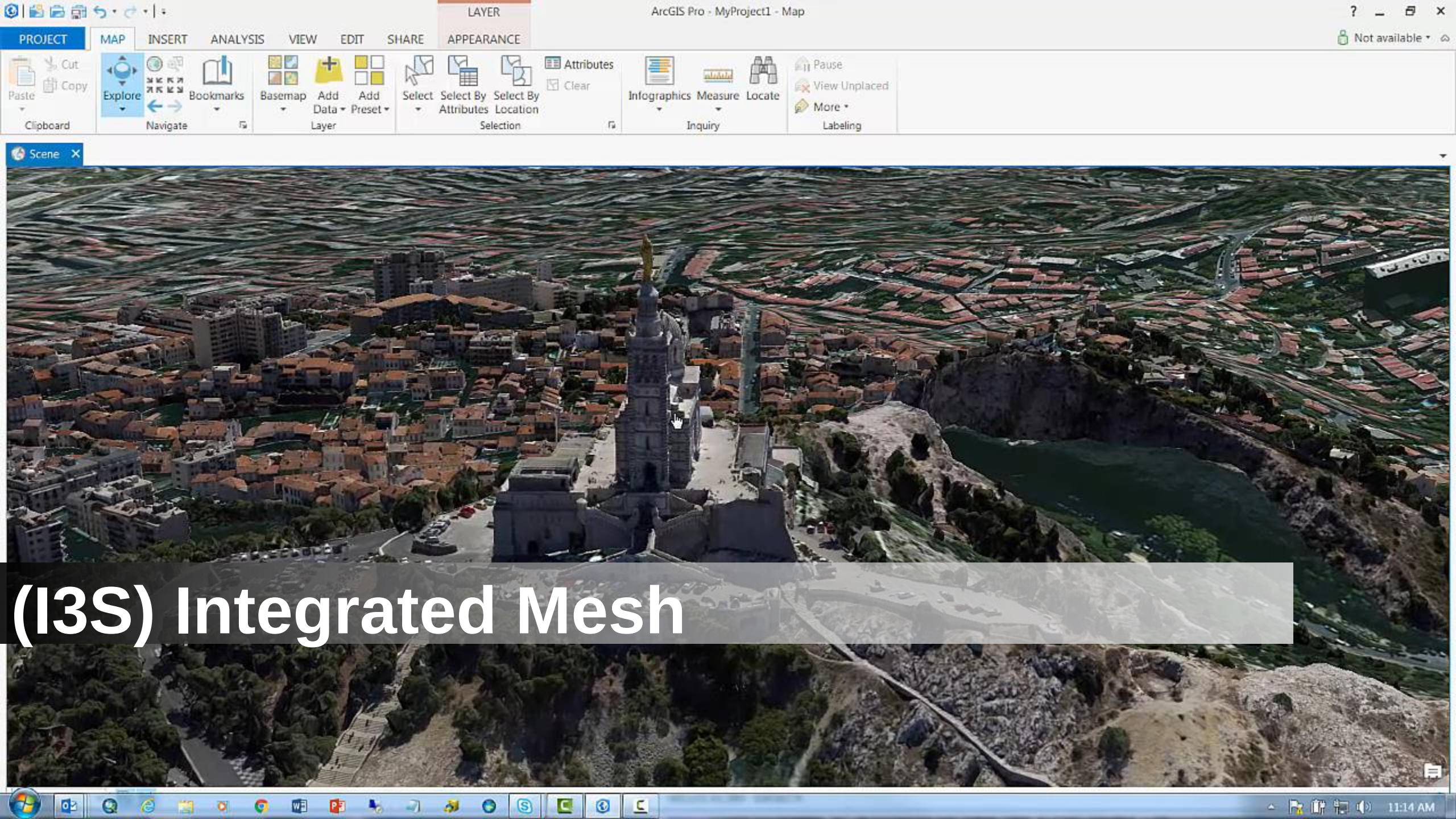
ArcGIS Pro Multipatch Editing

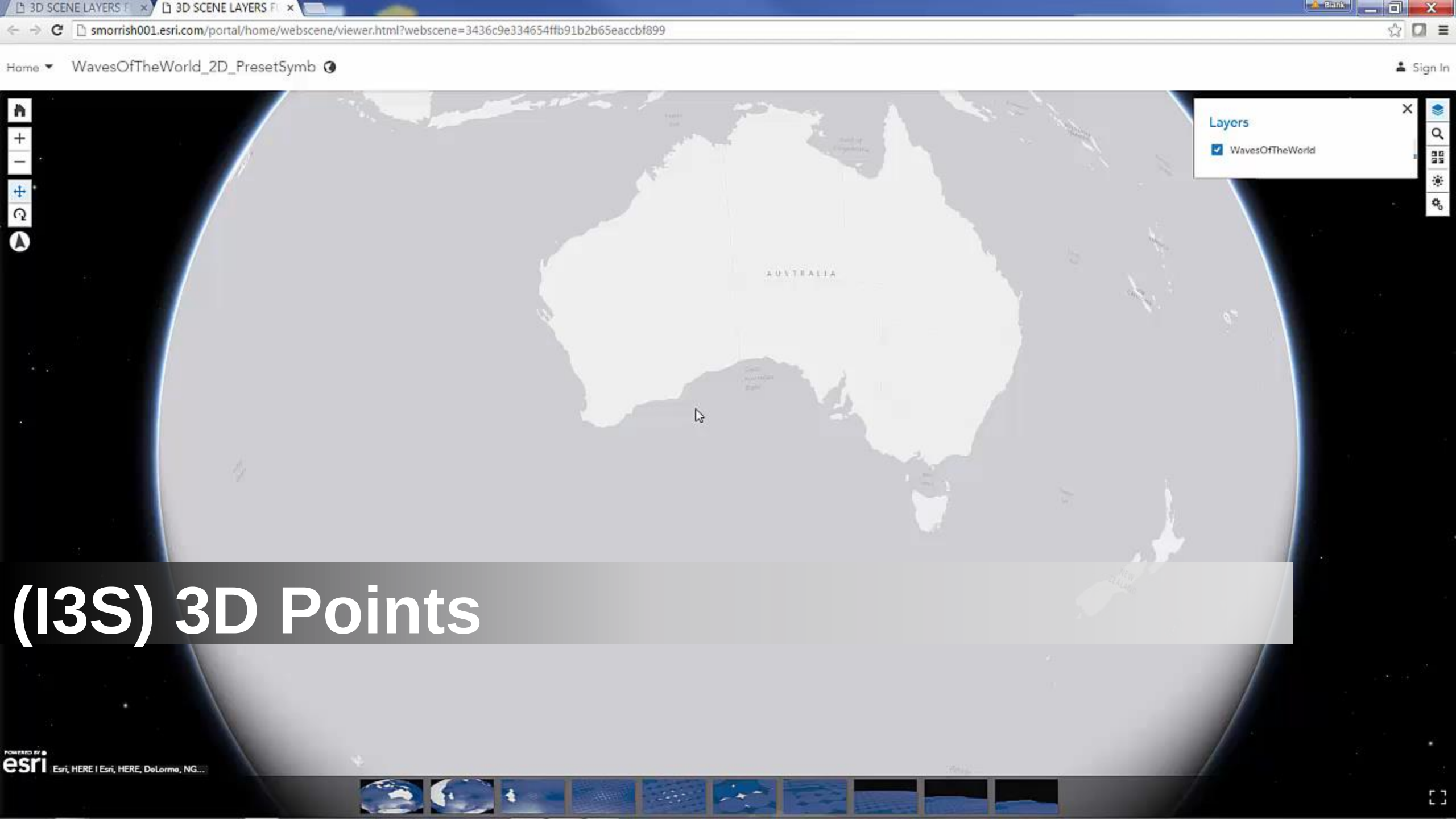
Indexed 3D Scene Layers

ArcGIS Scene Layers

- **3D Objects Scene Layer**
  - **MULTIPATCH**
  - **Preset Point Symbols (Trees…etc)**
- **3D Point Scene Layer**
  - **User Defined 3D Symbols**
  - **Automated Thinning**
- **3D Integrated Mesh Layer**
- **3D Point Cloud Scene Layer**

(I3S) 3D Objects


LAYER
ArcGIS Pro - MyProject1 - Map
PROJECT
MAP
INSERT
ANALYSIS
VIEW
EDIT
SHARE
APPEARANCE
Not available
Cut
Paste
Copy
Clipboard
Explore
Bookmarks
Navigate
Basemap
Add Data
Add Preset
Layer
Select
Select By Attributes
Select By Location
Attributes
Clear
Selection
Infographics
Measure
Locate
Inquiry
Pause
View Unplaced
More
Labeling
Scene
(I3S) Integrated Mesh
11:14 AM

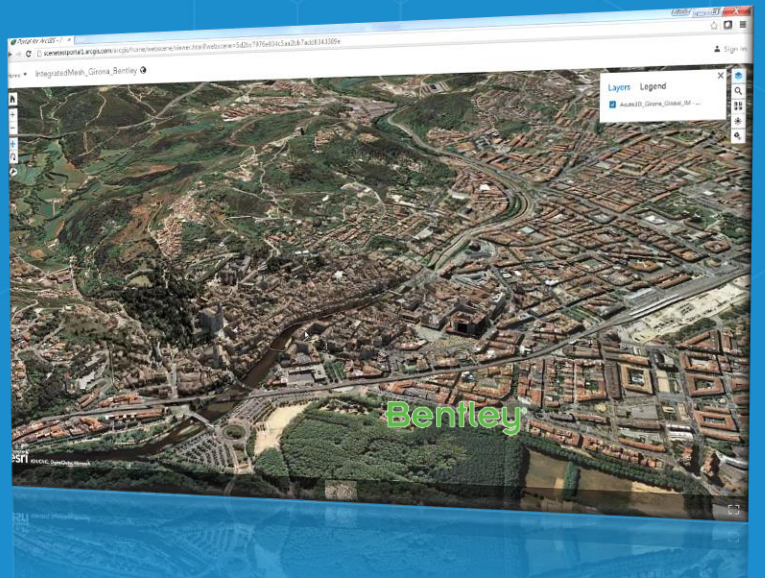


(I3S) 3D Points

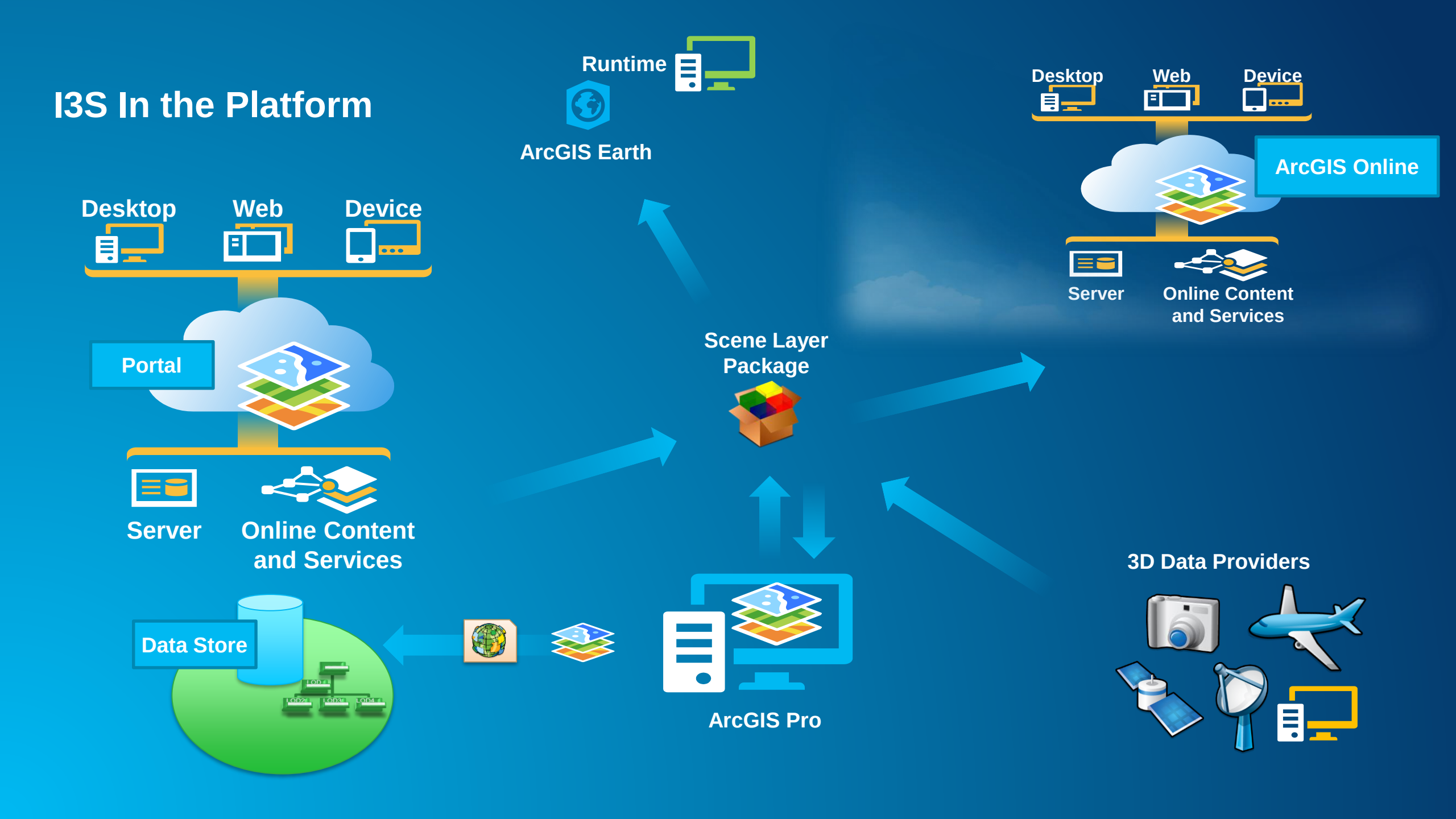
(I3S) Point Cloud

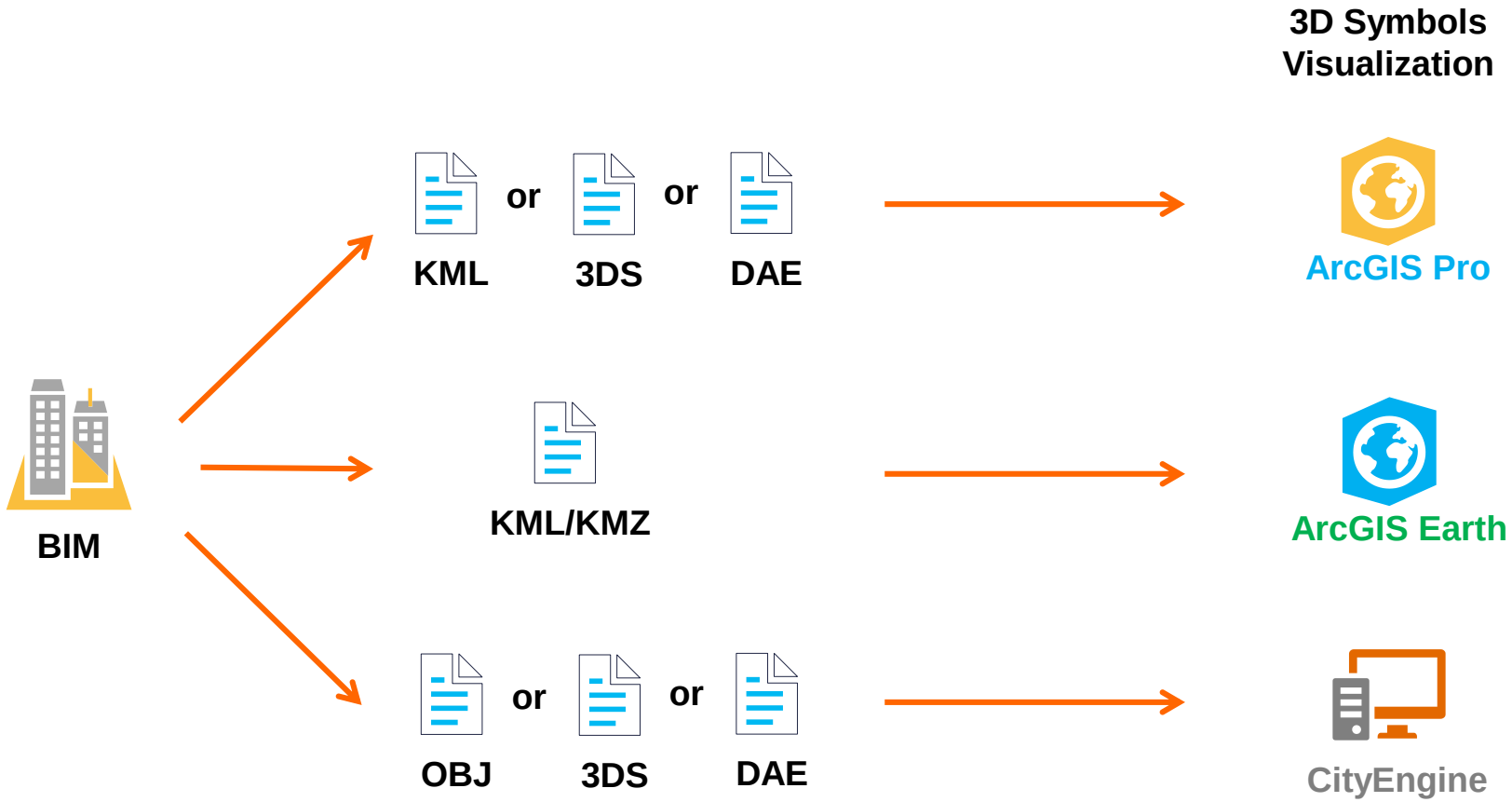
Industry Adoption I3S

- Integrated mesh
  - VRICON, Bentley, and Pix4D sharing packages of data in I3S format
  - Improves Military/Intel/AEC story
  - Supports Drone2Map
- Additional partners and layer types
  - Safe Software and Cyclomedia



I3S In the Platform





BIM as an Object

BIM to GIS Workflows

BIM as Symbols

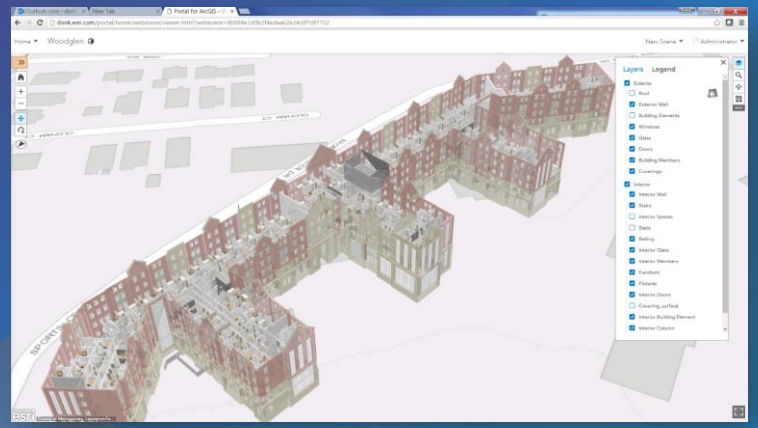
BIM/GIS Future?

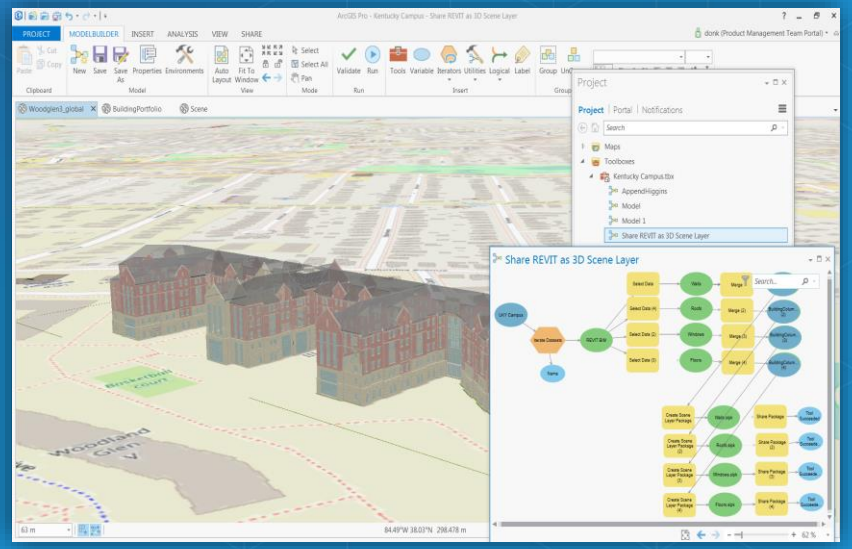
…you.

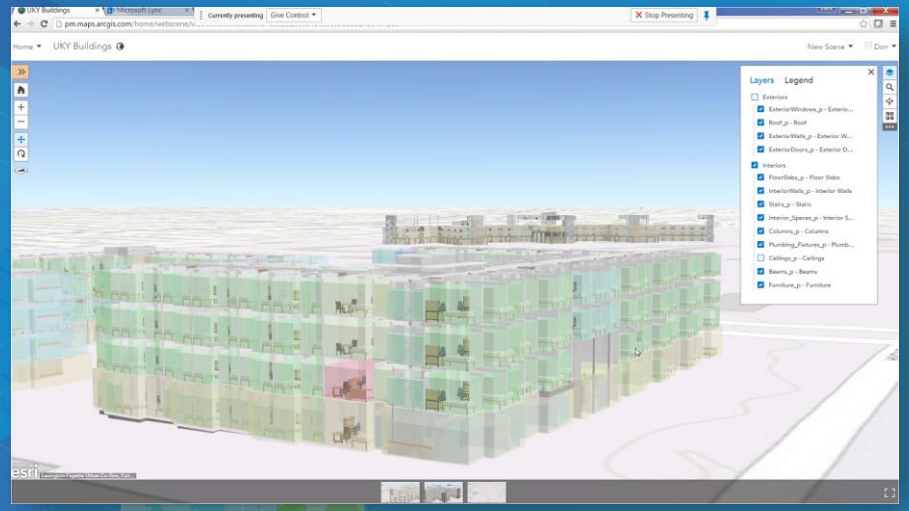
…Future more of what we know.

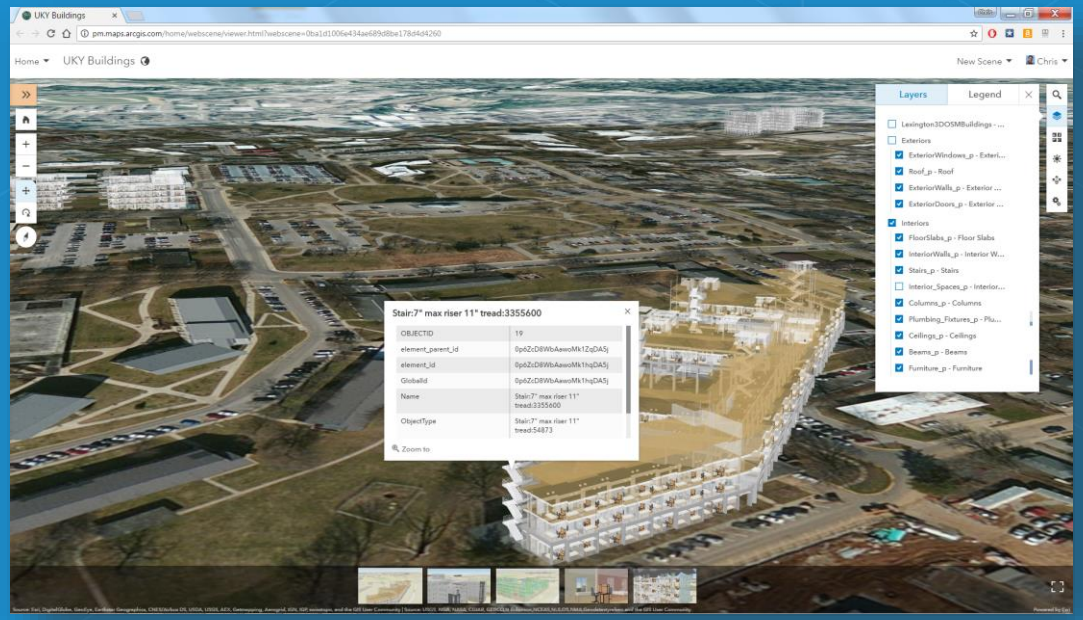
- Improved Direct Data Access
- More GIS 3D Scene Layers
- System of Systems Approach
- Cross Vendor Apps

Directly Read BIM Files









Continue the Conversation…

Don Kuehne, DKuehne@esri.com
Chris Andrews: CAndrews@esri.com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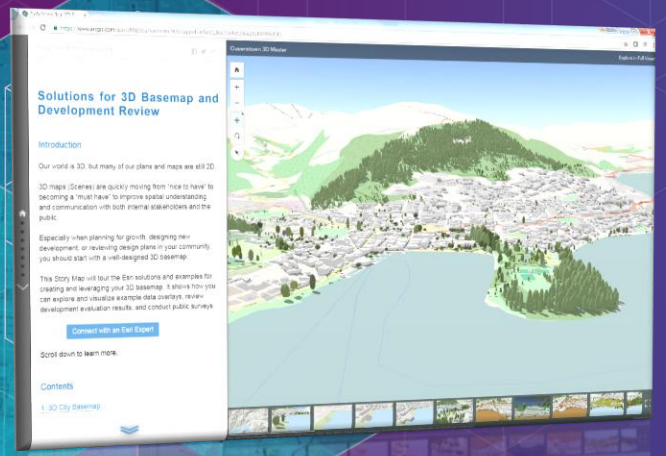
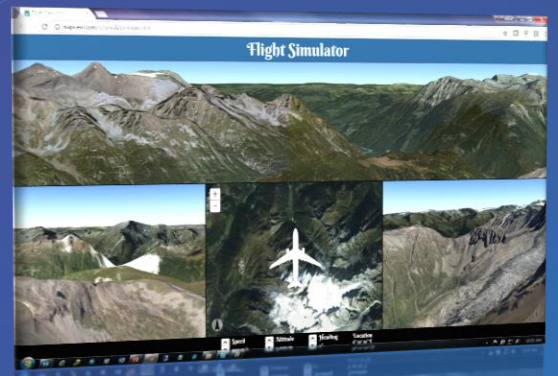
GIS for BIM

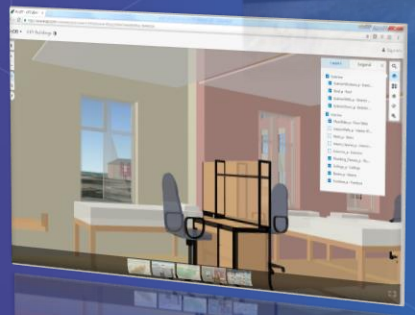


Story Maps

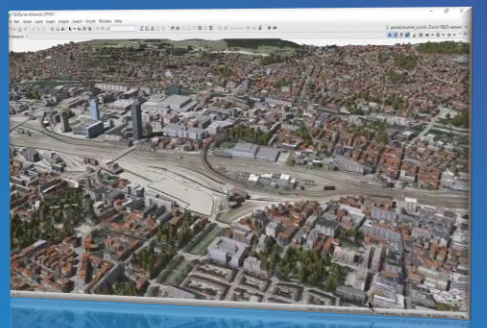


Runtime

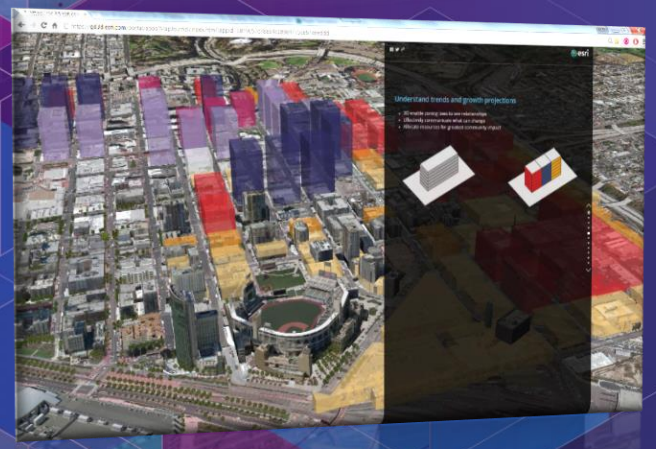
JavaScript

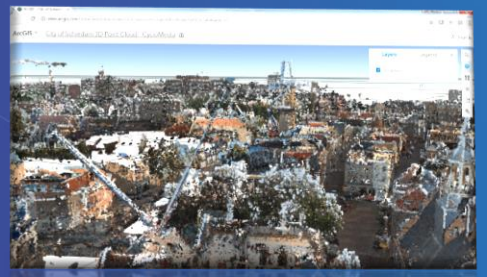


BIM Visualization



Parametric Design





Point Clouds

Analysis