ArcGIS Pro: Mapping & Visualization

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Mapping an Visualization Vision

In ArcGIS Pro

- Improve drawing performance and quality

- Provide an intuitive and efficient map authoring experience in 2D and 3D
  - Creating 2D maps, 3D maps, and layouts
  - Layer symbology including symbol selection and editing
  - Layer properties
  - Labeling

- Support existing maps you have today and extend them with new capabilities
- e.g. procedural modeling, KML

Mapping Overview

What we built

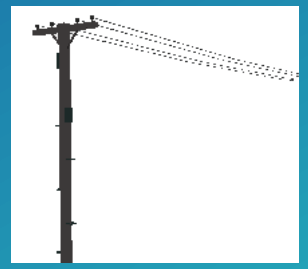
- Unified 2D / 3D mapping experience
- One symbol model integrating 2D, 3D, and representation symbols
- Decoupling maps and layouts
  - Multiple layouts
- Modern graphics support
  - Anti-aliasing
  - True transparency support
  - Improved drawing performance and application responsiveness
    - Multi-threaded drawing

High Level Mapping UX Design Goals

- **Emphasize your work, not the UI:**
- **Layer symbology and labeling**
  - **Provide better support for iterative workflows (e.g. map design)**
- **Layer properties**
  - **Provide ability to make changes across many layers**
- **Provide quick access to commonly changed items but allow deeper changes**
- **Erase differences between 2D and 3D where appropriate**

2D Maps and 3D Maps

- 2D Maps and 3D maps are similar…
  - Have layers, coordinate system, bookmarks…
- …but they usually have different goals
  - Different symbology, including different classification fields (eg: Utility Poles)

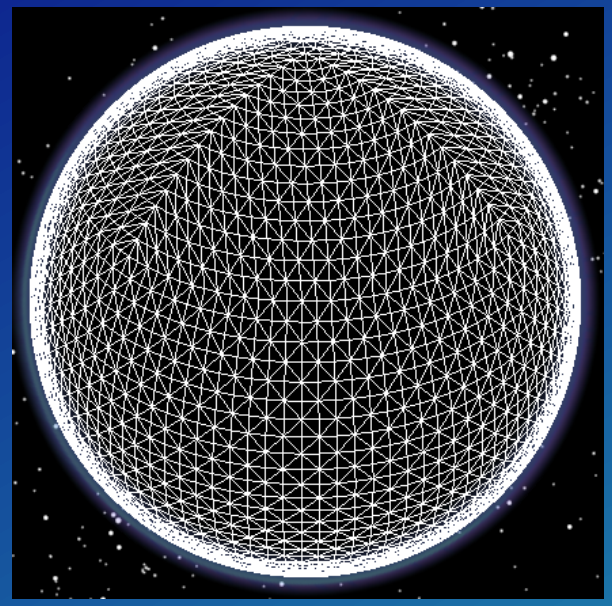


- Some 3D layers aren't useful in 2D
  - Elevation surfaces, Multipatches, Extruded features etc…

Solution: 2 types of maps

- Maps (2D) and Scenes (3D)
  - .MXDs → Maps
  - .SXDs / .3DDs → Scenes in Local or Global view
- You can create new Maps and Scenes
  - Then add in data, set coordinate systems, etc.
- You can convert a Map into a new Scene
  - And vice versa
- You can also:
  - Copy layers between them
  - Re-use Bookmarks between them
  - Link them together for interactive navigation

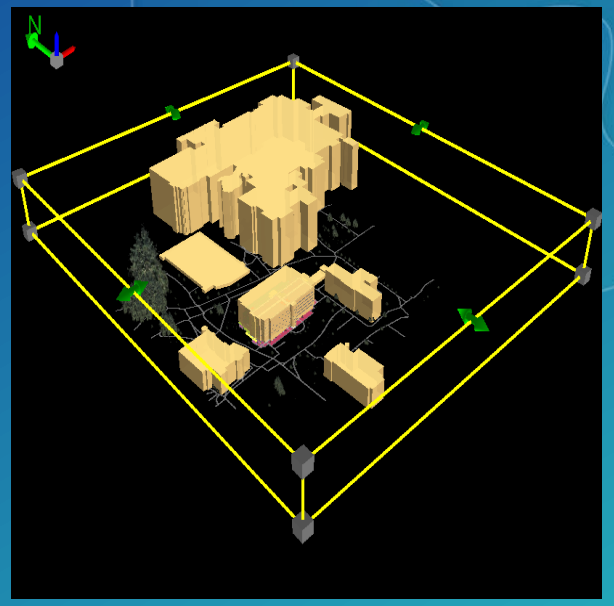
Types of 3D Worlds



ArcGlobe

‘Global’ context

Global Coordinate System (WGS84)
Curvature of the earth
Large Data & Services
Multiple surfaces acting as one



ArcScene

‘Local’ context

Projected Coordinate Systems
Area-of-interest
~~Local data only~~
~~One surface per layer~~

Terminology changes

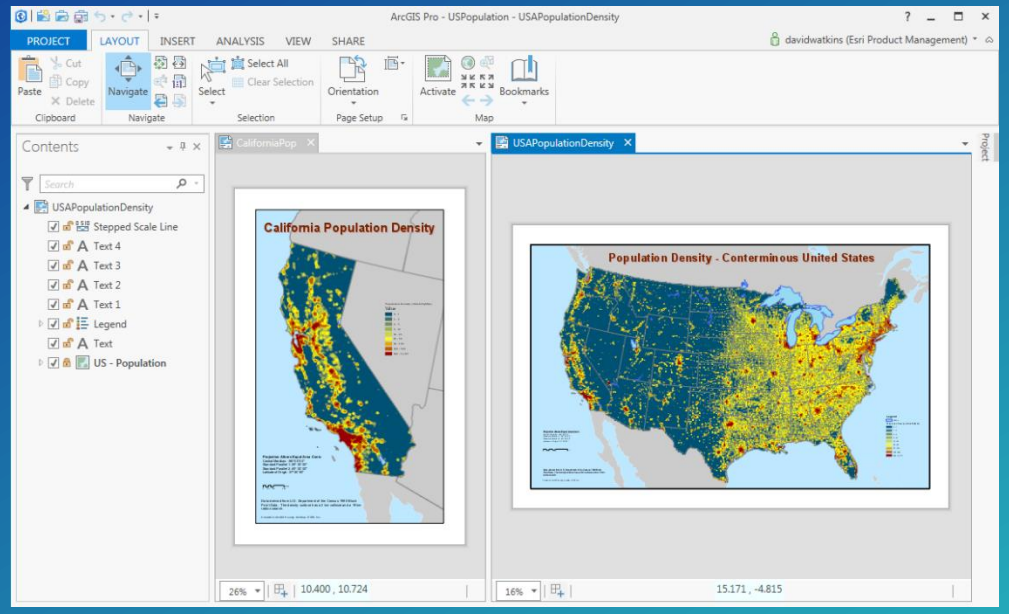
ArcMap name	ArcGIS Pro name
Data frame	Map
Globe	Scene: Global View
Scene	Scene: Local View
Color ramp	Color scheme
Marker symbol	Point symbol
Fill symbol	Polygon symbol
Symbol layer	Symbol layer of type marker, stroke, or fill

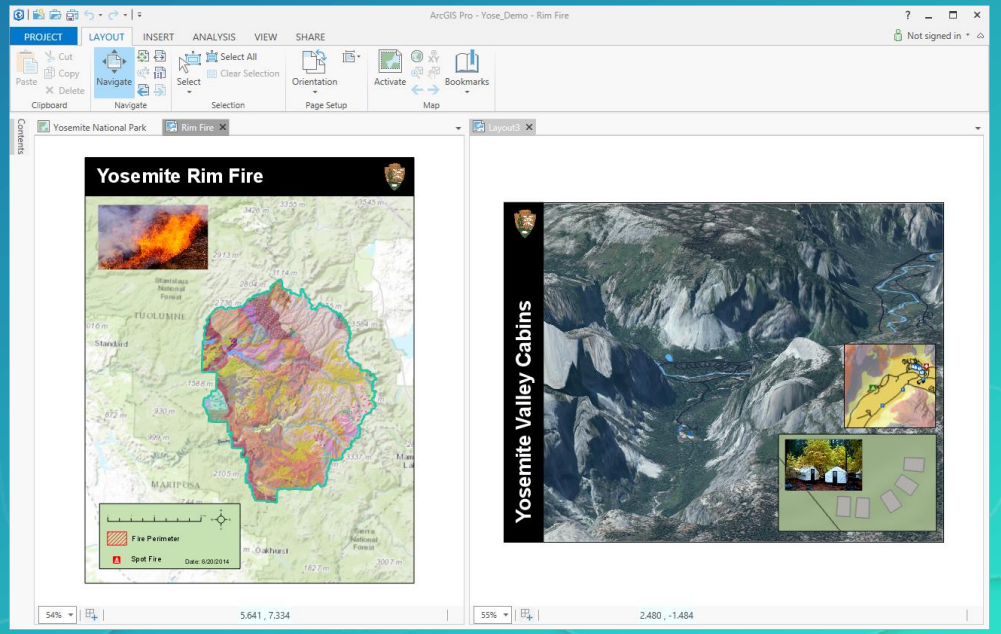
example: Polygon symbol made up of:

- Black stroke symbol layer (outline)
- Green fill symbol layer (interior)

Layout Enhancements

- Multiple layouts
- 3D Scenes in layout
- Layout contents
- Map decoupled from the layout
- Removed printer dependencies
- Inline text editing
- Map Series (Data Driven Pages)

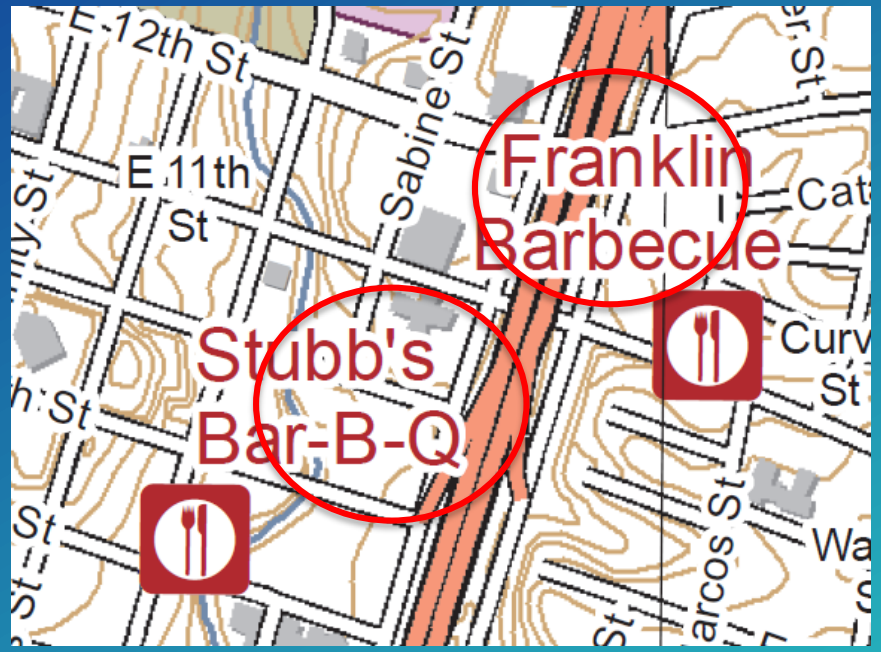




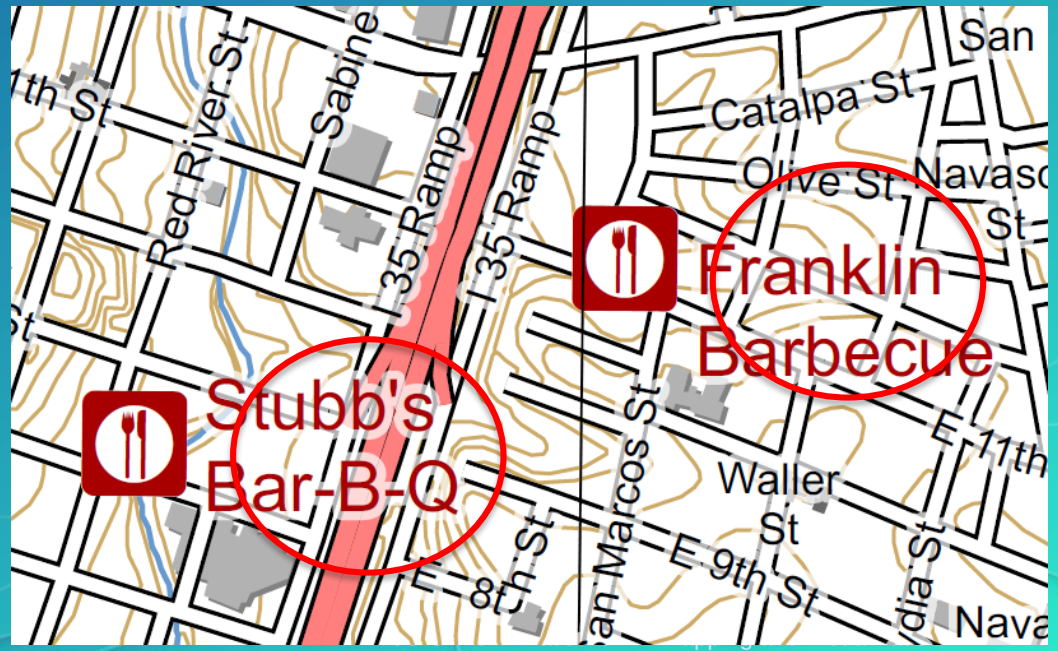
Export Improvements

- Support for transparency in PDF
- Anti-aliasing and improved graphics
- Faster
- Smaller file sizes

ArcMap



ArcGIS Pro



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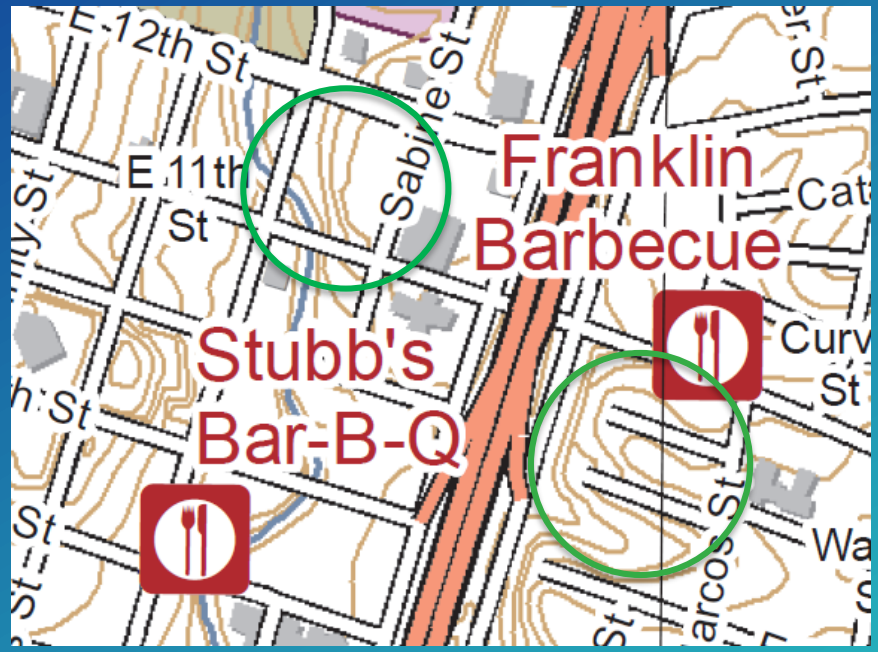

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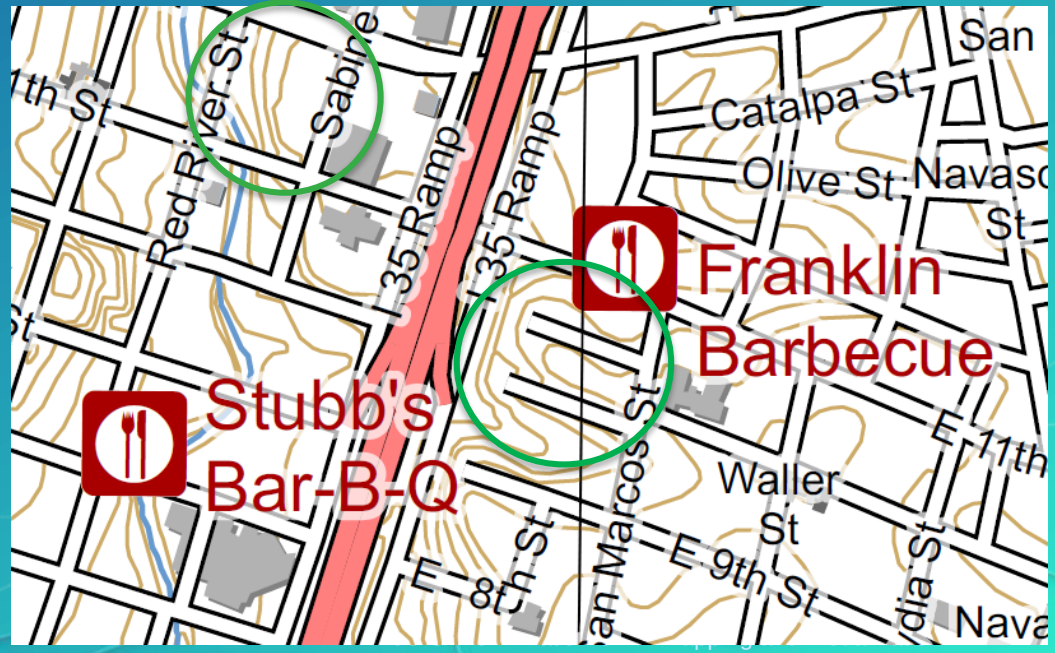

Map Automation

Provided by arcpy.mp module

```python
#Main object references
prj = arcpy.mp.ArcGISProject("current")
lyt = prj.listLayouts(gp_layoutName)[0]
mainMF = lyt.listElements("mapframe_element", gp_mapFrameName)[0]
indexLyr = mainMF.map.listLayers(gp_indexLyrName)[0]

#Page Numbering (manual)
if gp_pageNumberOption == "Enter a starting value":
  pageNum = gp_startingPageNum

count = 0
#Enter a loop of each page selected
if gp_ExportZoomOption == "Zoom to a single page":
  pageNameList = []
  pageNameList.append(gp_singlePageName)
if gp_ExportZoomOption == "Export to PDF":
```

- Script redundant mapping workflows
- Create map books
- Update projects, maps and layers (i.e. data sources, symbology)
- Automate the sharing of maps via export or publishing

- Migrate arcpy.mapping scripts to arcpy.mp - what changes?
  - Python 3.4
  - Projects (.aprx)
  - Layer file changes
  - Multiple layouts

Demonstrations

ArcGIS Pro releases

- 1.0 – January, 2015
- 1.1 – July, 2015
- 1.2 – March, 2016
- 1.3 – July, 2016
- 1.4 – January, 2017
- 2.0 – June, 2017
  - Annotation
  - Measured Grids
  - Custom Coordinate Systems
  - Import SVG for Symbology
- See “Road Ahead” sessions for more information on 2.0 and upcoming releases

Related Presentations

- ArcGIS Pro: An Introduction
  - Wednesday 3:15pm - 4:30pm Ballroom 6B
  - Thursday 8:30am – 9:45am Ballroom 6A
- ArcGIS Pro: Analysis and Geoprocessing
  - Tuesday 3:15pm – 4:30pm Room 8
  - Thursday 8:30am – 9:45am Room 8
- Desktop Mapping: Advanced Map Labeling using Maplex
  - Tuesday 3:15pm – 4:30pm Room 3
  - Thursday 3:15pm – 4:30pm Room 5A
- ArcGIS Pro Panel Discussion
  - Thursday 1:30pm – 2:45pm Ballroom 20D
- ArcGIS Pro Editing: An Introduction
  - Tuesday 10:15am – 11:30am Ballroom 6A
  - Wednesday 10:15am – 11:30am Hilton – Sapphire Ballroom E/F
- ArcGIS Pro: Tips and Tricks
  - Tuesday 1:30pm – 2:45pm Ballroom 6A
  - Wednesday 1:30pm – 2:45pm Hilton – Sapphire Ballroom I/J
- ArcGIS Pro: Migrating from ArcMap
  - Wednesday 3:15pm – 4:30pm Room 10
  - Thursday 10:15am – 11:30am Hilton – Sapphire Ballroom I/J

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