Migrating to ArcGIS Pro

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Is ArcGIS Pro a Replacement for ArcMap?
Is ArcGIS Pro a Replacement for ArcMap?

• Yes
• ArcMap still supported
  - But not supported forever
• Eventually ArcGIS Pro will replace ArcMap

ArcGIS Pro is the future for desktop GIS
ArcGIS Pro

- 64 Bit, multi-threaded
- Simplified user interface
- Integrated with the Platform
- Combined 2D/3D experience
- Multiple maps and layouts
- Comprehensive analysis tools
- Simple search and query
Why migrate to Pro?

• Modern application
• Great sharing experience for maps, scenes, layers & analysis
• Author the best web maps and layers
• 3D GIS
• Most comprehensive set of geospatial analysis tools
Responding to your education and training requests

Learning Resources – Overcoming the learning curve

• 76 ArcGIS Pro tutorials, web courses, videos and seminars on esri.com/training
• 15 Quick-start tutorials in Get started with ArcGIS Pro
• 11 ArcGIS Pro lessons on learn.arcgis.com
• 3 books plus a 4th on the way
Esri Training Site

Seasoned ArcMap User

• Migrating from ArcMap to ArcGIS Pro

New Desktop User

• ArcGIS Pro : Essential Workflows

Seminar Recording

• ArcGIS Pro : Editing Essentials
Start Here!

1. FAQs
2. Downloading, Installing, and Licensing ArcGIS Pro
3. Terminology Guide
4. Quick Start Tutorials
5. ArcGIS Pro Help Site
6. Training for ArcGIS Pro Guide
7. Learn ArcGIS Curriculum Map
User Interface in ArcGIS Pro
<table>
<thead>
<tr>
<th>ArcMap</th>
<th>ArcGIS Pro</th>
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<tbody>
<tr>
<td>Data View</td>
<td>Map View</td>
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<td>Data Frame</td>
<td>Map Frame</td>
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<tr>
<td>Active Data Frame</td>
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<td>Globe, Local Scene</td>
<td>Scene</td>
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<tr>
<td>Data Driven Pages</td>
<td>Map Series</td>
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<td>Find tool</td>
<td>Locate tool</td>
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<tr>
<td>Create Folder Connection</td>
<td>Add Folder</td>
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<tr>
<td>Marker Symbol</td>
<td>Point Symbol</td>
</tr>
<tr>
<td>Fill Symbol</td>
<td>Polygon Symbol</td>
</tr>
</tbody>
</table>
Project Templates

In Pro there is no normal.mxt

- You can have many templates
  - Editing, mapping, viewing
- Customize and share
  - User interface
  - Project styles
  - Layouts
  - Connections
  - Toolboxes

Your templates show up in the start experience
Working with Projects

• Multiple Maps and Layouts
• Database, Folder, Server connections
• Tools and Toolboxes
• Default Geodatabase

All can be easily packaged and shared

How should I organize my work moving forward?
Project → Catalog

- Project View and Project Pane are now Catalog View and Catalog Pane
Working with ArcGIS Pro
Familiar but new and improved

Ribbon contextual user interface and multiple views
Import your maps, scenes and globes

• Import .mxd, .sxd, and .3dd files
• What imports?
  - maps, layouts, symbology, styles, scenes, models
• Maps look the same

![ArcMap](image1.png)  ![ArcGIS Pro](image2.png)
What if something doesn’t look the same?

- In a few cases things may be slightly different
  - Check the Notifications
  - I.e. OLE Objects are not supported
Where are my styles?

- New style format (.stylx)
- Referenced styles are imported with maps
- Styles from ArcMap and Custom styles can be imported
- Add styles to your project
- Styles can be shared via ArcGIS Online or your portal
Favorites

- Add Database, Server and Folder connections
- Connections saved on a per user basis
Exercises

Tutorial Lesson Links:

ArcGIS Pro Quick-Start Tutorials
Get Started with ArcGIS Pro (Venice Tutorial)
Getting Started with ArcGIS Pro (Northridge EarthQuake)

Extract Roof forms for Municipal Development
Calculate Impervious Surfaces from Spectral Imagery
Fly Through South America in a 3D Animation
Classify Land Cover to Measure Shrinking Lakes
Licensing ArcGIS Pro
Licensing

- Named User
- Concurrent Use
  - Single Use
  - Concurrent Use
ArcGIS Pro Licensing

- **Named User**
  - Single Use
  - Concurrent Use
  - ArcGIS Online
  - ArcGIS Enterprise

Access Pro the best way for your organization
ArcGIS Pro Licensing

Named User

- Anytime / anyplace
  - Up to 3 machines
- Grant access by user
- Control product level and extensions
- Re-assign licenses
- Know who is using what and when
- ArcGIS Online or Enterprise

Web GIS
(Online/Enterprise)
Named User Licensing in ArcGIS Online/Enterprise

Add members to your organization

- Users who need an ArcGIS Pro license must first be a member of the organization
- Organization tab > Invite Members
- ArcGIS Pro requires that members have a Level 2 account
ArcGIS Pro Licensing

Single Use

- Perpetual or Term
- Locked to your machine
- Online or Offline
- Secure
ArcGIS Pro Licensing

Concurrent Use

- Perpetual
- License Manager
  - Requires version 10.5.x
  - Separate provisioning files
- On-premises \ Your network
- Online \ Offline
- Secure

Available for existing Concurrent Use customers
What extensions are available with ArcGIS Pro?

- Spatial Analyst
- 3D Analyst
- Network Analyst
- Geostatistical Analyst
- Data Reviewer
- Workflow Manager
- Data Interoperability
- StreetMap Premium
- Pipeline Referencing
- Defense Mapping
- Aviation Airports
Virtualizing ArcGIS Pro
On-premise Virtualization

Virtualization Platform

- VMWare
- ESXi
- Horizon View

- Citrix
- XenServer
- XenDesktop
Cloud-based Virtualization

**Microsoft Azure**
- NV-Series VM
  - Nvidia GPU
  - 56 Gb Memory
  - 380 Gb storage
  - Demo’d at Microsoft Ignite

**AWS**
- GPU Workspace
  - Nvidia GPU
  - 8 vCPUs
  - 15 Gb Memory
  - 200 Gb storage

- Available Now
- Tested by Esri Performance Engineering – Great UX

The demo really demonstrated the “Workstation in the Cloud” scenario that is now really possible with Azure NV based Virtual Machines at Ignite! - Karan Batta, Microsoft Azure
ArcGIS Pro – Current Status and The Road Ahead
ArcGIS Pro 2.0 Highlights

Create and Edit Annotation

Dynamic Charts in Layout

Measured Grids in Layout

Favorites

WFS Standard Support
<table>
<thead>
<tr>
<th><strong>ArcGIS Pro Roadmap</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Near-term</strong></td>
</tr>
<tr>
<td>• Utility Network</td>
</tr>
<tr>
<td>• Attribute rules</td>
</tr>
<tr>
<td>• Reports</td>
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<td>• Tables in Layouts</td>
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<td>• Full motion video</td>
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<td>• Stereo &amp; Oblique</td>
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<tr>
<td>• Mensuration</td>
</tr>
<tr>
<td>• Interactive 3D Analysis</td>
</tr>
<tr>
<td>• Real time streaming</td>
</tr>
<tr>
<td>• Offline Web maps &amp; layers</td>
</tr>
<tr>
<td>• SAP HANA</td>
</tr>
</tbody>
</table>
ArcGIS Ideas

- Visit ideas.arcgis.com to:
  - Vote
  - Comment
  - Submit new ideas

- ArcGIS Pro team wants your feedback!
  - Regular review
  - Your use case matters
  - Your ideas can result in new features for everyone

Put your Ideas in Motion

Visit the ArcGIS Ideas space on GeoNet
Responding to your requests and feedback

ArcGIS Desktop Ideas On the Move: June 2017

Blog Post created by Kory Kramer on Jun 27, 2017

Like 1 Comment 4

With today’s release of ArcGIS Pro 2.0, it’s time for another summary of what’s happening with ideas.

11 Desktop ideas have been moved to Implemented:
- Run more than one instance of ArcGIS Pro
- Saving Service and SDE Connection in ArcGIS Pro
- Grid and Graticules
- Rename Shapellies (better data-management) in ArcGIS Pro (1.4)
- Make Enterprise GDB Connections User-Wide for ArcGIS Pro
- Using a Web Feature Service (WFS) without converting it to a feature layer (ArcGIS Pro)
- ArcGIS Pro: Rearrange Fields in Field View
- Exporting Data from Project View in ArcGIS Pro
- Native/Direct WFS Support in ArcGIS Pro
- ArcGIS Pro - Extract Data tool - polygon input as in ArcMap
- ArcGIS Pro: Allow connection to .sde files in folders

2 Desktop ideas have been moved to In Product Plan:
- Drag & Drop Data into ArcGIS Pro
- Add full OGC WFS support in next version of ArcGIS Desktop (no extension use)

2 Desktop ideas have been moved to Under Consideration:
- Add an autosave feature for ArcGIS Desktop
- Add Direction to the Measure Tool
Analytics/Analysis in ArcGIS Pro
Analysis in ArcGIS Pro

ArcGIS Pro provides incredible analysis capabilities in 2D, 3D, and 4D (time)
Scalable 64-bit execution, non-blocking threading, and improved visualization

Geoprocessing is the technology that enables spatial analysis in the ArcGIS Platform
Analysis in ArcGIS Pro

The *Analysis* ribbon tab provides access to:

- Gallery of commonly-used tools
- Suite of all ~800 geoprocessing tools
- ArcGIS Enterprise and Online analysis tools
- Geoprocessing History
- Python command line
- ModelBuilder
- Network Analysis
- Imagery processing / raster functions
- Data Interoperability Workbench
Charts

Use charts to explore your data and communicate a message

Include as part of your analysis workflow to:
- Understand patterns and relationships before running an analysis
- Communicate information about your analysis results

Create a bar chart, scatter plot, histogram, line chart, profile graph or box plot

Fully interactive with the map layers and extent, attribute table, and range and time filters
Spatial Statistics

Statistical tools for analyzing spatial distributions, patterns, processes and relationships

- Summarize key characteristics of a spatial distribution
- Identify significant clusters and outliers, hot and cold spots
- Model and explore spatial relationship through regression

Space-Time Pattern Mining

- Aggregate data into cube data structure and identifies hot and cold spot trends and outliers
- Visualize the cube in 3D (add-in makes it easy)
R is the most widely-used statistical computing language in the world

Includes thousands of libraries for diverse applications

R-ArcGIS Bridge makes it easy to use GIS data in an R script

R-based script tool provides familiar geoprocessing tool for GIS users, but executes in the R engine

Requires installation of R and R-ArcGIS bridge
R-ArcGIS Bridge
Ready to use tools
ArcGIS Online

Analytical operations hosted by ArcGIS Online, using Esri curated elevation, hydrologic, and street network data

Simply provide a few basic inputs

Uses ArcGIS.com credits and you must be connected to an ArcGIS online organization with analysis privileges
Analysis Extensions

Extensions build on the core analysis capabilities of ArcGIS Pro

<table>
<thead>
<tr>
<th>ArcGIS 3D Analyst</th>
<th>ArcGIS Spatial Analyst</th>
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<td>ArcGIS Geostatistical Analyst</td>
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<td>ArcGIS Data Reviewer</td>
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Primarily comprised of additional geoprocessing toolboxes

Licensing same as ArcMap

Manage extension licenses the same way you license Pro
(Named User, Single Use, Concurrent Use)
Exercises

• Desktop Analytics case studies [http://arcg.is/2iZcBTP](http://arcg.is/2iZcBTP)
  - Determine relationships: [http://arcg.is/2iZDl6t](http://arcg.is/2iZDl6t)
  - ModelBuilder Tutorial: [http://arcg.is/2mxcjZc](http://arcg.is/2mxcjZc)
  - R-ArcGIS Bridge: [http://arcg.is/2uglPys](http://arcg.is/2uglPys)
Publishing in ArcGIS Pro
Sharing from ArcGIS Pro

ArcGIS Pro

ArcGIS Online

Portal for ArcGIS

ArcGIS Server

ArcGIS Data Store
ArcGIS Pro – Sharing User Experience

1. Sign into a portal
2. Share from:
   i. The ribbon to share your entire map
   ii. The context menu to share a selection of layers
ArcGIS Pro – Sharing User Experience

3. Analyze your data for potential issues
4. Click Share/Publish
<table>
<thead>
<tr>
<th>Web Layer</th>
<th>Web Service</th>
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</thead>
<tbody>
<tr>
<td>Map Image layer</td>
<td>Dynamic/Cached map service</td>
</tr>
<tr>
<td>Feature Layer</td>
<td>Feature service</td>
</tr>
<tr>
<td>Tile Layer</td>
<td>Cached map service (hosted)</td>
</tr>
<tr>
<td>Vector Tile Layer</td>
<td>Vector tile service</td>
</tr>
<tr>
<td>Scene Layer</td>
<td>Cached scene service</td>
</tr>
</tbody>
</table>
Exercises - Sharing

- Share a Web Map: http://arcg.is/2AzEWL3
Arcade: New Expression Language in ArcGIS Pro
What is Arcade?

• A new expression language for the ArcGIS Platform
  - ArcGIS Pro
  - Runtime SDKs
  - JavaScript API
  - Web apps

• Primarily designed for ArcGIS web maps and web scenes
Arcade Purpose

- Arcade is NOT intended to be a Full Programming / Scripting Language
- Goal: Lightweight and Simple
- Equivalent to a Spreadsheet Cell Calculation

- Embedded Expressions
- Labeling, Rendering, Symbol Variation
- Sharing

- Not a replacement for Python for geoprocessing and Automation
Arcade Goals

- Portable
  - Write and Expression in Pro, have it run in a Browser, or on a Device

- Secure
  - Ensure that Expressions or Scripting do not compromise Security

- Lightweight
  - Most requirements for Scripts and Expressions are Lightweight. The language should be small, and fast
Arcade Resources

- ArcGIS Arcade Main Site
- How to Arcade Story Map
- Introducing Arcade
- Using Arcade expressions in web apps
- Using Arcade to map the land
- How to Arcade Video
- Using Arcade in your ArcGIS API
ModelBuilder in ArcGIS Pro
Migration from ArcMap ModelBuilder Highlights

- Make a copy of original toolbox/model before editing in ArcGIS Pro.
- ModelBuilder models created in ArcGIS Pro are not backwards compatible. To use the models you must save the toolbox of the current version into the version you desire.
- Calculate Field tool now no longer supports VB expressions. All expressions must now use Python syntax. You will need to update your syntax if your models are saved in VB.
- All intermediate/managed data options have been removed. All intermediate output data is automatically deleted when tools complete. Except on datasets that are output parameters.
- In ArcGIS Pro, models have a slightly different color scheme. You cannot change colors, shapes, background images of model elements, and you cannot add images to the model diagram. Models from ArcMap will display these custom settings and objects in ArcGIS Pro when imported.
- List and series are not support in ArcGIS Pro. You can use iterators to perform batch processes on a collection of datasets
- Interactive drawing and entering of features or records is not fully supported in ArcGIS Pro
Migrating to Python 3.X in ArcGIS Pro
Analyze Tools for Pro

Will my tool "just work?"

- Analyze models
- Toolboxes
- Python scripts
- Script tools
- Built on 2to3 Utility

Returns anything not supported with helpful hints as to why
Ch-Ch-Changes

- Arcpy.mapping module is replaced with arcpy.mp to support mapping workflows in ArcGIS Pro
- Some tools are not available yet or are not supported in ArcGIS Pro. See this link for the not supported list currently. (e.g., parcel fabric arcpy module: arcpy.fabric)
- A key decision point will be whether you will update your Python code to work in both 10.x and ArcGIS Pro, or just ArcGIS Pro. If you're doing a one-way conversion of code from Python 2 to Python 3, there is a 2to3 command line utility that can be used to automate much of the process. This utility is available with both Python 2 and 3. It is important to note that 2to3, while an excellent tool, is not a complete solution (it is sometimes estimated as a 95 percent solution), and additional changes may be necessary. If you need to support Python 2 and 3, see this link for strategies in supporting both versions
ArcGIS API for Python

- **Install with Conda** `conda install -c esri arcgis`

- Python in the cloud

- Automate administration of AGOL/ Portal

- Perform Spatial Analysis/ Data Management in the cloud

- Create Jupyter Notebooks

- Learn more at the [Dev Docs](#)
ArcGIS API for Python

```
In [3]:
# Get Set Up
from arcgis.gis import GIS
from IPython.display import display

gis = GIS(https://www.arcgis.com, "astrong.psw", "******")

In [5]:
print items
items = gis.content.search('Parking Inventory')
for item in items:
display(item)
```

Klamath County Mobile Home Park Inventory dispatchers
Web Map by jaharrard3
Last Modified: March 27, 2017
0 comments, 7 views

Klamath County Mobile Home Park Inventory
Proof of Concept for Klamath County GIS
Workforce Project by jaharrard3
Last Modified: March 27, 2017
0 comments, 17 views

Parking Inventory
Parking Inventory is a configuration of Collector for ArcGIS that can be used by parking staff to inventory public parking lots, garages and on-street parking.
Introducing Tasks in ArcGIS Pro
Workflow Production Challenges
You have told us…
- People are unfamiliar with how to do standard work flows
- Every user does things differently
- Hard to maintain Quality Assurance
- Training time on current / new employees
- Standard Operating Procedures change or not followed
- Technology changes rapidly
What is a Task?

• **Sequential** steps that guide you through a **repeatable** workflow

• **Tasks:**
  - Used to **guide** and share knowledge
  - Are **interactive**
  - Improve **efficiency**
  - Improve **quality**

• Tasks use your (business) language

• Tasks are configurable

“The right tool in the right time”
When NOT to use Tasks?

- A workflow that takes very long time
- Task resources keep changing frequently: maps, layers, Geoprocessing tools
- Micro Management tool
- Does not replace Geoprocessing models:
  - Geoprocessing is used for **automation**
  - Tasks are **interactive**
INSERT new Task Item

- A project might contain 0 - many TASK ITEMS that are stored in the APRX file
- Use INSERT → Task Item
- Use ‘Save Project’ to save task modifications
- Use ‘Package Project’ to share with a project
Create Tasks & Steps

• Create a task
• Create steps
• Group tasks
General - Step Behavior

- Manual - 2 mouse clicks
- Auto Run / Auto proceed - 1 mouse click
- Automatic - no mouse clicks
Task Resources

- Workflows in ArcGIS Pro
- Introduction to Tasks in ArcGIS Pro (video)
Exercises - Workflow Control

- Share a Web Map: http://arcg.is/2AzEWL3
- Create a Task: http://arcg.is/2nn44iP
- Automate Using Tasks: http://arcg.is/2wZkfqP
- Getting Started with Arcade: http://arcg.is/2zUKa4G
Extending ArcGIS Pro
Many Pro SDK Resources

• Esri Training – Instructor-led Esri training course
• SDK landing page – main resource page
• SDK Wiki on GitHub – primary documentation site with concept and guide docs, and much more
• Community Samples – ready to use code solutions categorized by functional area
• SDK Snippets – code snippets by functional area
• GeoNet Pro SDK Group – developer community
• API Reference – full API reference
• FAQ – answers to common questions
• SDK Blog posts – focused on the Pro SDK
Solution Configurations

• Configurations
  - A new add-in pattern / template at Pro 1.4
  - Solution branding of the Pro UI
  - Conditional or role-based customization

• Documentation
Thank you

Transforming the world by unlocking data’s full potential