



ArcGIS Pro SDK for .NET: Demonstrating Pro Extensibility with Add-Ins

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2019 ESRI DEVELOPER SUMMIT
Palm Springs, CA

Session Overview

- Demonstrating Pro extensibility with add-ins:
 - **Power Line Visualizer** – Creating 3D visualizations
 - **Exploration Analyst** – Integrating geological analysis capabilities
 - **XTools Pro** – Providing efficiency tools for Pro users
 - **Intelligence Configuration for ArcGIS Pro (ICAP)** – Focusing Pro for analysts
- Resources for your work



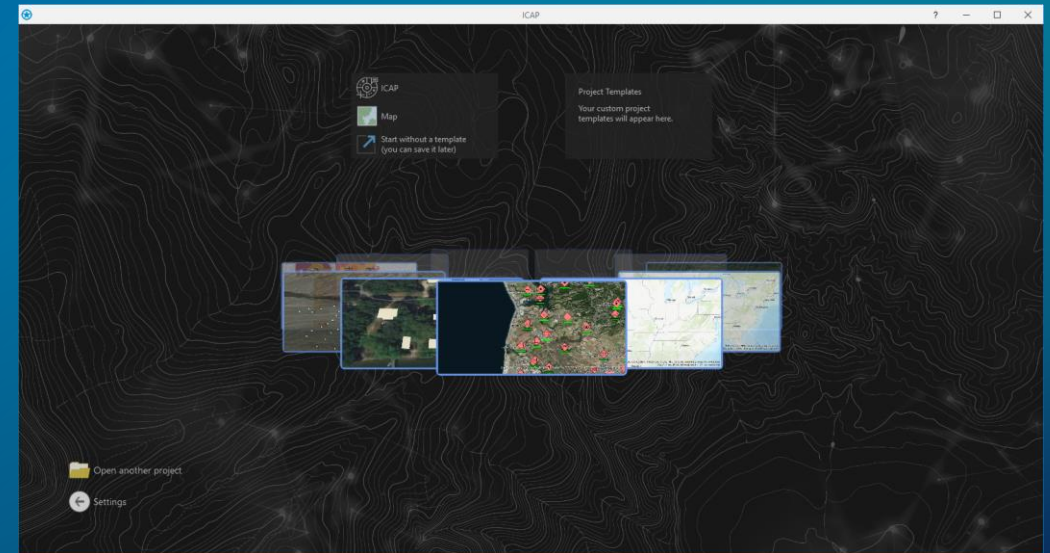
What are ArcGIS Pro Add-Ins?

Pro Add-Ins – Built with the ArcGIS Pro SDK for Microsoft .NET

- Add-ins allow for powerful customizing and extending of ArcGIS Pro
- Three main patterns:
 - **Add-Ins** – Develop new tools and functionality, and customize UI
 - **Configurations** – Deeper customization, branding, start-up experience, streamline UI
 - **Plug-in data sources** – Develop custom data source formats



Animated Symbols Add-In

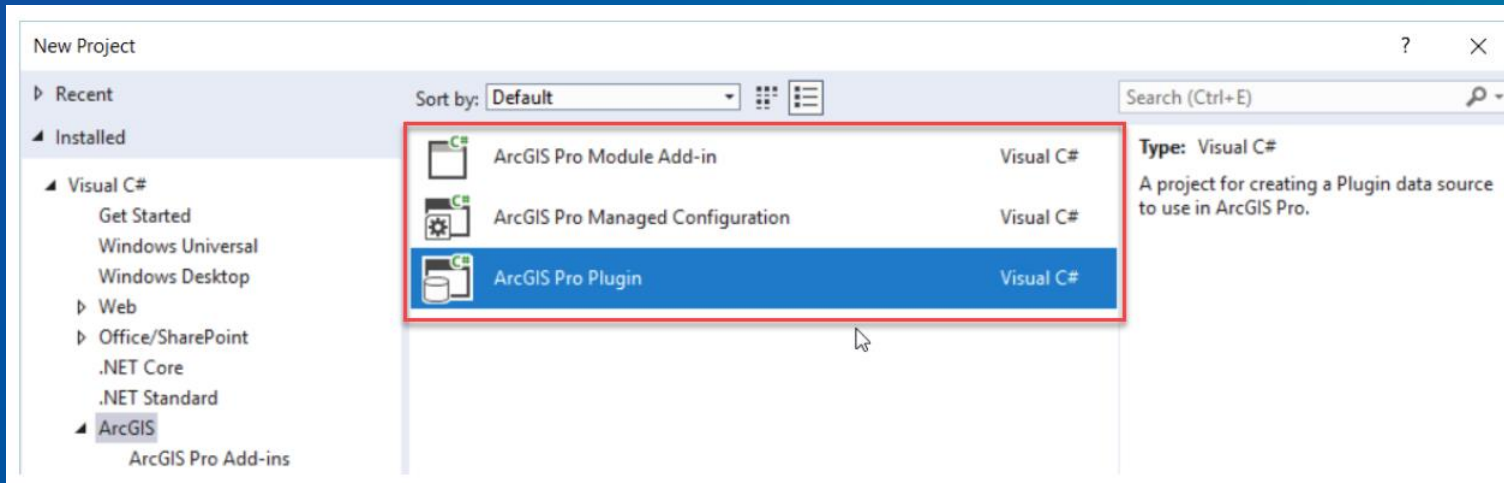


ICAP Configuration, with custom start page




















ArcGIS Pro SDK for Microsoft .NET

- Templates and tools to streamline Pro add-in development
- Modern framework using .NET – WPF, MVVM, LINQ, etc.
- Develop in Microsoft Visual Studio 2015 & 2017
 - VS 2019 support later this year

Project Templates



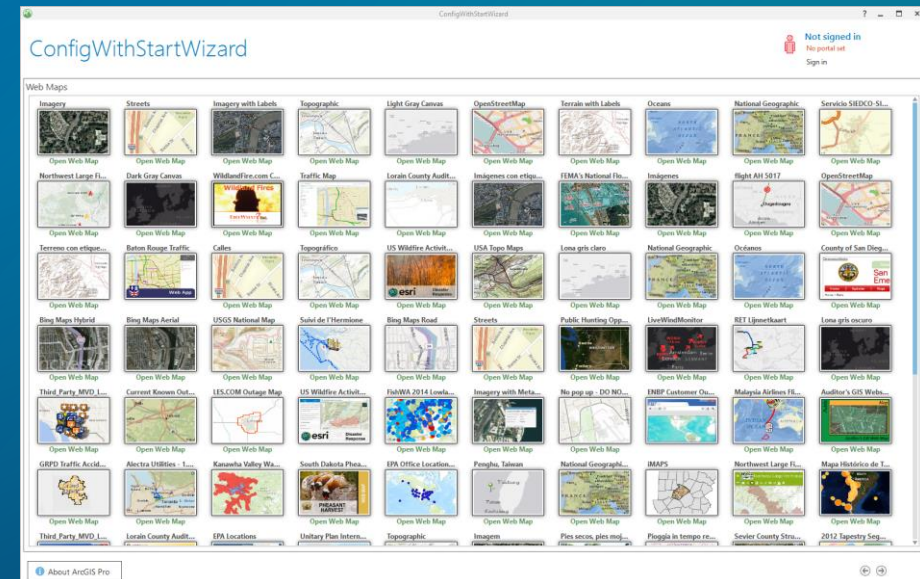
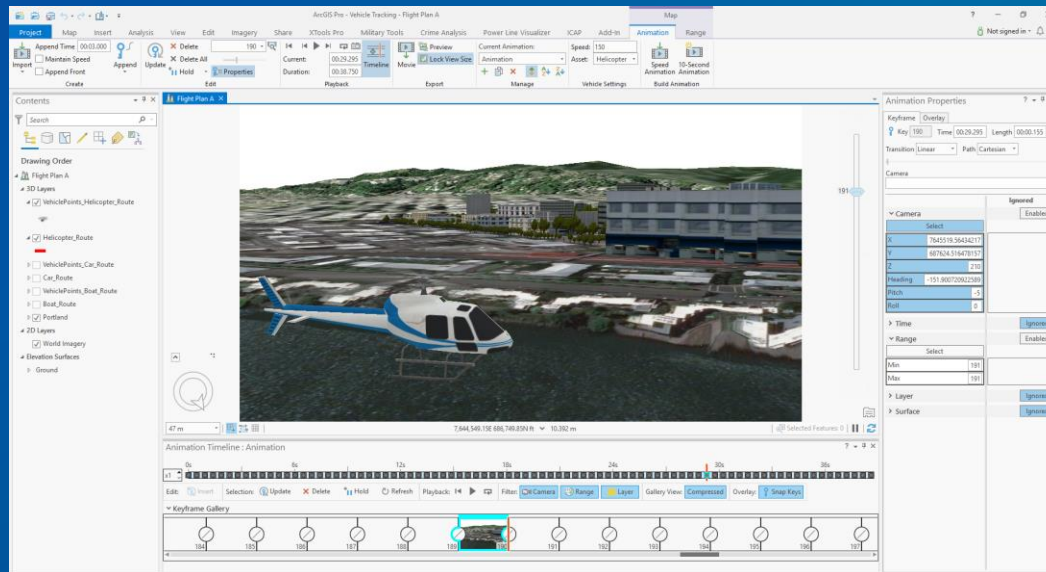
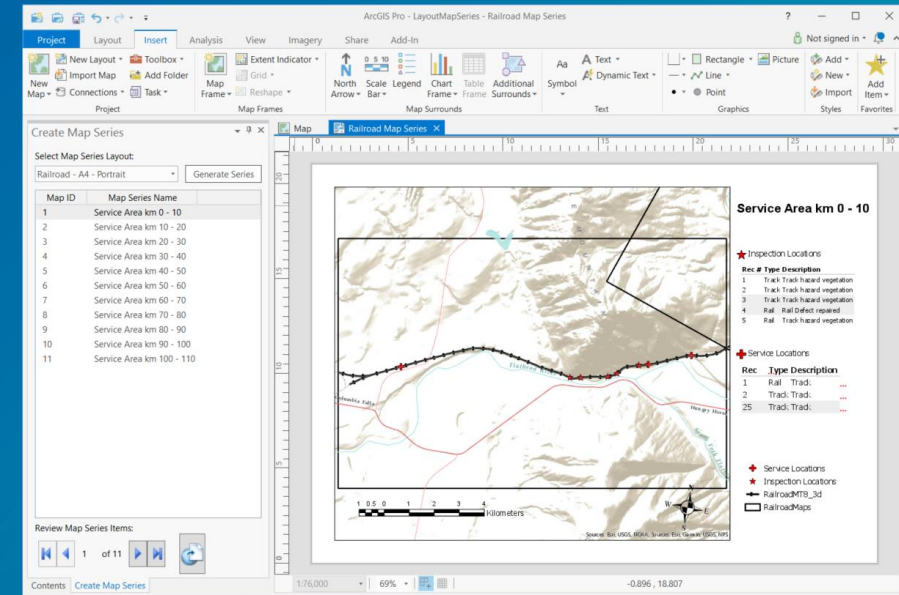
Item Templates

C#	VB	Name
		ArcGIS Pro Module Add-in Project template
		ArcGIS Pro Managed Configurations Project template
	N/A	ArcGIS Pro Plugin Project template
		ArcGIS Pro Backstage Tab
		ArcGIS Pro Button
		ArcGIS Pro Button Palette
		ArcGIS Pro Combo Box
		ArcGIS Pro Construction Tool
		ArcGIS Pro Custom Control
		ArcGIS Pro Dockpane

ArcGIS Pro SDK for Microsoft .NET

- Online guides, [code samples](#) and other resources
- Releases are in sync with ArcGIS Pro
- Pro APIs are growing with each release


A few of the 150+ available samples –
Map Exploration, Framework and Layout





Demonstrating Pro Extensibility with Add-Ins

Discussion points for each demo

- Overview of the add-in
 - How the add-in extends ArcGIS Pro
 - Video demonstration – focus on the customizations
 - Discussion of the Pro APIs used
 - Resources
- 

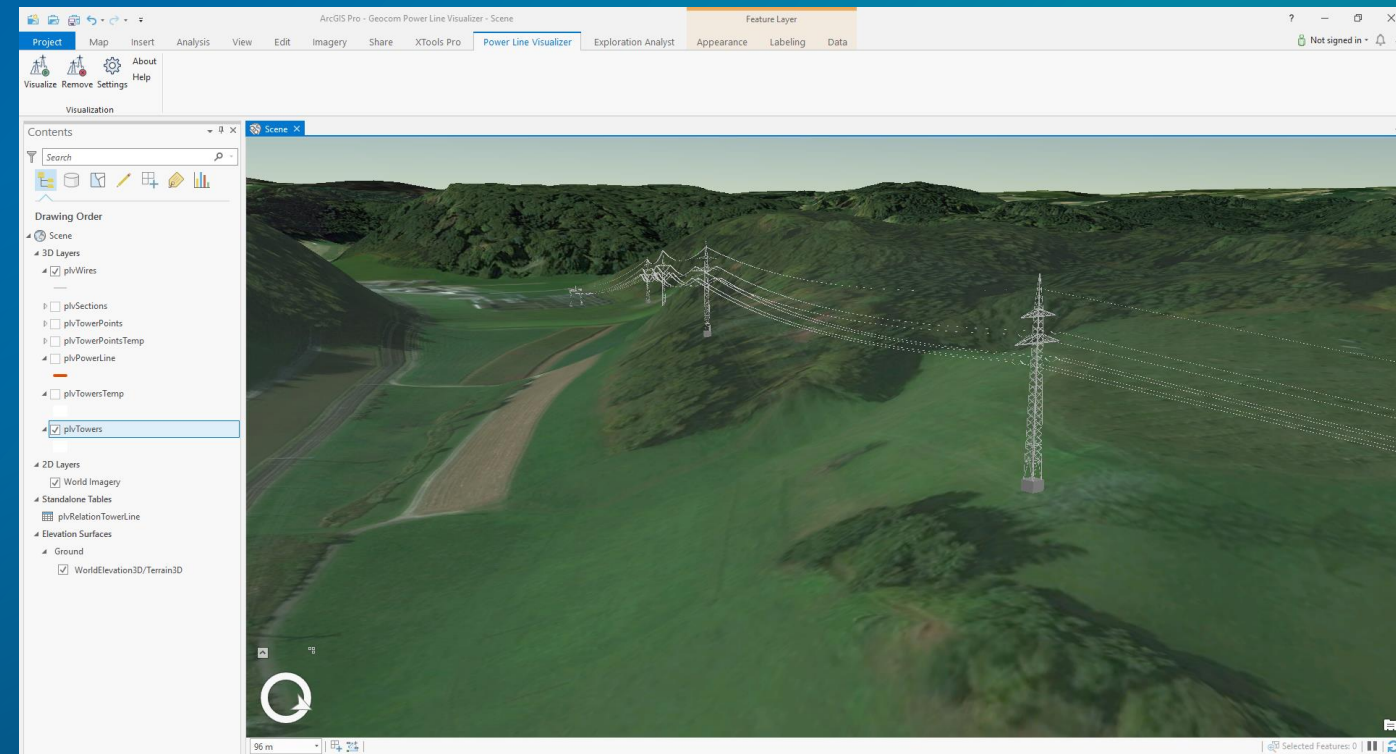


Power Line Visualizer

Extending Pro with tools for building
realistic 3D visualizations

Power Line Visualizer – Overview

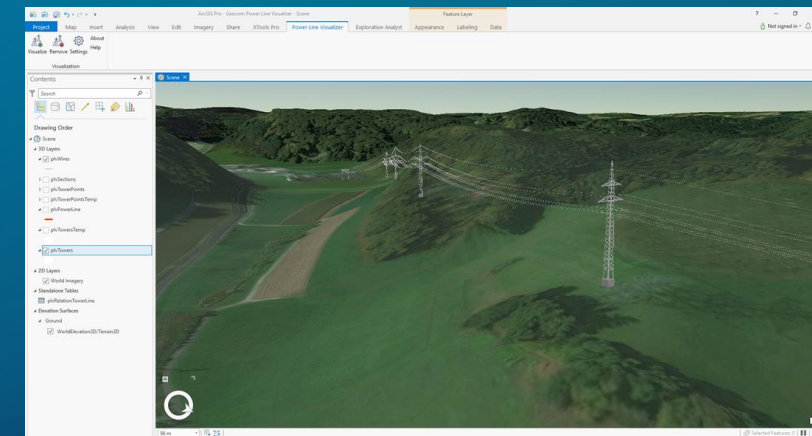
- Developed by: Geocom Informatik AG and vrbn AG, Esri Partners
- Released: Q4 2018
- Audience: Electric Transmission
- Focus area: 3D, Map Exploration



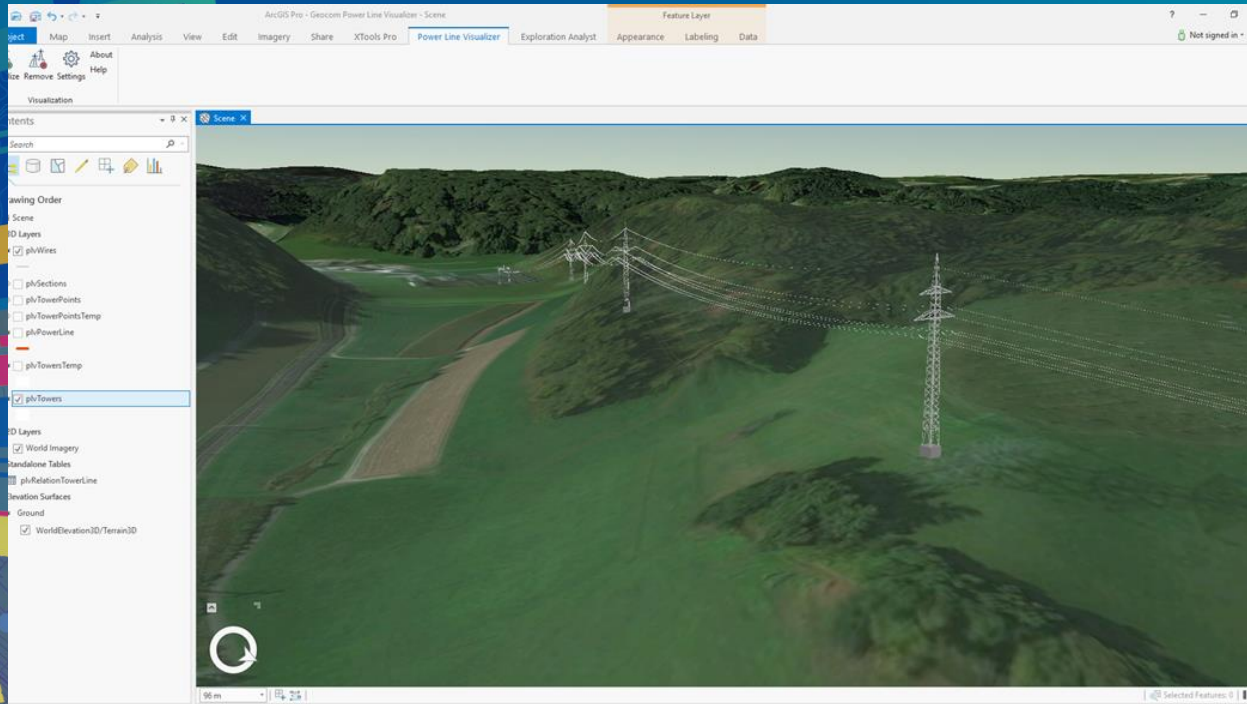
Power Line Visualizer – Overview



- **Emphasis:**
 - Provides custom tools and an easy-to-use workflow to quickly generate a 3D visualization of a planned transmission power line
- **How does it extend Pro:**
 - Automates the creating / removing of 3D representations of transmission features
 - Utilizes Esri CityEngine Rule Packages (RPKs) to render 3D towers and lines
 - Provides settings to control the visualization aspects of the 3D features



Demo: Power Line Visualizer





Power Line Visualizer – Extensibility Aspects

- Using the SDK and APIs:
 - Fast generation and removal of 3D renderings
 - Settings dockpane to select and save specified layers used in the workflow
 - Main Pro APIs used:
 - **Map Authoring** – rendering of layer symbology with CityEngine rule package
 - Sample – Symbol Layer with Rule Packages
 - Editing – Creating new features in layers
 - Framework – Toast notifications, custom tab and buttons, settings dockpane
 - Geodatabase – Working with feature classes and selections

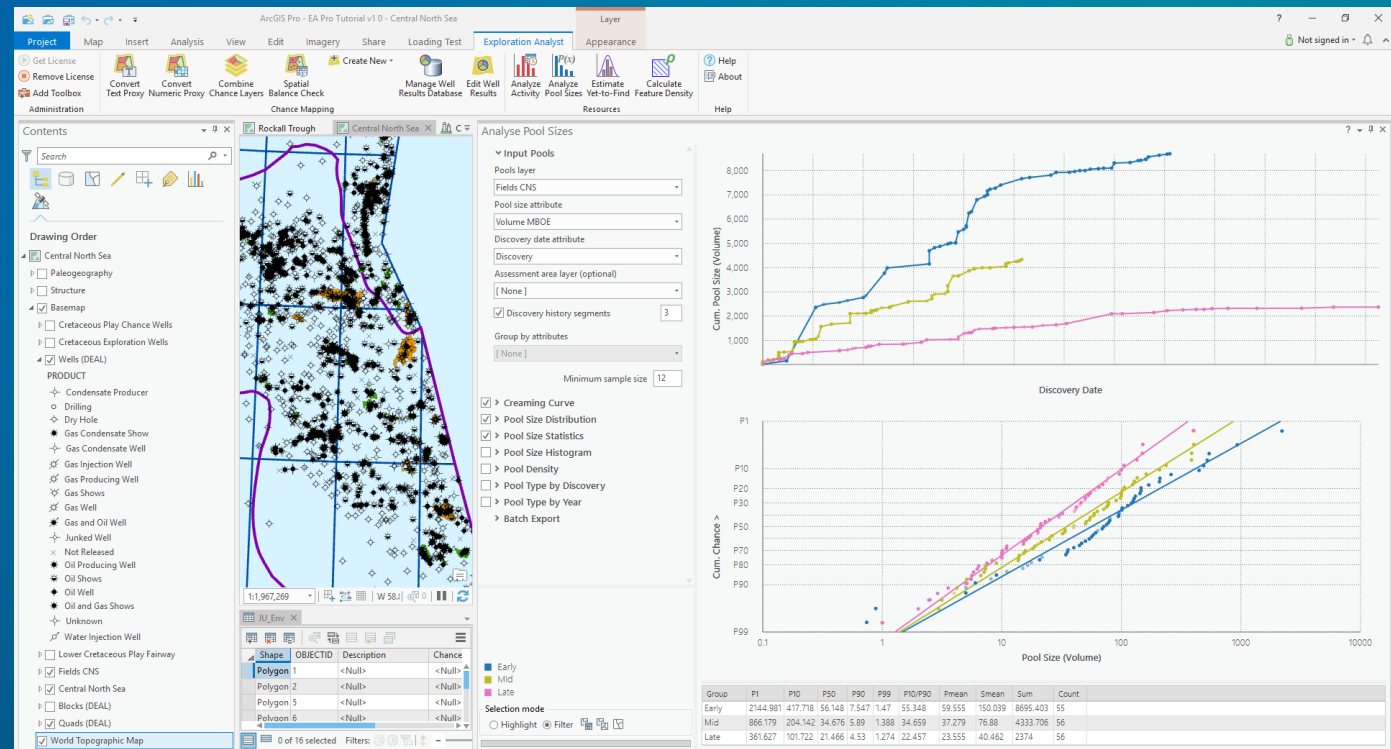


Exploration Analyst

Extending Pro with advanced spatial
analysis tools

Exploration Analyst – Overview

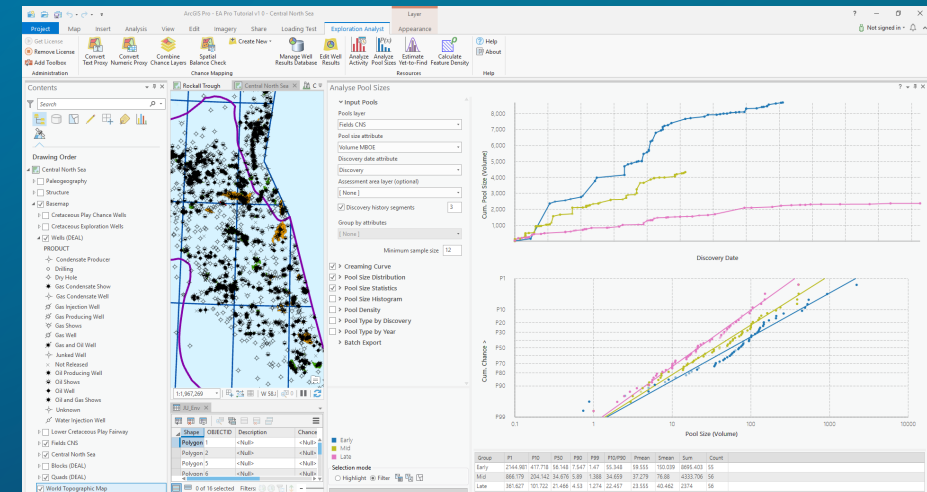
- Developed by: Exprodat, Esri Partner
- Released: Q4 2018
- Audience: Natural Resources / Petroleum
- Focus area: Spatial analysis



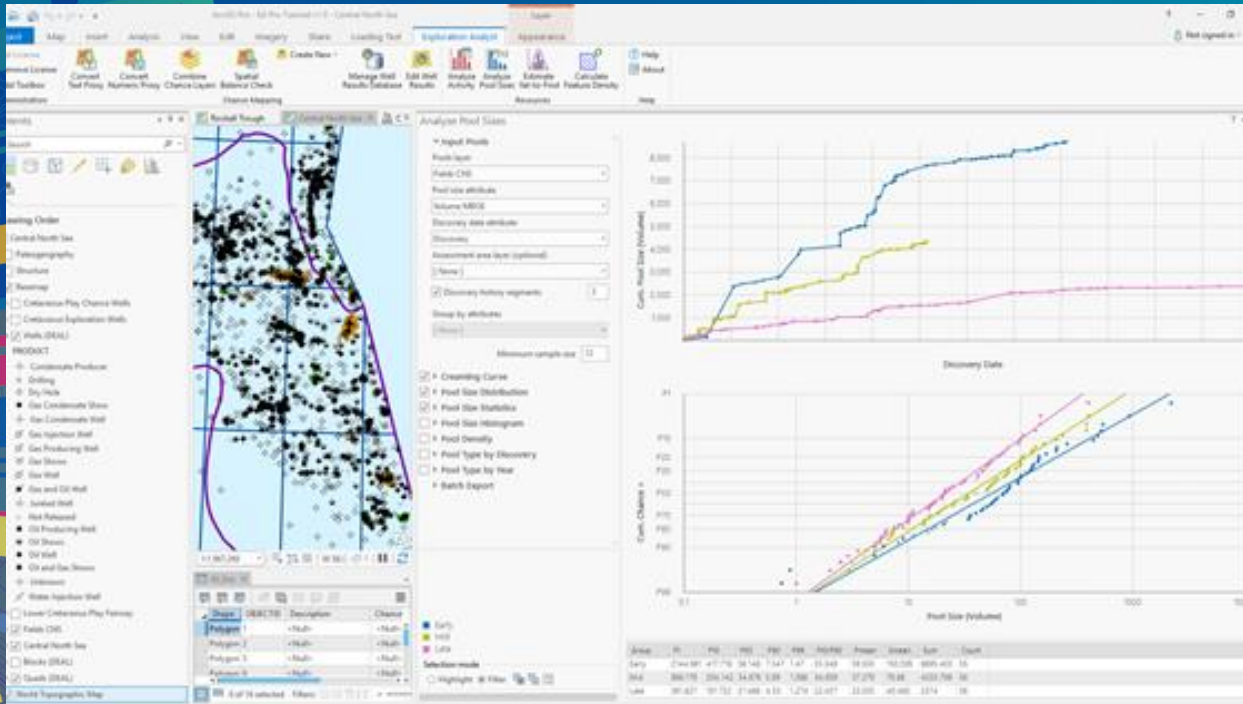
Exploration Analyst – Overview



- **Emphasis:**
 - Makes it easy for exploration geologists and geoscientists to spatially perform petroleum play chance analysis and resource assessment
- **How does it extend Pro:**
 - Integrates a set of petroleum basin exploration tools via dockpanes
 - Defines a clear workflow on the UI using data management and analysis tools
 - Integrates third-party graphing capability



Demo: Exploration Analyst



Exploration Analyst – Extensibility Aspects

- Using the SDK and APIs:
 - Extensive use of Pro dockpanes using different WPF controls
 - Integration of third party graphing capabilities for data analysis
 - Main Pro APIs used:
 - **Framework** – Defining UI elements on a new ribbon tab
 - Integration on Dockpanes
 - Framework Samples
 - Editing – updating layers, managing and editing attribute values
 - Geodatabase – managing layers, attribute and spatial filters and queries
 - Geoprocessing – create layers and schema, data processing
 - Map Authoring – rendering of layer symbology

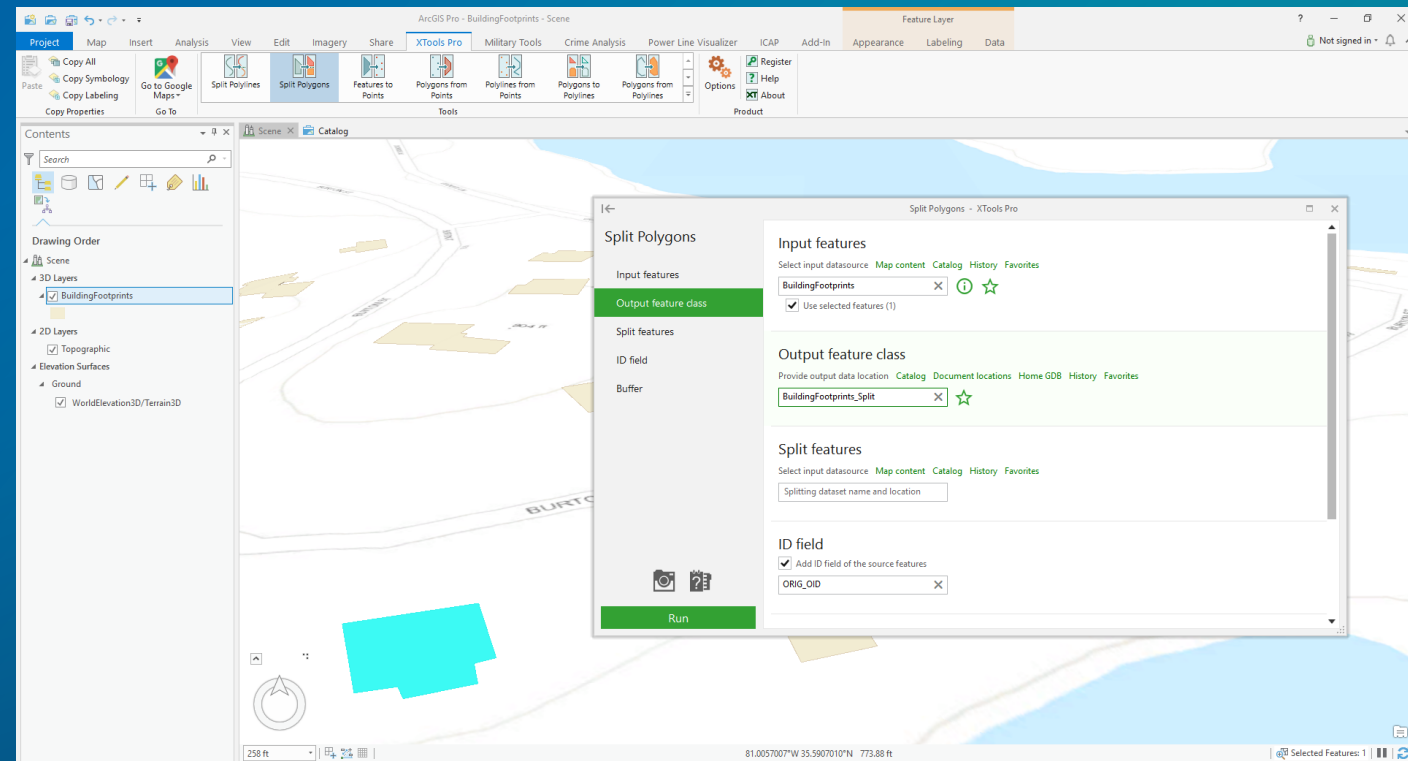


XTools Pro

Extending Pro with tools for
efficiency and data management

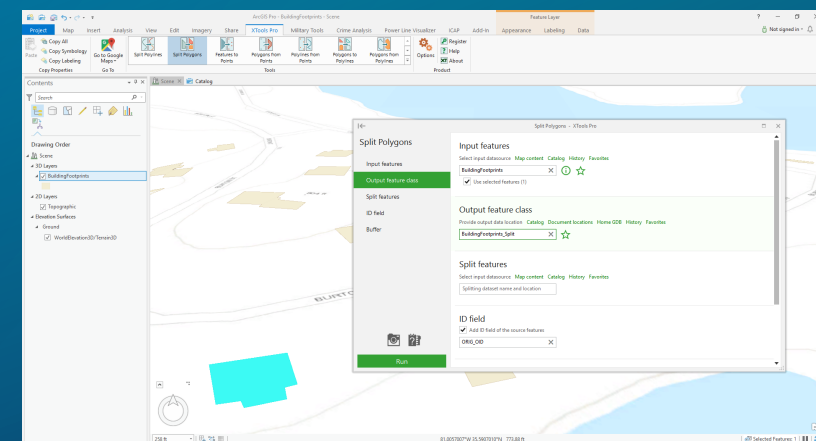
XTools Pro for ArcGIS Pro – Overview

- Developed by: Data East / XTools, LLC, Esri Partner
- Released: Q2 2016
- Audience: General, Power Users
- Focus area: Data management

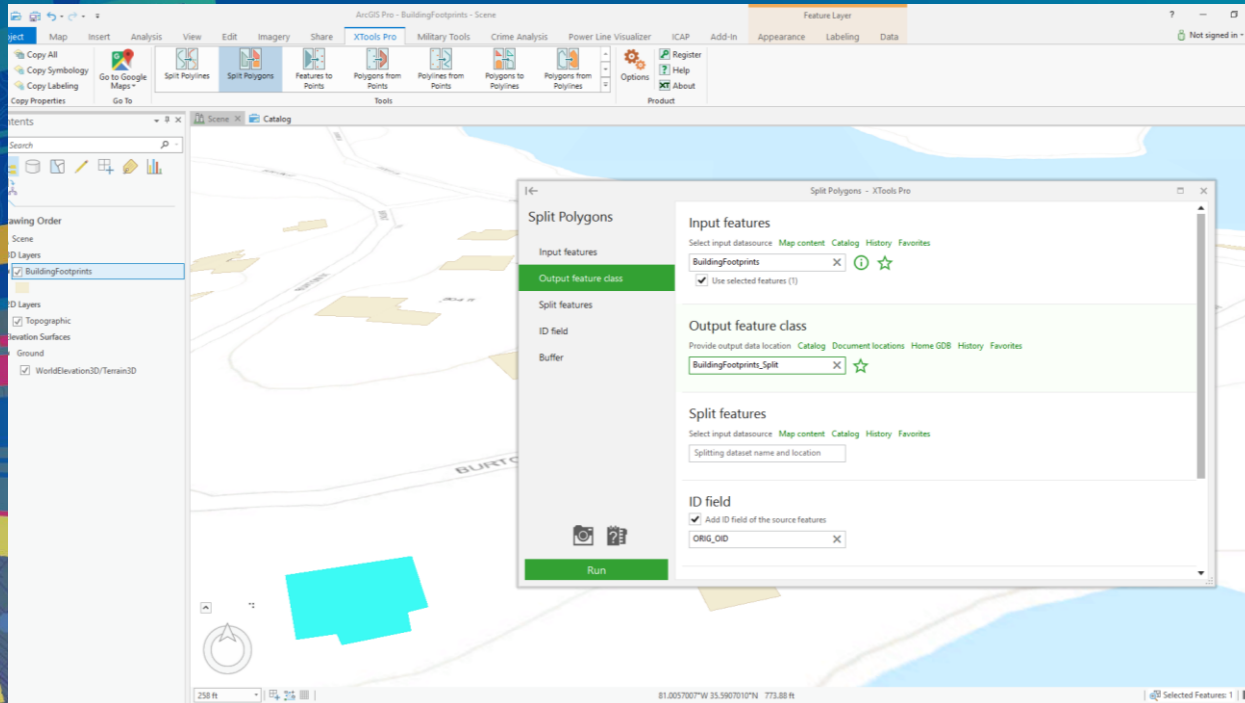


XTools Pro for ArcGIS Pro – Overview

- **Emphasis:**
 - Provides a suite of data management and efficiency tools to make common Pro tasks quicker and easier to perform
- **How does it extend Pro:**
 - Provides a well-organized tab for tools
 - Each data management tool has an easy-to-use pane format which guides the user
 - Tools for many operation types – geometry, conversion, analysis, import, export
 - Tools for data copying and Go To viewing functions



Demo: XTools Pro for ArcGIS Pro



XTools Pro for ArcGIS Pro – Extensibility Aspects

- Using the SDK and APIs:
 - Extensive set of tools organized on a custom tab, use of gallery control
 - Use of states and conditions for copy tools on ribbon
 - Main Pro APIs used:
 - **Editing** – Data management, attribute updates, extensive edit operations
 - Editing Snippets
 - Gallery Sample
 - Geodatabase – Work with feature classes, queries and selections
 - Geometry – Building new features, converting features, alignment
 - Map Exploration – map views, scale, properties

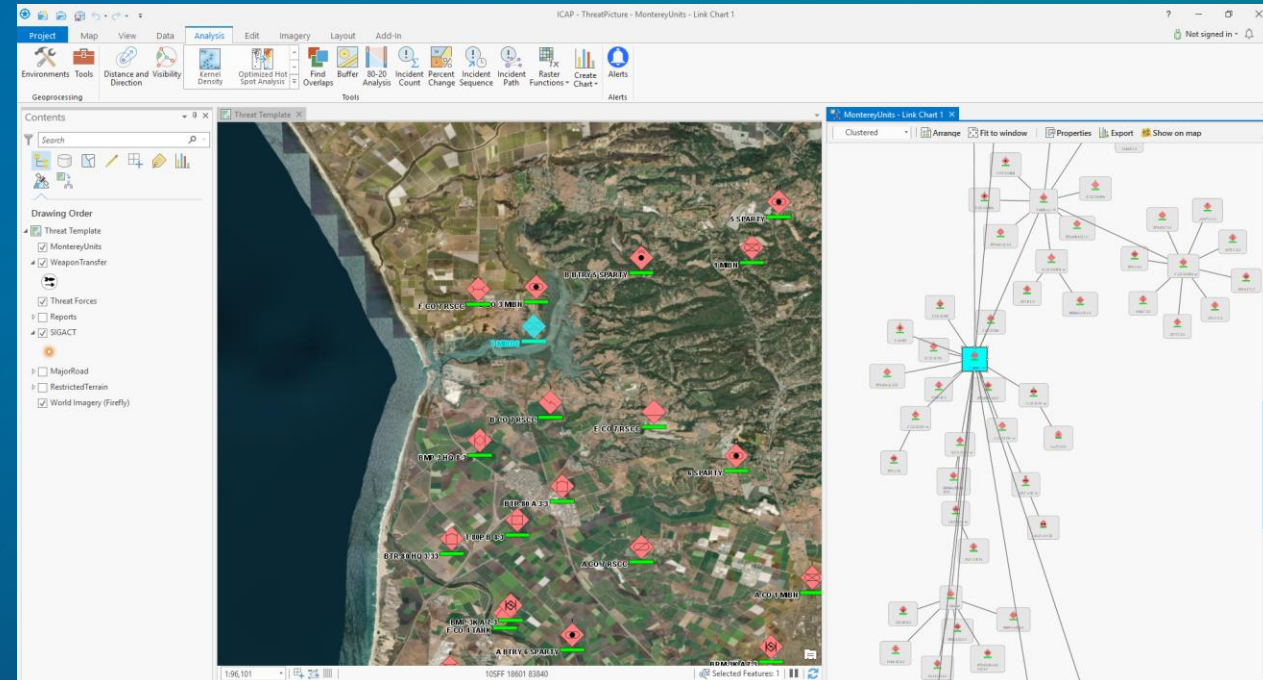


Intelligence Configuration for ArcGIS Pro (ICAP)

Streamlining workflows for
Intelligence Analysts

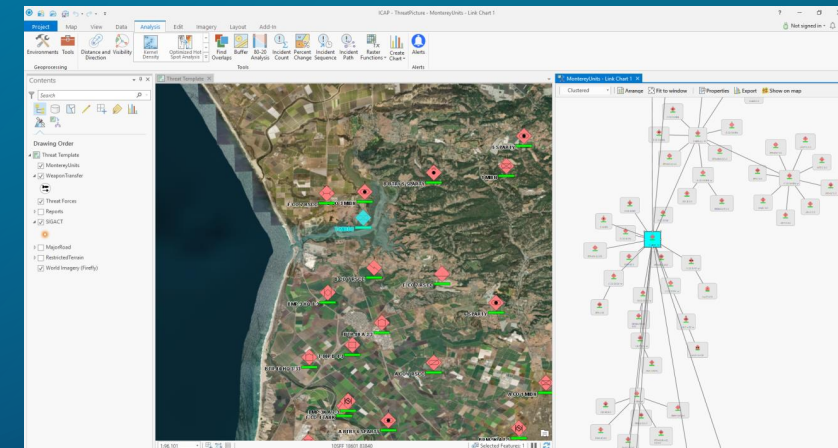
Intelligence Configuration for ArcGIS Pro (ICAP) – Overview

- Developed by: Esri Defense Solutions Team
- Released: Q3 2018
- Audience: Intelligence, Defense
- Focus area: Analysis, Data management



Intelligence Configuration for ArcGIS Pro (ICAP) – Overview

- Emphasis:
 - Provides focused tools to explore, analyze and visualize intelligence data
- How does it extend Pro:
 - Leverages the solution configuration pattern with custom start-up UI
 - Streamlines existing and new tools for intelligence workflows
 - Spatial queries can be saved as conditions with associated alert notifications
 - Link charts capability for visualizing and managing relationships



ICAP – Extensibility Aspects

- Using the SDK and APIs:
 - Uses Configuration pattern / template to create a focused solution
 - Main Pro APIs used:
 - **Configurations** – ConfigurationManager with start-up and UI
 - ProGuide Configurations
 - ConfigWithMap and ConfigWithStartWizard sample configurations
 - Editing – Data management tools, templates
 - Map Authoring – use of custom symbol dictionaries
 - Map Exploration – Visibility pane, Line of sight tools



Pro SDK Resources

Pro SDK Resources

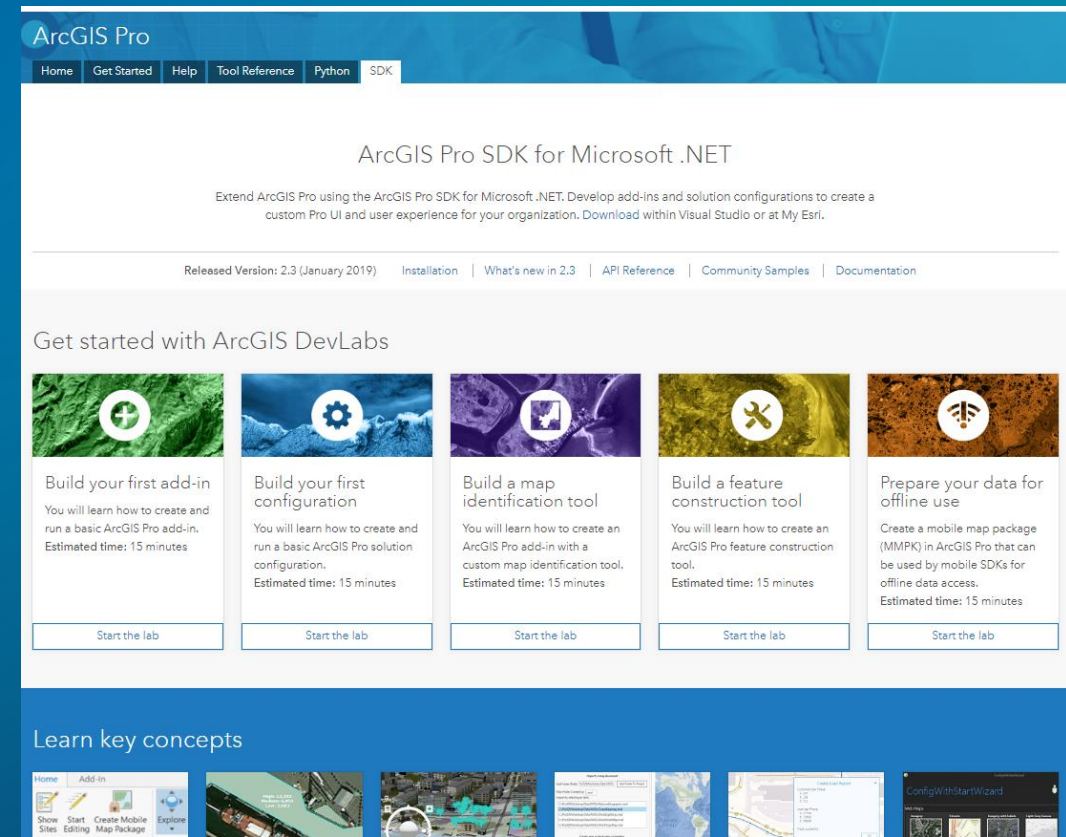
- Landing Page – main resource page

Go to **pro.arcgis.com** and click on “SDK” tab

<https://pro.arcgis.com/en/pro-app/sdk/>

- Links to:

- API Reference, Samples and Documentation
- ArcGIS DevLabs
- Key ProConcept documents
- Pro SDK Group on GeoNet
- Tech session video recordings
- Blog posts



Pro SDK Resources

- **Documentation Wiki** – primary documentation site

- <https://github.com/esri/arcgis-pro-sdk/wiki>

- Documentation for all Pro patterns and APIs

- ProConcepts
 - ProGuides
 - ProSnippets
 - Other resources documents

The screenshot displays the ArcGIS Pro SDK Wiki interface. At the top, the repository name 'ArcGIS / arcgis-pro-sdk' is shown with a 'Private' label and an 'Unwatch' button. Navigation tabs include 'Code', 'Issues (2)', 'Pull requests (1)', 'Projects (0)', 'Wiki' (selected), and 'Insights'. The main content area is divided into three sections:

- ProSnippets Editing**: Edited by 'arcgisprosdkt' 6 days ago, 932 revisions. It shows a metadata table with 'Language: C#' and 'Subject: Editing'.
- ProGuide Configurations**: Edited by 'Uma Harano' on Jan 24, 4 revisions. It shows a metadata table with 'Language: C# and Visual Basic', 'Subject: Framework', and 'Contributor: ArcGIS Pro SDK Team <arcgisprosdkt@esri.com>'.
- ProConcepts Layouts**: Edited by 'Uma Harano' on Jan 25, 10 revisions. It contains a paragraph about the 'ArcGIS.Desktop.Layouts' assembly and a list of DLLs: 'ArcGIS.Desktop.Core.dll' and 'ArcGIS.Desktop.Layouts.dll'. Below this is a metadata table with 'Language: C# and Visual Basic', 'Subject: Layouts', and other details. An 'In this topic' section follows, listing various classes and their methods, such as 'Layout class' (Reference an existing layout, Create a new layout), 'Layout elements' (Reference an existing element, Create a new element, Group elements, Ordering elements), 'CIM elements', and 'LayoutView class' (Activate an existing view, Open a new view, Element selection and navigation).

Home

- Samples
- ProSnippets

Developing with ArcGIS Pro

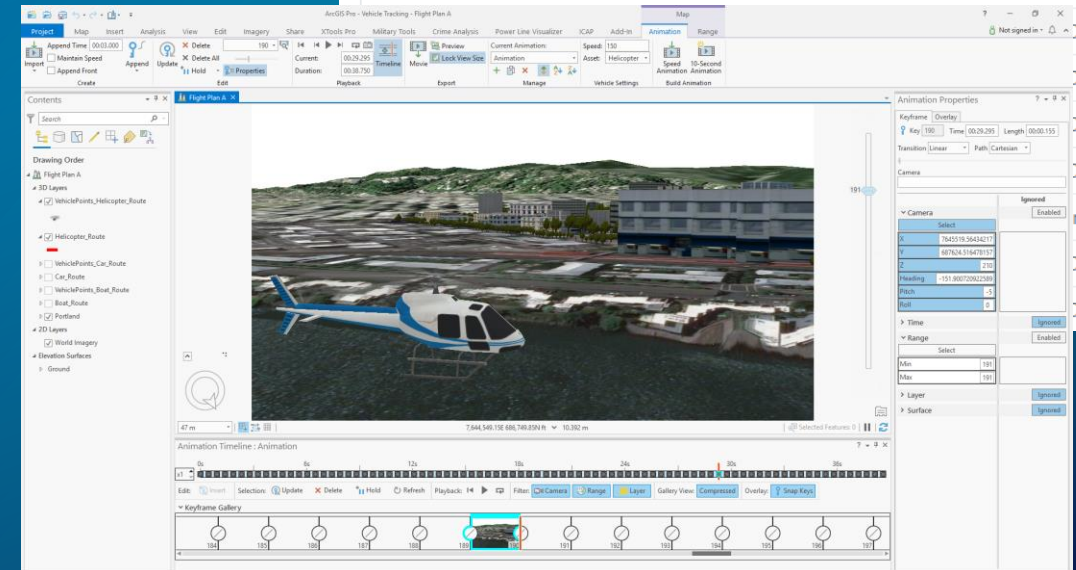
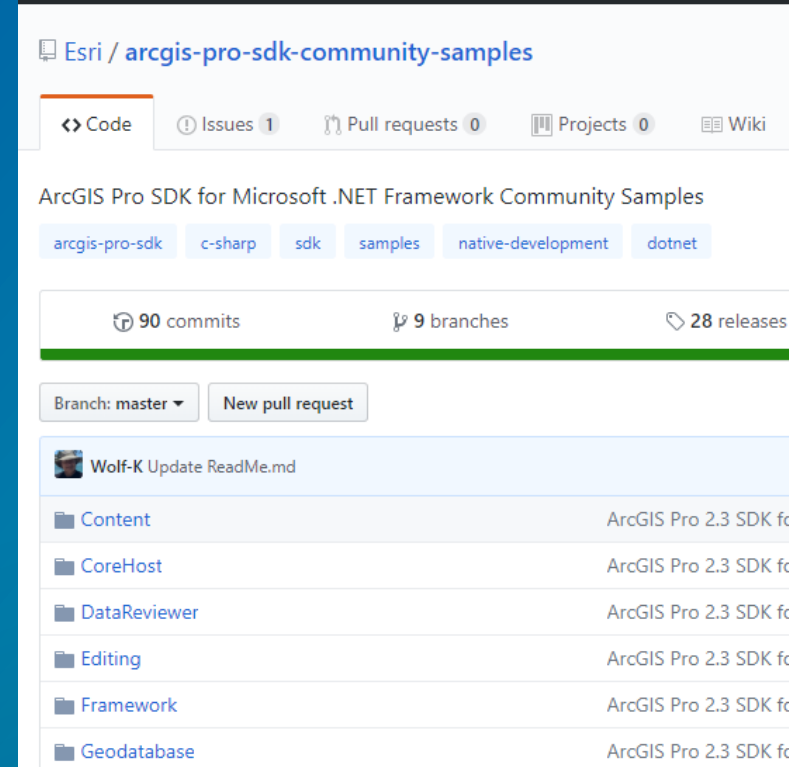
- Requirements
- Installing ArcGIS Pro SDK for .NET
- Getting started
- ProGuide: ArcGIS Pro Extensions NuGet
- ProConcepts: Migrating to ArcGIS Pro
- ProSnippets
- ArcGIS Pro API
- Release notes
- Resources

Framework

- ProSnippets: Framework
- ProSnippets: DAML
- ProConcepts: Framework
- ProConcepts: Advanced topics
- ProGuide: Custom settings
- ProGuide: Command line switches for ArcGISPro.exe
- ProGuide: Reusing ArcGIS Pro Commands
- ProGuide: Licensing

Pro SDK Resources

- **Community Samples** – Visual Studio code samples site
 - <https://github.com/esri/arcgis-pro-sdk-community-samples>
- Samples for all Pro patterns and APIs
 - Full Visual Studio solutions for all Pro API Areas
 - Sample data available
 - Code is free to use in your own projects
 - Updated for each release



Pro SDK Resources

- **ArcGIS Pro SDK Group on GeoNet** – Developer Community Site

- <https://community.esri.com/groups/arcgis-pro-sdk>

- Participate in the Community

- Collaborate with other developers and Esri staff
 - Ask questions and search on threads
 - Provide your feedback on the SDK
 - Get product updates


- Ask a question
- Start a discussion
- Write a document
- Upload a file
- Write a blog post
- Create a poll
- Create a project
- Create a status update
- Create by email
- Invite people to join this group
- Group feeds
- Create a video
- Create an event

Ask ArcGIS Pro SDK

Type your question

Ask it

Welcome!



This is an open group to ask and answer questions about the ArcGIS Pro SDK.

Owned by: Lhynes-esristaff

Tags: arcgis pro, .net sdk, arcgis pro sdk

Group Type: Open


Created: Jun 16, 2015


Related Groups

No similar groups found

Recent Activity

Filter


 krank42 in ArcGIS Pro SDK 3 days ago Show more

 ArcGIS Pro notifications

Hi there, with SDK for ArcGIS Pro 2.1 notifications are available for ArcGIS Pro. I found this in the ArcGIS Pro help ArcGIS Pro notifications—ArcGIS Pro | ArcGIS Desktop At the ProSnippets Framework - Esri/arcgis-pro-sdk Wiki · GitHub I found how to Add a toast notification Is it possible to create a blue dot if notifications are...


Like (0)


2 replies Show more activity

 krank42 (to krank42) 58 minutes ago Show more

Hi there, thank you. This is what I searched. Thanks Karsten

Like (0)


 EternalDOOM in ArcGIS Pro SDK 9 hours ago Show more

 UI-Buttons shortly greyed out during GPS-Tracking




Hi Everybody, I've a new question regarding a new Add-In I'm writing. It's still for ArcGIS Pro 1.4 and SDK version 1.3.0.5861 because it extends another system on that state. Basically it monitors a local GPS device via serial port and shows the data in different ways. Everything works as desired at the moment but I'm experiencing the...

Like (0)


1 reply Show more activity

 wkaiser-esristaff (to EternalDOOM) 3 hours ago Show more

I didn't try your sample, however. Buttons on the ArcGIS Pro ribbon are usually tied to a 'Condition' (which in turn is tied to a State in ArcGIS Pro). You can read more about that here: <https://github.com/Esri/arcgis-pro-sdk/wiki/ProGuide-Buttons>. You can try to override your GPS button's condition by addition the following attribute to your...

   0

Actions

 Group feeds

RSS Subscription

Feb 8, 2018
ArcGIS Pro 2.0 | How to convert label to annotation for selected features only?

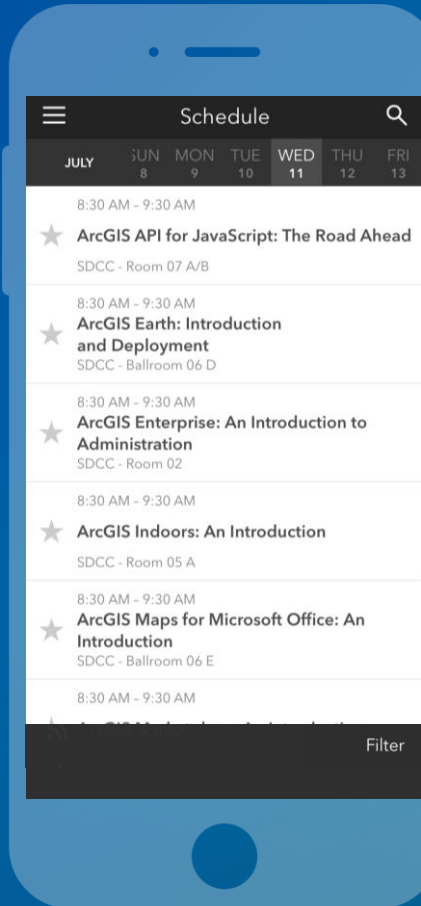
Feb 6, 2018
Leader control

Please Take Our Survey on the App

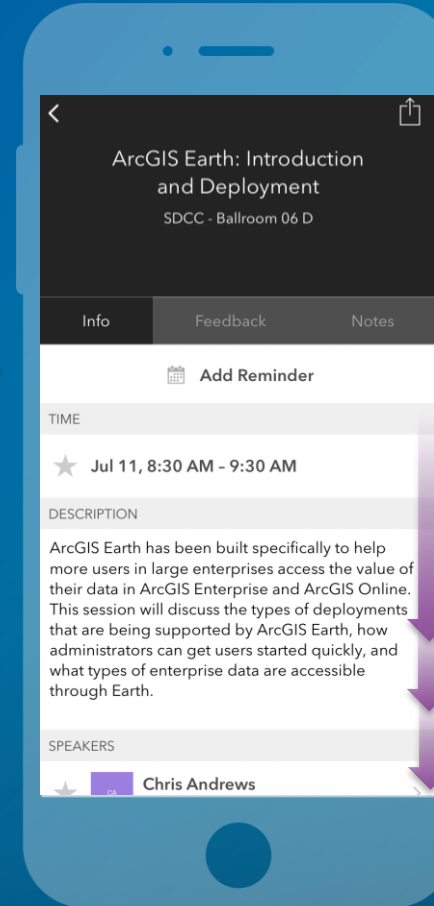
Download the Esri Events app and find your event



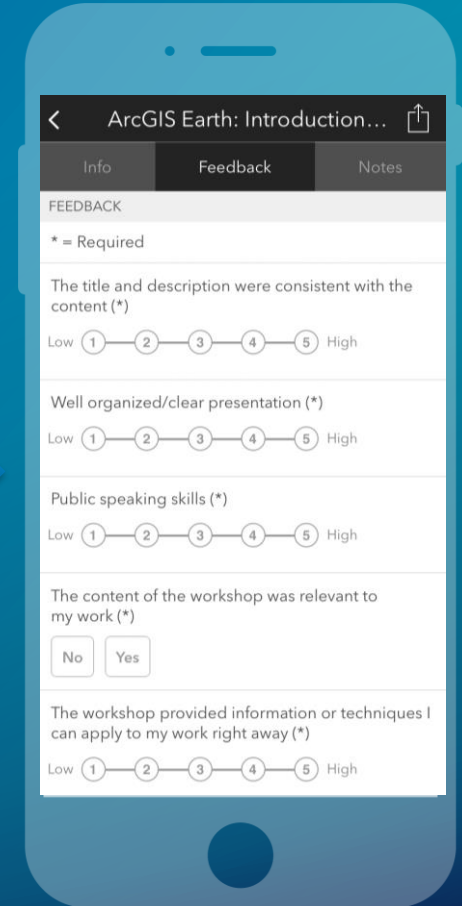
Select the session you attended



Scroll down to find the feedback section



Complete answers and select "Submit"





Question & Answer

Thank you!



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SCIENCE
OF
WHERE