ArcGIS Pro SDK for .NET: Approaches for Pro Extensibility

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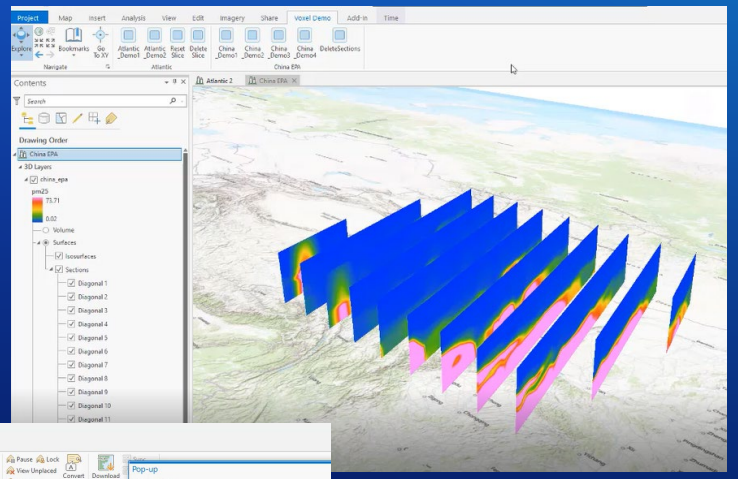
2021 ESRI
DEVELOPER SUMMIT

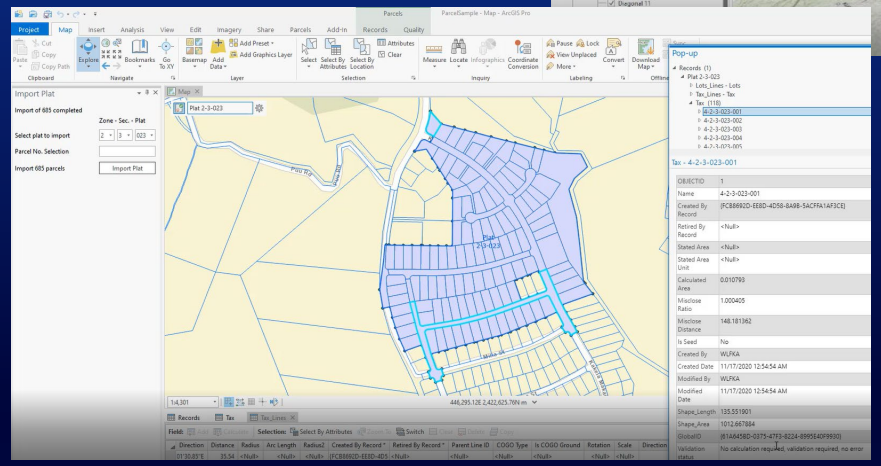
Session Overview

- Pro SDK and approaches for your work
- Pro Extensibility Patterns
- Pro APIs
- Resources

Voxel Layers API



Parcel Fabric API

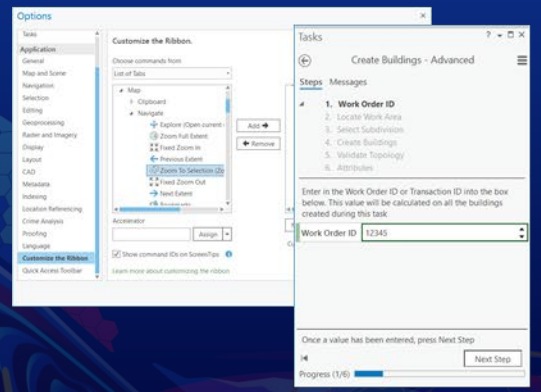


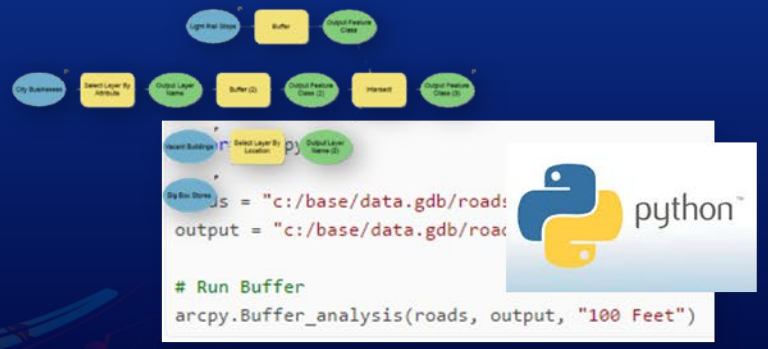
Extending ArcGIS Pro

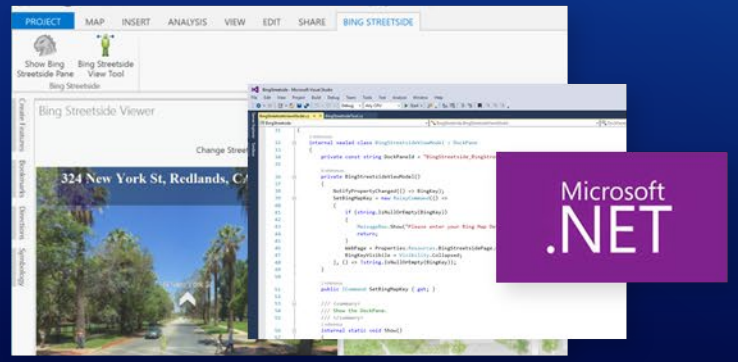
Extending ArcGIS Pro

Options:

- Configure UI through settings, and workflows through Tasks
- Automate using geoprocessing and Python
- Extend with your own custom tools and solutions using the ArcGIS Pro SDK for .NET







User Perspectives

- Many GIS development backgrounds
  - Microsoft .NET
  - ArcObjects SDK
  - New to ArcGIS Pro
  - New to ArcGIS entirely

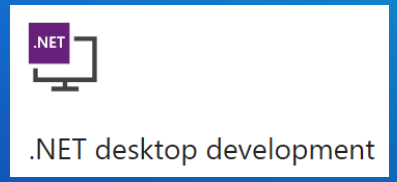
.NET desktop development

Pro SDK Community Sample in C#

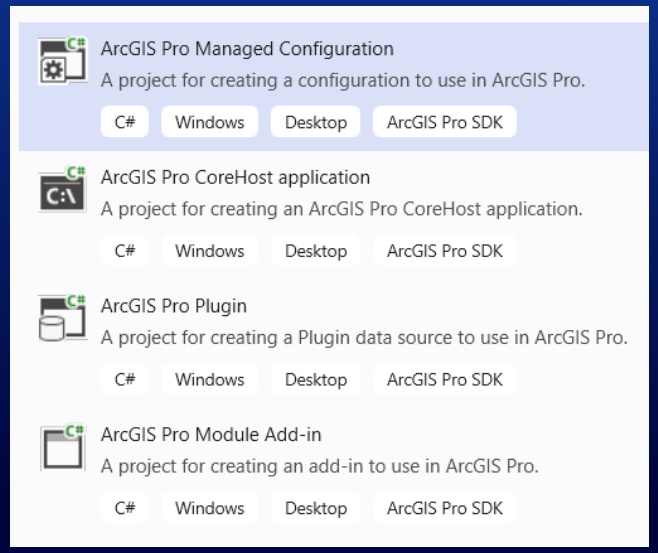
```
return Queued Task.Run(() =>
{
    var selectedElements = Module1.Current.SelectedGraphicsLayerTOC.GetSelectedElements().
                                OfType<GraphicElement>();

    //If only one element is selected, is it of type Point?
    if (selectedElements.Count() == 1)
    {
        if (selectedElements.FirstOrDefault().GetGraphic() is CIMPointGraphic) //It is a Point
        {
            //So we use it
            var polySymbol = selectedElements.FirstOrDefault().GetGraphic() as CIMPointGraphic;
            _pointSymbol = polySymbol.Symbol.Symbol as CIMPointSymbol;
        }
    }
    var cimGraphicElement = new CIMPointGraphic
    {
        Location = geometry as MapPoint,
        Symbol = _pointSymbol.MakeSymbolReference()
    };
    Module1.Current.SelectedGraphicsLayerTOC.AddElement(cimGraphicElement);

    //  Add a text label graphic next to the point graphic:
    if (selectedElements.Count() == 1)
    {
        if (selectedElements.FirstOrDefault().GetGraphic() is CIMTextGraphic) //It is a Text
        {
            var textSymbol = selectedElements.FirstOrDefault().GetGraphic() as CIMTextGraphic;
            _textSymbol = textSymbol.Symbol.Symbol as CIMTextSymbol;
        }
```

ArcGIS Pro SDK for Microsoft .NET

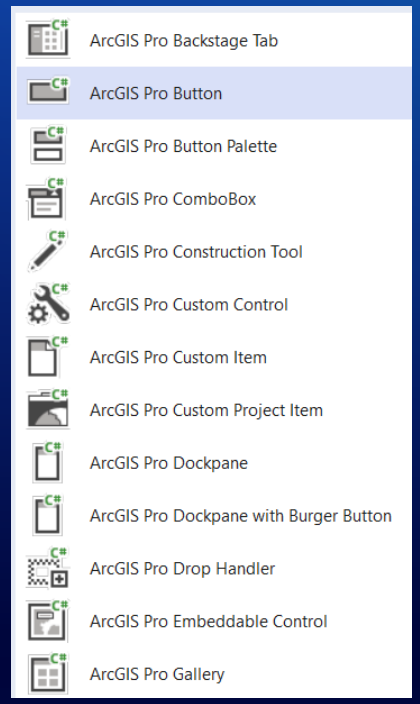
- Templates and tools for Visual Studio 2017 & 2019
- Access to the many Pro APIs – Editing, Layout, Map Exploration, etc.
- .NET Desktop Development – WPF, MVVM, Asynchronous programming, etc.
- Releases are in sync with Pro



Visual Studio
Project Templates



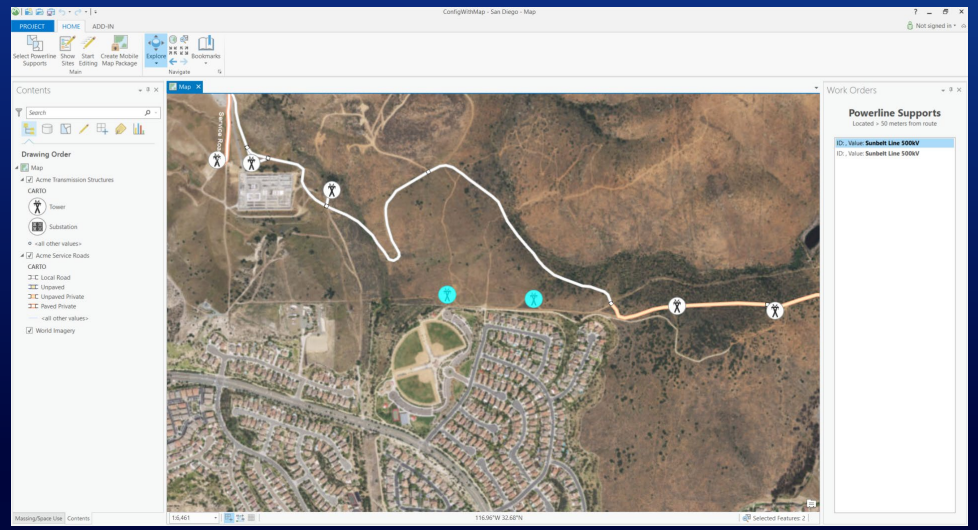
Item Templates



Extending ArcGIS Pro with the Pro SDK

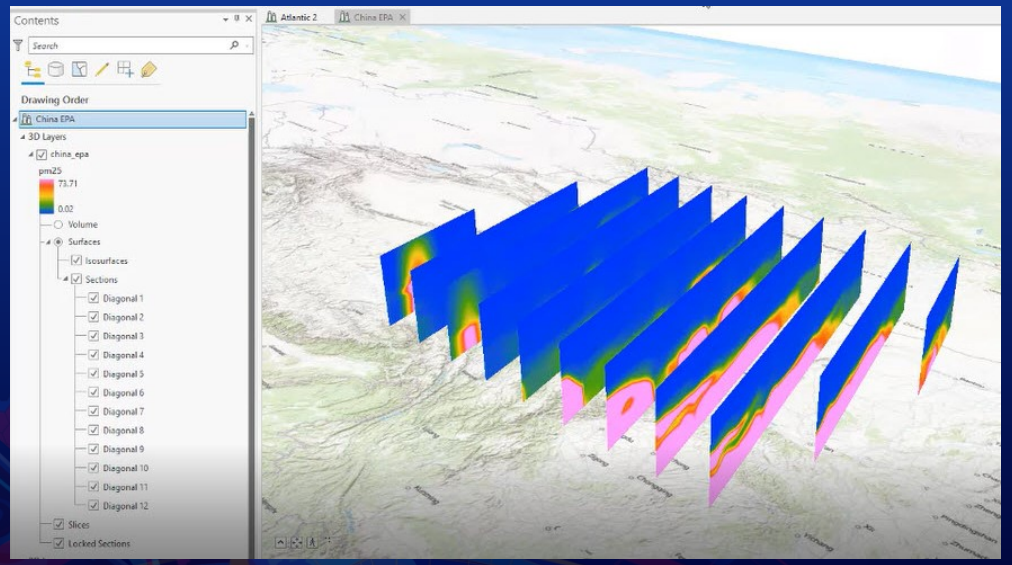
- Add new functionality to Pro
  - Create new tools and routines
  - Custom controls, panes, settings
- Streamline workflows
  - Focus on essential operations
  - Tailor the UI for your organization
  - Organize ribbon with new and existing tools
  - Reduce clicks, repetitive tasks and operations
  - Leverage your industry data
- Make Pro your own
  - Control the startup UI / UX
  - Custom branding

ConfigWithMap Configuration Sample

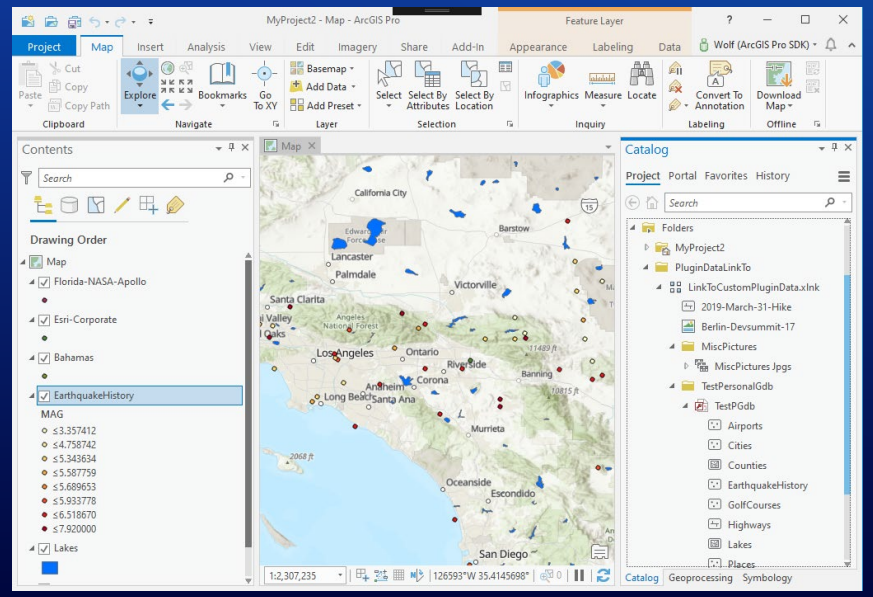


Extensibility Patterns

- **Add-Ins** – Develop new tools and functionality to extend Pro
- **Managed Configurations** – All Add-in capabilities + additional customization of Pro UI / UX
- **Plugin Datasources** – Custom data source integration with Pro
- **CoreHost Apps** – Standalone apps for 64-bit Geodatabase and Geometry access

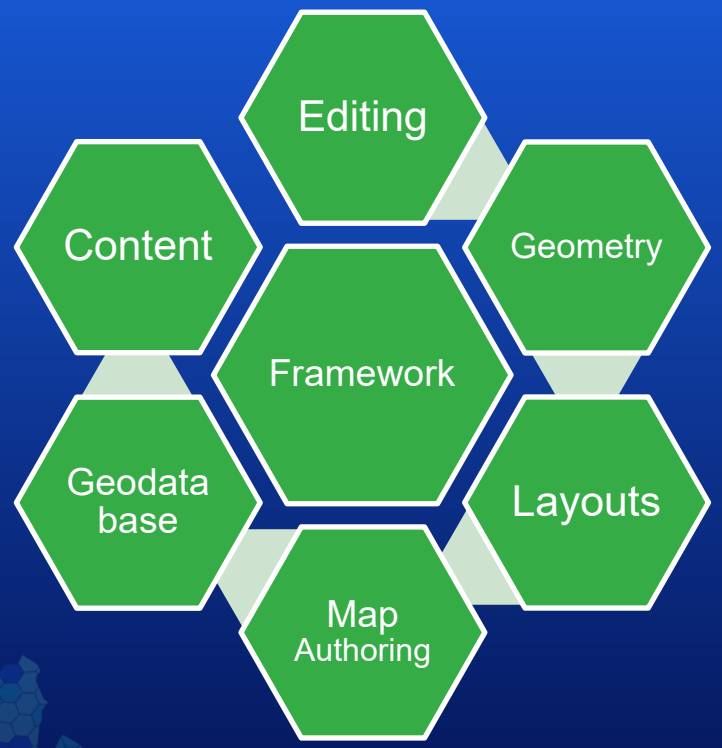


Voxel Layer Sample Add-In



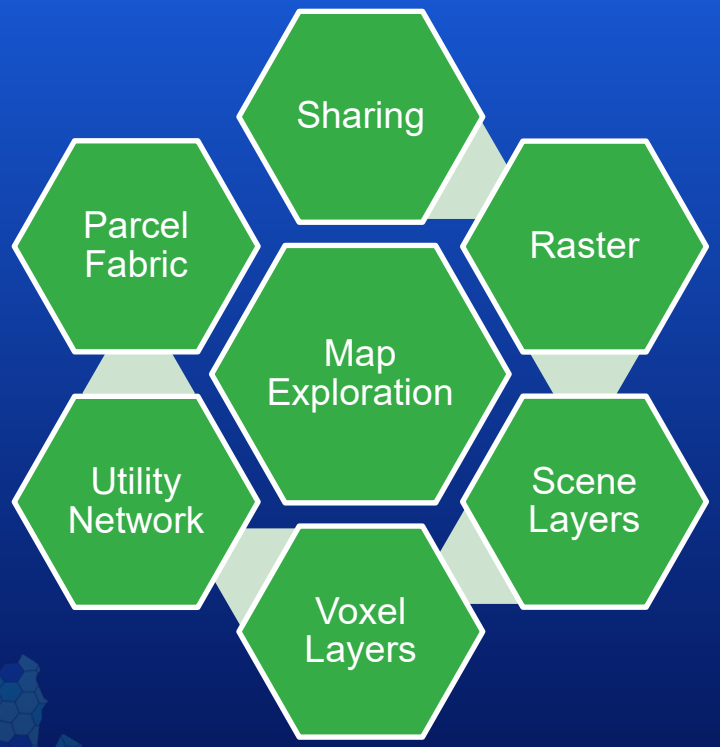
Plugin Datasource Sample

What's possible with the SDK?



- **Content** – manage Pro project items and connections to Portal to consume and integrate online data
- **Device Location** - manage GNSS device connections, visualize device positions and collect data
- **Editing** – develop powerful feature editing tools and create and manage 2D and 3D editing operations
- **Extensions** – work with Data Reviewer and Workflow Manager items
- **Framework** – customize and extend the Pro UI, add and remove controls from the ribbon
- **Geodatabase** – access file and enterprise datasets, manage queries, searches, selections and versions
- **Geometry** – build and manage feature geometries and perform spatial operations
- **Geoprocessing** – run geoprocessing tools and python scripts from add-in tools and routines
- **Layouts** – build custom layouts and elements, manage layout views and selections
- **Map Authoring** – author maps, manage layers, define and set layer renderers

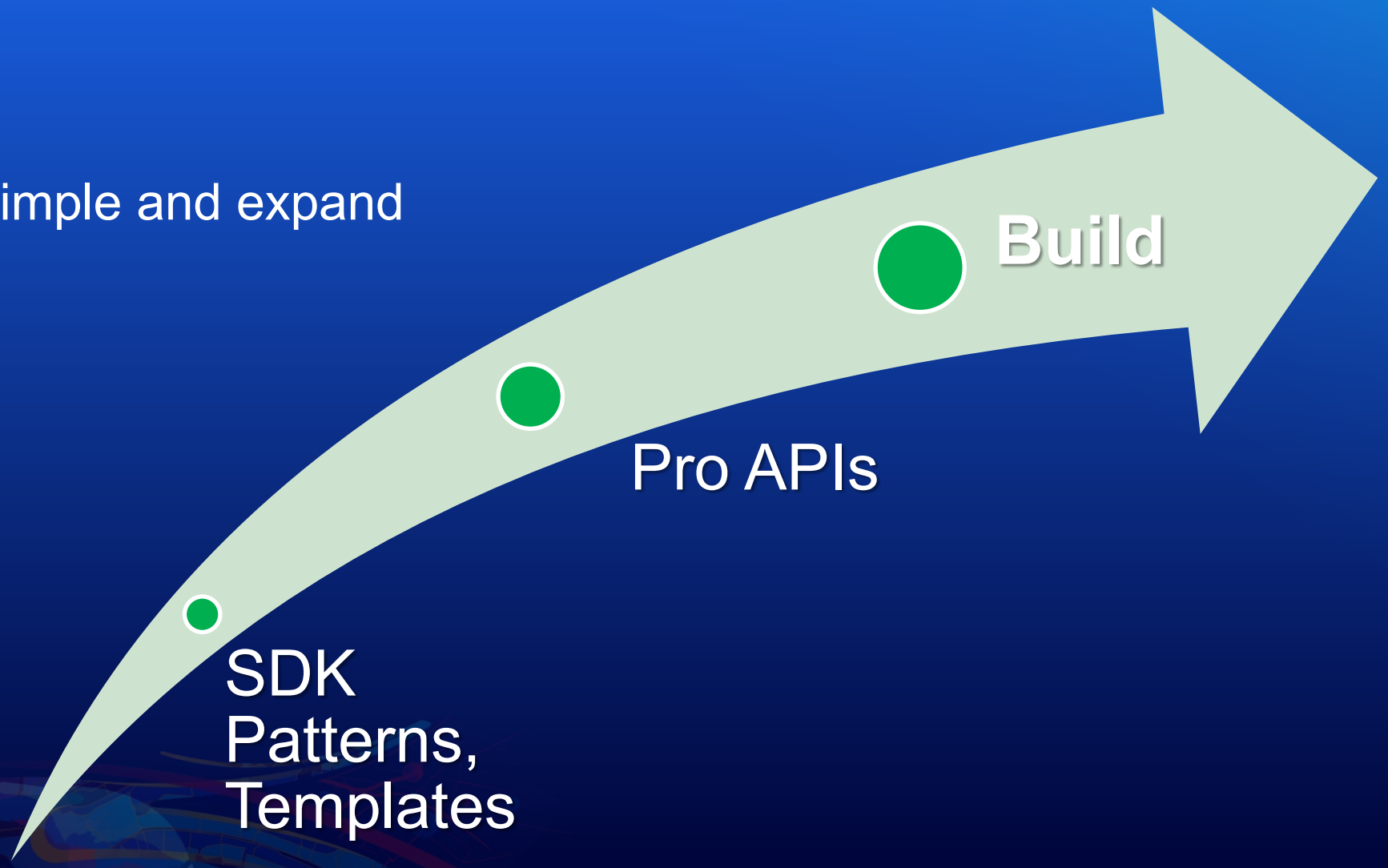
What’s possible with the SDK?



- **Map Exploration** – build and manage animations, control the camera and build new map tools
- **Metadata** – create custom metadata forms using the Metadata Toolkit
- **Parcel Fabric** - create editing tools, manage parcel seeds, types and records
- **Raster** – work with raster datasets, layers and colorizers
- **Real-time** – manage real-time stream layers, events and tracking data
- **Scene Layers** – manage scene layer content with selection and symbology
- **Sharing** – access and search content, folders, and groups of a portal or online organization
- **Tasks** – access and manage Tasks within the UI
- **Topology** – explore and manage topology rules, errors, validation and the topology graph
- **Utility Network** – create custom utility network tools, traces and workflows
- **Voxel Layers** – create and manage voxel layer slices, sections and isosurfaces, control voxel layer lighting and rendering

Approaching Pro Development

- Start simple and expand



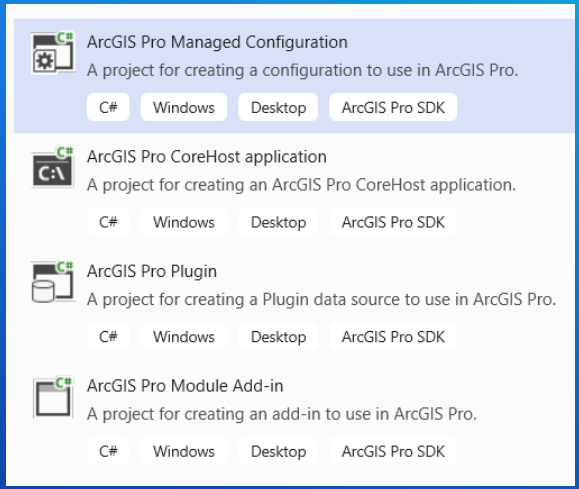
ArcGIS Pro

Extensibility Patterns

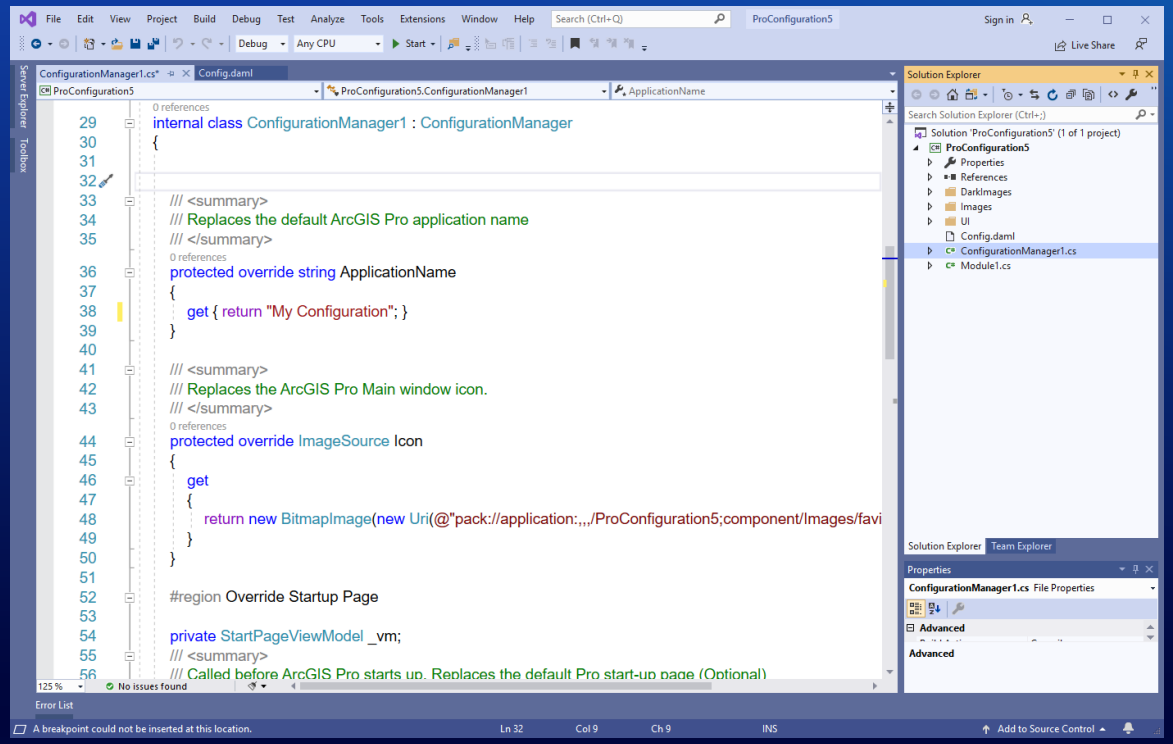
Patterns and Templates

- SDK Project Templates for Visual Studio
  - Basic framework for UI, module and classes
  - Basic file components

Pro SDK Templates



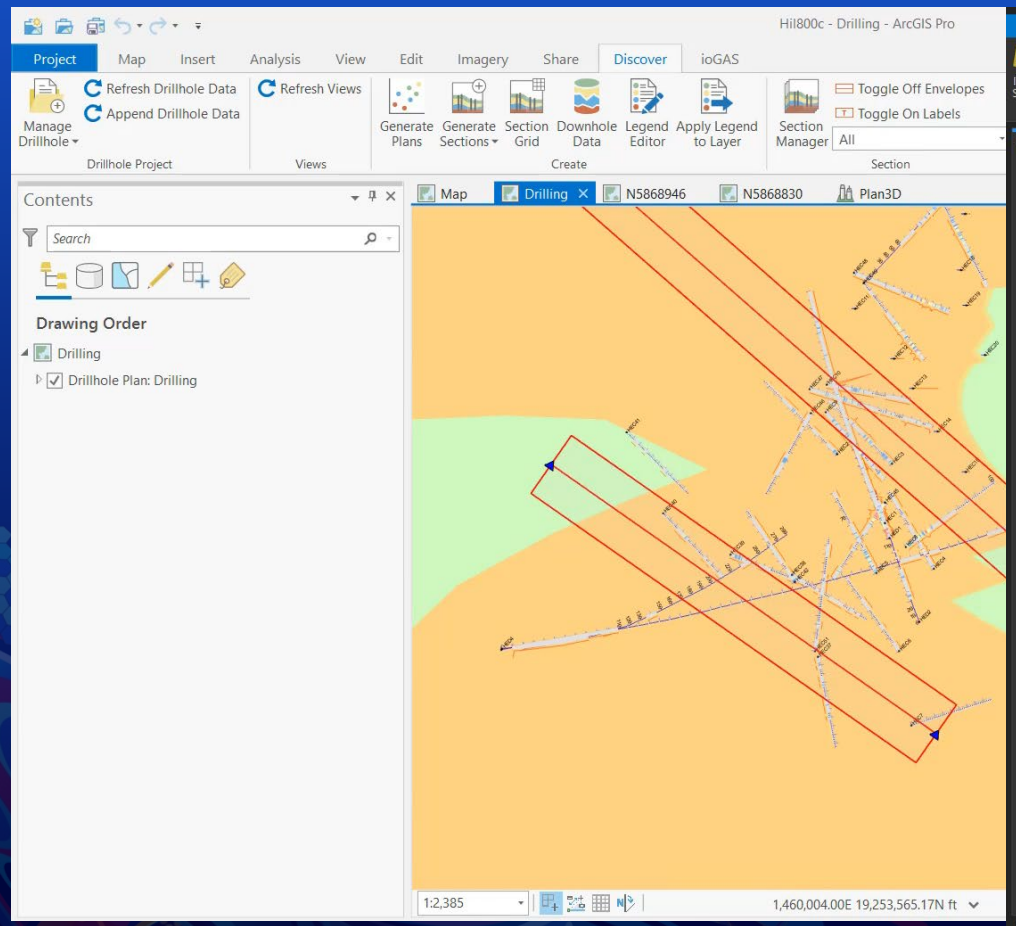
Configuration Template



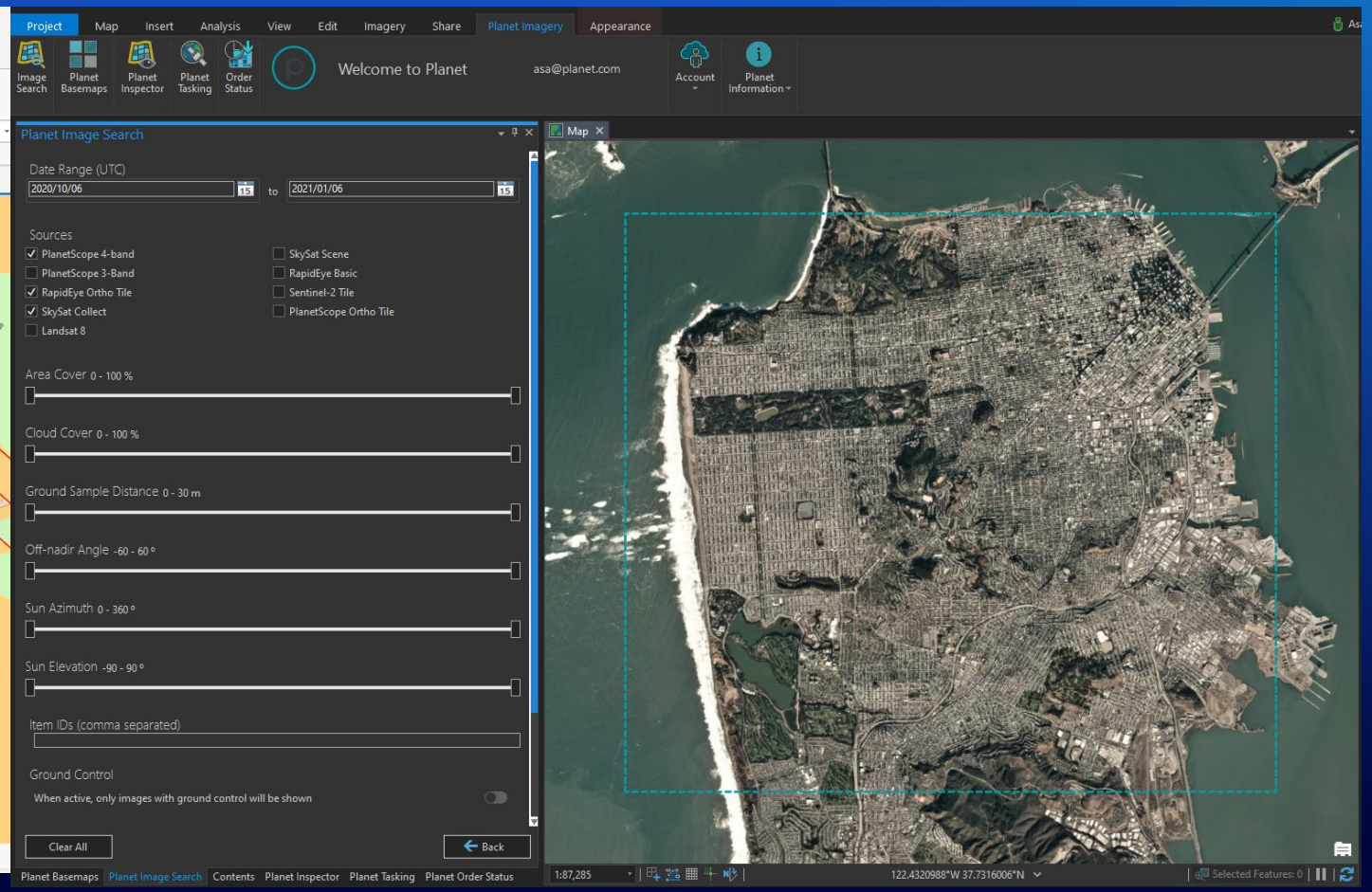
Pro SDK Extensibility Patterns

Add-Ins – Develop new tools and functionality to extend Pro

Datamine Discover for ArcGIS Pro



Planet ArcGIS Add-In V2

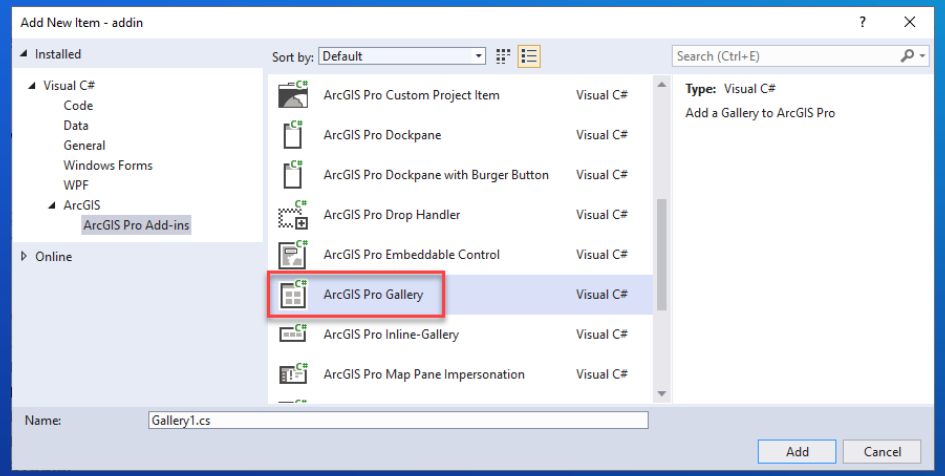


Item Templates

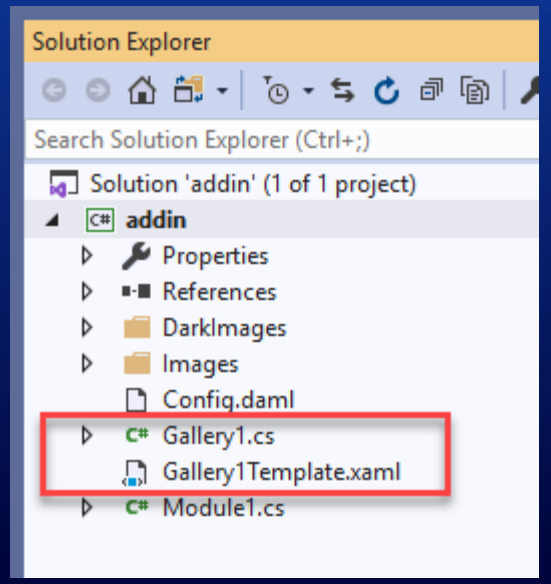
- SDK templates in Visual Studio
- Item templates listing

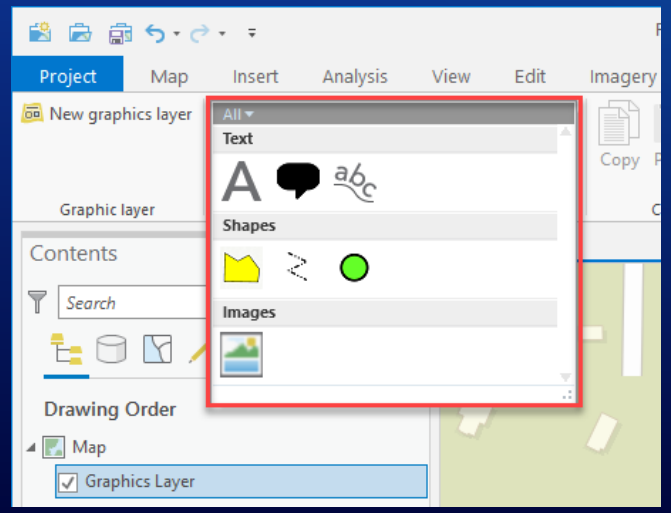
ArcGIS Pro Module Add-in Project template	ArcGIS Pro Inline-Gallery
ArcGIS Pro Managed Configurations Project template	ArcGIS Pro Map Pane Impersonation
ArcGIS Pro Plugin Project template	ArcGIS Pro Map Tool
ArcGIS Pro CoreHost Application Project template	ArcGIS Pro Menu
ArcGIS Pro Backstage Tab	ArcGIS Pro Pane
ArcGIS Pro Button	ArcGIS Pro Property Sheet
ArcGIS Pro Button Palette	ArcGIS Pro ProWindow
ArcGIS Pro Combo Box	ArcGIS Pro Split Button
ArcGIS Pro Construction Tool	
ArcGIS Pro Custom Control	
ArcGIS Pro Custom Item	
ArcGIS Pro Custom Project Item	
ArcGIS Pro Dockpane	
ArcGIS Pro Dockpane with Burger Button	
ArcGIS Pro Drop Handler	
ArcGIS Pro Embeddable Control	

Choosing the Pro Gallery template



Graphics Layers sample

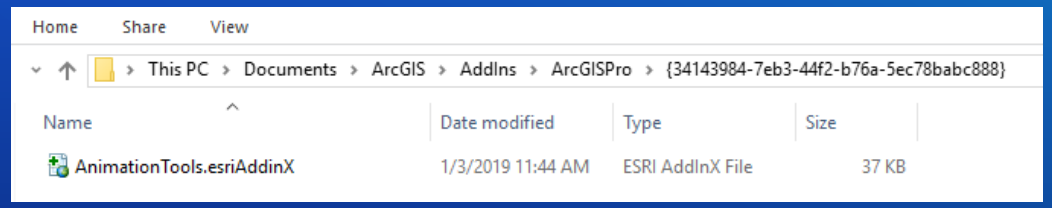


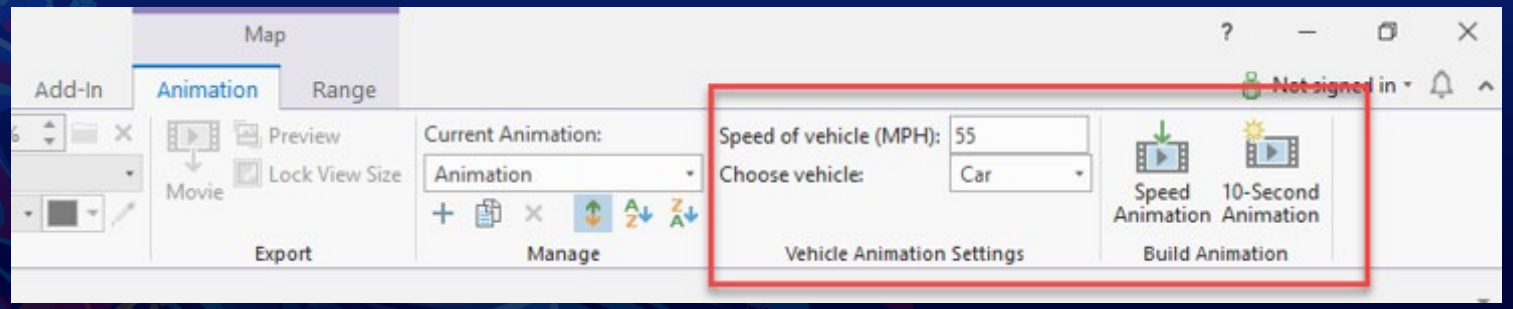


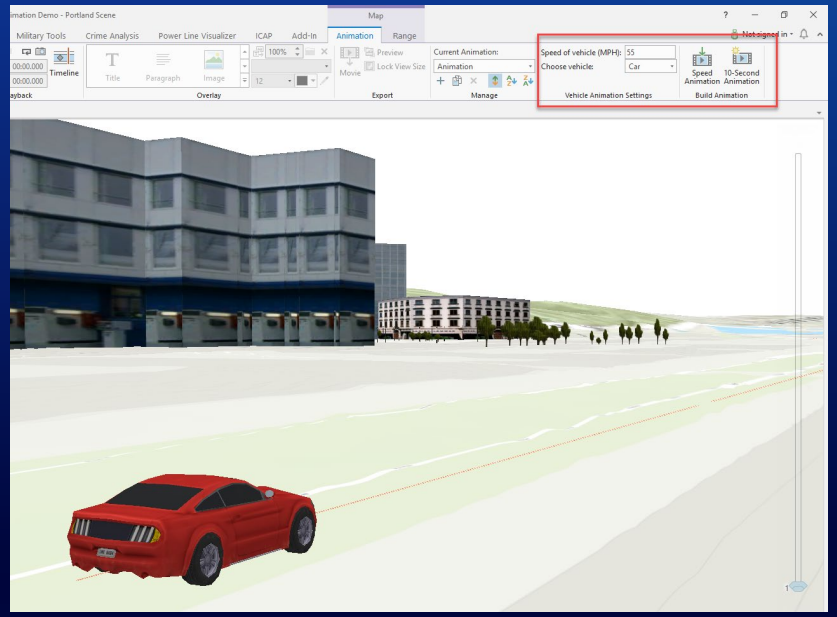
How does a Pro add-in work?

- Extends ArcGIS Pro through:
  - Pro buttons, tools, dockpanes, controls, etc.
  - Custom functionality you create with Pro APIs
- Packaged within a single, compressed file with an .esriaddinX file extension
  - C:\Users\<UserName>\Documents\ArcGIS\AddIns\ArcGISPro
- As Pro starts, it looks for add-ins placed in well-known folders and loads them

Animation Tools Sample Add-in



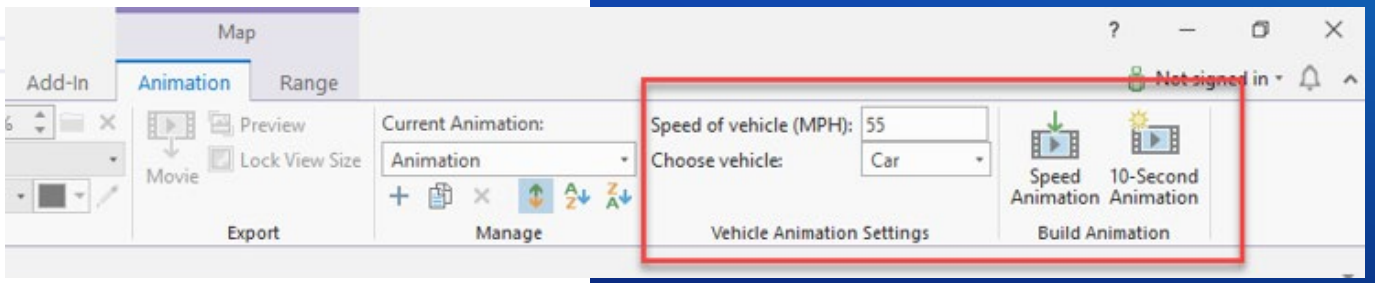




Desktop Application Markup Language (DAML)

- Add-ins use DAML to define the UI elements in Pro
  - Buttons, Dockpane, Galleries, Property Sheets, Tools, …
- DAML uses XML Syntax - stored in the ***Config.daml*** file
- Using DAML, you can add, modify, delete any User Interface element

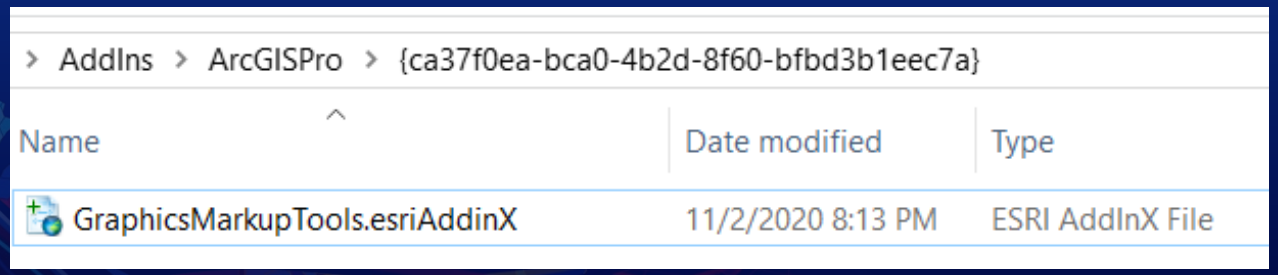
```
29  </AddInInfo>
30  <modules>
31    <updateModule refID="esri_mapping">
32      <tabs>
33        <updateTab refID="esri_mapping_animationTab">
34          <insertGroup refID="AnimationTools_Group1"  />
35          <insertGroup refID="AnimationTools_Group2"  />
36        </updateTab>
37      </tabs>
38    </updateModule>
39    <insertModule id="AnimationTools_Module" className="Module1" autoLoad="false" caption="Animation Tools Sample">
40      <groups>
41        <group id="AnimationTools_Group1" caption="Vehicle Animation Settings" appearsOnAddInTab="false">
42          <!-- host controls within groups -->
43          <editBox refID="AnimationTools_SpeedEditBox" size="middle" />
44          <comboBox refID="AnimationTools_VehicleListComboBox" />
45        </group>
46        <group id="AnimationTools_Group2" caption="Build Animation" appearsOnAddInTab="false">
47          <!-- host controls within groups -->
48          <button refID="AnimationTools_SpeedKeyframesButton" size="large" />
49          <button refID="AnimationTools_TenSecondKeyframesButton" size="large" />
50        </group>
51      </groups>
```

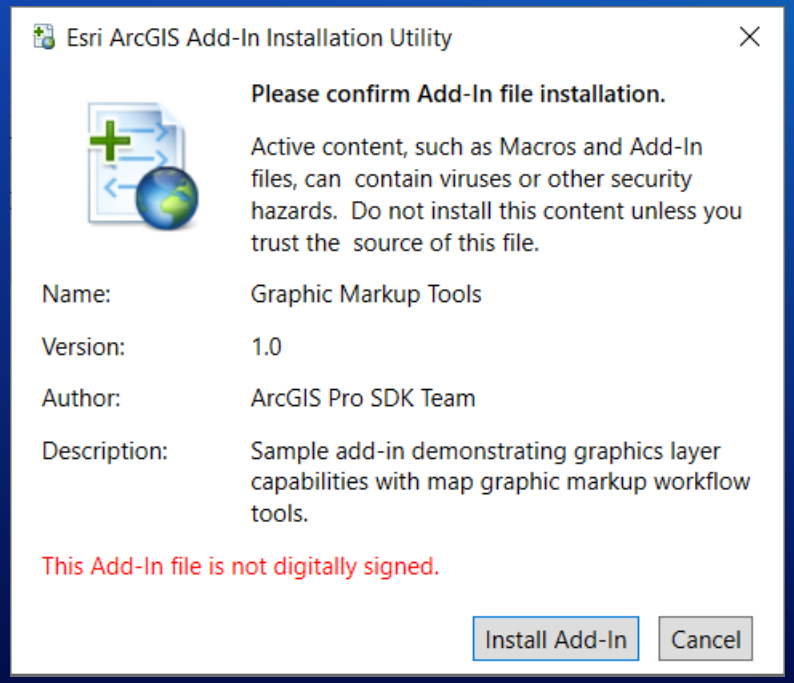


Installing Add-ins

- Simple double-click install
- No administrator privileges required
- No installation .exe to run or build
- No add or remove programs

C:\Users\<UserName>\Documents\ArcGIS\AddIns\ArcGISPro





Considerations

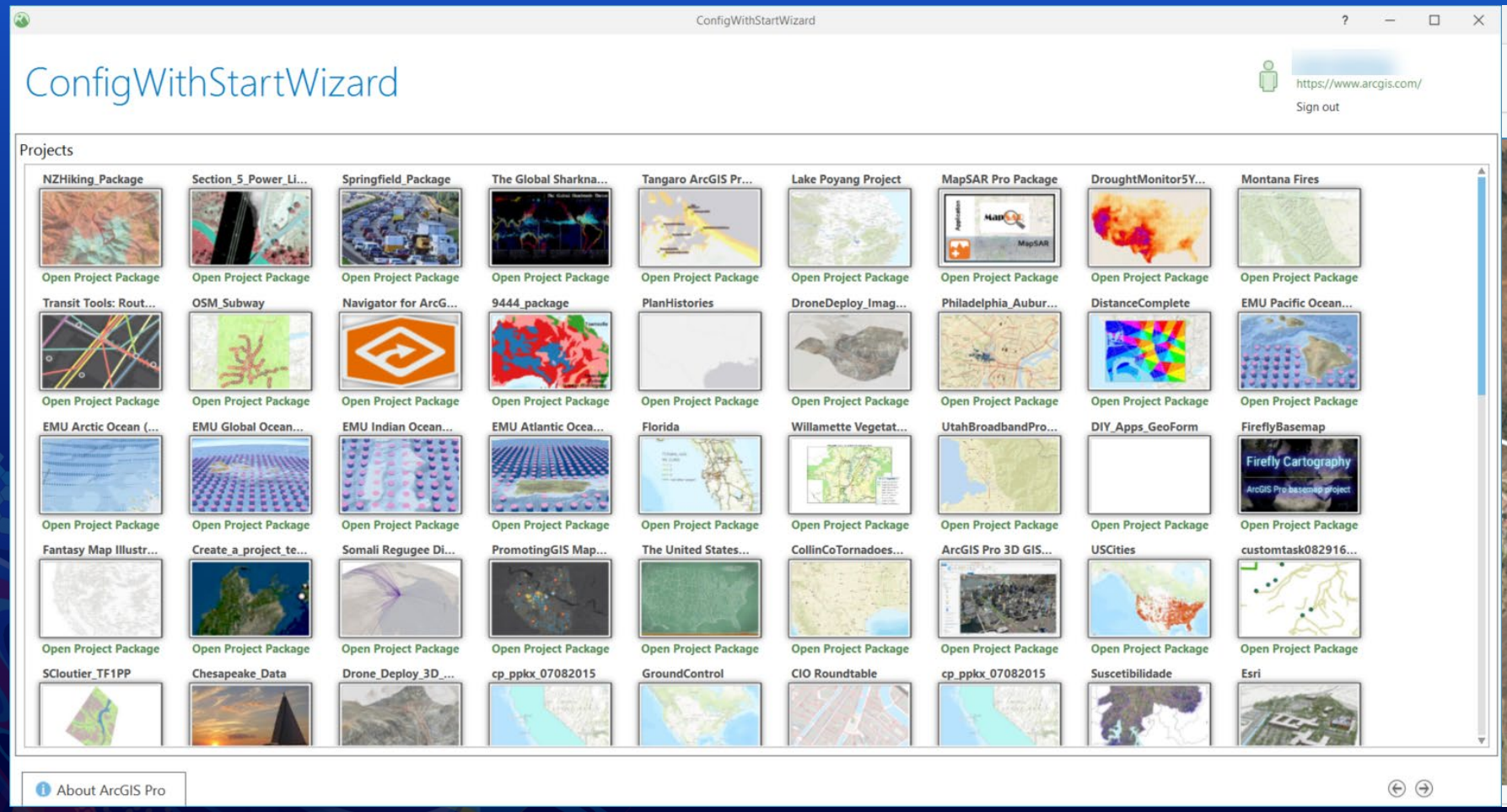
- Opportunities:
  - Powerful, and provide most of what your users are looking for
  - Developers can customize the UI by building new custom tools, buttons and panes
  - Build custom processes with .NET
  - Integrate third party libraries

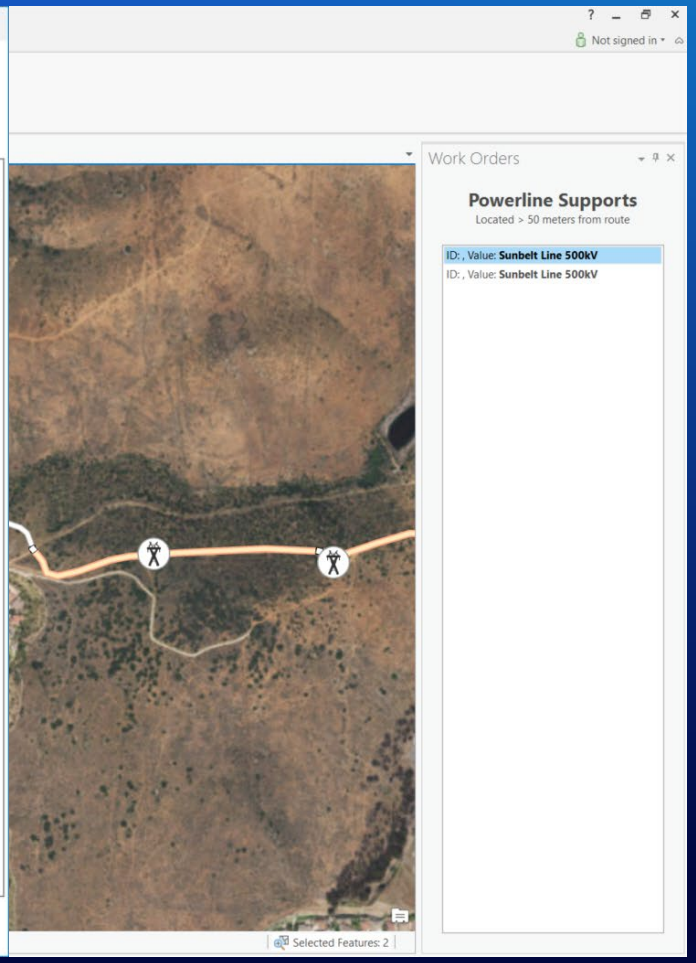
- Considerations:
  - Do you need control over the start-up process? >> Configurations
  - Do you have a data format that you want to use as a layer or table? >> Plugin datasources
  - Do you need to run a scheduled geodatabase process? >> CoreHost apps

Pro SDK Extensibility Patterns

Add-Ins – Develop new tools and functionality to extend Pro

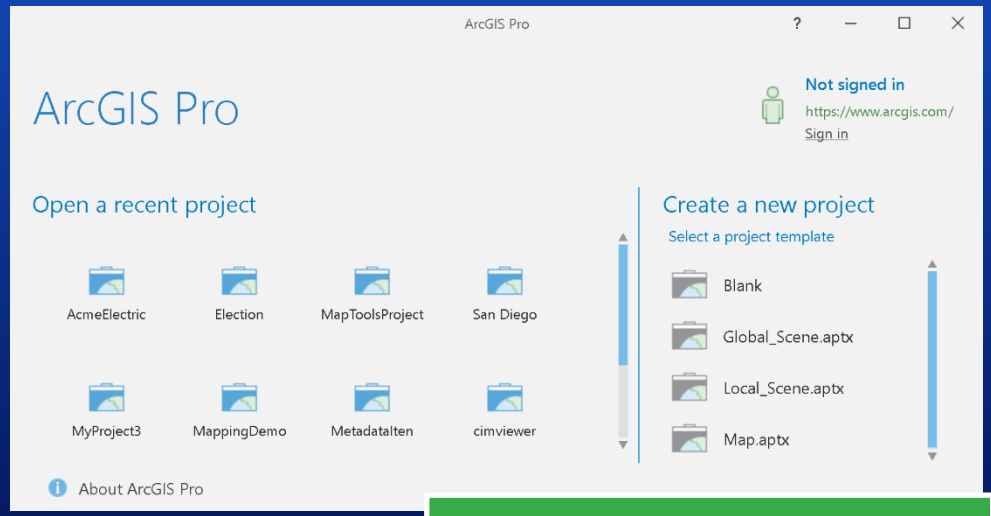
Managed Configurations – All Add-in capabilities + additional customization of Pro UI / UX



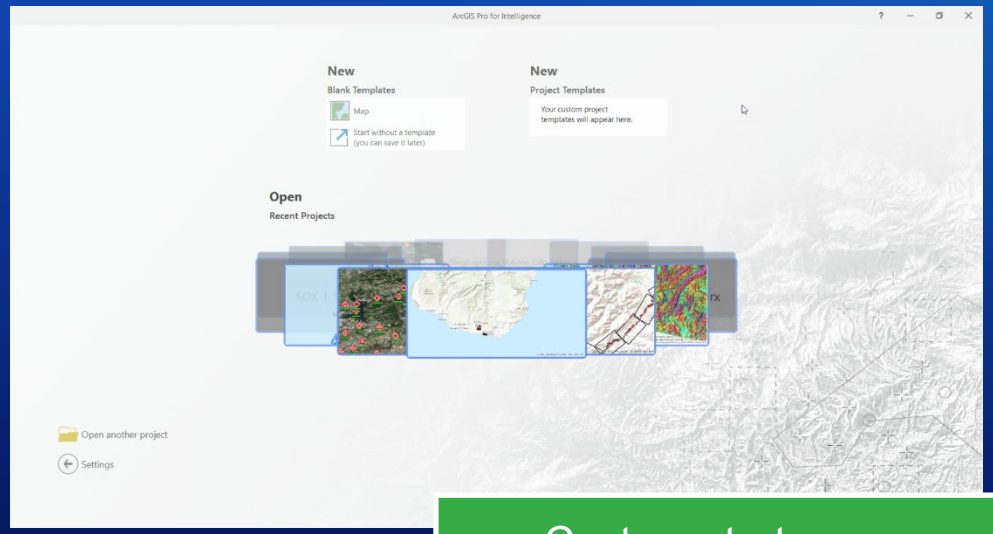


What is an ArcGIS Pro Configuration?

- Includes all functionality of an add-in plus:
  - Change the application title and icon
  - Change the application splash, start page, and about page
  - Conditional customization of the UI



Default start page



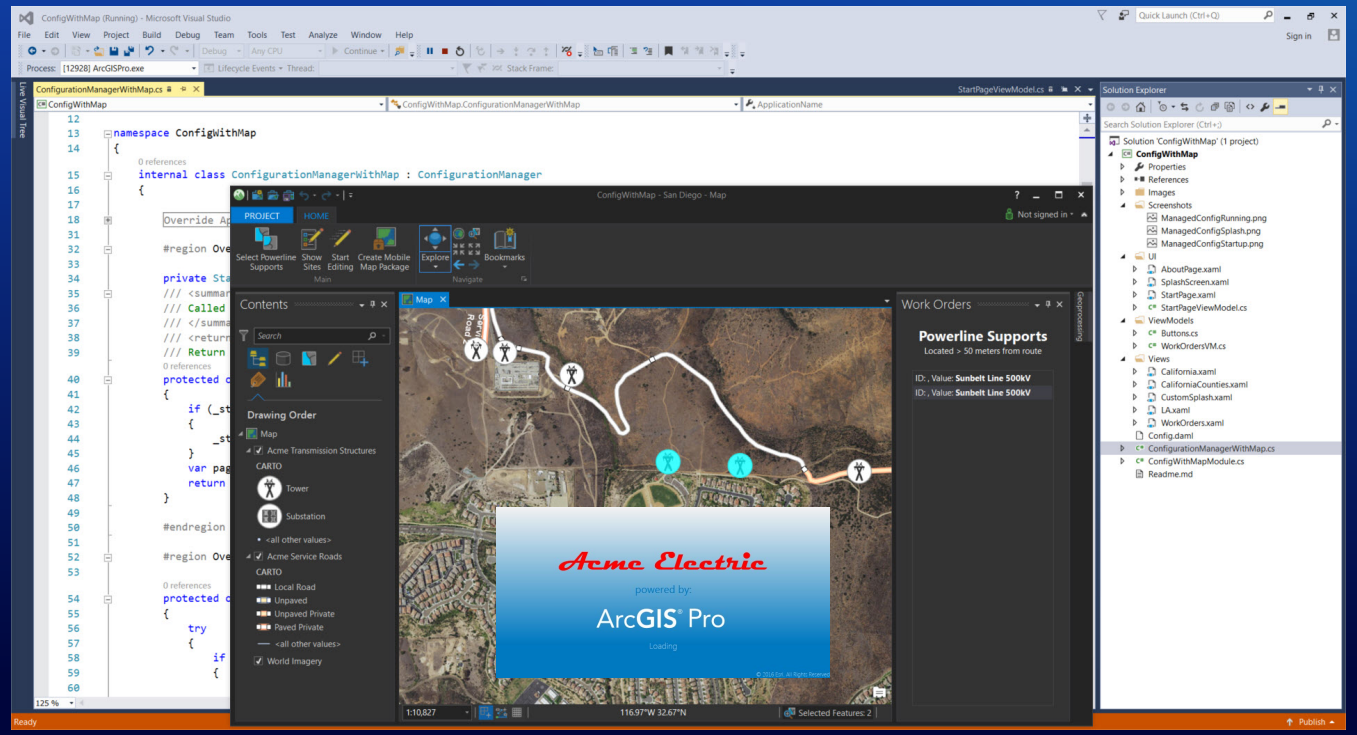
Custom start page

  - Packaged within a single, compressed file with a .ProConfigX file extension
  - Stored at: C:\Users\<UserName>\Documents\ArcGIS\AddIns\ArcGISPro\Configurations

Configurations

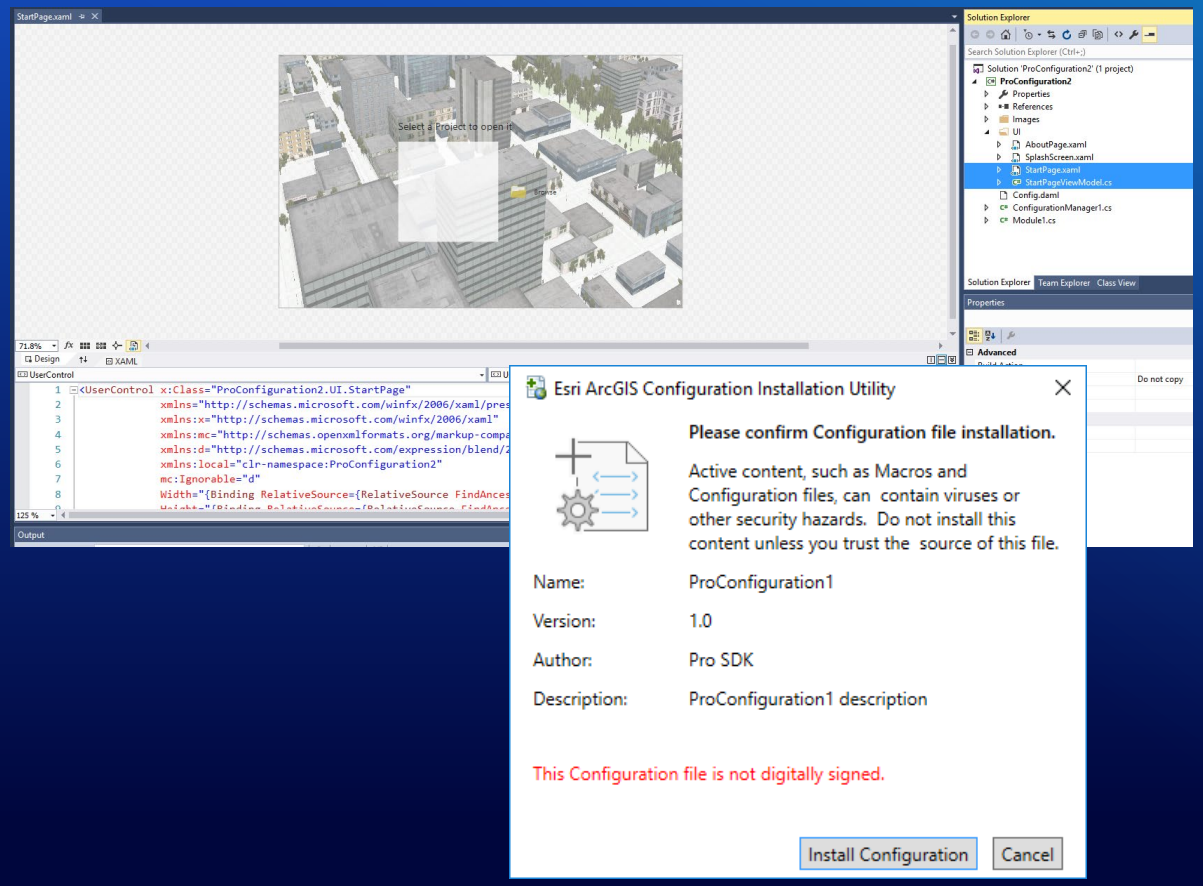
- Add-in with additional capabilities
- Custom start-up UX – splash screen, start page
- Vary UI / UX based on user role

- Documentation
  - ProConcepts – Configurations concepts
  - ProGuide – Configurations walk-through
  - Samples –
    - ConfigWithMap
    - ConfigWithStartWizard



Comparing Add-ins and Configurations

- Similarities
  - Built from SDK project templates
  - Compiled and deployed with the standard double-click installation
  - Both allow for customization of the UI
- Differences
  - Add-in
    - Multiple add-ins per Pro session
  - Configuration
    - One configuration per Pro session + add-ins
    - Start-up and Pro UI / UX customization

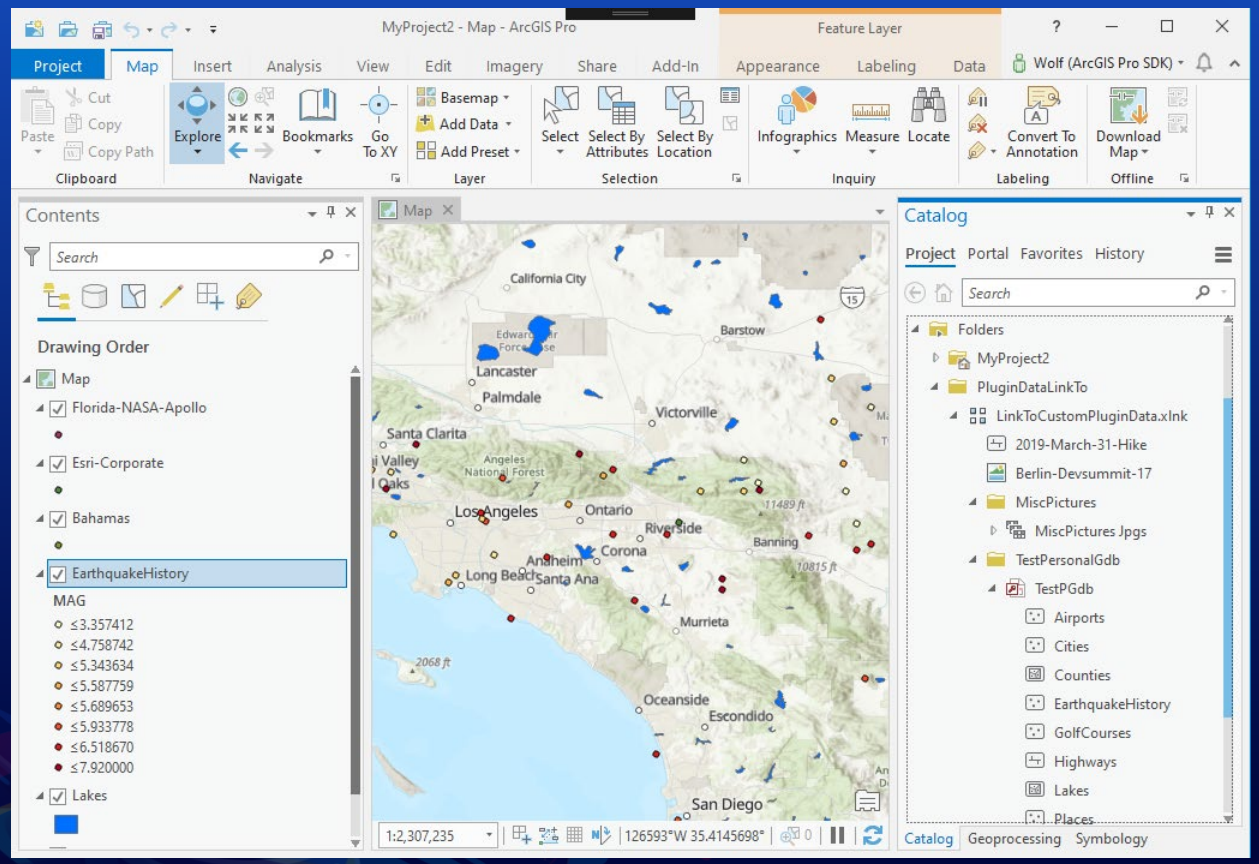


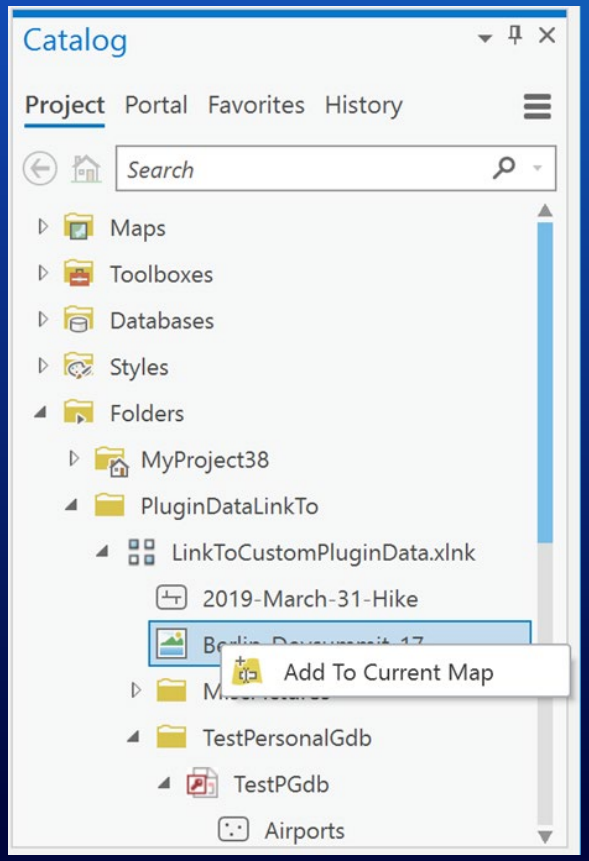
Pro SDK Extensibility Patterns

Add-Ins – Develop new tools and functionality to extend Pro

Managed Configurations – All Add-in capabilities + additional customization of Pro UI / UX

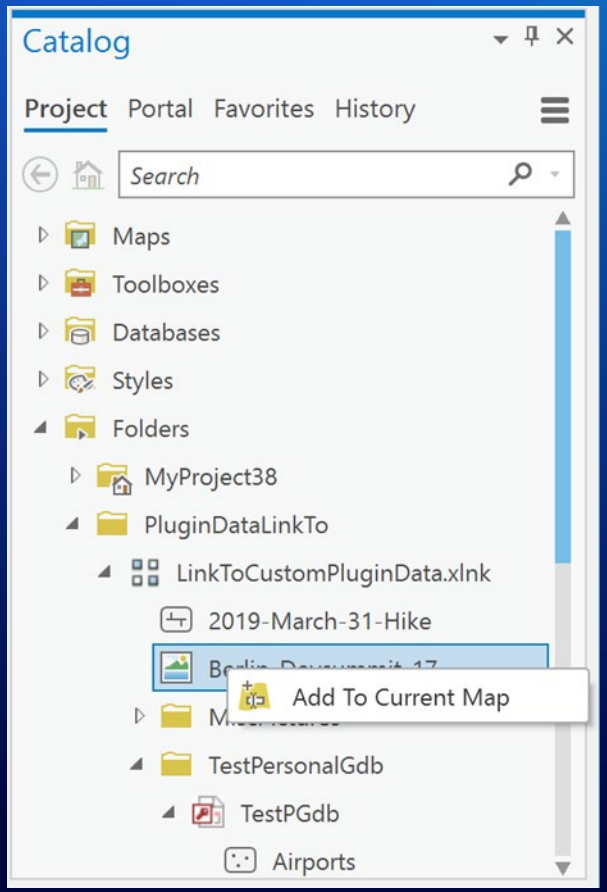
Plugin Datasources – Custom data source integration with Pro





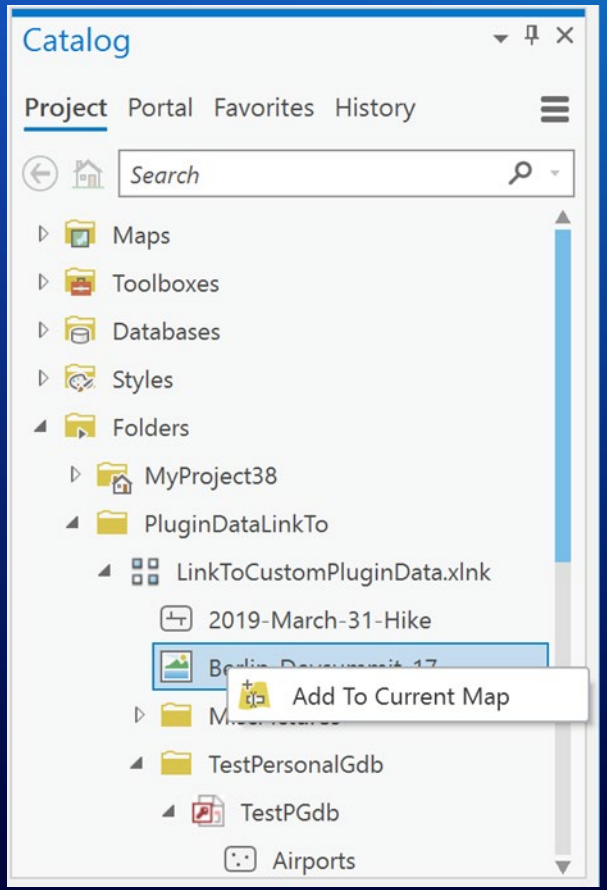
Plugin Datasources

- The Plugin Datasource framework allows developers to make custom datasources available for use in Pro
  - Access in Pro is read-only
  - Access is in the form of tables or feature classes
  - Access is file-based
- Examples of custom data sources – Image files, GPS data, proprietary file formats



Plugin Datasources

- ArcGIS Pro supports data from a large variety of data sources and formats from shape files to Oracle databases
- Plugin Datasources allow access to other data sources like relational databases such as MySQL, non-relational databases and other proprietary and file-based data stores
- Documentation
  - ProConcepts introduction and concepts
  - ProGuide – walk through guide
  - Samples to try, and build on



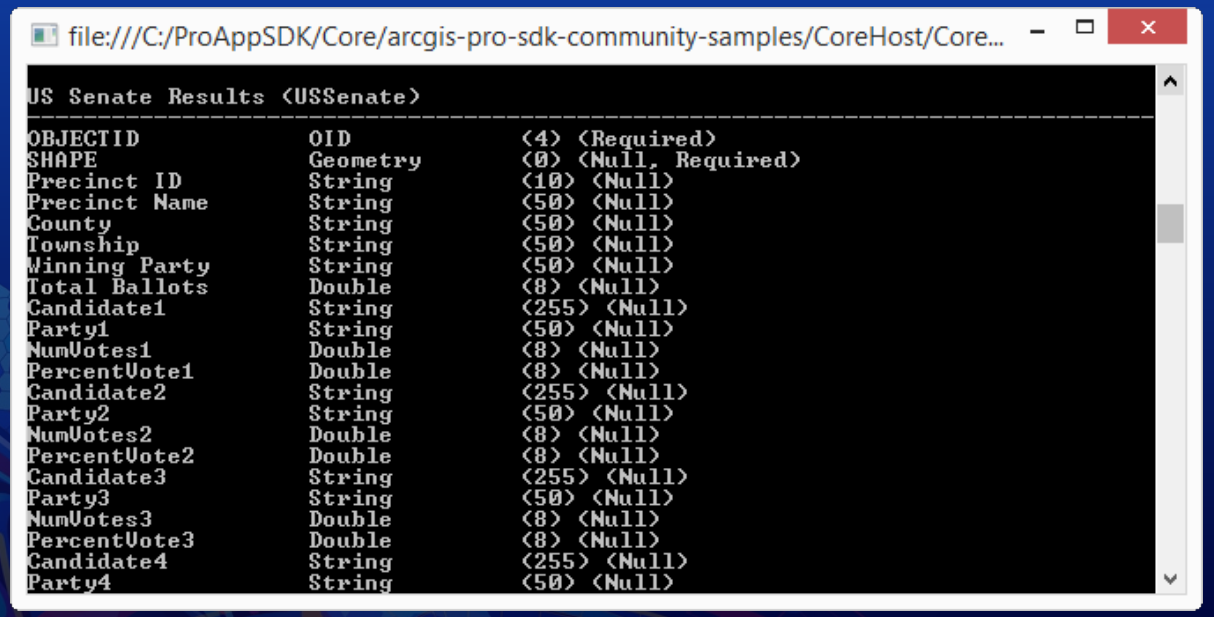
Pro SDK Extensibility Patterns

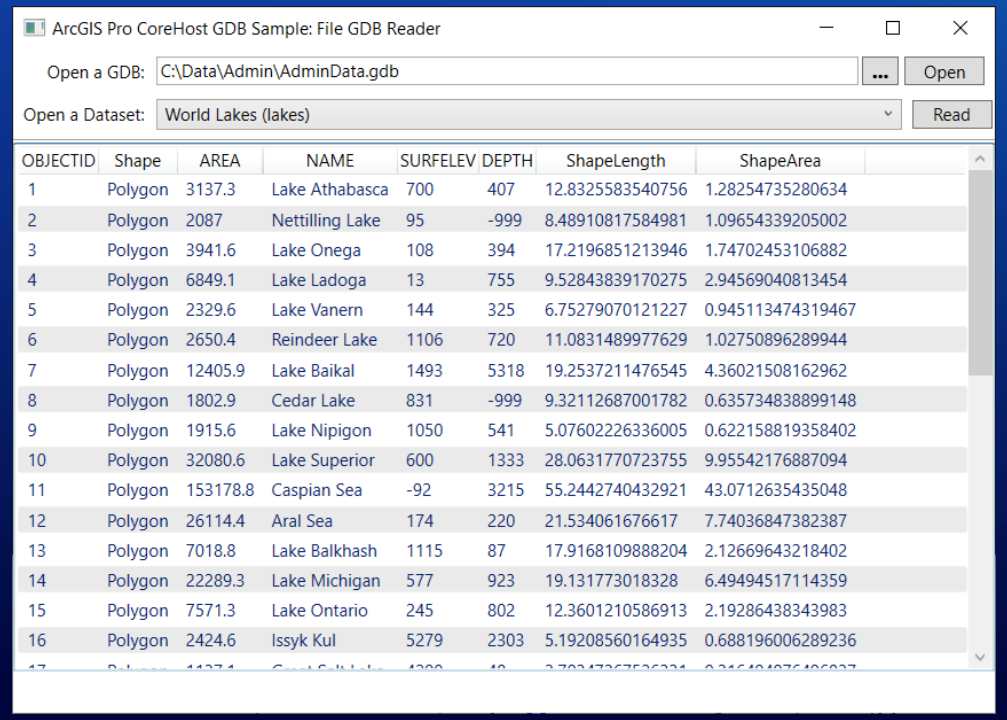
Add-Ins – Develop new tools and functionality to extend Pro

Managed Configurations – All Add-in capabilities + additional customization of Pro UI / UX

Plugin Datasources – Custom data source integration with Pro

CoreHost Applications – Standalone apps for 64-bit Geodatabase and Geometry access

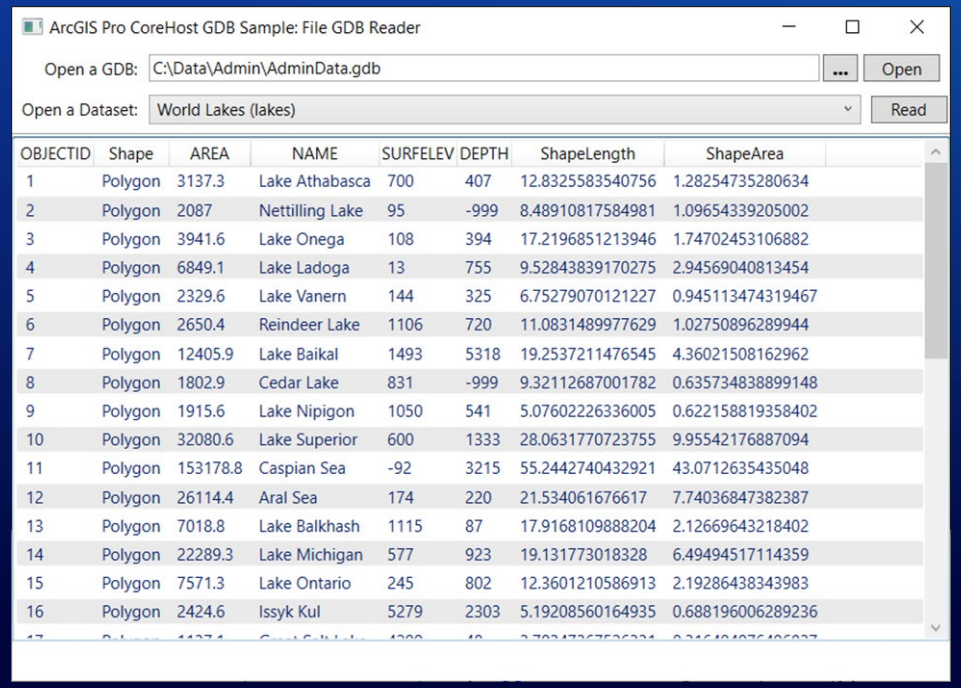




OBJECTID	Shape	AREA	NAME	SURFELEV	DEPTH	ShapeLength	ShapeArea
1	Polygon	3137.3	Lake Athabasca	700	407	12.8325583540756	1.28254735280634
2	Polygon	2087	Nettilling Lake	95	-999	8.48910817584981	1.09654339205002
3	Polygon	3941.6	Lake Onega	108	394	17.2196851213946	1.74702453106882
4	Polygon	6849.1	Lake Ladoga	13	755	9.52843839170275	2.94569040813454
5	Polygon	2329.6	Lake Vanern	144	325	6.75279070121227	0.945113474319467
6	Polygon	2650.4	Reindeer Lake	1106	720	11.0831489977629	1.02750896289944
7	Polygon	12405.9	Lake Baikal	1493	5318	19.2537211476545	4.36021508162962
8	Polygon	1802.9	Cedar Lake	831	-999	9.32112687001782	0.635734838899148
9	Polygon	1915.6	Lake Nipigon	1050	541	5.07602226336005	0.622158819358402
10	Polygon	32080.6	Lake Superior	600	1333	28.0631770723755	9.95542176887094
11	Polygon	153178.8	Caspian Sea	-92	3215	55.2442740432921	43.0712635435048
12	Polygon	26114.4	Aral Sea	174	220	21.534061676617	7.74036847382387
13	Polygon	7018.8	Lake Balkhash	1115	87	17.9168109888204	2.12669643218402
14	Polygon	22289.3	Lake Michigan	577	923	19.131773018328	6.49494517114359
15	Polygon	7571.3	Lake Ontario	245	802	12.3601210586913	2.19286438343983
16	Polygon	2424.6	Issyk Kul	5279	2303	5.19208560164935	0.688196006289236

CoreHost Applications

- Stand-alone application with a subset of Pro Assemblies
  - ArcGIS.CoreHost assembly – API to manage CoreHost functions
  - ArcGIS.Core assembly – Includes Geodatabase and Geometry classes
- CoreHost Applications have limited access
  - Geodatabase classes
  - Geometry classes
- CoreHost Application options
  - Windows Console application
  - WPF application



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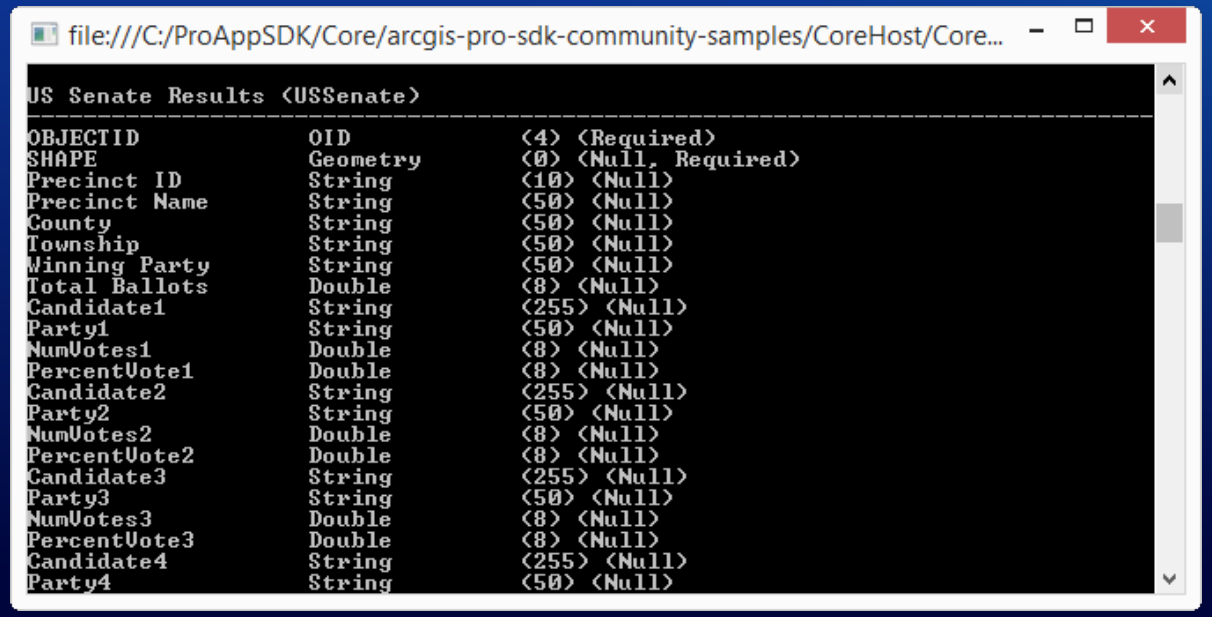
16	Polygon	2424.6	Issyk Kul	5279	2303	5.19208560164935	0.688196006289236

CoreHost Applications

- Scheduled routines
- Editing in standalone mode

- Documentation
  - ProConcepts introduction and concepts
  - Samples to try, and build on

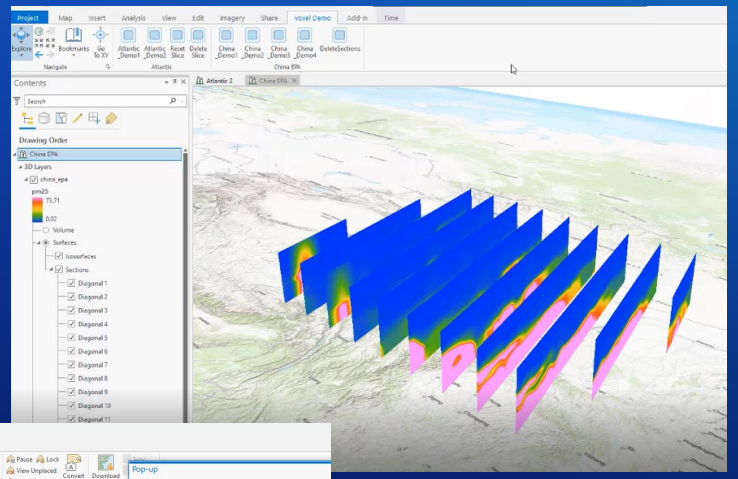


ArcGIS Pro APIs

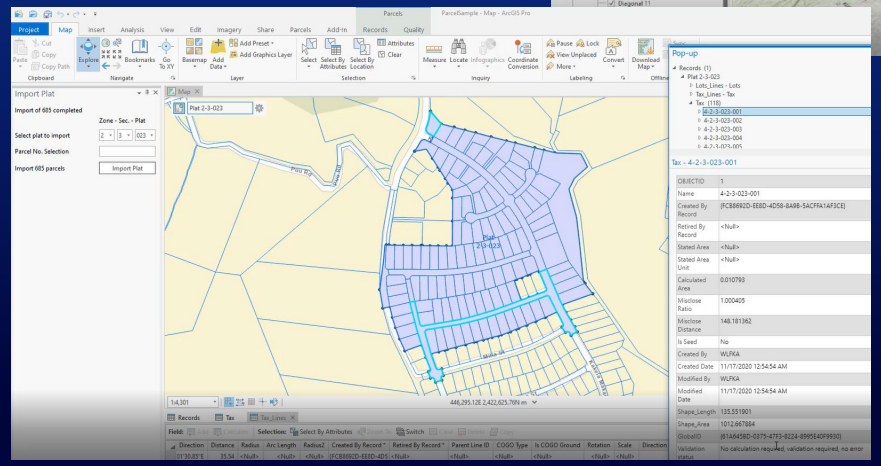
ArcGIS Pro APIs

- The SDK provides access to the Pro APIs
- APIs are installed directly with ArcGIS Pro

Voxel Layers API



Parcel Fabric API



ArcGIS Pro APIs and Assemblies

- Core and Extension assemblies installed with Pro

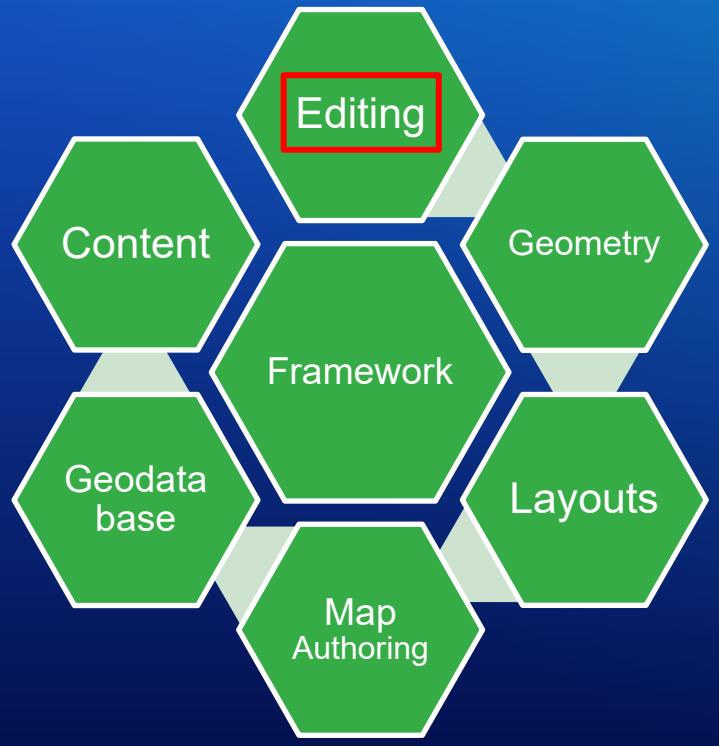
Core Assemblies
{Install} \ bin

Core	CoreHost
Framework	ItemIndex

Extension assemblies
{install} \ bin \ Extensions

Catalog	Desktop.Core
DataReviewer	Editing
Extensions	Geoprocessing
Layouts	Mapping
TaskAssistant	Workflow

API Categories



ArcGIS Pro APIs and Assemblies

- APIs are categorized and named by functional areas
- Pro APIs listing by assembly on SDK Doc Wiki

Core

Core assemblies are located in the {ArcGIS Pro Installation folder}\bin.

Assembly	Description
ArcGIS.Core.dll	Provides CIM, Geodatabase, Geometry and Utility Network APIs.
ArcGIS.CoreHost.dll	Provides Host.Initialize to initialize ArcGIS.Core.dll for stand-alone use.
ArcGIS.Desktop.Framework.dll	Provides the application framework to include add-in contracts, DAML support, and base classes. This assembly must be referenced by every add-in.
ESRI.ArcGIS.ItemIndex.dll	Provides functionality to create and work with Custom items.

Extensions

Major subsystems within ArcGIS Pro are organized into units called extensions. Extension assemblies are located in the {ArcGIS Pro Installation folder}\bin\Extensions folder in their own individual subfolder. Extension subfolder names are logically named for the unit of functionality they represent, for example, Mapping, Editing, Layout, and so on.

Assembly	Description
ArcGIS.Desktop.Catalog.dll	Provides access to project content items (map items, layout items, style items, folder items, and so on).

Core Assemblies
{Install} \ bin

- Core
- CoreHost
- Framework
- ItemIndex

Extension assemblies
{install} \ bin \ Extensions

- Catalog
- Desktop.Core
- DataReviewer
- Editing
- Extensions
- Geoprocessing
- Layouts
- Mapping
- TaskAssistant
- Workflow

ArcGIS Pro APIs

- API Reference Guide document
- Concept and Guide documents in SDK Doc Wiki

Table of Contents

- Introduction
- ArcGIS.Core Assembly
  - Overview
  - Namespaces
    - ArcGIS.Core Namespace
    - ArcGIS.Core.CIM Namespace
    - ArcGIS.Core.Data Namespace
      - Overview
      - Classes
      - Enumerations
    - ArcGIS.Core.Data.Mapping Namespace
    - ArcGIS.Core.Data.PluginDatastore Namespace
    - ArcGIS.Core.Data.Raster Namespace
    - ArcGIS.Core.Data.Realtime Namespace
    - ArcGIS.Core.Data.Topology Namespace
    - ArcGIS.Core.Data.UtilityNetwork Namespace
    - ArcGIS.Core.Data.UtilityNetwork.NetworkDiagrams N
    - ArcGIS.Core.Data.UtilityNetwork.Trace Namespace
    - ArcGIS.Core.Events Namespace
    - ArcGIS.Core.Geometry Namespace
    - ArcGIS.Core.Licensing Namespace
    - ArcGIS.Core.SystemCore Namespace
    - ArcGIS.Core.Threading.Tasks Namespace
- ArcGIS.CoreHost Assembly
- ArcGIS.Desktop.Catalog Assembly

ArcGIS Pro 2.7 API Reference Guide

ArcGIS.Core.Data Namespace (ArcGIS.Core)

Inheritance Hierarchy ▸ Expand All

The ArcGIS.Core.Data contains types that support data access.

Classes

Class	Description
Attachment	Represents a document associated with a row.
AttributedRelationship	Represents a pair of related rows (or features) fron
AttributedRelationshipClass	Represents an association between two tables in a
AttributedRelationshipClassDefinition	Represents the schema and properties of an Attrib
AttributeRuleError	Represents an error from a ValidationErrorType val
AttributeRuleEvaluationDescription	Specifies how an evaluation for validation rules an
AttributeRuleEvaluationResult	Provides information about the results of a call to
AttributeRuleManager	This class provides basic functionality to manage a
CodedValueDomain	Represents the information about the valid coded
Connector	Represents a connector to a data source.
Database	Represents the gateway to connect to a relational database table, or a **query layer** that is created fro
DatabaseClient	Provides a capability to execute tasks (e.g., a SQL s
DatabaseConnectionFile	Represents the physical path to a connection file t

Doc Wiki Menu – Geodatabase Group

Geodatabase

- ProSnippets: Geodatabase
- ProSnippets: Topology
- ProConcepts: Geodatabase
- ProConcepts: Plugin Datasources
- ProGuide: Plugin Datasources

Geodatabase ProConcepts Doc

ProConcepts Geodatabase

uma2526 edited this page on Dec 14, 2020 · 31 revisions

Functionality that uses the fine-grained Geodatabase API. Geodatabase API functionality is found in ArcGIS.Core.dll. The Geodatabase API is commonly used in conjunction with map exploration, map authoring, and editing.

```
Language:      C#
Subject:       Geodatabase
Contributor:   ArcGIS Pro SDK Team <arcgisprosdk@esri.com>
Organization:  Esri, http://www.esri.com
Date:          04/08/2020
ArcGIS Pro:    2.7
Visual Studio: 2017, 2019
```

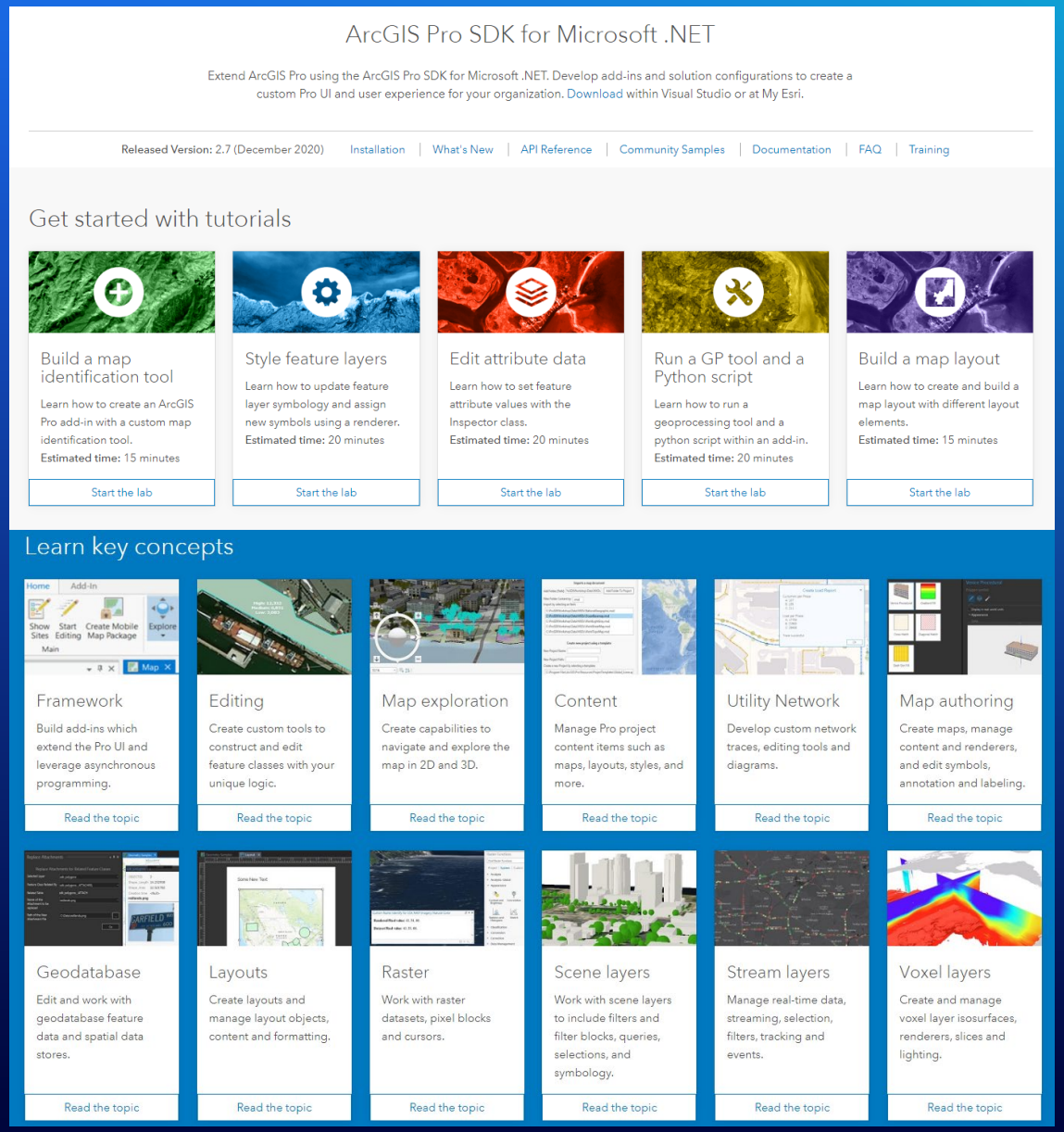
In this topic

- Architecture
  - Resource Management
  - Namespaces and Extension Methods
- Datastore
  - Geodatabase
    - QueryDef
    - QueryTable
  - Database
    - Query layers

Resources for your work

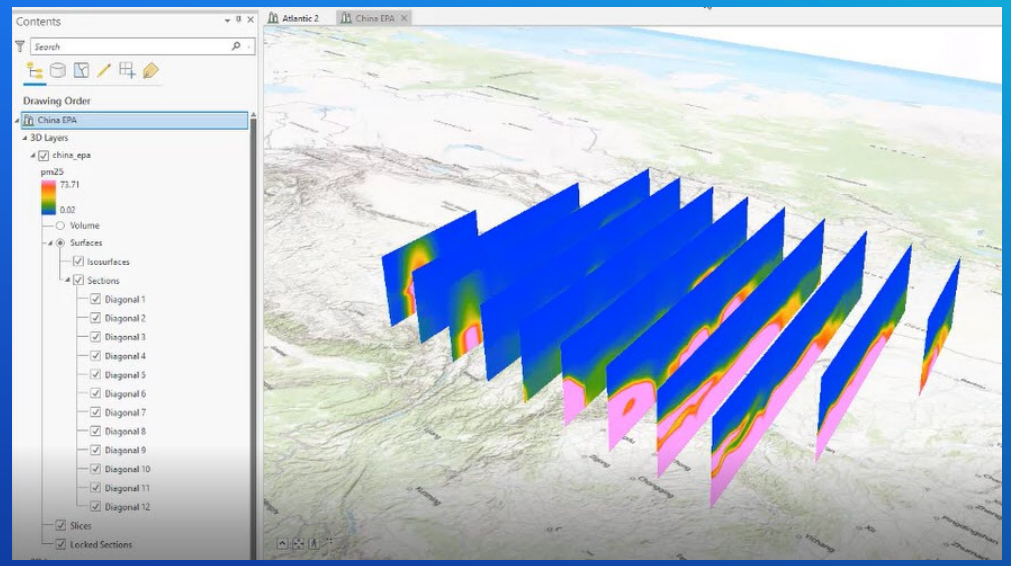
SDK Resources

- **Landing Page** –
  - https://pro.arcgis.com/en/pro-app/sdk/
- Links to all the Resources
  - API Reference, Samples and Documentation
  - ArcGIS Tutorials
  - Pro SDK Group on GeoNet
  - Tech session video recordings
  - Instructor-led training
  - ArcGIS Blog posts

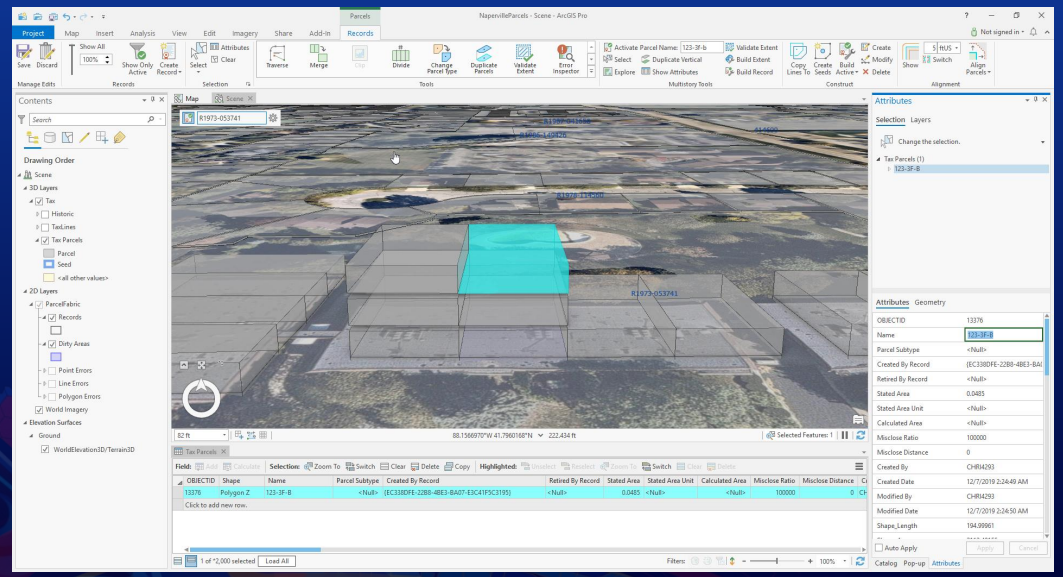


Samples and Documentation

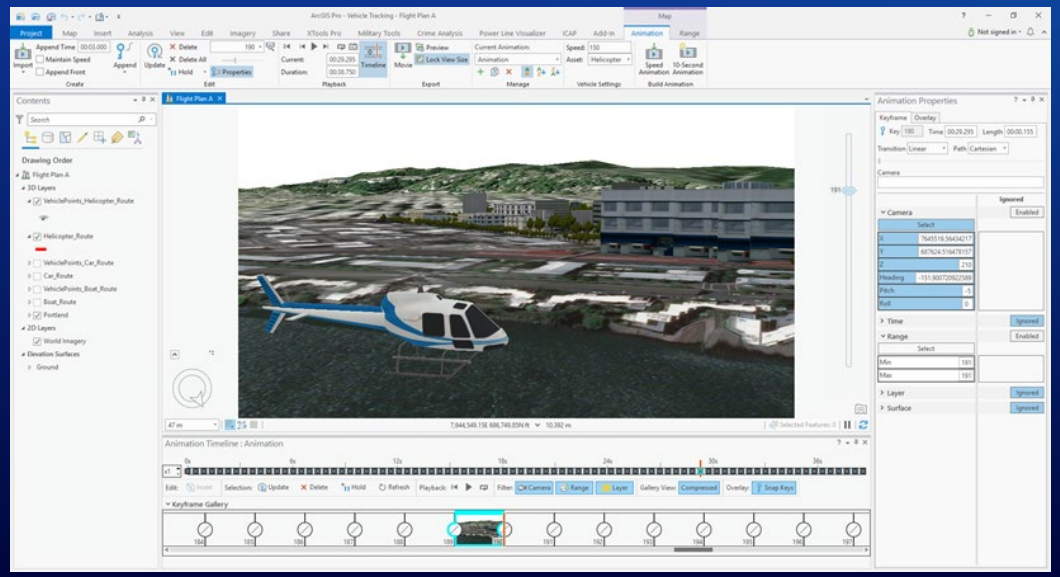
- Community samples on GitHub
- Ready to use C# solutions
- Code snippets for all patterns and APIs
- API Reference
- Concept and Guide documents on GitHub



Voxel Layers API



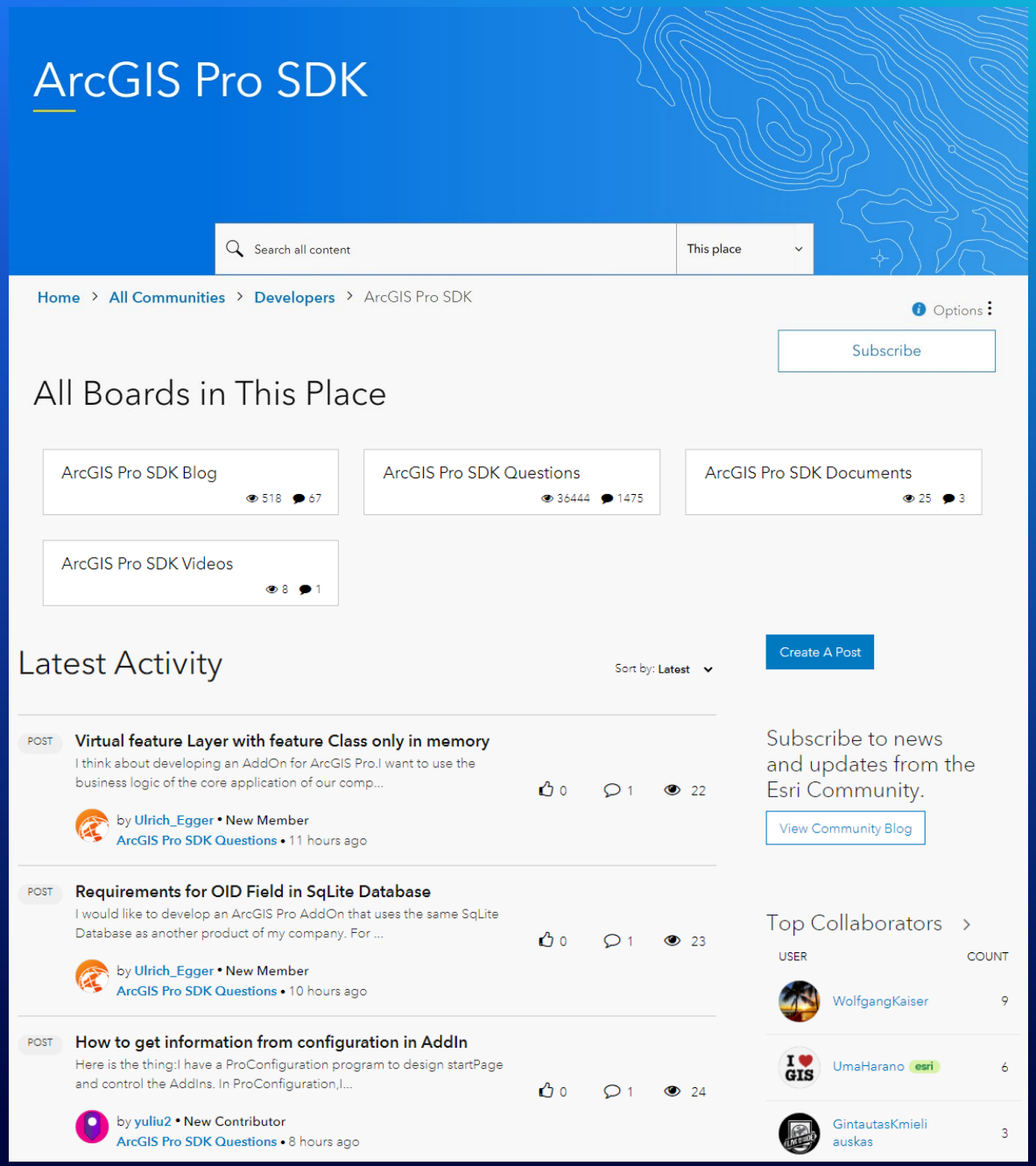
Parcel Fabric API



Map Exploration API

Pro SDK Group on GeoNet

- ArcGIS Pro SDK Group on GeoNet
- 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

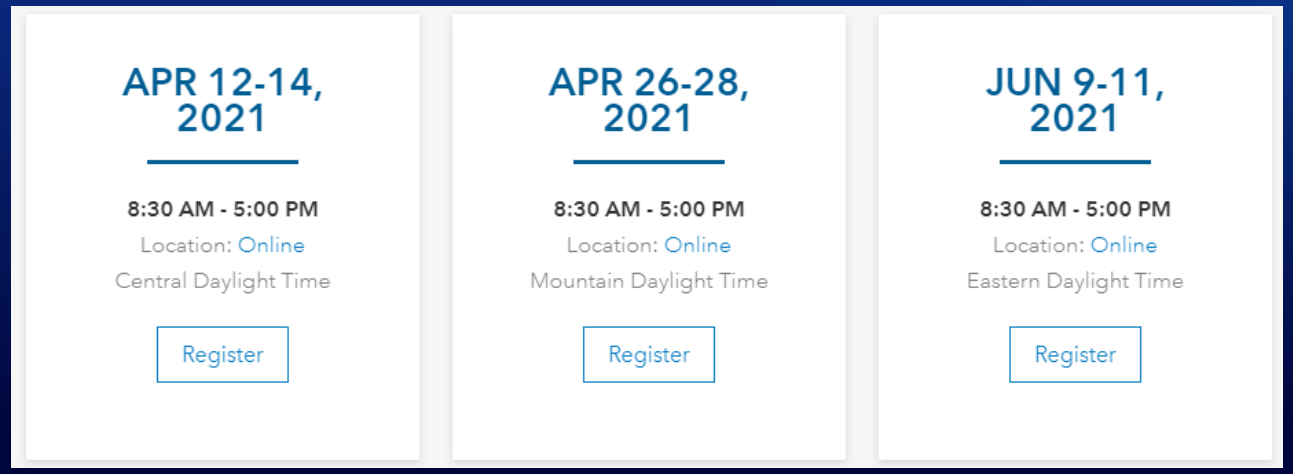


Learning Opportunities

Instructor-Led Training

- "Extending ArcGIS Pro with Add-Ins"
- Comprehensive 3-day course
- Jumpstart your development

Upcoming Courses:



ArcGIS® Pro Roadmap

Near-term

- Data Engineering
- Floor Aware Mapping and Editing
- Machine Learning for Point Clouds
- Suitability Modeler Sharing
- Presence-only Prediction
- Industry Foundation Classes (IFC)
- Aviation Charting
- Roof Editing in Stereo
- Geoprocessing Credit Estimator
- Indoor Positioning
- Big Data Connection Wizard
- Upgrade Python Environment

Mid-term

- Knowledge Graphs
- Catalog Layers
- Point Cloud Scene Layer Data Management
- Projects in the Enterprise
- Voxel Layer Sharing
- Presentations
- Dynamic Feature Clustering
- Animated Symbols
- Spatio-temporal Density Analysis
- Multiscale GWR
- Scientific Data Ingestion
- Big Data Analytic Warehouses
- Parcel Fabric 3D Cadastre
- Parcel Lineage
- Managed Indoor Data Pipeline

Long-term

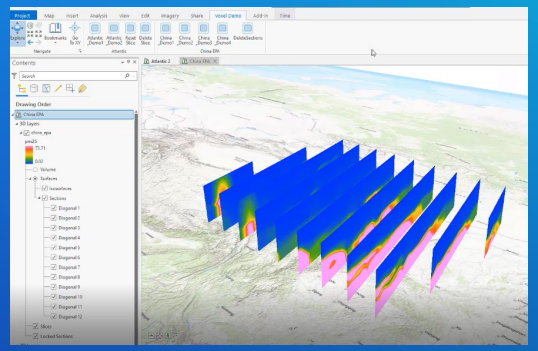
- Terrain Editing
- Materials Authoring
- High Fidelity Rendering
- 3D Mesh as Ground
- Simulation Modeling
- Integrated Mesh Scene Layer Data Management
- 64-Bit Object ID
- New Data Types (BigInteger, Timestamp with Time zone)
- Parcel Fabric Coordinate Based Cadastre

January 2021

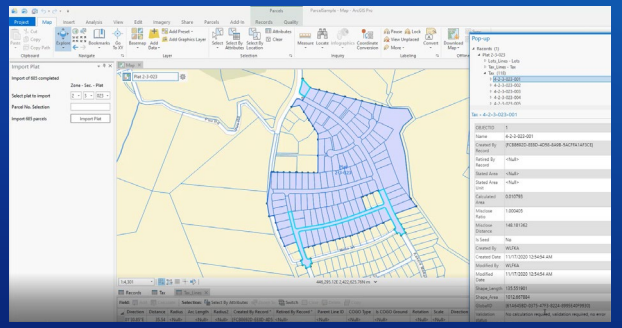
Recent Updates - Pro SDK 2.7

- New APIs:
  - **Device Location** – manage GNSS device connections, visualize device positions and collect data and create new features with position data
  - **Parcel Fabric** – create editing tools, develop record- and quality-driven workflows, manage parcel seeds, parcel types and parcel fabric records
  - **Topology** – explore and manage topology rules, errors, validation and the topology graph for geodatabase and service topologies
  - **Voxel Layers** - create and manage voxel layer slices, sections and isosurfaces, control voxel layer lighting and rendering
- Enhancements to existing APIs:
  - **Layouts** - Bulk element creation, view page transformation, grouping and ordering elements
  - **Reports** – Enhanced ability to create, modify and export reports
  - **Editing** – Sketch events for additional control in custom editing tools
  - **Geodatabase** – Pre-release DDL API for schema creation – test creating and deleting of tables and feature classes

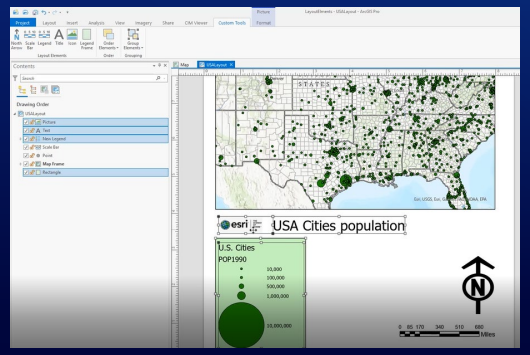
Voxel Layers



Parcel Fabric



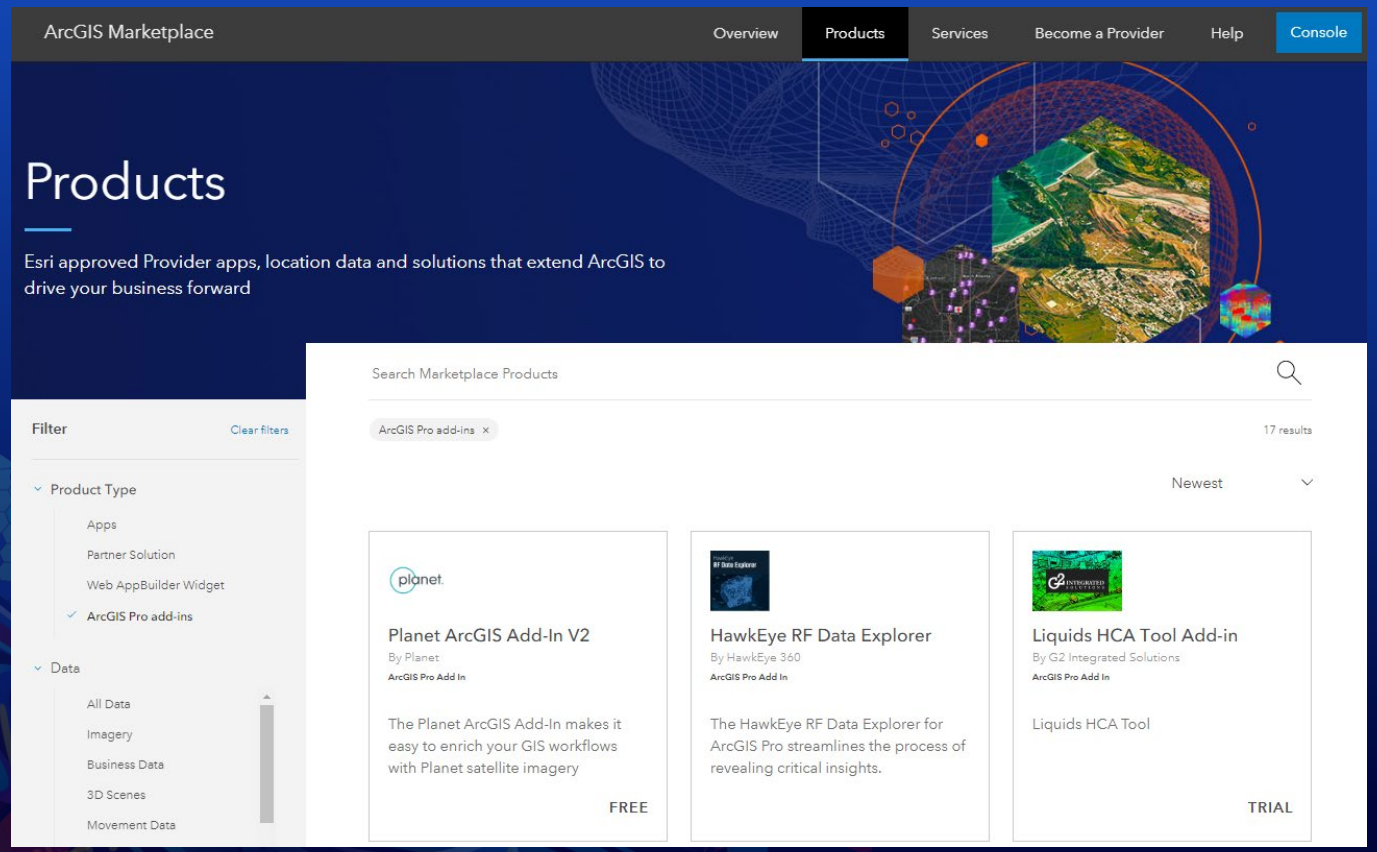
Layouts

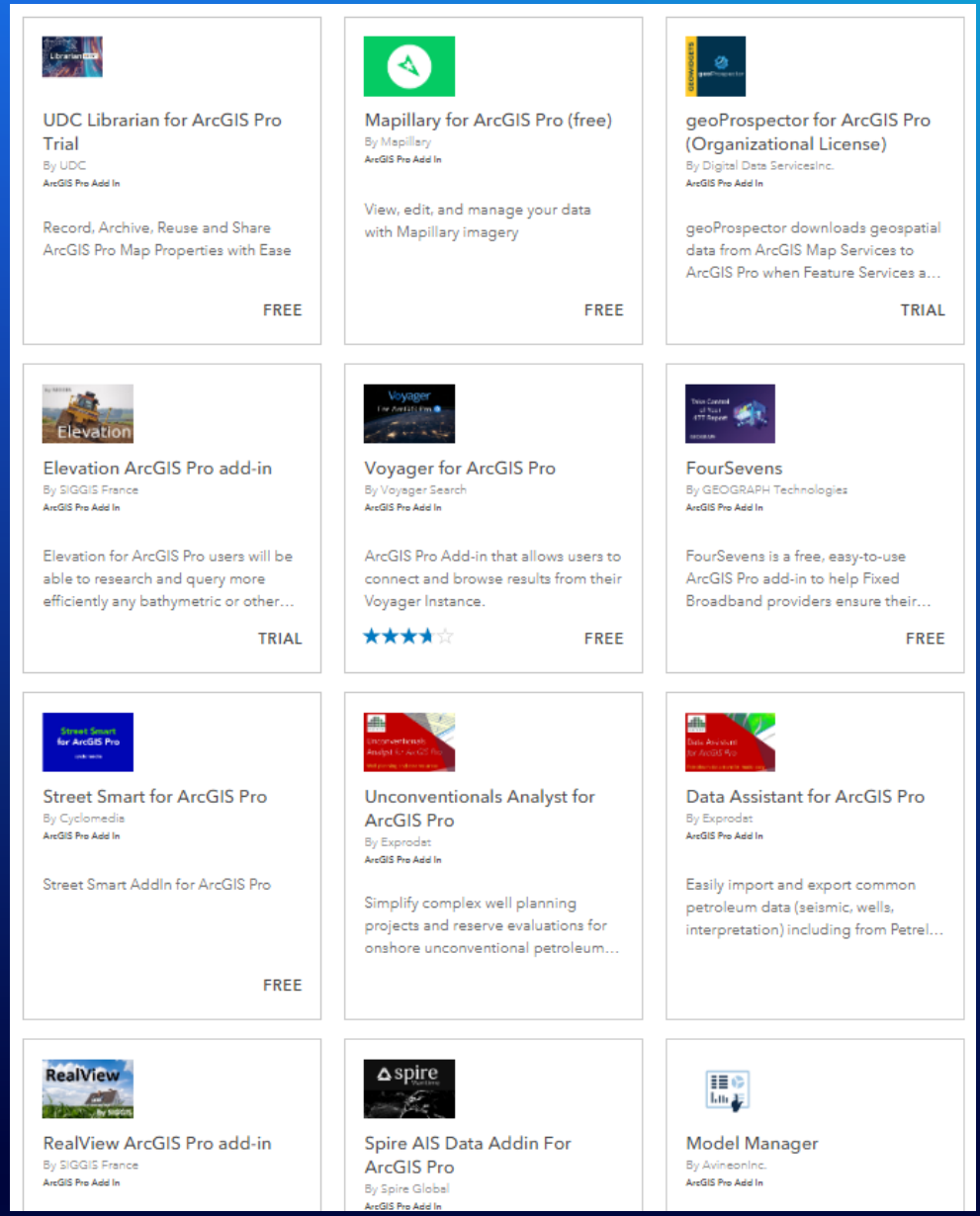


Esri Partner Add-Ins

Marketplace and Pro Add-Ins

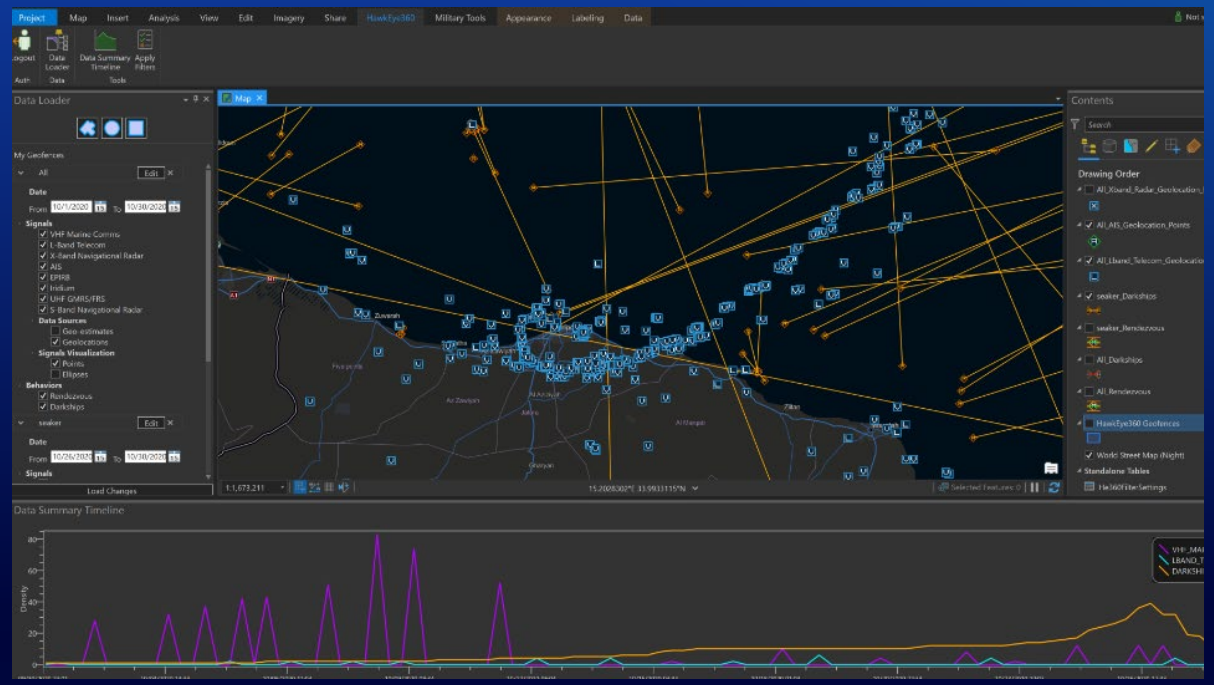
- Pro add-ins on the Marketplace
- Add-in listings – free and paid





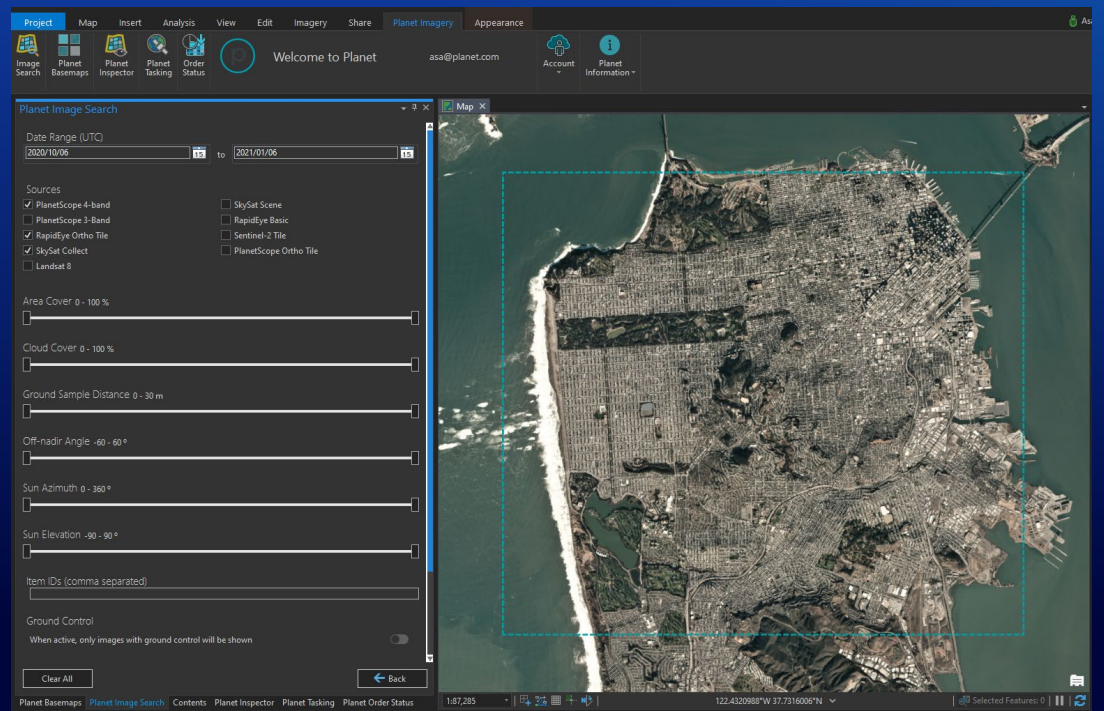
HawkEye RF Data Explorer Add-In for ArcGIS Pro

- Developed by: HawkEye 360
- Focus areas: Asset Tracking and Analysis, Situational Awareness, Real-Time Location Tracking, Risk Management
- Emphasis: Simplifies the workflow for using HawkEye 360's RF data and analytics
- How does it extend Pro:
  - Custom tab on the Pro UI with custom tools
  - Data loading tool for RF signal data, setting filters
  - Data summary timeline to identify trends and patterns
- **APIs:** Content, Framework, Map Authoring, Map Exploration



Planet ArcGIS Add-In V2

- Developed by: Planet
- Focus areas: Situational Awareness, Asset Tracking and Analysis, Operational Efficiency, Risk Management
- Emphasis: Supports search, streaming and download for Planet imagery & basemaps
- How does it extend Pro:
  - Custom tab on the Pro UI with custom tools
  - Search and workflow tasks on custom dockpanes
  - Map tools for defining AOI extent and other tasks
- **APIs:** Content, Map Authoring and Sharing



Developer Summit Sessions – Pro SDK

ArcGIS Pro Track – “**Simulive” Sessions with live Q&A**

- The Road Ahead: ArcGIS Pro
- Introduction to the Parcel Fabric API
- Regression Testing your ArcGIS Pro Add-In

Developer Summit Sessions – Pro SDK

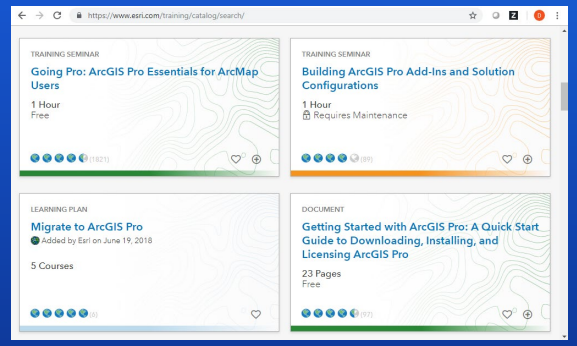
ArcGIS Pro SDK for .NET – **On-Demand Sessions**

- Practical Dockpane Design and Implementation
- What's New in Editing
- What's New in Sketch (Map) Tools for Editing
- Plugin Datasources, Deep Dive
- Working with Graphics Layers & Reports
- An Introduction to the Use of the CIM with Symbology in Pro
- Approaches for Pro Extensibility
- Utilizing GPS Devices in the API
- New Chart Renderers
- Synchronous and Asynchronous Custom Method Design
- Voxel Layer API

Search on "ArcGIS Pro SDK" in the Detailed Agenda for more sessions

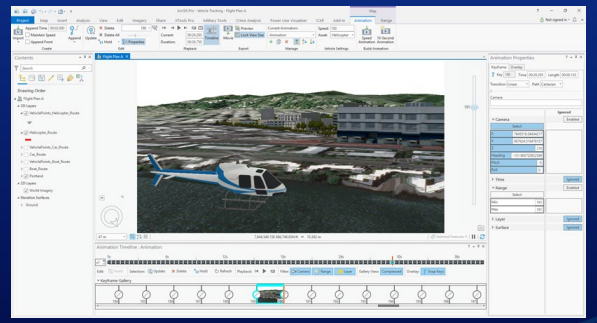
ArcGIS Pro Resources

Online Doc and Resources
pro.arcgis.com

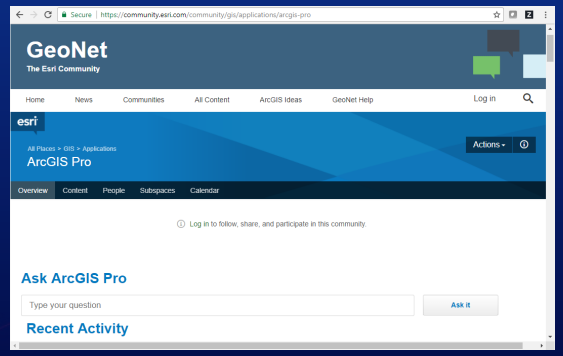


Training Classes
esri.com/training

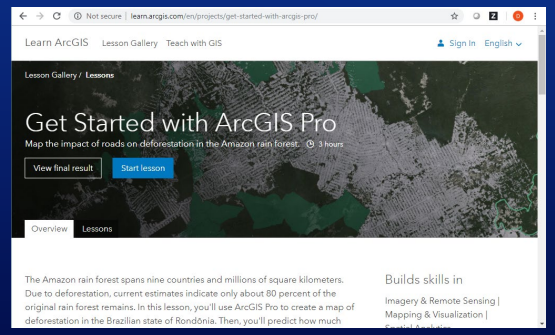
Videos
YouTube ArcGIS Channel



Samples
github.com/esri/arcgis-pro-sdk



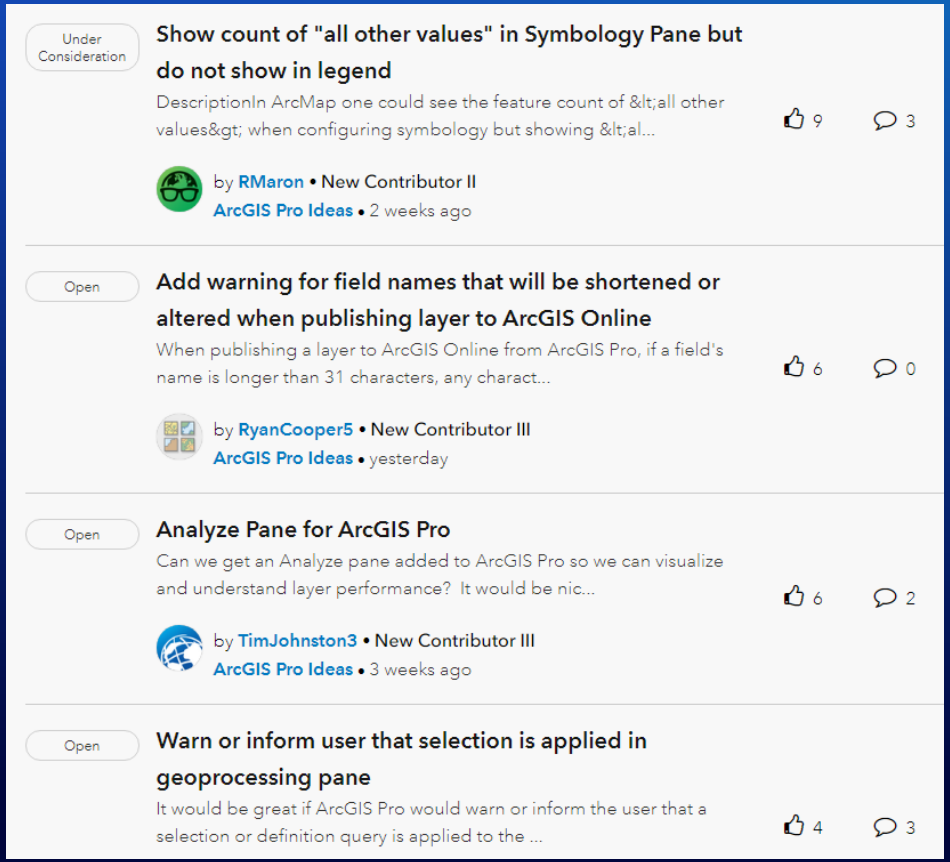
GeoNet
community.esri.com



Learn ArcGIS
learn.argis.com

ArcGIS Pro SDK for .NET – Your Feedback

- Customer feedback drives Pro SDK development
- Encouraging new requirements and the workflows these would support
- Feedback and Questions:
  - ArcGIS Pro SDK Group on GeoNet
  - Product Manager: Chris Zent, czent@esri.com
- Ideas:
  - ArcGIS Pro Ideas on GeoNet
  - “SDK” label



ArcGIS Pro SDK for .NET: Approaches for Pro Extensibility

- Find content for this and other Pro SDK technical sessions, including slides and sample code:
  - https://github.com/esri/arcgis-pro-sdk/wiki/tech-sessions

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