

Configurations

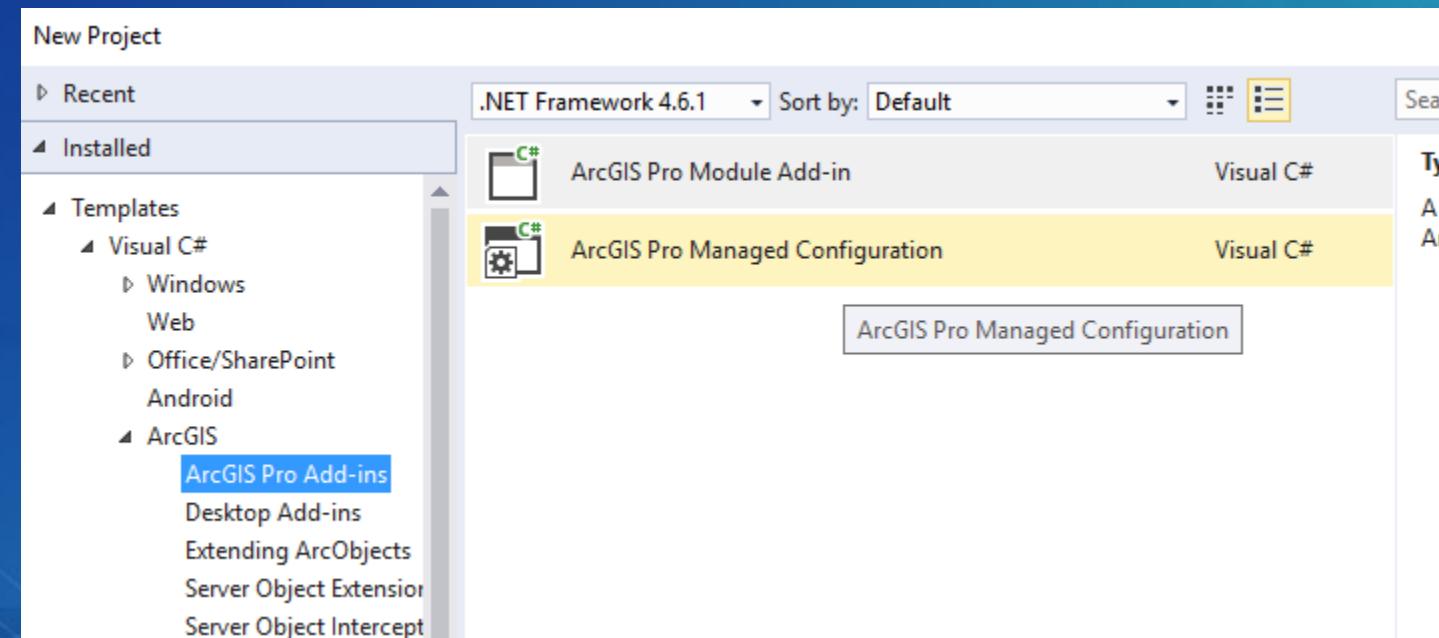
Charles Macleod
Wolfgang Kaiser

Configurations

- Extensibility pattern introduced at 1.4
 - All of the functionality of an Add-in plus:
 - Change the application title and icon
 - Change the application splash and start page
 - Conditional customization of the UI
 - Eg via the a user's permissions, role, portal group membership, etc

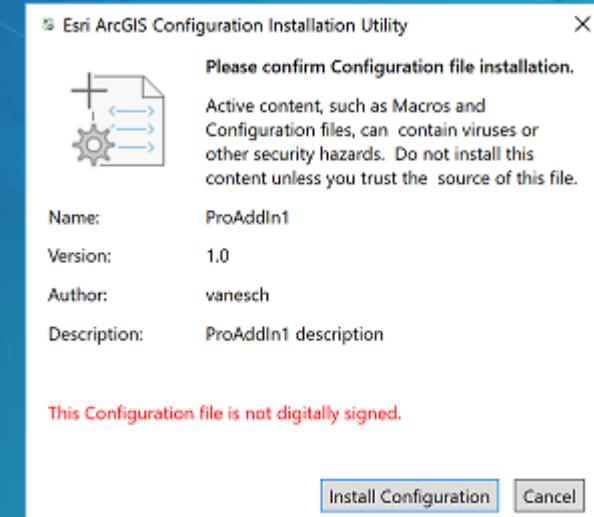
Configurations

- Project template installed with the Pro SDK
 - ArcGIS Pro Managed Configuration



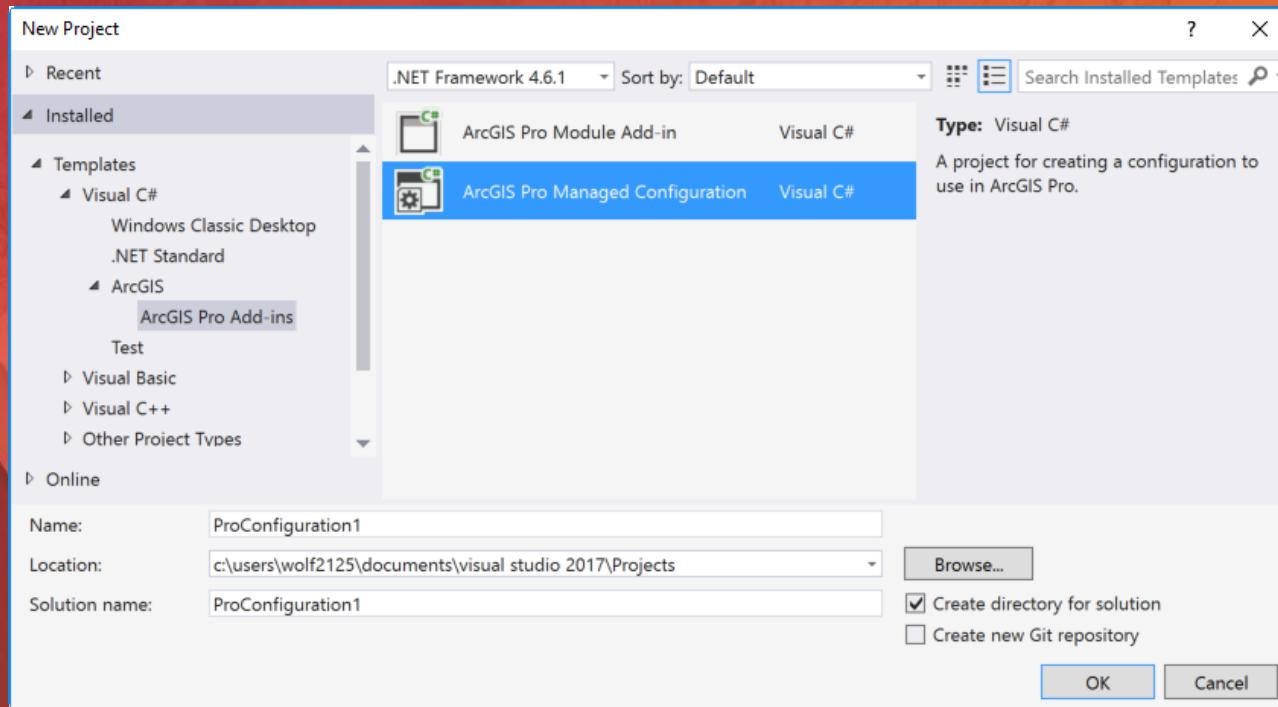
Characteristics

- **Archive .proConfigX**
- **Xcopy or double-click deployment (via RegisterAddin.exe)**
 - C:\Users\Public\Documents\ArcGIS\ArcGISPro\Configurations
- **Only one configuration can run per instance of Pro**
 - Specify it on the ArcGISPro.exe command line
 - **/config:{Configuration_name} command-line option.**
 - **C:\ArcGIS\bin\ArcGISPro.exe /config:Acme**



WALKTHROUGH

Using Pro SDK Configuration Template



Configurations

- **Basics:**
 - Overriding Splash, Start Page, About
 - Overriding Application Name + Icon
 - Tabs
- **Intermediate**
 - UI Customizations
 - Backstage
- **Advanced**
 - UI Customizations
 - Ribbon
 - Conditional UI Customizations
 - Overrides
 - Command Filters

Configurations

- Basics

ConfigurationManager Contract

- The Central Component of a Configuration is the ConfigurationManager
 - Defined in DAML (generated automatically by the template)

```
<Configuration>
  <ConfigurationManager className="ConfigurationManager1"/>
</Configuration>
```

- Provides a set of methods by which a developer can *override* “that” aspect of Pro
 - Most commonly Splash and Start Page
- All overrides are optional.
 - Delete any override (or return null) to retain the default Pro behavior

```
public abstract class ConfigurationManager {
    protected internal virtual Window OnShowSplashScreen();
    protected internal virtual FrameworkElement OnShowStartPage();
    protected internal virtual FrameworkElement OnShowAboutPage();
    ...
```

ConfigurationManager – Splash Screen

- Use **System.Windows.Window**
 - To mimic Pro dimensions 2:1 Width to Height Ratio
 - Simply use the provided splash screen and modify it to your purposes
 - Override the **OnShowSplashScreen**
 - Note: Pro Extensions are not loaded when your splash screen is called.
 - Do NOT use Pro resources or styles in your Splash Screen.

```
public abstract class ConfigurationManager {  
    protected override System.Windows.Window OnShowSplashScreen() {  
        return new SplashScreen();  
    }  
}
```

ConfigurationManager – Start Page

- Start Page is a User Control + View Model pair
- Start page is shown at the conclusion of Pro Initialization
 - It is only shown once – at the beginning of the Pro session
 - Either open an existing project or create a new one
 - Closed automatically by Pro when the project is opened.
- Ideally, support all 3 themes – Light, Dark, High Contrast
 - You may safely utilize Pro styles and resources

ConfigurationManager - StartPage

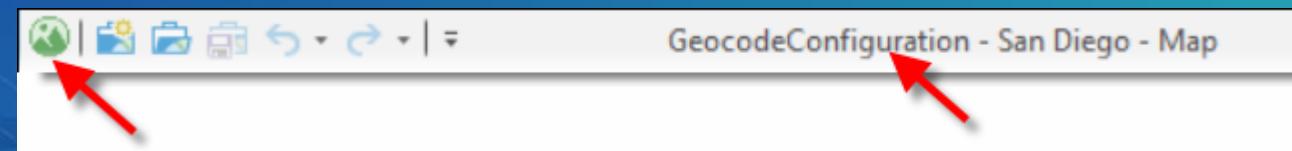
- **Override OnShowStartPage**
 - You are responsible for hooking up your view model
 - User interaction should trigger a project open or creation

```
private StartPageViewModel _vm;
protected virtual FrameworkElement OnShowStartPage() {
    if (_vm == null)
        _vm = new StartPageViewModel();
    var page = new StartPage();
    page.DataContext = _vm;
    return page;
}

//Elsewhere...open project which will automatically close your start page
Project.OpenAsync(SelectedProjectFile.FullName)
```

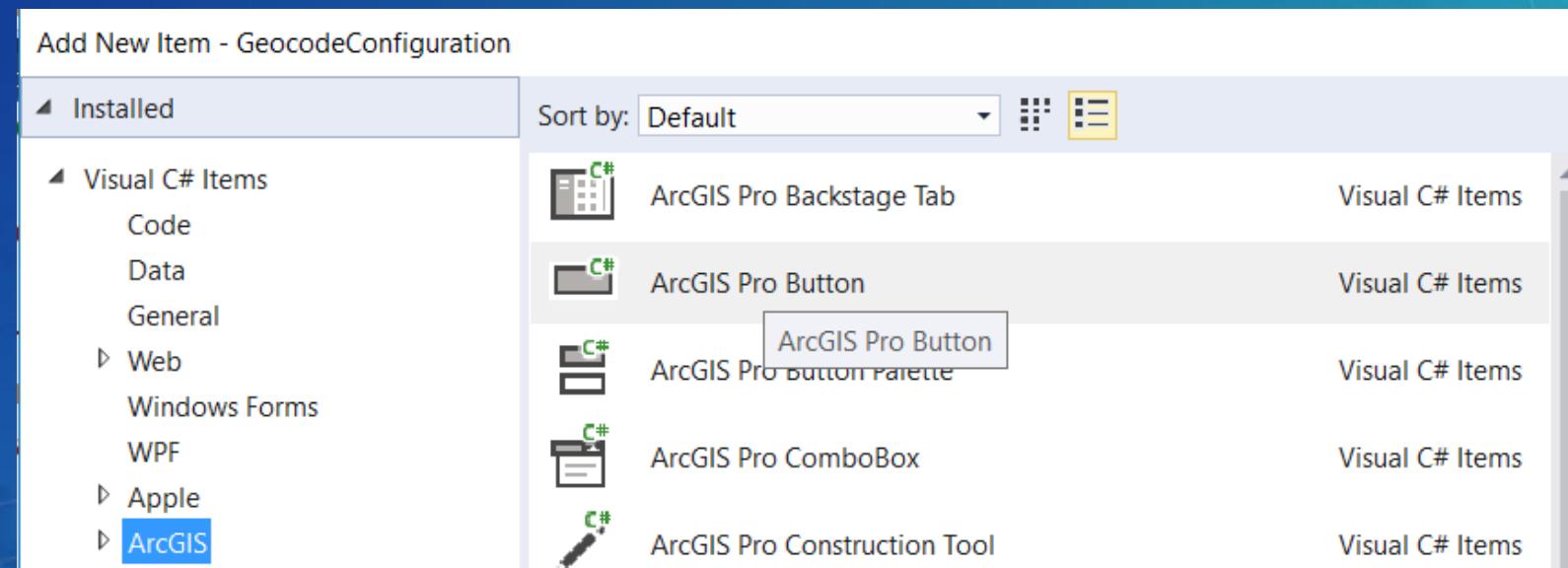
ConfigurationManager – About, Name, Icon

- **About page is a User Control**
 - Your content is added into the Backstage About Page
 - Override `OnShowAboutPage`. It is called each time the About Page is shown
- **Application Name**
 - Override `ApplicationName`
 - Shown on the Title bar
- **Application Icon**
 - Override Icon
 - Shown on the Title bar, Upper Left



UI Customization

- To support your Configuration Workflow
 - Add custom tab(s) and Commands
 - No different than for an Add-in



Configurations

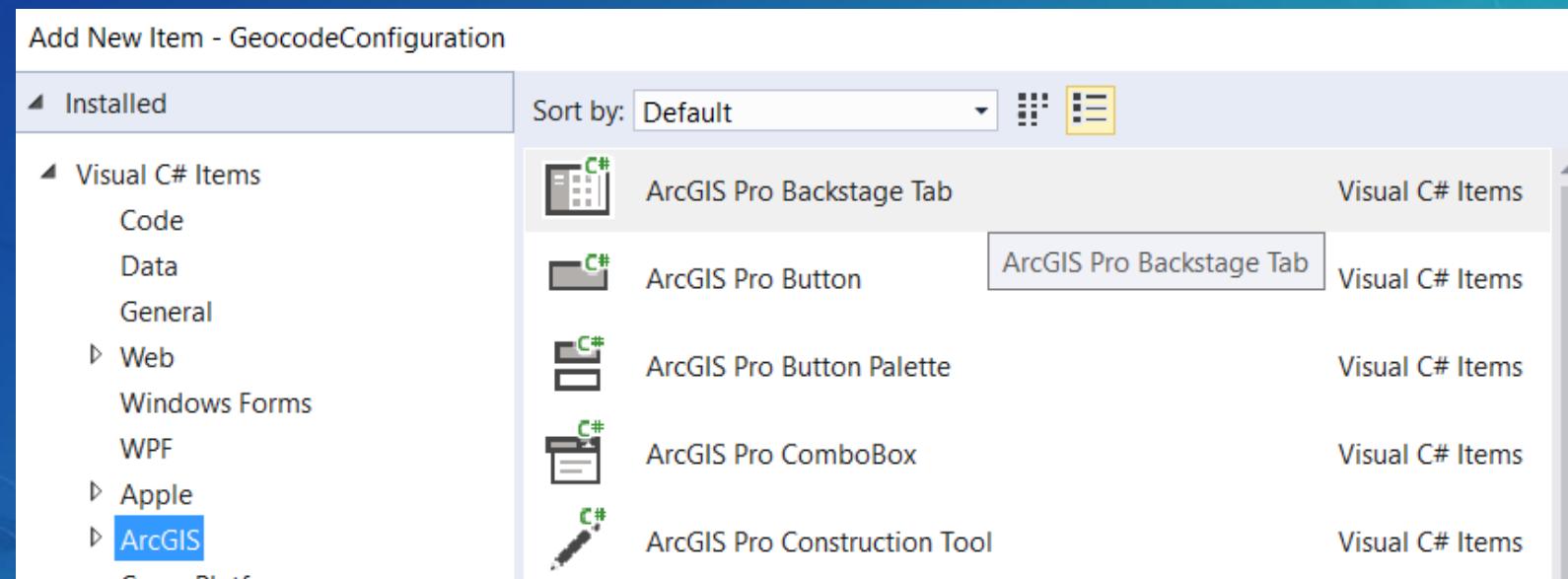
- Intermediate

Configurations – Intermediate

- Customize Backstage (eg provide custom New and Open experience)
 - Remove unwanted tabs from backstage

Configurations - Intermediate

- Adding custom functionality
 - Custom backstage tab(s)
 - Eg. Provide custom open/new experience
 - Use Add-in backstage tab item template



Configurations - Intermediate

- **Customize UI - Remove existing functions and tabs**
 - Can use DAML to update and delete ProUI
 - `updateTab`, `deleteTab`, etc.
 - May be preferable to implement UI changes in code
 - Use the `OnUpdateDatabase` override

ConfigurationManager - OnUpdateDatabase

- Invoked when Pro has consolidated entire UI from all modules and installed Add-ins
 - Pro UI definition in XML is passed in to the function as its parameter.
 - Changes made to the XML are propagated back to Pro UI

```
protected override void OnUpdateDatabase(XDocument database) {  
    var nsp = database.Root.Name.Namespace;  
    var tabElements = from seg in database.Root.Descendants(nsp + "tab") select seg;  
  
    // collect all elements that need to be removed  
    var elements = new HashSet< XElement>();  
    foreach (var tabElement in tabElements) {  
        if (tabElement.Attribute("id").Value.StartsWith("..."))  
            elements.Add(tabElement);  
    }  
    // remove the elements  
    foreach (var element in elements)  
        element.Remove();  
}
```

Configurations

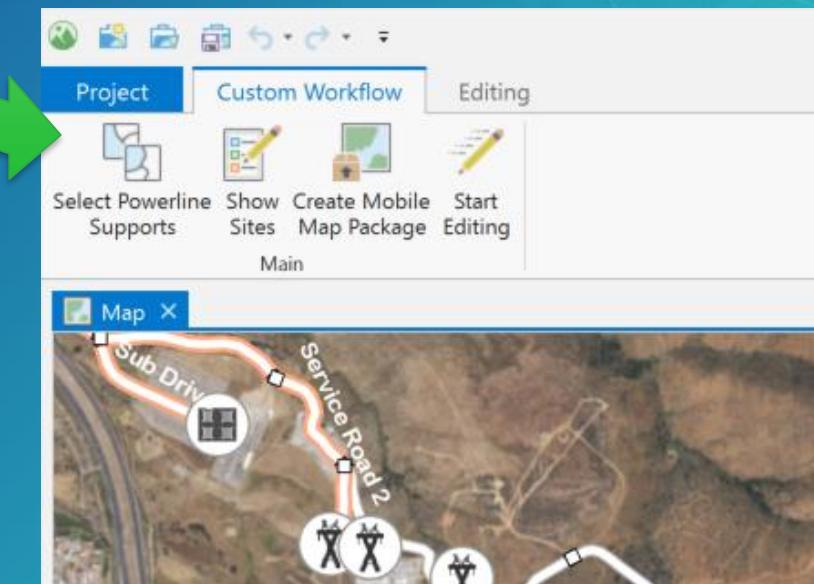
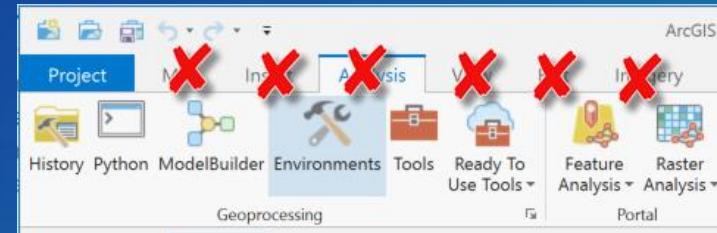
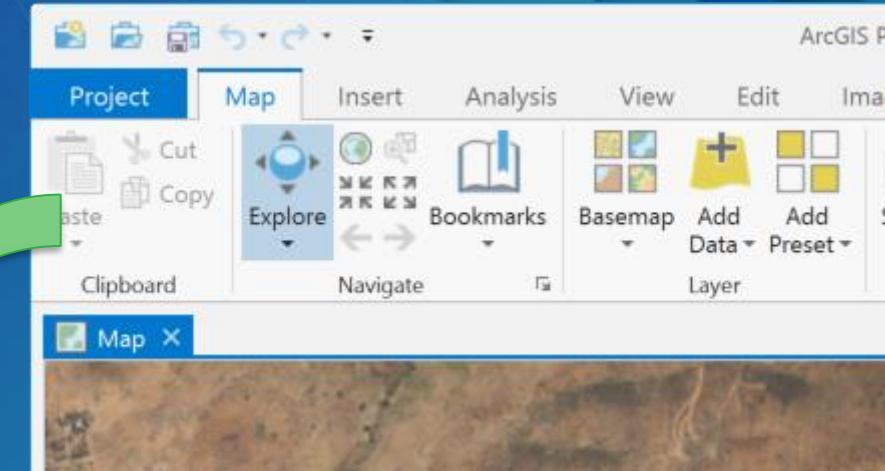
- Advanced

Configurations – Advanced

- **Customize UI**
 - Remove existing functions and tabs
- **Conditional Customization:**
 - Provide a different UI depending on the permissions of the user running Pro
 - Eg based on ActiveDirectory role, ArcGISPortal query
 - Filter Command functionality via a Command Filter
 - Buttons, Tools, Menus, etc. on the Ribbon

Customize UI

- Remove existing functions and tabs
 - OnUpdateDatabase revisited
 - Can modify UI via DAML
 - May be more preferable to use code



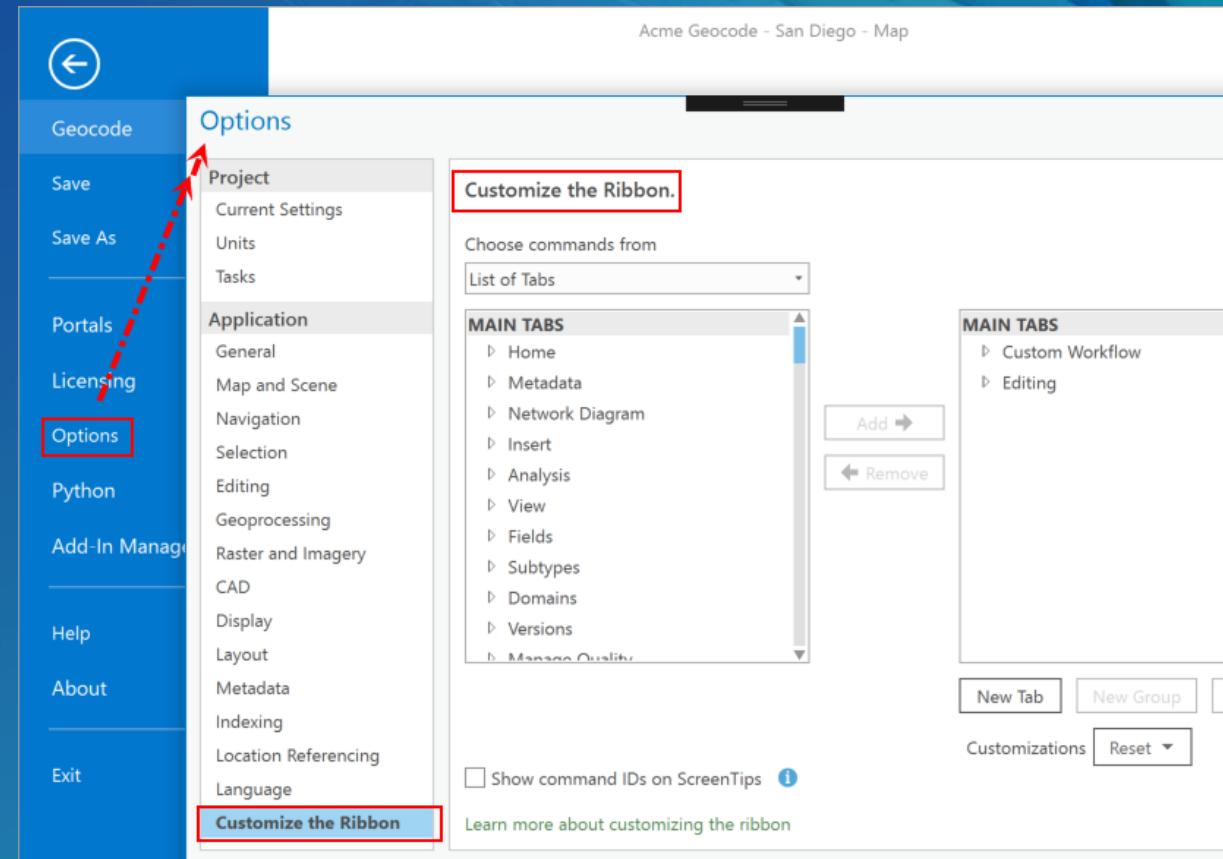
ConfigurationManager - OnUpdateDatabase

- We delete all unwanted tabs
 - Changes made to the XML are propagated back to Pro UI

```
protected override void OnUpdateDatabase(XDocument database) {  
    var nsp = database.Root.Name.Namespace;  
    var tabElements = from seg in database.Root.Descendants(nsp + "tab") select seg;  
    // we go through all tab elements and remove the ones we don't want  
    foreach (var tabElement in tabElements.ToList()) {  
        if (tabElement.Parent == null) continue;  
        var id = tabElement.Attribute("id").Value;  
        // for the backstage we have to remove selectively  
        if (tabElement.Parent.Name.LocalName.StartsWith("backstage")) {  
            if (id == "esri_core_newProjectBackStageTab" ||  
                id == "esri_core_openProjectBackStageTab") tabElement.Remove();  
        }  
        else if (!id.StartsWith("GeocodeConfiguration_")) tabElement.Remove();  
    }  
}
```

ConfigurationManager – Block UI Customization

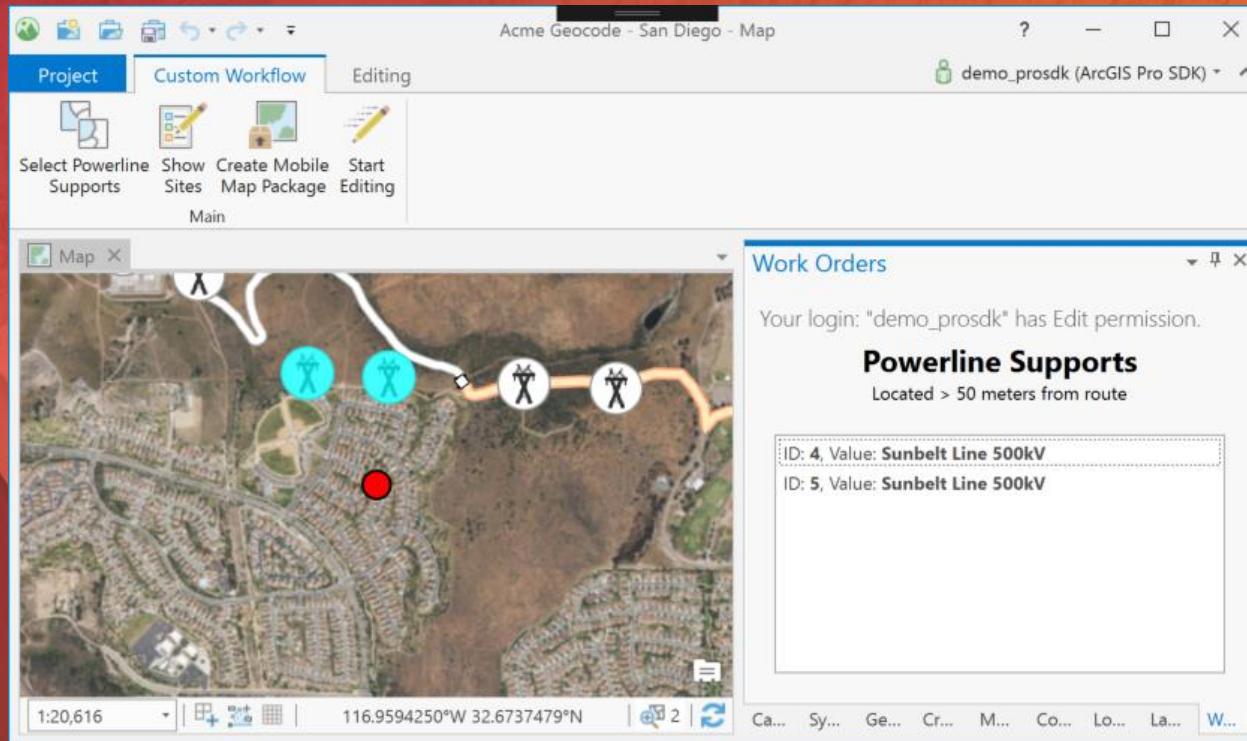
- Removed tabs can be added by the user
 - Via Options / Customize the Ribbon dialog
- Disabling “Customize the Ribbon”
 - In the config.daml under the ConfigurationManager tag: set the blockCustomizeDialog attribute to true
 - Now the “Customize the Ribbon” option is not available anymore



```
<Configuration appName="GeocodeConfigurationPortal"  
           blockCustomizeDialog="true">  
    <ConfigurationManager className="ConfigurationManager1" />  
</Configuration>
```

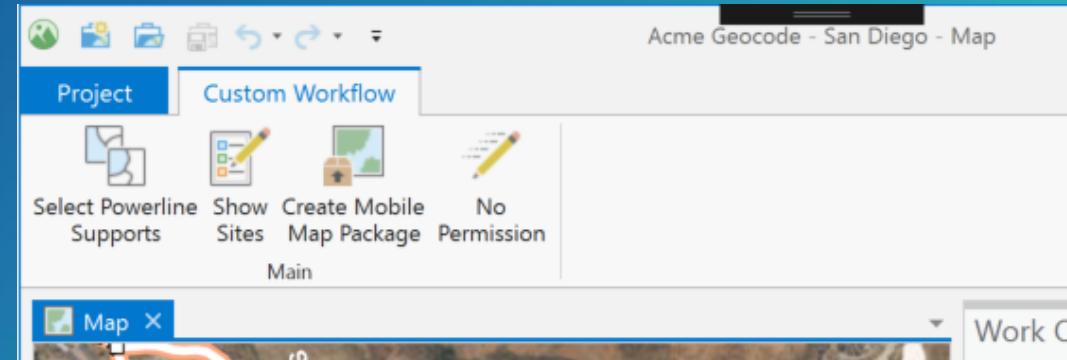
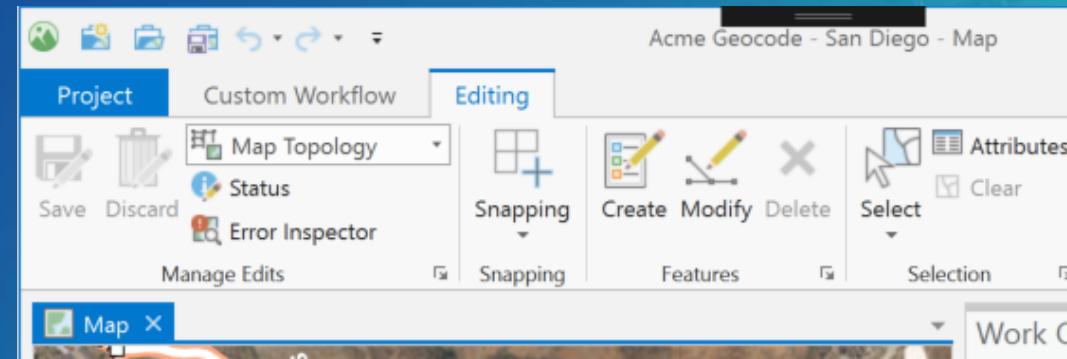
Pro Ribbon UI Advanced Customization

Remove existing functions and
selective tabs



Conditional Customization

- Provide a different UI depending on the permissions of the user running Pro
- For this demo we use ArcGIS Online Group Membership and two user accounts:
 - Demo_prosdk: member of ForEditing, and ForViewing
 - Demo_prosdk2: member of ForViewing only



Home Gallery Map Scene Groups Content Organization

Demo

Groups

My Groups Featured Groups My Organization's Groups

+ Create New Group

Search My Groups

1 - 2 of 2

Sort by: Title ↑

Owner: demo_prosdk
Created: Mar 4, 2017 Last Updated: Mar 4, 2017
Viewable by: Group Members
For editing

Owner: demo_prosdk
Created: Mar 4, 2017 Last Updated: Mar 4, 2017
Viewable by: Group Members
For viewing

Customization based on ArcGISPortal group membership

View ArcGIS Online configuration

Conditional Customization – based on ArcGISPortal group membership

OnApplicationInitializing, OnApplicationReady

- There are two key callbacks with respect to ConfigurationManager lifecycle:
 - OnApplicationInitializing
 - Denotes that it is now safe to call Portal
 - OnApplicationReady
 - Denotes that it is now safe to call (any) of Pro's APIs

```
protected override void OnApplicationInitializing(CancelEventArgs cancelEventArgs)
{
    // Get all ArcGIS Online Group Memberships for the current login user
    List<string> groupNames = GetPortalGroupMembership();
    // If the user is member of ForEditing then IsEditor is true
    Module1.Current.IsEditor = groupNames.Contains("ForEditing");
}
```

ConfigurationManager - OnCreateDaml

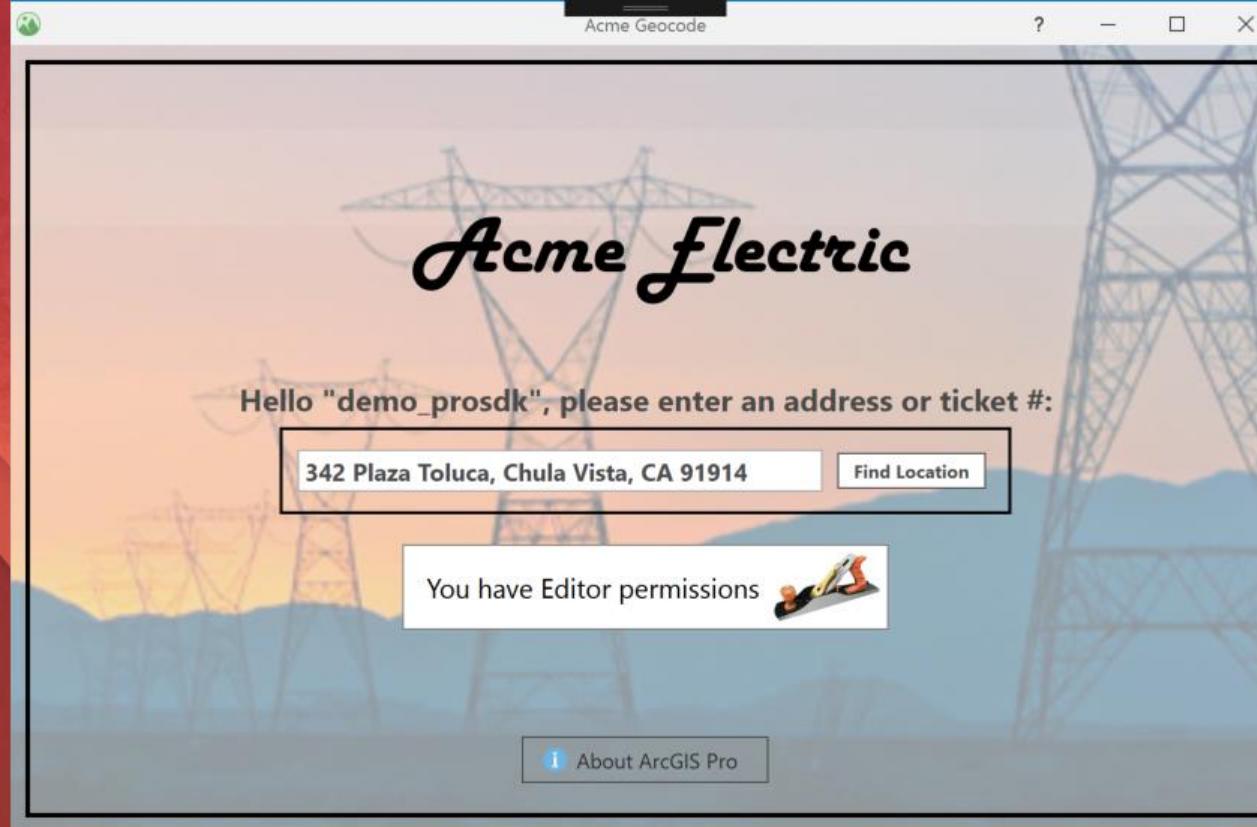
- Use **OnCreateDaml** to return a DAML string
 - Replaces any DAML read from our Config.daml
 - Is not “in addition to” Config.daml
 - Safe to call Portal. OnApplicationInitializing has occurred
 - OnCreateDaml is most appropriate for *adding* functionality conditionally

```
protected internal virtual string OnCreateDaml() {  
    //E.g. Construct a url to service, database, portal for Config daml content  
    string query = ${_svc_url}?user={_username}&config={_my_config}";  
    string response = "";  
    WebClient wc = new WebClient();  
    using (StreamReader sr = new StreamReader(wc.OpenRead(query), Encoding.UTF8, true))  
        response = sr.ReadToEnd();  
    return response;  
}
```

ConfigurationManager - OnUpdateDatabase

- Previously discussed
 - OnApplicationInitializing has been called
 - We are passed the complete DAML for the Pro UI
 - Based on a portal query or active directory query or...make modifications to Pro DAML
 - Use OnUpdateDatabase to add, update, delete Pro UI functionality

```
protected override void OnUpdateDatabase(XDocument database) {
    var nsp = database.Root.Name.Namespace;
    var tabElements = from seg in database.Root.Descendants(nsp + "tab") select seg;
    foreach (var tabElement in tabElements.ToList()) {
        var id = tabElement.Attribute("id").Value;
        // treat the Editing tab special, only remove editing tab if user is not an editor
        if (id == "GeocodeConfiguration_Edit" && !Module1.Current.IsEditor)
        {
            tabElement.Remove();
        }
        else if (!id.StartsWith("GeocodeConfiguration_")) tabElement.Remove();
    }
}
```



Customization based on ArcGISPortal group membership

View Configuration Demo with
Editor and Viewer Only Users

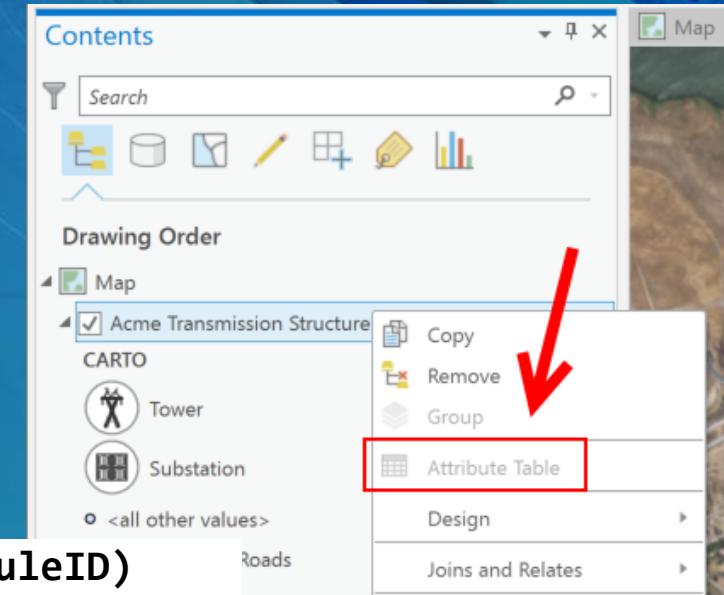
ConfigurationManager – Command Filter

- Use to prevent execution of relevant commands.
 - Eg disable editing commands
- Two overrides:
 - **OnCanExecuteCommand:** Disable a command on the MouseOver
 - **OnExecuteCommand:** Prevent execution of a command when it is clicked
- In both cases, the callback is passed the DAML ID of the relevant command
 - Filter code must determine whether *that* command can be enabled or executed
 - Note: **OnApplicationReady** has been called so it is safe to access any API aspect

ConfigurationManager – Command Filter

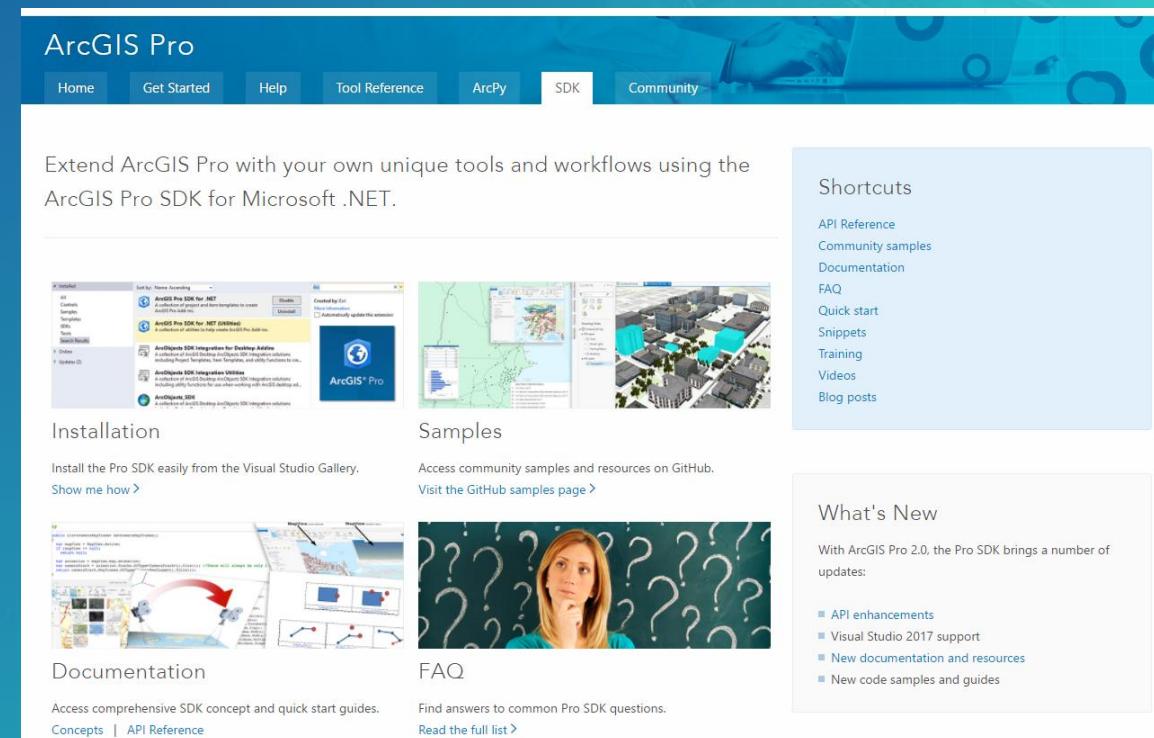
- Intercepting the behavior of existing ArcGIS Pro commands:
 - Example: OnCanExecuteCommand
 - Disable the ‘Command’ on the ArcGIS Pro UI if the user doesn’t have Edit Permission

```
protected override bool OnCanExecuteCommand(string cmdID, string moduleID)
{
    if (cmdID.StartsWith("esri_edit"))
    {
        if (!Module1.Current.IsEditor)
        {
            // The logged in user has no Editor permission => disable command
            return false;
        }
    }
    return base.OnCanExecuteCommand(cmdID, moduleID);
}
```



Questions and Follow-up

- Come by the ArcGIS Pro Area in the Showcase
- SDK tab on the ArcGIS Pro main page:
 - pro.arcgis.com
- Pro SDK feedback – czent@esri.com



The screenshot shows the ArcGIS Pro main page with a blue header. The top navigation bar includes Home, Get Started, Help, Tool Reference, ArcPy, **SDK**, and Community. Below the header, there's a banner with the text "Extend ArcGIS Pro with your own unique tools and workflows using the ArcGIS Pro SDK for Microsoft .NET." To the right of the banner is a "Shortcuts" sidebar with links to API Reference, Community samples, Documentation, FAQ, Quick start, Snippets, Training, Videos, and Blog posts. The main content area features several sections: "Installation" (with a screenshot of the Visual Studio Gallery), "Samples" (with screenshots of various ArcGIS Pro projects), "Documentation" (with a screenshot of the ArcGIS Pro help documentation), and "FAQ" (with a woman thinking in front of question marks). A "What's New" section at the bottom right discusses updates for ArcGIS Pro 2.0.

ArcGIS Pro

Home Get Started Help Tool Reference ArcPy SDK Community

Extend ArcGIS Pro with your own unique tools and workflows using the ArcGIS Pro SDK for Microsoft .NET.

Shortcuts

- API Reference
- Community samples
- Documentation
- FAQ
- Quick start
- Snippets
- Training
- Videos
- Blog posts

Installation

Install the Pro SDK easily from the Visual Studio Gallery.
[Show me how >](#)

Samples

Access community samples and resources on GitHub.
[Visit the GitHub samples page >](#)

Documentation

Access comprehensive SDK concept and quick start guides.
[Concepts](#) | [API Reference](#)

FAQ

Find answers to common Pro SDK questions.
[Read the full list >](#)

What's New

With ArcGIS Pro 2.0, the Pro SDK brings a number of updates:

- API enhancements
- Visual Studio 2017 support
- New documentation and resources
- New code samples and guides

Many Pro SDK Resources

- [SDK home page](#) – main resource page
- [Esri Training](#) – instructor-led Esri training course
- [Documentation Wiki](#) – primary documentation site with concept and guide docs, and much more
- [Community Samples](#) – ready to use code solutions categorized by functional area
- [Snippets](#) – code snippets by functional area
- [GeoNet Pro SDK Group](#) – developer community
- [API Reference](#) – full API reference
- [FAQ](#) – answers to common questions
- [Blog posts](#) – focused on the Pro SDK

The screenshot displays several resources related to the ArcGIS Pro SDK:

- ArcGIS Pro Website:** Shows the "ArcGIS Pro SDK for Microsoft .NET" page with a brief description and links to "Samples".
- GitHub Repository:** Shows the "Esri / arcgis-pro-sdk" repository with 34 commits, a master branch, and a sample added by "Wolf-K".
- GeoNet Group:** Shows the "ProSnippets Editing" page, which includes a detailed table of properties for an "Editing" class.
- Blog Post:** Shows a snippet of JavaScript code for "Find edit template by name" and a "Welcome!" message.
- Shortcuts Sidebar:** Includes links to API Reference, Community samples, Documentation, FAQ, Quick start, Snippets, Training, Videos, and Blog posts.

Pro SDK Training

- Extending ArcGIS Pro with Add-Ins – Esri Instructor-led training course on the Pro SDK
- Great way to get a comprehensive introduction
- Online offerings – very interactive and productive
- Esri.com/training

The screenshot shows the course details for 'Extending ArcGIS Pro with Add-Ins'. At the top right, there's an 'Instructor-Led' badge. Below it, the title 'Extending ArcGIS Pro with Add-Ins' is displayed, along with a 3D topographic map graphic. To the right of the title are two buttons: '3 Days (24 Hours)' and '+ Wish List'. The main content area is titled 'Goals' and contains four items, each with an icon and a brief description:

Goal	Description
	Develop, test, and deploy ArcGIS Pro SDK customizations using the add-in extensibility framework.
	Customize the ArcGIS Pro ribbon and apply key programming patterns.
	Create custom tools to interact with maps and scenes and select or edit geodatabase features.
	Create dock panes and other controls to work with projects, portals, items, views, layers, symbols, and renderers.

A 'Download Table of Contents' button is located below the goals section. Further down, there's a 'Upcoming Classes' table with the following data:

Date & Time	Location	Action
August 21 - 23, 2017 8:30 AM - 5:00 PM	Broomfield, CO	Register
October 4 - 6, 2017 8:30 AM - 5:00 PM Mountain Daylight Time	Online	Register
October 23 - 25, 2017 8:30 AM - 5:00 PM	Olympia, WA	Register
October 31 - November 2, 2017 8:30 AM - 5:00 PM Mountain Daylight Time	Online	Register

To the right of the classes table, there are 'Get Assistance' and 'Suggested Skills' buttons, and a note about required skills: 'C# or Visual Basic.NET programming skills and completion of ArcGIS Pro: Essential Workflows or equivalent knowledge are required.'



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SCIENCE
OF
WHERE

Addendum

- ConfigurationManager – Licensing
- ConfigurationManager Contract – Lifecycle sequence
- More Pro SDK resources

ConfigurationManager - Licensing

- **Override OnValidateLicense.**
 - Perform custom licensing checking as needed
 - Return false to indicate a licensing issue
 - Will shutdown Pro
 - Last callback before the start page is shown

```
protected override bool OnValidateLicense() {  
    //TODO: custom licensing logic as needed  
    //return false to shutdown Pro  
    return true;  
}
```

ConfigurationManager Contract – Lifecycle sequence

```
public abstract class ConfigurationManager {
    protected internal virtual Window OnShowSplashScreen();
    protected virtual string RuntimeDamlFile { get; }

    protected virtual void OnApplicationInitializing(CancelEventArgs cancelEventArgs);
    protected virtual string OnCreateDaml();
    protected virtual string ApplicationName { get; }
    protected internal virtual void OnUpdateDatabase(XDocument database);
    protected virtual ImageSource Icon { get; }
    protected internal virtual bool OnValidateLicense();
    protected internal virtual FrameworkElement OnShowStartPage();

    protected virtual void OnApplicationReady();
    protected virtual bool OnCanExecuteCommand(string cmdID, string moduleID);
    protected virtual bool OnExecuteCommand(string cmdID, string moduleID);
    protected internal virtual FrameworkElement OnShowAboutPage();
}
```

ConfigurationManager Contract – Lifecycle sequence

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}
```

ArcGIS Marketplace and Pro Add-Ins

A new way to get your Pro Add-Ins into the Marketplace

- Pro add-in sales directly from the Marketplace
- Contact your partner manager for next steps
- Visit Marketplace Area in Showcase

The screenshot shows the ArcGIS Marketplace interface. At the top, there's a navigation bar with links for 'Become a Provider', 'Get Help', 'Sign In', and the Esri logo. Below the navigation is a search bar labeled 'Search for apps and data'. The main content area is titled 'New' and features a sidebar with a 'Show Me' dropdown menu. The 'New' option is selected and highlighted in blue. Other options in the menu include 'All', 'Applications', 'Data', and 'By Esri'. To the right of the sidebar, there are several app cards displayed in a grid. Each card includes the app's name, developer, description, and rating. The cards shown are:

- Ecological Marine Unit (Example App)** by Esri Labs. Description: Better Understanding of Ocean Ecosystems. Rating: 5 stars (0 reviews).
- UtiliSync Documentation Automation** by UtiliSync. Rating: 5 stars (0 reviews).
- Tropical Cyclone Wind Hazards & Impacts** by Kinetic Analysis Corporation. Description: Kinetic Analysis Corporation. Rating: 5 stars (0 reviews).
- Mapillary for ArcGIS Online** by esri labs. Description: Tile Package Creator. Rating: 5 stars (0 reviews).
- FINDFZ** by FINDFZ. Description: TPK's made easy. Rating: 5 stars (0 reviews).



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

Esri Developer Summit Europe

October 24-26 Berlin Congress Center Germany

- Pre-Summit Hands-On Training
 - Introduction to the ArcGIS Python API
 - Introduction to the ArcGIS Pro SDK for .NET
 - Introduction to the ArcGIS API for JavaScript
 - ArcGIS Developer Workshop for Esri Distributors and Esri Partners
- Technical Sessions
 - Over 60 sessions on ArcGIS Runtime, Enterprise, Online, Python, JavaScript, Desktop, and Pro
- User Presentations
- Speedgeeking
- Exhibit and Networking Opportunities for Partners