CSCL Custom Tool Analysis Support for ArcGIS Pro 2023

*Activity Description*

*NYC Office of Technology & Innovation Advantage Program*

#### Introduction

NYC Department of City Planning (DCP) and NYC Office of Technology & Innovation are jointly responsible for the maintenance of the authoritative CSCL dataset for New York City.

Their current workflow consists of a customized set of tools to edit data and all associated attributes with datasets that are impacted. This currently occurs within Esri’s ArcMap software utilizing a series of ArcGIS Desktop [Class Extensions](http://help.arcgis.com/en/sdk/10.0/arcobjects_net/conceptualhelp/index.html#//000100000201000000) and custom tools to achieve their workflows.

At the time when these tools were developed, Class Extensions were a common approach to implement custom behavior to object classes and feature classes in a geodatabase not available using out-of-the-box functionality. These behaviors include capabilities such as advanced validation rules, attribute calculations, and event triggers and actions.

ArcMap is being retired in 2026 per the Esri Product Life Cycle below, so in anticipation of this DCP would like to conduct a proof of concept (POC) to determine if Esri’s next generation desktop software, ArcGIS Pro, can meet the demands of the DCP workflows using many of the commercial-off-the-shelf (COTS) tools and capabilities available in ArcGIS Pro.

<https://support.esri.com/en/Products/Desktop/arcgis-desktop/arcmap/10-8-2#product-support>

Due to the importance of the CSCL system to New York City, the Office of Technology & Innovation (OTI) has proposed the use of their Esri Advantage Program for DCP to pursue this POC.

The purpose of the POC is to determine if Esri can replicate two priority customized workflows using a COTS approach in ArcGIS Pro, especially since Class Extensions often combine various actions and validations behind the scenes that are not apparent to the end user.

Esri has had multiple meetings with the DCP CSCL maintenance team, and documentation on the existing priority workflows has been provided, along with a live demo of these target priority workflows.

#### ArcGIS Pro Migration - Pilot

Esri will provide up to ***120 hours*** of remote consulting services support to develop an example workflow using ArcGIS Pro and existing out-of-the-box functionality to replicate a workflow.

The workflows to be replicated as part of this pilot will include those demoed by DCP on Jan 25th 2023: reshaping an existing street centerline and adding a new street centerline. The pilot workflows will also adhere to the topological business rules and the polygon hierarchy for the database, as per the documentation provided by DCP.

The Esri team will recreate an editing environment and review the following potential approaches, to deem their applicability to the workflow replacement:

* Tools – This would refer to the out of the box tools included with Pro, such as Editing, Geoprocessing, etc.
* Attribute Rules - [Attribute rules](https://pro.arcgis.com/en/pro-app/help/data/geodatabases/overview/an-overview-of-attribute-rules.htm) are a new configurable option available in ArcGIS Pro that enhances the editing experience and improves data integrity for geodatabase datasets.
* Contingent Values - [Contingent values](https://pro.arcgis.com/en/pro-app/help/data/geodatabases/overview/contingent-values.htm), sometimes referred to as contingent attribute values, are a data design feature that allow you to make values in one field dependent on values in another field.
* Topology – Modeling topological relationships as [Geodatabase Topology](https://pro.arcgis.com/en/pro-app/help/data/topologies/topology-in-arcgis.htm) is available in ArcGIS Pro which can help with data quality, integrity, and data automation.
* Tasks – ArcGIS Pro has the concept of “[Tasks](https://pro.arcgis.com/en/pro-app/help/tasks/whatistask.htm)” which are a set of pre-configured steps that guide users through a workflow or business process.
* Custom Geoprocessing – In addition to the many out of the box geoprocessing tools, ArcGIS Pro offers the capability to create [custom geoprocessing tools](https://pro.arcgis.com/en/pro-app/help/analysis/geoprocessing/basics/use-a-custom-geoprocessing-tool.htm) to address any functionality that is not available. These are typically built using Python.
* System Configuration – This refers to configuring IT-related settings, for example native database functionality, security settings, web services, etc. to achieve the desired result.
* ArcGIS Pro SDK Add-Ins – ArcGIS Pro has a .NET based [SDK](https://pro.arcgis.com/en/pro-app/sdk/) that can be used to build custom “Add-ins” that extend the application with custom functionality, or entire solutions called “[configurations](https://github.com/esri/arcgis-pro-sdk/wiki/ProConcepts-Configurations)” which provide more extensive customizations such as entire new User Interfaces.

Esri will recreate the workflow using a combination of the above tools and showcase this workflow to the DCP team.

#### Esri Responsibilities

* Provide up to ***120 hours*** of remote consulting services as described above

#### DCP Responsibilities

* Provide necessary background information and documentation about the current ArcGIS Desktop workflows and tools
* Provide appropriate management and technical staff to participate in the remote support activities, including reach back questions about the existing workflow, if applicable.

# Learning and Services Credit Estimates

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| **Activity** | **Credits** |
| CSCL Custom Tool Analysis Support for ArcGIS Pro | 60 |