ArcGIS Arcade: an Introduction

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Agenda

- Introduction – What is ArcGIS Arcade?
- Map Viewer (Beta) – Symbology, Pop-ups and Labels
- ArcGIS Pro – Labels and Attribute Rules
- Dashboards Beta – List and Indicator Elements
- Conclusion – What's Coming and Resources
- Q&A

What is Arcade?

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ArcGIS Focused

Intuitive and Dynamic

Supports basic to advanced capabilities

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Intuitive and Dynamic

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What Arcade is Not?

Not a stand-alone programming language

Not a replacement for Python

Not used for Geoprocessing

A portable, lightweight and secure GeoSpatial scripting language…

Desktop

Apps

APIs

</>

ArcGIS Arcade

ArcGIS Runtime SDKs

ArcGIS API for JavaScript

ArcGIS Pro

ArcGIS Online

...used throughout the ArcGIS platform to provide a mechanism for defining and sharing expressions.

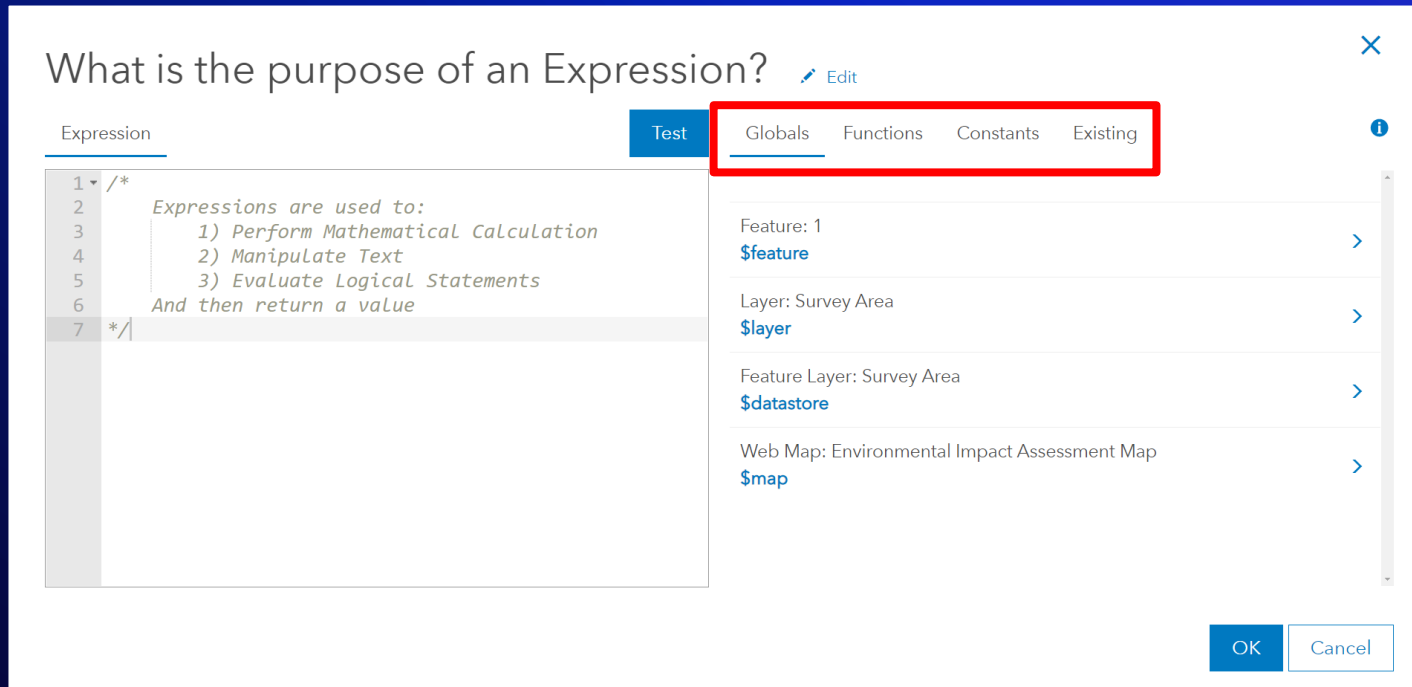# an expression:

Returns values from a script

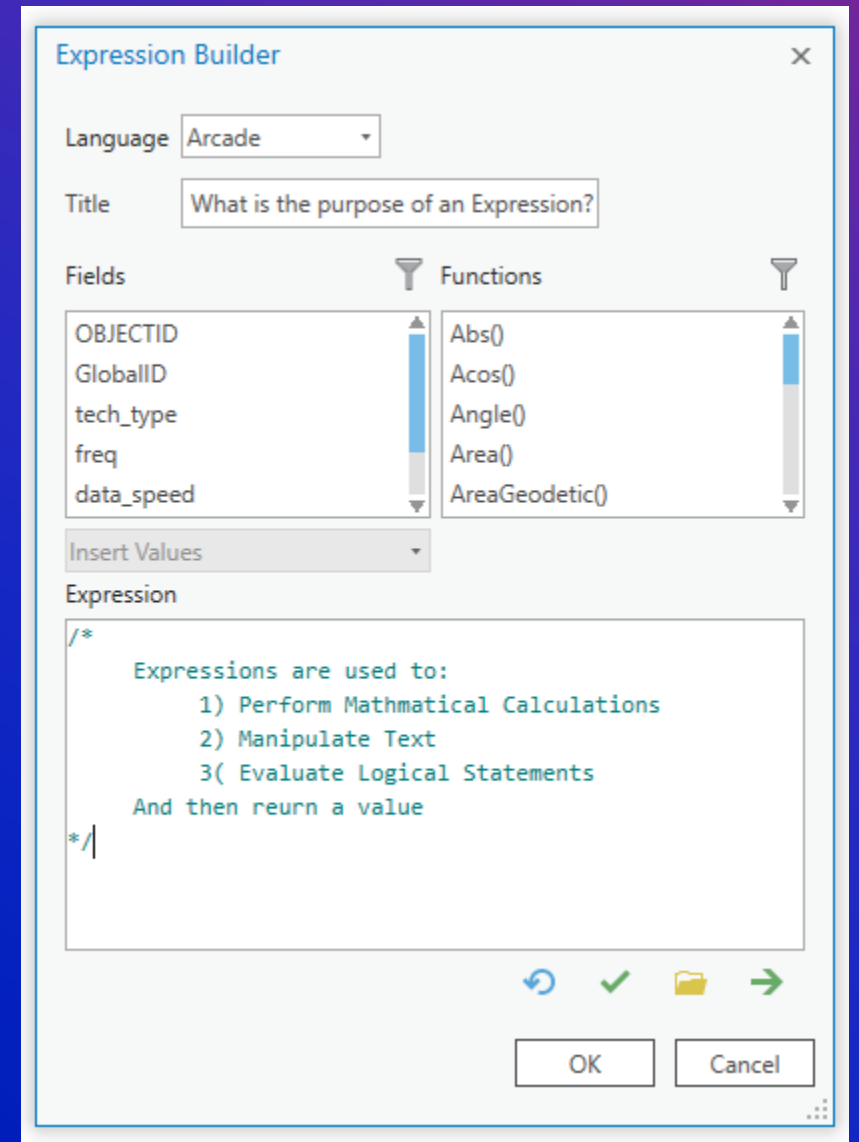**Perform Mathematical Calculations**

Manipulate Text

Evaluate Logical Statements

The Expression Builder:

Map Viewer

ArcGIS Pro

Globals

Arcade offers special global variables depending on the execution profile

- $datapoint • $datastore • $feature • $layer
- $map • $value • $view.scale

- You can access feature attributes as global variables using the $feature.fieldname syntax

- Attributes can also be referenced using square brackets: $feature["fieldname"]

*** Note *** For more complex expressions, list all field attributes that will be used in the execution of the script at the top of the expression.

Arcade does not have many programming constructs. Instead, it has a rich library of
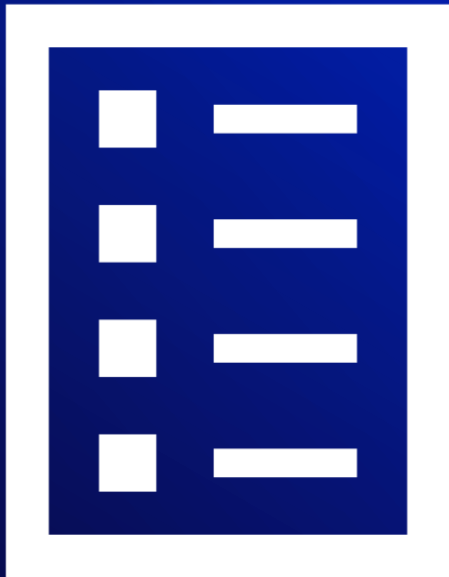
Functions

Built-in tools to help you

process and clean your data.

Profiles:
context in which an Arcade expression is evaluated and understood

Alias
Attribute Rules
    Attribute Rule Calculation
    Attribute Rule Constraint
    Attribute Rule Validation
Constraint
Dashboard
Dictionary Renderer
Feature Z

Field Calculate
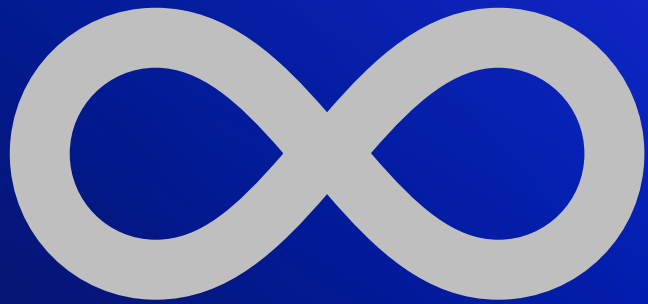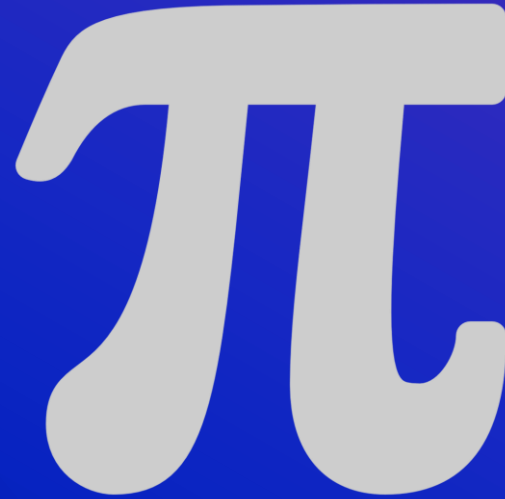Field Mapping
GeoAnalytics
Labeling
Layout
Measure
Popup
Velocity
Visualization

TextFormatting.BackwardSlash
TextFormatting.DoubleQuote
TextFormatting.ForwardSlash
TextFormatting.NewLine
TextFormatting.SingleQuote

Constants

Structure and Logic

- **Case insensitive**

- **Comments: Single-Line // and Multi-line /* */**

- **Multi-line Statements: lines separated by carriage returns ;**

- **Variables declared with var and may be assigned to any valid type**

- **Global and Local: variables have scope**

- **Template Literals – `string literals that allow for embedded expressions`**

- **FeatureSets - Currently, only the Popup, Field Calculate, and Attribute Rule profiles support**

- **Arcade provides the following Logical Statements and Operators**

- **User-Defined Functions are supported**

Arcade has a full type system.

It implicitly casts between types where appropriate, using a predefined set of rules.

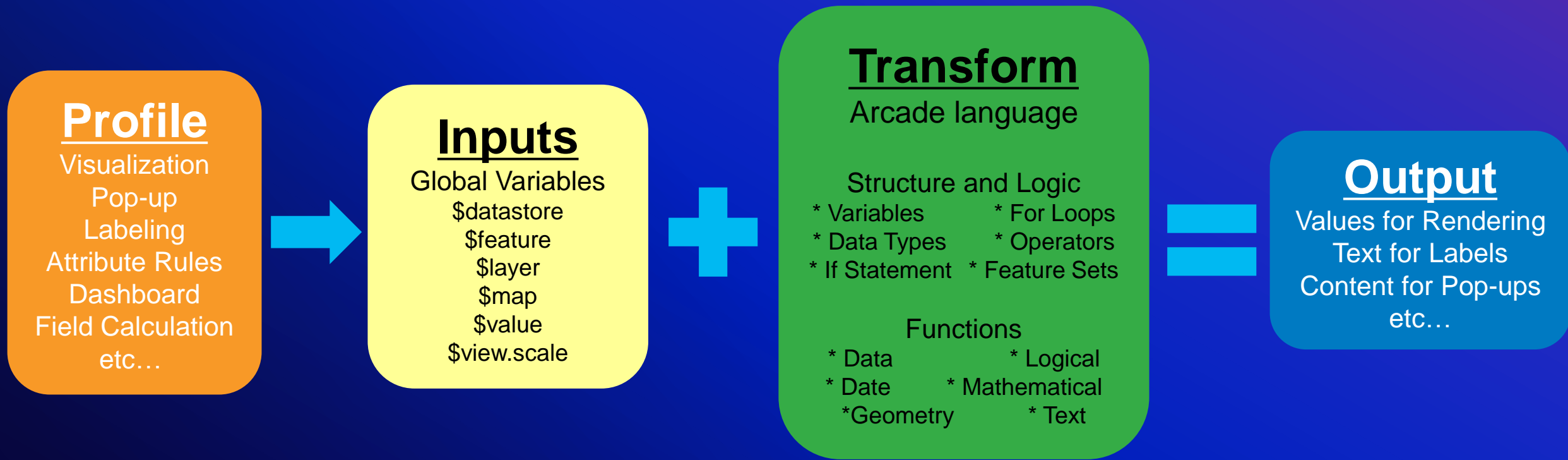Array   Attachment   Boolean   Date

Dictionary   Feature   FeatureSet   FeatureSetCollection

Geometry   Number   Portal   Text

Arcade Workflow

What do you need to do?

Profile
Visualization
Pop-up
Labeling
Attribute Rules
Dashboard
Field Calculation
etc…

Inputs
Global Variables
$datastore
$feature
$layer
$map
$value
$view.scale

Transform
Arcade language

Structure and Logic
* Variables   * For Loops
* Data Types   * Operators
* If Statement   * Feature Sets

Functions
* Data   * Logical
* Date   * Mathematical
*Geometry   * Text

Output
Values for Rendering
Text for Labels
Content for Pop-ups
etc…

Demo – Map Viewer

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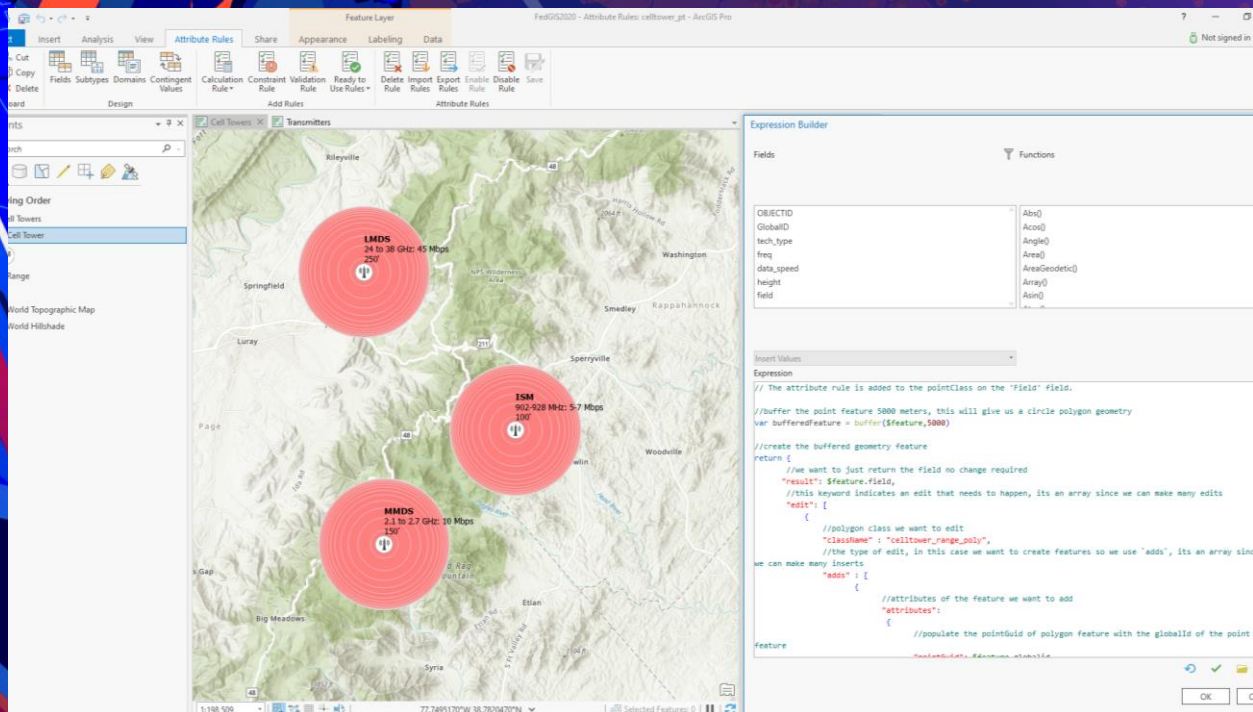
Demo – Attribute Rules

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Arcade in Dashboards Beta

What's the Difference?

- Built on the ArcGIS API for Javascript 4.x
  - Many 'under the hood' enhancements

- Supported data sources now include CSV layers and feature collections
  - Leverage them as data sources for elements
  - Can also use them for actions

- New statistics type: Percentile
  - Available in indicators, gauges, and serial chart elements

- *Arcade expressions* in the list and indicator elements

How it works

- Create an expression that returns a *dictionary*

- Configure custom attributes

- Reference attributes when configuring element

Demo – Dashboards

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What's Next for Arcade?

- Improved Web Editor

- Improved International Formatting

- Attribute Rule Support in Hosted Services

- Leveraging Arcade more in Smart Forms and Pop-ups for Dynamic Visibility, Data Population

Arcade Resources and Examples

- ArcGIS Arcade documentation and guide

- ArcGIS Learn lessons and Articles

- Videos from Esri Events or Online tutorials

- ArcGIS Blogs about Arcade
  - https://www.esri.com/arcgis-blog/products/arcgis-online/data-management/your-arcade-questions-answered/

- GeoNet

- Arcade Expressions and You – ArcGIS Online Group

- Esri/arcade-expressions GitHub repository

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