Using Arcade in ArcGIS Field Apps

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DEVELOPER SUMMIT

Agenda

- Overview of Arcade
- Use of Arcade in field apps
- Getting started with Arcade in field apps
- Using advanced Arcade functions
- Tips and troubleshooting
- Resources

```
var finishedHeight = $feature.FinishedHeight;
var sandbagType = $feature.SandbagType;

function SandbagsNeeded(wallHeight,wallLength,wallType) {

    // sandbag wall types
    // single stack = 0
    // dike == 1
    If(wallType == 0){
        // 3 sandbags per vertical foot of wall
        return Round((wallLength * wallHeight * 3),0);
    }
    else {
        // determine number of sandbags per foot of dike wall
        var numSandbagsFoot = ((3 * wallHeight) +
            (9 * pow(wallHeight,2))) / 2;

        // calculate number using desired length
        return Round(numSandbagsFoot *
            wallLength,0);
    }
}
```

ArcGIS Arcade – What is it?

- Lightweight cross-platform expression language
  - Not a full programming language
  - Equivalent to a spreadsheet cell calculation
- Portable
- Secure
- Geospatial

Benefits of ArcGIS Arcade

- Easy to get started
- Calculated on the fly
- No schema manipulation
- No data ownership required

Expression

```
var Status = Upper($feature.status)

IIF(IsEmpty(Status), "UNKNOWN", Status)
```

```
var Height = $feature.stage_ft

IIF(IsEmpty(Height), "UNAVAILABLE", Round(Height, 2) + " FEET")
```

What does ArcGIS Arcade include?

- Series of contexts or profiles
- Functions
- Flow control statements
  - Conditionals, loops
- Constants
- Variables
  - Global
  - User-defined

Popup

Global Variables
- $feature
- $map
- $layer
- $datastore

Visualization

Global Variables
- $feature
- $view.scale

Labeling

Global Variable
- $feature

Constraint

Global Variables
- $feature

Where does Arcade work?

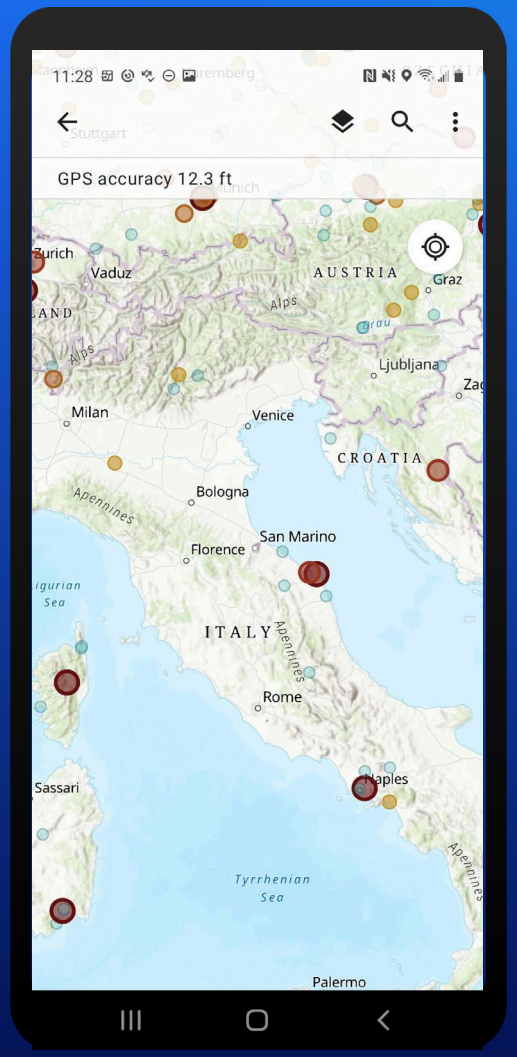
- ArcGIS Field Maps
- ArcGIS Collector
- ArcGIS Explorer
- ArcGIS Workforce
- ArcGIS Navigator

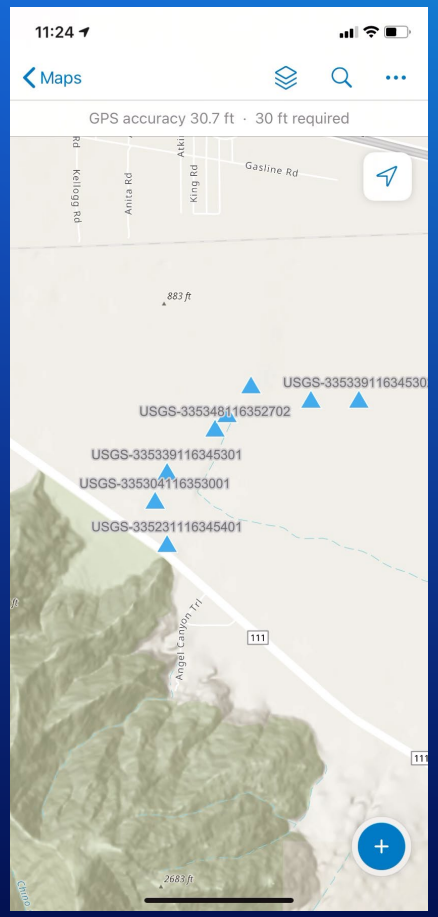
- In Web Maps and Mobile Map Packages (MMPKs)

- While connected and offline*

Arcade uses in Field Apps

- Symbology
  - Renderers
  - Transparency
  - Rotation
- Labels
- Popups
  - Title
  - Attribute list
  - Custom display
  - Charts
- Forms





```
//var altitude = 4000;

var dryBulbTemperature = $feature["drybulb_temperature"];
var wetBulbTemperature = $feature["wetbulb_temperature"];

var pt = Geometry($feature);
var altitude = pt.Z;

function BarometricPressure(T,h){

    var g = 9.80665; //gravitational acceleration
    var P0 = 101325; // pressure at sea level
    var M = 0.0289644; //molar mass of air
    var R = 8.31432; //universal gas constant

    //convert F to Kelvin
```

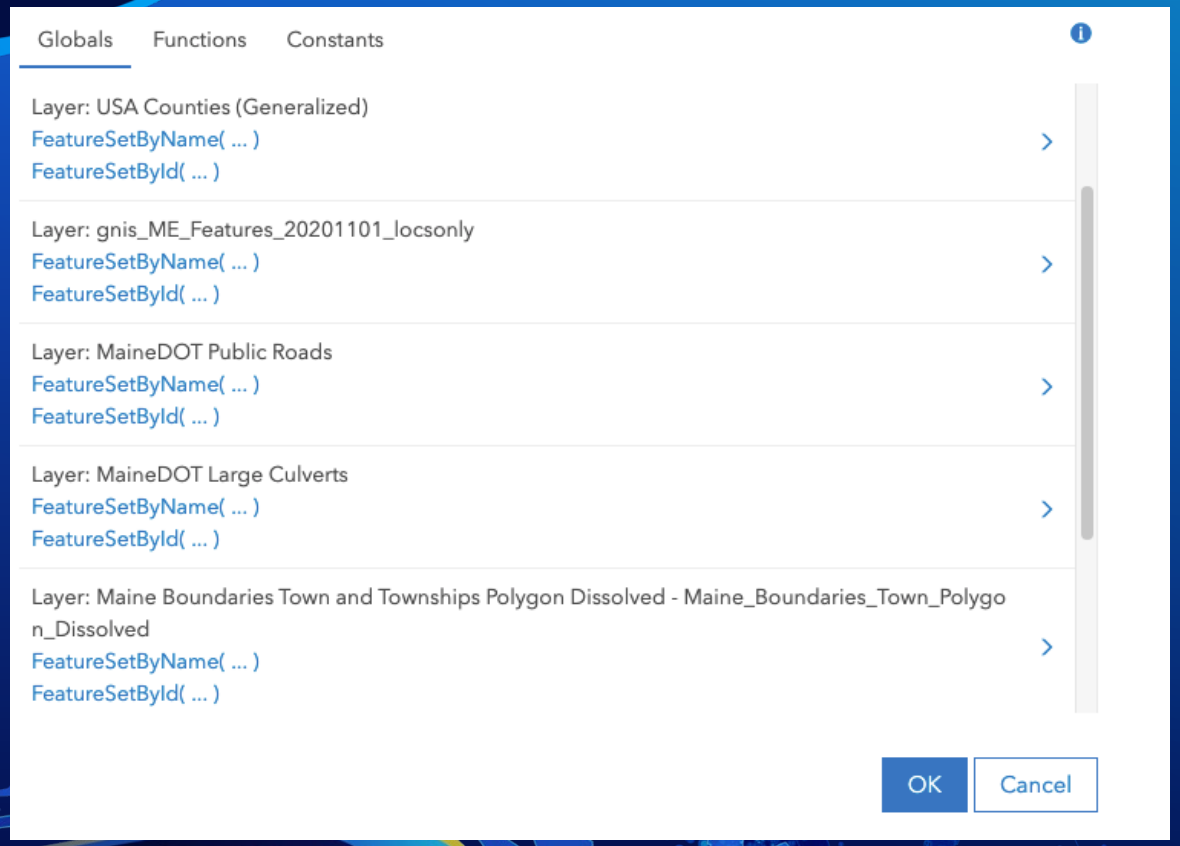
Arcade Basics

Doug Morgenthaler

Arcade Feature Sets

- Access features from other datasets
  - Geometry
  - Table
- Access data via
  - Layer Name
  - Layer ID
  - Portal Item
  - Relationship

https://www.esri.com/arcgis-blog/products/product/mapping/whats-new-with-arcade-taking-a-stroll-through-featuresets-part-1/



Arcade FeatureSets

Chris Dunn

Tips for working with Arcade

- Test your expressions in the Arcade Editor
  - Check return type
- Debug using Console messages to report variables
- Define specific values for feature attributes for testing
- Use functions to encapsulate complex expressions
- Use string literals for concatenation

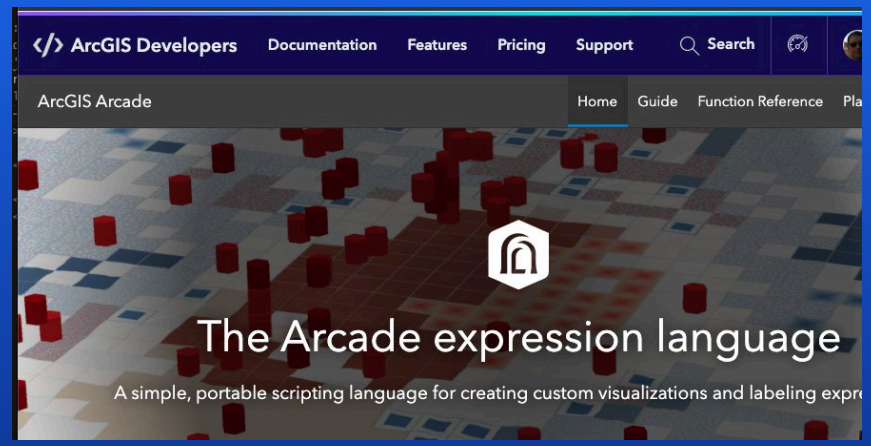
Tips for working with Arcade in Field Apps

- Date and numeric field formatting
  - Not driven by popup definition
  - Labels with codes
- Be aware of geometry limitations
  - Spatial reference
  - Geometry resolution differs by view scale
- Conditional visibility expressions must evaluate to a boolean value

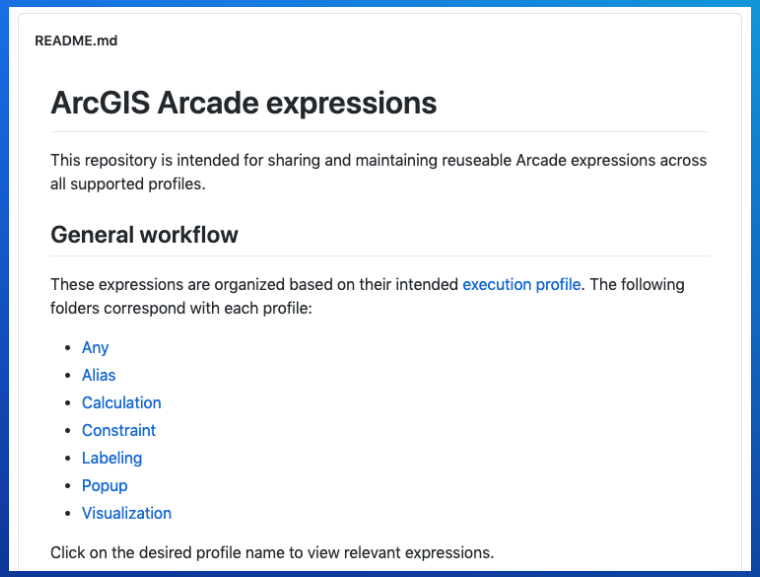
Arcade in Field Apps – Road Map

- Performing field calculations in forms
- Improved conditional expression authoring
- Redesigned Arcade expression editor
- Attribute rules
- FeatureSetByAssociation

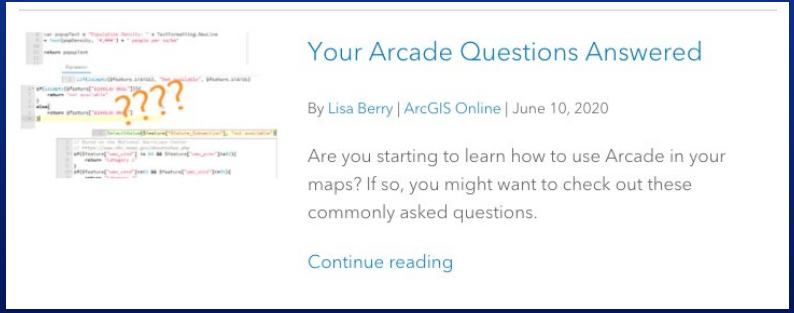
Learn more about Arcade



Developer Reference
https://esriurl.com/arcade



GitHub
https://github.com/Esri/arcade-expressions



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