



Effective Geodatabase Programming

Craig Cleveland & Kevin Sigwart

The background of the slide is a scenic view of Washington, D.C., featuring the Washington Monument on the left and the Jefferson Memorial on the right, both reflected in the water of the Tidal Basin. In the foreground, there is a decorative graphic of a blue, multi-faceted ribbon or path that winds across the scene.

Esri Developer Summit
Washington, DC

About the presenters

- Craig Cleveland

Knows nothing about programming...BUT

- Kevin Sigwart

He's the man.



Agenda

- Effective geodatabase programming via a “problem of the day”

Setting the problem

- **Geo-enable non-spatial data (RSS)**
- **Publish that data to a service**
- **Update that data at a regular interval**

Original Solution

RSS



Geography



(File GDB)



ArcGIS Server



Challenges

- **Updating the service – ArcGIS Server locked the feature class**
 - Had to stop the ArcGIS Server service...
 - Delete the original feature class...
 - Restart the service...

Had to be a better way...

And there was.

Weather Warnings Script

Kevin Sigwart

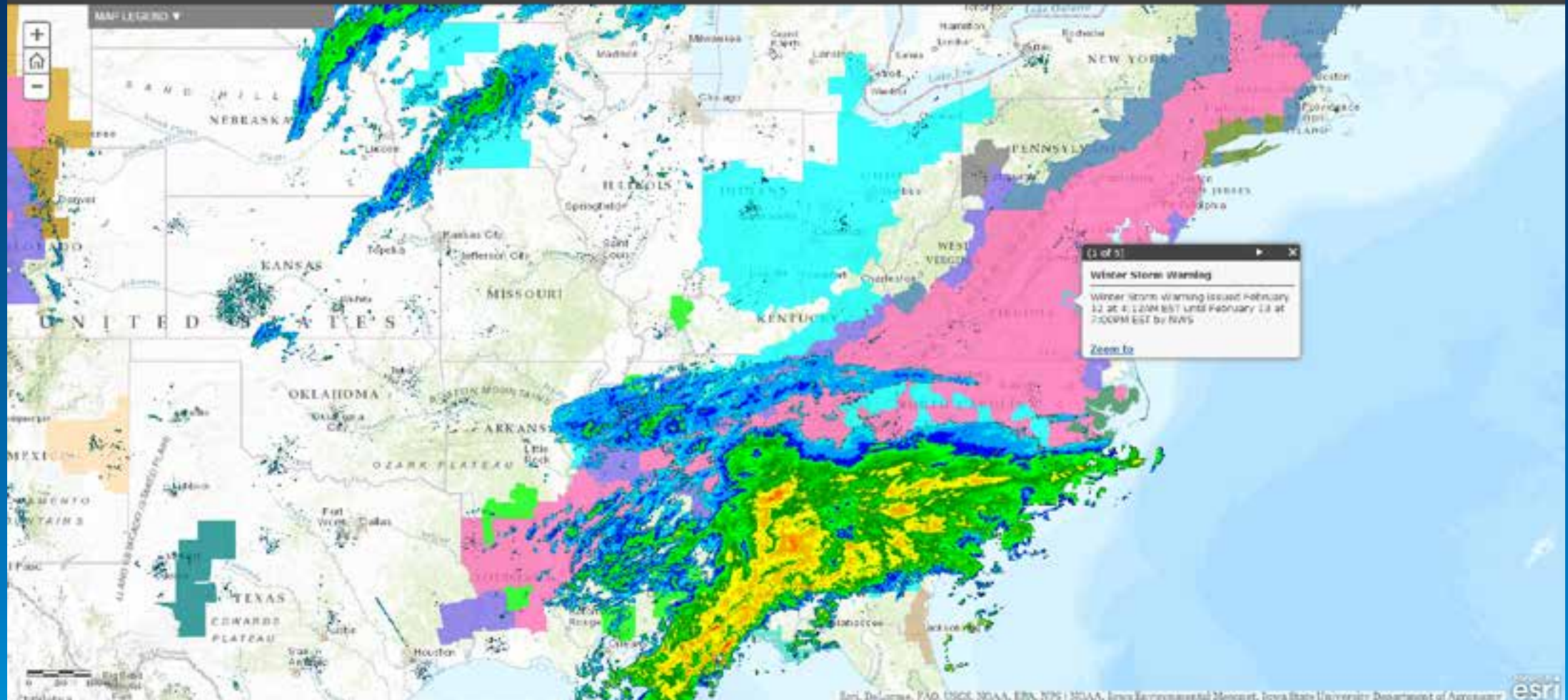
```
66         (UTC+9:30) Adelaide, Darwin : 9:30,  
67         ' (UTC+10:00) Brisbane, Melbourne, G  
68         ' (UTC+11:00) Magadan, Solomon Island  
69         ' (UTC+12:00) Fiji, Marshall Islands  
70     }  
71  
72     #***** Script Error *****  
73     class CustomError(Exception):  
74     def __init__(self, value):  
75         self.parameter = value  
76     def __str__(self):  
77         return repr(self.parameter)  
78  
79     #***** Script Error *****  
80  
81     class ObservationPoint:  
82     def __init__(self):  
83         # Get centroid of input for obs  
84         desc = arcpy.Describe(inFC)  
85         sourceSR = desc.spatialReference  
86         newSR = arcpy.SpatialReference(  
87         newSR.factoryCode = sourceSR.fact  
88         newSR.create()  
89         self.SR = newSR  
90         self.X = desc.extent.XMin + ((d  
91         self.Y = desc.extent.YMin + ((d  
92         self.ObservationPoint()  
93  
94     def ObservationPoint(self):
```

Python file

Example Weather Map (SAMPLE)

Example Weather Map (SAMPLE)

Use mouse to select region and level (Ctrl +)



Result

Near Real Time Weather Feeds As A Service

Architecture

RSS



Weather Warnings
Staging



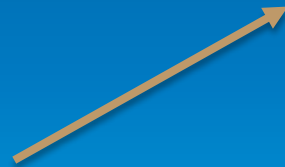
Weather Warnings
Production



ArcGIS Server



Counties



Steps

- **Connect to Staging Database**
- **Remove Old Features**
- **Get Alerts**
- **Get Counties Associated with Alert**
- **Insert Alerts\Counties into Feature Class**
- **Synch Changes with Replicated Database**
- **Clean up workspace**

Pseudo Code

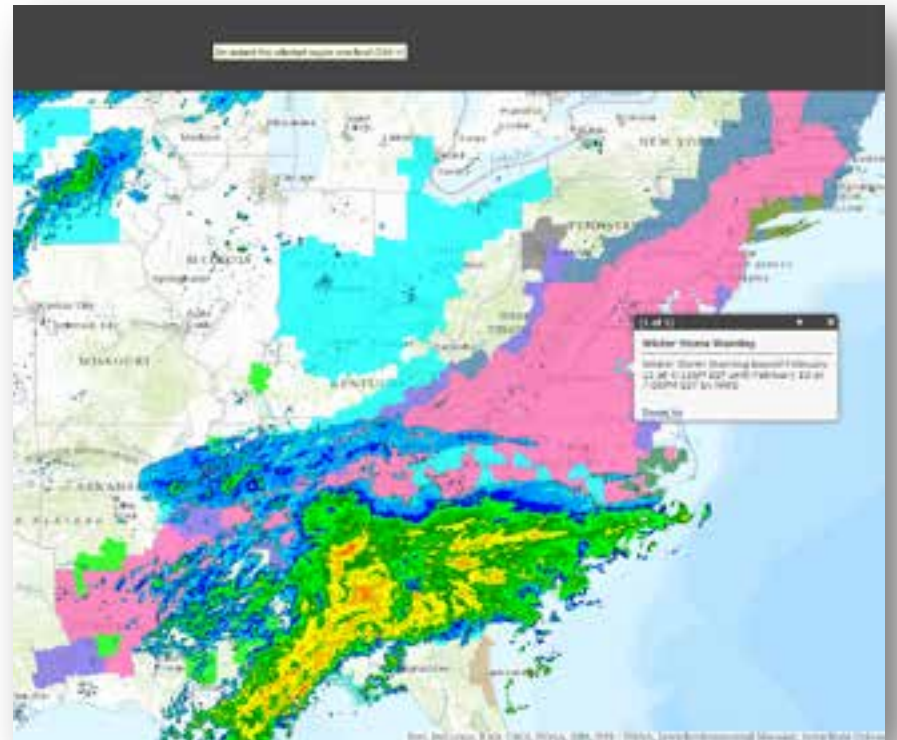
- **ConnectToStaggingDB()**
- **DeleteOldRecords()**
- **GetAlerts()**
- **AddAlertsToFeatureClass (alerts)**
 - **For each alert**
 - **For each County**
 - **GetCountyShape (FIPS)**
 - **InsertRecord (alert, shape)**

Pseudo Code (Continue)

- **SynchChanges()**
 - **ConnectToProductionDatabase()**
 - **SynchtionizeChanges()**
- **DataCleanUp()**

Demo

Kevin Sigwart



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What is ArcPy?

Desktop > Geoprocessing > ArcPy

ArcPy is a site package that builds on (and is a successor to) the `arcgisscripting` module. Its goal is to create the cornerstone for a useful, productive way to perform geographic data analysis, data conversion, management, and map automation with Python.

This package provides a rich and native Python experience offering code completion (type a keyword and a dot to get a pop-up list of properties and methods supported by that keyword; select one to insert it) and referential documentation for each function, module, and class.

The additional power of using ArcPy within Python is the fact that Python is a general-purpose programming language. It is interpreted and dynamic.

Resources

GitHub, ArcGIS Resource Center



Understanding our world.