ArcGIS Data Reviewer: An Introduction

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Workshop Agenda

• Importance of Data Quality
• What is ArcGIS Data Reviewer
• Automated Review
• Visual Review
• Managing Errors and Reporting Data Quality
• Summary/Resources
Importance of data quality
Defining Quality
A Business Perspective

• Executive
  - Confidently make decisions
  - Reduce financial risk
  - Optimize organizational performance

• Manager
  - Effective data stewardship
  - Maximize productivity
  - Drive increased usage

• Knowledge Worker
  - Increased efficiencies
  - Confidence in GIS
Defining Quality
A Technical Perspective

- Spatial Accuracy
- Thematic Accuracy
- Completeness
- Logical Consistency
- Temporal Quality
- Usability

ISO-19157 (DRAFT), 2010
What is ArcGIS Data Reviewer?

Data Quality Management for ArcGIS

- Provides
  - Rule-based validation
  - Interactive tools
  - Track errors

- For individuals and enterprise
  - Saves time/money
  - Less rework

- Standard extension
  - ArcGIS for Desktop
  - ArcGIS for Server
Managing Quality Control

Quality Control Processes

Automated Review

Visual Review

Reviewer Results

Quality Reporting
Automated Data Review
Defining Quality
Sources of Data Quality Requirements

- Subject Matter Experts
- Industry Standards / Specifications
- Quality Assurance Plans
- Training and Experience
Automated Review is Valuable!

- Efficient
- Consistent
- 100% Coverage
Rule-based Automated Review

- 40+ configurable checks
- Attribute
  - Feature and Table values
- Spatial
  - Spatial relationships
- Feature integrity
  - Collection rules
- Metadata check
  - Completeness/Content
Batch Validation
Implementing Cumulative Review

- Encapsulate QC model
- Designed once and executed many times
- Complete specification check
ArcGIS Resource Center
Leveraging Templates for QC Requirements

• Data Reviewer Templates for
  - Address Management
  - Electrical Utilities
  - Roads & Highways
  - Tax Parcel Editing
  - Water Utilities
• Based on Esri industry models
• Use as Starting point
Demo:
Getting Started with Data Reviewer
Authoring Data Quality Rules
Authoring Batch Jobs

• Batch jobs
  - Container for configured checks
  - Encapsulate QC requirements
  - Reusable and shareable

Business Rules

Attribute rules
1. Name cannot be NULL
2. Road width must be greater than 15

Spatial Rules
1. Water Mains should not have sharp angles
2. Hydrant must be connected to hydrant lateral

Translated to Batch Job data checks
Authoring Batch Jobs
A Workflow Perspective

- Before data loading
- During editing
- Prior to publishing services/maps
- Prior to rolling-out new applications
Other Batch Validation Options

- ArcToolbox
- Step in ArcGIS Workflow Manager
- Python Script
- ArcGIS for Server
Demo Scenario

• Department plans to deploy a new hydraulic modeling application which will leverage the GIS directly.

• New Business Requirement
  - Water utility data should meet a 95% accuracy for network connectivity.
Demo:
Authoring Data Quality Rules
Authoring Batch Jobs
Tips and Tricks

• When authoring new checks
  - Configure and execute from Reviewer Toolbar
  - Leverage Mini-Browser to assess results quickly
  - Try validating a pilot area first where known issues are located.
Visual Data Review
Value of Performing Visual Review

- Discover Patterns
- Find missing features
- Compare to trusted sources
Visual Review
Leveraging ArcGIS for Desktop

- Tools supporting
  - Feature Selection
  - Browsing
  - Flagging features

- Reviewer Overview window

- Random Sampling

- Positional Accuracy Assessment Tool (PAAT)
Visual Review
Leveraging ArcGIS for Server

• Extending quality control workflows into other communities
  - QC review across ArcGIS platform
  - Simple to use tools for error identification
  - Manual QC workflow “automation”
Demo Scenario

• Water utilities database will be leveraged by the Fire Department to support incident response and to minimize data duplication.

• New Business Requirements
  - Hydrant data should meet 98% accuracy for placement (+/- 1 meter).
Demo:
Visual Data Review
Managing and Reporting Quality
Managing Quality Control
QC lifecycle management

- REVIEW
  - Find & Record Errors
- CORRECT
  - Perform Edits or Note Exceptions
- VERIFY
  - Acceptable or Unacceptable
Reporting
ArcGIS for Desktop

- Automated reporting of quality control results
- Available Reports
  - Automated Check (Origin Table, Subtype, Check Group)
  - Total Record Count
  - Sampling
Reporting
ArcGIS for Server

- Better decision making by communicating data quality across stakeholders
  - Open quality reporting
  - Shared across ArcGIS system
  - New tools and methods to communicate quality
Scenario

As a GIS manager, I need to manage the quality of the water utilities database to ensure that it can support existing and new staff operations.

Areas to be addressed

• GIS shall support hydraulic modeling tasks (95% accuracy).
• Fire hydrant locations shall be positionally accurate and correctly attributed to support use by the Fire Department for emergency response (98% accuracy).
Demo:
Managing and Reporting Quality
ArcGIS Data Reviewer
Automate, Simplify, and Improve your Quality Control Process

- Extension to ArcGIS for Desktop and Server
- Supports complete QC process
- Provides
  - Rule-based validation
  - Interactive tools
  - Track errors
Resources

- **Product page**
  - www.esri.com/datareviewer

- **Resource Center**
  - http://resources.arcgis.com/

- **Training**
  - www.esri.com/training

- **Questions & comments**
  - datareviewer@esri.com
Thank you…

Please fill out the session evaluation

Offering ID: 1276

Online – www.esri.com/ucsessionssurveys

Paper – pick up and put in drop box
# Other Data Reviewer Sessions

<table>
<thead>
<tr>
<th>Day and Description</th>
<th>Type</th>
<th>Time</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Tuesday July 9</td>
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<tr>
<td>ArcGIS Data Reviewer: Validating Item Metadata</td>
<td>Demo Theater</td>
<td>3:30 – 4:00 PM</td>
<td>Geodatabase Mgmt Theater</td>
</tr>
<tr>
<td>ArcGIS Data Reviewer for Server - Deploying Distributed Quality Control Services</td>
<td>Demo Theater</td>
<td>3:30 – 4:00 PM</td>
<td>Web &amp; Server Theater</td>
</tr>
<tr>
<td>Using ArcGIS Data Reviewer to Validate the Quality of your Community Maps Content</td>
<td>Demo Theater</td>
<td>4:00 – 4:30 PM</td>
<td>Online GIS Theater</td>
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<tr>
<td>ArcGIS Data Reviewer for Server - Leveraging Distributed Quality Control Services in Web Clients</td>
<td>Demo Theater</td>
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<td>Web &amp; Server Theater</td>
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<tr>
<td>Wednesday July 10</td>
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<tr>
<td>ArcGIS Data Reviewer Special Interest Group Meeting</td>
<td>SIG</td>
<td>12:00 – 1:00 PM</td>
<td>Room 28B</td>
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<tr>
<td>ArcGIS Data Reviewer: An Introduction</td>
<td>Technical Workshop</td>
<td>1:30 – 2:45 PM</td>
<td>Room 31C</td>
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<td>Integrating ArcGIS Data Reviewer &amp; ArcGIS Workflow Manager to Automate Data Quality Control Workflows</td>
<td>Demo Theater</td>
<td>1:30 – 2:00 PM</td>
<td>Geodatabase Mgmt Theater</td>
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<td>ArcGIS Data Reviewer for Server - Deploying Distributed Quality Control Services</td>
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