ArcGIS Data Reviewer
An Introduction
Jay Cary & Michelle Johnson
Workshop Overview

• Importance of Data Quality

• What is ArcGIS Data Reviewer
  • Automated Data Review
  • Batch Data Review
  • Visual Data Review

• Managing Errors and Reporting Data Quality

• Summary/Resources
Ensuring Data Quality with ArcGIS Data Reviewer

Defining Quality
Understanding Data Reviewer
An Introduction to Data Reviewer Components
Defining Quality

What is ‘good’ quality?

- Positional Accuracy
- Attribute Accuracy
- Completeness
- Logical Consistency
- Lineage

Requirements are defined:
- Intended purpose and usage
- Technical specifications
- Client requirements

(Guptill & Morrison, 1995)
Defining Quality Control

- **Quality Control**
  - The tasks required to ensure data quality
  - Methods to assess and evaluate data

- **Quality Assurance Plan**
  - Defines desired level of data quality
  - Specifies acceptable and unacceptable levels of error
  - Identifies how quality control will be performed
Data Quality Matters

• Cost of poor quality can be extreme
  - $$ to fix
  - Impacts users
  - Reputation

• Consider for a moment
  - Do you publish a doc without spell checking?
  - Do you operate a PC without a virus scanner?
ArcGIS Data Reviewer

- Supports data QC process
- Provides
  - Rule based workflows
  - Interactive tools
  - Track errors
- For individuals and enterprise
  - Saves time/money
  - Less rework

Trusted data through improved quality management
Managing Quality Control

- Framework for managing QC lifecycle

- REVIEW
  - Find & Record Errors

- CORRECT
  - Perform Edits
  - or
  - Note Exceptions

- VERIFY (optional)
  - Acceptable
  - or
  - Unacceptable
An Introduction to Data Reviewer Components

The Quality Control Process with Data Reviewer

- Heart of the Data Reviewer
- Tracks all anomalies/errors from review
- Review Data & Identify Errors
- Automated Checks
- Batch Data Review
- Interactive table
- Visual Review

Reviewer Session
- Similar to an edit session
- Allows data interaction for QC purposes

Reviewer Workspace
- Stores spatial & attribute information about errors
- Personal, File, or Enterprise Geodatabase
- Feature class & tables created automatically

Report Quality Information
- Summarize quality control results
- Interpret data errors
- Report data accuracy
Ensuring Data Quality with ArcGIS Data Reviewer

An Introduction to Data Reviewer
Performing Quality Control
Automated Data Review

An Introduction to Automated Data Review

Understanding Data Reviewer Checks
An Introduction to Automated Data Review

- Validate data against a set of rules
- Quickest and least expensive form of quality control
- Validate large amounts of data (100%)
Understanding Data Reviewer Checks

Implement Quality Requirements as Rule-Based Data Reviewer Checks

- 42 configurable data checks
- Grouped into 11 functional areas
Table Checks

Execute SQL Check

Mains installed after January 2000 should only be Cast Iron, Ductile Iron, or PVC.
Feature on Feature Checks

Hydrants must be connected to a Hydrant Lateral.
Advanced Checks

Valency Check

Reducer must connect two mains of a different diameter
New Data Reviewer Checks at 10

- **Metadata Check**
  - Validate metadata against published standards or custom expressions

- **Valency Check**
  - Validate conditions between line and point features

- **Custom Check**
  - Validate data using custom code

- **Topology Rules Check**
  - Validate data against topology rules
Combine Multiple Rules for Batch Check

- Encapsulate workflow / process
- Designed once and executed many times
- Complete spec check

Subject Matter Experts
Industry Standards / Specifications
Training & Experience
Quality Assurance Plans

Configure as Rule-based Checks
Build Batch Job
Batch Validation

- Run multiple data checks
- Checks are organized into groups
Additional Options for Batch Validation

Run data validation outside ArcMap in several ways:

- Reviewer Service (Windows Service)
- Reviewer Console (Command Line)
- From ArcToolbox
- Within a Python script
- As a step in ArcGIS Workflow Manager
Automated Data Review

Configuring Data Reviewer Checks
Executing Automated Data Validations
Performing Quality Control
Visual Data Review

An Introduction to Visual Data Review
Structuring the Visual Data Review
Writing Records and Capturing Missing Features
An Introduction to Visual Data Review

- Visual inspection of the data
  - Level of judgment/discretion
  - Compare between data sources
  - Requires strong knowledge of the data & ability to make consistent decisions

- Simplify visual review with Data Reviewer
  - Organize and structure the visual review process
  - Manage error information in the Data Reviewer table
Working with the Reviewer Overview Window

- Structure review by geographic extent
- Navigate to cells & track review progress
Sampling Data

- **Determine a subset of features**
  - Fixed number of features
  - Percentage of features
  - Statistically significant sample
  - By polygon grid
Version Differences Tool

- Compare two SDE versions
  - Parent/Child, Child/Child
- Identify adds/modifies/deletes
- Browse results or write to Reviewer Table
Commit to Reviewer Table

- Write selected record(s) to the Reviewer Table
  - Features selected interactively
  - Results of automated processes
Capturing Missing Features

- Capture x,y location or complete geometry
- Identify type of missing feature
Visual Data Review

Managing Visual Review Process
Creating and Using a QC Grid
Identifying Errors Visually
Measuring and Reporting Data Quality

Working with Reviewer Table Records
Summarizing Information
Reporting
Working with Reviewer Table Records

- Interact with features
  - Pan/Zoom & Select
- Enter correction and verification status
Summarizing Information

- Sort and group by table fields
- Summarize quality control information
  - Identify most common data errors
  - View progress of quality control
Reporting

- Automated reporting of quality control results

Available Reports
- Automated Check by Origin Table
- Automated Check by Subtype
- Automated Check by Group
- Total Record Count
- Sampling
Measuring and Reporting Data Quality

Working with Reviewer Table Records
Summarizing Information
Reporting
Summary: ArcGIS Data Reviewer

Automate, Simplify, and Improve your Quality Control Process

- Standard extension to Desktop
- Supports data QC process
- Provides
  - Rule based workflows
  - Interactive tools
  - Track errors
- For individuals and enterprise
  - Saves time/money
  - Less rework
Resources

• Product Information  www.esri.com\datareviewer
  • 60-day Free Evaluation
  • ArcGIS Data Reviewer Checks poster

• Training  www.esri.com\training
  • Instructor Led Training: Data QC Using GIS Data Reviewer
  • Virtual Campus:
    • Introduction to GIS Data Reviewer  
    • Using ArcGIS Data Reviewer to Assess Data Quality  

• Data Reviewer Resource Center
  • resources.arcgis.com

• Email questions and comments to DataReviewer@esri.com
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<td>Assessing positional accuracy using ArcGIS Data Reviewer</td>
<td>Demo Theater</td>
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<td>Geodatabase Mgmt Theater</td>
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Visit the Geodatabase Management Island
Session Evaluations

- Session feedback has gone digital!

www.esri.com/sessionevals