Improving the Quality of your GIS Data with ArcGIS Data Reviewer

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Presentation Agenda

• ArcGIS Data Reviewer in context
• Importance of Data Quality
• Value of ArcGIS Data Reviewer as a solution
  • Automated Review
  • Visual Review
  • Reporting
• ArcGIS Data Reviewer for Server
Authoritative Content Producers
Must produce traditional products and web services

Require agile, multi-use capability
Esri Production Mapping
Standardize and optimize enterprise production

Centralization

Automation

Standardization

Workflow Management
Cartography
Editing
Quality Control

Repeatability
Mapping and Charting Solutions

Esri Production Mapping

Extensions

ArcGIS Data Reviewer for Desktop
ArcGIS Workflow Manager for Desktop

Server Extensions

ArcGIS Data Reviewer for Server
ArcGIS Workflow Manager for Server

ArcGIS for Aviation
Esri Defense Mapping Solution
ArcGIS for Maritime
Editing
Cartography
Product Library

ArcGIS Server Extensions
Improving Data Quality
When to perform quality control

- **Before data loading**
  - QC the data in the source

- **Receiving data from contractor/co-producer**
  - QC the data upon arrival
  - Notify sender of errors

- **Extracting or editing data**
  - QC edits for accuracy

- **Hard copy map review**
Data Validation
From the technical perspective

Spatial Accuracy
Thematic Accuracy
Completeness
Logical Consistency
Temporal Quality
Usability

(ISO-19157 (DRAFT), 2010)
Components of Data Validation

- Subject Matter Experts
- Industry Standards / Specifications
- Quality Assurance Plans
- Training and Experience
Think about…
How you manage Quality Control

How do you validate data?
Is your data complete and accurate?
Do you have defined business rules?
Who manages business rules?
Who performs quality control?
Streamline Data Validation

• The cost of poor data quality can be extreme
• ArcGIS Data Reviewer
  - Provides a framework for managing and automating QC
  - Standard extension to ArcGIS
    - Desktop extension since 8.0
    - Server extension at 10.1
Demo:
Review Data Quality

Building footprints should not intersect each other; this may impact facility planning and may cause underestimation of inventories.

Distribution:
- Severity 1: 32
- Severity 2: 4
- Severity 3: 25
Think about…
How you perform quality control efficiently

- Is quality control time-intensive?
- Do you only have time to review a portion of data?
- Do you notice recurring issues in your datasets?
- Do inconsistencies exist from feature to feature?
Automated Review is Valuable!

Efficient

Consistent

100% Coverage
Rule-based automated error detection

- 40+ configurable checks
- Attribute
  - Feature and Table values
- Spatial
  - Spatial relationships
- Feature integrity
  - Collection rules
- Metadata check
  - Completeness
Demo:
Automated Data Review
Think about…
Your quality control model

- Do you have a consistent quality control model?
- Do you maintain data to industry standards?
- Is data validation performed consistently?
- Can you run multiple data checks at once?
- Is your work easily repeatable and able to be shared?
Authoring Batch Jobs

- Multiple checks stored in a single file
- Encapsulate specification
- 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
Demo:
Authoring batch jobs
Think about...
Your quality control records

- When should you run your validation rules?
- Do you have a complete log of all your errors?
- Is your log a paper trail?
- How do you share information about known issues?
- Can you easily identify the feature that has the problem?
Batch Validation within ArcMap

• Using Reviewer Batch Validate
  - Consistent quality control model
  - Find and document errors

• Tips:
  - Try validating a pilot area first
  - After corrections are made, rerun batch job
Other Batch Validation Options

- Reviewer Service
- ReviewerConsole (Command Line)
- ArcToolbox
- Step in ArcGIS Workflow Manager
- Python Script
Reviewer Table

- Records errors found during the review
- Contains additional functionality
  - Navigate and manage records
  - Identify missing features
  - Visualize errors
Demo:

Batch Validation
Think about…
Your quality control records

What is the QA\QC lifecycle?

How do you know when an error has been fixed?

Are there tools to help automate the verification of errors?

How do you quantify the accuracy of your data?
Correction and Verification

• Complete the QC life cycle
  - Use Core tools or any available
• Document correction & verification status
  - In Reviewer table
• Tips:
  - Maintain a historical record of QC review
  - Symbolize records to view status on map
Reviewer Reporting

- Automated reporting of quality control results
- Many ways to organize report
- Sampling report
Demo:
Correct, Verify & Generate Reports
Think about…
How you perform visual review

- How do you find patterns in your data?
- How do you discover missing features?
- Do you compare data to trusted sources?
- Are you able to find all errors in your database?
Value of Performing Visual Review

- Discover Patterns
- Find missing features
- Compare to trusted sources
Visual Review

- Select, browse, and flag tools
- Reviewer Overview Window
  - Systematically review a given area
- Sampling check
  - Random sample
  - Statistical sample
Visual Review on the Server
Expanding the dialog on quality data management

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

Visual Review
Perform QC before, during and after a project

Ask questions. Think about your process. What do you want to achieve?

ArcGIS Data Reviewer provides data quality management for ArcGIS

Off-load data validation using ArcGIS Data Reviewer for Server
Data Reviewer Resources

• External Product page [www.esri.com/datareviewer](http://www.esri.com/datareviewer)
  - 60-day Free Evaluation
  - Data Reviewer Checks poster
  - Customer Success Stories
  - Demos

• Training [www.esri.com/training](http://www.esri.com/training)


• Email questions and comments [datareviewer@esri.com](mailto:datareviewer@esri.com)
Don’t Miss These Attractions

In the GIS Solutions EXPO

- Exhibitors
- I am GIS Photo Booth & Trading Cards
- Hands-On Learning & Coaching Labs
- Design Studio
- Spatial Outlet
- Esri Showcase
- GIS Technical & Extended Support
- 2 Demo theaters
- Drinks & snacks
Tuesday Evening Reception

Smithsonian American Art Museum and National Portrait Gallery

6:30 PM–9:30 PM

- Walking distance from convention center
- Conference Badge needed for reception
- Coat check available in courtyard
- Serving hot hors d’oeuvres and beverages
Closing and Hosted Lunch

11:30 AM–1:30 PM

• Ballrooms A–C, Third Level
• Join conference attendees for lunch and closing session
• Closing Speaker Todd Park, U.S. CTO
• Wrap-up and request for feedback with Jack Dangermond.
## Upcoming Events

### esri.com/events

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<tr>
<td>March 21, 2013</td>
<td><strong>Esri DC Meet Up – Big Data &amp; Location Analytics</strong></td>
<td>Washington, DC</td>
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<tr>
<td>April 18, 2013</td>
<td><strong>Esri DC Meet Up</strong></td>
<td>Washington, DC</td>
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<tr>
<td>March 23–26, 2013</td>
<td><strong>Esri Partner Conference</strong></td>
<td>Palm Springs, CA</td>
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<tr>
<td>March 25–28, 2013</td>
<td><strong>Esri Developer Summit</strong></td>
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<tr>
<td>July 6–9, 2013</td>
<td><strong>Esri National Security Summit</strong></td>
<td>San Diego, CA</td>
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<tr>
<td>July 8–12, 2013</td>
<td><strong>Esri International User Conference</strong></td>
<td>San Diego, CA</td>
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Thank You

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