Esri International User Conference | San Diego, CA

Technical Workshops | July 13, 2011

ArcGIS Data Reviewer
An Introduction

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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

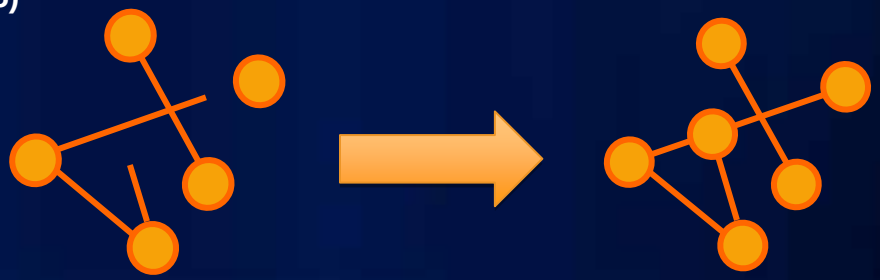
What is ‘good’ quality?

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

(Guptill & Morrison, 1995)

Requirements are defined:

- Intended purpose and usage
- Technical specifications
- Client requirements



Defining Quality Control

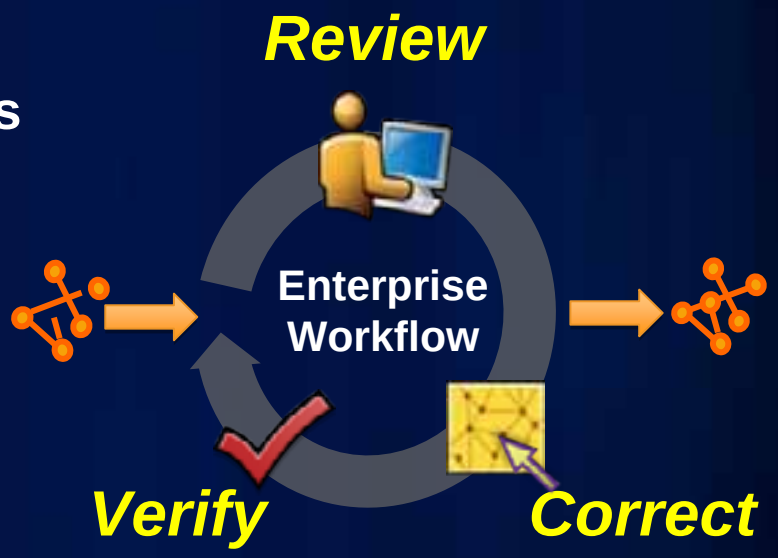
- Quality Control
  - The tasks required to ensure data quality
  - Methods to assess and evaluate data
- Quality Assurance Plan
  - Defines desired level of data quality
  - Specifies acceptable and unacceptable levels of error
  - Identifies how quality control will be performed

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**

Find &
Record Errors

Perform Edits
or
Note Exceptions

Acceptable
or
Unacceptable

An Introduction to Data Reviewer Components

The Quality Control Process with Data Reviewer

- Heart of the Data Reviewer
- Automated checks
- Tracks all anomalies/errors
- Batch Data Review
- Visual Review
- Interactive table
- Report data accuracy
- Feature class & tables created automatically

Review Data & Identify Errors

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

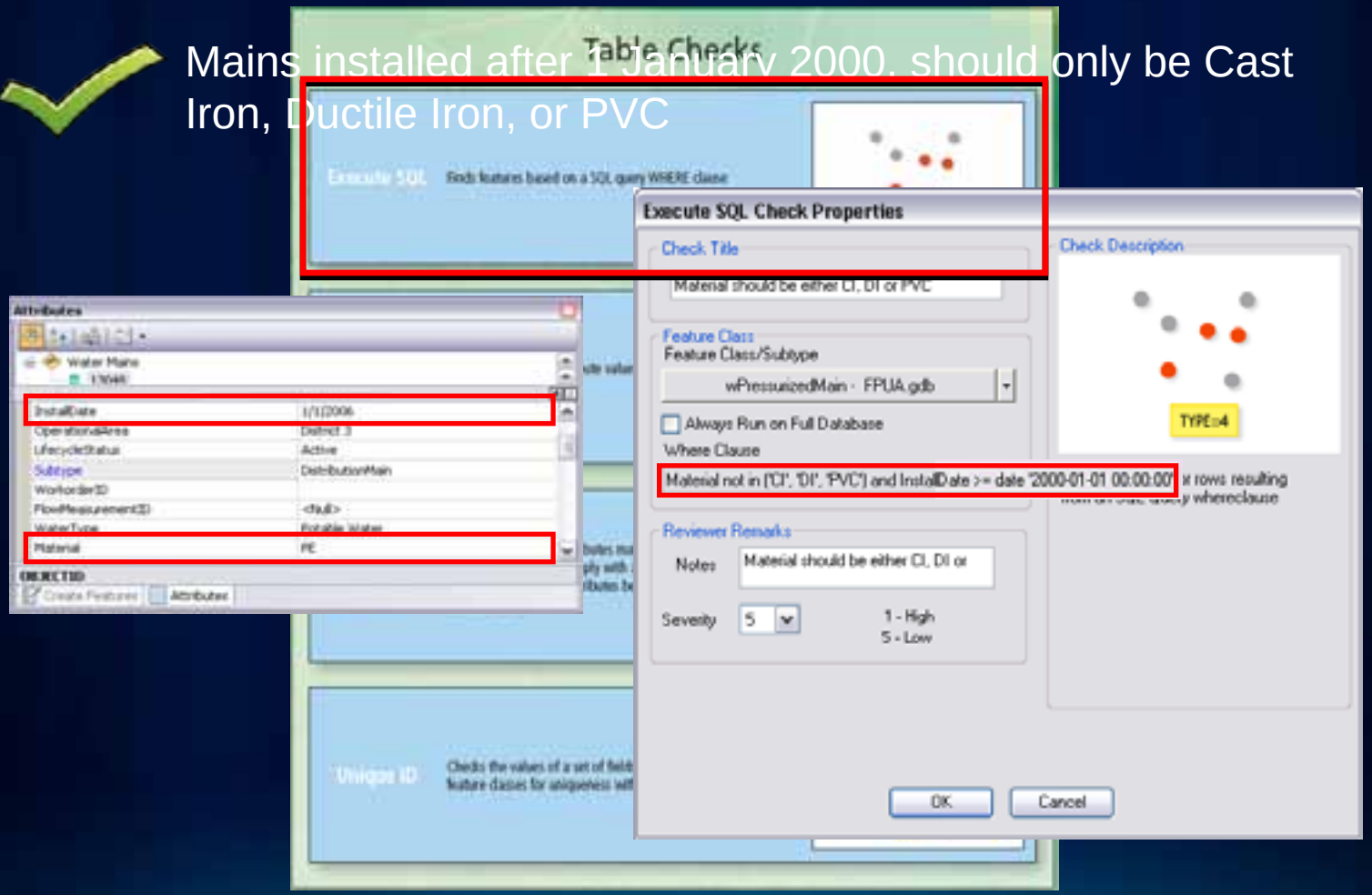
- 42 configurable data checks
- Grouped into 11 functional areas

Table Checks

Updated

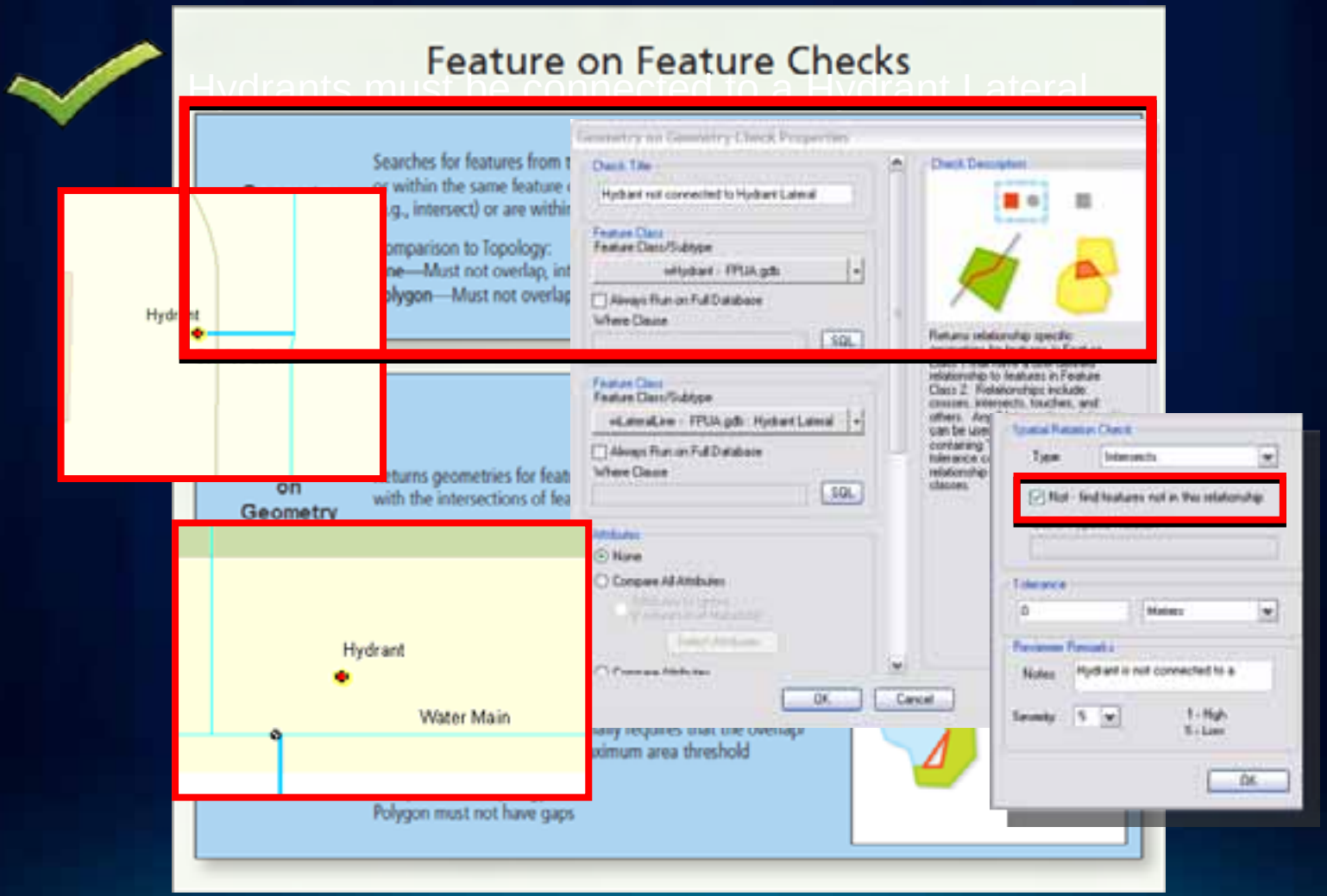
Execute SQL Check

Mains installed after 1 January 2000, should only be Cast Iron, Ductile Iron, or PVC



Feature on Feature Checks

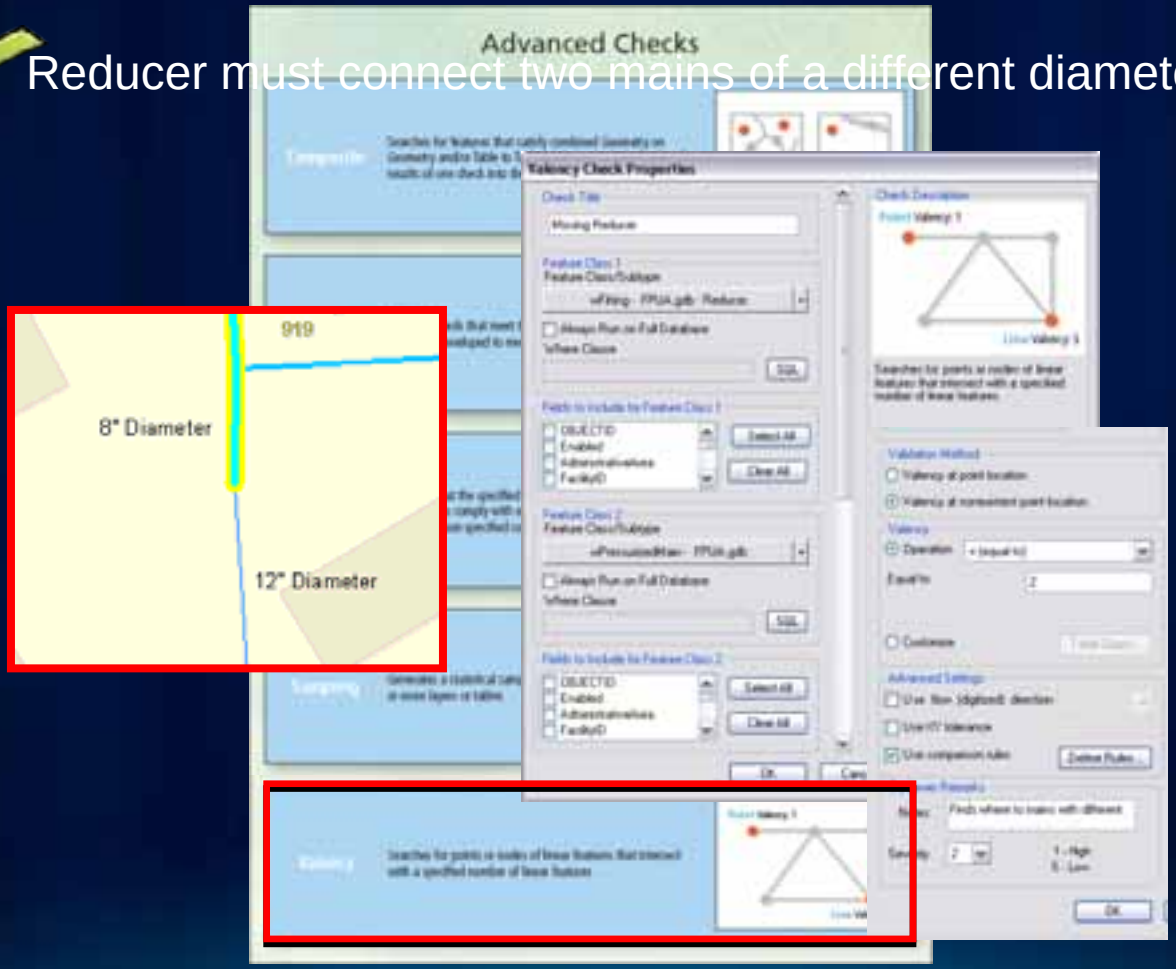
Geometry on Geometry Check



Advanced Checks

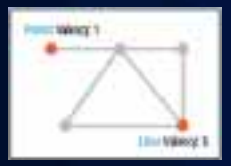
Valency Check

Reducer must connect two mains of a different diameter



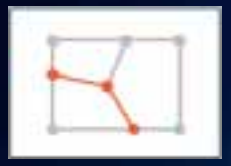
New Data Reviewer Checks at 10

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



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

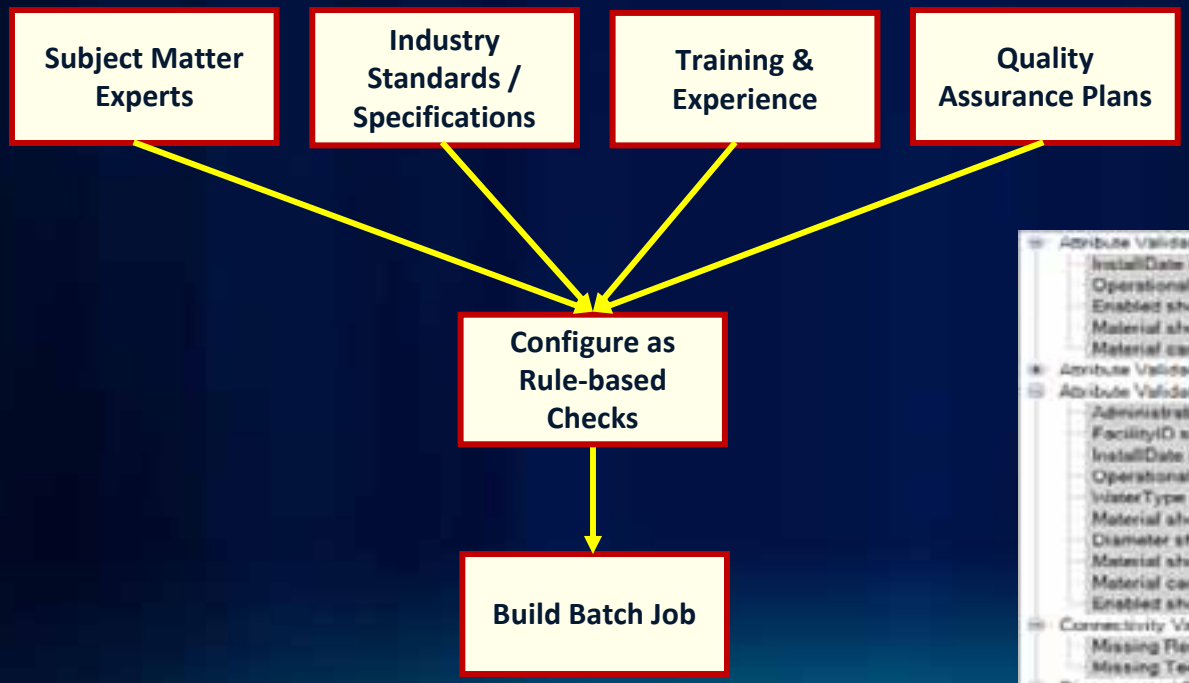
- **Custom Check**
  - Validate data using custom code



- **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



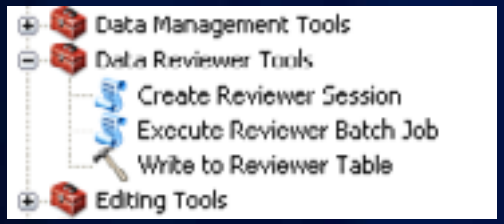
Batch Validation

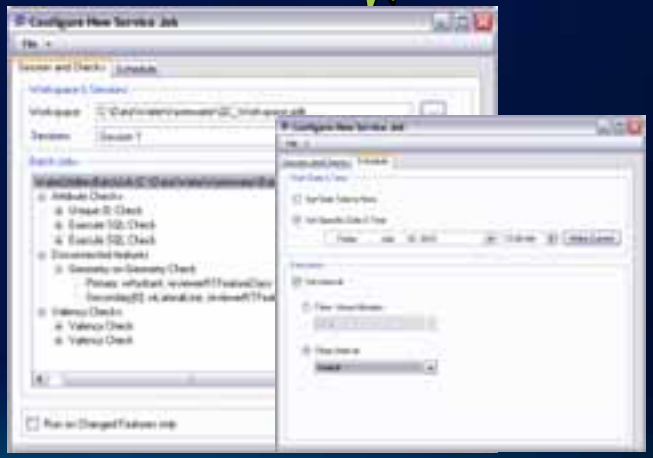
- Run multiple data checks
- Checks are organized into groups

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** 10





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

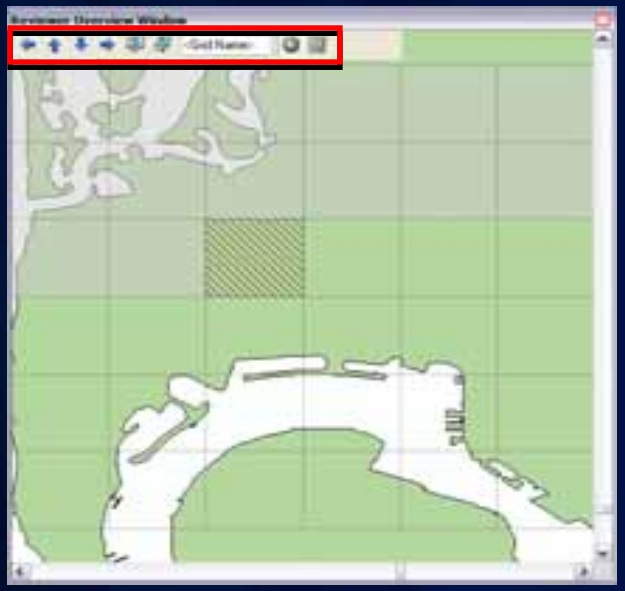
Writing Records and Capturing Missing Features

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

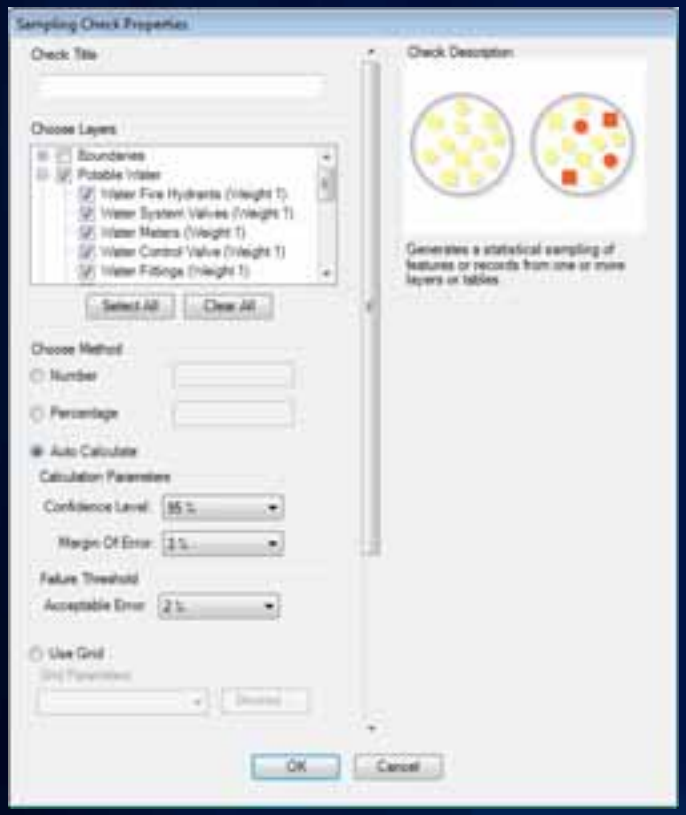
- Simplify visual review with Data Reviewer
  - Organize and structure the visual review process
  - Manage error information in the Data Reviewer table

Working with the Reviewer Overview Window



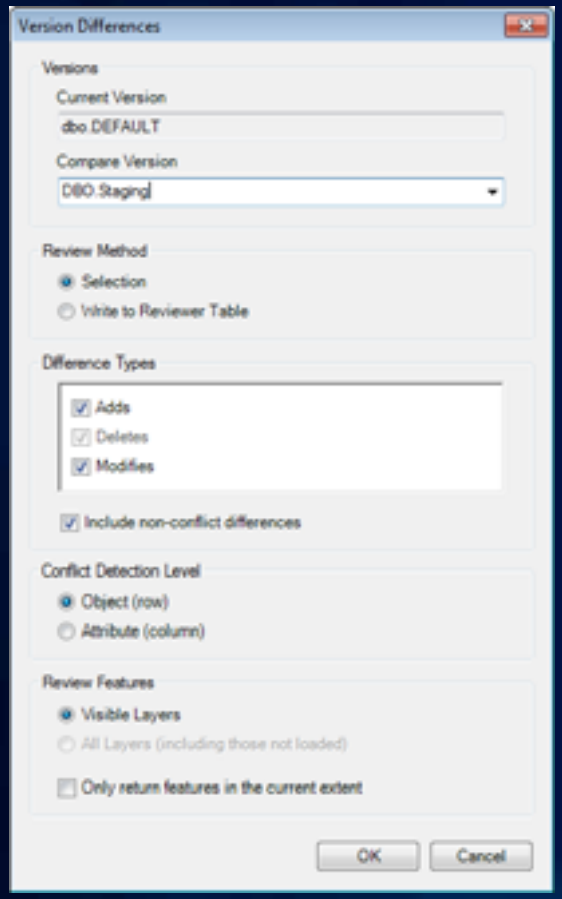
- Structure review by geographic extent
- Navigate to cells & track review progress

Sampling Data



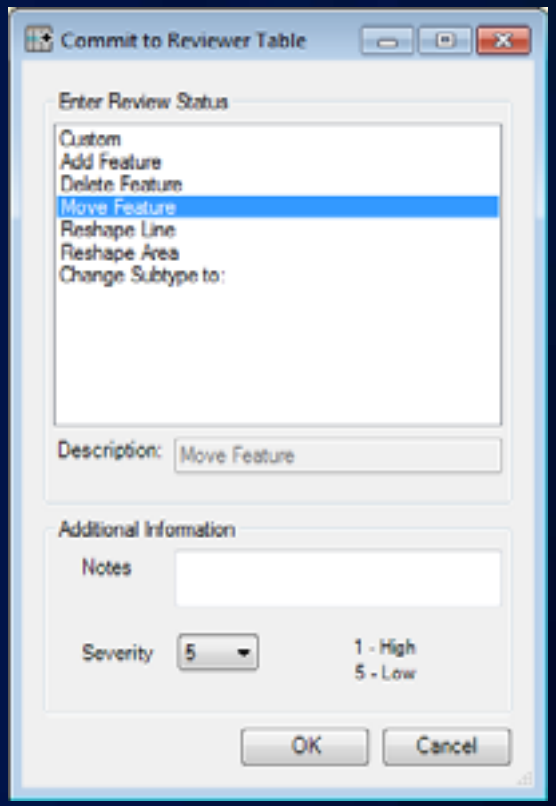
- **Determine a subset of features**
  - Fixed number of features
  - Percentage of features
  - Statistically significant sample
  - By polygon grid

Version Differences Tool



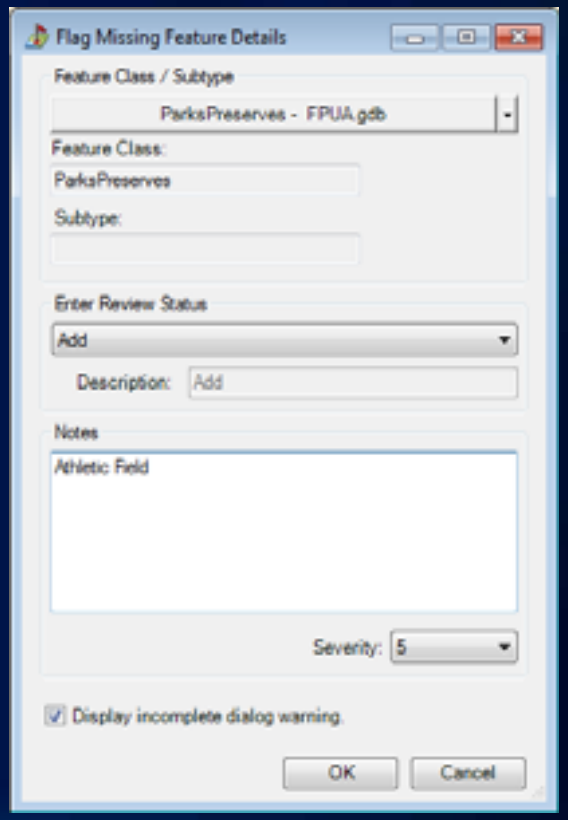
- **Compare two SDE versions**
  - **Parent/Child, Child/Child**
- **Identify adds/modifies/deletes**
- **Browse results or write to Reviewer Table**

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

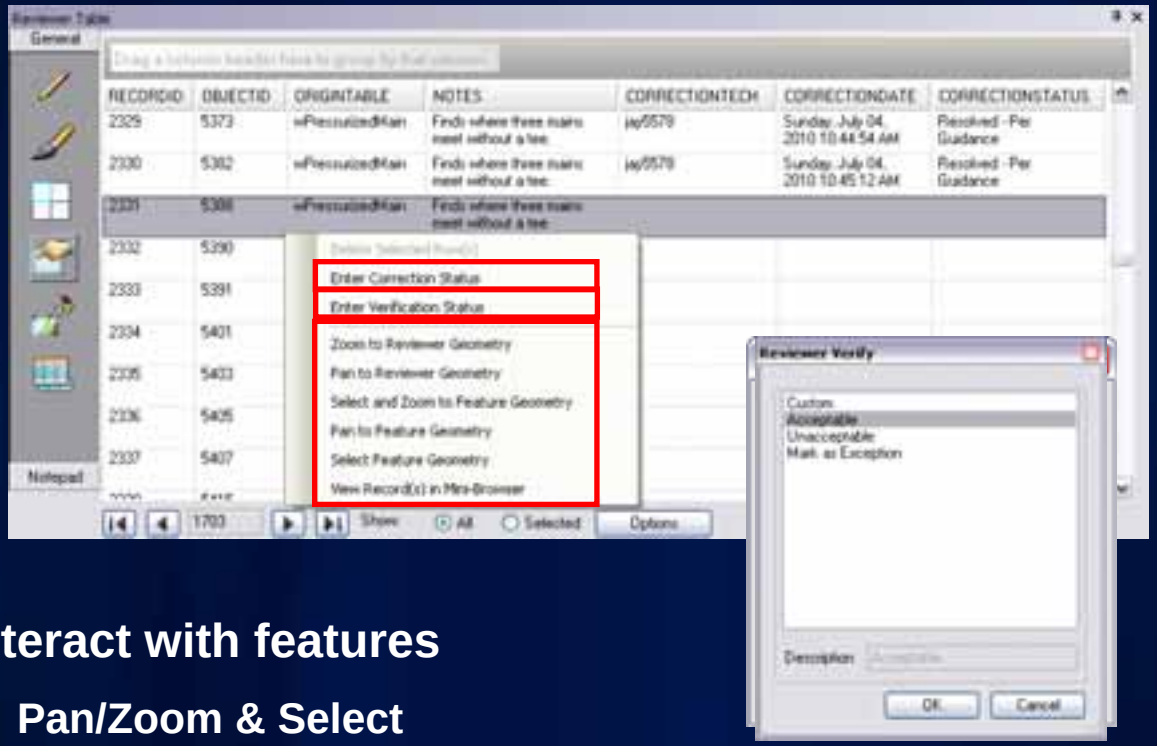
Measuring and Reporting Data Quality

Working with Reviewer Table Records

Summarizing Information

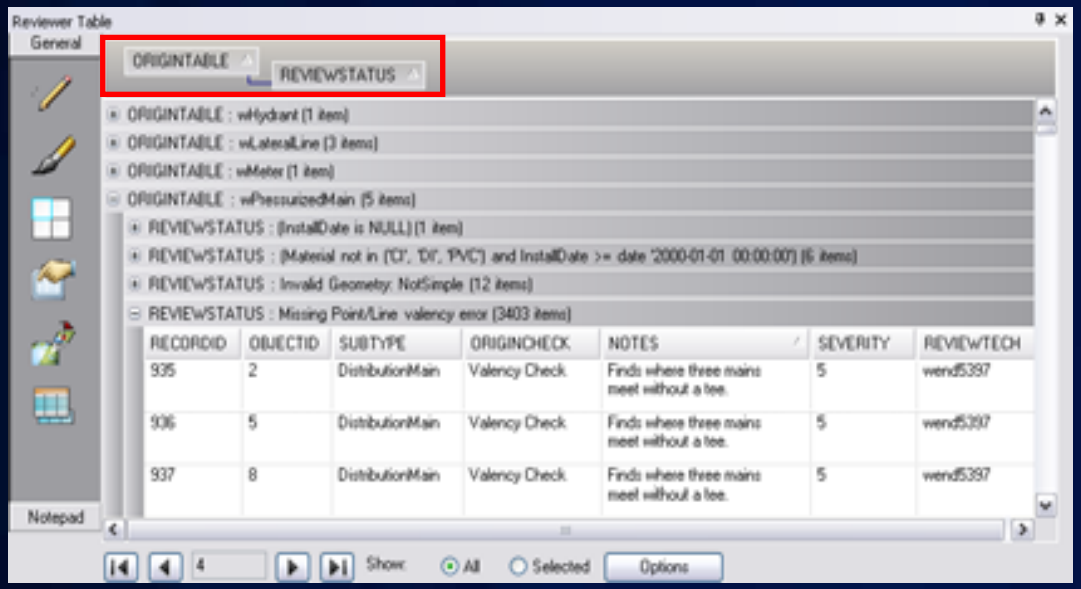
Reporting

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

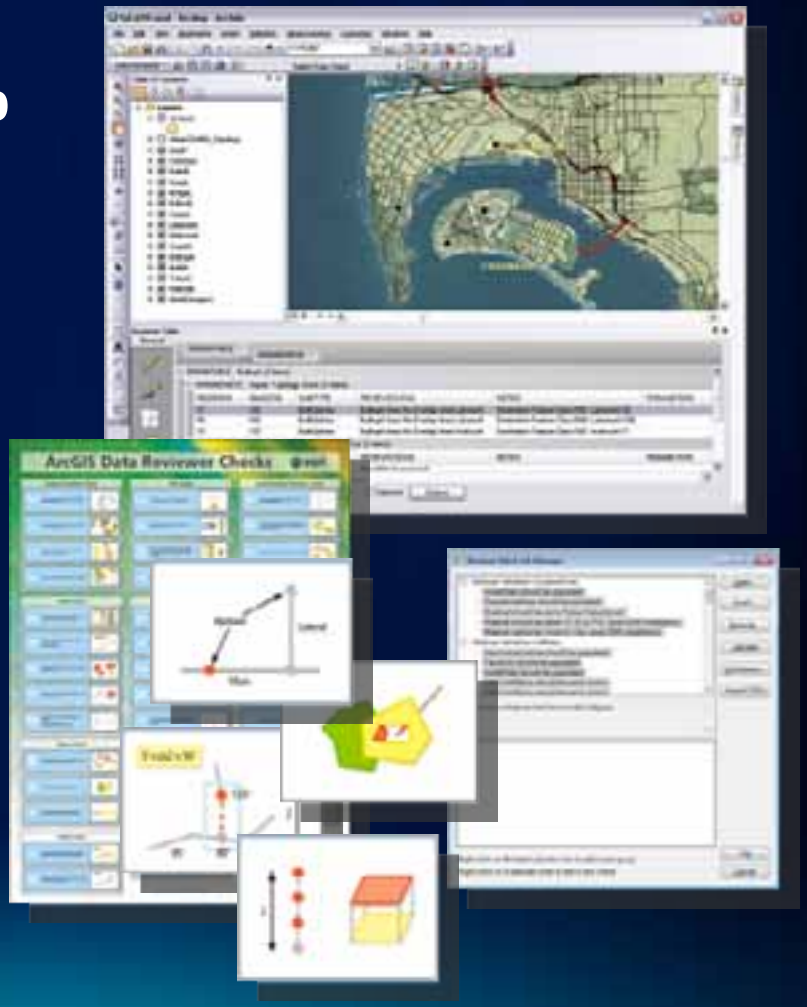
Summarizing Information

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

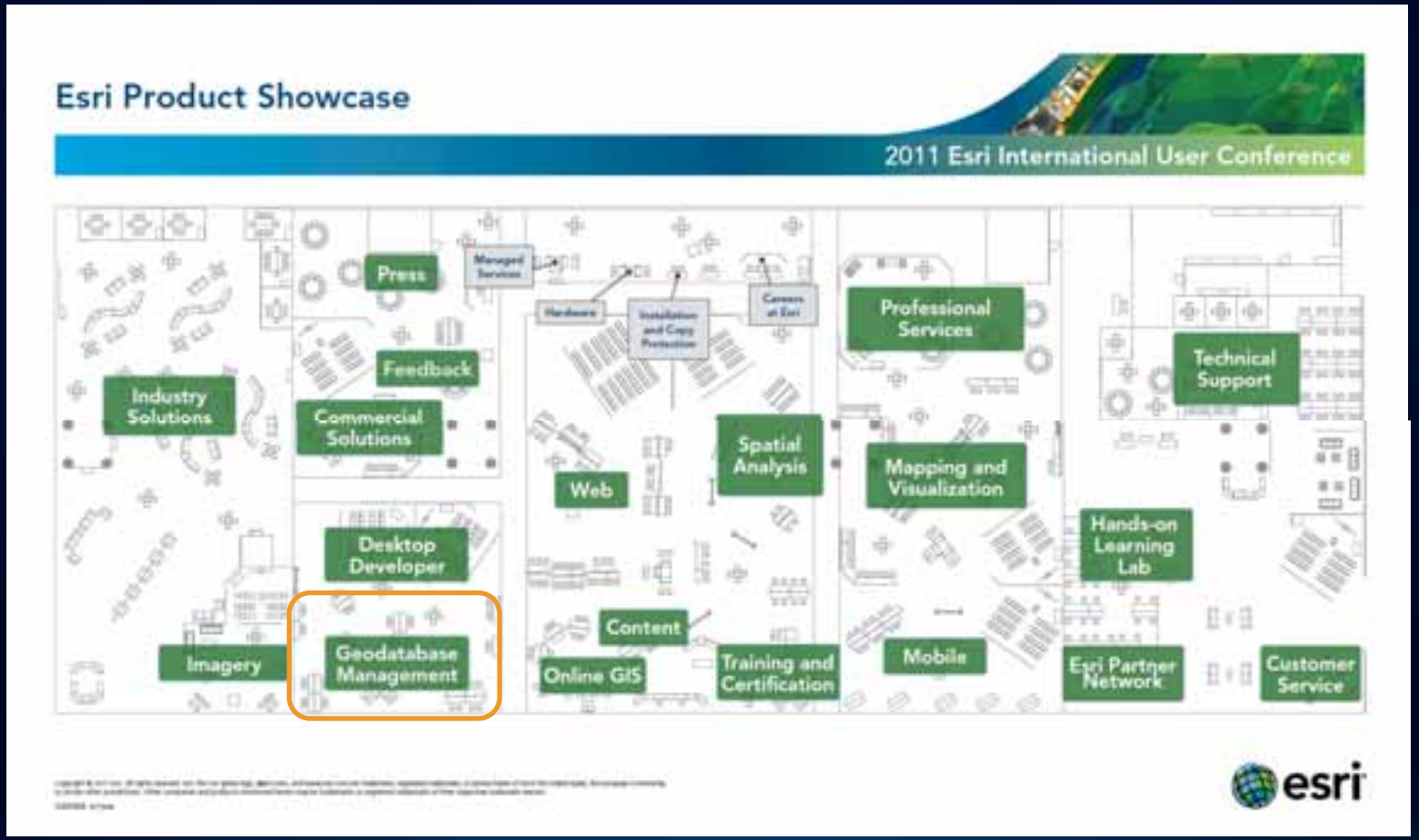
- **Data Reviewer Resource Center**
  - resources.arcgis.com

- **Email questions and comments to** DataReviewer@esri.com

Other Data Reviewer Sessions

Day and Description	Type	Time	Location
Tuesday July 12			
Assessing positional accuracy using ArcGIS Data Reviewer	Demo Theater	11:00 – 11:30 AM	Geodatabase Mgmt Theater
Integrating ArcGIS Workflow Manager and ArcGIS Data Reviewer to automate quality control workflows	Demo Theater	1:00 – 1:30 PM	Geodatabase Mgmt Theater
ArcGIS Data Reviewer - Extending Validation Framework	Demo Theater	5:30 – 6:00 PM	Geodatabase Mgmt Theater
Wednesday July 13			
ArcGIS Data Reviewer - Metadata quality control	Demo Theater	10:30 – 11:00 AM	Geodatabase Mgmt Theater
ArcGIS Data Reviewer: An Introduction	**Tech Workshop**	**1:30 – 2:45 PM**	**15B**
Assessing positional accuracy using ArcGIS Data Reviewer	Demo Theater	3:00 – 3:30 PM	Geodatabase Mgmt Theater
Thursday July 14			
Road Ahead - Data Reviewer	Tech Workshop	8:30 – 8:50 AM	6A
ArcGIS Data Reviewer: An Introduction	Tech Workshop	10:15 – 11:30 AM	15B
ArcGIS Data Reviewer - Extending Validation Framework	Demo Theater	12:00 – 12:30 PM	Geodatabase Mgmt Theater

Visit the Geodatabase Management Island



Session Evaluations

- **Session feedback has gone digital!**

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