Esri International User Conference
San Diego, California

Technical Workshops | July 26, 2012

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

Data Quality Matters

- Cost of poor quality can be extreme
  - $$ to fix
  - Impacts customers
  - Reputation
- Consider
  - Do you publish a doc without spell checking?
  - Do you operate a PC without a virus scanner?

Defining Quality

- Business Perspective
  - Intended purpose and use
  - Client requirements
  - Technical specifications
  - Industry standards
- Technical Perspective
  - Positional Accuracy
  - Attribute Accuracy
  - Completeness
  - Logical Consistency
  - Lineage

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Defining Quality Control

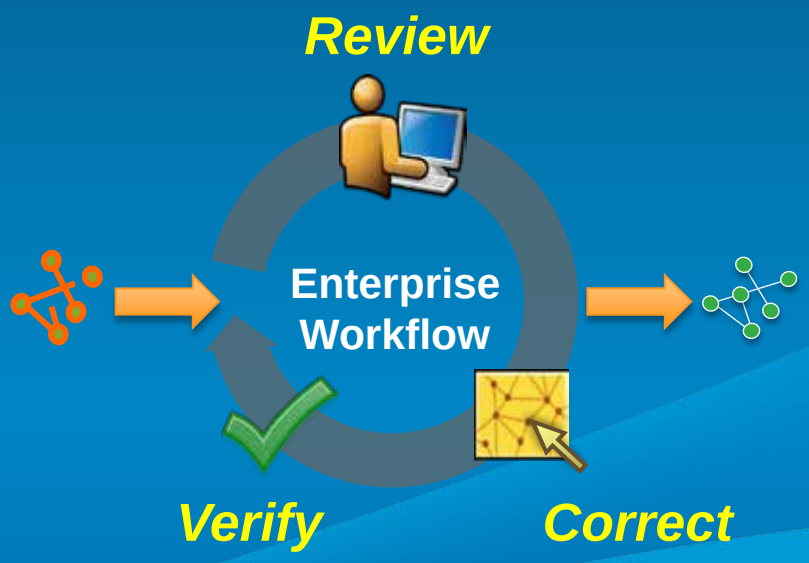
- Quality Assurance Plan
  - Defines desired level of data quality
  - Specifies acceptable and unacceptable levels of error
  - Identifies how quality control will be performed
- Quality Control
  - The tasks required to ensure data quality
  - Methods to assess and evaluate data

What is ArcGIS Data Reviewer?

Data quality management for ArcGIS

New

- **Provides**
  - Rule based workflows
  - Interactive tools
  - Track errors
- **For individuals and enterprise**
  - Saves time/money
  - Less rework
- **Standard extension to ArcGIS**
  - Desktop extension since 8.0
  - Server extension at 10.1



Trusted data through improved quality management

Managing Quality Control

Scalable framework for managing QC lifecycle

Find &
Record Errors

Perform Edits
or
Note Exceptions

Acceptable
or
Unacceptable

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An Introduction to Data Reviewer Components

The Quality Control Process with Data Reviewer

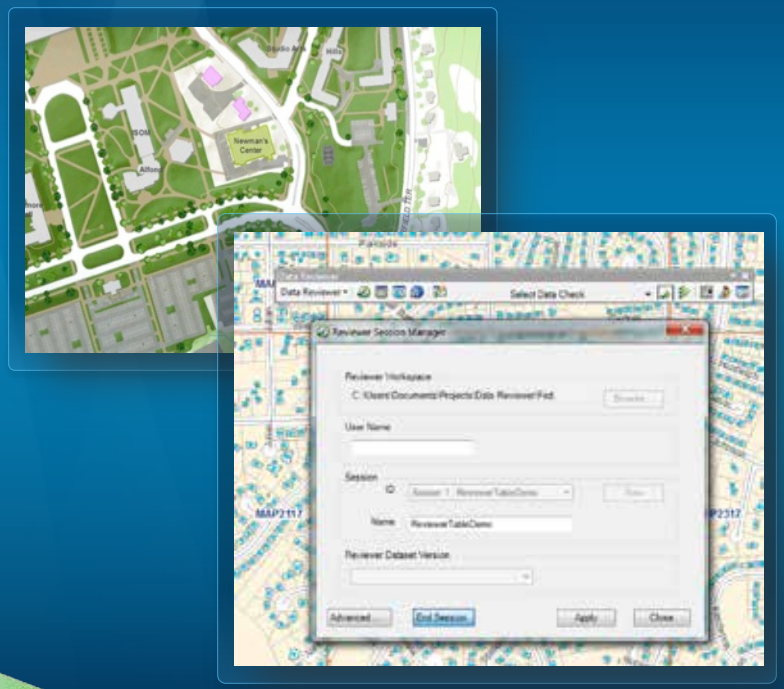
- Heart of the Data Reviewer
- Automated Checks
- Tracks all anomalies/errors
- Batch Data Review
- Interactive table
- Report data accuracy

- Feature class & tables created automatically

Review Data & Identify Errors

Reviewer Workspace

Ensuring Data Quality with ArcGIS Data Reviewer



Performing Quality Control
Automated Data Review

Types of Quality Control

Automated Quality Control

- Fast
- Consistent and repeatable
- Objective
- 100% coverage

Visual Review

- As subjective as needed
- Better for finding patterns and missing elements

Understanding Data Reviewer Checks

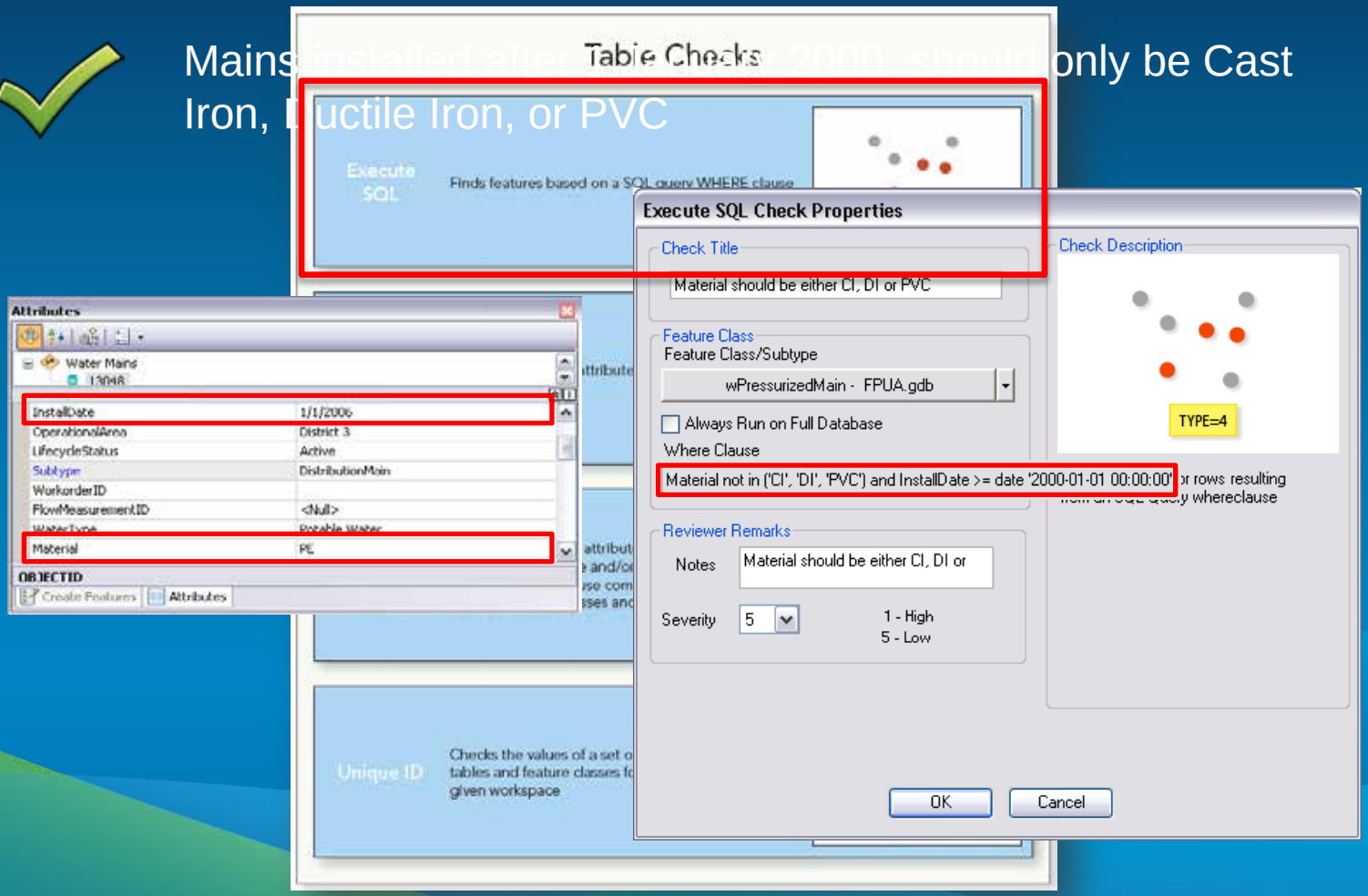
- Over 40 data checks
- Grouped into 11 categories
- Configurable
- Additive/Scriptable

www.esri.com/datareviewer

Table Checks

Execute SQL Check

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



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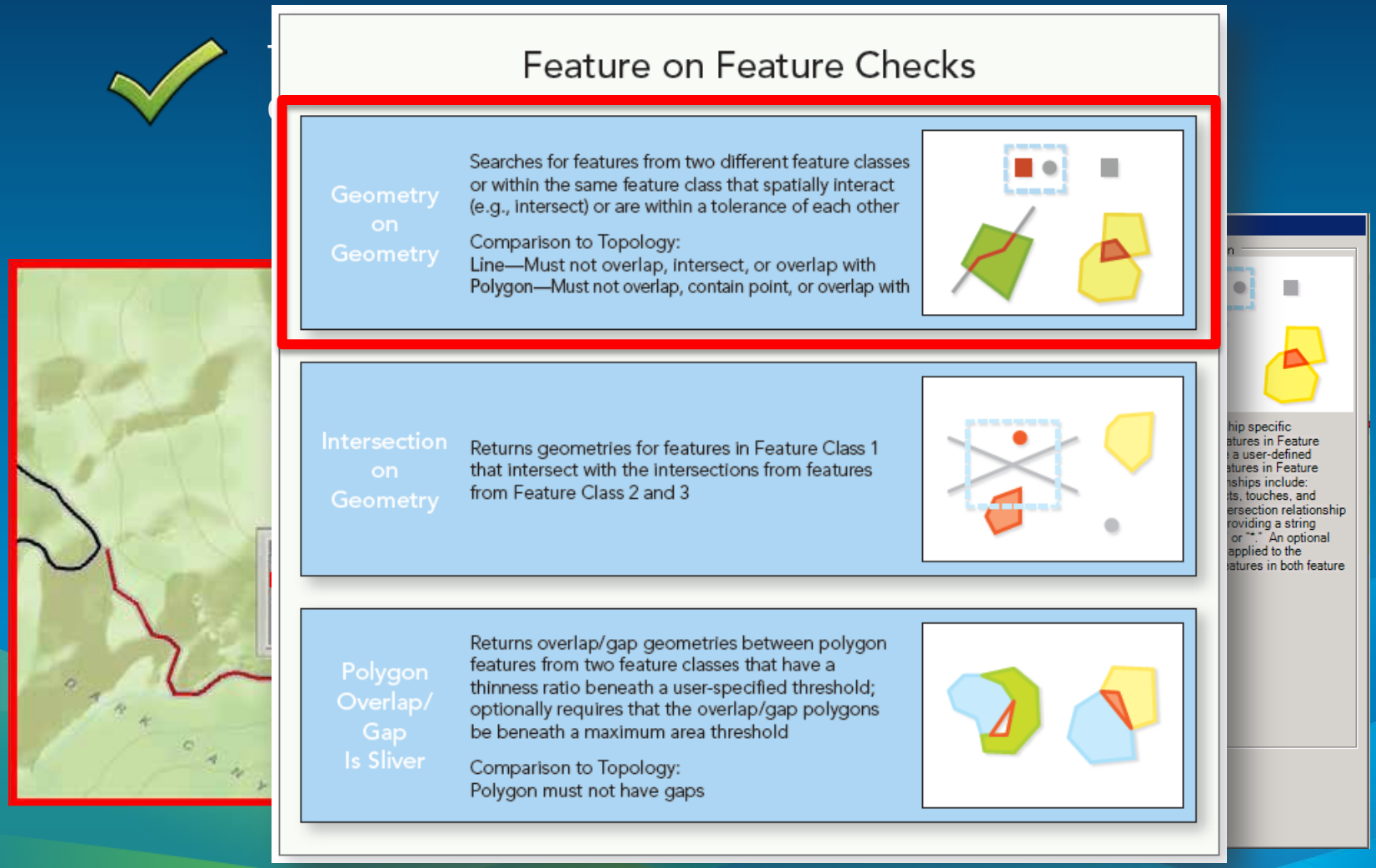
Feature on Feature Checks

Geometry on Geometry Check



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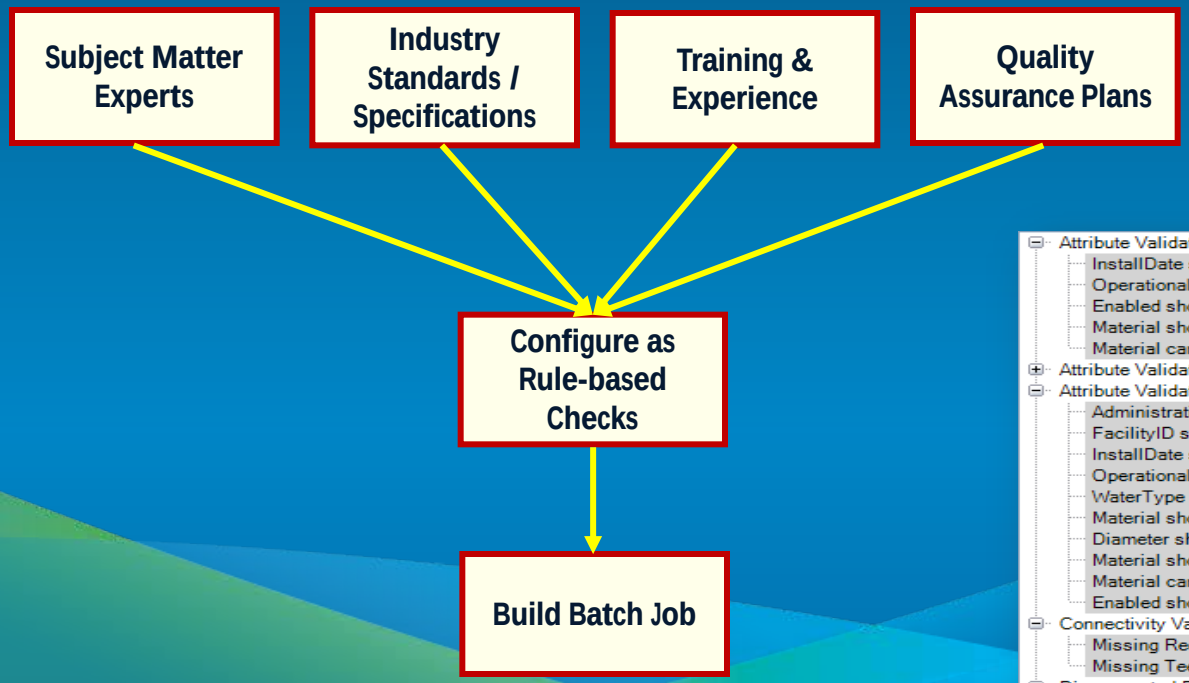
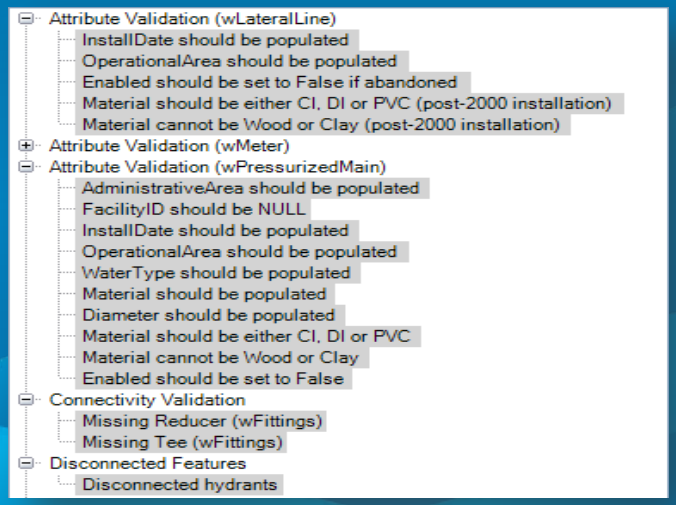
Combine Multiple Rules for Batch Check

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

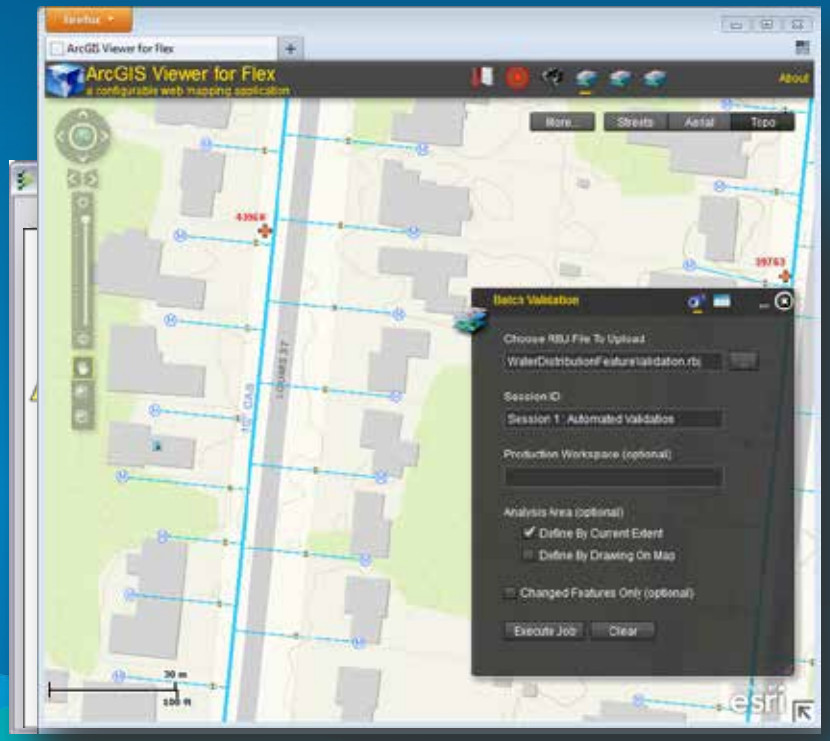




Batch Validation

Updated

- Run data validation in several ways:
  - Within ArcMap
  - From ArcToolbox
  - Within a model/Python script
  - ArcGIS Workflow Manager
  - ArcGIS Server service



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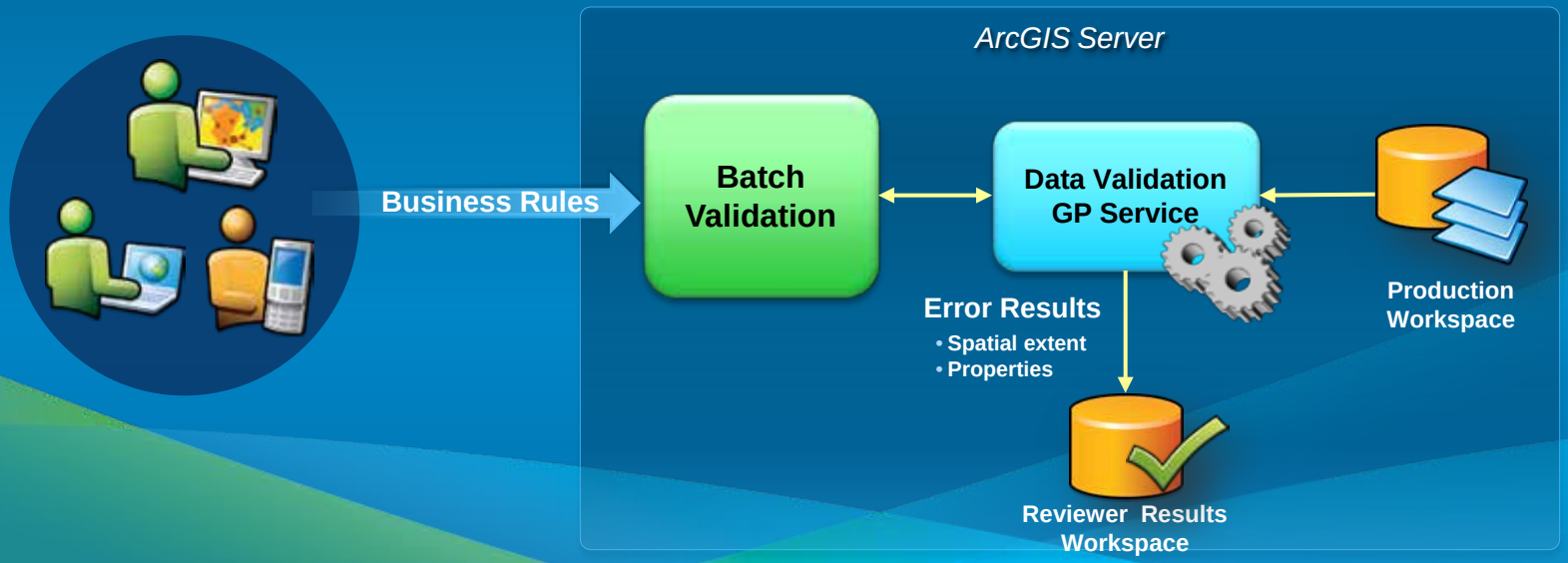
New Capabilities for 10.1

Server-based Data Validation

New

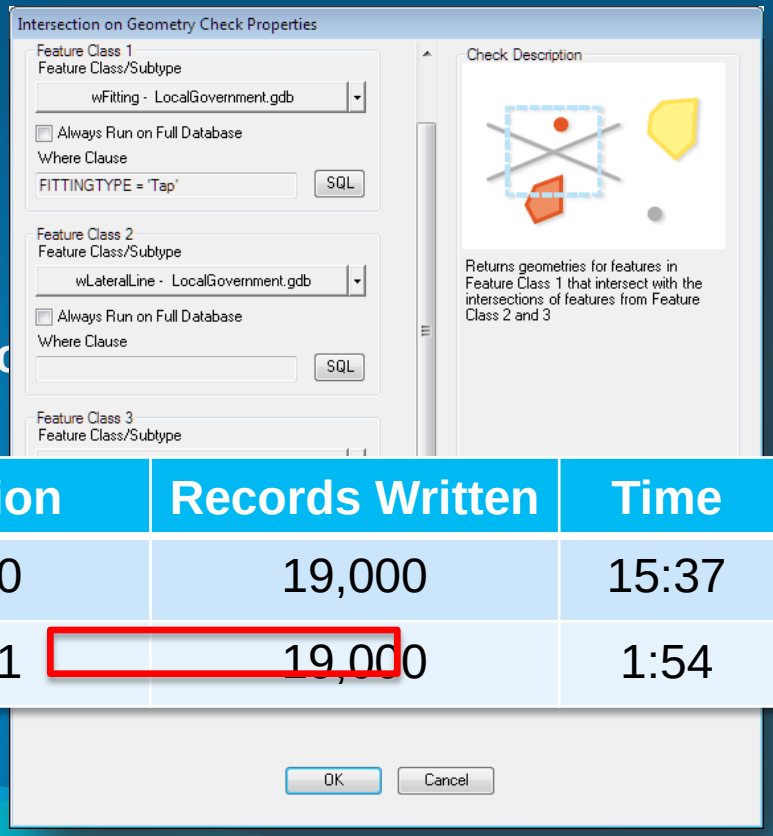
- Automated quality control for the enterprise
  - Scheduled and on-demand data validation
  - Frees data editors from running checks
  - Scalable data validation capability based on ArcGIS Server



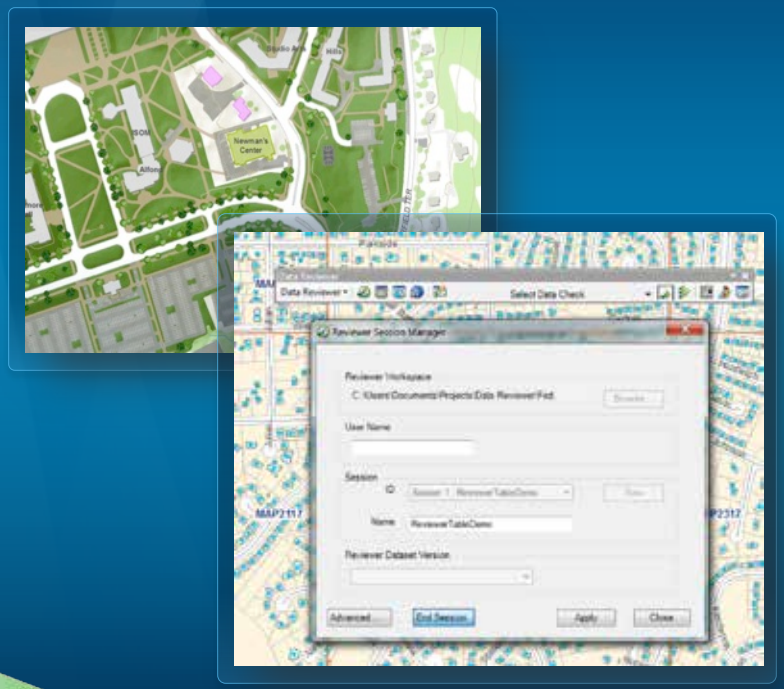
Enhancements for 10.1

Automated Data Validation

- Check Enhancements
  - Geometry on Geometry
  - Intersection on Geometry
- Performance improvements
  - Increase batch validation perfo



Version	Records Written	Time
10.0	19,000	15:37
10.1	19,000	1:54



Automated Data Review

Performing Quality Control
Visual Data Review

Types of Quality Control

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- As subjective as needed
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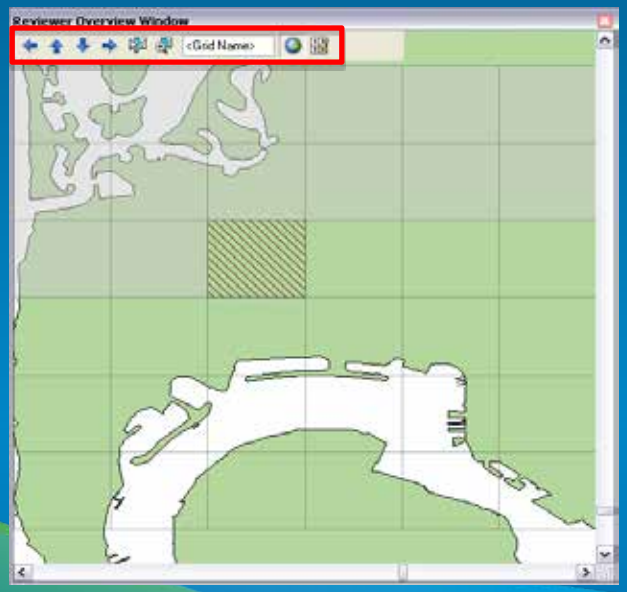
An Introduction to Visual Data Review

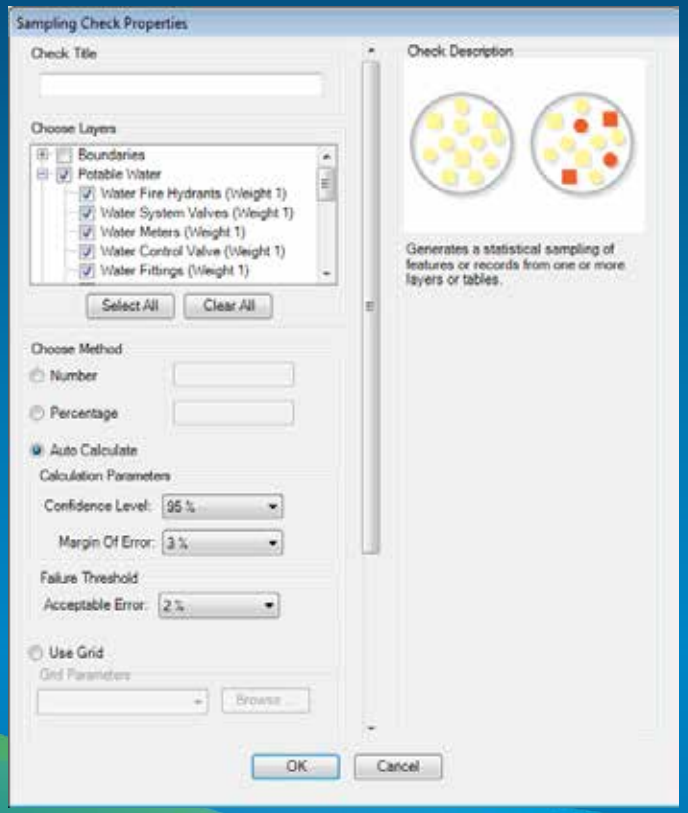
- Visual inspection of the data
  - Level of judgment/discretion
  - Compare between data sources
  - Requires strong knowledge of the data & ability to make consistent decisions
- Simplify visual review with Data Reviewer
  - Organize and structure the visual review process
  - Manage error information in the Data Reviewer table

Working with the Reviewer Overview Window

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



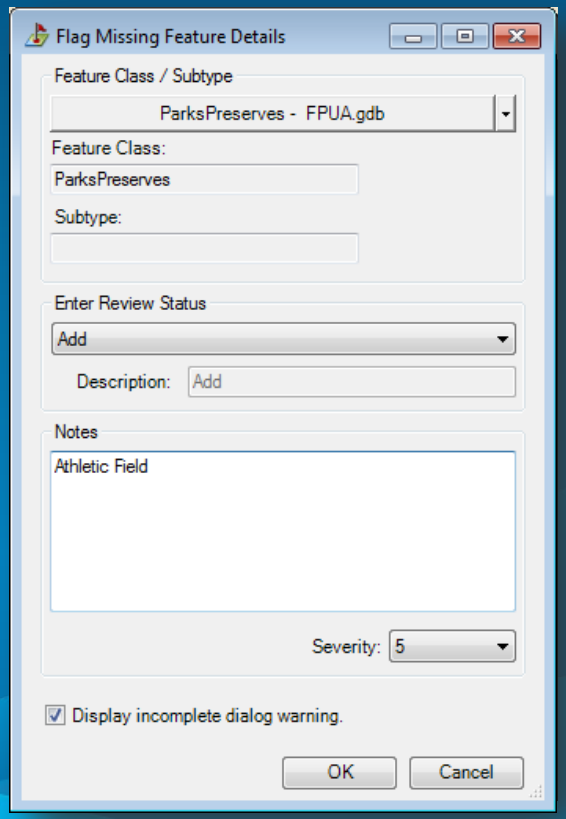
Sampling Data



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

Submitting Results during Visual Review

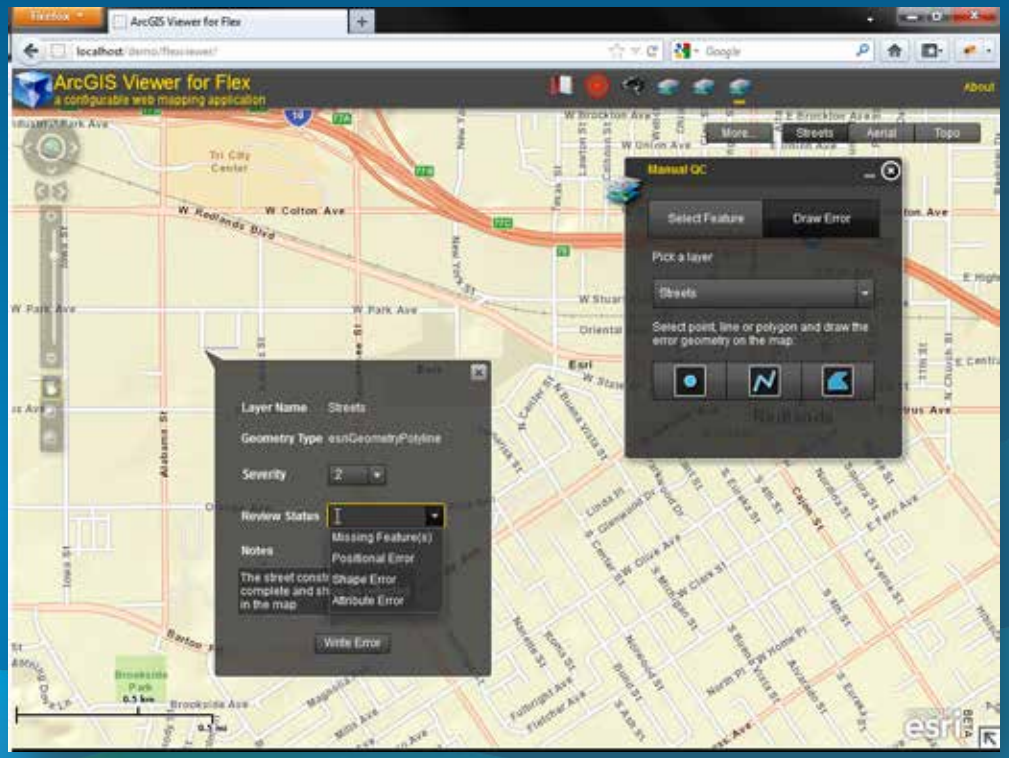
- **Commit to Reviewer Table**
  - Features selected interactively
  - Results of automated processes
- **Flag Missing Features/Notepad**
  - Capture x,y location or geometry
  - Identify feature

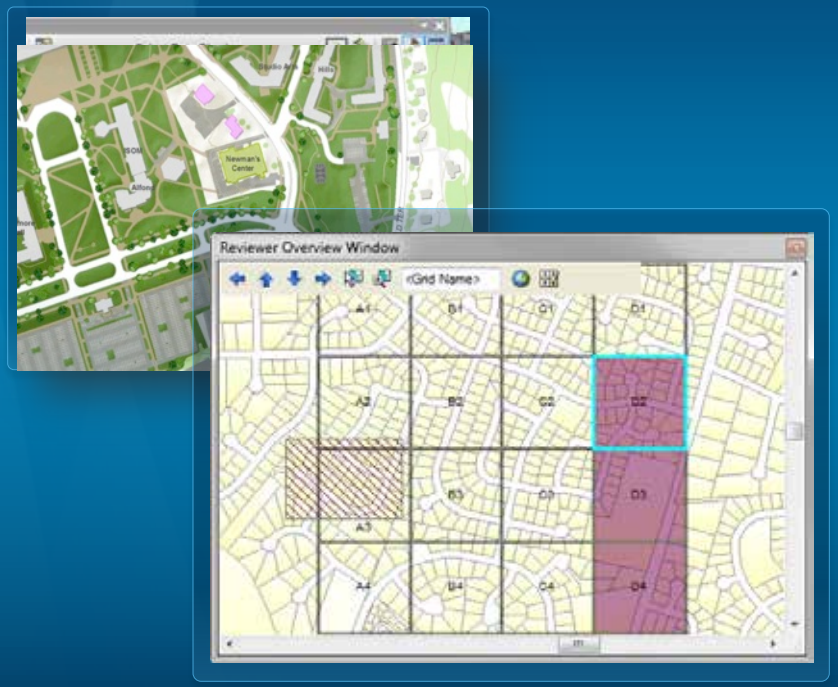


Quality Feedback via the Web

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
  - Deployed via intranet or Internet



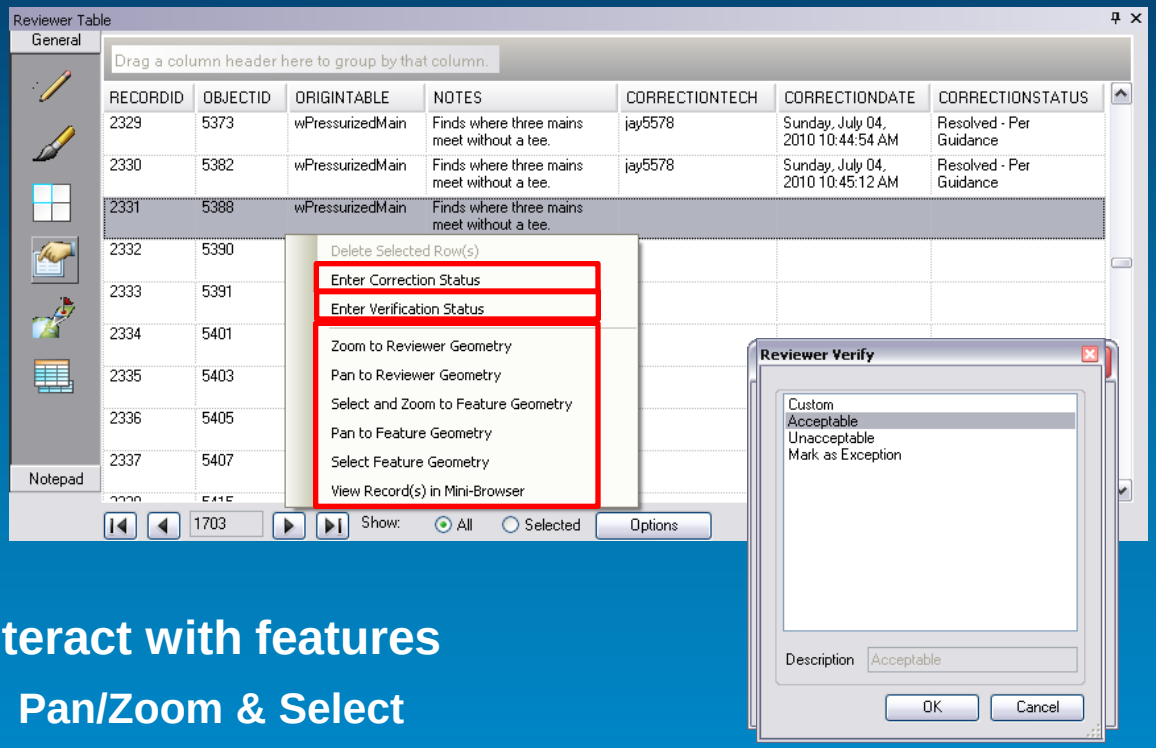


Visual Data Review

Measuring and Reporting Data Quality

Working with Reviewer Table Records

Updated



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

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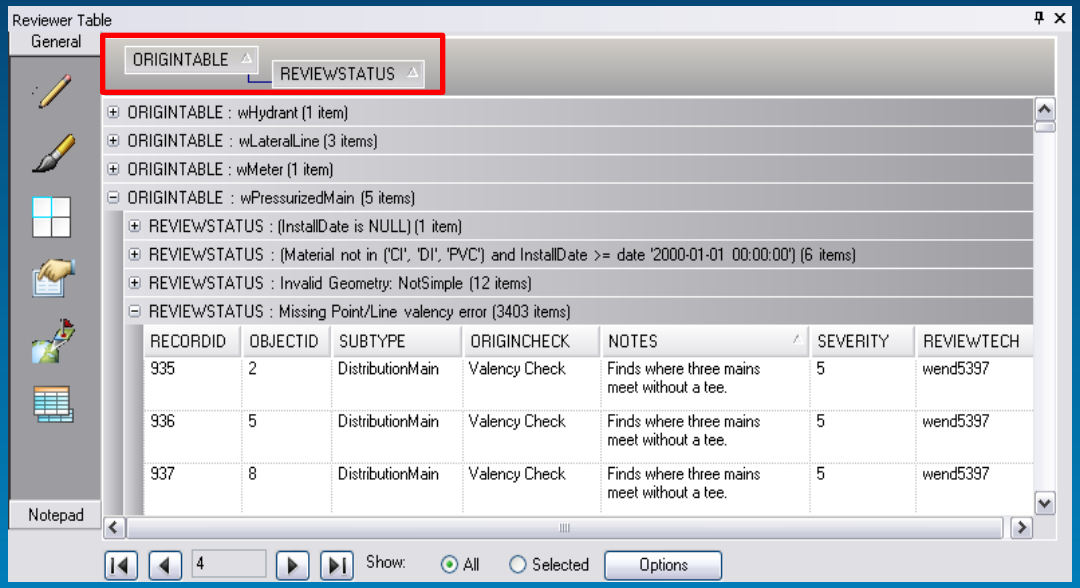
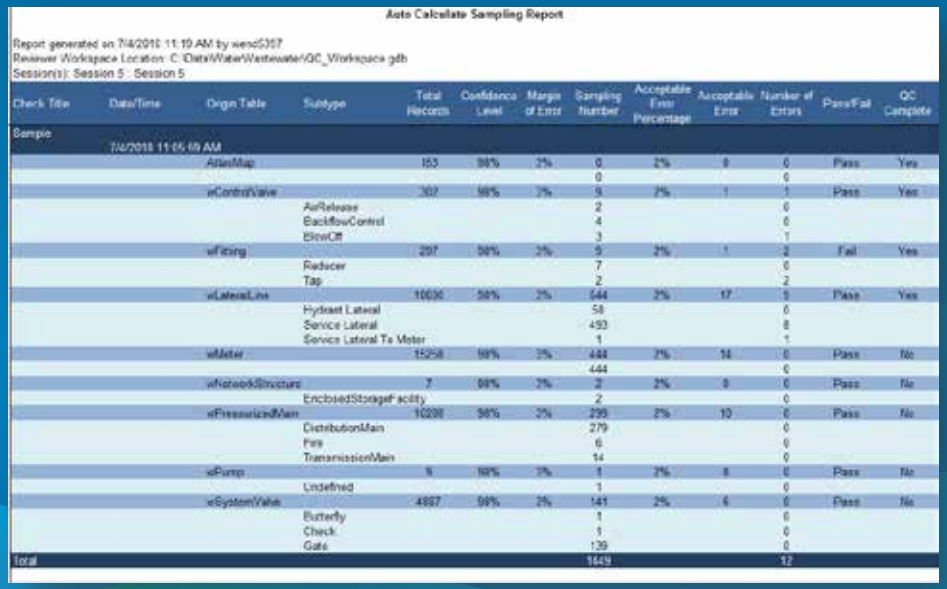
Summarizing Information



- **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



Auto Calculate Sampling Report

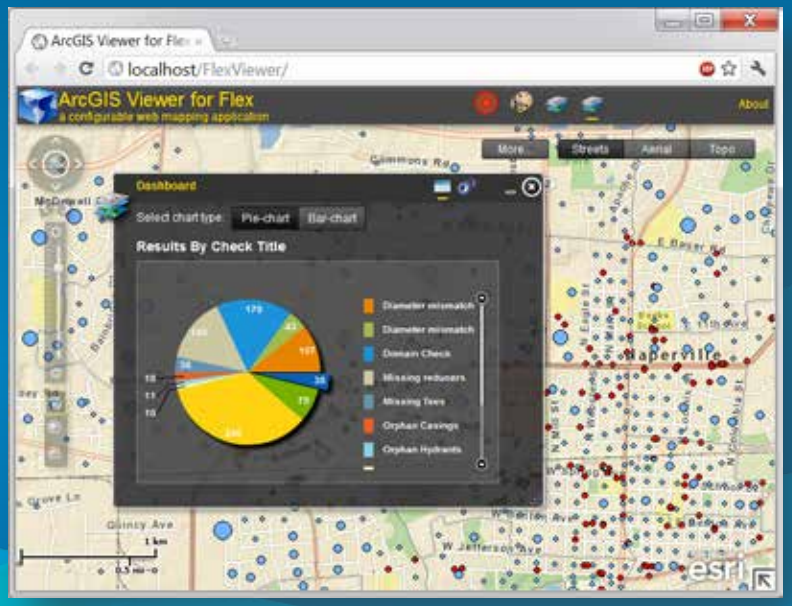
Report generated on 7/4/2018 11:19 AM by wend5357
Reviewer Workspace Location: C:\Data\Water\Wastewater\QC_Workspace.gdb
Session(s): Session 5 : Session 5

Check Title	Date/Time	Origin Table	Subtype	Total Records	Confidence Level	Margin of Error	Sampling Number	Acceptable Error Percentage	Acceptable Error	Number of Errors	Pass/Fail	QC Complete
Sample												
	7/4/2018 11:05:09 AM											
		AtlasMap		153	98%	2%	0	2%	0	0	Pass	Yes
							0			0		
		wControlValve		307	98%	2%	5	2%	1	1	Pass	Yes
			AirRelease				2			0		
			BackflowControl				4			0		
			BlowOff				3			1		
		wFitting		297	98%	2%	5	2%	1	2	Fail	Yes
			Reducer				7			0		
			Tap				2			2		
		wLateralLine		10036	98%	2%	544	2%	17	5	Pass	Yes
			Hydrant Lateral				58			0		
			Service Lateral				493			8		
			Service Lateral To Meter				1			1		
		wMeter		15258	98%	2%	444	2%	14	0	Pass	No
							444			0		
		wNetworkStructure		7	98%	2%	2	2%	0	0	Pass	No
			EnclosedStorageFacility				2			0		
		wPressurizedMain		10238	98%	2%	295	2%	10	0	Pass	No
			DistributionMain				279			0		
			Fire				6			0		
			TransmissionMain				14			0		
		wPump		5	98%	2%	1	2%	0	0	Pass	No
			Undefined				1			0		
		wSystemValve		4997	98%	2%	141	2%	6	0	Pass	No
			Butterfly				1			0		
			Check				1			0		
			Gate				139			0		
Total							1649			12		

Dashboard Reporting

Enabling transparency in data quality

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

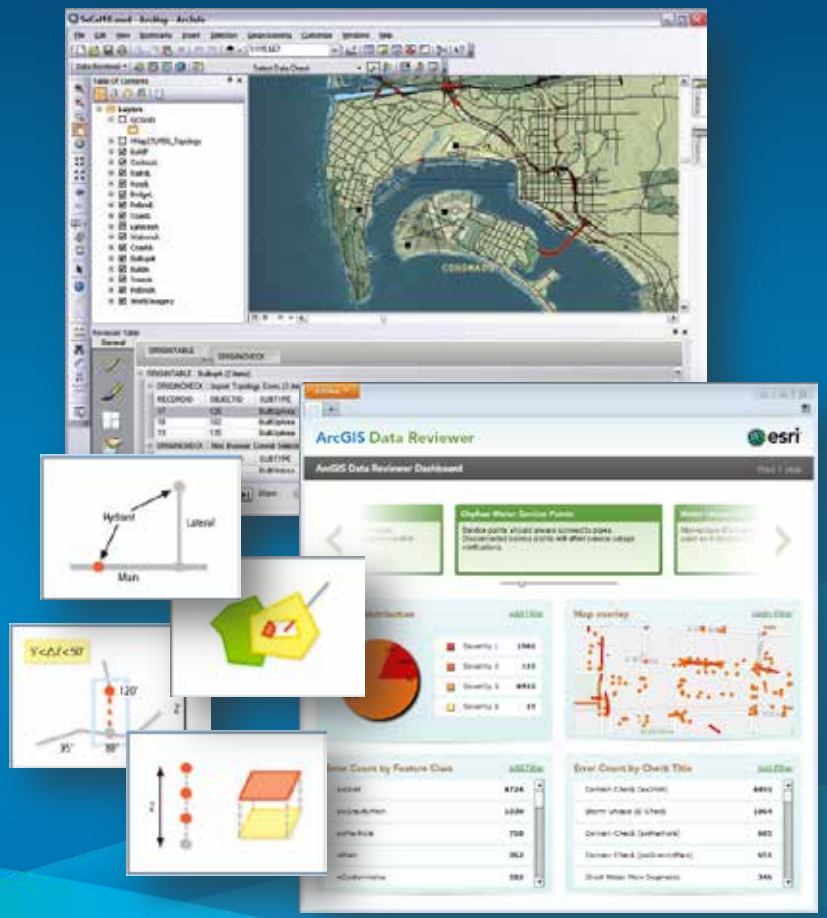


Measuring and Reporting Data Quality

ArcGIS Data Reviewer

Automate, Simplify, and Improve your Quality Control Process

- Extension to Desktop/Server
- Supports complete QC process
- Provides
  - Rule based workflows
  - Interactive tools
  - Track errors
- For individuals and enterprise
  - Saves time/money
  - Less rework



Resources

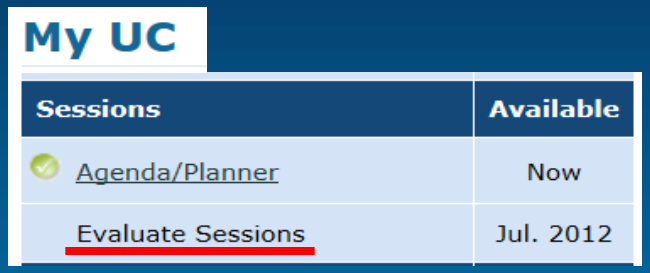
- Product Information www.esri.com\datareviewer
  - 60-day Free Evaluation
  - ArcGIS Data Reviewer Checks poster
- Training www.esri.com\training
  - Instructor Led Training: Data QC Using GIS Data Reviewer
  - Virtual Campus:
    - Introduction to GIS Data Reviewer Free!
    - Using ArcGIS Data Reviewer to Assess Data Quality Free!
- 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 24			
Validating Data on the Web Using ArcGIS Data Reviewer	Demo Theater	11:00 – 12:00 AM	Web & Server GIS Theater DRS
Using ArcGIS Data Reviewer to validate the quality of your Community Maps content	Demo Theater	1:30 – 2:00 PM	Online GIS Theater
Extending the ArcGIS Data Reviewer validation framework	Demo Theater	3:00 – 3:30 PM	Geodatabase Mgmt Theater
Wednesday July 25			
Using ArcGIS Data Reviewer to validate the quality of your Community Maps content	Demo Theater	9:30 – 10:00 AM	Online GIS Theater
Assessing positional accuracy using ArcGIS Data Reviewer	Demo Theater	10:00 – 10:30 AM	Geodatabase Mgmt Theater
Validating Data on the Web Using ArcGIS Data Reviewer	Demo Theater	12:00 – 1:00 PM	Web & Server GIS Theater DRS
Validating item metadata with ArcGIS Data Reviewer	Demo Theater	2:00 – 2:30 PM	Geodatabase Mgmt Theater
Integrating ArcGIS Data Reviewer & ArcGIS Workflow Manager to automate data quality control workflows	Demo Theater	2:30 – 3:00 PM	Geodatabase Mgmt Theater
Thursday July 14			
Leveraging Geoprocessing for data validation within ArcGIS Data Reviewer	Demo Theater	1:00 – 1:30 PM	Analysis and GP Theater
ArcGIS Data Reviewer: An Introduction	**Technical Workshop**	**1:30 – 2:45 PM**	**Ballroom 6C**

Steps to evaluate UC sessions

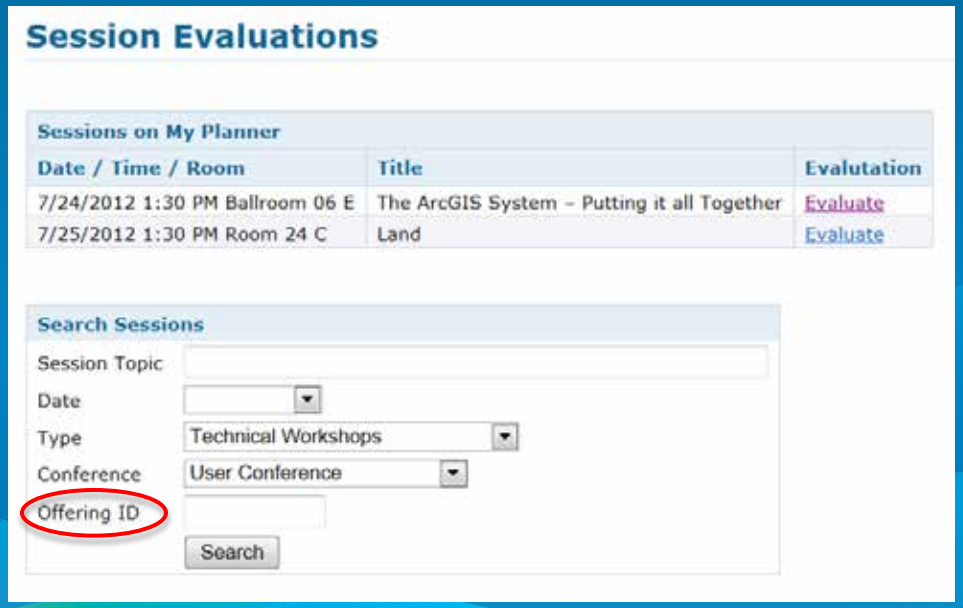
- My UC Homepage >
  "Evaluate Sessions"



- Choose session from planner

OR

- Search for session



www.esri.com/ucsessionsurveys

- Thank you for attending
- Have fun at UC2012
- Open for Questions

- Please fill out the evaluation:

www.esri.com/ucsessionsurveys

First Offering ID: 602

Second Offering ID: 859

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