



February Meeting

2/13/2019

AGENDA

1. Announcements
2. Esri Updates
3. Workflow Manager in ArcGIS Pro
4. Data Reviewer in ArcGIS Pro
5. Open Discussion

**** Please mute phones!! ****

ANNOUNCEMENTS

- Meeting Invites
- GIS-T Special Interest Group Meeting
 - April 24, 6:30pm (draft schedule)
- GeoNet Roads and Highways Website
 - <https://community.esri.com/groups/roads-and-highways-user-group-rhug>

ANNOUNCEMENTS

Functionality/Enhancement Priorities:

- LRS editing
- Event Editor
- Complex Geometries (gapped routes, self-intersecting routes)
- External Integrations
- Concurrencies
- Event Behaviors
- Intersections
- Temporality
- Redlining
- Geocoding
- Geoprocessing
- R&H Data Reviewer Checks
- Training
- Support
- Conflict Prevention

ANNOUNCEMENTS

- Future Discussion Topics
 - Temporality
 - Geocoding
 - Event Editing in Pro

Esri Updates

Nathan Easley

Workflow Manager in Pro

Michael Broadbent

Data Reviewer for Roads and Highways

Jay Cary

Open Discussion

RHUG Community

Upcoming Meetings / Contacts

Wednesday, March 13, 2019
and
GIS-T April 2019

Contact Info:

Erin Lesh ealesh@ncdot.gov

Patrick Whiteford pwhiteford@azdot.gov



Product Team Update (RHUG meeting 2/13/19)

Capabilities currently under development

- **Multi-field (concatenated) Route ID support in ArcGIS Pro**
 - Edit activities UI
 - GP tools
- **Regression testing 10.7 final release (available March)**

Support Incidents/Defects

- BUG-000117296 - Conflicts are introduced on routes when doing calibration point edits while the route edits are being posted in another version (fixed, being verified for 10.7)
- BUG-000118639 - Incorrect measure values are assigned to events when a whole part of a gapped route is realigned with the Split Value 'To Measure' set to the end of the gap and the event behavior is set to Cover in ArcGIS Desktop 10.6.1 (fixed for 10.7)
- BUG-000117736 Events on the gap route do not update correctly if the 'Gap calibration method' field is set to 'Applying Euclidian Distance' (as designed behavior)
- BUG-000119546 Extend route does not apply the Cover event behavior correctly on gapped routes (fixed, being verified for 10.7)
- BUG-000119545 Realign route does not apply the Cover event behavior correctly and applies incorrect measure values on gapped routes in different situations (fixed, being verified for 10.7)

Other Announcements

- **Roads and Highways GeoNet site now live**
 - <https://community.esri.com/community/esri-roads-and-highways>



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OF
WHERE



What is Data Reviewer for ArcGIS Pro?

February 13, 2019



Agenda

Data quality management in ArcGIS

What is ArcGIS Data Reviewer

- Automated Data Review

- Semi-Automated Review

- Managing Errors and Reporting Data Quality

Summary/Resources

Data quality management

Capabilities of the ArcGIS Platform

Geodatabase integrity

- Schema constraints
- Attribute Rules
- Versioning

Advanced data types

- Parcel Fabric
- Topologies
- Utility networks

ArcGIS Data Reviewer

- Automated review
- Semi-automated review
- Error management
- Quality reporting

What is ArcGIS Data Reviewer?

Data Quality Management for ArcGIS

Provides

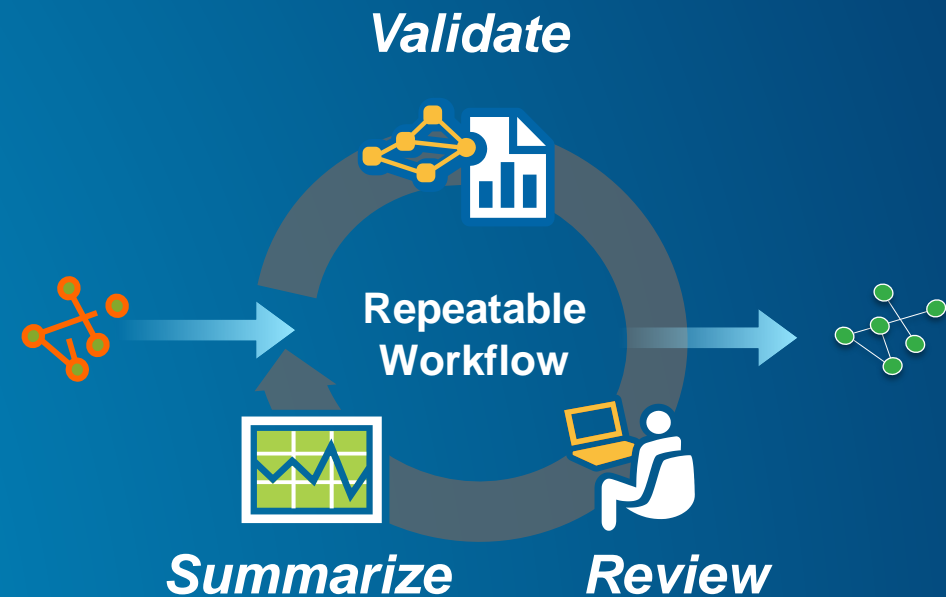
- Rule-based automated validation
- Semi-automated workflows
- Track and report quality

For individuals and enterprise

- Saves time/money
- Less rework

For multiple domains

- Configurable
- Extendable



What is ArcGIS Data Reviewer?

Data quality management in the ArcGIS platform

Data Reviewer for Desktop

- ArcGIS Pro
- ArcMap

Data Reviewer for Server

- ArcGIS Server (standard or higher)

Data Reviewer API

- JavaScript
- ArcGIS Pro SDK for Microsoft .NET

Web AppBuilder for ArcGIS



Types of Quality Control



Automated review

Fast

**Consistent and
repeatable**

Objective

100% coverage

Types of Quality Control



Automated review

Fast

Consistent and repeatable

Objective

100% coverage



Semi-automated review

Guided Workflows

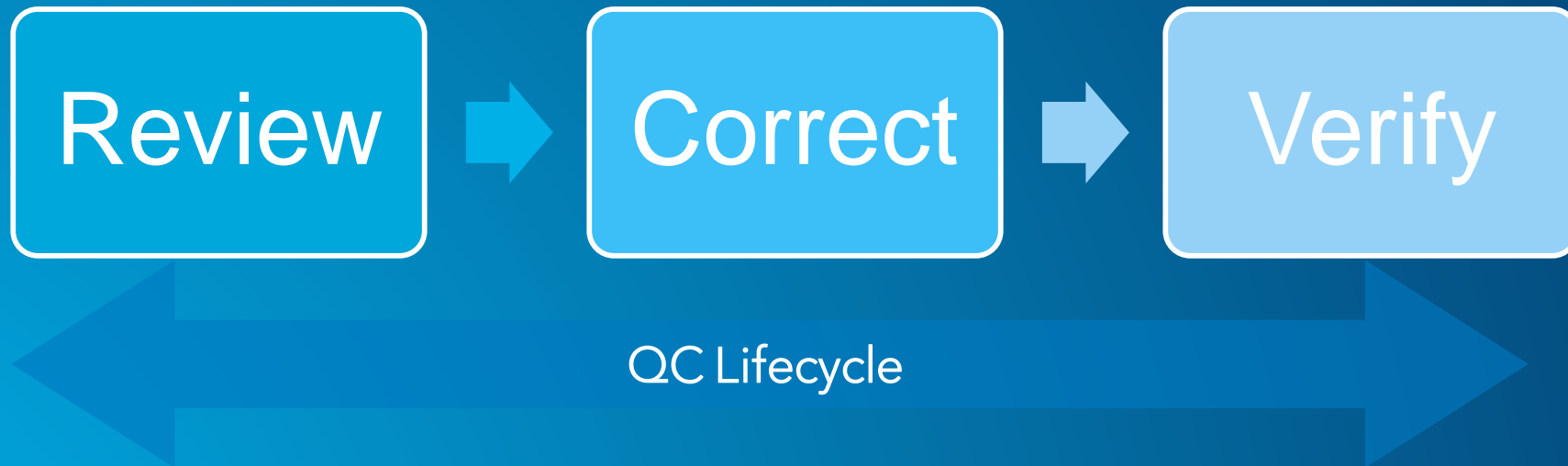
Streamlined processes

Subjective

Sampling

Managing Quality Control

Framework for managing QC lifecycle



Automated Data Review

Types of Quality Control



Automated review

Fast

Consistent and repeatable

Objective

100% coverage

After data creation

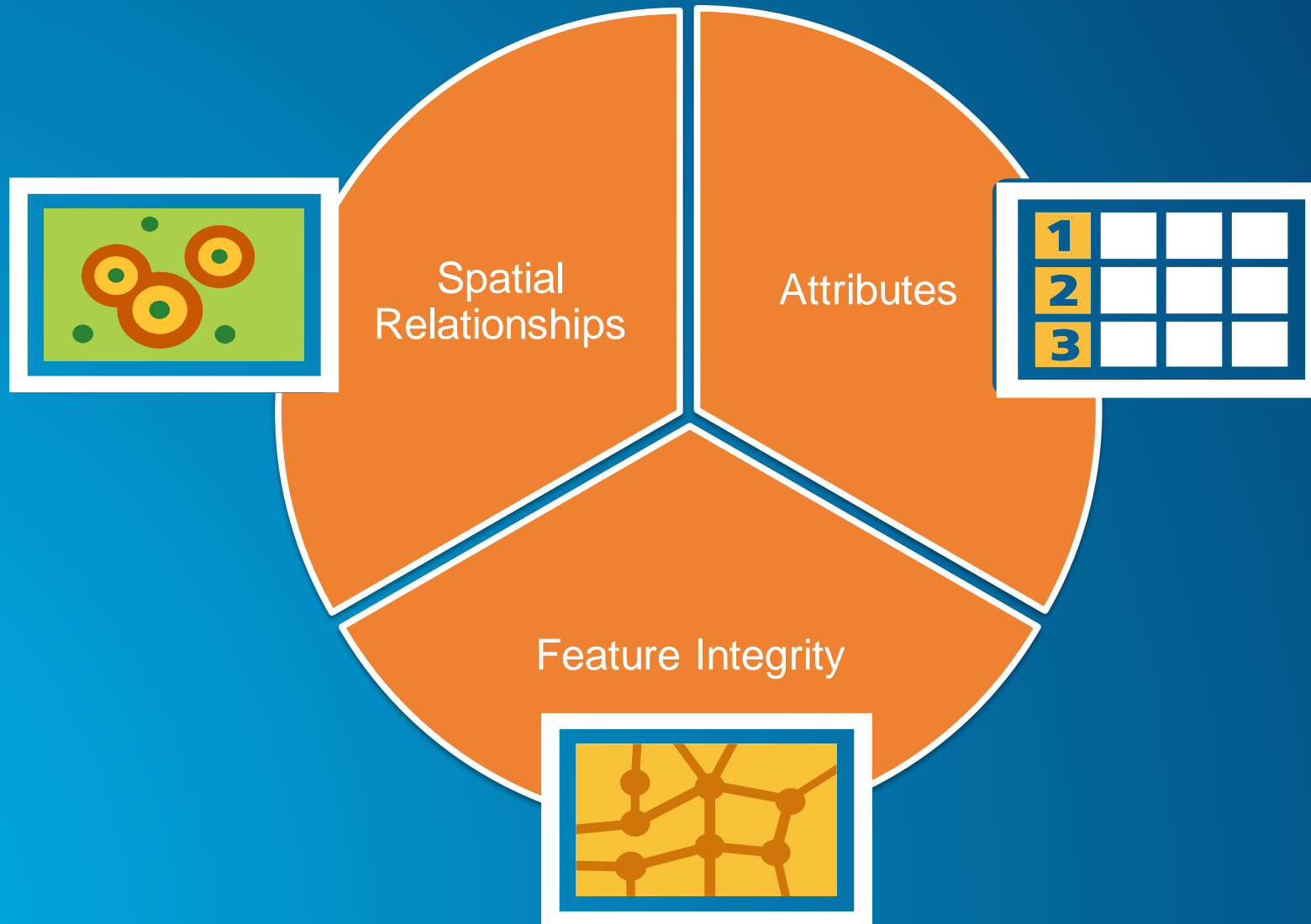


During data creation



Automated Review Methods

Different Type of Issues in GIS Data

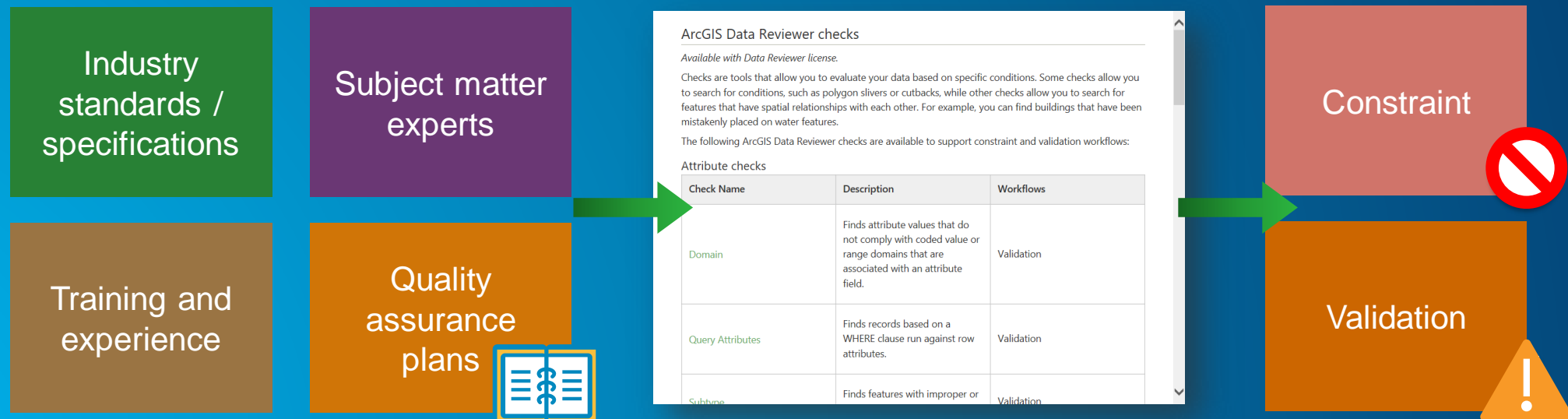


Implementing data quality rules

Rule implementation workflow

Authoring workflow

- Identify and document requirements
- Identify relevant validation methods in ArcGIS
- Identify validation workflow



Data Reviewer Checks

Reviewer Rule in constraint workflows

Constraint workflows

- Rules are stored in Geodatabase
- Enterprise geodatabase sources

The screenshot displays the ArcGIS Pro interface for managing Attribute Rules. The main window is titled "Attribute Rules: Road Centerlines". The interface is divided into several sections:

- Table:** A table listing constraint rules with columns for Rule Name, Description, and Subtype. The rules listed are:

Rule Name	Description	Subtype
Road centerline should not have extreme angles	Road centerline should not have extreme angles	<All>
Short segment (less than 25ft)	Road features should not be less than 25 feet in length.	<All>
Road centerlines should not contain multiple parts	Road centerlines should not be multi-part	<All>
Road Centerline must be broken and snapped at road intersections	Split and snap road centerline at all road intersections	<All>
road intersects road	test	<All>
- Configuration Panel:** On the right, the configuration for the selected rule "Road centerline should not have extreme angles" is shown. It includes:
 - Input Filters:** Subtype set to "<All>".
 - Check Parameters:** Minimum Angle Size set to 25°.
 - Execution:** Triggers checked for Insert, Update, and Delete.
 - Details:** Name and Description fields containing the rule name and description.
 - Tags:** LGIM 2018 and feature integrity.
- Catalog:** A panel on the right showing a tree view of geodatabase sources, including folders like "pmdb.pm.Elevation", "pmdb.pm.EmergencyOperations", etc.

At the bottom of the table, a status message reads: "5 of 5 Constraint rules listed as of 2/12/2019 4:32:17 PM."

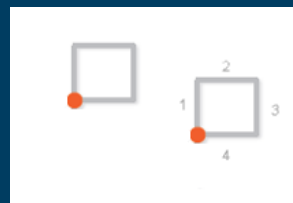
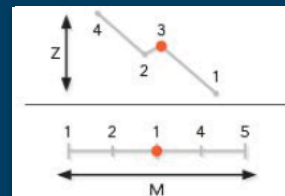
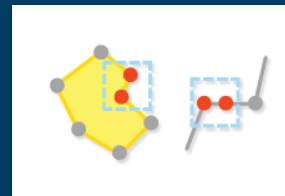
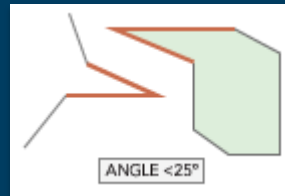


Data Reviewer Checks

Reviewer Rule in constraint workflows

Constraint workflows

- Rules are stored in Geodatabase
- Enterprise geodatabase sources
- Assess a feature's
 - Integrity
 - Spatial relationships



Cutbacks

Finds segments where the angle between segments in a polygon or polyline is below a specified minimum value.

Duplicate Vertex

Finds vertices from the same feature that are collocated or within a specified tolerance of one another.

Feature on Feature

Finds features that have a specific relationship, either from two different feature layers or within the same feature layer.

Monotonicity

Searches Z or M-enabled polylines for vertices that are not strictly increasing or decreasing in value or are trending based on specified conditions.

Polyline or Path Closes on Self

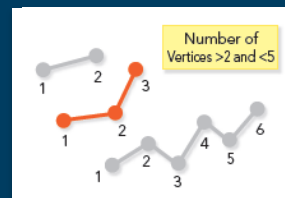
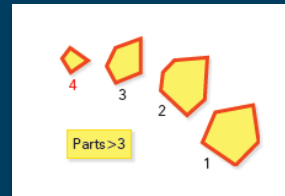
Finds paths or lines in polyline features that close themselves.

Data Reviewer Checks

Reviewer Rule in constraint workflows

Constraint workflows

- Rules are stored in Geodatabase
- Enterprise geodatabase sources
- Assess a feature's
 - Integrity
 - Spatial relationships
 - Geometric properties



Evaluate Polyline Length

Finds polyline segments, parts or features that have a line length within a specified tolerance.

Evaluate Part Count

Finds features with a part count that is within a specified value.

Evaluate Polygon Perimeter and Area

Finds polyline segments, parts, or features that have a line length within a specified tolerance.

Evaluate Vertex Count

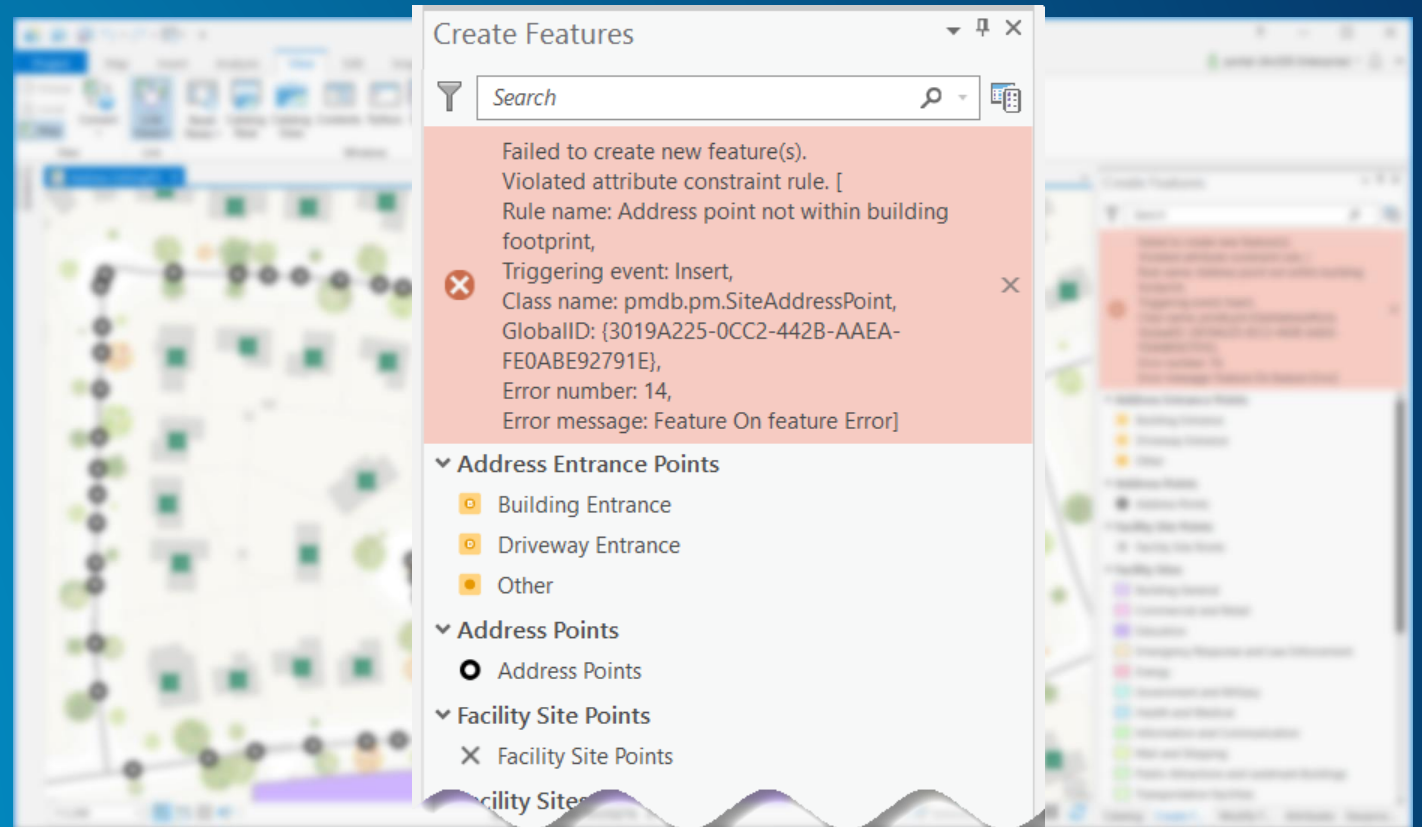
Finds polyline or polygon features that have a vertex count within a specified tolerance.

Data Reviewer Checks

Reviewer Rule in constraint workflows

Constraint workflows

- Rules are stored in Geodatabase
- Enterprise geodatabase sources
- Assess a feature's
 - Integrity
 - Spatial relationships
 - Geometric properties
- Triggered during creation, modification or deletion of a feature

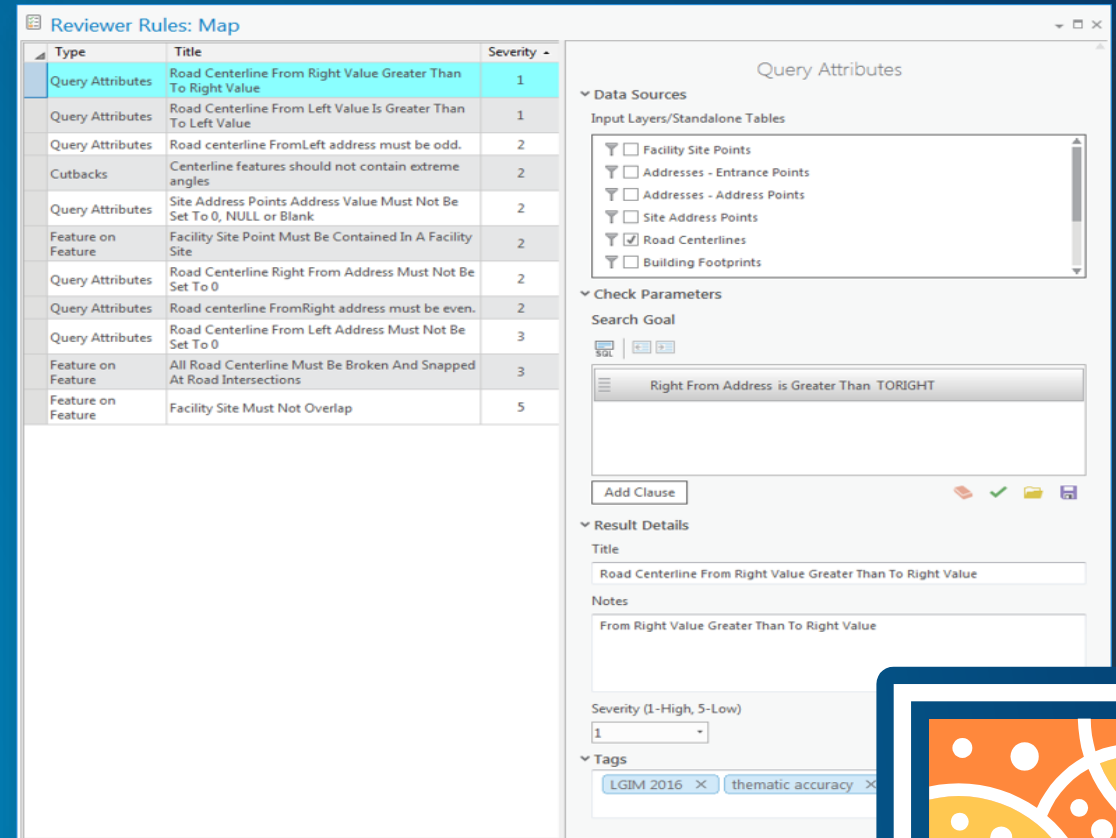


Data Reviewer Checks

Reviewer Rule in validation workflows

Validation workflows

- Rules are stored in Map
- Layer data sources



The screenshot displays the 'Reviewer Rules: Map' interface. On the left, a table lists various rules with their types, titles, and severity levels. The first rule, 'Road Centerline From Right Value Greater Than To Right Value', is highlighted in blue. The right panel shows the configuration for this rule, including data sources, check parameters, and result details.

Type	Title	Severity
Query Attributes	Road Centerline From Right Value Greater Than To Right Value	1
Query Attributes	Road Centerline From Left Value Is Greater Than To Left Value	1
Query Attributes	Road centerline FromLeft address must be odd.	2
Cutbacks	Centerline features should not contain extreme angles	2
Query Attributes	Site Address Points Address Value Must Not Be Set To 0, NULL or Blank	2
Feature on Feature	Facility Site Point Must Be Contained In A Facility Site	2
Query Attributes	Road Centerline Right From Address Must Not Be Set To 0	2
Query Attributes	Road centerline FromRight address must be even.	2
Query Attributes	Road Centerline From Left Address Must Not Be Set To 0	3
Feature on Feature	All Road Centerline Must Be Broken And Snapped At Road Intersections	3
Feature on Feature	Facility Site Must Not Overlap	5

Reviewer Rules: Map

Query Attributes

Data Sources

Input Layers/Standalone Tables

- Facility Site Points
- Addresses - Entrance Points
- Addresses - Address Points
- Site Address Points
- Road Centerlines
- Building Footprints

Check Parameters

Search Goal

Right From Address is Greater Than TORIGHT

Add Clause

Result Details

Title

Road Centerline From Right Value Greater Than To Right Value

Notes

From Right Value Greater Than To Right Value

Severity (1-High, 5-Low)

1

Tags

LGIM 2016 thematic accuracy

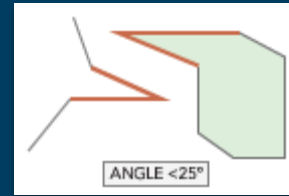


Data Reviewer Checks

Reviewer Rule in validation workflows

Validation workflows

- Rules are stored in Map
- Layer data sources
- Assess a features
 - Integrity



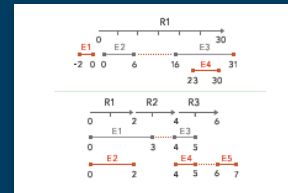
Cutbacks

Finds segments where the angle between segments in a polygon or polyline is below a specified minimum value.

OBJECTID	SHAPE	FCSUBTYPE
1	POLYLINE	AQ040-BRIDGE LINE
2	POLYLINE	AQ040-BRIDGE LINE
3	NULL	AQ040-BRIDGE LINE

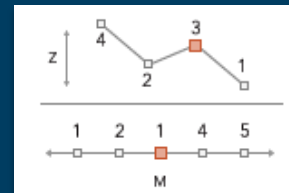
Invalid Geometry

Finds features that contain invalid geometry.



Invalid Event

Finds linear referenced events that do not have an associated route, contain invalid measure values, or have gaps or overlaps within the same route or across multiple routes.



Monotonicity

Searches Z or M-enabled polylines for vertices that are not strictly increasing or decreasing in value or are trending based on specified conditions.


Data Reviewer Checks

Reviewer Rule in validation workflows

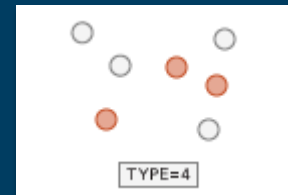
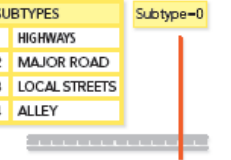
Validation workflows

- Rules are stored in Map
- Layer data sources
- Assess a features
 - Integrity
 - Attribution

LANDUSE	DESCRIPTION
000	UNCLASSIFIED
AGR	AGRICULTURE
SDP	PLAN
IND	INDUSTRIAL



SUBTYPES	Subtype=0
1 HIGHWAYS	
2 MAJOR ROAD	
3 LOCAL STREETS	
4 ALLEY	



Domain

Finds attribute values that do not comply with coded value or range domains that are associated with an attribute field.

Subtype

Finds features with improper or null subtype values.

Query Attributes

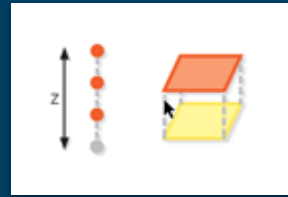
Finds features based on a query WHERE clause run against row attributes.

Data Reviewer Checks

Reviewer Rule in validation workflows

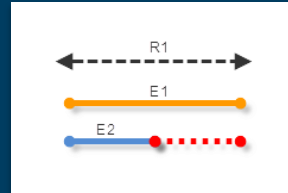
Validation workflows

- Rules are stored in Map
- Layer data sources
- Assess a features
 - Integrity
 - Attribution
 - Spatial relationships



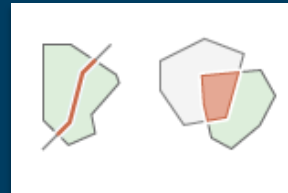
Duplicate Feature

Finds features of the same geometry type that are collocated and optionally share attributes.



Event on Event

Finds linear referenced events that overlay other events based on a user-defined relationship.



Feature on Feature

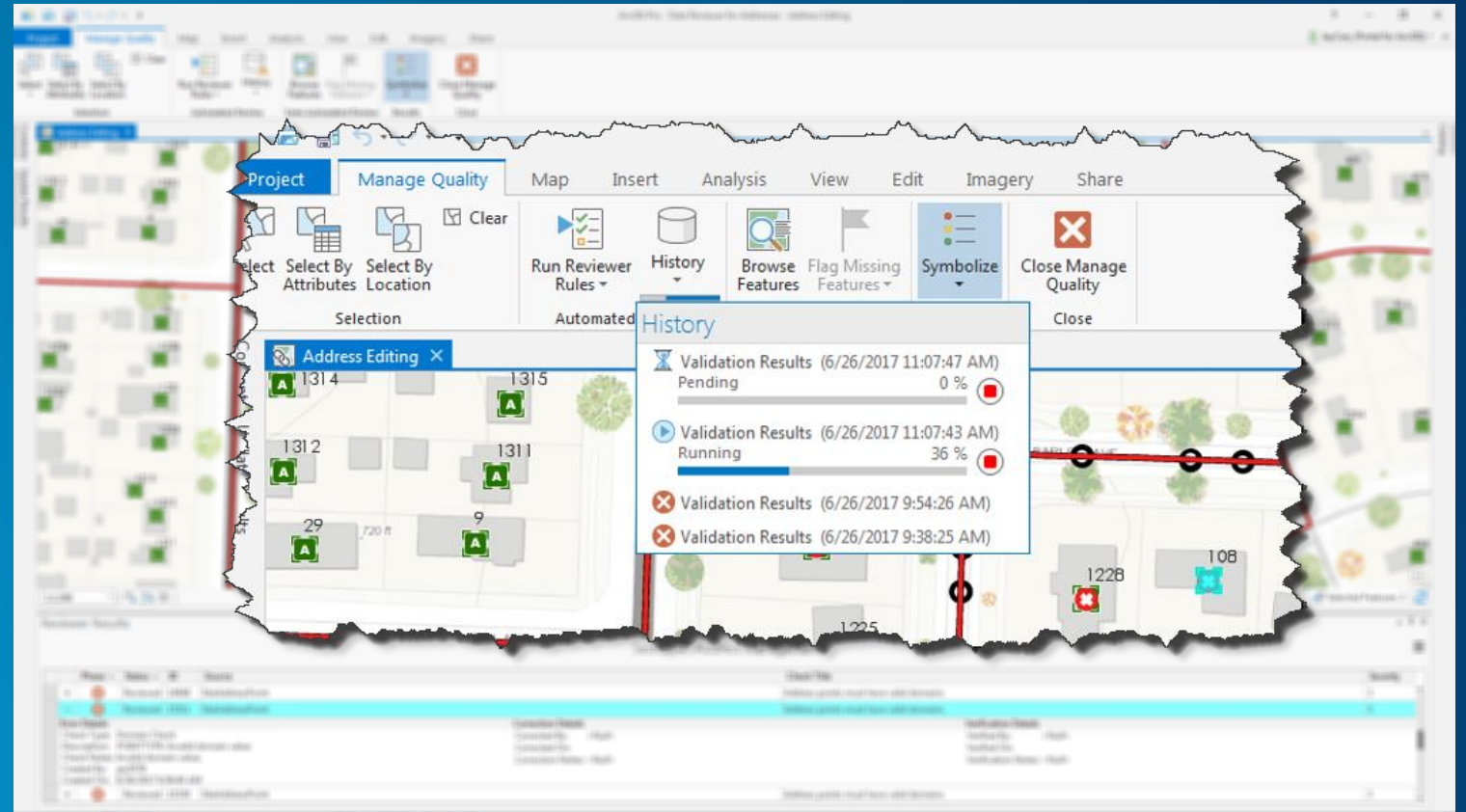
Finds features that have a specific relationship, either from two different feature layers or within the same feature layer.

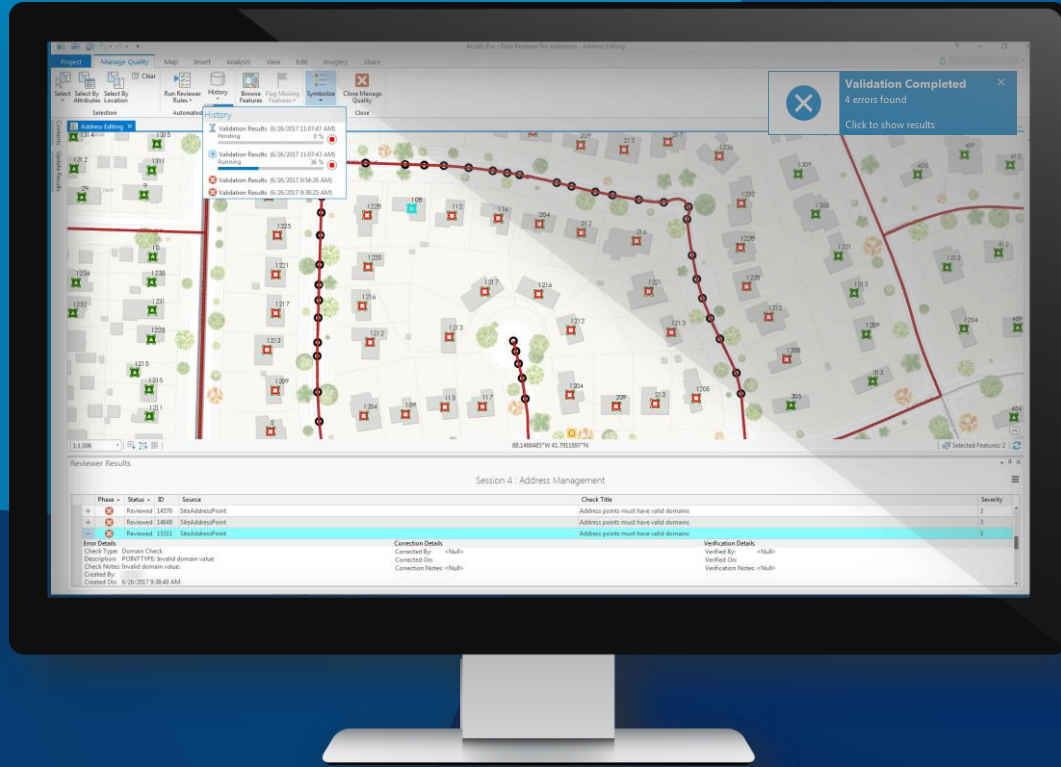
Data Reviewer Checks

Reviewer Rule in validation workflows

Validation workflows

- Rules are stored in Map
- Layer data sources
- Assess a features
 - Integrity
 - Attribution
 - Spatial relationships
- Adhoc execution





Demo:

Automated Validation

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 workflows
- Interactive tools
- Track errors

The screenshot displays the ArcGIS Pro Data Reviewer interface. The main window shows a map with green markers representing data points. A 'Batch Validation Manager' web application is overlaid on the map, showing a table of scheduled validation jobs. The 'Reviewer Results' table is also visible, listing the status and source of the reviewed data points.

Phase	Status	ID	Source
Resolved	Resolved	11423	SiteAddressPoint
Reviewed	Reviewed	12803	SiteAddressPoint
Reviewed	Reviewed	12961	SiteAddressPoint
Reviewed	Reviewed	12994	SiteAddressPoint
Reviewed	Reviewed	13027	SiteAddressPoint
Reviewed	Reviewed	13050	SiteAddressPoint

Batch Validation Manager

Job Title	Schedule
Stormwater Validation	Daily
Water Utility Validation	Weekly

Water Utility Validation

Batch Job	Water.rbj
Session	Session 1 : Water Utilities (Wo...
Runs	Weekly
Scheduled By	

Reviewer Results

Check Type	Description	Check Notes
Domain Check	POINTTYPE Invalid domain value	Invalid domain value.

Want to learn more?

Product page

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ArcGIS for Desktop Extensions

ArcGIS Data Reviewer

An ArcGIS for Desktop Extension

[Get a Free Trial →](#)

Main Features Use Cases Pricing Free Trial

Ensure the Quality of Your Data

Whether managing resources for a nation or facility assets for a local community, you want to make sure that your data is free of errors. With ArcGIS Data Reviewer, you can make data quality a component of your overall data management strategy.

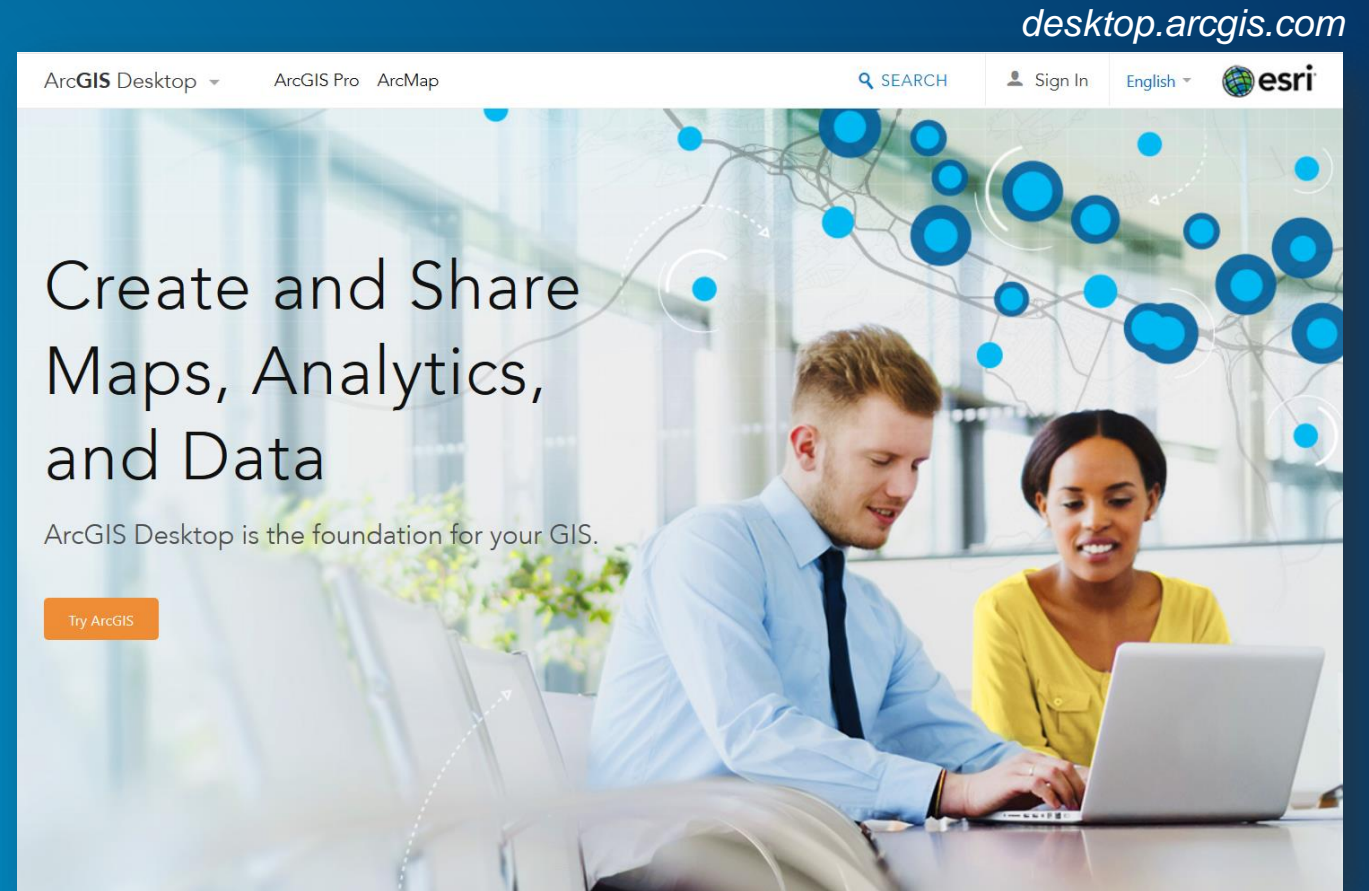
"We can now perform consistent QA/QC tasks and keep our data in top shape after we have done the initial time investment."

Daniel Hewitt—GIS Specialist, City of Woodland

www.esri.com/datareviewer

Want to learn more?

Documentation
- ArcGIS Pro



The screenshot shows the homepage of the ArcGIS Desktop website. The URL *desktop.arcgis.com* is visible in the top right corner. The navigation bar includes links for ArcGIS Desktop, ArcGIS Pro, and ArcMap, along with a search function, a sign-in option, and a language selector set to English. The main content area features a large background image of two professionals working on laptops in a modern office setting. Overlaid on this image is a network diagram with blue nodes and connecting lines. The primary headline reads "Create and Share Maps, Analytics, and Data". Below this, a sub-headline states "ArcGIS Desktop is the foundation for your GIS." An orange button labeled "Try ArcGIS" is positioned in the lower-left area of the main content.

desktop.arcgis.com

ArcGIS Desktop ArcGIS Pro ArcMap

SEARCH Sign In English esri

Create and Share Maps, Analytics, and Data

ArcGIS Desktop is the foundation for your GIS.

Try ArcGIS

Want to learn more?

Documentation

- ArcGIS Pro

GeoNet (geonet.esri.com)

- Data Reviewer place



Questions?



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