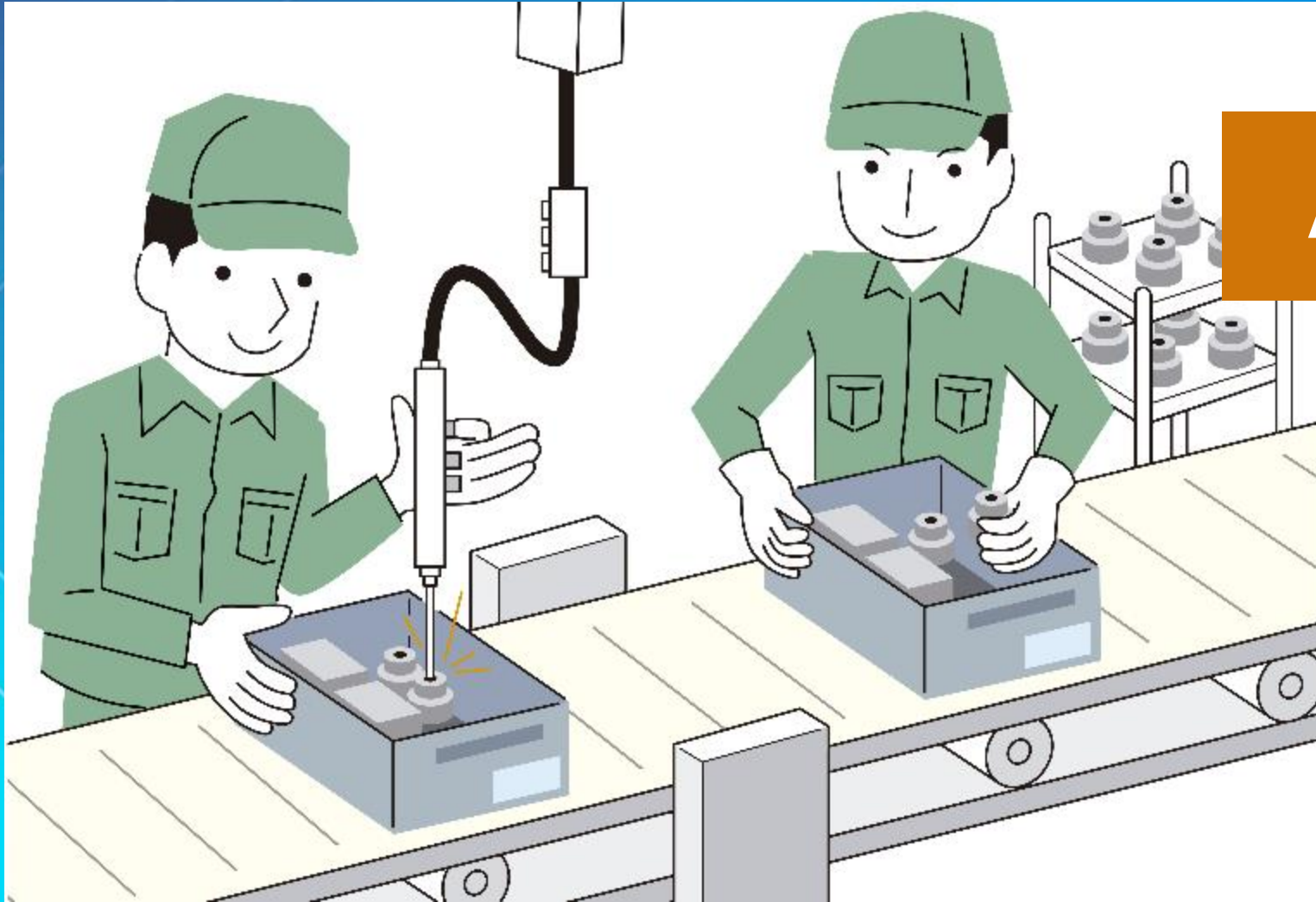




ArcGIS Extensions: Tools for Improving Data and Map Production

Sherry Fagin
&
Amber Bethell

Production

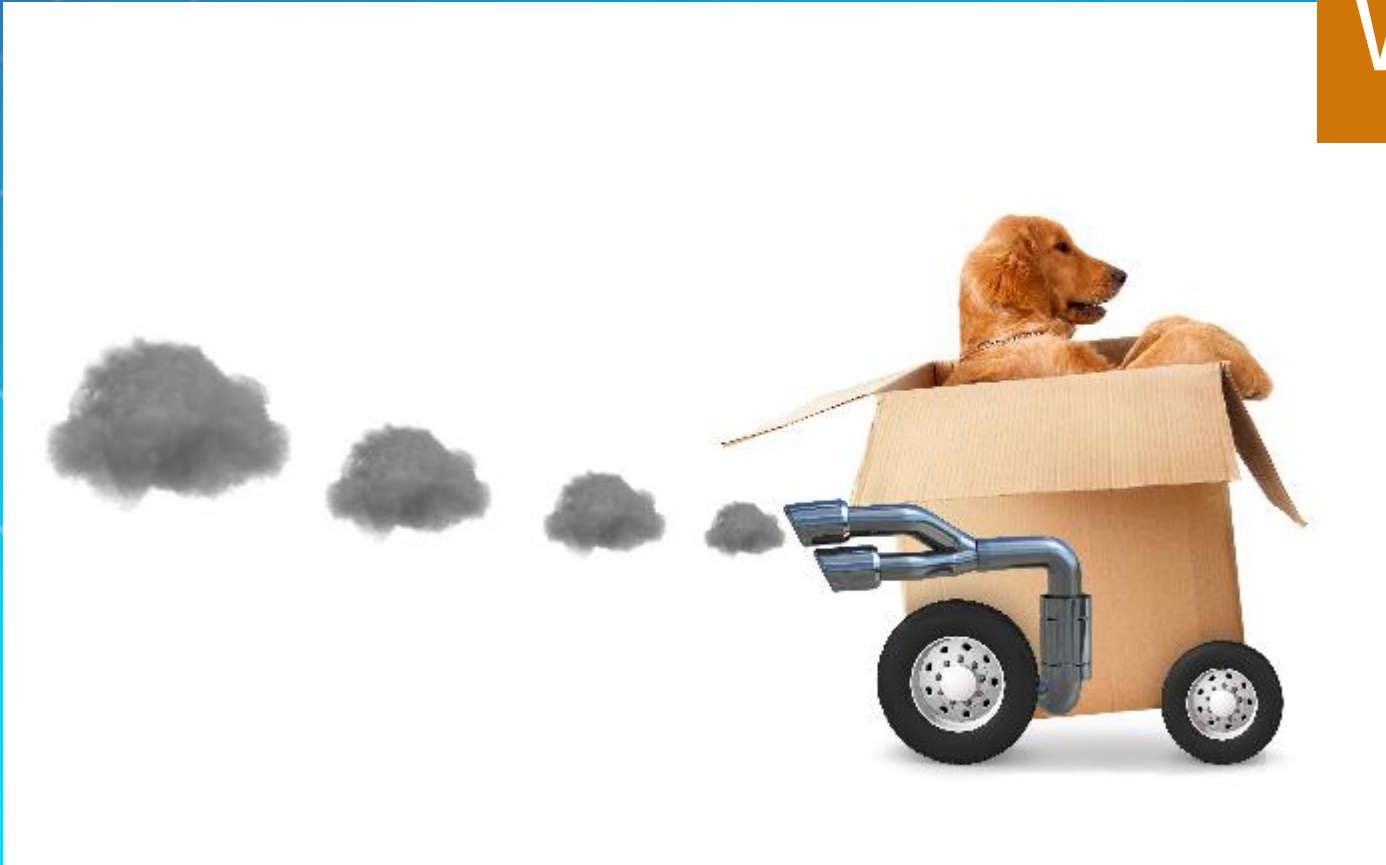


Assembly Line

Production

- Produce a flashy sports car...

Without Standards



Production

- Produce a flashy sports car...

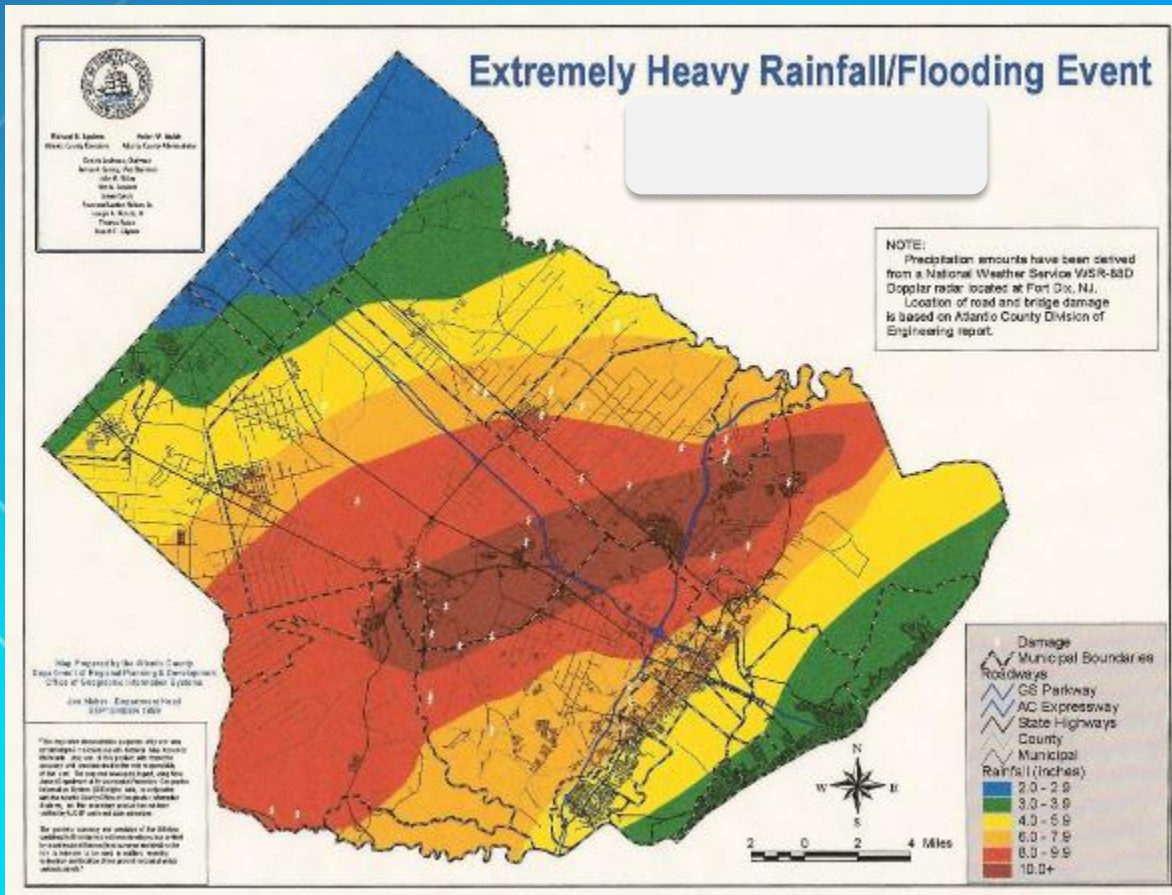
With Standards



Production

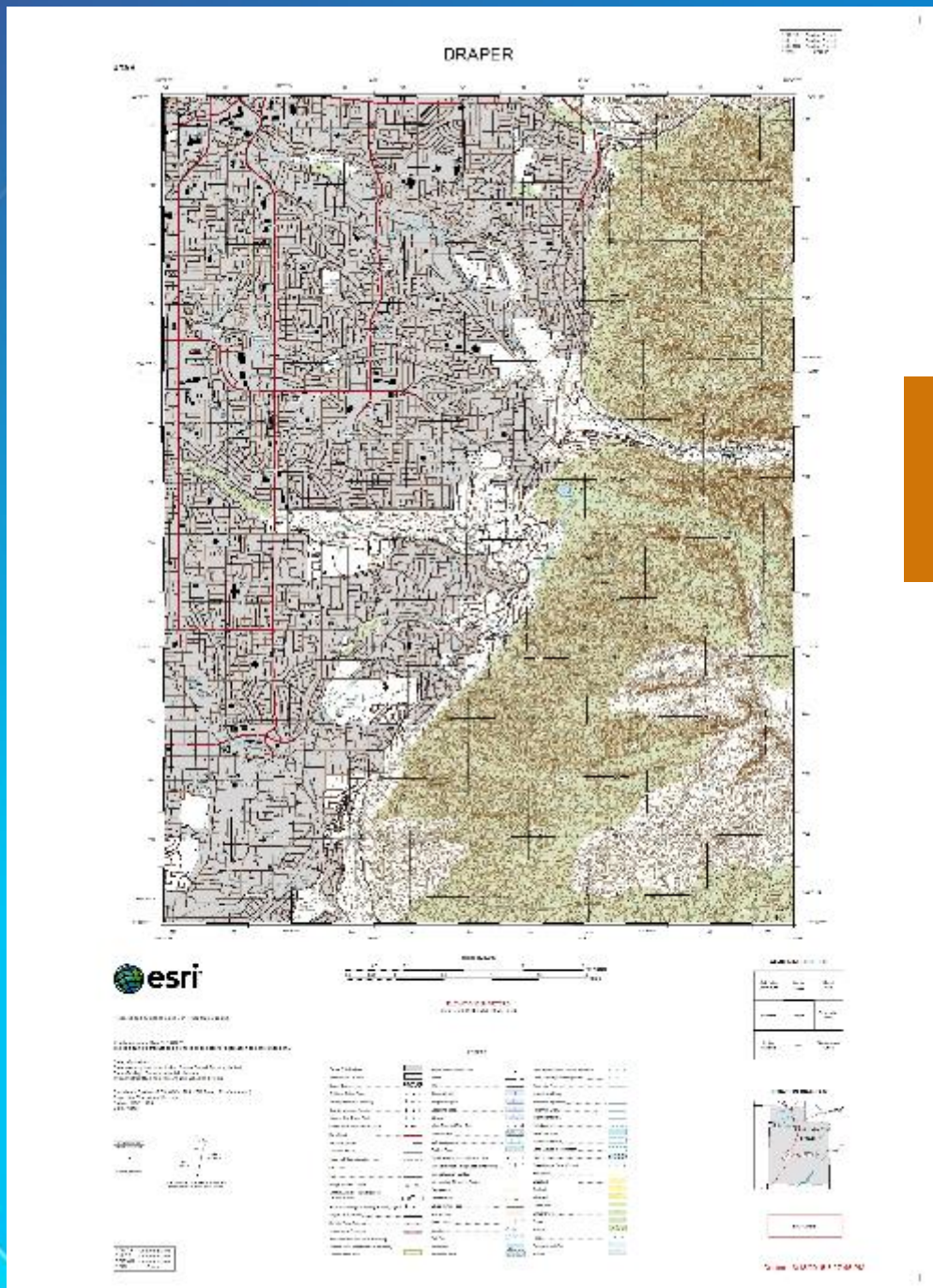
- Produce a high quality map

Without Standards



Production

- Produce a high quality map



With Standards

Data and Map Production

Workflows

**Quality
Control**

Editing

Cartography

Productivity

Automation

Efficiency

Accuracy

Standardization

Quality

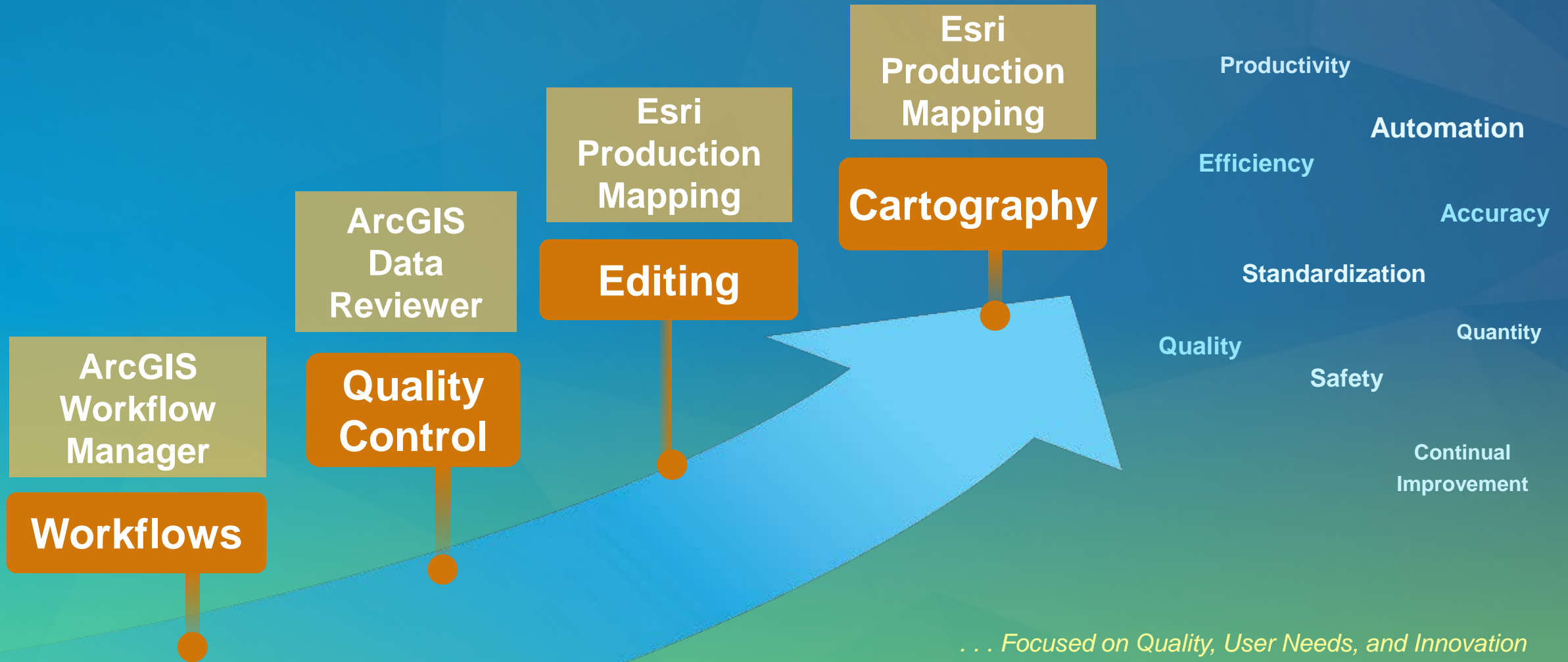
Quantity

Safety

Continual
Improvement

... Focused on Quality, User Needs, and Innovation

Data and Map Production





Managing and tracking production work

What is a workflow?

- A workflow is a sequence of steps that a piece of work has to pass from initiation to completion.



Planning



Forest Management



Emergency Management

Common Methods of Managing Work

- Individual approach
- Mock-up workflows
- Ticketing systems
- Whiteboards
- Spreadsheets



Workflow Manager ensures

The right work
is completed the right way
at the right time
by the right person

What is ArcGIS Workflow Manager?

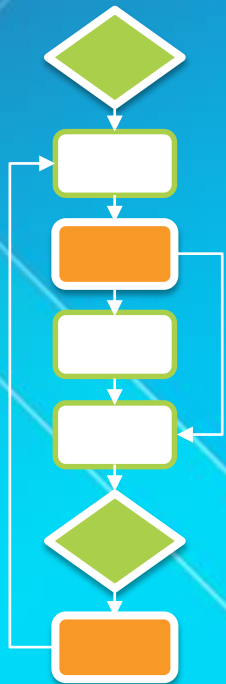
Enable and Empower GIS Workflows



Supporting GIS professionals and the entire organization

Macro and Micro workflows

- Workflow Manager



Call Received

Technician responds

Update GIS Data

- Task Assistant Manager

Start Editing

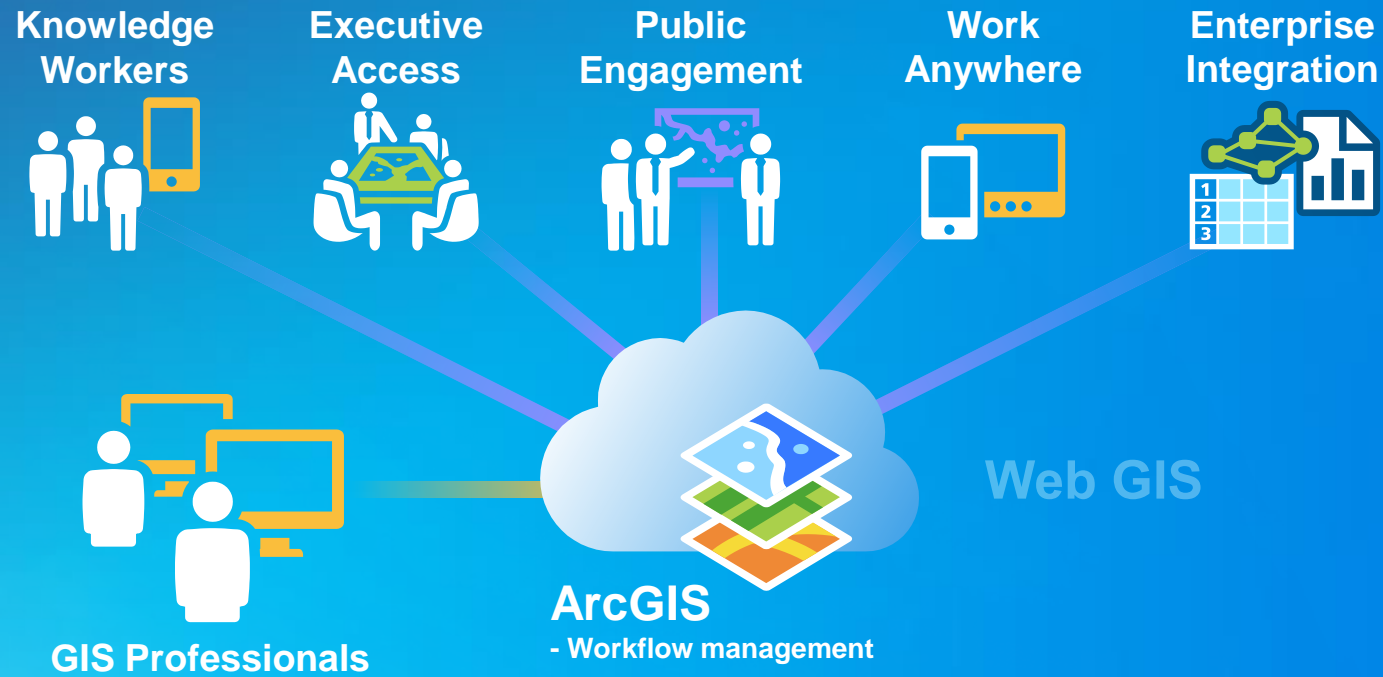
Set Edit Template

Create Feature

...



ArcGIS Workflow Manager Server

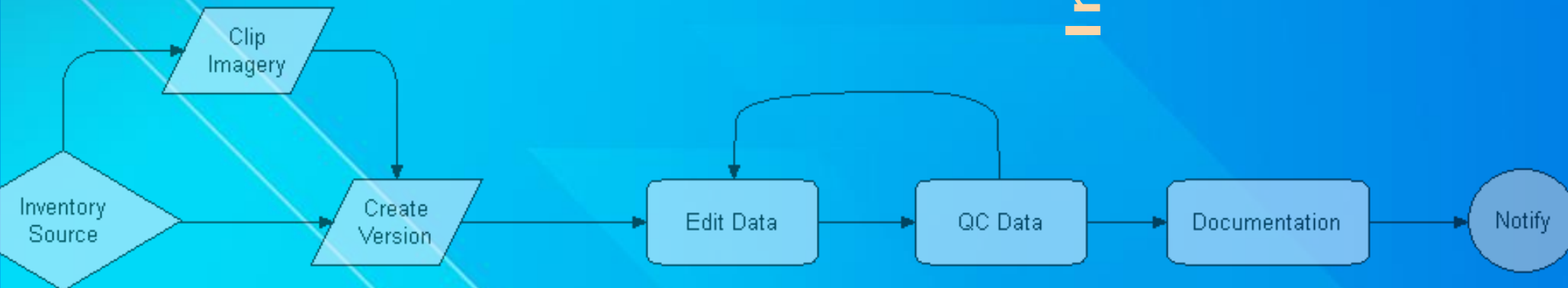


Expose workflow capabilities to your entire Organization

Benefits

Work Management

Distributed
Accurate
Enterprise
Cost-Saver
Efficient
Integrated
Consistent
Collaborative
Centralize
Automate
Consolidated
Quality
Efficient
Flexible
Integrated
Accurate



Demo

Workflow Manager

Workflow Manager ensures

The right work

is done by

the right people

at the right time

The background features a vibrant blue gradient. On the left side, there are several overlapping geometric shapes in shades of purple and yellow. One prominent yellow shape contains a faint, light-colored map of a region, possibly a state or country, with its internal boundaries visible. The overall aesthetic is modern and data-oriented.

Improving data quality

ArcGIS Platform QC options

Geodatabase integrity

- Schema constraints
- Geoprocessing tools
- Data load checks
- Versioning

Advanced data types

- Topologies
- Geometric networks

ArcGIS Data Reviewer

- Comprehensive data validation

Data quality matters!

The cost of poor data quality can be extreme

People

Reputation

Money

Would you publish a document without spell check?

Data Reviewer ensures you
produce better data,
better maps, and perform
better analysis

Automate data validation

- Data quality checks
 - 42 configurable checks
 - Attributes
 - Spatial relationships
 - Feature integrity
 - Metadata
- Custom check

The image shows the ArcGIS Data Reviewer Checks interface, which is a grid of 42 configurable checks. The interface is titled "esri ArcGIS Data Reviewer Checks" and is organized into several categories:

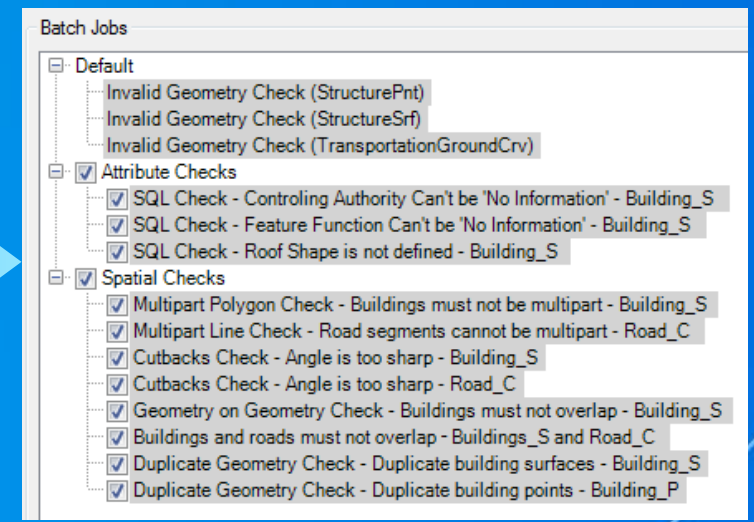
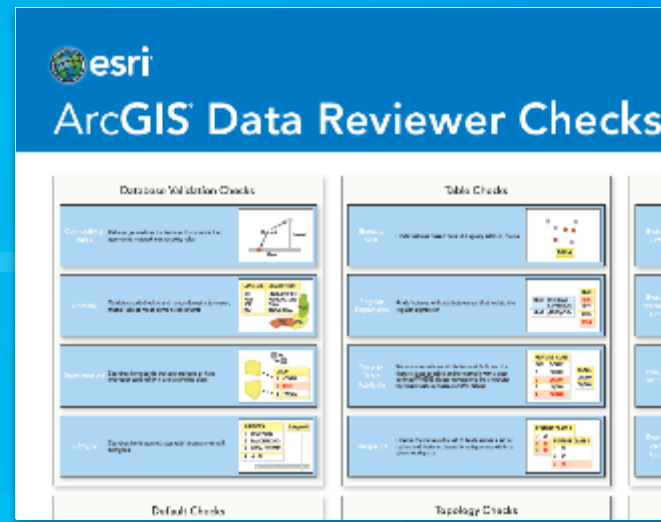
- Database Workflow Checks**: Includes checks for schema changes, data synchronization, and backup/restore operations.
- Table Checks**: Includes checks for table structure, data types, and table relationships.
- Spatial/Proximity/End-to-End Checks**: Includes checks for spatial relationships, proximity, and end-to-end connectivity.
- Feature Checks**: Includes checks for feature integrity, such as self-intersections, overlapping features, and feature length.
- Topology Checks**: Includes checks for topology rules, such as no self-intersections, no overlapping polygons, and no gaps.
- Polygon Checks**: Includes checks for polygon area, perimeter, and centroid.
- 2D Line Checks**: Includes checks for line length, angle, and curvature.
- Polygon Checks**: Includes checks for polygon area, perimeter, and centroid.
- Duplicate Geometry Checks**: Includes checks for duplicate geometry and overlapping features.

Four callout boxes highlight specific checks:

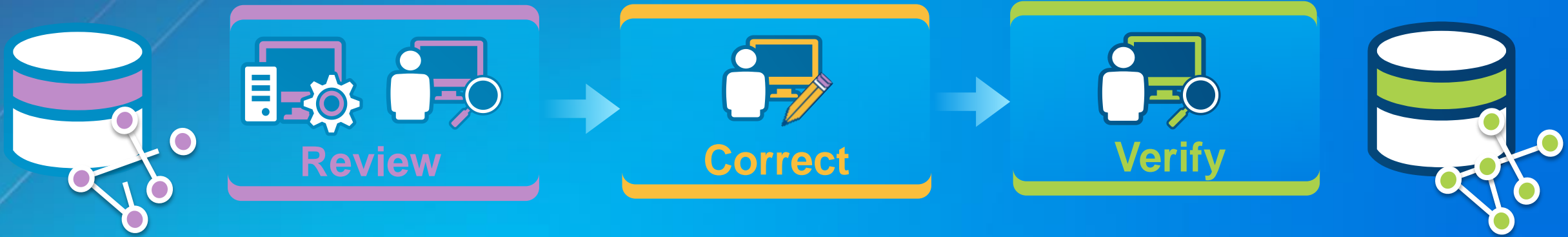
- TYPE**: A callout box showing a point feature with a yellow label "TYPE" and a small icon of a point.
- Angle < 25°**: A callout box showing a line segment with a yellow label "Angle < 25°" and a small icon of a line segment.
- Z**: A callout box showing a vertical line segment with a yellow label "Z" and a small icon of a 3D box.
- TYPE**: A callout box showing a point feature with a yellow label "TYPE" and a small icon of a point.

Automate data validation with batch jobs

- Define and encapsulate quality requirements
- Configure automated checks
- Design once and execute many times



Quality control life cycle



Centralized error information



Centralized error information



What is ArcGIS Data Reviewer for Server?

- System to support data quality management for ArcGIS
- Automates quality control process
- Monitor and Measure data quality



Demo

ArcGIS Data Reviewer

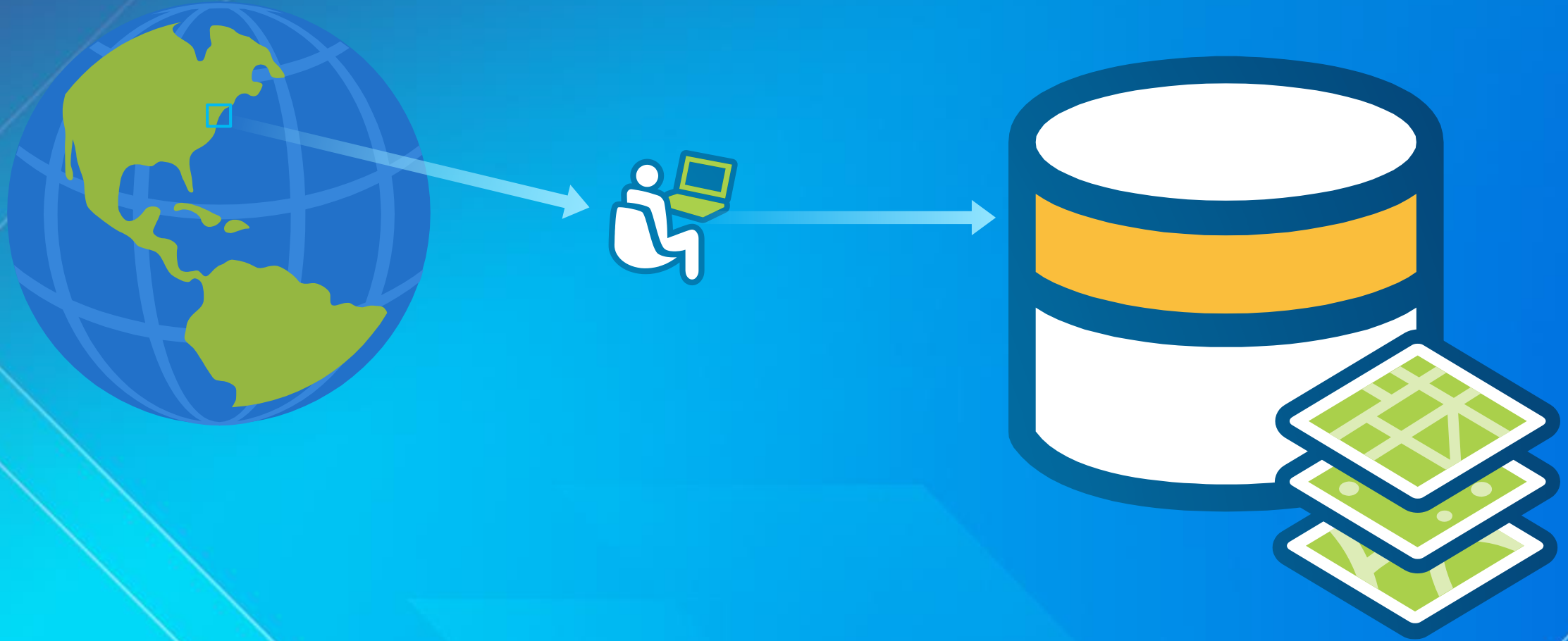


Data Reviewer ensures you
produce better data,
better maps, and perform
better analysis

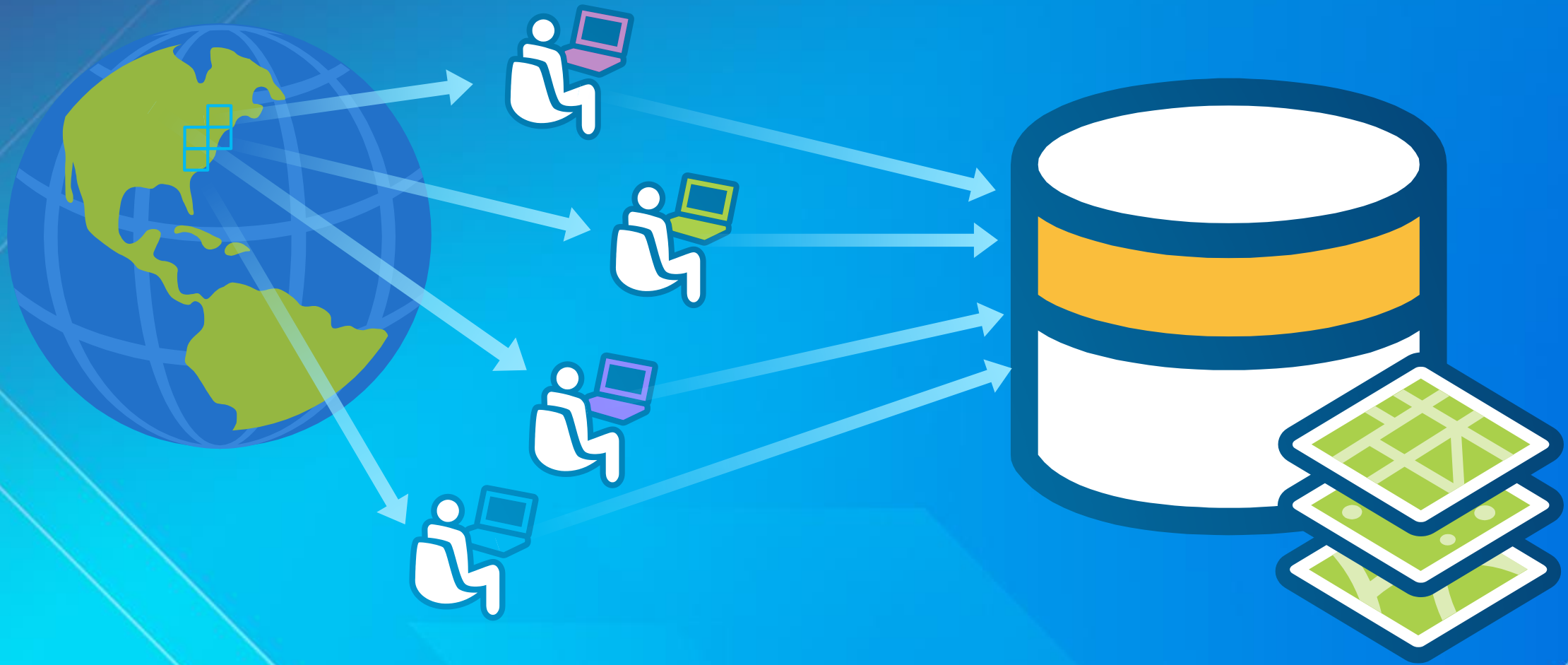


Creating and maintaining quality data

Seamless data collection



Seamless data collection



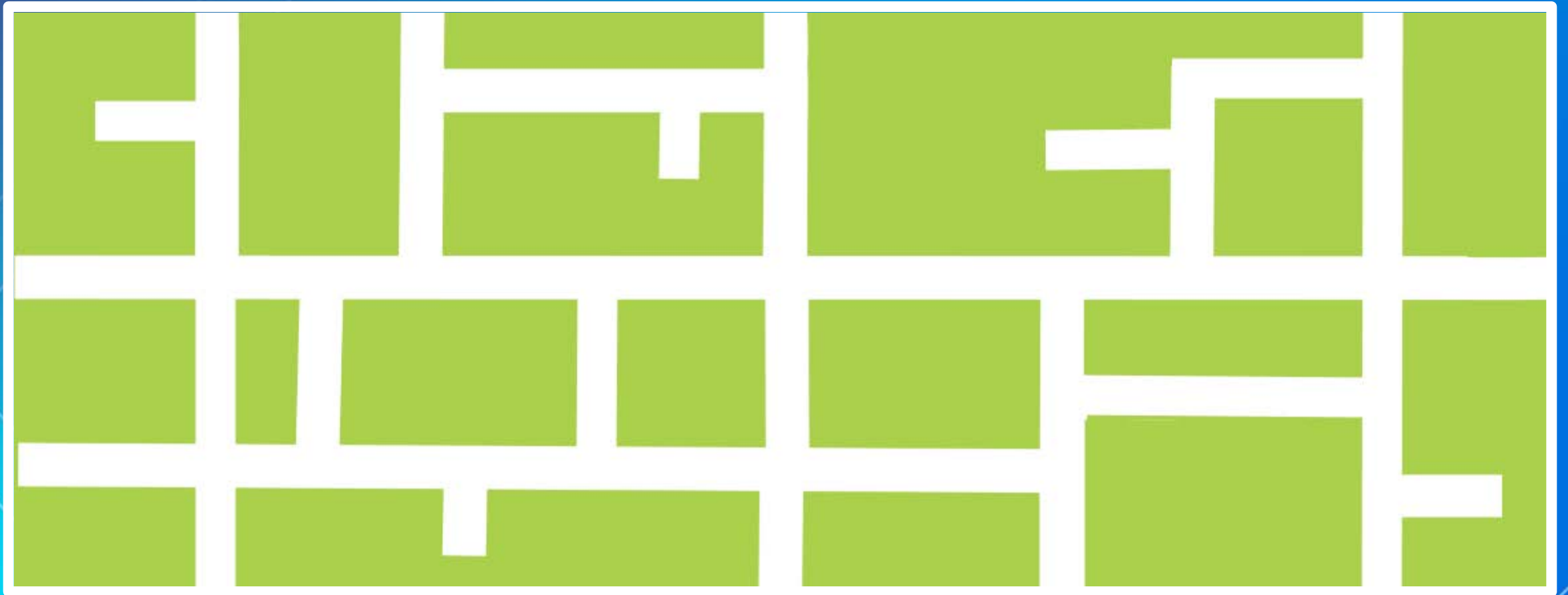
Feature collection specifications



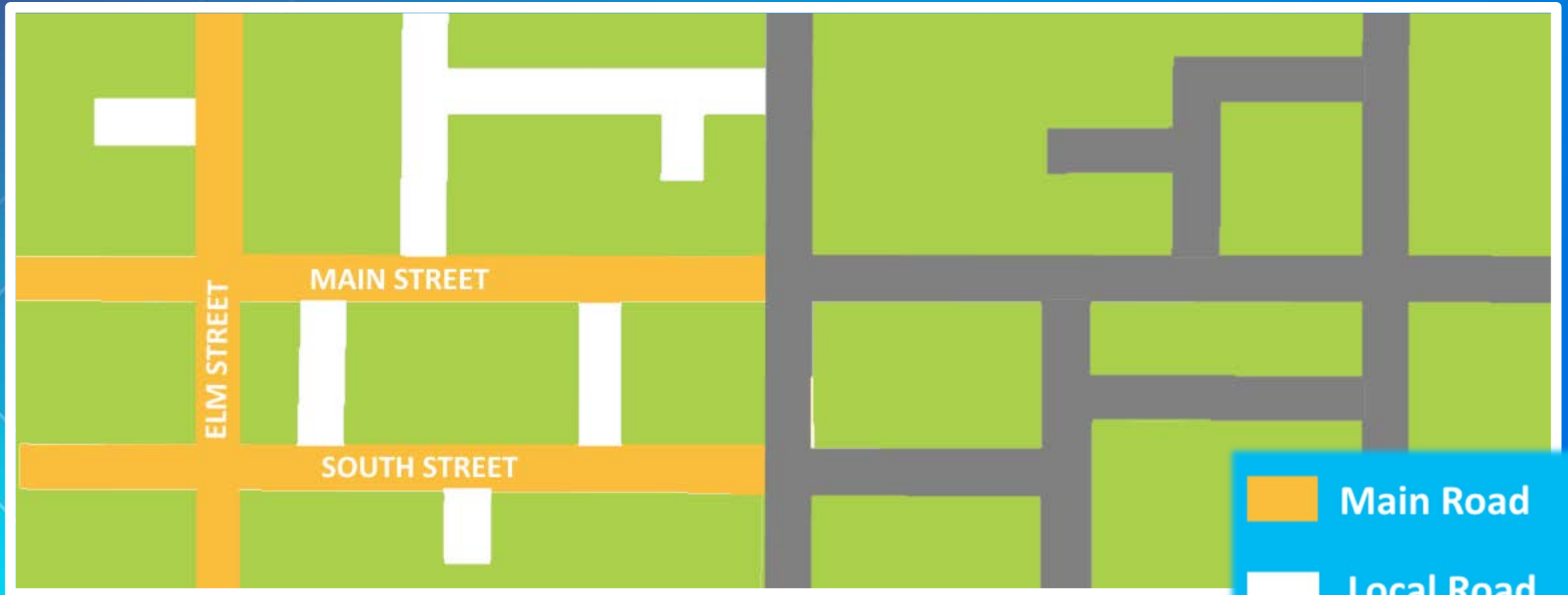
Feature collection specifications






Feature collection specifications

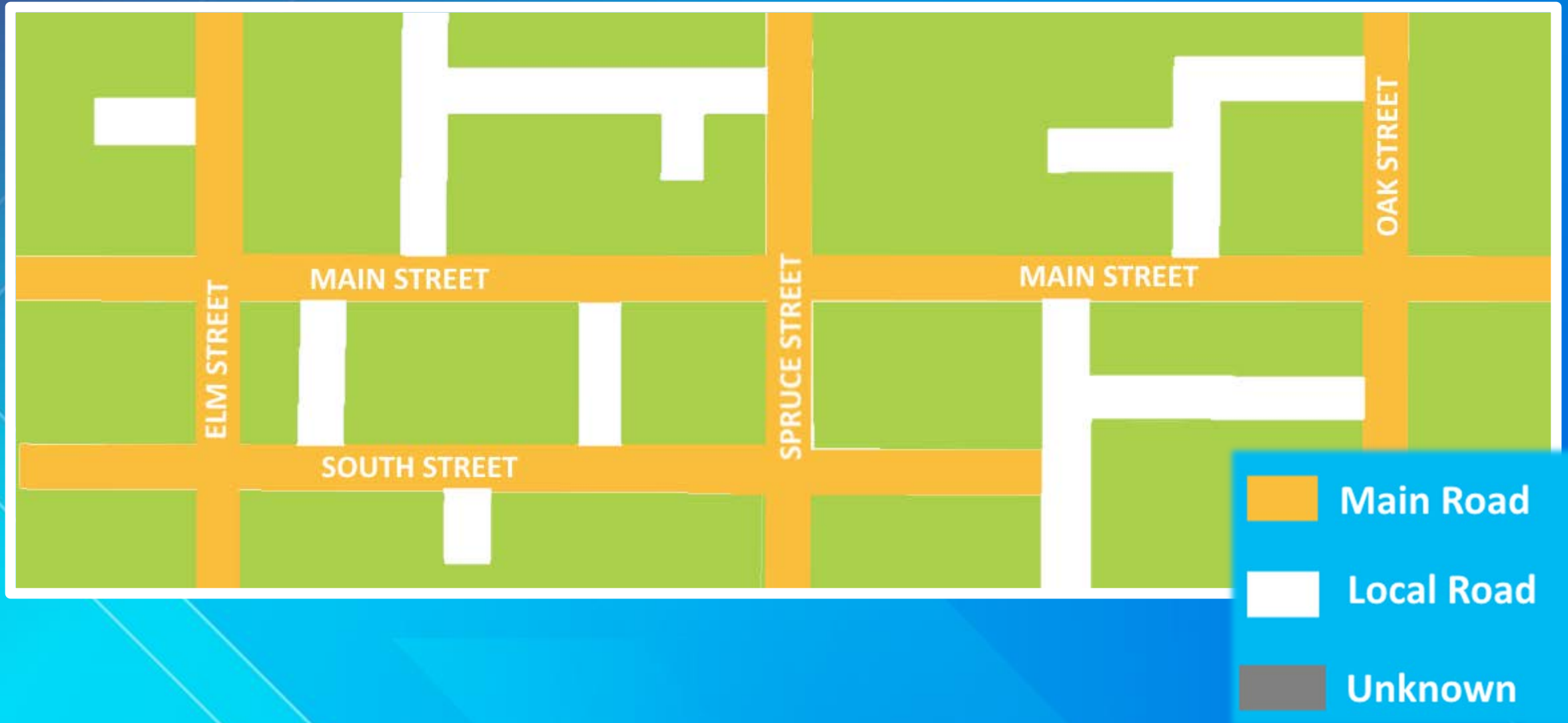


Feature collection specifications



-  Main Road
-  Local Road
-  Unknown

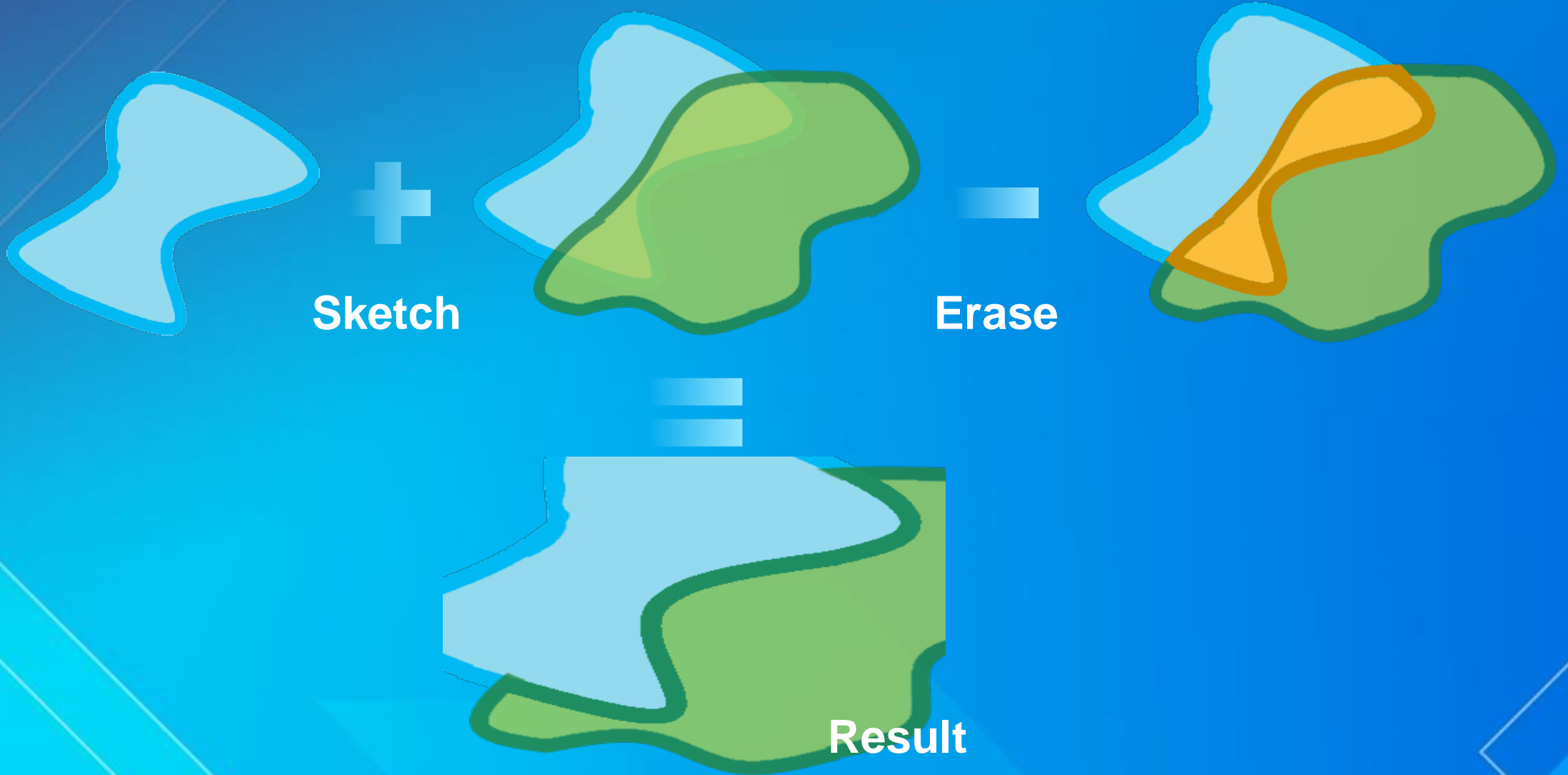
Feature collection specifications



Geometry Specifications



Traditional Editing tools

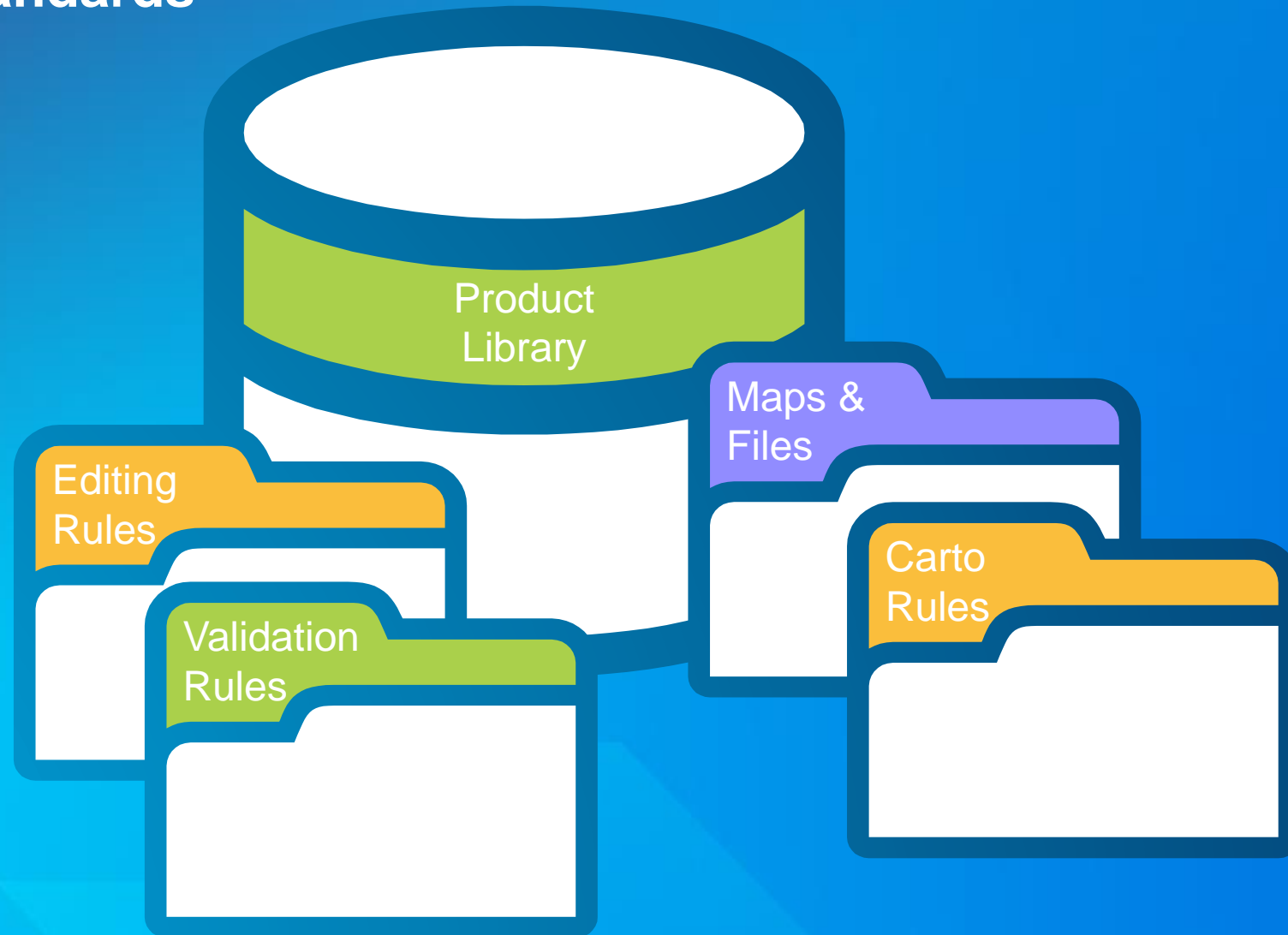


Streamlined Editing tools



Production Mapping Editing
ensures you create and maintain
high quality data consistently
competently and correctly

Configure your standards



Configure field display



1	<input type="checkbox"/>
2	<input type="checkbox"/>
3	<input type="checkbox"/>
4	<input type="checkbox"/>
5	<input type="checkbox"/>
6	<input type="checkbox"/>

Configure field display



1	
2	
3	
4	
5	
6	

1	
3	
5	
6	
2	

Ensure correctness




1	
3	
5	
6	
2	

Ensure correctness



1	
3	
5	
6	
2	

 Attribute 3 must be populated

Demo

Production Mapping Editing



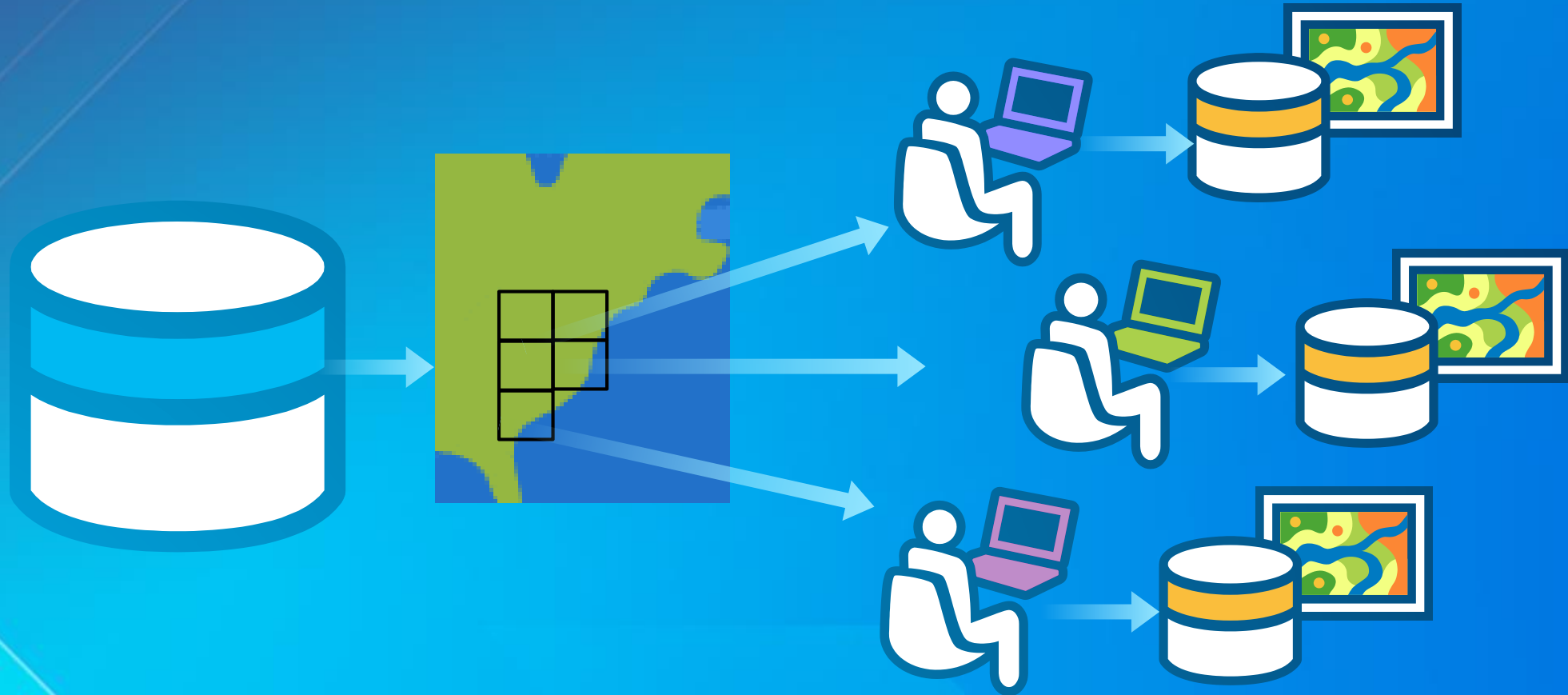
Production Mapping Editing
ensures you create and maintain
high quality data consistently
competently and correctly

Creating and managing specification-driven maps

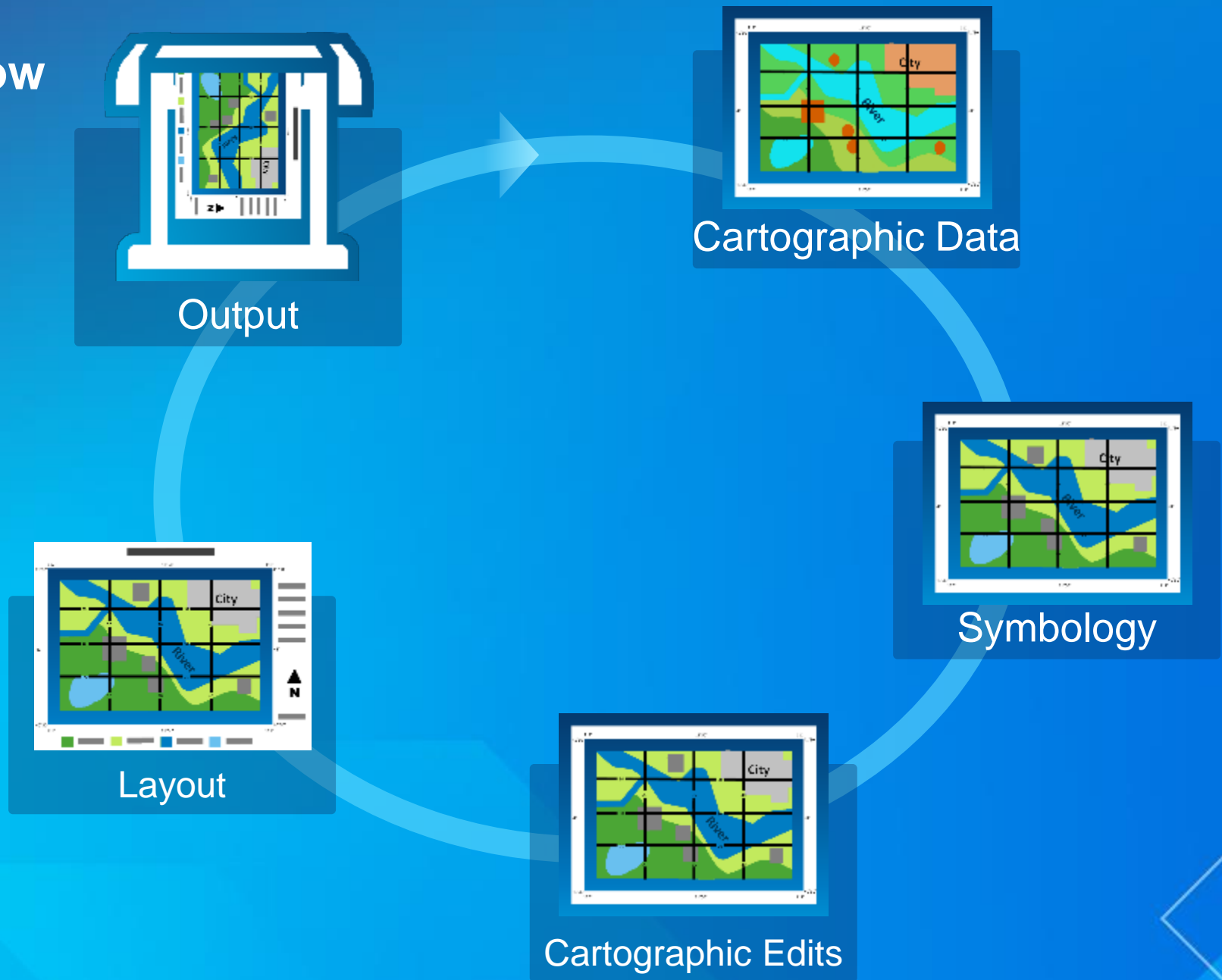


Traditional Cartography

With ArcMap



Cartographic Workflow

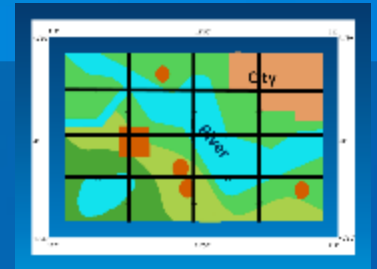
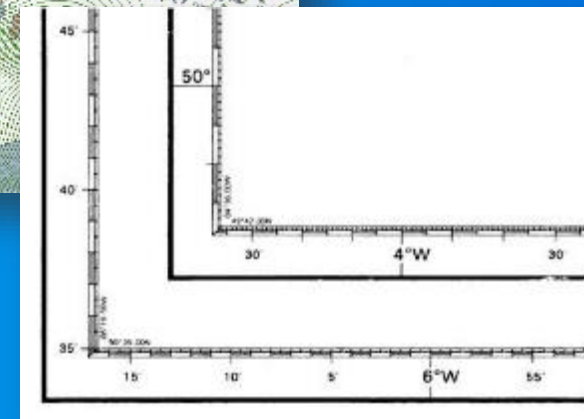
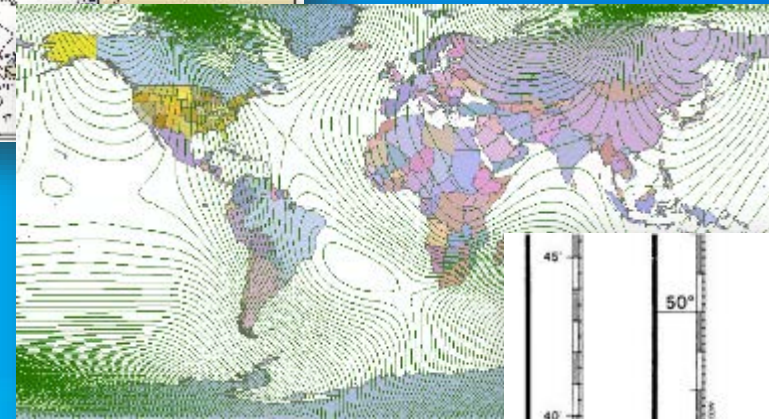
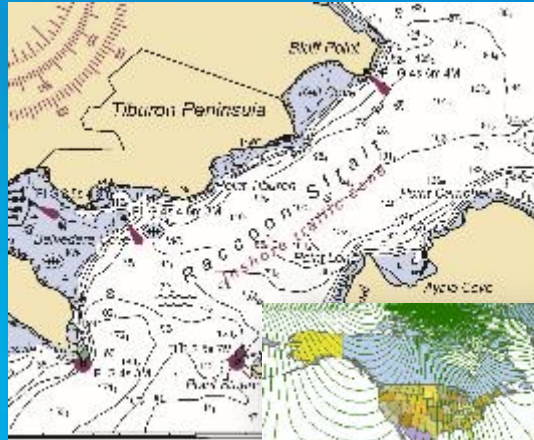


Production Mapping Cartography
ensures the production
of great maps and charts,
with great quality,
in great quantity

Cartographic Data

Data and text used to enrich cartographic products

- **Supplements GIS data**
 - Provides context
- **Grids and graticules**
- **Sharable specifications**



Cartographic Data

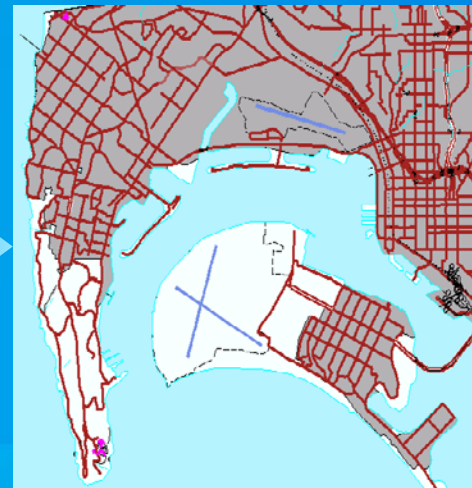
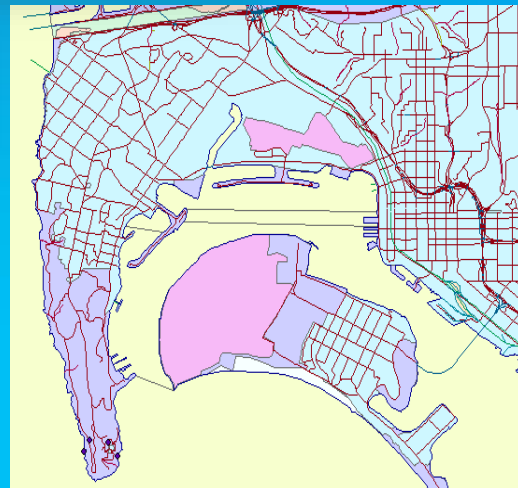
Symbology

Intuitively displaying information

- Views



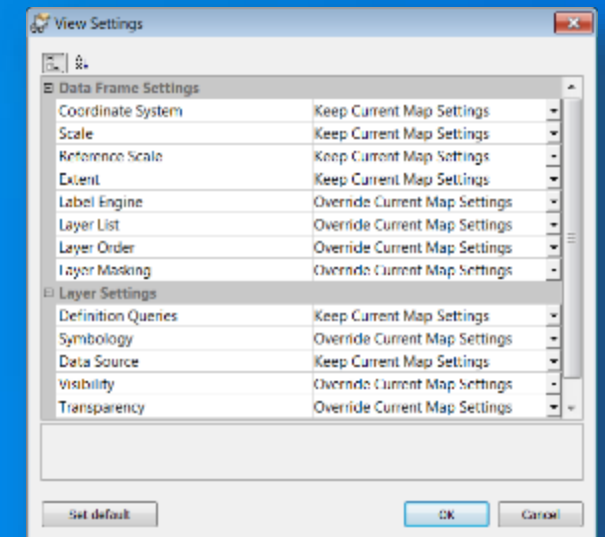
QA/QC
TopoMap
Road Map



- Visual Specifications



Symbology



Cartographic Edits

Improving map clarity

- **Improve the appearance of the map**
 - Conflict resolution
 - Hide/shift/mask features
 - Edit representation symbology
- **How to**
 - Manual tools – Cartographic Editing toolbar
 - Layer snapshot – Focus on changed features

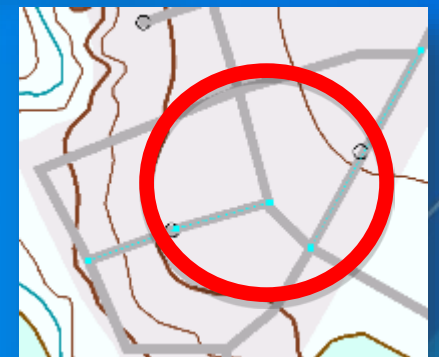


Cartographic Edits

1st Edition



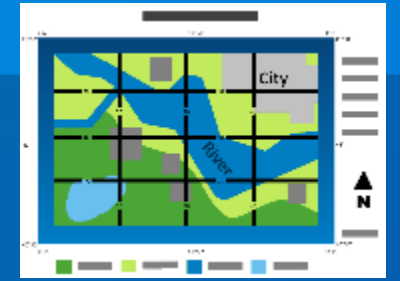
2nd Edition



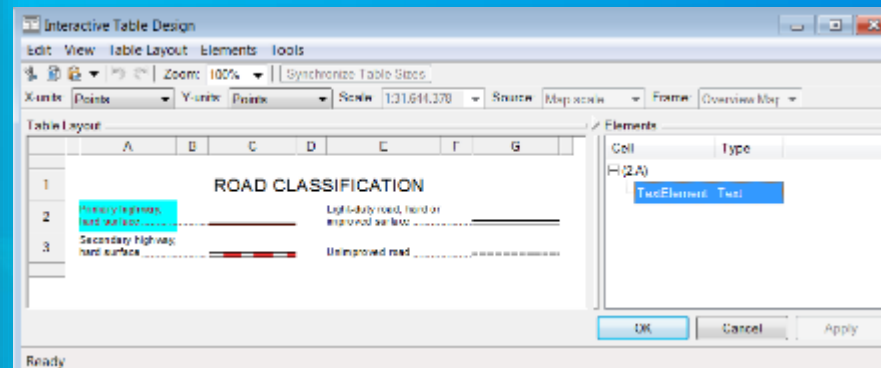
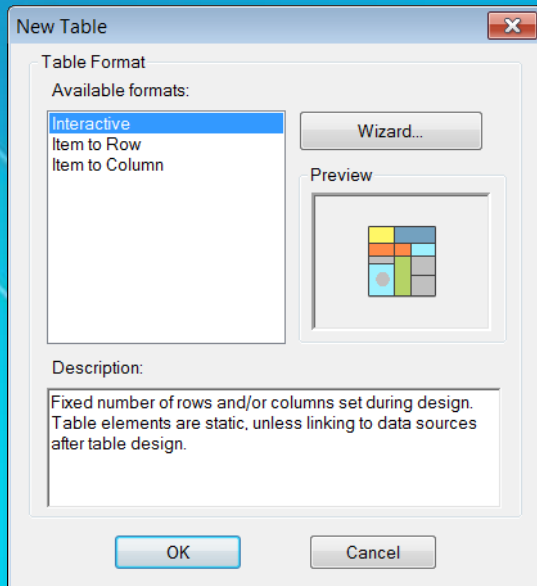
Layout

Providing Context

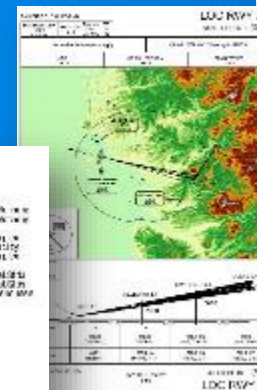
- **Graphic Table**
 - Dynamic table creation
 - Linked to feature layers
 - Include text, symbols



Layout



Grid Number	Reference	Name
1	0-0	0-0
2	0-1	0-1
3	0-2	0-2
4	0-3	0-3
5	0-4	0-4
6	0-5	0-5
7	0-6	0-6
8	0-7	0-7
9	0-8	0-8
10	0-9	0-9
11	1-0	1-0
12	1-1	1-1
13	1-2	1-2
14	1-3	1-3
15	1-4	1-4
16	1-5	1-5
17	1-6	1-6
18	1-7	1-7
19	1-8	1-8
20	1-9	1-9
21	2-0	2-0
22	2-1	2-1
23	2-2	2-2
24	2-3	2-3
25	2-4	2-4
26	2-5	2-5
27	2-6	2-6
28	2-7	2-7
29	2-8	2-8
30	2-9	2-9
31	3-0	3-0
32	3-1	3-1
33	3-2	3-2
34	3-3	3-3
35	3-4	3-4
36	3-5	3-5
37	3-6	3-6
38	3-7	3-7
39	3-8	3-8
40	3-9	3-9
41	4-0	4-0
42	4-1	4-1
43	4-2	4-2
44	4-3	4-3
45	4-4	4-4
46	4-5	4-5
47	4-6	4-6
48	4-7	4-7
49	4-8	4-8
50	4-9	4-9
51	5-0	5-0
52	5-1	5-1
53	5-2	5-2
54	5-3	5-3
55	5-4	5-4
56	5-5	5-5
57	5-6	5-6
58	5-7	5-7
59	5-8	5-8
60	5-9	5-9
61	6-0	6-0
62	6-1	6-1
63	6-2	6-2
64	6-3	6-3
65	6-4	6-4
66	6-5	6-5
67	6-6	6-6
68	6-7	6-7
69	6-8	6-8
70	6-9	6-9
71	7-0	7-0
72	7-1	7-1
73	7-2	7-2
74	7-3	7-3
75	7-4	7-4
76	7-5	7-5
77	7-6	7-6
78	7-7	7-7
79	7-8	7-8
80	7-9	7-9
81	8-0	8-0
82	8-1	8-1
83	8-2	8-2
84	8-3	8-3
85	8-4	8-4
86	8-5	8-5
87	8-6	8-6
88	8-7	8-7
89	8-8	8-8
90	8-9	8-9
91	9-0	9-0
92	9-1	9-1
93	9-2	9-2
94	9-3	9-3
95	9-4	9-4
96	9-5	9-5
97	9-6	9-6
98	9-7	9-7
99	9-8	9-8
100	9-9	9-9

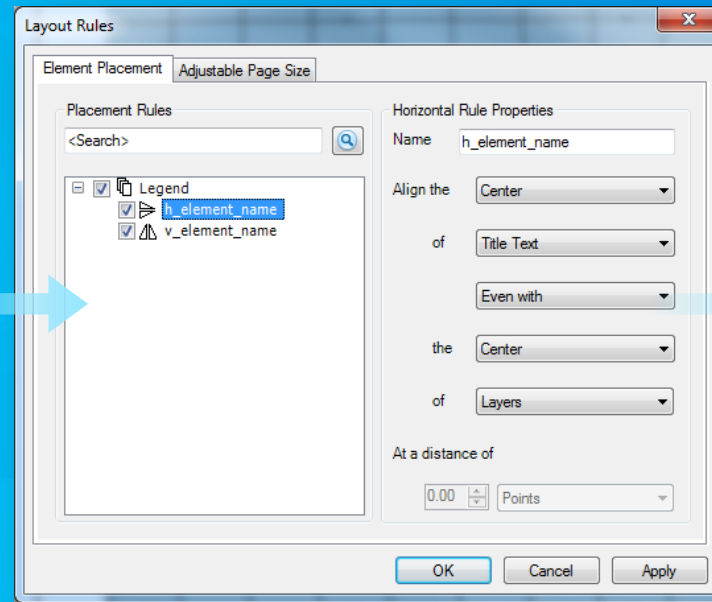
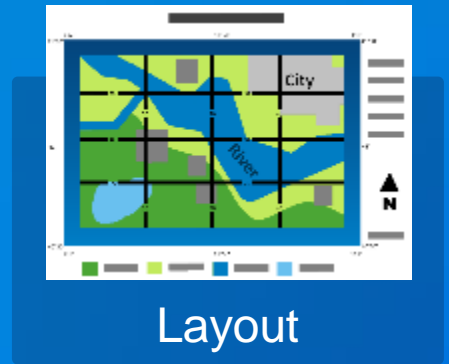


Category	Reference Number	Feature Name
1	4	4
1	12	12
1	8	8
1	5	5
1	3	3
1	21	21
5	41	41
5	24	24
5	26	26
5	21	21
5	54	54
5	51	51
5	67	67
5	62	62
5	64	64
5	68	68
5	28	28
5	24	24

Layout

Providing Context

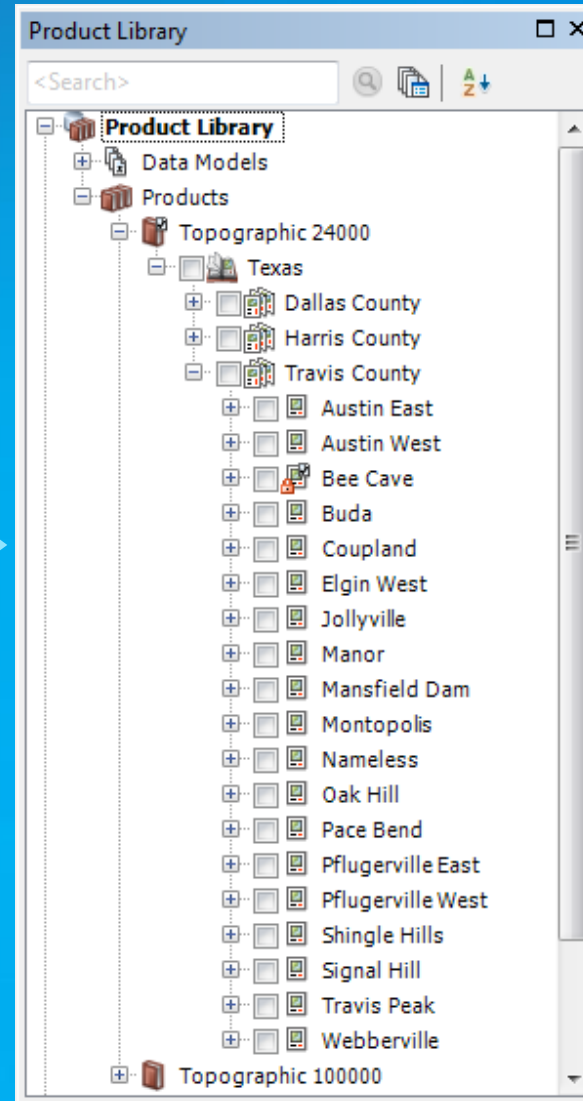
- Element Placement
 - Layout rules



Output

Getting your map to the people who need it

- Find the right map
- Print / Export

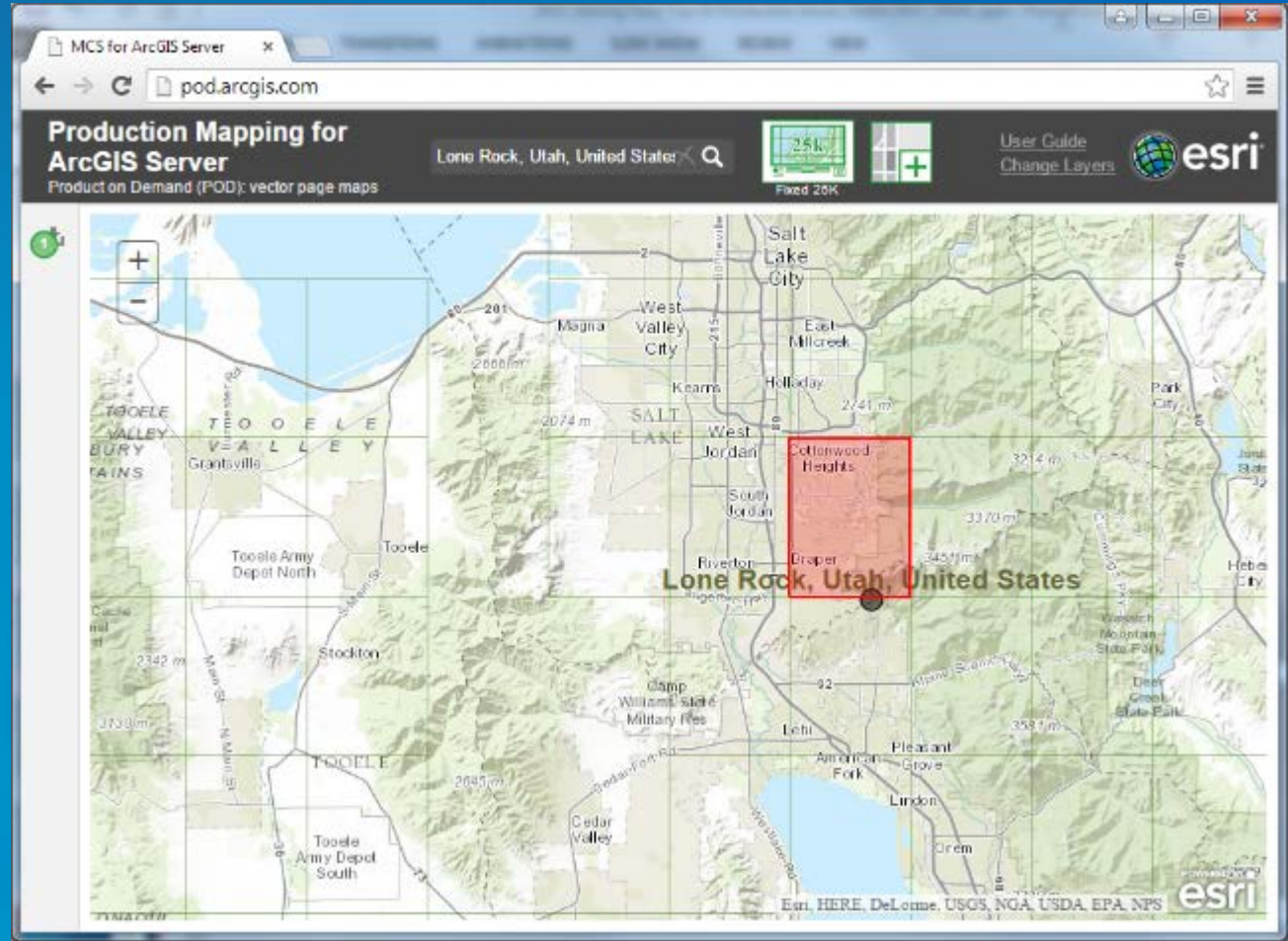


Production Mapping for Server For Sharing





Production Mapping Server



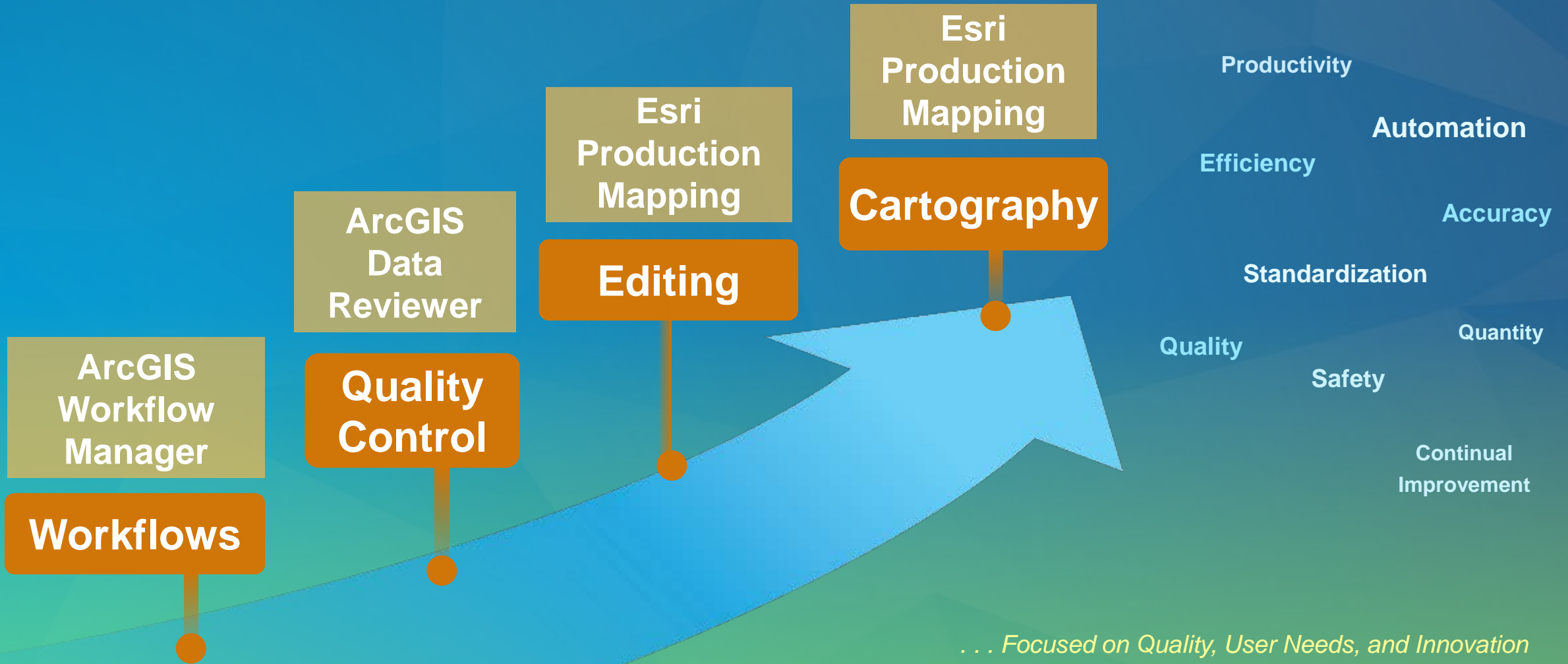
Demo

Production Mapping Server



Production Mapping Cartography
ensures the production
of great maps and charts,
with great quality,
in great quantity

Data and Map Production



Mapping and Charting Solutions

ArcGIS for
Aviation

Esri Defense
Mapping
Solution

ArcGIS for
Maritime

Esri Production Mapping

Editing

Cartography

Product Library

Extensions

ArcGIS Data Reviewer for
Desktop

ArcGIS Workflow Manager for
Desktop

Mapping and Charting Solutions

ArcGIS for Aviation

Esri Defense Mapping Solution

ArcGIS for Maritime

Esri Production Mapping

Editing

Cartography

Product Library

Extensions

ArcGIS Data Reviewer for Desktop

ArcGIS Workflow Manager for Desktop

Server Extensions

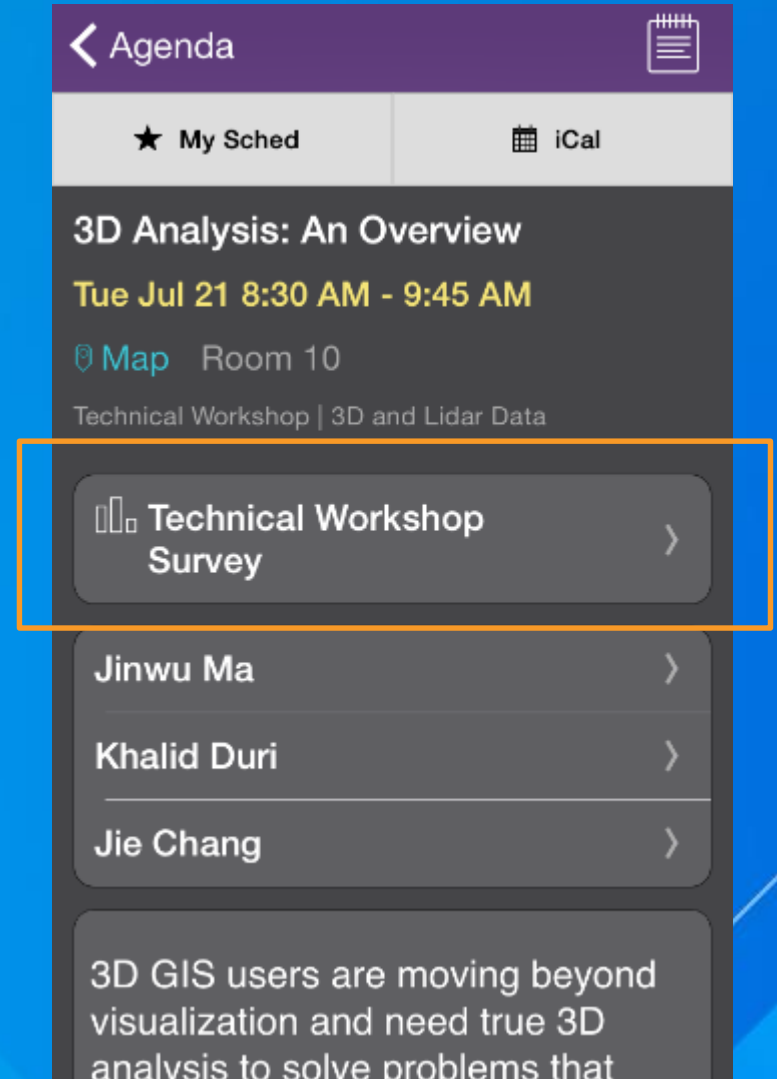
ArcGIS Data Reviewer for Server

ArcGIS Workflow Manager for Server

Esri Production Mapping for Server

Thank you...

- Please fill out the session survey in your mobile app
- Select **ArcGIS Extensions: Tools for Improving Data and Map Production**
 - Use the Search Feature to quickly find this title
- Click “Technical Workshop Survey”
- Answer a few short questions and enter any comments



Want to learn more?

- **Product Documentation**
 - ArcGIS Workflow Manager: www.esri.com/workflowmanager
 - ArcGIS Data Reviewer: www.esri.com/datareviewer
 - Esri Production Mapping: www.esri.com/productionmapping
- **Training:** www.esri.com/training
- **Questions and comments:** productionmapping@esri.com



Understanding our world.