

Web Editing - The Transition to Workflow Efficiency and Collaboration

2011 Esri Mid-Atlantic User Conference | December 6–7, 2011 | Hunt Valley, MD

Tim Lesser
URS Corporation | Technology Solutions | Germantown, MD



Agenda

Project / Team

Issues

Solution

Functionality

Applications - Editing and Status / Update

Ortho QC Checks and Editing Workflow

Outcomes

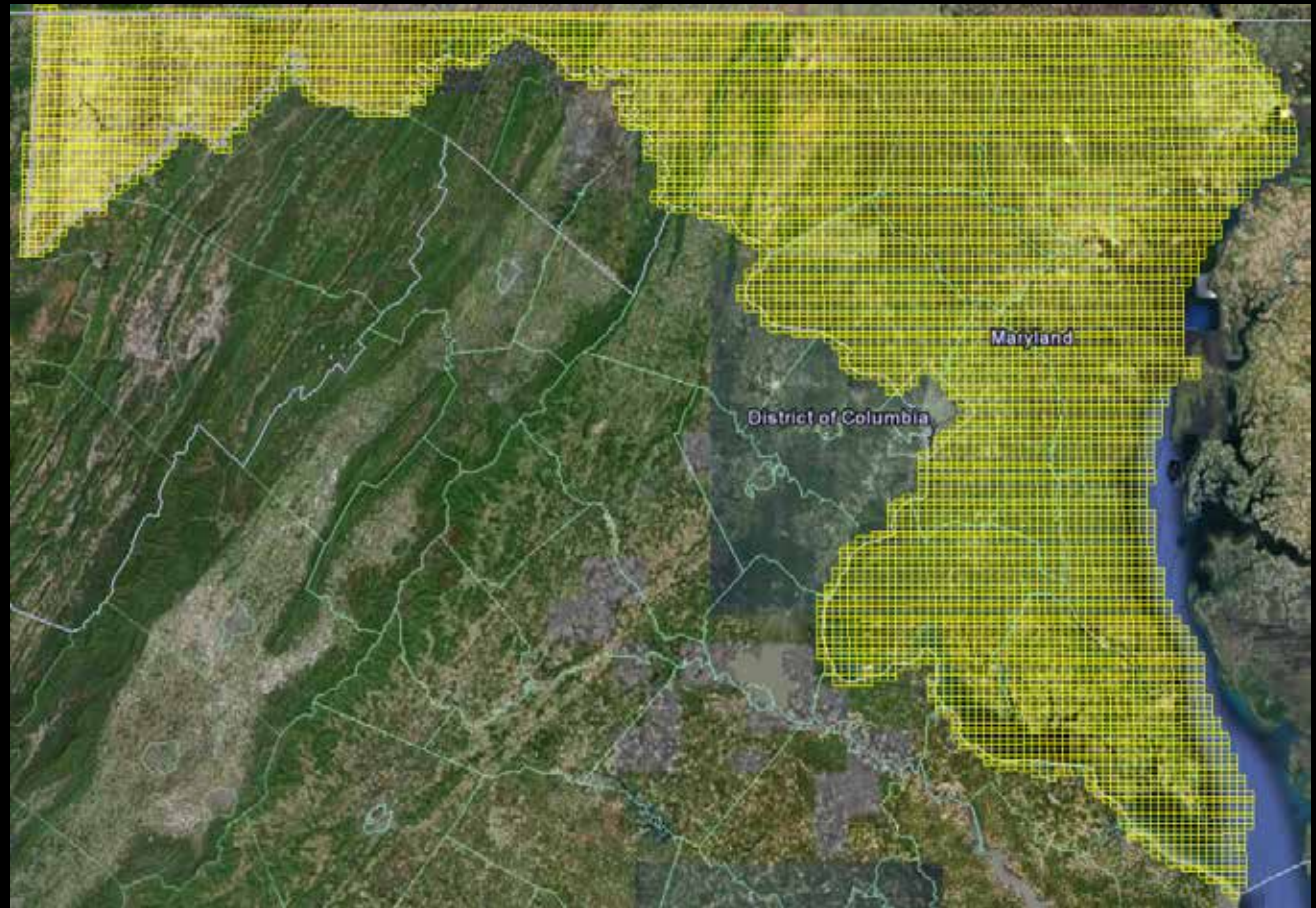


Project

2011 Maryland
High-Resolution
OrthoImagery

Team

State of Maryland
(DOIT / Planning)
Axis GeoSpatial
URS Corporation



URS Corporation

Program Management

POC to DOIT and MDP, coordinate production, QA/QC, project tracking, and status reporting

QA/QC Management

Ensure that designated levels of QA/QC are performed during production phases and followed up by independent technical reviews



Issues ...

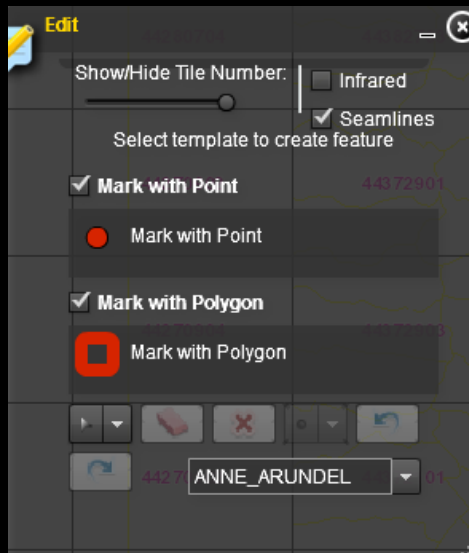
Visual orthophotography QA/QC analysis

- Takes place in more than one office location
- Uploading massive amounts of image data to external hard drives
- Shipping the drives to and from each of the offices
- Each delivery often contains one or more corrupted files that need to be redelivered
- Production time is lost every time a redelivery is shipped
- Additional time is lost if the client is conducting an acceptance review and files have to be shipped back and forth

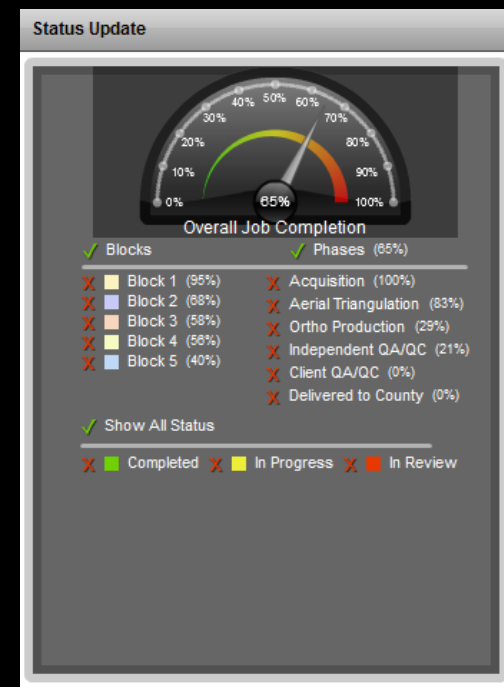


Applications

Ortho Web-Edit Site



Ortho Web-Status View / Update Site



Solution / Technology

Web Status and Editing Tools

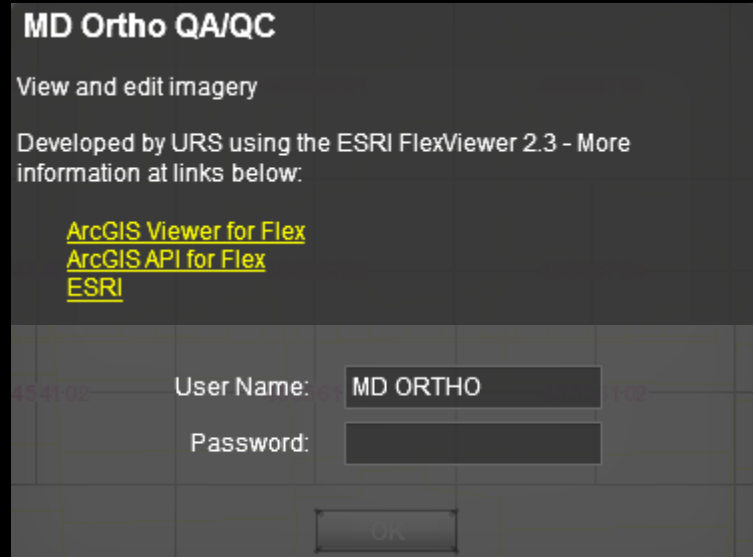
ArcGIS for Server v10 sp2

SDE / SQL Server

ArcGIS Viewer for Flex v2.3

ArcGIS API for Flex v4.5

Applications / Data Hosted



MD Ortho QA/QC

View and edit imagery

Developed by URS using the ESRI FlexViewer 2.3 - More information at links below:

[ArcGIS Viewer for Flex](#)
[ArcGIS API for Flex](#)
[ESRI](#)

User Name:

Password:

Orthophotography

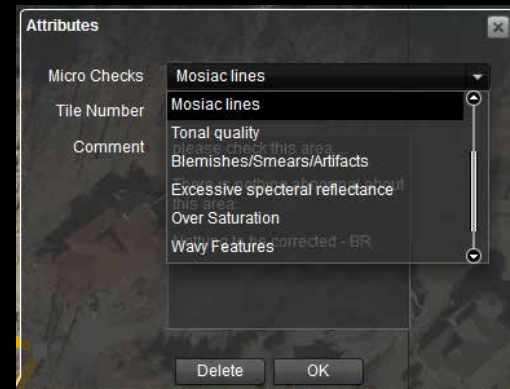
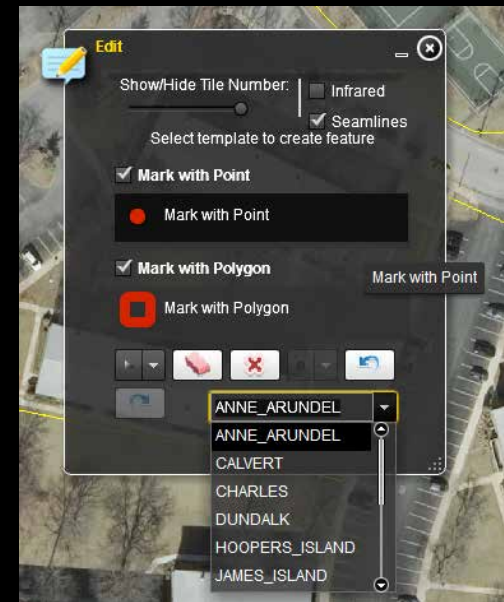
- Cached, without sacrificing image fidelity
- Rapid zoom in/out and pan
- Quickly flag errors and create points and polygons

Edit

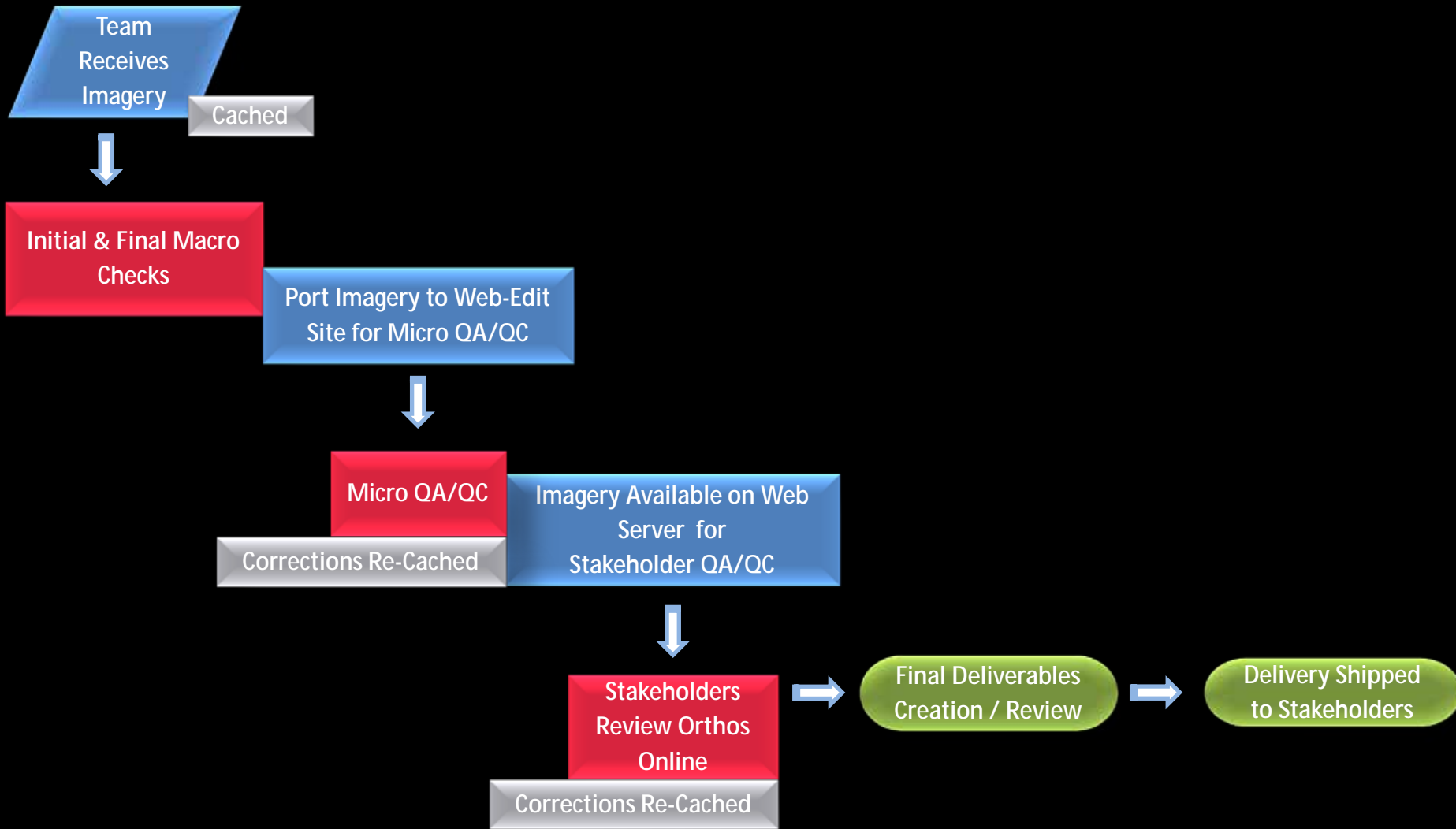
- Simple edit user interface
- Standard menu attribution and/or custom documentation
- Edit session date, tile number stored in SQL Server
- Multiple users in multiple locations have access

Security

- Secure web service for approved users
- Internal Team QA - stakeholders can view/edit all data
- External QA - stakeholders can only view/edit on their specific geographic area
- External users – view status only



Web Edit Functionality



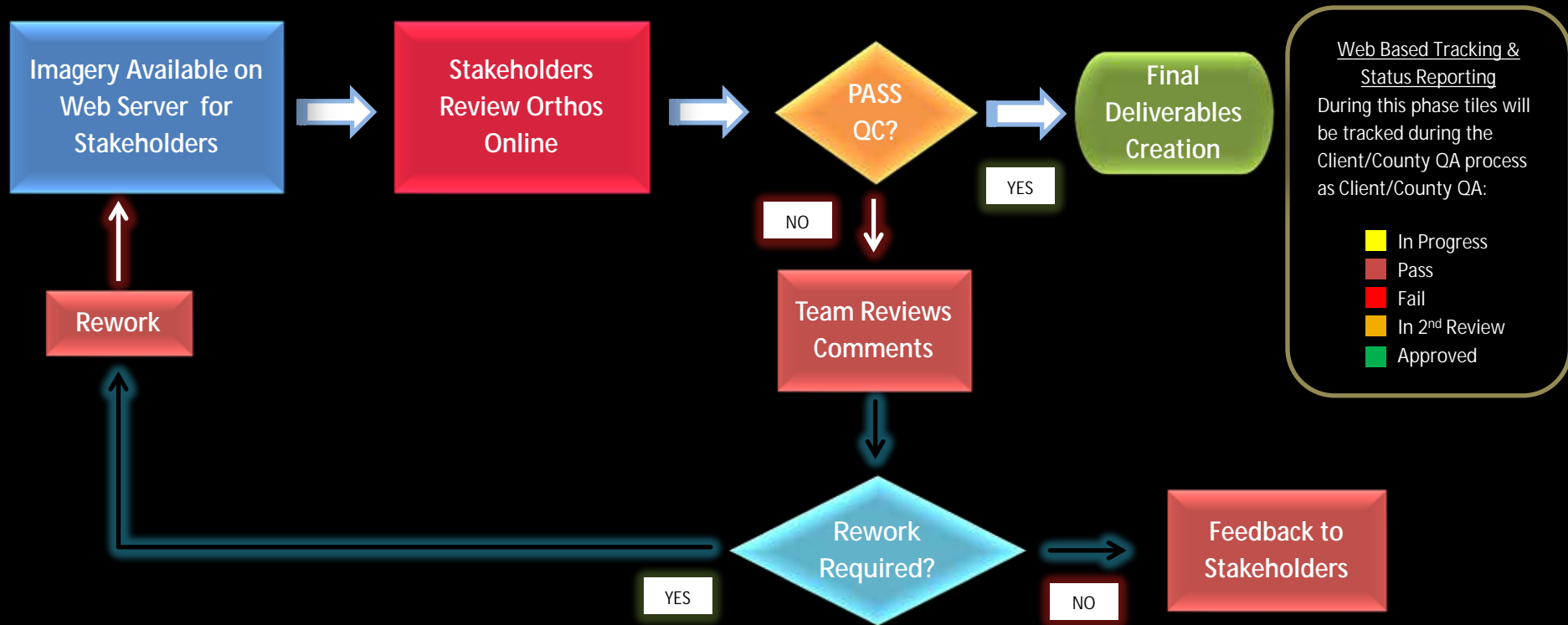
General Ortho QC Workflow

Micro Checks

Micro QA/QC

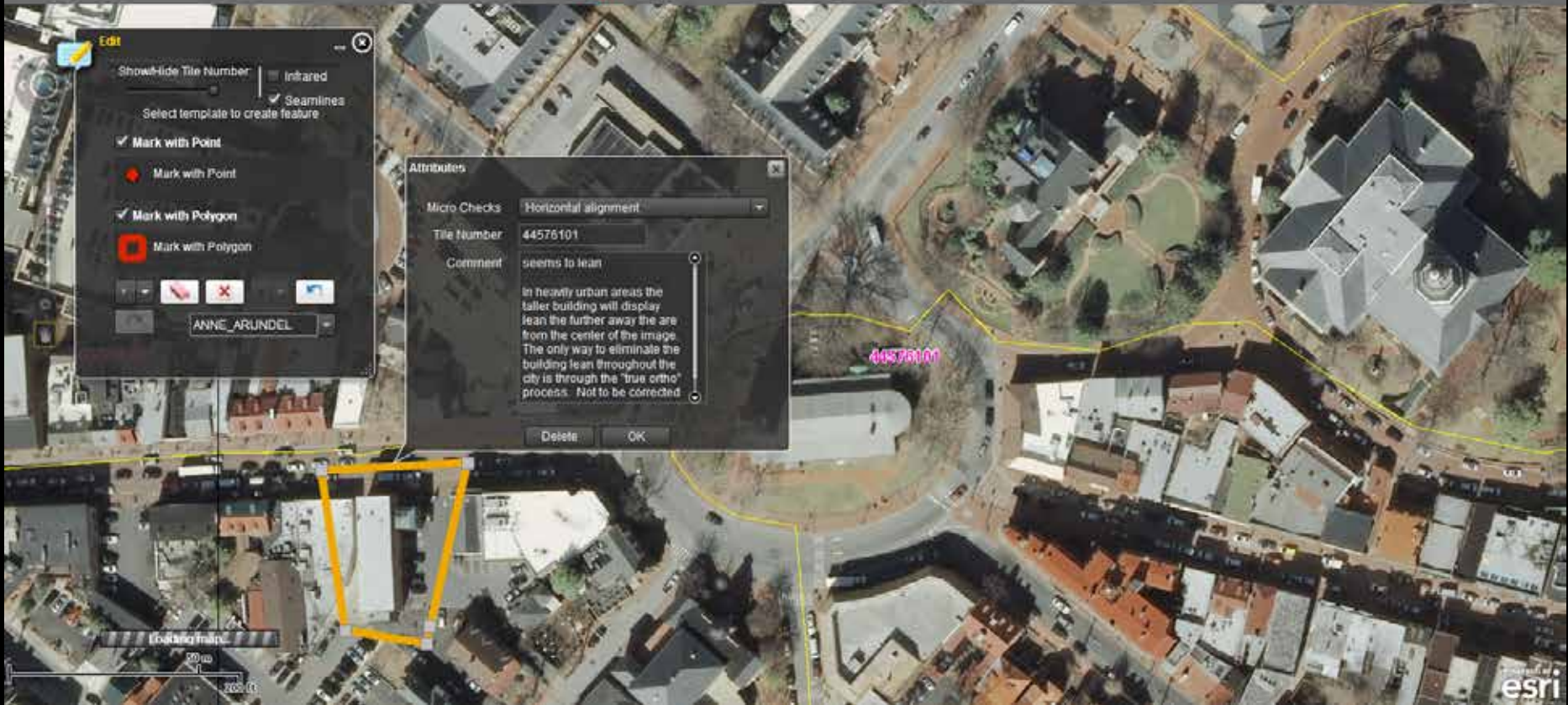
- Gaps in coverage
 - Holes, missing pixels, etc.
 - Verification of 32-bit, 4-band structure
 - Horizontal alignment
 - Mosaic lines
 - Tonal quality
 - Blemishes & smears
 - Artifacts
 - Wavy features
 - Excessive spectral reflectance
 - Over-saturation of color
- Micro checks are performed on all tiles
 - Edit calls recorded to GDB as points or polygons
 - Edits in GDB and made available to production team
 - Production team reviews edits and makes corrections
 - QA/QC team performs final review of corrected tiles
 - Final tiles made available to web service for stakeholder QA/QC review

Collaborative Micro Ortho QC Workflow

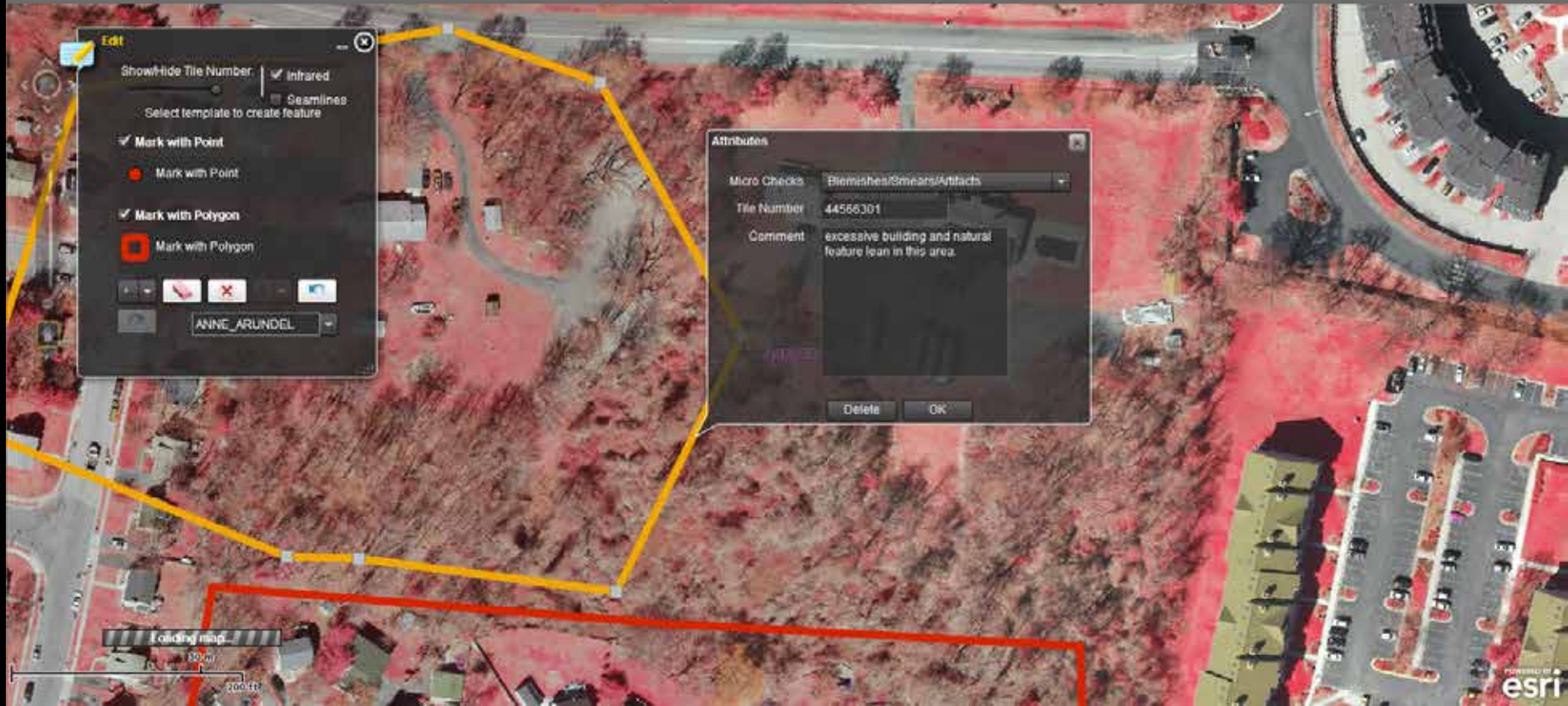


Collaborative Stakeholder Ortho QC Workflow

Ortho Web-Edit Site



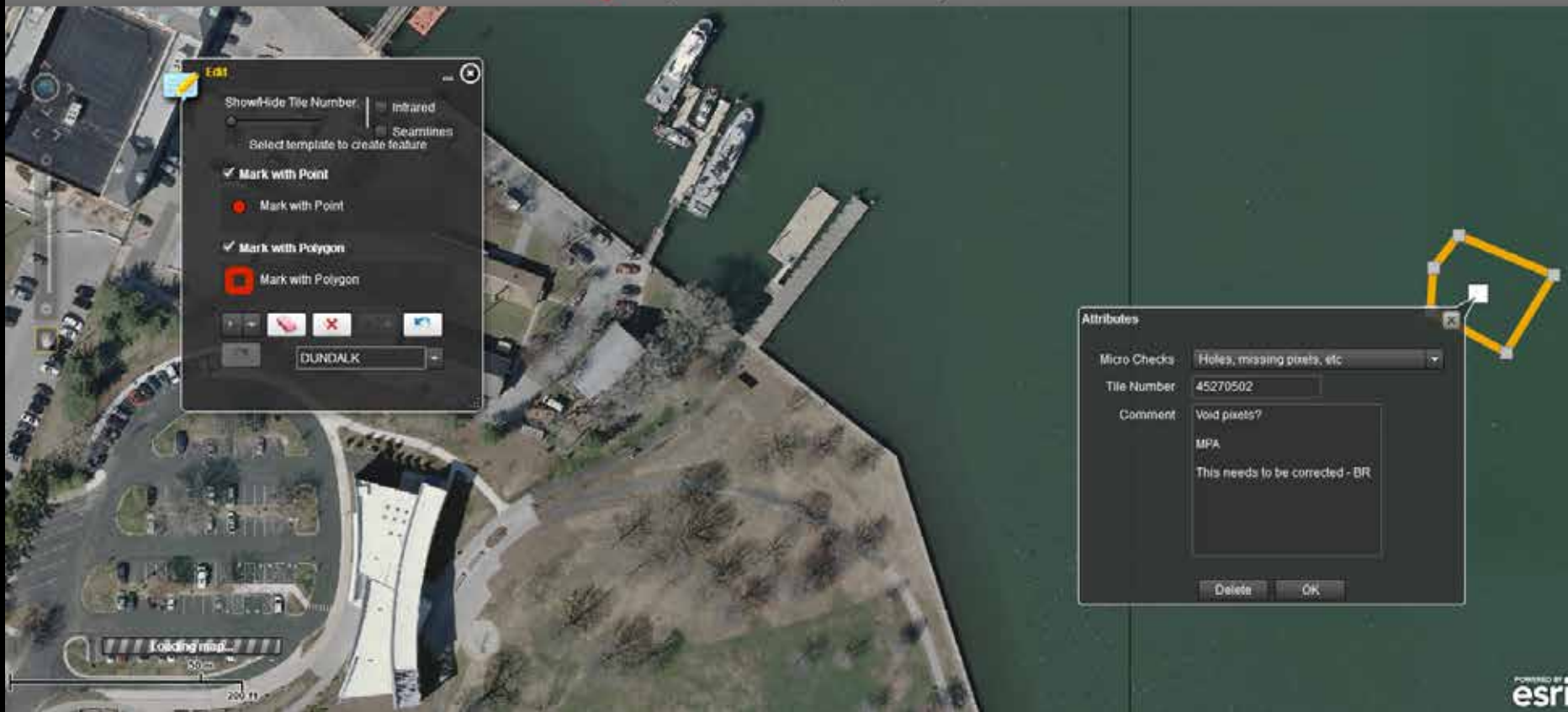
Ortho Web-Edit Site



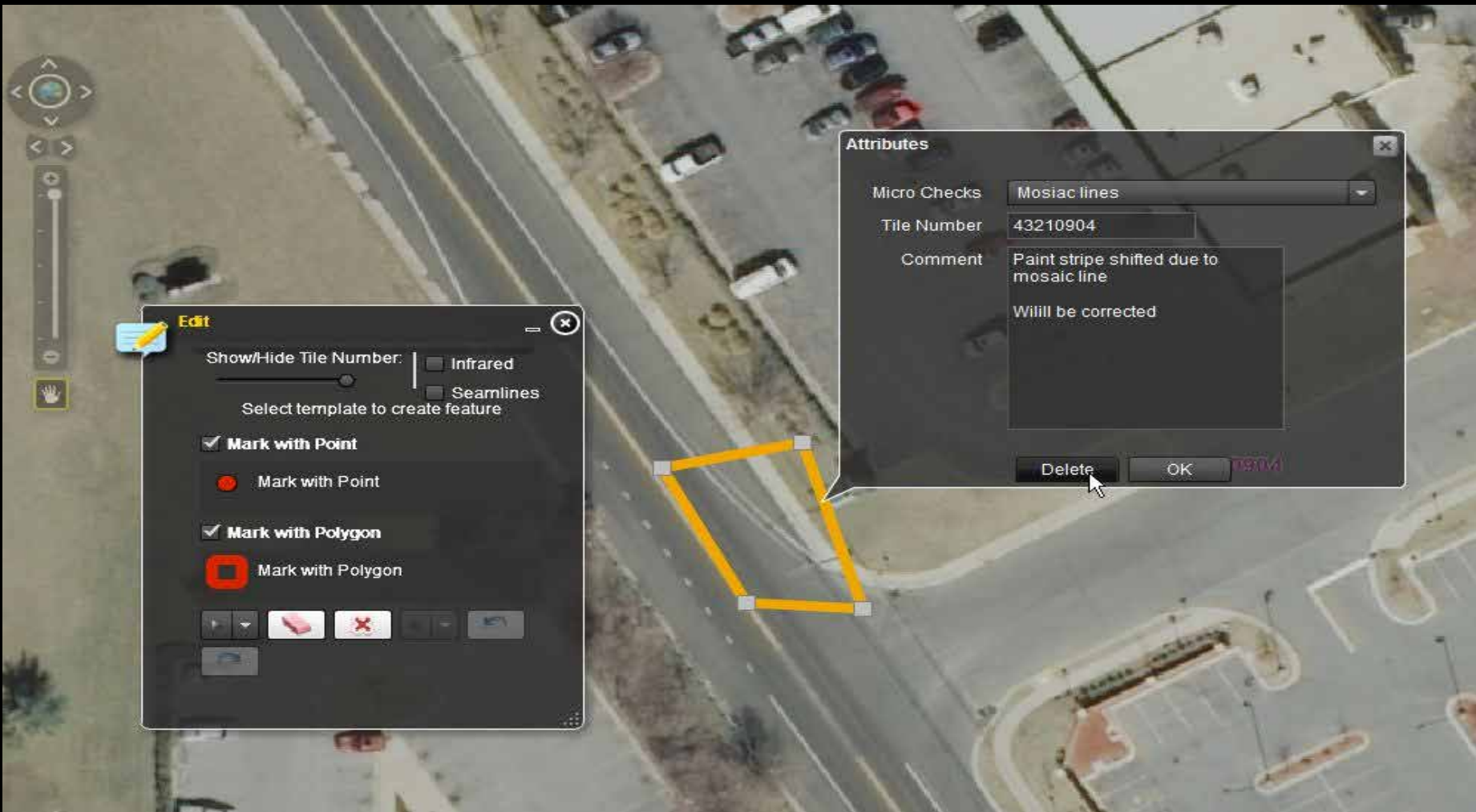
Ortho Web-Edit Site



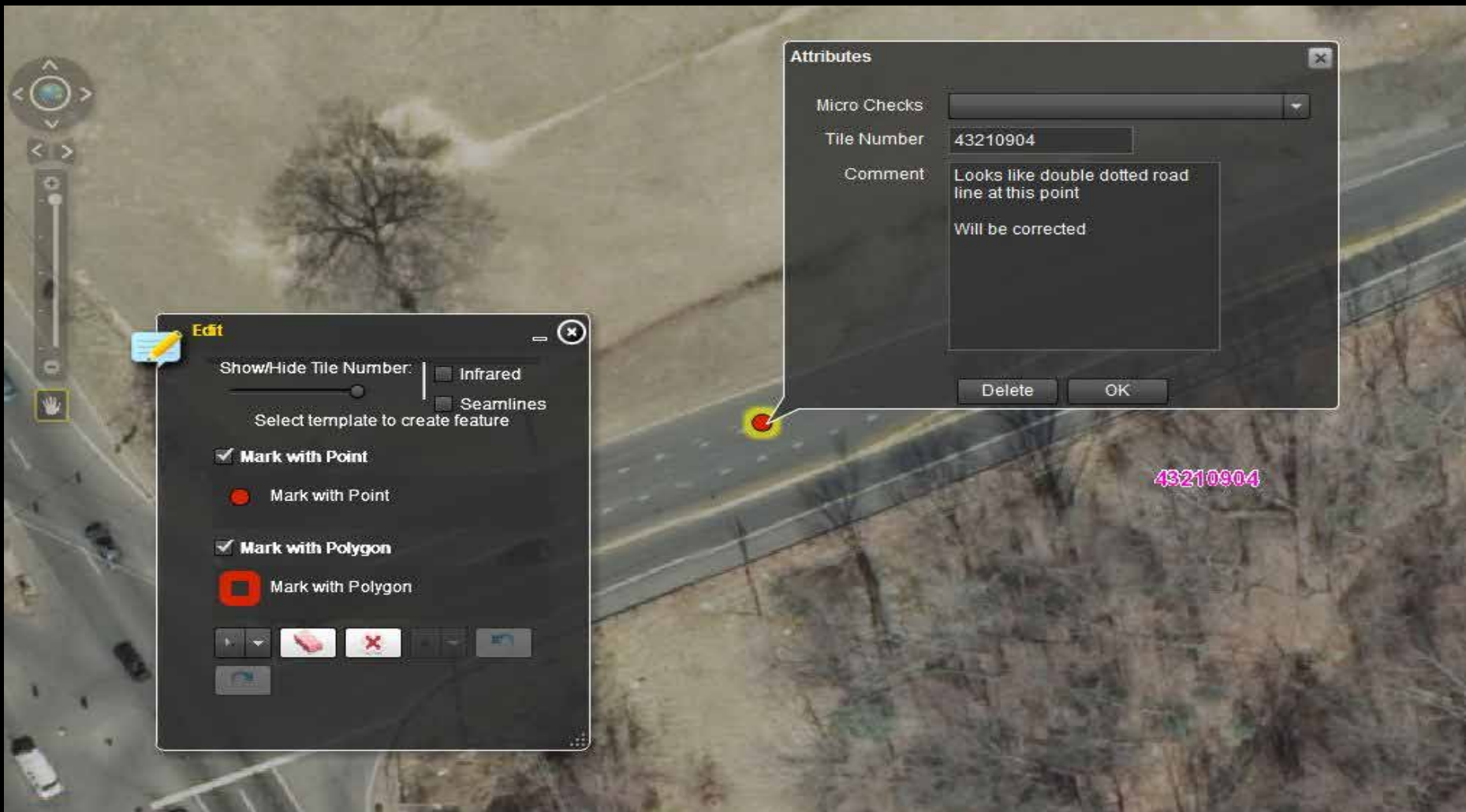
Ortho Web-Edit Site



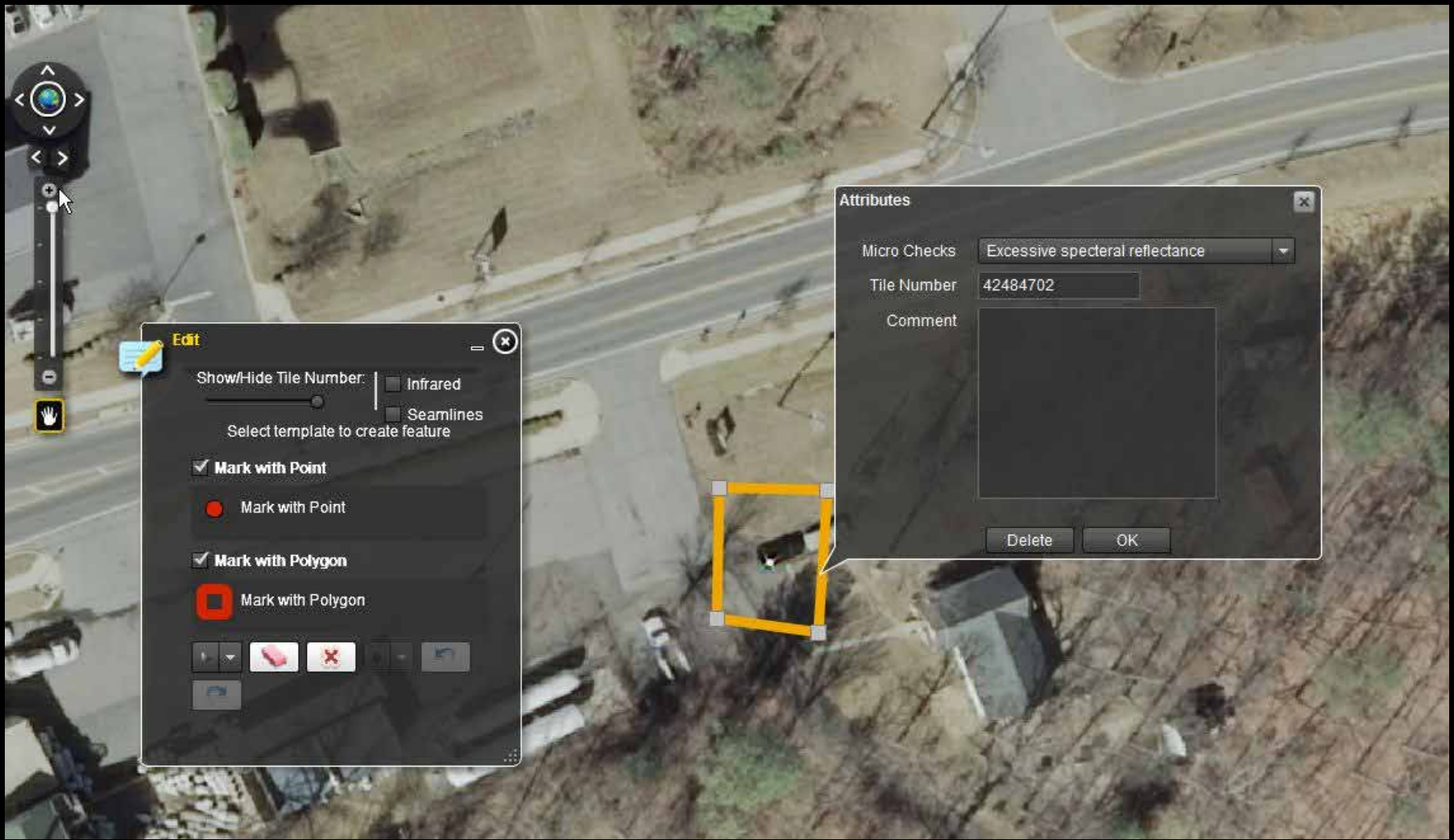
Ortho Web-Edit Site



Ortho Web-Edit Site



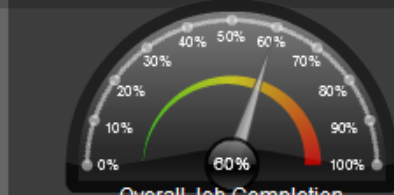
Ortho Web-Edit Site



Ortho Web-Edit Site

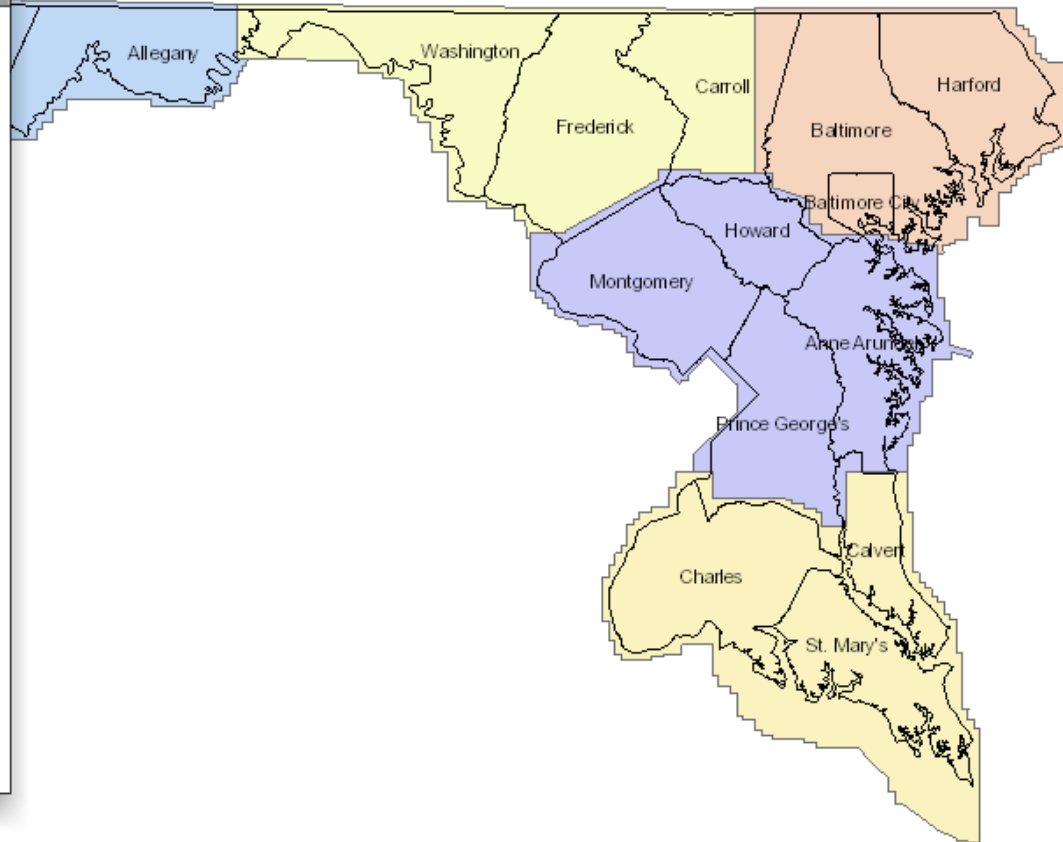
Ortho Web-Status View Site

Status Update



Overall Job Completion

- ✓ Blocks
 - ✗ Block 1 (96%)
 - ✗ Block 2 (59%)
 - ✗ Block 3 (55%)
 - ✗ Block 4 (40%)
 - ✗ Block 5 (40%)
 - ✓ Show All Status
 - ✗ Completed
 - ✗ In Progress
 - ✗ In Review
- ✓ Phases (60%)
 - ✗ Acquisition (100%)
 - ✗ Aerial Triangulation (62%)
 - ✗ Ortho Production (24%)
 - ✗ Independent QA/QC (21%)
 - ✗ Client QA/QC (0%)
 - ✗ Delivered to County (0%)



Ortho Web-Status View Site

Status Update



✓ Blocks

- ✗ Block 1 (98%)
- ✗ Block 2 (59%)
- ✗ Block 3 (55%)
- ✗ Block 4 (40%)
- ✗ Block 5 (40%)

✓ Phases (60%)

- ✗ Acquisition (100%)
- ✗ Aerial Triangulation (82%)
- ✗ Ortho Production (24%)
- ✗ Independent QA/QC (21%)
- ✗ Client QA/QC (0%)
- ✗ Delivered to County (0%)

✓ Show All Status

- ✗ Completed
- ✗ In Progress
- ✗ In Review

Acquisition

This production phase is comprised of the following major steps:

- Flight Planning
- Digital Imagery Acquisition
- GPS Base Stations to support imagery acquisition and processing
- Generation of acquisition related metadata and final reports
- Vendor QA/QC for all work performed under the Acquisition production

Aerial Triangulation

This production phase is comprised of the following major steps:

- Ground Control Planning and Survey to support the aerial triangulation process
- Aerial Triangulation to tie all of the images together in the project specified horizontal and vertical reference systems
- Vendor QA/QC for all work performed under the Aerial Triangulation production phase

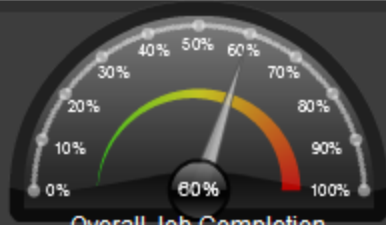
Ortho Production

This production phase is comprised of the following major steps:

- Digital Elevation Model (DEM) creation to be used in the rectification process
- Ortho-rectification to remove the differences in scale caused by elevation
- Generation of histograms for image color, tone, and balance
- Seamlines to reduce building lean and create a seamless image mosaic
- Photoshop to perform minor manual edits and corrections
- Vendor QA/QC for all work performed under the Ortho Production phase

Ortho Web-Status View Site

Status Update



Overall Job Completion

✓ Blocks

- ✗ Block 1 (98%)
- ✗ Block 2 (59%)
- ✗ Block 3 (55%)
- ✗ Block 4 (40%)
- ✗ Block 5 (40%)

✓ Phases (60%)

- ✗ Acquisition (100%)
- ✗ Aerial Triangulation (82%)
- ✗ Ortho Production (24%)
- ✗ Independent QA/QC (21%)
- ✗ Client QA/QC (0%)
- ✗ Delivered to County (0%)

✓ Show All Status

- ✗ Completed
- ✗ In Progress
- ✗ In Review

Independent QA/QC

The Independent QA/QC is performed on each of the three major production phases to ensure that the processes and specifications included in the technical scope of work have been completely and accurately performed and meet all project expectations.

Client QA/QC

The Client QA/QC serves as an independent technical review of the ortho imagery and the production phase reports and metadata. The imagery review will be performed on-line via the project web site for image viewing and editing.

Final Deliverables

This final production phase involves all work associated with uploading all final deliverable data to external hard drives and disseminating them to the end users.

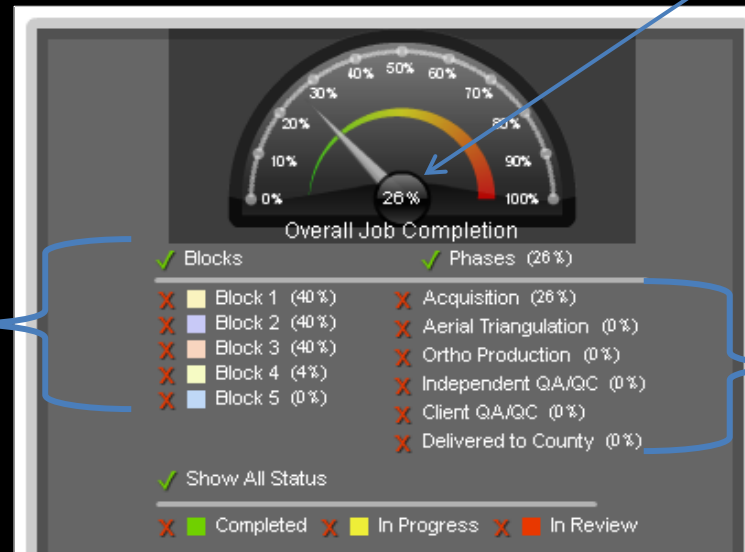
Ortho Web-Status View Site

Percent Complete Dial:

Dial changes when a combination of Blocks and Phases are selected

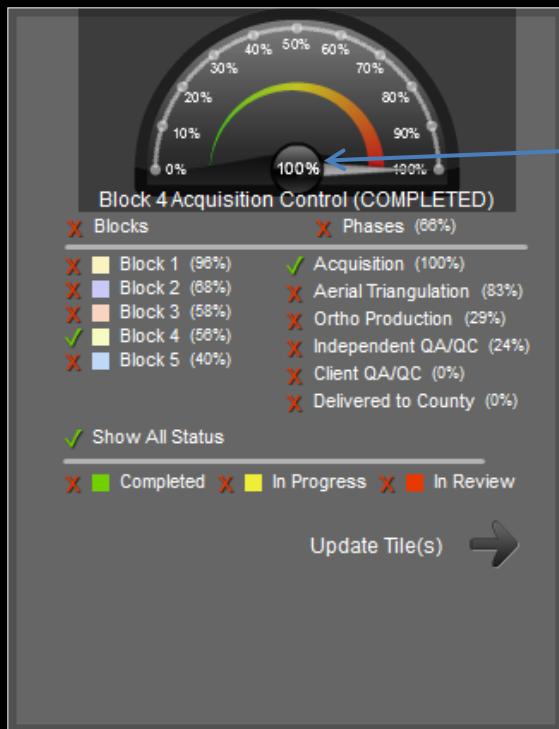
The value always indicates Overall Job Completion for the Entire Job/Block/Phase

Check Marks and Xs denote what is being seen and calculated on the map



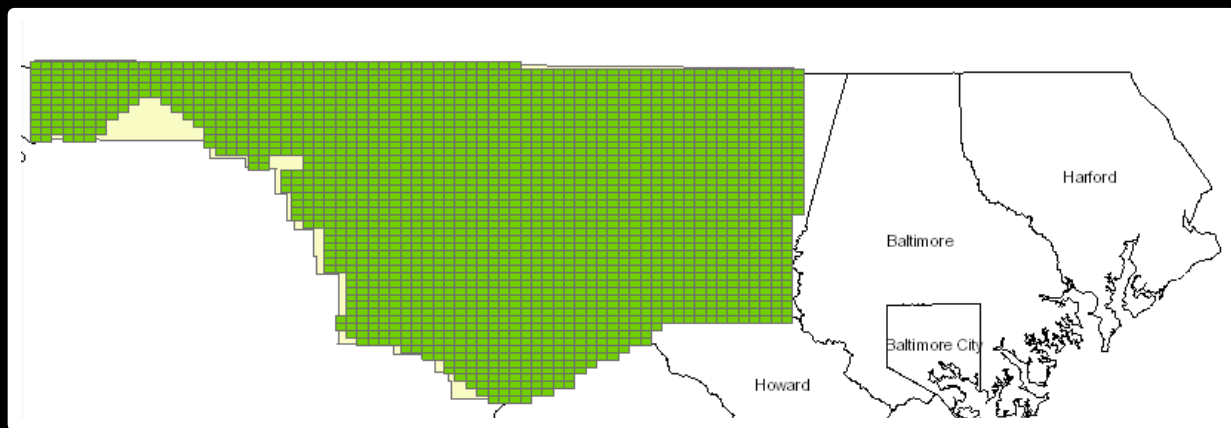
Percent value in parenthesis denotes the Overall Job Completion for the Block/Phase

Ortho Web-Status View Site



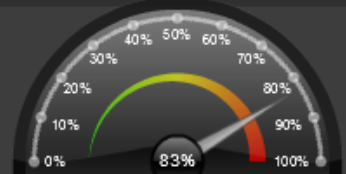
Indicates 100% of the tiles in Block 4 under the Acquisition Phase have been Completed

The dial only shows Completed Status and does not change if 'In Progress' or 'In Review' status changes. However, selecting those values does change the Map view.



Ortho Web-Status View Site

Status Update



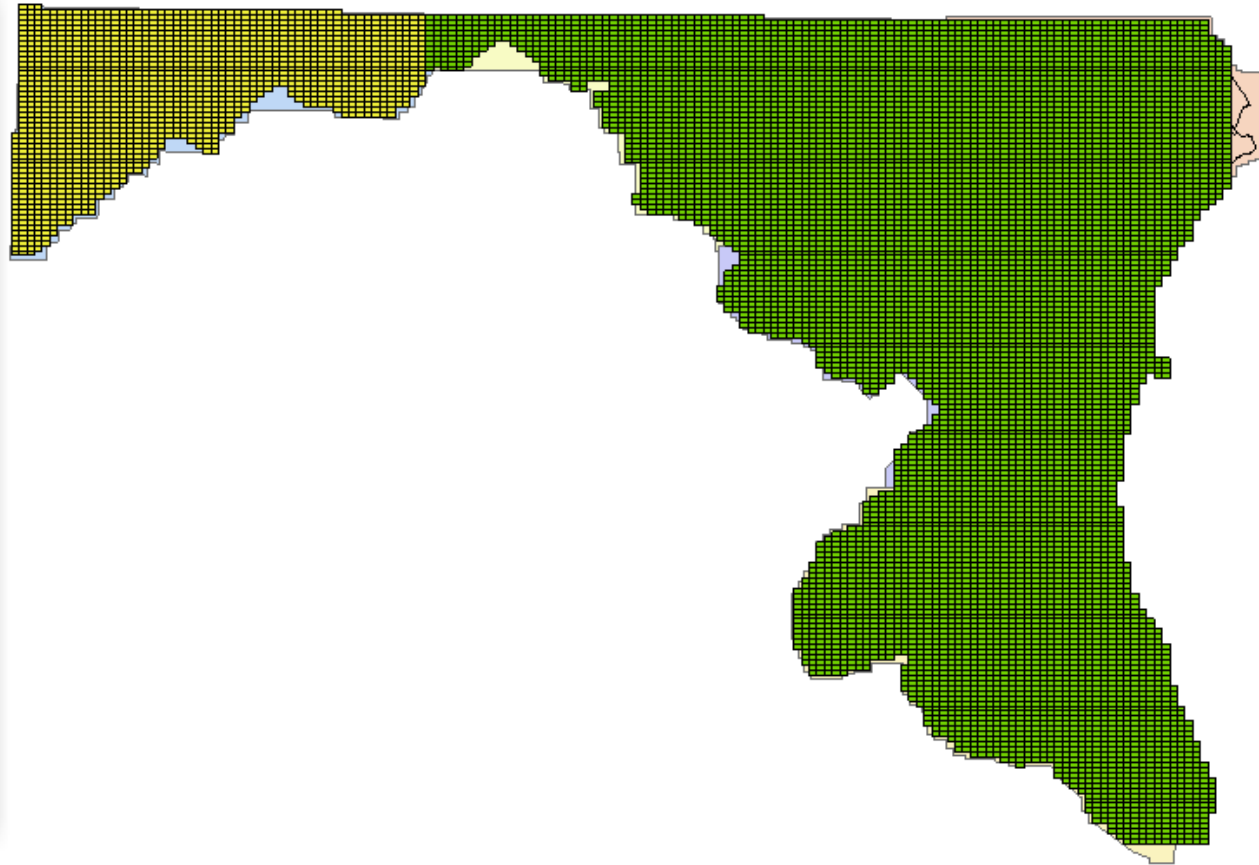
Aerial Triangulation (COMPLETED)

✓ Blocks	✗ Phases (66%)
✗ Block 1 (96%)	✗ Acquisition (100%)
✗ Block 2 (68%)	✓ Aerial Triangulation (83%)
✗ Block 3 (58%)	✗ Ortho Production (29%)
✗ Block 4 (56%)	✗ Independent QA/QC (24%)
✗ Block 5 (40%)	✗ Client QA/QC (0%)
	✗ Delivered to County (0%)

✓ Show All Status

✗ Completed ✗ In Progress ✗ In Review

Update Tile(s) ➔



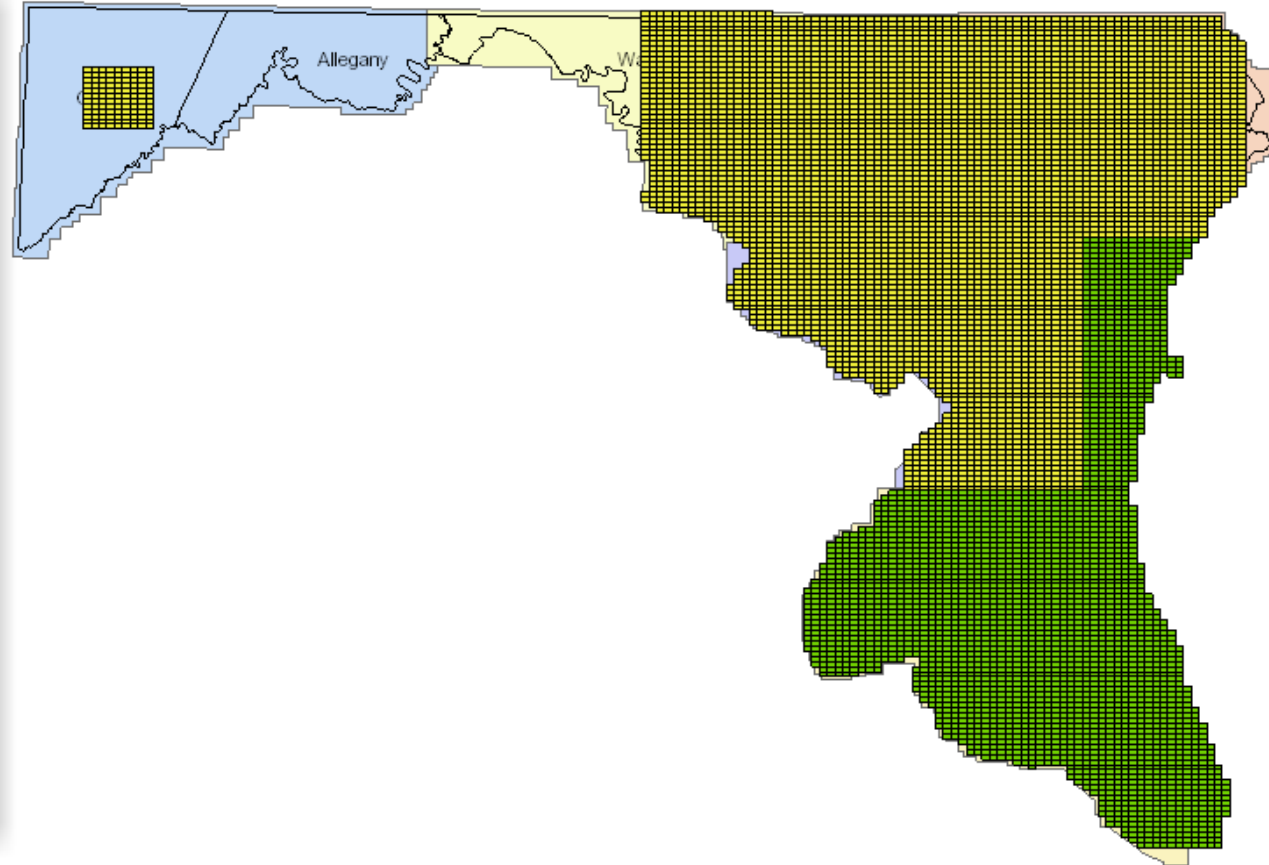
Aerial Triangulation Status

Status Update



- ✓ Blocks
- ✗ Phases (88%)
- ✗ Block 1 (96%)
- ✗ Block 2 (88%)
- ✗ Block 3 (58%)
- ✗ Block 4 (58%)
- ✗ Block 5 (40%)
- ✗ Acquisition (100%)
- ✗ Aerial Triangulation (83%)
- ✓ Ortho Production (29%)
- ✗ Independent QA/QC (24%)
- ✗ Client QA/QC (0%)
- ✗ Delivered to County (0%)
- ✓ Show All Status
- ✗ Completed
- ✗ In Progress
- ✗ In Review

Update Tile(s) →



Ortho Production Status

Status Update

Independent QA/QC (COMPLETED) 24%

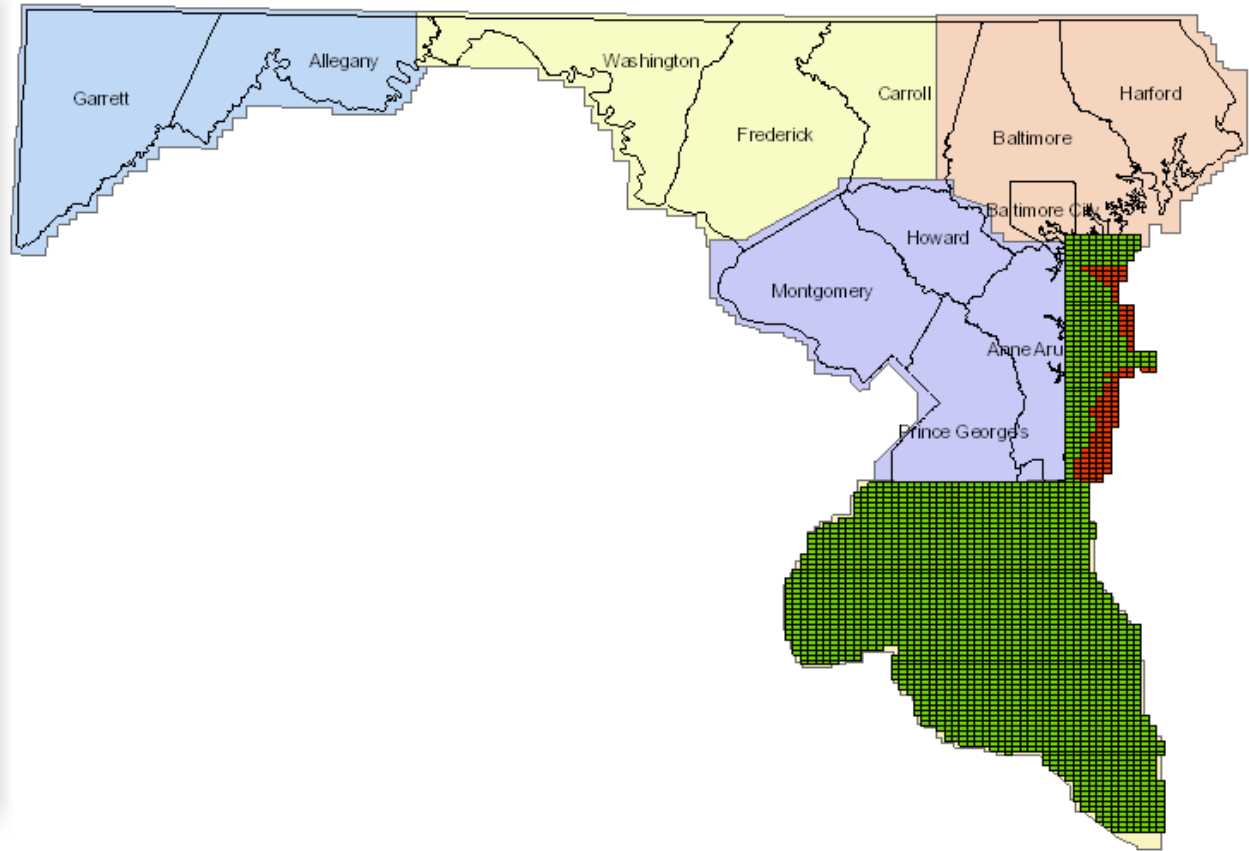
- ✓ Blocks
- ✗ Phases (86%)

✗ Block 1 (96%)	✗ Acquisition (100%)
✗ Block 2 (88%)	✗ Aerial Triangulation (83%)
✗ Block 3 (58%)	✗ Ortho Production (29%)
✗ Block 4 (56%)	✓ Independent QA/QC (24%)
✗ Block 5 (40%)	✗ Client QA/QC (0%)
	✗ Delivered to County (0%)

✓ Show All Status

Completed
 In Progress
 In Review

Update Tile(s) →



Independent QA/QC Status

Ortho Web-Status Update

Status Update

Select a Phase to Update

- Acquisition
- Aerial Triangulation
- Ortho Production
- Independent QA/QC
- Client QA/QC
- Delivered to County

Determine Tile Selection Method

- Select Block
- Enter Tile
- Select Tiles

Select the Progress Type

- Completed
- In Progress
- In Review

New Selection

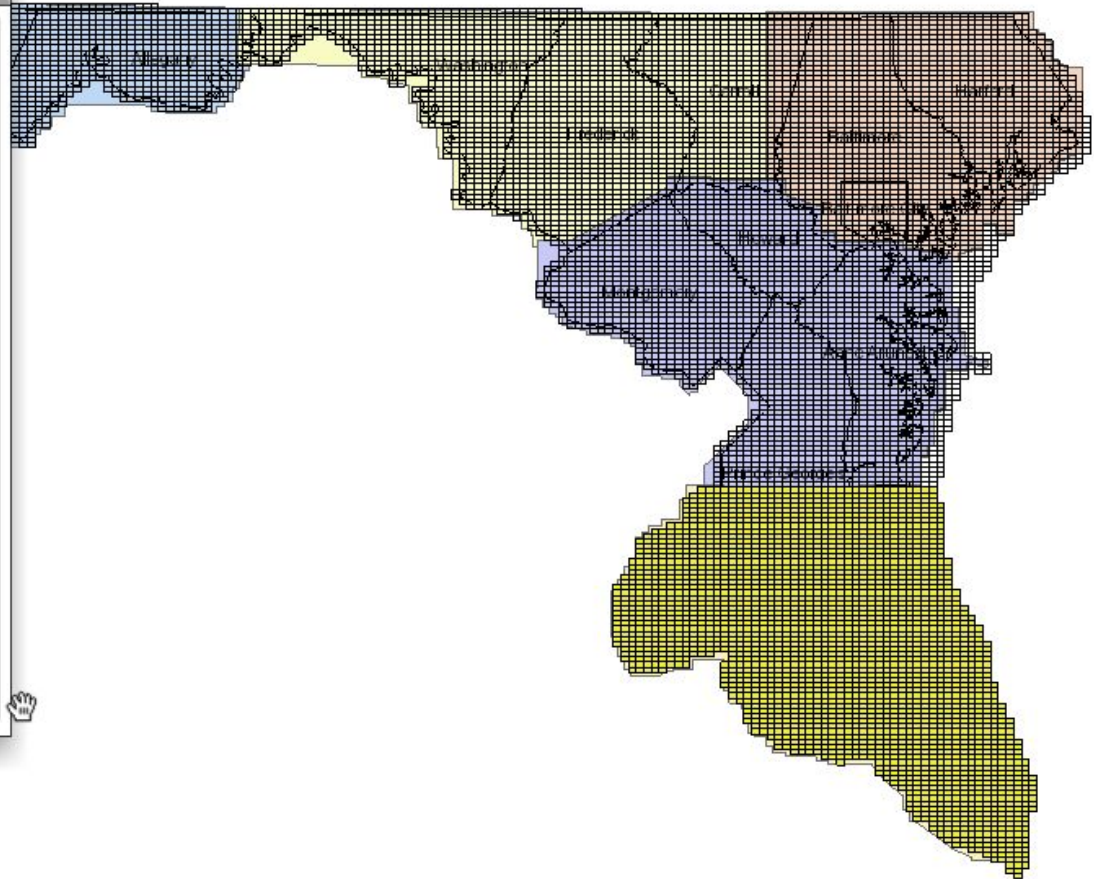


Save Updates



Updates are posted to Status site within 24 Hours

Show Status



Ortho Web-Status Update

Select a Phase to Update

- Acquisition
- Aerial Triangulation
- Ortho Production
- Independent QA/QC
- Client QA/QC
- Delivered to County

Determine Tile Selection Method

- Select Block
- Enter Tile
- Select Tiles

- Block 1
- Block 2
- Block 3
- Block 4
- Block 5


Number of Selected Tiles: 0

Select the Progress Type

- Completed
- In Progress
- In Review

New Selection  Save Updates 

Updates are posted to Status site within 24 Hours

Show Status 

Block

Select a Phase to Update

- Acquisition
- Aerial Triangulation
- Ortho Production
- Independent QA/QC
- Client QA/QC
- Delivered to County

Determine Tile Selection Method

- Select Block
- Enter Tile
- Select Tiles

Enter Tile Number(s)

to


Number of Selected Tiles: 0

Select the Progress Type

- Completed
- In Progress
- In Review

New Selection  Save Updates 

Updates are posted to Status site within 24 Hours

Show Status 

Tiles


Select a Phase to Update

- Acquisition
- Aerial Triangulation
- Ortho Production
- Independent QA/QC
- Client QA/QC
- Delivered to County

Determine Tile Selection Method

- Select Block
- Enter Tile
- Select Tiles


Hold Down Left Mouse Button
Drag Mouse Over Tiles You Want to Update

Select Tiles 


Number of Selected Tiles: 0

Select the Progress Type

- Completed
- In Progress
- In Review

New Selection  Save Updates 

Updates are posted to Status site within 24 Hours

Show Status 

Select

Ortho Web-Status Update

Outcomes

- Centralization and sharing/access to data
- Time and effort savings
- Provides a streamlined workflow
- Enables collaboration of multiple agencies in several different locations
- Value added methodology to integrate into other workflows
- Best practice to take advantage of geospatial investment / technology



MD Ortho 2011 Web-Status View Site *(Unlimited Access)*

<http://maps.ursdcmetro.com/Maryland/doit/orthophoto2011/default.aspx>

User Name: MD 2011 ORTHOS

Password: STATUS_MAP

URS Corporation | Technology Solutions | Germantown, MD

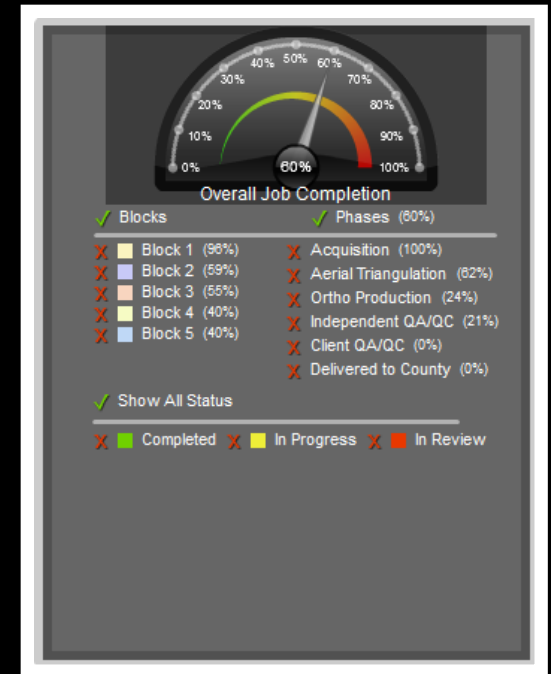
www.urscorp.com

Tim Lesser
301.820.3552

Tim.lesser@urs.com

Alex Bostic
301.820.3287

Alex.bostic@urs.com



Thank You