Oblique Imagery as a Key Tool in Property Assessment

Steve Miner, Assessment Commissioner, City of Milwaukee
Mark Paulat, Chief Property Assessment Training Officer, Department of Revenue
Brandon Tourtelotte, Regional Technical Manager, EagleView Technologies
Course Outline

Mark Paulat, Wisconsin Department of Revenue
- IAAO standards to be followed
- WPAM Compliance Requirements
- Why desktop review, why now?

Steve Miner, City of Milwaukee, and IAAO Rep. for Wisconsin
- Purpose of desktop review for Milwaukee
- Performing assessment/appraisal review and valuation
- Defending assessments
- Technology required
Course Outline - continued

Brandon Tourtelotte, Eagle View Technologies

- Hands on applications
  - Measurements for defensible valuations (distance, area, height, etc)
  - Query GIS Layers (any data source)
  - Saved workspaces
  - Workflows; browser, mobile, integrations into everything else
  - Who else consumes obliques?
Course Outline - continued

Group Applications; Availability,

- Current availability in WI
- Current methodology for Assessment in WI
- Current availability and usage in Assessment in MN and IA as examples
- Discussion on expanding availability and acquisition:
  - Equity and uniformity
  - Benefit to the taxpayer/good governance
  - There is a cost to fairness
  - Elected officials
  - Municipal & Assessor Responsibilities

TOTAL (60 Minutes) of Appraisal Credits
Technology Upgrades Support WLIA Purpose

• ...to foster the understanding, development, operation and maintenance of a network of statewide land information systems.
• ...require the spatial registration of various layers of land data that are maintained independently in various offices, agencies and organization...
• ...mission is focused on promoting sound policy, promoting interaction and cooperation, technical research and education.

• [https://www.wlia.org/about/](https://www.wlia.org/about/)
Mark Paulat, WI DOR

- **Standards that Assessors are required to be followed**
- IAAO Technical Standards - Available on IAAO web site at [www.iaao.org](http://www.iaao.org) 15 of them including:
  - Standard on Mass Appraisal, Section 3.3.5 Alternative to Periodic On-Site Inspections, AKA Desktop Review
  - Wisconsin Property Assessment Manual (WPAM) – Chapter 4
IAAO Technical Standards

- Standard on Assessment Appeal
- Standard on Automated Valuation Models (AVMs)
- Standard on Contracting for Assessment Services
- Standard on Digital Cadastral Maps and Parcel Identifiers
- Standard on Manual Cadastral Maps and Parcel Identifiers
- Standard on Mass Appraisal of Real Property
- Standard on Oversight Agency Responsibilities
IAAO Technical Standards - continued

• Standard on Professional Development
• Standard on Property Tax Policy
• Standard on Public Relations
• Standard on Valuation of Personal Property
• Standard on the Valuation of Properties Affected by Environmental Contamination
• Standard on Verification and Adjustment of Sales
• Standard on Ratio Studies
IAAO Standards in the WPAM
"3.3.5 Alternative to Periodic On-site Inspections"

• "3.3.5 Alternative to Periodic On-site Inspections

• Provided that initial physical inspections are timely completed and that an effective system of building permits or other methods of routinely identifying physical changes is in place, jurisdictions may employ a set of digital imaging technology tools to supplement field reinspections with a computer-assisted office review. These imaging tools should include the following:

• Current high-resolution street-view images (at a sub-inch pixel resolution that enables quality grade and physical condition to be verified)

• Orthophoto images (minimum 6” pixel resolution in urban/suburban and 12” resolution in rural areas, updated every 2 years in rapid growth areas, or 6–10 years in slow growth areas).
"3.3.5 Alternative to Periodic On-site Inspections“ - continued

• These imaging tools should include the following:

• **Low level oblique images** capable of being used for measurement verification (four cardinal directions, minimum 6-inch pixel resolution in urban/suburban and 12-inch pixel resolution in rural areas, updated every 2 years in rapid growth areas or, 6–10 years in slow growth areas).

• These tool sets may incorporate *change detection* techniques that compare building dimension data (footprints) in the CAMA system to georeferenced imagery or remote sensing data from sources (such as LiDAR [light detection and ranging]) and identify potential CAMA sketch discrepancies for further investigation.
"3.3.5 Alternative to Periodic On-site Inspections“ - continued

- These imaging tools should include the following:
- Assessment jurisdictions and oversight agencies must ensure that images meet expected quality standards. Standards required for vendor-supplied images should be spelled out in the Request for Proposal (RFP) and contract for services, and images should be checked for compliance with specified requirements. For general guidance on preparing RFPs and contracting for vendor-supplied services, see the Standard on Contracting for Assessment Services [IAAO 2008].
3.3.5 Alternative to Periodic On-site Inspections“ - continued

• In addition, appraisers should visit assigned areas on an annual basis to observe changes in neighborhood condition, trends, and property characteristics. An onsite physical review is recommended when significant construction changes are detected, a property is sold, or an area is affected by catastrophic damage. Building permits should be regularly monitored and properties that have significant change should be inspected when work is complete."
• Current high-resolution street-view images (at a sub-inch pixel resolution that enables quality grade and physical condition to be verified)
• Orthophoto images (minimum 6” pixel resolution in urban/suburban and 12” resolution in rural areas, updated every 2 years in rapid growth areas, or 6–10 years in slow growth areas).
• High-res metric oblique images capable of being used for measurement verification
• These tool sets may incorporate change detection techniques that compare building dimension data (footprints) in the CAMA system to georeferenced imagery or remote sensing data from sources (such as LiDAR [light detection and ranging]) and identify potential CAMA sketch discrepancies for further investigation.
• Digital Sketches that are Georeferenced
• Change Detection based on building outlines
Steve Miner, City of Milwaukee

How do we implement Desktop Review and these of Oblique Imagery?

• Understand the technologies that are involved
• Learn from current users
• Create an implementation plan - including a budget and timeline
• Develop your funding mechanism
• Recalibrate technology upgrade plans as often as needed
Sample desktop from ESRI Canada
Sample desktop from iLOOKABOUT
Incremental Approach to the Reappraisal

* Desktop Review
  * With the new photography, interns verified property characteristics, Grade & Condition, etc.
  * Properties were Quality Controlled by in-house appraisers.
Learn from others (so you know what is possible)

- Attend IAAO GIS/CAMA conference – learn from the best
- Learn from vendors
- Learn from other Assessors that have implemented these solutions
- Ask lots of questions
Vendors

Oblique imagery vendors

• EagleView Technologies (Pictometry)

• NearMap

• others
Create an implementation Plan

• Plan will be modified as you:
  - learn more information from vendors and current users
  - work through budgeting constraints
  - determine who your partners are
  - find new uses for the data
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<tbody>
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<td>Report, Sketch creation, printing</td>
<td>Adm Budget - ITMD</td>
<td>RFP release date = 3/16/18; Closing date = 5/11/18</td>
<td>Yes</td>
<td>January 2018 to September 2019</td>
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<td>Q1 2018</td>
<td>Patriot</td>
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<td>Yes</td>
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<td>Spatialest</td>
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<td>Devices for appraisers</td>
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<td>Production service for prints</td>
<td>Adm Budget - ITMD</td>
<td>Service needed when each new flight is completed</td>
<td>Yes</td>
<td>Flights in Spring 2018 and Spring 2020</td>
<td>EagleView or Pushpin</td>
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<td>Time &amp; Expense Reporting</td>
<td>Adm Budget - ITMD</td>
<td>Software - online</td>
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<td>Part of CAMA software</td>
<td>Patriot</td>
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<td>Appraisal for Assessor's data</td>
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<td>for public inquiry of assessment data</td>
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All items listed above are required by Wisconsin DOR & are published in Property Assessment Manual

Total from above: $0 $0 $0 $0
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<td>January</td>
<td>Development of RFP for Sketch creation</td>
<td>Development of RFP for new Street Level Imagery</td>
<td>Demos and selection of Vendor for Desktop Reviews</td>
<td>Continue with Desktop Reviews for Permits and up to 10% of all properties</td>
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<td>February</td>
<td>Install Appeal &amp; Litigation Management software from Patriot</td>
<td>New website for Milwaukee assessment data</td>
<td>Contract negotiation for Desktop Review software</td>
<td>Purchase Spatialiaest software</td>
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<td>Release of RFP, closing date, Evaluation of Proposals, Award of Contract</td>
<td>Release of RFP, closing date, Evaluation of Proposals, Award of Contract</td>
<td>Install Desktop Review software</td>
<td>Install Spatialiaest software</td>
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<td>April</td>
<td>Commencement of Sketch creation Services</td>
<td>Continue working in IAAO CEAA</td>
<td>Change Detection to compare data sets (Eagleview or Pushpin)</td>
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<td>May</td>
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<td>Aug 30–Sept 2, 2020 IAAO Conference to receive CEAA award (Denver, CO)</td>
<td>Eagle View Flight</td>
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<td>Development of RFP for Desktop Review Software</td>
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Takeaway

• If there’s no end-goal in mind

• There will never be a timeline

• Or movement – you have to start somewhere
Brandon Tourtelotte, EagleView Technologies

• Hands on applications

• Measurement for defensible valuations

• Query GIS Layers (including Statewide Parcels service)

• Saving workspaces

• Integrations
Brandon Tourtelotte, EagleView Technologies

Demonstration

ArcMap

Browser Software
Consumption of Obliques (beyond Assessors)

- Imagery integrates into 911 CAD software to verify cell phone locations
- Situational awareness, planning, location intelligence & training exercises
- Imagery can be used in court

- View property details to assess accurate value and determine tax rates
- Rely on imagery when processing appeals

- Pre-planning before onsite work (manholes, drainage, valves)
- Determine runoff patterns with oblique imagery

- Imagery layered on GIS data aids in planning
- Georeferenced ortho and oblique imagery provides accuracy
Consumption of Obliques

- Code enforcement
- Imagery can determine how a parcel will be used and if permits are granted

PLANNING & ZONING

- Wildfire control using wide-area imagery
- Planning and emergency drills

FIRE DEPARTMENTS

- Disaster preparedness, mitigation, response, and recovery planning

EMERGENCY MANAGEMENT

- Determines property boundaries

SURVEYOR
Consumption of Obliques

Also....

- Public
- State Agencies
- Elected Officials
Consumption of Obliques

Emergency Management / Disasters
• Rock River, Ft. Atkinson 2008
Consumption of Obliques

Emergency Management / Disasters
• Douglas County, 2013
Example Software Workflows

... to meet those needs

... Just looked at ArcMap workflow and software in the browser
Mobile
911 Dispatch
Offline
<< Placeholder for EagleView Sketch creation from imagery>>
Methodologies, Availability, What’s Next?
Oblique imagery
Availability in WI
Assessment methodology in WI

• Everyone is doing their own thing in their own unique way in every county
• Not sustainable
Some Neighboring States...
MN and IA

• County Assessors
• This is how they do business
• Fair and equitable
Cost / Benefit

• Yes, there is a cost
• How do you put a price on fairness?
• Do you pay property taxes? This matters to all of us
Cost / Benefit

• Benefit is to the taxpayer
• Good governance
• Starts with elected officials
• Equity and uniformity should be job #1
• Higher level of service from Assessors
• Better decisions by service providers and Elected Officials
Takeaway

• If there’s no end-goal in mind
• There will never be a timeline
• Or movement – you have to start somewhere
Brainstorming on Funding

- Scenarios; County consortium akin to the WROC, but for ortho/oblique product
- “WI Oblique Consortium”
- Funding from State Agencies
- E-Return
- Wisconsin Land Information Program
Obliques are mentioned in the WLIP and grant-eligible imagery product
Questions?

• Let’s be in touch
• Let’s figure this out together

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