



AND **Locate25** | **G**
THE NATIONAL GEOSPATIAL CONFERENCE

Presented at the FIG Working Week 2025,
6-10 April 2025 in Brisbane, Australia
FIG **Geospatial**
Council of Australia

Brisbane, Australia 6-10 April

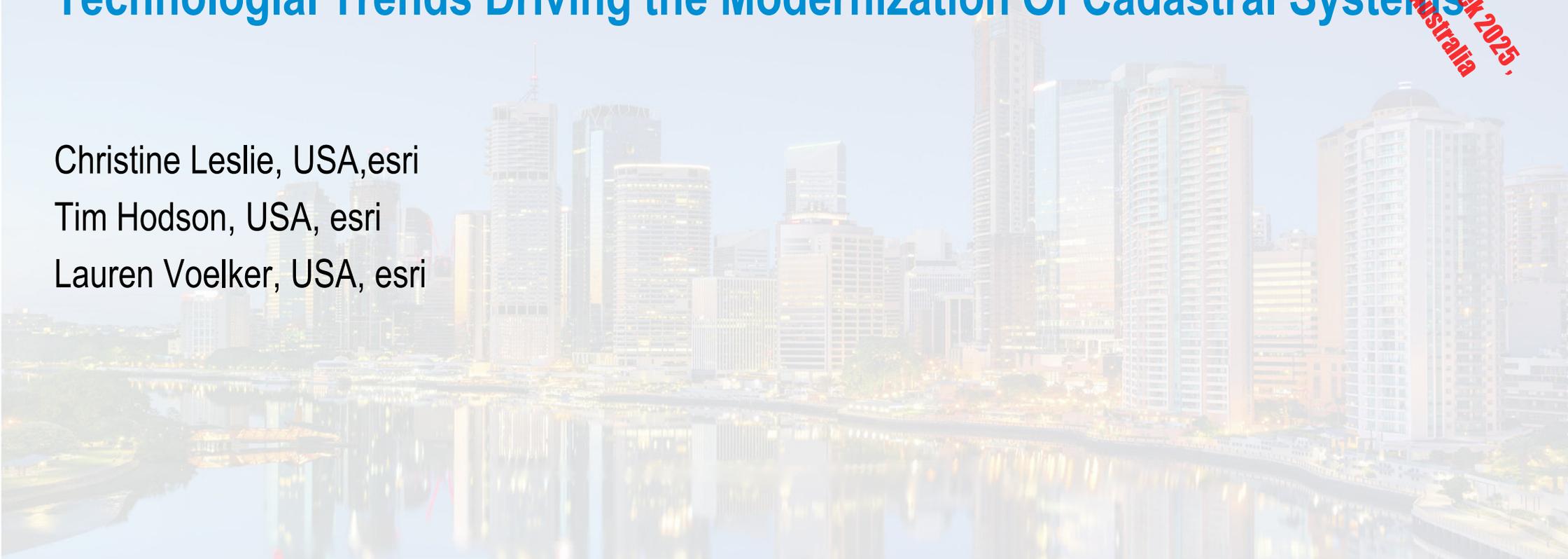
Collaboration, Innovation and Resilience: Championing a Digital Generation

Technological Trends Driving the Modernization Of Cadastral Systems

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PLATINUM SPONSORS



Modern Expectations

- Cloud-based deployments and offline editing
- Multi-user, concurrent editing
- Easy adoption and data migration
- Configurable data quality management
- Focused tools for parcel editing

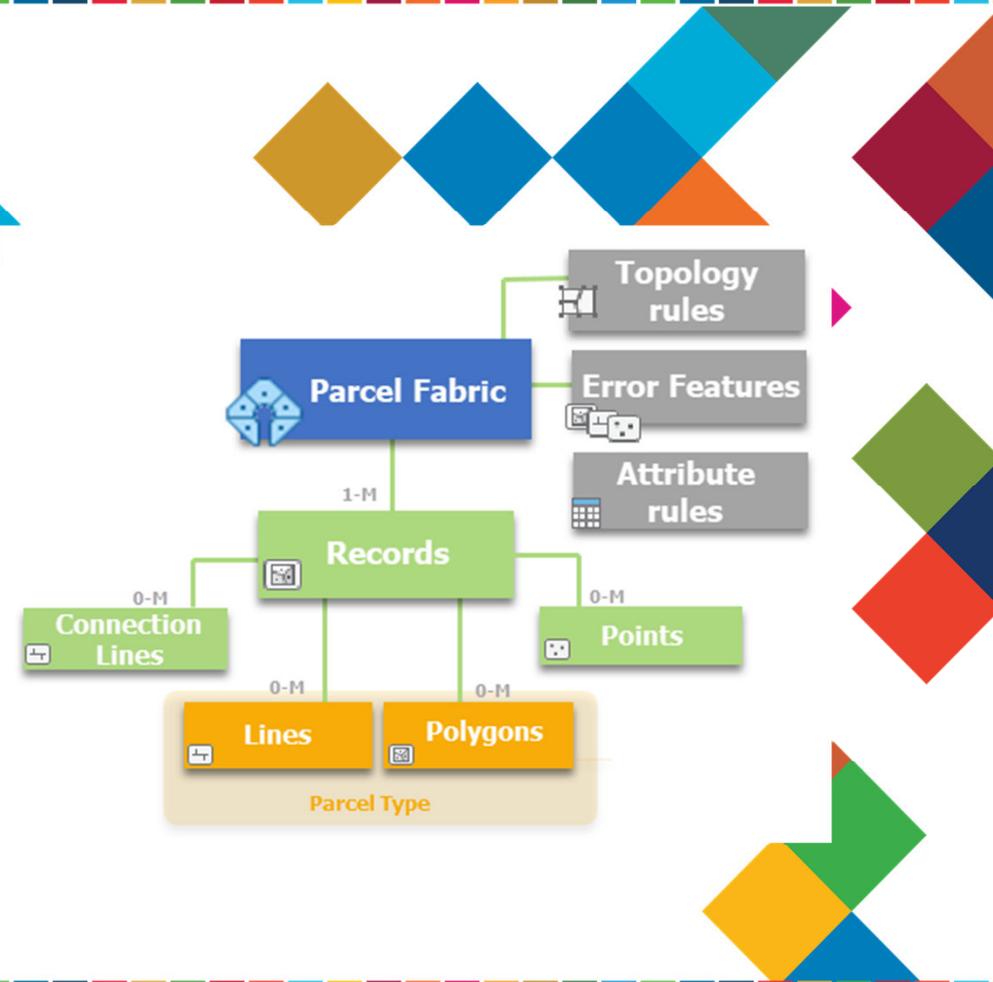


Data expectations

- Data should be accessible from any client – web services
- Data should be trustworthy – current and accurate and can be used in decision making processes
- Data should be secure – only named users can edit it
- Data should perform well, scale and be efficiently edited

The parcel fabric in ArcGIS Pro

- A comprehensive framework for parcel management
- A physical implementation of LADM (19152)
- 4D-enabled. 3D Cadastre and moments in time
- Used in production in hundreds of systems
- Uses Artificial Intelligence and machine learning

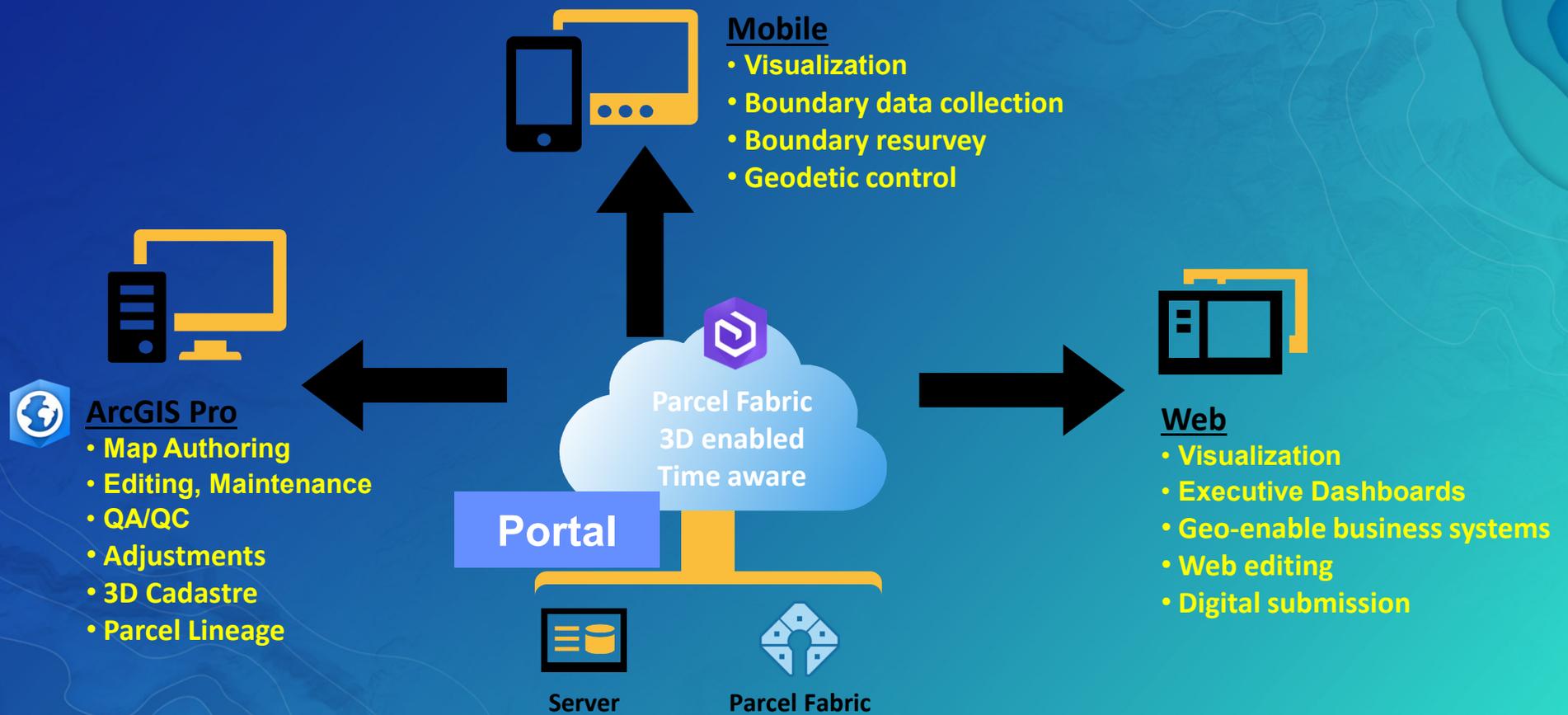


Services-Oriented Architecture

- Leverages web services and RESTful APIs
- Need for traditional ETL (Extract, Transform, Load) processes is minimized.
- Enhanced performance

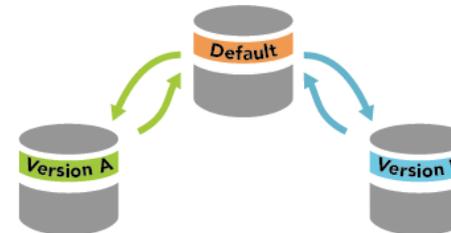


Services-Oriented Architecture



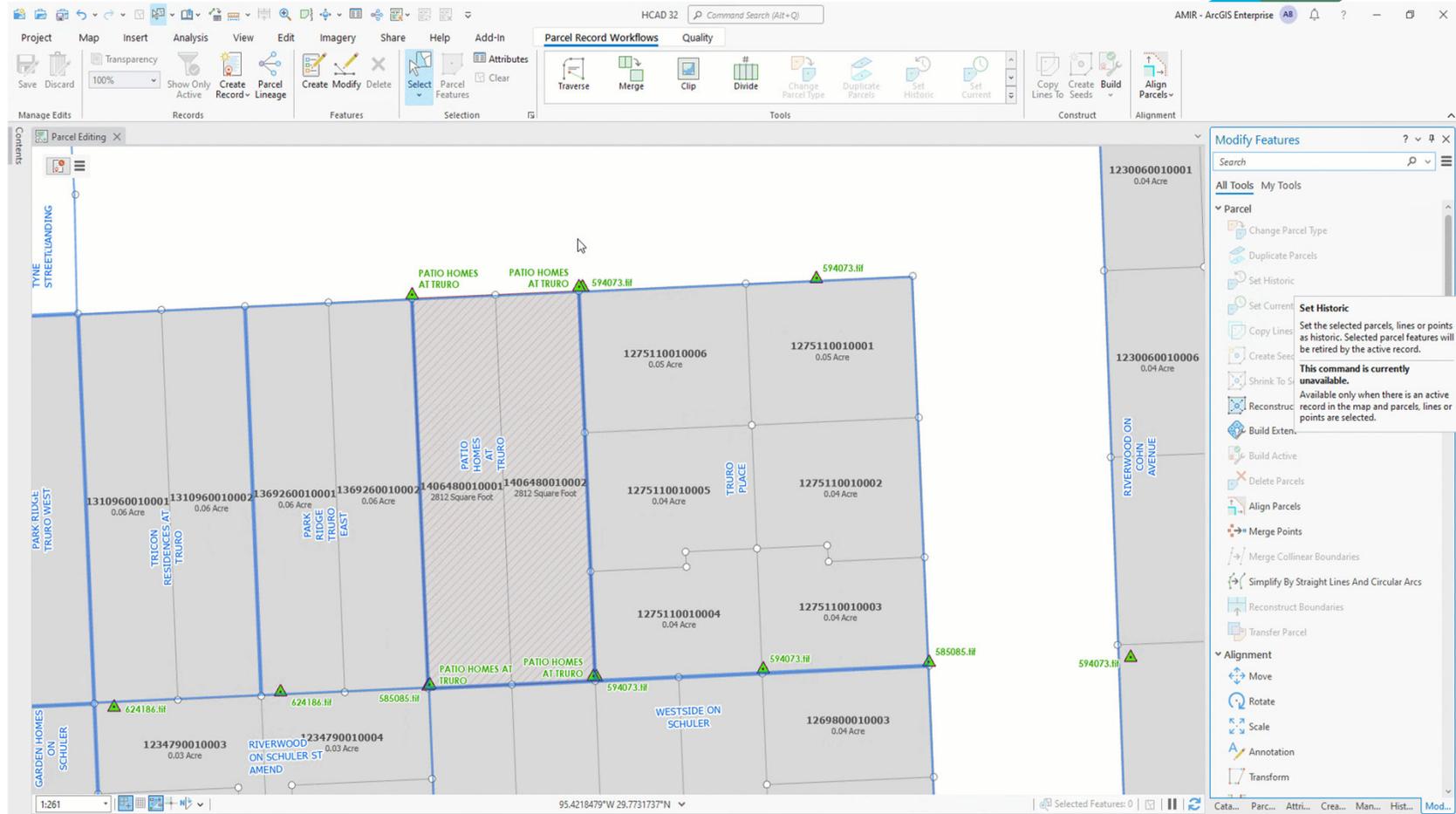
Multi-user editing

- Branch versioning – multiple users edit simultaneously without creating copies
- Edits on a version undergo QA before reconciled with main, default version
- Editor tracking - every edit is tracked by date, time and user.
- Can view historical states of the data at any moment in time.
- Supports offline editing on a version



Versioned
enterprise data

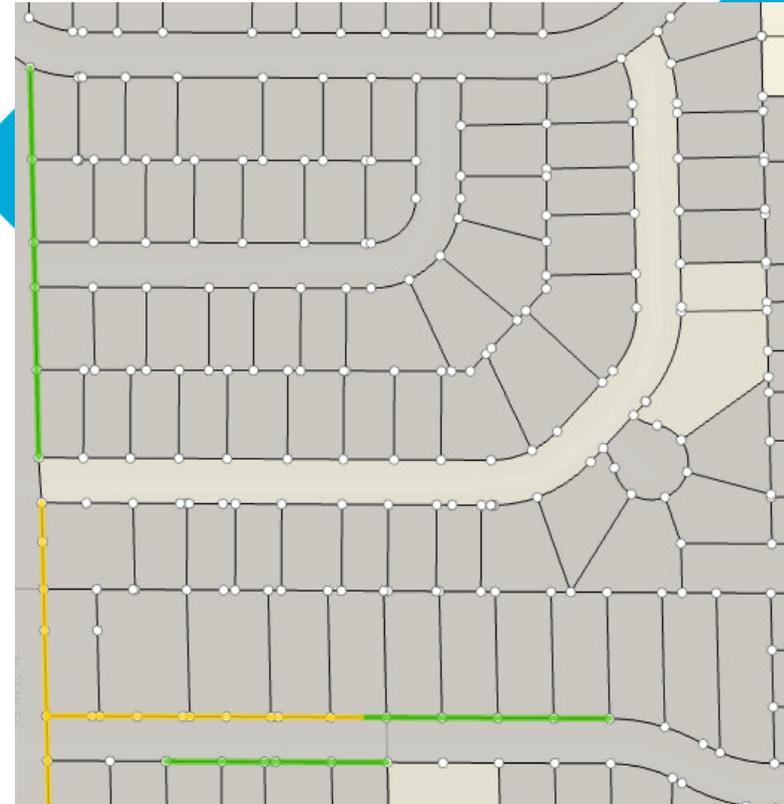
Focused workflows and parcel editing tools



3D Cadastre and strata parcels

The screenshot displays the ArcGIS interface for parcel editing. The top ribbon includes tabs for Project, Map, Insert, Analysis, View, Edit, Imagery, Share, and Help. The 'Edit' tab is active, showing tools for 'Highlight', 'Clear', and 'Align Parcels'. The 'Tools' section includes 'Simplify By Straight Li...', 'Delete Parcels', 'Change Parcel Type', and 'Duplicate Parcels'. The 'Parcel Record Workflows' section includes 'Consistency Check', 'Weighted Apply', and 'Reconstruct Boundaries'. The 'Contents' pane on the left shows a 'Drawing Order' list with 'Parcel Editing' at the top, followed by 'ParcelFabric' (with 'Records' checked), 'ParcelFabric_Topology', 'Points', 'DWG Floors 2-6', 'DWG Floor 1' (selected), 'Connection Lines', 'Subs and Condos', 'Floor 2-6 - 1120PLAT45...', 'Floor 1 - 1120PLAT45...', 'Buildings 1120PLAT45...', 'Tax', 'Tax_Lines', 'Tax', and 'Historic'. The main map area shows a 2D view of a parcel layout with lots numbered 2001 through 2012. A 3D view on the right shows the same parcels as blue wireframe blocks. The status bar at the bottom shows coordinates and scale information.

Focused quality tools: Highlight gaps and overlaps



Quality: Least Squares Adjustment (DynAdjust)

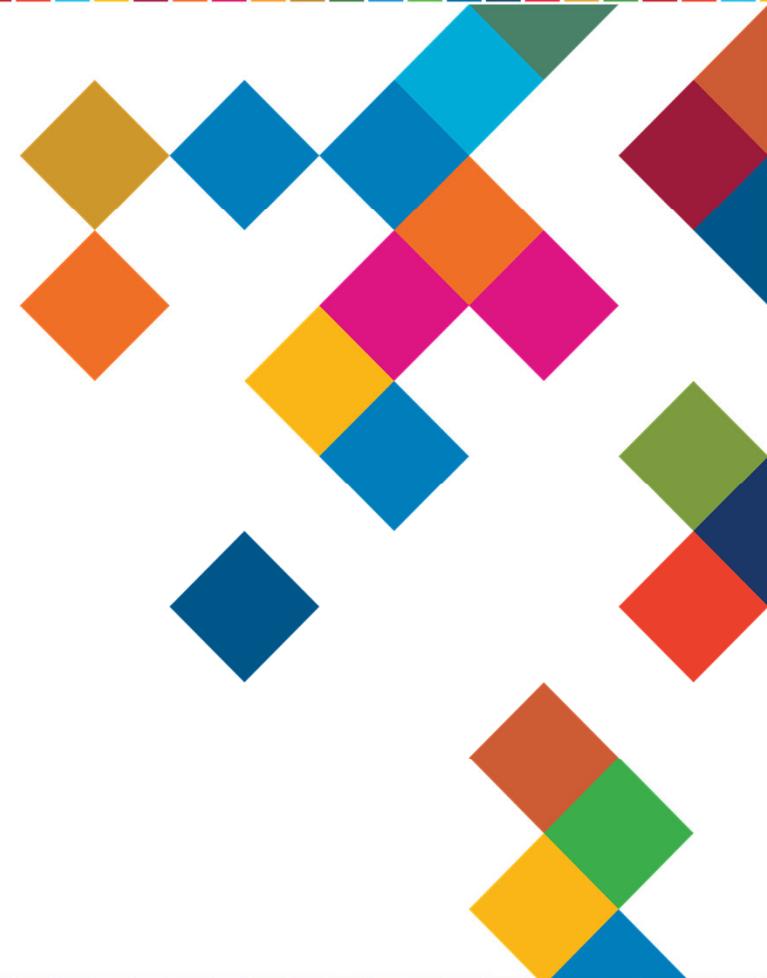
The screenshot displays the ArcGIS Pro interface for a project titled 'HCAD - WINDROW SEC 1 SUBDIVISION'. The main workspace shows a detailed subdivision plan with numerous lots and annotations. A Geoprocessing tool window is open, titled 'Analyze Parcels By Least Squares Adjustment'. The tool parameters are as follows:

- Input Parcel Fabric:** (Dropdown menu)
- Analysis Type:** (Dropdown menu)
- Consistency check:** (Dropdown menu)
- Convergence Tolerance:** 0.05 Meters

The tool window also includes an 'Enable Undo' checkbox and a 'Run' button. The background map shows a subdivision plan with various lots and annotations, including a north arrow and a scale bar. The interface includes a ribbon with various toolbars and a Contents pane on the left.

Leveraging OCR and machine learning

- Automated measurement extraction from deeds





recorded in the TOWN OF CHITTENDEN CLERK'S OFFICE in map book #3, page #900.

All course bearings within this description are referenced to VT State Plane NAD83 Grid North (2011) (Geoid2B); north reference point being corner #5 (stone pile) of Tract 949 (Northing: 438,012.9270, Easting: 1,542,760.5700). All distances are grid distances (U.S. Survey Feet). (Note: To convert to ground distance multiply grid distance by 1.000120489).

BEGINNING at a 24" diameter triple blazed Maple tree, **CORNER 1** (N 437560.3250, E 1538711.3943), said corner being a common corner to Lands of Cragin (Bk.59/Pg.185 & Bk.22/Pg. 270) and westerly right of way of Wildcat Road;

Thence southerly along the Lands of Cragin (Bk.59/Pg.185 & Bk.22/Pg. 270) **S62°50'26"W, 3,099.72 feet** to a 3ft diameter large stone with chiseled "X" painted red, said stone being common corner of Lands of Cragin and USFS Tract 855, **CORNER 2**

-14-

(N 436145.4012, E 1535953.4504);

Thence along USFS Tract 855 **S61°56'26"W, 3,501.30 feet** to USFS Tract 729 marked by triple blazed 8" diameter dead spruce tree, **CORNER 3** (N 434498.4339, E 1532863.6930);

Thence along USFS Tract 729 and USFS Tract 560 **N27°28'04"W, 1,722.84 feet** to a triple blazed 18" diameter yellow birch tree, said birch tree being the common corner of USFS Tract 560 and USFS Tract 672, **CORNER 4** (N 436027.0588, E 1532069.0336);

Thence along USFS Tract 672 **N64°04'50"E, 3,470.71 feet** to a triple blazed 18" diameter beech tree, **CORNER 5** (N 437544.1306, E 1535190.6231);

Thence along USFS Tract 672 **N25°13'45"W, 522.44 feet** to a stone pile, said stone pile being common corner of USFS Tract 672 and lands of Smith et al. (Bk.38/Pg.131), **CORNER 6** (N 438016.7351, E 1534967.9384);

dd°

- 1 **BEGINNING** at a 24" diameter triple blazed Maple tree, corner 1 (N 437560.3250, E 1538711.3943), said corner being common corner to Lands of Cragin (Bk. 59/Pg. 185 & Bk. 22/Pg. 270) and westerly right of way of Wildcat Road;
Thence southerly along the Lands of Cragin (Bk. 59/Pg. 185 & Bk. 22/Pg. 270) **S62 50' 26"W, 3,099.72 feet** to the 3 ft diameter large stone with chiseled "X" painted red, said stone being common corner of Lands of Cragin and USFS Tract 855, **CORNER 2**
- 2 Thence along USFS Tract 855 **S61 56'26"W, 3,501.30** to USFS Tract 729 marked by triple balzed 8" diameter dead spruce tree, **CORNER 3** (N 434498.4339, E 1532863.6930);
- 3 Thence along USFS Tract 855 **S61 56'26"W, 3,501.30** to USFS Tract 729 marked by triple balzed 8" diameter dead spruce tree, **CORNER 4** (N 434498.4339, E 1532863.6930);
- 4 Thence along USFS Tract 855 **S61 56'26"W, 3,501.30** to USFS Tract 729 marked by triple balzed 8" diameter dead spruce tree, **CORNER 5** (N 434498.4339, E 1532863.6930);
- 5 Thence along USFS Tract 855 **S61 56'26"W, 3,501.30** to USFS Tract 729 marked by triple balzed 8" diameter dead spruce tree, **CORNER 6** (N 434498.4339, E 1532863.6930);
- 6 Thence along USFS Tract 855 **S61 56'26"W, 3,501.30** to USFS Tract 729 marked by triple balzed 8" diameter dead spruce tree, **CORNER 7** (N 434498.4339, E 1532863.6930);
- 7 Thence along USFS Tract 855 **S61 56'26"W, 3,501.30** to USFS Tract 729 marked by triple balzed 8" diameter dead spruce tree, **CORNER 8** (N 434498.4339, E 1532863.6930);
- 8 Thence along USFS Tract 855 **S61 56'26"W, 3,501.30** to USFS Tract 729 marked by triple balzed 8" diameter dead spruce tree, **CORNER 9** (N 434498.4339, E 1532863.6930);

Connection lines template

Lines

Parcel lines template

ParcelLines

Set Start Set Start

	Direction	Distance	Radius
3	S61°56'26"W	3,501.3	
4	S61°56'26"W	3,501.3	
5	S61°56'26"W	3,501.3	
6	S61°56'26"W	3,501.3	
7	S61°56'26"W	3,501.3	
8	S61°56'26"W	3,501.3	
9	S61°56'26"W	3,501.3	
10	N28°03'34"W	2,543.23	
11	N61°56'26"E	3,501.3	
12	N61°56'26"E	3,501.3	
13	N61°56'26"E	3,501.3	
14	N61°56'26"E	3,501.3	
15	N61°56'26"E	3,501.3	
16	N61°56'26"E	3,501.3	
17	N61°56'26"E	3,501.3	
18	N61°56'26"E	3,501.3	
19	N61°56'26"E	3,501.3	
20	S28°03'34"E	2,543.23	
21	S54°56'26"W	404.5	

Misclose Distance: 0.77 ft
 Misclose Ratio: 1 : 88,118
 Calculated Area: 80,226,737.12 sqFt

Finish

Conclusion

- Technology has transformed the business requirements of modern cadastral systems
- The parcel fabric has responded by providing
 - Scalable platform for multi-user editing on desktop, web and mobile clients
 - An easy to adopt system that is configurable
 - Flexible to accommodate the business needs of different clients
 - Minimal need for customisation
 - Innovative solutions to age old challenges (using AI and OCR to extract COGO from deeds)



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Championing a Digital Generation



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STEP 1: SELECT HERE THE THREE MOST RELEVANT SDGs
STEP 2: COPY THE SDG INTO PREVIOUS SLIDE

1 NO POVERTY 	2 ZERO HUNGER 	3 GOOD HEALTH AND WELL-BEING 	4 QUALITY EDUCATION 	5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION 	7 AFFORDABLE AND CLEAN ENERGY 	8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES 	11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION AND PRODUCTION 	13 CLIMATE ACTION 	14 LIFE BELOW WATER 	15 LIFE ON LAND 	16 PEACE, JUSTICE AND STRONG INSTITUTIONS 	17 PARTNERSHIPS FOR THE GOALS 	