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GeoAI Strategy, Policy and Application





BUILD FASTER

Building homes for 2Bn people until
2050 → 30% faster than today



BUILD FOR RESILIENCE

4x as many disasters as in 1980, 3x as
many death. Flood is 43%.

“GIS is creating agreed upon
understanding -
A foundation for positive action”

Jake Dangermond, ESRI

Growth of commercial Earth-observing satellites

Starting in the early 2000s, the number of privately owned satellites that take images or collect other data about Earth has grown rapidly to nearly 600 in orbit as of August 2022.

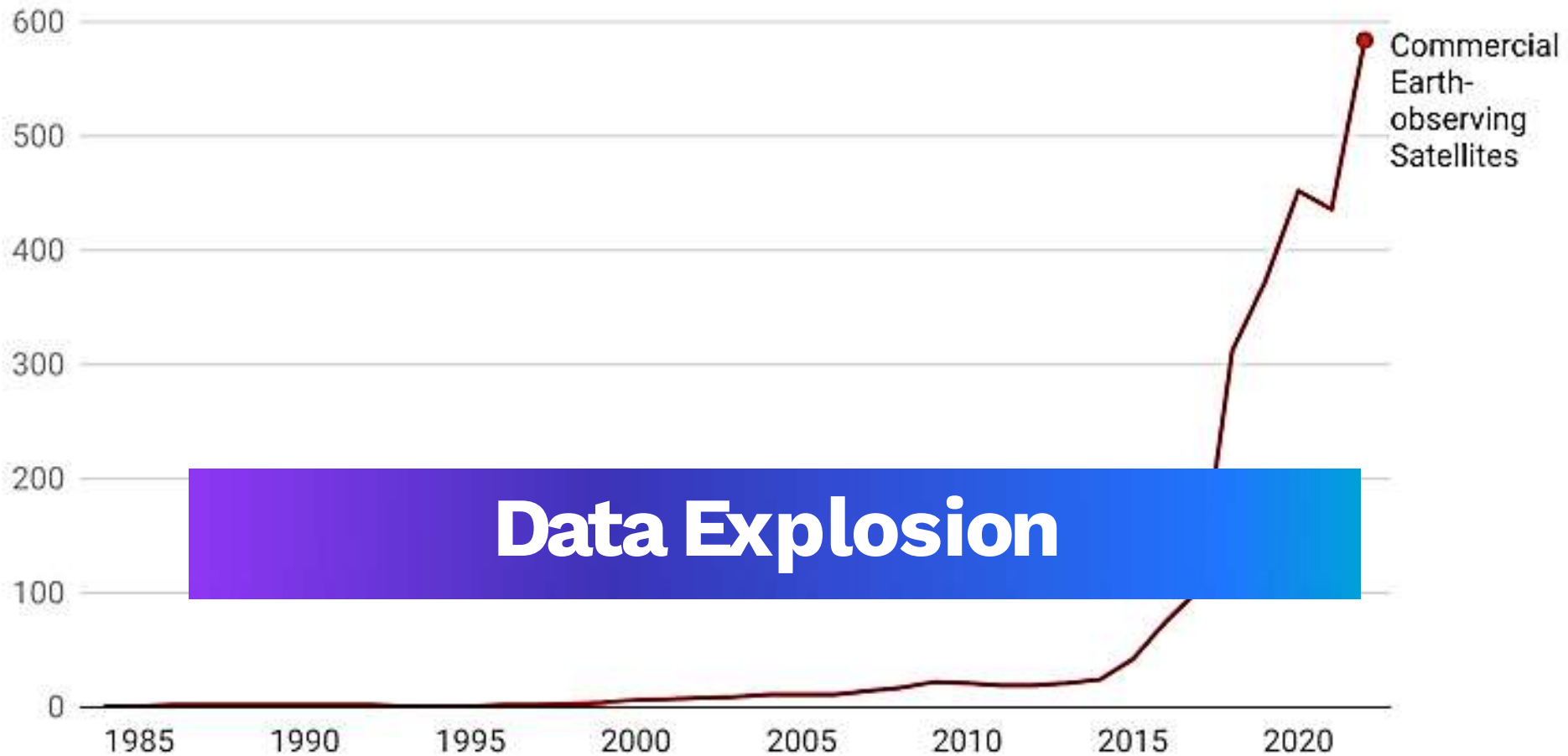


Chart: The Conversation • Source: Union of Concerned Scientists



1000x
as much
data



SATELLITES



AIRCRAFT



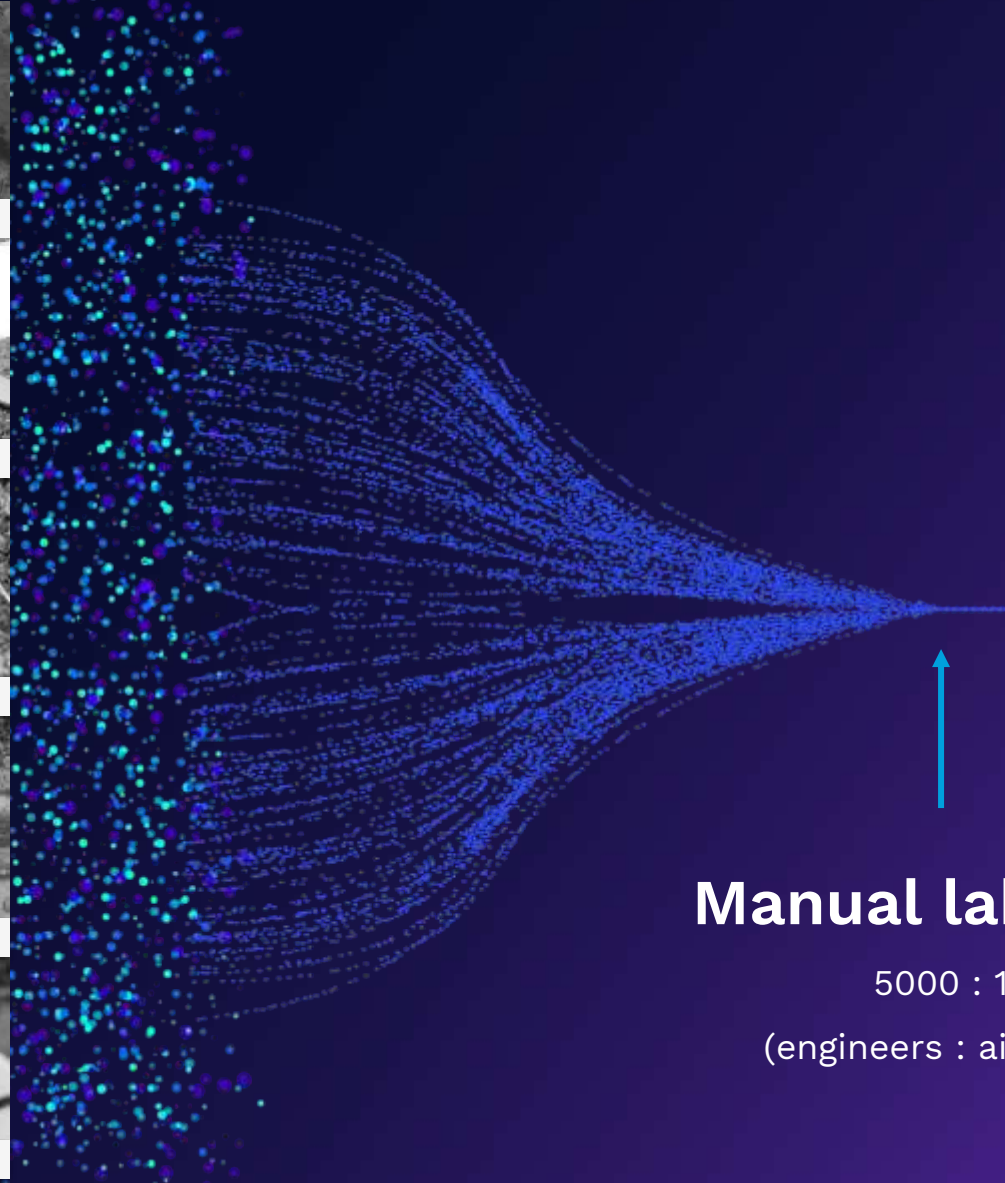
DRONES / UAVs



MOBILE MAPPING



LIDAR



Super large
datasets

Manual labeling

5000 : 1

(engineers : aircraft)



No AI → No Action



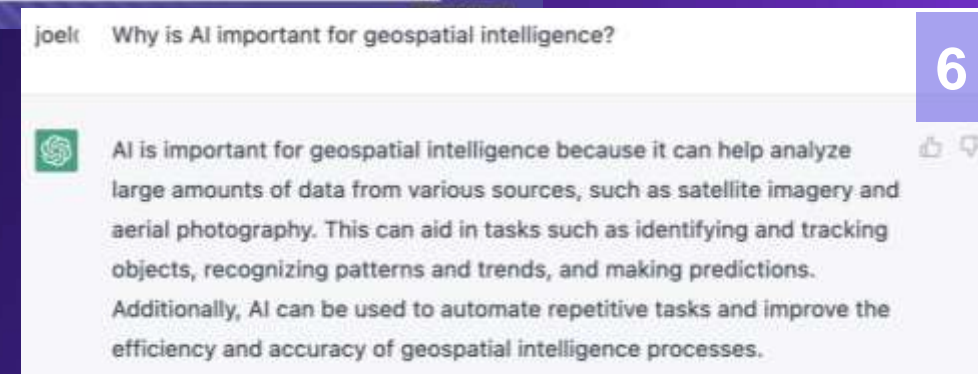
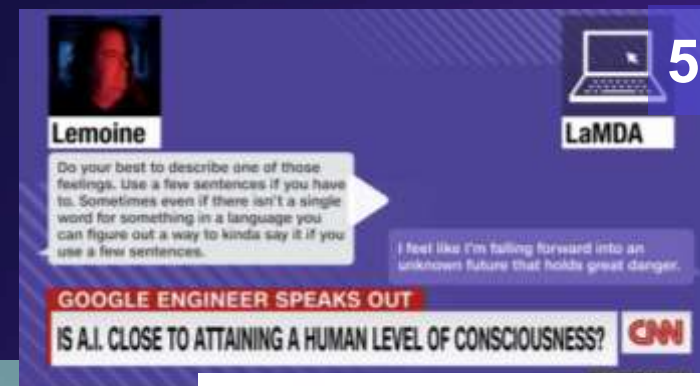
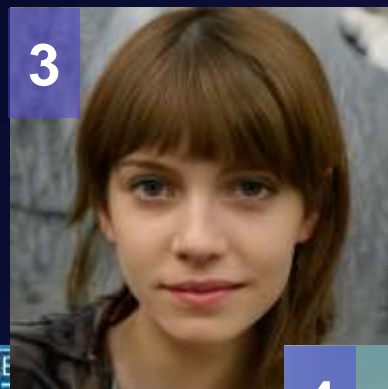
Why AI? – New Possibilities

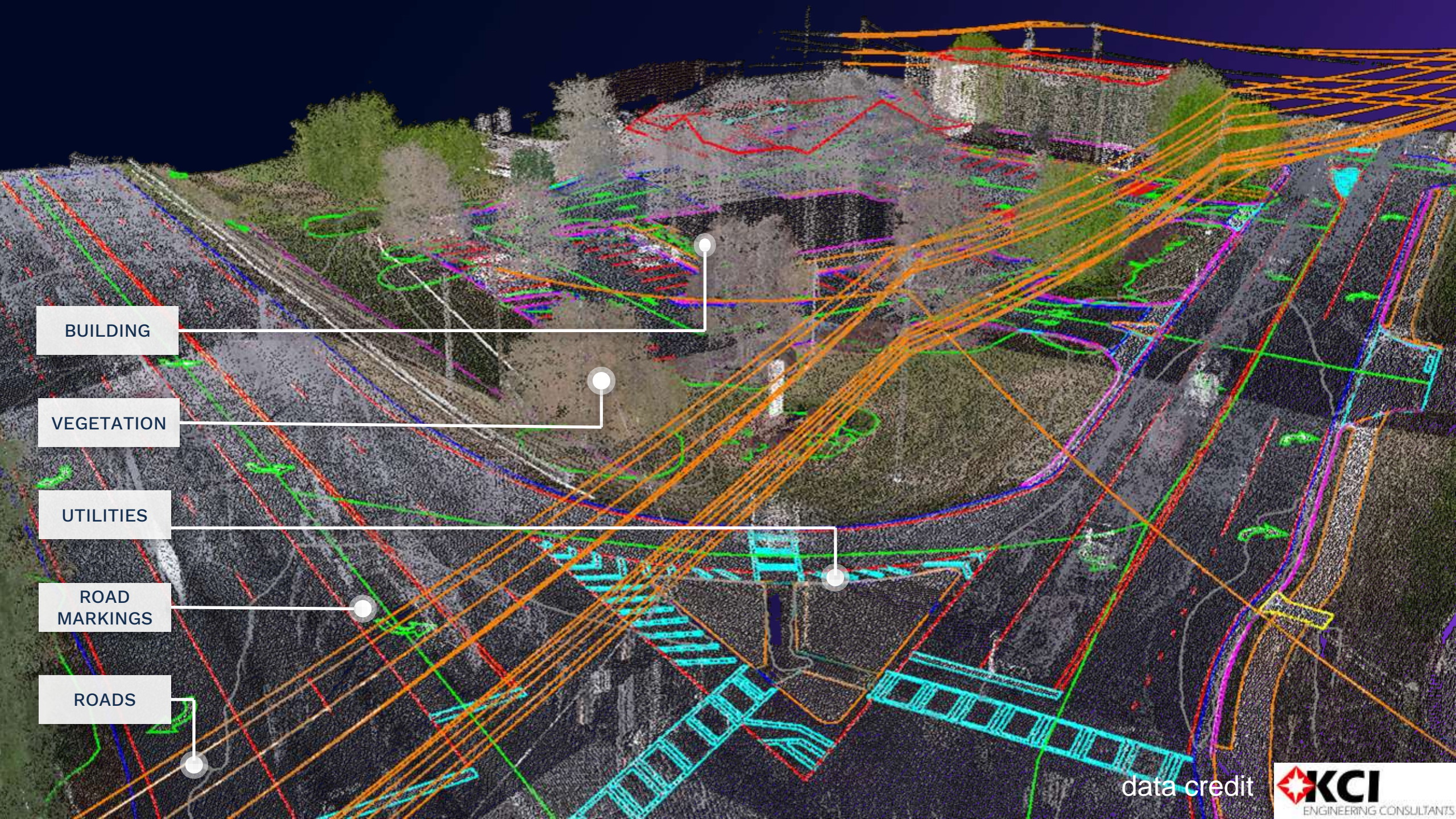
AI and ML Advances

- AI and ML have had rapid advances in natural language processing, computer vision, signal processing, and synthetic image generation
- Some examples: (1) Watson, (2) AlphaGo, (3) StyleGAN, (4) Stable Diffusion, (5) LaMDA, and (6) ChatGPT

Data Driven

- ML makes these advances by learning from the data rather than rule-based systems





BUILDING

VEGETATION

UTILITIES

ROAD MARKINGS

ROADS

data credit

1000x as
much data



CONSTRUCTION/ ENG

Automate surveying to speed up pre-construction process by 30%

UTILITES/ TELECOM

Adhere to permitting deadlines for fiber expansion, saving billions

GOVERNMENT/ GIS

Digitalize the world, understand our assets to prepare for resilience

INSURANCE

Understand risk better, evaluate properties with real time data

ASSET MANAGEMENT

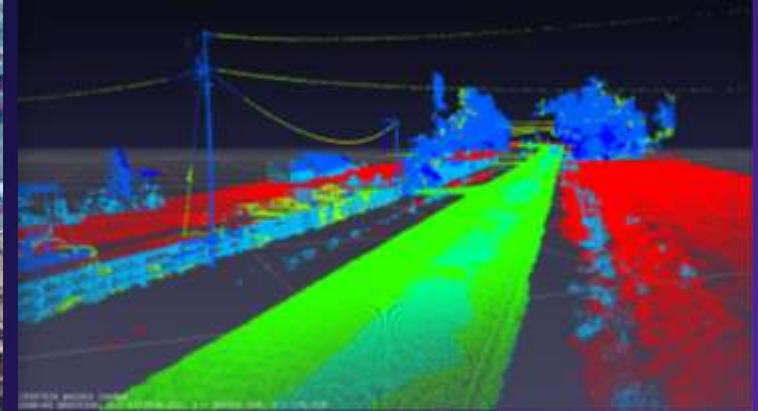
Evaluate existing assets, prioritize maintenance to optimize efficiency



AirWorks speeds up the pre-construction process for engineering firms through various project types by >50%

Project Types

- Commercial development
- Subsections
- Infrastructure
- Rail
- Utilities
- Water and wastewater
- Aviation
- Renewable energy
- Transportation
- Healthcare

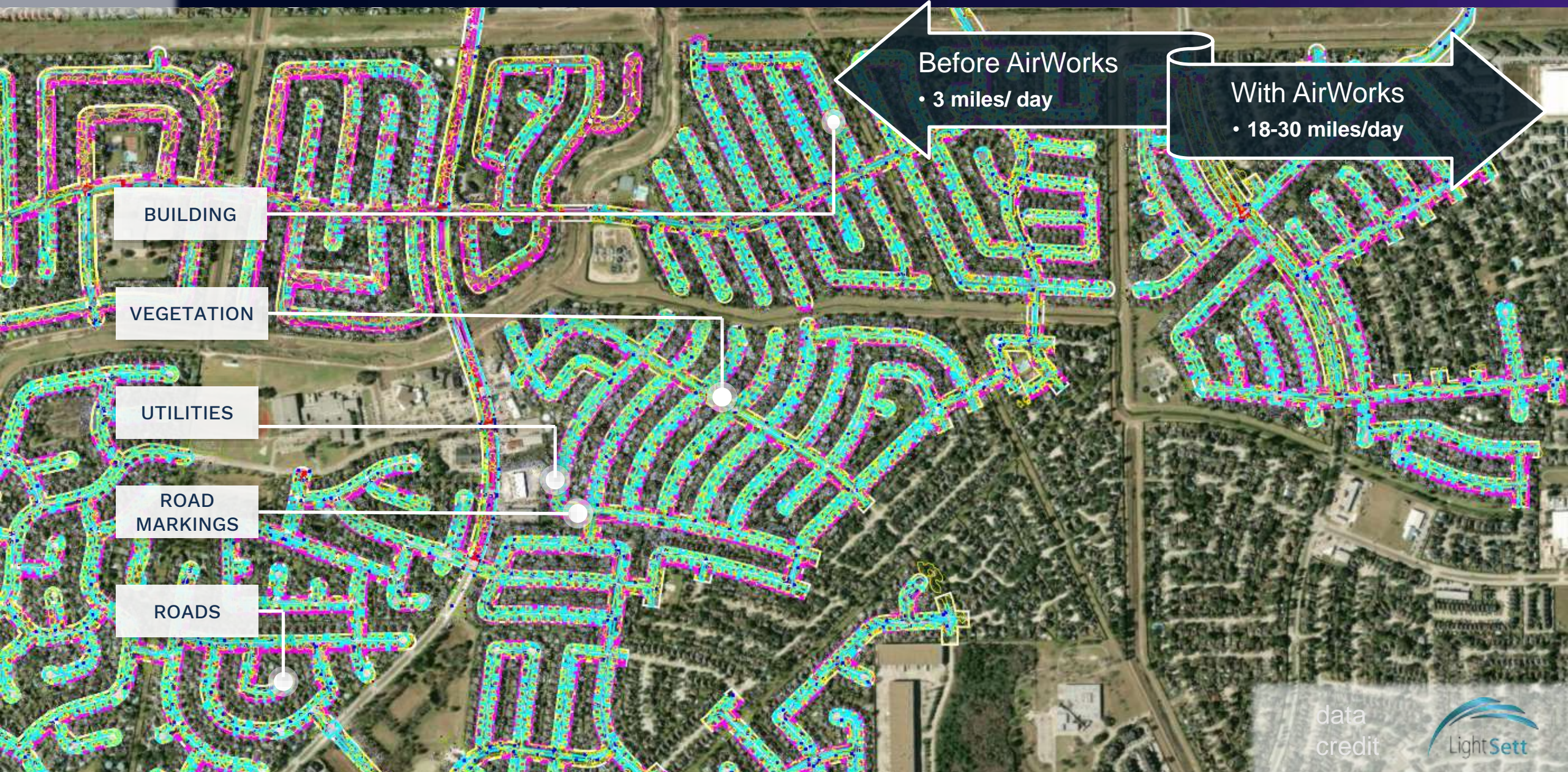


AEC

Before AirWorks
• 2 months / survey

With AirWorks
• < 2 weeks / survey

AirWorks helps the telecom industry install 30% more fiber



Before AirWorks
• 3 miles/ day

With AirWorks
• 18-30 miles/day

BUILDING

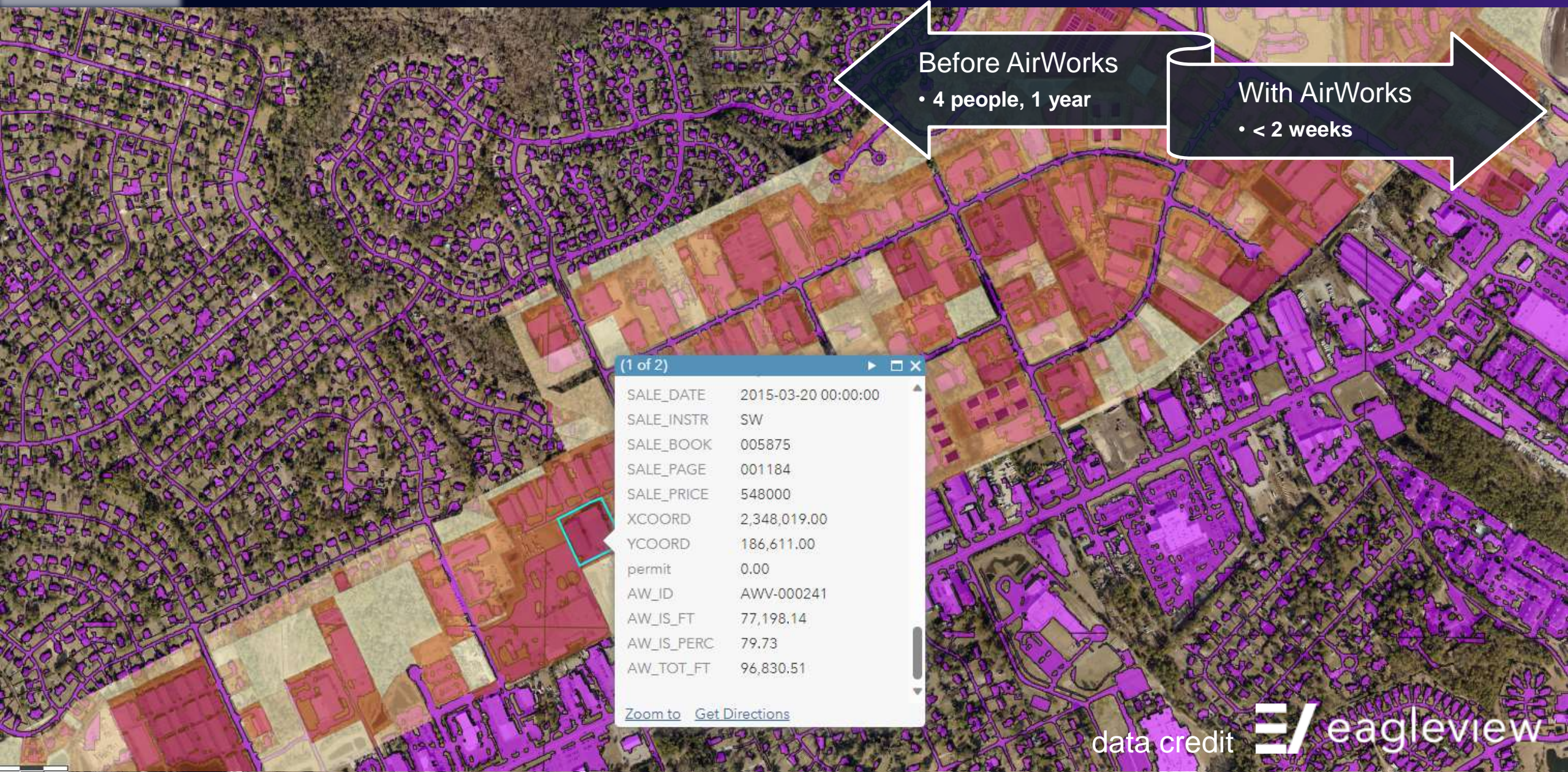
VEGETATION

UTILITIES

ROAD MARKINGS

ROADS

Automated analysis of Impervious Surfaces allows funding of stormwater programs



Before AirWorks

- 4 people, 1 year

With AirWorks

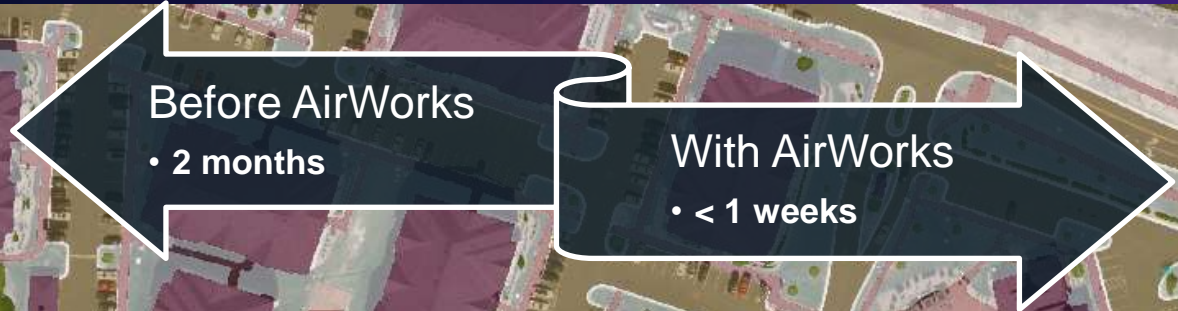
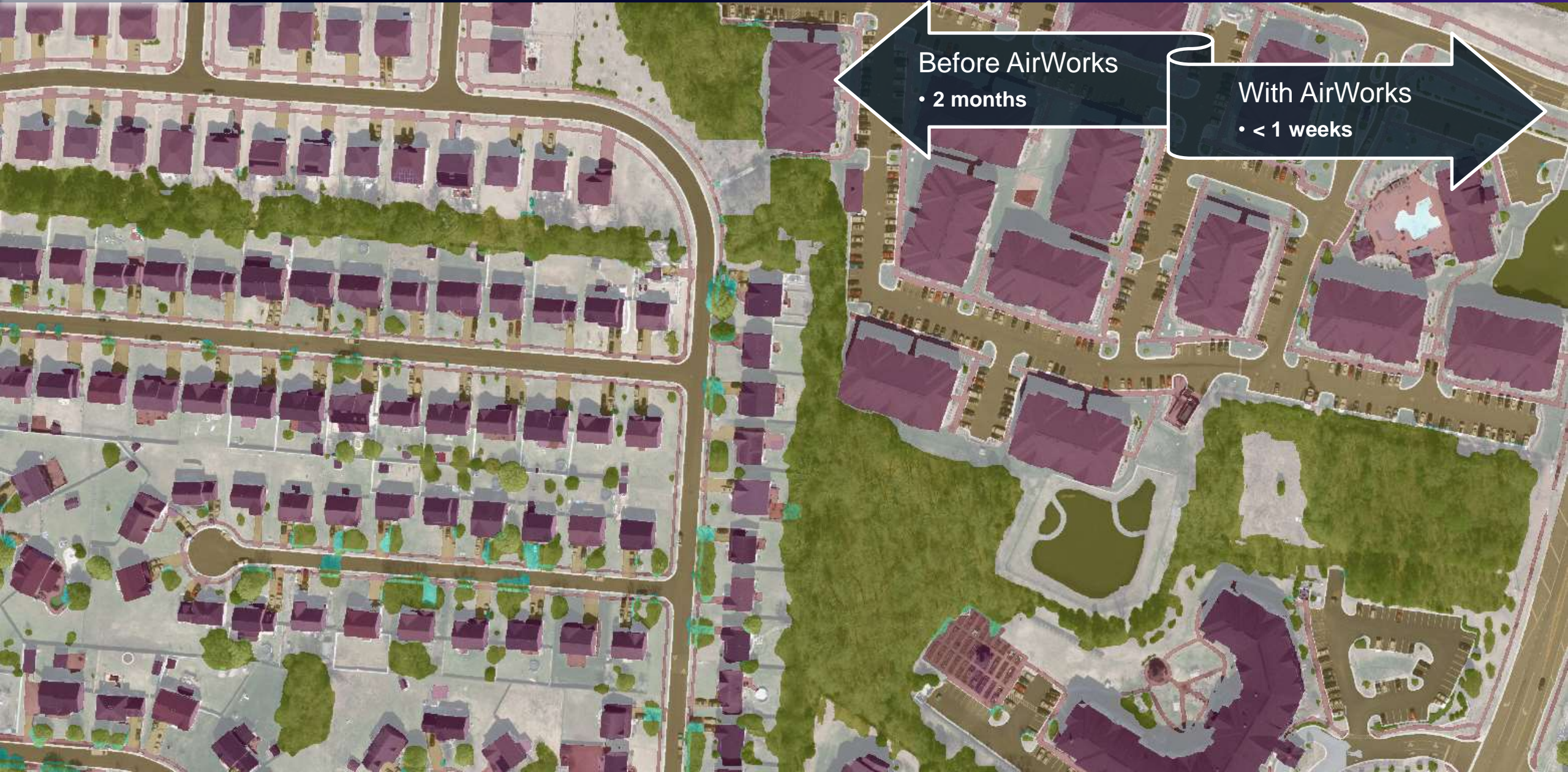
- < 2 weeks

(1 of 2)

SALE_DATE	2015-03-20 00:00:00
SALE_INSTR	SW
SALE_BOOK	005875
SALE_PAGE	001184
SALE_PRICE	548000
XCOORD	2,348,019.00
YCOORD	186,611.00
permit	0.00
AW_ID	AWV-000241
AW_IS_FT	77,198.14
AW_IS_PERC	79.73
AW_TOT_FT	96,830.51

[Zoom to](#) [Get Directions](#)

Planimetric updates for structures, infrastructure, water systems



Identify your next customer based on geospatial insights



Ohio Parcels with Object Counts (Features: 19950, Selected: 1)

AW_PERIM	AW_PLANE	AW_BASEDIM	AW_BRIDGE	AW_TRACK	AW_SMAVECH	AW_LARVECH	AW_SHIP	AW_TENNIS	AW_BASKET
3,594.01	0.00	0.00	0.00	0.00	1,042.00	182.00	0.00	0.00	0.00
3,663.28	0.00	0.00	0.00	0.00	581.00	132.00	0.00	0.00	0.00
2,079.94	0.00	0.00	0.00	0.00	13.00	131.00	2.00	0.00	0.00

What are the challenges?



AI is very good in constraint environments, not a simple solution for all generalized problems



50 STATES



LOW DPI



HIGH DPI

10 RESOLUTION BANDS



5+ SENSOR TYPES



15 FEATURE CLASSES

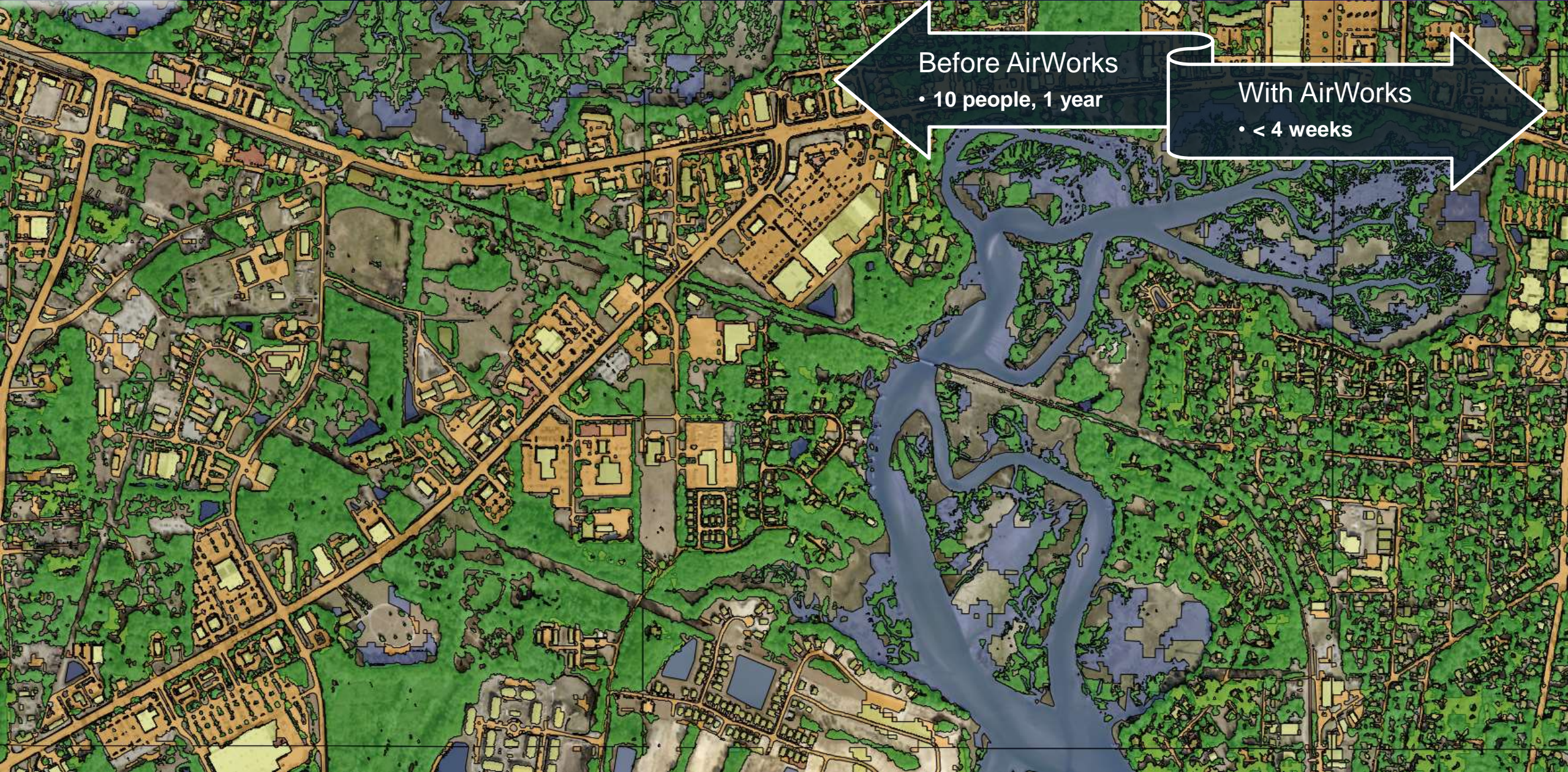


4 SEASONS



20,000 combinations

Planimetric updates for structures, infrastructure, water systems



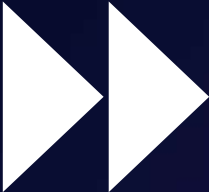
Before AirWorks
• 10 people, 1 year

With AirWorks
• < 4 weeks

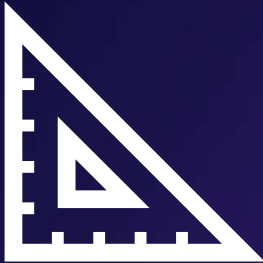
Reality Capture and AI can help you tackle future challenges!



Align all stakeholders



Speed up the analytics process dramatically



Assess materials, quantities and volumes



Generate new leads

thank you



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