

Master Location Data & pbKey™

Mike Ashmore
Director Product Management



2017  **RESO™ TECHNOLOGY SUMMIT**
ORCHESTRATING COLLABORATION & INNOVATION

SPEAKER

Mike Ashmore

Director Product Management

Pitney Bowes

michael.ashmore@pb.com



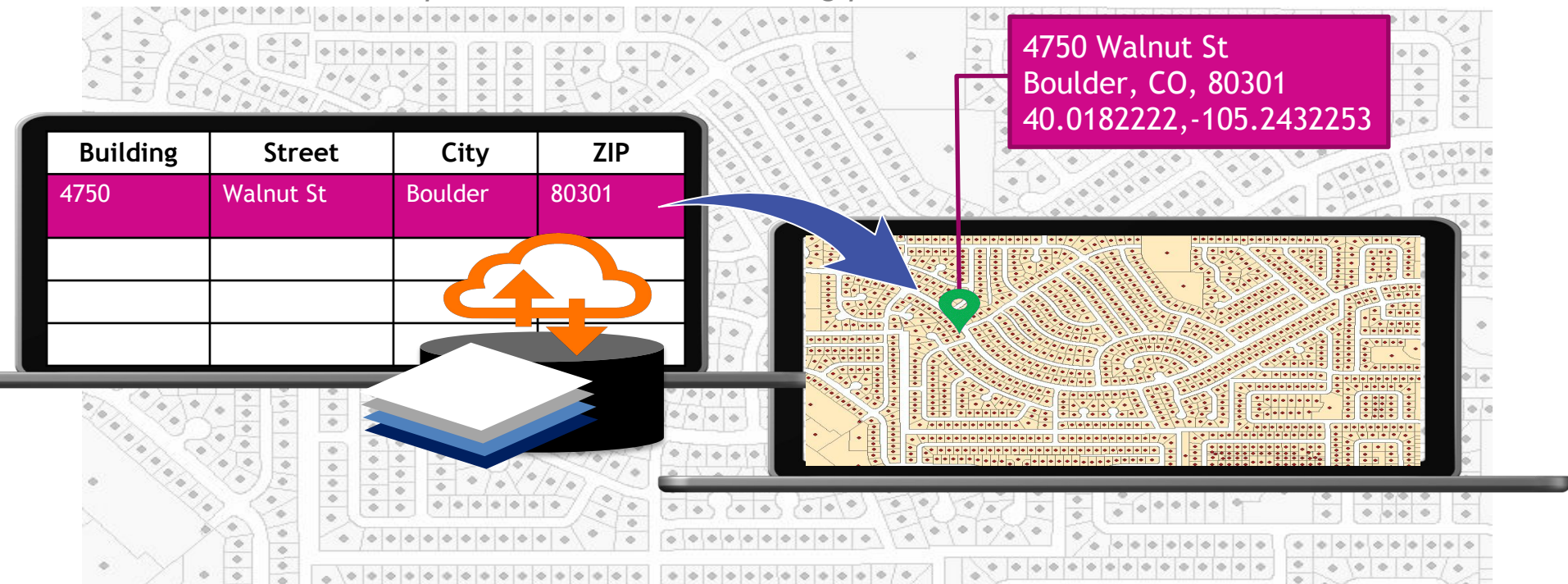
Master Location Data & pbKey™

Mike Ashmore
Director Product Management

Geocoding...simply assigning a coordinate to an address

A process that assigns a latitude/longitude coordinate to an address.

Once a lat/long is assigned, the geocoded address can be displayed on a map, but we mostly use it in an automated operational decision making process.



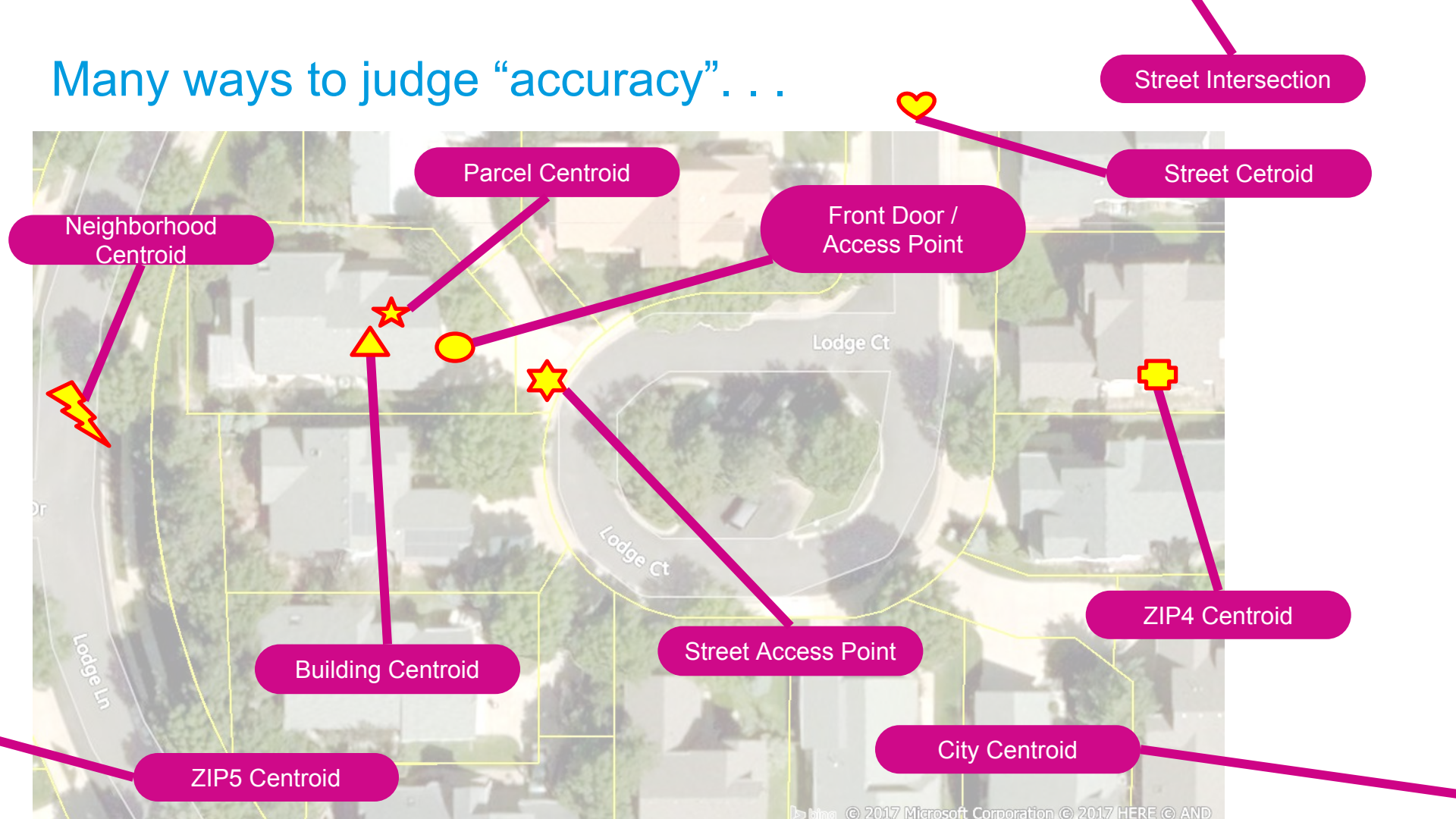
The Geocoding Process...

- Cleanse Address
- Standardize Address according to country rules
- Match to Reference Data
- Verify / Validate Address
- Return correct address and coordinates
- Return Detailed Match & Location Codes Metadata for automated decisioning
- Return Metadata linking to additional information



**350 5TH AVE
NEW YORK, NY, 10118-0110**

Many ways to judge “accuracy”...



Matching Examples of “Challenge” Addresses

	Input Address	Output Address
Building Alias	MESILLA VALLEY MALL 88011	700 S TELSHOR BLVD LAS CRUCES, NM 88011-4669
Street address with "&". Could be a street address or intersection	1535 E & W RD APT 1 WEST SENECA NY 14224	1535 E AND WEST RD APT 1 WEST SENECA, NY 14224-3742
Fractional house number	12 1/2 RAILROAD RD ATTICA, NY 14011	12 1/2 RAILROAD ST ATTICA, NY 14011-1015
THIRTEENTH → 13TH	2150 Thirteenth St, BOULDER	2150 13TH ST BOULDER, CO 80302-4802
Dual address (street address and PO Box on same address line)	3201 WALNUT ST STE A PO BOX 9000 BOULDER, CO	3201 WALNUT ST STE A, BOULDER, CO 80301-2645
Block Address with Directional in House Number	W399S6012 COUNTY ROAD Z DOUSMAN, WI 53118	W399S6012 COUNTY ROAD Z DOUSMAN, WI 53118-9543
Rural Route	RR 1 BOX 249 15823	1339 KEYSTONE RD BROCKPORT, PA 15823-1419
Rural Route	2500 ROANOKE DR SW APT 171, HUNTSVILLE AL 35805	2601 NEW ORLEANS ST SW APT 3212 HUNTSVILLE, AL 35805-8216
Spatial Vendor Address	1053 W THORNTON LAKE DR NW 97321	1053 NW WEST THORNTON LAKE DR NW ALBANY, OR 97321-1352
USPS alias	34 E NORTH CEDAR LAKE DR APT 101 PMB 123 65203	34 N CEDAR LAKE DR E APT 101 PMB 123 COLUMBIA, MO 65203-7136
Hyphenated house number. Not in USPS, but location exists.	713-153 JETERS RD, JANESVILLE CA 96114	713-153 JETERS RD JANESVILLE, CA 96114
Many 1's in the input address	1 100 # 1 10025	1 W 100TH ST FRNT 1 NEW YORK, NY 10025-4857

Addresses with complex parcel assignments



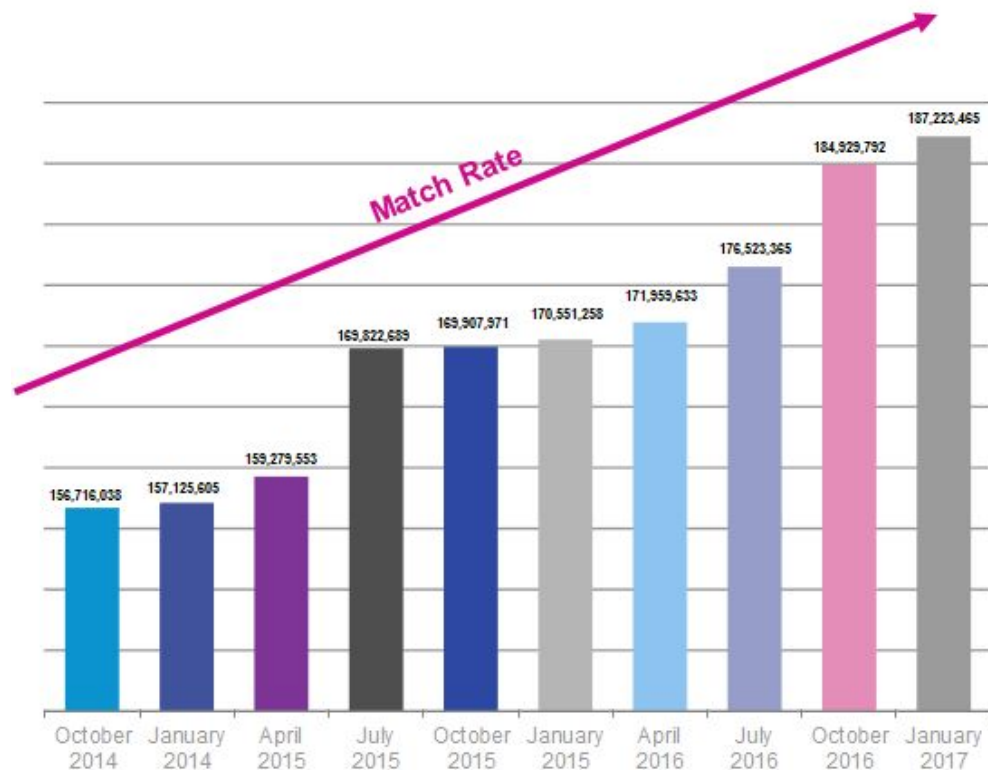
ADDRESS	pbKey	Geocode	APN
2814 AIELLO DR SAN JOSE, CA 95111-2197	P00002T4UGC8	-121846242, 37294071	49731015, 49731012, 49731013, 49731014, 49731011, 49731010, 49731009, 49731008
2814 AIELLO DR STE D SAN JOSE, CA 95111-2197	P00002T2WL1P	-121846003, 37294225	49731012
2814 AIELLO DR STE C SAN JOSE, CA 95111-2197	P00002T2WL1Q	-121845888, 37294299	49731013

MLD is PB's most complete US geocoding address data

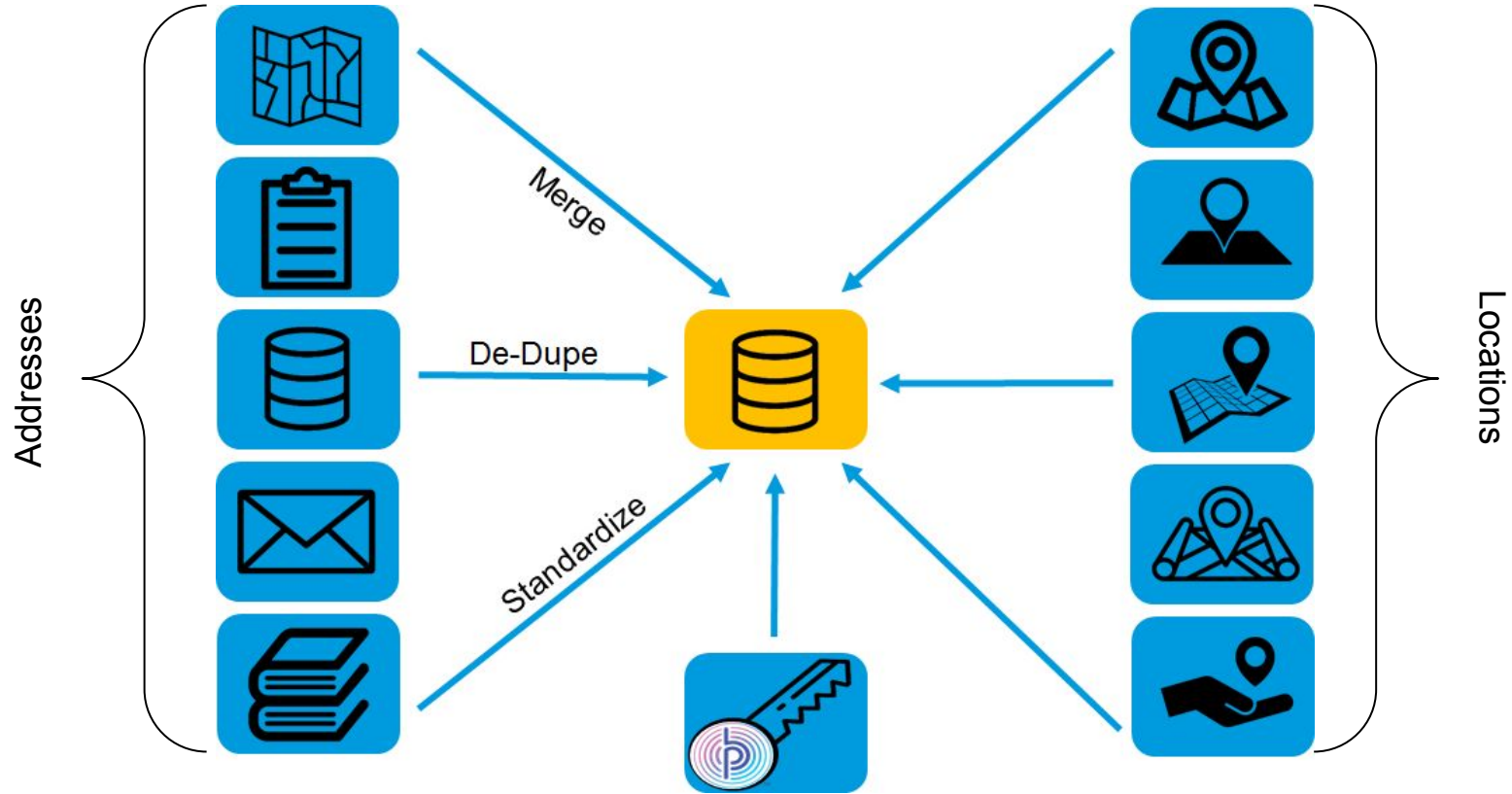
- Virtually all deliverable US postal addresses
- Non-postal street address in smaller communities and gated communities
- Multi-unit dwellings
- Rural Route Addresses
- “Hidden addresses” (e.g. basement apartments)
- Units in Co-Ops (e.g. New York)
- Non-USPS Addresses
- Addressable parcels with no buildings
- Points of Interest (incl. Parking Spaces?)



~190m Addresses



MLD Production Process



What's Inside MLD

PBKEY	ADD_NUM BER	STREETNAME	UNIT_ NUM	CITY	STATE	ZIPCODE	TYPE	FIPS	LAT	LON
P0000PRSLT94	389	CRAZY WOMAN CANYON RD		BUFFALO	WY	82834	P22	560199551001257	44.193942	-106.769755
P0000PRSLT95	555	CRAZY WOMAN CANYON RD		BUFFALO	WY	82834	P02	560199551001257	44.18891	-106.79813
P0000PRSLT96	733	CRAZY WOMAN CANYON RD		BUFFALO	WY	82834	P02	560199551001257	44.182441	-106.825981
P0000PRSNVDK	42	MUDDY CREEK RD		BUFFALO	WY	82834	P23	560199551001257	44.184073	-106.732327
P0000PRSMW7E	44	MUDDY CREEK RD		BUFFALO	WY	82834	P23	560199551001257	44.18332	-106.732942
P0000PRSLT9J	482	MUDDY CREEK RD		BUFFALO	WY	82834	P02	560199551001257	44.17587	-106.81041
P0000PRSPBSK	315A	W LINCOLNWAY		CHEYENNE	WY	82001	P21	560210007001129	41.13188	-104.81703
P0000PRSHUQ9	315A	W LINCOLNWAY	1	CHEYENNE	WY	82001	P02	560210007001129	41.13188	-104.81703
P0000PRSMKXU	315A	W LINCOLNWAY	11	CHEYENNE	WY	82001	P02	560210007001129	41.13188	-104.81703
P0000PRSMKXV	315A	W LINCOLNWAY	12	CHEYENNE	WY	82001	P02	560210007001129	41.13188	-104.81703
P0000PRSMKXW	315A	W LINCOLNWAY	14	CHEYENNE	WY	82001	P02	560210007001129	41.13188	-104.81703
P0000PRSHV70	2712 1/2	MAXWELL AVE		CHEYENNE	WY	82001	P02	560210007002015	41.14538	-104.815617
P0000PRSIAHX	1400	DELL RANGE BLVD	68	CHEYENNE	WY	82009	P05	560210014022020	41.162301	-104.80497
P0000PRSIAHY	1400	DELL RANGE BLVD	69A	CHEYENNE	WY	82009	P05	560210014022020	41.162301	-104.80497
P0000PRSIAI0	1400	DELL RANGE BLVD	69B	CHEYENNE	WY	82009	P05	560210014022020	41.162301	-104.80497
P0000PRSIAGT	1400	DELL RANGE BLVD	7	CHEYENNE	WY	82009	P05	560210014022020	41.162301	-104.80497

pbKey Basics...

- 12 Character alpha-numeric identifier, starts with a “P”
- No intelligence built into the ID - deliberately!
- Every unique address in MLD is given a unique pbKey
- There should be only one pbKey for each Address (including unit level addresses)
- One pbKey might apply to multiple addresses (more on that next)

Persistence Rules

- A unique pbKey is assigned to every standardized address (at unit level)
- If the address standardizes to an alias, keep the same pbKey
- If the location changes the pbKey stays the same
- If the address changes the pbKey stays the same
- If one address is combined with others, keep the old, create a new one
- If one address is split, keep the old, create new ones

Interesting Anomalies

1 pbKey maps to multiple addresses Alias': P00008BCG8WM

- 1206 W 600 S, FOUNTAINTOWN, IN 46130-9409
- 1206 W 1200 N, FOUNTAINTOWN, IN 46130-9409
- 1206 W COUNTY ROAD 1200 N, FOUNTAINTOWN, IN 46130-9409
- 1206 W COUNTY ROAD 600 S, FOUNTAINTOWN, IN 46130-9409



Uses for pbKey

1. Data Management

Keep addresses up to date by storing the pbKey then performing a reverse pbKey lookup to obtain the latest address.

2. Data Exchange

Pass pbKeys to business partners, customers and suppliers rather than addresses.

3. Data Enrichment

Unlock pre-processed reference data with a simple lookup, not address matching or spatial calculations required.

4. Analytics

Use multiple pre-process reference datasets to analyze trends, predict and target.



Data Enrichment

Over 148 million US Properties Attributes (Tax Assessor Data)

- 205 unique attributes
- Multiple Bundles
- Linked to address our pbKey



ID	Property attributes	Property location
pbKey	Year of construction View from building Front footage Side footage Land mass in acres Land mass in square feet Building square footage Living space square footage Ground floor square footage Basement square footage Garage square footage Number of rooms Number of bedrooms Number of bathrooms Number of bathroom fixtures Number of fireplaces Type of basement Type of air conditioning Type of foundation Type of floor construction Type of roof framing Type of garage or carport Presence of a pool Type of pool Method of heating Type of sewer system Type of water service	Census Tract Census Block FIPS Code Township Subdivision Zoning Code Survey range Survey section Property latitude Property longitude Land use code Assessor's parcel number Parcel APN
Property overview		Mortgage information
Property type Owner occupied indicator Residential use indicator Total buildings on parcel Number of stories Number of apartments Number of business units Mobile home indicator Building style Building type Construction quality Physical condition Method of construction Type/finish of exterior walls		Type of mortgage Type of legal ownership Amount of loan Date mortgage initiated Length of mortgage Name of lender
Property valuation		
Land value Improvement value Land plus improvement value Market value Assessed value Appraised value		
Address details	Owner details	Assessor/deed information
Physical street address Unit number and designator Official USPS address Delivery Point Validation USPS property type indicator Carrier route County code Vacancy indicator Alternate addresses	Property owner name Additional owner name Business or residence indicator Property owner phone number	Seller's name Date of sale Price of sale Year of last property assessment Prior sale information

MLD is 2 Products:

1. Master Location Data
“Geocoding Dataset”



2. “MLD Address Fabric”







Mike Ashmore

michael.ashmore@pb.com

[@michaelashmore](https://twitter.com/michaelashmore)

www.linkedin.com/in/michaelashmore/

**Don't forget to take the session survey in the
conference app!**

