Solutions for Enabling Lifetime Customer Relationships

Pitney Bowes Software

The Geocoding Advantage

Best practices for managing customer and location-based data

WHITE PAPER:

LOCATION INTELLIGENCE



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ABSTRACT

GEOGRAPHIC DATA IS INCREASINGLY CRITICAL TO CUSTOMER COMMUNICATIONS AND EFFICIENT OPERATIONS. MARKETING, BILLING, SITE LOCATIONS, AND LOGISTICS ALL HAVE A FUNDAMENTAL GEOGRAPHIC COMPONENT—AND THE COMBINATION OF INCREASED COMPETITION AND SLOWING GROWTH MAKE GETTING THE RIGHT LOCATION ASSIGNMENTS ESSENTIAL TO DIFFERENTIATING YOURSELF AND DELIGHTING YOUR CUSTOMERS.

HIGH QUALITY GEOCODING INCREASES THE ACCURACY, IMMEDIACY AND INSIGHT OF ENTERPRISE LOCATION INTELLIGENCE. IT IS BUILT ON ADDRESSES THAT HAVE BEEN CAREFULLY VALIDATED AND STANDARDIZED TO ENSURE ACCURACY. IT ASSIGNS LATITUDE/LONGITUDE COORDINATES TO ADDRESSES, MAKING IT EASY FOR ENTERPRISES TO EASILY INTEGRATE LOCATION INFORMATION WITH OTHER BUSINESS DATA. IT FACILITATES PRESENTATION OF COMPLEX DATA VIA MAPS, ENABLING DECISION MAKERS TO VISUALIZE RELATIONSHIPS, SEE OPPORTUNITIES, AND PURSUE NEXT STEPS WITH INCREASED CONFIDENCE. AND IT EMPOWERS BUSINESS PROCESSES FROM ASSET PLANNING, TO MARKETING, TO TAX ASSIGNMENTS AND MORE.

ALL GEOCODING, AND PARTICULARLY ALL INTERNATIONAL GEOCODING, IS NOT CREATED EQUAL. THIS WHITE PAPER OFFERS INSIGHT INTO THE MANY BENEFITS OF HIGH-QUALITY GEOCODING AND HOW TODAY'S MARKET LEADERS ARE EMPLOYING BEST PRACTICES TO ENGAGE CUSTOMERS, REDUCE COSTS, FOCUS PROCESSES AND MORE EFFECTIVELY MANAGE RISKS.

GEOCODES INFORM IMPORTANT SPATIAL DECISIONS BY ENABLING DECISION MAKERS TO QUICKLY AND CLEARLY VISUALIZE RESULTS

The power of geocoding

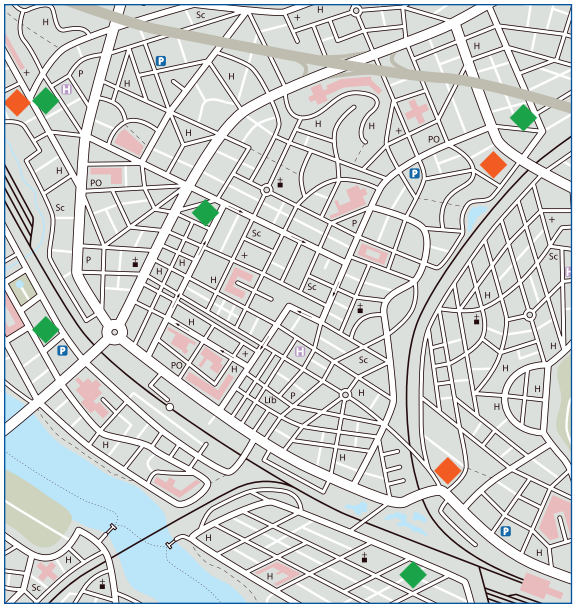
Geocodes provide an ideal way for organizations to quickly inform important spatial decisions by enabling decision makers to visualize results.

For marketing: Geocodes help businesses across industries map coverage, customers, and competitors to determine prime target areas for promotional activities—and ensure that offers align with available services. Integrating geocodes with points and parcel data helps identify all the possible customers that organizations can easily support through their infrastructure.



Parcels within flood zone

For risk management (see above): Insurers looking for more accurate assessments of clients' exposure based on location data use geocoding to determine the level of exposure at individual points on the map. This enables insurers to better estimate potential losses and help customers to purchase the correct amount of coverage at the right price.



Above, retail locations in red and competitiors in green

For retail site locations (see above): With geocoding, it is easy to map current and competitive retail locations, and match these against demographics for a clear indication of challenges and opportunities.

For asset management: For utility companies, geocoding can determine service availability and coverage as well as pinpoint Right-of-Way and Call-Before-You-Dig requirements. Telecommunications companies use geocoding to visualize coverage, coverage gaps and best sites for additional towers.

For municipalities and public sector: Geocoding and mapping tools can improve constituent services, determining eligibility for services and programs, voting precincts and polling locations, and even crime mapping.

In each of these instances, highly accurate, highly actionable geocodes are provided in a manner that enables integration into business processes for improved insight and efficiencies.

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ZIP Codes aren't enough

When location precision is required, postal codes are not the answer. ZIP Codes are designed to deliver mail—not to assign accurate location information. Even ZIP+4s lack the accuracy available through point and street-level geocoding.

For example, there are more than 10,000 state and local taxing jurisdictions in the U.S. These jurisdictions are not designed to align with ZIP Codes, and they can change at a rate of as much as 25% per year.[1] Some jurisdictions today have gone so far as to prohibit the use of ZIP Codes for tax assignments because of the known inaccuracies that result. ZIP Codes are also not drawn to define property risks or zoning restrictions. On their own, they cannot accurately define the distance from shorelines, fault lines, flood plains and other risk factors; nor can they pinpoint where business developments will/won't run up against zoning concerns.

Accurate addresses—for better business results

The accuracy of a geocode is only as good as the address upon which it is based—and with big decisions riding on accurate insights, it is essential to ensure that underlying address data is of the highest quality before assigning geocodes.

Best practices in ensuring that underlying data can be used efficiently and with confidence starts with a three-step process called Global Address Verification.

The three steps in Global Address Verification

Standardization: To ensure address completeness and consistency, a standardization process breaks each address down into its component parts. This process starts by identifying and assigning an ISO code for the country. It parses the address, identifies and converts known synonyms, expands common abbreviations, and strips out duplicate components wherever possible.

Validation: As good as the standardization process makes the data, the validation process goes further. It compares the records with country-specific reference data so duplicates can be removed, and missing components can be identified, sought out and incorporated. Once any corrections are made, a validation level, match score and address correction results code (ACR) is assigned. These provide perspective on the quality of the updated address.

Formatting: Once an address is broken down into its component parts, standardized and validated, it is time to re-assemble it. The newly formatted address should follow its country-specific format as generally as recommended by the relevant postal authority, or be customized to other needs.

It is important to note that this Address Verification process also makes the address data better for use across the enterprise. In particular, improved address quality can improve deliverability of goods and communications—and increase opportunities to match and enrich customer data.

To determine the quality of Global Address Verification, there are a few key questions to consider:

- How extensive are the company's global reference datasets?
- Does the solution support native character sets in different languages and alphabets?
- Is the company's solution postal-certified in all necessary markets?
- What quality controls are built in? (transliteration, type-ahead, etc.)

Better addresses yield more accurate geocodes; and, more accurate geocodes help organizations better manage customer relationships, infrastructure, logistics, and risk—and plan more effectively for growth.

[1] Bob Meador, "A New Look At Communications-Industry Property-Tax Issues," Telecomweb, 26 June 2008, http://www.telecomweb.com/news/wbf/260883.html

THE ACCURACY OF THE GEOCODE IS TOTALLY RELIANT ON THE ACCURACY OF THE UNDERLYING DATA.

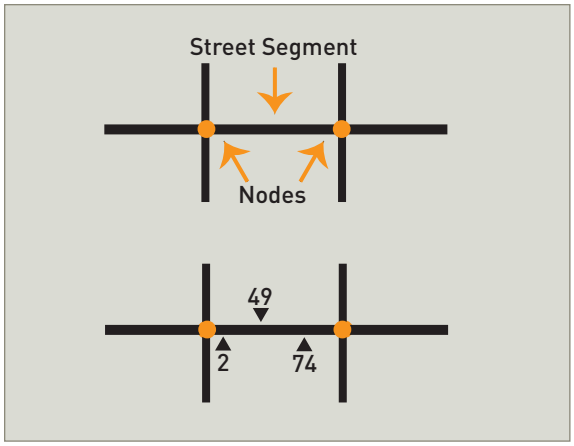
All geocoding is not created equal

Verifying and validating the underlying address is just the first step in ensuring the best insights via geocoding. The next step is to match that address with accurate latitude and longitudinal coordinates. To do this, the address is run against one or more different datasets. Again, the accuracy of the geocode is reliant on the accuracy of the underlying data.

"Cascading match logic" is used to provide the greatest number of matches—and the highest accuracy available for matches made. It runs addresses against multiple conflated datasets, starting with the most accurate. It could, for example, match addresses against the following data levels as available:

- Address Point
- Street Address Interpolated
- Street Centroid
- Postal Code Centroid or City Centroid

Address point is the most accurate. It is precise to the parcel level and is rapidly becoming the new standard for quality geocoding. The first pass looks for this level of matches. A second and third pass takes addresses that weren't matched at the point level and looks for street level matches comprised of centroid and/or interpolated data. Addresses that are still unmatched are then run against postal or city centroid data. In this way, each match is made based on the best available data for that address.



Interpolation uses a sub-segment of a given street and places addresses proportionally along the sub-segment, offering even more precision than street-centroid data.

Additional datasets or "dictionaries" offer many different ways and levels of geocoding—and these add to the options decision makers have for visualizing addresses. In addition to those listed above, some of the custom datasets that businesses use include:

- Intersections
- Highway Exit Numbers
- Sections/Ranges/Townships
- Landmarks/Points of Interest/Business Names
- Neighborhoods
- Other User-defined and/or Custom Dictionaries

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Objectives and challenges in international geocoding

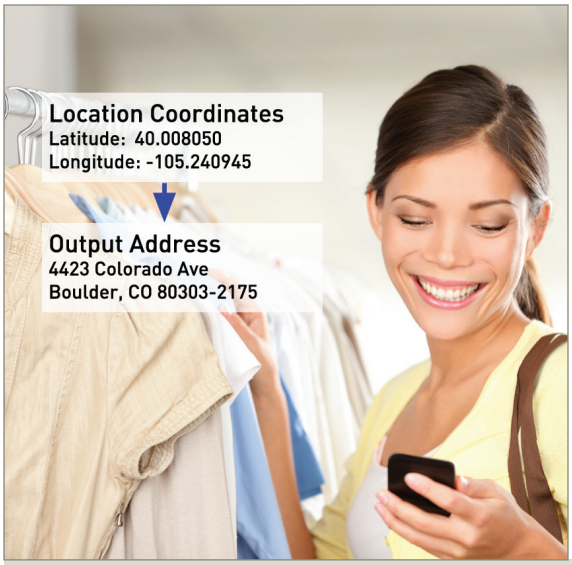
Increasingly, organizations are turning to international geocoding for insights to support their planning and operations worldwide.

Geocoding on an international level, however, poses a new range of challenges. Address formats vary, some have postcodes, some do not; the order of the address information is often different; commas are not always used for separation, state information is often excluded, and postal codes vary widely in usage and definition. And these complexities are just the start:

- There are various languages and corresponding character sets or alphabets involved—sometimes even multiple languages in use within individual countries (Russian, Japanese, Arabic, etc.)
- There are countries that use localities, points-of-interest, and landmarks rather than streets as the basis for their addressing system.
- Key pieces of information that are not required for local delivery may not be available for use in geocoding.

With all of these differences, the best international geocoding will offer a consistent API to be used across countries, an extensive selection of databases, and flexibility to use third-party databases as well. Matching options should enable alignment with the available data for the region, and database search order priorities should be able to be selected based on preference and performance as well.

In the end, it's important for decision makers to understand the level of accuracy of the available geocodes so that they have a sense of the level of confidence they can place in the data. The most efficient way for this to be conveyed is through a results code that indicates the match and geographical accuracy.



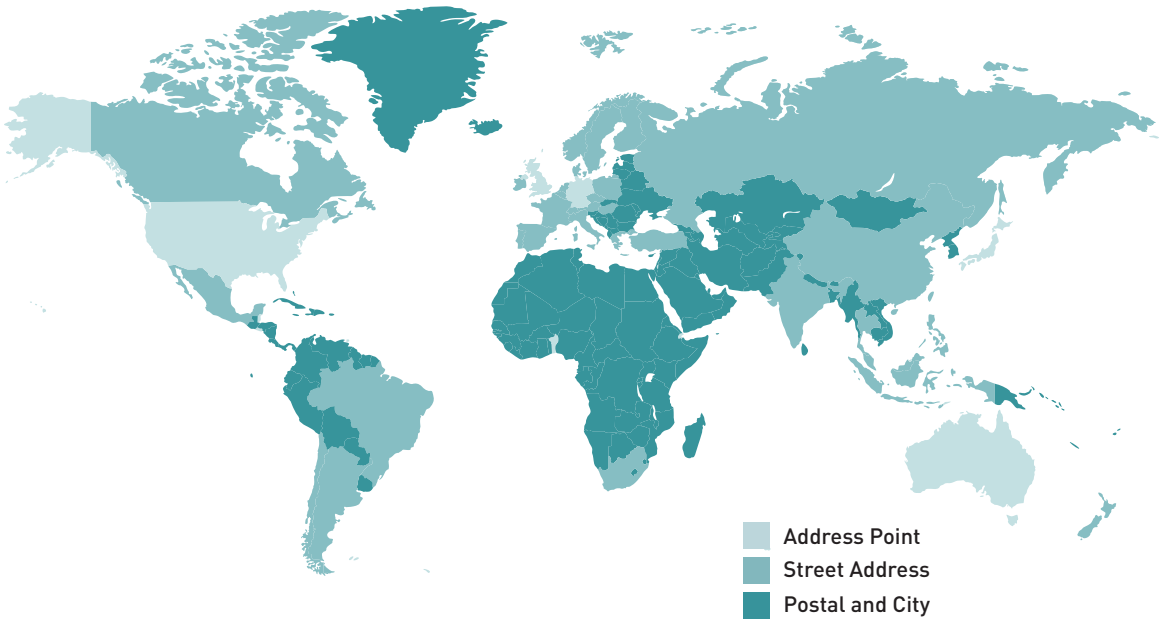
Reverse geocoding: the mobile marketing connection

While this paper focuses on best practices for geocoding, it's also important to point out the newer flipside—reverse geocoding—which makes personalized messaging more actionable by reaching consumers when and where they are most likely to buy. With nearly a billion smartphones in use the world over, it offers the missing link in mobile and social-media marketing.

Reverse geocoding grabs a mobile GPS signal from a customer's smartphone, pinpoints where he or she is and translates the coordinates to an address. In a fraction of a second, that person's current location can be melded with key data, such as the person's buying patterns, behaviors, preferences and influencers—and cross-referenced with nearby sites and stores. Personalized messaging can then be pushed out to the consumer based on current location, personal profile and immediate retail opportunities.

Because reverse geocoding provides an actual address rather than just a point on a map, it has potential to benefit 911 responders and law enforcement and to enable more precise routing information for logistics, as well as to inform more precise mobile marketing messaging.

FOR BETTER, FASTER, AND MORE INSIGHTFUL DECISION MAKING, CHOOSE THE BEST IN GEOCODING SOLUTIONS.



Geocoding from Pitney Bowes Software

Mapping and location intelligence are key capabilities at Pitney Bowes Software; and, its geocoding solutions are among the most extensive available today. Address verification and cascading logic are integrated into every one of the Pitney Bowes geocoding solutions to ensure results that companies can truly rely on.

Pitney Bowes is also one of a very few companies that offer reverse geocoding capabilities; and, it is rapidly expanding its geographic coverage for both geocoding and reverse geocoding to support more businesses in more countries the world over.

FOR OPTIMAL INSIGHTS AND GEOGRAPHICALLY INFORMED DECISION MAKING, LOOK TO PITNEY BOWES FOR THE HIGHEST QUALITY GEOCODING SOLUTIONS.

TO LEARN MORE, CALL 1-800-327-8627 OR VISIT WWW.PB.COM/SOFTWARE.

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