

# International Geocoding

A consistent approach to Location Intelligence leads to more effective decisions across country lines

WHITE PAPER:

**ENTERPRISE LOCATION INTELLIGENCE**

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### ABSTRACT

GEOGRAPHIC-BASED DATA DRIVES SOCIAL POLICY, NETWORK PLANNING AND MARKET ANALYSIS. IN BUSINESS, INSIGHTS DERIVED FROM LOCATION INTELLIGENCE ARE ESSENTIAL FOR RISK MANAGEMENT, REGULATORY COMPLIANCE, PRICING AND STRATEGIC PLANNING. THAT'S WHY SO MANY ORGANISATIONS EMPLOY GEOCODING. GEOCODES TRANSLATE COMMON REFERENCE POINTS, SUCH AS CUSTOMER ADDRESSES, INTO LATITUDE AND LONGITUDE COORDINATES THAT MAKE IT EASIER TO ANALYSE DATA.

MULTI-NATIONAL ORGANISATIONS FACE SEVERAL CHALLENGES BECAUSE THE ACCURACY AND QUALITY OF GEOCODING —AND CORRESPONDING DECISIONS— CAN BE DIFFICULT TO ASSESS FROM COUNTRY TO COUNTRY. INCREASINGLY, ORGANISATIONS ARE LOOKING TO APPLY STANDARDS ACROSS MARKETS, SO THAT THE MAKE-OR-BREAK DECISIONS MADE EVERY DAY WILL ALWAYS BE BASED ON THE SAME, ACCURATE, TIME-SENSITIVE INFORMATION.

BUSINESS-STRENGTH GEOCODING SOLUTIONS ARE MEANT FOR PROBLEM SOLVING. SO TODAY, GLOBAL ORGANISATIONS ARE TAKING A CLOSER LOOK AT THE RISKS ASSOCIATED WITH A POOR OR INCONSISTENT APPROACH TO LOCATION INTELLIGENCE. WHAT THEY HAVE FOUND IS THAT IMPROVED ACCURACY, DATA FLEXIBILITY, EASE OF INTEGRATION AND AN ABILITY TO HANDLE EXCEPTION PROCESSING CAN BE APPLIED CONSISTENTLY ACROSS AN ENTERPRISE—WHICH MAKES IT EASIER TO ACT WITH CONFIDENCE.

## BEFORE YOU CAN ANALYSE, EXTRAPOLATE OR PROFIT FROM LOCATION DATA, YOU NEED TO ASSOCIATE EACH RECORD WITH AN ACCURATE LATITUDE AND LONGITUDE COORDINATE.

### Your most critical decisions rely on location data.

Most every new consumer gadget includes a location-based component. Whether it's GPS or smart phones, "where" has become the new in-demand application.

In the business community, however, the "intelligence" required from Location Intelligence goes well beyond colourful maps, driving directions and find-the-nearest calculations. Every day, multi-national organisations make thousands of critical business decisions based on location data—decisions that impact virtually every aspect of an enterprise:

- **Market analysis.** Population trends in key geographies, including incomes, demographics and purchasing behaviours, can make or break a new product launch.
- **Risk assessment.** The ability to pinpoint the distance between a property and a fault line, for example, can help ensure that a deal is underwritten at the proper price.
- **Effective targeting.** Finding hidden pockets of opportunity in neighbourhoods—including consumers who will pay more for convenience—can turn poor performers into market leaders.
- **Network investments.** The placement and management of strategic assets such as power plants, cell towers, ATMs, commercial facilities or retail branches often require multi-million dollar investments—with long-term implications.
- **Portfolio management.** On a macro-level, organisations must understand exposure beyond traditional boundaries and across location-based factors such as economic conditions, weather, tax jurisdictions and market demographics.

When an organisation does business in a single country, ensuring that location data is up-to-date, accurate and accessible can be a challenge. For global companies, these challenges multiply to the point where it may be difficult for executives to judge with confidence how geo-based analyses compare across markets.

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### INCONSISTENT PROCESSES CREATE RISK, ADD COST AND LEAD TO POOR DECISIONS.

#### Corporate decision makers are constantly weighing alternatives.

Hundreds of business propositions or initiatives may be worthwhile on paper, but only so many can be approved, funded and prioritised. Unfortunately, when organisations rely on disconnected data, inconsistent standards and one-off processes, it is impossible to make an apples-to-apples comparison.

Increasingly, corporations have pursued international standards, common systems and consistent operating procedures as a way to get everyone—and every decision—on the same page. This is particularly relevant in the realm of International Geocoding.

Market leaders are moving to a common geocoding platform across lines of business. However, other organisations still rely on outdated methods that deliver inconsistent—and sometimes inaccurate—results:

#### Ignoring the “where”.

Some legacy systems ignore the “where” component of data. While other data dimensions are considered, the vast pool of intelligence around location data remains untapped; and this results in poor business decisions.

#### Manual processes limit growth.

Some organisations rely on the local knowledge of their in-country teams, which means they cannot apply the same standards or business rules across markets. Manual processes lead to misinformation and inconsistent levels of geocoding accuracy because, while some practices may be appropriate in some countries, they could represent risk in others—and corporate executives have no way to measure or track such variances. For example, there is little consistency around postal codes. Some postal codes represent 50,000 households, others less than 3,000; the area covered by any given could be small, or vast.

#### Multiple vendors add costs – in more ways than one.

Companies that understand the value of geocoding turn to third-party experts, but some make the mistake of allowing each country to deal with distinct vendors—which can be significantly more expensive. Working with different vendors

requires dealing with different geocoding methods, which can result in inconsistent data that increases operational overhead. From an administrative perspective, each contract requires specs and requirements, legal teams, product management review and IT set-ups. More development resources and geocoding expertise are needed up front, while expenses for ongoing data maintenance are incurred for each market.

Organisations can better compete in today’s economy by sourcing a more complete solution that is simple to use, scales globally and offers high-quality standards that remove the complexity and inconsistencies of local market factors.

#### AREN'T ALL ADDRESSES THE SAME?

Some executives take it for granted that physical addresses exist and always provide the same level of information in every country— but that is incorrect.

In some countries physical addresses and postal codes may not even exist. Other countries don’t follow the concept of continuous house numbers. In many geographies it is difficult to ascertain how two locations relate to one another based on address information—and difficult to automate workflows around location-sensitive decisions. For example:

- In Japan, the world’s second largest market for insurance, house numbers are allocated to houses in the order of when each house was built within a certain area instead of following a continuous sequence along street segments.
- Six-digit postal codes in The Netherlands define an area so small that having a house number and postal code is enough to identify a unique location; whereas in Germany and France, house numbers will be repeated multiple times in a single postal code because it covers a much larger area.
- The Czech Republic relies on two numbering systems for addresses—used at the same time. The orientation number is location-dependent and follows continuous numbering along a street segment. The descriptive number is unique in a town area and is based on the date a structure was built.

These types of variations make it difficult to apply consistent models when looking to analyse markets, assess risk, map competition or forecast population trends using address information alone.

## ORGANISATIONS CAN BETTER COMPETE IN TODAY'S ECONOMY BY SOURCING A MORE COMPLETE SOLUTION THAT IS SIMPLE TO USE, SCALES GLOBALLY AND OFFERS HIGH-QUALITY STANDARDS THAT REMOVE THE COMPLEXITY AND INCONSISTENCIES OF LOCAL MARKET FACTORS.

### International Geocoding: the key to multi-national success.

As more than 70% of all business records include a location component, it is not surprising that Location Intelligence is in such high demand nowadays. But before you can analyse, extrapolate or profit from location data, you need to associate each record with an accurate latitude and longitude coordinate.

Given the shortcomings of approaches that rely on outdated methods, a data-quality-enhanced, enterprise-wide approach to international geocoding has become the new standard. Today's leading enterprise geocoding tools combine address quality, multi-level geocoding and location analytics in a single solution that can apply the same standardised rules in every market.

This combination is particularly important because the main goal of organisations is not to pick a point on a map—but to gain business insights and make better business decisions in each and every country in which they do business.

- Where are consumers likely to shop?
- How have income and lifestyles changed over time?
- What is the aggregate risk associated with this storm?

If your geocode is wrong, your analytics are wrong, your insights are wrong—and your decisions are wrong—so it pays to be accurate.

Accuracy has two elements. Positional accuracy measures how close the geocode is to the reference point. Geocoding an address to a city centroid, for example, will be less positionally accurate than one centred on a parcel.

A more important factor in accuracy, however, is match accuracy, which determines how well the input data reflects the actual reference point you are interested in. In the United States, for example, the USPS estimates that more than 23% of customer records include an address error—errors that could lead a stand-alone geocoding system to return the wrong reference point candidate. That's why only systems that standardise, validate and cleanse addresses as part of the geocoding process can achieve both match and positional accuracy. The result is a true confidence in geocoding that applies consistent rules in every market.

### SPOTLIGHT ON INSURANCE

International geocoding has played a critical role in the insurance industry, helping companies create more effective pricing, underwriting and risk management. Three factors are behind this trend:

#### 1. The location-based nature of P&C insurance.

Risk analysis and pricing depend on precise Location Intelligence. Consider these every-day business questions:

- Where is the car garaged? How far is the drive to work?
- How close is this home to a fire station?
- Is this commercial venture susceptible to hurricanes, floods or earthquakes?
- What is our concentration of policyholders? How great is our exposure to a catastrophic event?

#### 2. The reliance on data and automated workflows.

Geocodes turn addresses into reference points that can be measured, compared, calculated and analysed using rules-based technologies to support:

- Straight-through processing and automated underwriting
- Online quotation systems via the Internet
- Automatic, risk-based pricing
- Streamlined global catastrophic management

#### 3. The reporting demands of global corporations.

While the corporation may have a global footprint, in-country divisions and subsidiaries have previously operated more independently. Today, there is a movement to synchronise standards and systems to reduce inconsistency, time and costs. Many have found that separate systems can limit growth and are moving to a common underwriting platform that delivers a more consistent approach to pricing and risk management.

*"Everyone needs to be doing something," advises Deb Smallwood, founder of SMA, a leading insurance advisory firm. "Location Intelligence is no longer an option, it's the table stakes—but you need to incorporate common-sense ideas into the process. Business units need to define capabilities if you expect the technology to align to business roadmaps. Companies should also think in terms of modules that plug-and-play into existing underwriting, claims, CRM and billing systems."*

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### TODAY'S BEST PRACTICES ADD VALUE ACROSS THE ENTERPRISE.

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Given the wide-spread impact that international geocoding can have on business, organisations would be well served to consider the best practices employed by multi-nation firms who leverage the power of geocoding and Location Intelligence in cost-efficient, effective and consistent ways across their organisation. Nine recommendations include:

#### 1. Validate source addresses

Consumer-oriented geocoding solutions can often be acquired at little or no cost, but organisations that use information to make business decisions need to be more concerned with the validity of addresses. A business-strength application will offer the ability to cleanse data, standardise addresses and validate that source addresses are correct before applying geocodes.

#### 2. Validate geocode results

Analysing geocode results based on positional accuracy doesn't provide the full insight needed to make critical business decisions. Even when source addresses are fully validated, the geocoding process needs to ensure that the address is located at the right spot. Some solutions return geo-coordinates without providing any details regarding the accuracy level—even when no close match is found. These "false positives" can create a false-sense of confidence, which can increase the risk for poor decisions. A first-class geocoding solution will provide both the match accuracy and the positional accuracy—and enter a path of exception processing if there is the potential for an incorrect result.

#### 3. Utilise precise, up-to-date reference data

How often you update your reference data is important, as reference points such as roads, addresses and developments are always being added and modified. In some cases, live data updates might be best, but many companies do quite well with quarterly data refreshes. In markets with fewer customer contacts, annual updates may be sufficient. The

ability to generate precise geocodes is also important: some organisations may need to geocode at parcel-centroid level, for example, while others may need to identify points where two roads intersect.

#### 4. Geocode to multiple levels of accuracy

There will be times when it is not possible to deliver a geocode centred on a specific address or parcel. The tools you use should recognise this and apply consistent rules, automatically cascading to the next most-specific point of reference, from address point, to street level, to postal code, city, state, etc. This approach ensures the best-available information.

#### 5. Combine geocoding and spatial analysis

Ultimately, the goal of any solution is to provide answers, not latitudes and longitudes. Best-in-class solutions combine geocoding with the ability to perform analysis, calculations and predictive analytics, including:

- Point-in-Polygon Analysis (e.g. does a point falls in a sales territory or trading area?)
- Closest Site Analysis (e.g. determine the number of homes within a three mile radius of a fire station)
- Calculate drive time and distance (e.g. find the nearest garage in the case of a car break down)

#### 6. Integrate into existing workflows

One of the advantages of single-source, international geocoding is that it makes it easier to integrate geocode analytics into existing operations and business processes—which streamlines workflows, eliminates manual processes and improves decision making. API (Application Programming Interface) based geocodes should directly feed into systems. Using the same API calls for each country enables systematic access to geocodes across multiple markets.

## TODAY'S LEADING ENTERPRISE GEOCODING TOOLS COMBINE ADDRESS QUALITY, MULTI-LEVEL GEOCODING AND LOCATION ANALYTICS IN A SINGLE SOLUTION THAT CAN APPLY THE SAME STANDARDISED RULES IN EVERY MARKET.

### 7. Design for maximum performance

Many organisations wonder whether reference data should be stored locally, or accessed through a hosted solution. In most cases, on-premises or desktop data libraries will improve performance and allow you to geocode hundreds of thousands of records per hour—but there are costs involved. The best approach may be to utilise local libraries for markets with high customer populations, and Web connections for secure access in all other markets.

### 8. Provide for data flexibility

Flexibility is particularly significant for multi-national organisations that operate across multiple languages, where there is a need for built-in logic that understands the nuances of local postal rules. One would also want flexibility to handle different types of databases and input addresses, including structured/unstructured, residence/business, etc. Most importantly, organisations need the flexibility to utilise

and switch among multiple data sources. For example, a company may own street data or point of interest data in one town, or, may have access to proprietary data from a local municipality—and the goal should always be to provide for the best decision possible.

### 9. Look for one-stop service

Solutions need to be simple to use and flexible enough to meet different business requirements. A single technology platform that matches up with your overall corporate objectives can help ensure that a consistent standard will be applied in every market. Likewise, maintaining one platform reduces cost of ownership and can speed up system integration. A single interface also simplifies training and education, and makes it easier for your company to gain the skills and capabilities in Location Intelligence needed to achieve a competitive advantage.

## PITNEY BOWES BUSINESS INSIGHT: A TOTAL PACKAGE

For the past 25 years, organisations have turned to Pitney Bowes Business Insight for Location Intelligence. Our business-strength solutions are designed not only to provide accurate geocodes—but to provide the business insights needed to make better business decisions.

As a global solutions provider, Pitney Bowes Business Insight works with organisations who serve customers in Asia, Europe, Africa, Australia and the Americas—and we have

designed technologies and services specifically geared to meet the challenges of today's multi-national corporations. Our ability to combine data quality, geocoding and location intelligence in a single, easy-to-integrate solution makes us uniquely positioned to help companies solve problems more effectively. To learn more about best practices in international geocoding, contact Pitney Bowes Business Insight today.

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Uwe Rupp believes that geocoding is the key step for enabling Location Intelligence across a wide range of business solutions, and he has played a key role in developing PBBI's international strategy for geocoding. Rupp joined PBBI in 2001 and is based in Frankfurt, Germany.

A computer scientist and geographer by background, Rupp has 13 years professional work experience in processing geo-spatial related data for different industries. Prior to joining Pitney Bowes Business Insight, Uwe Rupp ran his own business in the area of consultancy for geo-spatial related projects. He received his graduate and under-graduate degrees from University of Saarland in Saarbrücken, Germany.

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