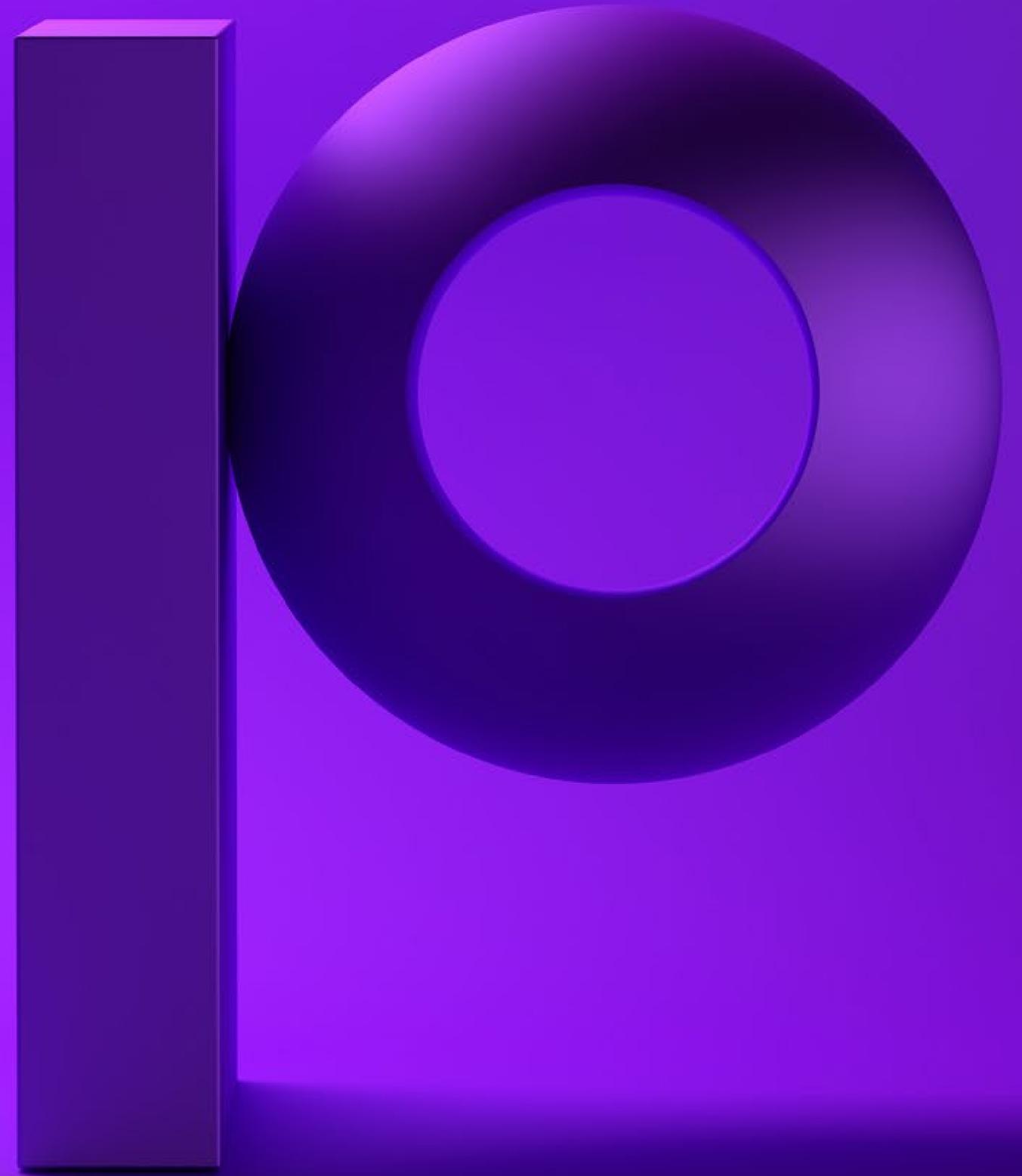


precisely

Geocoding for Business

Considerations for selecting
geocoding technology
to support a winning Location
Intelligence business strategy



Understanding the significance of location

That's the whole point of geocoding

Business operations in industries as diverse as insurance, financial services, and telecommunications are more reliant than ever on **Location Intelligence**.

Location Intelligence is the art and science of analyzing the connections between geospatial locations (latitude and longitude coordinates) and what exists or occurs in these locations (customers, businesses, crimes, weather events, traffic, etc.). But before you can analyze the connections, you need to define them, associating each location-based record with accurate geospatial coordinates. That's geocoding.

Local governments are using geocoding-embedded mobile solutions to increase citizen engagement

Location is at the heart of key business questions:

- How can we sell to more homes within our service area?
- Is the insured property in an area with increased risk of natural or manmade hazards?
- Is our home loan portfolio overexposed in a high-risk market?

Get to know geocoding

Your business may depend on it

It's tempting to think of geocoding as a simple conversion process: Input a street address or location name, output geographical coordinates. If that's all there was to it, buyers would justifiably look for the least expensive geocoder that delivers reasonably accurate results.

However, there are many potential pitfalls in the geocoding process. If you are unaware of these, not only might you obtain inaccurate geocodes, but you also might not realize they are wrong. This could have a major impact on your business outcomes.



What to look for in a geocoder

With so many factors affecting the geocoding process, rational assessment of geocoding solutions can be an overwhelming task. To help you along, we have organized geocoder capabilities into five categories:

01

Matching

The interpretation of an input address and matching it to reference data.

02

Positional Accuracy

How close the geocode is to the specific addressable location you are targeting.

03

Throughput

How many records per unit of time the geocoder can process. It's an essential business consideration.

04

Metadata

The data you have about your geocoding results, which enables operational automation and insights.

05

Deployment Options

Where will the geocoder reside? On what platform will it run? How will it integrate?

In the following pages, we will address each of these categories. But before we do, a caveat:

Where to proceed with caution



“Black box” solutions

This type of software or service offers no visibility into the sources or methods of determining the geocode, so it's hard to evaluate the quality of the results. Also, due to their one-size-fits-all approach to geocoding, these solutions may not align with your business model.



Basic/free solutions

Because these solutions are not enterprise-ready, you may find your costs increasing significantly as you employ expensive resources to develop and deploy the additional functionality you need.



01

Matching

Your business may depend on it

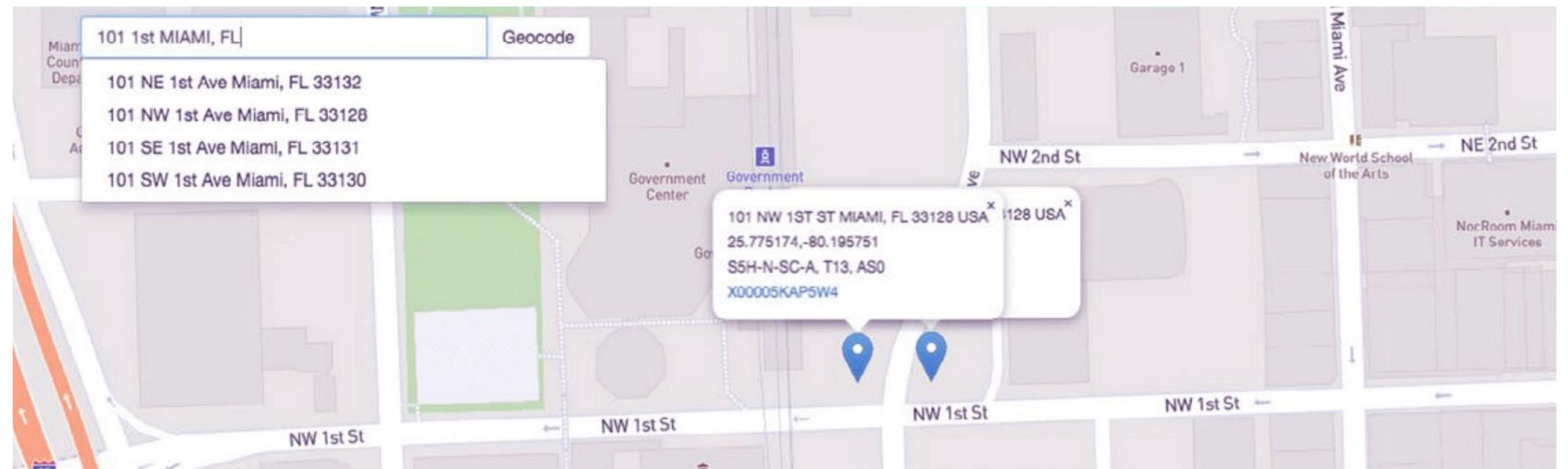
Match rate. This is the proportion of input addresses that the geocoder accurately matches with the reference data, which could be streets, boundaries, addresses, etc. Simply put, a higher match rate gives you more answers. This is essential if you want to embed geocoding capability in heavily used applications, especially those that are business and mission critical.

However, the high match rates you get with some geocoders also come with a high rate of false positives. Figure 1 shows an input that could result in any of four different addresses. Would your geocoder know which one to use? Geocoders with more sophisticated matching algorithms tease out the right address, even with incomplete input data. This is essential for automated decision-making applications, or anytime you want to minimize manual error correction and other human interventions.

Coverage. If you are targeting a single country, look for a geocoder with national address coverage. If your scope of business is international, you will also need to specify coverage for all the countries you target. The best way to ensure the broadest coverage is to use a geocoder that **combines the data** from the various sources into a single unified offering.

Database update frequency. Keep in mind that the human landscape is highly dynamic. Addresses change, as do territory designations, such as postal codes, neighborhoods and administrative boundaries. You'll want to look for **quarterly, or even monthly**, updates whenever possible.

Figure 1.



02

Positional accuracy

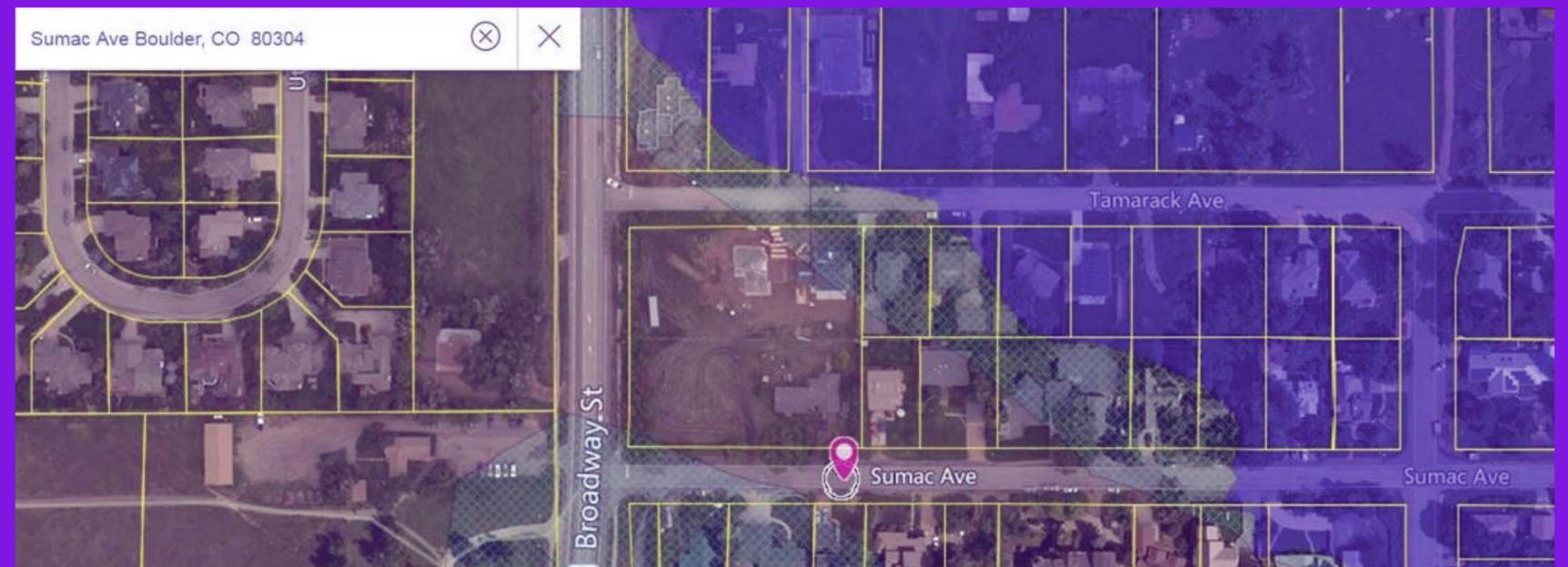
Make sure the geocodes serve your business needs

Getting to the ground truth. When your decisions depend on the attributes of specific residences or businesses, geocodes calculated to the ZIP Code, neighborhood, or even street centroid are not precise enough. You need flexible positional accuracy, that is, the ability to obtain coordinates that are most appropriate for each use case. Demographic profiling, for example, requires less positional accuracy than insurance underwriting.

In any case, the geocoder should provide metadata specifying the accuracy level attained. Companies that use geocodes in automated decision-making processes need this metadata to minimize the risk of decision errors. See page 9 for more information on metadata.

Flexible positional accuracy is key to answering a variety of questions:

- Is a house in an area of high fire risk?
- How can we target our advertising to families living in apartments with more than two kids?
- Which downtown businesses can I service with my existing fiber optic infrastructure?



Let's say a customer applies for property insurance. In this case, the geocoder uses an interpolated property location, placing the geocode just outside a flood zone. If you're not confident in the positional accuracy of your geocoder, do you quote a flood-zone rate, and risk losing the business? Or do you quote the lower rate and assume the risk if you're wrong?

03

Throughput

Keep up with high-volume analysis and cloud-native/big data processes

Geocoders are the foundation of highly automated operational processes where addresses and their locations power the outcome. Leading geocoders can process **hundreds of millions of records per hour**.

Throughput is also an important factor for geocoding for **big data/cloud-native analytics**. If your organization operates or is considering deploying your applications using cloud-native or big data, such as EMR or Spark, you'll want to insist on a geocoder that runs within in these environments, which minimizes the need for custom software integration.

Case in point:

Property and casualty insurance

In this industry, profitability hinges on the accuracy of risk assessments and location attributes are key factors in these assessments. Because location attributes change frequently, many insurance companies update geocodes for their whole book of business every month. Only with high throughput is such an effort practical for the business.





04

Metadata

Gain more insight with data-rich geocodes

Advanced geocoders are well-equipped to support automated decision-making and in-depth analysis by generating and delivering various metadata. Geocode metadata may include information about how well the input address matched the reference data, the type of point returned and its level of positional accuracy.

Another type of metadata is a **unique and persistent identifier**, which is attached to an address, not a location, and can be used to quickly obtain the address in the future, even if the location of the address or the address itself changes. This unique and persistent identifier can improve operational processes between systems or companies and even unlock additional information from additional data files or APIs.

Metadata about **primary-secondary relationships** between locations (such as suites within an office building) can save you countless hours of research.

Finally, metadata that consists of **links to additional information** related to the geocoded location can speed up analytical processes by revealing previously unknown relationships between location-related data.

Imagine you're considering investing in office space in a large building. Geocoding the exact mailing address can tell you about that geographic location and the specific office. But are there issues with other offices in the building that may impact your business?

Relationship metadata allows you to quickly track down information about locations with the same primary address (for example suites within an office building). Or, if you are interested in the entire building, that single geocode can give you all the metadata for the individual office properties within the building.



05

Deployment options

Choose a geocoder that flows with your business

Deployment environment. As your business evolves, so will your IT needs and capabilities. Choosing a flexible solution now will save you potential headaches and unexpected costs later. On-premises geocoding should be easy to embed into server and desktop applications. Cloud-based geocoders should offer the same results and rich capabilities as on-premises options.

Integration. Apart from GIS professionals, few business users need geocodes as their final output. Most users performing spatial analysis need geocoding built into their business process workflows and applications. The faster you can integrate your geocoder into existing and new applications, the shorter your time to value. To make integration easier, look for solutions that interface with multiple web service protocols (such as REST and Java) and support various programming languages and operating modes, such as client/server, batch, and interactive.

Can your geocoder provider say yes to all these deployment options?

- On premises/Private cloud
- Cloud-native/Big data
- Cloud: API's
- Cloud: SaaS
- Hybrid deployments
- Any operating system

Let's put a finer point on this

Please contact us to obtain more in-depth information about selecting geocoding technologies to support your business objectives

Contact Precisely



About Precisely

Precisely is the global leader in data integrity, providing accuracy and consistency in data for 12,000 customers in more than 100 countries, including 90 percent of the Fortune 100. Precisely's data integration, data quality, location intelligence, and data enrichment products power better business decisions to create better outcomes. Learn more at www.precisely.com.

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