

# US Rooftop Geocoding Release Webinar Transcript

[Video for this transcript can be found here.](#)

**00:11** - Alright welcome everybody we're excited to be with you this morning. We're really excited about this product. Thanks for joining us for this webinar about US Rooftop Geocoding from SmartyStreets. It's certainly a project that we have been looking forward to releasing and I know there's a lot of excitement.

We've got a lot of attendees actually today, so we're we know there's excitement out there for this new product. We're glad to be able to share some more details with you about this I'm sure you guys are looking forward to learning a little-bit more so let's get started. Just to introduce ourselves my name is Wes Arnold and I'm a marketing manager here at SmartyStreets.

**00:51** - And with me is Berk Charlton and Berk is the Director of Geolocation Intelligence and Berk comes to us, we're excited to have Berk. Berk and I are both relatively new additions to the company and I don't know if you guys know this but SmartyStreets is growing quite rapidly and I think that's because people are discovering us for our speed, our reliability, our awesome support team and with that growth you know more people are being hired and Berk and I are actually benefactors of that.

Berk specifically comes to us with over 25 years of [geocoding](#) experience. We're really great grateful to have him and in the past he's managed the largest geocoding product portfolio in the world, and he's worked extensively with PNC insurance companies telecom providers and logistics companies, so he's got an extensive background on geocoding and geolocation intelligence, so we're really grateful to have him with us.

**01:54** - Let's go over what we're going to talk about today so some of the topics we're going to discuss are just:

- [An introduction to rooftop geocoding some definitions a little-bit of geocoding in the past and a rooftop with what rooftop meant in the past versus today.](#)
- [We'll talk about specifically The SmartyStreets Rooftop Geocoder and Reverse Geocoding.](#)
- [Berk's got some visual examples of how those will benefit you guys in your](#)

[industries.](#)

- [We'll talk about the release schedule and the plans for the future.](#)
- [At the end we'll have a short Q & A session uh that you guys can address your questions.](#)

**02:32** - If you have questions go ahead and submit them over the questions feature on uh go to webinar and what we'll do is we'll just at the end we'll address those questions as they come up so now I'm just going to turn the time over to Berk who's the Subject-Matter Expert, so I'll turn the time over to you Berk.

## Introduction and Definition of Rooftop Geocoding

**02:52** - Thanks a lot Wes I'd like to start with an interesting anecdote about geocoding historically and it seems very relevant given the current environment with diseases and epidemiology and I expect that most of you are probably working from home as many of us are and so let me just talk about something that happened in 1854, there is a big cholera outbreak, dozens of people were dying from a cholera incident and one of the first epidemiologists in history, a man named John Snow, decided to take all of these deaths that we're having any mapped them out on the streets of London.

His original map is lower left. It's really his he's mapped out the deaths that happened as a histogram so that you can see how many deaths happened in a certain spot. And he was able to trace a lot of them to what they call the Broad Street water pump.

And even though people were living elsewhere, the Broad Street water pump was popular because the people thought the water tasted better.

But what had happened was that some cholera had gotten dumped into the water to fit into that pump, or it actually was I think it was, what amounted to, some dirty diapers of some sick children that got dumped into the water supply. And he was able to identify that water pump, shut it down.

There's a modern adaptation as a map over on the right-hand side here that shows where those deaths occurred and also the water pump that he mapped out has been memorialized. If you go there on Broad Street, you can see that water pump. There was a plaque that shows why it's important. This is sort of a landmark for poor, modern for modern geographic analysts that they like to go there and have a look at that.

**04:55** - So modern epidemiologists continue to use geocoding to monitor and measure incidents and outbreaks of disease. And I know they've been very active lately trying to track down COVID-19 cases where they're coming from and get as accurate as they can, even at the building level when they can.

So I think they're kind of modern-day geographic heroes. Let's go over some definitions real quick.

Geocoding sometimes called forward Geocoding typically means just appending the latitude and longitude to a location like an address. So our address here at SmartyStreets is 2335 S State Street, Provo, Utah, with specific latitude.

And when that gets geocoded in this case, it puts it right on top of the building and then in address geocoding, the address is typically cleansed and normalized and validated and everything else being equal.

## Rooftop Geocoder & US Reverse Geocoding API Specifics

The better the quality of the address validation, the better the geocoding. And that has been true since geocoding started. You've really got to clean the addresses. And that's why the marriage of geocoding with SmartyStreets is so powerful.

SmartyStreets is a top-notch address cleansing and validation engine. And combine that with good geographic data that you really have a great combination.

Once you geocode an address, then there's a huge amount of geographic data that can be added to the address. I think of it's like latent energy. All of this new data that no one knew was there all this new information about an address and can be unlocked when geocoding happens.

**06:36** - [Reverse geocoding](#) is really just the exact opposite of geocoding, and it seems to be very relevant today. We've got billions of devices, literally billions that are churning out location information, usually as latitude and longitude.

These lat longs deliver to app providers and cell phone service providers and navigation

systems and other connected devices, typically starting with the lat long, reverse geocoding then converts the lat long coordinates to street addresses or maybe named locations.

An example here is this lat long and the address that it identified with that. Then let's just talk about the geocoding process. When an address is geocoded, typically it gets standardized and normalized. That includes things like parsing it to be able to identify the street types and street names in the street suffixes.

Then the address is cleansed to make sure that everything looks normal, the street suffixes and the street names and everything like that, and the city names are all cleansed to match something that's real and then it gets verified and validated in the United States.

We do that according to the United States Postal Service rules, and then it gets matched to street data and the point data and local geography. The better that data is that street data and point data and local geography, the more accurate it will be. And then after that detailed address and location codes can be returned for additional decision-making.

**08:15** - So here's a hopefully a recognizable address. Let's talk about false positives real quick, and I'm going to talk about why most geographic analysts hate false positives and how we avoid them with SmartyStreets. A false positive geocode occurs when the address is confirmed, but it matched badly or is in the wrong location.

In general, at least in the companies that I work with in the past for geocoding applications, a non-match is greatly preferred over a false positive match because false positive matches lead to bad business decisions and costly mistakes.

For example, in the case of a logistics company, a false positive match could send a truck to the wrong location and that can cost anywhere from fifty dollars to two hundred dollars per incident, depending on how far or the way they have to go. So these are very costly.

So businesses would much prefer to do a manual intervention on a non-match. A good example to show you here in a second, the false positives are greatly reduced if you have high quality address cleansing on the way in and need to be validated, such as putting SmartyStreets in front of a geocoding engine that would greatly reduce the instances of false-positive matches.

And because the [SmartyStreets US Rooftop Geocoding](#) is a hundred percent integrated with a SmartyStreets address validation API that results in highly accurate and valid results. Let me give you an example of something here. I hate to pick on Google, but they're big, and they can take it and I love them anyway. But this is an example of a false positive match.

**10:05** - It happened to me a couple of days ago. I was trying to ascertain the amount of alternate street name addresses that exist in our area. We're on State Street, but it's also a US Highway 89.

So I was curious to see how Google would handle that as an alternative street name. So I typed in 2335 S US Hwy 89 in Provo, Utah. And Google Maps returned clearly a false positive, 2335 US-89 in Harrisville, Utah, which is 90 miles away from where I was trying to get a match.

I would much prefer it to say "we don't know where that is. We can't verify it." SmartyStreets returns unknown addresses for the same address. Google didn't tell me they didn't know it, they put it 90 miles away.

In the worst case scenario, this would result in some delivery to the wrong address. So that is a false positive match, where good validation and good address quality would result in a non-match in this case.

Why do we geocode? Nobody memorizes their latitude and longitude because it's not relevant. It's just a number. What is relevant is what the address is near to, or what that address is inside of, or the risk, or the value, or the danger.

**11:53** - And that's really why people are geocoding, is to be able to get to an answer regarding a geographic location. Addresses have a lot of latent energy that is unlocked by geocoding and with accuracy, whether that's a franchise area, which was closest, or distance to a line (like a coastline or wildfire zone).

These are all questions that people who geocode, organizations that geocode are trying to answer. The more accurate the geocode, the more accurate the answer is.

And with that, I've just got a chart here that I've used for some time, which explains the

different accuracy levels of different types of geocoding and what types of decisions would be dependent on that.

So, for example, with rooftop geocoding things like risk exposure or 5G coverage in telecommunications, mobile marketing apps, what they used to call location based services, routing applications, mapping to aerial imagery or real estate technology, these are all applications that really benefit a lot from rooftop geocoding.

**13:17** - Parcel centroid geocoding could be just fine for doing things like tax determination or utility company call before you dig — they need to know what parcel to go to be able to identify where that site might be. Franchise determination or epidemiologists, usually good parts of centroid.

Interpolated— you're estimating where it is a long street segment. Territory assignment for insurance companies that's usually good for that target marketing and retail trader and site selection.

**13:48** - Then down to zip4 where demographic analysis and consumer segmentation and sales territory definition. These are all possible with these different levels. Now, geocoding applications typically cascade from the most accurate level to at least accurate. The SmartyStreets rooftop geocoder positions, a high majority of geocodes at the true rooftop level.

Addresses that it does not find at that rooftop level, will cascade down. Most of the rest at the parcel centroid level or some to an interpolated street address level. So that's how the geocoding technology cascades and how it works.

When we say rooftop geocoding, we're referring to an expression that's actually been around a long time, I've been in this long enough that I've seen the expression "rooftop geocoding" being used for a variety of different ways.

I remember back in the 90s ZIP+4 geocoding when it first came out, was actually referred to by those that pioneered it, as rooftop geocoding. Well not for long. And then Street interpolated geocoding came along and that was called rooftop geocoding. And then finally parcel centroid geocoding was called rooftop geocoding and that was almost correct.

**15:12** - I was involved in pioneering some of the early parts of central geocoding applications. And yes, in fact, a lot of addresses did land on a rooftop, but it was really more coincidental.

It wasn't by design just because a lot of people tend to build houses in the middle of a property. However, when SmartyStreets says rooftop geocoding, we mean that the placement of an address deliberately includes the geographic coordinates.

It shows up somewhere on the rooftop of a building. It's not by accident where we are taking a combination of data elements like building footprint data, and we're deliberately putting building locations, coordinates on rooftops of buildings.

And that's what we mean. And the new SmartyStreets rooftop Geocoder will place a high majority geocoded addresses right on the rooftop of the building. I'm going to give an example here of a parcel centroid versus a rooftop geocode. The sample address is in Salem, Utah. 1142 W, 1500 N.

Some geocode vendors call this a rooftop match, but it's really a parcel match. So there is the center of the parcel. You can see the turquoise line of the parcel boundary and a parcel centroid match clearly puts it right in the middle of the parcel.

**16:37** - There again, they are calling parcel centroid matches, rooftop matches, but you can clearly see here that it's not a rooftop match. The new SmartyStreets US Rooftop Geocoder though, gives this result, placed down on top of where you can see the house, this true rooftop geocoding and this is what we're talking about for rooftop geocoding.

So parcel centroid matches literally puts the location of that address right in the middle of the parcel called the centroid.

**17:12** - Address interpolation means addresses that are geocoded using street-level address ranges. It was pioneered by the US Census Bureau in the mid-nineties and is generally considered to be more accurate than ZIP+4 geocoding. The street level address has information like street name, and address ranges.

Interpolation, approximates the location of that address based on the length of the segment and the address range. So for example, in this case, 49 Main Street is about halfway along the address range of one to 99.

And it interpolated about halfway along that segment. This works fairly well. Unfortunately, addresses actually get clumped together on one side street, or the other, or on one end of the street or the other.

And so sometimes it can be hundreds of feet away, but it's still is generally considered better than ZIP+4 but not as good as parcel. And certainly not as good as building rooftop.

**18:16** - Some applications require very high confidence and location accuracy. P&C insurance is one of those applications where an accurate measurement of the distance from a property to a coastline is very, very important.

And I heard an insurance underwriter say there's really no such thing as a policy they won't write. It's really how much they're going to charge for that. And I would imagine that this house and closest to us in the foreground there is going to be fairly expensive to insure based on their close-proximity to an exposed coastline.

**18:58**

5G coverage is another application that requires building specific accuracy to determine coverage. Telco providers typically will prequalify coverage strength by geocoding an address and then matching that against coverage polygons.

Maybe some of you have said, well, I wonder what my coverage is going to be if I'm subscribed to AT&T or Sprint or T-Mobile or Verizon. You type in an address — They geocode that, and then they match that against the signal strength in that area.

**19:30** - 5G coverage is really interesting because it's frequently building specific. That's illustrated in the map below. Those are specific building locations and 5G coverage is really more like aiming a rifle at a building. it's so specific that they really need to be quite accurate in terms of how that coverage is going to work.

**19:52** - So some applications with telco including 5G, really do require building rooftop accuracy. The SmartyStreets US rooftop geocoder will offer unparalleled accuracy, speed and pricing.

So the geocoding from SmartyStreets will have precise nationwide geocoding available.



For most of those geocodes will have accuracy at the building level, and many geocodes, in fact, will have accuracy at the sub-building level.

**20:23** - Some of the the multi-unit complexes in the lower right part of the screen there are multiple addresses on each one of those buildings. That's called a sub-building accuracy level geocode. There are millions upon millions of those.

Not all of them will have that level of accuracy. Some will come together in the middle of a structure, but there are many, many that will be accurate to the sub-building level.

The superior accuracy that you'll see when you start geocoding at this type of rooftop level will be very obvious and should be suitable for applications demanding the highest levels of accuracy. The SmartyStreets geocoding data is sourced from thousands of municipal, county, and state data sets.

It's then blended with building for data street data and parcel data and all blended together to make sure that all this data can be the most precisely located is possible. And then it's tightly integrated with the SmartyStreets address validation.

**21:28** - What makes us special?

It is the highest available accuracy for true US rooftop geocoding.

It's one hundred percent cloud-based. Those of you who are SmartyStreets customers know the advantages of cloud-based infrastructure, end-users don't need to bear the cost and time of updating huge reference data sets and making sure that everything stays updated and coordinated together.

That's something the SmartyStreets does for you. All the hardware and the data updates and technical issues are completely handled by SmartyStreets. SmartyStreets has world-class customer support from our support team. When you call, chat, or email. We will answer your questions quickly — usually right away.

**22:22** - There's a wide range of lookout volume options, including unlimited volumes, which I have to tell you is rare in the cloud-based industry. Most never stop charging no matter how many geocodes.

We have a number of unlimited volume options. On top of that, we've high processing speeds, including options for over 50 million records an hour, if that is what you need, we can provide the volume that you need and what you're looking for completely in the cloud.

The SmartyStreets geocoding is very tightly integrated with SmartyStreets address API, which means that you'll have high match rates, low false positives, and a wide range of easily integrated APIs, which many of you have been using for a long time.

So it really shouldn't be a lot of extra work or any extra work to start using the geocoding API. It's completely integrated into existing processes that are already in place.

## Geocoding Accuracy Use Cases & Examples

**23:21** - Just a couple of examples real quick, I'm going to keep picking on Google just because, like I said, they're big, and then they can take it and none of us are going to stop using it for a variety of things. But the geocoding makes it easy to compare.

And they are they're pretty good. I love Google. They're pretty good. I'm just offering you options now that are better than what geocoding from Google is able to offer.

So this is an accuracy example here. This is sub-building geocoding for a strip mall, the Google geocoding is the blue dot right there in the building. Any address that you type in for that building would show up on that blue dot. And good for them.

They did put on the building and it's just not spread out. The red dot is partial centroid from other vendors. That's where they put it. But the SmartyStreets addresses are the green stars across the building.

Here's an example of a street view image of that, and the white lines there show the view that we're looking at the building. You can see that there are, in fact, a lot of retailers spread out on that building.

And it looks very credible where the SmartyStreets locations are. Another geocoding, accuracy example: Here we're using building footprint polygons to illustrate where the structures are.

This is in a mobile home community in the Midwest. And you can see that the building centroids are, in fact, on top of all, most or all of the mobile homes that are existing in that community. The pink dots of SmartyStreets and green triangles represent parcel centroids in that area.

**24:55** - Another example — this is a rural address geocoding. Again, you can see we've got the building footprints, located on the imagery where the buildings are. The pink dot at the center of the parcel is Google.

The turquoise dot is SmartyStreets and the pink lines are the parcel and property boundaries. Here you can see that SmartyStreets is putting the address correctly on the building and parcel centroid misses the mark by hundreds of feet, in this case, putting it in the middle of a pond.

**25:45** - I'd like to give you a reverse geocoding use case, most of you probably remember Hurricane Katrina unless you're very young, after Hurricane Katrina, many of the homes in Gulfport, Mississippi, and other communities nearby that were stricken by this were literally washed away.

And PNC claims agents were initially unable to identify specific properties on the ground.

I was working in geocoding this time, and I remember working with some of these companies to implement a reverse geocoding solution using mobile devices.

The mobile devices provide the lat long and then reverse geocoding was able to accurately identify many hundreds of these properties that were washed away without any street signs or house numbers by being on the property, getting the worst geocode, and then locating the property where it was located.

**26:37** - For those of you who are current customers or prospective customers, how do you use the SmartyStreets geocoder? Well, we hope it's going to be pretty simple. The SmartyStreets, rooftop geocoder and [reverse geocoder API](#) are very tightly integrated with the street address API.

You can use upgraded authorization and token keys, which will unlock the rooftop

geocoder and reverse geocoder. It's really just as simple as putting in those new auth and token keys.

You're currently getting ZIP+4 geocoding with SmartyStreets applications that will continue. You don't need to worry about that. The ZIP 4 geocoding is something that's already been provided. That will continue to be part of it. It's just that the new rooftop geocoder is an additional product.

The command-line interface, the SmartyList.exe, is fully supported for batch processing and all the current SDKs — The .Net, C#, etc., Go, iOS, Java, JavaScript, PHP, Python, Ruby, all fully supported. In the same way as it always has been, you just need to use the new keys and new authorization license and it will continue to work the way it has been.

## US Rooftop Geocoding and Reverse Geocoding API Release Schedule & Future Plans

**27:58** - What's our release schedule?

We are targeting early September 2020. The rooftop geocoder and reverse geocoder are currently in beta testing.

**28:22** - The rooftop geocoding will be an add-on to address validation, and there'll be additional pricing that will be determined by volume and processing speeds. The pricing will be public and published soon. Contact SmartyStreets Sales, if you have questions regarding enterprise and high-speed options or pricing questions about the product.

**28:46** - There's a wide range of processing speeds. That includes options 13,000 records per second, which equates to around fifty million records an hour. And we will continue to offer unlimited enterprise options for validation and also for rooftop geocoding.

**29:09** - It's difficult to find vendors right now that will offer rooftop geocoding in unlimited volumes in the SmartyStreets tradition, this is something we're going to continue to do for our enterprise customers, and we'll be happy to talk to you about that.

There will be options for higher speed and things like that. And as always, the world-class support team from SmartyStreets will continue to support you in your use of the

rooftop geocoder.

## Geocoding Questions and Answers

**29:42** - Ready to get started? I'm going to leave this up on the screen while we answer some questions.

**30:37** - One question here is, can you speak to how the quality of the SmartyStreets compares with competitors and specifically how the geocoding compares to the Google Maps API? Well, I'd answer some of this a little bit. The Google Maps API is very good and many of us, I think, have probably been using it from time to time over the years.

I would say that the SmartyStreets geocoding application is going to be, worst case will be as accurate, and in most cases will be more accurate, especially as it compares to multiunit properties or multiple properties within a parcel, for example, with apartments or with mobile home communities or rural addresses.

We've seen a big difference in terms of quality. We've done a lot of comparison to the Google Maps API, and it just I would say it does a lot better, especially in some types of properties.

**31:50** - Another one here, the if we already have a SmartyStreets account and API key, would we need to create a new subscription?

The rooftop geocoding accuracy will be extra. So there will be an extra licensing fee to be able to access that. And you can work that out with your sales rep.

Another question here, will the rooftop geocoding application give unit granularity like in strip mall? Well, I think we partially answered that, yes, in many cases it will give unit granularity.

It's not 100 percent right, so not every multiunit property, like a strip mall or an apartment building or condo complex will always give unit granularity. But I'd say if I had to just give a broad guess, I'd say about 50% of the time you will get unit granularity.

**32:48** - What are the percentages of addresses do we have a true rooftop and not a parcel

centroid? Our early beta testing has shown that we're getting a rooftop level about 80 percent of the time.

I mean, I'm not going to guarantee that, but I'm saying that that seems to be what our early nationwide testing is showing.

We're getting something better than ZIP+4 accuracy, meaning we're getting an actual address. We're getting about 80 percent accuracy.

**33:24** - Are you handling location points on the Z-axis? What a great question. And I, I anticipated that would be a question. And the answer to that is no, not yet. There are some ways to possibly interpolate at elevation.

And let me explain what this question means for those of you who might be new to the concept, the Z-axis is the elevation above ground at the building level. No, we're not doing that yet.

In Japan, which I think probably has the best geocoding source data in the world, they actually make all that data available if you're willing to buy it, you can get X, Y, and Z locations and names of every apartment and unit in the entire country with the latitude, longitude and elevation. We're not quite there yet, but maybe someday.

**34:27** - What are the sources of your data and how frequently is your validation data is refreshed? The sources of data are proprietary, but I will say that the majority of our data is coming from thousands upon thousands of locally sourced government entities like cities, municipalities, counties, and sometimes states.

**34:56** - We're blending all these together to get the best location for every address point that we can. The source data for address validation is updated monthly. Does SmartyStreets provide parcel data? Not yet.

It's something that we're considering. Shortly in the future, SmartyStreets will begin offering updated data sets, which we call enrichment data sets, where we'll be offering additional data for each of the addresses that we geocode.

Parcel data and the attributes for parcel data, which is hundreds and hundreds of things like building type, rooftop structure, number of bedrooms and bathrooms, detached

garages, and things like that.

All of those are available with that type of data. I anticipate that within the next year that we will start offering data such as that. This first release of the rooftop geocoder does not include that level of data.

**36:05** - In the mobile-home example, there were some pink dots on empty spaces. How does that happen? Very that's very observant and a very good question.

It's in a mobile home community and mobile homes are mobile, and so it turned out that the imagery date did not appear to match up with the building footprint data, or the address data of three different data sets, we've got, building footprint typically collected by a local municipality or county, imagery data that is collected by Google, Bing or various other companies, and then we've got the address data, which is also collected by various local government authorities.

**36:56** - Those don't always match up 100% in mobile home communities. Mobile homes come and go fairly rapidly, so it's just really a data synchronization issue. But as this is for geocoding, if someone gives you that address where there might be an empty space, you're still going to get the location correct.

**37:17** - If an address cannot be rooftop validated and is demoted to the central parcel, is there a consideration for how close this address is to the boundary line? The more likely it's near or on the line, the lower the confidence?

We are just saying it's a parcel centroid, and we're not giving anything like the area of the parcel or the perimeter of the parcel, anything like that, I'd say about within the database, about 10 percent of the addresses will be demoted to parcel centroid.

**38:32** - One question here is — this seems residential focused? Is, SmartyStreets a good solution for B2B marketing, or list development or business type targeting? This is actually not residential focused. Many of the examples that I showed today were residential examples, but business addresses actually will have a higher rate of matching than residences.

They tend to be more postal authorized than residential. So it is definitely not only focused on residential, many of our clients are very much commercially oriented. In fact,

we'll tell you with the results with SmartyStreets if it's a residential or a business.

**39:56** - The question is — Are you still using mailing addresses to verify or using legal addresses, i.e. tax assessor data? We're using a combination. The mailing addresses are being used to validate and verify the addresses.

A lot of our source data does come from the addresses originally contained in tax assessor data, but they are being validated and verified right now by USPS.

On our roadmap for next year we are going to be expanding our coverage to include all the non-USPS addresses, many of which can be found in the parcel data.

**41:38** - Are addresses in Puerto Rico, supported by the geocoder. Not yet. We have really great information for Puerto Rico, and we are currently investigating the viability of doing that. So I would say not yet, hopefully soon.

**42:11** - We have one more question — I need to merge two data sets, through address merging, what would be the best way to use an address validation service for my business? I think that we've noticed that we have a fair amount of customers who are using the SmartyStreets service traditionally for doing a lot of address blending and address validation.

**39:21** - One thing that's really interesting about this question is that there are a lot of sub-parcel addresses will have a different street name.

For example, we can have a parcel in a downtown area that could have '1st Ave' on one side that would be covered with addresses, and on the other side of the parcel you could have 'Main Street' that is also covered with addresses — all of which would be part of the same parcel.

**43:19** - For address blending operations, there are a lot of companies that would like to know that those two separate addresses were in close-proximity to each other or even in the same parcel. I know that in real estate, this is especially important to know all the addresses that may be part of the same parcel.

With the SmartyStreets Rooftop Geocoding this will be possible in most cases. You'll be able to identify that those addresses are part of the same building, or in close-proximity to



each other, even though they may have different addresses.