


# The Importance of Partnerships

To Advance Interoperability

Derald Dudley, USDOT  
Holli Howard, Google

September 22, 2021

  Bureau of Transportation Statistics



- Intro and Welcome
- About current work and how partnership communication improves outcomes
  - USDOT
  - Google
- A few wins for Public Private Partnerships: WZDX and the NAD
- Brainstorming fun with the Mentimeter

## BTS | Google

### Importance of Partnerships to Advance Interoperability

Derald Dudley, USDOT and Holli Howard, Google



**Derald Dudley**'s geography career started at the GIS lab at Virginia Tech in 1992 where he digitized stream orders and soil types for the state of Virginia. Starting in 1996 he worked as a cartographer at NOAA's Marine Chart Division where he managed source data used in the construction of Nautical Charts. Derald started at the **USDOT** in 2001 and he currently Leads the Transportation Theme of NSDI and chairs the Geospatial Transportation Subcommittee where he leads the effort to maximize the benefit geospatial-transportation resources for the nation. Specifically, he coordinates the efforts of federal partners and facilitates their compliance with legislative and executive directives directed at improving geospatial data management.

**Holli Howard** represents Geo Data Operations and manages the Geo Data Upload program at **Google**. She spearheads engagement efforts with geospatial industry partners and government agencies to improve efficiency of interoperability with Google Maps. Holli was previously a Senior Geospatial Analyst at the National Geospatial-Intelligence Agency and the USAID's GeoCenter.

We are presenting together because people like the sound of names with alliterations to begin on a good note.

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**What important feature type would you like to access or share more broadly, but find it difficult?**

Answer at [www.menti.com](https://www.menti.com)

Use access code: 7024 2527

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**Safety:** Reduce Transportation-Related Fatalities and Serious Injuries Across the Transportation System.

**Innovation:** Lead in the Development and Deployment of Innovative Practices and Technologies that Improve the Safety and Performance of the Nation's Transportation System.

**Infrastructure:** Invest in Infrastructure to Ensure Mobility and Accessibility and to Stimulate Economic Growth, Productivity and Competitiveness for American Workers and Businesses.

**Accountability:** Serve the Nation with Reduced Regulatory Burden and Greater Efficiency, Effectiveness and Accountability.

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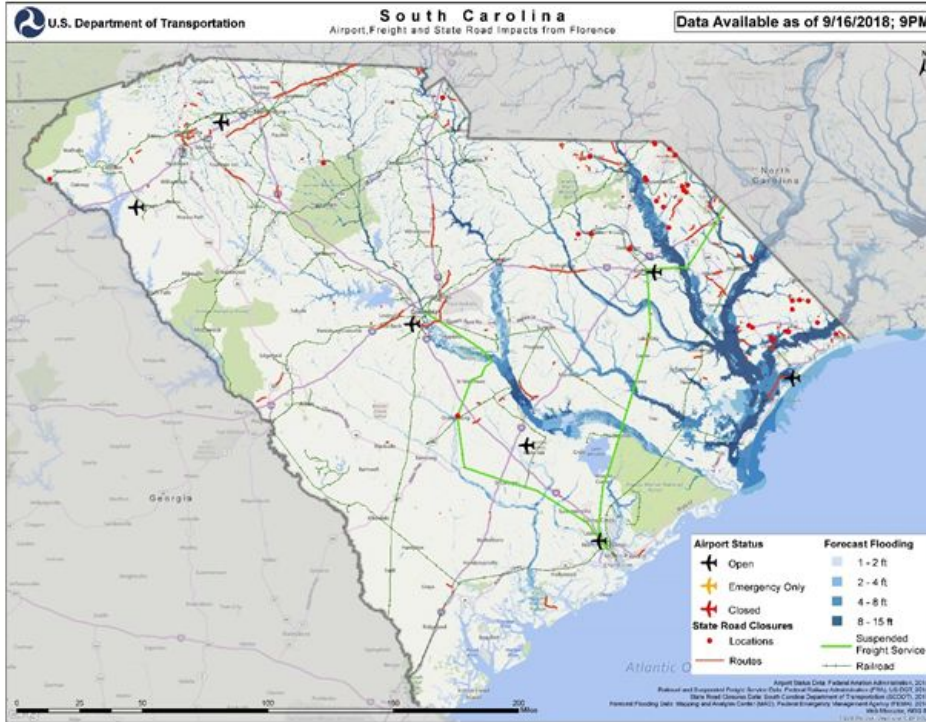
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# GEOSPATIAL PROGRAMS ADVANCE DOT GOALS



All USDOT administrations use Geospatial data

Advance mission goals by examining the whole system and how the components complement each other

**We improve safety, infrastructure, and accountability through innovation.**

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## What does transportation look like in 20, 50, 100 years?



### Zero Deaths

Integrated computer systems

Vehicle to Vehicle (V2V)

Vehicle to Infrastructure (V2I)

Location and travel characteristics shared

Better informed drivers improves safety

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AVs rely on multiple systems to assess conditions and inform drivers

One component is geospatial data

Geospatial data plays an increasingly important role

To share geospatial data we must agree on content, format, method of sharing.

How?

Voluntary **STANDARDS!**

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Standards **THRIVE Through Consensus** and languish in isolation.

Must have the support of an interest group (IG) to be successful.

Standards are onerous to create and maintain.

Difficult to implement; Is a standard a standard if no one is using it?

IGs define administration rules, document the content, agree on representation, format, definitions, structures, transmission, manipulation, use, and more;

IGs advocate for the standard and build a user base through outreach

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Avoid the Stovepipes. (A.K.A. “Columns of Excellence”)

Standards serve the communities that develop them.

Poor representation creates standards that serve only a portion of the community.

~~“Standards Development”~~ - Consider “Standards Lifecycle”  
Standards are never finished

We must constantly advocate for data standardization.

**Be vigilant!**

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**With what organizations do you partner or collaborate?**

Answer at [www.menti.com](https://www.menti.com)

Use access code: 7024 2527

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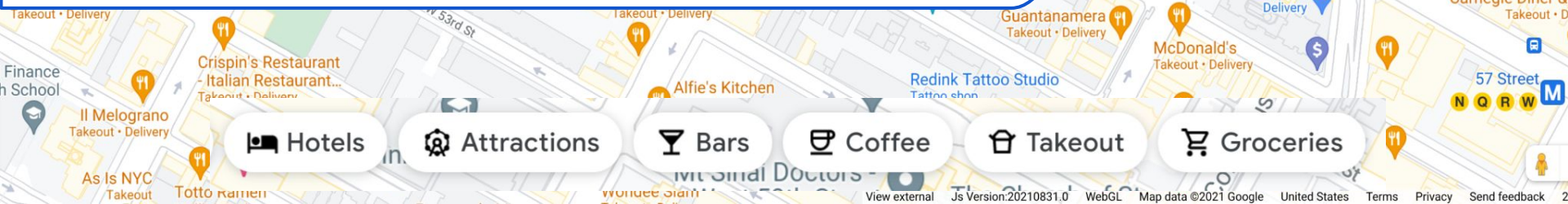
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Google aims to provide comprehensive location data across the globe

With this goal to provide users with **the best, most up-to-date map possible**, we need multiple ways to accomplish this.

We build map data with machine learning and internal operations, but **geospatial industry partnerships bring authoritative, high quality, critical data to the map**. Many features are not possible without these partnerships.



However the data created and provided was almost certainly generated for a completely different purpose or use case than to showcase on Google Maps....

So you never know what you will get...

This means that every provided data set is unique and **currently** comes with its own rules, nuances based on its original intended use, the data creator and the region +...



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**For Addressing do you use:**

- A. FGDC**
- B. E911 NENA**
- C. Both**
- D. Other**
- E. Not sure**

Answer at [www.menti.com](https://www.menti.com)

Use access code: 7024 2527

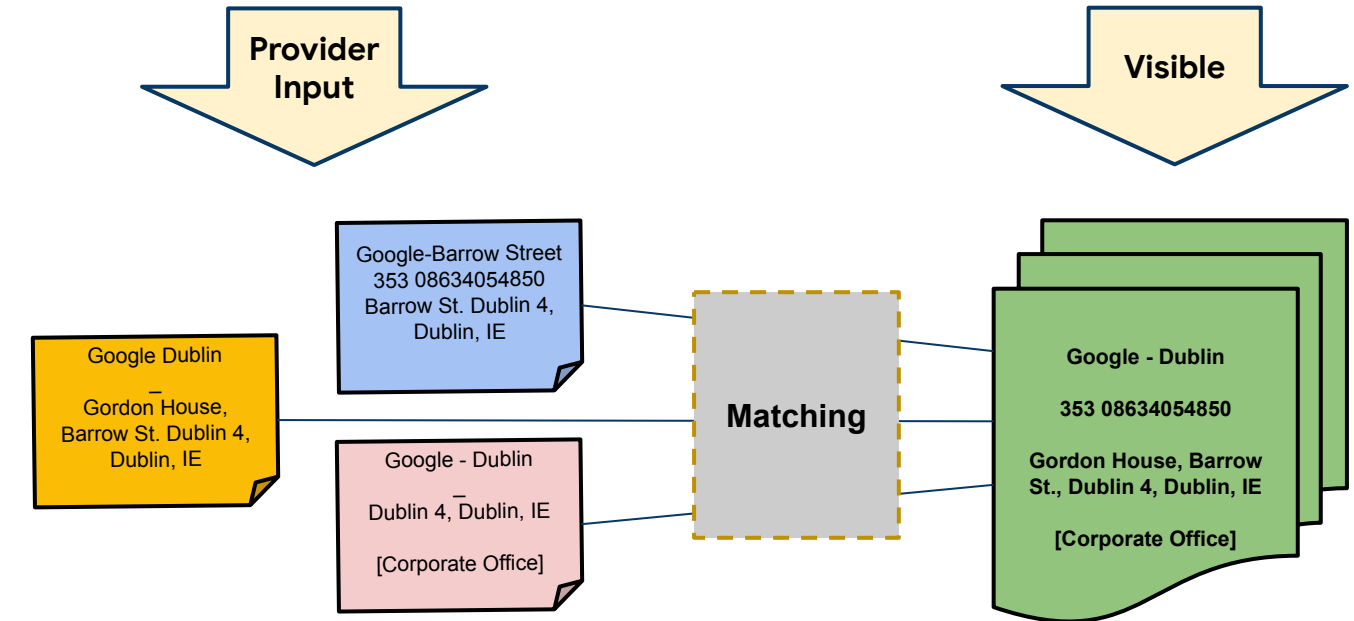
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## Matching is the key to the process, efficiency and success





# INCORPORATING PARTNER DATA for the best user experience

The screenshot displays a Google Maps interface for the location 'Google, Dublin'. The search bar at the top contains the text 'Google, Dublin corporate headqu...'. Below the search bar, there is a 'Back to results' link and a street view image. The main information panel on the left shows the business name 'Google, Dublin', a 4.5-star rating with 1,302 reviews, and the address 'Corporate office'. It includes navigation icons for Directions, Save, Nearby, Send to your phone, and Share. Below these are details such as 'You visited 2 years ago', the full address 'Google Building Gordon House, Barrow St, Dublin 4, Ireland', and contact information including phone number '+353 1 436 1000' and website 'google.ie'. At the bottom of the panel, there is an 'Add a label' option. The map itself shows the location of Google Dublin (marked with a red pin) in the center, surrounded by other businesses like 'The Foundry', 'EuroSpar Barrow Street Delivery', and 'Meagher's Pharmacy Barrow Street'. A street view inset shows a 3D view of the building. At the bottom of the map, there are three business cards for 'Google, Dublin', 'Google Velasco', and 'Google EMEA HQ', each with a star rating and a 'Website' link.

A yellow arrow pointing downwards is positioned above a stack of three green cards. The top card contains the following text:

**Visible**

**Google - Dublin**

**353 08634054850**

**Gordon House, Barrow St., Dublin 4, Dublin, IE**

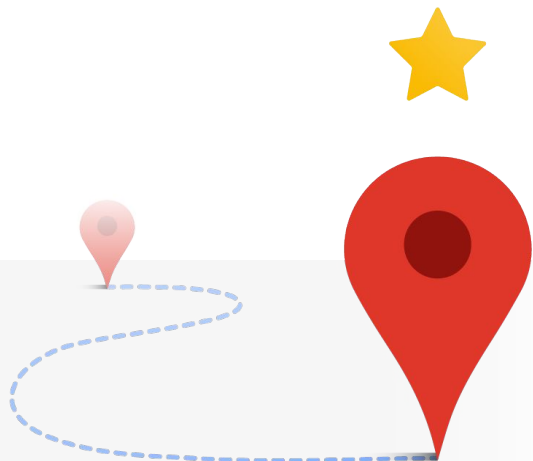
**[Corporate Office]**

A horizontal bar with a light background and a map-like texture. It contains six rounded rectangular buttons, each with an icon and a label: 'Hotels' (with a bed icon), 'Attractions' (with a camera icon), 'Bars' (with a cocktail glass icon), 'Coffee' (with a coffee cup icon), 'Takeout' (with a shopping bag icon), and 'Groceries' (with a shopping cart icon).

## GEO DATA UPLOAD PROGRAM

A website that enables partners to seamlessly bulk upload/share their geospatial data to Google Maps

<https://g.co/maps/geodataupload>



### Geo Data Upload basics

- [About the Geo Data Upload](#)
- [Get started with Geo Data Upload](#)

### Get started with Geo Data Upload

Help people in your region find their way by improving your town's geographic data on Google Maps. We welcome submissions from organizations and governments with authoritative data. Below are the general guidelines or if you are familiar with the requirements, get started here:

[Ready to Upload Data](#)

#### Partner requirements

We partner with organizations of all types to incorporate their authoritative mapping data in our services, including national, state/provincial and local governments as well as non-profits, educational institutions and commercial entities.

To advertise your business, please visit [Google My Business](#) to manage your presence across Google for free. If you are not an eligible partner, you can still submit Maps feedback to Google [here](#). Here is one more place to go if you don't fit these requirements - [Get on Google](#).

#### Content requirements

Full content specifications are available [here](#).

Once your organization is approved, Google will process your data, with priority given to roads and addresses missing on Google Maps. We will accept additional features (e.g., parks, political boundaries, buildings, parcels) though we are still experimenting with processing these types so each will be handled case by case.

#### How to share your geographic data on Google Maps

After you understand the requirements, follow these steps to submit your organization or agency for approval and share your geographic data on Google Maps:

1. Create a new account or sign in to [Geo Data Upload](#)
2. Enter your information when prompted to include an upload name, data type and description reflecting the data to be shared
3. Click "Upload files" to upload your files prepared according to [content specifications](#)
4. Click submit

#### After you submit

Once you upload your data, you will have email access to the Google operators processing your data for information and updates. This is the best way to ask questions about your submission. You will receive an email notification when we begin working on your data and can see status throughout the process within the tool.

Status defined:

**New** - Thank you for uploading your data; it will soon be passed to a Google operator to assess.

**Under Review** - A Googler has claimed your data set and is converting it for the best visualization on Maps.

**In Use** - We have completed processing and you should now see the accepted changes visible on Google Maps.

Turn around time is dependent on many variables. Once your data status changes to 'Under Review', an operator can give you more information about your data set. At this stage, we may ask for additional information to improve the outcome, let you know potential challenges or when you will be able to see your data on Maps!

## POI Requested Data Format for Geo Data Upload: Required, Preferred, Optional

Required for best matching outcomes:

- Name
- Address (varies by region)
- Latitude/Longitude
- Category (Restaurant, Medical Center)
  - This is how we can tell that these three places can be in one address
- Phone number (verify)
- Unique ID

CSV (single) v. XML (feeds)

- Readability and manipulate columns
- Parse address, normalize by region
- Easier for non tech partners

CSV Field	Required	Description	Justification
Unique_ID	REQUIRED	This is an alphanumeric value used to identify each POI. Each value must be unique to each feature and should remain consistent across all uploads.	Used to ensure continuity and track the lifecycle of a data point
Name	REQUIRED	Contains the business name for a particular listing.	Identifier
Category	REQUIRED	Contains the business category to which the business belongs. <a href="#">Examples</a> For polling stations, use "voting_facility"	This helps Google identify how it will render on the map. A pharmacy has different attributes than a school.
Latitude	PREFERRED	Contains the latitude that corresponds to the location of the listing.	If you have Lat/Long for these point please include to aid matching
Longitude	PREFERRED	Contains the longitude that corresponds to the location of the listing.	If you have Lat/Long for these point please include to aid matching
Full_Address	REQUIRED	Contains the full formatted address, including all available details (street number, street name, town/city, state/province/region, postal code and country).	Full address string to ensure best match; please only include exact address in your countries standard format
Street_Number	OPTIONAL	Parsed out address	
Street_Name	OPTIONAL		
Apartment	OPTIONAL		
City_Locality	OPTIONAL		
State_Province	OPTIONAL		
Country	OPTIONAL		
Postal_Code	OPTIONAL		
Phone	OPTIONAL	Contains the main phone number of the business (including country code e.g. +86).	Aids in identification and verification
Website	OPTIONAL	Contains the URL for the official website of the business. Please make sure your URLs begin with "http://" and include your domain name.	Aids in identification and verification

*Content Requirement Examples at [g.co/maps/geodataupload](http://g.co/maps/geodataupload)*

**What standards do you use for addressing (roads and address points):**

- A. Our own internal agency format**
- B. State and Country standards**
- C. Internationally recognized standards**
- D. Not sure**

Answer at [www.menti.com](https://www.menti.com)

Use access code: 7024 2527

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**How hard is it for your organization to convert to a new standard?**

- A. Easy - i.e my team would have to prioritize it though**
- B. Medium - i.e we need approval from the boss**
- C. Difficult - i.e. much red tape and/or budget**

Answer at [www.menti.com](https://www.menti.com)

Use access code: 7024 2527

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# Example: COVID TESTING CENTERS NEAR ME

## Required for best matching:

- Name
- Address (varies by region)
- Latitude/Longitude
- Category (Medical Center)
- Phone number (verify)

## Optional for additional attributes:

is_covid_19_testing	REQUIRED	Indicates whether a facility is currently performing medical testing for COVID-19. Required for COVID-19 testing centers. Format is "Yes/No".
has_antibody_testing	OPTIONAL	Indicates whether a facility is currently performing medical antibody testing for COVID-19. Preferred for COVID-19 testing centers. Format is "Yes/No".
has_drive_through_covid_19_testing	OPTIONAL	Indicates whether a facility has drive through testing capabilities. Format is "Yes/No".
is_appointment_required_covid_19_testing	OPTIONAL	Indicates whether a facility requires an appointment before a consultation. Preferred for COVID-19 testing centers. Format is "Yes/No".
is_prescription_required_covid_19_testing	OPTIONAL	Indicates whether a facility requires a prescription. Preferred for COVID-19 testing centers. Format is "Yes/No".
has_covid_19_testing_patient_restrictions	OPTIONAL	Indicates whether there are any restrictions on the type of patient that can get tested for COVID-19 here (e.g. only in-network patients, first responders, or county residents). This does not refer to other types of restrictions such as if a prescription or appointment is required. Preferred for COVID-19 testing centers. Format is "Yes/No".
covid_19_website	OPTIONAL	Specific website containing relevant COVID-19 testing information. http:// or https:// prefix must be used. <b>*If used, "facility_instructions_covid_19_testing" must also be included*</b>
facility_instructions_covid_19_testing	OPTIONAL	Block of text to indicate instructions or restrictions a user must be aware of before visiting a facility. <b>*If used, "covid_19_website" must also be included*</b>

The screenshot shows a Google search for "covid testing center near me". The results list several locations, with "Garnet - Burlington International Airport" selected. The details for this location include:

- Category:** COVID-19 testing center
- Attributes:** Appointment required, Referral not required, Testing for all patients
- Instructions:** Schedule an appointment at www.garnet.care/testing. Paid service, insurance not accepted.
- Address:** 481 White St, South Burlington, VT 05403
- Hours:** Closed · Opens 8AM
- Phone:** (802) 876-2400

Red arrows in the image point to these specific attributes: "Appointment required", "Referral not required", "Testing for all patients", "Verify testing center info before going", and "Phone: (802) 876-2400".

# CHALLENGES - When partner data doesn't match our schema... or even if they do

## Data issues from partner data that influence matching success to current POIs:

- **Names/Title Errors**
- Miscellaneous characters in names
- Generic names
- Excessive use of abbreviations
- Excessive title casing errors
- **No TYPE category provided** (hospital v. medical center; more than one in same address)
- Address Errors - Improper values used (localities in street name column) or just incomplete
- **Lat/Long not rounded to the 6 to 8th decimal (e3)**

## Even if the data is submitted to our template specifications there still may be matching issues:

- **We may not have roads or addresses in that region so we would need both lat/long and address at times; This may be actually a POI but it is difficult to verify**
- There may always be 'something' with partner data (we always have to review data before we can give TAT i.e)
- Technical specifications but there are always potential caveats to the data sets submitted - in their use case the data may look right, but is off in ours
- Create duplicates because the names don't match and so we create a new point (Data says *Outlet*, but we have it as *Superstore*)
- Some countries do not have addressing so Lat/long, pluscodes, short Inc. - address need to also be in the standardization model

The composite image illustrates data matching challenges through several components:

- Map:** A map of the Eastern United States with a red arrow pointing to a location in the Southeast.
- Satellite View:** A satellite view of a wooded area with a yellow pin indicating a location.
- Data Table Snippet:** A table snippet showing a 'Hospital' row highlighted with a red arrow, indicating a category mismatch.
- Pharmacy List:** A list of pharmacy names with red arrows pointing to specific entries, such as 'Pharmacie Jonathan Barville, Steven Haddad et Patrick Lamarche inc. - AstraZeneca' and 'Pharmacie Catherine Sanche et Alain Plourde (St-Étienne) inc.', demonstrating name and category mismatches.

# CHALLENGES - If we had a common standard many conflicts could be resolved

## Data issues from partner data that influence matching success to current POIs:

- Names/Title Errors
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C	
Category	
Hospital	
Health Care Facility	

Farmacia Khedri pharmaciens inc.	
Farmacia Vaccination Lafontaine - Studio Yoga	
Pharmacie AstraZeneca	
Pharmacie AstraZeneca	
Pharmacie Jonathan Barville, Steven Haddad et Patrick Lamarche inc. - AstraZeneca	
Pharmacie Dolarian et Chirinian Senc - AstraZeneca	
Jean Coutu-Pharmacie Danielle Fréchette Inc. - AstraZeneca	
B. Morand, É. Péladeau, M.-A. Sauvé, S. Vinet et M. Vinet pharmaciens inc. - AstraZeneca	
Familiprix-Pharmacie Sylvie Champagne et Stéphanie Ouellet(MAGURIE) - AstraZeneca	
Matthieu Leduc, Martin Halley, Julien Bolduc, pharmaciens inc. - AstraZeneca	
Pharmacie Faten El-Gharib - AstraZeneca	
Pharmacie Familiprix Est de l'île	
Familiprix Extra - Pharmacie Yanick Fournier Inc.	
Pharmacie Gervais Lemay Inc. - AstraZeneca	
Brunet - Pharmacie Catherine Sanche et Alain Plourde (St-Étienne) inc.	
Familiprix - Pharmacie Pierre-Olivier Bertrand Inc. ***MODERNA***	
Uniprix - Sylvie Bougie, pharmacienne Inc.	



- Intro and Welcome
- About current work and how partnership communication improves outcomes
  - USDOT
  - Google
- **A few wins for Public Private Partnerships: WZDX and the NAD**
- Brainstorming fun with the Mentimeter

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WZDx is...

A simple, open standard for sharing a subset of data about planned work zone event.

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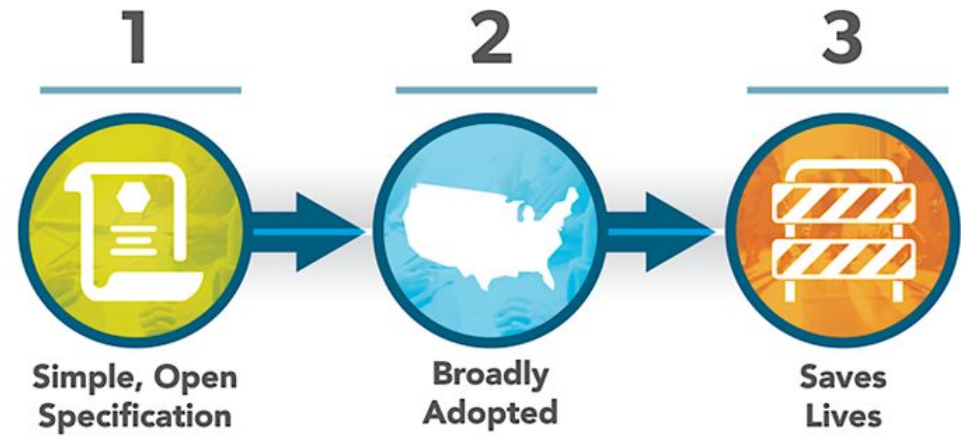
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# The Work Zone Data Exchange (WZDx)



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<b>Specification Update Subgroup</b>	Update the WZDx specification
<b>Worker Presence Subgroup</b>	<ul style="list-style-type: none"><li>• Promote the inclusion of real-time information on the presence of workers in work zones</li></ul>
<b>Technical Assistance Subgroup</b>	<ul style="list-style-type: none"><li>• Identify best practices in implementing feeds</li></ul>
<b>Smart Work Zone Devices Subgroup</b>	<ul style="list-style-type: none"><li>• Extend the specification to include real-time data from SWZ devices</li></ul>
<b>Specification Extension Subgroup</b>	<ul style="list-style-type: none"><li>• Identify and draft extensions to the WZDx specification beyond work zones</li></ul>

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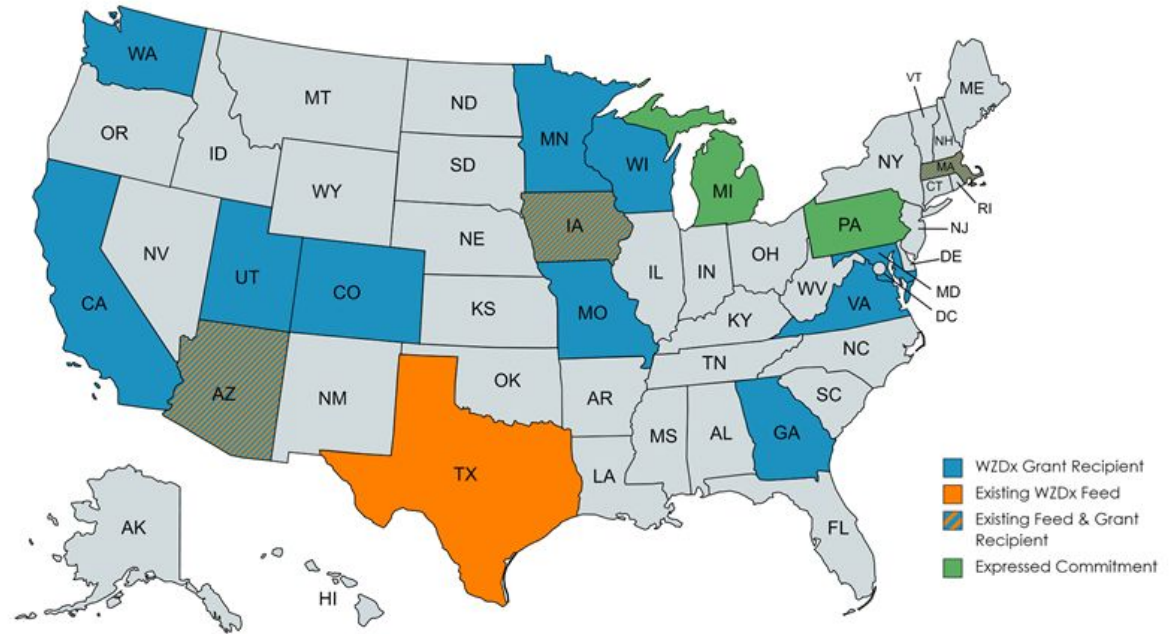


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USDOT offered a one-time grant opportunity in 2020 for public roadway operators such as state/local agencies to establish WZDx data feeds.

**Find more information at:**

[https://ops.fhwa.dot.gov/wz/wzdx/demonstration\\_grants.htm](https://ops.fhwa.dot.gov/wz/wzdx/demonstration_grants.htm)



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**How familiar are you with the Work Zone Data Specification?**

- a. Not Familiar**
- b. Kind of Familiar**
- c. Familiar**
- d. Very Familiar**

Answer at [www.menti.com](https://www.menti.com)

Use access code: 7024 2527

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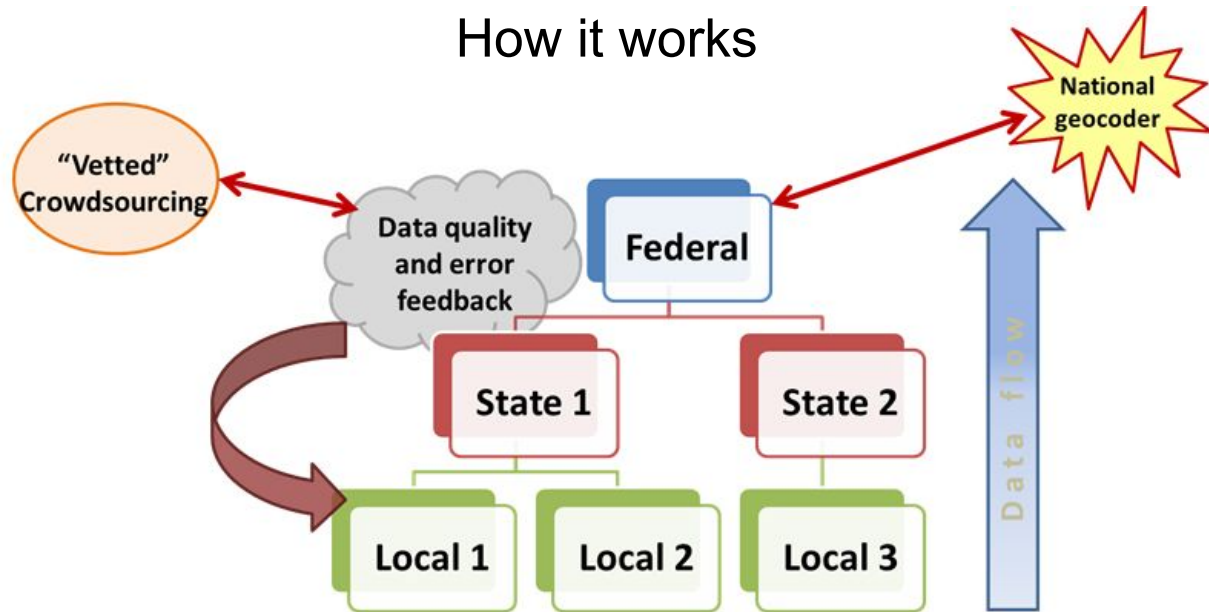
Before the NAD, there was no authoritative, nationwide, public domain GIS database of addresses

Address points critical to 911 response and service delivery

Addresses required for NG9-1-1

In 2015, DOT agreed to lead the effort to compile the NAD by working with data partners at all levels of government

## How it works



First met at the Maritime Institute in Linthicum, MD (April 2015)

Objective: Identify & discuss possible options for developing the NAD

Broad stakeholder representation

Government (Federal, State, Local, and Tribal) – 45 representatives

Private Sector – 8 representatives

Non-Profits and Trade Organizations – 5 representatives



**Do you provide data to the National Address Database (NAD)?**

- A. Yes**
- B. No**
- C. Not sure**
- D. This does not apply to my organization**

Answer at [www.menti.com](https://www.menti.com)

Use access code: 7024 2527

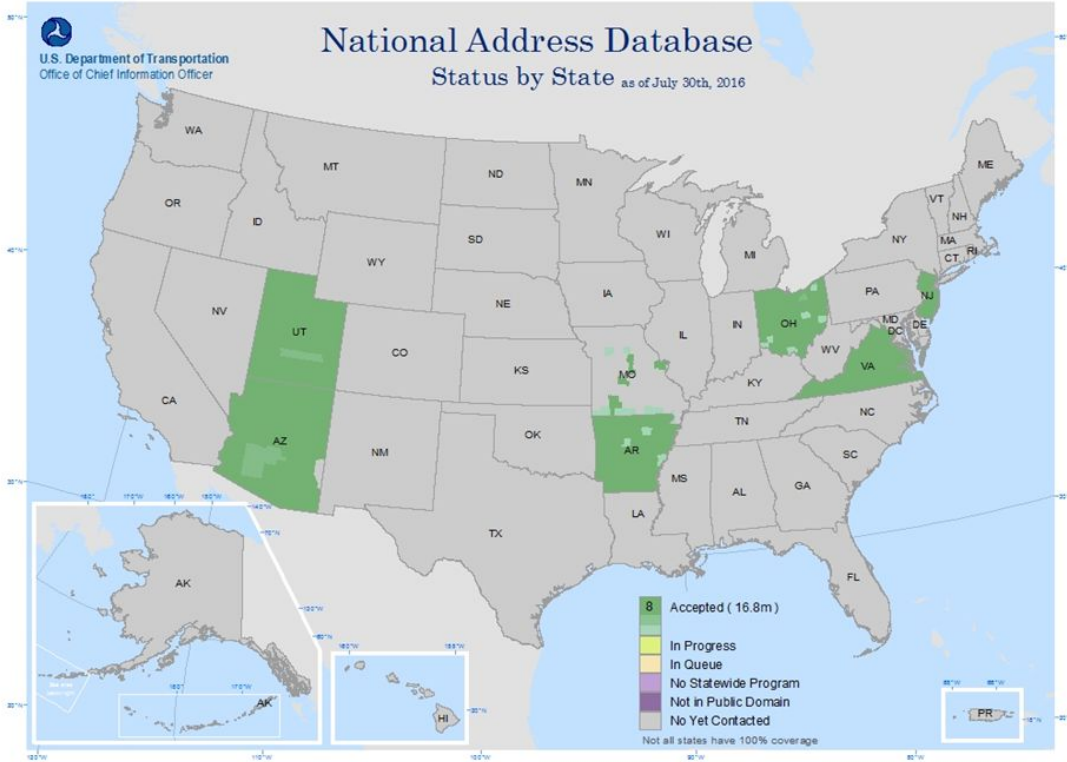
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# STANDARDS WINS - BUILDING THE NAD - COALITION OF THE WILLING

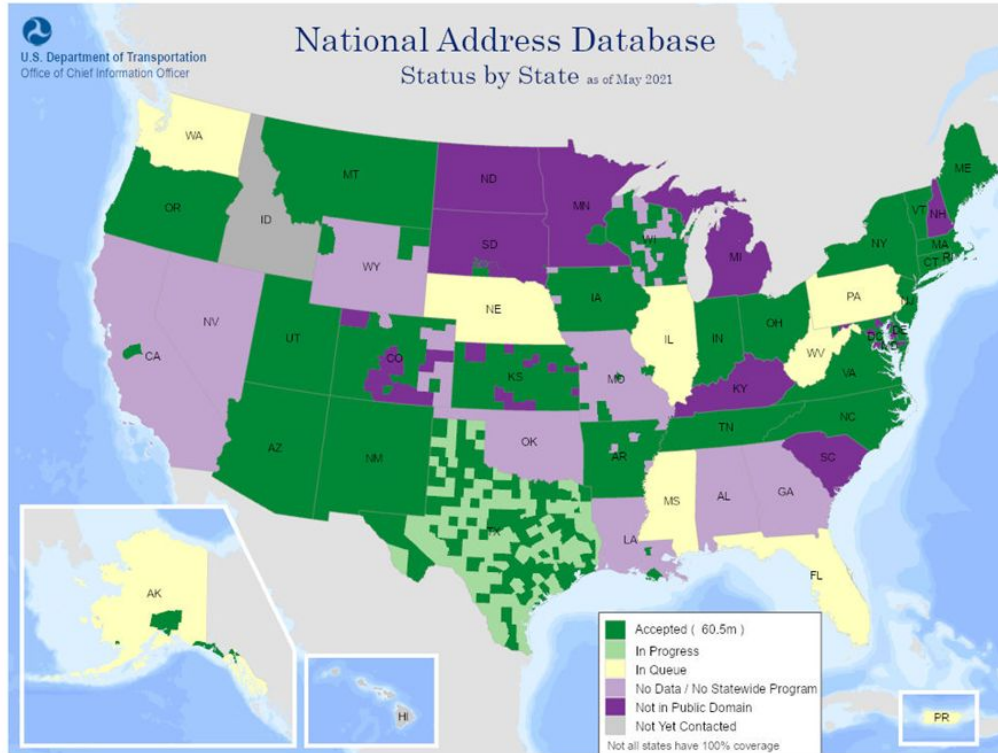


## Original Partners (OPs)

Arizona  
Arkansas  
District of Columbia  
New Jersey  
Ohio  
Utah  
Virginia  
Missouri  
9 counties  
1 city

**NAD Published in July 2016**

# STANDARDS WINS - BUILDING THE NAD - COALITION OF THE WILLING



## The coalition has grown

34 state partners,

25 provide data

25 county partners

1 city partner

1 tribal partner

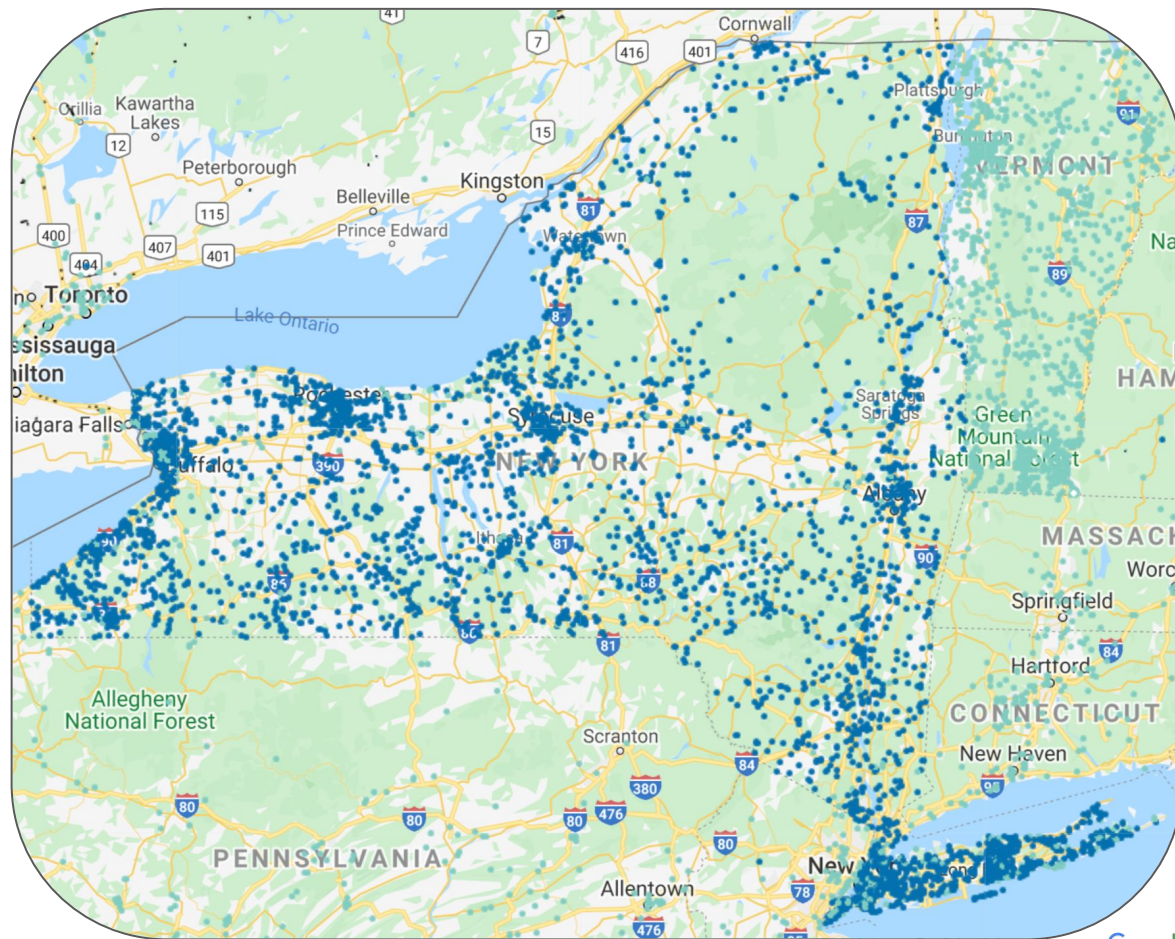
**60.5 million address points provided  
to the NAD**

[www.transportation.gov/nad](http://www.transportation.gov/nad)

# STANDARDS WINS - NATIONAL ADDRESS DATABASE (NAD) PUBLIC PRIVATE PARTNERSHIP

- Commercial companies are able to use NAD to have geocode coverage streamlined for any state that has joined the National Address Database
- At Right - Google Maps Modifications based on NYS and NAD Geocode data

**HUGE WIN WIN WIN!**  
For USDOT, States and Commercial Mapping Companies



Proprietary + Confidential



**Would you participate in the National Address Database (NAD) if you knew that Google and other large map agencies would then be able to easily access your data through a single authoritative source?**

- A. Yes**
- B. No, this doesn't influence why I don't participate**
- C. This doesn't apply to my organization**

Answer at [www.menti.com](https://www.menti.com)

Use access code: 7024 2527

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# Thank you!

## Q & A

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Holli Howard, [hollihoward@google.com](mailto:hollihoward@google.com)

September 22, 2021

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