

How does Google Maps work?

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For example, how does Google create accurate maps in many different areas? How can it collect all data about every corner of the world? Who is responsible for maintaining and updating the map? What about real-time traffic conditions, temporary speed limits and operating hours of local businesses?

Somehow all of these complex features work very smoothly, which is why so many of us rely on Google Maps to navigate daily. So isn't it time for us to find out how it works? Read the following article to see what 'magic behind the curtain' is!

How does Google Maps work?

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Why does Google launch Maps?

Google's mission is to "organize the world's information and make this information universally accessible and useful". Many, but not all, of Google's current projects focus on this task - a task that depends on collecting, organizing, and interpreting millions of gigabytes of data.

But the information that Google is trying to organize is not only online, but also largely offline. Speaking to The Atlantic, Manik Gupta, Google Maps senior product manager, explains: 'We are trying to bridge the gap between what we see in the real world and the online world. Maps really plays an important role in that process.'



At a very basic level, Google Maps has taken a huge amount of offline information and published it online. We are saying things like highway networks, traffic signs, street names and business names. But Google also hopes that Maps will be able to do more in the future.

Collect data for Google Maps

Data collection to help maintain and improve Google Maps seems never to be enough - and really impressed that no information over 3 years has not been updated. This is a very large project.

Google Maps partners

Google works with "comprehensive and authoritative data sources" through its Base Map Partner Program. A large number of agents send detailed vector data to Google. These include USDA Forest Service (US Department of Agriculture Forest Protection Department), US National Park Service (US National Park Service), US Geological Survey (US Geological Survey), many associations city ??and county, etc.

This data is used to identify changes between boundaries and waterways, showing new bike paths, and more. This helps keep the "base map" constantly updated.

Street View

The Street View feature of Google is a never-ending road trip. With a huge fleet of cars scattered across the planet, the goal is to constantly drive around every road that can find and capture 360-degree photos everywhere.

Based on the GPS coordinates of the media, Google will map Street View images on its base map.



Street View offers more than street panoramas and locations. Using optical character recognition (OCR), Google can 'read' things like traffic signs, traffic signals and business names.

These additional readings are processed and converted into navigational and navigational data that Maps can incorporate into its database. If the street name has changed since the last time the photo was taken, a recent Street View photo will detect this. This is also (in part) the way Google builds a huge database of its local business details.

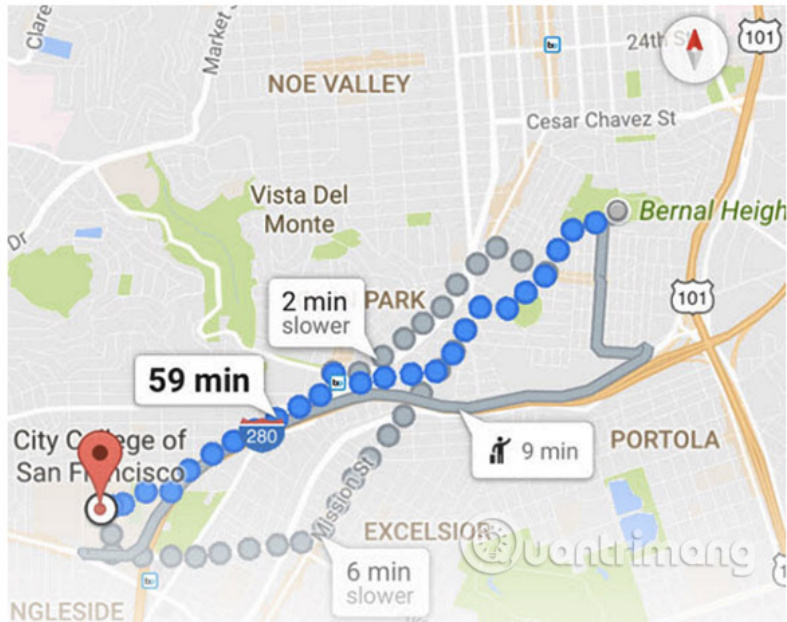
Satellite

Another class of Google Maps is its satellite view - satellite view. This is a close collaboration with Google Earth, combining high-resolution images of the planet captured by satellites.

These images are cross-checked with other data layers, such as Street View as well as data sent by outside agencies. This helps Maps capture geological changes, new or changed buildings, etc.

Location services

There is not much accurate information about how Google uses mobile location services to keep Maps up to date, but it is clear that positioning plays a huge role.



That's right. If Google has access to location data collected by your smartphone, you are part of Google's community activity to improve and expand Maps.

Your location data can be used for things like real-time traffic updates, estimated current traffic speeds and route directions. If a crowded route suddenly has no traffic, Maps will assume a navigation and adjust directions accordingly.

Google also uses this data to estimate when businesses will be busy. It does this by placing traffic tabs in each individual building. This is probably a bit scary, but there is still another attempt to bring that offline information online.

Local Guides (Local guide)

Just like the editorial team, Google also has millions of local guides. Local Guides is a feature similar to Foursquare and Google's attempt to collect a more subjective data layer to integrate into its base map.

When you are in Google Maps, visit **My Contributions** and you can search for different locations in your area. By leaving a review, answering some questions and submitting photos, you can contribute to this additional data layer.

Knowledge at this local level helps Maps know things like a cafe, a hotel with parking or a restaurant with options for vegetarians. Contributors can earn rewards such as increasing storage capacity on Google Drive.

Making data becomes meaningful

As you can see, the amount of data collected by Google is huge - and we don't even know some service integrations, such as Google's business listing.

These data layers, when processed, will give us access to all information found on Google Maps. But what really does all this data mean?

This largely focuses on the types of algorithms that make up Google's platform as a company. These algorithms, which are extremely complex and secret, work to clean the data, discover inconsistencies and link all the information together to make them more useful.

For example, when Street View scans images of traffic signs and business names, algorithms will try to understand the road networks by interpreting these road signs. At the same time, location data can be taken into account, when calculating the fastest routes from position A to position B.

Although algorithms are always improving, they still have limitations, so all this data will be combined with human participation. If there is something that Google's algorithm cannot understand, a team member will review it manually and set everything in the right direction.



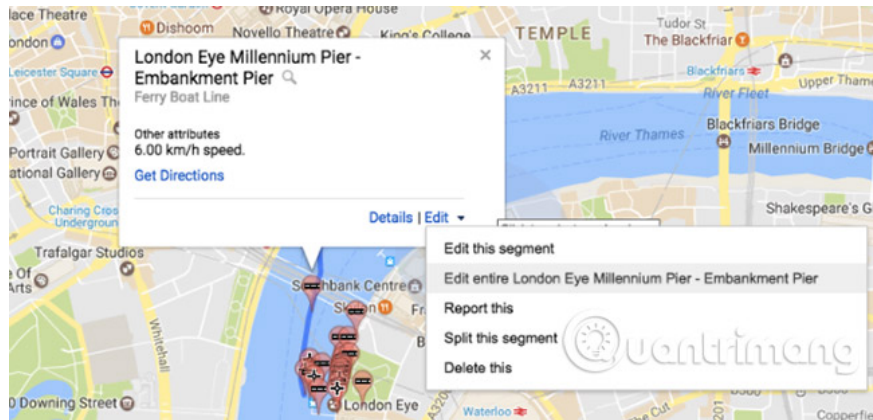
Normally, the intersection logic - the integration of two spatial data sets - is entered manually and new paths are placed in the right position. This is because sometimes the best way to understand what is seen on the road is to use the eyes of a real person.

This is a huge task. That's why Google has partner groups around the world, specializing in updating everything in every country where Google operates.

What happens when there is an error on Google Maps?

Every day, a lot of changes are made to Google Maps. Some of these changes may be the addition of new locations and new paths, while other changes may involve bug fixes.

Many of these errors are corrected by community members such as editing location descriptions, adding lines, etc. However, above all, Google has a large group of people working through thousands of reports. sent to Google every day.



Part of these reports are reviewed and processed manually. This is done using Atlas, Google's own map editing program. New routes are hand-drawn, connected roads, new buildings are added to the map, etc.

This is a project that will never end. With thousands of new roads being built every day and cities changing traffic rules when necessary, Google Maps will have to work continuously to maintain the accuracy of the data.

Although Google Maps is only considered a kind of map, no one can deny its role in everyday life. All of these things work together to provide useful services for many people - a service that goes beyond the quality of its competitors.

From handling complex algorithms, to arranging huge data sources, Google Maps is admirable.



However, Google will not stop here. Google Maps will play an important role in future breakthroughs, such as self-driving cars. And with more information, photos and videos linked to Maps, the app can shift from being a world map to a global guide.

Do you know how to maintain Google Maps? And what other information can you hope to use in Google Maps? If you don't use Google Maps, why is that? Let us know in the comments section below!

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