Apple Maps Image Collection

Privacy by Design

At Apple, we believe privacy is a fundamental human right, which is why the Apple Maps application has been built from the ground up with privacy-by-design at its core. Users don't have to sign in to use Maps, and personalized features, like letting users know when it's time to leave for their next appointment, are created using data on their device. Before someone begins using Apple Maps, we ask permission to access location data while they're using the app, and data that Maps collects while someone uses the app — like search terms, navigation routing, and traffic information — is associated with a series of unique, random identifiers that can't be tied to their Apple ID. These identifiers regularly reset themselves as the app is used to ensure privacy, the best possible experience, and to improve overall Maps quality and performance.

The Purpose of Image Collection

Apple is conducting ground surveys around the world to collect data (GPS traces, images, LiDAR) to improve Apple Maps, and in support of the Look Around feature. We will also periodically revisit some locations to gather new data in an effort to maintain a high-quality, up-to-date map.

We are committed to protecting your privacy while conducting these surveys. For example, we will censor faces and license plates on images that are published in Look Around. If you have comments or questions about this process, your privacy rights, or would like to request that a face, license plate, or your own house be censored, please contact us.

In order to continue to improve Maps, Apple is deploying Field Teams to collect data for the purpose of product improvement. To do this, Apple uses a fleet of vehicles branded with "Apple Maps." The Maps vehicles will collect GPS Traces, 2D Still Imagery and LiDAR. Apple may also collect the same type of data in areas that are inaccessible to vehicles using portable or "pedestrian" collection systems.

In order to inform individuals where we will be collecting data, Apple maintains a Maps Data Collection website http://maps.apple.com/imagecollection/. The website also informs individuals how to raise concerns or queries. Further, any requests received through our standard privacy contact form are also efficiently handled.

Data Collected

GPS Traces

The GPS trace data collected is information about road networks which are publicly accessible by drivers. The GPS trace information, which is a bundle of data containing vehicle heading, latitude and longitude (position), and altitude, are the core elements of providing strings of data that will enable Maps to build and maintain an accurate representation of the road network. Other sensors to aid the navigation data are the Inertial Measurement Unit (IMU) and the Distance Measuring Indicator (DMI) which measure movement and distance travelled and are described in more detail below. The data from these sources is combined to give an accurate picture of how the vehicle has moved over time. Apple Maps vehicles will avoid any road that is marked "Private" and any other part of the road network which is specified as prohibited.

Images

The 2D Still Imagery used in our map data production is a highly effective tool which allows data editors to append key "attributes" to the GPS trace information. Examples of attributes include, but are not limited to:

- Stop signs
- Turn Restrictions (e.g., no left turn from 3PM to 7PM)
- Crosswalks
- Lane markings
- Address Ranges

- Speed Limits

These are all details which enable the map database to become a truly accurate representation of the road network, enabling consumers to enjoy a reliable navigation experience. Without such attributes correlated to the road network shape and position, providing map display, search, routing and navigation experiences of benefit to the consumer become exceedingly difficult.

LiDAR

LiDAR (Light Detection and Ranging), a commonly used technology by digital map makers across the industry, is a parallel to RADAR, but rather than using radio signals to detect shape and form, it uses pulses of light to detect shape and form. For the purposes of this collection, it is used to establish the height, width and depth of buildings and other structures for multi-dimensional representation. LiDAR's primary functions are:

- Augmenting the position of "attributes", relative to that of other objects.
- Bringing a rough outline of shape to the object being detected, in order to provide confirmation of the object type should it be unclear.
- Providing specific dimensions for such crucial attributes as intersections and pedestriancrosswalks.

Secure

The data collected is stored on Solid State Drives (SSDs) which are fully tracked including as collected data is uploaded to Apple's servers in the United States.

International Data Transfer

All imagery and associated data collected is securely transferred to Apple's data centers in the United States. Apple's International transfer of personal data collected in the European Economic Area, the United Kingdom, and Switzerland is governed by Standard Contractual Clauses. Please contact us with any questions in this respect, including if you wish to obtain a copy of Apple's Standard Contractual Clauses.

Privacy Features

Before publication of any form of imagery, Apple uses image blurring technology to ensure no faces or license plates are identifiable in the published product and to ensure that the privacy of individuals whose image is unavoidably captured during the mapping process is protected. To limit the amount of data that is unavoidably captured, collection timing aims to take place at off peak times whenever possible (avoiding a Saturday afternoon in city centers, for example). Further, we do not share the unblurred data with third parties.

To ensure that Apple was applying the best image blurring technology possible, Apple conducted an entire year of test drives through the US and Europe in 2015, where it did not publish any of the imagery collected during these drives but used it instead to improve Apple's technology such as image blurring techniques on such objects as faces and license plates. Apple also has a Quality and Assurance process, both automated and manual, at each step, to ensure the product is developed to Apple's standards. As a final step, Apple pays special attention to areas of particular sensitivity such as places of worship, hospitals, etc., prior to publication.

Privacy Rights

Any requests for access to or deletion of unblurred imagery by an individual are processed by the Apple Team upon the provision of appropriate information relating to the location where an image was likely collected and the timing preferably within a 15-minute time window.

In the event of publication, users who wish to report concerns with images can use the "Report an Issue" feature in Maps. For non-Apple users wishing to report an image of concern they will also be able to use this Apple Maps feature on third party websites where available. Where a person does not wish to pursue any of these options, Apple's contact email address will remain available on the same basis as currently. In addition to the methods outlined above, individuals can still get in touch

with Apple about any privacy related queries and questions by using this contact us link.

Retention
We recognize that risks can arise from retention of imagery prior to publication and have robust procedures in place for protecting that data and restricting access to it. In this respect we blur imagery as soon as it is possible. Collected imagery will be retained in an unblurred form for 12 months from the date of collection.