

## CAN I BE TRACKED BY GOOGLE?

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**Abstract.** "Can I be tracked by Google?" is a case study on the Google Maps app, used today by many people, on various desktop or mobile devices. Maps generated by the Google Maps app, based on Google's personal account, highlights location history as well as user routes. These maps can be handled in various ways, can be deleted from the history, but can also be exported in a GIS format such as the KMZ or JSON format. This paper describes both the steps of accessing the new Google Maps section "Your timeline" or "Cronologia ta"(in romanian), available only to us users and to Google, as well as enabling or disabling the innovative location tracking feature for Google Maps and other applications from various search engines such as Chrome, Mozilla Firefox, Safari, Opera, etc. and on different operating systems (Android and IOS). With an innovative feature titled Your Timeline, Google Maps shows your tracks in recent years, and besides this, Google Maps gives you the chance to create a map that allows you to choose both the road that you want to go through and mark your own goals on that road. You can import this map into Google Earth with public or secure access. The importance of this research paper is the innovative feature of the Google Maps application that can store and track the location at any time, the coordinates of the points of travel, the distance between these points, the way the route is traversed (on foot, by car, by public transport etc.) without being limited by a certain distance or a certain amount of time, that is, it tracks and saves all available information about locations around the world for years in a row until this feature is deactivated by the Google Account holder on the device used, be it a mobile phone or a laptop. This feature also provides the opportunity to save photos taken in any place, and moreover, transmits real-time information about traffic situations related to each obstacle or difficulty, and can determine an alternative or bypass route, and also, you can follow your desired route on a map created by you.

**Keywords:** Android, GIS, Google Maps, IOS, tracking, timeline

### INTRODUCTION

#### What is GIS?

Geographic Information System or GIS acronym, often used, is a system used to create, store, analyse, and process of many kinds of data from different fields (GOLDAN AND NISTOR, 2014, GOLDAN ET AL., 2010).

This system provides information about spatial locations by providing information on maps or 3D scenes (HERBEI, 2009).

The majority of GIS data has a geographical component (HERBEI, 2015). The information processed by the Geographic Information System (BEGOV UNGUR ET AL., 2016) is of two types:

- graphic information
- DATA BASE information

The first type of information, *graphic information* displays the spatial distribution of the elements and the second one has the function of memorizing the details about the represented elements; for example, provide the length of the highway, the number of bands, etc.

Graphical information is of two types, also:

- raster (images),
- vector represented by geometric elements (points, polygons, segments) (HERBEI ET AL., 2015).

For each object represented in GIS is assigned a geographic coordinate system, meaning it is geo-referenced, and has a unique position (SMULEAC ET AL., 2016) in the Information System, similar to the geographic position in the real world (HERBEI ET AL., 2016).

#### **What is Google Maps?**

Google Maps is a mapping application that can be accessed from both: mobile and computer with internet access at <http://maps.google.com>. This application was released at the end of 2004 by Google.

Google Maps or Maps is part of the Geographic Information System and with the help of this application can search for addresses, different companies, restaurants, etc., but can also view roads all over the globe, both traffic directions and traffic information such as streets closed to traffic or in repair, can find the distance between two or more points on the map (by walking, by public transport or by personal car) and includes the option of 3D map view. Even it has these multiple functions, the application is just an online map viewer and does not contain software, hardware and geographic data such as GIS, so it can be concluded based on the above-mentioned arguments that Google Maps is just a visualization software for GIS (<https://support.google.com>).

### **MATERIAL AND METHOD**

For beginning, is defining the GIS system and the Google Maps app, the subject of this practical study. The quest is the same: Can I be tracked by Google? And to answer this question, and to follow this study, it only needs a smartphone and a laptop with internet connection and of course Google's account.

#### **Functions of the Google Maps app**

- Adding of home or work address
- Obtaining information about a location
- Obtaining information about traffic, public transport, etc.
- Measure distances between several points
- 3D view of the world
- Displaying of street view images
- Display of current location
- Location History (Google Maps Timeline)

The target of this study is to access the last one of the listed functions: Google Maps Timeline or Location History

#### **Google Maps Timeline**

Google Maps Timeline is an innovative tracking feature for past locations so far, as long as the localisation service is active on the device for location history, because it is by default disabled; it is also the user's choice to delete all or part of the information stored in the history, or to edit the visited locations. Very important is that this timeline is private and can only be opened for viewing, editing and deleting. Google Maps Timeline keeps high-precision track of the travels, can observe the user's activity and the route by car, bicycle or walk, the places where was accommodated or stopping for a break and the distance. If there are multiple devices that are connected to the same account and location history is enabled, Google will receive the information about all locations, but it is possible to remove or limit the number of

devices by reporting locations just from few of them, or it may be disabled Timeline for Google account.

#### “Can I be tracked by Google?”

As a conclusion of the above description, the answer to the question is "YES", Google monitors each user's location by creating a history that can be edited or deleted.

#### “How can I be tracked by Google”?

Information about location is tracked by mobile devices or Google's browser, and then it creates location history in Google Maps.

#### What is the importance of the function “Your Timeline”?

Due to this function, it can be generated maps based on personal Google account that highlights the user's routes. These maps can be used in various ways, can be deleted from history, but can also be exported in a GIS format such as KMZ or JSON format.

## RESULTS AND DISCUSSIONS

The following rows will demonstrate the importance of this practical application and how to use it.

#### Enable of Location Service

The first step is to enable location service for map history of Google account on your device. Privacy and protection of personal data is often the reason why someone would not activate Google's tracking of the location, but at the enabling there is no risk of losing personal data protection as a result of this feature because this information can only be accessed by the Google user account. To enable the location tracking service linked to Google account on a mobile phone, proceed as follows:

- For ANDROID operation system will open the folder: SETTINGS → GOOGLE → LOCATION → GOOGLE LOCATION HISTORY
- For ANDROID operation system will open: SETTINGS /CONFIDENTIALITY → INTIMITY → LOCALIZATION SERVICES.

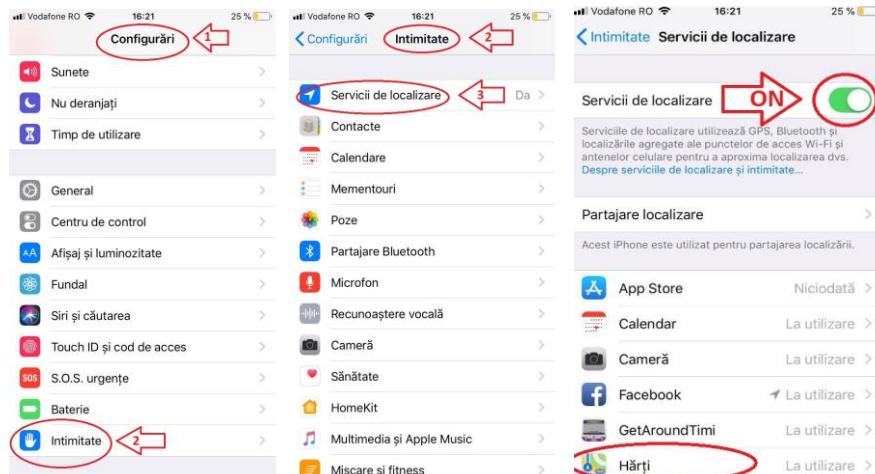


Figure 2 Turn ON of localisation function for IOS

- To turn on the location tracking service linked to your Google account on browser: on

a new page, will be looking for any information, then running down the page will click on Use the exact location

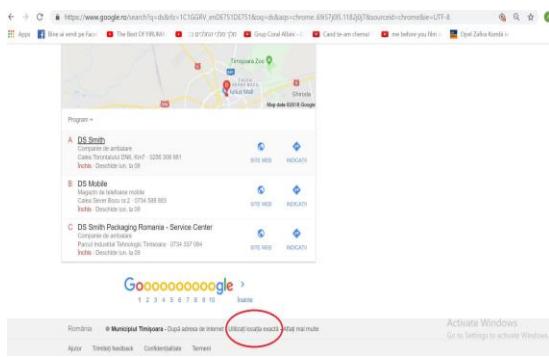


Figure 3 Turn ON of localisation function for PC

#### Access of Timeline

Open Google browser and insert URL agrees: <https://maps.google.com/locationhistory>. On PC will be open Google Maps apps, login with the same Google account an on top-left side will open MENU → Timeline.

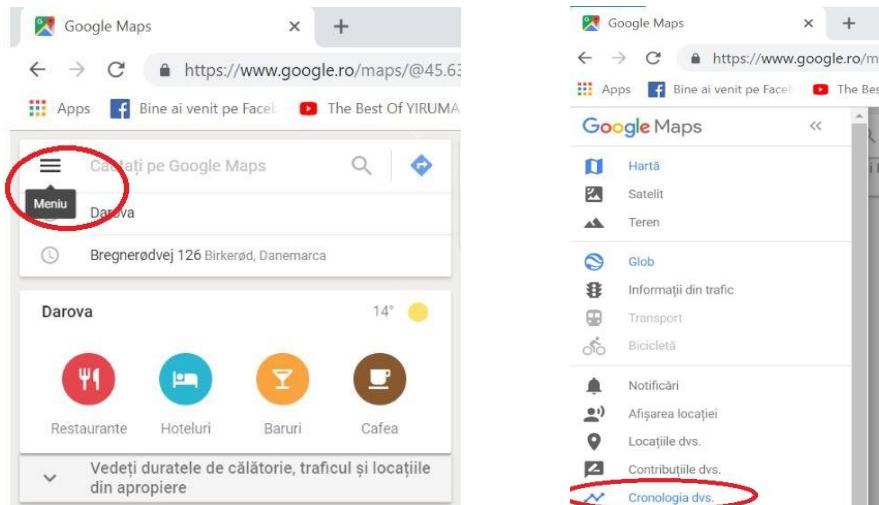


Figure 4 Access of Timeline

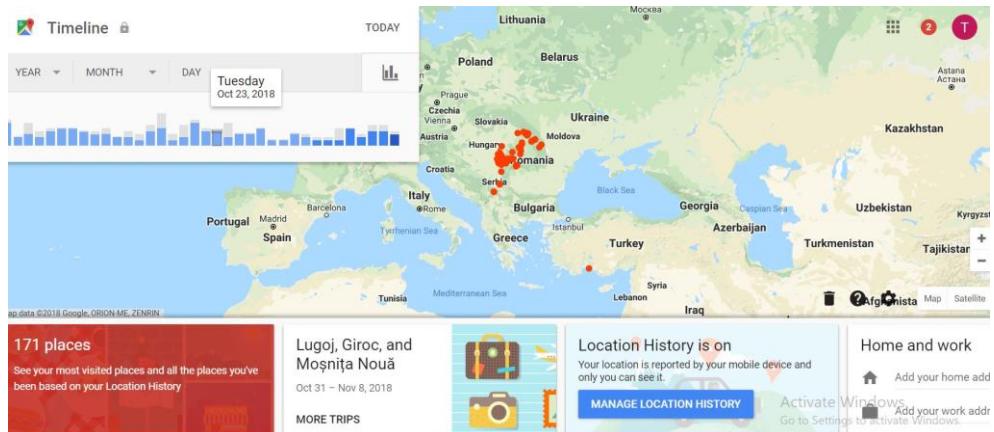


Figure 5 Timeline interface

In the figure 5 it can see the Timeline interface. The points on the map marked with red are the visited sites and in the left-top corner of the image are the activities and trips performed in the last part of October by the user. It can get details about each day, the information are about visited sites and about the routes (by walk, by car, etc.), also. Can also add home and work addresses, and based on uploading these data, Google Maps will instantly make a route map and send real-time traffic information notifications.

#### View photos taken with Google photo

This application uses and memorizes every photo taken with Google Photos independently of location and internet connection. Provides the possibility to view and upload to other social networks the user's favourite photos even if they have been accidentally deleted from the device because they are stored in the Google Maps app in "Your Timeline". In the following figure it can see the route of the trip, its details and the attached pictures.

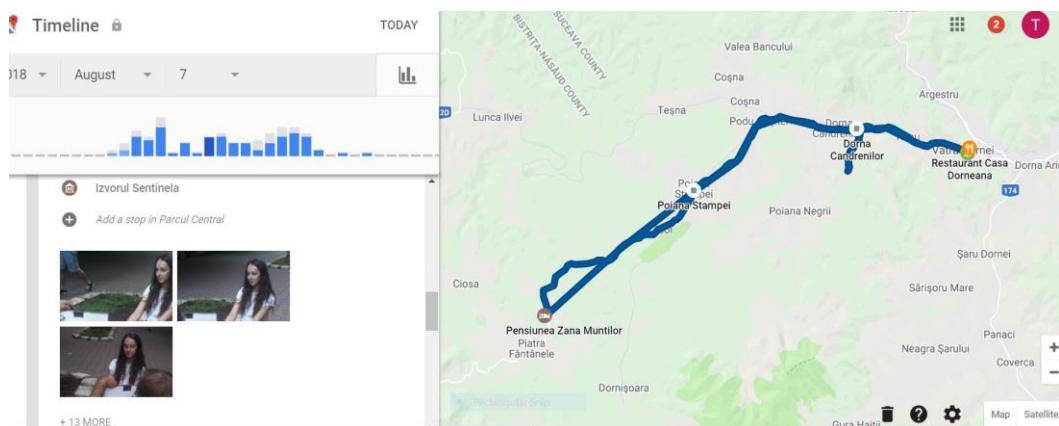


Figure 6 Timeline photo

### Create and download KML files

A KML file stores geographic modelling information in XML format. It includes points, lines, polygons, and images. KML files are used to identify and label locations, create different camera angles, overlay textures, and add HTML content.

Any day saved in Timeline can be edited and create a KML file in order to create a personalized map, which can be displayed to the public at the moment of uploading to Google Earth or Google Maps, or may be private and viewable only by user.

In the bottom right corner of the Timeline window, go to: SETTINGS → EXPORTS THIS DAY TO KML, and the exported file will appear in the tab bar.

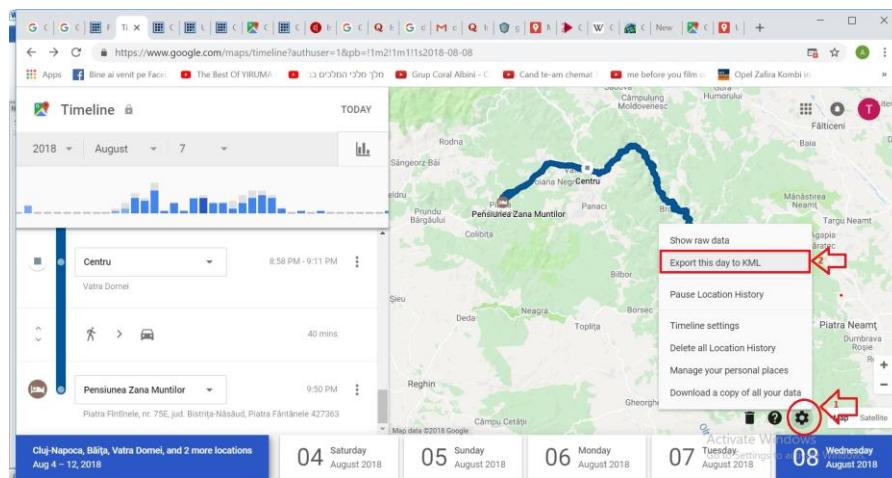


Figure 7 Exporting of KML files

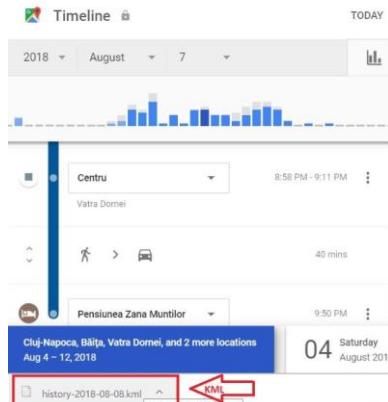


Figure 8 Map in KML format

### Importing and view of exported data

An important point of this application is the creation of GIS maps based on historical information.

Map making steps are:

- Open the Google Maps app
- Access of Maps menu, located at the top left corner of the map
- Select: your locations
- maps
- create a map
- on the new redirected tab, select: import
- select a file from computer

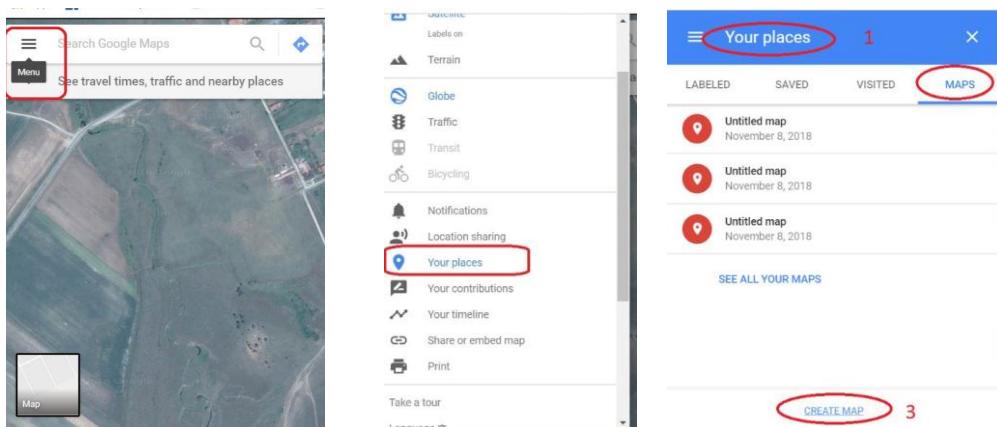


Figure 9 How to create maps in KML / KMZ format

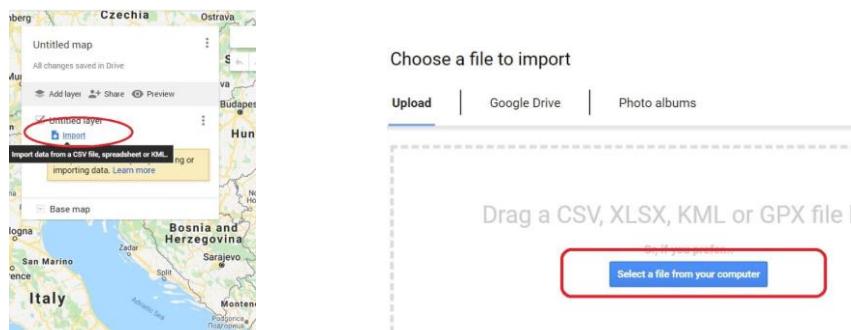


Figure 10 KML file import

The final result is the map, which is exported to a KMZ file, as follows: Select Menu and then EXPORTS KML / KMZ. The maximum size of a file that can be uploaded to Google Maps can not exceed 3 MB.

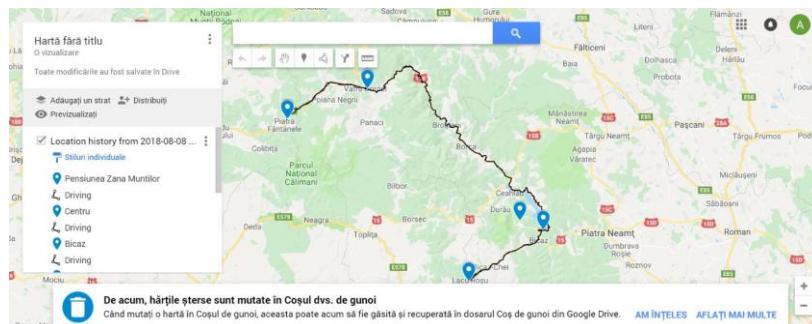


Figure 11 Final map

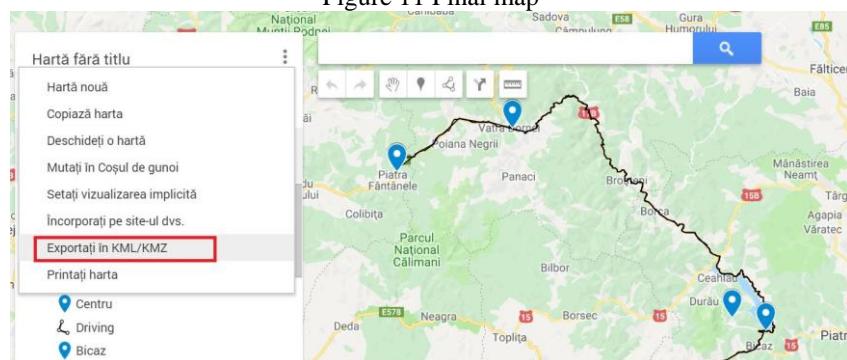


Figure 12 Map export in format KMZ / KML

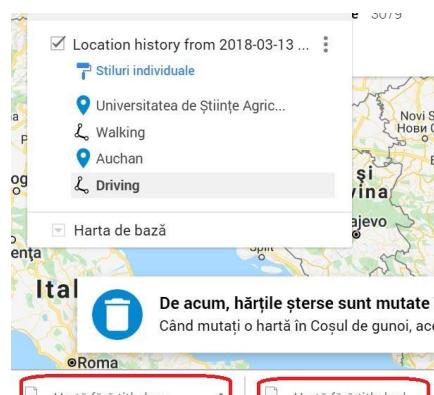


Figure 13 Automatic download of the file



#### Deleting of data from location history

The map settings from the timeline are opened again, which is on the right, bottom, and it choose to delete the history locations, as in the figure below. As it can see here, there is also the History interruption function.

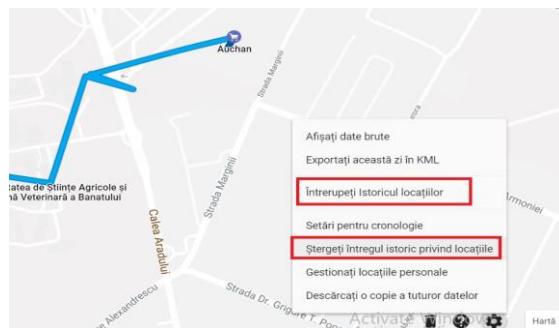


Figure 14 Deleting of data from location history



#### Importing the KMZ file into Google Earth. The import steps are:

- Open the Google Earth app
- FILE → IMPORT → ALL FILES → OPEN
- NOTE! Select all file types in the import box.

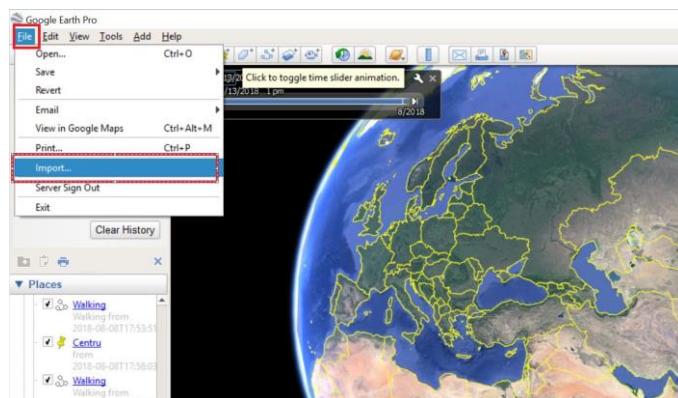


Figure 15 The import of KMZ files in Google Earth app

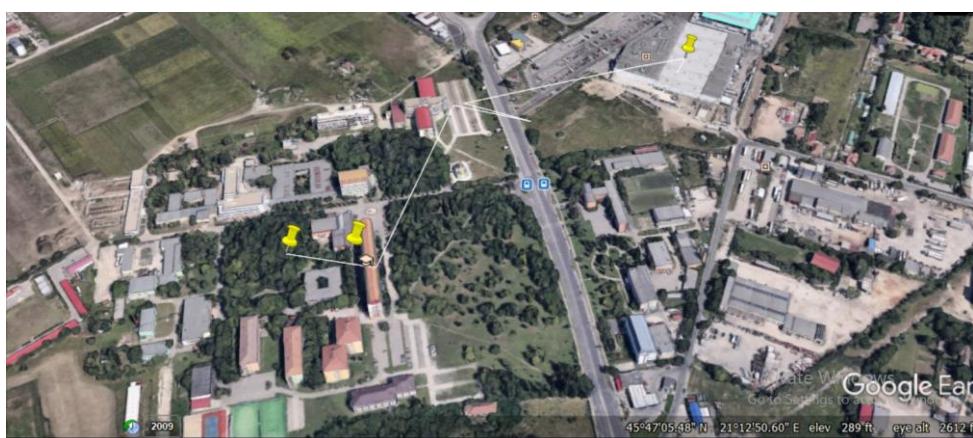


Figure 16 View data in Google Earth

## CONCLUSIONS

With an innovative feature titled Your Timeline, Google Maps shows to user the routes from last years, besides, Google Maps offers the chance to create a map where it can choose the route and the objectives to visiting.

This map can be imported into Google Earth with public or secure access. The importance of this study is the description of the innovative feature of the Google Maps application that can store and track any time the location, the coordinates of the points of travel, the distances between these points, how to navigate (by walk, by car, public transport) without being limited by distance or time. It tracks and saves all available information about locations around the world, even for many years, until this feature is deactivated by the Google Account holder on the device, mobile phone or laptop.

This feature has practical applicability and can be accessed by anyone without costs, and Google's option to make available all locations and travels and has an important purpose in evaluating and editing of reviews of visited sites.

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[https://support.google.com/maps/answer/144349?hl=en&ref\\_topic=3092425](https://support.google.com/maps/answer/144349?hl=en&ref_topic=3092425)

<https://www.google.com/maps/timeline?pb>