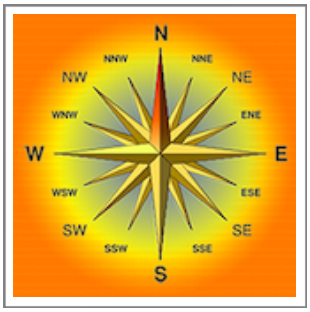

NaviTracker

Download on the App Store

'As The Crow Flies' navigation and tracking in Airplane Mode. Recreational Navigation Tool using GPS, Compass, Waypoints, and geofenced Alarm Zones.

Application Reference

iTrackMobile®

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Contents

I. Overview

II. Privacy and Data Protection

III. Navigation

IV. Off-line Maps

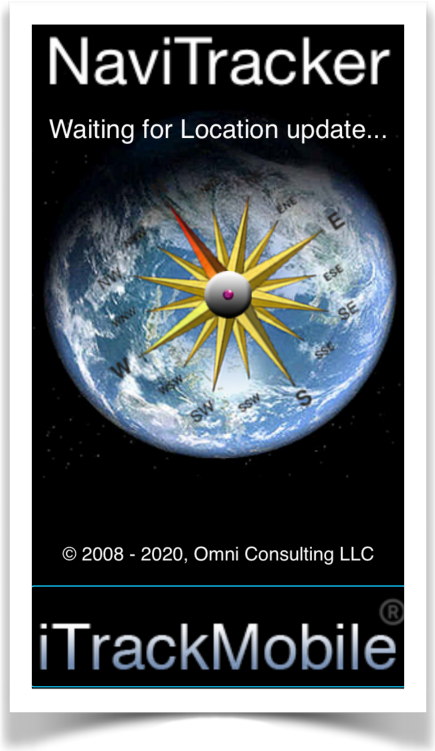
V. Monitor

VI. Preferences

VII. How-To Tutorials

I. Overview

The '**NaviTracker**' app offers a comprehensive set of utility functions to use your mobile device as a tool for general navigation, monitoring, and location tracking purposes. The app performs these functions while running in either background or foreground mode under iOS, and *NOT* when **removed or terminated** by the user from the device Home Screen.



Basic Navigation function are accessible directly from the app launch screen. However, full functionality is only available after the device owner logs into the app.

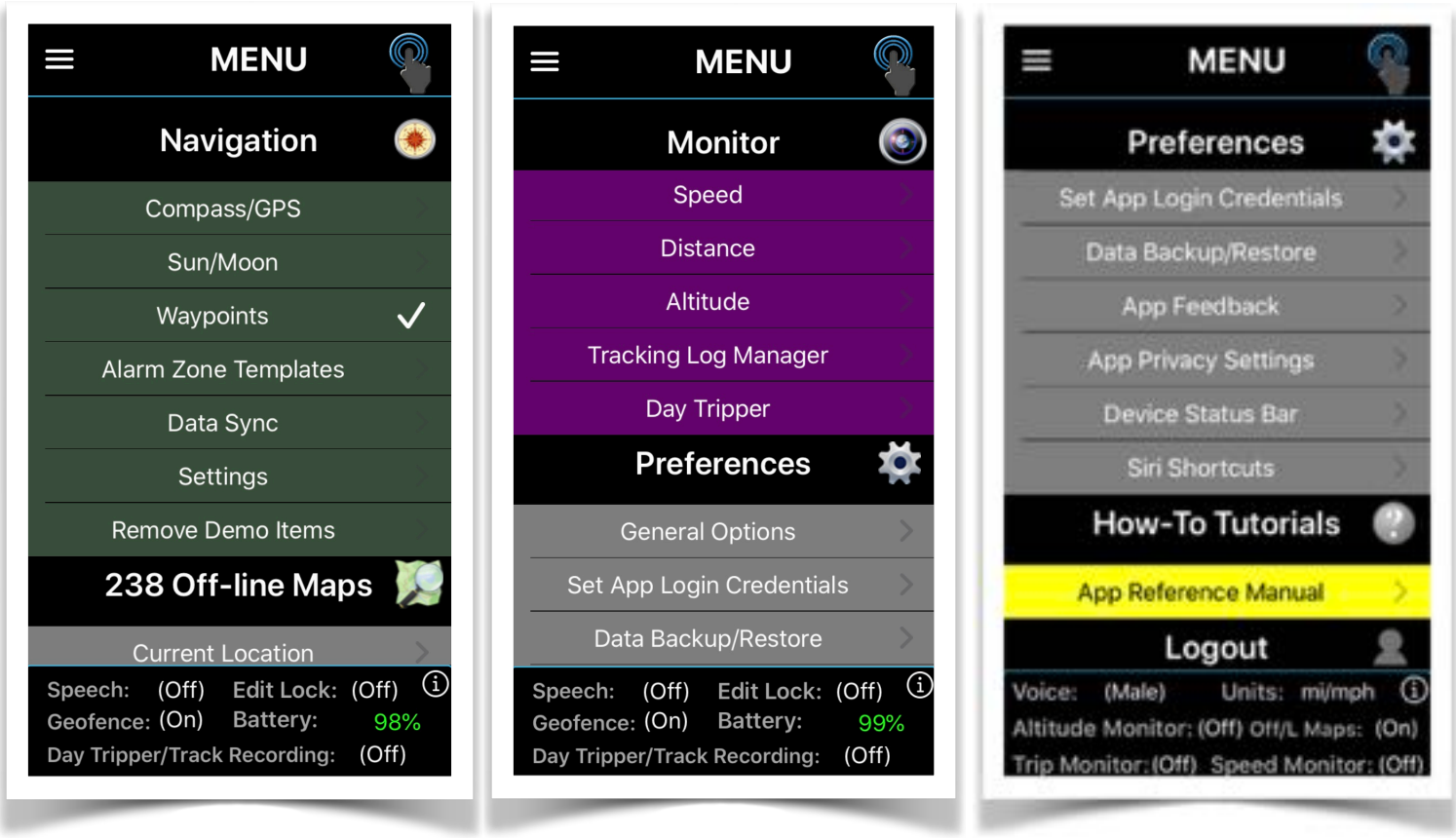
NOTE: Tracking and Navigation functions require the mobile device being connected to a GPS receiver (either built-in hardware or via Bluetooth), and also having the *Privacy Settings* for the app's Location Services set to allow location access as '**Always**' *or* ***While Using the App***.

NaviTracker Splash Screen

Upon launch, the app will display a Splash Screen which is the entry point for the user to authenticate with login credentials in order to unlock and enable full access to all features. Alternatively, for unauthorized users, tapping the ‘Basic Navigator’ button will open the app to enable minimum navigation functions.

App Main Menu and Settings Display

After user authentication, prominent app features are accessible directly from the Main Menu. The current user-enabled settings are shown at the bottom of the screen (depending on iOS version and device type).



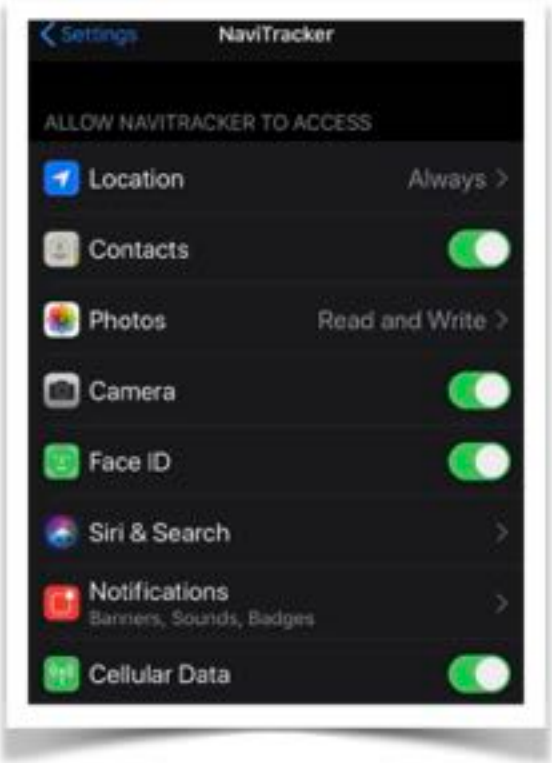
Also, the app supports 3D/Long Press gestures and customizable Siri commands for contextual app short-cuts.

II. Privacy and Data Protection

All data collected to meet the functional objectives of this app (‘**NaviTracker’**) are securely stored internally on your device and ***not*** uploaded to a remote server, iCloud, or any other Internet-based repository/service.

This app is not designed to share your information with any party or entity for any purpose.

Users can manage their data in confidence being assured that their information is kept private on the device on which the app is installed from the Apple App Store.



The user can control the apps' iOS Privacy settings based on certain functions to be performed.

Typical allowed features include access to:

1. *Location* ***Always*** or ***While Using the App*** for the app to perform navigation functions in either background or foreground.
2. *Camera* to augment waypoint meta data for illustration purposes.
3. *Siri Search* for verbal short cuts to initiate app actions.
4. *Notifications* for the app to issue local alerts when arriving/departing at a user-defined geofence.
5. *Cellular Data* to access on-line Apple navigation maps and/or download navigation maps from Open Street Maps (OSM) for local storage and use in off-line mode. The preferred method for downloading off-line maps is over the Internet via a Wi-Fi connection.

III. Navigation

A. Compass/GPS
B. Sun/Moon
C. Waypoints
D. Alarm Zone Templates
E. Data Sync
F. Settings
G. Include/Remove Demo Items

Overview

For devices equipped with GPS and/or Compass hardware, provides real-time navigation functions based on user-defined waypoints.
Alarm notifications can be triggered if the device arrives and/or departs a customized circular or polygon shaped region (Geofence).
Geofences are associated with a particular waypoint and do not necessarily be at the same geolocation as the waypoint itself.

Also, Local Notifications can be generated if the device travels at a speed exceeding a user-defined limit, a user-defined distance, and/or a user-defined altitude.

The traveled route can be recorded for later review and analysis.

NOTE: *Continuous GPS Navigation functions are recommended to be used with the device connected to a supplemental power source to prevent the built-in battery from draining too quickly*.

A. Compass/GPS

Provides real-time Compass and GPS navigation functions.

T*rue or Magnetic* North Compass functions are only supported for devices with the appropriate hardware configuration (e.g. iPhone or iPad). If a device does not offer compass functionality (such as an iPod touch), then the app will present a Compass Screen using *True* North information from a GPS receiver (possible connected via Bluetooth), as long as the device is actively moving towards a heading.

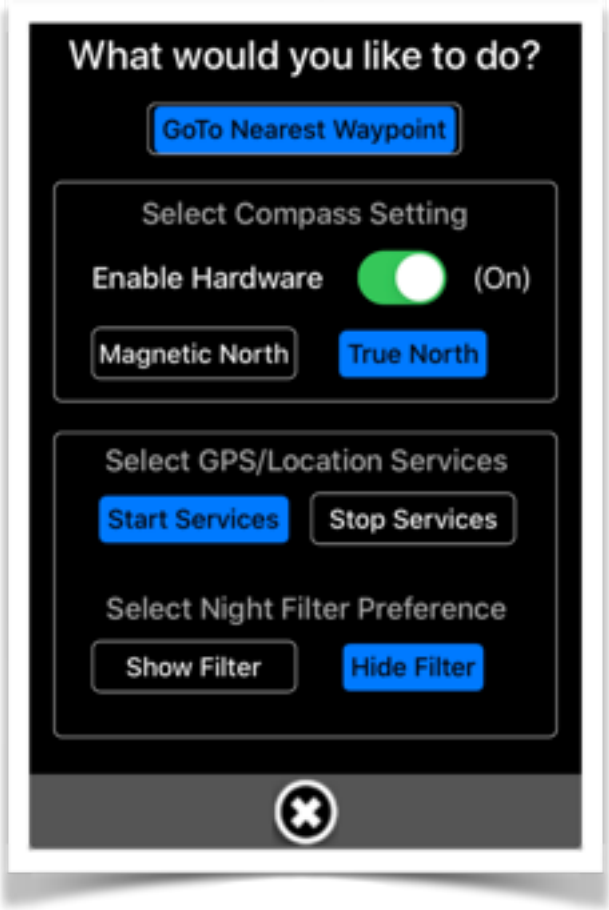
Similarly, a GPS receiver is required in order to allow for the app to perform the basic navigation functions. The GPS receiver could be a standard hardware component manufactured into the device, or be a third-party GPS receiver connected via Bluetooth (e.g connected to an iPod touch or non-cellular iPad).

Compass Features

The compass view (initiated by touching the compass icon at the bottom of the navigation screen) will display a compass rose showing the coordinates of the current GPS location as well as the associated address (provided the device is connected to the Internet). The compass will either point to *True* or *Magnetic* North, based on user-preferred configuration settings. By tapping on the center of the compass rose, the user can change to a number of different compass rose displays. Also, by tapping any area outside the compass rose, the user can change the background theme of the display.

If the current navigation mode is to **GoTo** a particular waypoint, then the name of the waypoint is shown in addition to the distance from the device current location, as well as the bearing of the destination (in degrees).

Using a 3D/Long Pressure touch gesture on the compass view will trigger a contextual short-cut screen allowing for the selection of the following actions:



1.Change navigation to go to the nearest waypoint relative to the current GPS position.
2.Enabling/Disabling Compass Hardware (if present). Disabling Compass hardware will use the Compass Screen readings based only on headings received from GPS.
3.Select Magnetic/True North Reference.
4.Starting or Stopping GPS hardware services.
5.Show or hide the display night filter.

GPS Features

The GPS View (initiated by touching the location icon at the bottom of the navigation screen) will display the coordinates of the current GPS position, altitude, plus the local date and time. If the device is in motion, then the course and speed is also shown. Touching the center Moon/Sun icon will launch a screen making available Time Zone, Moon Phases, and Sunrise/Sunset information related to the current GPS location based on user-selectable dates.

Tapping the top area of the navigation screen, entitled ‘Tracking Log Manager’ will transfer control to the screens dedicated for this purpose (as described in a later chapter of this manual).

If the device is in a **GoTo** navigation mode, then the navigation screen can be swiped left or right to toggle over to the **GoTo** screen, which shows the name of the waypoint, any related meta data scrollable images, as well as the following information:

1.Bearing
2.Distance
3.ETA
4.TTG (Time To Go)
5.Current Date/Time
6.Altitude or Course and Speed

A Moon/Sun icon, similar to the one described above, is also accessible from the **GoTo** screen.

Speed View

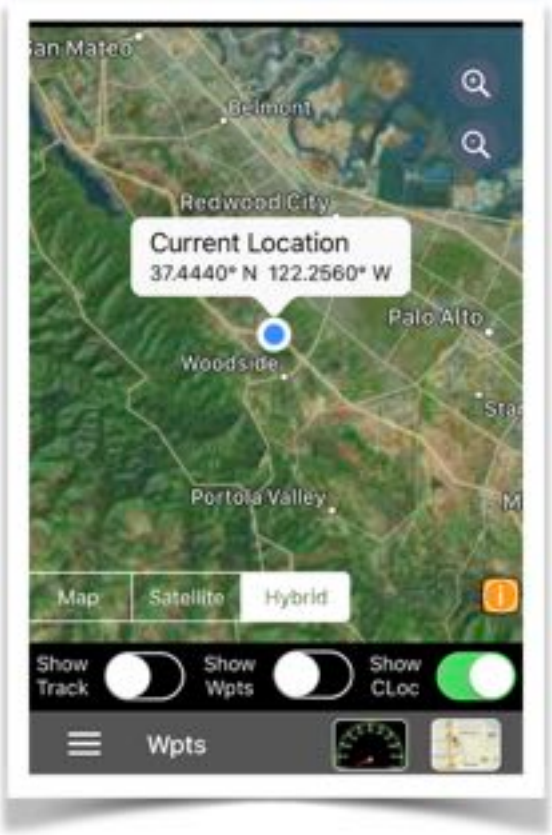
The Speed View is activated by tapping the Speedometer icon at the bottom of the Navigation Screen. When the device is in motion, the speed will be displayed whilst the speedometer image changes dynamically its scale depending in the selected unit of measure (mi/mph, km/kph, nmi/ktph).

If location track recording is active, then the number of points logged so far is shown. If a Speed Monitor is turned on, a speed limit value is shown which, when exceeded, will cause a user-customizable alarm notification to trigger.

The Odometer reading indicates the total cumulative distance travelled by the device.

Tapping the Info button within the odometer frame will toggle to the Trip Meter, which can be reset here at any time.

Map View



The Map View is activated by tapping the Map icon at the bottom of the Navigation Screen.

If an Internet connect is available to the device, then on-line Apple Maps will be used for navigation.
If no Internet connection is available, then the appropriate off-line maps locally stored on the device will be utilized.
Also, there is an option to configure navigation maps for use in off-line mode as the default choice regardless of availability of Internet. This option is configured under the Navigation Setting entry from the apps main menu.

Several features can be activated while the Map View is displayed, either through designated button or switch controls:

1. Increasing or decreasing the Zoom Level.
2. Showing or hiding the track while navigating.
3. Showing or hiding active waypoints.
4. Showing or hiding the Current Location of the device.
5. Showing or hiding arrival and departure alarm zones.

For on-line Apple Maps, the display style of the map can also be chosen (e.g. Map, Satellite, Hybrid).

Tapping the Map icon at the bottom of the Navigation Screen while the Map View is displayed, will dismiss the Map View and toggle back to the GPS View.

.

Applying a 3D/Long Pressure touch to any of the Navigation Screen views will trigger a contextual short-cut display allowing for the selection of the following actions:

1. Activate navigation to **GoTo** nearest waypoint from current location.
2. Make a new waypoint.
3. Selecting a Map Source (e.g. on-line if connected to the Internet, or off-line maps stored locally on the device).
4. Clear any active **GoTo** navigation.
5. Share the current device location via email.
6. Set an Altitude limit monitor with alarm notification.
7. Set a Distance limit monitor with alarm notification.
8. Reset/cancel all monitored alarms.

B. Sun/Moon

Shows the Sun or Moon positions by user defined waypoint location or current location based on GPS readings of the device.
The main Navigation Extras screen shows the coordinates on which to base the location of the area of interest, Time Zone data, and icons linking to either Moon Phase or Sunrise/Sunset views.

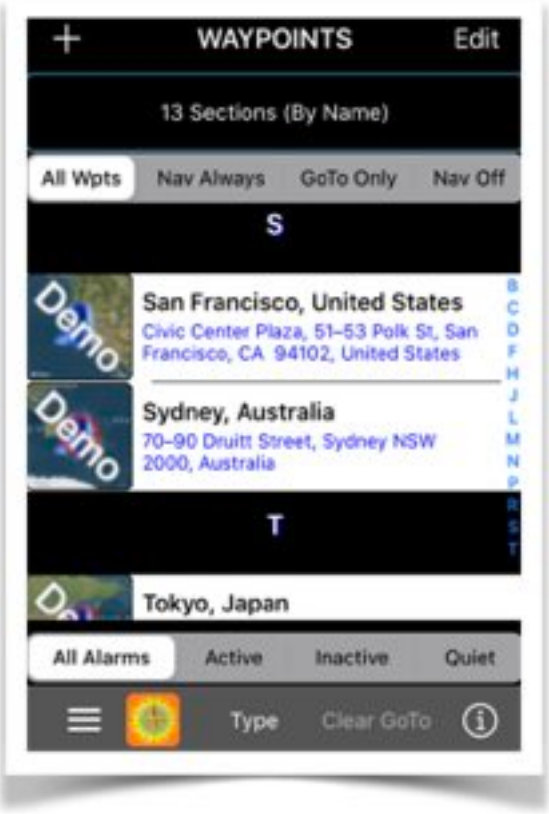
Moon Phases View

Depicts, based on user-selectable month/day/year:
1. An image of the Moon
2. Phase of Moon
3. Ecliptic Latitude and Longitude
4. Constellation.

Sunrise/Sunset View

Depicts, based on user-selectable month/day/year:
1. Nautical Twilight Start and End time.
2. Astronomical Twilight Start and End time.
3. Sunrise and Sunset times.

C. Waypoints



Allows for the definition of waypoints for navigation purposes. Includes associating alarm zones with either circular and/or polygon shaped boundaries.

When device monitoring is enabled and this application (‘**NaviTracker’**) is activated from the Home Screen, navigation and tracking functions are based on the position determined by the Location Services of the device (e.g. built-in

GPS, Bluetooth-connected GPS receiver, WiFi/Cell towers).

To add waypoint items, touch the + at the top left of the screen.

To remove a waypoint item, touch Edit at the top right of the screen and select the entry to be removed.
Alternatively, slide the entry of interest to the left and select the Delete button.

Waypoint entries can be listed in alphabetical order (by Name), by Type, or by Distance relative from the current GPS location of the device.

The entries can also be filtered in a combination of several ways:

By showing either all of the configured waypoints (All Wpts), only the ones that are flagged for being automatically used for navigation at all times (Nav Always), just the ones that have been flagged for navigation only in he event when assigned as a **GoTo** target (GoTo Only), or the ones that have been configured to be ignored for navigation (Nav Off).

In combination with the waypoint filters, Device Alarm notification can be used to show all alarm types (All Alarms), only those which have an Arrival and/or Departure Geofence assigned to a waypoint (Active), or the ones that do not have a Geofence configured (Inactive).

A (Quiet) filter will list those entries which will not issue any notification to the device at the time an alert event occurs.

A list entry in green color with a check mark (✓) denotes the current waypoint designated for **GoTo** navigation.

Touch the 'Clear GoTo' button at the bottom to release the geofenced waypoint for navigation purposes.

Tapping a list entry will launch the waypoint details view to assign geofenced regions as well as selecting **GoTo** navigation for the waypoint.

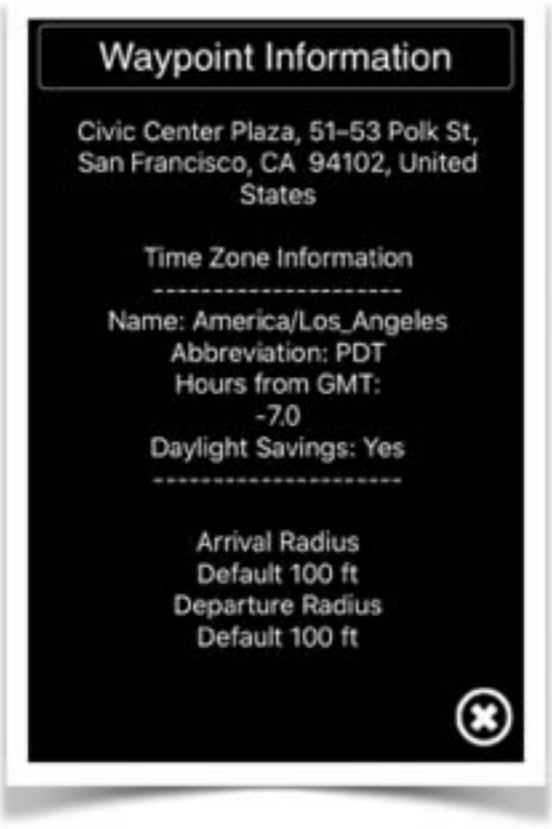
Waypoint Details View

Details about a given waypoint are shown here:
1.The name assigned to the waypoint.
2.The type of waypoint.
3.The latitude and longitude coordinates.
4.The distance from the current GPS location of the device to the location of the waypoint.
5.Elevation.
6.Optional meta data images such as a user-supplied photo, or images depicting the waypoint and geofences on a map.

Provided that the device is connected to the Internet, applying a *3D/Long Pressure touch* to the Waypoints Details View, will launch an action screen that allows connecting to the Apple Maps app for turn-by-turn navigation from the current location to the subject waypoint. Also sharing waypoint location via email is optional.

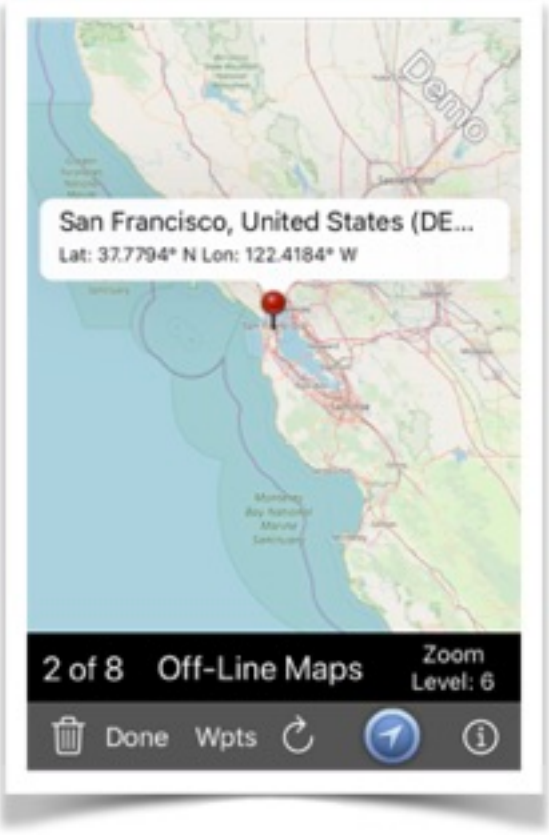
Certain function can be performed by tapping on the following *control buttons*:

1. ‘Set GoTo’ at the bottom of the screen will assign the waypoint for **GoTo** navigation, including the option to start a named tracking log.
2. The ‘Info’ button will display a view showing (if available) the Street, Town, Country, and Time Zone information of the waypoint based on the assigned coordinates. Also shown are the attributes of the Arrival and Departure geofences, including the amount of time spent in either during navigation activities
3. The Moon/Sun icon will display the Sunrise/Sunset and Moon Phases information based on the waypoints’ coordinates and user-selected date.



4. The Maps icon will launch a screen where any **off-line** maps are managed that were downloaded for local device storage to aid in the navigation pertaining specifically the the waypoint.
5. The Alarms Bell icon at top left of the screen will launch the views to manage the assignment of Arrival and Departure geofences, as well as other navigation options for the waypoint.
6. The ‘Edit’ button at top right will launch the views to edit all the specific criteria of the waypoint. These views are essentially similar to the ones when originally adding a new waypoint to your device.

Waypoint Off-Line Maps View



With the 'Off-Line Maps' option enabled in the Navigation Settings panel of the **NaviTracker** app, map tiles can be downloaded from the Internet when a Waypoint is defined or edited.

To comply with copyrights, only map images are allowed to be retrieved and stored on your device from OpenStreetMap.org (OSM), a free source available for this purpose.

Map tiles are downloaded to a lowest zoom level of 17 for a given Waypoint Location coordinate, sufficient for street level identification and navigation.

Also, if map tiles covering the Waypoint location are already available on your device, then no duplicates will be requested from OSM.

Swipe the map image left or right to view maps at zoom levels available for the associated Waypoint location.
Pinch the map image to change the scale for viewing.
Double-tap the map image to view it at the original scale.

If the current location of your device is within range of the current maps' zoom level, it will be displayed in addition to the location of the associated Waypoint.
Tap the Current Location icon at the bottom of the screen for different viewing modes.

The refresh button alternates between showing all configured waypoints or only the current waypoint that can fit on the selected map.

Individual map images can be deleted. However, it could affect other Waypoints that might want to use the same map because of their location within the region.

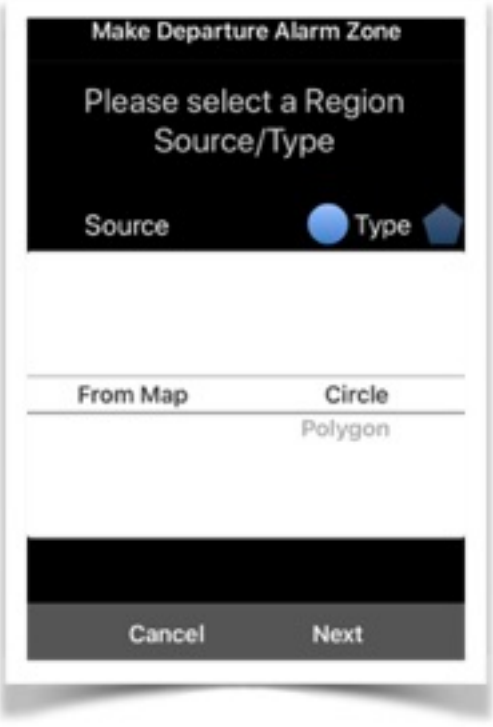
Map tiles can be added to a given Waypoint again when editing a waypoint under the Waypoint Panel within the apps Main Menu.

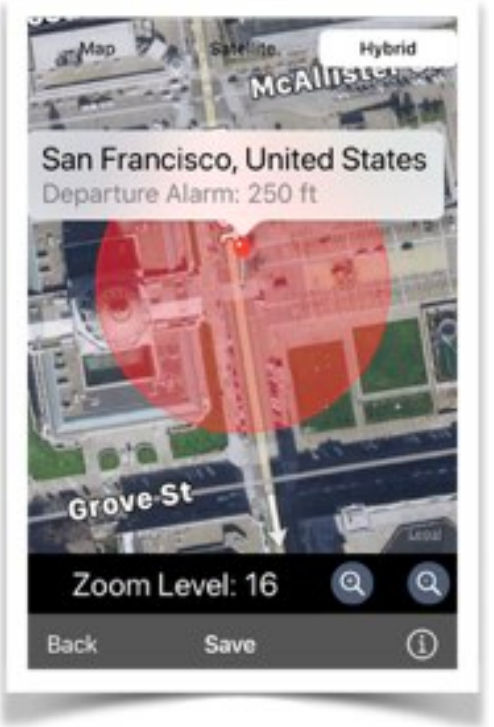
Waypoint Geofences View

Arrival and Departure alarms are based on geofencing, a method which defines a geographical location (e.g. Waypoint) in association with an Alarm Zone. For Waypoint navigation, the Geofence can be defined as either a circular or polygon-shaped region.

Unless customized by the user, Departure and Arrival Alarm Zone geofences are defaulted to be circular with a diameter of one mile in radius with the Waypoint location at the center.

Setting a Departure Alarm Zone





Setting a Arrival Alarm Zone

User-defined geofences require that the device be connected to the Internet utilizing access to the Apple Maps service at time of setup.

An alarm is triggered when the user device crosses the boundaries of the defined region.

The Navigation Mode determines if boundary tracking is done for the Geofence all the time (Always), only when used as the active GOTO Waypoint (GoTo Only), or temporarily disabled (Off).
Geofencing can be disabled for all Alarm Zones by the device owner from the Preferences -> General Options configuration settings of the app.

When enabled, geofencing operates in the foreground as well as background with multi-tasking.
Different combinations of alarm notifications can be selected.
Device Alarms are local to the device.

Tapping the Geofence map icon at the top of the screen will reveal the Departure and/or Arrival regions for all (or just the current) Alarm Zones on a geographical map.

NOTE: Alarm Zone monitoring works only while **NaviTracker** is running (either in the foreground or background) and the user's device is awake.

Waypoint navigation is highly responsive and provides frequent and accurate location updates at the expense of battery usage.
It is recommended that the device be plugged into an external power source for extended periods of navigation tasks.

App '**NaviTracker**' navigation is intended for attended (hands-on) use, similar to any hand-held GPS device.

Waypoint Alarm Zone monitoring only requires a GPS receiver for navigation and local device notifications without having to be connected to the Internet.

Touch the Alarm Bell image to simulate a device Arrival or Departure to a configured Waypoint Alarm Zone by dragging and dropping a pin on a map.

Then, verify that the alarms are generated as configured based on the simulated geographical position of the device.

Local alarm notifications can also appear during testing if the app is send into background mode.

Geofence activity can be reviewed by touching the Info button at the bottom of the Waypoint Screen.

Add/Edit a Waypoint View

A unique default waypoint name is assigned automatically.
The latitude, longitude, and elevation are preset based on the current location.

The waypoint name can be changed by the user. Duplicate names are not allowed.
The latitude, longitude, and elevation can also be input manually.

Touching the camera icon allows for the assignment of an image to the waypoint. Depending on the device type, the image can originate either from a camera, the Photo Library, or a system generated QR code (containing the waypoint location) for possible sharing.

If the image (including a QR from the Photo Library) has associated location meta data, the user has the option to assign that location to the waypoint.

Another way to assign location information as well as downloading Open Street Maps for off-line use, is by touching the map+search icon for this purpose.
A working Internet connection is required when utilizing map features for location and address searches.

A waypoint type (category) can be picked from a sample list. User-defined types can be added to the end of the list by touching the + icon. A user-defined type can only be deleted from the list if it is not assigned to any other waypoint.
When touching the 'compose' icon at the bottom, a customized description can be supplied to further document the waypoint for future reference.

If possible, the location address will be provided as a default.

Assign a Waypoint Location using a Map View

In order to use navigational maps, an active Internet connection as well as GPS reception is required.
The Current Location of the device is always displayed.
For new Waypoints, this will be assigned as the default location.

A location can also be assigned based on an address selected from your Contacts list.

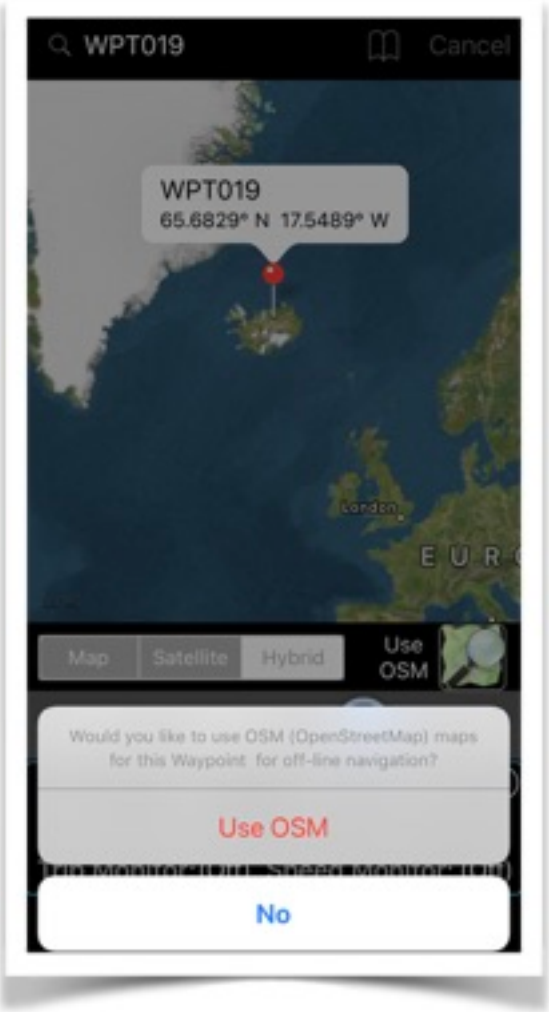
You can also search for a location by entering an address in the search bar at the top of the screen.

The Waypoint location is depicted by a red pin.
The pin can be repositioned by dragging (first tap) to another location on the map.

Alternatively, you can drag the map below the center target icon and touch the target to define the location of the Waypoint.

Touching the 'Apply' button will assign the location to the Waypoint and also generate a picture of the map for future reference (as meta data, but not for navigational purposes).

Touching the 'Cancel' button will exit the page without changing any original data of the Waypoint.

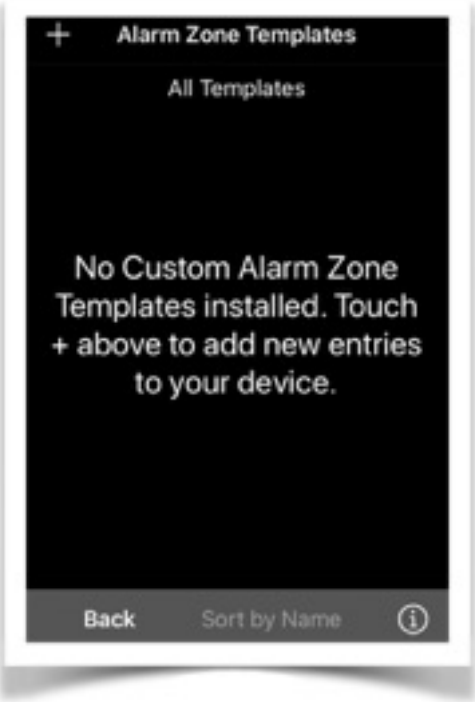


If you wish to store navigation maps on this device for future off-line navigation, then touch the map icon entitled 'Use OSM' (OpenStreet Maps).

You will be guided through the procedure to download only those maps that cover the location of this Waypoint at different zoom levels. If an applicable off-line map tile is already stored on your device, then the procedure will not generate any duplicates.

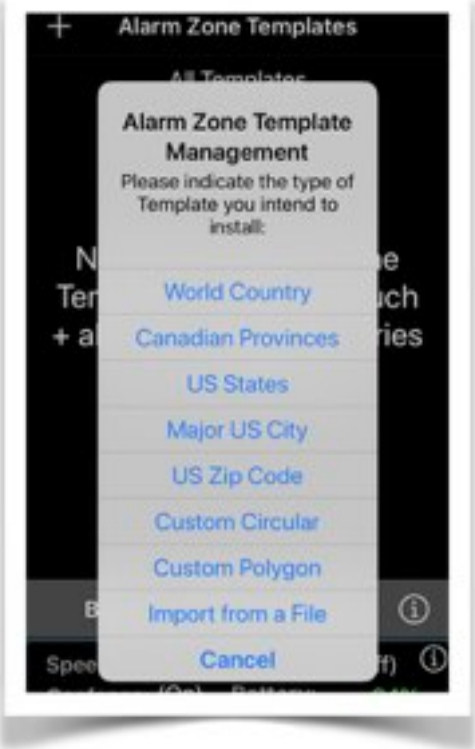
D. Alarm Zone Templates

Assign system-provided geographical overlays to associate Alarm Zones with waypoints and issue alerts when the mobile device enters and/or departs an active alarm zone.



Touch the + icon at the top left of the screen to add a Alarm Zone Template to your collection.

Alarm Zones can be associated with Waypoints to monitor the arrival and/or departure of the device based on real-time GPS co-ordinates when performing navigation functions.

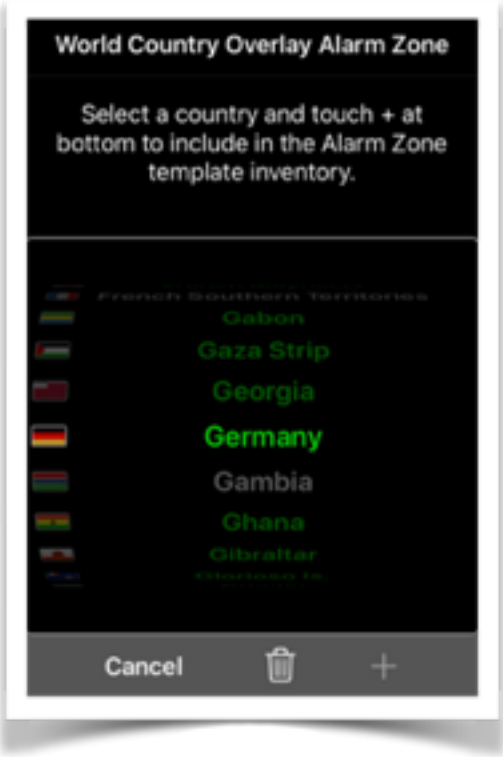


When your device is connected to the Internet, a number of system-provided polygon overlay templates can be installed on your device, such as:

A World Country, Canadian Provinces, Municipios of Mexico, States of Germany, Counties of Puerto Rico, US States, Counties of a US State, a major US City, a US Zip Code, and user-defined circular or polygon shaped regions.

Also, user-provided overlay files can

be imported into the app.

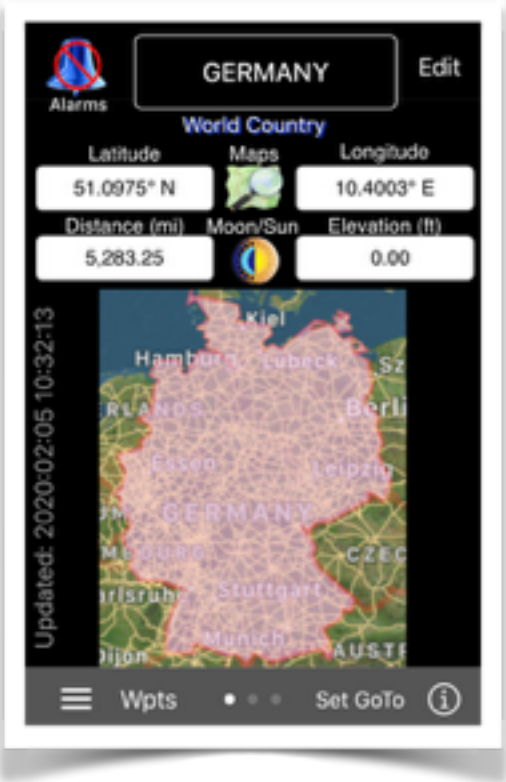


The example on the left shows the selection to install World Country ‘Germany’. By touching the + button on the bottom right of the view, the Alarm Zone is added to the list.

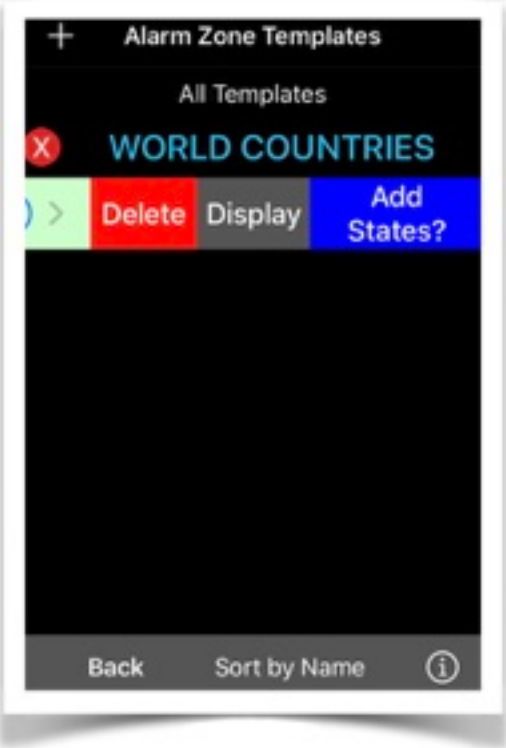
Tap the 'Info button' on a listed entry to display the Alarm Zone on a map

Tapping the ‘Save’ button at the top right of the view allows for the creation of a waypoint derived from the Alarm Zone Template. This will only be allowed if no waypoint by the

name of the Alarm Zone already exists for navigation.



The waypoint will be displayed after successful creation, ready for navigational and alarm notification configuration.



Swipe a listed entry to the left to reveal additional actions that can be performed on the selected item of interest.

In this example, German States were available and selected for installation.
Not all system-provide Alarm Zone Templates have extended data available.

Display the entire Template List in either Name or Type order by tapping the 'Sort by Type/Name' button at the bottom of the list view.

E. Data Sync

Transfers or synchronizes customized navigation data between nearby devices running the ‘NaviTracker’ app. Also refer to section ‘Sync Navigation Data View’ for more details.

F. Settings

Facilitates additional advanced navigation settings.
The Navigation Settings View is activated by tapping the ‘Settings’ entry within the Navigation Section of the **NaviTracker** app Main Menu.

Here are the typical settings available to the user:

1. True North/Magnetic North'
Only applies to devices with Compass Hardware.

2. Show GPS Warning'
Will display an Alert when no GPS signals are received.
Applies to devices with either built-in or Bluetooth connected GPS receiver.

3. 'Enable Track Recording'
Records navigation tracking information for device with GPS receiver function enabled.
Recorded information can be displayed using either on-line or off-line available navigation maps. Tracking logs can be exported as a file in KML/GPX format for use in Google Earth, as GPS Traces for OpenStreetMap.org (OSM), or for import into app '**NaviTracker**', respectively.

4. 'Night Filter'
Will dim the screen suitable for navigation in the dark.

5. 'Off-line Maps'
When set into the ON position, will enable the user to manage OSM off-line maps for local storage on the device and subsequent navigation activities without having to be connected to the Internet.

Also, by tapping the map icon at the top right of the screen, the use of off-line maps can be set as the overriding default choice for map use regardless of any available Internet connection.

6. ’Navigation Edit Lock’
This feature will disable the waypoint edit functions to prevent a user from altering existing navigation data when not being logged into the app.

7. ’More…’
Additional configuration functions and Navigation Data transfer between nearby connected devices (with the '**NaviTracker**' app installed) can be performed.

GENERAL

Navigation can be accomplished without an Internet connection. However, Compass, GPS, or both hardware must be available to the device.
OSM Maps are supported in off-line mode.
Apple maps will be used as default if the device is connected to the Internet.

More… Advanced Features View

This view is launched either directly from the Settings view or linked from other app monitoring views.

Invoking the Advanced Features View will cause the app to prompt an alert message, requiring a user-confirmation in order to advance to the next step, and possibly require that a backup file be created first.

The alert message will convey:

"Are you sure to potentially alter entries of the Navigation database?
The only option to recover the original data is to restore the information by importing a backup file from the main Menu of the '**NaviTracker**' app."

After an affirmative user response, the app will make available the advanced utility functions that can be performed:

1. 'Clear Alarm Zone Templates'
This will delete any installed user-defined and system Alarm Zone Templates from the device.

2. 'Clear Custom Waypoint Types'
This will delete any user-defined waypoint types from the device.

3. 'Clear Off-line Maps'
This will delete all locally stored off-line maps from the device.

4. 'Clear Tracking Log'
This will erase the tracking history.

5. 'Clear All'
Erases all user-entered navigation information and resets the device to standard options.
NOTE: All information deleted from the system is permanently erased and cannot be recovered (unless restored from a saved back-up file).

6. 'Clear Geofences'

This will erase the Geofence configurations for all defined waypoints.

7. ’Clear Waypoints’
This will remove all waypoints from the system, including attached images, any associated navigation data, and Geofences.

8. ’Sync Navigation Data’
Manages the navigation data transfer between nearby devices running the '**NaviTracker**' app.

Sync Navigation Data View

This view is launched either directly from the Advanced Features view or by tapping the ‘Data Sync’ entry within the Navigation Section of the apps’ Main Menu.

When launched from the Main Menu, a similar alert as described for the Advanced Features View above, will be displayed first.

The following describes the sync process:

Devices with nearby transmission (Bluetooth/private Wi-Fi) connectivity can exchange navigation data when running the '**NaviTracker**' app.
Data can be transferred into one direction, or both, effectively synchronizing the user-created navigation data.

Navigation data comprises user-defined waypoint types, waypoints with metadata (associated image, description, map reference) and position information, geofenced alerts, off-line maps downloaded over the Internet from OpenStreetMap.org (OSM) and locally stored on the device, or navigation tracking history logs.

The data transfer can be cancelled while in operation. Cancelling a transmission from a device will cancel the transmission of all devices and will not alter the original data on the device. Data received by a device will only be applied after successful completion of the transmission.

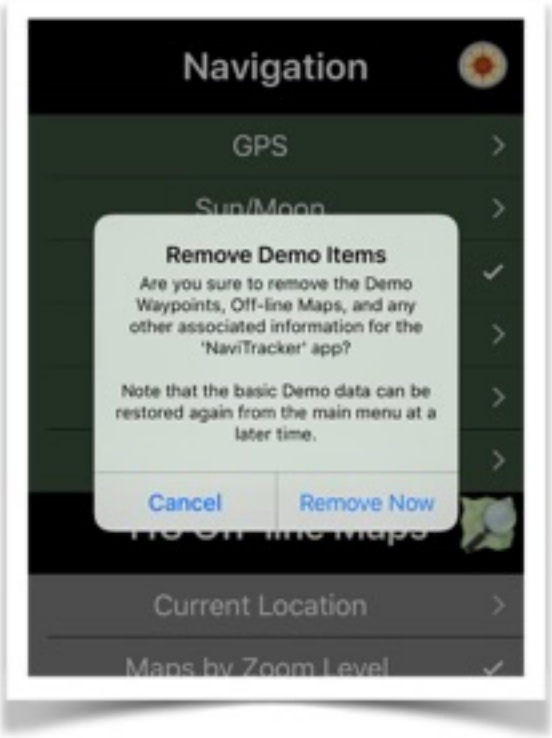
NOTE:
Waypoint and Geofence Alarm synchronization is based on the name of the waypoint/alarm and the last date the waypoint/alarm was created or modified.When two devices

have a waypoint/alarm by the same name, then the most current one will be the one that is retained during a transfer/ replacement operation.

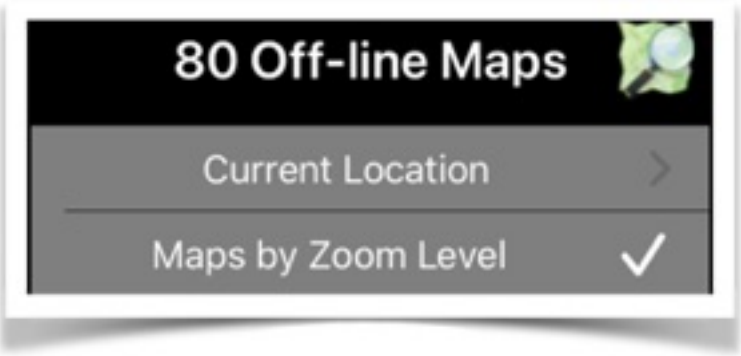
G. Include/Remove Demo Items

The app provides examples of waypoints, off-line maps, and tracking logs to enable the user to explore the many navigation features and utility functions to assist in the creation of personalized content.

The examples can be removed or restored to original content at the users' discretion.



IV. Off-line Maps



A. Current Location
B. Maps by Zoom Level

Overview

Navigation Maps can be downloaded from the Internet and stored locally on your mobile device.

Because of copyright restrictions, the '**NaviTracker**' app will only allow the downloading of Navigation Maps from the Open Street Maps (OSM) source for the purpose of off-line navigation.

When the device is connected to the Internet, Apple Maps will be used for on-line navigation as the default.

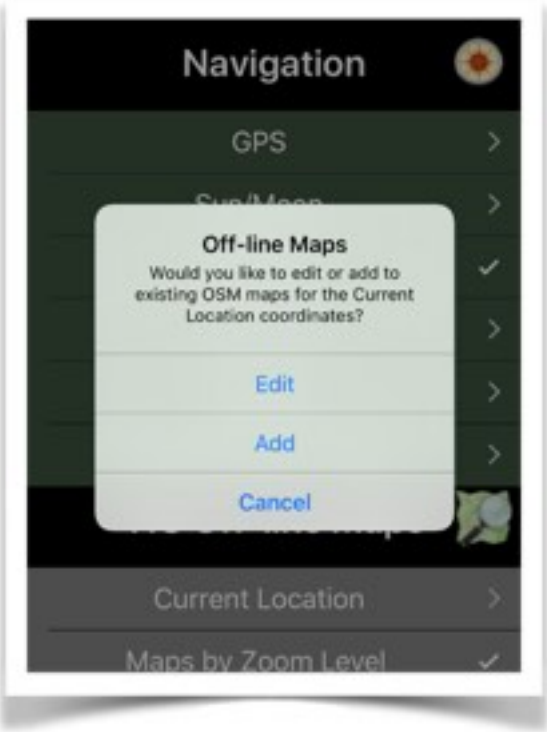
If no Internet connection is present, then the app will automatically attempt to use any locally stored map tiles that cover the current GPS co-ordinates.
The user also has the option to always use off-line maps, regardless of Internet connectivity.

Downloading of OSM map tiles can be initiated when defining or editing a waypoint, for the current GPS position

of the device, or to cover the playback and review of saved navigation tracking logs.
For obvious reasons, the downloading of OSM tiles requires that the app is then connected to the Internet.

Map tiles are efficiently stored as needed in compressed format at Zoom Levels 1 through 17.
Duplicates are being avoided by design.

A. Current Location



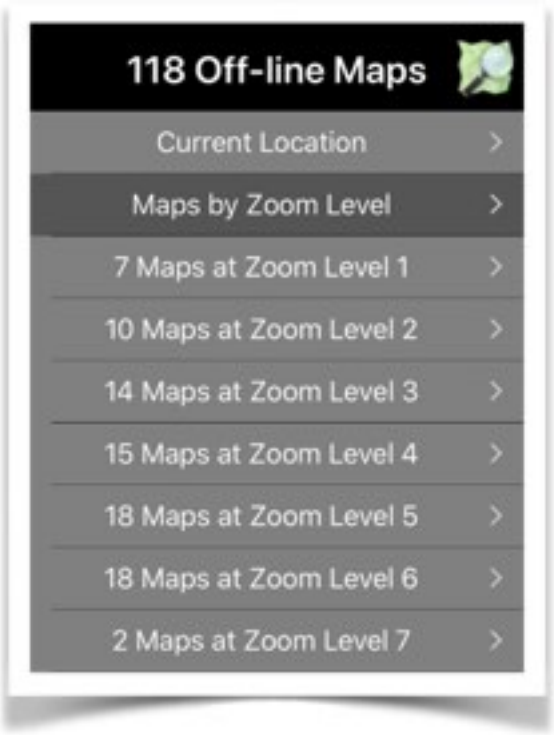
Allows for the creation and review of off-line maps covering the current location based on the GPS co-ordinates captured by your mobile device.

B. Maps by Zoom Level

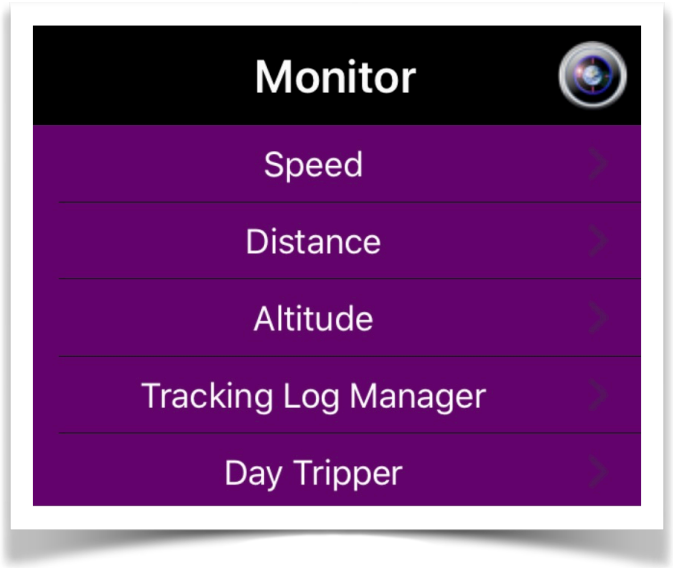
Lists the off-line maps stored on your device by Zoom Level.

Allows for the deletion of individual maps or groups by Zoom Level.

Will indicate any waypoints which might be affected by the removal of associated off-line maps.



V. Monitor



A. Speed
B. Distance
C. Altitude
D. Tracking Log Manager
E. Day Tripper

Overview

Monitoring of the device arrival/departure movements based on user-defined geofenced regions, triggering optional alert notifications.

Notifications can be local device Notifications or received by a paired Apple Watch.

Notifications can be silenced when monitoring is in progress.

Allows for the transfer and sharing of monitoring configurations between nearby devices running the '**NaviTracker**' app.

A. Speed

Will generate Local Alarm Notifications when the GPS readings detect that the device travels at a speed exceeding a user-defined limit.
The Speed Limit Monitor view is launched by tapping the ‘Speed’ entry within the Monitor Section of the apps’ Main Menu.

Here are the following actions that can be initiated from various control shown in the view:

1. ’Enable Speed Monitor' switch in the On position will enable the local alarm notification feature to operate when the app is used for navigation purposes.

NOTE: Navigation implies that the app has to be running either in background or foreground.

Navigation functions cannot be performed when the app is cancelled by the user (removed from the Home screen).

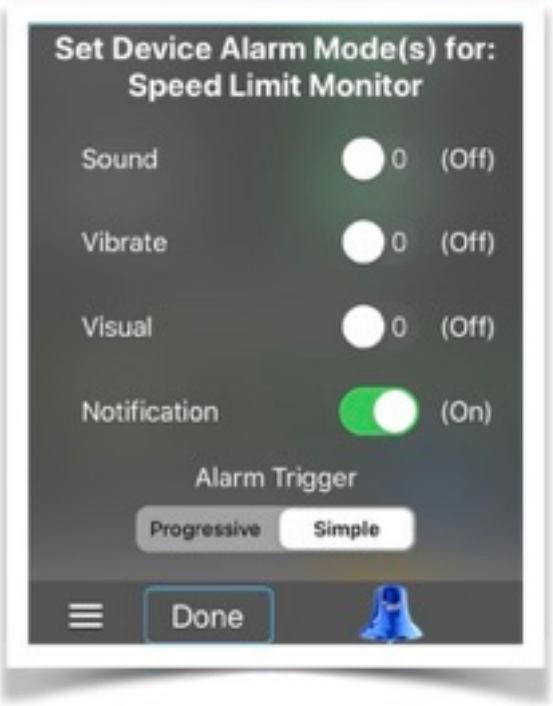
2. ’Enable Track Recording' switch in the On position will record the GPS positions as the device travels along its path.

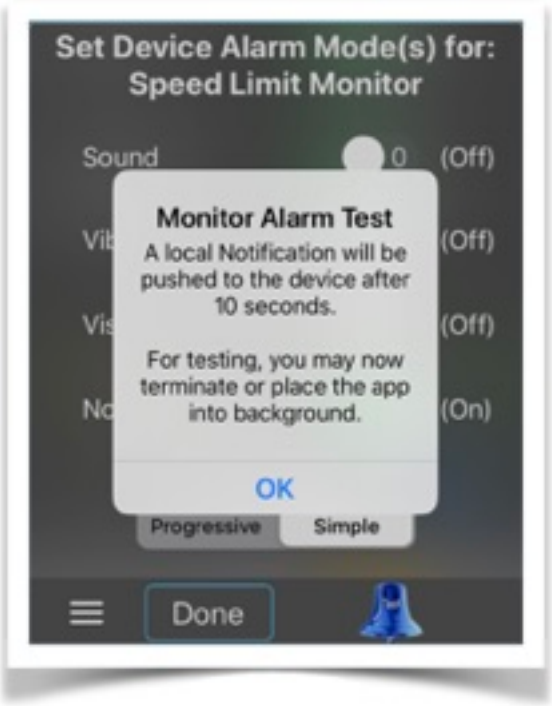
If previous tracking data was already recorded, then any new data can be added or replaced.

The recorded data can later be viewed, analyzed, and exported from the GPS Navigation View of the app.

3. ’Speed Limit' is the upper speed limit to be monitored. Dial the appropriate value, one digit at a time.

4. Touching the ‘Alarm Bell’ icon allows for the configuration of device alarms.





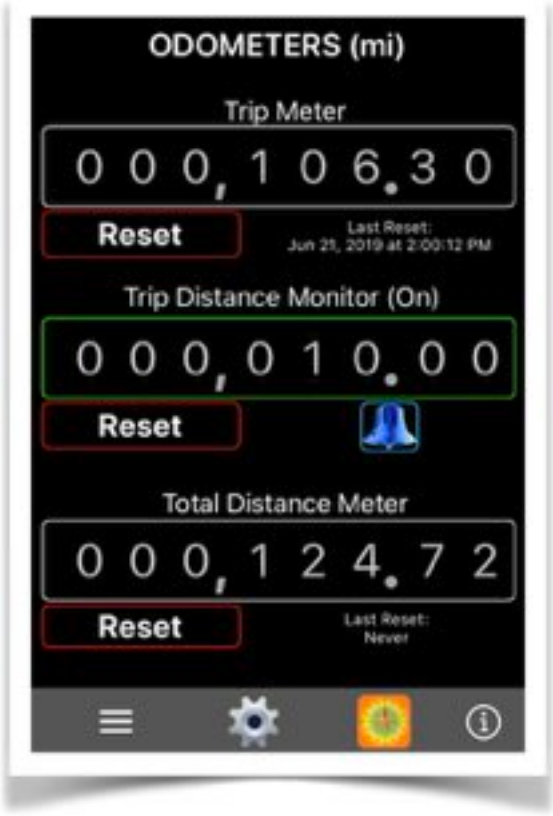
When exceeded while the GPS indicates movement, and depending on the device alarm settings, will cause a Local Alarm Notification to be displayed to the device owner (and on any paired Apple Watch).

B. Distance

Will generate Local Alarm Notifications when the GPS readings detect that the device reached a user-defined distance limit.

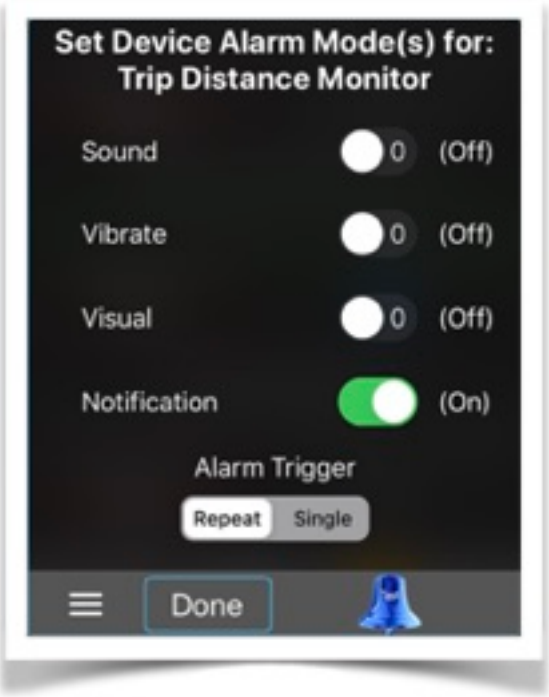
The Odometers view is launched by tapping the ‘Distance’ entry within the Monitor Section of the apps’ Main Menu. Here are the following actions that can be initiated from various control shown in the view:

1. Toggle the ‘Distance Monitor’ digits, one at a time, with an amount greater than zero, to enable the monitor feature when the app is used for navigation purposes.



NOTE: Navigation implies that the app has to be running either in background or foreground. Navigation functions cannot be performed when the app is cancelled by the user (removed from the Home screen).

2. Touching the ‘Alarm Bell’ icon allows for the configuration of device alarms.



When the distance limit is exceeded, and depending on the setting of the device alarm options, a Local Alarm Notification can be displayed to the device owner (and on any paired Apple Watch).
If the Alarm Trigger is in the ‘Repeat’ selection, then a notification will be issued each time when the set distance interval has been reached. In addition, the cumulative distance is also announced.
When the Alarm Trigger is in the ‘Single’ selection, then a notification is issued each time the set distance interval is reached, but then no cumulative total is announced.

C. Altitude

Will generate Local Alarm Notifications when the GPS readings detect that the device reached a user-defined altitude limit.

The Altitude Monitor view is launched by tapping the ‘Altitude’ entry within the Monitor Section of the apps’ Main Menu.

Here are the following actions that can be initiated from various control shown in the view:

1. ’Enable Altitude Monitor' switch in the On position will enable the local alarm notification feature to operate when the app is used for navigation purposes.

NOTE: Navigation implies that the app has to be running either in background or foreground.

Navigation functions cannot be performed when the app is cancelled by the user (removed from the Home screen).

2. ’Enable Track Recording' switch in the On position will record the GPS positions as the device travels along its path.
If previous tracking data was already recorded, then any new data can be added or replaced.

The recorded data can later be viewed, analyzed, and exported from the GPS Navigation View of the app.

3. ’Altitude Limit' is the upper altitude limit to be monitored. Dial the appropriate value, one digit at a time.

4. Touching the ‘Alarm Bell’ icon allows for the configuration of device alarms.

When exceeded while the GPS indicates movement, and depending on the device alarm settings, will cause a Local Alarm Notification to be displayed to the device owner (and on any paired Apple Watch).

D. Tracking Log Manager

Allows for the storage, sharing, and replay of GPS co-ordinates of user-named traveled routes.
The Tracking Log Manager View is initiated by either touching the entitled button at the top of the GPS view, or the ‘Tracking Log Manager’ entry within the Monitor Section of the apps’ Main Menu.

Tracking Logs are created under several circumstances:
1. When a waypoint is configured for **GoTo** navigation. The log will assume the name of the waypoint. If a tracking log is already in existence, then the user has the option to either replacing the log, add tracking points to the existing log, or adding a new log segment under the same name.

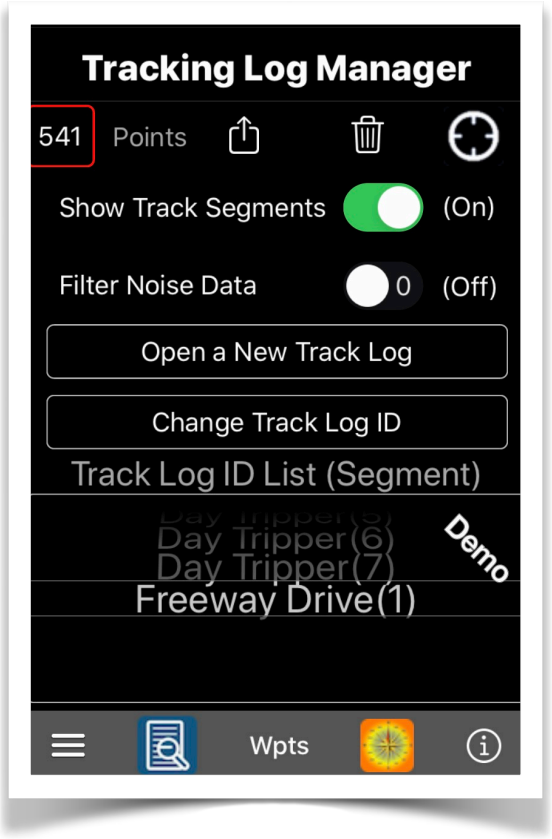
2. Using the Tracking Log Manager, dynamically creating a uniquely named Tracking Log when no other tracking log is currently active. In this case, logging will be performed as long as the app is performing navigation functions in either background or foreground.

3. Enabling named track recording using the Navigation Settings view.

4. Enabling named track recording using either the Speed or Altitude Monitor views.

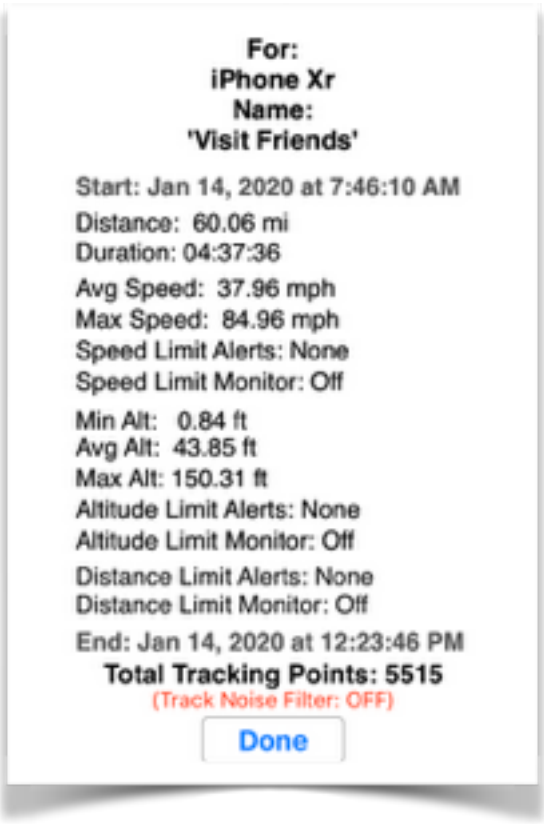
5. Initiating the ‘Day Tripper’ function from the apps’ Main Menu.

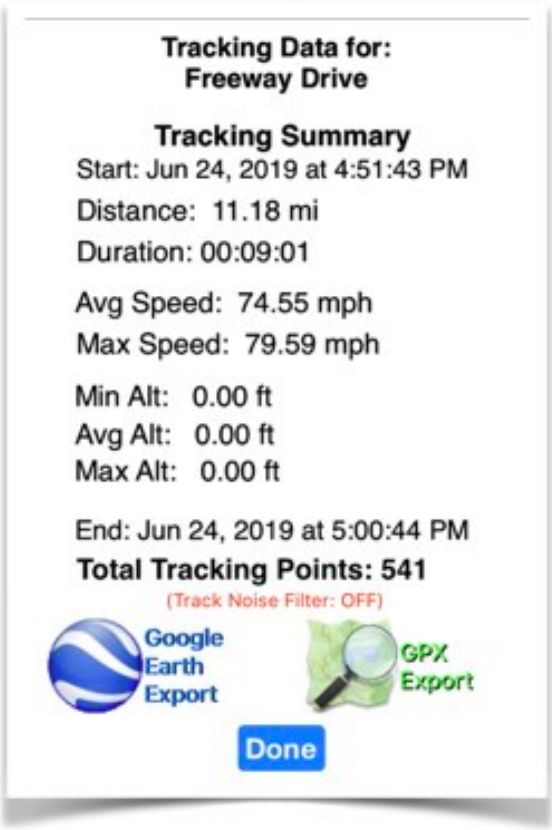
The *Tracking Log Manager View* contains several actionable controls and displays, including:

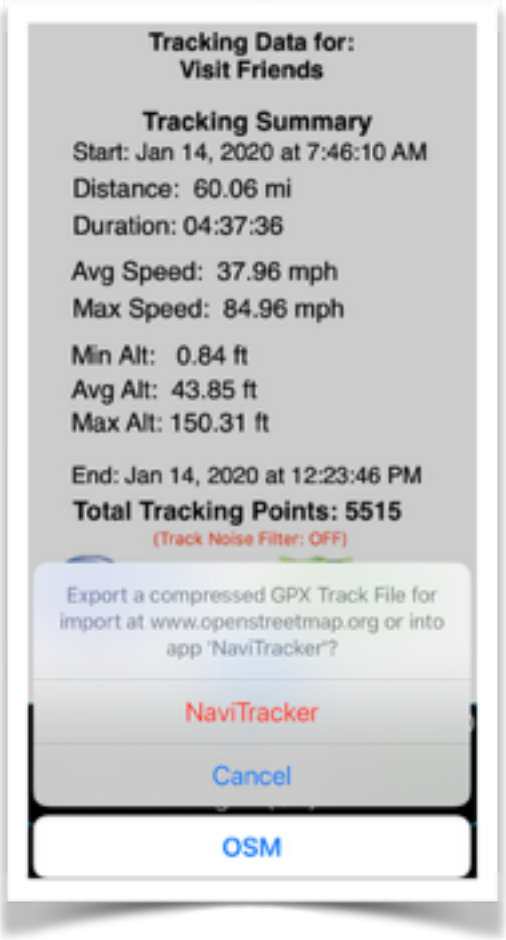


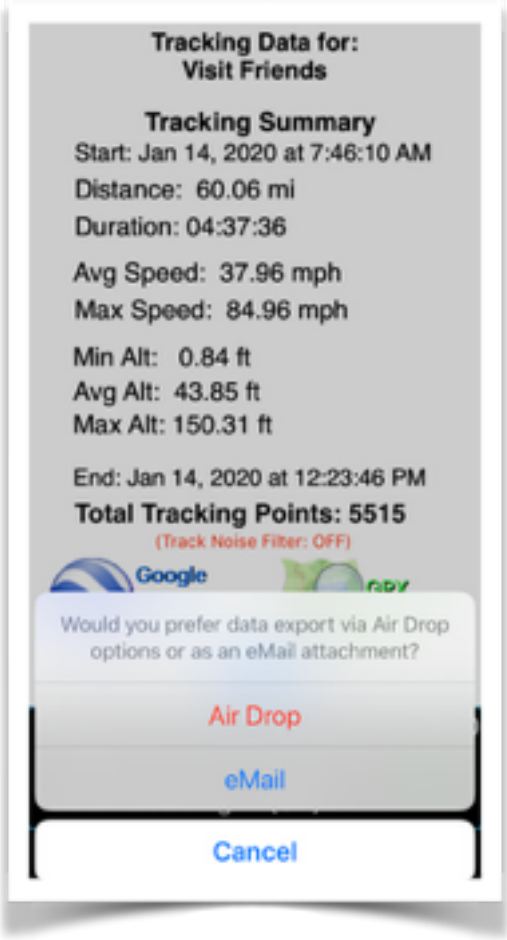
1. A scrollable list of uniquely named Tracking Logs and the total number of location points captured for each.
2. Buttons the Rename a Tracking Log ID, or to create a new log for future navigation activities.
3. A switch button to select whether to filter (On) or include (Off) noise data from the Tracking Log when displaying data analysis information on a subsequent screen.
4. A ‘Delete’ button (trash icon) to permanently remove the currently displayed Tracking Log ID data from the system.

5. A ‘Action’ button to display a subsequent view showing a summary of the current Tracking ID, such as the start/end and date/time, distance and duration travelled, average/maximum speed, minimum/average/maximum altitude, and total number of tracking points captured. Buttons are also available to export the Tracking Log as file formatted for import into either Google Earth, OpenStreetMap, or the NaviTracker app



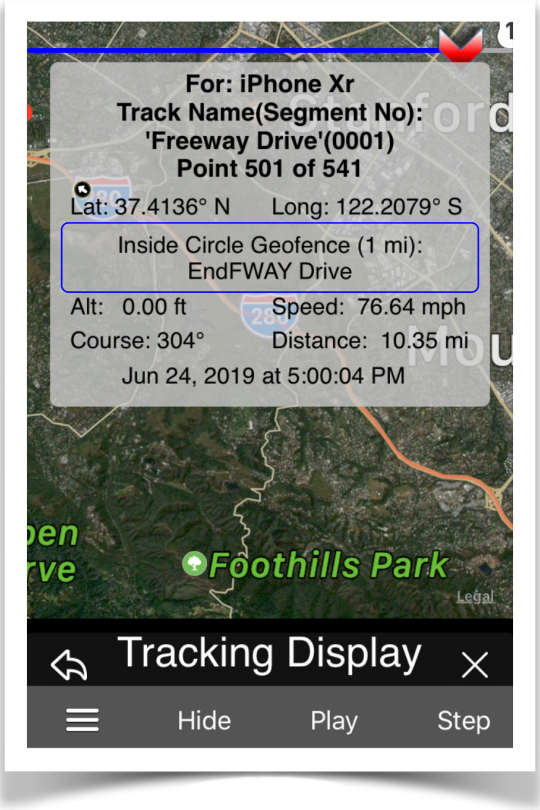


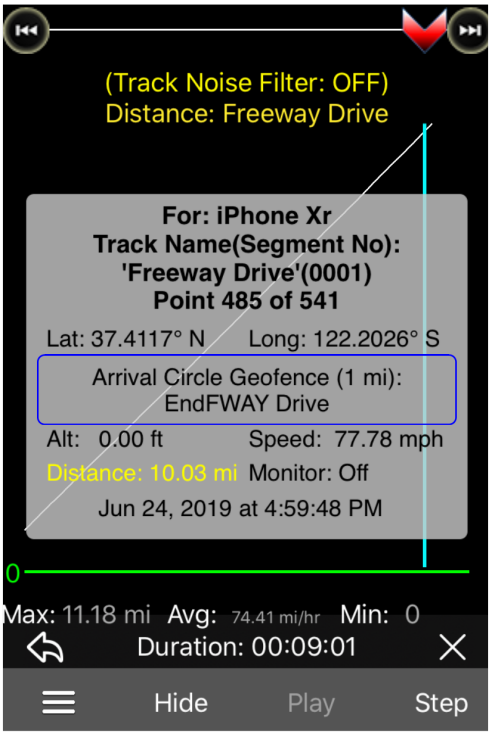




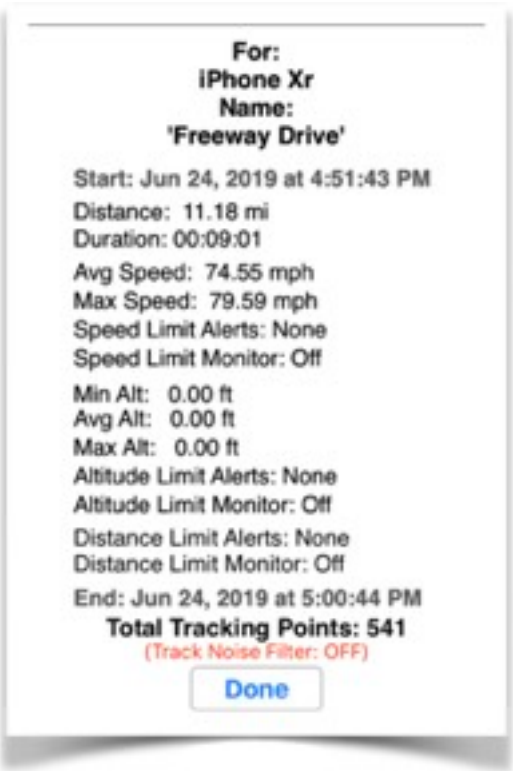
6. The navigation icon at the top right of the view will launch an auxiliary screen to enable more utility functions relative to the current Tracking Log ID, such as:

   - Exporting the current history as a file
   - Permanently deleting the tracking data
   - Refreshing Off-Line Maps for presentation purposes
   - Setting Speed, Altitude, and Distance Monitors to analyze impact on recorded tracking data history
   - Display Distance, Speed, or Altitude performance graphs
   - Replay the navigation track with detailed step-by-step data display utilizing an on-line or off-line map


For: iPhone Xr
Track Name(Segment No):
'Freeway Drive'(0001)
Point 501 of 541
Lat: 37.4136° N Long: 122.2079° S
Inside Circle Geofence (1 mi):
EndFWAY Drive
Alt: 0.00 ft Speed: 76.64 mph
Course: 304° Distance: 10.35 mi
Jun 24, 2019 at 5:00:04 PM
Foothills Park
Tracking Display
Hide
Play
Step


(Track Noise Filter: OFF)
Distance: Freeway Drive
For: iPhone Xr
Track Name(Segment No):
'Freeway Drive'(0001)
Point 485 of 541
Lat: 37.4117° N Long: 122.2026° S
Arrival Circle Geofence (1 mi):
EndFWAY Drive
Alt: 0.00 ft Speed: 77.78 mph
Distance: 10.03 mi Monitor: Off
Jun 24, 2019 at 4:59:48 PM
0
Max: 11.18 mi Avg: 74.41 mi/hr Min: 0
Duration: 00:09:01
Hide
Play
Step

What would you like to do?
Export Tracking History
Clear Tracking History
Refresh Off-Line Maps
Set Speed Monitor
Set Altitude Monitor
Set Distance Monitor
Select Graph Type
Distance
Speed
Altitude
Select Map Type
Standard
Satellite
Hybrid


For:
iPhone Xr
Name:
'Freeway Drive'
Start: Jun 24, 2019 at 4:51:43 PM
Distance: 11.18 mi
Duration: 00:09:01
Avg Speed: 74.55 mph
Max Speed: 79.59 mph
Speed Limit Alerts: None
Speed Limit Monitor: Off
Min Alt: 0.00 ft
Avg Alt: 0.00 ft
Max Alt: 0.00 ft
Altitude Limit Alerts: None
Altitude Limit Monitor: Off
Distance Limit Alerts: None
Distance Limit Monitor: Off
End: Jun 24, 2019 at 5:00:44 PM
Total Tracking Points: 541
(Track Noise Filter: OFF)
Done

7. A ‘Analysis’ button at the bottom of the screen to analyze and report on a given Track ID (including ‘Day Tripper’) for cost determination based on rate and distance travelled.

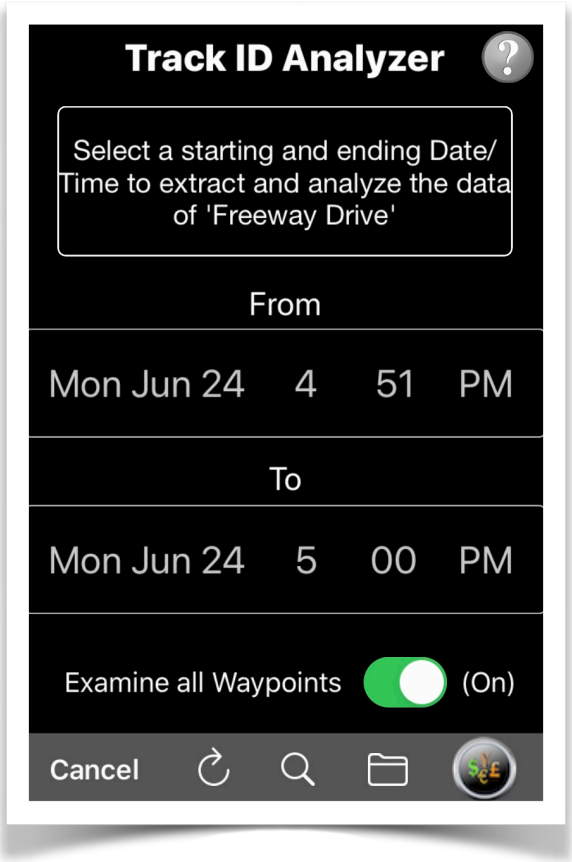
Note that ‘Day Tripper’ is a reserved app name and cannot be assigned by the user as a Tracking Log ID.

E. Day Tripper

This feature records the tracking of the mobile device for the purpose of reporting on the cost of actual distance travelled, based on a user-defined monetary unit. Any Waypoint geofences encountered during a trip will also be reported on in terms of arrivals, departures, and cost. Reports are generated in PDF and can be exported using various sharing methods.
Other Track ID recordings can also be analyzed for the reporting of travel expenses.

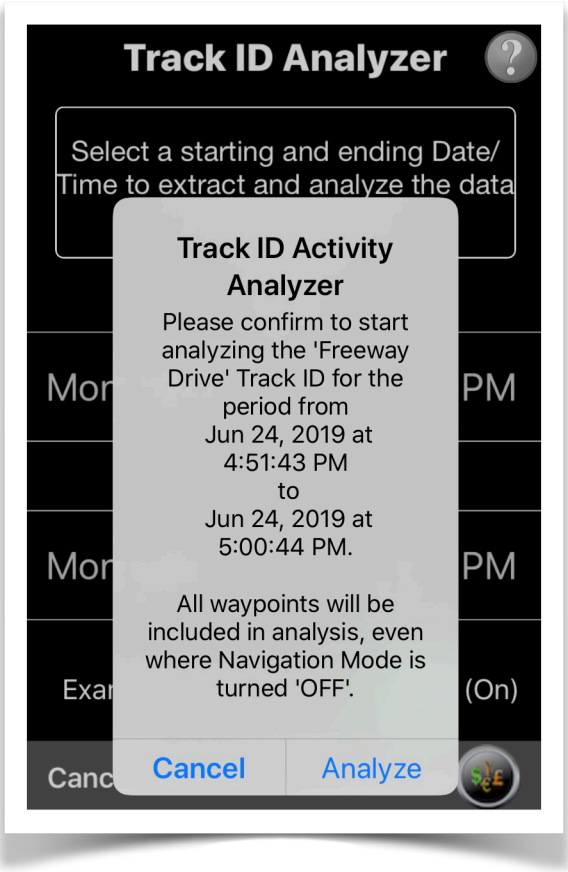
Note that the ‘Day Tripper’ feature cannot be initiated while another active track recording is being performed. Other track recordings could be as a result of either GoTo navigation to a specific waypoint, or a user-initiated custom-named Track ID while navigating.

Conversely, no other track recording can be initiated while the ‘Day Tripper’ recording is active.



The ‘Day Tripper’ activity is run in either background or foreground mode as long as the ‘NaviTracker’ app is active on the users device. If the app is restarted after having been terminated (dismissed by the user while in ‘Day Tripper’ mode) from the home screen, then the ‘Day Tripper’ function will resume automatically by adding a new sequential segment to the existing track recording. As with any existing Track ID Log file, analysis and reporting can be based on either a whole track log (like one consecutive travelled route) or by a specific segment number to eliminate time and location gaps in between recordings.

Analysis and reporting for ‘Day Tripper’ or other named Track IDs can only be performed when track recording is inactive. Analysis and reporting are based on the detailed



records of a given Track Log. For obvious reasons, reports cannot be generated if a corresponding tracing log is permanently deleted by the user. However, generated reports are stored in a separate repository on the device and can be recalled and managed by the user at any time.

The ‘Day Tripper’ function can be requested either directly from the app’s Main Menu, or the appropriate button at the bottom of the Tracking Log Manager view.

The ‘***Track ID Analyzer***’ view is used to perform an analysis of the records for a selected Track ID (including ‘Day Tripper’).

At the top of the page you will find the caption and identification of the Track ID that can be analyzed for subsequent reporting.

After loading of this page, the starting (From) and ending (To) date and time ranges are shown for the tracking data of interest. These date/time values are contained in a picker control that allow for the user to select an upper and lower range of values of reporting interest.

Note that the selected values cannot be outside the minimum and maximum limits of the actual recorded tracking data.

The 'Refresh' icon towards to bottom of the page will reset the 'From' and 'To' date/time values of the picker control to the minimum and maximum boundaries, respectfully.

The 'Currency' button at the bottom will launch a screen to enable the user to set a Distance Recovery Rate to calculate the amount of money that will be applied to the distance that your mobile device recorded for the selected Track ID data.

This recovery rate is used for system wide analysis and reporting of a cost amount based on distance travelled, both for the entire route and portions travelled within a configured waypoint geofence.

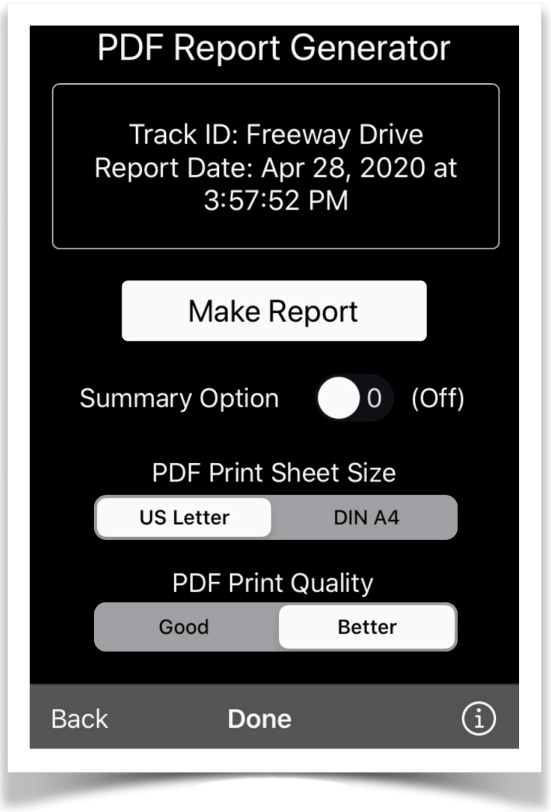
The switch control entitled 'Examine all Waypoints' can be set to the On position to include all waypoints in the Track ID analysis, even if a given waypoint is disabled for geofence monitoring.

To initiate the iTack ID reporting function, tap the 'Search' icon at the bottom of the page, which is followed by a confirmation dialog form.
Then, tap the 'Analyze' option to start generating a report in PDF.

The 'Analyzer Report Manager' page will be displayed upon completion of the report generation. From there a list of reports is displayed for deletion, printing, or other iOS sharing functions.

NOTE: If data analysis is not desired at this time, then the user can jump directly to the 'Analyzer Report Manager' to review previously created reports, by tapping the 'Folder' image at the bottom of the page.

The '***Analyzer Report Manager***' view is launched by tapping the 'Search' icon at the bottom of the '*Track ID Analyzer*' view.



The Report Manager shows a picker control containing one or more selectable PDF Reports as a result of previously run Track ID analyses.
Each entry shows the name of the Track ID as well as the date/time when the report was generated.

Please note that the report represents the end product of an analysis performed against the data of a given Track ID. When the data for a Track ID is permanently deleted by the user, then its baseline for reporting is also lost.

The PDF reports are retained in a separate repository on your device and are maintained by the Analyzer Report Manager.

Touch the 'Trash' icon at the bottom of the page to permanently delete either the currently selected PDF Report, or all PDF Reports shown in the picker control.

NOTE: Permanently deleting a PDF report will not automatically delete its associated baseline data of the Track ID, meaning that a deleted PDF report can be re-generated as long as the Track ID data is available.\

Tapping the 'Folder' image at the bottom of the page will launch the '*PDF Report Generator*' page where the user can further customize the printing and sharing of the selected report.

The '***PDF Report Generator***' view allows for some user customizations of the printing and sharing of the generated PDF report.
Set the 'Summary Option' switch to ON if you wish to suppress the printing of supplemental waypoint information.

Select the paper size on which the report is to be printed:

US Letter, or DIN A4

The PDF Print Quality determines the sharpness of the printed output.

72 Dots Per Inch (DPI) is the standard 'Good' selection.

Selecting 'Better' will result in 144 DPI resolution, but will also use slightly more time to generate and increase the storage requirement for the document.

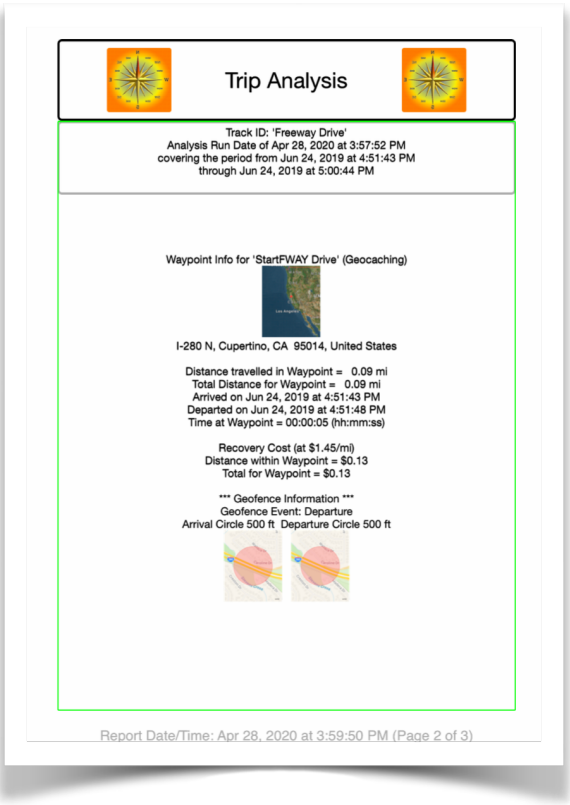
Tap the ‘Make Report' button to generate the document while a progress view is displayed.

Upon completion of the report generation, a standard iOS sharing form is displayed for the user to select the distribution of the PDF (e.g. AirDrop, Messages, Mail, Print, Save to Files, etc.).

The typical content of the report includes:

1. In the page Header: The name of the Track ID, the analysis run date/time, the start and end date/time covering the reporting period.
2. In the page Footer: The date/time the report was generated, including page numbers.
3. On the front page: A summary showing the trip Starting and Ending Locations obtained from the tracking data, the Total Travel Time, Total Travel Distance, Average and Maximum Speed, number of Waypoint Geofences visited during travel, Total Chargeback Amount and Chargeback Rate per unit of distance, and the total number of tracking records processed during the analysis.
4. For each Waypoint Geofence visited during the trip, a page is generated showing the following information:
    - Waypoint Name, Type, and any user supplied meta data.

- Address of Waypoint
- Distance travelled to Waypoint
- Distance travelled within Waypoint Geofence
- Total Distance attributed to Waypoint
- Time travelled to Waypoint
- Date/Time of Waypoint Geofence Arrival/Departure
- Recovery Cost for Distance to Waypoint
- Recovery Cost for distance within Waypoint Geofence
- Total Recovery Cost attributed to Waypoint
- Geofence information showing Arrival or Departure Event, Type of Geofence (Polygon or Circular), and Radius of Circular Geofence.
- If the report was generated with the ‘Summary Option’ disabled, then additional information (if available) is also shown per Waypoint, such as images showing the Waypoint location on a map, images showing the


Trip Analysis

Track ID: 'Freeway Drive'
Analysis Run Date of Apr 28, 2020 at 3:57:52 PM
covering the period from Jun 24, 2019 at 4:51:43 PM
through Jun 24, 2019 at 5:00:44 PM

Waypoint Info for 'StartFWAY Drive' (Geocaching)

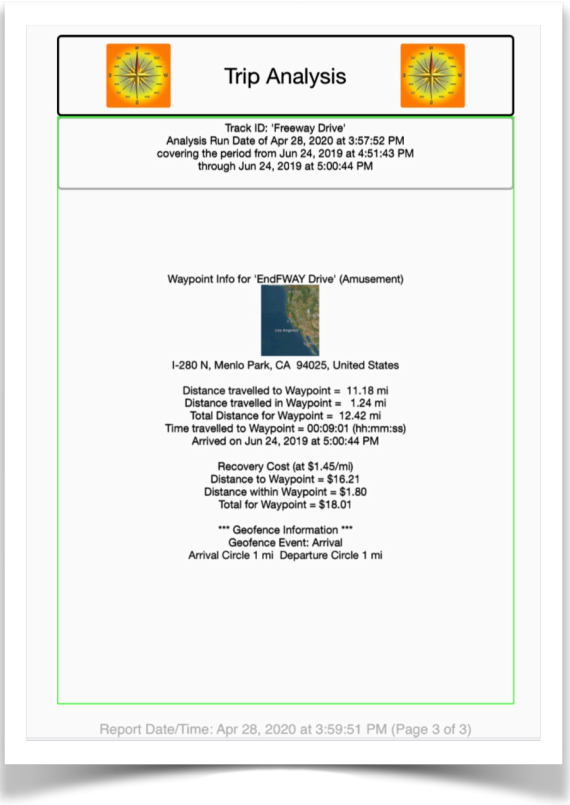
I-280 N, Cupertino, CA 95014, United States

Distance travelled in Waypoint = 0.09 mi
Total Distance for Waypoint = 0.09 mi
Arrived on Jun 24, 2019 at 4:51:43 PM
Departed on Jun 24, 2019 at 4:51:48 PM
Time at Waypoint = 00:00:05 (hh:mm:ss)

Recovery Cost (at $1.45/mi)
Distance within Waypoint = $0.13
Total for Waypoint = $0.13

*** Geofence Information ***
Geofence Event: Departure
Arrival Circle 500 ft Departure Circle 500 ft

Report Date/Time: Apr 28, 2020 at 3:59:50 PM (Page 2 of 3)


Trip Analysis

Track ID: 'Freeway Drive'
Analysis Run Date of Apr 28, 2020 at 3:57:52 PM
covering the period from Jun 24, 2019 at 4:51:43 PM
through Jun 24, 2019 at 5:00:44 PM

Waypoint Info for 'EndFWAY Drive' (Amusement)

I-280 N, Menlo Park, CA 94025, United States

Distance travelled to Waypoint = 11.18 mi
Distance travelled in Waypoint = 1.24 mi
Total Distance for Waypoint = 12.42 mi
Time travelled to Waypoint = 00:09:01 (hh:mm:ss)
Arrived on Jun 24, 2019 at 5:00:44 PM

Recovery Cost (at $1.45/mi)
Distance to Waypoint = $16.21
Distance within Waypoint = $1.80
Total for Waypoint = $18.01

*** Geofence Information ***
Geofence Event: Arrival
Arrival Circle 1 mi Departure Circle 1 mi

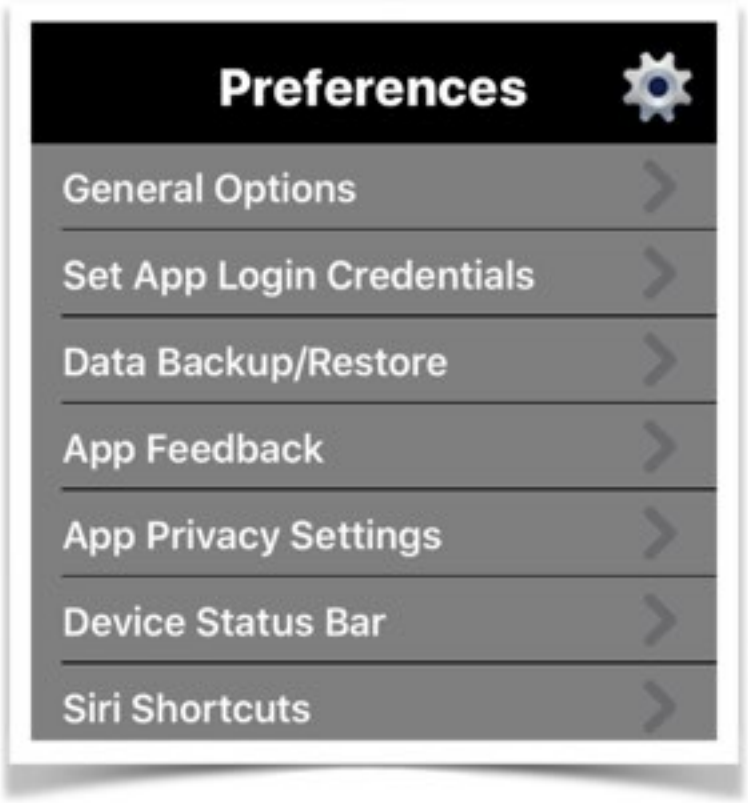
Report Date/Time: Apr 28, 2020 at 3:59:51 PM (Page 3 of 3)

geofence contour overlay on a map, and any other image that was associated by the user when first define the waypoint.

Please also note that additional Track ID Log analysis, including the detailed step-by-step display of the travelled route, can be shown on an off-line or on-line navigation map.

These additional functions can be performed by invoking the ‘Tracking Log Manager’ from the apps’ Main Menu, or other places as indicated.

VI. Preferences



A. General Options
B. Set App Login Credentials
C. Data Backup/ Restore
D. App Feedback
E. Device Status Bar
F. App Privacy Settings
G. Siri Shortcuts

Overview

Allows for the configuration of several app-wide behaviors.

A. General Options

Allows for the configuration of general settings affecting the operation of the app. The feature is initiated by tapping the ‘General Options’ entry within the Preferences Section of the apps’ Main Menu.

Following are the possible customization options:

1. ‘App Icon’
When iOS 11.0 (and above) is installed on the device, the icon for display on the Home Screen can be changed for app ‘**NaviTracker**'.

2. ‘Speech Assistance’
This option is used in conjunction with Siri Voice Shortcuts as well as vocalizing alert notifications to the device user during navigation activities.
Male or Female voices can be selected, or disabled to allow for quiet mode.

3. ’Face/Touch ID’
If enabled, for devices having the built-in hardware feature, will be used to authenticate the user to log into the '**NaviTracker**' app.

4. ‘Geofence’
If disabled, will prevent the device from using the Location Services to monitor any configured Geofences and associated arrival/departure notifications.

5. ‘Badge Number’
When enabled, will display, on the Home Screen, the App Icon with number of Waypoints configured for possible navigation.

6. ‘Security Sentinel’
Causes the app to automatically log out after a user-set inactivity period.
However, any configured navigation actions will continue to be performed in the background (e.g. position tracking and monitoring of geofences) .

B. Set App Login Credentials

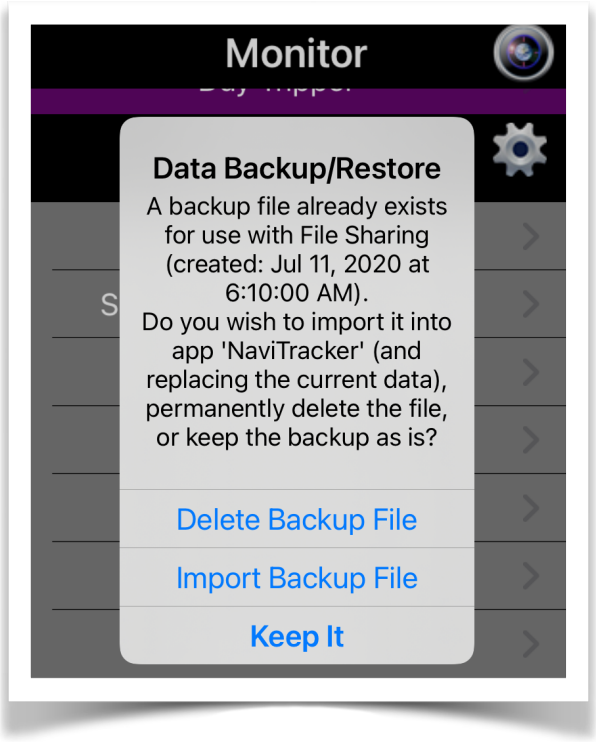
Enables the device owner to modify the login credentials to unlock advanced functionality in a secure manner.

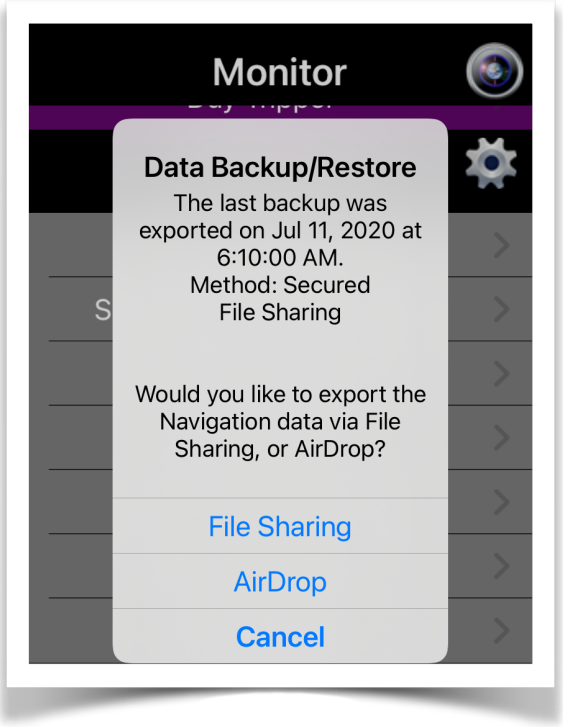
Authenticating with Touch/Face ID (if supported by device).

C. Data Backup/Restore

The Navigation database, including all preference settings, can be backed up using different transport options, including File Sharing.

When restoring a back-up file, the password in use at the time of back-up creation is required to authorize data reload.





Restoring a back-up file will replace all current app information.

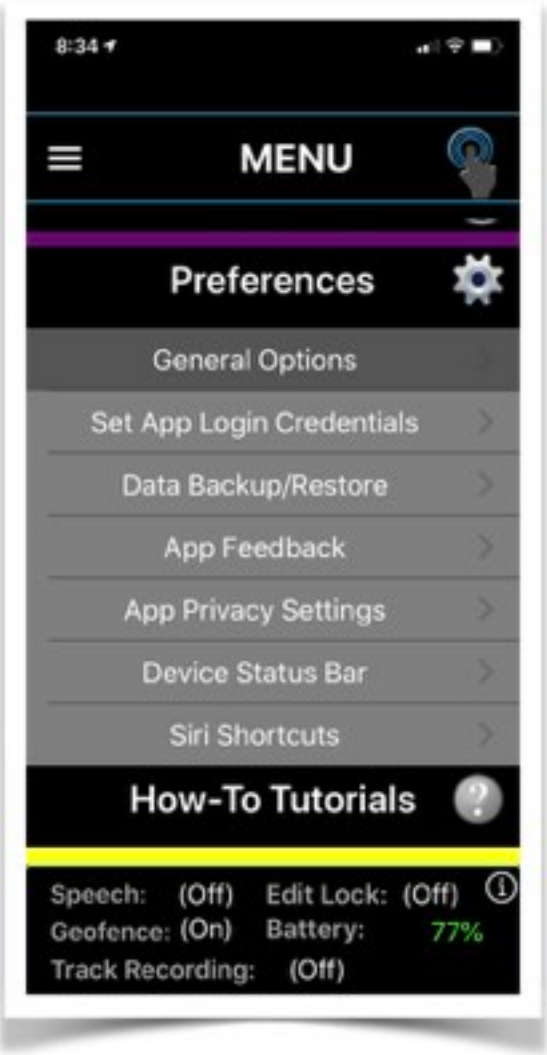
D. App Feedback

Transfer constructive feedback and suggestions to our developers via the Apple App Store.
Your comments will be reviewed by our team to improve the functionality of the app in upcoming releases.

The device has to be connected to the Internet in order to perform this function.

E. Device Status Bar

The status bar for your device can be hidden or displayed at the top of the apps' views based on your personal preference.

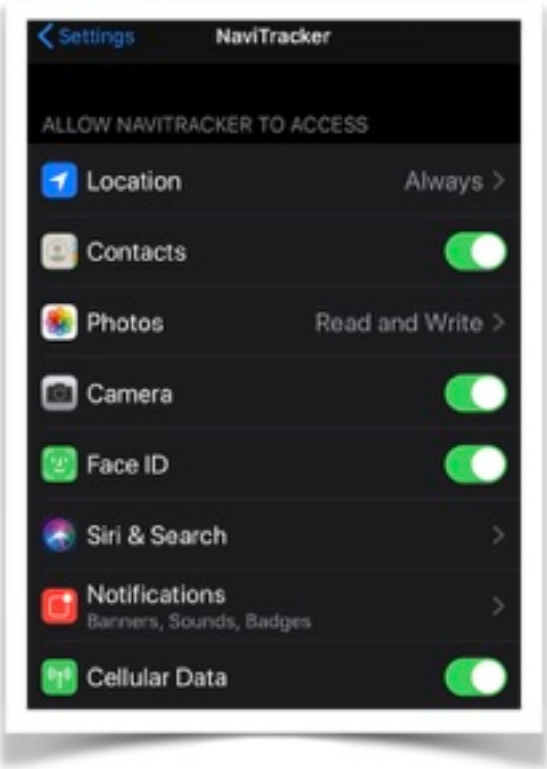


F. App Privacy Settings

Displays the current iOS privacy settings related to app '**NaviTracker'**.

The user can change the settings based on certain features to be performed by the app.

Please NOTE: Since the primary objective of this app is to perform navigational functions in either foreground or background, at a minimum, it is essential that Location Services be allowed 'ALWAYS' or 'While Using the App'.



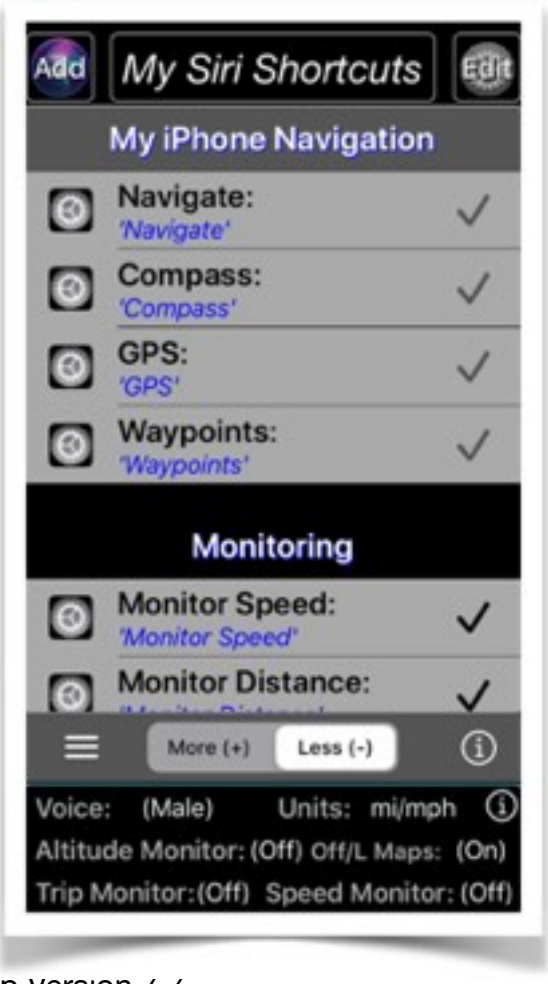
Typical allowed features include access to:

1.*Location* ***Always*** or ***While Using the App*** for the app to perform navigation functions in either background or foreground.
2.*Photos* to use as a location source when defining waypoints or augment waypoint meta data.
3.*Camera* to augment waypoint meta data for illustration purposes.
4. *Face/Touch ID* to allow quick and secure app authentication.
5. *Siri Search* for verbal short cuts to initiate app actions.
6. *Notifications* for the app to issue local alerts when arriving/departing at a user-defined geofence.

7. *Cellular Data* to access on-line Apple navigation maps and/or download navigation maps from Open Street Maps (OSM) for local storage and use in off-line mode. The preferred method for downloading off-line maps is over the Internet via a Wi-Fi connection.

G. Siri Shortcuts

iOS 12 (and later) users can configure voice shortcuts to perform certain '**NaviTracker'** app features via Siri.
Note that Siri is designed to recognize shortcut voice commands only if the device is also connected to the Internet.
This *My Siri Shortcuts* view is launched directly from within the Preferences section of the apps' Main Menu.



Many of the '**NaviTracker**' app features can be activated directly with your voice using Siri.

The available app functions suggested for Siri configuration are listed here.

At the bottom of the screen, you can display More (+) or Less (-) of these available functions.

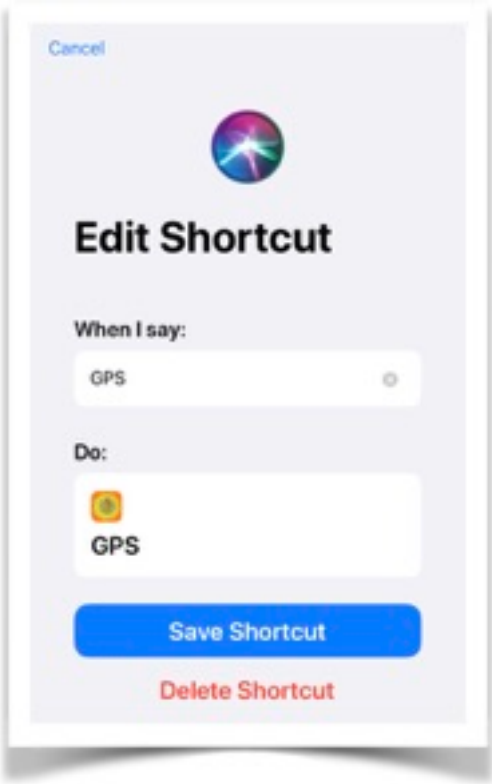
More functions include most features which can also be

directly accessed through the apps Menu system.

Less functions only show the shortcuts that are specifically intended as Siri Voice commands, performing multiple activities automatically to eliminate extra user interactions in order to achieve the desired outcome more efficiently.

List entries with a check mark have already been added to Siri and are ready as Voice commands.

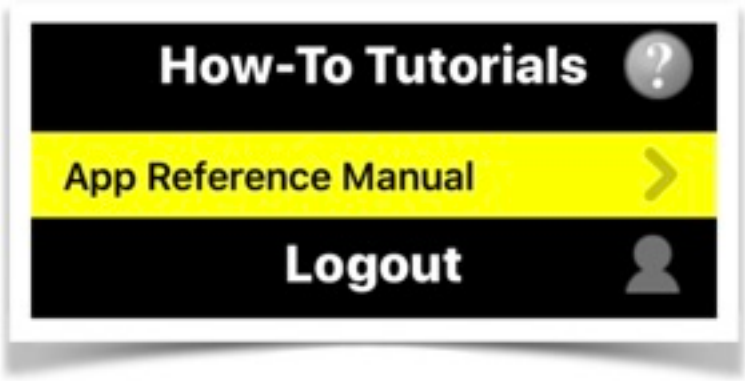
Touch (or left-swipe) an entry in the list to either add the command to Siri, or edit/remove a command that was previously configured.



In either case, you have the option to first preview the command and resulting outcome by executing it.
NOTE: There are three buttons at the top of the view which can be used to selectively list the Siri Shortcuts.
The top left button (Add) will list any Siri Shortcuts that have not been assigned by the user.

The middle button 'My Siri Shortcuts' lists all available commands supported by this app, indicating if a command can be added to Siri, or edited/deleted by the user.
The button to the right (Edit) will only list those commands which have been assigned to Siri and can either be edited or deleted by the user.

VII. How-To Tutorials



A. App Reference Manual
B. Handling File Sharing

Overview

The usage descriptions are somewhat generic in nature to cover the general steps in order to accomplish a given task. Because of ongoing iOS feature updates and version releases, some specifics might deviate from the examples shown in the tutorials.

B. App Reference Manual

Although contextual how-to tutorials are embedded in the '**NaviTracker**' app, two pdf versions of an App Reference Manual are additionally available to the user:

1. A condensed guide containing how-to instructions covering all major features of the app. The benefit of this embedded manual is that it is readily available without requiring a connection to the Internet.

2. A more comprehensive guide covers the content of the condensed version as well as adding many screen shots to assist the user in navigating the how-to tutorials. Because of

the guide being more comprehensive, its file size is also substantial. For this reason, the comprehensive guide will only be downloaded to the App Document Folder when the mobile device is connected to the Internet.

In the event an on-line version is not accessible, the app will always present the condensed built-in Reference Manual.

B. Handling File Sharing

You can copy files between your computer and app '**NaviTracker**' on your iOS or iPadOS device using File Sharing.
If you're using **macOS Catalina**, use the **Finder** to share files between your computer and your iOS or iPadOS device, or perform alternative Finder actions as described on the Apple Support website.
If you're using **macOS Mojave or earlier or a Windows PC**, use **iTunes** to share files between your computer and your iOS or iPadOS device, or perform alternative iTunes actions as described on the Apple Support website.

Finder File Sharing

(Copy from your Mac to your device)
1. Open a Finder window.

2. Connect your iPhone, iPad, or iPod touch to your computer with a USB cable.

3. Select your device in the Finder.
4. Click the Files tab to see a list of apps that can share files.

5. Click the triangle next to app '**NaviTracker**' to see the files that you can share.

6. Drag the files to the app on your device. The Finder copies the files to your device.

Finder File Sharing
(Copy from your device to your Mac)
1. Select the files that you want to copy.

2. Drag the files to a folder on your computer. The Finder copies the files to your computer.

iTunes File Sharing
(Copy files from your computer to an iOS or iPadOS app)
1. Open latest version of iTunes on your computer (Mac or PC).

2. Connect your device to your computer using a USB cable.

3. Select your device in iTunes.

4. On the left sidebar, click File Sharing.

5. Select the '**NaviTracker**' app from the list in the File Sharing section.

6. Drag and drop desired files from a folder or window onto the Documents list to copy it to your device.
You can also click Add in the Documents list in iTunes, find the appropriate file, and then click ‘Add’. iTunes copies the file to the app '**NaviTracker**' on your device.

iTunes File Sharing
(Copy files from an iOS or iPadOS app to your computer)

1. In iTunes, select the '**NaviTracker**' app from the list in the File Sharing section.

2. Drag and drop files from a folder or window onto the Documents list to copy them to your device.
You can also select the file or files you want to copy from the Documents list in iTunes to your computer, and then click ‘Save’.

iTunes copies these files from the app '**NaviTracker**' to your computer.

NOTE: All imported files are locally stored on the device in compressed format before being automatically deleted form the source location.