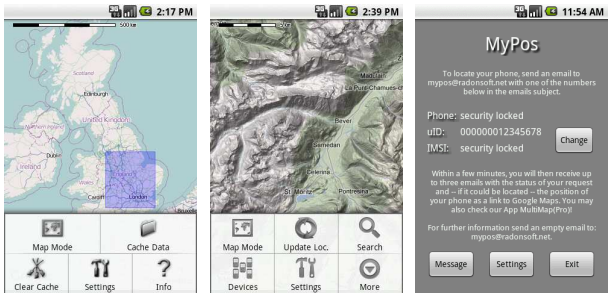
MultiMap

MultiMapPro

MyPos



RadonSoft GmbH

v2.0 – 04/2010

Overview

MultiMap and MultiMapPro are applications running on Android phones designed to display and organize maps in various formats like Google and several OpenStreetMap types for cycling, skiing and more. Map data is loaded from the Internet only once, as it is cached locally on the phone's sd card for faster access and to save network bandwidth.

An advanced caching option allows to preload mapping data to the phone when it is connected to the Internet through a high-speed connection (WiFi etc.) thus minimizing the required internet bandwidth during outdoor activities.

GPS and network based positioning data can be used to display your own position on the selected map with additional data like speed and approx. height.

MultiMapPro adds positioning and free messaging capabilities with other Android phones. All phones to be integrated with MultiMapPro need to run RadonSoft's free MyPos App and the phones need to have Internet connectivity. The network bandwidth required for position data and messages is extremely low though. MultiMapPro also adds search functionality for places, cities etc. – upon search, the best match is displayed on the map currently selected.

MultiMap

MultiMap starts with a display of the last selected map. If activated, your current position is shown on the map and the map is automatically centred to that position.

Through the application's Menu, you have access to several optional settings that control the behaviour:

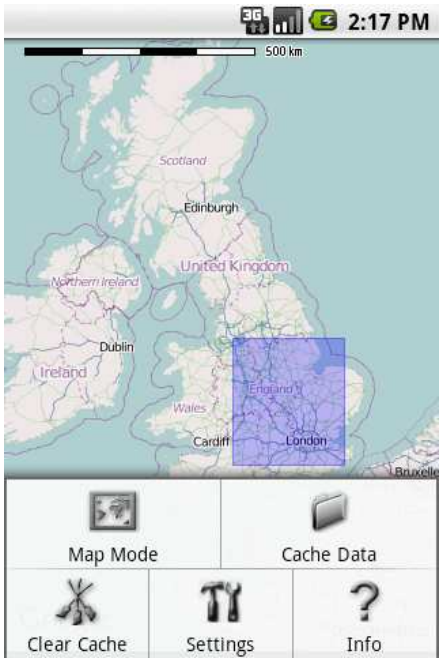
- **Map Mode** allows selection of various maps; a list with links to the maps currently implemented can be found in the reference section at the end of this document.

- **Cache Data** enables a rectangle that defines the map area to be preloaded. Hit the phone's "back" button to start caching, after you entered the detail level to use.

- **Clear Cache** allows you to remove previously cached data from the SD card to free space or delete outdated maps. Selection can be made by map or date.

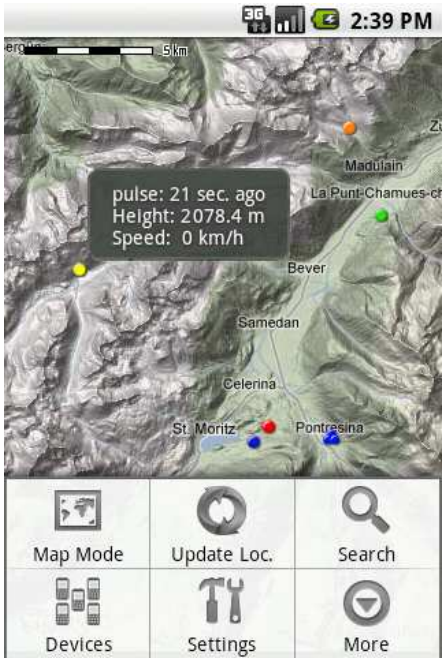
- **Settings** lead you to two options – "Display own position" and "Center map on update". Both options do what they suggest; enable or disable them as required.

- **Info** displays upgrade information to MultiMapPro with a direct link to Google Market.



MultiMapPro

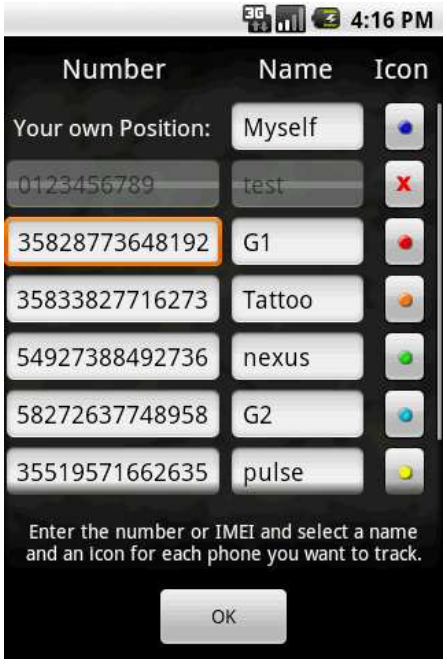
MultiMapPro adds various options to the functionality available in the standard version of MultiMap. Like in MultiMap, the map last selected is displayed upon start and you may set up the options through the application's Menu:



- **Map Mode** as in MultiMap, this selects between various maps to display. A full list can be found in the reference section at the end of this document. Concerning the other functions of MultiMapPro, all maps behave identical so you may choose the map that best suits your specific requirements (cycling, skiing etc.).

- **Update Location** updates the location of all phones set up in the "Devices" menu as well as your own position (if enabled) exactly once. Depending on network and phone's location, the update takes between a few seconds up to one minute. If enabled, a short notification is displayed upon receiving the position update from a phone with the phone's name.

- **Search** opens a dialog that allows you to enter a place, city or other location. If a match is found, it is displayed on the map with a small blue icon and the map is centred to that position.



- **Devices** lead to a dialog for setting up other phone's data. Each phone to be connected to requires a number, a name and an icon to be used for identification of that phone's owner on the map. Enable an icon for your own phone if you also want to display and update that along with the other devices (suggested). Depending on the MyPos settings and the network operator the target phone is using, the number entered here may either be the actual phone's number, it's unique IMEI or, in case MyPos security is enabled, a custom UID you set up individually on the target phone. Check the entries that MyPos displays on the target phone if in doubt what to enter here. If others should be able to request your position and to send messages to your phone, you need to tell them your own number, IMEI or UID as displayed in your own MyPos settings. The name beside "Your own position" is used to identify yourself in Messages to others, so it is suggested to enter something meaningful here (**not** "Myself" as shown on the right).

- **Settings** brings up a dialog to specify various options regarding the application's behaviour during position updates. Enable ***Auto Update*** in the ***Position of other devices*** section to request cyclic position updates. Set up the time between two updates in the ***Minutes*** field.

  If ***Notification on update*** is enabled, a short notification is shown each time a position update is received from a phone. The notification includes the phone's name (as set up in the ***Devices*** dialog) and the update type – either Network or GPS.

  The ***Center Map on Update*** section controls the behaviour of the map during position updates. ***Center all positions*** will calculate the "gravity" center of all positions currently available and center the map accordingly**.** ***Center own position*** will always center the map to your last known own position and ***Never*** will not alter the map's center upon position updates. If ***Auto scale Map*** is enabled, MultiMapPro recalculates the map scaling and boarders upon each update and sets the map accordingly. This feature is useful for an initial set up or if all participants move in a certain direction (e.g., several cars on the motorway). In other cases, however, you will probably want to disable this feature and simply manually control the map scaling and boarders.

  Update Type selects between ***GPS Only*** and ***Network and GPS***. Select the former, if you do not want position updates calculated from the phone's network. This can be useful if using MultiMapPro in an area with only very few transmission cells (e.g., in the mountains or countryside), as the position of the phone's may then jump significant distances (a few kilometres) between updates due to the inaccuracy of the network positions. Selecting ***GPS Only***, however, require all phones to get GPS updates, so it is limited to outdoor usage.

  Use the settings in ***Update Own position*** to specify how you want your own position to be updated – ***Permanent*** or ***With other devices*** only. While the former ensures your position to be always up-to-date, it uses more battery as the GPS will be switched on permanently.

Once you see other devices icons on the map, you may short-tap them for more information about the phone's position – it's name, current speed and approx. altitude. In case the target phone's position is retrieved from network only, speed and altitude are not available and will show as 0.

Long-tap a phones icon to get a menu with two options: ***Update device position*** and **Send message to device**. The first will update the device's position once, without updating anything else. The second will bring up a dialog for sending a short message to the target phone. This dialog is exactly the same as for MyPos – the fields are prefilled with your name and the target phones IMEI or UID, as set up in the ***Devices*** dialog.

MyPos

MyPos installs a service on your Android phone that holds a permanent connection from your phone, through the Internet to one of our servers. This is required, as all Android phones implement a very secure firewall with nat (network address translation) that prevents any service originating in the outside network (Internet) from establishing a connection to your phone.

While the connection itself does not consume any significant bandwidth, most network operators will cut the connection if there is no data sent through it for a certain amount of time. Although there is no dedicated information available about this, our tests show that this time seems to vary between 30 minutes (e.g., T-Mobile and most other network operators in Europe) and 10 minutes (e.g., Swiss Sunrise).

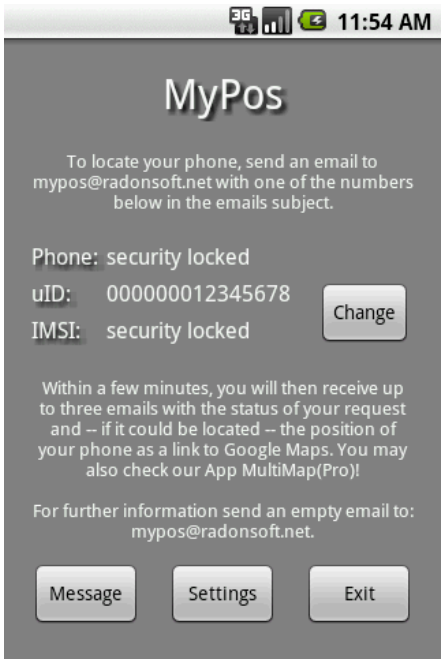
Due to the above limitation, a small "keep alive" packet is sent after a specific timeout, depending on the settings in MyPos. This results in about 50 kB per day, if the network connection of the phone is stable. In case the phone's network connection changes (e.g. from 3G to 2G to no connection or to WiFi), a new connection to our server is automatically established, resulting in a few packets extra data.

In case your phone establishes a WiFi connection, the keep alive time is automatically adjusted to 5 minutes, as this is the most common time interval used by routers and access points. This will slightly increase the required network bandwidth for WiFi connections, but a few additional kB a day should probably hardly matter in case of WiFi.

Once MyPos is installed and running on your phone, you can use its various options:

- Track the phone's position by sending an email to mypos@radonsoft.net
- Use MultiMapPro to display your and other phones position on various maps
- Send free messages to other phones running MyPos

Upon start, MyPos displays a screen with a short usage message along with the available numbers that can be used to track your phone or to send messages to it.



Hit ***Change*** to set up a custom uID to be used instead of the hardware specific IMEI. This will prevent others, from simply using your phone number or IMEI to request position updates or send messages to your phone.

If you set up a uID, the phone's number and IMSI (a number specific to your network operators SIM card) can no longer be used to identify your phone and the corresponding fields with show "security locked" (as shown on the right).

Even when not using a uID, you may find your ***Phone*** field empty. This indicates, that your network operator does not allow for retrieval of your own phone number by an application, which seems to be true at least for a number of European operators (Swiss Sunrise, Swisscom, German Simyo etc.). In that case, your phone will not respond to update requests or messages sent to the phone's number.

Hitting ***Settings*** will bring up a dialog with four options:

Vibrate on Message indicates a message sent to your phone (from either another Phone's MyPos app or through MultiMapPro) with a short vibration sequence.

Indicate pos request should be enabled, if you want to see if anyone requests a position update from your phone. In that case, the phone's LED will flash upon a position request until the position is retrieved and sent out to our server. Please note, that certain phones (like the T-Mobile Pulse) do not implement a signal LED, so there will be no indication of an update request on those phones.

Autokeep alive net is an option to be enabled if you encounter problems retrieving position updates from your phone or sending Messages to it. Enabling this option will start a sequence in the connection service that will automatically find the optimal time interval for "keep alive" packets. If you disable this option, the "keep alive" interval is reset to the default setting of 25 minutes, so it is suggested to leave this switched on. Please note, that upon first start, it may take up to half a day until the optimal setting is found and the MyPos service runs stable. The value actually used by MyPos can be looked up at the bottom of the message dialog – if that value does not change for a few hours, the optimal value for your network operator is found and MyPos should run stable. In case of switching network operators (another SIM card), it is recommended to switch this option off, restart MyPos and switch the option back on.

Finally, ***No position updates*** can be enabled to prevent any localization requests to be served by MyPos. The requesting application (or email) will always receive a "No position update" immediately upon sending a position request. You may enable this option, if you want to use MyPos messaging service without displaying your own position to others.

A click on ***Message*** brings up a dialog for sending a short message to another phone running MyPos. Enter your own name in the ***From*** field – this name will be displayed to the message receiver at the top of the message. The ***To*** field needs to be filled with a valid phone number, IMEI, IMSI or uID, depending on the MyPos settings used by the **Message receiver** (not **your** MyPos settings!).

After entering the message, hit ***Send*** to get the message out to the receiver's phone. If the receiver's phone is running MyPos and registered with our server using the number you entered in the ***To*** field, a "Message successfully sent" dialog will indicate a successful sending of your message. In a few, rare circumstances, however, the message may nevertheless not be received – e.g., if the receiver's phone just went offline or if it just changed networks (to / from WiFi). Please keep that in mind – simply request a confirmation in case of critical messages.

On the receiver's phone, the message will be indicated with a vibration (if enabled) and with an icon in the notification bar (as shown above). Drag the notification bar and click the message to read it or alternatively start MyPos directly. From the message dialog you can directly answer to the Message's sender, e.g., to confirm a message etc..

Reference

Below is a list of the maps currently implemented by MultiMap and MultiMapPro:

Google: http://maps.google.com
OpenStreetMap: http://www.openstreetmap.org
OpenCycleMap: http://www.opencyclemap.org
OpenPisteMap: http://openpistemap.org
Public Transport DE: http://www.öpnvkarte.de
OpenSeaMap: http://www.openseamap.org
OpenOrienteeringMap: http://oobrien.com/oom

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For questions, comments, hints etc. contact us at: info@radonsoft.net