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Introduction

Welcome to iGIS, the world's first and leading iOS GIS.

iGIS represents a new era in mobile GIS solutions by enabling users to load, view, investigate, create and export their own spatial data over a background of Google Maps imagery.

Getting Started

When iGIS starts you will be presented with icons for all your projects.



The basic steps to use iGIS are:

1. Import your own spatial data into iGIS

iGIS supports the import of vector spatial data via the ESRI shapefile format. A shapefile is made up of at least three files with the same name but with different types: a main file (*.shp), an index file (*.shx), and a dBASE table (*.dbf) shapefiles optionally include a projection file (*.prj) a text file which details the coordinate system the data relates to. As part of the import process you will need to specify what coordinate system your shapefile data relates to. This is very important to ensure that all datasets align with each other as well as underlying satellite imagery data.

iGIS supports the import of raster spatial data which has been pre-processed with the open source MapTiler tool. This tool takes raster data in a number of formats and converts it into a series of tiles, similar to the underlying iGIS Google maps imagery.

[More help on Importing](#)

2. Organise your data into projects.

A Project defines your map, the data that you wish to appear on it and how it will look. Once you define a name and projection a new project icon will be created on the main page. The projection property defines the coordinate values which will appear in the map window. Select the information symbol in the bottom left hand corner of a project icon to display and edit a project's settings. Project settings enable you add data as layers to your projects map view, and control how and when it will be displayed. The order of layers is important, as layers are drawn on top of

each other. Polygons should be drawn at the bottom, then lines with points on top. You can change the drawing order of layers in the layers menu option in a project's map display.

[More help on Projects](#)

3. Investigate and edit your data within a project map window.

Viewing your data on maps is the fun part. Use all the standard touch gestures to move around the map, such as pinch zoom, double tap and double finger tap.

[More help on Maps](#)

4. Export your edited spatial data from iGIS.

Export the valuable new features and edits which you have captured in your field work back into the ESRI shapefile format so that they can be incorporated into your desktop GIS.

[More help on Exporting](#)

Importing Data

Your vector spatial data needs to be in ESRI shapefile format. A shapefile is made up of at least three files with the same name but with different types: a main file (*.shp), an index file (*.shx), and a dBASE table (*.dbf) shapefiles optionally include a projection file (*.prj) a text file which details the coordinate system the data relates to. As part of the import process you will need to specify what coordinate system your shapefile data relates to. This is very important to ensure that all datasets align with each other as well as underlying satellite imagery data. This linked iGIS support site article contains some third party tools which may help in determining which ESRI projections relate to which EPSG codes. [Which EPSG code relates to the projection of my shapefile data?](#)

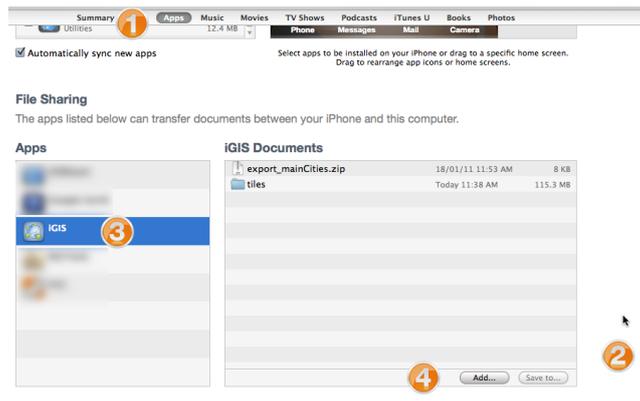
iGIS supports the import of raster spatial data which has been pre-processed with the opensource MapTiler tool. This tool takes raster data in a number of formats and converts it into a series of tiles, similar to the underlying iGIS Google maps imagery. The process is detailed in this linked iGIS support site article: [Loading and using Raster Imagery](#) Data can be imported into iGIS via either USB cable or WiFi network modes. Press the Import button, and choose between WiFi and USB by pressing the button at the bottom of the screen.

Importing via USB Cable

To import via the USB cable, you will need to zip (or compress) your files, then use iTunes to transfer these files to your iPhone.



1. Zip or Compress all the files you wish to import
2. Connect your iPhone to a Mac or PC using the white Apple USB cable.
3. Start iTunes on your PC/Mac.
4. In iTunes, click on your device name under the Devices list



1. In iTunes, click on the 'Apps' tab
2. Scroll to the bottom of the page, to the File Sharing section
3. Choose the iGIS App
4. Add the zip file of your spatial data to the project.

The data is automatically synced to your iPhone/iPad and the load process is then initiated on the iPhone. You will need to set the projection of the data and the character set.

Importing via WiFi

When you enter the Import mode, a Web Server will be started on the iPhone. The IP address of the device is presented on the iPhone display. Enter this address into a web browser on your desktop machine in order to start the Data Import.



If you have access to Bonjour, an Apple service discovery protocol, then the iPhone will be available to you through that interface. This removes the need to enter the IP address into a browser as Bonjour takes care of this for you.



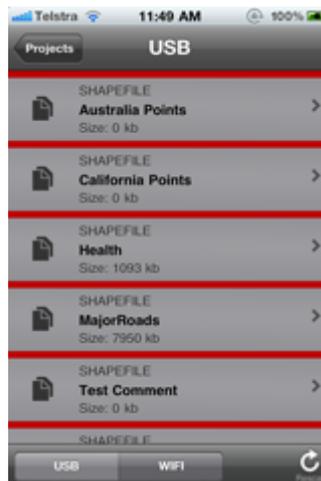
Once the web page is running, you can upload shapefiles to the iPhone. Please consult the documentation on the Import web page for further instructions on how to import shapefiles.

Exporting Data

You can export iGIS spatial data either through:

- the USB cable, or
- a WiFi connected computer.

Exporting via USB



This is the default method. Choose the files you wish to export from this list of all data.



The files will be exported to shapefile format and zipped up.

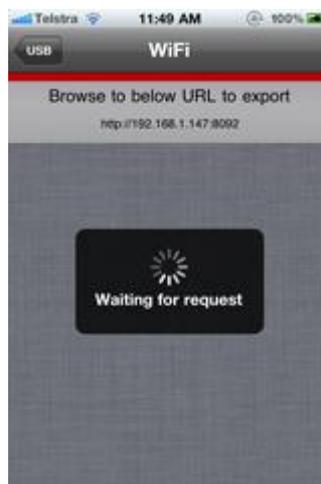
1. Connect your iPhone to a Mac or PC using the white Apple USB cable.
2. Start iTunes on your PC/Mac.
3. In iTunes, click on your device name under the Devices list
4. In iTunes, click on the 'Apps' tab
5. Scroll to the bottom of the page, to the File Sharing section

6. Choose the iGIS App
7. You will see a series of zip files, which you previously exported. Drag these to your desktop.



Exporting via WiFi

You can export the spatial data stored in the iPhone through a web page designed for this purpose. When you enter the export mode the web server will be started but this time it will serve the Export web page.



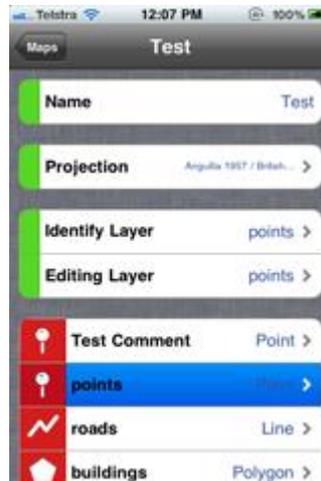
A list of available layers is presented in the Export web page. You can choose to export and/or delete any layers. Once you have set the operations you want to perform, press the start button to allow the Exporter to extract and/or remove your layers from the iPhone.



Please consult the documentation on the Export web page for further instructions on how to export shapefiles.

Projects

The project screen allows you to edit the name, projection system and current layers for a project.



The projection system is used to specify the location at the bottom of the display when viewing the project as a map. It is not used to transform your data in order to be rendered.

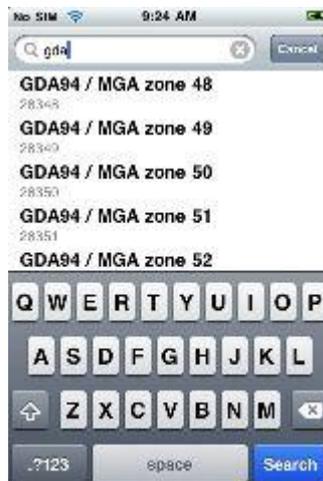
The projection system view presents a list of available Spatial Reference Systems that are supported by the application. You can scroll through the list to find the appropriate projection.



You can also enter a term into the search box at the top to search the projection list for any matches.



Any matches to the entered term will be presented to you to select the most appropriate item.



Layers

By touching the Add New Layer button a list of layer types will be presented to you. This will contain Point, Line and Polygon depending on what types of layers you have imported in the iPhone.

If you only have point layers then only the point type will be offered to you. If you also have some polygon layers then both point and polygon will be presented.



Selecting a particular type will present all layers of that type. Scroll through the list and select the layer you want to add to the project.



Keep in mind that order of layers is very important as polygons will cover any lines or points that are beneath them. Try to keep point layers at the top of the list, followed by lines and then polygons. You can alter the order later.

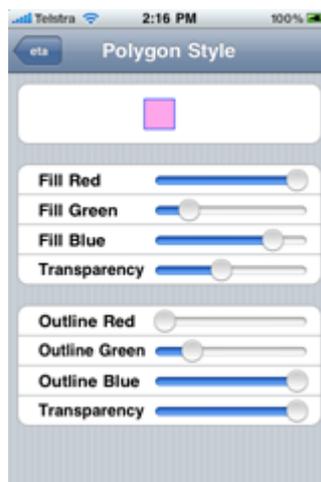
When you add a layer to a project, you will be presented with some options for that layer. This includes being able to rename the layer, set a

field to use for labelling, enable/disable the layer from rendering, set the style to render the layer and set an appropriate zoom level.



The style and zoom level are very important.

The style must be unique to all other layers on the same map so that you can distinguish between the different layers and see what the map is trying to tell you.



You can adjust the colour by using the sliders for Red, Green and Blue. The thickness can help differentiate more important layers from others. The alpha value allows you to make the layer transparent. This is very useful for polygon layers that cover large areas. By using a certain level of transparency, you can still see details from layers underneath it.

The zoom level becomes more important as the size or level of detail of your data increases, changing this setting will affect when your layer becomes visible as you zoom in on the map.

At the left most setting, the layer will always be visible.

The centre setting will turn on the layer at about the state level. This is not an exact level as some states are larger than others but it gives a general idea of when to expect the layer to display.

At the right most setting the layer will only turn on when zoomed in to the street level. i.e. there is enough visible area on the map to show a few streets. Detailed data sets should be set to this level to avoid waiting for maps to render.

Maps

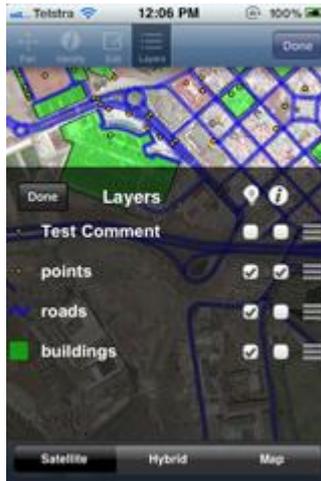
Selecting a projects icon from the main menu will invoke its map view.



The map opens in pan mode. In this mode you can alter the view of the map by using gestures. Touching and then sliding your finger will pan the map around at the current zoom level. A quick flick will move further than a drag gesture. Two quick taps will zoom in a level. Using two fingers touch the screen and then spread your fingers apart or bring them together for a more dynamic zoom adjustment.



The Layers button on the menu at the top of the map will present a list of layers, showing each of their styles, with a checkbox to turn on/off each layer or to set whether the layer is the identify layer, to be searched when using the Identify tool.



On the right side of the screen, is a control that allows you to re-order the layers in the list. Simply touch this control and drag the layer to the new position. Layers are drawn from bottom to top, so it is a good idea to place points above lines above polygons.

You are able to choose the background map that you wish to display also.

The identify button allows you to view and edit the attributes for features that you select on the map. Touch the map to select features within a small area around the touch point. A square is drawn to show you the area that will be used then a list of features that intersect the area is displayed. Select the feature of interest to see all attributes associated with it. Selecting edit on this dialog allows you to edit the attributes of the selected feature.

The Edit button on the menu at the top of the map starts the Edit mode. Use this mode to create new features within your layers. Use the Edit layers menu to define the target layer which you will be editing. Spatial features consist of a collection of points, vertices. Create an edit sketch of the vertices that will make up your new spatial feature by using screen touches or the incoming GPS signal or a combination of both. Once you have finished your sketch select commit in the top right hand corner of the map window to define the new features attributes and save it to the database.

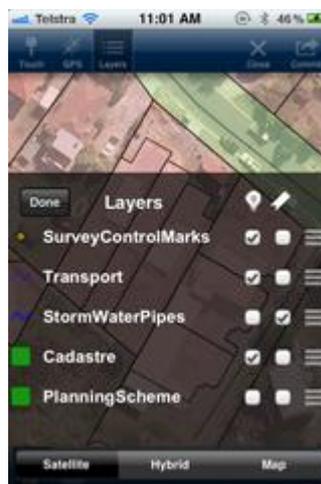
Editing Data

You are able to create new spatial data using iGIS. This can be done via GPS tracking or waypoints or manual drawing of vertices.

In this version we allow you to add new spatial data. Future version will allow editing of existing data



To start editing, press the Edit button. This will display a new set of tools.



Press the Layers button and select the layer you wish to edit with the rightmost check box. In the above screenshot the StormWaterPipes layer is selected.

There are two modes for editing: Touch and GPS. They can be used in combination to create a spatial feature.

GPS Mode

Press on the GPS button at the top of the page. You now have two choices: either track your current position or mark a waypoint.

Press Track to start recording the current position. The red light will flash to indicate recording has commenced.

Press Waypoint to record the current GPS position as a vertex on the feature.



Touch Mode

You can use touch mode to manually draw each vertex on the screen. Press the Touch button at the top of the screen to enter Touch mode. Press the Touch button at the bottom of the screen to start creating vertices.



Once you've created your new spatial feature, press Commit. This will then show an attribute editing form, where you can enter feature attributes and save your feature.

Requirements

Spatial Data You must be able to supply spatial information, in the form of ESRI shapefiles, which can then be imported into the application.

WiFi for Import/Export You will need a computer that is capable of "seeing" the iPhone on a network. Generally, this means having a WiFi connection for the phone and the required security settings to see it from a computer on the same network. As iGIS uses standard web protocols, security is not usually a problem unless your network has been locked down or if you are at a public WiFi hotspot.

3G/WiFi for Background Imagery (optional) While the data of interest is supplied by you, iGIS will use a background layer supplied by Google Maps.

The Google Maps data is retrieved through a network connection. This may be a WiFi connection but it also could be a 3G connection which may have a cost associated with it.

The Google Maps images are cached, but you must ensure that you download the required images at all zoom levels before you disconnect from your network.

Tips

Deleting from Lists

A quick swipe with your finger will delete items from a list. You will have to confirm the item to delete, so there's no danger of accidental deletions.

Speed Tips

Spatial data is often very large in terms of storage. This can happen in one of two ways or by a combination of the two. Either the data contains many individual features and/or each feature is very detailed (in the case of highly detailed lines or polygons).

This presents a problem for small devices, such as the iPhone. As powerful as they have become, they will never match larger computers and the data we record and store is tailored to these more powerful computers.

It is recommended that you only extract the data that you need to use with a small buffer around it for context information. This helps to keep the number of features to a low value and minimizes wait times for a map to be drawn.

If your data is very detailed, that is, it contains a lot of vertices per feature, then you can generalise that layer as you extract it. This will reduce the number of vertices where possible and so reduce the storage size and time it takes to render them.

Please note that generalisation will reduce the detail of the line or polygon and it may distort the true shape of the feature if it is taken too far.

Sometimes the data we want to use comes in separate shapefiles. For example, suppose you had data relating to capital cities around the world and used some background layers to provide context information in different continents. It is better to have as few layers as possible in order to reduce rendering time.

If you can combine your background layers into a single Shapefile and then load that to the iPhone, you will find the application performs much better because it can remove unnecessary features from the rendering pipeline very quickly. When they are spread across different layers, each layer must be queried for any features in the viewing area. Each query uses valuable resources and caused more time to pass before a map can be drawn.