

TatukGIS Editor 2.0 Review

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1 Preface

This document is a review of the TatukGIS Editor 2.0, the release of which I have been anticipating for quite some time. The review will be as objective as possible.

There are a number of big changes in the version 2.0 which makes it a much better GIS than version 1. Historically the focus of TatukGIS has been the development of the development kit (GIS Developer Kernel product). The release of the Editor 2.0 raises some questions. Does the Editor now meet the GIS needs of some customers who would previously have used the developer kit? For some customers and situations, the answer is probably yes. But for those customers requiring a completely customized application or the embedding of a GIS engine into an existing application, the Editor will not replace the development kit. A completely customized GIS application is beyond the capability of the Editor and not the right use for this product. The Editor is perfectly suited for customers who want/need a GIS which is easy to use right out-of-the-box, but that can also be customized and extended with additional functionality, all for a very good price.

1.1 Who is doing this review?

Just to let you know who is performing this review, I provide a short introduction of myself. My name is Danny van Hooren and I have a bachelor of engineering degree in technical computer science. I graduated in 1995 and in 1996 I started working with GIS applications. While I did not study GIS, I have come to find it very interesting. I started as a consultant with GE Energy Smallworld GIS and later consulted with other GIS applications such as ArcGIS. I have been looking at several alternative GIS applications through the years and, over the last 2 years, I have become very fond of TatukGIS. As senior GIS consultant, I advise customers how GIS can be used in their organizations. With this review, I want to share with potential customers something about the new TatukGIS Editor. I should note that my company, SmallToGo, acts as a value added reseller for TatukGIS in the Benelux region. I have several employees. We can act as a GIS implementor for English, German and Dutch speaking customers. Russian and Polish are to some extent possible as well. More information about our services and experience can be found on our website where you will find a number of products as well.

2 Installation

The installation is as smooth as it was in version 1. No special setup is necessary. The application installs itself in not more than 2 minutes.

No special requirements are necessary for running TatukGIS Editor. This makes the Editor very fast in terms of installation. It is very nice that there is absolutely no dependency with any other software.

After installation of the Editor retail version on a new system, the license activation should be performed. The activation procedure is no different than in the version 1.

The installed product now contains several directories. The help files are improved and there is now a manual for the script environment. That manual `TatukGIS_EDK.chm` describes how to use the API when writing a script.

All icons on the toolbar are now provided in the `Common Data\Glyphs` directory so they can be used in the script environment.

Furthermore, a number of print templates provided by TatukGIS are installed in `Editor\PrintTemplates`.

Language files for the program user interface are installed in `Editor\Languages`. The language transactions can be updated using the SIL editor.

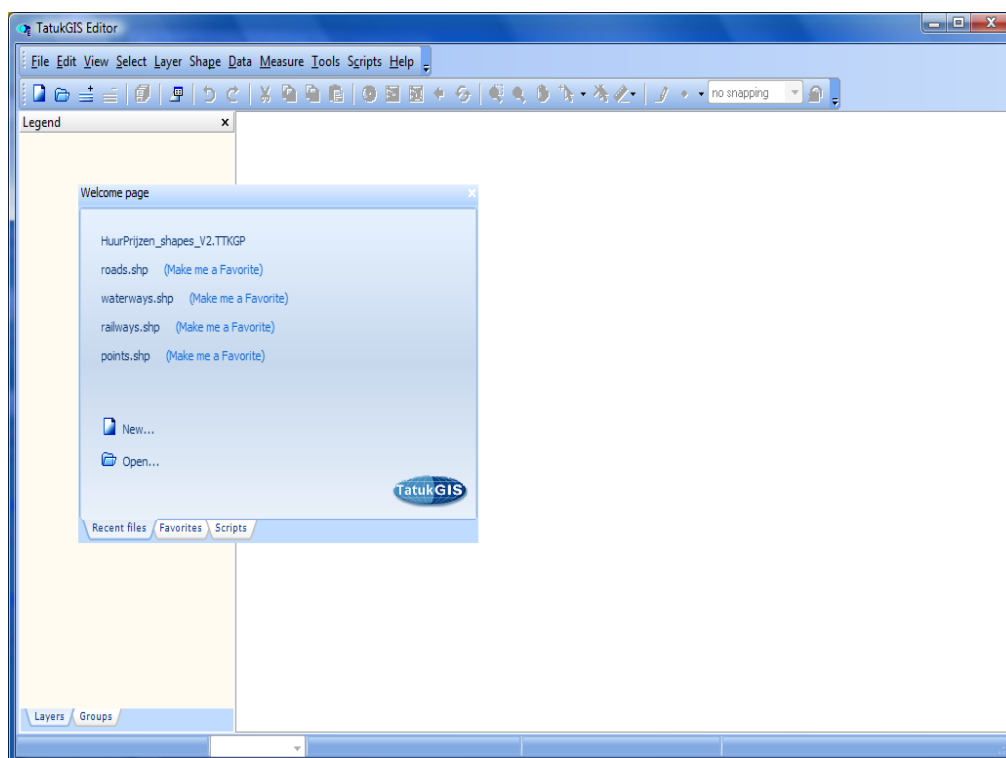
3 Starting up the editor

Although starting the TatukGIS Editor is very fast in comparison to other products on the market, the version 2 is a bit slower than version 1. There are number of very good reasons for this.

During the start-up, the program loads the different language files, starts up the scripting environment, and does some other things.

When the Editor starts, the welcome page catches your eye. Here you can select from a list of recently opened projects or files, so that the Editor starts up with the selected project/file. What is even more interesting is that you can make a list of favorite projects or files. Recently loaded scripts are also presented on the welcome page.

Otherwise, the user interface looks almost the same as the previous version 1. However, we will discover a lot of new functionality.



4 Loading a project

To start, I take an existing project that was prepared using the Editor version 1. The project loads without any problem. So the Editor 2.0 is backwards compatible.

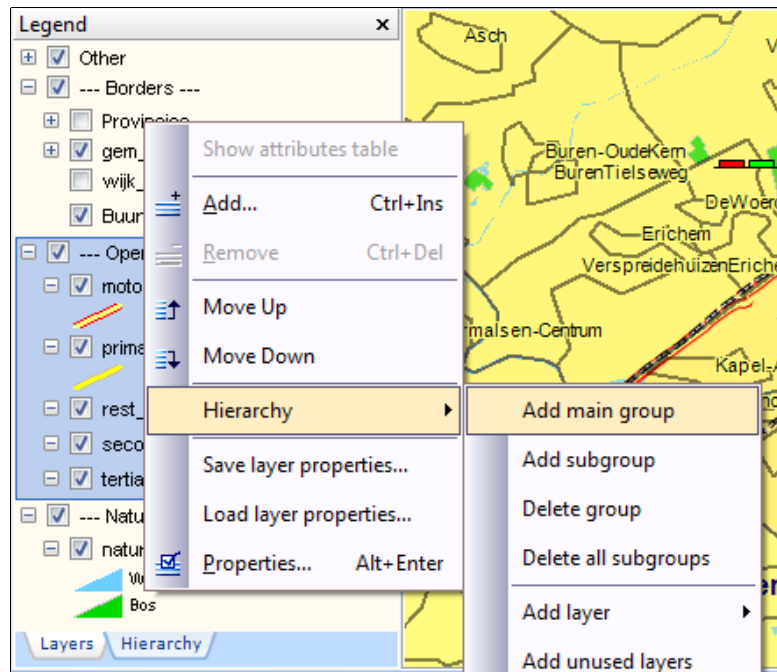
However, a few things from older projects might require some changes. Most importantly, the labels should be reviewed because the version 2.0 supports a new way for setting up labels which is called HTML-Labeling. More about this later.

Editor 2.0 projects store a coordinate system for each layer and a coordinate system for the whole project. (The map layers are displayed in the map window according to the project coordinate system.) The version 1 did not support coordinate systems, so this is an important reason to upgrade to the 2.0.

4.1 Hierarchy

A project can hold many layers. A missing feature of version 1 was the possibility to group layers together under a common group name. Layer grouping is now available in version 2 and it is fast and easy to configure. A group of layers can be moved together just by dragging and dropping. Sub groups, sub layers, and event sub projects are now also supported.

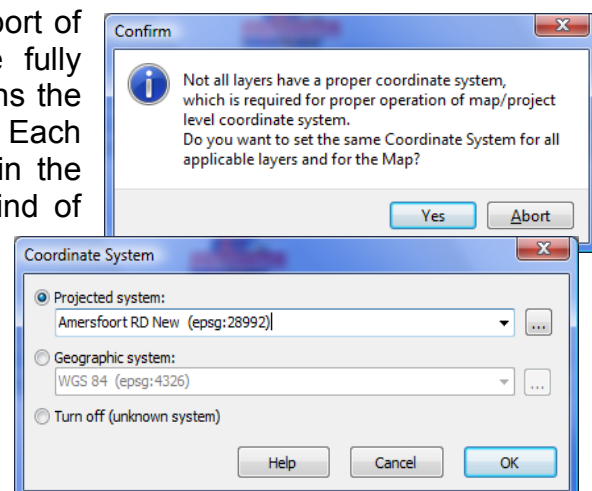
The layer hierarchy features provide for a more useful presentation of the layers in legend panel. There is now the possibility to turn on or off the map presentation of a whole group of layers.



4.2 Coordinate systems

Very important for GIS applications is the support of coordinate systems. Coordinate systems are fully supported in version 2. The project file contains the coordinate system information for each layer. Each layer can be converted on-the-fly for display in the project coordinate system. In this way, any kind of data in any kind of coordinate system can be used together. You can even configure your own custom coordinate system!

One notable feature is the ability to efficiently convert on-the-fly image (as well as vector) layers between coordinate systems.



The Editor attempts to automatically read the coordinate system of any supported file type loaded as a layer in the program. For example, when an ESRI *.shp file is located, the program looks for the *.prj file for that layer (which would share the same file name as the layer). If the *.prj file is available, the Editor automatically applies the coordinate system information from the *.prj file to the layer.

So a file called `municipal_projects.shp` should have a `municipal_projects.shp.prj`

The structure of the prj file is exactly the same as it is used in ArcGIS environments.

4.3 Implications for existing DK8 or Editor 1 customers

ICT companies currently developing with the DK8 will have to adjust to the new and much more complete support for coordinate systems. We notice that some ICT companies are not 'real' GIS development companies. Now, with the introduction of the new support for coordinate systems and projections, these companies sometimes get stuck in this, even though it is a normal GIS feature.

Particularly the use of the standardized and fully documented EPSG codes, which make it easy to always use the same coordinate system or projection, can be confusing to these ICT companies due of their lack of a general knowledge of coordinate system. For these companies, we advise considering the Editor 2.0 upgrade source that we offer which covers the new support for coordinate systems and projections along with the other new features of the version 2.0 upgrade. Upgrading one's knowledge can be as important as upgrading their software.

5 Viewing

The map viewing features are unchanged from the version 1. All features such as zoom-in, zoom-out, pan, etc., work the same as in the version 1.

5.1 Minimap

Some improvements have been made to the MiniMap feature, which is designed to put the current map view into perspective within a larger map extent.

A world map or a continent can be chosen as one of the delivered KML maps for the world view of the minimap.

The minimap can show the area of the current map view. The minimap can also be printed as it is one of the elements which might be put on a plot template.

5.2 Panning

Panning (dragging) on the map works smoothly. The Cached Paint and Incremental Paint settings are important for best performance with the map redrawing when dragging the map. These features were also available in version 1.

5.3 Map hotlinks

The map hot linking feature has been improved. In version 1 there was the possibility to link only one document, file, URL, etc., to only point objects. In version 2 this has been improved so that any number of documents, files, URL's, etc., can be linked to any type of map object. So now we can store an email-address, a pdf document, and/or a website link to any given object. This enables the building of a small document management system with the Editor, especially so in combination with the powerful built-in script editor.

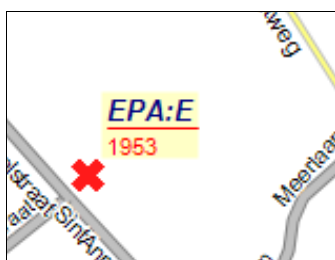
A small oversight with the map hotlinks feature is the lack of an easy way to enter data. For a file, you would expect a file selection dialog. As it is, the filename with path has to be copied and then pasted into the field of the record. However again with the script editor, we can easily solve this initial limitation.

5.4 Thematic maps

The way of setting up thematic maps is generally the same as in version 1. The biggest change is with the setup for labels. This is now very powerful and supports a bit of HTML tag-like commands. Many colors can be set up in a label. e.g. For example, the HTML label definition:

```
<b><i><FONT SIZE="10" COLOR="NAVY">EPA: {EPALABEL}</FONT></i></b><hr>{Bouwjaar vho}
```

Results in this label on the map:



The help file clearly explains everything that might be required to set up the labels. However, it would be helpful if a small dialog were used to simplify the label set-up procedure, especially for projects involving many labels.

5.5 Using field information for style setup

A new feature is that attribute field values can be used to set the color, font name, size, or object rotation. Each record (shape) can store elements of its own style setup, which can be applied based on scale or attribute query.

The enormous combination of possibilities makes the style setup very important, but the complexities can be so great that it is easy to lose sight of an overall strategy for the map theme. Some management or documentation covering the styles setup for any given mapping project is recommended!

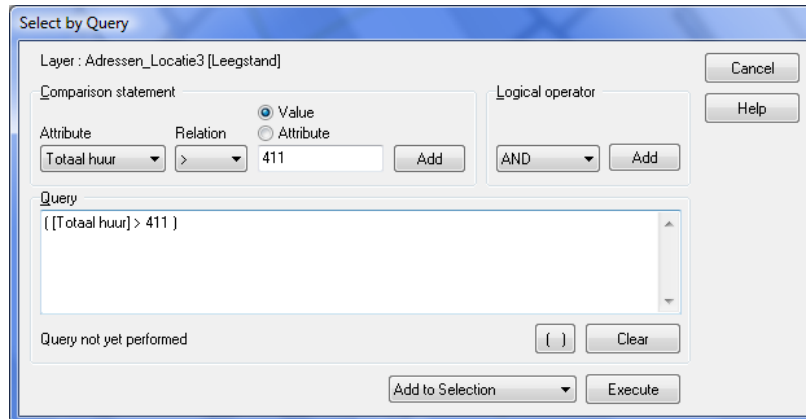
5.6 Anti-aliasing

This new feature really enhances the quality of the map drawing. The most dramatic improvements are for line labels, but for points and areas, there is also clear improvement.

Geometries may be transparent in combination with anti-aliasing. Once turned on, you never want to turn the anti-aliasing feature off again. This represents a big improvement in Editor 2.0.

6 Selections

The attribute query selection functionality is not much changed from the version 1. The many ways for selecting geometries were already available. In version 2 there is a new dialog in the Select menu bar: 'Select by Query'.



This menu contains some functions for manipulating the currently selected geometries, such as subtracting the result of the selection query from the already selected geometries. This is a good addition.

A missing feature that would be useful is a function that shows a list of geometries found in the neighborhood of mouse click on the map. With the Editor 2.0, the selection of a specific object in a crowded area can still be a bit of work. For example, think of a situation involving utility connections to 40 apartments within a single apartment building. How to quickly select the correct apartment (utility connection)?

6.1 Spatial selections

All standard spatial selection types are possible. Something to get used to is that some spatial selection operations are performed via the Editor's internal clipboard.

The advantage of the use of the clipboard is speed. It is very fast.

7 Layer functionality

Nothing much is changed here except the support for additional file types and database connections. The best additions are the support for the PostgreSQL and Microsoft SQL server 2008/Spatial database layer formats and the DWG2000 and FME file formats. Also the support for WMS layers is much better than in the version 1. It supports e.g. layers.

Given that the Editor now supports the editing of 3D shape files, one would expect it to also be able to display 3D shape files. Well, this is not yet supported, but TatukGIS tells me that full 3D map display is in the works for a post 2.0 version update. The question is - when? 3D visualization is becoming a very hot item in the GIS world, e.g., for the registration of underground pipe networks.

With the additional list of supported file types and databases, I am convinced that the TatukGIS Editor contains built-in support for more file types and databases than any other GIS product on the market. Other GIS applications can also support some database formats, but the support is typically as an extension which must be purchased extra to the product.

The support for the georaster via ArcSDE is a useful feature for customers who are fully on Oracle databases.

So, all in all, a very important characteristic for the Editor is the built-in support for so many file and database formats. I have also noticed that customers appreciate that TatukGIS supports all the OGC (Open GIS Consortium) formats.

7.1 Importing layers

Layers can be imported in two different ways:

- i) import into a new (empty) layer of a selected format (with format conversion, if required) or
- ii) merge (append) the imported geometry to existing geometry contained by a map layer, with the data merger based on a key field.

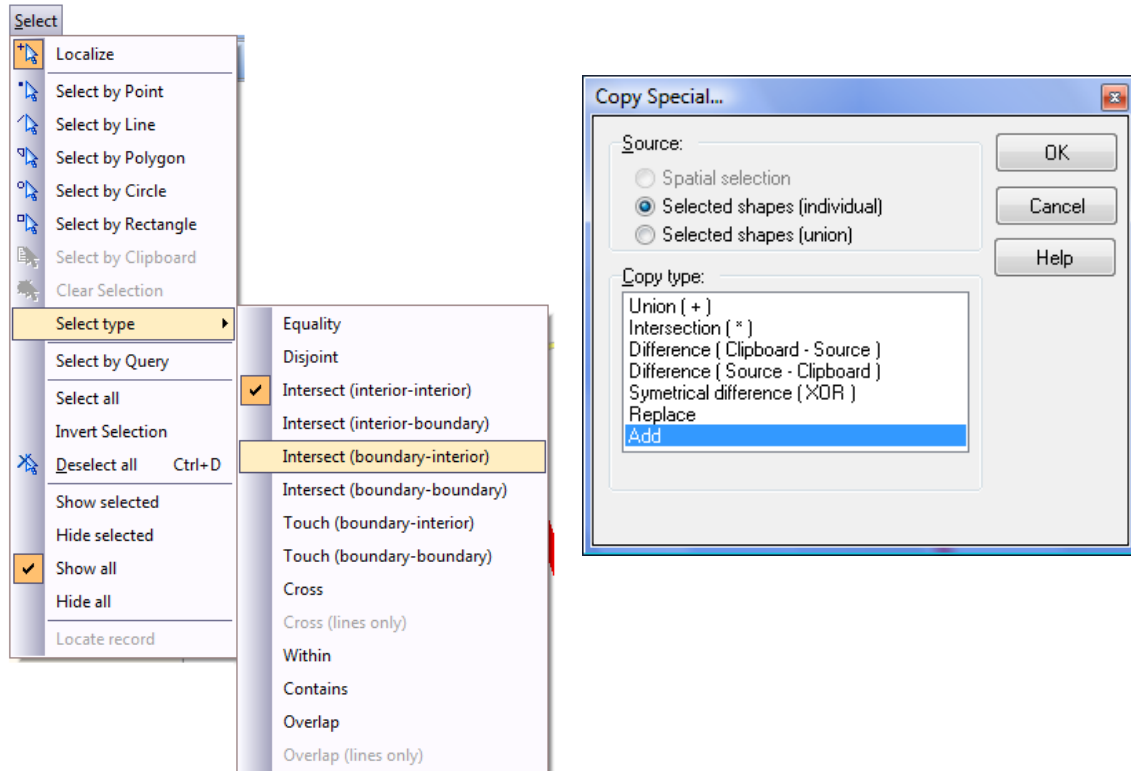
7.2 Side effect

A funny thing about the Editor is that it can be used as a (simple) data migration tool. Just import or export from one format to another. This is a big advantage for customers with data in many different file types who wish to migrate to a single environment.

7.3 Analysis

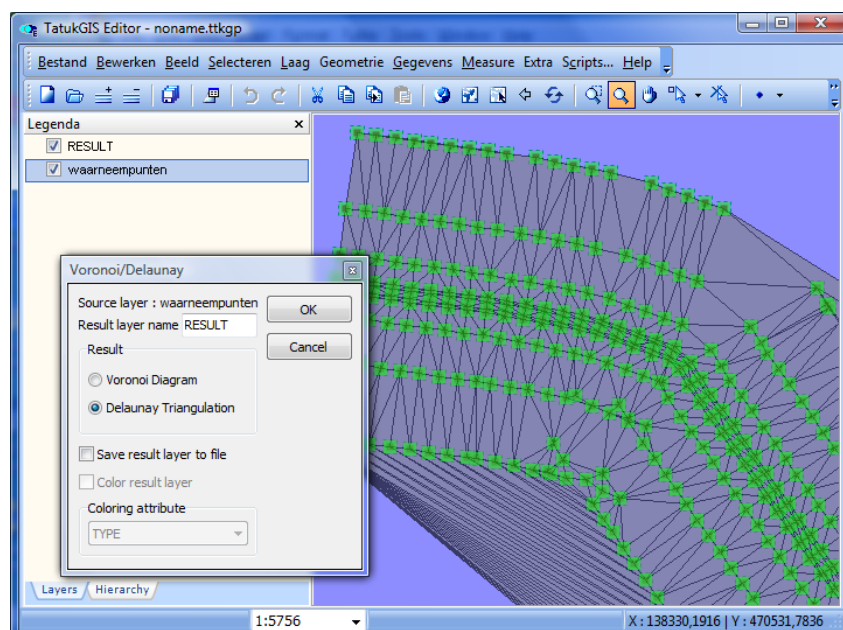
The Editor supports all possible types of spatial analysis operations, e.g., intersection, subtracting, overlaps, crossing, touching, etc. Much of this is done via a single, but powerful, menu used in combination with the select types. The clipboard is used for many of these operations, with very good performance.

This combination of functions gives all the spatial analysis which can be made. Clipboard is used for many of these functions which therefore gives a very good performance.



7.4 Triangulation and Voronoi networks

Some new classes do a Delaunay triangulation or generate a Voronoi diagram. This is important because TatumGIS slowly moves in the direction of visualising 3D data which is an upcoming hype in GIS applications. This is an example of a Delaunay triangulation:



8 Working with geometries

TatukGIS uses the term “shape” to mean a geometry, but I prefer the more general term - geometry. The term geometry fits better when speaking of, for example, an object in a dxf file or a sql database layer.

Editing geometries in general is done very quickly with the Editor. Some basic functions give just enough possibilities to add or manipulate a geometric feature.

On the other hand, a GIS is not a CAD drawing program. So these basic functions just fit the requirements of a GIS.

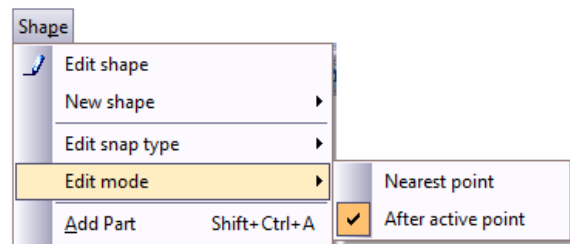
Once a geometry is added, it cannot be “undone” – removal can be done only by deletion. The Editor’s undo and redo features work only when in geometry editing mode.

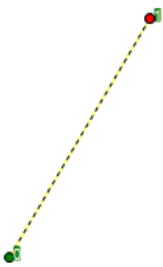
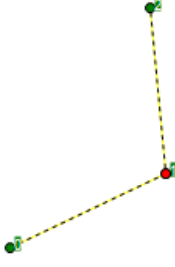
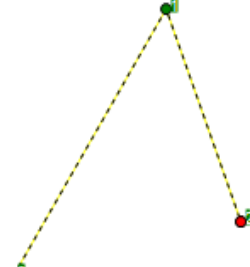
Some important improvements have to do with the snapping and editing of geometries. Particularly with editing geometries, one tiny new feature is really welcome: `Edit mode`

8.1 Edit Mode

An annoying issue with the version 1 when adding a point to an existing geometry was that the relation of the new vertex to the existing vertices forming the shape was not as intended.

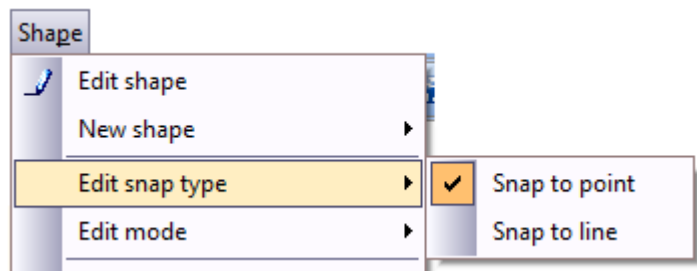
Look at the table below for the different possible outcomes when adding a vertex to an existing geometry. The 2.0 version enables the user to better control the outcome that is realized from the edit operation.



Function -->	Version 1: standard	Version 1: possible with workaround
	Version 2: Nearest Point	Version 2: After active point
Result -->	After 3 rd point:	After 3 rd point:
		
		

8.2 Snap type

A small but very handy function is the snap mode. With the version 1, it had been almost impossible to place a new point (vertex) precisely on an existing line, so that the placement results in no overshoot or undershoot of the line. Snapping was possible only using the snapping mode on the toolbar and only to the vertices forming line being snapped to, e.g. the start point, end point, etc. The version 2 introduces two new snap modes to place a point exactly on a line without using the topology feature for snapping. This is important because, for a two point line, we can also snap to coordinates that are precisely on a segment of the line – between the vertices which form the line.



8.3 Split parts

This is a minor new function to split up a multipolygon or multiline geometry into different parts. Each resulting new part is a new record which has the same attribute values as the geometry before the split was performed.

9 Data

The term “data” is used in this document to mean alphanumeric data, so without any map geometry information.

Data can be imported into any layer and exported from a layer to some file formats, such as *.txt or excel files. The import function gets more interesting when it involves the import of data from a database which is linked via ODBC.

Another important new function is the ability to “join” a geometrical layer in the Editor with an alphanumeric table in an external database. A good example of a database join is the geocoding of data in an external database to the map, i.e., geocoding a data table. The layer and the table are persistently linked based on a unique id.

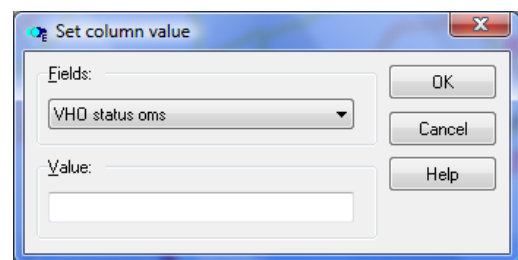
For now, the database join is only for as long as the project is open, because the join information is not saved as part of the project file. This means that when the project is next restarted, the join to the database must be set up again. This is not convenient, particularly when it must be done for several layers.

9.1 Bulk update

The ability to bulk import data (from Excel, database table, etc.) into a layer is a very nice feature. The import is done to the currently active layer (the layer for which the attribute data currently presented in the data panel).

Be careful to not mistakenly overwrite the layer's existing attribute data with the imported data! While this is an option, generally the imported data would be appended to any already existing attribute data.

A nice feature would be an option to perform the import only to the currently selected objects in the layer, but that option is not yet available. Such a feature would provide the means to avoid a number of potential problems.



10 The measure tool

It is sometimes necessary to measure an area or the length of something on the map. For this, the Editor provides measurement tools – which work just fine.

The measurement result is shown in the measurement panel. The measurements results are presented in “map units”, which is sometimes confusing because the units, e.g., meter, kilometer, etc, are not identified. The map units reflect the units of the projection used to define the project (i.e. map) coordinate system.

11 Tools: topology, desktops

The tools options covers the topology engine and some user specific settings like the desktop layout, the language selection for the user interface, or the skin of the application.

12 Networking

Networking is not the strongest point of the Editor. Although some of the required basics are already built into the application, there are no built-in network follower or optimal routing features. Such functionality can only be implemented on a custom basis via scripts, and with some limitations.

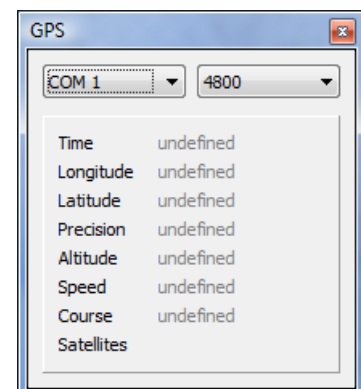
To the extent that the Editor application will be used for topology related tasks by small utility companies, networking functionality is an important area for improvement – and I expect that there will be improvements in upcoming releases of the Editor product. I think there is a real potential for TatumGIS to improve the Editor application in this area by small utilities.

13 GPS Support

The editor now also supports the communication with GPS devices. This makes the editor a mobile GIS as well. The market for mobile GIS solutions is growing and the Editor can be appropriate to meet the needs of this market.

The GPS functionality is also available as a component in the Editor's script environment. This gives the full control of the GPS component for each user's own needs and solutions.

This is an example of the standard component. It can be very easily embedded in scripted solutions.



14 Scripting

The scripting features lift the Editor application to a whole new level. The scripting support is very powerful and even includes a built-in GUI designer. Scripts for the Editor can be written – quite quickly and easily – to implement advanced solutions. The scripting enables within the Editor the whole API of the TatukGIS Developer Kernel GIS development kit. Because the API of TatukGIS is not very difficult to understand, results can be achieved very fast.

14.1 What cannot be done using scripts?

Probably so as not to make the Editor replace the TatukGIS Developer Kernel product, there are some limitations of the scripting. The following tasks, which can be performed with the Developer Kernel, cannot be done using Editor scripts:

- classes cannot be created or added
- existing classes cannot be extended
- fewer classes ('uses') than are available as in the development kit, e.g. no possibility for charts or graphs, reporting functions etc.
- new products or dll files or executables cannot be made
- GIS functionality cannot be embedded into another software application

Despite these limitations, the Editor + scripts is still very powerful and can be used to create solutions for perhaps 80% of the problems customers are facing, with minimal custom development costs.

14.2 What can be done using scripts?

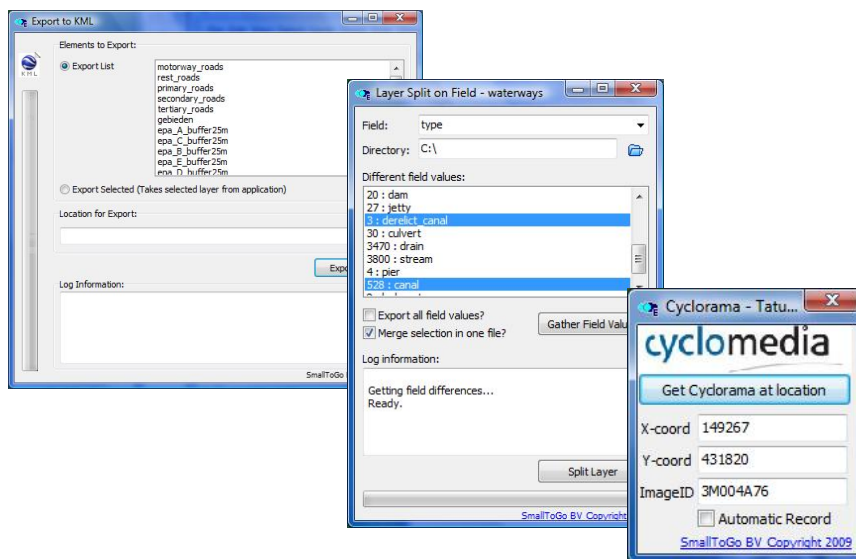
The following is a short list of benefits of building solutions based on the Editor and scripts:

- starting point is a highly functional and ready-to-go GIS desktop application
- Editor application can be customized: menu, toolbars, popup menus.
- extended functionality without compilation of the executable
- change the functionality over and over again
- using in a geo batch processing environment (command line interface)

14.3 Some of our examples

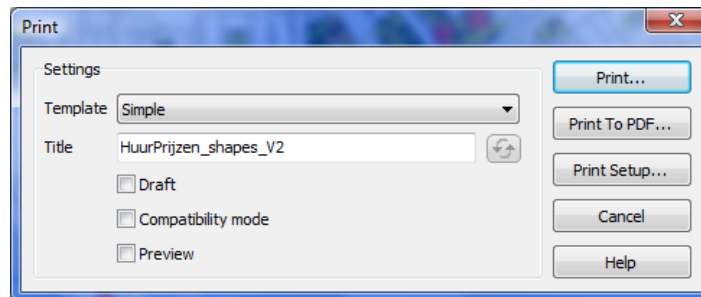
To give an impression of what can be done using scripts, below are screenshots of dialogs for some scripts that we (SmallToGo) already made for the editor.

- Extended KML export tool: *a tool generating KML files and calling Google Earth*
- Layer splitter for field values
- Cyclorama link for watching cyclorama's: *here we use a DLL call*



15 Printing

Printing has been changed. Now there is a possibility to set up plot templates to be used for plotting.



One improvement is that the printing and pdf plotting are now on one menu. Templates can be changed because they are simply textfiles. It would be better, however, if there was a template set-up tool.

It is important now there is the possibility to set up print templates.

16 Overview

The TatukGIS Editor product is growing. The step from version 1 to version 2 (and actually the step from the DK v.8 to the DK v.9, because the Editor 2.0 is compiled from the DK 9.0 product) is a big one, and a very important one. Given the highly competitive situation in the GIS software market, a product has to get established with its place in the market. For the TatukGIS development kit product, this has already happened - with many thousands of installations. The Editor still has a gap to fill.

The biggest advantages of the new Editor 2.0 version are:

- very fast installation/implementation
- no special requirements at all during installation
- short learning curve because, for the user, many things work in a very logical way
- enormous list of supported file types and databases
- very good graphical improvement with the new anti-aliasing feature
- full support for coordinate systems and projections
- the scripting editor to enrich the editor's base functionality
- GPS support

My conclusion is that there is a very good market potential for the Editor 2.0. Many customers who want to start with a GIS do not make very high demands on the GIS application. Furthermore, all things considered, the TatukGIS Editor is a very functional GIS application.

For many GIS customer situations, the TatukGIS Editor 2.0 can replace the GIS application currently in use, e.g. MapInfo, ArcGIS, Intergraph, or other well known GIS applications on the market.

TatukGIS can also be very interesting for customers planning to use open source solutions. For the price of a license, the TatukGIS Editor is very competitive alternative to open source. So on all fronts, Editor 2.0 is very competitive!!!!

16.1 Possible implementations of the Editor 2

The Editor can be used in so many different ways that there is a possibility to use it for almost any requirement. The following is a list of some of the ways in which I have discovered the Editor to be useful. This is quite a versatile list for a single purchase purchased under a single license.

- use as a complete out-of-the-box GIS solution without any changes.
- Set up different applications by changing the `ttkedt.psc` file in the Editor installed directory. e.g. set up the Editor as a viewer
- create an application which starts up a script project doing something special such as layer conversion between different coordinate systems
- use as a geo batch processing application, doing for example geometrical operations – which could take quite some time in big databases.

Different startup parameters for the `ttkedt.exe` can be to do the different jobs:
`/es, /cs, /rs.`

/es: execute script, /cs: compile script and /rs: run script.

16.2 Switching from ArcGIS to TatukGIS?

For ArcGIS users considering a switch to the TatukGIS Editor (or the TatukGIS Developer Kernel), this is made surprising easy by a free product called “Arc2TatukGIS” which was developed by a TatukGIS customer. Arc2TatukGIS designed to export a project from ArcGIS/ArcMap to a TatukGIS project which can be readily opened in TatukGIS software products. This is most interesting!!!