geocom by VertiGIS™

User Manual

VertiGIS DXF Export (ArcMap)

Release 1.1.0.0

User Manual
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We reserve the right to make technical changes.

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1 About this User Manual

1.1 Editorial

Thank you for using VertiGIS DXF Export (ArcMap) 1.1.0.0.

With this version, help and documentation are only available online. This enables us to quickly correct any errors and implement corrections.

For our clients used to PDF, there is still the possibility to download a printable version via PDF Download. However, design adjustments such as page breaks etc. to the PDF formatting were minimized in favor of the web-based version.

Please feel free to alert our technical documentation team to errors in any chapters directly via the feedback button.

We are happy to receive your feedback.

1.2 Reference documents

The following documents provide further information:

Geocom

- User Manual *GEONIS expert*
- User Manual *GEONIS Dimension*

Esri

- Online help ArcGIS for Desktop (or help for ArcMap)

1.3 Terminology

1.3.1 Standard terms

Term	Description
DXF	AutoCAD DXF Data eXchange Format (ASCII) of the manufacturer Autodesk. A large number of programs that process geometric data (CAD, CIM, GIS, ...) support this exchange format; for viewing and displaying DXF files, the freely available program DWG TrueView (in the current version) from the manufacturer AutoDesk is used as a reference.
Feature class	In ArcGIS and GEONIS, feature classes are homogeneous collections of common features, each having the same spatial representation, such as points, lines, or polygons, and a common set of attribute columns. Feature classes can be saved in Geodatabases, Shape files, Coverages, or other data formats. Feature classes allow homogeneous objects to be grouped in one single unit. In a geodatabase, feature classes can contain annotations/labels or dimensions as well.

Standard terms

1.3.2 Abbreviations

Term	Description
DXF	Data Exchange Format
FGDB	File Geodatabase
PGDB	Personal Geodatabase
SDE	Spatial Database Engine

Abbreviations

1.4 Conventions

1.4.1 Symbols

Symbol	Meaning
	Note
	Attention
	Cross-reference
	Time-consuming process

1.4.2 Markups

Bold

Element	Example
Program names, features, etc.	Click on **Windows Explorer** to open it.
Folder and directory names, paths, file names, menus	**EXCEL.EXE** **C:/Windows/Programs** **File > Open...**
Commands and menu entries	The menu **File**. The command **Page Setup**.
Dialog, tab, field and option names, toolbars, etc.	• the tab **View** • the option **Portrait** • the field **Form** • the button **Cancel**

Style "Bold"

If an element is already a header or in bold, it is marked with straight quotes (").

Bold and Italics

Element	Example
Titles of other publications	See User Manual ***GEONIS expert***

Style "Bold and Italics"

Italics in < >

Element	Example
Placeholder for variables	Enter *<password>*.

Style "Italics in < >"

Blue (underline)

Element	Example
Clickable internal and external cross-references	PDF (always underlined) Online help (underlined on mouse-over)
Non-clickable cross-references	Online help

Style "Blue (underline)"

Capitals

Element	Example
Acronyms and File extensions	USA INI file EXE file
Keys and Keyboard Shortcuts	Press the ENTER key.

Style "Capitals"

Consola

Element	Example
Programming text is displayed in font `Consola`	`losegaimiope.` `loremipsumdolor`

Style "Consola"

2 What is VertiGIS DXF Export?

Since AutoCad DXF has become the established standard over the years for the exchange of geometric information, it appears obvious that this format should be properly supported in a manner that is as simple as possible for the user. Data, i.e. maps and plans should be capable of being displayed from ArcMap in a CAD or DXF display program without any additional effort, particularly for adjustments to the exchange process (configuration). The display should not differ essentially from the one in the original system (ArcGIS).

The tool described here therefore deliberately dispenses with the configurability that is normal for VertiGIS software products. There are no (XML) configuration files which process information on the data to be exported, such as line styles, fill colors, symbols, etc. The data is taken directly from an ArcMap map document file.

Users increasingly want to automate the process for exchanging data with third-party systems. There is therefore an interactive version of VertiGIS DXF Export (for ArcMap) and a version for batch operation. Both versions are sold as a Geocom product and installed by the same installation program. Both versions are available at all times on a system.

The statements made below related to functionality (which data is exported) are illustrated using the interactive version. However, they also apply to the Batch version to the exact same extent.

3 Tool setup

3.1 Installation

VertiGIS DXF Export (for ArcMap) can be installed with a Windows-conform installation program. You will require administrator permissions to run the installation on the target system.

Please ensure that you install the correct version of **VertiGIS DXF Export (for ArcMap)**. The version of the supported **ArcGIS Desktop** is included in the name of the installation program (in brackets). Even the version of **VertiGIS DXF Export (for ArcMap)** itself is part of the name, which should be structured as follows:

VertiGIS_DXF_export_for_ArcMap(<ArcGIS Version>)_<DXF-Export für ArcMap Version>.msi

The current version of **VertiGIS DXF Export (for ArcMap)** is 1.1.0.0.

ArcGIS	Installation program name
10.1	VertiGIS_DXF_export_for_ArcMap(10.1) _1.1.0.0.msi
10.2	VertiGIS_DXF_export_for_ArcMap(10.2) _1.1.0.0.msi
10.3	VertiGIS_DXF_export_for_ArcMap(10.3) _1.1.0.0.msi
10.4	VertiGIS_DXF_export_for_ArcMap(10.4) _1.1.0.0.msi
10.5	VertiGIS_DXF_export_for_ArcMap(10.5) _1.1.0.0.msi
10.6	VertiGIS_DXF_export_for_ArcMap(10.6) _1.1.0.0.msi
10.7	VertiGIS_DXF_export_for_ArcMap(10.7) _1.1.0.0.msi
10.8	VertiGIS_DXF_export_for_ArcMap(10.8) _1.1.0.0.msi

IMPORTANT!

This list is not exhaustive. With the appearance of supplements/corrections of "VertiGIS DXF Export (for ArcMap)", new versions of the installation program may appear, without revising this chapter of the documentation.

3.2 Licensing

Execution of **VertiGIS DXF Export (for ArcMap)** requires a **license from Geocom** for the tool itself as well as a license for the ArcGIS application.

Geocom License

VertiGIS DXF Export (for ArcMap) is licensed with FlexNet Publisher (Flexera Inc.).

The tools used to manage the license are the same ones used for GEONIS for ArcGIS. The Geocom License Administrator may be installed with the installation of **VertiGIS DXF Export (for ArcMap)**. Please only install this if you are certain that this auxiliary program is not already installed on the system, e.g. through a GEONIS setup.

Please contact Geocom if you do not have a license yet.

ArcGIS License

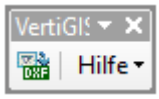
An ArcGIS Desktop with an ArcGIS Desktop Basic, ArcGIS Desktop Standard or ArcGIS Desktop Advanced license is required in order to operate the interactive version of **VertiGIS DXF Export (for ArcMap)**.

Alternatively, an ArcGIS Engine license can also be used for batch operation.

4 Interactive DXF Export

4.1 Toolbar

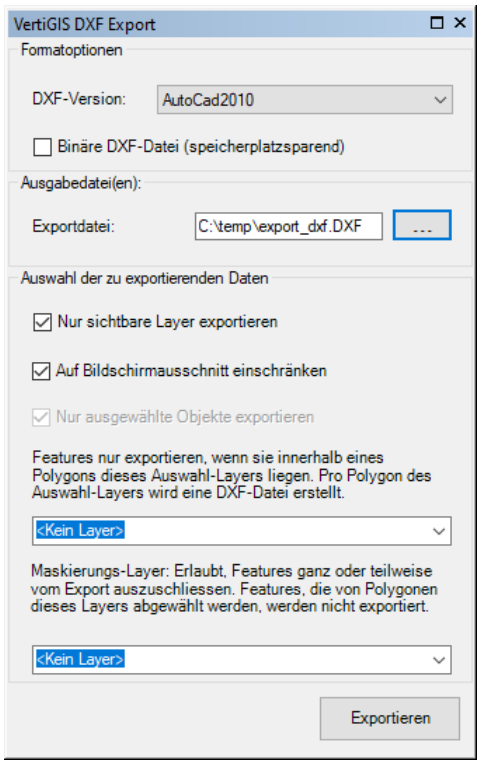
VertiGIS DXF Export (for ArcMap) is implemented as an ArcMap Command. It contains a toolbar that also contains the access (help menu) to these operating instructions in addition to the actual button for launching the exporter. The toolbar is listed as **VertiGIS DXF - Export Tools** in the ArcMap toolbars and can be displayed or hidden in the same way as any other toolbar in ArcGIS.



For further information, please refer to the *GEONIS expert* user manual*Open documentation in browser*.

4.2 Export dialog

VertiGIS DXF Export (for ArcMap) is launched via a dialog window that can be docked at the edges of the work areas in ArcMap. This docking process works the same way as with all other dockable windows in ArcMap, e.g. the content view or the window for the editing templates. This keeps the tool **at hand** and allows the exporting map to be adjusted and an export to be launched straight away. The dialog window remains open at all times, but can be hidden if required.



The dialog window allows the export process to be adapted and manipulated.

4.2.1 Format options

DXF version

Determines the version of the DXF specification upon which the export is based.

Check the version specified by the importing system and then set this version for the export.

Binary DXF file

Usually one expects DXF in a DXF/ASCII file. There is however specification of a binary format. This supports the same objects and attributes as ASCII-DXF, but it can be loaded in a text editor and only poorly interpreted by people. The use of the binary format is then interesting if storage space should be saved, savings of around 40% are realistic.

4.2.2 Output file(s)

The target directory and target file can be selected/entered via the selection button **...** using the Windows standard file selection dialog. The pathway and file name can also be entered manually or via **Copy/Paste** into the **Export file** text field.

ATTENTION!
The following applies in both cases: Existing files are overwritten without warning.

4.2.3 Selection of data to be exported

Checkbox "Export visible layers only"

Only data from visible layers in the ArcMap map document are exported. The visibility may change, e.g. through adjustment of the map scale.

Checkbox "Limit to screen section"

Only the section that was displayed in the current screen section at the start of the export process is exported.

Checkbox "Export selected objects only"

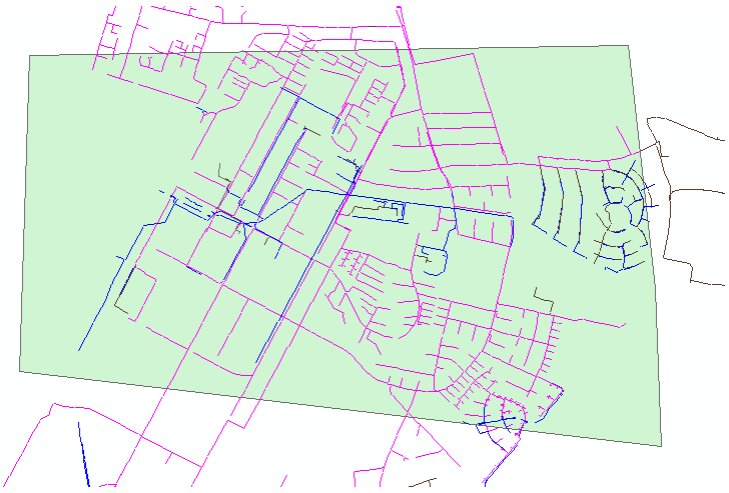
Allows the export to be limited to a current ArcMap selection. Only the selected features are also exported.

4.2.4 List box "Selection layer"

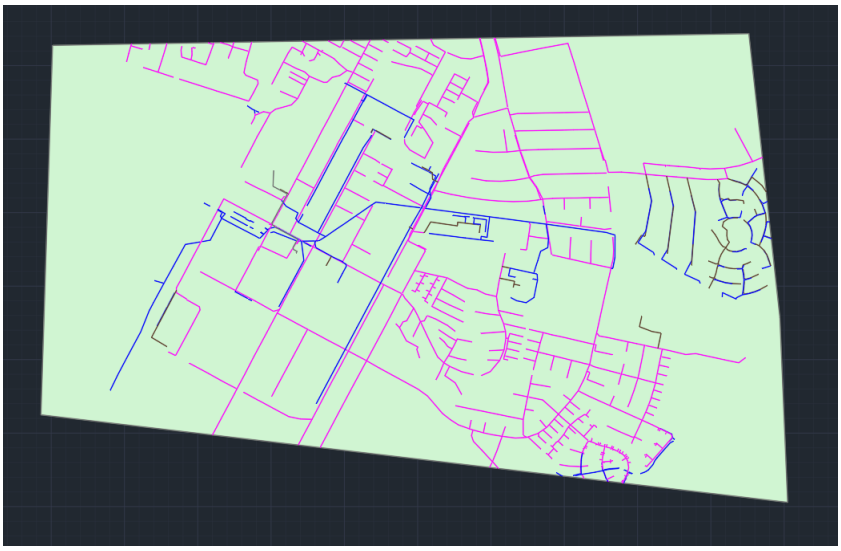
Features are only exported if they are located entirely or partially within a polygon of the layer stated here. A DXF file is created (with sequential numbering) for each polygon (feature) of this layer. This allows the areas to be exported to be saved in a layer (feature class) and the results of the export also to be grouped by topic.

The selection field described this way lists all polygon layers that are present in the ArcMap map document downloaded. The limitation takes place independently of the visibility of the layer. If the selection polygons are not being exported themselves, then the selection layer can be set to invisible in the ArcMap key and the option Export visible layers only can be enabled. Line and polygon features are clipped at the edges of the selection polygons (clipping).

Example



A situation such as the one depicted (the green filled polygon serves as a selection polygon) is exported to DXF as follows.

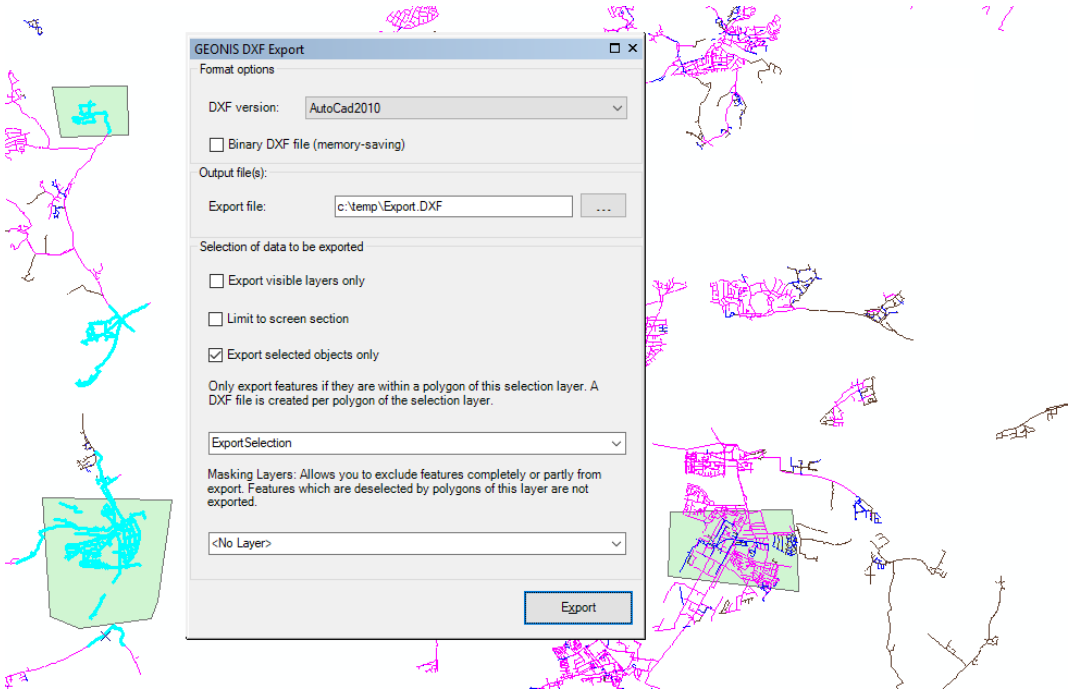


Please take note of the lines clipped at the edge of the selection polygon.

As already described in the text on the selection field, a DXF file is produced for each selection polygon. If more than one DXF file is produced, the files are provided with a sequential 3-digit number. The output file name stipulated is expanded accordingly: **Output_file.DXF** becomes **Output_file_001.DXF**, **Output_file_002.DXF**, **Output_file_003.DXF**.

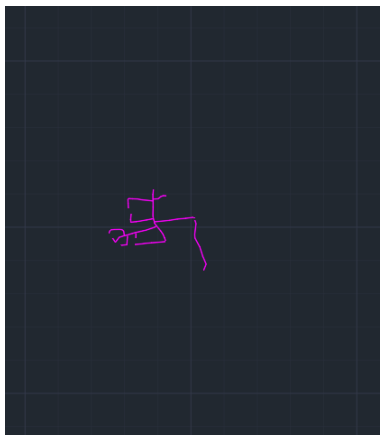
If one of the options **Selected objects only** or **Limit to screen section** is selected or if both of these are selected, the intersection is exported of the features that are within a selection polygon, are part of the current ArcMap selection and/or are currently displayed on the screen.

Example



The export displayed here as an example produces the DXF files **C:\Temp\export_002.DXF** and **c:\Temp\export_003.DXF**. **C:\Temp_001.DXF** would contain the lines of the selection in the center of the image; only these are not located within an export polygon and are therefore not exported.

C:\Temp\export_002.DXF



C:\Temp\export_003.DXF

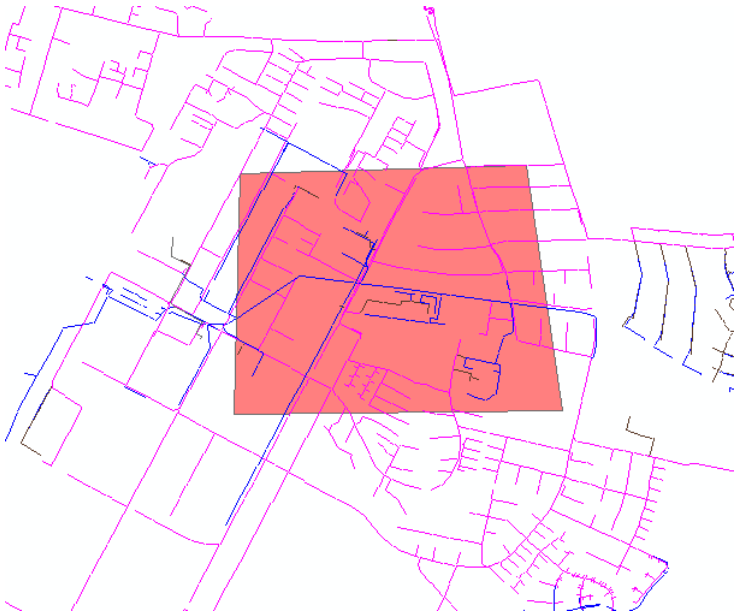
Please note the gap in the sequential number. Unfortunately, this is unavoidable.

4.2.5 List box "Masking layer"

Features are not exported if they are located entirely within a polygon of the layer stated here. Features that are only partially covered are clipped at the edges of the masking polygons.

The selection field so described lists all polygon layers that are present in the ArcMap map document downloaded. The limitation takes place independently of the visibility of the layer. If the masking polygons (covered areas) are not to be exported themselves, then the masking layer can be set to invisible in the ArcMap key and the option Export visible layers only can be enabled. Line and polygon features are clipped at the edges of the masking polygons (covered areas).

Example



A situation such as the one depicted (the red filled polygon serves as a masking polygon) is exported to DXF as follows:

Take note of the lines clipped and cut out by the masking polygon.

The masking functionality can of course be combined with the different options for selection of the features to be exported (selection layer, selection, limitation to screen section). The features selected are suppressed in all cases if they are located within a masking polygon, or are clipped at the edge of the masking polygon if they intersect this (clipping).

4.3 Export process

Procedure

1. Load a project to be exported in ArcMap
   This may involve a GEONIS project or simply an ArcMap map document (MXD file).
2. Select target format
   (A compatible DXF is written as standard for AutoCad 2010)
3. Determine target file(s)
   Limit the export (if required)

   See chapter Selection of files to be exported 19
4. Click on **Export**
   The button label changes immediately to **Cancel** and the export process starts (the entry fields for the export dialog are locked for entries). The progress with the export process is displayed in the ArcMap status bar.

A successful export is confirmed via a message. The acknowledgments are more detailed if multiple DXF files have been written – e.g. because selection areas have been defined.

Aborting the export

The operation can be canceled at any time:

1. Click button **Cancel** or press ESC key
   A message is received from **VertiGIS DXF Export (for ArcMap)** asking whether the export process really should be canceled.
2. Clicking **Yes** cancels the process, and clicking **No** lets the process continue

Please note that the buttons **Yes**/**No** are provided in the Windows system language.

The user receives a message to confirm that the export process has been aborted.

4.4 What's exported?

Feature layers (point, polyline and polygon), annotation layers, as well as the label features created in accordance with the GEONIS standard (Geocom Unique Value Text Renderer Label) are all exported.

4.4.1 Layer

A corresponding DXF layer is produced for each ArcMap layer exported. This is named in accordance with the ArcMap layer (DXF layer name = ArcMap layer name), whereby the DXF layer name cannot feature certain characters. The characters (\, /, :, *, ?, ", <, >, |, ;, ,, =, `) are replaced by an underscore (_). The present version of **VertiGIS DXF Export (for ArcMap)** does not assign any further (presentation) characteristics to the DXF layers. All presentation attributes are added directly to the individual DXF objects (also known as **Entities** in DXF jargon).

4.4.2 Points

Two-dimensional and three-dimensional points are exported. The symbols are extracted from ArcMap (Windows font) and are stored as a DXF block definition in the export file. A point (data record) in the export file contains a reference to the relevant block definition for the presentation. On the one hand, this has the advantage of saving space (each point symbol is only included in the export data record once). In addition to this, the presentation of the points (the DXF file is a pure text file) can also be adapted with a normal text editor; only the referenced presentation block needs to be edited for this. The following are supported:

- Simple ArcMap point symbols – **Simple Marker Symbol**: (circle, square, cross, X, diamond)
- Character symbols – **Character Marker Symbol** (characters of any TrueType font)
- Multilayer symbols – **Multilayer Marker Symbol**. Each symbol layer can include a character symbol or a simple ArcMap point symbol.

Symbol screens are not supported.

4.4.3 Polylines

2D polylines are exported as DXF-LWPolylines (Light-Weight Polylines). Circular arc segments can also be written in addition to simple straight lines. 3D polylines, on the other hand, are exported as a DXF polyline. This geometry type only recognizes straight line segments. Circular arcs must therefore be converted from ArcMap before being written into multiple (in some cases very many) small straight line segments (Densify).

The line color and line thickness are adopted from ArcMap for both line types of LWPolyline and Polyline. Even possible (partial) transparency is considered. Further attributes are copied according to the respective line type[29].

Line symbols

Following ArcGIS line symbols are supported:

- Simple line symbol
  In addition to the line color, the dotted line - drawn through, dotted, scored, dot-dashed, dash-dot-dot line is exported, whereby the latter type is exported to DXF as dotted due to the lack of equivalent format. The specification of a line width is only possible for the **Drawn through** line type (ArcGIS limitation). All other types are exported as a one dot wide line.
- Cartographic line symbol
  Line color and width are copied. A dashed line is copied from the template. Caps, line connection, line decoration, and offset are not transferred.
- Marker Line Symbol
  Line color, line width, and marker symbol are adopted; caps, line connection, line decoration and offset are not adopted.

Symbol coating

Symbols can be coated in ArcGIS. For example, a certain type of geographic line (area border, line, path, etc.) can be represented as a wide yellow line, on which a thin blue dotted line crosses. In this way, a geographic line can be displayed with several parallel line symbols.

The DXF format does not recognize such coating of line symbols. If one wants to achieve the same representation, for each coating an individual line must be created with corresponding (single) symbolization.

This **VertiGIS DXF Export (for ArcMap)** writes an DXF, which visually corresponds (representation) to the source as accurately as possible in ArcMap (MXD, Geodatabase). As such, an individual line is created in DXF for each coating of a multi-layered line symbol. Invisible lines - e.g. because they are covered by overlapping, equally wide lines, are ignored here. A symbolization using parallel (multi-layered) line symbols, which is defined by an offset, is no longer needed as the offset is not considered. A single line is created.

4.4.4 Polygons

An ArcMap polygon is exported as one or more closed polylines and a hatch. Polygons can therefore also feature holes.

The symbolization of the polygon edges is the same as for polylines according to this structure. The option to display the hatch is described in a sub-chapter.

Polygons can be exported as a two-dimensional or three-dimensional object. Edge circular arcs are supported with two-dimensional polygons, but not with three-dimensional ones.

See chapter Polylines 29

Fill symbols

For all symbols only the options for representing the filling are described.

The symbolization of the outline is explained in the chapter on Polylines 29.

Following ArcGIS fill symbols are supported.

- **Simple fill symbol**
  The color is exported for a homogeneous hatch. Even possible (partial) transparency is considered.
- **Line fill symbol**
  This symbolization version rather corresponds to the term of a hatch. The surface is hatched with a line. The hatch angle and separation are considered (distance between the individual lines to each other).

  The options for the symbolization of the hatch lines are described in the chapter on Polylines 29.
- **Gradient fill symbol**
  For surface filling, a two-colored process is considered. If several intermediate colors are specified in ArcGIS, the first and last one are used. Linear, circular, right-angled and cylindrical processes are exported.

Symbol coating

Symbols can be coated in ArcGIS. For example, a certain type of geographic line (area border, line, path, etc.) can be represented as a wide yellow line, on which a thin blue dotted line crosses. In this way, a geographic line can be displayed with several parallel line symbols.
Even polygon fillings can be coated. This makes sense if a hatch should be positioned in front of a permanently filled area, or if two hatches should be positioned over each other with different hatch angles. It can also be wise/desirable to represent the various hatch lines differently or when coating elements of the representation - partially transparent.

The DXF format does not recognize such coating of symbols. If one wants to achieve the same representation, for each coating an individual line or own hatch must be created with corresponding (single) symbolization.

This **VertiGIS DXF Export (for ArcMap)** writes an DXF, which visually corresponds (representation) to the source as accurately as possible in ArcMap (MXD, Geodatabase). As such, for each coating of a multi-coated fill symbol, an individual hatch and outline (polyline[29]) are created in DXF. In doing so, several polylines are written to the DXF file for the outline.

4.4.5 ArcGIS annotations

ArcGIS annotation features are exported as DXF multiline text. This means that labels may include line breaks. Any TrueType font is possible; the font attributes of font color, font size (height), font thickness (normal, bold), underscore, strikethrough, and italics are taken into account.

ArcGIS Annotations can also include further geometry elements in addition to the text. As such, an indicator line and a reference point of the text are created by GEONIS Annotation Converter, if these elements have also been available in the GEONIS label. These geometries are exported by **VertiGIS DXF Export (for ArcMap)**. However, the export is not limited to indicator lines and reference points; all existing geometry elements are copied. As such, then for example, even the dimensions can be copied from **GEONIS Dimension** tool (attention- this does not involve dimensioning features here).

Additional specific attributes available in ArcMap such as text shadow, text background, and test filling are not taken into account at present.

See User Manual *GEONIS Dimension*

4.4.6 GEONIS labels

GEONIS labels are stored in the Geodatabase as Line features. The relevant line geometry - a simple straight line segment - is used to help with placement (positioning, alignment, orientation) of the text to be displayed. The label text itself originates from the feature referenced from the label definition.

VertiGIS DXF Export (for ArcMap) exports labels as DXF multiline text; the text block may therefore include line breaks. Any TrueType font is possible; the font attributes of font color, font size (height), font thickness (normal, bold), underscore, strikethrough, and italics are taken into account.

Additional specific attributes available in ArcMap such as text shadow, text background, and test filling are not taken into account at present.

Pointer lines and anchor points can be exported. Pointer lines are written as regular DXF-LW polylines or polylines (see Polylines 29), and anchor points as point symbols (see Points 28).

4.4.7 ArcMap labeling

ArcMap labels (standard as well as Maplex) are not covered in the current version of **VertiGIS DXF Export (for ArcMap)**. The dynamic for placement of these labels is very wide and depends on many factors. It is hardly possible for an external application to reproduce the labels as presented by ArcMap.

4.5 Representation and reference scale

An understanding of how the different map scales impact on the output is important for handling **VertiGIS DXF Export (for ArcMap)** correctly. A distinction should be made in this regard between the map's reference scale and the current representation scale. The reference scale is set in the Layer properties in ArcMap. It states the scale used to draft the map – or in other words – the scale for which the symbology was selected. Symbols are presented to scale as provided in the reference scale.

Example

> If a text point measures 1/72 inches (a standard in the typeset), then a symbol 12 points in size (e.g. a manhole cover) is drawn 12 points in size on the map with a presentation in the reference scale 1:250. In the real world, this equates to 250 × 12/72 inches = 3000/72 inches = 250/6 inches = 41 2/3 inches or 1,058 meters (where 1 inch = 25.4 mm).

A line – e.g. a pipe 3 points thick – is drawn with the same reference scale of 1:250 in such a way as if it would cover 26.5 cm in reality.

ArcMap has two possible options if the map is supposed to be presented in a different scale to the reference scale:

- The symbols are always drawn in points in the size stated. This means that symbols in large scales (larger than the reference scale) appear to be too large; a map or plan can soon become illegible as a result of the oversized symbols. Symbols can virtually "disappear" when presented in small scales because they are too small in relation to the plan content.
- The symbols can be scaled. If the map is presented at half the reference scale then the symbols displayed are double in size (in terms of points). This means that symbols which are designated at the 12 point size for a reference scale of 1:250 are presented at the 24 point size if the plan is supposed to be presented at a scale of 1:250. The reverse applies accordingly when zooming out, i.e. if a larger representation scale is used.

Please ensure in all cases that the map document (MXD) features a matching reference scale. A proper zoom-in to the desired scale or statement of a map scale (parameter –mapscale 41) in Batch mode can help to optimize the fine details of symbol representation.

5 Batch export

While tools with an intuitive graphical user interface can be very good, In a lot of cases, the same operation has to be repeated. This often even has to be executed with the same settings. This should of course be possible without requiring user interaction and also be possible with a time-controlled option, e.g. at night.

These requirements are met by the Batch function in **VertiGIS DXF Export (for ArcMap)**. Depending on whether the computer also has **GEONIS** is installed or not, the export tool is located under **C:\Program Files (x86)\Geocom\GEONIS\Dxf Export for ArcMap** or **C:\Program Files (x86)\VertiGIS\Dxf Export for ArcMap** .

VertiGISDxfBatch.exe can be started with the appropriate parameters and take over these tasks.

5.1 Command line

If **VertiGISDxfBatch.EXE** is launched without command line arguments, then a help screen is displayed:

```
C:\Program Files (x86)\Geocom\GEONIS\Dxf export for
ArcMap>VertiGISDxfBatch.exe --help
VertiGISDxfBatch 1.1.0.0
© 2020 Geocom Informatik AG

 -m, --mxd Required. Name of map file (.mxd) to export data
                                  from

 -d, --dxf Required. Name of dxf file(s) to be written. If no
                                  selection layer given (see
                                  parameter -s), the name of one
                                  single output file. If a
                                  selection layer is also
                                  specified, the output file name
                                  will be split and a 3-digit
                                  running number will be inserted
                                  between the file name and it's
                                  extension. So when specifying
                                  data.dxf, files data_001.dxf,
                                  data_002.dxf, data_003.dxf...
                                  will be the result. Each one of
                                  these output files will contain
                                  the data selected by a single
                                  polygon in the selection layer.

 -n, --dxfversion (Default: AutoCad2010) Version of the DXF
                                  format to write

 -s, --selectionlayer Name of a layer specifying export
                                  selections

 -a, --maskinglayer Name of a layer used to mask out regions in
                                  exported areas

 -v, --restricttovisible (Default: true) Restrict to visible
                                  layers (true/false)
```

```
  -l, --mapscale Map scale (1:n), i.E. 500 for 1:500, 1000 for
                                  1:1000 etc. If not specified,
                                  the reference scale of the map
                                  document will be used

  -b, --binary (Default: false) Write binary dxf files

  -o, --log Name of a log file

  --help Display this help screen.

  --version Display version information.

C:\Program Files (x86)\Geocom\GEONIS\Dxf export for ArcMap>
```

Unfortunately, the help text cannot be displayed in German in the present version for technical reasons.

The individual parameters correspond with the elements of the control dialog in terms of their function. Entering the **-mxd** and **-dxf** details is mandatory with this, the other parameters can be stated as necessary.

The parameters can either be stated using the long version (two leading hyphens), e.g. **--dxf c:\daten\mydxf.dxf** or short version (one leading hyphen) **-d c:\daten\mydxf.dxf**. The values can be entered separately from the parameter name using one or more empty spaces (**-d c:\daten\mydxf.dxf**) or the equals sign can also be used (**-d=c:\daten\mydxf.dxf**).

The **–help** parameter and **–version** parameter are explicit and no other parameters may be entered with these at the same time. The **–help** parameter displays the help screen described above, and the **--version** parameter provides information on the current program version.

Once the command line has been finalized by pressing the Enter key, it can in some cases take a few seconds before a response is received regarding an error in the command line, or until the successful launch of the export is displayed. ArcObjects (the program library required for access to the ArcGIS modules and thus to the ArcMap document) must therefore be downloaded and initialized before checking the entries and this in turn checks for a valid license.

5.1.1 Parameter –mxd (-m)

The **–mxd** parameter is used for **VertiGIS DXF Export (for ArcMap)** in order to determine the location of the data to be exported. Unlike the interactive version where the ArcMap document is already available and in some cases is not even saved as a file,this must be located and downloaded for the export in the batch.

Please state the complete path and file name, e.g.
–mxd=»c:\daten\projekte\wichtiges projekt\projekt1.mxd.

5.1.2 Parameter –dxf (-d)

Please state the complete path for the DXF file(s) to be created. The same rules apply as those for the entry field described under Output files 18.

5.1.3 Parameter –dxfversion (-n)

In the interactive mode, this is the **DXF version** selection list. Please enter the name of the required format in exactly the same way as displayed in the selection list. An AutoCAD 2010 compatible DXF is written as standard if no details are entered.

See Format options 17.

5.1.4 Parameter –selectionlayer (-s)

A layer can be stated here with selection polygons (selection layer). In the interactive version, this can be done using the **Selection layer** selection field.

See Selection of files to be exported 19

5.1.5 Parameter –maskinglayer (-a)

Enables a layer to be stated with covered areas (masking layer). Corresponds with the **Masking layer** selection field in the interactive version.

See List box "Masking layer" 23

5.1.6 Parameter –restricttovisible (-v)

Corresponds with the **Export visible layers only** option in the interactive version.

See Selection of files to be exported 19

Enter **true** here (**--restricttovisible=true**), and only visible layers are displayed.

If **false** is entered (**--restricttovisible=false**), then all layers are displayed irrespective of their visibility. The standard value for this parameter is **false**.

Please note that stating this parameter also affects the viewing scale to be used (see section Parameter -mapscale (-l) 41) as the visibility of layers may depend on the viewing scale.

5.1.7 Parameter –mapscale (-l)

Allows a viewing scale to be stated for the map. This value can be determined in interactive mode for **VertiGIS DXF Export (for ArcMap)** either by zooming into the map or by selecting a value from the **Map scale** selection list. If no parameter is stated then the reference scale is used from the map document.

5.1.8 Parameter –binary (-b)

Writing a binary file instead of an ASCII DXF file.

See Format options 17.

5.1.9 Parameter –log (o)

Allows to specify a log file to which the messages of VertiGISDxfBatch are written (in addition to the console output). If the file does not exist, it is created, if the file exists, it is extended.

5.2 Result and error codes

VertiGIS DXF Export (for ArcMap) issues a standard Windows 10 exit code when the program ends. This code can be requested by calling programs or by a calling **.BAT file** as **ERRORLEVEL**. This allows the execution of the follow-up processing to be controlled.

Exit code	Meaning
0	Successful export
10	Error in command line
12	Invalid details for output file (DXF) Target directory does not exist or the details are formally incorrect.
13	Invalid details for DXF format version
14	Invalid details for input file (MXD) Directory or file does not exist or the details are formally incorrect.
15	Invalid specification of a log file (wrong or non-existent path), invalid file name
16	Invalid details for selection layer Layer does not exist.
18	Invalid details for masking layer Layer does not exist.
20	Invalid details for the representation scale
30	ArcGIS is missing No ArcMap was found on your system.
32	No valid license for ArcMap
80	Error while initializing components for **VertiGIS DXF Export (for ArcMap)**
99	General, unknown error

5.3 Extended logging

VertiGISDxfBatch writes its log output using **log4net** (version 1.2.10), a library for standardized log writing. Usually, **log4net** is configured internally in the application **VertiGISDxfBatch**. A log output is directed to the console and, if a log file (Parameter --log 41) is specified, an additional log is created in the specified file.

Log4net offers the possibility to configure the log output within wide limits. Filters can be specified and the output can be routed to various channels. **VertiGISDxfBatch** searches for a suitable configuration file at startup and adjusts the logging behavior according to this if necessary.

The configuration file must have the name **log4net.config**. It is first stored in the document folder of the logged on user under **VertiGIS\VertiGIS DXF export for ArcMap** and, if it is not found there, in the program directory of **VertiGISDxfBatch**.

See documentation log4net ().

If a configuration of **log4net** exists, it replaces the configuration for the output of log messages to the console. Any log file specified on the command line (Parameter --log 41) is still written.

6 Restrictions

The following restrictions apply to **VertiGIS DXF Export (for ArcGIS)**:

- Feature layers are supported (only). No basemaps, no drawing layers, no grids.
- Dimension feature layers are not yet supported.
- If a feature is displayed with a **Object Class Extension**, the export may not work correctly, especially if the OCE is not available.
- Some element types of an annotation layer are not supported:
  - Grouped elements can contain several texts. Only the first text of this is output.
  - Circles and ellipses are not supported.
  - If a background rectangle has been defined for a text, it is not output.
  - With callouts (labels) only the texts appear, not the guides and not the background.
- Representations are currently not supported. A layer with representations is created during export completion under **The listed layers could not be exported** and a message is written to the log: **ESRI representations not supported in this version of**.
- If a cartographic line symbol is used and a template is captured for this purpose, incorrect representations may occur if segments of the displayed polyline are very short. This is due to DXF, because in this case a DXF line type is used and this is applied per line segment (and not over the whole polyline) when outputting in the respective DXF Viewer (AutoCad).
- 3D polylines cannot currently be fully symbologized. The DXF format only allows you to specify a drawing pin thickness (max. 2 mm). It is not possible to specify a width in the drawing coordinate system. Thus, 3D polylines are exported as thin lines with correct color and, if necessary, dashed.
- 3D polylines can currently only be exported as a sequence of straight line segments. There are no circular arcs. If necessary, arcs to be exported are divided into small straight lines (densify).

- Symbol masks (e.g. halos) are not exported.
- In general it should be noted that a translation into a foreign format (here from ArcMap to DXF) is always associated with losses. In detail the possibilities of the formats differ in many points.

IMPORTANT!
This list is not exhaustive. Further restrictions may be added in the course of development (depending on customer requirements).

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