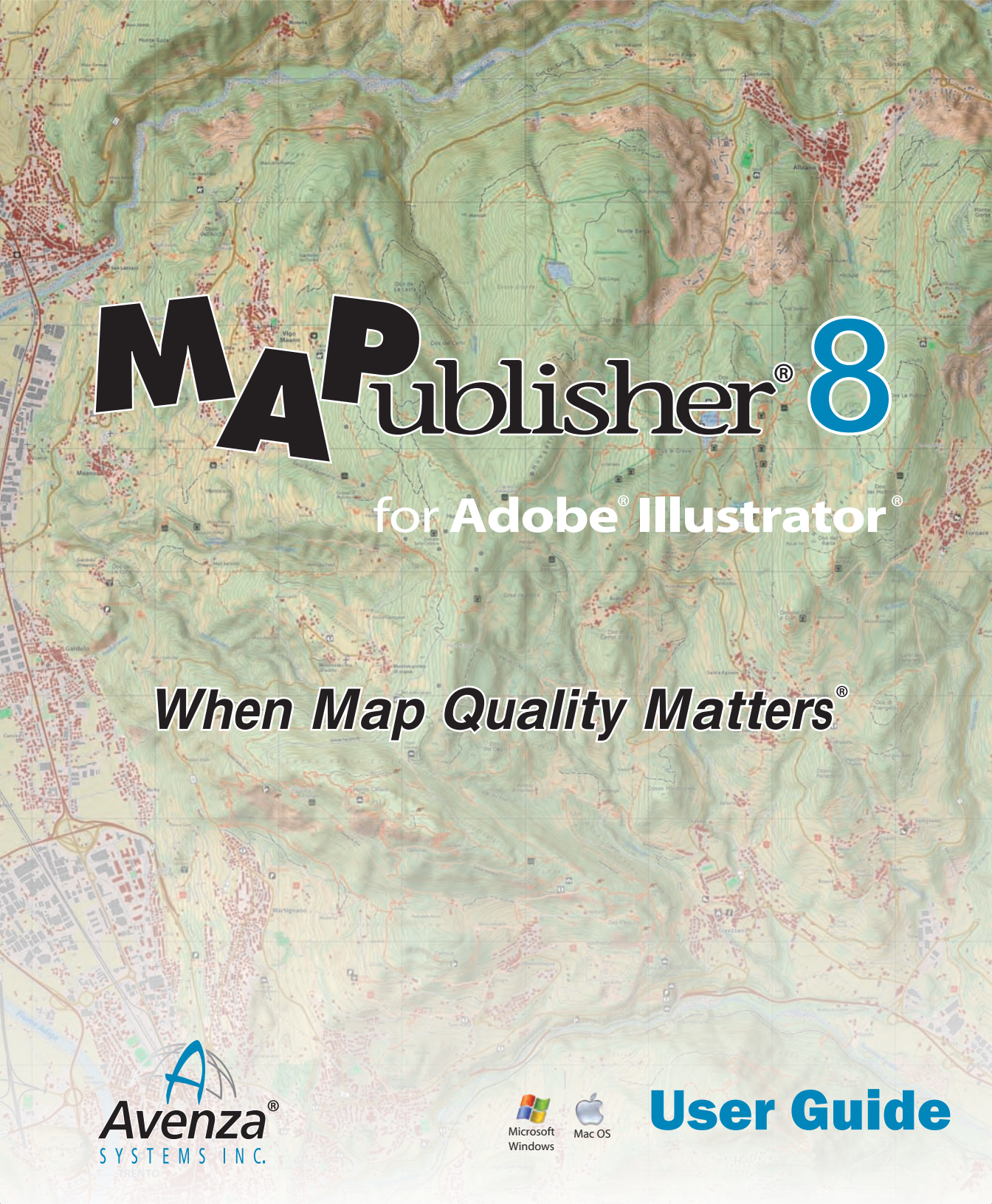

MAPublisher® 8

for Adobe® Illustrator®

When Map Quality Matters®

Avenza® SYSTEMS INC.

Microsoft Windows

Mac OS

User Guide

Avenza MAPublisher 8 User Guide

MAPublisher® 8 for Adobe® Illustrator® User Guide for Windows® and Macintosh®.

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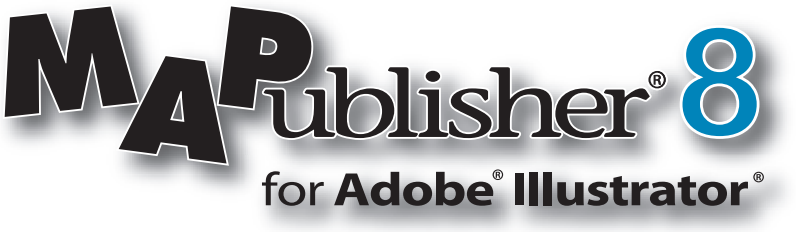


When Map Quality Matters®

User Guide

Avenza®
SYSTEMS INC.

Welcome

Avenza welcomes you to map-making in the 21st century!

Combined with Adobe Illustrator, MAPublisher has revolutionized the art of map-making by allowing spatial data files to be used to create maps inside a vector graphics program. MAPublisher allows all cartographic tasks to be performed where they should be done; in a powerful graphics environment.

This manual assumes that the user is familiar with Adobe Illustrator and has at least a basic understanding of geographic information systems (GIS) terminology and concepts. Please refer to the Adobe Illustrator user guide for more information on using Adobe Illustrator.

The *User Guide* explains the installation process and the many features of MAPublisher. All MAPublisher panels, filters and tools are thoroughly detailed together with the related concepts necessary to build map and perform fundamental cartographic and GIS tasks. Please refer to the document *Avenza Projections Guide.pdf* for more information on the projections supported in MAPublisher.

As a complement to these guides, the MAPublisher software installer includes tutorial documents (*MAPublisher 8 Tutorial Guide.pdf* , *MAPublisher 8 Quick Start Guide.pdf* and *MAPublisher 8 MAP LabelPro Tutorial Guide*) and associated GIS datasets. We encourage all users to go through these guides to gain additional experience with MAPublisher tools and functions.

MAPublisher and Adobe Illustrator together constitute an integrated cartographic design software system with state-of-the-art graphics tools and geographic functions.

Contents

Introduction

MAPublisher 8 is the newest version of a powerful suite of plug-ins for Adobe Illustrator CS3 and CS4 that bridges the gap between geographic information systems (GIS) and high-end graphic design software in order to facilitate the map creation process. MAPublisher 8 offers additional panels, functions, tools and filters to the powerful Adobe Illustrator design environment that enable GIS data files to be used as a base for cartographic production destined for print or Web contents.

Working from a traditional Adobe Illustrator document, users create and edit their data organized through layers (either new or imported with MAPublisher). Users benefit from the Adobe Illustrator graphic tools as well as additional custom MAPublisher functions and panels to create, edit and query the map data.

MAPublisher **Simple** and **Advanced Import** functions allow the import of major GIS and CAD formats (ArcGIS, MapInfo, AutoCAD, MicroStation, KLM and more) into Adobe Illustrator, while retaining their native geometry (Point, Line, Text, Area), layer structure, geographic location and attribute data.

The cartographic workspace is managed through **MAP Views** that control the geospatial parameters: coordinate system, map anchor, map scale and rotation. Layers organized under the same MAP View share the same geographic frame of reference. A layer must reside within a MAP View to be managed by MAPublisher functions and keep its spatial and attribute information; however layers not related to a MAP View may still be used for presentation purposes (such as title, scale and legend). An Adobe Illustrator document may contain more than one MAP View. For example, a map with an inset map at a larger scale to represent a zoomed-in area of interest.

The **MAP Attributes** panel allows for creating, editing and querying attribute information. For example, for a line layer containing street data, each line segment may be linked to a table with information relative to the street name and street category. Using the MAP Attributes panel, this information can be viewed, queried, edited or additional columns of data may be appended.

The **MAP Stylesheets** make use of the attribute data to apply Adobe Illustrator graphic styles, symbols or character styles to map features, depending on a given object's attribute value.

MAPublisher offers many functions and tools to manage GIS data from within Adobe Illustrator. They are described in detail in this manual:

- Import major GIS and CAD format (MAPublisher **Simple** and **Advanced Import, Spatial Database**).
- Plot a symbol by typing in its world coordinates (**MAP Point Plotter**).
- Draw objects with geographic dimensions (**MAP Area Tools**).
- Trim the geographic extents of the map (**MAP Vector Crop**).
- Join lines or points that share a same attribute value, simplify lines, create a buffer area around a line (MAPublisher line functions)
- Automatically label features based on attribute data (**MAP LabelPro**, **Feature Text Label** and **MAP Tagger Tool**).
- Select features based on attributes (**MAP Selection Filters**).
- Import and export geographically referenced images.
- Create grids and indexes.
- Create scale bars and north arrows.
- Export to Geospatial PDF.
- Export a map to Flash with populated Web tags (**MAP Web Author**).
- Export layers to major GIS and CAD formats.
- Connect to a GPS device for real-time symbol or line tracing (**MAP GPS**).
- And more...

What's New in MAPublisher 8

MAP Web Author

Use the new MAP Web Author tool to create interactive Flash maps for Web-based content, complete with rollovers, pop-ups and layer control
A number of options are available to design your Web tags:

- Use MAP Attributes to automatically populate the text field.
- Include Images, and set their size.
- Type and style custom text.
- Insert hyper links.
- Customizable with Javascript.

Users can tag multiple data layers at the time. During the export process, the user can customize the outline of Web tags using the interface options or CSS File. MAP Web Author API add more possibilities for advanced users.

MAPublisher Spatial Database import

MAPublisher 8.2 supports direct import from ESRI Personal Geodatabase (.mdb), File Geodatabase (.gdf), and ArcSDE servers. This function requires ESRI software and a valid license installed on the computer and consequently it is only available on Windows operating systems. Supported feature types are Point, Polyline, Polygon, Circular Arc, Eliptical Arc, Bezier Curve, Annotations (text). The MAPublisher Spatial Database import allows for SQL queries and spatial filters. This function is available as an optional add-on to MAPublisher 8.2.

MAP Vector Crop Tool

With the new MAPublisher 8 Vector Crop Tool, users only need to draw a box around an area of interest and all geometry outside the frame is cropped out, while preserving attributes and styles.

MAPublisher LabelPro™

MAPublisher LabelPro™ revolutionizes the way users can label map data, including using symbols as labels and label conflict resolution with a high degree of customizable rule-based labeling options. The MAP LabelPro engine uses your map data attributes for labeling with styles, rules and controls configured through an intuitive, easy-to-use Graphical User Interface. This function is available as an optional add-on to MAPublisher 8.1 and higher.

MAPublisher Toolbar

MAPublisher now has its own customizable toolbar. Buttons for importing, all MAPublisher filters, and toggle buttons for MAPublisher panels can be found on this dockable toolbar.

MAPublisher Preferences

The new MAPublisher Preferences allow users to fully customize their MAPublisher experience. Control everything from the way layers are sorted to the font used to display attribute data or style of the MAP Selection Filters panel. This includes several previously hidden options that used to be the domain of advanced users.

MAP Measurement Tool

The MAP Measurement Tool measures straight distances (between two points), path distances (multiple points) and the perimeter and area of closed paths — in page or map unit (real world distances). Furthermore, the measuring path can be converted to a line or area in the currently selected layer.

Export to Geospatial PDF:

New with MAPublisher 8.2 is the ability to export map data to a geospatially enabled PDF. In this process, all objects and associated MAP Attributes information (when available) are ported to PDF, while also maintaining the map coordinate system. When a geospatial PDF is opened with Adobe Acrobat Reader 9, one can find locations, measure distances, add location markers as well as copy coordinates to the clipboard. Additionally, objects can be selected and queried and their MAP Attributes can be viewed in the Adobe Acrobat Model Tree.

MAP Point Plotter Panel

The MAP Point Plotter panel has been redesigned for the release of MAPublisher 8. The point style is now selected from a pop-up dialog box which contains a larger preview of all the styles present in the document, including their full name. By default, the point's position is plotted using the same coordinate system as the current MAP layer, but users can now elect to plot using another coordinate system (geodetic or projected). Another new feature is the ability to plot centroids. A point may now be plotted at the centroid of every area or line on a selected MAP area or line layer.

MAPublisher License Management

The new MAPublisher License Management system helps users manage their licensing in a more streamlined and user-friendly manner. Users can now evaluate the product, register, retrieve their licenses and checkout a floating license, all in a single dialog box. Additionally, MAPublisher panels are now marked with a lock icon when the software is not licensed.

Split Layer

The MAPublisher Selection Filters panel has a new option that allows users to split a layer into new layers based on an expression or by unique attribute value. The qualifying features can either be copied or moved to a new layer, while maintaining all their attribute data.

KML/KMZ Import and Export

KMZ files (KML compressed format) can now be imported and exported directly into and from MAPublisher. Google Maps does not support the KML Schema tag or any derived tag (i.e. KML files with attributes values). As such, MAPublisher 8 KML/KMZ export settings now includes an option to export to KML/KMZ without the attributes information, so that the resultant KML file is compatible with Google Maps.

S-57 Import

IHO S-57 vector format can now be imported with MAPublisher 8. Use the supplied S-57 template to automatically style the map on import.

Geographic Markup Language - Simple Features Import and Export

OGC GML Simple Features (points, lines and polygons), version 2.0 and higher, can now be imported and exported (to version 3.1.1) with MAPublisher 8.

Expressions

Expressions created in the MAP Selection Filters and recent expressions used in the MAP Attributes panel and MAP Stylesheets panel can now be selected and re-used in the Expression Builders of all panels.

MAPublisher 8.2 introduces new functions available from the *Expression Builder* (MAP Attributes, MAP Selection Filters and MAP Stylesheets panels).

MAP Views Editor

The MAP View Editor now has the ability to display both thumbnails and coloured extents of MAP Views in the document. Combined with the new ability to zoom and pan the preview, users should find it much easier to precisely position their MAP view on the canvas. Additionally a new function allows to automatically rotate a MAP View so that it is oriented to North.

Specify Anchor

The Specify Anchor function has been redesigned so that the anchor point world coordinates maybe entered in any coordinate system specified by the user (geodetic or projected), hence removing the need for external coordinate conversions.

Register Image

When no matching vector data is available, a new MAP View can be created directly from a GeoTIFF reference file or by specifying a coordinate system.

Grids and Graticules

The Grids and Graticules function offers new options for labelling, a preview option and now fully supports rotated MAP Views.

MAP Attributes Interface

The attribute viewer has had several enhancements added for MAPublisher 8. Several buttons have been added to provide faster access to some existing functionality: the column button makes setting attribute visibility much more accessible and the *Zoom to Feature* button zeroes in on the current row's artwork in one click. The look and feel of the panels has also been improved, with new icons for existing buttons as well as new attribute type icons in the column headers. Additionally, the list of layers now only displays MAP layers that have selected MAP features selected.

The MAP Attributes panel has a new function *Export Attributes* to export all selected attribute information to a delimited text file (comma, space, tab or semi-colon separated).

A new function *Add Calculated Data* has been implemented to allow users to populate attribute columns based on geometrical or statistical calculation (e.g. centroid position, mean, distribution...).

Simplify Line Functionality

With MAPublisher 8, Simplify Lines now preserves topology when simplifying—no more gaps between simplified polygons. In addition, a new preview option lets you see the results without leaving the dialog box—it even displays simplification statistics like *number of points removed*.

Import/Export Optimization

The import process has been optimized, improving the loading speed by up to 80%.

MapInfo MID/MIF and MicroStation DGN exports have been enhanced. MicroStation exports now supports the use of seed files.

MAP Views Panel

The MAP Views panel has been revamped for speed and stability. The panel should also provide better feedback about the states of layers and MAP Views. One immediate effect is that large files or files with large number of layers and MAP Views open much faster. Additionally, the MAP Views panel has a new *Export* button for easy access, as well as a new *Switch to MAP View* button, which should facilitate the movement of layers between MAP Views.

MAP Stylesheets Panel

The MAP Stylesheets panel has been revamped for speed and stability. The panel should also provide better feedback about the states of layers and MAP Stylesheets. The popular *Switch To* button from the MAP Views panel has also made it into the MAP Stylesheets panel, allowing you to facilitate the movement of layers from one stylesheet to another with just a couple of quick clicks.

Getting Started

Before using MAPublisher please read this section to ensure that you have a suitable hardware environment, are familiar with the installation and activation procedures, and adequately prepare your system and workspace to make maps with Adobe Illustrator and MAPublisher 8.

Topics covered in this section:

System Requirements
Installation Instructions
MAPublisher Compatibility Notes
MAPublisher License Management
The MAPublisher Tools
The MAPublisher Toolbar
MAPublisher Preferences
Preparing the Workspace

System Requirements

Before installing MAPublisher 8, please ensure that sufficient system resources are available, as outlined below:

WINDOWS

- Adobe Illustrator CS3/ CS4
- Intel Pentium 4 processor or higher (Dual core recommended)
- Windows XP / Vista / 7
- 2 GB of RAM minimum (4 GB of RAM or higher recommended)
- 300 MB of available hard-disk space

MAC OS X

- Adobe Illustrator CS3 / CS4
- Intel recommended (Power PC G5 deprecated)
- Mac OS X 10.5 or higher*
- 2 GB of RAM minimum (4 GB of RAM or higher recommended)
- 300 MB of available hard-disk space

** Official support for Mac OS 10.4 has been deprecated. As such, we highly recommend using MAPublisher on OS 10.5 or higher.*

NOTE: Not all foreign language versions of Adobe Illustrator may be supported. Please contact *support@avenza.com* for more information.

Installation Instructions

Please note that MAPublisher is licensed for use on a single computer and once activated will be node-locked to that computer and will only function on that computer. Therefore, before proceeding with installation and activation please ensure that MAPublisher is being installed on the appropriate computer.

Different full version releases (i.e. 8.x and 7.x) can be installed on the same computer if two versions of Adobe Illustrator are present. For example MAPublisher 8 with Adobe Illustrator CS3 and MAPublisher 7.6.3 with Adobe Illustrator CS2. However, two point-releases of MAPublisher 8.x **cannot** be on the same machine. For example, MAPublisher 8.2 with Adobe Illustrator CS4 cannot operate together with MAPublisher 8.1 with Adobe Illustrator CS3 on the same computer.

In the all cases, it is recommended to un-install older versions of MAPublisher before installing the newest release. In this process, an option will be given to backup custom coordinates systems and MAP LabelPro rules.

NOTE: If MAPublisher 8 is installed without un-installing an earlier MAPublisher version, removing the earlier version will also un-install MAPublisher 8.

WINDOWS

1. Make sure that a compatible version of Adobe Illustrator is installed on the computer. If Adobe Illustrator is running, exit the program.
2. **DVD version:** Insert the MAPublisher 8 DVD. If Autorun is disabled on the system, navigate to the *MAPublisher 8.2* directory on the DVD, and double-click the **Setup.exe** file.
   Electronic version: Double-click the *mp82wi-e.zip* file to open the WinZip self extractor. When the files are unzipped, proceed to the *MAPublisher* directory and double-click the **Setup.exe** file.
3. Proceed through the installation screens as instructed. Options are given to install documentation and tutorial data. If these components are selected, the files can be subsequently be found here:
   Start > All Programs > Avenza > MAPublisher 8 > MAPublisher Tutorials.
4. Launch Adobe Illustrator. *Please proceed to the section on Registration and Licensing on the following page.*

MAC OS X

1. Make sure that a compatible version of Adobe Illustrator is installed on the computer. If Adobe Illustrator is running, exit the program.
2. DVD **version:** Insert the MAPublisher 8 DVD. Navigate to the *MAPublisher 8.2* directory on the DVD, and double-click the **Install MAPublisher 8.2** icon.
   Electronic version: Unstuff the *mp82mi-e.dmg* file if this operation has not been completed automatically. Then proceed to the *MAPublisher 8.2* folder and double-click the **Install MAPublisher 8.2** icon.
3. Proceed through the installation screens as instructed. Note that documentation and tutorial data will also be installed. After installation, these files can be found in the *Applications\Avenza\MAPublisher 8\MAPublisher Tutorials* . An *Alias* to this folder will be created at the end of the installation process which will be placed on the desktop.
4. Launch Adobe Illustrator. *Please proceed to the section on Registration and Licensing on the following page.*

MAPublisher Compatibility Notes

MAPublisher 8 is compatible with Adobe Illustrator CS3 and CS4. Please read the following important compatibility information for use when opening legacy MAPublisher and Adobe Illustrator documents.

BACKWARD COMPATIBILITY

All MAPublisher documents are not backwards compatible with previous versions of MAPublisher.

MAPUBLISHER 5 (OR EARLIER) DOCUMENTS

Point Data

MAPublisher introduced new standards on dealing with point data in MAPublisher 6. Pre-MAPublisher 6 documents will have font based points converted to symbols on opening of the document.

MAPUBLISHER 6 (OR EARLIER) DOCUMENTS

Grids and Graticules

Grids and Graticules were redesigned in MAPublisher 7. Please note that grids created in previous versions of MAPublisher (6.x and earlier) will need to be recreated with the new tool if the generation of an index is required.

Legend to Stylesheet Conversion

Legend functionality (Assign Legend Info, Draw Legend etc) was ported into MAP Stylesheets in MAPublisher 7. Legend information held in legacy MAPublisher documents (6.x and earlier) will be converted into stylesheets on document open. Subsequently Graphic Styles (for line and area legends), Character Styles (for text legends) and Symbols (for point legends) will automatically be generated and added to the respective Adobe Illustrator panels.

To qualify for legend conversion, legend art in legacy documents must contain the following properties:

1. Be of a valid art type: i.e. polygon, path, symbol or text
2. Have a legend expression assigned (via Assign Legend Info or Auto Assign Legend Info)
3. Have a target MAP Layer

During the conversion process you will be asked to set additional conversion preferences:

1. Determine if target MAP Layers should be immediately assigned to the applicable stylesheet. Checking this option will immediately apply the new stylesheets to map art on target layers, whereas unchecking this option means the new stylesheets will not be applied on document open, allowing you to manually drag target layers into the applicable stylesheet later. Note auto assignment conversions are slower.
2. Determine if you wish to merge similar converted stylesheets (i.e. stylesheets with a matching feature type and original map layer) into a single stylesheet. Note this option will be disabled if it is not applicable.

Tables

Table information held on table layers (i.e. MPTables layers) will be removed on document open. Therefore ensure that all tables have been joined to the vector art prior to opening the document in MAPublisher 8.

ALL MAPUBLISHER DOCUMENTS IN ADOBE ILLUSTRATOR 10 (OR EARLIER) FORMAT

Legacy Text Conversion

Adobe introduced new methods on dealing with text art in Adobe Illustrator CS. Therefore files containing MAPublisher text objects must be converted using Adobe Illustrator and MAPublisher text conversion utilities.

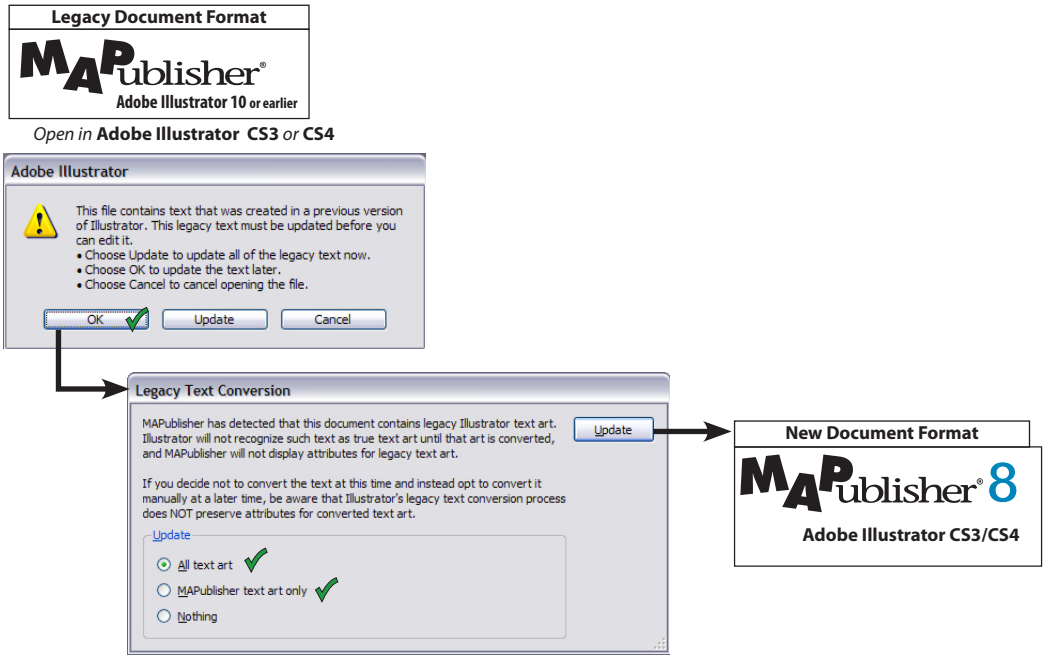
If the **Illustrator Legacy Text Conversion** message appears when opening a legacy document, you should click **OK** *(if the text contains attributes that need to be retained)*. This will allow MAPublisher to use its own conversion utility to update text items maintaining the text attributes. If you click **Update**, the document will be opened, however all attributes associated with this text will be lost.

When receiving the **MAPublisher Legacy Text** message, choose one of the following:

✓ **All text art** — to convert both MAPublisher text and regular Adobe Illustrator text to the new Adobe Illustrator text format.

✓ **MAPublisher text art only** — to convert only MAPublisher text to the new Adobe Illustrator text format.

✗ **Nothing** — to open the file but lose attribute information associated with MAPublisher text elements.



MAPublisher License Management

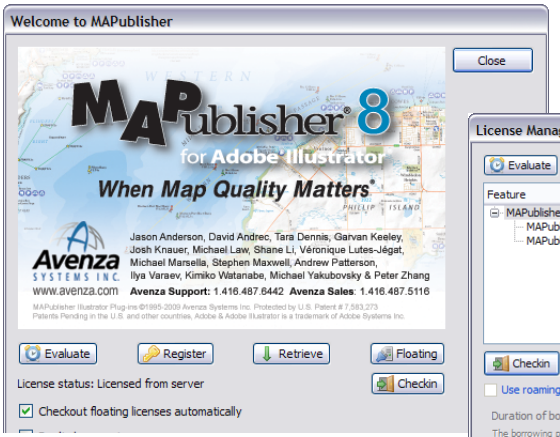
MAPublisher will fail to function until activated. The following instructions are for the activation of single-user licenses of MAPublisher 8 only. If you have purchased a floating license please refer to the floating license installation guide provided with your purchase. MAPublisher 8 is available in both single-user and floating license configurations. Floating licenses are designed to allow an organization to deploy a specific number of licenses that can be used and shared on any number of computers over a network.

IMPORTANT: Some peripheral components might interfere with the activation process. Before activating MAPublisher, users must temporarily unplug or disable: mobile phone, blue tooth, wireless or GPS systems. Laptop users with a docking station must activate MAPublisher in the **undocked** state.

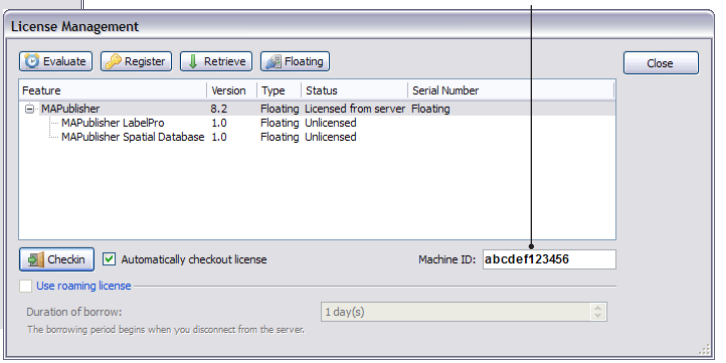
After the installation of MAPublisher 8, launch the version(s) of Adobe Illustrator you installed it to. The *MAPublisher Welcome Screen* will appear automatically. This screen gives four licensing options: **Evaluate, Register, Retrieve** and **Floating**.

NOTE: To continue to use Adobe Illustrator without MAPublisher, cancel this dialog box and activate MAPublisher license later by navigating to the *Help* menu in Adobe Illustrator and then to *MAPublisher Licensing* > *License Management*.

MAPublisher panels are marked with a lock icon when the software is not licensed.



MAPublisher Welcome Screen



MAPublisher License Management

ACTIVATING AN EVALUATION VERSION OF MAPUBLISHER

1. After installation of MAPublisher 8, click the **Evaluate** button of the **MAPublisher Welcome Screen** or **MAPublisher License Management** dialog box. Fill the form.

   If you cannot activate the evaluation license directly from the application (due to Firewall limitations), then go to *www.avenza.com/register* or email (*activation@avenza.com*) or phone and provide the Machine ID displayed in the **MAPublisher License Management** dialog box. An email with a zipped license file attachment will be sent to you. You must unzip this attachment and save the *.lic* file to the appropriate folder*.

2. When you are ready to purchase the software you can open the *MAPublisher License Management* dialog box from Adobe Illustrator Help menu at *MAPublisher Licensing* > *License Management*, click **Register** button and follow the instructions in the next paragraph.

REGISTER A PURCHASED COPY OF MAPUBLISHER

1. To activate MAPublisher 8 you must enter the Serial Number which was provided when you purchased the product.
2. After installation of MAPublisher 8, click the **Register** button of the *MAPublisher Welcome Screen* or *MAPublisher License Management* dialog box. You will be prompted to enter the serial number, then fill out the form.

If you cannot register your purchased license directly from the application (due to Firewall limitations), then go to *www.avenza.com/register* or email (activation@avenza.com) or phone and provide the Machine ID displayed in the Finish screen. We will then send you an email with a zipped license file attachment. You must unzip this attachment and save the *.lic* file to the appropriate folder*.

RETRIEVE YOUR MAPUBLISHER LICENSE

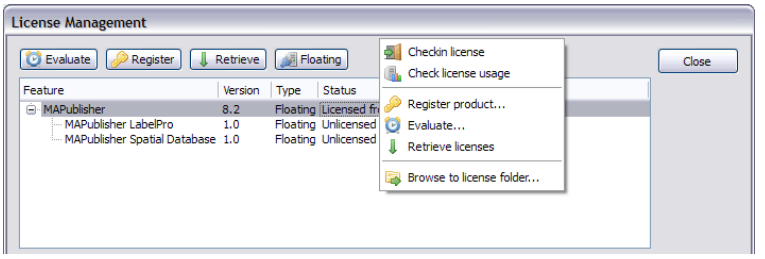
If you have inadvertently deleted your license file from your hard drive, you can click the **Retrieve** button of the *MAPublisher Welcome Screen* or *MAPublisher License Management* dialog box. This will download the license file from our server.

If you cannot retrieve your MAPublisher license directly from the application (due to Firewall limitations), then go to *www.avenza.com/register* or email (*activation@avenza.com*) or phone and provide the Machine ID displayed in the MAPublisher License Management dialog box. We will then send you an email with a zipped license file attachment. You must unzip this attachment and save the .lic file to the appropriate folder*.

* The license file is located in the following directories:

Windows XP: *C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8*
Windows Vista / 7: *C:\ProgramData\Avenza\MAPublisher 8*
Mac OS X: *Applications/Avenza/MAPublisher 8/MAPublisher Plug-In*

Alternatively, users may right-click on a row in the **License Management** dialog box (started from the menu *Help* > *MAPublisher Licensing* > *License Management*) and click on the menu item **Browse to license folder...** This opens a file browser at the dedicated MAPublisher license file directory for your operating system. Keeping this browser opened, users can past in the license file received directly at the appropriate location.



CHECKOUT A FLOATING LICENSE

If you have purchased a floating license please refer to the floating license installation guide provided with your purchase. Once the server license is fully operational, follow these instructions to check-out a license from the client machine (computer running the actual MAPublisher application).

1. After installation of MAPublisher 8, click the **Floating** button of the *MAPublisher Welcome Screen* or *MAPublisher License Management* dialog box.
2. Enter the name or IP address of the server where the license manager resides.
3. Click the **Checkout** button to retrieve the one of the licenses from the server.

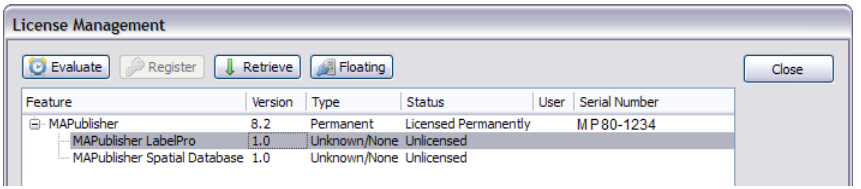
NOTES:

- If you wish to use Adobe Illustrator without MAPublisher, then click the **Check in** button from the MAPublisher License Management dialog box (at *Help* > *MAPublisher Licensing* > *License Management*). This releases the license, so other users can now use it.
- The link to the server is set for once. The next time you start the application, you just need to the click the Checkout button on the MAPublisher Welcome Screen (or License Management dialog box).

MAPUBLISHER LABELPRO LICENSING

MAPublisher LabelPro is an optional add-on to MAPublisher. Purchased MAPublisher LabelPro licenses are added to the main MAPublisher license. During the registration process described earlier in this chapter, all valid licenses will be imported. When purchasing a new MAPublisher LabelPro license on the top of an existing MAPublisher license, the existing serial number will be tagged to support LabelPro and the new license must be retrieved (see instructions earlier).

To evaluate MAPublisher LabelPro license, open the **MAPublisher License Management** dialog box from the Adobe Illustrator menu *Help* > *MAPublisher Licensing* > *MAPublisher License Management*. Click the **MAPublisher LabelPro** branch and then click the **Evaluate** button as previously explained.



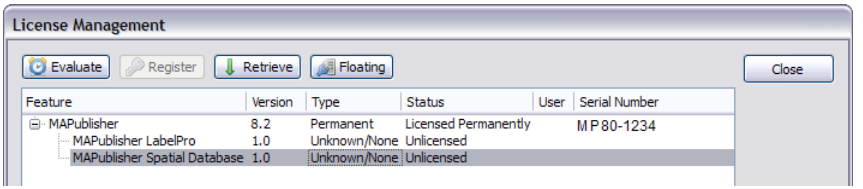
The evaluation version of MAPublisher LabelPro scrambles the text of placed labels but preserves the case, spacing and punctuation, so that the results give a sense of how actual labels would be placed based on the rule settings. See chapter 18 for more details on MAP LabelPro functionality and usage.

NOTE: MAPublisher and MAPublisher LabelPro can only be both floating licenses or both local licenses (fixed or evaluation). A user on a floating license wishing to evaluate MAPublisher LabelPro will have his main MAPublisher and MAPublisher LabelPro licenses switched to a local evaluation license. At the end of the evaluation period, the settings for floating license can be reset as described above.

MAPUBLISHER SPATIAL DATABASE LICENSING

MAPublisher Spatial Database is an optional add-on to MAPublisher 8.2. Purchased MAPublisher Spatial Database licenses are added to the main MAPublisher license. During the registration process described earlier in this chapter, all valid licenses will be imported. When purchasing a new MAPublisher Spatial Database license on the top of an existing MAPublisher license, the existing serial number will be tagged to support Spatial Database and the new license must be retrieved (see instructions earlier).

To evaluate MAPublisher Spatial Database license, open the **MAPublisher License Management** dialog box from the Adobe Illustrator menu *Help* > *MAPublisher Licensing* > *MAPublisher License Management*. Click the **MAPublisher Spatial Database** branch and then click the **Evaluate** button as previously explained.



NOTE: MAPublisher and MAPublisher Spatial Database can only be both floating licenses or both local licenses (fixed or evaluation). A user on a floating license wishing to evaluate MAPublisher Spatial Database will have his main MAPublisher and MAPublisher Spatial Database licenses switched to a local evaluation license. At the end of the evaluation period, the settings for floating license can be reset as described earlier.

MOVING A LICENSE

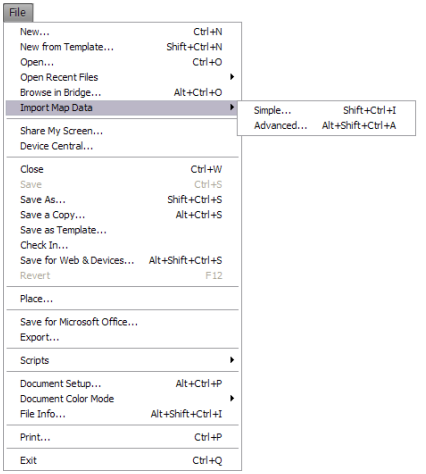
To move a previously activated license to a new computer, use the following steps:

1. Uninstall MAPublisher from the current computer.
2. Install MAPublisher on the new computer.
3. Obtain the machine ID for the new computer — as found in the MAPublisher License Management dialog box started from the Adobe Illustrator Help menu at *MAPublisher Licensing* > *License Management*.
4. Send an e-mail to *activation@avenza.com* with the following information:
   - Product name, version and serial number (or machine ID of the old computer).
   - New machine ID.
   - A note that indicates the request to move (rehost) the license to a new computer.

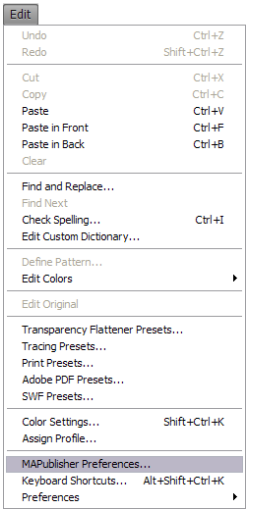
The MAPublisher Tools

MAPublisher tools can be found in a number of locations in Adobe Illustrator.

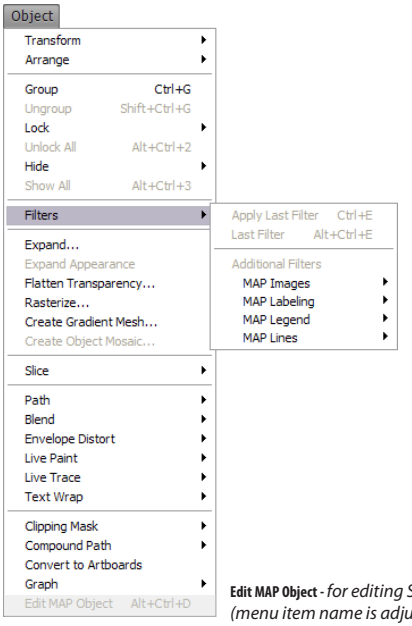
The MAPublisher Importers can be found under the **File** menu

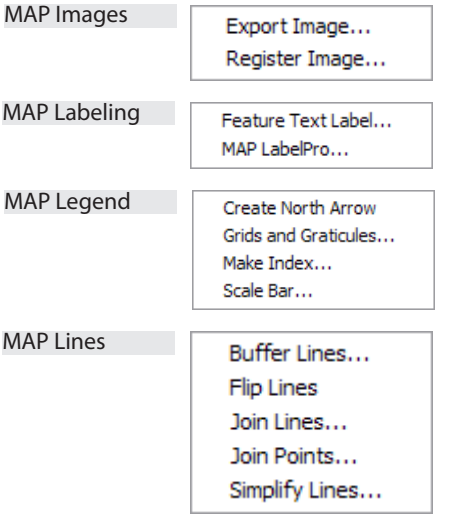


The MAPublisher Preferences can be found under the **Edit** menu.



The MAPublisher filters can be found under the **Object > Filters** menu*.
The MAPublisher Edit MAP Object function can be found under the **Object** menu.

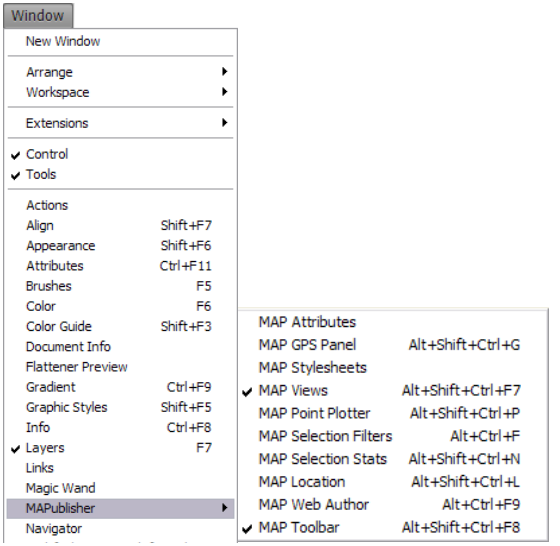




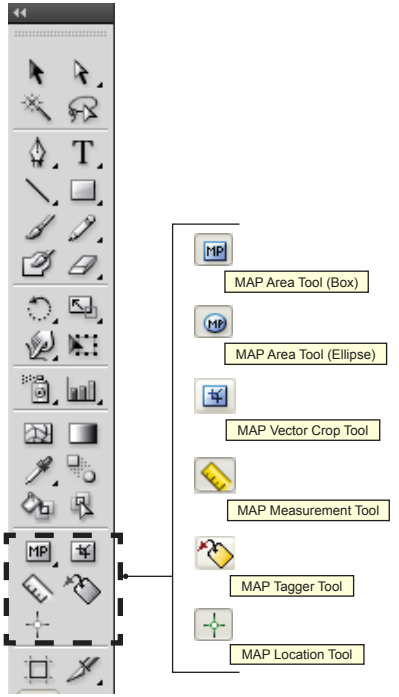
Edit MAP Object - *for editing Scale Bars, Grids and Graticules (menu item name is adjusted accordingly)*

** In Adobe Illustrator CS3, MAPublisher Filters are found in the Filters menu.*

The MAPublisher panels can be found under the **Window** menu



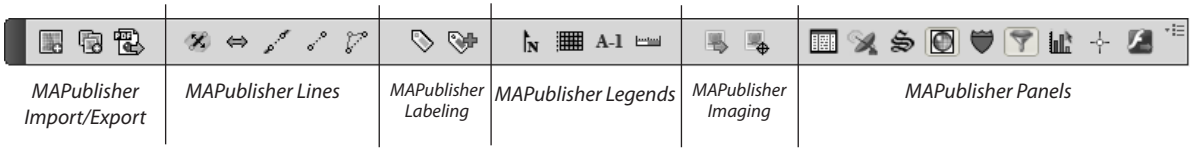
Five MAPublisher tools can be found in the main **Adobe Illustrator Tools** panel



MAPublisher Toolbar

Window > MAPublisher > MAP Toolbar

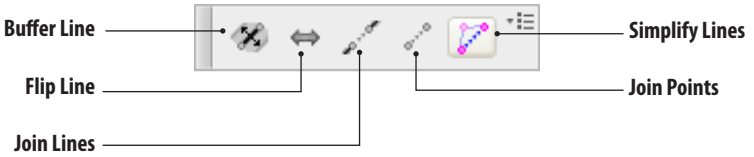
The new MAPublisher Toolbar allows the user to launch the MAPublisher tools, described in the previous paragraph, in a single click. The MAP toolbar is divided in five sections: *MAPublisher Import, MAPublisher Lines, MAPublisher LabelPro, MAPublisher Legends, MAPublisher Imaging* and *MAPublisher Panels.*



NOTE: MAPublisher Toolbar cannot be saved in a workspace (Adobe Illustrator main menu *Window > Workspace >Save Workspace...*)

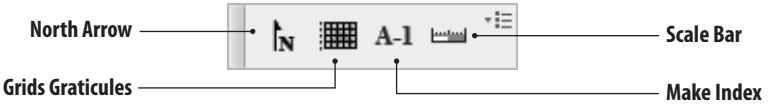
MAPUBLISHER IMPORT/EXPORT

MAPUBLISHER LINES



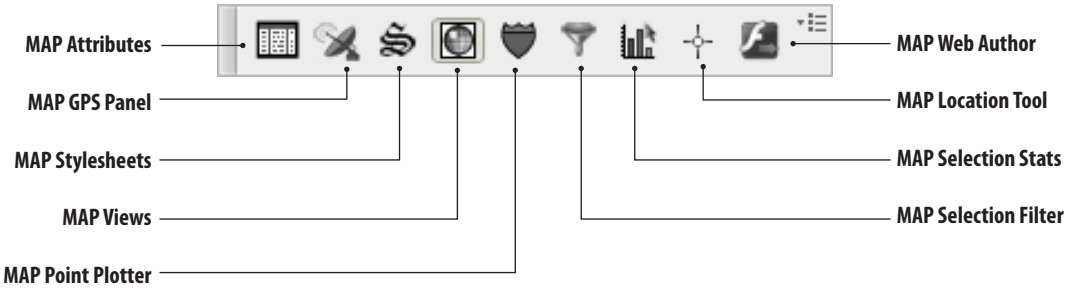
MAPUBLISHER LABELING

MAPUBLISHER LEGENDS



MAPUBLISHER IMAGING

MAPUBLISHER PANELS

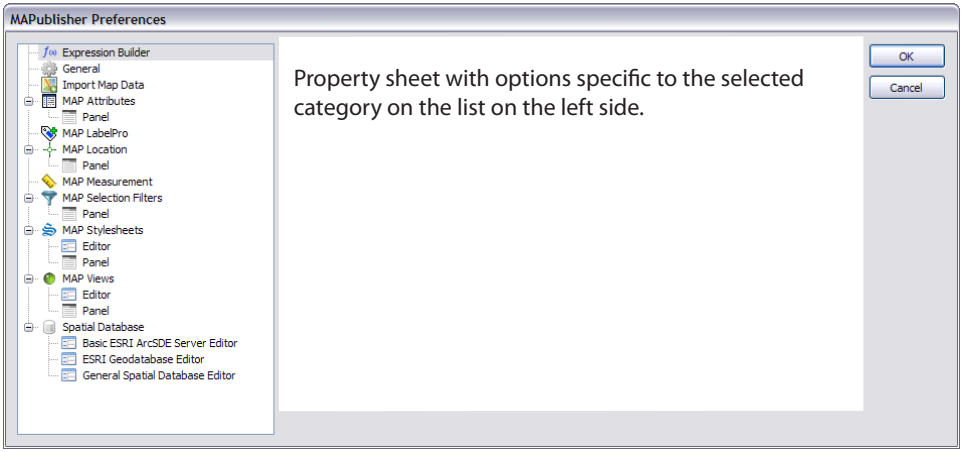


MAPublisher Preferences

Edit > MAPublisher Preferences (Windows)
Illustrator > MAPublisher Preferences (Mac OS)

MAPublisher Preferences are options that allow users to customize MAPublisher panels and editors, including those for layer ordering, font for attribute data display, panel style, etc. Settings are available for the following categories:

- Expression Builder.
- General.
- Import Map Data
- MAP Attributes (panel).
- MAP LabelPro.
- MAP Location (panel).
- MAP Measurement.
- MAP Selection Filters (panel).
- MAP Stylesheets (panel and editor).
- MAP Views (panel and editor).
- Spatial Database (Basic ESRI ArcSDE Server Editor, ESRI Geodatabase Editor and General Spatial Database Editor). *Windows only.*



MAPublisher Preferences are saved within the Adobe Illustrator preference file called *AIPrefs* (Windows) or *Adobe Illustrator Prefs* (Mac OS), which is launched each time Adobe Illustrator is started. Therefore, MAPublisher Preferences are not file dependent.

NOTE: The Adobe Illustrator preference file is located in following directory

Windows XP: *C:\Documents and Settings\[user profile]\Application Data\Adobe\Adobe Illustrator CSX Settings\AIPrefs*
Windows Vista / 7: *C:\Users/(user)\AppData\Roaming\Adobe\Adobe Illustrator CSX Settings\AIPrefs*
Mac OS X: *Users/~username/Library/Preferences/Adobe Illustrator CSX Settings/Adobe Illustrator Prefs*

OPEN MAPUBLISHER PREFERENCES

MAPublisher Preferences can be opened from the Adobe Illustrator main menu, **Edit > MAPublisher Preferences** (Windows) or **Illustrator > MAPublisher Preferences** (Mac OS X), from the panel options menu of the following MAPublisher panels: *MAP Attributes, MAP Selection Filters, MAP Stylesheets* and *MAP Views*, and from double-click of the tools buttons: *MAP Location* and *MAP Measurement*.

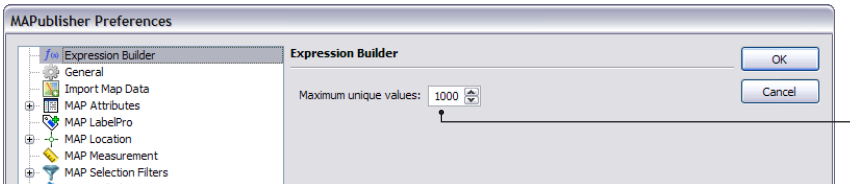
When opened through the Adobe Illustrator menu, MAPublisher Preferences opens up with no category selected. When started from a specific MAPublisher panel options menu, MAPublisher Preferences open on the current panel property sheet.

MAPUBLISHER PREFERENCES SETTINGS

Clicking one of the MAPublisher category or sub-categories on the left hand list displays the corresponding property sheet displayed on the right.

Expression Builder Preferences

The Expression Builder property sheet shows the settings relative to the Expression Builder dialog box used with the MAP Attributes, MAP Stylesheets and MAP Selection Filters panels (see chapter 5 for more information).

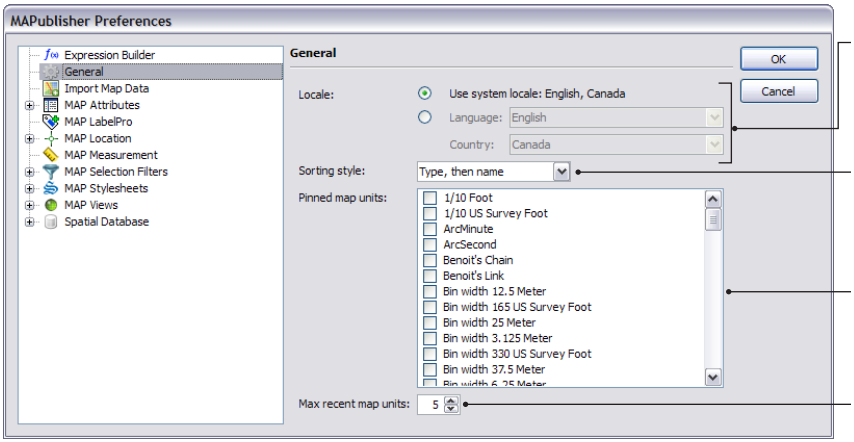


Maximum unique values - Set the maximum number of unique values visible in the Expression Builder (*Expression Components > Description*).

The default value is 1000, users with high performance computers can increase this number.

General Preferences

The General property sheet is used to change the layer ordering rule for all MAPublisher panels. By default, layers are sorted alphabetically only. The other option is to first group layers by data type first (Legend, Text, Point, Line and Area) and subsequently in alphabetical order for each group.



Locale- This option affects how MAPublisher formats numbers (e.g. use comma or point as a decimal separator). Use the operating system local settings or specify a different language and country

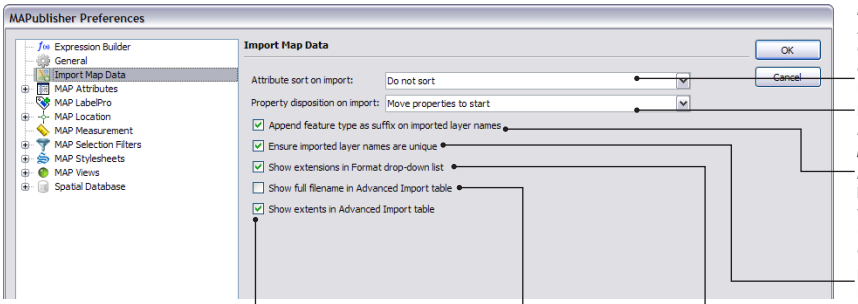
Sorting Style - Set to *Name, then type* for an alphabetical sorting. Set to *Type, then name* to first sort the layers per data type (Legend, Text, Point, Line or Area)

Pinned map units - The selected map units are listed first in the unit drop-down lists of MAPublisher (e.g. in Scale Bar or Buffer Lines dialog boxes).

Max recent map units - Maximum number of map units memorized by MAPublisher.

Import Map Data Preferences

The Import Map Data preference category allows users to sort the order of the attributes columns upon import. By default, attributes are imported in the same order as in the source GIS data file and the MAPublisher #Property attributes are created in front of the imported attributes (see chapter 5 for additional information)



Attribute sort on import - Set to *Do not Sort* to maintain the attributes order of the source GIS file. Set to *Order attributes alphabetically* to apply this new ordering.

Property disposition on import - Set to *Move properties to start* or *Move properties to end*.

Append feature type as suffix on imported layer names - By default, the feature type is appended to the layer name (e.g. '_area' or '_point'). Clear this check box to prevent this behaviour.

Ensure imported layer names are unique- By default, MAPublisher appends a number 1, 2 etc... to an imported layer name if the layer name already exists. Clear this check box to prevent this behaviour.

Show extents in Advanced Import table - Check this option to display the data extents (lower left and upper right corners coordinates).

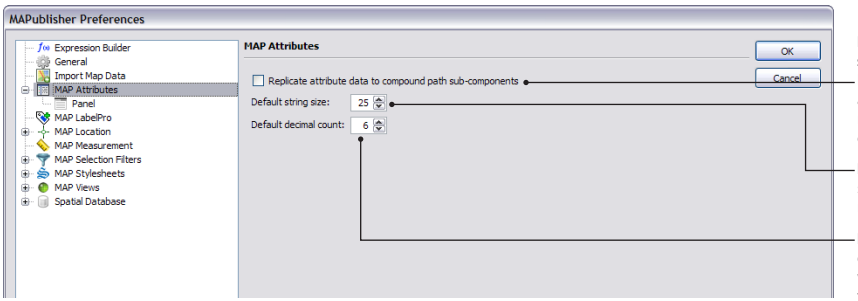
Show full file name in Advanced Import table - The Advanced Import table shows the list of selected files for import. By default, only the file name is displayed. Check this option to display the full path.

Show extensions in Format drop-down list - By default, the Format drop-down list in the Simple and Advanced Import dialog boxes shows the format extensions (e.g. '.shp'). Clear this check box not to display format extensions.

MAP Attributes Preferences

The MAP Attributes preference category does not contain general settings but has a sub-category for the MAP Attributes panel (see chapter 5 for a full description of the MAP Attributes panel).

MAP Attributes Preferences



Replicate attribute data to compound path sub-components - Enable this option before import or creating new attributes so that the attributes do not get broken when releasing a compound path (see chapter 5).

Default string size - Specify the default string size applied when creating a new attribute of type S String.

Default decimal count - Specify the default number of decimals applied when creating a new attribute of type R Real.

MAP Attributes > Panel Preferences:

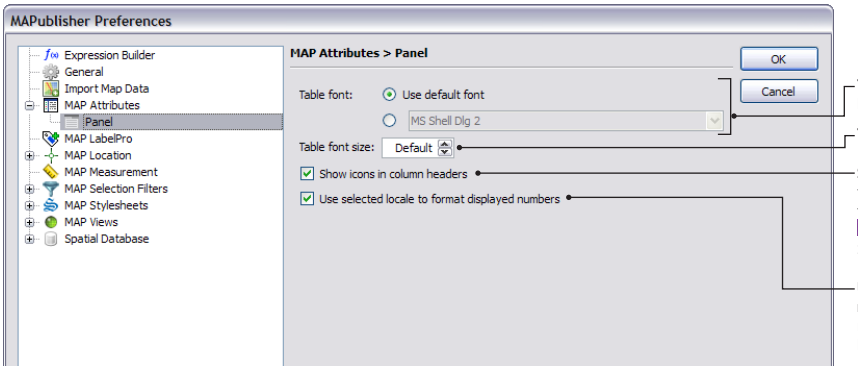


Table font– Set the text font for headers and attribute values.

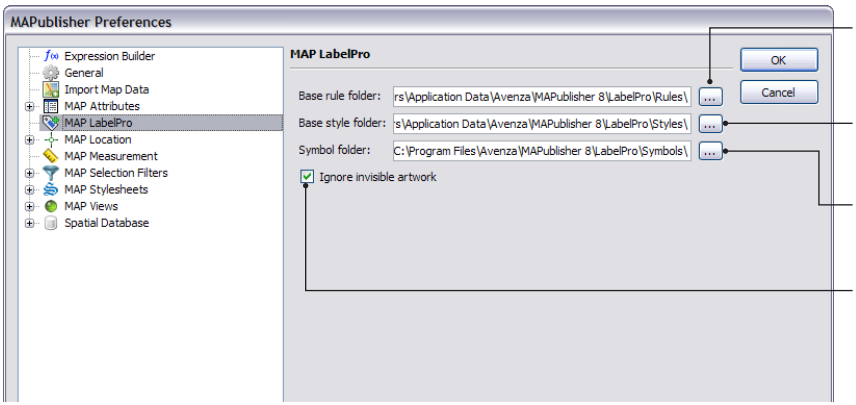
Table font size– Set the text font size.

Show icons in column headers – Enable this option to display the data type in front of the attribute column name (B Boolean, I Integer, R Real, S String).

Use selected locale to format displayed numbers – Enable this option to apply number formats compliant with the locale set in the *General* preferences.

MAP LabelPro Preferences

The MAP LabelPro preference category contains general settings to save the path access to saved rules, styles and symbol folders (see chapter 18 for more information on MAP LabelPro).



Base rule folder – Directory path to the rule folder. Click the browse button ... to open a folder browser and change the path.

Base style folder – Directory path to the style folder. Click the browse button ... to open a folder browser and change the path.

Symbol folder – Directory path to the symbol folder. Click the browse button ... to open a folder browser and change the path.

Ignore invisible artwork – Enable this option to ignore individual invisible artwork. If this option is disabled, individual invisible artwork will be taken into account as labelling source and obstacle.

NOTE: The default directories for the rule, style and symbol folder are as follow:

- Default rules and styles folders—respectively *Rules* and *Styles* subfolders in the directory:

Windows XP: *C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8\LabelPro\..*
Windows Vista / 7: *C:\ProgramData\Avenza\MAPublisher 8\LabelPro\..*
Mac OS X: *Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/LabelPro/..*

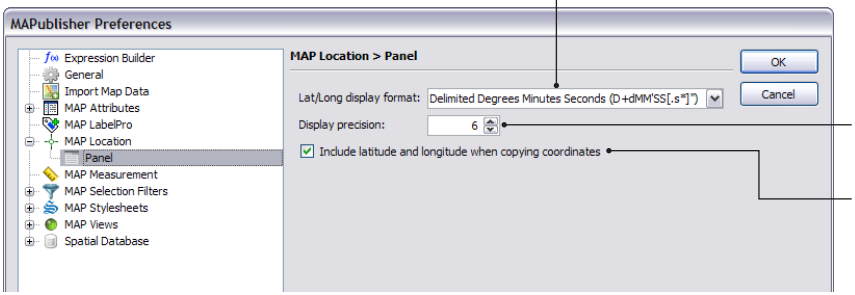
- Default symbol folder:

Windows XP: *C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8\LabelPro\Symbols*
Windows Vista / 7: *C:\ProgramData\Avenza\MAPublisher 8\LabelPro\Symbols*
Mac OS X: *Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/LabelPro/Symbols*

MAP Location Preferences

The MAP Location preference category does not contain general settings but has a sub-category for the MAP Location Tool panel (see chapter 4 for a full description of the MAP Location Tool).

MAP Location > Panel Preferences:



Lat/Long display format- Set the latitude and longitude display format:

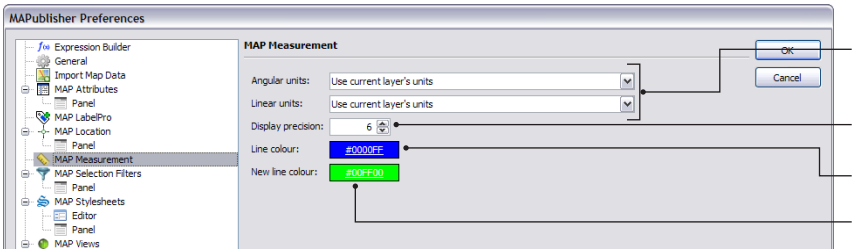
- *Decimal degrees*
- *Delimited Degrees Minutes Seconds*
- *Degrees.Minutes*
- *Degrees.MinutesSeconds*
- *Packed DMS with decimal point*
- *Packed DMS*

Display precision - Set the number of decimals shown on the MAP Location Tool panel.

Include latitude and longitude when copying coordinates - Enable this option to copy the positions in both projected (WX, WY) and geodetic coordinates (longitude, latitude) when using Shift+click in the MAP Location Tool panel (see chapter 4).

MAP Measurement Preferences

The MAP Measurement category contains display settings for the MAP Measurement Tool (see chapter 7 for details).



Angular/Linear units - Choose to use the current layer units or select a specific unit in the drop-down lists.

Display precision - Set the number of decimals shown on the MAP Measurement annotations

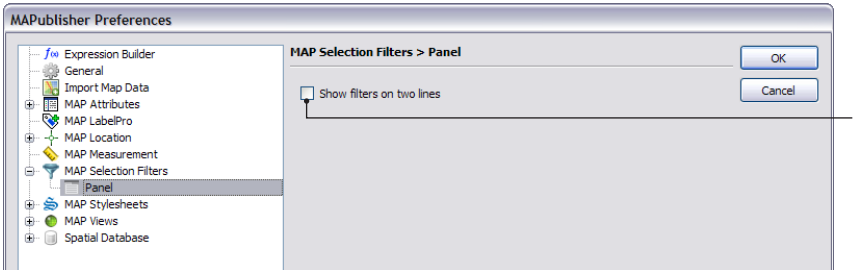
Line colour - Set the colour of the digitized measurement path.

New line colour- Set the colour of the current segment (between last digitized point and current mouse position).

MAP Selection Filters Preferences

The MAP Selection Filters preference category does not contain general settings but has a sub-category for the MAP Selection Filters panel (see chapter 11 for a full description of the MAP Selection Filters panel).

MAP Selection Filters > Panel Preferences

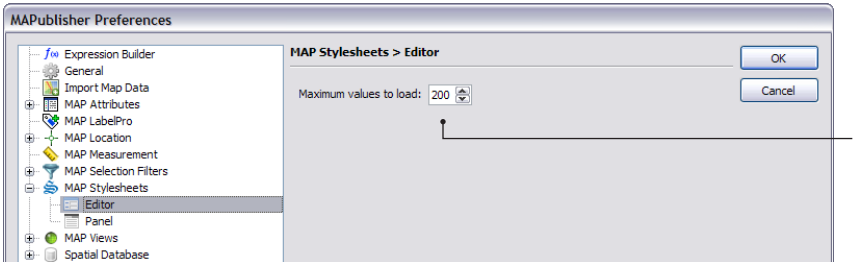


Show filters on two lines - Enable this option to display the selection filter name and its expression on two separate lines.

MAP Stylesheets Preferences

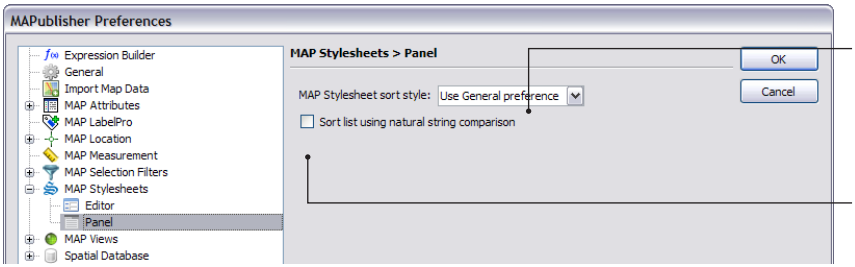
The MAP Stylesheets preference category does not contain general settings but has sub-categories for the MAP Stylesheets editor and panel (see chapter 9 for a full description of the MAP Stylesheets editor and panel).

MAP Stylesheets > Editor Preferences:



Maximum values to load - Maximum number of attribute values that are loaded in list of values of the Simple Expression dialog box..

MAP Stylesheets > Panel Preferences:



MAP Stylesheet sort style – By default, the General sorting style is applied (option *Use General preference*). Set to *Name, then type* for an alphabetical sorting. Set to *Type, then name* to first sort the layers per data type (Legend, Text, Point, Line or Area).

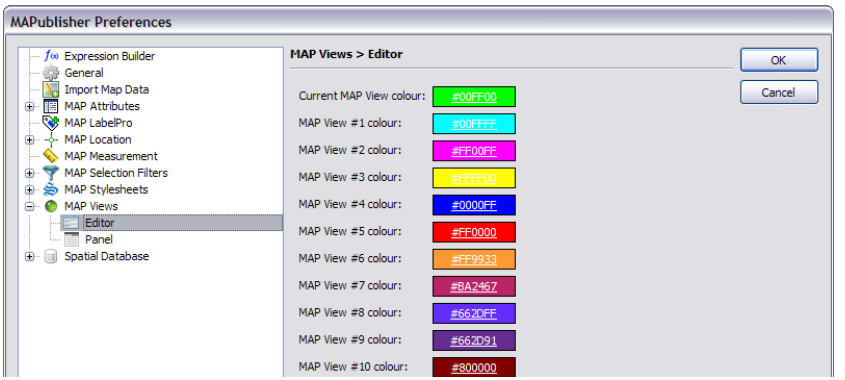
Sort list using natural string comparison – Enable this option to use the natural sorting for layer and MAP Stylesheet names using numbers (e.g. 1,2,10 instead of 1, 10, 2).

MAP Views Preferences

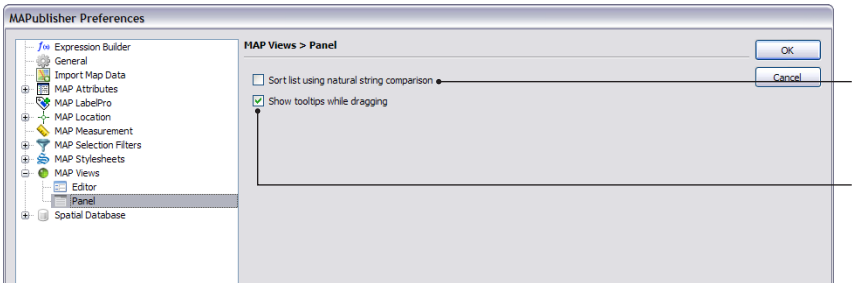
The MAP Views preference category does not contain general settings but has sub-categories for the MAP Views editor and panel (see chapter 4 for a full description of the MAP Views editor and panel).

MAP Views > Editor Preferences:

In the MAP Views Editor, the Preview Pane allows to display up to 10 MAP Views represented in different *Coloured boxes* . The MAP Views Editor preference property sheet allows to customize the colour of these coloured boxes.



MAP Views > Panel Preferences:



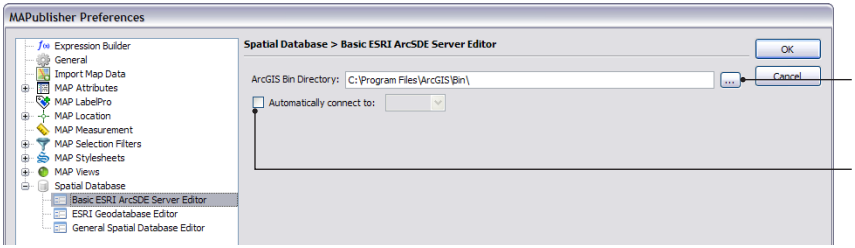
Sort list using natural string comparison – Enable this option to use the natural sorting for layer and MAP Stylesheet names using numbers (e.g. 1,2,10 instead of 1, 10, 2).

Show tool tips while dragging – When dragging a layer from one MAP View to another, a tooltip displays information on the destination MAP View. Clear this check box to prevent tool tips to be displayed.

Spatial Database Preferences

The MAPublisher Spatial Database preference category does not contain general settings but has three sub-categories: *Basic ESRI ArcSDE Server Editor, ESRI Geodatabase Editor* and *General Spatial Database Editor* (see chapter 19 for a full description of the MAPublisher Spatial Database).

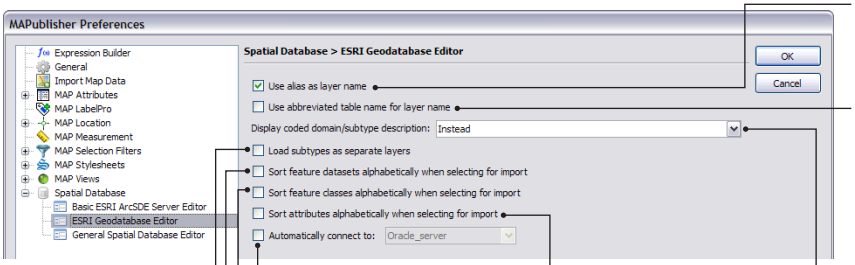
Spatial Database > Basic ESRI ArcSDE Server Editor Preferences:



ArcGIS Bin Directory – Specify the location where the ArcGIS software is installed. Click the browse button ... to open a folder browser and change the path.

Automatically connect to – Check this option to automatically connect to a specific server connection, selected in the drop-down list.

Spatial Database > ESRI Geodatabase Editor Preferences:



Use alias as layer name – Enable this option to use feature classe's alias name rather than its true name

Use abbreviated table name for layer name - ArcSDE geodatabases' tables are identified as *databaseName.userName.tableName*. The abbreviated version uses only the table name as layer name.

If this option is used in combination with the "use alias" option, the alias is applied first.

Display coded domain/subtype description - Option to import attributes with coded values from subtypes and attribute domains as follow:

- *Instead:* replace the codes by their description (text);
- *Never*: import actual values—codes.
- *In Addition:* create two attribute columns, one with the coded values and one with the descriptions.

Load subtypes as separate layers– Enable this option to use create new layers per subtype.

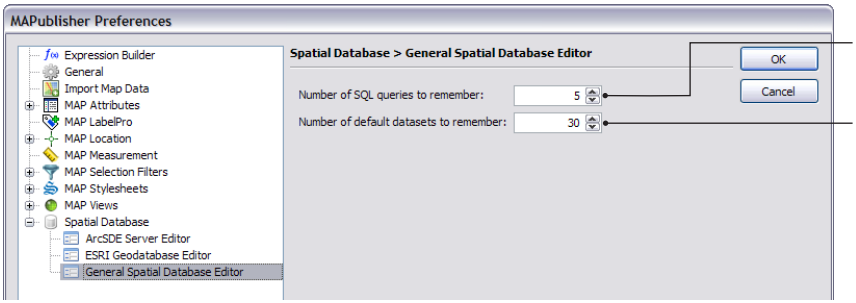
Sort feature datasets alphabetically when selecting for import – Enable this option to sort feature datasets alphabetically in the import dialog boxes.

Sort feature classes alphabetically when selecting for import – Enable this option to sort feature classes alphabetically in the import dialog boxes.

Sort attributes alphabetically when selecting for import – Enable this option to sort attributes alphabetically in the import dialog boxes.

Automatically connect to – Check this option to automatically connect to a specific server connection, selected in the drop-down list.

Spatial Database > General Spatial Database Editor Preferences:

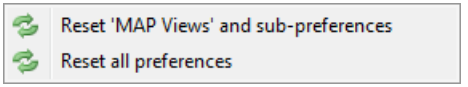


Number of SQL queries to remember – Select the number of queries memorized in the Recent category.

Number of default datasets to remember – Select the number of default datasets saved in memory for later use.

RESET MAPUBLISHER PREFERENCES TO DEFAULT SETTINGS

MAPublisher Preferences can be reset directly from the MAPublisher Preferences dialog box. A right click on a category will display the choice to reset the preference setting of this category or the entire MAPublisher Preferences.



MAPublisher Preferences will also be reset if the Adobe Illustrator preferences are reset or deleted. Adobe often recommends this to solve some problems with the application. Adobe Illustrator preferences are reset by doing one of the following:

- Press and hold **Alt+Control+Shift** (Windows) or **Option+Command+Shift** (Mac OS) as Adobe Illustrator is starting. The current settings are deleted.
- Remove or rename the *AIPrefs* file (Windows) or *Adobe Illustrator Prefs* file (Mac OS). New preferences files are created the next time Adobe Illustrator is restarted.

Preparing the Workspace

Before you can start using MAPublisher, you must first set up your Adobe Illustrator document. It is at this point that you define your page size and units, set your print orientation and generally prepare your Adobe Illustrator workspace.

Establish the desired page size and orientation before importing map data as MAPublisher will establish georeferencing based on the current page. However editing page dimensions after import will maintain correct georeferencing based on the new page dimensions.

SETTING UP YOUR DOCUMENT

1. Create a new Adobe Illustrator document by selecting *File* > *New,* or Select *File* > *Document Setup* if you already have a blank document open - The Adobe Illustrator Document Setup dialog box appears.

2. Select the size to use for your page. Letter (8.5" x 11") is the default size*. You may wish to change the orientation to landscape for some files. For example, a map of Chile may be best displayed in portrait but a map of Indonesia may be best displayed in landscape.

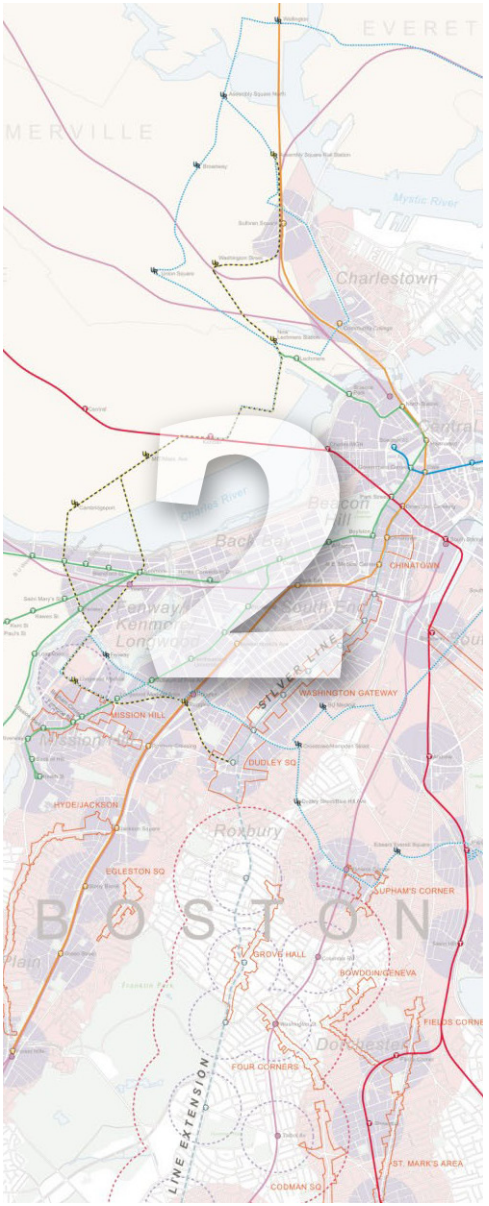
3. Select your desired page units. The default unit type is Points.

4. Ensure the page origin is at 0,0. To do this, select *View* > *Show Rulers*. Double-click the top left corner of the rulers where the vertical and horizontal rulers intersect.

For more information and details regarding these operations please refer to your Adobe Illustrator User Guide.

** In step 2 the default page size of 8.5" x 11" is for North American versions of Adobe Illustrator. Other language versions of Adobe Illustrator may have different default page sizes. Consult your Adobe Illustrator User Guide for more information.*

NOTE: When using Adobe Illustrator CS3, the document size should not exceed a limit of 200 inches by 200 inches (200" equals 5080 mm, 508 cm, 14400 points, 1200 picas, 14400 pixels). Passed this limit, some MAPublisher tools may not operate properly (shift in positioning) due to some issue with this version of Adobe Illustrator. Note that the maximum length and width dimension for an Adobe Illustrator document is 227.5416 inches.



Map Data File Formats

MAPublisher 8 imports and exports most of the GIS industry leading vector file formats:

Import Formats
CAD (*.dxf) (*.dwg)
Digital Line Graph (*.dlg) (*.opt)
ESRI ArcInfo Generate (*.gen)
ESRI Interchange File (*.e00)
ESRI Shapefile (*.shp)
GML (Simple Features 2.0 +)
MapInfo Interchange (*.mif / *.mid)
MapInfo Table (*.tab)
MicroStation Design (*.dgn) *Not supported under Mac PPC/Rosetta*
Delimited Text Data (*.txt) (*.csv) (*.tsv)
KML (*.kml,*kmz)
S-57 (*.000)
Spatial Data Transfer Standard (SDTS) (*.ddf)
TIGER/Line (*.rt1) (*.bw1)
Basic ESRI ArcSDE Server
ESRI ArcSDE Geodatabase
ESRI File Geodatabase (*.gdb)
ESRI Personal Geodatabase (*.mdb)

Export Formats
CAD (*.dxf) (*.dwg)
ESRI Interchange File (*.e00)
ESRI ArcInfo Generate (*.gen)
ESRI Shapefile (*.shp)
GML (Simple Features 3.1.1)
MapInfo Interchange (*.mif / *.mid)
MapInfo Table (*.tab)
MicroStation Design (*.dgn)
Delimited Text Data (*.txt) (*.csv) (*.tsv)
KML/KMZ (*.kml/*.kmz)

This section provides an overview of the supported formats. For an in-depth analysis of further considerations when using these formats during Import, please see appendix A1.

Import and Export Supported Data Formats

DATA FORMAT DESCRIPTIONS

AutoCAD Drawing (*dwg) and Drawing Exchange (*.dxf)

Import and Export

These file types are most commonly created by Autodesk AutoCAD product, though other software programs such as Bentley MicroStation and various other computer-aided design (CAD) programs are capable of creating files in this format. There are two formats used by AutoCAD: DXF (drawing exchange format) files, which are large, and ASCII representations of the binary DWG (drawing) files. Logically, both files are identical and, therefore, MAPublisher treats both file types in the same manner. AutoCAD files consist of drawing settings and configurations, as well as a series of entities, or graphic elements, organized into layers. MAPublisher provides broad support for many AutoCAD entity types and options. Prior to import set the colour mode of the Adobe Illustrator document to the same scheme used in the colour table of the CAD file (i.e. RGB or CMYK) to ensure colours are imported correctly.

Note the hierarchy of layers in multi-feature imports is by feature type: text layers, then point, then line, then area layers.

Digital Line Graph (*.dlg) (*.opt)

Import only

The USGS (United States Geological Survey) DLG file structure is designed to accommodate categories of spatial data represented on a conventional line map. Node (point), line, and area data types are accepted. The attribute coding scheme is designed to accommodate basic cartographic data categories such as hypsography, hydrography, or political and cultural features, as well as additional thematic data categories.

Delimited Text Data (*.txt) (*.csv) (*.tsv)

Import and Export

MAPublisher also supports the import of Delimited Text Data held in a variety of tabular file formats, as long as the data contains coordinate values. File types supported are Text (.txt), Tab Separated (.tsv) and Comma Separated (.csv) files. Import Settings dialog box: In order to import point data with MAPublisher the parameters must be set by clicking the Settings' button. This operation is required to choose the columns of the selected attribute file that will be used to derive the X and Y coordinates of the data, and ensure correct georeferencing. These and further settings are discussed in chapter 6 and in the Delimited Text Data Settings section in appendix A1.

ESRI ArcInfo Generate (*.gen)

Import and Export

ArcInfo Generate files are created by ESRI ArcInfo product, and have a simple ASCII *from x-y to x-y* format. Due to its simplicity you can also use a text editor such as Notepad to create text files and save them with a *.gen extension, which can then be imported with MAPublisher.

ESRI Interchange File (*.e00)

Import and Export
ESRI Interchange File files are created by ESRI ArcInfo product. A single E00 file describes a complete ArcInfo coverage. The file itself is actually an archive of several smaller files, or sub files, which will have fixed names and follow a predefined data format. MAPublisher will reproduce these sub files as distinct Adobe Illustrator layers on import. Therefore importing a single e00 import can result in the generation of point, area, line and text layers.

Note the hierarchy of layers in multi-feature imports is by feature type: text layers, then point, then line, then area layers.

ESRI Shapefile (*.shp)

Import and Export
Shapefiles are most commonly created by ESRI ArcGIS or ArcView. Shapefiles store both geometry and attributes for features, and a single shapefile will consist of at least three physical files. The .shp portion contains the geometric data, the .dbf contains attributes for the geometric data, and the .shx contains the index information. All three files are required in order to successfully import a shapefile to Adobe Illustrator using MAPublisher. There is also usually a .prj file, which holds the coordinate system information of the shapefile and will automatically be read by MAPublisher on import. If your shapefile folder does not contain a .prj file you will be required to specify the coordinate system in order to fully utilize MAPublisher. The important things to remember when importing Shapefiles are that the .shp file must be the one that is selected through the MAPublisher import filter and that all its component files must be in the same folder. You may also find that your Shapefile directory comes with two extra files, a .sbn and a .sbx, which hold the spatial index for the geometric data. These two files will not exist unless the Shapefile was created with an ESRI product, and are not necessary for successful import with MAPublisher.

GML (Simple Features 2.0+)

Import and Export
The Geographic Markup Language (GML) was designed as a geographic interface language for the Geo-Web. It is currently in draft as an ISO standard (ISO 19136). The goal of the format is to provide users with a set of abstract base objects that can be built into working real world dataset. It uses as XML base to store geometry and feature information that can easily be transported across the Internet.

The *GML Simple Feature Profile* was created by the Open Geospatial Consortium (OGC) as a restricted but useful subset of the GML specification. It provides a reduced geometry and metadata profile that can be shared across many GIS tasks. This simple feature model can be used as a base to generate local application profiles for a specific work area. Since the GML models base abstract classes, these application profiles (schemas) are required for accessing and processing any GML datasets. GML data has a ***.gml** extension, and requires a attributes schema file ***.xsd**. Some GML files may have their .xsd file referenced to a URL path, we recommend to copy the xsd files locally, to avoid error messages upon import when no internet connection is available.

Users have two options to store their .gml and .xsd files: they can be both located in a same directory or the xsd files can be kept in the MAPublisher GML Schema directory found here:
Windows XP, Vista and 7: *C:\Program Files\Avenza\MAPublisher 8\Data Source Files\GMLSchema*
Mac OS X: */Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/Data Source Files/GMLSchema*

The second option is the most practical if all the GML files are using a same schema (only one instance of the xsd file needs to be saved).

Installed with MAPublisher are three default xsd files:

- *xml.xsd,* generic GML attribute schema.
- *nen3610.xsd* and *top10nl.xsd,* models standardized in the Netherlands (maintained by the Dutch topographic office Kadaster).

GML files with a missing xsd file or with an invalid attribute schema will cause a *GML validation error* upon import (see chapter 3). Users have the option to either find the appropriate xsd file and copy it to the GML Schema directory or to the GML file directory, or to disable the GML validation. This option will assign a type string to all attributes. See chapter 3 *Importing Map Data* for more details on these settings.

MAPublisher supports the import of simple features (points, lines, polygons, donuts, and aggregates) in GML 2.0 and later versions. MAPublisher supports export to GML 3.1.1.

KML/KMZ (*.kml, *kmz)

Import and Export

Keyhole Markup Language (KML) is an XML-based language for managing the display of three-dimensional geospatial data in the programs Google Earth, Google Maps, Google Mobile and WorldWind. The KML file specifies a set of features for display. Each feature always has a longitude and a latitude and can have other data, such as tilt, heading, and altitude. KML shares some of the same structural grammar as GML. KML files are very often distributed as KMZ files, which are zipped KML files with a .kmz extension. MAPublisher imports and exports both file type based on the KML version 2.2. specifications.

MapInfo Interchange (*.mif/*.mid)

Import and Export

Files of this type are most commonly created by the MapInfo product, though other products, including MAPublisher, are also capable of generating files in this format. These files exist in pairs where each file has the same name but ends in either a .mif or .mid file extension. The .mif portion contains the vector geometric data, and the .mid contains the associated attributes. Both files are required in order to successfully import a file of this format to Adobe Illustrator using MAPublisher. The important things to remember when importing MapInfo files are that the .mif file must be the one that is selected through the MAPublisher import filter and that both files must be in the same folder. MAPublisher will automatically locate and deal with the .mid file.

MapInfo Table (*.tab)

Import and Export

The TAB format is a simple, non-topological format for storing the geometric location and attribute information of geographic features, and is an integral part of the MapInfo product. The TAB format defines the geometry and attributes of geographically-referenced features in several files with specific file extensions that are stored in the same folder on disk. They are:

.tab: main file: table structure in ASCII format.
.map: the file that stores the feature geometry.
.id: the file that stores the index of the feature geometry.
.dat: the dBASE file that stores the attribute information of features.
.ind: table field indexes (if necessary)

The geometry of each feature is stored as a shape that comprises a set of vector coordinates. The attributes for each feature are stored as a record in a dBASE table (.dat) associated with the Shapefile (.map). There is one record in the dBASE table for each feature in the map file. Raster TAB files cannot be imported in MAPublisher.

To ensure successful import, select the .tab component in the MAPublisher importers.

MicroStation Design* (*.dgn)

Import and Export

MicroStation Design files (.dgn) are the native files created by Bentley Systems Inc. (and formerly Intergraph) MicroStation product. Design Files consist of a header, followed by a series of elements. The header contains global information including the transformation equation from design units to user coordinates, as well as the dimension of the elements in the file. Each element contains standard display information, such as its colour, level, class, and style, as well as a number of attributes specific to its element type. During the import process MAPublisher will reproduce .dgn levels as distinct Adobe Illustrator layers. Therefore a typical single import will produce one layer for each Level that exists in the MicroStation Design File.

MAPublisher supports the import of MicroStation J (version 7) and V8 files, however attached raster file will not be imported (they are ignored). Prior to import set the colour mode of the Adobe Illustrator document to the same scheme used in the colour table of the original file (i.e. RGB or CMYK) to ensure that the colours are interpreted correctly upon import.

The hierarchy of layers in multi-feature imports is by feature type in the following order: text layers, then point layers, then line layers, then area layers. Raster files attached to DGN files are ignored during the import process.

Files are exported to DGN from MAPublisher as MicroStation J files. Upon export, users may select a dgn seed file. All information in the seed file gets carried over to the output file, such as level (layer) definitions, units, colors, line styles definitions, etc. If an exported layer name matches a level name in the seed file, the data of that layer is appended to the existing level, if not, a new level is created.

S-57 (*.000)

Import only

S-57 is referring to the IHO (International Hydrographic Office) Special Publication number 57 related to the *IHO transfer standard for Digital Hydrographic Data* . Maintained by the IHO, S-57 format is intended for the exchange of digital hydrographic data between national hydrographic offices and for its distribution to manufacturers, mariners and other data users. It is used for the supply of ENC cells (Electronic Navigational Charts) to ECDIS (Electronic Chart Display and Information System). The objects spatial geometry can be of Point, Line or Area geometry, while object descriptions are categorized in object classes, organized in specific attributes schemas. To make full use of this format, refer to the online object catalog available on *www.s-57.com*.

MAPublisher imports non-encrypted S-57 data into MAP layers named per S-57 object acronym, of type Area, Line or Points. All S-57 Attributes are converted into MAP Attributes.

An Adobe Illustrator template is supplied to automatically style the map after import. The template contains a series of MAPublisher stylesheets linking S-57 imported features to nautical symbols and graphic styles (libraries provided by Avenza). This representation is non-exhaustive and meant to assist users with limited knowledge of the S-57 format to interpret the data contents more easily. The S-57 template and the symbols and graphic styles libraries can be found in the MAPublisher *Helpful Styles & Symbols* folder (see Appendix 4).

Spatial Data Transfer Standard SDTS (*catd.ddf)

Import only

Digital cartographic products of the USGS are available in the Spatial Data Transfer Standard format, and are generally distributed over the Internet as a means of promoting the standard. For SDTS import, select the *catd* file (xxxxcatd.ddf), which is the index file that contains a description of the other files in the SDTS transfer. Individual DDF files cannot be imported. Generally all SDTS downloads will contain the CATD file.

TIGER/Line (*.rt1) (*.bw1)

Import only

TIGER is an abbreviation of T*opologically Integrated Geographic Encoding and Reference System*, and was developed by the U.S. Census Bureau. TIGER/Line files are a digital database of geographic features, such as roads, railroads, rivers, lakes, political boundaries, census statistical boundaries, etc., that cover the entire United States. The database contains information about these features such as their location in latitude and longitude, the name, the type of feature, address ranges for most streets, the geographic relationship to other features, and other related information. TIGER/Line files are the public product created from the Census Bureau TIGER database of geographic formation. TIGER was developed in order to support the mapping and related geographic activities required by the census and sample survey programs. More information on the TIGER/Line file format and data product can be found on the US Census web page at: *http://www.census.gov/geo/www/tiger/*

MAPublisher considers the .rt1 or .bw1 file as the TIGER dataset. Even though each county will consist of a series of files with a common base name, there may be a number of different extensions. Remember to select the .rt1 or .bw1 file when importing TIGER data.

Basic ESRI ArcSDE Server† (Optional Add-On For MAPublisher 8.2)

Import only

ArcSDE geodatabases are multi-user ESRI spatial databases, that allow users to store, use, and manage their GIS data in one of the following commercial database management systems (DBMS): IBM DB2, IBM Informix, Microsoft SQL Server, or Oracle. They are available in three levels of flexibility: desktop, workgroup and enterprise. The *Basic ESRI ArcSDE Server* import option allows users who have a free ESRI desktop application called ArcReader to import feature classes from ArcSDE geodatabases, but with some limitations on the selection functions — see chapter 19 relative to spatial databases for more information.

† Basic ESRI ArcSDE Servers are not supported on MAC OS due to limitations of the related ESRI libraries.files.

ESRI ArcSDE Geodatabase† (Optional Add-On For MAPublisher 8.2)

Import only

ArcSDE geodatabases are multi-user ESRI spatial databases, that allow users to store, use, and manage their GIS data in one of the following commercial database management systems (DBMS): IBM DB2, IBM Informix, Microsoft SQL Server, or Oracle. They are available in three levels of flexibility: desktop, workgroup and enterprise. The *ESRI ArcSDE Geodatabase* import option allows users who have ArcGIS software and a valid license to import all ArcSDE geodatabase types with advanced options for the selection — see chapter 19 relative to spatial databases for more information.

† ESRI ArcSDE Geodatabases are not supported on MAC OS due to limitations of the related ESRI libraries.

ESRI File Geodatabase† (*.gdb) (Optional Add-On For MAPublisher 8.2)

Import only

A File Geodatabase is a native ESRI single-user spatial database. It is a collection of various types of GIS datasets held in a file system folder. This is the recommended native data format for ArcGIS — see chapter 19 relative to spatial databases for more information. This function requires ArcGIS software and a valid license.

† ESRI File Geodatabases are not supported on MAC OS due to limitations of the related ESRI libraries.

ESRI Personal Geodatabase† (*.mdb) (Optional Add-On For MAPublisher 8.2)

Import only

A Personal Geodatabase is a native ESRI single-user spatial database. This is the original data format for ArcGIS geodatabases stored and managed in Microsoft Access data files — see chapter 19 relative to spatial databases for more information. This function requires ArcGIS software and a valid license.

† ESRI Personal Geodatabases are not supported on MAC OS due to limitations of the related ESRI libraries.

DATA CONSIDERATIONS

When obtaining GIS data for use with MAPublisher, whether from an online source, commercial vendor, government office or from an internal source within your organization, there are a number of important considerations to keep in mind.

First and foremost you should always endeavour to obtain data in one of the formats supported by the MAPublisher Importers (see above). In cases where the file format native to a particular mapping application is not supported by MAPublisher, you can often request the data provider to export a file in one of the supported formats.

When obtaining data you should acquire as much metadata about the files as possible. MAPublisher deals with data in the following manner: Unprojected data will be imported by MAPublisher with latitude and longitude map anchors, which will therefore range from (x) -180 to 180, (y) -90 to 90.

If you receive projected data you should be aware of the following. MAPublisher will import projected data with a true scale and appropriate map anchors. Unlike unprojected data, these map anchors will not be in lat/long, but rather in a coordinate system appropriate for the particular projection. For most file formats the name of the projection, datum, and units will be recognized by MAPublisher. However if the program cannot find this information in the data, and you wish to subsequently reproject your data, you will be required to specify the coordinate system.

Additionally, please be aware that MAPublisher is a 2D mapping program. Therefore if you attempt to import 3D data with MAPublisher it will be converted to two dimensional artwork by the importers.

NOTE: Data provided in a generic latitude and longitude (unprojected) coordinate system will usually be recognized as a WGS 84 (World Geodetic System 1984 - EPSG = 4326) coordinate system by the MAPublisher importers.

Importing Map Data

The Import filters are the starting point for most users wanting to work with GIS map data in Adobe Illustrator. These filters are used to import GIS data files, set the initial map scale and define your cartographic workspace to start making maps.

MAPublisher 8 supports import of the following GIS data formats:

CAD (*.dxf) (*.dwg)
Digital Line Graph (*.dlg) (*.opt)
ESRI ArcInfo Generate (*.gen)
ESRI Interchange File (*.e00)
ESRI Shapefile (*.shp)
GML (Simple Features 2.0 +)
MapInfo Interchange (*.mif / *.mid)
MapInfo Table (*.tab)
MicroStation Design (*.dgn)
Delimited Text Data (*.txt) (*.csv) (*.tsv)
KML/KMZ (*.kml,*kmz)
S-57 (*.000)
Spatial Data Transfer Standard (SDTS) (*.ddf)
TIGER/Line (*.rt1) (*.bw1)
Basic ESRI ArcSDE Server†
ESRI ArcSDE Geodatabase†
ESRI File Geodatabase† (*.gdb)
ESRI Personal Geodatabase† (*.mdb)
See chapter 2 for a description of these formats.

Two import filters will be discussed in detail in this section:

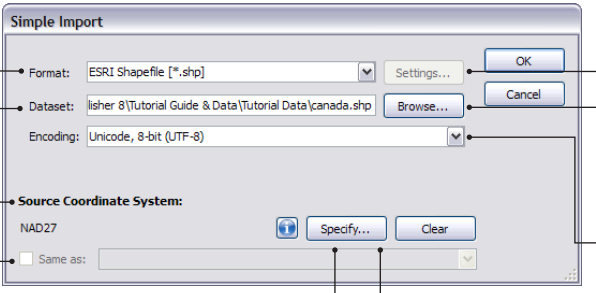
Simple Import: This filter is designed to provide a fast way to import one file, or several files of the same data format and coordinate system into Adobe Illustrator.

Advanced Import: This filter provides functionality to import a number of files of differing data type and/or coordinate systems into Adobe Illustrator.

† Import settings for ESRI geodatabases formats are covered in chapter 19.

Simple Import

File > Import Map Data > Simple and *MAP Toolbar*



Format - Select the data type you wish to import. This drop-down list shows the names of all MAPublisher supported data types.

Dataset - Displays the directory path and filename for the currently selected file(s). You can also manually type in the dataset location here.

Source Coordinate System - Provides a description of the coordinate system and units detected in the data source.

Same as - Check this option in order to assign a coordinate system that matches that of an existing MAP View.

Specify - If the coordinate system of the selected file(s) is known, but it was not automatically detected by the program, click here. This will open the *Specify Source Coordinate System* dialog box (below).

Clear - Click this button to clear the existing source coordinate system.

Settings - Opens a *Settings* dialog box if the file format requires the input of extra parameters, such as for the import of DGN, DXF, DWG, E00, GML, KML, MIF/MID, Tab and Delimited Text Data (see facing page).

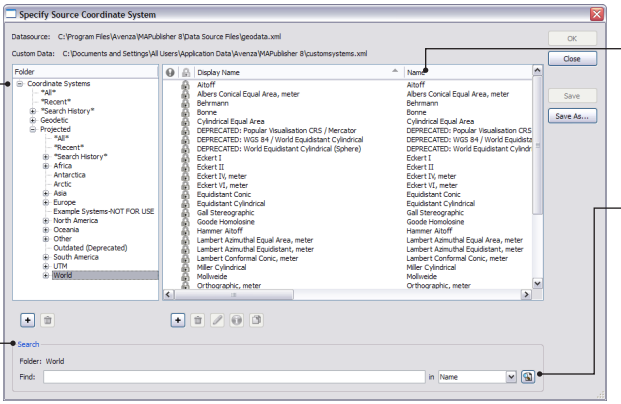
Browse - Opens a Data Source browser to enable the selection of files for import.

Character Encoding - Assign a codec if the attribute information held in the selected dataset uses a double byte character set.

RELATED TOOLS

Specify Source Coordinate System

Accessed via the **Specify** *button.*



Coordinate Systems - Choose a category appropriate to the data to be imported. To view all of the coordinate systems select *All*. For a list of the last 10 coordinate systems used, select *Recent*.

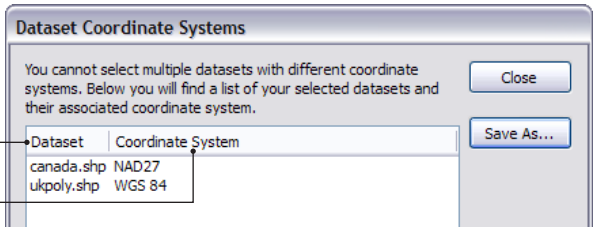
Search - Specify a text string to search the database for coordinate systems. Results are displayed in the *Search* category.

Coordinate System Information - This area shows information about the coordinate systems. (i.e. Name, Type, Envelope, EPSG Code). To choose a known source coordinate system select it from this list.

Search - Click this button and your search results will be populated.

Dataset Coordinate Systems

Automatically opens if multiple datasets have been selected and they do not have a matching coordinate system.

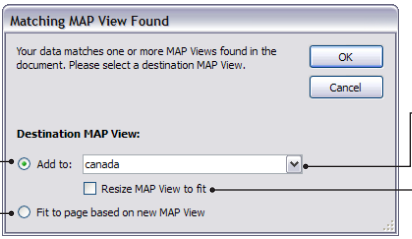


Dataset - List of all the datasets selected for import.

Coordinate System - List the coordinate system of each individual dataset.

Matching MAP View

Automatically opens if there is already a coordinate system in your document which matches the incoming data.



Add to - Add the incoming data file to a matching MAP View.

Fit to page based on new MAP View - Create a new MAP View for the imported data. Existing data and incoming data will be treated separately in terms of page scaling and position.

MAP View list - Select the matching coordinate system that you wish to align the incoming data to.

Resize MAP View to fit - Check this box to rescale the matching data so that both the selected layer and the incoming data fit inside the page extents.

IMPORT SETTINGS

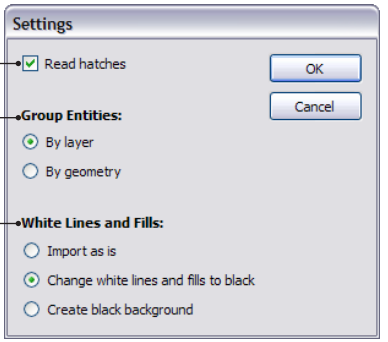
AutoCAD DXF/DWG Settings

Hatches - Check this box to read the hatch pattern on import .

Group Entities By - Group entities by layer name or geometry.

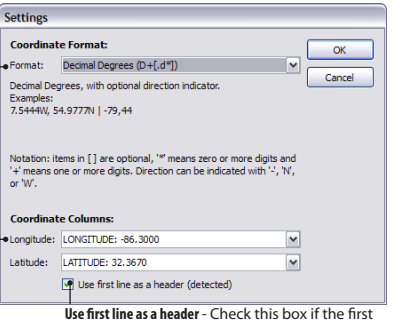
White Lines and Fills - Set the option:

- *Import as is:* import the data true to the original colour settings contained in the file.
- *Change white lines and fills to black*: import black lines instead of the files native white lines.
- *Create black background:* incorporate a layer containing a black background, to mimic the AutoCAD environment.



Delimited Text Data Settings

Coordinate Format - Select the coordinate format of the data to be imported (e.g. Decimal Degrees, Packed DMS... see chapter 6).



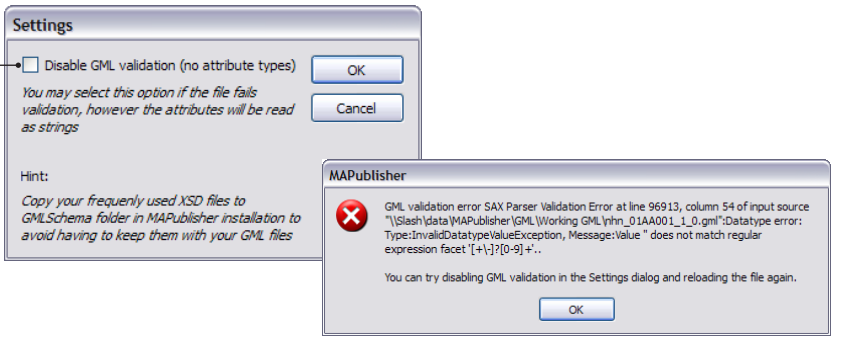
Use first line as a header - Check this box if the first line of the text file contains column headings.

Latitude/Longitude or **X/Y Columns** - These two drop-down lists hold the names of all the numeric columns in the selected file. Select the columns containing the coordinate information.

GML (Simple Features 2.0+) Settings

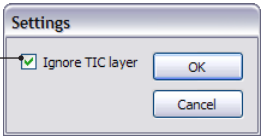
GML validation - GML validation must be disabled to import GML files with a missing .xsd file or with an invalid attribute structure.

If not disabled, a *GML validation error* will be displayed during the import of these files - as seen on the right.



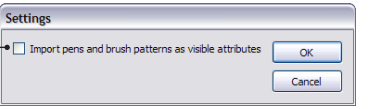
ESRI Interchange File Settings

Ignore TIC Layer - Enable not to create a *_tic_point* layer. Disable to create a layer holding the registration control points.



MapInfo TAB and MIF/MID Settings

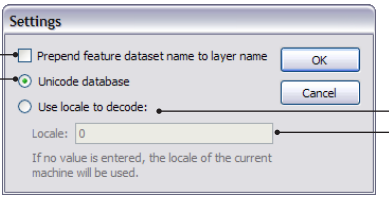
Pen and Brush Patterns - Enable this box to view the pen and brush pattern values in the imported attribute table.



Basic ESRI ArcSDE Server, ESRI ArcSDE Geodatabase, ESRI File Geodatabase and ESRI Personal Geodatabase

Prepend feature dataset name to layer name - Select this option to append feature dataset names to layer names.

Unicode database - Unless specific issues importing converted geodatabases, keep this option as default.



Use local to decode - This option might be required if the geodatabase was created by converting a file in a format not supporting unicode (e.g. ESRI shapefile) and if it contains non-ASCII characters.

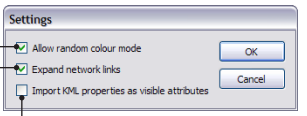
Locale - Specify the locale name (e.g. en-US), leave it as 0 to use the locale of the current machine.

THESE ARE ADVANCED SETTINGS, PLEASE CONTACT AVENZA SUPPORT AT *support@avenza.com* FOR ASSISTANCE.

KML/KMZ Settings

Allow Random Colour Mode - Enable this option to generate random colour settings for the data.

Expand Network Links - Enable this option to use of network linked KML files.



Import KML as Visible Attributes - Enable this option to import KML-specific attributes into the MAP Attributes panel as visible entities. When this option is disabled, these KML attributes are imported but are hidden in the MAP Attributes panel

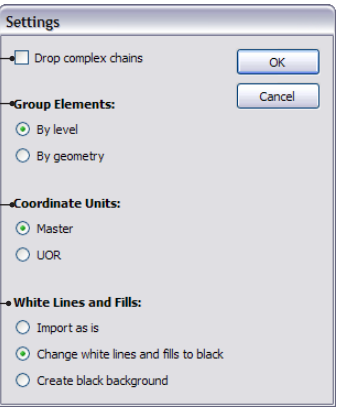
The KML attributes are Description and Address which are displayed in the MAP Attributes panel as *kmlDescription* (object description) and *kmlAddress* (object address).

MicroStation Design Settings

Complex Chains - Check the *Drop* box for each component of a complex chain to be returned as its own feature. Otherwise all elements of the complex chain will be merged into a single linear feature.

Group Elements - Choose how to group the elements. If elements are grouped by level, it may result in a large number of output files.

Coordinate Units - Specifies how feature coordinates will be interpreted and converted.



White Lines and Fills - Set the option:

- *Import as is:* import the data true to the original colour settings contained in the file.
- *Change white lines and fills to black*: import black lines instead of the files native white lines.
- *Create black background:*. incorporate a layer containing a black background, to mimic the Microstation environment.

SIMPLE IMPORT FUNCTIONALITY

The Simple Import function provides a fast, uncomplicated method of importing map data into Adobe Illustrator. Its purpose is for the map maker to import quickly a single piece of map data, or several files sharing the same format and coordinate system.

PREREQUISITES

In order to import data via Simple Import, an Adobe Illustrator document must first be created and setup appropriately. For example, a map of the world would fit well into a page with a landscape orientation, whereas a map of South America would fit best into a page with a Portrait orientation.
MAPublisher will interpret the artboard dimensions during the import process, and calculate a map scale for the document accordingly. If the document size is changed in the Adobe Illustrator document settings, the scale will have to be recalculated using the MAP View Editor (see chapter 4 for more information).

Some import options are specified in the **MAPublisher Preferences Import MAP Data** category, such as attribute order, layer naming convention or display of extents in the import dialogs. For a full description, please refer to chapter 1 on MAPublisher Preferences.

USING SIMPLE IMPORT

The MAPublisher Simple Import function is accessed from the Adobe Illustrator menu *File* > *Import Map Data* > *Simple Import* or from the MAPublisher toolbar button  .

Overview

The dialog box itself is split into two sections. The upper section allows to choose a file format, select the file to import, and enter any additional settings that may be required. The lower section displays the coordinate system of the selected file (if available) or allows to specify it manually if the file doesn't store this information.

Adding Files

First specify the format of the file to be imported. Set the **Format** drop-down list as *<Auto detect format>* or to a specific format. With the <Auto detect format> option, all supported GIS files will be displayed in the browser. Choosing the required format directly is recommended to ease the navigation.

Once a format has been selected, click the **Browse** button to select the file(s) to be imported and then click **Open**. Alternatively type in the full path of the file(s) in the **Dataset** text box. Only files in a same format and sharing the same coordinate system can be imported at once with the MAPublisher Simpler Import dialog box.

NOTE: The import of multiple of Delimited Text files is not supported.
NOTE: Data provided in a generic latitude and longitude (unprojected) coordinate system will usually be recognized as a WGS 84 (World Geodetic System 1984 EPSG = 4326) coordinate system by the MAPublisher importers.

Source Coordinate System

Once the **Dataset** text box has been populated with a valid path, the program will read the file(s) to determine if a valid coordinate system can be found, and display this in the **Source Coordinate System** section.

If the program returns the message *[No Coordinate System Specified]* for the coordinate system, click the **Specify** button to specify it. In the **Specify Source Coordinate System** dialog box, coordinate systems are separated into categories (geodetic or projected) to ease the process of choosing a coordinate system: under the Coordinate System category ***All*** will list all the coordinate systems in the database. For an overview of Geodetic and Projected systems and Datums see appendix A2. To view the parameters of a certain coordinate system, click the **Info** button.

Character Encoding

Extended and international character sets are supported as attributes on import. To assign a character codec suitable for your selected dataset, choose the appropriate value from the list box.

Format Specific Settings

Certain file formats offer additional configuration parameters which can be accessed by clicking the **Settings** button. These file formats are **ESRI Interchange File**, **ESRI Geodatabases (ArcSDE, File and Personal)**, **CAD DWG/DXF**, **MicroStation DGN**, **MapInfo MIF/MID**, **MapInfo TAB**, **KML/KMZ**, **Delimited Text Data*** and **GML**. After selectin a file, if the format accepts additional settings the **Settings** button will be enabled. See the import settings at the beginning of this chapter for an overview of the meanings of these options.

**Additional Settings are mandatory only for importing Delimited Text Data.*

Delimited Text Data Settings

MAPublisher also allows for the import of delimited text files as point data provided they contain coordinate values. MAPublisher supports the following delimiters between data values: comma, return, end-of-line and tab.

To import delimited text data, first specify the Format: *Projected Units, Decimal Degrees, Delimited Degrees Minutes Seconds, Degrees.Minutes, Degrees.MinutesSeconds, Packed DMS with decimals* and *Packed DMS* (see chapter 6, for more details). In the **Coordinate Columns**, specify the fields in the source file that contains the coordinate information. The caption of the fields display **Longitude** and **Latitude** or **X** and **Y**, depending on the selected format. If the first line of the text file contains columns headings, check the **Use first line as a header** option, although MAPublisher generally detects it automatically. f the file does not appear to contain column headers, MAPublisher will assign the default headers *Column1, Column2* to the attribute columns on import.

Importing Data

Once the files are selected and settings specified, click **OK** to start the import process. If the Adobe Illustrator document contains a MAP View with a coordinate system matching the incoming data, the **Matching MAP View** dialog box will open with the following options:

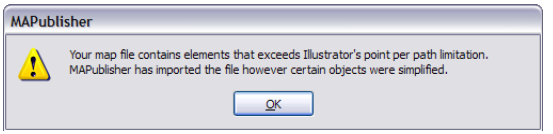
- **Add to:** choose the **MAP View** from the drop-down list where to add the incoming data. Check the option **Resize MAP View to fit** to rescale all the data (existing and incoming) to fit on the artboard. If this option is not checked, the imported data may fall outside the page extents
- **Fit to page based on new MAP View**: the incoming data will be treated separately from the matching data, as if it was the first import. The incoming data will overlap with the existing data, use the MAP View Editor to rescale and move the data on the page (see chapter 4 on MAP Views).

NOTE: Importing ESRI Geodatabases require further settings, refer to chapter 19 for a detailed description.

RESULTS

The data is imported as individual Adobe Illustrator layers with appropriate feature type matching the original source data type. Layers are named based on the file name or on the layer name in the source file. By default, the appropriate feature type extension is appended (e.g. *name_area*), and a layer name is already present in the document, it appends a number (e.g. *name_area 1)* — but this may be disabled in the MAPublisher Preferences, *Import MAP Data* property sheet. The layers are automatically placed as sub-features of a MAP View (existing or new) that contains the geospatial, scaling and positioning information.

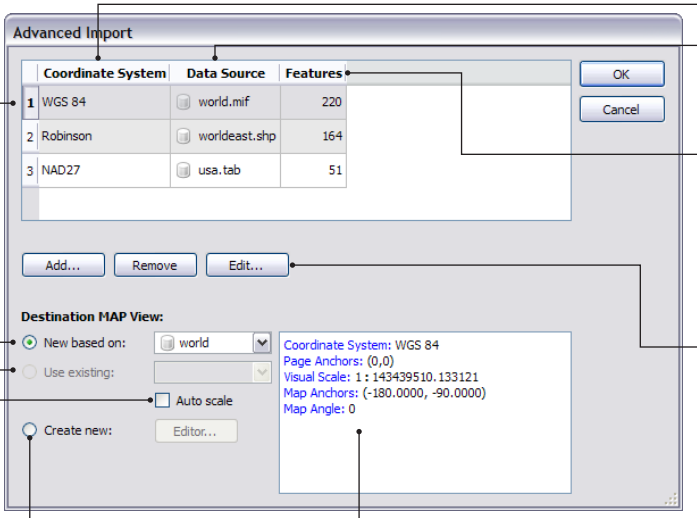
NOTE: When importing data exceeding the allowable 32,000 points per path in Adobe Illustrator, MAPublisher automatically simplifies the imported object and shows the following warning message:



The simplification algorithm compares points in a line or polygon in groups of three. When the shortest segment is found, the center point is removed, and the total segment distances are recalculated. This removal process continues until the maximum allowable number of points is reached.

Advanced Import

File > Import Map Data > Advanced and *MAP Toolbar*



File List - This is a table where all files selected for import are listed.

Coordinate System- coordinate system of the file.

Data Source - Map file(s) to be imported (full path or just file name depending on MAPublisher Preferences - see chapter 1).

Features - Number of objects to be imported

(if enabled in Import MAP Data MApublisher Preferences).
Extents - Displays the lower left (LL) and upper right (UR) coordinates (XY) of the dataset extents.

Destination MAP View:

New based on - Imports all of the files to one of the coordinate systems in the File List.

Use existing - Allows to import all of the files in a coordinate system that already exists in a MAP View in the document.

Auto scale - If multiple files are present in the File List, and *New Based On* or *Use Existing* is selected, check this box to ensure the imported artwork fits inside the page extents.

Create new - Allows to import all of the files in a new coordinate system. Click the **Editor** button to open the **MAP View Editor** (see chapter 4) .

Details - Displays details of currently selected file: Coordinate System, Unit, Page Anchors, Scale, MapAnchors and Rotation.

Add - Allows the selection of files for import by opening the **Advanced Import Data Source** function (see below).

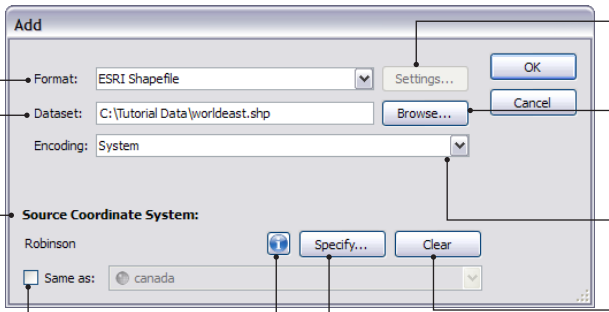
Remove - Removes selected files from the list.

Edit - Allows the edit of the selected file by re-opening the **Simple Import Data Source** function (see below).

RELATED TOOLS

Advanced Import Data Source

Accessed via the **Add** *or* **Edit** *button.*



Format - Select the data type you wish to import. This drop-down list shows all MAPublisher supported data types.

Dataset - Displays the directory path and filename for the currently selected file(s). You can also manually type in the dataset location here.

Source Coordinate System - This section allows the manual selection of the coordinate system if this information is not held in the data source.

Same as - Check this option in order to assign a coordinate system that matches that of an existing MAP View.

Info - Click this button to view the parameters of a selected coordinate system.

Settings - Opens **Settings** dialog box for file formats that requires the input of extra parameters, such as for the import of DGN, DXF, DWG, E00, GML, KML, MIF/MID, Tab and Delimited Text Data (see chapter 2).

Browse - Opens a Data Source browser to enable the selection of files for import.

Character Encoding - Assign a codec if the attribute information held in the selected dataset uses a double byte character set.

Clear - Click this button to clear the existing parameters of the source coordinate system.

Specify - Click this button to open the **Specify Source Coordinate System** tool (see Appendix 2), enabling you to search for coordinate systems by specifying a text string. Results are displayed in the *Search* category.

IMPORT SETTINGS

See the *Simple Import* various Import Settings dialog boxes and options.

ADVANCED IMPORT FUNCTIONALITY

Advanced Import provides an alternative method of importing map data into Adobe Illustrator. This function can import files in multiple formats and coordinate systems. All files flagged for import are displayed in the dialog box with information relative to their coordinate system. All imported files are reprojected to match a selected coordinate system.

NOTE: Advanced Import is recommended when importing data that will require a coordinate system transformation that implies redrawing and path divisions (e.g. world data reprojected from European to North American aspect). Applying a coordinate system transformation during Advanced Import allows MAPublisher to split paths during transformation, which is not possible at a later stage. Divided pathas are grouped as compound paths.

PREREQUISITES

In order to import data via Simple Import, an Adobe Illustrator document must first be created and setup appropriately. Please refer to the Simple Import *Prerequisites* section in this chapter.

USING ADVANCED IMPORT

The MAPublisher Advanced Import is accessed from the Adobe Illustrator menu *File > Import MAP Data > Advanced Import* or by clicking the MAPublisher Toolbar button  or by using the keyboard shortcut, Alt+Shift+Ctrl+A.

Dialog Box Overview

The top part of the Advanced Import dialog box provides a list of the selected files, their coordinate system information and the number of features they contain. The bottom part of the dialog box refers to the Destination MAP View settings.

The **Add** and **Edit** buttons open a dialog box similar to the *Simple Import* dialog box. Please refer to the previous section for information on the C*haracter Encoding, Format Specific Settings* and *Delimited Text Data Settings*.

NOTE: The dialog box displays the file name or the full path of the selected files depending on the settings specified in the MAPublisher Preferences for Import MAP Data (see chapter 1). Users can also choose to display the geographical extents of the file.

Adding Files

Click the **Add** button to select one or more files that share the same format and coordinate system. The Add dialog box is similar to the Simple Import dialog box, please refer to previous section for more information. Click OK to add the files to the Advanced Import list.

To import more files in a different format or coordinate system, use the Add dialog box again, as often as necessary.

Advanced Import File List

All selected files are listed in the **Advanced Import** dialog box. The list contains two columns, for each file, the coordinate system and full access path are displayed.

Click on a row of the list to select a file. Then, click **Remove** to remove the file or click **Edit** to change the import parameters. The Edit dialog box provides the same options as the Add dialog box, users can modify the access path, settings or source coordinate system.

NOTE: It is not possible to import multiple files with a mix of unknown and known coordinate systems therefore the unknown coordinate systems will need to be specified.

Destination MAP view

Although the Advanced Import allows to import files with multiple source coordinate systems, they have to be imported into a single coordinate system. This information is stored in the **Destination MAP View** section (for more information on MAP Views, please refer to chapter 4).

Users have three options to select the coordinate system of the Destination MAP View.

- **New based on** option: choose the coordinate system of one of the files selected for import.
- **Use existing** option: if the Adobe Illustrator document already contains map data, choose the MAP View with the desired coordinate system from the list of existing MAP Views in the document

With these two options, check the option **Resize MAP View to fit** to rescale all the data (existing and incoming) to fit on the artboard. If this option is not checked, the imported data may fall outside the page extents

- **Create new** option: specify the parameter for a new MAP View. Click the **Editor** button to open the **MAP View Editor**. In the *Destination Source Coordinate* system section, click the **Specify** button to select a coordinate system from a large list of existing system or to create a custom one. The MAP View Editor is explained in depth in chapter 4, in brief it allows for the edition of the scale, the position of the data on the page and rotation.

RESULTS

Once the files have been selected and properly set up, click **OK** to start the import process.

The data is imported as individual Adobe Illustrator layers with appropriate feature type matching the original source data type. Layers are named based on the file name or on the layer name in the source file. By default, the appropriate feature type extension is appended (e.g. *name_area*), and a layer name is already present in the document, it appends a number (e.g. *name_area 1)* — but this may be disabled in the MAPublisher Preferences, *Import MAP Data* property sheet. The layers are automatically placed as sub-features of a MAP View (existing or new) that contains the geospatial, scaling and positioning information.

MAP Views and Georeferencing

The MAP Views panel is the hub from which many additional MAPublisher features may be accessed. The panel itself will display the Adobe Illustrator layers that exist in the current document as sub layers of distinct coordinate systems, or MAP Views. With this tool, you can specify coordinate systems for map layers, transform coordinate systems, edit scale and data placement, merge layers, and export to GIS formats.

During a standard Import process, an Adobe Illustrator layer is created for each feature type automatically, and is automatically appended with a *_point, _line, _area,* or *_text* suffix in the Adobe Illustrator Layers panel. Certain file types generate multiple layers, such as the levels found in DGN or DXF, but they are similarly split up by feature type. A single import of such files produces a single MAPublisher View as an import can only take place in a single coordinate system. Custom MAP Views may be created in order to georeference existing Adobe Illustrator artwork.

The following pages deal with the creation and management of MAP Views, specifying and reprojecting a coordinate system, editing scale and data placement on the page, merging Adobe Illustrator layers, and exporting to GIS formats.

The topics covered in this section are as follows:

Georeferencing
MAP Views Panel
MAP View Editor
Import MAP View
Export
MAP Location Tool

Georeferencing

Georeferencing a non-georeferenced Adobe Illustrator file in MAPublisher can be separated into three steps:

1. A **Source Coordinate System** must be specified. The coordinate system gives a method to represent geographic points in relation to a world origin (these are also called point map, geographic, real world or spatial coordinates).
2. MAPublisher bases its georeferencing on a tie point within an Adobe Illustrator document (artboard). The relationship between **Page Anchor** and **Map Anchor** is defined below.
3. A **Scale** is necessary to translate measurements on the ground to measurements on the artboard.

During the import process, the software reads the coordinate system settings from the input file and calculates a scale to best fit the map data on the page. The software treats the point at (0,0) in the document (**Page Anchor**) as being coincident to the lower left corner of the data in real world coordinates (**Map Anchor**). From this point on these two points are dynamically linked. MAPublisher uses this anchor point in subsequent data transformations, such as rescaling and transforming, but also in the creation of grids and to maintain georeferencing on export.

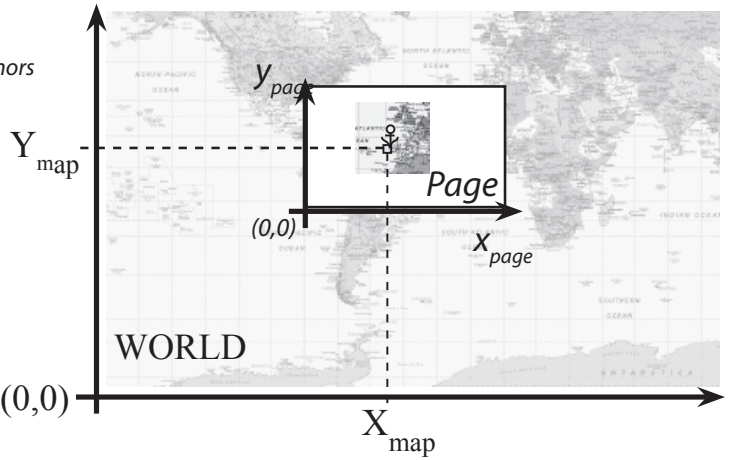
If a coordinate system has not been defined in the source data, the **Source Coordinate System** has to be manually set in MAPublisher, as well as the **Scale.** One should not estimate this information, it is usually provided as metadata by data vendors or indicated as text on the original map. Also, anchors have to be specified manually: **Map Anchor** information can be entered in any coordinate system unit (for example latitude and longitude in degree), **Page Anchor** are entered in the document units.

The most common way to set up an Adobe Illustrator page is to set the page origin (0,0) to coincide with the lower left corner of the map extents. If this information is not known, any point on the map can be used as long as its geographic location is known (e.g. a building or graticule grids on a scanned map—this information is usually given by the data provider if not obvious on the map itself). The position in page coordinates for the same point is found using the Adobe Illustrator *Info* panel.

Again, once the relationship between the real world coordinates and the page coordinates is established, MAPublisher will be able to perform coordinate system transformations, rescaling, plotting points etc...

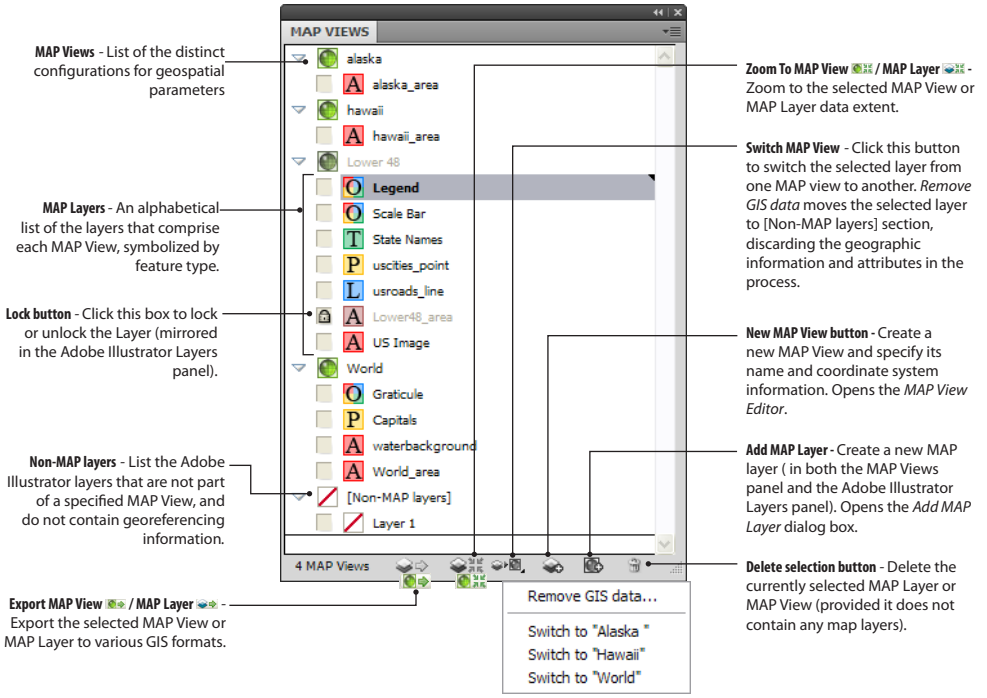
For further information, please refer to the appendices. See appendix A1 General Tips on *Georeferencing an Adobe Illustrator file*. Appendix A2 provides general information on the MAPublisher coordinate systems as well as customizing options.

Illustration of page and map anchors

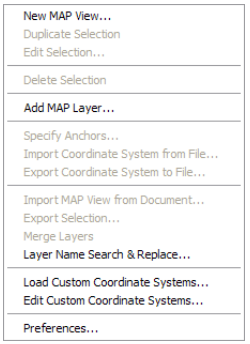


MAP Views Panel

Window> MAPublisher > MAP Views and *MAP Toolbar*



MAP VIEWS PANEL OPTIONS MENU



New MAP View - Create a new MAP View and specify its name and coordinate information.

Duplicate MAP View - Create a duplicate of the currently selected MAP View.

Edit MAP View - Open the MAP View Editor to edit the name and coordinate system of the currently selected MAP View.

Delete Selection - Delete the currently selected MAP View or MAP Layer provided it does not contain any Adobe Illustrator layers.

Add MAP Layer - Create a new MAP Layer through *Add MAP Layer* dialog box.

Specify Anchors - For manually establishing the tie-in point between Map and Page Anchors (should only be used for new MAP Views or for the correction of georeferencing errors).

Import Coordinate System From File - Imports a coordinate system from different file types including, WKT definitions (*.wkt), MAP files (*.map), ESRI projection files (*.prj), MapInfo TAB files (*.tab). The imported coordinate system overwrites the source coordinate system of the selected MAP View (see appendix A2).

Export Coordinate System to File - Exports the selected MAP View coordinate system to a WKT definition (*.wkt) (see appendix A2).

Import MAP View - Import MAP Views and associated MAP Layers from other open documents.

Export - Enable the export of the selected MAP View or MAP Layer to various GIS formats.

Merge Layers - Combine two or more MAP Layers, as long as their attribute structures match. **Ctrl** key (Windows) or the **Command** key (Mac) to select the layers in the MAP Views panel.

Layer Name Search and Replace - Search for text within layer names and specify an alternative. Useful for multi-layer imports.

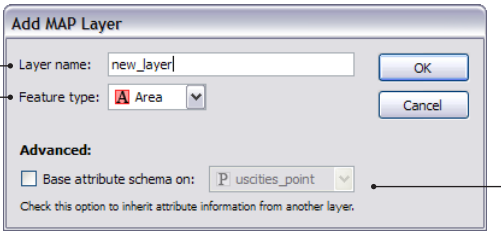
Load Custom Coordinate Systems - Load external coordinate systems in .xml format (see appendix A2).

Edit Custom Coordinate Systems - Open the custom coordinate system editor to create new coordinate systems and edit the parameters of existing ones in the data source (see appendix A2).

Preferences - Opens MAPublisher Preferences on the MAP Views Panel property sheet (see chapter 1).

RELATED TOOLS

Add MAP Layer



Layer name -Type the name of the new layer (it will appear in both MAP Views and Adobe Illustrator Layers panels).

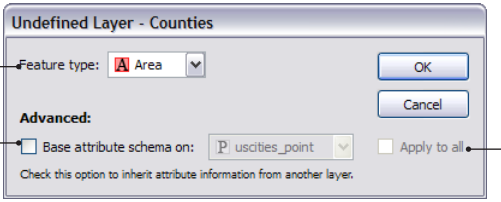
Feature Type -Select the type of feature that exists on the layer being dragged. This drop-down list presents a choice of Area, Line, Point, Text or Legend layer types.

Base Attribute Schema on - Check this option to copy the attribute schema from the existing MAP Layer selected in the drop-down list

Plot Centroids, Feature Text Label, MAP Tagger Tool and MAP LabelPro tools make use of this option, see specific chapters.

Define Layer

Automatically opens when dragging a Non-MAP layer into a specified MAP View.



Feature Type -Select the type of feature that exists on the layer being dragged. This drop-down list presents a choice of Area, Line, Point, Text or Legend layer types.

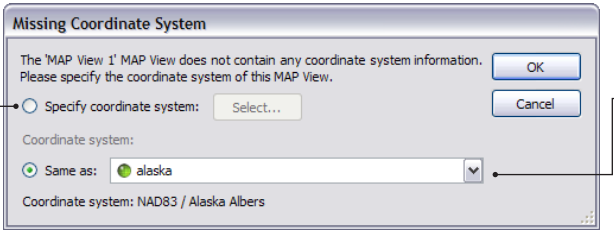
Base Attribute Schema on - Check this option to copy the attribute schema from the existing MAP Layer selected in the drop-down list.

Plot Centroids, Feature Text Label, MAP Tagger Tool and MAP LabelPro tools make use of this option, see specific chapters.

Apply to all - When multiple layers are switched at once to a specified MAP View, check this box to apply the same feature type to all.

Missing Coordinate System

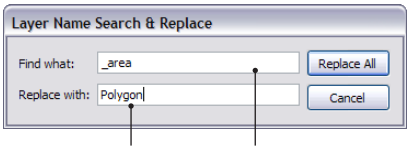
Automatically opens when dragging a MAP Layer to an alternate MAP View, and either the source or destination MAP View has an unspecified coordinate system.



Select custom coordinate system - Choose this option and then click the **Select** button to specify the coordinate system of the named MAP View via the **Select Coordinate System** dialog box (see Appendix 2). Once selected, the coordinate system will be displayed below it.

Same as - Choose this option in order to assign a coordinate system to the named MAP View that matches that of an existing MAP View. The coordinate system of the selected MAP View will be displayed below.

Layer Name Search and Replace

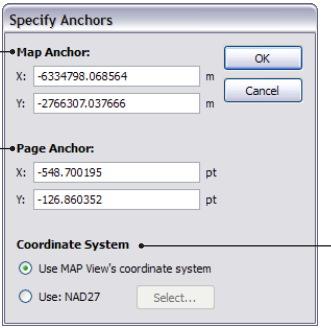


Replace with - Type in the variable you wish to change the layer names to.

Find what - Type in the variable contained in the current layer names on which you wish to search.

Specify Anchors

Should only be accessed when creating a new MAP View, or correcting inaccurate georeferencing information.
Caution: editing anchors can damage the accuracy of the data.



Map Anchors - The location of the Map Anchors in the units of the selected coordinate system.

Page Anchors - The location of the Page Anchors in the units of the current document *(see File > Document Setup)*.

Coordinate system - Specify the coordinate system in which the anchor position is entered.
Use the current MAP View's coordinate system, or specify a different one (by default, the geodetic system base of the projection or WGS84, in latitude-longitude format). Click the **Select** button to open the **Select Coordinate System** dialog box and choose any coordinate system

OVERVIEW

The MAP Views panel displays a list of all the Adobe Illustrator layers in the current document and all MAP Views—defined configurations for geospatial parameters (coordinate system, anchors, map scale and rotation). Every MAP Layer is shown in this panel as belonging to a particular MAP View. Adobe Illustrator layers that do not have georeferencing information (e.g. layers existing in the document prior to import) are placed in the [Non-MAP layers] category.

Categories are symbolized in the following manner:

 MAP View — *Contains layers with georeferencing and attribute information.*

 [Non-MAP layers] — *Contains layers with no georeferencing or attribute information.*

Each layer that belongs to a MAP View is symbolized in MAPublisher panels and dialog boxes with an icon identifying its feature type:

 Area layer *(e.g. county boundaries, urban areas, country outlines etc.)*

 Line layer *(e.g. rivers, roads, railways etc.)*

 Point layer *(e.g. town and city symbols, railway stations etc.)*

 Text layer *(e.g. text labels)*

 Legend layer *(for MAPublisher Legend items: North Arrows, Scale Bars, Grids)*

NOTE: Layers are sorted alphabetically or per data type, as specified in the MAP Views category in the MAPublisher Preferences (see chapter 1).

FUNCTIONALITY

MAP Views are designed to provide an easy method of accessing settings for specifying and transforming coordinate systems, for editing scale and data placement on the page and for exporting to GIS formats. The MAP Views panel allows for merging Adobe Illustrator layers, georeferencing existing Adobe Illustrator artwork, changing multiple layer names, and reprojecting data on the fly.

USING THE MAP VIEWS PANEL

The **MAP View Editor** is discussed in detail later in this section.

Creating New MAP Views

To create a new MAP View click **New MAP View** under the panel options menu or click the **New** button  at the base of the panel. This will automatically open the **MAP View Editor,** which will be discussed in the MAP View Editor section, allowing to set up a coordinate system, and enter values for scale, rotation, and page anchors. After creating a new MAP View, the **Specify Anchors** item from the MAP Views panel options menu must be used to define the tie-in point between Map Anchors and Page Anchors.

Duplicating And Deleting MAP Views

MAP Views can be duplicated. For example, to create inset maps make a duplicate and drag MAP Layers into the new MAP View. Then use the MAP View Editor to edit the placement, scale or coordinate system of the duplicate.

MAP Views that do not contain any MAP layers can be deleted. Both of these tools are accessed in the panel options menu of the MAP Views panel. You can also delete a MAP View by clicking the **Delete** button at the base of the panel. Note that these functions act on MAP Views only, and not MAP Layers.

Creating New MAP Layers

New MAP Layers are necessary in order to digitize geospatial data or generate artwork using MAPublisher tools (plot points, labels, legends, grids, scale bars and north arrows). Click the **Add MAP Layer** button  to create a new Adobe Illustrator layer, placed directly into the selected MAP View. Specify the appropriate **Layer name** and **Feature type** for the new layer.

To generate artwork using MAPublisher tools, specify the **Feature Type** as follow:

 for **Text** items. **Feature Text Label** , **MAP Tagger** (chapter 10) and **MAPublisher LabelPro** (chapter 18) require a Text layer as destination.

 for **Point** symbols. **Point Plot** (see chapter 6) will not function without a Point layer selected.

 for **Legend** items. **Grids and Graticules** (see chapter 13), **Scale Bars** and **North Arrows** (see chapter 14) must be placed on Legend layers.

NOTE: The Advanced option **Base attribute schema on** allows to copy the attribute schema from an existing MAP Layer (see chapter 5 for details). This option is required to enable the copy of attributes from source to destination layers in the MAPublisher labelling tools and Plot Centroids function. See respective chapters.

Reprojecting MAP Layers via MAP Views Panel

The MAP Views panel can be used to move Adobe Illustrator layers from one MAP View to another, enabling to reproject vector art* quickly. Layers can be moved via drag-and-drop or with the new **Switch MAP View** button  .
** Raster imagery cannot be reprojected with MAPublisher.*

For example, when importing two data layers, one in UTM projection and the other in latitude/longitude, MAPublisher will produce two distinct MAP Views, each holding the associated MAP Layer. To reproject the layer which is in UTM into Lat/Long, drag it from the UTM MAP View and drop it into the Lat/Long MAP View. MAPublisher will automatically reproject and scale artwork on the layer to match the destination MAP View.
When reprojecting in this manner, and either the origin or destination MAP View does not contain a defined coordinate system, the **Missing Coordinate System** dialog box is displayed offering the two options:

1. *Specify custom coordinate system* to specify the projection of the named MAP View, via the Source Coordinate System function.
2. *Same as* to specify the coordinate system of the named MAP View by choosing a coordinate system which already exists in a MAP View in the document.

NOTE: Many transformations will inherently cause the loss of precision by the very nature of the complex mathematical calculations that must be performed. Additionally there are differences in precision between

MAPublisher and Adobe Illustrator. MAPublisher calculations are in 64-bit for accuracy, but the results still must be stored as 32-bit for Adobe Illustrator. As a result, please be aware that some precision may be lost if layers are dragged repeatedly from one coordinate system to another. When determining a coordinate system to use via the drag method, we strongly recommend to use *Edit > Undo* to revert coordinate systems until the appropriate system is found.

Zoom to MAP View / Zoom to MAP Layer

Use these functions to zoom to the selected MAP View  or MAP Layer  in the MAP Views panel. This is particularly useful for files containing a large number of layers.

Assigning Georeferencing Information To Adobe Illustrator Layers

Existing Adobe Illustrator layers that do not contain georeferencing or attribute information also appear in this panel under the default MAP View entitled **Non-MAP layers**. Such layers can be moved into a specified MAP View with a matching geospatial configuration (coordinate system, scale, position on the page, etc.).

NOTE: Moving a non-MAP layer to a MAP View does not imply any transformation (the artwork is not redrawn). Users must ensure that the art on the non-MAP layer is positioned and scaled properly on the page with regard to the MAP View definition.

Moving a non-MAP layer into a specified MAP View prompts the **Define Layer** dialog box to specify the feature type of the layer. Multiple layers may be selected and moved together to a specified MAP View. Use the **Apply to all** option to assign the same feature type to all layers being moved. The Advanced option **Base attribute schema on** allows to copy the attribute schema from an existing MAP Layer (see chapter 5 for details).

Specify Anchors

The Specify Anchors function should only be accessed when referencing a new MAP View (for example in the process of georeferencing an Adobe Illustrator file, see appendix A1) or to correct an inaccurate referencing.

The **MAP Anchors** are entered in the unit of the selected coordinate system. MAP Anchors coordinates must be known from information written on the map (e.g. graticules crossing) or from external source (metadata, survey points or other). When the **Use Current MAP View's coordinate system** option is toggled, MAP Anchors coordinate values are entered in the current MAP units of the coordinate system of the MAP View. When the **Use: XXXX** option is toggled, the **Select** button becomes enabled. Clicking the **Select** button opens the **Select Coordinate System** dialog box. Choose any coordinate system, the coordinates values entered will be in the unit (Point Style) for this coordinate system. When the selected or default coordinate system is projected, X and Y coordinates are entered in the unit (Point Style) of the coordinate system (e.g. metre, kilometre, feet). When the selected or default coordinate system is Geodetic, Lat and Long coordinates are entered in degrees.

NOTE: When the current MAP View coordinate system is a projected system, the default system specified in Use:XXXX is set to the geodetic system base for the projection. For example, if the MAP View's system is the US State Plane *NAD83 / Colorado North (ftUS)*, the default alternative system is set to *NAD83* (to enter the latitude/longitude coordinates in degrees).

The **Page Anchors** are entered in the current unit of the document. This unit can be changed through the Adobe Illustrator menu *File > Document Setup*. Positions of points on the document in page coordinates are determined using the Adobe Illustrator Info panel (menu *Window > Info*).

Layer Name Search and Replace

The MAP Views options list also provides a **Search and Replace** function, enabling the quick change of names of multiple Adobe Illustrator layers. For example MicroStation Design or CAD imports may contain a large number of similar named layers. This option allows to quickly change the names of all layers that contain a specified character string.

Merge Layers

If several layers in a same MAP View share the same attribute schema and data type, they can be merged into a single layer using the Merge Layers function. For example, if a dataset has been split in separated files and imported as multiple layers in Adobe Illustrator, this function is used to re-combine the dataset into a single layer.

To select multiple layers, press the **Ctrl** or **Shift** keys (Windows) or the **Command** or **Shift** keys (Mac) and click the layers in the MAP Views panel, then click **Merge Layers** in the panel options menu. The layers are merged in a single layer holding the data and its associated attributes.

Export MAP Views and MAP Layers

The MAP Views panel offers the option to export a single MAP View  or a single MAP Layer  to a multitude of GIS formats. This function is explained later in this chapter.

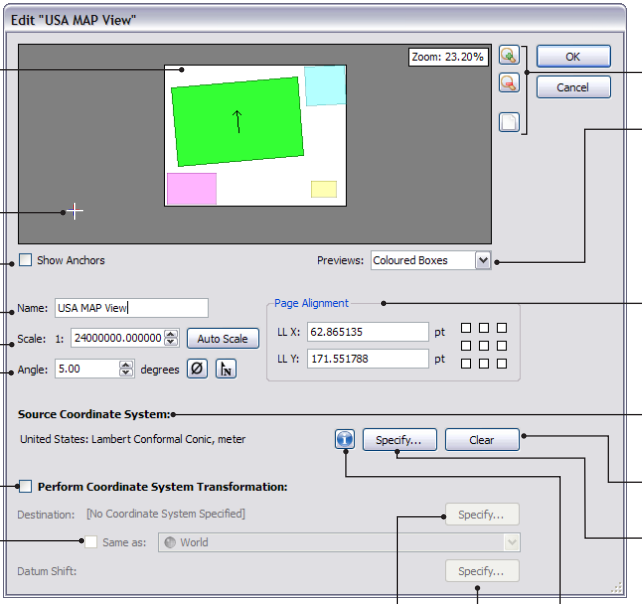
Removing MAPublisher Information

At the end of the project cycle, it may be useful to permanently remove all georeferencing and attribute information in the current document. This can be accomplished by switching all MAP Layer(s) to the [Non-MAP layers] category in the MAP Views panel via **drag and drop** or clicking the **Switch Map View** button  and the **Remove GIS data...** option.

NOTE: This function should only be used as a final step as all attributes and georeferencing will be removed leaving a standard Adobe Illustrator file devoid of all map information. Be sure to save a copy of the file before performing this operation.

MAP View Editor

MAP Views panel > Edit MAP View / New MAP View,
Advanced Import > Create New > Editor



Preview Pane - Displays the data extents of the MAP View:
White rectangle - Artboard extents.
Green rectangle - Data extents of the current MAP View.

Crosshair - Location of the current Map and Page Anchors.

Show Anchors - Display or hide the Map and Page Anchors.

Name - Name of the MAP View.

Scale - Editable of the MAP View scale relative to the page. Click **Auto Scale** to fit the data extents to the page extents.

Angle - Editable rotation angle of the MAP View. Click ⌀ to reset to 0, click to orient the MAP View north up.

Perform Coordinate System Transformation - Enable this option to transform the data to a new coordinate system.

Same as - Check this option to transform to a coordinate system used by another MAP View in the document.

Specify Destination Coordinate System - Open the **Specify Destination Coordinate system** dialog box to select a coordinate system .

Specify Datum Shift - Change the datum shift for the transformation.

Zoom buttons - zoom in/out or fit to the extents of the map view.

Previews - Select the preview options: None, Coloured Boxes, Thumbnails, Thumbnails and Boxes

Page Alignement - *Affects the position of the Page Anchors:*
- **LL X, LL Y** - Position of the lower left corner of the data in document units.
- **Alignment Control** - Click a position on the grid to control the alignment of the data extent relative to the page (e.g. center middle, upper right...).

Source Coordinate System - Displays the current coordinate system assigned to the MAP View.

Clear - Remove all references to a coordinate system

Specify - Open the **Specify Source Coordinate System** dialog box to select a new source coordinate system. To be used only if the source coordinate system is undefined or is not matching the data.
To apply a new coordinate system to a MAP View, use **Perform Coordinate System Transformation**.

Info - View the parameters of a selected coordinate system.

FUNCTIONALITY

The MAP View Editor displays and controls the geospatial parameters of the MAP View (coordinate system and scale on the page), the position of the data extents on the page (alignment and rotation) and allows to edit the MAP View name. A preview pane shows and allows the move the current MAP View relative to the artboard and to the other MAP Views in the document.

The MAP View Editor is also the place where a coordinate system transformation are performed. Transformations affect the data geometry on the page because shapes and points are redrawn to match the new coordinate system properties.

USING THE MAP VIEW EDITOR

The MAP View Editor can be accessed as part of the **Advanced Import** dialog box or from the **MAP Views** panel:

- *Advanced Import:* click the **Create new** option in the *Destination MAP View* section, and then click the **Editor** button to open the MAP View Editor.
- *MAP Views panel*: select a MAP View, and then select **Edit** under the *Options* arrow in the upper right corner of the panel. Or double-click the MAP View name in the MAP Views panel.

Preview Pane

By default, the Preview Pane displays the data extents with a green rectangle and the MAP View orientation with an arrow pointing north. The **Previews** option allows to change the preview to *None* (default green rectangle), *Coloured boxes* (previews up to 10 MAP views, symbolized with rectangles of different colours as specified in the MAP View Editor MAPublisher Preferences, see chapter 1), *Thumbnails* (preview a reduced image of the document contents, including all MAP views) and *Thumbnails and boxes* (shows both thumbnails and coloured boxes of up to 10 MAP views in the document).

NOTE: Due to Adobe Illustrator rasterization limitations, thumbnails cannot be displayed when a very large MAP View is present in a file.

To move the data on the page, click inside the green rectangle and drag to a more suitable position within the page. Use the **Zoom In**, **Zoom Out** and **Center** buttons to set the magnification of the preview. To move the page within the Preview Pane, click outside the MAP View extent and drag to move the page.

MAP View Name

The current name of the MAP View is listed in the **Name** text box, which is editable. MAP Views are ordered alphabetically in the MAP Views panel, so changing a MAP View name may change its position in the panel.

Page Alignment

During the import process, MAPublisher sets the page and map anchors so that the page origin (0,0) to coincide with the lower left corner of the map extents. The **Page Alignment** settings allow to move precisely the data on the page. In the **LL X/ LL Y** fields, users can edit the position of the lower left corner of the data extent in document unit. When the values are changed, all the data contained in the MAP View is shifted accordingly. Alternatively, the alignment grid provides pre-set arrangements for position of the map extents relative to the page (center-middle, lower-left, upper-right, etc.). A click on one of the grid location aligns the map data accordingly.

Editing the lower left corner position does not affect data integrity. It simply means that the data is shifted on the page but the corresponding real world coordinates remain unchanged.

NOTE: The Page Anchor does not always coincide with the lower left corner of the map extent. When manually registering an Adobe document, users can also enter a specific position using the MAP Views panel options menu *Specify Anchors* (see first section of this chapter).

Scale

The scale of the current MAP View is shown in the **Scale** text box. For MAP Views in projected coordinate system, the scale value is a real world scale (exact ratio *linear distance on the page* over *distance on the ground*). For MAP Views in geodetic coordinate system (i.e. Lat/Long format in angular unit), the scale value is approximated using the common formula 1°= 111.353m (metres per degree at the equator). This is not an accurate number because the formula is only valid at the equator, but it is more intuitive for cartographic considerations.

The scale can be edited manually (typing in a precise value) or by using the Up and Down arrows to increase or decrease the scale by 10% of the starting value. The **Auto Scale** button applies the scale to fit the data to the page extent and centers the map on the page.

Rotation

A rotation figure can be applied or edited by specifying an angle in the entry field, or by using the arrow buttons. Notice that changes to rotation will be automatically previewed in the Preview Pane with the green rectangle and arrow depicting the new orientation of the data. Click  button to reset to the angle to 0. Click  button to orient the MAP View True North up (True North is calculated at the center of the data extents).

Set Source Coordinate System

In most cases, the MAP View source coordinate system is initially assigned during the import process if the imported data file contains such an information (see chapter 3). To view the properties of the source coordinate system, click the info button.

If no coordinate system is recognized during the import, the resulting MAP View source coordinate system is set to *[No Coordinate System Specified]*. In order to rescale, rotate or transform the MAP View, a coordinate system must be specified. To do so, click the **Specify** button to open the **Specify Source Coordinate System** dialog box (explained below).

In some rare cases, the source coordinate system might have been wrongly assigned during the import process (due to a wrong manual selection or file issue). In this case, users may specify another coordinate system by clicking the **Specify** button. This should be used with caution because data integrity may be lost if the current coordinate system is overwritten by mistake. Changing the source coordinate system does not affect the data geometry on the page. To reproject a MAP View to a new coordinate system, use **Perform Coordinate System Transformation**.

Coordinate System Transformation

To reproject a MAP View to another coordinate system using the MAP View Editor, click the **Perform Coordinate System Transformation** check box (the MAP View must contain data for this option to be available). Users have two options to select the destination coordinate system:

- To select a coordinate system from the MAPublisher database, click the **Specify** button in the *Perform Coordinate System Transformation* frame to open the **Specify Destination Coordinate System** dialog box (described below).
- To select a coordinate system used by another MAP View in the document, click the **Same as** check box and select the appropriate MAP View in the drop-down list. This does not affect the page position.

The **Preview Pane** displays the new data extents for the transformed MAP View, however the thumbnails view is not available until the transformation is finalized by clicking the **OK** button in the MAP View Editor.

Some coordinate system transformations require a datum shift. When this is the case, MAPublisher selects the most appropriate datum transformation. This can be edited by clicking the **Specify** button in the datum shifts frame and selecting another datum transformation (see *Avenza Projections Guide.pdf* for more information).

NOTE: Coordinate system transformations are also performed by layer drag and drop between MAP Views.

Specify Coordinate System

The **Specify Source/Destination Coordinate System** dialog box allows to select, copy and edit coordinate systems and associated parameters from the MAPublisher coordinate systems (Geodetic Data Source). The MAPublisher Geodetic Datasource is explained in depth in the Appendix A2, and discussed here briefly only.

Coordinate systems are divided in two categories: **Geodetic** and **Projected**. For a convenient use, they are sorted in sub-folders by continent > country > sub-division (e.g. state or county). The ***All*** category lists all systems with no sorting; the ***Recent*** category lists the last 10 systems recently selected; the ***Search*** category lists the result of a coordinate system search. The MAPublisher coordinate systems may also contain custom systems.

New MAP Views

After clicking the **New MAP View** button, the MAP View Editor opens for users to set the name, coordinate system and page scaling of the new MAP View. After a new MAP View is created, the **Specify Anchors** option from the MAP Views panel must be used to define the tie-in point between Map Anchors and Page Anchors. Map Anchor coordinates can be entered in any chosen coordinate system (for example, latitude and longitude in degree for projected map).

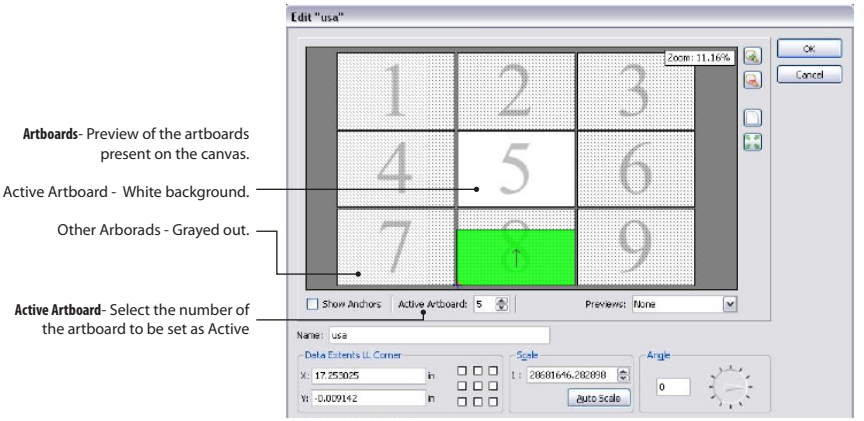
This functionality is explained in detail in *Georeferencing an Adobe Illustrator file* in appendix A1 General Tips.

IMPORTANT NOTES FOR ADOBE ILLUSTRATOR CS4 USERS

Adobe Illustrator CS4 introduced the concept of multiple artboards (up to 100). MAPublisher 8 takes this new feature into account in the MAP View Editor.

When a document contains multiple artboards, the MAP View Editor dialog box has an additional drop-down list to select the **Active Artboard**. When this section of the dialog has focus, the **Preview Pane** displays the number of each artboard. The current active artboard is shown in white, while the others are grayed out. The **Data Extents LL Corners** and **Scale** calculations are based on the Active Artboard dimensions.

To move the data extent (green box in the Preview Pane) from one artboard to another, change the Active Artboard number to the artboard where the data is to be moved, then click the Auto Scale button or one of the Data Extents LL Corner boxes.

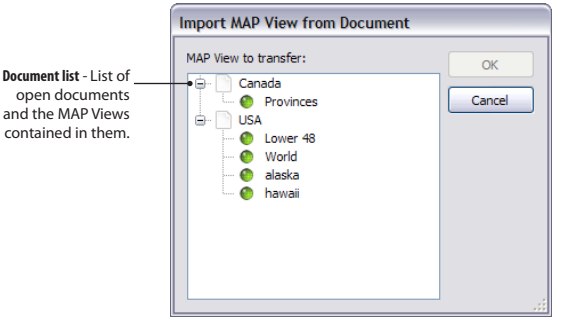


NOTE: Adobe Illustrator CS4 allows users to move artboards. However, this action does not preserve the georeferencing (same effect as moving art on the active artboard). Instead of moving the artboard, users must do the following:

- Create a new artboard at the desired position on the canvas.
- Open the MAP View Editor and move the data from the initial artboard to the new one (see explanation above).
- Delete the initial artboard.

Import MAP View

MAP Views panel > Import MAP View From Document



FUNCTIONALITY

MAPublisher Import MAP View copies a MAP View from one document to another, including all the layers that are within that MAP View. This can be a useful tool when merging parts of several documents into a single document. An example might be to import a commonly used inset map.

PREREQUISITES

At least two documents must be opened to use Import MAP View. The active document does not need to contain any MAP View, but the second document must at least contain one MAP View.

NOTE: Import MAP View imports all the layers contain in the selected MAP View. To limit the number of layers being exchanged: in the source document , make a duplicate of the MAP View and move a subset of layers from the original MAP View to the duplicate; then import of the duplicate. This way, only the subset of layers gets imported.

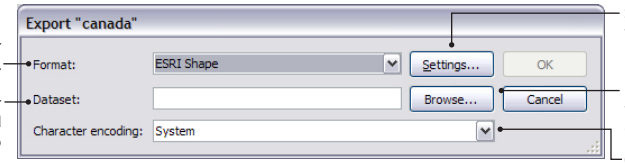
USING IMPORT MAP VIEW

To access the function, click the **Import MAP View from Document...** item in the MAP Views panel options menu.

The Import MAP View dialog box shows all other documents currently open, along with all the MAP Views they contain. Simply select the MAP View to be imported into the current document, and click OK to import the MAP View and MAP Layers.

Export

MAP Views panel > *Export* and buttons  *(MAP View)*  *(MAP Layer)*



Format - Select the export format for the selected layer or MAP View.

Dataset - Displays the directory path for the export of the currently selected layer or MAP View. You can also manually type in the dataset location .

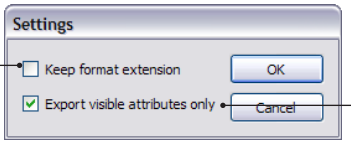
Settings - Opens a Settings dialog box for the input of extra parameters (see below).

Browse - Opens a Data Source browser to enable the selection of an export directory.

Character Encoding - Assign a codec if the attribute information held in the selected layer or MAP View uses a double byte character set.

EXPORT SETTINGS

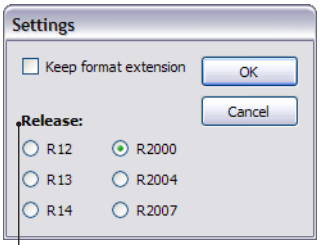
General Settings



Keep format extension - Check this option to export layers with their feature extension (_area, _line, _point, or _text) which may have been appended to layer names during import.

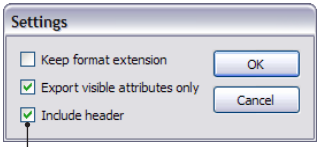
Export visible attributes only - Check this option to export only the attributes that are currently visible in the MAP Attributes panel.

AutoCAD Settings



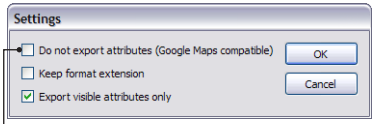
Release Version - Specify the AutoCAD version number you wish to export to.

Delimited XY Text Data Settings



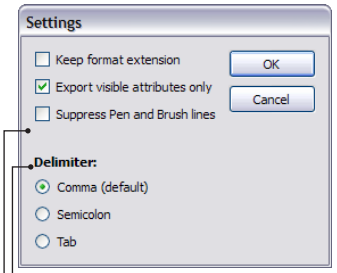
Include header - Add the column headers at the first line of the exported text file

KML/KMZ Settings



Do not export attributes - Check this option for export to KML to be used in Google Maps (Google Maps does not support KML files with attribute values).

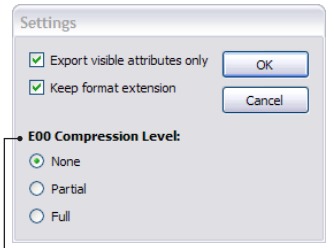
MIF/MID Settings



Delimiter - Set the fields delimiters to either comma, semicolon or tab.

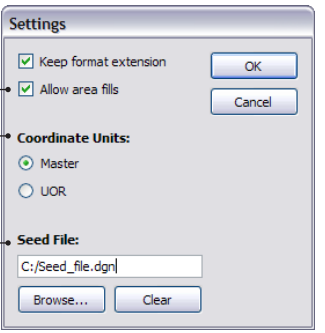
Suppress Pen and Brush lines - Check this option to remove all pen and brush styles in the output MapInfo MID/MIF files.

E00 Settings



E00 Compression Level - Set the compression of the exported E00 file (default is *None*).

MicroStation Settings



Seed File - If required, select a seed file to be applied to the exported dgn file . Click Clear to remove the seed file selection.

Coordinate Units - Specifies how feature coordinates will be interpreted and converted (Master, Sub or Units of Resolution).

Area Fills - Controls whether or not fill linkages will be written out for ellipses, shapes, and solids.

FUNCTIONALITY

MAPublisher supports the export of single MAP Layers or whole MAP Views to various GIS formats, maintaining all georeferencing and attribute information. The following export formats are supported:

CAD (*.dxf) (*.dwg)
Delimited Text Data (*.csv) (*.tsv) (*.txt)
ESRI Interchange File (*.e00)
ESRI ArcInfo Generate (*.gen)
ESRI Shapefile (*.shp)
GML (Simple Features 3.1.1) (*.gml / *.xsd)
KML/KMZ (*.kml/*.kmz)
MapInfo MIF/MID (*.mif / *.mid)
MapInfo TAB (*.tab)
Microstation Design (*.dgn)

NOTE: Exporting a MAP View to CAD or MicroStation format will assemble all hosted layers into a single file.

NOTE: Exporting a MAP View to Flash map or Geospatial PDF is explained in chapter 15 and 17 respectively.

PREREQUISITES

The Export function exports a single selected Adobe Illustrator layer contained in a MAP View or all layers contained in a selected MAP View. Both imported and user created MAP Views that contain MAP Layers that are suitable for export to GIS formats.

NOTE: Export to KML/KMZ is only possible if the MAP View's coordinate system is WGS84 geodetic. So it might be required to first transform the MAP View to that system.

USING MAP EXPORT

Export a MAP View

To export all the MAP layers within a single MAP View, select the MAP View to be exported in the MAP Views panel, then click the button  . Alternatively, click **Export** *"<MAP View name>"* in the panel options menu.

Export a MAP Layer

To export a single layer, select the MAP Layer to be exported in the MAP Views panel, then click button  . Alternatively, click **Export** *"<Layer name>"* in the panel options menu. Within the dialog box select the export required **Format**, and then click the **Settings** button.

NOTE: Only a single MAP View or a single layer can be exported at one time.

Keep Format Extension

The name of the MAP Layer or MAP View selected for export is the default name of the exported file. However the feature type text (i.e. _area, _line, _point, or _text) appended to Adobe Illustrator layers by MAPublisher in the Import process, are removed during the export process, unless the **Keep format extension** option is checked.

Export Visible Attributes

Check this option to export only the attributes that are currently visible in the MAP Attributes panel. If this option is not checked, all attribute columns (including MAPublisher #Property attributes) are exported.

Format Specific Settings

Depending on the selected export format, additional specific settings may be available. This is the case for the following formats: AutoCAD, Delimited XY Text Data, MicroStation, MID/MIF, E00 and KML/KMZ. See the Export Settings above. When exporting to KML/KMZ, specify the format extension (*.kml or *.kmz) in the **Select Export File** dialog box (**Save As Type** drop-down list).

Choosing a Destination Folder

Most of the export formats require the selection of a destination folder only. For export to **ESRI** or **MapInfo** formats, click the **Browse** button to specify a destination folder. Click the **OK** button to export your MAP Layer.

When exporting to **AutoCAD** format, it is required to specify a name for the exported file, and select the file extension *(DXF* or *DWG)* to be used. For **MicroStation** formats, it is required to specify a name for the exported file. To export to either of these formats, click the **Browse** button to name the export file, and then choose the file format from the **Format** drop-down list.

ADDITIONAL NOTES

Valid Area Direction (Area Layer Exports)

When exporting Area layers to GIS formats, polygon outlines must have a positive *Area* value, whereas holes held inside compound paths (or complex shapes) must have a negative *Area* value. If some polygons in the *#Area* property column of the MAP Attribute table which contradict these guidelines, use the following tools to convert the MAPublisher area calculation from a negative to a positive value or vice versa:

- **Flip Lines** tool (chapter 8) for convert multiple areas:
- Create a **Selection Filter** (chapter 11) to select all elements that have an *#Area* of less than zero (to select negative values) or greater than zero (to select positive values). Then start the *Flip Lines* function.
- *#AreaDirection* property value (chapter 5) to convert areas one by one: select the area to edit and then choose the alternate value for *#AreaDirection* in the MAP Attributes panel.

Text Exports

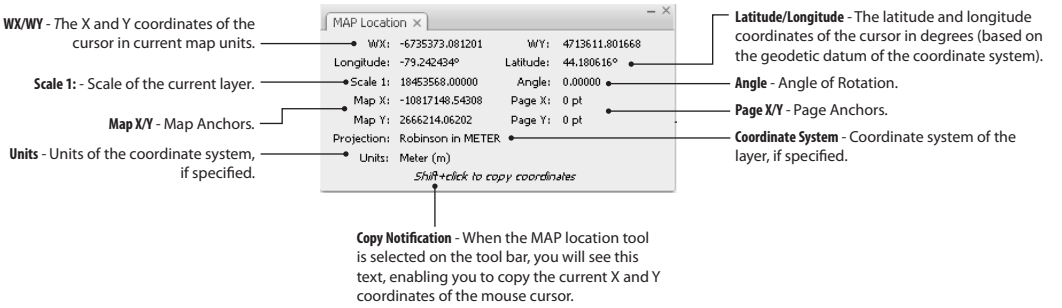
It is not possible to export values in the #Text property column. An alternative is to create a new string attribute column and assign it an expression of #Text. See **Edit Schema** in chapter 5 on MAP Attributes.

Texts on a path are exported as point text with an angle (main direction of the original path).

MAP Location Tool

MAP Toolbar, or *Tools> MAP Location Tool* *and*
Window > MAPublisher > MAP Location

Displays the parameters of the currently selected layer.



FUNCTIONALITY

The MAPublisher Location Tool displays the coordinates of the mouse cursor on the selected map layer, in current **Map Units** and in **Degrees**. Latitude and longitude values are in reference to the geodetic datum set in the coordinate system definition. When no georeferencing is present on the selected layer, the dialog box will display the coordinates in **Page Units.** The dialog box will also display the **Map** and **Page Anchors**, the **Scale**, **Angle** of rotation, and the **Coordinate System** and **Units** of the MAP Layer.

The MAP Location Tool also enables the X and Y position of the cursor in the current map units (WX and WY) to be copied to the clipboard. An example of a use of this function is to build point files in an external text editor; files which can then be re-imported with MAPublisher. Coordinates are copied with the X value first and Y value second, and are delimited by a comma. For example: `-79.396527,43.631979`

USING THE MAP LOCATION TOOL

To use the **MAP Location Tool**, click the button in Adobe Illustrator Tools panel or on the MAP Toolbar**,** or open the panel through *Window > MAPublisher > MAP Location*. With the cursor scroll around the map document, and note how the map units update with the location of the mouse.

NOTE: While the MAP Location Panel is opens, the values are constantly updated with any other tool selected.

When the **MAP Location Tool** button is enabled in the Adobe Illustrator Tools panel, users are able to copy the coordinates of a specific location. The appropriate layer must be selected in the MAP Views panel, the MAP View containing the layer will determine the MAP units and coordinate system used to display the positions. To copy the positions:

- Position the cursor at the desired location.
- Click the document while holding the Shift key.

The X and Y position in map units are copied to the clipboard and can be paste into any text editor. Latitude and Longitude values are also copied if this is enabled in the MAP Location Tool preferences (see below). Only one set of coordinates can be copied at once. When shift+click is used again, the values copied previously will be overwritten.

NOTE: When the cursor is placed outside of the MAP View extent of the selected layer, positions values are indicated as *Unavailable* .

MAP LOCATION TOOL PREFERENCES

The MAPublisher Preferences for the MAP Location Tool can be accessed from the menu *Edit* > *MAPublisher Preferences* or by double-clicking the MAP Location Tool button  in the Adobe Illustrator Tools panel.

There, users can specify the latitude/longitude display format and number of decimals. Enable the option *Include Latitude and Longitude values when copying coordinates* to copy both the X/ Y and Lat/Long positions when using Shift+Click (see above).

MAP Attributes

MAPublisher can import GIS files into Adobe Illustrator while retaining both geographic vector and attribute information and makes it very easy to produce high quality maps.

The attribute information is later used as a key for many MAPublisher functions: MAPublisher labelling engines, MAP Stylesheets, MAP Selection Filters, MAP Web Author...

This section explains the principles of attribute information and how these are maintained within MAPublisher.

Topics covered in this section are:

Attributes Foreword
MAP Attributes Panel
Edit Schema
Expression Builder
Find & Replace Attributes
Apply Expression
Join Table
Export Attributes

Attributes Foreword

ATTRIBUTE INFORMATION

The attribute table that forms part of a GIS map file is one of the most important parts of any data set. It is in the attribute table that we find important information such as street names for lines, zoning or zip code numbers for areas and elevations for points to go along with our vector line, area or point data. Along with vector line, area and point data imported as explained in the previous sections, MAPublisher also imports the attribute data table associated with any vector map file that it supports.

MAP LAYERS

Throughout this guide, an Adobe Illustrator layer containing georeferencing and/or attribute information will be referred to as a **MAP Layer**.

Each MAP Layer which can contain attribute information is symbolized in MAPublisher panels and dialog boxes with an icon depicting its feature type:

- Area layer *(e.g. county boundaries, urban areas, country outlines etc.)*
- Line layer *(e.g. rivers, roads, railways etc.)*
- Point layer *(e.g. town and city symbols, railway stations etc.)*
- Text layer *(e.g. text labels)*

NOTE: Legend layers do not contain any attribute.

MAPUBLISHER #PROPERTY ATTRIBUTES

In addition to the attribute values that were created upon data import or within a work session, Area, Line, Point and Text layers are also assigned a number of additional MAPublisher attribute columns. These property columns (prefixed with a #) are designed to indicate the physical properties of map art on the Adobe Illustrator canvas. Art can be modified directly from the attribute table by making edits to values in these columns.

The following property columns are attached to valid map layers in this version of MAPublisher:

Area layers

#LayerName	*describes the name of the containing layer. This property cannot be set.*
#ID	*describes the internal unique ID to refer to Adobe Illustrator artwork within the document.Read-only..*
#Name	*describes the name of the polygon. Editing this property will change the name in the Layers panel.*
#AreaDirection	*describes the direction as clockwise or counter-clockwise. Editing this value will reverse the direction accordingly.*
#VertexCount	*describes the number of points in the art. This property cannot be set.*
#Style	*describes the Graphic Style in use. Editing this property will apply the selected style to the art.*
#StrokeWeight	*describes the stroke weight of the path. Editing this property will alter the stroke weight of the art.*
#Perimeter	*describes the perimeter of the area in world units. This property cannot be set.*
#PathClosed	*describes whether or not the path is closed (yes or no). Editing this value will open/close the path.*
#ArtScale	*describes the scaling of the line stroke. Editing this value will scale the stroke weight.*
#Area	*describes the area of the path in world units. This property cannot be set.*

Line layers

#LayerName	*describes the name of the containing layer. This property cannot be set.*
#ID	*describes the internal unique ID to refer to Adobe Illustrator artwork within the document. Read-only.*
#Name	*describes the name of the polygon. Editing this property will change the name in the Layers panel.*
#VertexCount	*describes the number of points in the art. This property cannot be set.*
#Style	*describes the Graphic Style in use. Editing this property will apply the selected style to the art.*
#StrokeWeight	*describes the stroke weight of the path. Editing this property will alter the stroke weight of the art.*
#PathClosed	*describes whether or not the path is closed (yes or no). Editing this value will open/close the path.*
#Length	*describes the length of the path in world units. This property cannot be set.*
#ArtScale	*describes the scaling of the line stroke. Editing this value will scale the stroke weight.*

Point layers

#LayerName	*describes the name of the containing layer. This property cannot be set.*
#PageX	*describes the x-coordinate in the document units of the current point.*
#PageY	*describes the y-coordinate in the document units of the current point.*
#ID	*describes the internal unique ID to refer to Adobe Illustrator artwork within the document. Read-only.*
#Name	*describes the name of the point. Editing this property will change the name in the Layers panel.*
#HorizontalScale	*describes the horizontal scaling of a point object. Editing this value will scale the symbol in the X axis.*
#VerticalScale	*describes the vertical scaling of a point object. Editing this value will scale the symbol in the Y axis.*
#Rotation	*describes the rotation in degrees of the art around its anchor point. Editing this value will rotate art.*
#Style	*describes the Symbol in use. Editing this property will apply the selected symbol to the art.*
#MapX	*describes the x-coordinate in the world units of the current point.*
#MapY	*describes the y-coordinate in the world units of the current point.*

Text layers

#LayerName	*describes the name of the containing layer. This property cannot be set.*
#PageX	*describes the x-coordinate in the document units of the current point text. For text-on-a-path or text-in-a-path, this will be the x-coordinate of the first vertex on the associated path.*
#PageY	*describes the y-coordinate in the document units of the current point. For text-on-a-path or text-in-a-path, this will be the y-coordinate of the first vertex on the associated path.*
#ID	*describes the internal unique ID to refer to Adobe Illustrator artwork within the document. Read-only.*
#FontSize	*describes the font size used by the text.*
#FontFamily	*describes the font family used by the text.*
#Name	*describes the name of the text field. Editing this property will change the name in the Layers panel.*
#Text	*describes the contents of the text. Editing this property will edit text on the page.*
#TextLength	*describes the number of characters in the contents of the text art. This property cannot be set.*
#Rotation	*describes the rotation in degrees of the art around its anchor point. Editing this value will rotate art.*
#Style	*describes the Character Style in use. Editing this property will apply the selected style to the art.*
#MapX	*describes the x-coordinate in the world units of the current point.*
#MapY	*describes the y-coordinate in the world units of the current point.*
#HorizontalScale	*describes the horizontal scaling of a point object. Editing this value will scale the text in the X axis.*
#VerticalScale	*describes the vertical scaling of a point object. Editing this value will scale the text in the Y axis.*

Warning - *The #ID property is not persistent. This means that if a document is saved and re-opened, the #ID value might change. The value will usually not change over the life of a document session, but there are Adobe Illustrator operations that can cause the value to change.*

IMPORTANT ADOBE ILLUSTRATOR COMPATIBILITY NOTES

Some Adobe Illustrator functions may cause the link between artwork objects and their attributes to be broken, resulting in possible data loss. These functions are:

- Compound path (Make)
- Pathfinder
- Live Paint
- Gradient mesh
- Blob brush (Adobe Illustrator CS4)

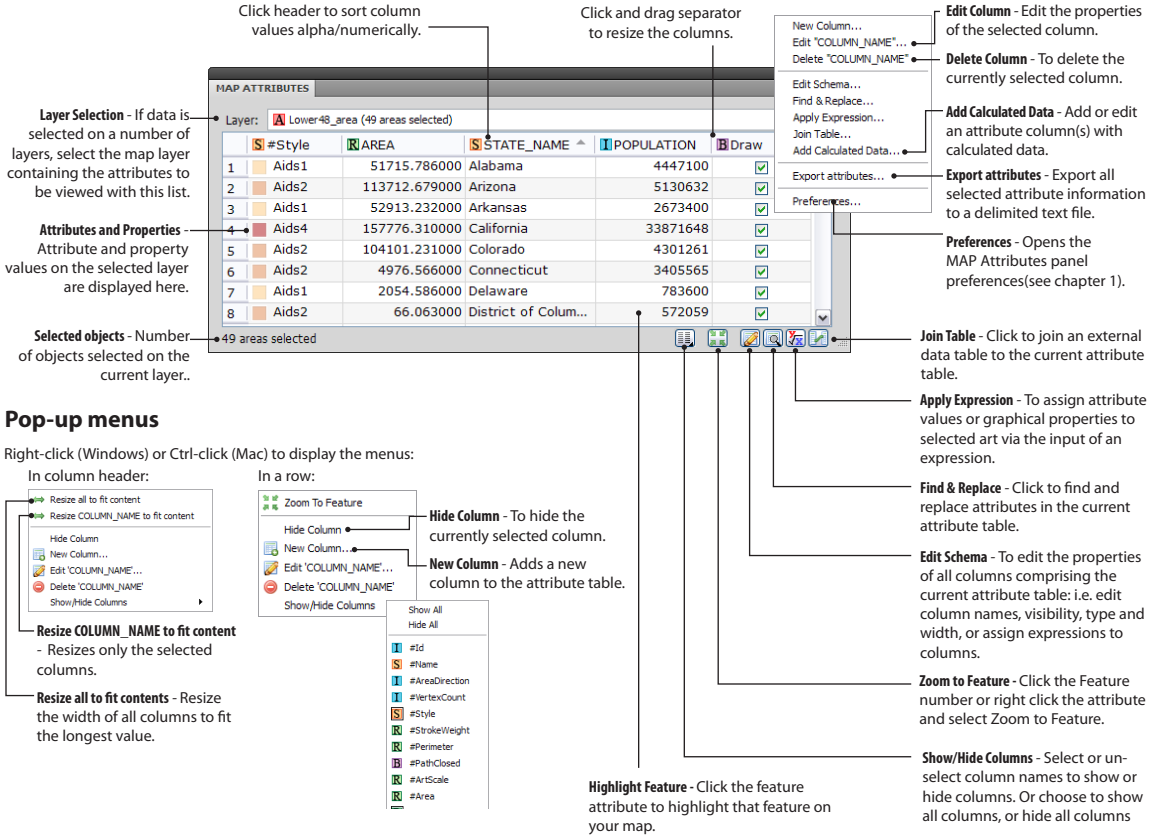
By default, releasing a compound path also breaks the link between released paths and the attributes. To avoid this behaviour, users may enable the option **Replicate attribute data to compound path sub-components** in the *MAPublisher Preferences* for *MAP Attributes*. This option must be enabled when attributes are created for the attribute data to be copied to the compound path components. For example, if a compound path is imported with the option disabled, the attribute data is not copied to the child paths — therefore releasing the compound path will always break the attributes, even if the option is enabled at a later stage.

NOTE: This option has an impact on the performance, so it should only be enabled if necessary.

If required, users should first duplicate their working layer in the Adobe Illustrator Layers panel before using these functions. The original layer can be kept for labelling (see chapter 10 and 18) or for information purposes.

MAP Attributes Panel

Window > *MAPublisher* > *MAP Attributes* and *MAP Toolbar*



FUNCTIONALITY

The MAP Attributes panel displays the map attribute and property attribute records for a map layer, which are linked to the map's graphic elements, and makes them available for editing. This panel is also the hub from which you can edit column schemas and visibility, add or delete columns, join tables, find and replace attributes, and apply expressions to selected art. Only the visible attributes of selected map features will be displayed in the dialog box.

USING THE MAP ATTRIBUTES PANEL

Viewing Attributes

Selected features are sorted per layer. The **Layer** drop-down list shows all the layers that currently have features selected, as well as the number of selected map objects for each layer (also reported at the base of the panel). The attribute values displayed in columns in the MAP Attributes panel can be sorted in ascending or descending order by clicking the column header. The widths of the columns may be changed by clicking the column separator and manually dragging it to resize as desired.

The type of attribute is indicated by an icon preceding the column name :


Boolean - columns contain True or False values


Integer - columns contain only whole numbers (limited to 10 digits)


Real - columns contain numbers carrying decimal values


String - columns can contain attributes that are both alpha and numeric

Editing Attributes

MAPublisher MAP Attributes panel is a fully editable spreadsheet environment. All attribute values may be edited except for certain MAPublisher Property attributes (see earlier in this chapter). To change the value of a cell, double-click within the cell and enter the new value such as you would in a spreadsheet program. Keep in mind that entered values must correspond with a column's type (i.e. only enter numbers into a column of type *Real* or *Integer*). The edits will immediately be reflected in the map documents database records. Existing attribute records may also be edited or modified by performing a find and replace operation on them.

Column Visibility

Click the **Show/Hide Columns** button (or Right-click (Windows) or Ctrl-click (Mac) on a column in the dialog box) to edit the column visibility, either toggling visibility for individual columns or for all columns. It is also possible to edit the visibility of attribute columns with the **Edit Schema** tool.

Zoom To and Highlight Feature

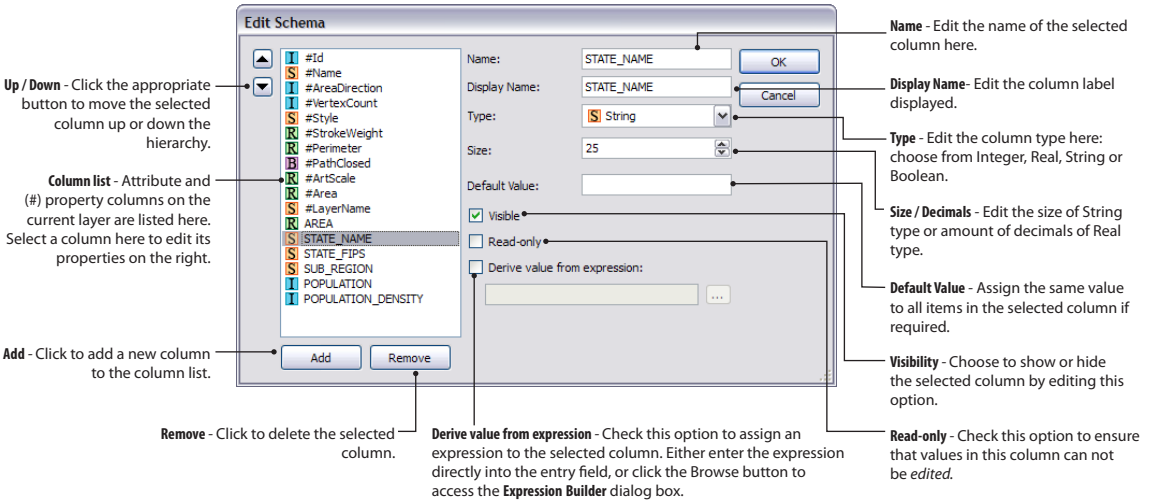
To zoom into a specific feature in the attribute table, select a single attribute and click the **Zoom to Feature** button. This will automatically fit this feature to the screen and highlight it—allowing to examine it closer or to simply locate it on the map. To highlight a specific feature on the page maintaining the current zoom level, click one attribute of that feature.

Property Attributes

The attribute table can also be configured to display property attributes for datasets. These attributes describe the current assignment of graphical properties such as the stroke weight, style, rotation and scale. These fields are editable and provide the ability to modify a map objects graphical properties directly within the context of the MAP Attributes panel. To edit a property attribute for a particular map object, either double-click within the appropriate property cell and directly enter a value or choose from an available drop-down list depending on the property type being edited. Once these changes have been entered into the MAP Attributes panel, the modified art elements are graphically updated within the map to reflect these changes.

Edit Schema

MAP Attributes panel > Edit Schema / Edit Column / New Column



In MAPublisher, the term **schema** is used to define the structure and makeup of the map attributes table.

FUNCTIONALITY

The Edit Schema function allows to edit and manage various components of the data's map attribute structure, including creating, editing and deleting columns, setting visibility preferences, and assigning expressions. Any changes made to the schema will instantly be reflected in the MAP Attributes panel.

USING EDIT SCHEMA

Select an object of the MAP Layer containing the attributes to be edited. It gets selected in the MAP Attributes panel. Access the tool by clicking the **Edit Schema** button or menu item in the MAP Attributes panel options menu.

Edit Schema lists all of the columns which currently exist in the MAP Layer attribute structure, including MAPublisher Property attributes (see previous section). By default, imported or created attributes will be visible, whereas property columns will not be shown by default. Please note some #Property column structures cannot be edited (read only).

Editing Column Format

Each column has a name and display name. The name is used in the expression builder and for export. The display name is used when exporting to geospatial PDF (see chapter 17) and is shown by default in the column name in the MAP Attributes panel (see MAPublisher Preferences in chapter 1).

The punctuation characters are not supported in column names to avoid complications when exporting to external formats. The following illegal characters are replaced with an underscore '_' upon data import or join table:

space ` ~ ! @ # $ % ^ & * ( ) - + = { } [ ] | ; : " ' \ , < . > / ?

These character are supported in Display name.

To rename a column enter the new text directly into the **Name** field. All expressions referring to this attribute name are updated instantaneously.

NOTE: Some external file formats have limits on the number of characters allowed for field names. Therefore, during the export from MAPublisher, some field names might get truncated to comply to the chosen external file format. For example, ESRI shapefiles are limited to 10 characters (confirmed up to ArcGIS 9.3), ESRI Interchange File (.e00) to 16 characters, MapInfo to 30 characters.

Once the name is set, specify a data type by making the appropriate selection in the **Type** list. Please note the following:

- *String* columns can contain attributes that are both alpha and numeric.
- *Integer* columns contain only whole numbers.
- *Real* columns contain numbers carrying decimal values.
- *Boolean* columns contain True or False values.

To modify the amount of characters or decimals, enter a value into the **Size/Decimal** text box (the maximum string size is 28000). A **Default Value** can be assigned for all new objects placed on the selected layer by entering text accordingly. Check or uncheck the **Visible** option to edit a column's visibility. Check or uncheck the **Read-only** option to edit a column's read/write status.

Check the **Derive value from expression** option to assign an expression to the selected column. Enter a valid expression in the Expression field or click the **Browse** button to enter and edit expressions via the **Expression Builder** dialog box. The **Expression Validity** icon  will report if the expression entered is valid. Otherwise it will report  and include additional warning notes. This function is useful, for example, to populate the column values based on the contents of other columns and/or mathematical formulas.

NOTE: Values derived from expression are dynamically linked to the attributes used in the expression. Therefore, they are read-only. Use the **Apply Expression** function to generate values that can be modified.

The following are some examples of basic expressions which can be assigned to columns in *Edit Schema:*

"Ontario" *(applied to column = NAME)*
Result: *All items are assigned the value "Ontario" in the NAME column.*

"MAP Area 01" *(applied to column = #Style)*
Result: *All area items are assigned the value "MAP Area 01" in the #Style column and are assigned the Graphic Style "MAP Area 01" on the page.*

45 *(applied to column = #Rotation)*
Result: *All point items are assigned the value 45 in the #Rotation column and are rotated to 45° on the page.*

NOTE: String values are case-sensitive and must be entered in quotes ("...").

Adding, Deleting and Re-Ordering Columns

Stipulations regarding the display order of attribute columns in the MAP Attributes panel can be set by reordering the existing list according to your preferences. Any column may be promoted in the list/attribute table by selecting it in the list and clicking the Up and Down buttons to move it up or down within the list. Columns will display in the MAP Attributes panel according to the display order established in Edit Schema.

To create a new column, click the **Add** button and input the desired column properties. To delete an existing column, choose it from the available list and click the **Delete** button.

Click **OK** to confirm your edits to the attribute structure on the selected layer. These edits will immediately be visible in the MAP Attributes panel.

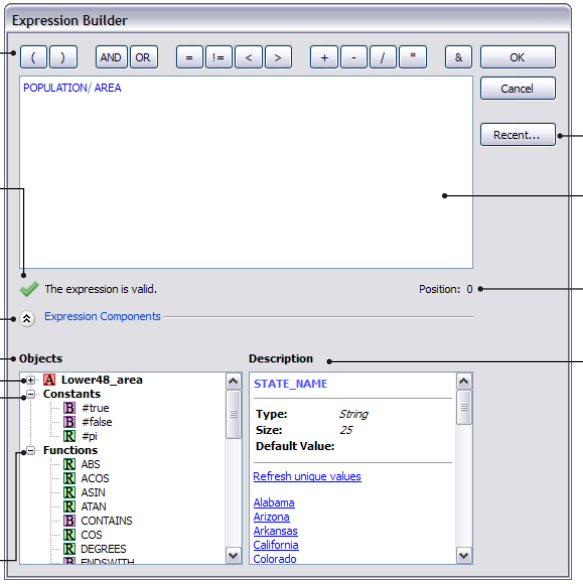
EDIT COLUMN

Edit Schema can also be accessed via the **Edit Column** context menu. Within the MAP Attributes panel, select the column to be edited, right-click the column heading or cell and click **Edit**. This opens the **Edit Schema** dialog box with the same column immediately selected in the column list.

Expression Builder

Accessed from Edit Schema, Apply Expression, New/Edit Selection Filter, MAP Stylesheet Editor

Expression Builder



Operator buttons - Click to insert an operator into the expression at the current cursor position.

Expression Validity - Indicates if the expression is valid or invalid. If invalid, additional info is reported.

Advanced toggle - Click to show or hide the Expression Components section

Objects - List of attribute and property columns, constants and functions for use in the expression. To expand a folder click ⊞; to collapse click ⊟. Double-click items to insert them into the expression.

Layer attributes - List of the attribute and property columns which comprise the current layer.

Constants - Insert either True or False into the expression if required.

Functions - List of functions for use in the expression if required.

Recent - Select from a list of recently used expressions in the MAP Attribute or MAP Stylesheet panels or from the MAP Selection Filters (see chapter 11).

Expression Entry - Where all composition of the expression occurs. Use the keyboard, operator buttons, and/or the Objects list to compose the expression.

Cursor Position - Position of the current text entry point.

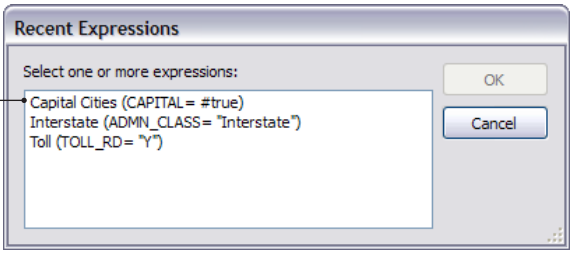
Description - Displays information on the currently selected item in the Objects panel, i.e. a description and example of the function or constant, or information regarding the format of the MAP layer along with it's attribute values.

When selecting an attribute, click the link **display unique values*** to display the attribute values of the selected attribute column.

**Display unique values only list up to a maximum set in the MAPublisher Preferences for the Expression builder (see chapter 1 for more information)*

Recent Expressions

This dialog box appears when the Recent button is clicked



Expressions - List of expressions from the MAP Selection Filters saved expressions (see chapter 11) or from the ones used in MAP Attributes or MAP stylesheets during the current Adobe Illustrator session.
Click one or more entries to copy to the expression builder—multiple selections are concatenated with the AND statement.

FUNCTIONALITY

The MAPublisher Edit Expression tool provides for the entry and edit of expressions for use in the generation of new attribute values and properties, to make selections or to apply styles. Expressions can be entered using the keyboard, and/or by selecting from listed column names, operators and functions.

Edit Expression provides functionality for a number of tools:

Edit Schema*:* To create or edit an expression for the generation of values in an attribute or column.
(MAP Attributes panel > Edit Schema > Derive value from expression > Browse)

Apply Expression*:* To apply an expression to an attribute or property column for selected art only.
(MAP Attributes panel > Apply Expression> Browse)

New/Edit Selection Filter *(chapter 11):* To create or edit expression criteria for use in selecting map data.
(MAP Selection Filters panel > New/Edit Selection Filter > Browse)

MAP Stylesheet Editor *(chapter 9):* To create or edit an expression for use in styling map data.
(MAP Stylesheets panel > Edit MAP Stylesheet > Advanced Expression > Browse)

ENTERING EXPRESSIONS

Expression can be built using the keyboard and/or by clicking the operator buttons or items in the **Objects** list (attributes name and values, constants and functions). These items are colour coded to ease the identification: attribute names in purple, string values in orange, operators and numerical values in grey, constants in green and functions in black. Clicking any of the operator buttons or double-clicking an item from the **Objects** list inserts that item into the expression.

It is recommended to use the interface rather than the keyboard to build expressions, because functions are formatted correctly (e.g. with brackets), and, for attribute values of type strings, quotations marks are added automatically. Besides, expressions are case-sensitive. For string comparison, all strings values can be converted to a same case using the appropriate function (*LOWER("string")* or *UPPER("string")*). However, the keyboard is best used for deletions.

Validity

The validity of the expression will be displayed below the Expression Entry field, and will be updated as the expression is built. The **Expression Validity** icon will report if the expression entered is valid. Otherwise it will report and include additional warning notes.

Operator Buttons

Click to insert an operator at the current cursor position. Available operators are as follows:

(	*Open clause operator*
)	*Close clause operator*
AND	*Logical AND operator*
OR	*Logical OR operator*
=	*Logical equal to comparator*
!=	*Logical not equal to comparator*
<	*Logical less than comparator*
>	*Logical greater than comparator*
+	*Mathematical addition operator*
-	*Mathematical subtraction operator*
/	*Mathematical division operator*
*****	*Mathematical multiplication operator*
&	*Text concatenate operator*

Expression Components

Items in the *Objects* list fall into three categories. Information on a selected item is displayed in the Description panel. Double-click to insert an object at the current cursor position. Available objects are as follows:

<MAP Layer>*

List of #property columns
List of attribute columns†

Constants

#true	*Boolean true value*
#false	*Boolean false value*
#pi	*π numerical value (3.141592)*

* Layer may vary depending on tool. For Edit Schema, Apply Expression and New/Edit Selection Filter, the current layer is displayed. In the MAP Stylesheet Editor, all layers hosted by the stylesheet are displayed.

† Unique values contained in each attribute column can be viewed in the Description panel.

Functions

ABS	*Absolute value of a number*
ACOS	*Inverse of the cosine of an angle.*
ASIN	*Arcsine of an angle.*
ATAN	*Arctangent of an angle.*
CONTAINS	*True if source string contains search string.*
COS	*Cosine of an angle.*
DEGREES	*Converts values from radians to degrees.*
ENDSWITH	*Returns true is the source string ends with the suffix string.*
FIXED	*Numbers as string values.*
IF	*Conditional statement.*
IF_CASE	*Conditional statement based on multiple cases.*
LEFT	*Extracts the first N characters of a string.*
LENGTH	*Returns the number of characters in a string.*
LIKE	*Searches the source string using wildcards.*
MID	*Extracts N characters of a strings from a specified location.*
NUMBER	*String values as numbers.*
POW	*Base to the power of an exponent.*
PROPER	*Strings converted to capital case.*
RADIANS	*Converts values from degrees to radians.*
REGEX	*Searches the source string using a regular expression.*
RIGHT	*Extracts the last N characters of a string.*
ROUND	*Rounds to specified decimals of precision.*
ROUNDDOWN	*Rounds down to specified decimals of precision.*
ROUNDUP	*Rounds up to specified decimals of precision.*
SEARCH	*Returns the position of a character in a string.*
SIN	*The sine of an angle.*
SPLIT	*Splits a string and extracts the indexed part of it*
SQRT	*Square root of a value.*
STARTSWITH	*Returns true if the source string starts with the prefix string.*
SUBSTITUTE	*Replaces a set of characters by another in a string*
SUBSTITUTE_RX	*Replaces a regular expression by characters in a string*
TAN	*Tangent of an angle.*
TRIM	*Removes all spaces in a text (except the singe ones between words).*
UPPER	*Strings converted to upper case.*

For each function, a description and some examples are provided in the Description panel of the Expression Components.

NOTE: String values are case-sensitive and must be entered in double quotes ("..."). For functions using indexes for text position (*MID, SEARCH* and *SPLIT*), the first index number is 0.

Recent Expressions

Expressions already entered in the MAP Attributes panel, MAP Stylesheets panel (see chapter 9) and MAP Selection Filters (see chapter 11) can be re-used by selecting them from the Recent list. Click one or more entries to copy to the expression builder—multiple selections are concatenated with the AND statement.

Only MAP Selection Filters expressions are saved with the Adobe Illustrator documents, the other recent expressions are only saved in memory for the time of the Adobe Illustrator session (they are reset if the document is closed).

Confirmation

When the expression is finalized and validated, click **OK**. The expression is inserted into the expression field of the appropriate tool. The Edit Expression tool can be re-opened if further edits are required.

Example Basic Expressions

APPLY EXPRESSION

"Ontario" *(applied to column = NAME)*
Result: All selected items are assigned the value "Ontario" in the NAME column.

"MAP Area 01" *(applied to column = #Style)*
Result: All selected area items are assigned the value "MAP Area 01" in the #Style column and are assigned the Graphic Style "MAP Area 01" on the page.

45 *(applied to = #Rotation)*
Result: All selected point items are assigned the value 45 in the #Rotation column and are rotated to 45° on the page.

SELECTION FILTER

NAME = "Ontario"
Result: All items with the value "Ontario" in the NAME column are selected.

POPULATION < 1000000
Result: All items with values less than one million in the POPULATION column are selected.

NAME = "Ontario" OR NAME = "Alberta"
Result: All items with the value "Ontario" OR "Alberta" in the NAME column are selected.

NAME = "Ontario" AND POPULATION < 1000000
Result: Only the items containing the value "Ontario" in the NAME column AND values less than one million in the POPULATION column are selected.

MAP STYLESHEET

NAME = "Ontario"
Result: All items with the value "Ontario" in the NAME column are assigned the selected style.

POPULATION < 1000000
Result: All items with values less than one million in the POPULATION column are assigned the selected style.

NAME = "Ontario" OR NAME = "Alberta"
Result: All items with the value "Ontario" OR "Alberta" in the NAME column are assigned the selected style.

NAME = "Ontario" AND POPULATION < 1000000
Result: Only items containing the value "Ontario" in the NAME column AND values less than one million in the POPULATION column are assigned the selected style.

EDIT SCHEMA

LOWER(NAME) *(applied to column = name)*
Result: *All items in column name are assigned the value of the column NAME in lower case (e.g. "ontario" for "Ontario", "new brunswick" for "New Brunswick")*

PROPER(name) *(applied to column = Proper_name)*
Result: All items in Proper_name are assigned the value of the column name in proper case (or capital case) (e.g. "Ontario" for "ontario", "New Brunswick" for "new brunswick").

TRIM(JOINING_COLUMN)
Result: All items are trimmed with all spaces except single ones between words (" Route 66 " becomes "Route 66"). This is particularly useful prior to using the Join Table function because extra spaces at the beginning, end or in between words will cause the join to fail.

Example Complex Expressions

SELECTION FILTER or MAP STYLESHEET

LIKE (NAME, "*New*")
Result: all items with the string of letters "New" in the NAME column are selected (e.g. "New Brunswick" and "Province of Newfoundland")

STARTSWITH (NAME, "o")
Results: all items that starts with the letter "o" ("Ontario") are selected.

EDIT SCHEMA

ROUND((POPULATION/ AREA),3) *(applied to column=density)*
Result: All items are calculated as "population divided by area", rounded to three decimals.

IF_CASE("null", VALUE>0,"positive",VALUE<0,"negative")
Result: A default status of "null" is assigned unless the value is strictly superior or inferior to 0.

SUBSTITUTE_RX(ROAD_NAME,"\D","")
Result: All non digit characters (\D is the regular expression for non-digit character) are replaced by nothing (two double-quotes indicate that the new string is blank), therefore only numerical values are kept. For example, if the ROAD_NAME equals "Route 66", the result is "66". This can be useful to prepare an attribute table prior to labelling roads with road number rather than road names.

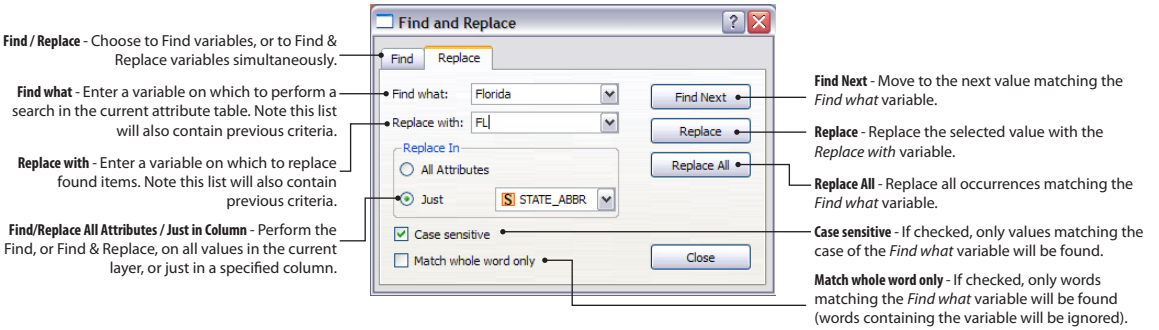
SPLIT(GEOLOGIC_UNIT,"(",0)
Result: All items containing one or more open parenthesis are split in several text blocks (as many as there is open parenthesis, plus one), and returns the first block found (index 0). For example, if GEOLOGIC_UNIT equals "Qmw(Qc)", the result is "Qmw".

SUBSTITUTE(*SPLIT(GEOLOGIC_UNIT,"(",1)***,")","")**
Result: Removes all closing parenthesis (i.e subtitute all closing parenthesis with nothing) in the result of the same SPLIT as above, that returns the second text block found (index 1). For example, if GEOLOGIC_UNIT equals "Qmw(Qc)", the result is "Qc": first the SPLIT function returns "QC)" and then ")" is removed with a SUBSTITUTE.

More examples of each individual function can be found in the *Expression Builder* dialog box itself. Make sure to expand the *Expression Components*, then as you select a function or constant on the *Objects* list, the *Description* tab is updated with explanations and examples.

Find & Replace Attributes

MAP Attributes panel > Find & Replace



FUNCTIONALITY

The Find & Replace tool allows for the searching and/or replacing of attribute values and properties contained in the MAP Attributes panel. Note that only values in visible columns can be found and/or replaced.

USING FIND & REPLACE 

Access the tool by clicking the *Find & Replace* button or menu item in the MAP Attributes panel.

Find Only

To use Find & Replace to easily find values, click the **Find** tab to enter the search criteria. Find criteria can be typed directly into the **Find what** entry field (previous criteria can be selected from the list). A search may be performed on all attributes by default, or only on specific columns contained within the MAP Attributes panel by enabling the **Just** option and choosing a column from the list. Criteria may be further refined by enabling the **Case sensitive** and **Match whole word only** options.

Once the search string has been entered click the **Find Next** button in order to perform the search. Search results can be seen in the MAP Attributes panel; the column header and row number containing the first matching record will be displayed in bold text. At this point search for individual records can be done by clicking again the *Find Next* button.

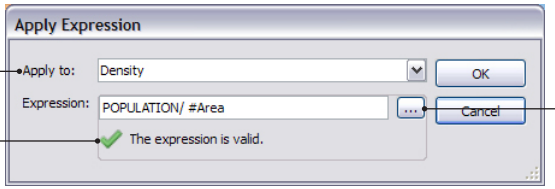
Find & Replace

To replace records selected through the *Find* operation click the **Replace** tab. Find & Replace criteria can be typed directly into the **Find what** and **Replace with** entry fields (previous criteria can be selected from the lists). A *find and replace* may be performed on all attributes by default, or only on specific columns contained within the MAP Attributes panel by enabling the **Just** option and choosing a column from the list. Criteria may be further refined by enabling the **Case sensitive** and **Match whole word only** options.

There are two methods to replace values. The first method requires to approve each replacement manually by clicking the **Replace** button so that each instance of the attribute located via the search parameters is successively replaced in the map attribute table. The second method allows for the replacement of all found records simultaneously, accomplished by clicking the **Replace All** button.

Apply Expression

MAP Attributes panel > Apply Expression



Apply to - Select the attribute column on which to apply the expression. Attribute and MAPublisher Property columns can be assigned expressions

Expression - Enter the expression directly into the entry field, or click the Browse button to access the **Edit Expression** function..

Expression Validity - Indicates if the expression is valid or invalid.. If invalid, additional info is reported.

FUNCTIONALITY

The Apply Expression function allows to apply a value or an expression to an attribute of the currently selected artwork for the purpose of assigning new values or edit properties attributes. For example, this tool can be used to compute attribute values based on the values in other columns, to assign a style by editing the *#Style* property attribute, or to rotate symbols by assigning a fixed value to the *#Rotation* property attribute. Read-only attributes cannot be edited with Apply Expression.

Note that property attributes are dynamic. Changes made to them in the map attribute table are reflected immediately in the graphical properties and on-screen display of the data to which they are linked. Expressions can be generated and applied to data based on the values found in an existing attribute column, providing a one-step process to transform a vast number of different objects in a single operation.

NOTE: Unlike the **Derive Value From Expression** option in **Edit Schema**, values computed through **Apply Expression** are not tied to the original attributes constructing the expression and can be edited later on. Besides, only currently selected artwork is affected by the changes.

APPLYING EXPRESSIONS

Ensure the data required for the application of the expression is selected, and that layer is selected in the MAP Attributes panel. Then access the tool by clicking the **Apply Expression** button or menu item in the same panel.

First specify a column from the **Apply to** list to specify which attribute column the expression will be applied to. The columns listed here are representative of the attribute structure unique to the data layer currently displayed in the attribute table as well as the standard MAPublisher property attributes.

To assign an expression to a column, enter a valid expression in the Expression text box. The **Expression Validity** icon will report if the expression entered is valid. Otherwise it will report and include additional warning notes. Alternatively, click the **Browse** button to enter and edit expressions via the **Edit Expression** tool (page 46).

The following are some examples of basic expressions which can be assigned to selected data with *Apply Expression*.

"Ontario" *(applied to column = NAME)*
Result: All selected items are assigned the value "Ontario" in the NAME column.

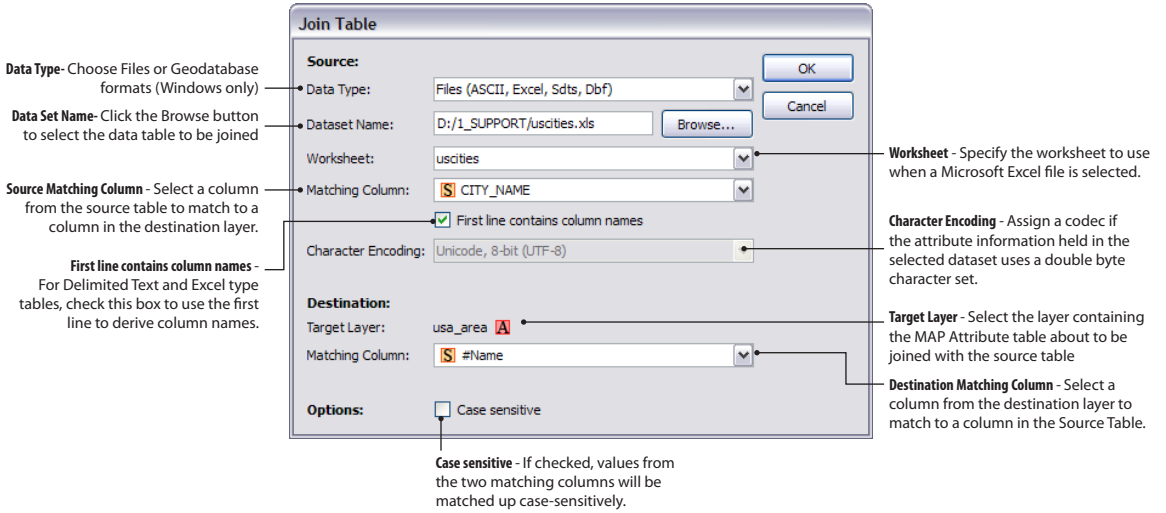
"MAP Area 01" *(applied to column = #Style)*
Result: All selected area items are assigned the value "MAP Area 01" in the #Style column. Same items are assigned the Graphic Style "MAP Area 01" on the page.

45 *(applied to = #Rotation)*
Result: All selected point items are assigned the value 45 in the #Rotation column. Items are rotated to 45° on the page.

Click **OK** to apply the expression to the selected data, updating the values in the selected attribute column and transforming data as appropriate.

Join Table

MAP Attributes panel > Join Table



FUNCTIONALITY

Join Table provides the ability to merge external data tables directly into an existing MAP Layer attribute schema in order to create a single extended attribute table. Three of the most common table formats are supported:

• **dBase** (*.dbf) • **USGS SDTS** (*.ddf) • **Delimited Text** (*.csv) (*.tsv) (*.txt) • **Excel** (*.xls)

When exporting tables from spreadsheet applications for use with MAPublisher the preferred format to use is Delimited Text (*.csv).

NOTE: dBase tables created or edited in Microsoft Excel must have a proper data type assigned to each column through cell formatting before being saved as dbf. For example, numerical values specified in a cell set with a format "General" will import as an Integer type by default, therefore loosing all decimal values.

Users on Windows operating system and with valid ESRI software and license installed on their computer, can join table with feature classes and non-spatial tables of ESRI geodatabases (ArcSDE, File and Personal). For information on ESRI software requirements for this option, please refer to chapter 19 of this user guide.

PREREQUISITES

In order to successfully join a table into an existing attribute schema, both MAP Layer and data table must share at least one common attribute column with matching values. The column must be of a matching type (i.e. String, Real, Integer, Boolean) in both the Source and the Destination table. If not, the join table might fail.

Access the Join Table tool by clicking the **Join Table** button  or options menu item in the MAP Attributes panel.

USING JOIN TABLE

Source Data (Files)

Users on Windows with ESRI software must first set the **Data type** drop-down list to *Files (ASCII, Excel, Sdts, Dbf)*. This is the only option for other users.

Click the **Browse** button to select the data table for import. If a Microsoft Excel file is selected, use the **Worksheet** drop-down list to specify the sheet to be used for joining. Then, select a common column by selecting an appropriate entry in the **Matching Column** drop-down list.

In MAPublisher, double byte characters are supported in attributes on import, allowing such attributes to be used for labelling and export. To assign a codec suitable for the selected dataset, choose an appropriate entry from the **Character Encoding** drop-down list.

If the table contains column names as headers, check the **First line contains column names** option. If it does not contain headers, do not check this option and each column will be assigned a default heading name: Column1, Column2, etc.

Source Data (ESRI geodatabases)

Users on Windows operating system and with valid ESRI software and license installed on their computer, can select a feature class or non-spatial table of ESRI geodatabases (ArcSDE, File and Personal).

If the **Data type** drop-down list is set to *ESRI ArcSDE Geodatabase,* click the **Browse** button to select the ArcSDE server connection and then select the appropriate feature class or non-spatial table. If the **Data type** drop-down list is set to *ESRI File Geodatabase* or *ESRI Personal Geodatabase*, click the **Browse** button to select a feature class or non-spatial table. Please refer to chapter 19 for information on ArcSDE server connection and feature class selection.

The attribute selection is the same as for *Files* source data.

Destination Table

Choose the attribute table to be joined to the data table. This can be achieved by choosing a MAP Layer from the **Target Layer** list. When the destination layer has been selected, select a common column by selecting an appropriate entry in the **Matching Column** drop-down list. This column must match the format and values as the column selected in the *Source Table* section.

Additional Option

If the **Case sensitive** option is checked, the column entries from the two matching columns will only be matched by case. For example, if there is a mix of upper or lower case entries in the data table that is mirrored in the destination attribute table, this option should be checked. If one of the matching columns contains values in lowercase, and the other contains values in uppercase, for example, then do not check this option.

RESULTS

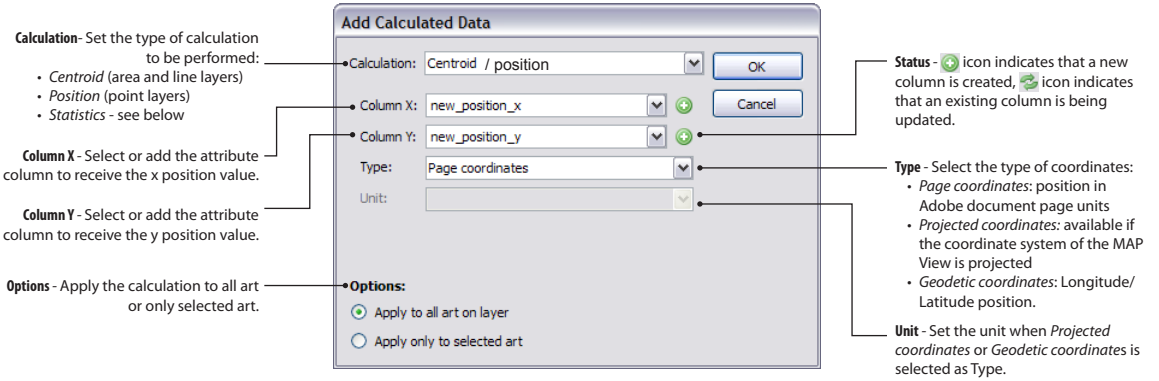
The data table is added to the attribute table on the destination MAP Layer and may be viewed in the MAP Attributes panel. Notice that the matching column in the data table has also been added, but has been appended with a 1 if the column names were identical in the source and destination tables.

Add Calculated Data

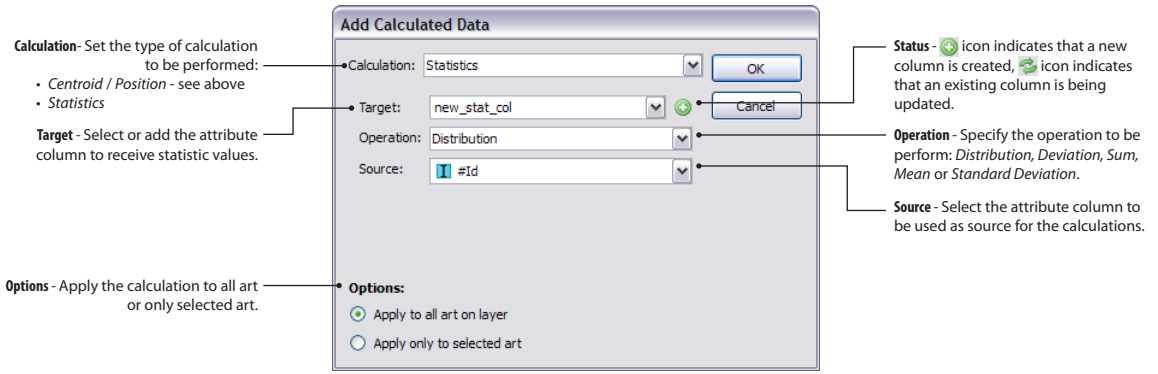
MAP Attributes panel options > Add Calculated Data

Add Centroid / Position Data

Not available for text layers



Add Statistics Data



FUNCTIONALITY

The **Add Calculated Data** function populates existing or new MAP Attribute columns with values calculated from the art geometry or from another column numerical values. The calculation options are:

- Geographic information: *centroid* position for lines and areas or *position* for points .
- Perform statistic calculations based on the overall attribute data of a specified column.

Calculated values are not updated automatically when the source column changes. *Add Calculated Data* must be run again for updates to be applied.

For single polygons, the centroid can be assimilated to the center of mass of the surface. For single lines, the centroid is the mid-point of the line. For polygons or lines grouped into a compound path, the centroid of the largest polygon or line is used.

NOTE: The centroid of a Bezier polygon (smoothed path) may not be completely accurate because only the anchor points are used to calculate the centroid's position. If necessary, use the Adobe Illustrator **Add Anchor Points** function (*Object* > *Path* > *Add Anchor Points*) before running Add Calculated Data.

Calculated data can be added or updated to all art on a layer or only to the selected art, however statistical calculations are based on the entire dataset.

PREREQUISITES

Add Calculated Data can populate new or existing attribute columns. Only attributes of type Real can be updated so users should make sure that the proper data type are applied to these columns.

For statistics calculations, the source column must be numerical (Integer or Real type), users may need to use the *Join Table* function to import appropriate numerical data beforehand (e.g. election results per county). (see **Edit Schema** in this chapter)

USING ADD CALCULATED DATA

Make a selection on the MAP layer concerned and click **Add Calculated Data** from the MAP Attributes panel options menu.

Calculate Centroid or Position

If the selected data is on a MAP layer of type *Line* or *Area*, set the **Calculation** drop-down list to *Centroid* to calculate the x and y position of the line or area centroids. If the selected data is on a MAP layer of type *Point*, set the **Calculation** drop-down list to *Position* to calculate the x and y position of points in a specific coordinate format.

In the **Column X** and **Column Y** drop-down lists, users have the options to keep the default new column names (*new_position_x* and *new_position_y*), type names of their choice, or select an existing column. Only existing columns of data type Real are listed.

The positions coordinate format is set in the **Type** drop-down list. The options are:

- **Page coordinates**: x and y positions relative to the Adobe Illustrator page reference, in page units (as specified in the Adobe Illustrator document setup).
- **Projected coordinates**: x and y positions in the source coordinate system of the MAP View containing the selected layer (if this system is projected).
- **Geodetic coordinate***s*: longitude and latitude positions — calculated from x and y positions if the source coordinate systems of the MAP View containing the selected layer is projected.

The **Unit** drop-down list shows a selection of linear or angular units if the coordinate type is set to *projected* or *geodetic* respectively.

Finally, set the option to calculate the centroid or position to the selected art only or to all art on the current layer.

Calculate Statistics

To calculate statistics based on a source attribute column, set the **Calculation** drop-down list to *Statistics*.

The following statistical operations are available:

- **Deviation**: for each row, difference between the current value and the mean.
- **Distribution**: for each row, current value divided by the sum.
- **Mean:** sum of all the row values divided by the number of rows in the source column (same for all rows).
- **Standard Deviation**: measure of the variability or dispersion of the row values in the source column. A low standard deviation indicates that row values are very close to the mean, whereas high standard deviation indicates that row values are spread out. Calculated as the square root of the sum of all deviations squared, divided by the number of rows in the source column (same for all rows).
- **Sum**: addition of all the row values in the source column (same for all rows).

In the **Target** drop-down list, users have the options to keep the default new column name (*new_stat_col)*, type a name of their choice, or select an existing column. Only existing columns of data type Real are listed.

Then, select the required function in the **Operation** drop-down list. *Deviation* and *Distribution* calculate a value specific to each row; *Mean, Standard Deviation* and *Sum* create a single value for all rows.

In the **Source** drop-down list, select the source column from within all numerical attributes of the current layer. Users have the option to add calculated data to all art on a layer or only to the selected art, however statistical calculations are based on the entire dataset of the source column

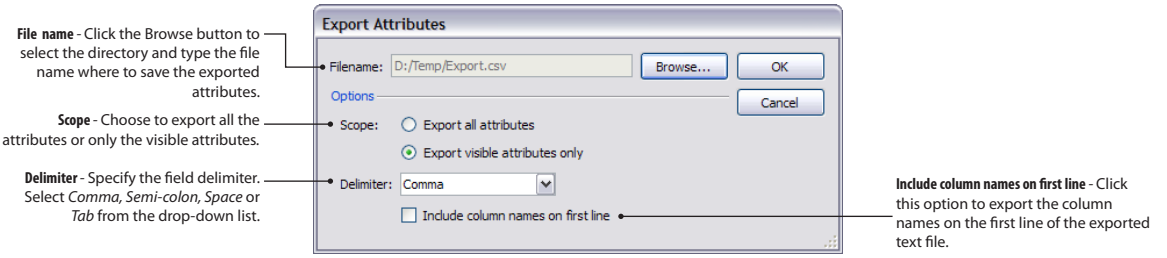
NOTE: To obtain a distribution in percents, first use *Add Calculated Data* with the *Distribution* operation, then use the *Apply Expression* function to multiply the column values by 100 (e.g. COLUMN = COLUMN * 100).

RESULTS

The attributes columns are updated or created according to the specified settings. Note that these new values are not updated automatically when the source column changes. *Add Calculated Data* must be run again for updates to be applied.

Export Attributes

MAP Attributes panel options > Export Attributes



FUNCTIONALITY

The Export attributes function exports all selected attribute information from the current MAP Layer to a delimited text file—comma, space, tab or semi-colon separated.

PREREQUISITES

Attributes will be exported as they are in the MAP Attributes panel. For example, users can change the number of decimals for attributes of type Real prior to exporting (see **Edit Schema** in this chapter), to limit the size of the exported file—or to turn on/off the visibility of some attributes, with **Edit Schema** or the MAP Attributes panel **Show/Hide** function.

USING EXPORT ATTRIBUTES

Export attributes is accessed from the MAP Attributes panel options menu.

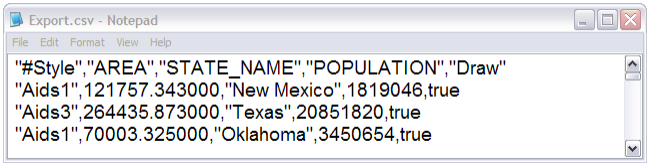
In the Export Attributes dialog box, click the **Browse** button to navigate to the directory where the exported file will be saved and type a file name. By default, the exported file will be appended a *.txt* extension—to export in another delimited text format, type another file extension (*.csv or *.tsv) in the file name (e.g. file.csv).

Users have the following options to set:

- Export all attributes or visible attributes only.
- Set field delimiter in the exported text file to *Comma, Semi-colon, Space* or *Tab*.
- Export or not the column names on the first line.

RESULTS

A delimited text file is created according to the specified settings. Text attributes (type String) are exported in double quotes ("...") in the text file.



Plotting Points

The ability to place points onto a map is a fundamental part of cartography. Points can represent the locations of towns and cities, shops and malls, airports and train stations and more. MAPublisher provides the functionality to create or plot points in vector format.

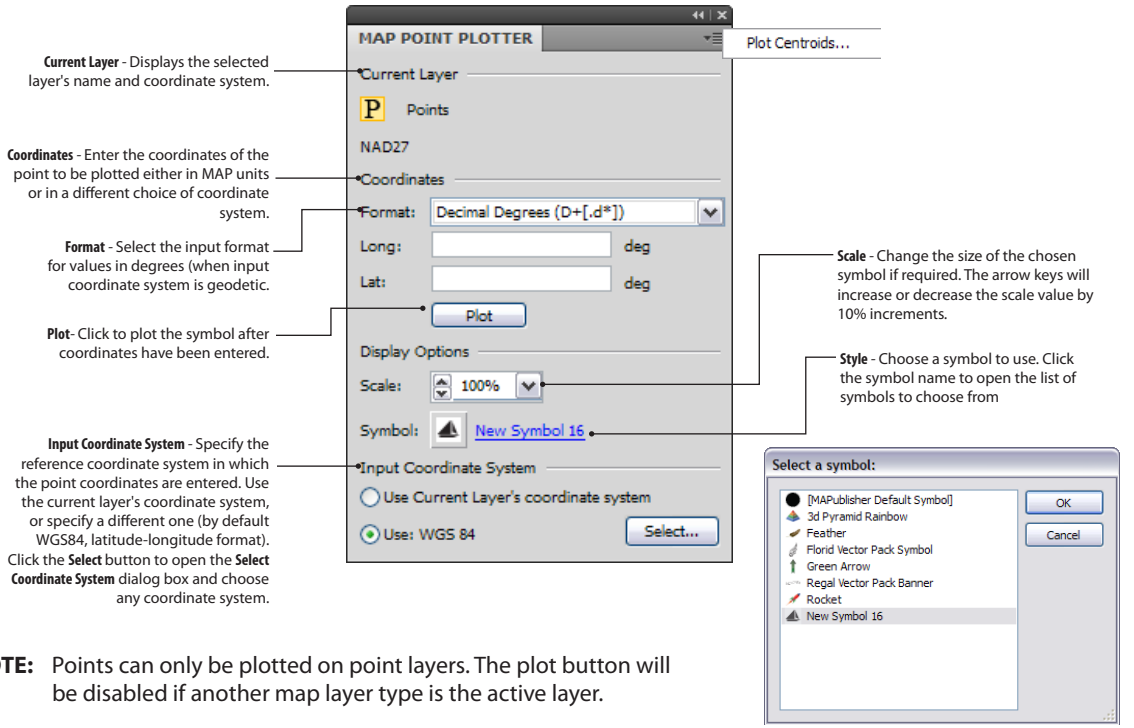
There may be times when you wish to quickly add a point or a small group of points to your map but you do not have a GIS or ASCII file containing these points ready for import. Alternatively your map may be in a projection that holds coordinates in linear units, yet the coordinates of your point locations are in angular units (i.e. degrees).

Provided you have a fully specified MAP View, and know the coordinates (coordinate system and unit can be specified) for the locations you wish to plot, you can use the MAPublisher Point Plotter to have your points automatically added at their correct locations.

Topics covered in this section are:
MAP Point Plotter
Plot Centroids

MAP Point Plotter

Window > *MAPublisher* > *MAP Point Plotter* and *MAPublisher Toolbar*



NOTE: Points can only be plotted on point layers. The plot button will be disabled if another map layer type is the active layer.

PREREQUISITES

In order to plot points using the Point Plotter, you must first have a fully georeferenced MAP View in your document, as this function will use the coordinate system of that MAP View in order to generate points. Furthermore you must create a new Adobe Illustrator layer in which your points will be placed, as the software will not support multiple feature types on the same layer. Remember once you have created a Point layer, you must drag it into the desired MAP View, specifying **Point** in the Define Layer dialog box.

USING POINT PLOTTER

Setting up the Symbol Selection

The symbols used by Point Plotter are a direct reproduction of those that exist in the Adobe Illustrator **Symbols** panel. To open the Adobe Illustrator symbols panel, click the menu *Window* > *Symbols*. If you wish to add points to this panel, create your symbols as closed Adobe Illustrator objects and drag them into this panel. Alternatively, open the **MAP Symbols** file from the *Helpful Styles & Symbols* folder on the MAPublisher DVD or local drive (see Appendix 4), and drag the symbols into your Adobe Illustrator Symbols panel.

Entering Coordinates

When the **Use Current Layer's coordinate system** option is toggled, coordinate values can be entered in the current MAP units of the coordinate system of the MAP View containing the selected layer.

When the **Use: WGS 84** option is toggled, the **Select** button will become enabled. Clicking the **Select** button will open the **Select Coordinate System** dialog box. Choose any coordinate system, the coordinates values entered to plot points will be in the unit (Point Style) for this coordinate system.

When the selected or default coordinate system is projected, X and Y coordinates are entered in the unit (Point Style) of the coordinate system (e.g. metre, kilometre, feet). When the selected or default coordinate system is Geodetic, Lat and Long coordinates are entered in degrees. The values entered into the Latitude and Longitude text boxes may be entered in different formats:

- Decimal degrees (D+[.d*])
- Delimited Degrees Minutes Seconds (D+ MM SS[.s*])
- Degrees.Minutes (D+.MM[m*])
- Degrees.MinutesSeconds (D+.MMSS[s*])
- Packed DMS with decimal point((D)DDMMSS[.s*])
- Packed DMS ((D)DDMMSS[s*])

Items in [ ] are optional, * means zero or more digits, + means one or more digits.

NOTES:

- Lines of latitude run East-West (the Equator is an example), whereas lines of longitude run North-South (the Greenwich Meridian is an example). Positive degree values represent north latitudes and east longitudes. Negative degree values represent south latitudes and west longitudes. Directions can be entered either with positing/negative values or using the N, S, E or W letters preceding or following the numerical values, separated or not with a space.
- Valid delimiters for *Delimited Degrees Minutes Seconds* format are:
  - → *space, hyphen* (-), *colons* (:) or *underscore* (_) : e.g. 43 41 48.98N, 43-41-48.98N, 43:41:48.98N or 43_41_48.98N
  - → *d* (degree), *single quote* (minute), *double quote* (second): e.g. 43d41'48.98"N
- *Packed* formats require the use of two digits for degrees of latitude (e.g. 1°N must be written 01) and 3 digits for degrees of longitude (e.g. 1°E must be written 001).

Examples of Latitude/Longitude values

Formats		Decimals Degrees	Delimited Degrees Minutes Seconds	Degrees.Minutes	Degrees. MinutesSeconds	Packed DMS with decimal point	Packed DMS
Avenza Office: **43°41'48.98"N 79°23'32.38"W** (= 48°41.8163'N | 79°23.5396"W) (= 48.6969°N | 79.3922°W)	Lat	43.6969N	43d41'48.98"N	43.418163N	43.414898N	434148.98N	43414898N
	Long	79.3922W	79d23'32.38"W	79.235396W	79.233238W	0792332.38W	079233238W
	Lat	43.6969	43 41 48.98	N43.418163	N 43.414898	434148.98	N 43414898
	Long	-79.3922	W 079 23 32.38	W79.235396	W 79.233238	-0792332.38	W 079233238
	Lat	N 43.6969	N 43-41-48.98	43.418163	43.414898	N 434148.98	43414898N
	Long	-079.3922	W 79:23:32.38	-079.235396	-079.233238	W 0792332.38	-079233238

Warning - *Double-quotes (") are supported in MAP Point Plotter, but not in the import of Delimited Text.*

Choosing a Symbol and Scale

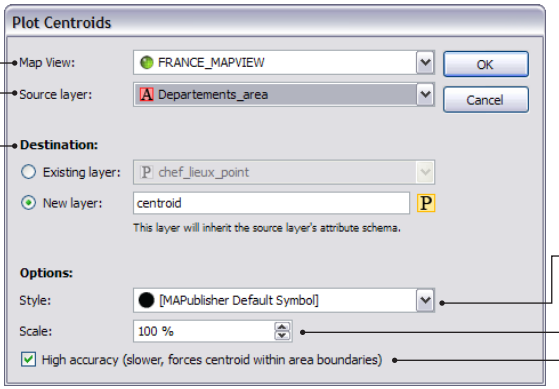
After entering coordinate values select an appropriate symbol to use by clicking the symbol name link. Again the symbols displayed are the symbols that currently exist in the Adobe Illustrator Symbols panel. To scale the symbol used, edit the **Scale** entry field. Clicking the **Up** and **Down** arrows will increase or decrease the value by 10%.

Plotting Points

Click **Plot** to plot the point in the designated MAP layer. To plot subsequent points, edit the coordinates, and also choose different symbols if required and click Plot again.

Plot Centroids

MAP Point Plotter panel > Plot Centroids



MAP View - Select the MAP View containing the layers of interest (**Source Layer** and **Destination Layer**)

Source Layer - Select the Area or Line MAP Layer containing the paths on which the centroids will be calculated.

Destination Layer - Select an existing Point MAP Layer or create a new one, where centroid symbols will be added .

Options:

Style - Select the symbol to use. The list correspond to the symbols present in the Adobe Illustrator Symbols panel.

Scale - Select the symbol scale

Use high accuracy - *if the selected source layer is an Area MAP Layer*, check this option for a high placement accuracy..

FUNCTIONALITY

The **Plot Centroids** function adds point symbols at the center of polygons or line, while copying the attributes from the source MAP layer when the *New Layer* option is selected. This function is useful for cartographic generalization purpose (e.g. replacing small island area by a symbol), or to simply add a meaningful symbol at the center of areas. For single polygons, the centroid can be assimilated to the center of mass of the surface. For single lines, the centroid is the mid-point of the line. For polygons or lines grouped into a compound path, the centroid of the largest polygon or longest line is used.

NOTE: The centroid of a Bezier polygon (smoothed path) may not be completely accurate because only the anchor points are used to calculate the centroid's position. If necessary, use the Adobe Illustrator **Add Anchor Points** function (*Object* > *Path* > *Add Anchor Points*) before running Plot Centroids on Bezier polygons.

PREREQUISITES

The document must contain a fully georeferenced MAP View that includes a MAP layer of type Area or Line that contains art. An existing Point layer may be used as destination layer (*Existing Layer* option), in which case this layer must be included in the file before running the function . Furthermore, the desired symbol must be present in the Adobe Illustrator Symbols panel.

USING PLOT CENTROIDS

Plot Centroids is located in the Point Plotter panel options menu.

- Select first the **MAP View** that contains the layers concerned by the function.
- Select the **Source Layer** containing the polygons or lines for which the centroids will be plotted (MAP Layer of type Area or Line).
- Select the symbol **Style** and **Scale** to apply.
- Choose the **Destination Layer** in which the centroids will be added: select an existing Point layer or create a new one.

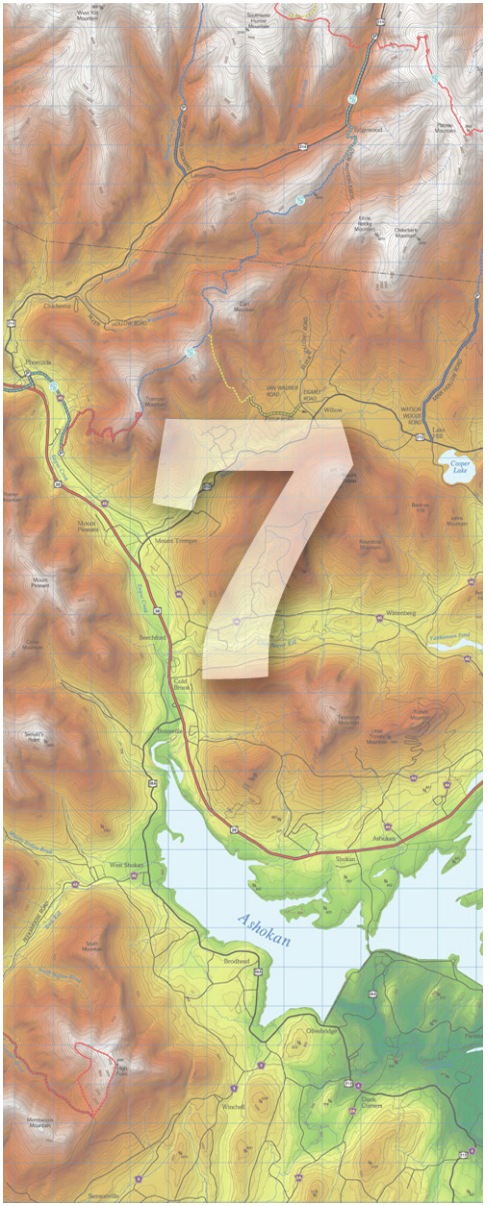
The high placement accuracy option makes more advanced calculations for the centroid positions so as to force them to fall within the area boundaries (useful for areas with strange shapes, for example some S shape islands).

NOTE: When the *New Layer* option is enabled, the attributes from the source MAP layer are copied to the new Point layer. However, when using an existing point layer, attributes do not get transferred unless the Point layer was created with its attribute schema based on the same source MAP Layer (see chapter 4 for more information on the *Base attribute schema on* option when creating new MAP layers).

RESULTS

Symbols are added to the specified Point MAP Layer specified. Depending on the type of polygon or line (single or compound path), symbols are located on the center of the polygons/lines or at the center of the biggest polygon/ longest line of a group.

Example: result of plotting centroids on a Canadian provincial Area layer.



Drawing Tools

MAPublisher benefits from Adobe Illustrator drawing tools. Any artwork created on a specified MAP layer is incorporated into the map data and can therefore be rescaled and reprojected. If the new artwork is of the same feature type as the MAP Layer, it will be automatically added to the attribute table.

Similarly, objects can be deleted and moved between layers with basic Adobe Illustrator tools. Therefore it is very easy to quickly add and delete features to MAP Layers.

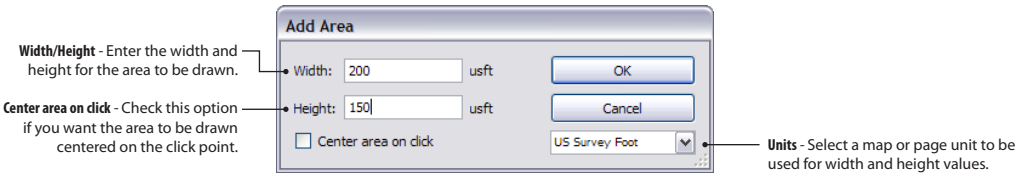
In addition to this, MAPublisher also provides its own tools for creating and managing artwork. **MAP Area Tools** are designed to draw rectangular and elliptical areas of specified dimensions in MAP Units. The **MAP Vector Crop Tool** will trim all the vector data (on all active layers) falling outside of a crop area. The **MAP Measurement Tools** allows users to measure distances in page or world unit and to save the measuring path as an art.

The topics covered in this section are as follows:

MAP Area Tool
MAP Vector Crop Tool
MAP Measurement Tool

MAP Area Tools

Tools > MAP Area Tool (Box) / MAP Area Tool (Ellipse)



FUNCTIONALITY

By using the **MAP Area tools**, areas of exact map dimensions can be quickly added to any MAP Layer and its related attribute table. Whenever an area is created using the MAP Area tools, any objects that fall inside the area (in whole or part) will be automatically selected.

USING THE MAP AREA TOOLS

Overview

MAPublisher offers **Ellipse** and **Rectangle** drawing tools. Select the shape you require from the main Adobe Illustrator Toolbar, and select the MAP Layer which contains the coordinate system on which you want to draw the shape.

There are two methods of using the MAP Area tools. As with Adobe Illustrator shape tools you can either click and drag to create a shape at an unspecified size. Alternatively you can single click in the MAP document to open the **Add Area** dialog box, where you specify exact width and height values for the shape.

Drawing via Click and Drag

To draw shapes at unspecified sizes, click and drag over the Map document while holding down the left mouse button until the desired area has been outlined, as is done with the standard Adobe Illustrator area drawing tools. Use the **Alt** key (Windows) or the **Option** key (Mac) to draw from the centre and/or the **Shift** key to constrain the proportions. When you release the mouse button the area will be created.

Entering Specific Dimensions

To draw shapes at specified sizes, single click at a point in your Map document at the location from which you wish to plot the shape. The MAPublisher **Add Area** dialog box will appear into which you can enter specific dimensions for the area to be drawn. If you wish to have the area centered over the click point simply check the **Center area on click** box. If you do not check this box an area will be drawn from its upper left corner. Click **OK** to plot the shape.

RESULTS

Plotting a shape using either of these methods will initially select the features that fall, inside the area (in whole or part). Therefore, these tools can be also useful for selecting features that are within designated distances away from a central location.

MAP Vector Crop Tool

Tools > MAP Vector Crop 

FUNCTIONALITY

By using the MAP Vector Crop Tool, the entire map drawing (vector data) can be trimmed to a certain area of interest. Typically, the tool is meant to crop imported vector data that might be covering a larger area than the intended map extents. Used on a copy of the full original MAP View, MAP Vector Crop can also be utilized to create map insets (smaller maps centered on specific areas)—see example below.

PREREQUISITES

Before using the **MAP Vector Crop Tool**, ensure that the layers to be trimmed are visible and unlocked in the Adobe Illustrator Layers panel. Similarly, layers that are not supposed to be cropped should be locked or invisible. The extent of the map that will remain after cropping must be visible on the screen**,** so make sure to zoom out sufficiently prior to starting the vector crop tool.

NOTE: Invisible and locked layers will not be cropped.

Users should save a copy of the Adobe document prior to performing a crop. Due to some Adobe Illustrator limitations, text typed on a path might not return to their prior state after an undo.

USING THE MAP VECTOR CROP

Click the **MAP Vector Crop Tool** button  in the Adobe Illustrator Tools panel, then click and drag a rectangle over the artboard. Upon release of the mouse button, the crop function is completed.

If the remaining map is too large, the MAP Vector Crop can be run again on the remaining data.
If the remaining map is too small, the MAP Vector Crop can be undone (menu *Edit* > *Undo*) and run again.

RESULTS

On all visible and unlocked layers:

- Text objects that have their anchor outside of the cropping rectangle are deleted. Text objects with their anchor inside the cropping rectangle are retained completely.
- Points falling outside of the cropping rectangle are deleted (the position of the center of the symbol is relevant). Symbols that have their center inside the cropping rectangle are maintained as a whole.
- Lines are clipped at the boundary of the cropping rectangle.
- Areas (polygons) that are completely out of the cropping rectangle are deleted. Areas intersecting with the cropping rectangle are clipped and closed following the edge of the rectangle.

The overall result is a map coverage reduced to the cropping rectangle outline. Subsequently, the MAP View(s) can still be transformed, rescaled etc. See examples on the next page.

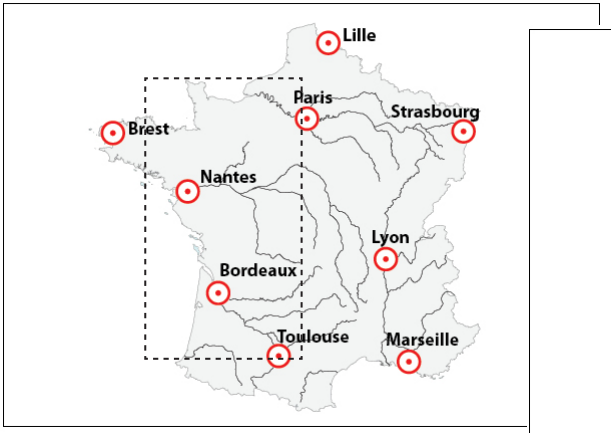
NOTE: The purpose of the MAP Vector Crop is to cut *vector* data types (points, lines and polygons). Some Adobe Illustrator specific objects might not be cropped properly using this tool, for example:

- Blend and Live Paint objects.
- Any art using effects that have been rasterized.
- Custom art such as scale bars, grids/graticules, north arrows *(expand custom art to crop)*.
- Images cannot be cropped with this tool.
- Legacy Text

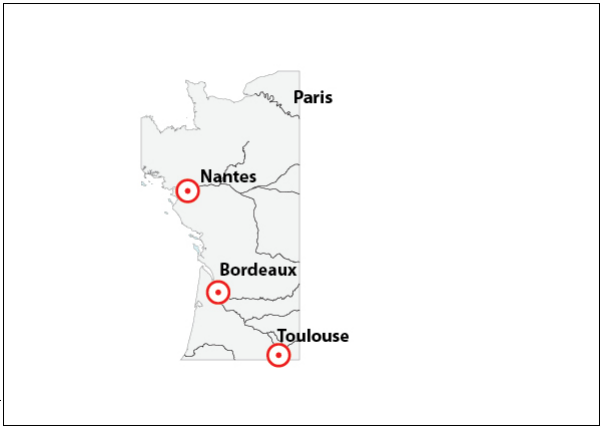
Due to an Adobe Illustrator limitation, text on a path may flip after a crop operation. This is corrected by checking the **Flip** option from **Type on the Path Options** dialog box (choose *Type* > *Type on a Path* > *Type on a Path Options)*.

Examples

Crop vector data



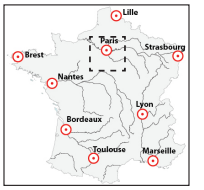
Original map



Crop result: lines and area are clipped, text with 1st letter within the cropping rectangle and symbol with center point in rectangle are maintained. The MAP view can be re-scaled to fit better to the document size

Create Inset

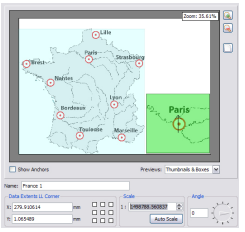
- Open a map, and make a copy (choose *File* > *Save a Copy*). Leave the original map open, make the copy the active document.
- Use MAP Vector Crop to crop the area of special interest.
- Make the original map active. In the MAP Views panel, select the option menu *Import MAP View from document*. Select the MAP View from the copy .



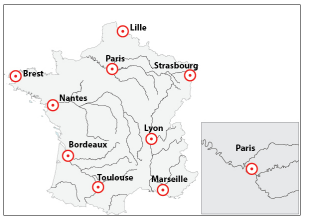
Original

The map now contains two MAP Views (at least). Their relative position can be managed from the MAP View Editor, as well as the scale of the inset map.

Copy and Crop



Edit MAP views: e.g. move inset and change scale



RESULT

MAP Measurement Tool

Tools > MAP Measurement Tool 

FUNCTIONALITY

The MAP Measurement Tool measures straight distances (between two points), path distances (multiple points) and the perimeter and area of closed paths — in page or map unit (real world distances). Furthermore, the measuring path can be converted to a line or area in the currently selected layer.

PREREQUISITES

To measure real distances on the ground (in map units), the Adobe Illustrator file must contain at least one MAP View with an assigned coordinate system.

The **map units** of the measurement is set in the *MAPublisher Preferences* for the *MAP Measurement Tool*. Users can select to use the current layer's map unit or select a specific unit. **Angular units** are used by geodetic coordinate systems, **linear units** are used by projected coordinate systems. The **layer's map unit** is defined in the coordinate system definition of the selected MAP View. The current map unit can be viewed in the **MAP View Editor,** by clicking the information button of the *Source Coordinate System* (called **Point Style** in the Definition tab) - see chapter 4 and appendix A2 for details.

The **page unit** is defined in the Adobe Illustrator document setup. The page unit can be accessed and changed in the **Document Setup** dialog box (Adobe Illustrator menu *File* > *Document Setup*).

To enable snapping to art while measuring, turn on the Adobe Illustrator **Smart Guides** (Adobe Illustrator menu *View* > *Smart Guides*). The snapping tolerance is set in the Adobe Illustrator Preferences for Smart Guides (Adobe Illustrator menu *Edit* > *Preferences* > *Smart Guides*)

USING THE MAP MEASUREMENT TOOL

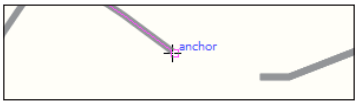
Click the **MAP Measurement Tool** button  in the Adobe Illustrator **Tools panel** to start a new measurement. The mouse cursor becomes a cross .

To measure distances in map unit — real world distances — select a MAP layer (i.e. layer belonging to a MAP View) in the Adobe Illustrator Layers panel. The unit of the layer's parent MAP View will be used in the measurements.

To measure distances in page unit — distances on the page — select a non-MAP Layer (i.e. not included in a MAP View) in the Adobe Illustrator Layers panel. The unit of the document will be used in the measurements.

NOTE: While the MAP Measurement Tool is enabled, users can change the selected layer in the Adobe Illustrator Layers panel. If the new selected layer is contained in a different MAP View, the distance values are updated accordingly on the screen automatically without having to start a new measurement — e.g. if the MAP View scale is different, the measurement will significantly change.

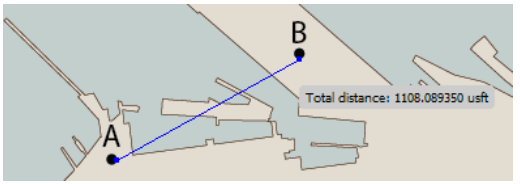
If the Adobe Illustrator Smart Guides are enabled, the MAP Measuring Tool can snap to existing anchor points. When the mouse cursors is near enough a point, Adobe Illustrator highlights it as shown in the image below.



Measure Straight Distance

By default, the MAP Measurement Tool measures straight distances (distance between two points).

Click a starting point to begin measuring. As the mouse moves on the artboard, a distance label indicates the distance from the starting point to the current mouse position. A second click digitizes the end point. As soon as the second point is clicked, the measurement is ended and the total distance is displayed.



When the measurement is finished, the user has the option to:

- Click once to clear the measuring line and label, or
- Click while holding the Shift key to convert the measuring line to an Adobe Illustrator art object (added to the currently selected layer), applying the currently selected stroke setting.

A new click on the page starts a new measurement. To exit the MAP Measurement Tool, select another tool in the Adobe Illustrator Tools panel.

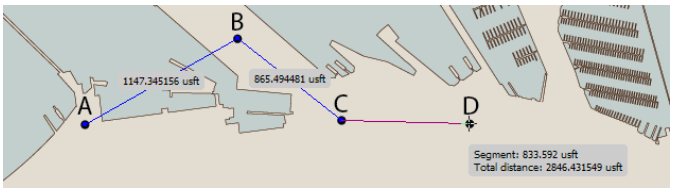
Measure Path Distance

Click a starting point to begin measuring. Before clicking a second time, hold down the Shift key. The cursor changes from ⊹ to ⊹. A new point is added on the path, but the measurement does not end.

Keep holding the **Shift** key while adding more points along the path. As the mouse moves on the artboard, a total distance label indicates the length of the path already digitized and the distance from the last added point to the current mouse position.

While digitizing the measuring path, hold the **Alt** key (Windows) or **Control** key (Mac OS) to display the length of each digitized path segment.

Before adding the last point, release the Shift key. As soon as the last point is clicked, the measurement is ended and the total distance is displayed. Hold the Alt key (Windows) or Control key (Mac OS) while clicking the last point to display all annotations (segment lengths and total distance).



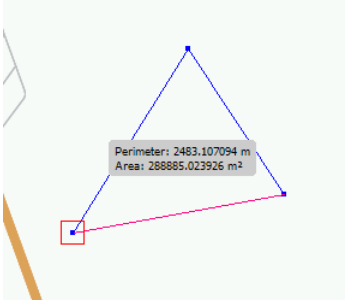
When the measurement is finished, the user has the same options: click once to clear the measuring path and label, or click while holding the Shift key to convert the measuring path to an Adobe Illustrator art object (added to the currently selected layer), applying the currently selected stroke setting.

A new click on the page starts a new measurement. To exit the MAP Measurement Tool, select another tool in the Adobe Illustrator Tools panel.

Measure Perimeter and Area

To measure the perimeter and area of a closed path, follow the same steps as the measure of a path distance. When digitizing the last point, release the Shift button and place the mouse cursor over the start point — a box is drawn around the starting point — click to close the path and end the measurement.

Hold the Alt key (Windows) or Control key (Mac OS) while digitizing to display the length of each segment.



NOTE: Holding down the Shift key while clicking the start point again prevents the path from being closed and the measurement can continue.

When the measurement is finished, the user has the same options: click once to clear the measuring path and label, or click while holding the Shift key to convert the measuring closed path to an Adobe Illustrator art object (added to the currently selected layer), applying the currently selected fill and stroke setting.

MAP Measurement Tool Preferences

The MAP Measurement Tool Preferences are accessed by double-clicking the MAP Measurement Tool button  on the Adobe Illustrator Tools panel or from the menu *Edit > MAPublisher Preferences > MAP Measurement*.

Users can set the number of decimals for the measurement values, the digitized path colour and new segment colour. See chapter 1 for more information on MAPublisher Preferences.

Line Functions

The Adobe Illustrator environment offers lots of flexibility when working with vector art. MAPublisher offers graphics specific line tools, which is discussed in detail in this chapter.

Buffer Lines allows for the creation of a buffer around current lines at designated distances in map units.

Flip Lines can be used to swap the start and end points of lines if these line strings were not originally digitized in a preferable manner.

Join Lines can be used to connect line segments into continuous line strings or compound paths based on a specified attribute column.

Join Points allows for point symbols to be joined based on attribute values. This tool will generate a line string joining common points, and is ideal for GPS data.

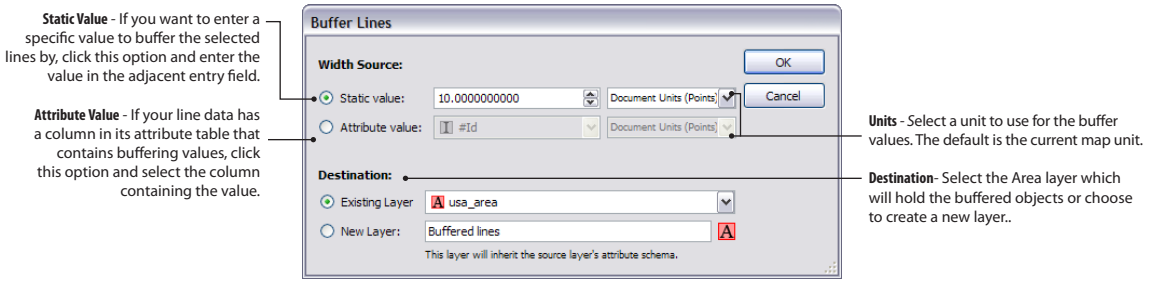
Simplify Lines allows for the removal of vertices from selected lines based on mathematical formulae.

Topics covered in this section are:

Buffer Lines
Flip Lines
Join Lines
Join Points
Simplify Lines

Buffer Lines

*Object > Filters > MAP Lines > Buffer Lines** or *MAP Toolbar*



FUNCTIONALITY

The MAPublisher **Buffer Lines** filter creates buffer Area objects around the line work. This can be useful if you are attempting to calculate distances on each side of a line. An example use this tool could be in the planning of new roads, where the actual width of the highway is a major consideration.

PREREQUISITES

To use Buffer Lines, the select artwork must be on a MAP Layer of type line **Line layer**.

USING BUFFER LINES

Select the line(s) to buffer click the menu *Filter > MAP Lines > Buffer Lines* or the MAPublisher toolbar button .

The buffer value for lines can be entered as a fixed a value or by selecting an attribute column that contains buffer values. The buffering value specified designates the total width of the new area object. For example, a value of 10 map units would create a buffer of 5 map units on either side of the selected line. This works on individual lines or a selected set of lines. The buffer width is calculated and created using the units of measurement set in the dialog box.

1. Set the unit to use for the buffer value from the **Units** drop-down list.
2. Then choose which option to use for the buffer values. When the Buffer Lines filter is run with the **Attribute Value** option checked, an area width is calculated based on the value(s) related to the selected object(s) in the attribute table. The area will then be constructed based on the line's attribute value. When the filter is run based on a **Static Value**, an area object is created by the specified value.
3. Choose the **Area layer** to place the buffer(s) (choose an existing layer or create a new one), then click **OK** to generate the areas.

** In Adobe Illustrator CS3, Buffer Lines is found in the Filter > MAP Lines menu.*

Flip Lines

*Object > Filters > MAP Lines > Flip Lines** or *MAP Toolbar* 

FUNCTIONALITY

The MAPublisher **Flip Lines** filter reverses the endpoints of a line or an area (open or closed path).

Adobe Illustrator *Brushes* and *Type on a Path* tools are designed to position patterns and text depending on the direction of the endpoints. Two consequences of this are:

- Cases occur when labels are placed upside down and backward when using the MAPublisher labelling tools (*MAP Tagger* tool and *Feature Text Label,* see chapter 10 Labelling Functions).
- When applying graphic styles with a brush pattern to paths (manually or using MAPublisher *MAP Stylesheets*), sometimes patterns are not applied at the right side of the line or in the expected orientation.

In order for the labels or patterns to be consistent for a group of lines, flipping some of the lines may be necessary.

Lines can be flipped on  **Line layers** and  **Area layers**. In order to use this filter, select the lines to be flipped, and then go to *Filter > MAP Lines > Flip Lines*, or use the MAPublisher toolbar button  .

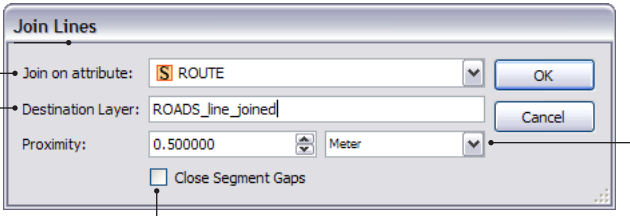
NOTES:

- When exporting Area layers to GIS formats, polygon outlines must have a positive #Area value in the MAP Attributes panel. If some values in the #Area column are negative (and #AreaDirection is equal to *Counter Clockwise*), **Flip Lines** can then be used to reverse the #AreaDirection and convert the #Area to a positive value.
- For compound paths, the #AreaDirection property is equal to *Indeterminate*, therefore compound paths cannot be flipped.
- The MAPublisher *MAP Tagger* tool or *Feature Text Label*, have an option to enable **Flip upside-down labels** to create text in a consistent orientation, without requiring the use of the Flip Lines function (see chapter 10 for details).

** In Adobe Illustrator CS3, Flip Lines is found in the Filter > MAP Lines menu.*

Join Lines

Object > *Filters* > *MAP Lines* > *Join Lines** or *MAP Toolbar* 



Join on Attribute - Select the column you wish to base the join on. All lines within the selected proximity with matching column values will be joined.

Destination Layer - Enter the name of the output layer. This new layer will contain the newly joined lines.

Proximity - Assign a proximity value in the current unit. This value determines how close together (in map units) the lines must be in order to be joined.

Proximity Units - Select a map or page unit to be used for proximity values.

Close Segment Gaps - If two line segments are separated by a distance less than the Proximity, selecting this option will create a line segment that connects the two lines otherwise a compound path is created.

FUNCTIONALITY

The **Join Lines** filter allows a group of linear features to be joined based on a common value within an attribute column. For example, it may be desirable to join all segments of a particular street by the common attribute of street name in order to create a single line element representing that street. When the Join Lines filter is run a new layer is created containing the joined lines in order to avoid deleting other attributes within the original street layer. The new MAP Layer contains the joined lines with an attribute column representing the joined column.

Join Lines can be very useful for reducing the size of a data file by joining related lines and thus reducing the number of segments and associated data present in the file. It is also very useful to run Join Lines prior to labelling with **Feature Text Label** in order to reduce the occurrence of duplicate labels (see chapter 10 *Labelling Functions*).

PREREQUISITES

This tool can be executed on selections on **Line layers**. To access Join Lines, choose *Filter* > *MAP Lines* > *Join Lines* or click the MAPublisher toolbar button  .

USING JOIN LINES

In the **Join on attribute** drop-down list, select the attribute column containing the attributes you wish to join. For example to join lines based on street name, the column containing the street names should be selected. This will result in line segments containing the same street name being joined.

In the **Destination Layer** text box, specify a name for the new **Line layer** that MAPublisher will create to hold the joined lines.

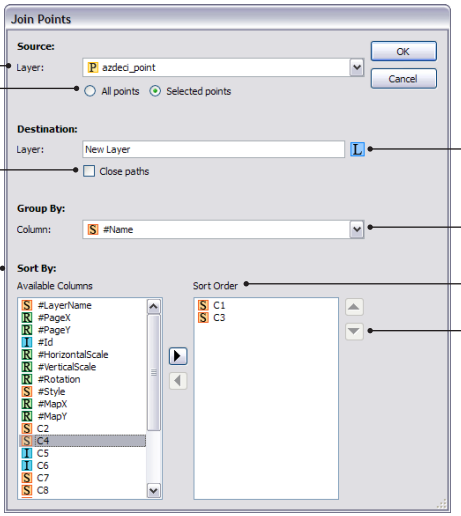
A **Proximity** value should be entered and proximity **Units** assigned. Units can be specified in map units or page units. Entering a proximity value of zero will only join line segments that are touching. If the distance between the end of a segment and the start of another is greater than the set proximity value, these lines will not be joined. If two line segments in the selection are separated by a distance less than the set proximity value, check the **Close Segment Gaps** option to create a line segment that connects the two lines. When not selected a compound path will be created.

When the settings are entered, click **OK**. On the newly created Line layer view the layer's attributes in the **MAP Attributes** panel. Note that the only attribute columns present are the default #Property columns and the attribute column specified for the join.

** In Adobe Illustrator CS3, Join Lines is found in the Filter > MAP Lines menu.*

Join Points

Object > Filters > MAP Lines > Join Points or MAP Toolbar*



Input Layer - Use this drop-down list to select the Point layer containing the symbols you wish to join.

All Points / Selected Points You can choose to join only those points that have been selected or all points on the selected MAP Layer.

Close paths - Check this option to generate an Area layer. If unchecked, a Line layer will be generated.

Sort By Available Columns - Select an attribute column containing ascending values to sort by. Then click the Add button to add the column to the Sort Order.

Destination Layer - Enter the name of the output layer. This new layer will contain the generated lines.

Group By - Specify the attribute column containing similar values to determine each group of points.

Sort Order - Contains a hierarchical list of the columns specified to sort by. To remove a column from the Sort Order, click the Remove button.

Move Up / Move Down - You can move columns up and down the Sort Order hierarchy by clicking the appropriate button .

FUNCTIONALITY

The **Join Points** filter allows a group of point symbols to be joined to form a line, based upon sorting criteria which exist in the attribute structure of the point layer. For example, it may be desirable to join points that were originally generated by a GPS device, in order to create line elements connecting these points. When the Join Points filter is run a new layer is created containing a line linking each set of common points, with the generated layer containing the same common attribute column that was used to group the points together.

PREREQUISITES

Join Points can only function on **Point** layers, and can be used on both currently selected point symbols or all the point symbols on a specified layer. There must be at least two attribute columns on the specified point layer in order to use Join Points. To open the dialog box, choose *Filter > MAP Lines > Join Points* or click the MAPublisher toolbar button .

USING JOIN POINTS

From the **Input Layer** drop-down list, select the **Point layer** containing the points to be joined. Then specify if **All Points** should be joined, or just the **Selected Points** on this layer, by selecting the appropriate option.

Specify a name for the **Output Layer** that this function will generate. By default, the program will generate a **Line** layer. To generate an **Area** layer (by linking the line end to the start) check the **Close paths** option.

In the **Group By Column** drop-down list, select the attribute column containing the common attributes used to join the point together. For example to join points based on a unique ID, select the column containing the common ID names. This will result in point symbols containing the same name being joined together.

** In Adobe Illustrator CS3, Join Points is found in the Filter > MAP Lines menu.*

Because each point that is joined will be represented by a node in a line string, a logical order by which the points are be joined must be specified. For example, it is logical that the point which was captured by a GPS unit first should be the first node in the line string, with the second and third points being located at the second and third nodes. In order to specify these parameters, choose columns by which to sort your points. These should be attribute columns which contain rising alphabetical or numerical values.

In the **Sort By Available Columns** list, select the primary sorting column. This should be the attribute column that contains the best fit for rising alphabetical or numerical values. For example if points have rising values from 1–10, the point with a value equal to 1 will be at the start of the generated line, and the point with a value equal to 10 will be at the end of the line. Select first a column and then click the **Add** button to place the column into the **Sort Order** list. If all the values contained in the first *Sort By* column are unique,it is not required to set a secondary column.

If the first *Sort By* column contained any similar values, a secondary column must be specified. Again click a column in the **Sort By Available Columns** list, and then click the **Add** button to place the column in the **Sort Order** list. Similarly third, fourth and fifth *Sort By* columns can be specified in the same manner if previous columns contain similar values. Note that the *Sort By* columns are a hierarchy with the topmost specified column being used for the primary sort, then the second, then third, etc.

To move columns up or down the hierarchy after they have been specified, simply select the appropriate column in the Sort Order list and click either the **Up** or **Down** button.

To remove any *Sort By* columns from the hierarchy, select the column in the **Sort Order** list and click the **Remove** button.

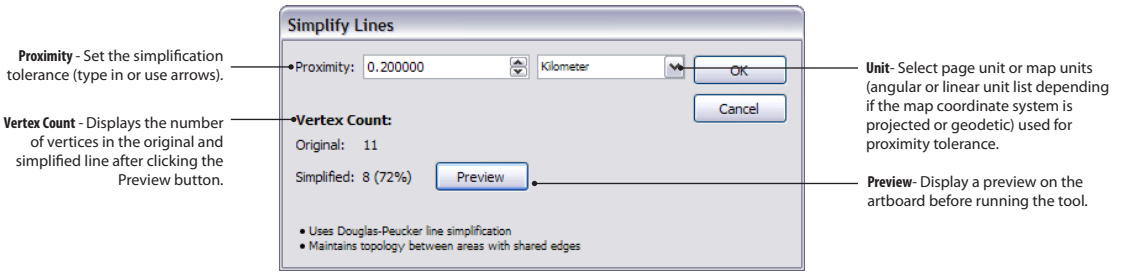
Note that a maximum of five columns can be used to sort points into a logical order. If the columns specified to sort by do not distinguish an ordering between certain points, the order of these points in the attribute table will be used to determine the order of the nodes in the generated line string.

RESULTS

When all the options have been set click **OK** to join the points on the specified layer. An **Area** or **Line** layer will be generated, depending on the specified output layer type, which will be placed in the same MAP View as the Input Point layer which has been joined.

Simplify Lines

*Object > Filters > MAP Lines > Simplify Lines** or *MAP Toolbar* 



FUNCTIONALITY

The MAPublisher **Simplify Lines** filter allows for the simplification or generalization of imported vector data. The Simplify Lines function uses the popular Douglas-Peucker algorithm for removing nodes and vertices during simplification. For more information on the Douglas-Peucker algorithm see Appendix A1.

Simplify Lines is used to reduce the number of points required to represent a vector-encoded line where the lines are approximated by a stream of X-Y coordinates. The function can be used on **Line** or **Area** layers and removes nodes based upon a proximity value in either **Page Units** or **Map Units**. The list of **Map Units** depends on the MAP View coordinate system—e.g. angular units (page units, degrees, etc) for geodetic coordinate systems; linear units (such as metre, feet) for projected coordinate systems.

The **Proximity value** or simplification tolerance is based on the vertical difference between the begin-end line and points off a line, *not* the distance between anchor points on the line. The Douglas-Peucker algorithm takes the proximity value and iterates through the line vertices to determine the points that fall within the specified proximity distance off the line and removes those vertices. Once all vertices are determined to be greater than the proximity value the line processing ends. A smaller proximity value will usually result in a fewer number of nodes being removed.

USING SIMPLIFY LINES

To access the function choose *Filter > MAP Lines > Simplify Lines* or the MAPublisher toolbar button  . Enter a proximity value in **Page Units** or **Map Units** by making a selection from the **Units** drop-down list. Page Units will be simply the units of the current document. Enter a proximity value in the unit specified by typing a value or by using the arrows.

Click the **Preview** button to see the simplification result. Once the result is correct, click **OK** to perform the actual simplification. It is always a good idea to experiment with different proximity values in order to achieve the desired results particular to the scale and coverage area.

** In Adobe Illustrator CS3, Simplify Lines is found in the Filter > MAP Lines menu.*

RESULTS

All selected lines or areas are simplified according to the settings. Simplified lines or areas will not be simplified again unless the tolerance value is increased. For example, if a line has been simplified with a proximity of 1.5 km., then it will not be simplified again until the tolerance is set to a value larger than 1.5 km.

In practice, it means that simplified lines can be selected again with non-simplified lines to run the function again, when the **Simplify Lines** function is run only the new lines will be simplified (unless the proximity value is increased).

NOTES:

- It is a good idea to perform simplify lines on artwork before exporting a Flash map. This will reduce the size of the file and therefore it will have a faster rendering time.
- To smooth the appearance of paths using Bezier curves, use the Adobe Illustrator function **Simplify Lines** found in the menu *Object* > *Path* > *Simplify.*

MAP Stylesheets

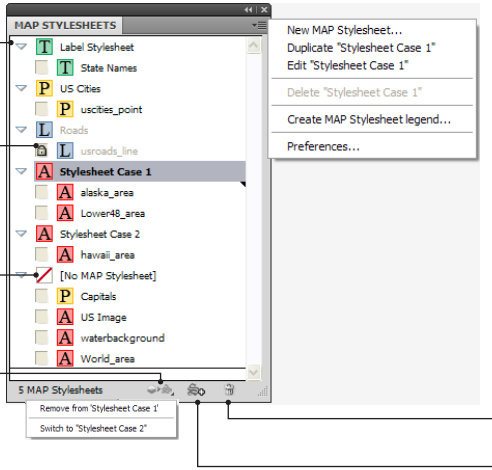
MAPublisher provides extensive tools for quick, easy and accurate styling of points, lines, areas and text. This function is able to read and work with the data found in the MAP Attributes panel and to apply symbols, graphic styles and character styles to artwork according to specified legend criteria.

The topics covered in this section are as follows:

MAP Stylesheets Panel
MAP Stylesheet Editor
Create MAP Stylesheet Legend

MAP Stylesheets Panel

Window > *MAPublisher* > *MAP Stylesheets* or *MAP Toolbar* 



MAP Stylesheet List - An alphabetical list of the MAP Stylesheets and associated MAP Layers in the current document. Both are depicted with their feature type.

Lock button - Click this button to lock or unlock the layer.

No MAP Stylesheet - Lists the MAP Layers which are not associated to any MAP Stylesheet.

Switch MAP View - Click this button to switch the selected layer from one MAP Stylesheet to another. *Remove from Stylesheet* moves the selected layer to [No MAP Stylesheet] section

Panel Options Menu

New MAP Stylesheet - Opens the **New Stylesheet** dialog box to specify a name and feature type for the new stylesheet.

Duplicate MAP Stylesheet - Creates a duplicate of the selected MAP Stylesheet.

Edit MAP Stylesheet - Opens the **MAP Stylesheet Editor** dialog box to edit the selected MAP Stylesheet.

Delete MAP Stylesheet - Deletes the selected MAP Stylesheet.

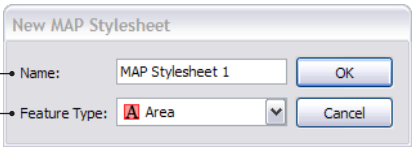
Create MAP Stylesheet legend - Creates a legend using the selected MAP Stylesheet rules.

Preferences - Opens MAPublisher Preferences on the MAP Stylesheet Panel property sheet (see chapter 1)

Delete MAP Stylesheet - Deletes the selected MAP Stylesheet.

New MAP Stylesheet - Opens the **New Stylesheet** dialog box to specify a name and feature type for the new MAP Stylesheet.

New MAP Stylesheet



Name - Specify a name for the new MAP Stylesheet.

Feature Type - Specify a feature type for the stylesheet: Area, Line, Point or Text.

FUNCTIONALITY

MAP Stylesheets allow to quickly create and apply legends (or expression rules) based on MAP Attributes using symbols, graphic styles, and character styles that exist in the respective Adobe Illustrator panels. Stylesheets are created using specific values contained in the MAP Attributes panel for the related MAP Layer assigned to the MAP Stylesheet and then stylized using Adobe Illustrator symbology, graphic styles or character style. MAP Stylesheets can be applied to data on both a one to one basis, where specific attribute values are assigned with a specific style or symbol (i.e. Style 1 = Value A) or with attribute value ranges (i.e. Style 2 = Greater than Value B and Less than Value C). Stylesheet information are saved in the Adobe Illustrator file..

USING THE MAP STYLESHEETS PANEL

To open the MAP Stylesheets panel, choose *Window* > *MAPublisher Panels* > *MAP Stylesheets* or click the Stylesheets button on the MAPublisher toolbar  .

The MAP Stylesheets panel contains a list of all MAP Layers. Similar to *MAP Views*, the icons used for these layers are:

A Area Layer L Line Layer

P Point Layer T Text Layer

By default all MAP Layers will be listed as not belonging to a stylesheet—[No MAP Stylesheet]. When a new MAP Stylesheet is created, drag a MAP Layer into it. This loads its attributes for creating legend rules or expressions.

Loading Symbols and Styles

The symbology used by MAP Stylesheets is directly related to the symbols and styles which exist in native Adobe Illustrator panels. In order to correctly function, the MAP Stylesheet requires that symbology or styles appropriate to the feature type is established in the following Adobe Illustrator panels:

A Area Stylesheets:	**Graphic Styles** *panel (Window > Graphic Styles)*
L Line Stylesheets:	**Graphic Styles** *panel (Window > Graphic Styles)*
P Point Stylesheets:	**Symbols** *panel (Window > Symbols)*
T Text Stylesheets:	**Character Styles** *panel (Window > Type > Character Styles)*

Symbology can be quickly added to these panels by dragging and dropping artwork from the artboard, or by dragging and dropping symbology from custom libraries.

As an example under *Window > Graphic Style Libraries > Other Library…* navigate to the *Helpful Styles & Symbols Files* folder (see Appendix 4) on the MAPublisher DVD and load either *MAP_AreaStyles.ai* or *MAP_LineStyles.ai*. Then shift-select these styles and drag them into the *Graphic Styles* panel for use in Area and Line Stylesheets.

Another option is to navigate to *Window > Symbol Libraries > Other Library…* and load *MAP_PointSymbols.ai*. Then shift-select these symbols and drag them into the *Symbols* panel for use in Point Stylesheets.

NOTE: An Adobe Illustrator file saves all the symbols, graphic styles and character styles created. Create a master file with all often used symbols, graphic styles and character styles for easy reference when adding these elements for MAP Stylesheet creation.

Creating a New Stylesheet

To create new MAP Stylesheets, first select **New MAP Stylesheet…** under the **Options** menu, or click the **New** button at the base of the panel. This opens the **New Stylesheet** function, where the name and feature type for the new MAP Stylesheet is specified . Clicking **OK** creates the new stylesheet in the panel and assign it with the appropriate type icon. It is possible to now drag single or multiple **MAP Layers** with a matching feature type into this stylesheet.

NOTE: Layers do not need to contain the same attribute structures to be under a same MAP Stylesheet, as long as they are all of a matching feature type.

Deleting and Duplicating Stylesheets

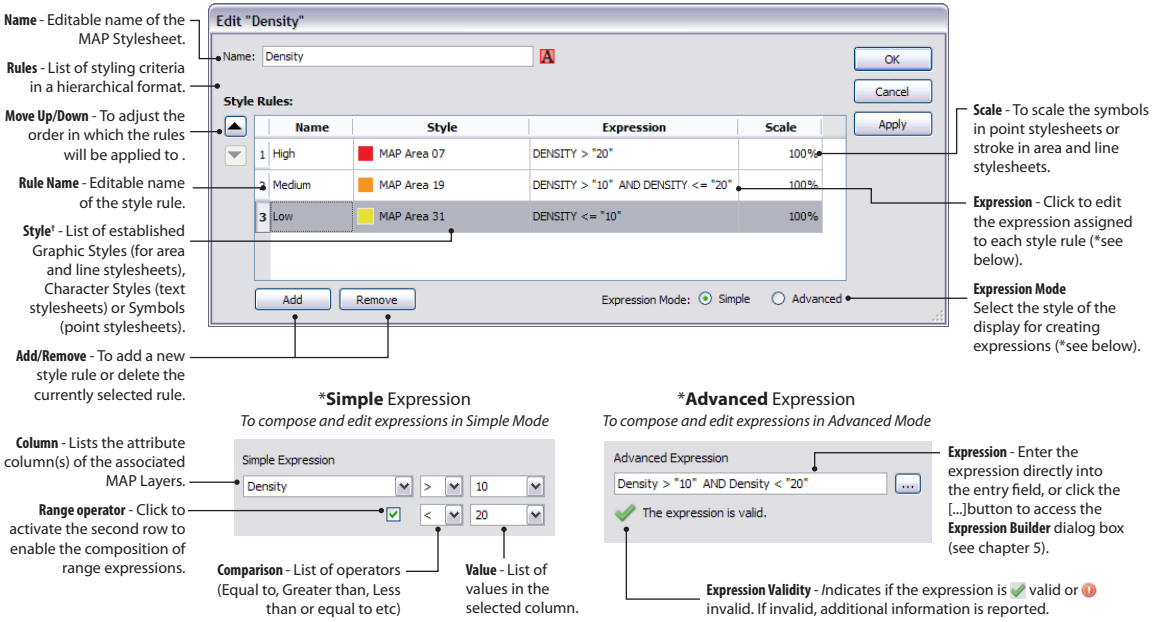
A document can contain as many MAP Stylesheets as desired. The MAP Stylesheets panel options menu offers functions to delete and duplicate stylesheets.

Selected MAP Stylesheets may be deleted by clicking the **Delete** button at the base of the panel or by selecting **Delete Stylesheet** in the panel options menu. Only empty stylesheets can be deleted. Associated MAP Layers must be moved to [No MAP Stylesheet] or into another stylesheet via drag-and-drop or with the new **Switch MAP Stylesheet** button  . Only at this stage will the Delete option be activated. Note that moving a stylesheet to [No MAP Stylesheet] will not restore the data to its default symbology; it will simply remove the relationship between attribute value and style/symbol.

Duplicate Stylesheet can be used to create copies of existing stylesheets. Even though the copy will not contain a MAP Layer at first, the style rules which exist between attributes of the original layer and the symbology will be retained. This is useful to create different versions of a map: for each stylesheet duplicate, edit the styles that relate to each value in each stylesheet. To apply the different styles, MAP Layers only need to be moved from one stylesheet to another via drag-and-drop or with the new **Switch MAP Stylesheet** button  .

MAP Stylesheet Editor

MAP Stylesheets panel > Edit



† *For Text stylesheets, if the* **Style** *list does not contain a recently created character style, simply return to the Character Style panel, double-click this style and click OK in the Character Style Options dialog box. This forces Adobe Illustrator to re-load the list of character styles.*

FUNCTIONALITY

The MAP Stylesheet Editor contains the rules applied to link certain attribute values with symbols or styles taken from the Adobe Illustrator panels (Symbols, Graphic Styles or Character Styles). In this interface, users create or remove rules that are defined by:

- **Name:** editable,
- **Style**: selection from the Adobe Illustrator panels,
- **Expression:** conditions on the attribute values, using Simple or Advanced methods,
- **Scale**: modify the scale of the selected symbol or the stroke of the selected graphic style.

NOTE: A style (symbol, graphic style or character style) can only be used once per MAP Stylesheet. To use a same style for multiple rules, the style must first be duplicated in the appropriate Adobe Illustrator panel.

PREREQUISITES

The desired symbols, graphic styles or character styles must be present in the Adobe Illustrator document. See previous section on *Loading Symbol and Styles*, or refer to the Adobe Illustrator documentation on how to create new symbol and styles. All Adobe Illustrator symbols and styles are supported by the MAP Stylesheet.

As stated above, users may want to duplicate some symbols prior to accessing the MAP Stylesheet Editor. Besides, it maybe useful to rename symbol and styles with a convenient convention to make the selection more easy.

USING MAP STYLESHEET EDITOR

Select a MAP Stylesheet that hosts at least one MAP Layer, click the stylesheet name, and choose *Options* > *Edit*… Alternatively *double-click* the new MAP Stylesheet.

The **Name** of the current MAP Stylesheet is displayed at the top of this dialog box, which is editable. Also an icon representing the feature type is displayed.

Click the **Add** button to create new rules in the MAP Stylesheet.

Assigning a Style Rule Name

The Style Rule **Name** column contains the name of the rule. This can be edited to describe the style rule and/or its intention. This name is used when creating MAP Stylesheet legend so it is a good practice to do so. For example, style rules could be named "Roads" or "Cities with populations over 200,000".

Selecting Styles and Symbols

The **Style** field will contain a list of styles that currently exist in the Adobe Illustrator **Graphic Styles** panel (for Area and Line stylesheets), in the **Symbols** panel (for Point stylesheets), or in the **Character Styles** panel (for Text stylesheets). For each rule, choose a style or symbol to use. The **Move Up** and **Move Down** buttons moves the priority of the selected style up or down the list.

Assigning an Expression

The Expression field describes the criteria for applying the style rule. By default, the field displays the currently entered expression, if any. Clicking the *Expression* field opens either the **Simple Expression** panel or the **Advanced Expression** panel, depending on the **Expression Mode** and the current expression. Using the Advanced Expression, expressions created in the *MAP Selection Filters* may be re-used to create MAP Stylesheets rules. See chapter 5 for more information on the Expression Builder and chapter 11 on MAP Selection Filters.

To choose the mode in which to compose your expression, select the **Simple** or **Advanced** option. Then assign an expression for each rule using the guidelines below.

NOTE: Property and read-only attributes cannot be selected in the Simple Expression mode. To use property and read-only attribute values, use the Advanced option.

Simple Expressions...

The Simple Expression panel is intended to facilitate quick expression generation. First, select a column from the drop-down list, or manually type in a name.

Choose a **Comparison**. There are six options available:

=	*Equal to*	**>=**	*Greater than or equal to*
>	*Greater than*	**<=**	*Less than or equal to*
<	*Less than*	**!=**	*Not equal to*

Select the **Value** against which the comparison will be applied. Select the value from the drop-down list or enter the value manually. Similarly, the value does not have to appear in the list to be valid.

If a *Comparison* is select (except *Equal to, (=)),* then the expression can be further. Clicking the **Range operator** check box enables an additional **Comparison** and **Value** input pair.

If the operator *Equal to* (e.g. *Attribute1 = A*) is selected, when this rule is selected while clicking the **Add** button, the new expression will be automatically written using the same attribute *Equal to* the next value on the list (e.g. *attribute1 = B*). This does not occur with the other operators.

Advanced Expressions...

The Advanced Expression panel allows to construct more complex expressions and to use read-only and property attributes.

Enter a valid expression in the Expression field. The **Expression Validity** icon will report  if the expression entered is valid. Otherwise it will report  and include additional warning notes. Alternatively click on the **Browse** button to enter and edit expressions via the **Expression Builder** dialog box (see chapter 5).

Advanced expression are saved in memory for the time of the Adobe Illustrator session and can be selected in the *Recent* list of the expression builder.

The following are some examples of basic expressions which can be entered for styling rules:

NAME = "Ontario"
Result: All items with the value "Ontario" in the NAME column are assigned the selected style.

POPULATION < 1000000
Result: All items with values less than one million in the POPULATION column are assigned the selected style.

NAME = "Ontario" OR NAME = "Alberta"
Result: All items with the value "Ontario" OR "Alberta" in the NAME column are assigned the selected style.

NAME = "Ontario" AND POPULATION < 1000000
Result: Only items containing the value "Ontario" in the NAME column AND values less than one million in the POPULATION column are assigned the selected style.

NOTE: String values are case-sensitive and must be entered between double quotes ("...").

Assigning a Scale

The **Scale** default is 100%. Editing the scale will alter the symbol size (points) or stroke weight (areas and lines). The maximum scaling factor is 1000%.

Building the Stylesheet

For subsequent style rules proceed in the same manner. Click **Add**, and then specify a **Name**, **Style**, **Expression** and **Scale**. Click the **Apply** button at any time to preview the results at any stage of building a stylesheet, while continuing to edit the settings for individual style rules. In order to delete a style rule from the list, click anywhere in its row to select it and click the **Remove** button.

Click **OK** to exit the dialog box and to assign the MAP Stylesheet to the associated MAP Layers.

IMPORTANT NOTES

Dynamic Style Linkage

Once a MAP Stylesheet has been assigned with styles and symbols, those styles and symbols are dynamically linked to the attribute values. Consequently, when the attribute value is changed, the style/symbol is updated accordingly in the Adobe Illustrator document.

Additionally, if a MAP Stylesheet uses a **simple equality expression** on a non read-only or property attribute, manually applying a style/symbol to an object of a layer contained in that MAP Stylesheet will assign the corresponding attribute value to that object. Note that this only work if no rule already applies to that object.

A simple equality expression uses only one attribute and only one equality operator. For example *AttributeA = 1* is a simple equality expression, while *AttributeA > 15* is not.

For example, if MAP Stylesheet has a rule as follow, and contains a layer named *point of interest*:

Name	Style	Expression
Restaurant	restaurant	CATEGORY = "restaurant"

Adding the *restaurant* symbol on the same *point of interest* layer, will automatically assign the value "restaurant" to the CATEGORY attribute of the newly created art.

Caution should be used with manually editing the styles of artwork after MAP Stylesheets have been applied if any style rules have simple equalities. For this reason, it is generally recommended to remove layers from MAP Stylesheets when the styling is finalized.

Point Data

Regarding the editing of **Point Data**, the MAP Stylesheets or the MAP Attributes panel may be used to change symbology. As point data is linked dynamically to a symbol choosing *Break Link to Symbol* from the Symbols panel options will result in the loss of attributes for the point data. However symbols may be edited manually in isolation mode (double-click on the symbols in the Symbols panel).

Expression Modes

The **Expression Mode** determines which type of expression panel is used to edit a style rule's expression. The expression mode will be remembered from the last session.

If the *Expression Mode* is set to **Advanced**, the expression panel will always be the Advanced Expression panel, irrespective of the expression being edited.

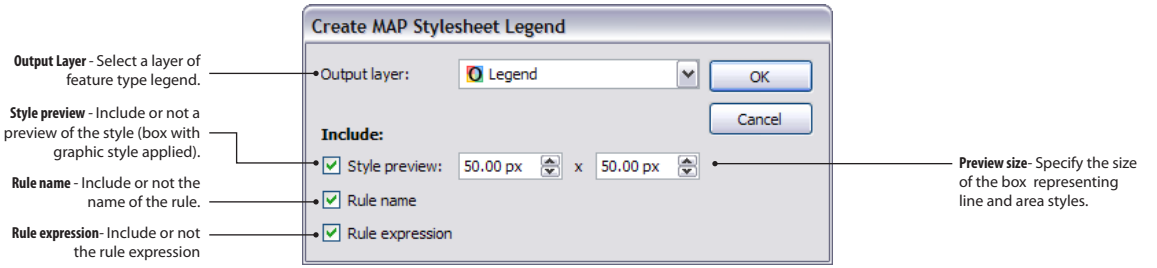
If the *Expression Mode* is set to **Simple**, the expression panel will be the Simple Expression panel, unless the expression to be edited is not a simple expression. A *Simple Expression* is one that is either empty or includes only one attribute and no more then two clauses using simple operators (=, !=, inferior, superior, AND). For example:

Simple Expression: AttributeA = 1
Simple Expression: AttributeB < 5 AND AttributeB > 1
Advanced Expression: AttributeC > 1 OR AttributeD > 10

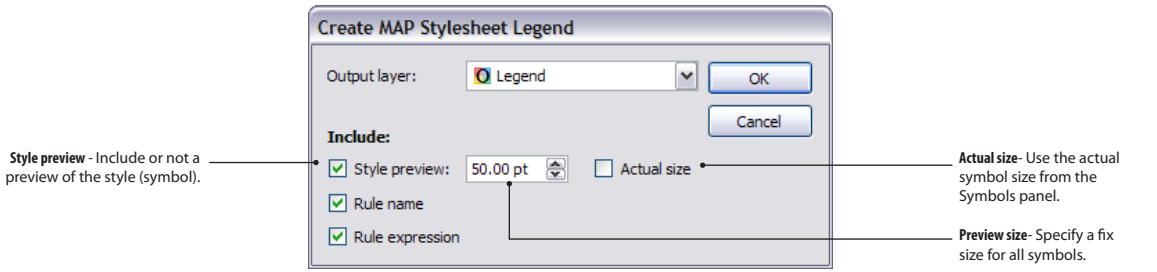
Create MAP Stylesheet Legend

MAP Stylesheets panel > Create MAP Stylesheet Legend...

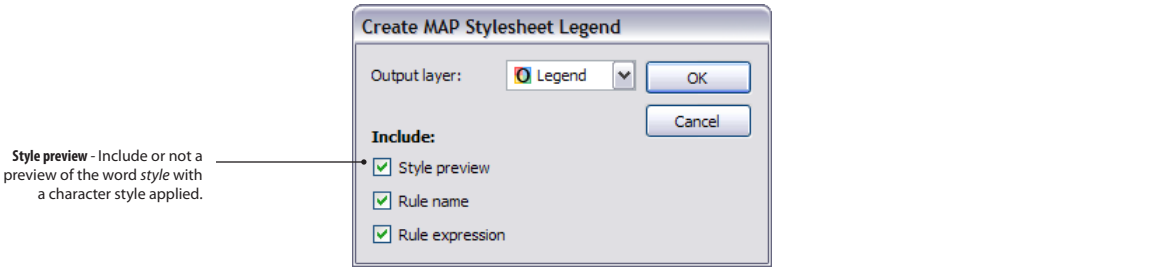
Area/Line Stylesheets Legend



Point Stylesheets Legend

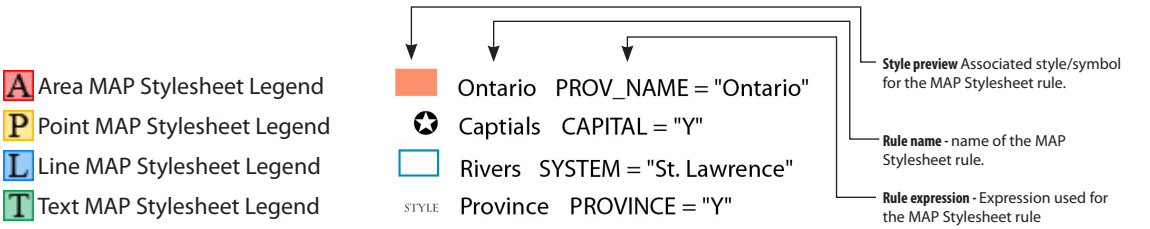


Text Stylesheets Legend



FUNCTIONALITY

A legend can be quickly created using any MAP Stylesheet. Any area, line, point or text MAP Stylesheets can be used for a legend. The legend is composed series of boxes (for areas or lines), point symbols or words *Style* — using the style/symbol set by the rule — followed by the expression associated with that MAP Stylesheet rule.



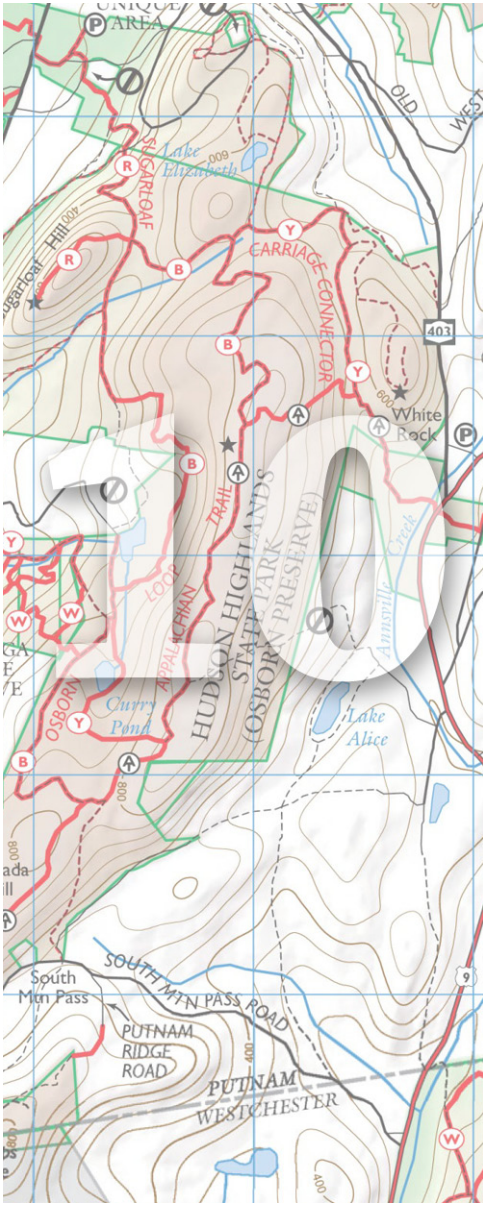
USING CREATE MAP STYLESHEET LEGEND

MAP Stylesheet legends are added to a legend layer, a **Legend layer** must be created first using the MAP Views panel Add button, choosing a feature type *Legend* (see chapter 4).

Select the MAP Stylesheet to use as base for the legend, then select **Create MAP Stylesheet legend** in the panel options menu. In the *Create MAP Stylesheet legend* dialog box, specify the output layer and the legend elements to be added.

The legend font is set by the current setting in the Adobe Illustrator **Character** panel. Prior to creating the MAP Stylesheet legend, use the Character panel to set the font and options.

Legends are not dynamically linked to the MAP Stylesheets. Each element can be further edited freely easily — using the *Direct Selection* tool, in isolation mode or if un-grouped (menu *Object* > *Ungroup)*.



Labelling Functions

One of the most useful features of MAPublisher is the ability to create labels for map objects using values from the MAP Attributes panel. Manually entering and placing labels is not necessary, provided that the labelling information is included in the map attributes of the MAP Layer being labelled.

MAPublisher provides two methods of adding labels to a map, both of which contain options to place labels intelligently using defined label settings.

One way to create feature labels is to first select all the features to be labelled and use **Feature Text Label** to label all of them by specified attribute values.

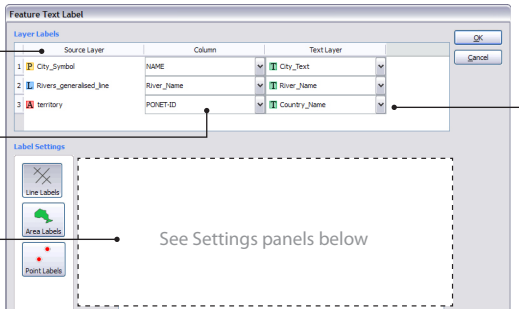
An alternate method involves using the **MAP Tagger Tool** to apply labels individually, also by specified attribute values.

Topics covered in this section are:
Feature Text Label
MAP Tagger Tool

For more advanced labelling capabilities refer to chapter 18 on MAPublisher LabelPro (additional license required).

Labelling Tools

For Feature Text Label and MAP Tagger Tool



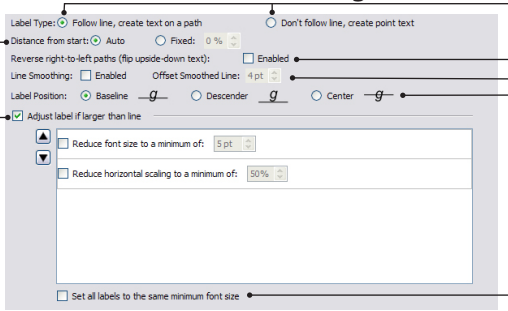
Source Layer - Lists the Point, Line and Area layers which can be labelled. For Feature Text Label, only layers containing selected items are listed.

Source Column - Select the column that contains the values you wish to use to label the selected features.

Label Settings - Click the appropriate button to assign label settings and rules for each layer type (see below).

Text layer - For each Source Layer, select the destination text layer you wish to place the generated text labels on.

Line Label Settings



Distance from start - Controls where the text is located along the line.
Auto - places text at the midpoint for straight lines and find the smoothest portion closest to the midpoint for curved lines.
Fixed - allows for precise placement of text along a line.

Adjust label if larger than line - Specify rules for the scaling of text if the text will not fit onto the text path in its entirety.
Click the Up or Down buttons to adjust the order in which the rules will be implemented in the labelling process.

Follow/Don't Follow Line - Select whether text should follow paths or be placed at a point near the selected line.

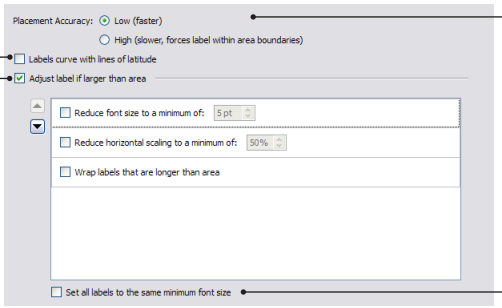
Flip upside-down labels - By default this is always enabled and will automatically orient labels correctly. Disabling this feature will not flip label.

Line Smoothing / Offset Line - Check to smooth the generated text path. Then specify an offset distance for the text path from the original.

Label Position - Choose how the text will be placed on the generated text path.

Set all labels to same minimum size - If at least one label has been reduced in font size due to the implementation of rules, then ALL text items will be reduced to that font size (in Feature Text Label only).

Area Label Settings



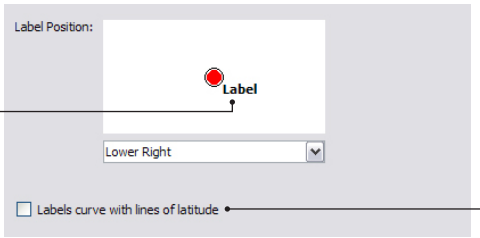
Labels curve with lines of latitude
For projected layers, choose this option to generate curved text on latitude lines.

Adjust label if larger than line - Specify rules for the scaling of text if the text will not fit inside the area object in its entirety.
Click the Up or Down buttons to adjust the order in which the rules will be implemented in the labelling process.

Placement Accuracy - To quickly generate labels, choose *Low*. To force labels within the boundaries of area of complex shape, choose *High*.

Set all labels to same minimum size - If at least one label has been reduced in font size due to the implementation of rules, then ALL text items will be reduced to that font size (Feature Text Label only).

Point Label Settings



Label Position - Choose the position of the label relative to the point symbol.

Labels curve with lines of latitude
For projected layers, choose this option to generate curved text on latitude lines.

Feature Text Label

*Object > Filters > MAP Labeling> Feature Text Label** or *MAP Toolbar* 

FUNCTIONALITY

The Feature Text Label filter add labels to a map based on the attribute data of the features. Line, Point or Area MAP Layers containing attribute information can be labelled using this filter. All selected features on MAP Layers (which contain appropriate attribute information) can be labelled using this tool. Data selected on multiple MAP Layers can be labelled simultaneously. In addition, more options can be specified, such as alignment to lines of latitude, minimum font size, horizontal scaling and label position to place labels intelligently.

PREREQUISITES

Labels will be added to a  **Text layer** that must be created in the **MAP Views** panel. To create a new text layer, use the **Add MAP Layer** function in the MAP View panel(see chapter 4):

- Set the feature type to *Text*.
- To enable the copy the attributes from the source MAP layer to the label destination layer, check the option **Base attribute schema on** and select the appropriate layer to copy its attribute schema.

For best results, set up a character style for type font, size, justification and color. (Adobe Illustrator menu *Window > Type > Character Style*). Select the appropriate style in the Character Style panel before starting the Feature Text Label tool and MAPublisher will generate labels based on these settings. Otherwise labels applied will appear in the current default colour, font and font size. Then select the features to be labelled and go to *Filter > MAP Legend > Feature Text Label* or the MAPublisher toolbar button  to access the function.

FEATURE TEXT LABEL SETTINGS

Source Layer and Column

First set the options for MAPublisher to determine the attributes that will be converted to text labels. The **Source Layer** list shows the Area, Point and/or Text layers currently containing selected data.

For each layer, the **Column** drop-down list(s) is populated with the attribute structure of that layer. Choose the appropriate column that holds the attributes used to label the map with.

Target Text Layer

In the **Text layer** drop-down list(s), specify a Text layer that the labels will be output to. Note that labels can only be created on to text layers in the same MAP View as the Source Layer.

LABEL SETTINGS

MAPublisher provides options to specify label preferences such as label position, alignment to lines of latitude, minimum font sizes and horizontal scaling to best place labels within polygons and paths. These label settings are common to **Feature Text Label** and the **MAP Tagger Tool**.

 Line Labels

MAPublisher will place Line labels intelligently, depending on the curvature and length of the line string. Click the **Line Labels** button to assign MAPublisher Line Label Settings.

** In Adobe Illustrator CS3, Feature Text Label is found in the Filter > MAP Labeling menu.*

MAPublisher controls where text is placed along lines by using the **Distance from start** option. Selecting **Auto** will place text at the midpoint for straight lines and for curved lines this will find the smoothest portion of the curved line closest to the midpoint. Selecting **Fixed**, the distance from start is set as a percentage of the length of the line.

Flip upside-down labels is enabled by default and will automatically orient labels correctly if some lines are flipped. Disabling this feature will not flip labels.

If the **Line Smoothing** option is used, MAPublisher creates a smoothed path for each text object in the selected Text layer and places the text along this path at the specified **Offset** value. The labels can then be dragged and positioned at any position along a line. If the *Line Smoothing* option is not selected, the labels follow the original path.

The **Label Position** option allows for the selection of the vertical position of the labels relative to the line. Three options are available: *Baseline*, *Descender,* and *Center*:

- Select **Baseline** to place labels above the generated text path.
- Select **Descender** to place the portion of a letter in a Latin-derived alphabet that normally extends below the baseline of a particular font above the generated text path.
- Select **Center** to place the centre the label on the generated text path.

Labels can be modified if they exceed the length of the line in the current default font size. First check the **Adjust label if larger than line** option to activate the label rules. Rules are executed by MAPublisher in a hierarchical order, and can be reordered by clicking the rule and clicking the **Up** or **Down** button.

Checking the **Reduce font size** option allows to reduce the size of the font to a specified minimum size in points. Checking **Reduce horizontal scaling** allows text to be scaled down horizontally by the percentage specified.

Feature Text Label also provides an additional option (not applicable in *MAP Tagger)*. If *any* of the labels have been adjusted in size due to the activation of a line adjustment rule, *all* labels can be resized to the same size by checking the **Set all labels to the same minimum font size** option.

If no rules are enabled, MAPublisher will not perform any label scaling. If none of the rules specified in the panel can be satisfied, MAPublisher will default to placing the label centered over the line. Also note that text generated for Line labels will be automatically orientated above the lines, irrespective of the direction of line digitization.

Area Label

MAPublisher will place Area labels intelligently, depending on the shape and size of the area polygon. Click the **Area Labels** button to assign MAPublisher Area Label Settings.

Decide how to place area labels—with a high degree of precision or lower degree of precision—by choosing the appropriate **Placement Accuracy** option.

If the **Labels curve with lines of latitude** option is selected, MAPublisher creates a path that conforms to local line of latitude and place the text along it. If this option is not selected, the labels are placed horizontally. This option is enabled only for MAP Views set with a projected coordinate system.

Labels can be modified if they exceed the size of the area in the current default font size. First select the **Adjust label if larger than area** option to activate the label rules. Rules are executed by MAPublisher in a hierarchical order, and can be reordered by clicking the rule and then the **Up** or **Down** button.

Checking the **Reduce font size** option allows to reduce the size of the font to a specified minimum size in points. Checking **Reduce horizontal scaling** allows texts to be scaled down horizontally by the fraction specified. Checking the **Wrap Labels that are longer than area** option adds a carriage return at the nearest space in the text.

NOTE: The *Wrap Labels that are longer than area* option is not available if the *Labels curve with lines of latitude* option is checked.

Feature Text Label also provides an additional option which is not available with the *MAP Tagger tool*. If *any* of the labels have been adjusted in size due to the deployment of an area adjustment rule, *all* labels can be resized to the same size by checking the **Set all labels to the same minimum font size** option.

If no rules are enabled, MAPublisher will not perform any label scaling. If none of the rules specified in the panel can be satisfied, MAPublisher will default to placing the label centered over the area. In situations with area compounds, MAPublisher labels the largest area in the compound.

P Point Labels

Click the **Point Labels** button to assign MAPublisher Point Label Settings.

If the **Labels curve with lines of latitude** option is selected, MAPublisher creates a path that conforms to local line of latitude and places the text along it. If this option is not selected, the labels are placed horizontally. This option is enabled only for MAP Views set with a projected coordinate system.

Adjust the **Label Position** by specifying relative position of the labels to the point. Nine options for the text anchor placement are listed.

FEATURE TEXT LABEL RESULTS

When all the *Layer Label Options* have been set and the *Label Settings* have been specified click **OK** to label the selected features.

Labels applied using Feature Text Label appear in the current default colour, font and font size (as set by the selected character style).

If the destination text layer and source layer have the same attribute schema, the attributes of the labelled features are copied as attributes to text features (to apply MAP Stylesheets for example).

MAP Tagger Tool

Tools > MAP Tagger Tool 

FUNCTIONALITY

The MAP Tagger Tool allows labels to be added to your map based on the attribute data of the features. Line, Point or Area MAP Layers containing attribute information can be labelled using this filter. This tool functions similarly to the *Feature Text Label* filter. However, labels are created by clicking the feature with the MAP Tagger Tool. You also have greater control over the initial placement of the label, because the label is placed where you click, and the tool provides the ability to create leader lines for labelling congested areas of the map. In addition, you may specify options such as alignment to lines of latitude, minimum font size, horizontal scaling and label position to place labels intelligently.

PREREQUISITES

Labels will be added to a  **Text layer** that must be created in the **MAP Views** panel. To create a new text layer, use the **Add MAP Layer** function in the MAP View panel(see chapter 4):

- Set the feature type to *Text*.
- To enable the copy the attributes from the source MAP layer to the label destination layer, check the option **Base attribute schema on** and select the appropriate layer to copy its attribute schema.

For best results, set up a character style for type font, size, justification and color. (Adobe Illustrator menu *Window > Type > Character Style*). Select the appropriate style in the Character Style panel while using MAP Tagger tool, and MAPublisher will generate labels based on these settings. Otherwise labels applied will appear in the current default colour, font and font size.

The MAP Tagger Tool can be found towards the bottom of the Adobe Illustrator Toolbar. Double-click the  tool to create new label settings or to edit settings.

MAP TAGGER TOOL SETTINGS

Source Layer and Column

First set the options for MAPublisher to determine the attributes that will be converted to text labels. The **Source Layer** list shows all Area, Point and/or Text layers in the current document.

For each layer, the **Column** drop-down list is populated with the attribute structure of that layer. Select the column that holds the attributes used to label the data with.

Target Text Layer

In the **Text layer** drop-down lists(s), specify the Text layer that the labels will be output to. Note that labels can only be created on to text layers in the same MAP View as the Source Layer.

LABEL SETTINGS

MAPublisher provides options to specify label preferences such as label position, alignment to lines of latitude, minimum font sizes and horizontal scaling to best place labels within polygons and paths. These Label Settings are common to **Feature Text Label** and **MAP Tagger Tool**.

TAGGING MAP DATA

When the label settings are set, click **OK** to close the dialog box and confirm these settings.

Then click the map object to add labels for the clicked features. It can be convenient to lock the layers that do not require labelling in the Adobe Illustrator Layers panel to avoid selecting undesired objects.

The following list of keyboard modifiers may be used for additional labelling options:
(note = click map object with MAP Tagger Tool selected).

Labels placed using current Adobe Illustrator Type and MAPublisher settings.
L *Line labels are placed at click point and assigned angle of line at click point.*
A *Area labels are placed horizontally at click point.*
P *Point labels are placed horizontally at click point.*

+ Shift
Only applicable for Line labels. Labels placed using current Adobe Illustrator Type and MAPublisher settings.
L *Line labels are placed horizontally at click point.*

+ Shift + *drag*
Labels placed using current Adobe Illustrator Type and MAPublisher settings and leader line created on drag.
L *Line labels are placed horizontally. Leader line connects text to line feature.*
A *Area labels are placed horizontally. Leader line connects text to area feature.*
P *Point labels are placed horizontally. Leader line connects text to point feature.*

+ *drag*
Labels placed using current Adobe Illustrator Type and MAPublisher settings.
L *Line labels are assigned angle of line at click point.*
A *Area labels are placed horizontally.*
P *Point labels are placed horizontally.*

NOTE: To create custom leader lines use a graphic style. Create or load a graphic style and select it in the Graphic Styles panel while using the MAP Tagger Tool function.

MAP TAGGER TOOL RESULTS

Labels are added for the object being clicked at the desired position (see above).

Labels appear in the current default colour, font and font size (as set by the selected character style).

If the destination text layer and source layer have the same attribute schema, the attributes of the labelled features are copied as attributes to text features (to apply MAP Stylesheets for example).

Making Selections

MAPublisher contains tools for selecting data graphically and by attribute values.

The **MAP Selection Filters** tool provides functionality to create, edit and save multiple selection criteria. These selections can be applied to any MAP Layer and can only be used to split MAP Layers. Selection Filters are saved in the document.

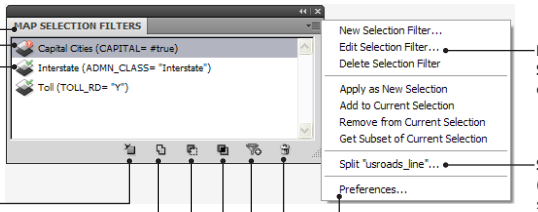
The **MAP Selection Stats** tool are used for quickly selecting all features contained in a MAP Layer, for viewing how many objects are selected at a given time, to save a selection and to reverse selections.

The topics covered in this section are as follows:
MAP Selection Filters
MAP Selection Stats

MAP Selection Filters

Window > MAPublisher > MAP Selection Filters or *MAP Toolbar*

MAP Selection Filters panel



Filters List - Lists the Selection criteria in the current document.

Not Valid Filter Icon- If the expression is not valid for that particular data layer a red exclamation mark is displayed.

Valid Filter Icon - When a selection filter contains an expression that is valid for the active Adobe Illustrator data layer a green check mark icon is displayed.

Apply as New Selection - Makes a new selection using the highlighted criteria.

Add to Current Selection - Adds the highlighted criteria to the current selection.

Remove from Current Selection - Removes the highlighted criteria from the current selection.

Get Subset of Current Selection - Makes a selection within the current selection.

Create New Selection Filter - Opens the **New Selection Filter** function (below).

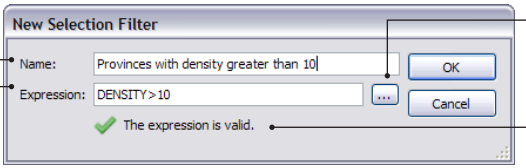
Delete Selection Filter - Deletes the selected filter(s).

Edit Selection Filter - Opens the **Edit Selection Filter** function (below) for editing the assigned expression.

Split layer - Opens the **Split Layer** function (below) for copying or moving selected objects to a new layer.

Preferences - Opens the **MAPublisher Preferences** on the MAP Selection Filters property sheet.

New/Edit Selection Filter



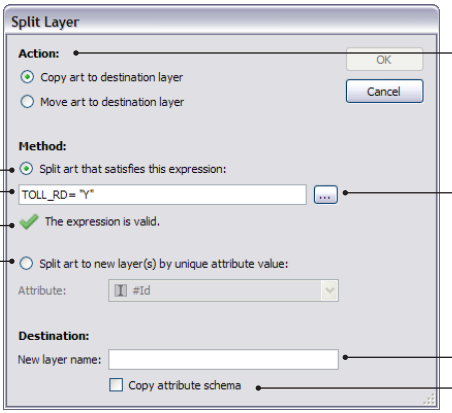
Name - Assign or edit the name of the selection filter.

Expression - Enter the expression directly into the entry field, or access the **Expression Builder** function (see chapter 5).

Edit Expression - Opens the **Expression Builder** for editing the assigned expression.

Expression Validity - Indicates if the expression is valid or invalid. If invalid, additional information is reported.

Split Layer



Split by expression - Choose this option to split the selected layer based on the currently selected expression. The expression is editable (manually or using the Expression builder).

Expression - Assign or edit the expression.

Expression Validity - Indicates if the expression is valid or invalid. If invalid, additional information is reported.

Split art based on unique values - Choose this option to split the selected layer into multiple layers - one per unique value of the selected attribute in the **Attribute** drop-down list.

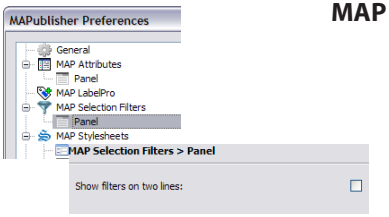
Action - Select the option to copy or move objects from the source layer to the destination layer

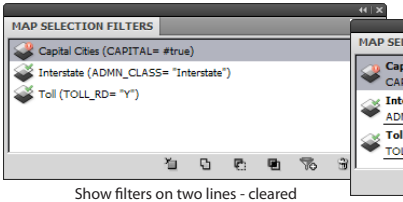
Expression Builder - Opens the **Expression Builder** for editing the assigned expression (see chapter 5).

Destination Layer- Enter the name of the new layer to be created. Or enter a prefix when using split by attribute value.

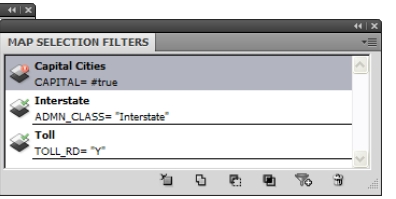
Copy attribute schema - Check this option to copy the attribute schema onto the new layer

MAP Selection Filters Panel Preferences





Show filters on two lines - cleared



Show filters on two lines - selected.

FUNCTIONALITY

MAPublisher Selection Filters allow to build, edit and apply multiple selection criterias based on the attributes and properties contained in MAP Layers. Selection criterias are created in an expression. Selection filters can be applied to any MAP layer, and are saved in the document so that they can be edited or applied later.

Expressions created in the MAP Selection Filters may be re-used for MAP Attributes and MAP Stylesheets expression builders (see chapter 5).

CREATING A SELECTION FILTER

To open the MAP Selection Filters panel, choose *Window > MAPublisher > MAP Selection Filters* or click the MAPublisher toolbar button  . This panel will contain a list of all the selection filters in the current document.

Create a new MAP Selection Filter by clicking the **Create New Selection Filter** button or panel options menu. This will open the **New Selection Filter** dialog box.

The **Name** text box can be edited to describe the selection filter or its intention. For example, a selection filter could be named *Cities* or *Countries with 80% or higher literacy*.

The **Expression** field describes the criteria for the selection of feature art. Build a valid expression in the Expression field. The **Expression Validity** icon will report  if the expression entered is valid. Otherwise it will report  and include additional warning notes.

Alternatively click the  button to enter and edit expressions via the **Edit Expression** tool (see chapter 5).

The following are some examples of basic expressions which can be entered for use as selection filters.

NAME = "Ontario"
Result: All items with the value "Ontario" in the NAME column are selected.

POPULATION < 1000000
Result: All items with values less than one million in the POPULATION column are selected.

NAME = "Ontario" OR NAME = "Alberta"
Result: Items with the value "Ontario" OR "Alberta" in the NAME column are selected.

NAME = "Ontario" AND POPULATION < 1000000
Result: Only items containing the value "Ontario" in the NAME column AND values less than one million in the POPULATION column are selected.

Click **OK** to create the filter, adding it to the list of filters in the panel.

EDITING AND DELETING SELECTION FILTERS

The name and entered expression can be edited. To edit a MAP Selection Filter, double-click the appropriate selection filter in the panel, or click the selection filter in the panel and click the **Edit Selection Filter** in the panel options menu. This opens the **Edit Selection Filter** dialog box. Delete a MAP Selection Filter by clicking the **Delete Selection Filter** button or menu item.

MAKING SELECTIONS

Once MAP Selection Filters have been created they can be applied to a MAP layer. Selection filters can only be applied to one layer at a time. However, more than one filter may be applied simultaneously (use **Shift** or **Ctrl** (Windows) or **Command** (Mac) to select multiple filters). When applying multiple selection filters, art only has to satisfy one of the chosen selection filters to qualify (i.e. multiple selection filters are combined using the "OR" operator).

NOTE: When the expression is marked as valid, it is not necessarily valid when applied to a given layer. For example, the expression Country="Ohio" is only applicable to a layer with the Country attribute. If an expression is not valid for a layer, an error is shown when the selection filter is applied.

There are four methods of applying a selection filter (available as buttons and menu items):

- **Apply as New Selection:** Clears the current selection and selects any art on the current layer that meets the criteria of the chosen selection filter(s).
- **Add to Current Selection:** Adds any art on the current layer that satisfies the chosen selection filter(s) to the current selection.
- **Remove from Current Selection:** Deselects any art on the current layer that is selected and satisfies the chosen selection filter(s).
- **Get Subset of Current Selection:** Deselects any art on the current layer that is selected and does not satisfy the chosen selection filter(s).

SPLIT LAYERS

A MAP Selection Filter may also be applied to create a new layer containing the selected features. Features can either be copied or moved from the source layer to the destination layer with the option to maintain the attribute information from the source layer. With this function, a layer can also be split by unique values of a selected attribute, hence creating multiple layers. The same options to copy or move the features apply.

This function is particularly useful to split a layer that contains a lot of objects. For example, a *road* layer with classes such as *street*, *highway* and *toll road* could be split in three distinct layers. Split Layers can be used as a preliminary to running MAPublisher LabelPro (to allow labelling of multiple classes with different styles, see chapter 18), or to exporting layers to external GIS formats.

To use **Split Layers**, the MAP Layer to be split must be selected in the Adobe Illustrator **Layers** panel and/or a filter can be selected from the list of valid filters in the **MAP Selection Filters** panel. The Split Layers function is started from the MAP Selection Filters panel options menu **Split "layer name"**.

In the **Action** options, users specify if split art can be either copied or move to the new layer(s).

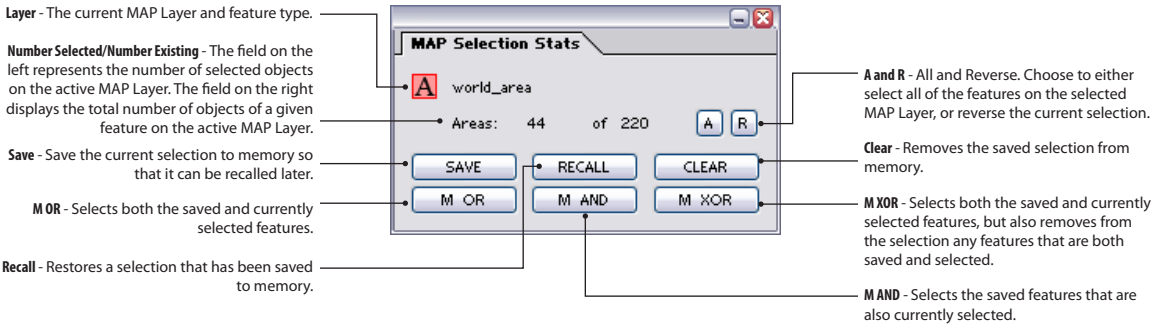
Two splitting methods are possible:

- **Split art by expression**: by default the expression of the currently selected filter is displayed (if applicable), and it can be edited manually or using the *Expression Builder* (see chapter 5). Then a layer name for the new layer must be entered in the **Destination** frame.
- **Split art by unique attribute value**: an attribute must be selected from the **Attribute** drop-down list. Each new layer created will contain only art that share the same attribute value. By default, the name of these layers correspond to each single attribute value. In the **Destination** frame, users can enter a prefix to be prepended to every layer name.

For both methods, users have the option to copy or not the attribute schema to the destination layer(s).

MAP Selection Stats

Window > *MAPublisher* > *MAP Selection Stats* or *MAP Toolbar*



USING THE MAP SELECTION STATS PANEL

To open the **MAP Selection Stats** panel, choose *Window* > *MAPublisher* > *MAP Selection Stats* or click the MAPublisher toolbar button .

Layer Statistics

On initial opening, this panel displays the **total** number of map features that exist on the current MAP Layer, as well as how many are currently **selected**. As only one feature type is supported per MAP Layer, this dialog box only displays the current feature type. Only MAPublisher objects are displayed in the MAP Selection Stats panel. Objects that are in [Non-MAP layers] in the MAP Views panel, are not recognized in this panel.

Selecting objects manually or via a MAP Selection Filter updates the left hand field in the panel. The right hand field always displays the total number of objects that exist on the current MAP Layer.

All or Reverse

The dialog box offers a quick way to select all map features on the current layer. Simply click the **A** (All) button to select all the Map features on the current layer.

Clicking the **R** (Reverse) button reverses the current selection (i.e. all the features that were selected are deselected, and the features that were deselected are selected).

Saving Selections

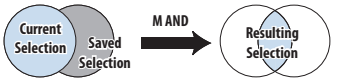
The **Save** button saves the current selection to memory, allowing to retrieve the selection again later. Only one selection can be saved, and it is limited to the current Adobe Illustrator session. A subsequent click of the **Save** button overwrites the original saved selection.

Clicking **Recall** performs the selection that is saved to memory. Clicking **Clear,** removes the saved selection from memory.

Additional Selection Options

This panel also offers additional selection tools: **M OR**, **M AND**, and **M XOR**.

Clicking the **M OR** button selects both the currently selected objects and the saved selection.



The **M AND** button selects the map features in the current selection which are included in the saved selection.

The **M XOR** button selects both the currently selected features and the saved selection if these selections do not overlap. However, if the current selection includes any features that are part of the saved selection, those are deselected.

Working With Images

MAPublisher contains tools for working with georeferenced raster images such as aerial photography and satellite imagery.

The **Register Image** filter accurately registers raster images with georeferencing information to vector map data.

The **Export Image** filter exports raster images with various georeferenced formats.

Georeferencing information for raster images are usually stored in a separate text file (except GeoTIFF) where the image and its associated reference file have the same file name but a different file extension.

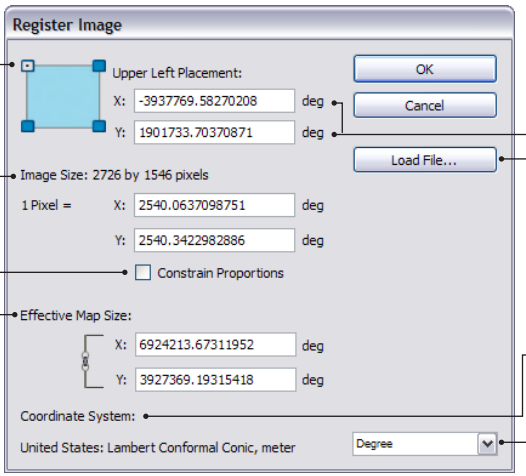
The reference file formats that can be read by Register Image, or written to by Export Image are:
World (*.tfw)
Image Report (*.irp)
MapInfo TAB (*.tab)
ListGeo (*.lgo)
GeoTIFF (*.tif) (a single file containing both the image and its reference data)

Topics covered in this section:
Register Image
Export Image

Register Image

Object > Filters > MAP Images > Register Image or MAP Toolbar*

Register Image



Tie Points† - Change the tie point of the image by clicking another corner of the graphic

Image Size† - Specify the size of each pixel in the selected map unit (updates the Effective Map Size). Register Image supports non square pixels.

Constrain Proportions - Check this option to keep the pixel proportions.

Effective Map Size X/Y† - Specify the X and Y size of the image in map units (updates the Pixel Size).

Placement X/Y† - Specify the coordinates (in map units) of the selected corner of the raster image.

Load File - Choose a file containing the georeference information for the selected raster image. The information from the file will be inserted into the appropriate fields.

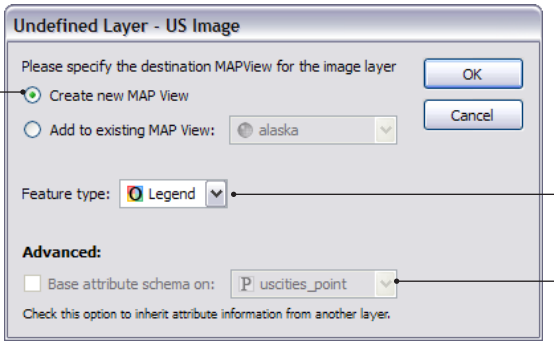
Coordinate System - Indicates the coordinate system of the loaded file (for GeoTIFF images). Set to *unknown* by default.

Units - Select a unit to use for the specification of georeferencing information. The default selection is the current map unit.

† Editing these options is not required when using the Load File function.

Undefined Layer

This dialog box appears if the image to register is not placed on a MAP Layer



Select MAP View - Register the image on a new MAP View (created from the image registration information) or select an existing MAP View from the drop-down list.

Feature Type - Select the type of feature that exists on the image layer. The feature type is indifferent if the layer contains only the image.

Base Attribute Schema - Check this option to copy the attribute schema from an existing MAP Layer.

FUNCTIONALITY

The **Register Image** filter applies geospatial properties to images imported to the document with the Adobe Illustrator **Place** command, i.e. image placement and pixel or image size—entered manually or loaded from a reference file. If an image's coordinate system matches one of existing vector data, the image can be scaled and rotated to fit the vector data. If no matching vector data is found in the document, a new MAP view can be created to store the cartographic information of the image to allow for data digitization with accurate positioning.

Register Image does not have the capability to transform images from one coordinate system to another.

** In Adobe Illustrator CS3, Register Image is found in the Filter > MAP Images menu.*

PREREQUISITES

For Register Image to be functional, the geospatial properties of the raster image must be known. Some raster image formats store the relationship between source image coordinates (pixel location) and real-world reference coordinates in an associated reference file but do not save the coordinate system information (e.g. world file .tfw). The commonly used GeoTIFF images are embedded with geographic information such as position and coordinate system. Depending on the image format, check the position and coordinate system of your imagery with your data provider before attempting to use this tool.

To fit the imagery to existing vector data, one option is to first transform the vector data to match the image's coordinate system in MAPublisher (see the **MAP View Editor** in chapter 4). Alternatively Avenza's **Geographic Imager** for Adobe Photoshop can be used to transform the imagery to match the coordinate system of the MAP View.

Finally, the image must be imported to the document using the Adobe Illustrator **Place** command (*File* > *Place*). The image can be placed on any layer (MAP Layer or not). Use a MAP Layer only if it is certain that the image's coordinate system matches the MAP View containing the layer.

NOTE: The image can be placed to a layer containing artwork, but it is recommended to use a specific layer, dedicated only to the image registration for better layer management and workflow.

At this point, the image is placed on the artboard in a default location and with a default size. It still needs to be registered. With the image selected go to *Object* > *Filter* > *MAP Images* > *Register Image** or click the MAPublisher toolbar button  to access the function.

** In Adobe Illustrator CS3, Register Image is found in the Filter > MAP Images menu.*

USING REGISTER IMAGE

If the image is placed on a MAP Layer, the Register Image automatically registers the image using the coordinate system of the MAP View containing that MAP Layer.

If the image is placed on non MAP Layer, the **Undefined Layer** dialog box opens. Users can either select to create a new MAP View or to use an existing MAP View (if it is certain that the coordinate system of this MAP View matches the one of the image). In both cases the feature type must be specified (indifferent if the layer only contains the image).

When creating a new MAP View, the MAP View's anchor point and scale are derived from the registration information (placement and image size). In the case of GeoTIFF images, the MAP View's coordinate system is automatically read from the image header—for other image formats, the coordinate system has to be specified manually in the MAP View Editor after the registration process (see chapter 4 for more information on *Specify coordinate system*).

Registration via Reference File

To select a reference file click the **Load File** button and navigate to the folder containing the reference file. The reference file usually is called the same name as the image, but may have a different extension (*.irp, .tfw, .tab* or *.lgo*). In the case of the GeoTIFF format, the image file itself contains both the image and reference data, however the same GeoTIFF file (.tif) needs to be loaded to retrieve the georeferencing information.

The values contained in this reference file are automatically entered into the image parameters. If the file is in GeoTIFF format, the image coordinate system is read and displayed in the **Register Image** dialog box **Coordinate system** field—for other file formats, the coordinate system is left to *unknown*.

Manual Registration

To manually enter image parameters, one of the following combinations must be available in page units *or* map units:

- The X and Y coordinates of one corner of the image *and* the X and Y Pixel Size.
- The X and Y coordinates of one corner of the image *and* the X and Y size of the image.

First choose the units to use for entering parameters by making a selection from the **Units** drop-down list. Then, click the appropriate corner of the graphic to indicate the image placement point and enter the X and Y coordinates for this location in the adjacent fields. Next set *either* the **Pixel Size** or **Effective Map Size**. The *Pixel Size* is the value of a single pixel in the units set. The *Effective Map Size* is the X and Y size of the whole image in the units set. Setting either option will update the other accordingly.

NOTE: The MAPublisher Register Image supports the registration of images having non-square pixels.

RESULTS

When registering GeoTIFF images, a warning message will be displayed if the coordinate system of the image does not match the selected MAP View's coordinate system. When registering images not in GeoTIFF format while creating a new MAP View, the coordinate system of the MAP View has to be specified in the MAP View Editor to finalize the georeferencing.

Provided that the coordinate system, placement and size of the raster image are correct, the image will be scaled and registered. When matching vector data is available, the image will fit to the artwork. The MAP Location Tool can be used to check the positions (see chapter 4).

NOTES:

- Raster images cannot be transformed into another coordinate system. If the vector data is transformed through the **MAP View Editor** *Perform Coordinate System Transformation* function after the image has been register, the image will have to be transformed externally (with Avenza's **Geographic Imager** for example) and registered again in MAPublisher.
- Registered images can be re-scaled and rotated together with the vector data, but not automatically. After the vector data has been re-scaled or rotated using the **MAP View Editor**, **Register Image** must be used to re-apply the image referencing information. In the case of a manual registration, it is recommended to use the **Export Image** function before applying the changes to the vector data (see next paragraph). This way, registering the image again is only a matter of loading a reference file.

SUPPORTED GEOREFERENCED IMAGE REFERENCE FORMATS

World File (*.tfw, *.tifw, *.wld, *.eww, *.jgw, *.jpw, *.pgw, *.sdw, *.eww, *.blw, *.dmw)

World files contain the affine relationship between source image coordinates (pixel locations) and real-world reference coordinates (lat/long or other real-world coordinate units). World files simply contain a computed relationship between source image coordinates and reference coordinates and not the complete reference point information. World files do not support storing coordinate system information.

IRP Image Report File (*.irp)

IRP Image Report files are ASCII report files indicating the coordinates of the four corners of the raster file and the pixel size in ground units to allow for georeferencing of the image in other image processing, CAD, or GIS programs.

MapInfo TAB File (*.tab)

MapInfo Table file formats save the complete reference point list information such that it can be loaded again in the future. MapInfo TAB files support storing coordinate system information.

Supported projections when saving the coordinate system are listed below:

Albers Equal-Area
Azimuthal Equidistant
Cylindrical Equal Area*
Eckert IV*
Eckert VI*
Equidistant Conic*
Gall Stereographic*
Hotine Oblique Mercator
Lambert Azimuthal Equal Area*
Lambert Conic Conformal
Mercator*
Miller Cylindrical*
Mollweide*
New Zealand Map Grid
Hotine Oblique Mercator 1pt
Polyconic
Robinson*
Sinusoidal*
Swiss Oblique Mercator
Stereographic Transverse Mercator

* Coordinate Systems using this projection will not be stored when saving the reference file.

ListGeo file (*.lgo)

A ListGeo files are text files containing the GeoTIFF metadata information (or tags), which can then be read, and may also be used as input to other programs.

GeoTIFF File (*.tif, *.tiff)

Tagged Image File Format (TIFF or TIF) is a common raster graphic file format and one of the most common geospatial image formats you are likely to come across. Many raster geographic images from GIS systems are stored in this format. A GeoTIFF is a TIFF file with embedded geographic information such as position and scale in world coordinates, coordinate system or an explicit list of ground control points.

NOTE: The only way to differentiate a regular TIFF image from a referenced GeoTIFF image is to open it in a spatial imaging software application (such as Avenza's **Geographic Imager** product).

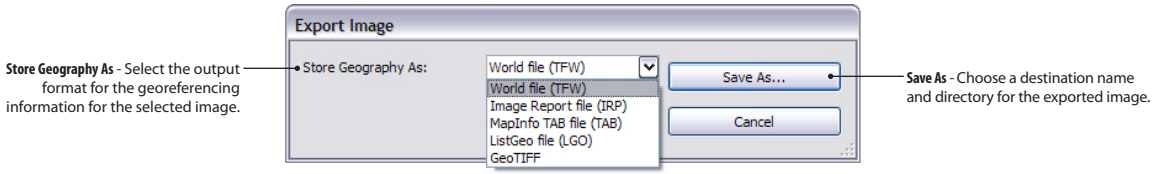
Unlike the other geographically referenced image formats discussed in this section, GeoTIFFs do not require a separate reference file. When registering a GeoTIFF image in MAPublisher, the same file name must be selected in the **Load File** dialog box—the required georeference information is contained in the file header.

Supported projections when saving the coordinate system are listed below:

Albers Equal-Area
Cassini-Soldner - Cassini
Cylindrical Equal Area
Equidistant Conic
Equidistant Cylindrical
Equirectangular
Gnomonic
Hotine Oblique Mercator
Laborde Oblique Mercator
Lambert Azimuthal Equal Area
Lambert Conic Conformal (1SP)
Lambert Conic Conformal (2SP)
Lambert Cylindrical Equal Area
Mercator
Miller Cylindrical
New Zealand Map Grid
Oblique Mercator
Oblique Stereographic
Orthographic
Polar Stereographic
Polyconic
Robinson
Sinusoidal
Stereographic
Transverse Mercator
Transverse Mercator (South Oriented)
VanDerGrinten

Export Image

Object > *Filters* > *MAP Images* > *Export Image* or *MAP Toolbar*



FUNCTIONALITY

MAPublisher offers the ability to export placed raster files as georeferenced images for use in other programs and/or for archival purposes. This can be useful in a number of ways. For example, when working with an image for which there is no georeferencing file, use the MAPublisher **Export Image** function to create a GeoTIFF or other georeferenced image file based upon the coordinate system of the host MAP View.

The **Register Image** filter can be used to accurately position and scale imagery with vector data. Alternatively the imagery can be manually moved, scaled or rotated to align with artwork in a designated MAP View. If the host MAP View contains accurate georeferencing information, Export Image can be used to save raster data to a fully georeferenced image format. It is also possible to convert the vector artwork to a georeferenced raster image.

MAPublisher will export the selected image as a TIF, with a choice of the five reference file formats (see the previous page).

USING EXPORT IMAGE

With the image selected, go to *Filter* > *MAP Images* > *Export Image* or click MAPublisher Toolbar button .

The **Store Geography as** drop-down list will show the five available reference file formats. A regular **TIF** file will be generated with a reference file carrying the extension **TFW**, **IRP**, **TAB** or **LGO** if one of these formats is selected. If **GeoTIFF** is selected from this drop-down list, only a **TIF** file will be produced, as this will carry both the image and the georeferencing information.

RESULTS

When all of the export options have been set, click the **Save As** button. Specify a name for the TIF file, and the location where it will be saved. If the format is a TIF and reference file combination, the reference file will carry the same file name and will be saved to the same location as the TIF.

This image file can be subsequently used in imagery applications, such as Avenza's **Geographic Imager** for Adobe Photoshop, or in other Adobe Illustrator documents using MAPublisher.

NOTE: Exporting linked images in CMYK color mode will create an incorrect result. These images must either be set to a different mode or embedded prior to exporting.

NOTE: If a MAP View is rotated, the exported image will not store any rotation parameter (it will be automatically rectified - oriented north up).

** In Adobe Illustrator CS3, Export Image is found in the Filter > MAP Images menu.*

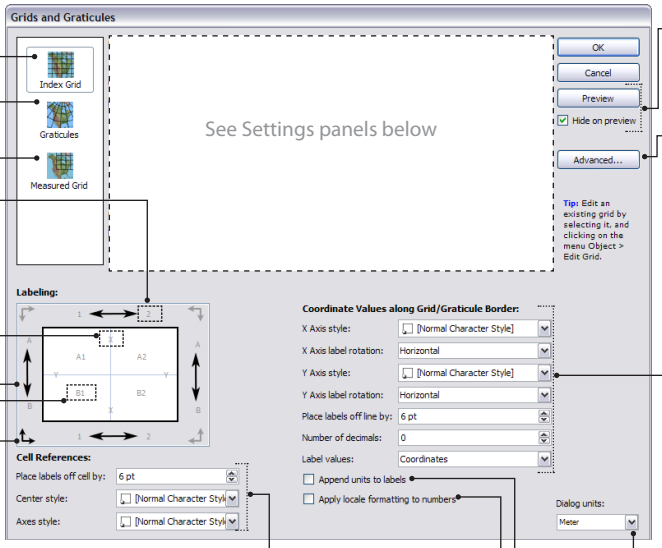
Grids and Indexes

MAPublisher contains tools to easily create map grids and map indexes. Grids can be created for reference purposes, or to follow designated lines such as latitude and longitude, and can also be labelled for indexing. When a labelled grid has been established, MAPublisher is able to generate index files, containing the location of text objects in MAP Layers.

Topics covered in this section:
Grid and Graticules
Make Index

Grids and Graticules

*Object > Filters > MAP Legend > Grids and Graticules** or *MAP Toolbar*
Object > Edit Grid / Edit Graticules



Grid/Graticule Selection - Click the appropriate button to select the grid type required and to assign settings (see below). Note: Measured Grids can only be created on MAP Views in projected coordinate systems.

Axis Labels - Solid graphic denote an enabled labelling option. Click an axis label to toggle all labels on that axis ON or OFF.

Coordinates Labels - Solid graphic shows labels will be generated (labelled as X,Y for measured grids or Lat/Long for graticules . Click the label to toggle between *X, Y, Both, OFF* or *Lng, Lat, Both, OFF.*

Label Direction - Click to reverse the direction that labels increment.

Cell Labels - Solid graphic shows labels will be generated. Click a cell label to toggle all center labels ON or OFF.

Flip Label Axes - Click to flip alpha and numerical labels..

Preview - Click this button to preview the grid.

Hide on preview - Minimizes this dialog box during preview.

Advanced - Access the **Advanced** dialog box to specify additional options for the grids or graticules.

Coordinate Values along Grid/Graticule Border:

X and Y Axis style - Select the *Character Style* to use for the X and Y labels.

X and Y Axis label rotation - Choose *Horizontal* or *Vertical* rotation.

Place labels off line by - Select a distance off the grid to place the labels.

Number of decimals - Specify the number of decimals.

Labels values - Select the type of labels to display (distances measured from the lower left corner of the grid, or actual coordinates (X/Y or lat/long).

Units - Set the units for *Measured Grid* dimensions if appropriate.

Cell References:

Place labels of cell by - Select a distance off the grid to place the labels.

Center Style† - Select the *Character Style* to use for the Center Labels.

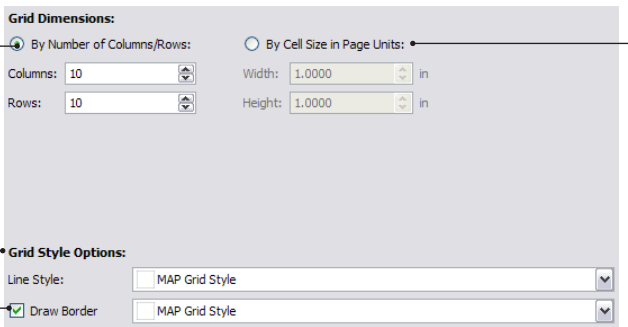
Axes Style† - Select the *Character Style* to use for the Axis Labels. .

Append units to labels - Choose to include labels (i.e. degree symbols) for Line Labels.

Apply locale formatting to numbers - Choose to apply locale formatting (e.g. decimal separator as dot or comma), as specified in the MAPublisher Preferences.

† *If the* **Center, Axes** *and* **X or Y Axis style** *lists do not contain a recently created character style, simply return to the Character Style panel, double-click this style and click OK in the Character Style Options dialog box. This forces Adobe Illustrator to re-load the list of character styles.*

Index Grid Settings



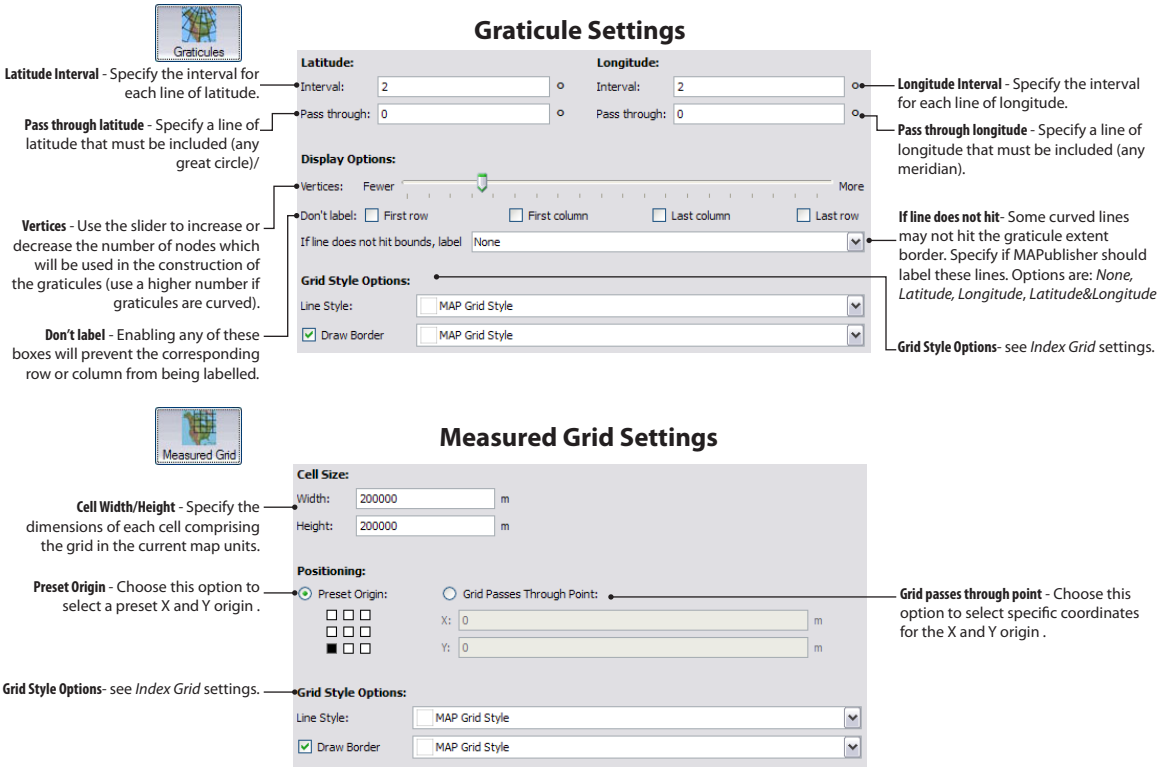
Number of Columns and Rows -Select this option to create a grid with the specified number of rows and columns.

Cell Size in Page Unit - Select this option to specify the cell size in page unit (as specified in the Adobe Illustrator Document Setup).

Line Style - Select a graphic style for the grid axis

Draw Border - Check this option to draw the grid border (frame) and select a graphic style for it.

** In Adobe Illustrator CS3, Grids and Graticules is found in the Filter > MAP Legend menu.*



FUNCTIONALITY

The **Grids and Graticules** tool generates grid lines based on a number of user-defined settings.

There are three grid types available:

- **Index Grid**: divides the grid extents based on a specified number of cells or by entering a cell size in document unit.
- **Graticules:** plots grid lines at specific intervals of latitude and longitude which will be automatically curved as applicable.
- **Measured Grid**: place grid lines based on a grid size in real-world dimensions.

Numerous options for labels, placement, size and alignment are provided.

All grids plotted with this tool can be subsequently resized using the bounding box of the grid, and can be edited by clicking the Adobe Illustrator menu *Object > Edit Grid / Edit Graticules*.

PREREQUISITES

Grids and Graticules are added on **Legend layers**. If no legend layer is present in the document, a new legend layer will be created automatically. To manually create a new Legend layer, use the *Add MAP Layer* button on the MAP View panel and specify a feature type of Legend (see chapter 4 for more details).

By default, MAPublisher will use the *Normal Character Style* when generating grid labels. If custom character styles are to be used for the labels, these styles should be established before opening this dialog box *(Window > Type > Character Styles)*.

A default grid line style will also be used. To use an alternate style for the grid lines, create or add the desired style to the *Graphic Styles* panel prior to accessing the *Grids and Graticules* function.

The MAP View must have a coordinate system assigned in order to plot a grid. Graticules and Index Grids can be generated for any coordinate system. Measured Grids cannot be generated for geodetic coordinate systems.

To access the function select the legend layer and navigate to *Object > Filters > MAP Legend > Grids and Graticules** or MAPublisher toolbar button  .

** In Adobe Illustrator CS3, Grids and Graticules is found in the Filter > MAP Legend menu.*

INDEX GRIDS

The *Index Grid* option divides the grid extents based on a specified number of cells or by entering a cell size in document unit. The grid dimension can be either calculated from the specified **number of columns and rows** or by **Cell Size in Page Units**. Finally, graphic styles for the grid lines and border, and character styles for labels may be specified.

NOTE: The page units are specified in the Adobe Illustrator document setup (main menu *File > Document Setup*).

GRATICULES

The *Graticules* option permits grid lines to be placed at specific intervals of latitude and longitude (in degrees). Specify the **interval** for lines of latitude and longitude and as required a latitude and longitude value to **pass through**. Use the **slider** to increase or decrease the number of vertices used in the graticules if required (use a higher number if the graticules are highly curved due to the current projection).

To control which axis are to be labelled, set the following features:

- **Don't label**: allows not labelling a specific column or row (first or last, row or column).
- **If line does not hit bounds, label** (*None, Latitude, Longitude* or *Latitude & Longitude*): choose to label or not curved lines that do not intersect with the grid extents (applies even if the line hits the grid border but not the bounding box).
- **None, Lat, Lng** or **Both** axis labels: a click on the axis in the label placement control switches the label caption from off (text grayed out), Lat, Lng or Both. This is useful for rotated grids or for labels of curved lines.

Finally, graphic styles for the grid lines and border, and character styles for labels may be specified .

MEASURED GRIDS

The *Measured Grid* option creates a grid based on a grid cell size specified in real world unit, when the current MAP View is in a projected coordinate system. The size is specified in the **Width** and **Height** text boxes (the map units can be specified in the **Units** list).

The grid position can be specified as relative to the page extent (**Preset Origin**) or by entering a X, Y position (**Grid Pass Through Point**). Finally, graphic styles for the grid lines and border, and character styles for labels may be selected.

LABELLING OPTIONS

A number of labelling options are available for use in grids and graticules.

The **Cell Reference** options are relative to the indexing labels of grids and graticules. In the label placement control, click on the **axes labels** (A, B or 1,2) and **cell labels** (A1,A2...) to enable or disable the display of these labels. Use the arrows to change the direction of axes and flip the numeric labels. Click a corner graphic to swap which axes are labelled numerically and which are labelled alphabetically. Then specify the axes label distance from the grid border (**Place Labels of cell by** option — a negative value places labels inside the grid) and choose a character style for the **Center** and **Axis styles.**

NOTE: Indexing labels for graticules are always generated as if the graticules covered the full map extents, regardless of the actual graticules' bounding box.

The **Coordinate Values along Grid/Graticule Border** options are relative to the coordinate labels of the grids and graticules (X,Y for indexed and measured grids, Lat,Lng for graticules). In the label placement control, click on the X/Y or Lat/Lng axis labels to select which values are labelled (**disable, X, Y** or **X&Y** for grids, **disable, Lat, Lng, Both** for graticules). These options are useful for rotated grids where grid lines may intersect on the wrong border of the grid or curved lines of latitude or longitude. The label rotation (**Horizontal** or **Vertical**) can be modified.

Other options for the coordinate labels are:

- Distance from the grid (**Place labels off line by**) — a negative value places labels inside the grid;
- **Number of decimals**;
- **Label values**: coordinates or distance from the lower left corner of the grid — index and measured grids only;
- **Append units to labels:** e.g. °, m;
- **Apply locale formatting**: apply number formatting according to the locale settings in the MAPublisher Preferences (e.g. 10000 may be written 10,000 or 10.000 or 10 000).

ADVANCED OPTIONS

Click the **Advanced** button to access additional grid extents and labelling options.

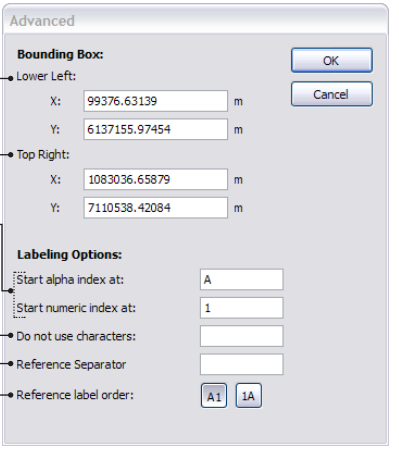
Modify the bounding box extents of the grid or graticules by entering new coordinates for the *Lower Left* and *Top Right* position of the grid.

It is also possible to edit the first value used for cell labels by editing the *Start alpha/numeric index at* values. Omit certain alpha characters from cell references with the *Do not use characters* option. For example, it may be useful to omit the characters "I" and "O" for indexing purposes (when entering alpha characters to omit, separate characters with a comma). The Reference label order option can be edited to change the center labels from alpha-numeric (A-1) to numeric-alpha (1-A), or vice versa.

When creating graticules, users may need to edit the maximum graticule extents allowed. By default, MAPublisher automatically detects the maximum graticule extents as +/- 180° from the central meridian specified in the coordinate system definition of the current MAP View for longitudes and +/- 90° from the Equator for latitudes. The graticule is then created as the intersection of the bounding box and the maximum graticules extents.

In some rare cases, the bounding box specified may extend beyond the default limit (with some polar projections or some cases when the data crosses the 180 degrees west/east meridian), and the created graticule will be truncated or wrapped. In these cases, users may enter specific values for the **Graticule Start** and **Graticule End** coordinates in the **Advanced** dialog box — e.g. Start: -180, -90 | End: 360, 90. In most cases this is not necessary, so we recommend to use **Auto-Detect** and only edit the graticule start and end coordinates if the resulting graticule is truncated (increase extents) or wrapped (reduce extents).

Advanced Grid Settings



Lower Left - Adjust X and Y values for the lower left of the grid extents.

Top Right - Adjust X and Y values for the upper right of the grid extents.

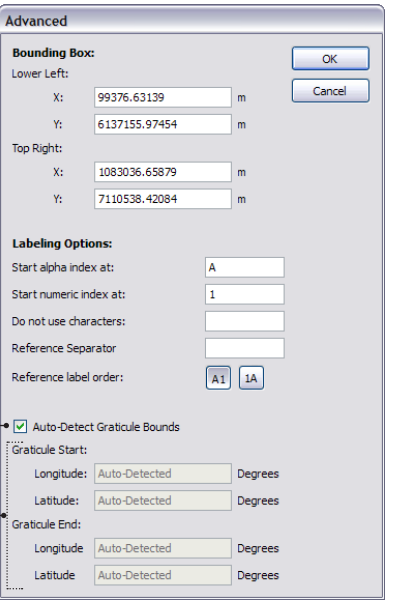
Start alpha/numeric index at - Edit the first value used for cell labels.

Do not use characters - Enter alpha characters to omit from cell references.

Reference Separator - Enter one or more characters to separate the alpha and numeric indexes (e.g. - or / for A-1 or A/1)

Reference label order - Choose to make Center Labels alpha-numeric or numeric-alpha.

Advanced Graticules Settings

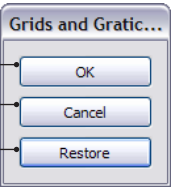


Auto-Detect Graticule Bounds - Auto-Detect the maximum graticule extents from the MAP View's coordinate system definition.

Graticule Start | Graticule End - Enter specific coordinates for the graticule limits. *Use only if the resulting graticule is truncated or wrapped.*

GENERATING AND EDITING THE GRID

When all the options have been set, click the **Preview** button to display a preview of the result. The Grids and Graticules dialog box may be minimized in the preview mode.



OK - Creates the grid on the artboard and closes the dialog box.

Cancel - Closes the dialog box without creating a grid.

Restore - Restores the full size *Grids and Graticules* dialog box to further edit the parameters.

Click **OK** to create the grid or **Restore** to return to setting up the parameters. The grid is plotted on the legend layer using the entered parameters.

Once the grid is added on the artboard, use the bounding box of the generated grid *(View > Show Bounding Box)* to resize if required. Re-sizing grids horizontally or vertically adds, removes or re-sizes (index grids) component cells in the grid.

After transforming a MAP View containing a grid, the grid will be transformed and rescaled within its current bounds (the physical extents of the grid on the page is not edited), in which case the grid has to be resized manualy.

To change any parameter without generating a new grid, simply select the grid and access the *Object > Edit Grid/ Edit Graticules* menu item. This re-opens the *Grids and Graticules* dialog box populated with the current parameters of the grid. All parameters can be edited, even the grid type selection.

IMPORTANT NOTES

Manually editing text position, font, colour etc is not possible on grids and graticules in their default grouped state. Manual editing is possible however if the grid is first expanded *(Object > Expand),* though this will negate any opportunity to subsequently edit the art via the *Grids and Graticules* dialog box. When expanded, grids cells are converted to both polygons (from index) and lines.

Measured grids cannot be labelled properly using actual coordinates when the data is projected using a stereographic or orthographic coordinate system (because some areas may have some high curvature).

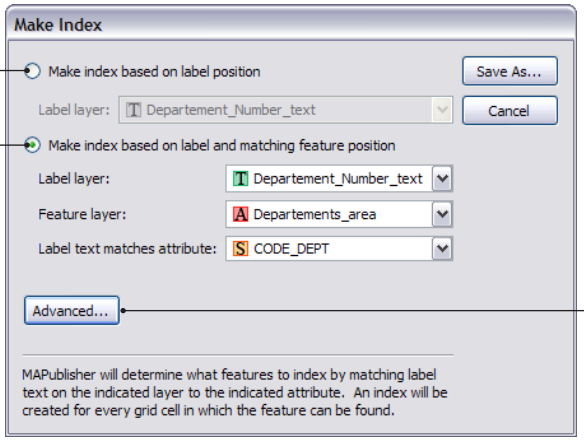
If the generation of a grid/graticule causes blank or incomplete results, the following workflow should be used:

1. Transform the MAP View to a geodetic coordinate system (e.g. WGS 84).
2. Generate a grid or graticules on this MAP View.
3. Expand the object *(Object > Expand).*
4. Create a new area layer in the MAP View. Drag the expanded grid to this new layer.
5. Transform the MAP View back to the original projection.

Please see Appendix A3 for more information on working with grids and graticules in MAPublisher 8.

Make Index

*Object > Filters > MAP Legend > Make Index** or *MAP Toolbar* A-1

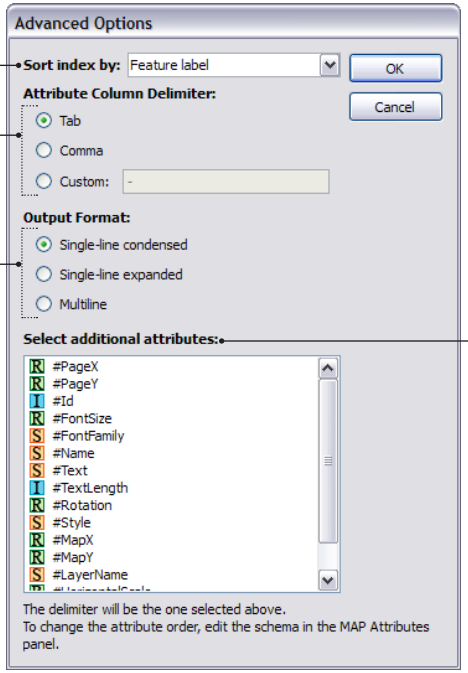


Make index based on label position - An index will be created by assigning one index location for each label found on the selected label text layer.

Make index based on label and matching feature position - MAPublisher will determine what features to index by matching label text on the selected *Label layer* to the indicated attribute on the *Feature layer*. An index is created for every grid cell in which the labelled feature can be found.

Advanced - Click this button to open the **Advanced** dialog box (below), to specify additional options for the index format.

Advanced Options



Sort index by - Choose to sort the entries in the index file by either feature label or grid cell address.

Attribute Column Delimiter - Select a delimiter for the columns in the index file - *Tab, Comma* or *Custom*. If *Custom* is selected, enter the desired delimiter into the adjacent text field.

Output Format

Single-line condensed - Creates one index entry for each unique label. The index is compressed in the format: A1-3;B2,4

Single-line expanded - Creates one index entry for each unique label. The index is in the format: A1,A2,A3,B2,B3

Multiline - Creates one index per label recurrence.

Select additional attributes - Select one or more attributes to be added to the index file. The selected attributes appear in separated columns delimited by the chosen *Attribute Column Delimiter*.

** In Adobe Illustrator CS3, Make Index is found in the Filter > MAP Legend menu.*

FUNCTIONALITY

When a grid (index or measured) or set of graticules have been created, the **Make Index** filter can be used to generate a map index based on the position of text elements in grid cells. Index files generated using this function are produced as a simple text file, and sorted alphabetically (by label or cell reference). A typical file would be formatted as follows:

Melrose Place	B4
Richview Avenue	A5
Sesame Street	A4
Wisteria Lane	B5

The index file has a header indicating the name of each column (name, attribute name if applicable, and grid locations).

PREREQUISITES

To create a map index, an *Index Grid, Measured Grid* or set of *Graticules* must have been created using the **Grids and Graticules** function. This grid must exist on a **Legend layer**, and not be expanded, and must be selected in order to access the function. An index will be created even if grid labels are hidden.

The **Text layer** containing the labels to be indexed must be located in the same MAP View as the grid.

To access the Make Index tool, click the menu *Object* > *Filters* > *MAP Legend* > *Make Index* or MAPublisher Toolbar button A-1.

USING MAKE INDEX

Index Based on Label Position

This method creates an index by assigning one index location for each label found on the selected text layer. For example, if the label "High Street" is only found in grid cell A4, the only entry for "High Street" in the index file would be as follows: High Street A4

Select the **Make index based on label position** button to generate an index using this method. Then choose the layer containing the text to be indexed from the **Label layer** drop-down list.

Index Based on Label and Matching Feature Position

This method creates an index by matching label text on a selected *Label Layer* to the indicated attribute on the *Feature layer*, creating an index entry for every grid cell in which the feature can be found. Note that only features that have labels can be indexed. For example if "High Street" passes through grid cells A3, B3 and C4, each grid cell will be in the index — on a single or multiline (see advanced options). For example as: High Street A3, B3, C4

Use this function as follows:

- Select the **Make index based on label and matching feature position** option to generate an index using this method.
- Choose the layer containing the text to be indexed from the **Label layer** drop-down list.
- Choose the layer that was used to generate the labels from the **Feature layer** drop-down list.
- In the **Label text matches attribute** list, select the attribute column in the selected *Feature layer* which matches the labels to be indexed.

Advanced Formatting Options

To set additional options to control the formatting of the index file, click the **Advanced** button.

The **Sort index by** option controls the order of the index entries. The default setting is **Feature label** — entries are ordered based on the label text (alphabetical). Alternatively, **Grid cell** can be selected to sort by the cell indexes.

The **Attribute Column Delimiter** indicates which delimiter is used to separate the different columns in the index file (label, additional attributes and indexes). The options are **Tab**, **Comma**, or a **Custom** delimiter. When using a custom delimiter, type the desired character(s) in the adjacent text field.

MAPublisher offers three types of **Output Format:**

- **Single-line condensed:** One index for each unique label is created. The grid cell references are compressed in the format:

  Label A1-3;B2,4;F-H9

  where:
  - A dash "-" indicates a range: A1-3 means the label is found in cells A1, A2 and A3; F-H9 means the label is found in cells F9, G9 and H9. The ranges by number are grouped first and then the ranges by letter.
  - A comma "," indicates a list: B2,4 means the label is found in cells B2 and B4 but not B3.
  - A semicolon ";" separates each entry.
- **Single-line expanded:** One index for each unique label is created. All grid cell references as listed in the format:

  Label A1, A2, A3, B2, B4, F9, G9, H9
- **Multiline:** One index for each cell reference is created: in the format

  Label A1
  Label A2
  Label A3

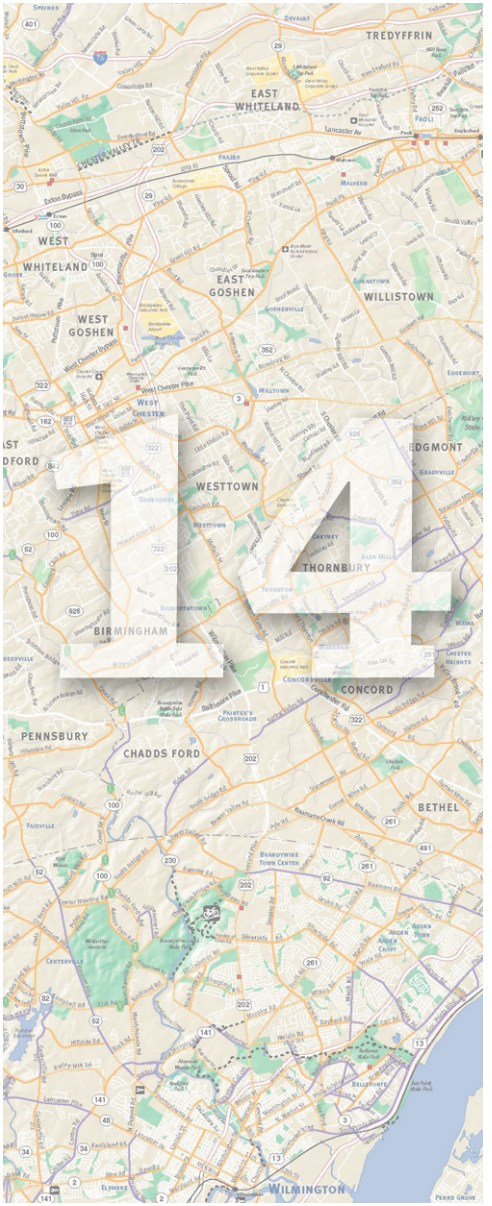
Users can add more attributes to the index file by selecting one or more attributes from the **Select addition attributes** drop-down list. Additional attributes are inserted in the file in columns between the label and the grid locations, separated by the chosen *Attribute Column Delimiter*. For example:

Label Attribute1 Attribute 2 A1-3;B2,4;F-H9

Saving the Index File

When all indexed options have been set, click the **Save As** button. Then specify a name for the text file, and the location where it will be saved. The index file can be opened in a text editor, or placed back into the document using the Adobe Illustrator **Place** function*.

** Using Adobe Illustrator CS4 on Mac OS X, it is recommended to copy the index contents into a text box instead of using the Place function*.



Scale Bars and North Arrows

MAPublisher contains tools for plotting accurate scale bars and north arrows onto your map.

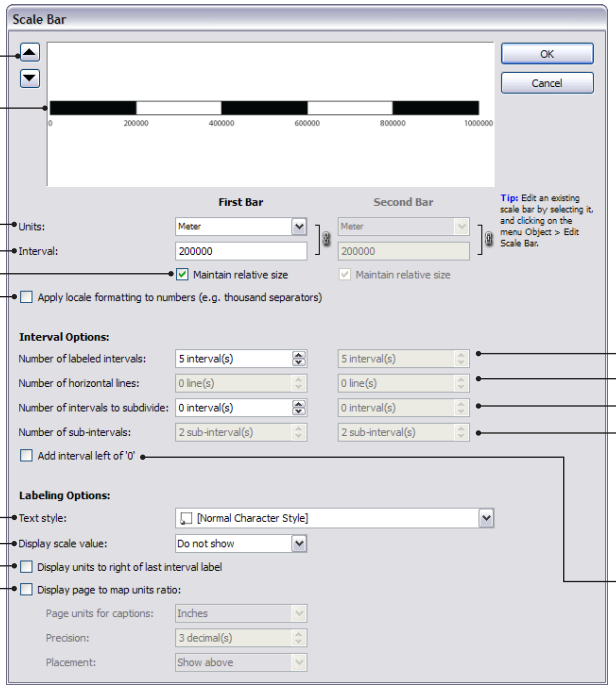
The **Scale Bar** filter offers a number of different designs that you can choose from, including double-bar designs for the placement of scale bars in multiple units.

North Arrows are created from selected artwork on the page using the **Create North Arrow** filter, and will be immediately aligned to true north.

Topics covered in this section:
Scale Bar
Create North Arrow

Scale Bar

*Object > Filters > MAP Legend > Scale Bar** or *MAP Toolbar*
Object > Edit Scale Bar



Select Style - Click the up or down button to browse through the scale bar styles.

Preview Panel - Displays a preview of the generated scale bar.

Units - Select the desired map units to be used in the selected scale bar.

Interval - Specify the length of each interval in the selected map unit.

Maintain relative size - Check this option to convert the interval values when units are changed..

Apply local - Use the locale format settings specified in the *General* section of MAPublisher Preferences..

Text Style† - Select the Adobe Illustrator Character Style to be applied to the text.

Display scale value - Check this option to display the scale value above or below the bar.

Display units - Check this option to display the interval unit

Display page to map units ratio - Check this option to show the scale as page unit to map unit ratio, selectable from *cm*, *mm* or *inch*. Specify the Precision and Placement.

Interval Options:

Labeled intervals - Enter the number of interval which will comprise each bar.

Horizontal lines - Select the desired number of horizontal lines to be included in the scale bar. Used with certain scale bar styles only

Sub intervals - Select the number of sub-intervals for each subdivided scale bar interval.

Intervals to subdivide - Enter the number of scale bar intervals to be subdivided.

Add interval left of zero
Check this box to have an interval placed on the scale bar to the left of the zero mark.

† *If the* **Text style** *list does not contain a recently created character style, simply return to the Character Style panel, double-click this style and click OK in the Character Style Options dialog box. This forces Adobe Illustrator to re-load the list of character styles.*

FUNCTIONALITY

MAPublisher contains ten different scale bar designs that may be incorporated into a map. After creation, MAPublisher scale bars can be subsequently resized via a bounding box (for example to add or remove component intervals). Scale bars can also be edited by selecting the *Object > Edit Scale Bar* menu item.

PREREQUISITES

To accurately create a scale bar, a MAP View must contain accurate georeferencing information and the coordinate system must be projected. (i.e. not in degrees) . Scale bars are added on **Legend layers**. If no legend layer is present in the document, a new legend layer will be created automatically. To manually create a new Legend layer, use the *Add MAP Layer* button on the MAP View panel and specify a feature type of Legend (see chapter 4 for more details).

If a custom character style is to be used for the labels of the Scale Bar, it is also advisable to establish this style *(Window > Type > Character Styles)* before opening this dialog box.

ADDING A SCALE BAR

The **Scale Bar** dialog box is accessed by clicking the menu *Filter* > *MAP Legend* > *Scale Bar* or MAPublisher toolbar button  .

Standard Options

Use the **Up** and D**own** buttons to select a scale bar design .Note that certain scale bar designs contain two bars and when such a design is selected, the *Second Bar* column of options will be enabled.

In the **Units** drop-down list, specify the units for the scale bar interval(s) to be based on. The default units are that of the current MAP View.

In the **Interval** text box(s), specify a real-world distance that each interval of the scale bar will represent. This figure will be in the unit specified in the **Units** list.

NOTE: A scale bar cannot be created on a MAP View that contains a coordinate system using custom (user defined) point styles or units.

Specify the number of cells in the bar(s) by entering a figure in the **Number of labeled intervals** entry field.

Depending on the chosen style of scale bar, it may be required to specify the **Number of horizontal lines** that will compose the scale bar.

To subdivide some of the intervals or cells in the bar(s), choose a figure from the **Number of intervals to subdivide** list. The subdivided cells will begin from the left of the bar(s). The **Number of sub-intervals** that compose each of these cells can be specified in the next list. As required, choose to **Add an interval left of zero**.

Labelling Options

Choose a **Character style** for the scale bar labels by choosing a style from the list. The label options allow adding extra scaling information to the generated scale bar. The text that will be generated by this tool is displayed in the Preview panel when the options are set.

Generating the Scale Bar

Click **OK** to place the selected scale bar on the legend layer at a default position (lower left corner of the artboard. The Adobe Illustrator editing tools may be used to move the scale bar to a desirable location.

** In Adobe Illustrator CS3, Scale Bar is found in the Filter > MAP Legend menu.*

EDITING A SCALE BAR

Use the bounding box of the generated scale bar (*View* > *Show Bounding Box*) to resize. Resizing scale bars horizontally will add or remove intervals from the bar(s). Resizing vertically will adjust the width of the bar(s).

Scale bars can also be resized using the Adobe Illustrator menu *Object* > *Transform* >*Transform Each*, by changing the horizontal or vertical scales.

To change the design of the scale bar, or to modify any parameter without generating a new version, select the scale bar and access the *Object* > *Edit Scale Bar* menu item. This will re-open the Scale Bar dialog box and the current parameters of the bar will be available for editing.

NOTE: Manually editing the type position, font, colour etc. is not possible on scale bars in their default grouped state. However, manual editing is still possible if the object is expanded first (*Object* > *Expand*). Please note, however, that this will remove all opportunity to subsequently edit the art via the Scale Bar filter. Please see Appendix A3 for more information on working with scale bars in MAPublisher 8.

Create North Arrow

*Object > Filters > MAP Legend > Create North Arrow** or *MAP Toolbar* 

FUNCTIONALITY

The MAPublisher **Create North Arrow** filter provides the functionality to convert selected symbology into a geographically correct north arrow. Once the north arrow is created it will be rotated to true north, and this property will be maintained through subsequent reprojection or rotation.

PREREQUISITES

The MAP Layer on which the art to be converted to a north arrow resides must be a  **Legend** layer, and be selected. This Legend layer must be hosted by the **MAP View** base for the alignment of the north arrow.

CREATING A NORTH ARROW

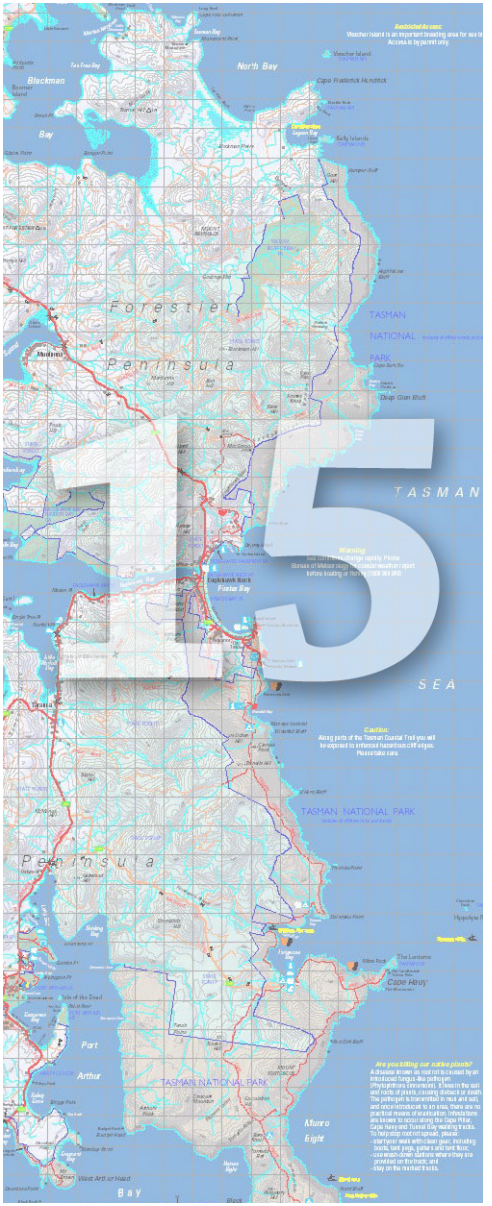
Select the piece of art to be converted to a north arrow. The art can be any form of artwork which can normally be converted to an Adobe Illustrator symbol. Then select *Filter > MAP Legend > Create North Arrow* or MAPublisher toolbar button  .

Upon creation, the north arrow will be added to the Adobe Illustrator Symbols panel and the coordinate system of the host MAP View will be used to align the north arrow correctly.

When the north arrow symbol is repositioned on the map, it will be re-oriented to the true north at the new location.

NOTE: Sample north arrow designs are included on your MAPublisher DVD. Go to *Window > Symbol Libraries > Other Library…* navigate to the *Helpful Styles & Symbols* folder on the DVD and load the *MAP_NorthArrows.ai* file. Drag the required symbol onto the Legend layer and then execute the Create North Arrow filter.

** In Adobe Illustrator CS3, Create North Arrow is found in the Filter > MAP Legend menu.*



MAP Web Author

Users should have a basic understanding of HTML syntax to use this feature.

MAPublisher 8 introduces the **MAP Web Author** tool that exports Adobe Illustrator documents with GIS attribute data to interactive Flash maps; complete with callout bubbles, rollovers, layer control, pan and zoom controls.

Like other MAPublisher functions, MAP Web Author is completely built-in to Adobe Illustrator. An interactive Flash map can be exported without any additional coding or software requirements. Therefore, users are not required to have Adobe Flash installed to benefit from this tool.

Flash map export offers controls for the layers visibility. Additionally, map features (point, line, and area) can be identified from the attribute information when users type a keyword in a search box.

Users with a good understanding of HTML, CSS and Javascript will be able to customize maps to embed into any web page using the MAP Web Author API and CSS tools.

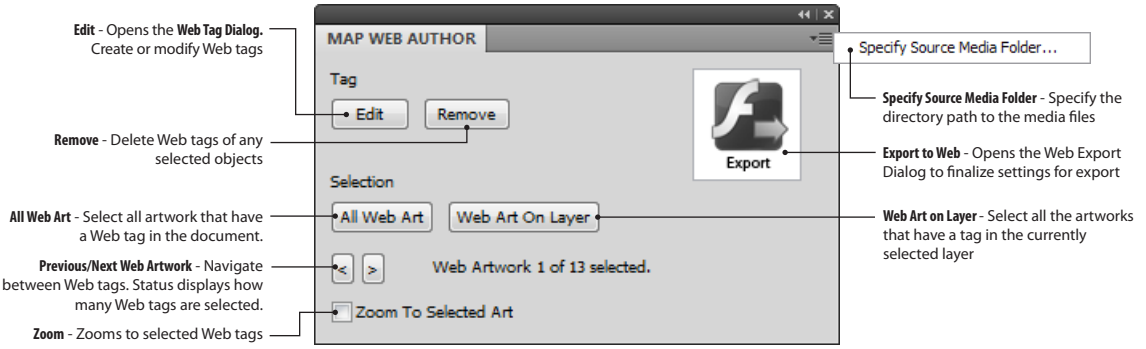
Topics covered in this section are:

MAP Web Author Panel
Web Tag Dialog
Export to Web
Web Export Advanced Settings
MAP Web Author Workflow
Advanced Features

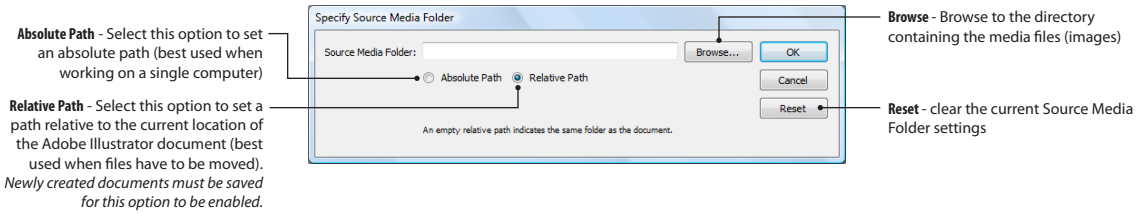
MAP Web Author Panel

Window > MAPublisher > MAP Web Author or *MAP Toolbar*

MAP Web Author Panel



Specify Source Media Folder



FUNCTIONALITY

The **MAP Web Author** tool exports a MAPublisher document as an interactive Flash map for Web display. Together with the map artwork, Web tags (also known as callout bubbles) are included in the export. Prior to the export process, the **MAP Web Author** panel is used to create, edit or modify these interactive objects.

Web tags can either be populated one object at a time or for a selection of objects. To create or edit multiple Web tags, select artwork and click the Edit button. Using this method, the same Web tag format is applied to all selected artwork. Information can be entered manually or extracted from the MAP Attributes fields (when available for the object layer). At any time, Web tags can be edited or modified by selecting them and clicking Edit.

Text and image formatting is created using simple HTML (Hyper Text Markup Language). The results can be checked in the **Callout Preview** window available in the **Web Tag Dialog**.

Additional settings such customizing the navigation and callout bubbles are available during the export process.

PREREQUISITES

In order to use **MAP Web Author**, first complete a map using MAPublisher and Adobe Illustrator tools. The Adobe Illustrator document size will determine the size of the Flash map. It is recommended to set the document size before any work is started. However, the document size may be changed in the Adobe Illustrator **Document Setup** (CS3) or **Artboard Options** (CS4) dialog box at any time. Using pixel units is the most practical to determine Flash map sizes in a Web browser.

To populate Web tags, MAP layers must have relevant attributes populated in its **MAP Attributes** table. For example, to insert links to images, the MAP layer must have a dedicated attribute field containing an image path (e.g. \images\picture1.jpg).

NOTES:

- Not just any map can be made into a Flash map. A print ready map does not necessarily mean that it is a Flash ready map. Unneeded art and attributes should be removed, lines should be simplified. Layers that do not require tagging will still be exported.
- Only the active artboard will be exported to Flash (Adobe Illustrator CS4 only).

The **Source Media Folder** containing the images must be organized properly. The supported image formats are *jpeg, png* and *gif*. To be sure that images can be viewed properly, the latest *Flash Player* version should be installed (download from Adobe website *www.adobe.com*).

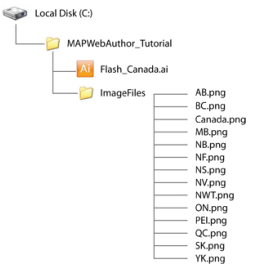
USING MAP WEB AUTHOR

Specify the Source Media Folder

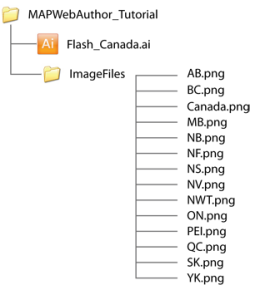
The **Source Media Folder** is the directory containing images that might be displayed in the Web tags (callout bubbles). The path to this directory is chosen through **Specify Source Media Folder** in the **MAP Web Author** panel options menu.

Either an **Absolute Path** or a **Relative Path** may be entered. An absolute path refers to the full folder directory path (e.g. *C:\folder1\folder2...*). A relative path refers to the folder path from the current location of the Adobe Illustrator document. In the example below, the relative path starts from \MAPWebAuthor_Tutorial.

Absolute Path example



Relative Path example



If the Adobe Illustrator file is to be exchanged between computers, it is good practice to use a **Relative Path** to avoid having to reset the link to **Source Media Folder** when the files are moved.

Add, Edit and Remove Web Tags

To add or edit a Web tag, select a piece of artwork and click the **Edit** button in the MAP Web Author panel. This opens the **Web Tag Dialog** where the Web tag settings can be defined. When multiple artwork is selected, any settings made in the **Multiple Web Tag Dialog** are applied for all of the selected artwork. They may be individually modified by scrolling through the Web tags or at a later time by selecting the artwork and clicking the **Edit** button.

To remove Web tags, select artwork with an associated Web tag and click the **Remove** button.

Selection

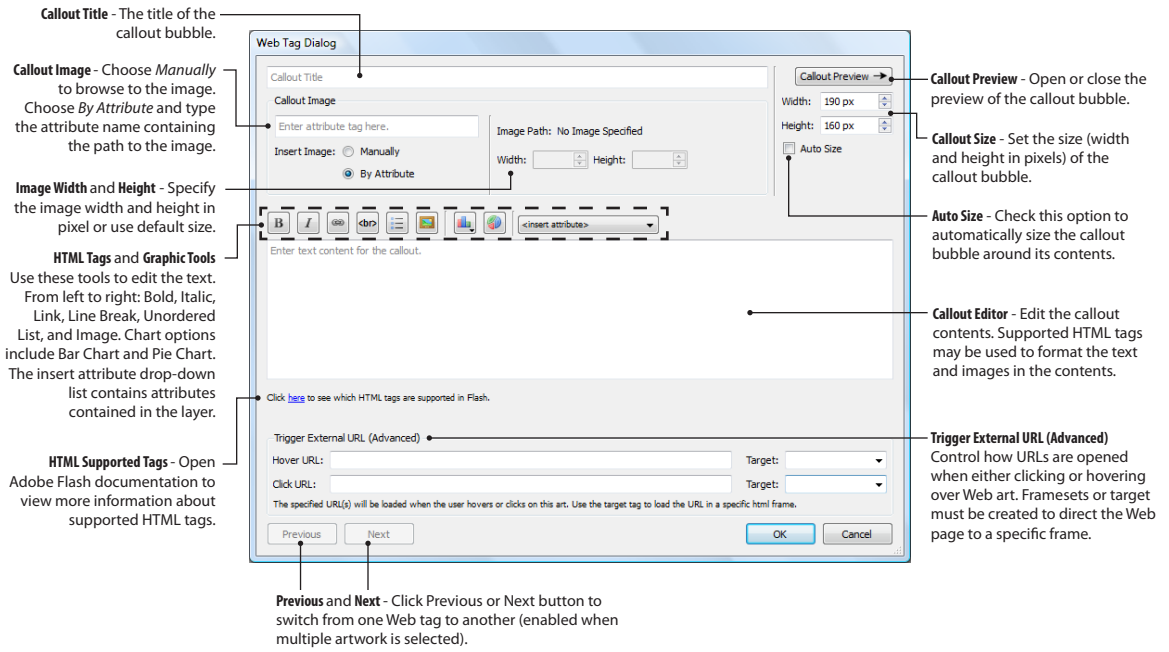
Select any artwork in the document and the MAP Web Author panel displays the number of Web tags (assuming the artwork contains a Web tag). To select all the artwork with Web tags in a document, click the **All Web Art** button. To select all the artwork with Web tags on a specific layer, select the layer in the Adobe Illustrator Layers panel, and click the **Web Art On Layer** button. Use the navigation buttons to consecutively move to the previous or next artwork that contains a Web tag.

The **Zoom To Selected Art** option centers the Adobe Illustrator document view to the selected artwork with Web tags. Check this option and use the **Previous/Next Web Art** buttons to navigate between them.

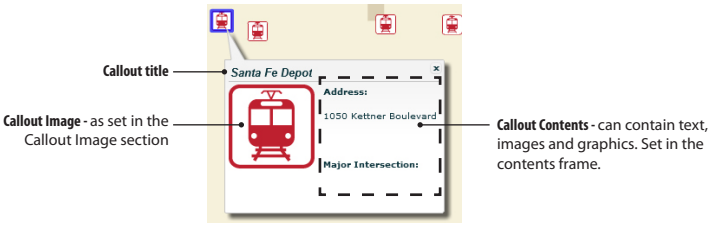
Export to Web

The **Export to Web** button opens the **Web Export Dialog** described later in this chapter.

Web Tag Dialog



Callout Bubble example:



FUNCTIONALITY

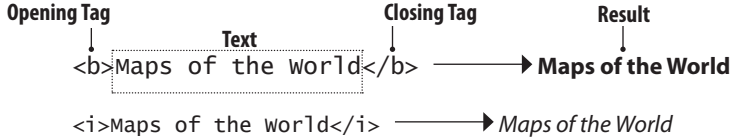
Click the **Edit** button in the the **MAP Web Author** panel to open the **Web Tag Dialog** (**Multiple Web Tag Dialog** if multiple artwork is selected). These dialog boxes are used to design the Web tags (callout bubbles) using HTML. These callout bubbles appear when objects in the Flash map are clicked or hovered over. Not all objects in the map need to be associated with a callout. Use the Callout Preview to see how the HTML affects the Web tag.

NOTE: Document artwork (lines, areas, points) associated with callout bubbles are also called *Web Art*. Only Web Art will be searchable in the resulting Flash map (see **Export to Web**).

PREREQUISITES

In the **Web Tag Dialog**, text and image parameters are edited using *HTML tags*. HTML tags are key codes written between less than (<) and greater than (>) signs, that indicate how the Web browser should display the text. There are opening and closing version for most (but not all) of the tags, and the text to be affected is contained between the both tags. Both the opening and closing tags use the same key code but the closing tag is preceded by an initial extra forward slash sign (/).

Examples of text formatting



Examples

Some HTML tags are used to insert links and images.

- `<a href="http://www.avenza.com">Avenza Web Page</a>`
  → Creates a link to www.avenza.com accessed when clicking "Avenza Web Page" text.
- `<img src="sourcemedia/picture.jpg" hspace="0" vspace="0" align="left" >`
  → Inserts an image (picture.jpg located in the **Source Media Folder**).

HTML ignores extra spaces and returns, therefore tags such as **
** (to create line breaks) and **<p>** (to start a new paragraph) should be used. In addition to the HTML tags, MAPublisher can use text extracted from the MAP Attributes table. The reference to the attribute field name is indicated between two percent **(%)** signs. For example, `%AttributeName%`.

Examples of using attribute fields

- `<b>%Street_Name%</b>` → **Main Street**
- `<img src="sourcemedia/%image%" hspace="0" vspace="0" align="left" >`
  → Displays image indicated in the attribute called "image" (a string text). *hspace* and *vspace* set the horizontal and vertical space left blank around the image. *align* set the image alignment to the left of the page
- `<a href="http://%WebSite%">Avenza Web</a>`
  → Avenza Web (and opens the Website indicated in the attribute WebSite on click).

USING THE WEB TAG DIALOG

Callout Set-up and Preview

The **Preview** button opens or closes the preview of the callout. As text and images are inserted, the preview gets updated to show the aspect of the callout bubble prior to export. Set the **Height** and **Width** of the callout bubble in pixel units or use the **Auto Size** option. This option sets the size of the bubble automatically based on the contents of the callout (image and text). Note that pie and bar charts cannot be displayed in the preview.

NOTE: Due to some known Flash Player HTML rendering limitations, the callouts of a Flash map exported using the MAP Web Author tool may not appear in a browser exactly as shown in the MAP Web Author tool preview window which supports proper HTML rendering. For example, ordered and unordered lists (<ol> and <ul> tags) are not recognized by Flash Player so they do not modify how the list is rendered and all list items will be shown using bullets.

Insert a Title

Callout bubbles can be given a title. The title can be typed in as a simple text, but it can also be formatted using HTML tags and MAP Attribute values. The attribute field name must be entered between percent (%) signs, e.g. %TITLE%.

Insert an Image

Images can be inserted into callout bubbles using two methods: **Manually** or **By Attribute**. To insert an image manually, choose the **Manually** option and browse to the image file. To use an attribute value containing the path to the image file, choose the **By Attribute** option and type the attribute field name into the box. The field name must be entered between percent (%) signs, e.g. %Image_File%.

By default, the original image size is used. To change the image size, enter a new **Width** and **Height** into the boxes. The width/height ratio is maintained. Use the Callout Preview to view the size of the image. This option is not available for **Multiple** tagging with option **By Attribute.**

NOTE: The maximum size for a callout is 1000 pixels x 1000 pixels. When this limit is reached, images are automatically scaled to fit (image aspect ratio is maintained).

Add and Edit Contents

As explained in the *Prerequisites*, the callout bubble contents can be typed and formatted using HTML tags. However, the **Web Tag Dialog** provides a series of tools to create HTML tags more quickly. The table below shows the tag buttons and functions that are available.

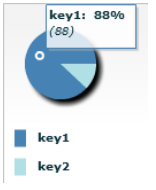
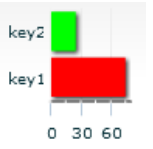
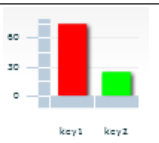
To insert a tag into the callout editor box, click a tag button. Then type callout text in between the opening and closing tags. Alternatively, highlight text with the cursor and click a tag button to wrap tags around it. Use the Callout Preview to see how the text, links or charts are displayed.

Aside from the HTML tags, the **Web Tag Dialog** provides a drop-down list to pick **MAP Attributes** (visible attributes only). Choose an attribute from the drop-down list and it will be entered into the callout editor box.

NOTE: MAP Attributes column names are case sensitive.

Tag button	Tag Function	HTML tag example	Result
	Bold	`<b>bold text</b>`	**bold text**
	Italic	`<i>italic text</i>`	*italic text*
	Hyperlink	`<a href="http://www.avenza.com">Avenza Page</a>`	Avenza Page
	Line Break	`line break`	break line

	Unordered List	`<ul>`
		`<li>list 1</li>`
		`<li>list 2</li>`
		`</ul>`
			• list 1
			• list 2

	Insert Image	`<img src="ImageFile/Canada.png">`	
	Pie chart	`<chart type="pie" showLegend="true" values="'key1', '%attrib1%' | 'key2', '%attrib2%'" colors="0xff0000, 0x00ff00" width="180" height="180" >`	
 Horizontal Vertical	Horizontal bar chart	`<chart type="horizontalbar" showLegend="true" showAxisValues="true" values="'key1', '%attrib1%' | 'key2', '%attrib2%'" colors="0xff0000, 0x00ff00" width="180" height="180" >`	
	Vertical bar chart	`<chart type="verticalbar" showLegend="true" showAxisValues="true" values="'key1', '%attrib1%' | 'key2', '%attrib2%'" colors="0xff0000, 0x00ff00" width="180" height="180" >`	

Additional information for pie and bar charts:

- **key1**: Legend for the first value. Enter a text in between ' sign. For example: 'Male Population'
- **%attrib1%**: Attribute that contains the first numerical value for the graph, as found in the MAP Attributes panel. For example, if the attribute is named MALE_POP enter '%MALE_POP%'
- **key2**: Legend for the second value. You can enter a text of your choice in between ' sign. For example: 'Female Population'
- **%attrib2%**: Attribute that contains the second numerical value for the graph, as found in the MAP Attributes panel. For example, if the attribute is named FEMALE_POP enter '%FEMALE_POP%'
- **colors**: enter a list of colors for the chart (first color, second color etc...). The color values must be entered in hexadecimals values. For example, use the Adobe Illustrator Color Picker and select color : the hex value (below the B of RGB). However, Illustrator write the color #BC1E1E , but in MAP Web Author, the # sign by 0x (zero-x) replaces the # — so 0xBC1E1E must be entered.
- **width** and **height**: Size of the graph in pixels.

Advanced HTML tags combinations are possible to create more effects. For more information and a complete list of HTML tags supported by Adobe Flash, click the link on the Web Tag dialog box or go to *http://livedocs.adobe.com/flash/9.0/main/wwhelp/wwhimpl/common/html/wwhelp.htm?context=LiveDocs_Parts&file=00000922.html*.

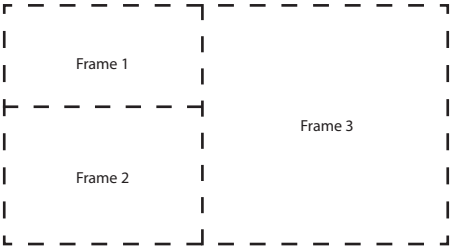
Auto Size Option

When this option is used, the callout bubble automatically resizes to fit to its contents.

Trigger External URL

The Trigger External URL options allow an advanced Web designer to load a specified HTML document (designated by its URL address) into a targeted HTML frame. Attributes may be used (i.e. %ATTRIBUTE_NAME%). This option occurs when the Web Art is clicked or hovered over.

A Web browser can be divided into multiple panes called HTML frames, to present documents in multiple views, which may be independent windows or subwindows. For example, within the same window, one frame might display a static banner, a second a navigation menu, and a third the main document that can be scrolled through or replaced by navigating in the second frame. An example layout could be as follow:



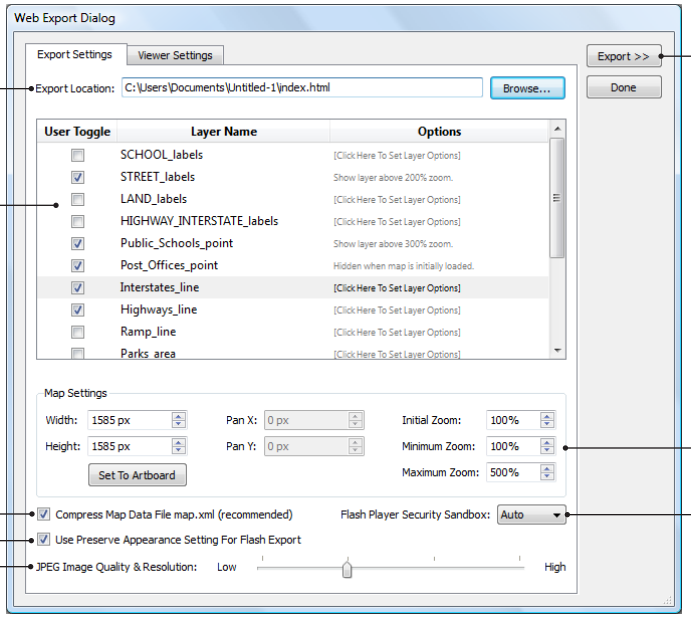
Names of frames created by Web designers must begin with an alphabetic character (a-z/A-Z). Some special purpose HTML frames have reserved names with a leading underscore. The following reserved names are available for selection from the **Target** drop-down list.

- **_blank:** Loads a linked document into a new blank window (unnamed).
- **_self:** Loads a linked document into the same frame in which the link was clicked (frame containing Flash map).
- **_parent:** Loads a linked document into the immediate parent of the document the link is in (frame containing Flash map).
- **_top:** Loads a linked document into the entire window, clearing the frames.

To use the *Trigger External URL* options, enter the URL address of the HTML document to open in the **Hover URL** or **Click URL** fields. The specified URL can be any page available locally or any external Web page (for example *http://www.avenza.com*). In the **Target** drop-down list, enter the name of the destination frame (type in the name given by Web designers or use one of the four available reserved names).

Web Export Dialog

Export Settings



Export Location- The destination folder of the exported Flash documents.

Layer Controls - Lists all the layers in the active artboard. All layers will be visible, but only checked layers under **User Toggle** can be shown/hidden by a user. **Options** - Set layer export options. Show a layer at certain zoom levels, set initial layer visibility and static content is affected by pan and zoom.

Compress Metadata File - Check this option to compress the map data file, map.xml (recommended).

Preserve Appearance - Flatten artwork to a single layer before export. Checking this limits the editability of the file. When unchecked, path simplifications are applied by Adobe Illustrator.

JPEG Image Quality & Resolution Drag the slider to control the amount of JPEG file compression.

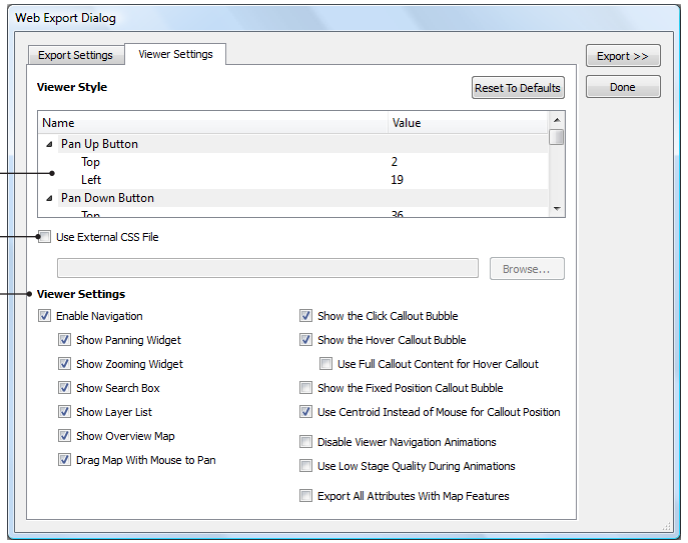
Export - Export the document to a Flash map.

Map Settings
Width and Height - Size of the Flash map in the browser. Cannot be larger than the Adobe Illustrator document.
Set to Artboard - Reset the width and height to its original values.
Pan X and Pan Y - Initial pan shift applied to the Flash map (from top-left corner).
Initial Zoom - Zoom level when the Flash map is opened.
Minimum Zoom - The minimum zoom level that the map can be set to.
Maximum Zoom - The maximum zoom level that the map can set to.

Flash Player Security Sandbox
Provides a restricted area for the map that prevents access to private data. Depending on location of final Flash map, choose Local or Network. It is set to Auto by default.

Viewer Settings

See next section for more details



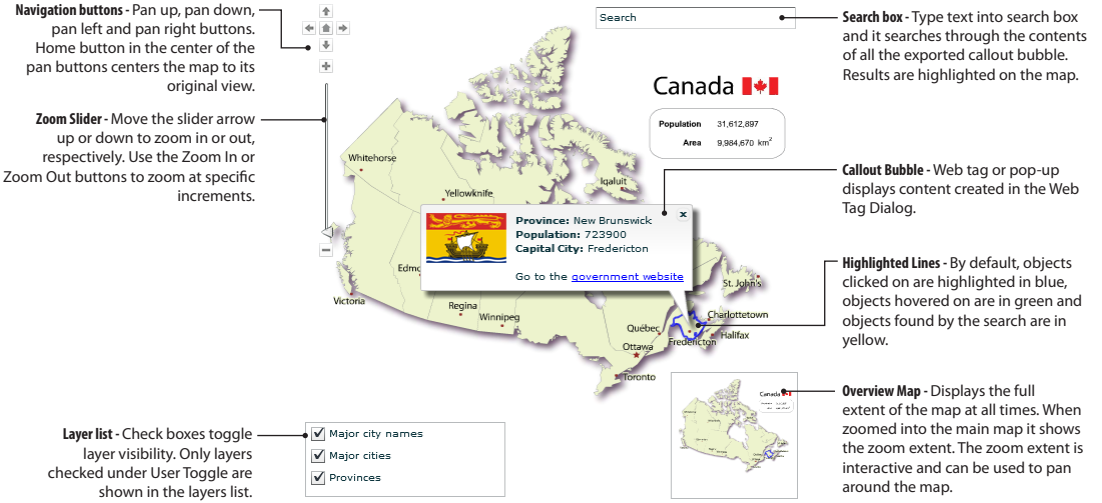
Viewer Style - Use these setting to control the style and position of navigation objects and map elements. Any changes to the default settings will output a new CSS file.

Use External CSS File - If an external CSS file is specified, it will override any of the settings specified above. When a CSS file is specified, an Edit link is enabled. It opens the file in the system's default text edtior.

Viewer Settings - Customize the navigation controls of the map. The default settings shown are shown here.

FUNCTIONALITY

Use the **Web Export Dialog** to set the look and feel of the Flash map: style navigation objects and map elements such as buttons, the search box, overview map, layer list, callout bubble, zoom slider, and highlight lines and colours. These are the final settings before exporting the document as a Flash map.



PREREQUISITE

Web tags must be first created using the **Web Tag Dialog**.

USING WEB EXPORT DIALOG

In the **MAP Web Author** panel, click the **Export to Web** button  to access the **Web Export Dialog**. The Web Export Dialog contains two tabs. The **Export Settings** tab controls the export location, layer options (visibility, toggability, etc.) and the Flash map settings. **The Viewer Settings** tab control the appearance and disposition of the Flash widgets.

WEB EXPORT DIALOG - EXPORT SETTINGS

In the **Export Location** box, specify the directory that will store the HTML index file (by default *index.html*) and Flash export files. Click the Export button to complete the Web export.

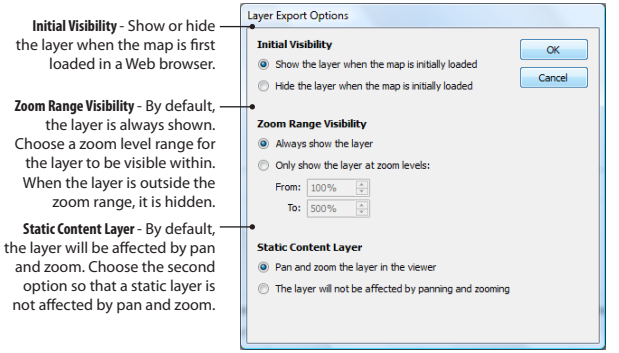
Layer Controls

To insert a layer list in the Flash map, at least one layer check box under the **User Toggle** column must be checked (Export Settings tab) and the Show Layer List option must be enabled (Viewer Settings tab). Layers that are checked are included in the Flash map layer list and can be toggled on or off. The layers that are unchecked are exported, but can not be toggled on or off.

Layer Export Options

It is also possible to customize the visibility and zoom of each layer. Double-click **[Click Here To Set Layer Options]** to access the **Layer Export Options** dialog box.

Layer Export Options



Map Settings

Use these settings to change how the Flash map is displayed in a Web browser:

- Change the width and height of the Flash map. It cannot be larger than the Adobe Illustrator document. Click the **Set To Artboard** button to reset the width and height to its original values.
- Set the initial position of the Flash map upon load using Pan X and Pan Y (if zoomed-in).
- Set the initial zoom upon load. Set the minimum and maximum zoom that the map is allowed to have.

Additional Settings

Images in Adobe Illustrator are exported as JPEG. The **JPEG Image Quality & Resolution** slider sets the compression level of exported images. This setting does not apply to images included in Web tags.

The option **Use Preserve Appearance Settings For Flash Export** flattens the artwork to a single layer before exporting. It is recommended to maintain the artwork quality. However, some known issues with Adobe Illustrator Flash export cause some documents to fail to export with this option enabled.

The **Flash Player Security Sandbox** provides a secure area in which a Flash map will load. Three options are offered:

- **Auto**: If the file is opened from a Web based URL, the sandbox is automatically switch to *Network*. If the file is opened from a file folder, the sandbox switches to *Local*.
- **Network**: When Network is selected, Flash Player classifies assets (including SWF files) from the Internet in separate sandboxes that correspond to their Web site origin domains. By default, these files are authorized to access any resources from their own server, but can not load any local files or resources unless these are enabled through the Flash Security Settings (see later in this chapter).
- **Local**: With this option, Flash Security Settings are not required, however only contents from the local host computer can be accessed by Flash Player (i.e. hyperlinks, API will not function). This option is recommended when distributing Flash maps on CD, for example.

The **Compress Map Data File** (*map.xml* or *map.xml.zip*) is used by the Flash viewer to get information on the initial zoom level, Web tag content, tagged object geographic coordinates. It is recommended to keep this option enabled to use a compressed version of this file (*map.xml.zip*) to maintain a fast loading map. However, advanced users may use the uncompressed version (*map.xml*). For example, an advanced user could create programs that automatically update the Web Tag contents. Once compressed, this file cannot be uncompressed to *map.xml*. If this file is required, the export must be run again with this option turned disabled.

NOTE: In MAPublisher 8.0, the metadata file was named *map.afm* or *map.afm.compressed*. The decision was made to change the file extensions because these file formats were not recognized by all Web servers.

WEB EXPORT DIALOG - VIEWER SETTINGS

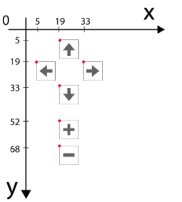
Viewer Style

To set the style and position of the MAP Web Author map viewer controls, users can edit the **Viewer Style** list or use a CSS (Cascading Style Sheet). CSS is a style sheet language that enables the separation of document content (HTML, JavaScript) from document presentation — it is a simple mechanism for adding style (e.g. fonts, colors, spacing) to multiple Web pages at once.

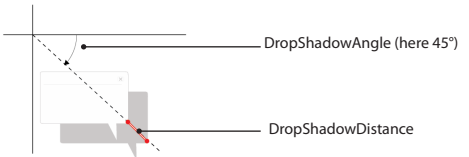
The **Viewer Style** list contains MAP Web Author map viewer controls which include navigation buttons, zoom slider, search bar and callout bubbles. Each control can be styled and positioned by adjusting basic property values. Users can export with the default values without further adjustment. If any control properties are changed from the default values, a custom CSS file is exported to the export data folder.

NOTE: The controls in the Viewer Style list contain only basic properties, for more advanced designs an external CSS file should be used (see below).

Map viewer controls and properties in the Viewer Styles list are as follows — all positions are relative to the top left corner of the Flash map:



- **Pan Up Button** (*Top, Left*) - Position of the pan up button.
- **Pan Down Button** (*Top, Left*) - Position of the pan down button.
- **Pan Left Button** (*Top, Left*) - Position of the pan left button.
- **Pan Right Button** (*Top, Left*) - Position of the pan right button.
- **Pan Home Button** (*Top, Left*) - Position of the pan home button.
- **Zoom In Button** (*Top, Left*) - Position of the zoom in button.
- **Zoom Out Button** (*Top, Left*) - Position of the zoom out button.
- **Zoom Slider** (*Top, Left*) - Position of the zoom slider widget.
- **Click Callout Bubble** (*Corner Radius, Show Arrow, Drop Shadow, Fill Colors Start, Fill Colors End*) - style of a callout bubble when it is clicked.
- **Hover Callout Bubble** (*Corner Radius, Show Arrow, Drop Shadow, Fill Colors Start, Fill Colors End*) - style of a callout bubble when it is hovered over.



- **Fixed Position Callout Bubble** (*Top, Left, Width, Height, Corner Radius, Draw Bubble, Fill Colors Start, Fill Colors End*) - position and style of a static position callout bubble.
- **Click Highlight Line** - (*Visible, Color, Transparency, Line Thickness*).
- **Hover Highlight Line** - (*Visible, Color, Transparency, Line Thickness*).
- **Search Highlight Line** - (*Visible, Color, Transparency, Line Thickness*).
- **Search Box** (*Top, Left*) - Position of the search box.
- **Layer List** (*Top, Left, Width, Height*) - Position and size of the map layer list.
- **Overview Map** (*Top, Left, Proportion*) - Position and proportion (relative to map size) of the overview map.

Alternatively, enable **Use External CSS File** and browse to a CSS file. The file will overwrite any of the configurations made in the Viewers Style list. Using an external CSS files for styling the viewer is advantageous because more visual aspects of the viewer can be set — such as, callout bubble style, text font, images for buttons — and external CSS can be reused for multiple maps. If the need arises, the external CSS file can be updated after the map has been exported.

For advanced users, the appearance of the MAP Web Author map viewer can be fully customized using CSS. The CSS implementation is based on the Adobe Flex 3 CSS system. Only class selectors are supported. Full documentation is located on the Avenza Systems website at *http://www.avenza.com/mapublisher/mapwebauthor/css*. This site includes CSS samples and examples of CSS code.

Viewer Settings

In the **Viewer Settings** section, check/uncheck any of the check boxes to enable/disable the object/feature. Most of these options are enabled by default unless otherwise specified.

- **Enable Navigation** - Displays all of the navigation buttons, search box, layers list and overview map.
- **Show the Click Callout Bubble** - Display a callout bubble when a feature with a Web tag is clicked.
- **Show the Hover Callout Bubble** - Displays a callout bubble when a feature with a Web tag is moused over.
- **Use Full Callout Content for Hover Callout** - Displays full callout bubble when option to show hover callout bubble is enabled. Disabled by default.
- **Show the Fixed position Callout Bubble** - Displays a fixed position callout bubble. Disabled by default.
- **Use Centroid Instead of Mouse for Callout Position** - places the callout bubble position of a feature with a Web tag on the centroid. Disable it so that the callout position occurs where the mouse position is.
- **Disable Viewer Navigation Animations** - Enabling this option disables panning and zooming animations. Disabled by default.
- **Use Low Stage Quality During Animations** - Lowers the quality of animations for improved performance. Disabled by default.
- **Export All Attributes With Map Features** - Forces all attributes to export, regardless of whether they are used in a Web tag or not. Disabled by default.

NOTE: The visibility of the controls may also be set through an external CSS file.

EXECUTE WEB EXPORT

Click the Export button to execute Web export. The export summary is displayed in the **Web Export Log**.

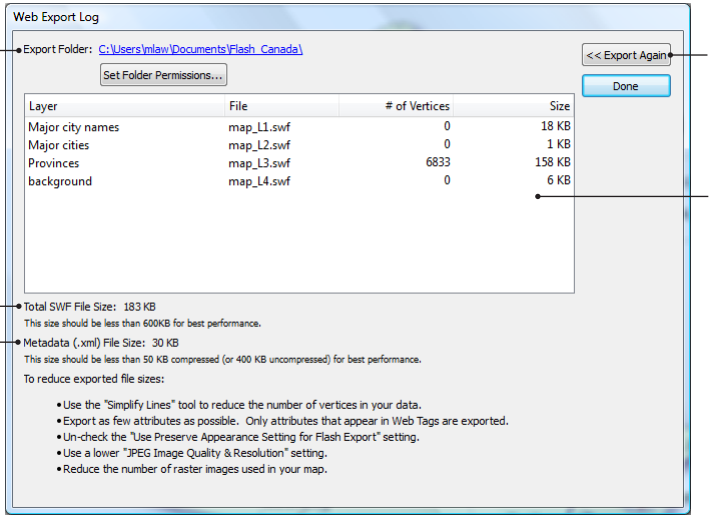
The export creates an *index.html* file and an *index_data* folder in the export location (the "index" name is default, a custom name can be substituted here in the **Export Location** box). Some of the important files are:

- *map.xml.zip* (or *map.xml* when the Compress Map Data File option is not checked).
- *map-viewer-local.swf* and *map-viewer.swf* (map viewer implementation files).
- *map_LN.swf* (where N is the layer number; one file per layer when option to toggle is checked).

View the README.txt file inside the export data folder for more information about each file.

The **Web Export Log** displays several export file size statistics: the total SWF file size and the metdata file size. These file sizes are meant to warn the users when files get very large. Large files should be avoided as they may be very slow to open on a Web site.

Web Export Log



Export Folder - Link to the export folder. Right-click to copy link location to clipboard.

Set Folder Permissions - Set folder permissions. Read more about Flash Security and permissions.

Total SWF File Size - Total file size of the created SWF files. Less than 600 KB is ideal.

Metadata (.xml) File Size - Size of the created metadata.xml file. Less than 50 KB compressed (xml.zip) is ideal.

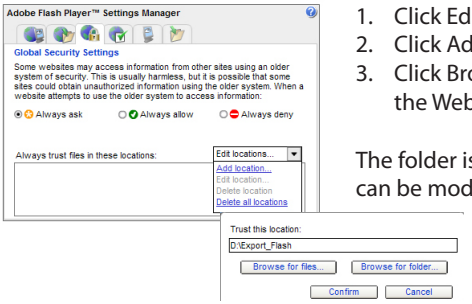
Export Again - Return to the Web Export Dialog.

Layer List - List of the exported layers, including file name, number of vertices and file size.

Flash Security and Permissions

When exporting a Flash map intended for Web distribution, choose the **Network** option in the Flash Player Security Sandbox drop-down list. If a Flash map is intended for only local use, choose the **Local** option. By default, the **Auto** option is chosen and automatically detects whether the Flash map is run on a network or locally. If the Network option is selected, the Global Security Settings must be configured in the Adobe Flash Player Settings Manager before an Internet browser can properly view the Flash map **without posting it on a server**. If the **Local** option is chosen, it is not necessary to set folder permissions. However, files exported with this option will not work for a Web site and will have to be exported again with either the **Network** or **Auto** option.

Click the **Set Permissions** button in the **Web Export Log** dialog box to access the Adobe Flash Player Settings Manager (*http://www.macromedia.com/support/documentation/en/flashplayer/help/settings_manager04.html)*:



1. Click Edit Locations.
2. Click Add Location.
3. Click Browse For Folder or copy the full path as written in the Web Export Log dialog box and click Confirm.

The folder is added to the list of trusted locations. Locations can be modified or deleted at a later time.

NOTE: You must be connected to the Internet in order to set these permissions.

View Flash Map

To view the exported Flash map, browse to the Flash export folder (as specified in the **Web Export Dialog**) and open the file *index.html* (or name specified in Export Location) in a Web browser. Check that the Web browser has the latest version of Flash Player installed (*http://www.adobe.com/products/flashplayer/*). An outdated version may cause the Flash map to display incorrectly.

NOTE: Depending on the security settings of the Web browser used, some warnings may appear when opening files exported with Local option enabled. These can be ignored.

MAP Web Author Workflow

MAPublisher 8 is installed with tutorial materials. It is recommended that users work with the exercises in order to gain familiarity with MAPublisher tools. The tutorial materials have an exercise dedicated to the new **MAP Web Author** panel. The following workflow can be used for guidance.

1) MAP COMPILATION WITH ADOBE ILLUSTRATOR / MAPUBLISHER 8

Users must create their map document using MAPublisher 8 and Adobe Illustrator tools. If the only purpose of the map is to create a Flash map, consider at this stage the document size parameter, as this determines the size of map viewer extents in the Web browser.

2) PREPARING FOR MAP WEB AUTHOR

a) Creating a working directory

Create a folder on your computer. This folder is used to store all the components for the Web Flash map and the exported Flash files.

b) Preparing images for the callouts

Images that will be used in the Web tagging process must be collected and grouped in a folder (**Source Media Folder**). When inserting images using a **MAP Attributes** field for multiple artwork, note that it is not possible to change the photo dimensions in the **Web Tag Dialog**. Image dimensions should be edited in a photo editor first.

c) Setting document size for the Flash map

If the document size hasn't been set at step one (document creation), it should be modified through the Adobe Illustrator menu *File* > *Document Setup* prior to Web export.

NOTE: Changing the document size after artwork is created may result in the adjustment of symbol and text sizes as well as stroke widths.

d) Attribute table information to attach the callouts

To use attribute information for Web tags, it must be organized using the MAPublisher **MAP Attributes** panel. This may require creating new attribute columns for elements such as Web site links or image file paths.

e) Data preparation

Run the crop tool, simplify lines and remove unneeded attributes.

3) USING MAP WEB AUTHOR

a) Setup the Source Media Folder

The user have a choice between entering an *absolute* or *relative* path for the **Source Media Folder**.
Example: Absolute path: *C:\Work\Flash_Project\Images*
Relative path: *\Images*

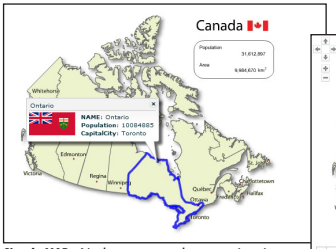
NOTE: If an image is placed under *C:\Work\Flash_Project\Images\MyImage\MyImage1.jpg*, and the Source Media Folder is *C:\Work\Flash_Project\Images*, then the path *\MyImage\MyImage1.jpg* must be typed in the **Web Tag Dialog** (or in the **MAP Attributes** panel when using attributes).

b) Creating callout bubbles

Using the **Web Tag Dialog,** insert content (such as a title, images and text) into the callout bubbles Use the **Callout Preview** to see an example of how the callout bubble will look, prior to the export process.

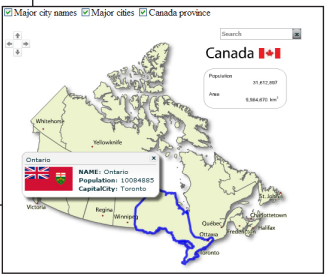
4) EXPORT FLASH DOCUMENTS

The settings entered in the **Web Export Dialog** are determined by the desired aspect of the Web map. It is recommend that users try different configurations. Here are some basic examples:



Simple MAP - No layer control, no navigation (*Basic Settings*). No Search box (*Advanced Settings*).

Default Style Map - Built-in layer control and navigation button added through the *Basic Settings* only.
No *Advanced Settings* required.



Customized Style Map - External layer control and navigation button added through the *Basic Settings*. Removed zoom buttons and changed callout bubble style through *Advanced Settings*.

5) VIEWING FLASH MAPS WITH A WEB BROWSER

Download the latest Flash Player version (*http://get.adobe.com/flashplayer/*) and install it. Open the Flash map in a Web browser to view it (i.e. select the exported html file and open it locally).

NOTE: If the **Flash Player Security Sandbox** is set to **Network** during the export, the folder permissions must be set in the *Adobe Flash Player Settings Manager,* as explained earlier in this chapter. If the option **Auto** or **Local** has been chosen during the export, the map can be opened while offline with no further settings.

Advanced Features

Additionally to the common MAP Web Author functions, users with good knowledge of HTML and Javascript can benefit from some advanced features. The information for these features are provided on the Avenza Systems Inc. Web site (*www.avenza.com*) to allow for frequent updates and is available to all MAPublisher customers.

EXTERNAL CSS

As explained earlier in this chapter, the visual aspects of the widgets that appear in the MAPublisher Web Author viewer can be configured using CSS (Cascading Style Sheet). The CSS implementation is based on the Adobe Flex 3 CSS system. Only class selectors are supported.

Refer to the Web page *http://www.avenza.com/mapublisher/mapwebauthor/css* for information on how to edit the CSS file and for a reference to the list of classes available for styling and their supported properties.

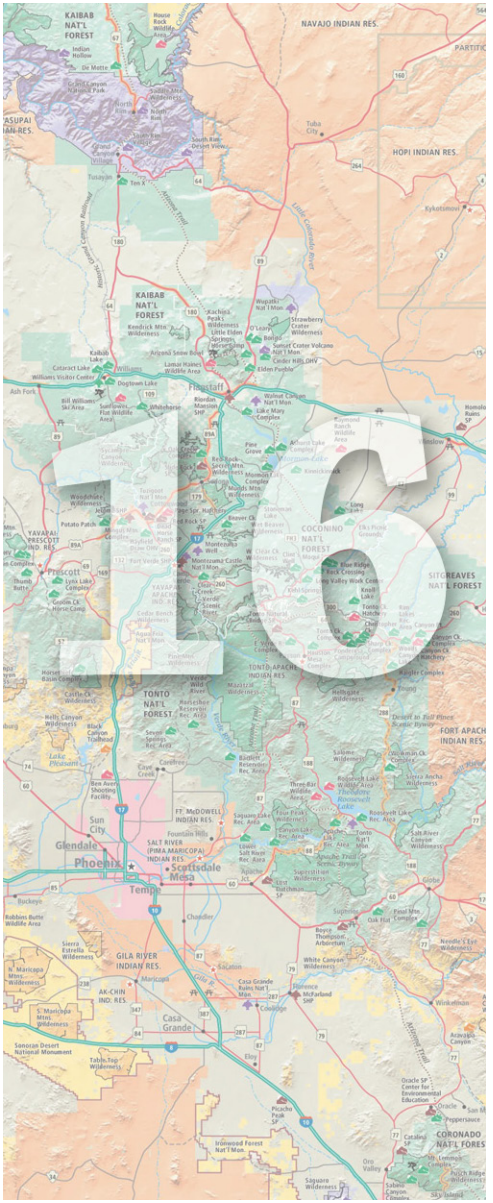
MAP WEB AUTHOR JAVASCRIPT API

The MAP Web Author JavaScript API allows developers to embed and interact with maps produced by MAPublisher in web pages.

Some Web pages have been developed on the Avenza Systems Inc. Web site to provide a guide to the API and is available to all MAPublisher customers. They include an API reference, FAQs and examples.

For more information please refer to *http://www.avenza.com/mapublisher/mapwebauthor/api*.

The Web Author examples are also provided on the MAPublisher DVD.



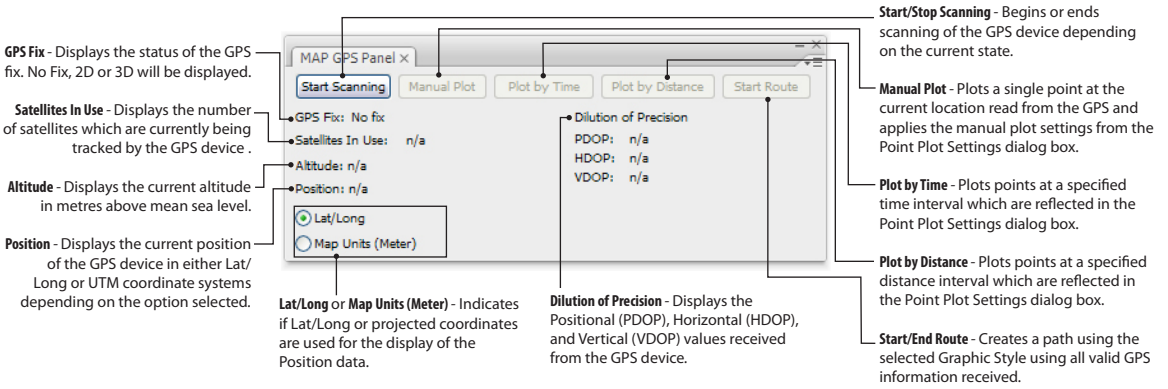
MAP GPS

The MAP GPS feature allows for the collection, display and styling of raw GPS data directly in Adobe Illustrator. Using the MAP GPS feature, you can connect to many NMEA compliant GPS devices, collect data points and then use the information to apply it to maps. The data can be reprojected, styled, and scaled automatically when it is received.

The **MAP GPS Panel** is covered in this section.

MAP GPS Panel

Window > MAPublisher > MAP GPS Panel or *MAP Toolbar* 



FUNCTIONALITY

MAP GPS will collect, interpret, and apply styles to points and lines from information received from a supported GPS device within an Adobe Illustrator document, based on user settings.

Several plotting options are available for use in MAP GPS. For plotting points, users can decide whether to plot single points using the **Manual Plot** option, to plot points based on a specific time interval, or to plot points based on a set distance interval. For plotting lines, the **Start Route** feature may be used to create a line feature containing all valid information received from the GPS device.

Additionally, auxiliary settings may be used to plot points on separate layers when either a change in speed or a change in heading is observed, when concurrently using one of the previously mentioned plotting options.

MAP GPS also provides the ability to automatically apply user defined attributes for specific layers while plotting, and to record a log file of information received from the GPS device, which may then be played back into an Adobe Illustrator document at a later time.

PREREQUISITES

Prior to being able to use MAP GPS, it is required to have a compatible GPS receiver. Supported devices include any NMEA compliant device which has a serial COM port or Bluetooth connection option (using a COM Port). To use devices with USB connection, the USB port must be converted to virtual serial COM port using software provided by the GPS vendor or a third party application.

Prior to interacting with the GPS device, the proper COM port settings have to be specified in the **Device Settings** dialog box so that the GPS can communicate and interact with the MAP GPS function.

Either a new document or an existing document may be used to begin a GPS session. If the appropriate type of layer is selected in the layers panel e.g. a point layer, then points will be plotted on that layer. If no layer or an improper layer for the type of plotting action is selected then a new layer will automatically be created of the proper type.

USING THE MAP GPS PANEL

Start Scanning

This feature allows MAPublisher to interact with the specified GPS device. When the **Start Scanning** button is clicked, the settings specified in the **Device Settings** dialog box will be used to begin reading and interpreting the information the GPS is receiving. This information is then used to display the GPS status in the GPS panel as well as to plot points and/or lines.

Manual Plot

This method plots a single point at the current position reported by the GPS device. The plotted point is reflective of the settings specified under the **Manual Plot** section of the **MAP GPS Point Plot Settings** panel, i.e. using the specified scale and point symbol. When **Manual Plot** is clicked, a single point will be plotted either on an existing point layer (if selected) or on a new layer which is automatically created if a point layer is not selected. If the Adobe Illustrator document does not contain any MAP View, a new one is created in the WGS84 geodetic coordinate system.

Plot By Time

This method plots a single point each time the specified time interval is observed. The time interval is displayed in the **MAP GPS Point Plot settings** panel along with other settings such as scale and point symbol.

Plot By Distance

This method plots a single point each time the specified distance interval is observed. The distance interval is displayed in the **MAP GPS Point Plot settings** panel along with other settings such as scale and point symbol.

Start Route

This method creates a line feature for all valid information received by the GPS. Line styling is determined by the Graphic Style selected in the Adobe Illustrator *Graphic Styles* panel.

MAP GPS Panel Menu

Accessed from the MAP GPS Panel

Many of the **MAP GPS** features can be accessed via the MAP GPS panel options menu. These features include **Device Settings**, **Point Plot Settings**, **Autosave Settings**, **Edit User Attribute,** as well as many different log file features. The following sections will outline each of the features and their uses.

Device Settings - Opens the *Device Settings* dialog box.

Point Plot Settings - Opens the *Point Plot Settings* dialog box.

Autosave Settings - Opens the *Autosave Settings* dialog box.

Edit User Attribute for Current Layer - Opens the Edit *User Attribute for Current Layer* dialog box.

Record Sentence Log - Opens the *Record Sentence Log* dialog box.

View Sentence Log - Opens the *View Sentence Log* panel.

Playback Sentence Log - Opens the *Playback Sentence Log* panel.

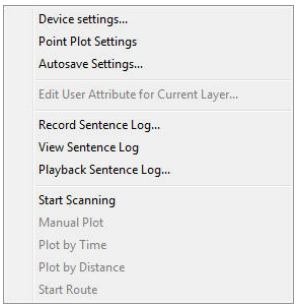
Start Scanning - Begins Scanning the GPS device.

Manual Plot - Plots a single point.

Plot by Time - Begins plotting points by a specified time.

Plot by Distance - Begins plotting points by a specified distance

Start Route - Begins plotting a route.



MAP GPS DEVICE SETTINGS

Accessed from the MAP GPS menu.

The **MAP GPS Device Settings** dialog box provides for the input of the specific settings for the connected GPS Device. Users are required to manually select the appropriate settings prior to using MAP GPS. Appropriate settings for specific devices can usually be obtained by consulting the device's user manual or by contacting the manufacturer.

Port Name - Select the proper serial port for your GPS device.

Baud Rate - Select the baud rate for your GPS device.

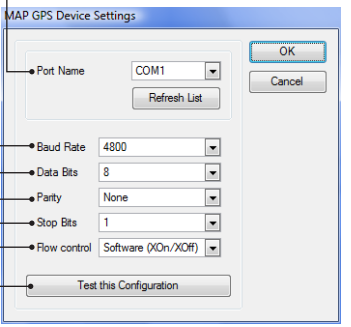
Data Bits - Select the data bits for your GPS device.

Parity - Select the proper parity for your GPS device.

Stop Bits - Select the proper Stop Bits for your GPS device.

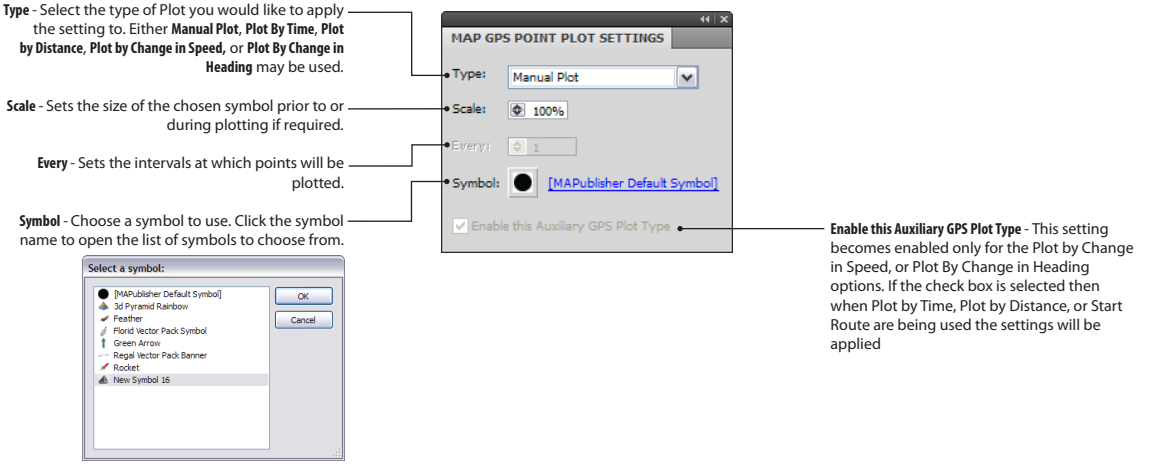
Flow Control - Select the proper flow control for your GPS device.

Test this Configuration - Select button to ensure all the specified features are inputted correctly before continuing.



MAP GPS Point Plot Settings

Accessed from the MAP GPS menu.



FUNCTIONALITY

The MAP GPS **Point Plot Settings** panel is used for controlling all of the settings related to points to be plotted by the GPS. In this dialog box, users define parameters such as scale, interval, and point symbol. The **Point Plot Settings** panel also controls the additional auxiliary settings such as change in speed and change in heading. Point symbols reflect the symbols found in the Adobe Illustrator **Symbols** panel. New symbols created or loaded in the Adobe Illustrator Symbols panel will be appended to the MAP GPS Point Plot Settings panel.

Use the **Type** drop-down list to enter the settings for **Manual Plot, Plot By Time, Plot by Distance, Plot by Change in Speed** or **Plot by Change in Heading.**

USING THE POINT PLOT SETTINGS PANEL

Manual Plot

The **Manual Plot** setting option controls how points will be plotted and styled when using the Manual Plot option from the main MAP GPS panel. There are two settings for the Manual Plot, the Scale and Plot symbol. The scale controls the size of the point symbol to be plotted. With a scale of 100 percent selected, the point is plotted at the original size of the symbol. The second option is the **Plot Symbol** which determines which symbol is plotted.

Plot By Time

The **Plot By Time** setting options control how points will be plotted when using the Plot By Time feature from the main MAP GPS panel. Three separate settings can be adjusted: **Scale**, **Every** and **Plot symbol**. The **Every** setting is used to specify the time interval between plots. For instance, if the **Every** setting is set to 5 seconds, a new point is plotted every five seconds. These settings may be changed while plotting is occurring. If the user wishes to increase or decrease the scale or change to a different point symbol while plotting by time, they may do so by setting new parameters. Changes will be reflected in the next point to be plotted.

Plot By Distance

The **Plot by Distance** setting options control how points will be plotted when using the Plot by Distance feature from the main MAP GPS panel. Three separate settings can be adjusted: **Scale**, **Every** and **Plot symbol**. The **Every** setting is used to specify the distance interval between plots. For example, if the **Every** setting is set to 5 metres, a point will be plotted every five metres. These settings may be changed while plotting is occurring. If the user wishes to increase/decrease the scale or change to a different point symbol while plotting by distance, they may do so by simply selecting new parameters. Changes will be reflected in the next point to be plotted.

Plot By Change in Speed

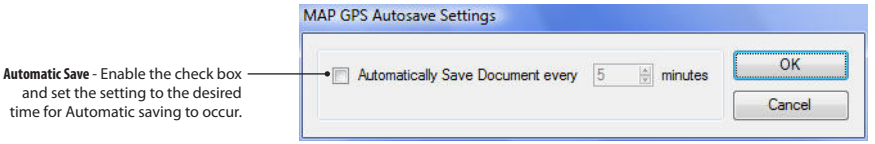
The **Plot by Change in Speed** auxillary settings will plot a point each time a change in speed is detected as specified by the threshold set in the **Point Plot Settings**. Change in speed points are plotted in addition to the points plotted while completing one of the standard plot options (**Plot by Time**, **Plot By Distance** or **Route**). To use this setting, a user must first enable it by selecting the **Enable this Auxillary GPS Plot Type** from the bottom of the MAP GPS Point Plot Settings panel. The optional settings for **Scale**, **Every**, and **Plot Symbol** must then also be specified. The **Every** setting has an additional option which allows specification of the speed units. Either km/h, knots, or mi/h may be used. When plotting begins, a new layer is automatically be created specifically for the change in speed points. This layer will be automatically named based on the name of the current layer upon which the main plotting operation is being conducted with the phrase **change_in_speed** prefixed to it. For example if the main plotting is in progress on a layer called *ABCD,* the layer created for the change in speed plots will be named *change_in_speed_ ABCD*.

Plot By Change in Heading

The **Plot by Change in Heading** auxillary settings will plot a point each time a change in heading is detected as specified by the threshold set in the **Point Plot Settings**. Change in heading points are plotted in addition to the points plotted while completing one of the standard plot options (**Plot by Time**, **Plot By Distance** or **Route**). To use this setting a user must first enable it by selecting the **Enable this Auxillary GPS Plot Type** from the bottom of the MAP GPS Point Plot Settings panel. The optional settings for **Scale**, **Every**, and **Plot Symbol** must then also be specified. When plotting begins, a new layer will automatically be created specifically for the change in heading points. This layer will be automatically named based on the name of the current layer upon which the main plotting operation is being conducted with the phrase **change_in_heading_** prefixed to it. For example if the main plotting is in progress on a layer called *ABCD,* the layer created for the change in heading plots will be named *change_in_heading_ ABCD*.

MAP GPS Autosave Settings

Accessed from the MAP GPS menu.



FUNCTIONALITY

The **MAP GPS Autosave Settings** provide the option to have a document automatically saved each time a specified time interval has elapsed. This feature allows for users to limit data loss in the instance that hardware or power problems occur while collecting data.

PREREQUISITES

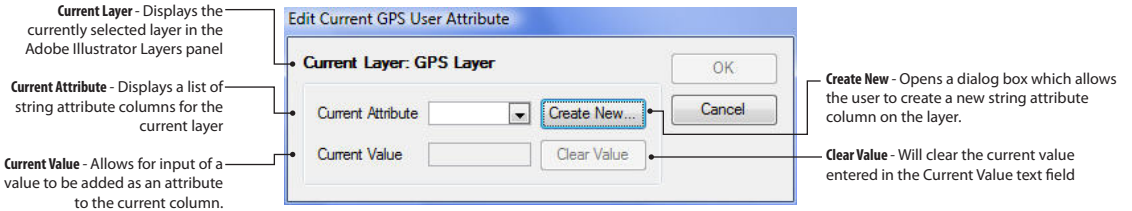
The current document must have already been saved at least once to a local location on the computer. If the **Autosave** setting is activated and the current document has not been saved then a warning will appear upon leaving the **Autosave** dialog box, stating that this feature will not function until the document is saved and will offer the option to manually save the document at that time.

USING THE AUTOSAVE SETTINGS

The **Autosave** settings may be activated by selecting the associated check box and specifying the number of minutes between autosave instances. Once this has been activated and the current document has been saved, automatic saves will occur each time the specified interval is reached.

Edit User Attribute for Current Layer

Accessed from the MAP GPS menu.



FUNCTIONALITY

The **Edit Attribute for Current Layer** dialog box provides the ability to create a new attribute column for the current layer or use an existing string (text) attribute column and have custom attribute values automatically entered in that column for plotted features. Attribute values will be added each time a new point is plotted. For example, if points are being plotted along a street, a *Street* column could be created and the street name could be added as an automatic attribute value each time a new point is plotted.

PREREQUISITES

Prior to using this feature the current document requires a MAP View and at least one MAP layer. If the MAP layer is selected then the **Edit User Attribute for Current Layer** is accessible and can be set up for use when plotting begins. If the above criteria are not met the **Edit User Attribute for Current Layer** menu item will be greyed out and unavailable.

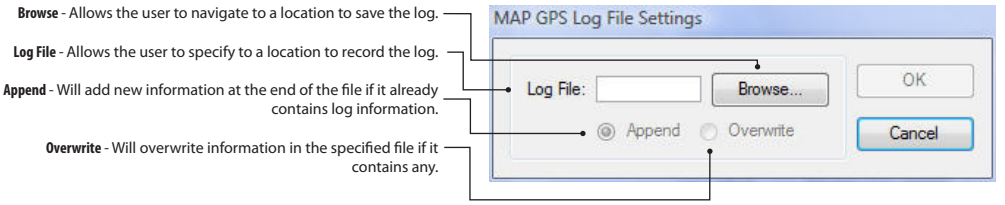
USING THE EDIT USER ATTRIBUTE FOR CURRENT LAYER

The **Edit User Attribute For Current Layer** function can be accessed whenever a valid MAP layer is selected. Upon opening the dialog box, the current layer name will be displayed in the dialog box along with any string attribute column names associated with that layer. To add attribute values to an existing attribute column select the desired column name from the **Current Attribute** combo box and enter the desired attribute value into the **Current Value** text field. To create a new column select the **Create New** button and enter a column name into the open dialog box. When a new attribute column is created its type will be automatically set to **string**. When the dialog box closes and plotting begins, the attribute value will be added to the layer each time a point is plotted.

NOTE: If the **Edit User Attribute For Current Layer** dialog box is opened while plotting is in progress, the plotting will be paused. This allows the necessary changes to be made. Upon closing the dialog box all the points which would have been plotted will be plotted and will reflect the changes just made.

Record Sentence Log

Accessed from the MAP GPS menu.



FUNCTIONALITY

The **Record Sentence Log** feature allows for all information gathered from the GPS to be saved to a text file. This information can be used for back-up or debugging purposes or imported at a later time into a new document. In addition to being able to record to the file, the user is given the options of adding to an existing file or overwriting any information which may be in the specified file.

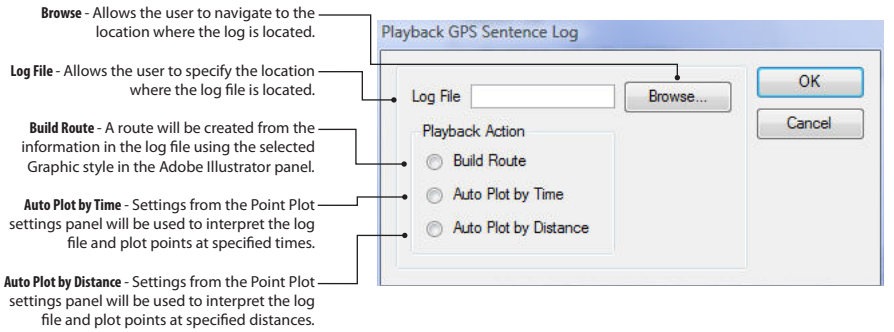
USING THE RECORD LOG SETTINGS DIALOG BOX

The **Record Log Settings** dialog box requires either navigation to a directory or manual specification of a location to which the log file is to be saved. Once a directory has been specified the file name for the Record Log must be specified. This file will be saved as a standard text file that is readable in *Notepad* or any other plain text capable application. It may also be used at a later date to import the log information into a new or existing document as MAP features. In addition to specifying a file name and location either the **Append** option or the **Overwrite** option must be specified. The **Append** option will add all new information to the end of the file if the selected file contains information. The **Overwrite** option will overwrite any information currently contained in the specified file with the new information received.

NOTE: Once a *Record Log* file has been specified using the **Overwrite** option and plotting started, any interruption to the plotting, for example, evoking a **Stop Scanning** operation, will result in the saved log file being overwritten by new log data once scanning and plotting restart. If it is desired that a complete session log be created and saved which is not overwritten each time plotting is stopped and restarted, the **Append** option should be used.

Playback Sentence Log

Accessed from the MAP GPS menu.



FUNCTIONALITY

The **Playback Sentence Log** feature allows for information contained in a log file to be re-imported into an Adobe Illustrator document. The **Playback Sentence Log** feature is used in conjunction with the MAP GPS Point Plot Settings panel to create a series of points or a route in the document based upon data previously collected using MAP GPS. Depending on the applied settings, GPS sessions which have been previously recorded can be recreated in a new or existing document. This feature may also be used to import raw NMEA files collected from other devices.

USING THE PLAYBACK SENTENCE LOG DIALOG BOX

The **Playback Sentence Log** feature is used by selecting a previously recorded log file and then selecting one of the plot options: **Build Route**, **Auto Plot by Time**, or **Auto Plot by Distance**.

- **Build Route** - A route will be created from the information in the log file using the selected *Graphic style* in the Adobe Illustrator panel.
- **Auto Plot by Time** - Settings from the Point Plot settings panel will be used to interpret the log file and plot points at specified times.
- **Auto Plot by Distance** - Settings from the Point Plot settings panel will be used to interpret the log file and plot points at specified distances.

Export Geospatial PDF

Adobe Illustrator documents with GIS data can now be exported to geospatially enabled PDF files thanks to the MAPublisher function **Export Geospatial PDF**.

A Geospatial PDF is an Adobe Acrobat file that retains geospatial coordinates. With the coordinates, users can view and interact with the PDF to find and mark location data.

MAPublisher not only exports the minimum geographic information to geospatial PDF, but also all the attributes data present in the Adobe Illustrator document. Attributes values can subsequently be accessed and searched in Acrobat version 9 (and 8 with limitations).

Using geospatial PDF exported with MAPublisher allows for performing the following tasks in Adobe Acrobat:

- Find and mark location coordinates
- Measure distance, perimeter, and area
- View coordinates in measurement units in various formats/units
- Copy location coordinates to clipboard.
- View attributes of map objects
- Reopen Geospatial PDF in Adobe Illustrator with MAPublisher capabilities maintained.

This section provides an overview of the exporting process of a **MAP Geospatial PDF** along with an outline of the tools used when viewing a geospatial PDF in Adobe Acrobat.

Topics covered in this section are:

MAP Geospatial PDF Export
View MAP Geospatial PDF

MAP Geospatial PDF Export

File > Export> MAP Geospatial PDF or *MAP Toolbar* 

FUNCTIONALITY

The MAP Geospatial PDF export function exports any MAPublisher document, containing a MAP View with a specified coordinate system, to the Adobe Acrobat Geospatial PDF format, retaining the georeference and attribute information. All layers are exported to PDF, including non MAP layers (regular Adobe Illustrator layers) but these layers are not geospatially enabled and have no attributes.

The MAP Geospatial PDF files exported from MAPublisher are compatible with Adobe Acrobat 9 and later. The Adobe Acrobat Analysis Tools allow viewing and marking coordinates, viewing attributes, measuring distances, perimeters and areas.

With Acrobat Pro and Pro extended, the measurement tool is always enabled. To enable this tool in Acrobat Reader 9 (standard), the file must first be opened in Acrobat Pro to enable annotations on the PDF (menu *Comments > Enable for commenting and analysis*).

NOTE: MAP Geospatial PDF files can also be opened in Adobe Acrobat 8, however no geospatial information will be visible, only attributes.

PREREQUISITES

MAP Geospatial PDF Export can only be used with MAPublisher documents, that is to say the document must contain at least one MAP View with a specified coordinate system. All coordinate systems within MAPublisher are supported, including user-defined systems*. Multiple MAP Views are supported with no limitation.

** With some unusual coordinate systems, the measuring tool in Adobe Acrobat may not give proper results (displaying always 0). This is an Adobe Acrobat limitation.*

Users should complete their map using MAPublisher and Adobe Illustrator tools prior to exporting (styling, simplification etc). Depending on the expected behavior of the geospatial PDF, attributes, layers and MAP Views might need additional manipulations as explained hereafter.

MAPublisher legacy files (created with version 8.1 or earlier) must be saved first with MAPublisher 8.2 prior to exporting. If not the Adobe Acrobat data tools (see later in this chapter) will not function properly.

NOTE: Some Adobe Illustrator effects are not supported during export. The attributes will not be visible for objects with the following effects* :

- All *Photoshop* effects
- Any effect that modifies the outline shape of the artwork will cause attributes to fail. (i.e. warp effects, *Convert to Shape*, *3D* effects, *Distort and Transform*, and some of the *Pathfinder* effects).
- Any effect that rasterizes the art will cause attributes to fail (several *SVG filters* do this).
- *Gradients Fills* are supported, with the caveat that transparency gradients (going from opaque to transparent) and *Gradient Mesh* are not supported.

** In Adobe Illustrator CS3, some of these effects may be found under the Filter menu.*

Geospatial Information Extents

The document exported to geospatial PDF only contains geographic information in the extent covered by a MAP View. In other words, Adobe Acrobat *Geospatial Location Tool* and *Measurement Tool* will not work outside the MAP View's extents. To increase the extents of the MAP View so that it covers a larger part of the document, create a polygon on a MAP Layer of type area that bounds the required new extents.

Layers and MAP Views Structure

All layers in the Adobe Illustrator document are exported, including locked and hidden layers. The visibility status is maintained in the exported geospatial PDF, however not the locking status. Locking layers must be done within Adobe Acrobat.

Layer order and name are maintained as in the Adobe Illustrator document, with the exception of nested layers. Adobe Acrobat does not support nested layers therefore only top most layers are maintained in the exported geospatial PDF. Objects in nested layers are exported but they are included in the top most layer. We recommend not to use nested MAP Layers because their attributes will not be exported unless the master layer is also a MAP Layer.

Layers must have a unique name. If multiple layers have the same name, a warning message is prompted upon export.

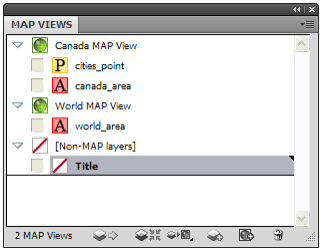
All MAP Views are exported. MAP Views are exported in the order they appear in the MAP Views panel (alphabetical), the top most is exported first and lowest is exported last. If some MAP Views are overlapping, the positions shown in Adobe Acrobat are calculated based on the coordinate system of the latest exported MAP View (the lowest one in the MAP Views panel). When working with inset maps, the inset MAP View should be placed at the bottom of the tree in the MAP Views panel (using an appropriate MAP View name since the order is alphabetical).

MAP Attributes

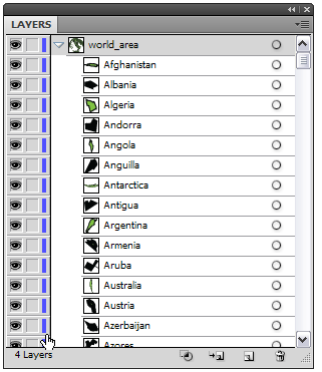
Only visible attributes (see chapter 5) for map objects are exported to PDF, so users might want to delete or hide/ display relevant attributes in the MAP Attributes panel prior to exporting.

In Adobe Acrobat, the *Model Tree* displays a list of all the map objects in the document along with their attribute information (if applicable), organized in a tree structure in MAP View/Layer Name/ Object Name — see next section on how to view MAP Geospatial PDF.

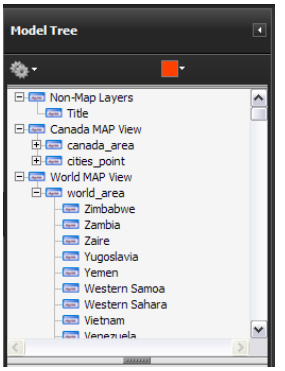
The name of the objects are displayed in the *Structure Pane* of the Model tree. They are derived from the map object's name as shown in the Adobe Illustrator Layers Panel. The default names given by Adobe Illustrator to objects are often meaningless for a data user. For example, lines and areas have a default name of <*Path*> or <*Compound Path*>, points have the name of the symbol or ordering number.



MAP Views Panel



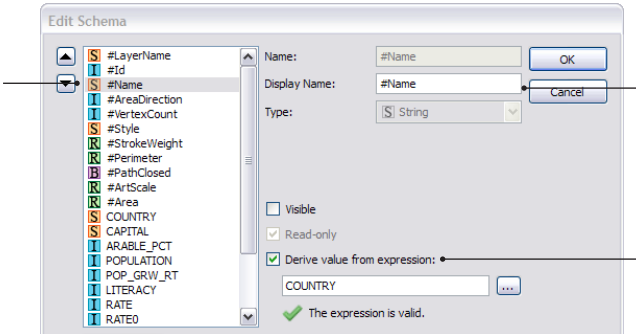
Adobe Illustrator Layers



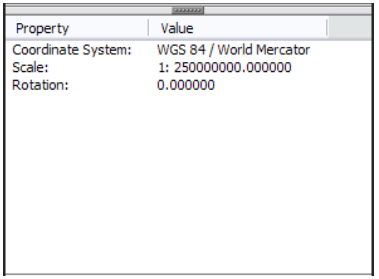
Model Tree Objects List

For this reason, it is good practice to assign a specific name to objects prior to export in order to make the geospatial PDF more readable for users. This is achieved using the MAP Attributes panel and assigning a new value

to the property attribute **#Name**. For example, use *Apply Expression* or *Derive value from expression* functions to assign the value of another attribute to #Name. In the example below, #Name values are copied from an attribute called COUNTRY_NAME:

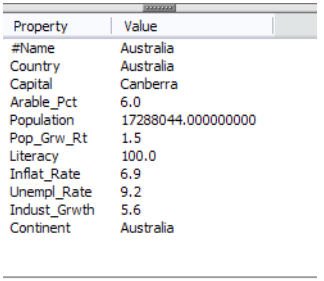


The Object Data Pane of the Model Tree displays either the coordinate system of a MAP View, if a MAP View is selected in the Model Tree, or the attribute information of a selected object. The attribute name displayed in the **Property** list corresponds to the attribute **Display Name** specified in the MAP Attributes panel.



Property	Value
Coordinate System:	WGS 84 / World Mercator
Scale:	1: 250000000.000000
Rotation:	0.000000

MAP Views properties



Property	Value
#Name	Australia
Country	Australia
Capital	Canberra
Arable_Pct	6.0
Population	17288044.000000000
Pop_Grw_Rt	1.5
Literacy	100.0
Inflat_Rate	6.9
Unempl_Rate	9.2
Indust_Grwth	5.6
Continent	Australia

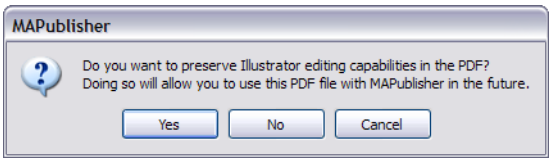
Attributes properties

For more information on MAP Attributes and expression builder, please refer to chapter 5.

USING EXPORT GEOSPATIAL PDF

To export to Geospatial PDF, choose *File* > *Export* and select **MAP Geospatial PDF** in the **Save as type** (Windows) or **Format** (Mac)(drop-down list) — or click the Export MAP Geospatial PDF button  on the MAPublisher Toolbar.

Upon export, a message is displayed to choose whether or not to preserve the Adobe Illustrator editing capabilities in the resulting PDF.



If the Adobe Illustrator editing capabilities are preserved, users will be able to retrieve MAP Views, MAP Layers and MAP Attributes when re-opening the exported Geospatial PDF back into Adobe Illustrator. If not, the Geospatial PDF will open into Adobe Illustrator with no georeferencing or attribute information and all layers will be merged into one — this might be recommended for secured documents.

NOTE: If a preserved Geospatial PDF is opened in Adobe Illustrator and some changes are made, the file will have to be exported again using the Geospatial PDF export function. Simply saving the document will not maintain the geospatial capabilities of the PDF as it does not run through the MAPublisher 8 special Geospatial PDF engine..

Export Geospatial PDF does not have any settings dialog. The default PDF settings are applied, regardless of any specific preferences set elsewhere:

- Compatibility: Acrobat 8, PDF 1.7.
- General: *Embed Page Thumbnails* and *Create Acrobat Layers from Top-Level Layers.*
- Compression: no image compression, *Compress Text and Line Arts* is on.
- Security: no master or user password required.

To change PDF file settings (compression, password access, etc.) open the exported MAP Geospatial PDF file in Adobe Acrobat Pro or Pro Extended (version 9 or higher) and resave the document.

View MAP Geospatial PDF

The MAP Geospatial PDF files are compatible with the geospatial tools introduced in Adobe Acrobat 9. The availability of these tools depends on the user's Acrobat version (Reader, Standard, Pro or Pro Extended), but no additional Acrobat plug-in is necessary to use MAP Geospatial PDF.

All traditional Adobe Acrobat tools applies, here are some of the most relevant:

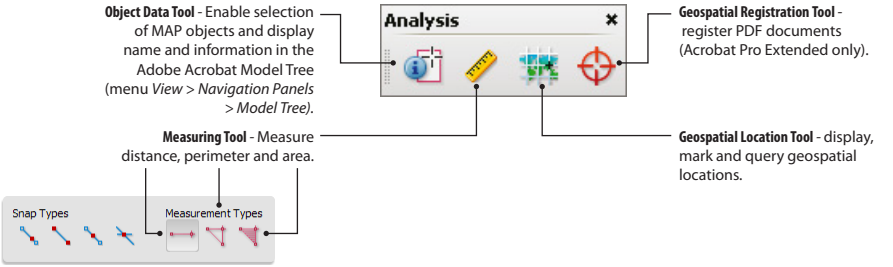
- **Search:** selects objects with matching name first, then objects that have a matching attribute value.
- **Acrobat Layers panel:** displays all layers and controls the display and lock of the layers.
- **Object Data Tool:** to select map objects and display their attributes in the Adobe Acrobat Model Tree (Structure Pane and Object Data Pane).

MAP Geospatial PDF files can also be read in Adobe Acrobat 8, however only the attribute information is accessible (*through the menu Tools > Object Data > Object Data Tool*) but Adobe Acrobat 8 does not have the geospatial tools available in the version 9.

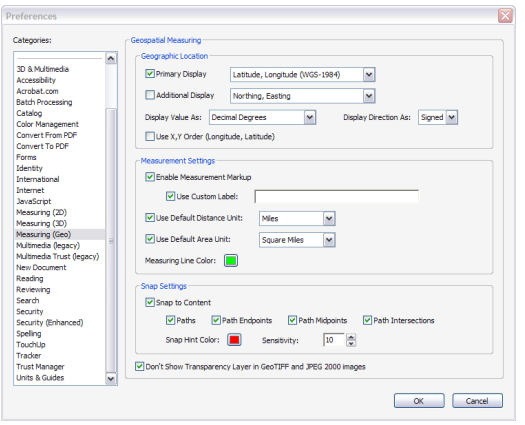
Adobe Acrobat 9 has the following special tools to access geospatial information:

- **Measuring Tool**: to measure distance, area and perimeter.
- **Geospatial Location Tool:** to display, mark and query geospatial locations.
- **Geospatial Registration Tool**: to spatially register any PDF document by digitizing control points (Adobe Acrobat Pro Extended only).

These tools and the Object Data Tool are found on the Analysis Toolbar (menu *View > Toolbars > Analysis*).



The settings for the Measurement and Geospatial tools are found in the Adobe Acrobat **Preferences** (menu Edit > Preferences), under the category **Measuring (Geo)**.



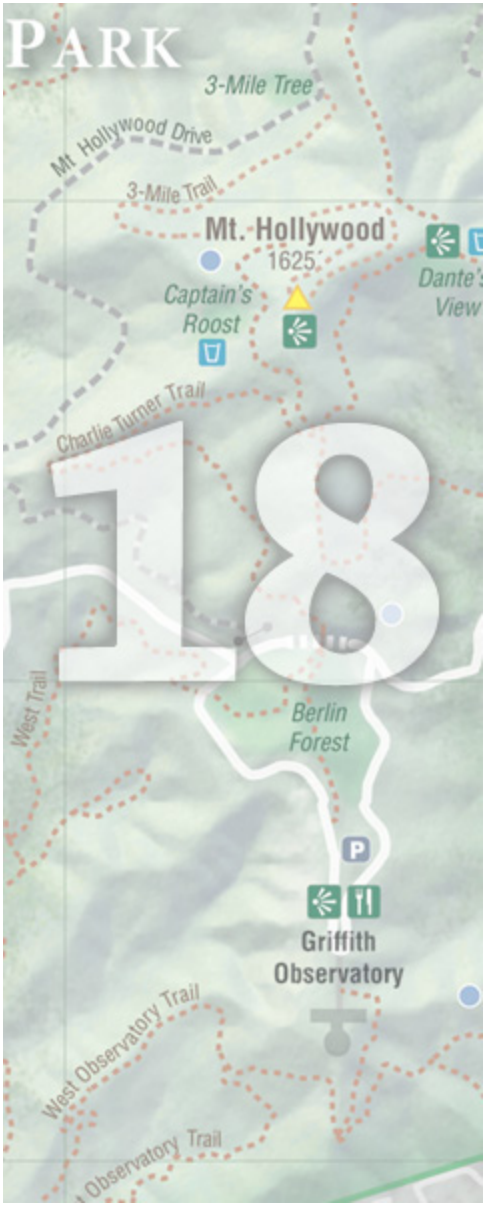
These analysis tools are described in many details in the Adobe Acrobat documentation that can be found under the Adobe Acrobat menu *Help > Adobe Acrobat Help* or on the AdobeWebsite *www.adobe.com*.

Not all tools are available depending on the Adobe Acrobat version, below is a matrix showing the features availability per Adobe Acrobat version:

	Acrobat 9 Reader	Acrobat 9 Standard Acrobat 9 Pro	Acrobat 9 Pro Extended (Windows only)
Geospatial Measuring Tool			
Measure distance/perimeter/area	✓*	✓	✓
Store measurements as comments	✓*	✓	✓
Export/import PDF comments	✓*	✓	✓
Geospatial Location Tool			
Show on-screen coordinates	✓	✓	✓
Search for/zoom to a location	✓	✓	✓
Mark location with right click	✗	✓	✓
Copy coordinates to clipboard	✗	✓	✓
Geospatial PDF Registration Tool			
Create from geoTIFF/JPG2000	✗	✗	✓
Georegister a PDF map / image	✗	✗	✓
Add shapefile layers to a map	✗	✗	✓

* To enable the measurement tool in Acrobat Reader 9, the file must first be opened in Acrobat Standard, Pro or Pro Extended to enable annotations on the PDF (menu *Comments > Enable for commenting and analysis*).

NOTE: The extended tools of Adobe Acrobat Pro Extended are not necessary for MAPublisher users because these functions are performed by MAPublisher. Besides, Adobe Acrobat Pro Extended is currently not supported for MAC operating systems.



MAPublisher LabelPro™

MAPublisher LabelPro is a comprehensive collision-free labelling solution integrated into the MAPublisher framework. Using rules and styles for text placement, it extracts label information from map layer attributes and performs fast, intelligent, cartographic text placement. Placement rules can be saved to a file and imported into other labelling work sessions.

Topics covered in this section:

MAP LabelPro
MAP LabelPro Settings
MAP LabelPro Styles
MAP LabelPro Rules
Label Verification

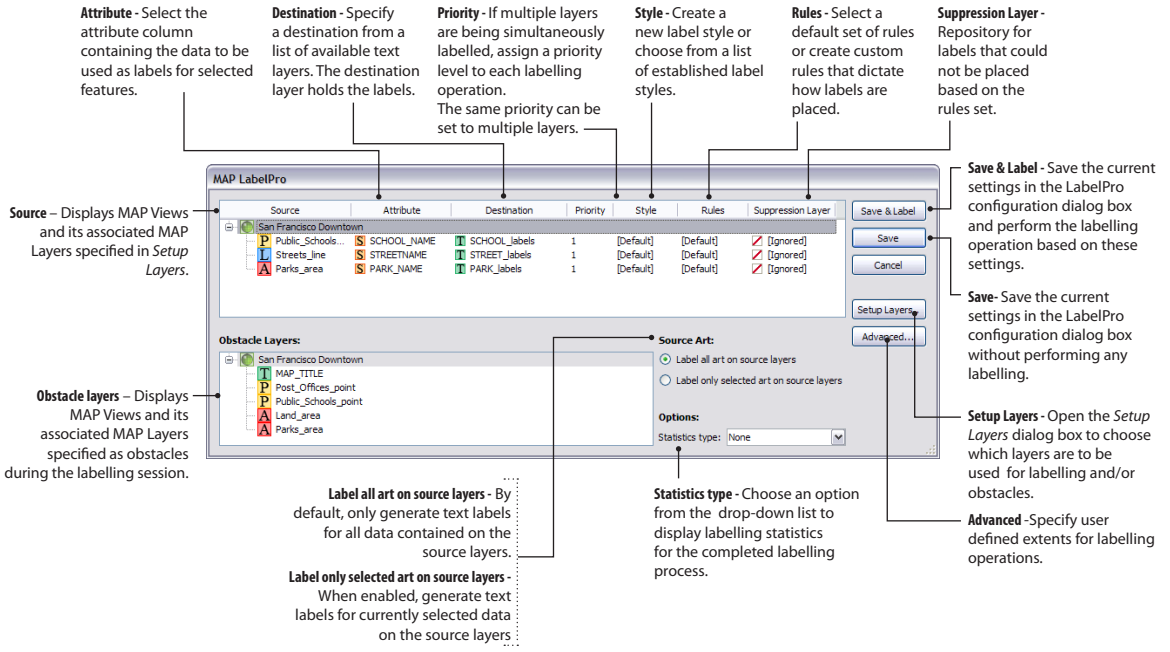
MAP LabelPro is available as an optional add-on to MAPublisher. For more information on how to obtain a MAP LabelPro license please contact *sales@avenza.com* or visit *www.avenza.com*.

For information on how to activate a purchased or evaluation license please refer to chapter 1 of this guide.

NOTE: The evaluation version of MAPublisher LabelPro scrambles the text of placed labels but preserves the case, spacing and punctuation, so that the results give a sense of how actual labels would be placed based on the rule settings.

MAP LabelPro

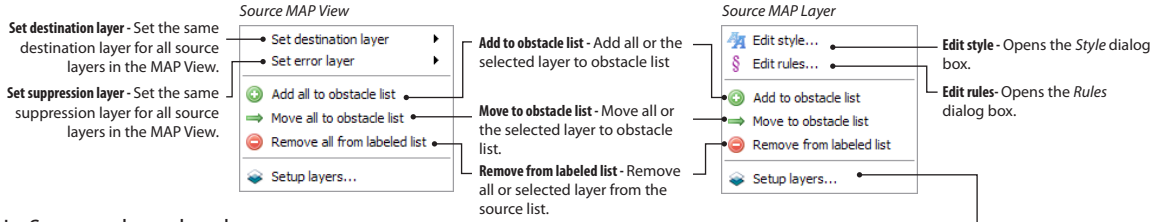
Object > *Filters* > *MAP LabelPro* or *MAP Toolbar*



Pop-up menus

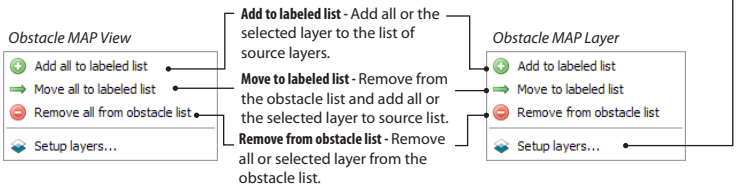
Right-click (Windows) or Ctrl-click (Mac) to display the menus:

In *Source* :



In *Source* column header:

In a *Obstacle Layers*:



FUNCTIONALITY

The MAPublisher LabelPro labelling engine offers advanced labelling capabilities beyond those available in MAPublisher Feature Text. The MAP LabelPro engine contains sophisticated algorithms based on MapText's EZ Label technology that solves many of the most common map labelling problems such as complex conflict resolution across multiple layers, the ability to specify data as obstacles and the ability to create complex labelling conventions via user defined rules. The MAPublisher LabelPro engine uses map data attributes for labelling and provides a much greater level of sophistication and control that can be configured through an intuitive user interface. Data layers may be assigned an order of prioritization for labelling sequences and existing text can be recognized as obstacles for multiple labelling sessions if necessary. Placement rules and properties, once set, can be saved to a file and imported into other files or shared over a network.

Only Point, Line and Area layers can be labelled using MAPublisher LabelPro, however, Text layers may only be used as obstacles.

PREREQUISITES

MAPublisher LabelPro can only be used in conjunction with MAPublisher documents. MAPublisher LabelPro generates static text, meaning the map extent and scale should be established prior to labelling. Once placed, labels do not maintain a link with the source data.

Before labelling with MAPublisher LabelPro, it is necessary to create the destination **Text layer(s)** (layers on which the new labels will be contained). To use suppression layer(s) (for labels that could not be placed by MAPublisher LabelPro) create other text layer(s) for this purpose. To create a new text layer, use the **Add MAP Layer** function in the **MAP View panel** (see chapter 4):

- Set the feature type to *Text*.
- To enable the copy the attributes from the source MAP layer to the label destination layer, check the option **Base attribute schema on** and select the appropriate layer to copy its attribute schema.

For each source layer, MAPublisher LabelPro derives the labels from a selected attribute column. Use the **MAP Attributes** panel to analyze and/or edit the information prior to labelling. For instance, to force some labels to be stacked, users can insert the characters && in the MAP Attribute value to indicate a Carriage Return — this can be done by combining two columns into a new one or using the Find and Replace function.

It is not possible to label based on an expression (e.g. a *road* layer with classes such as *street*, *highway* and *toll road* can only be labelled with a single style and rule). To label multiple classes of a layer, use the **Split Layer** option of the **MAP Selection Filter** to create new layers for each class (see chapter 11).

In the MAPublisher Preferences section for MAP LabelPro, base rule and style folder paths can be set. By default, invisible objects are ignored by MAPublisher LabelPro (they will not be labelled or used as obstacle). To take them into consideration, uncheck the option *Ignore invisible artwork*. See chapter 1 on MAPublisher Preferences for more information on this topic.

USING MAPUBLISHER LABELPRO

To start MAPublisher LabelPro click the MAP LabelPro button  on the MAPublisher Toolbar or the menu *Object > Filters > MAP Labeling > MAP LabelPro**

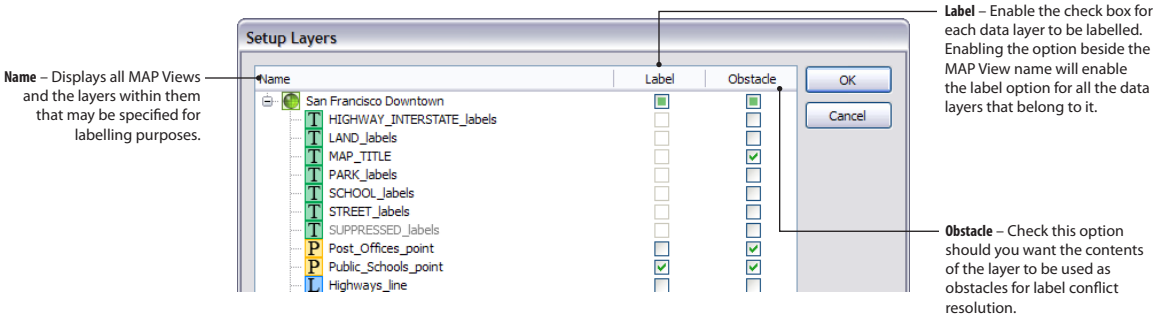
** In Adobe Illustrator CS3, MAP LabelPro is found in the Filter > MAP Labeling menu.*

MAPublisher LabelPro Settings

SETUP LAYERS

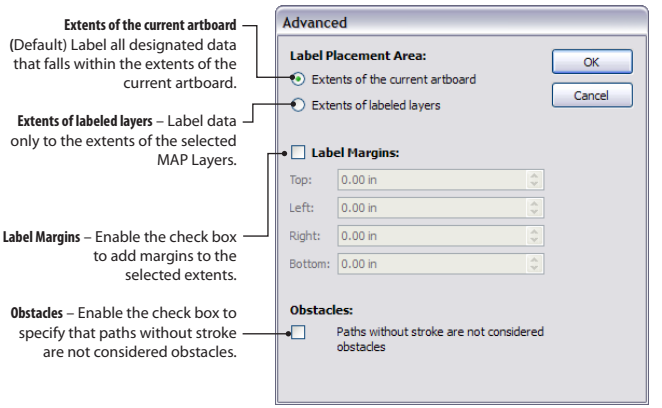
Before labelling, the Setup Layers dialog box must be configured to specify which MAP Layers are to be labelled and which layers, if any, will be denoted as obstacles. Obstacles are map objects that are included in the conflict resolution decision making process, and are considered objects that must be avoided when trying to place a label. The Setup Layers dialog box displays all valid MAP Views and their MAP Layers in the document. To mark a layer for labelling purposes or as an obstacle, check the appropriate check boxes to the right of the layer name. All layers are listed, but only layers that are checked will be included in the labelling process or considered as obstacles.

NOTE: Layers may be used as both a label and an obstacle concurrently. It is possible to perform labelling operations for multiple MAP Views simultaneously, however, source data layers and destination text layers must belong to the same MAP View.



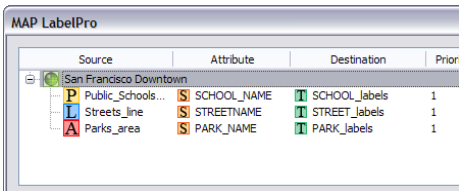
ADVANCED

In the Advanced options dialog box, set the Label Placement Area option to the extents based on the current artboard or the extents of labelled source layers. To set Label Margins, enable the option and enter the extents of the label container in increments of the current document units. Data that is outside of the label margins is disregarded in the labelling process.



NOTE: These settings are applied in conjunction to the settings from the *Source Art* section in the main MAP LabelPro configuration dialog box. Units for margins are determined by *Document Setup* in Adobe Illustrator.

SOURCE AND ATTRIBUTE COLUMNS



These settings determine which attribute information is converted into text labels for a respective layer. The Source column shows the Area, Point and Line layers in the document that have been enabled for labelling through the Setup Layers option. For each layer listed in Source column, the Attribute column holds a drop-down list populated with the attribute structure of that MAP layer. Specify the appropriate attribute to be used for generating that layer's labels.

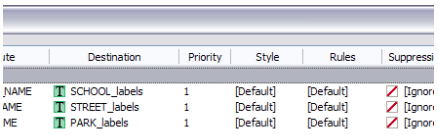
NOTE: By default, label case is left exactly as it is found in the attribute table. To modify a label's case, see the options in the *Label Case* drop-down list located in the *Style* dialog box of each layer.

DESTINATION AND SUPPRESSION TEXT LAYERS

The layers on which generated labels should be placed are specified in the *Destination* and *Suppression* Layer column drop-down lists. Destination layers will contain only the labels that could be placed successfully on the map based on the defined rules. Suppression layers are repositories for labels that could not be placed successfully according to the rules and have not met all placement conditions. For best viewing results after labelling, hide the suppression type text layers. Alternately, the suppression layer can be set to **Ignored** and unsuccessfully placed labels will not output to any layer.

NOTE: Rows that have incomplete configuration settings (locked destination or suppression layers/unspecified destination layers) are displayed in red under the Source list in the configuration dialog box. It is normal for a certain percentage of labels to not succeed in being placed due to rule or data conflicts. Information regarding the success rate of placement can be reviewed by enabling one of the *Statistic type* options located in the *Options* frame.

PRIORITY



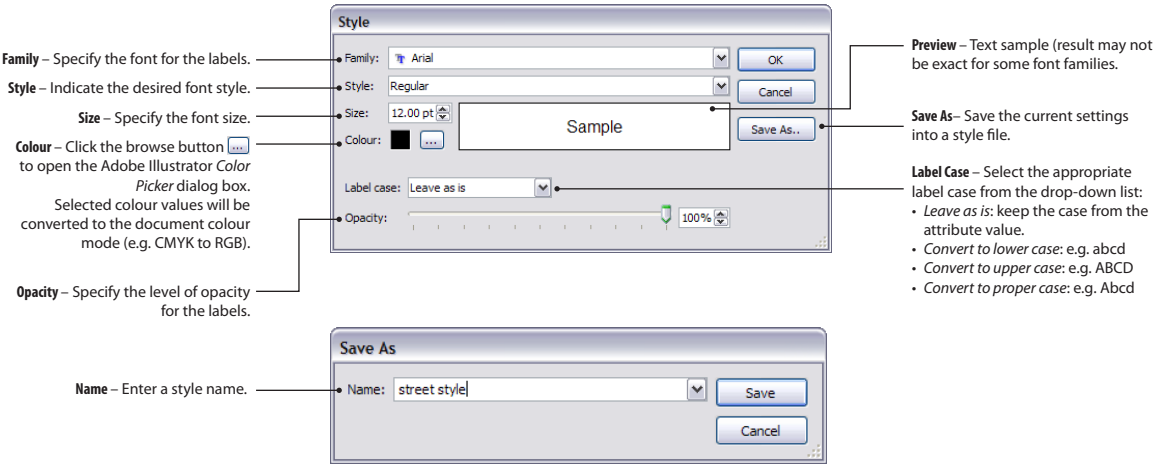
The *Priority* setting allows for complex hierarchical labelling sequences. The priority is the order of preference in which labels are placed. Layers with a priority of 1 will be placed first (or have a high priority). Layers with a priority of 12 will be placed last (or have a low priority). Consequently, layers with a low priority might have more suppression labels generated for them. Priorities are set by selecting a number in the *Priority* drop-down list for a respective layer.

NOTE: A maximum of twelve priorities may be assigned at any given time however the same priority number can be assigned to multiple layers.

MAPublisher LabelPro Styles

POINT AND AREA STYLES

The *Style* dialog box allows users to set label style properties for each map layer. To access the dialog box, click the Style edit button . Set the text properties for font family, style, size and colour. A sample preview of the stylized text is shown in the large text box. Once the desired settings have been made, they can be collectively saved into a style file by clicking *Save As*. MAP LabelPro offers a pre-configured default style of 12 point Arial as a base labelling option.



Once saved, Styles are added to the Styles drop-down list in the MAP LabelPro Configuration dialog box. This is very helpful in maintaining labelling consistency among similar mapping projects or when multiple users are working on the same project. Existing styles may be deleted by selecting it from the Style drop-down list and then clicking on the delete button. Style files are saved to either a point, line or area folder depending on the type of map layer it is associated with.

By default, styles are saved in the following location:

Windows XP: C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8\LabelPro\Styles
Windows Vista/7: C:\ProgramData\Avenza\MAPublisher 8\LabelPro\Styles
Mac OS X: Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/LabelPro/Styles

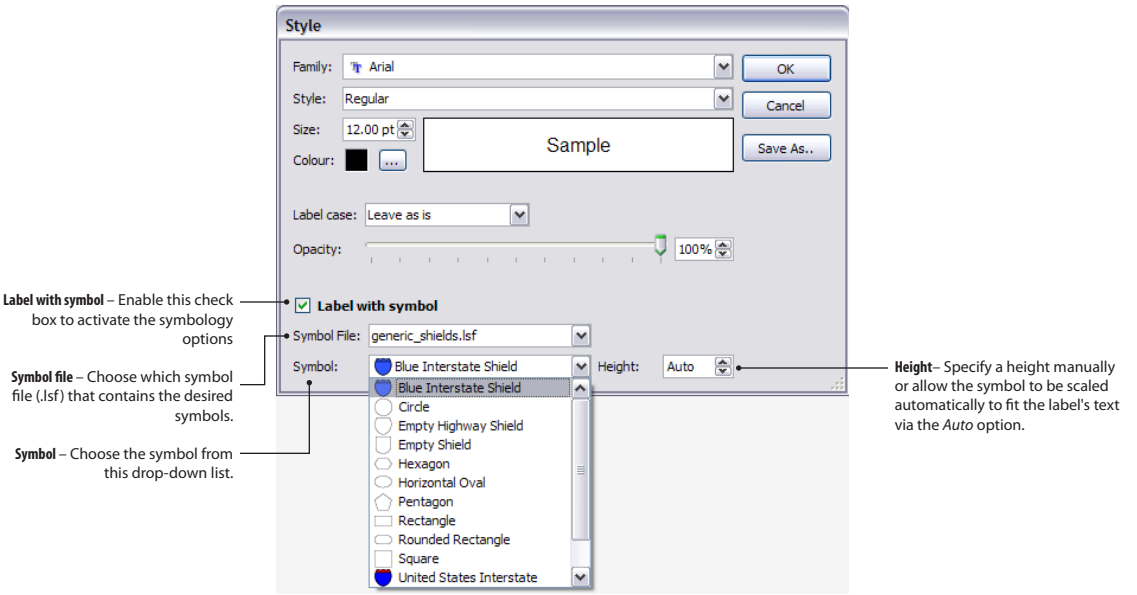
The default save path for the Styles can be modified in the MAP LabelPro section of the MAPublisher Preferences dialog box. Choose *Edit* > *MAPublisher Preferences* (Windows) or choose *Illustrator* > *MAPublisher Preferences* (Mac).

NOTE: On Windows, labelling with PostScript Type 1 fonts that are not placed in the Windows system font folder will produce an error message *Failed to perform label placement: FontNotFound Exception.* In these very rare cases, the font files should be copied from the Adobe font folder (usually under *C:\Program Files\Common Files\Adobe\Fonts\Reqrt\Base*) to the Windows font folder (found from *Control Panel* > *Fonts*). Notably, *Myriad* font is such a PostScript Type 1 font that is not installed on the Windows font folder by default.

NOTE: Attributes consisting of Unicode characters must be labelled with a Unicode font that contains the appropriate characters. For example, attempting to label Japanese characters with an Arial font will result in an error or incorrect results.

LABELLING LINE DATA WITH SYMBOLS

MAPublisher LabelPro has the ability to place labels inside symbols. A typical application of this would be numbered highway route shields. To label lines with symbols, check the *Label with symbol* check box to enable the symbol options. Choose an appropriate symbol set from the *Symbol File* drop-down list and select a symbol from the Symbol drop-down list. Use the *Height* option to change the size of the symbol in the Adobe Illustrator document unit (e.g. inches or millimeters).



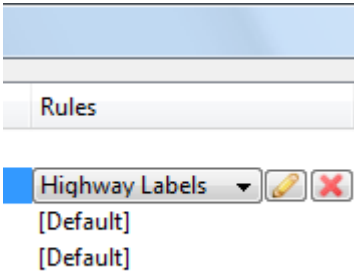
NOTE: The label font size and a fixed symbol height (not Auto size) affect how a label is sized inside a symbol. For example, if a fixed symbol height of 0.5 in is used, but the label font size of 5 pt, the symbol will be 0.5 in but the label inside will be no greater than 5 pt. If the label font is set to 50 pt, but the fixed symbol size is 0.5 in, the label will have a maximum size of whatever fits inside the symbol or the selected font size.

Symbols are stored in the location set in the MAPublisher Preferences (see chapter 1). The default locations are:

Windows XP: C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8\LabelPro\Symbols
Windows Vista/7: C:\ProgramData\Avenza\MAPublisher 8\LabelPro\Symbols
Mac OS X: Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/LabelPro/Symbols

NOTE: Labelling with symbols is only available for Line layers. To label areas with symbols, use the Plot Centroids function from the MAP Point Plotter (see chapter 6).

MAPublisher LabelPro Rules



MAPublisher LabelPro provides users with an intuitive, easy to understand graphical user interface for setting up labelling rules. Each Point, Line and Area rule dialog box has numerous label placement options for a high level of label detail and a variety of configurations.

To access label rules, click the Rules edit button in the Rules column of the main MAP LabelPro dialog box. Depending on the layer type, this will open either the Area, Line or Point Rules dialog box. Configure label rules and, if needed, save the rules to add it to the Rules drop-down list.

Rules operate in a very similar approach to Styles in that once added to the *Rules* list, they can be immediately applied, reused later in the same file or in other documents provided they are being applied to the same type of data. Rules are saved to the Area, Line or Point folder depending on the feature type of the map layer.

MAPublisher LabelPro offers a pre-configured *Default* rule for each data type. It is loaded by default and used until new rules have been created or selected. The default rule is a good starting choice as it is configured to be useful for the most common labelling situations, however, creating custom rules can be very useful when specific labelling conventions are required.

In an Area, Point or Line Rule dialog box, the sequence in which the rule options appear and are checked have no bearing on the order of label placement, only whether the option is enabled or not. Adjust the Priority value of layers to adjust the sequence of label placement. Existing rules may be deleted by selecting them from the Rule drop-down list and then clicking the delete button .

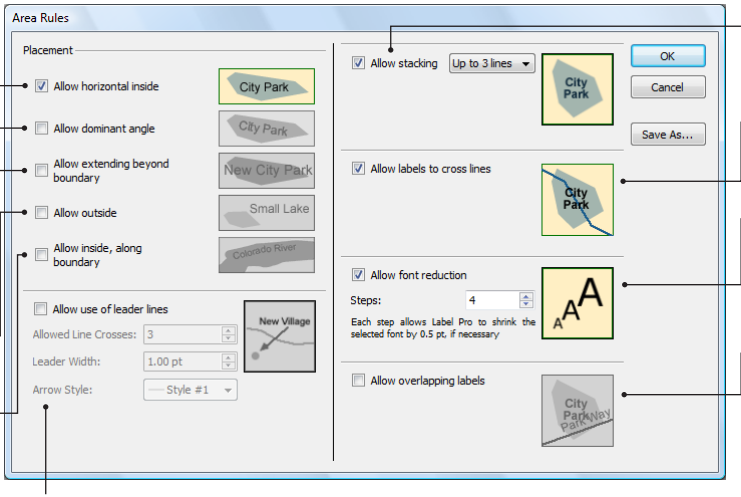
Rules are saved to the location set in MAPublisher Preferences (see chapter 1). The default locations are:

Windows XP: C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8\LabelPro\Rules
Windows Vista/7: C:\ProgramData\Avenza\MAPublisher 8\LabelPro\Rules
Mac OS X: Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/LabelPro/Rules

NOTE: Labelling results will vary depending on which rules are enabled. If no rules are enabled, MAP LabelPro will not perform any labelling.

AREA RULES

The Area Rules dialog box contains the label configuration options for labelling Area layers. Rules can be set by selecting an area feature type layer and clicking the Rules edit button in the Rules column. The placement settings in the screenshot below represent the *default* configuration, however, these settings may be changed to match any labelling requirements. Click the *Save As* button to save the label configuration. The rule will be saved with a user assigned name. Click *OK* to apply the current settings.



Allow horizontal inside – Labels are allowed to be placed horizontally inside the polygon.

Allow dominant angle – Labels are allowed to be placed parallel to the dominant angle of the polygon.

Allow extending beyond boundary Labels are allowed to exceed the boundaries of the polygon being labelled.

Allow outside – Labels are allowed to be placed outside the polygon being labelled.

Allow inside, along boundary Labels are allowed to be placed inside the polygon, following the polygon boundary.

Allow use of leader lines – Incorporates the use of leader lines. Options include the number of lines the leader line are allowed to cross, the width of the leader line being used and the style of arrow to be used as the leader line.

Allow stacking – Labels are allowed to stack up to a maximum of two, three, or four lines.

Allow labels to cross lines Labels are allowed to cross line features and area boundaries.

Allow font reduction Automatically reduces the label size incrementally, when necessary. Each step shrinks the selected font by 0.5 pt.

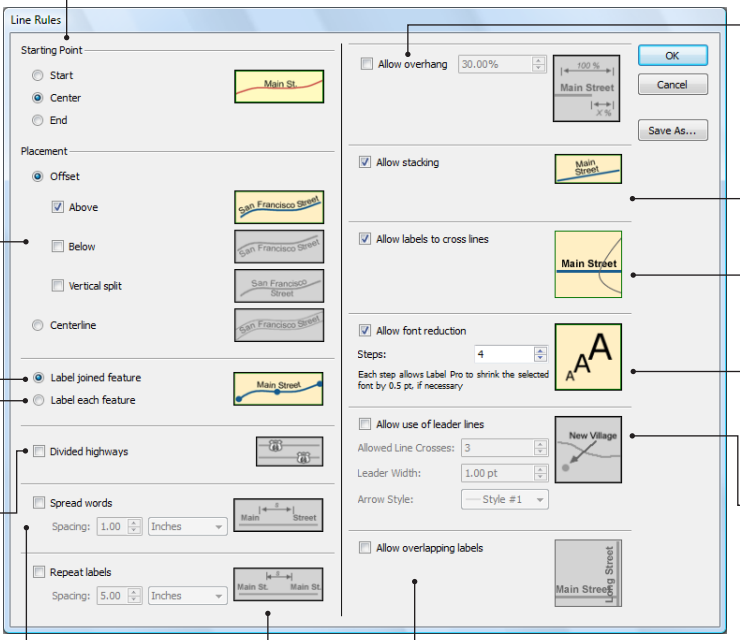
Allow overlapping labels Area Labels are allowed to overlap other labels in the same labelling session.

NOTE: For Area type data, labels are placed relative to an object's centroid.
For areas grouped in a compound path, the largest area of the compound will be labelled.

LINE RULES

The Line Rules dialog box contains the label configuration options for labelling Line layers. Rules can be set by selecting a line feature type layer clicking the Line Rules edit button in the Rules column. The placement settings in the graphic below represent the default configuration, however, these settings may be changed to match any labelling requirements. Click the *Save As* button to save the label configuration. The rule will be saved with a user assigned name. Click *OK* to apply the current settings.

Starting Point – Specify where the start of the label will be placed with options including Start, Center and End. Start will have the start of the label placed at the starting point of the line, Center will place the label in the center of the line and End will place the label at the end of the line. The starting point of a line depends on the direction of the vertices.



Placement – Place labels using an offset or on a centerline. Offset labels *Above* or *Below* a line. *Vertical Split* places multiple word labels above and below the line and relative to the center of the line. If the generated label only has one word, it will be placed on the suppression layer. The Centerline option places labels directly on top of the line.

Label joined feature – Places one label on a line that is joined together.

Label each feature – Labels each and every line segment.

Divided highways – Label multiple road segments with a common symbol such as a shield. Lines must be within 0.25 inch and 75% of the lines must be parallel to be considered a divided highway. The divided highway symbol will be placed on the line with the longest geometry.

Spread words – Multiple word labels placed a specified amount apart.

Repeat labels– Repeat labels along a line at specified amounts.

Allow overlapping labels – Check this option to allow line labels to overlap with other labels in the same labelling session.

Allow overhang – Labels are allowed to overhang the line up to a set percentage. The percentage of overhang is relative to the start of the label and the end of the line.

Allow stacking – Labels are allowed to stack to a maximum of two lines.

Allow Labels to Cross Lines Labels are allowed to cross line features and area boundaries.

Allow font reduction Automatically reduces the label size incrementally, when necessary. Each step shrinks the selected font by 0.5 pt.

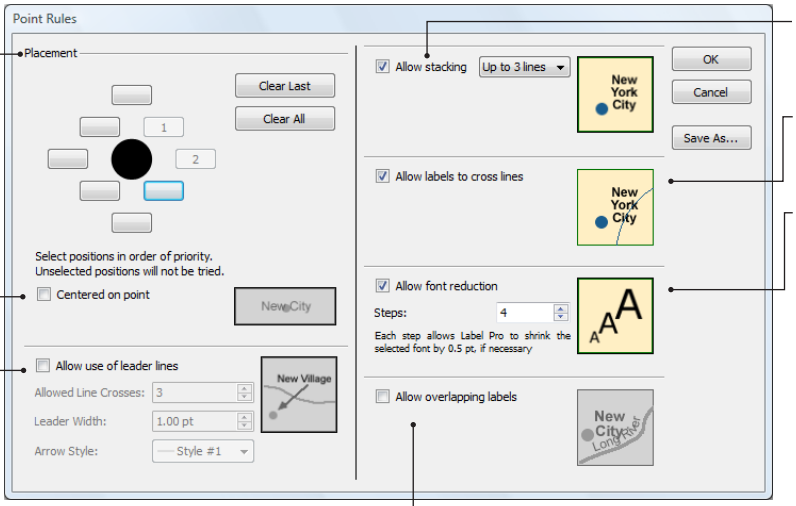
Allow use of leader lines Incorporate the use of leader lines. Allowed Line Crosses permits the number of lines the leader line will be allowed to cross. Leader Width and Arrow Style adjusts the thickness and style of the leader line, respectively.

NOTE: Text as obstacles will not work unless the *Allow labels to cross lines option* is disabled. This is because text obstacles are treated as areas and not text. Also, text will only be avoided being placed where it intersects the outline of the shape and not within it.

Using the Placement option *Vertical Split* may require additional line smoothing (straightening or simplifying).

POINT RULES

The Point Rules dialog box contains the label configuration options for labelling Point layers and follows the same conventions mentioned for the previous two data types.



Placement – Click the placement buttons in the desired order of priority. Use the *Clear Last* or *Clear All* options to remove selections. Unselected positions will not be considered.

Centered on point Labels are placed on the center of the point.

Allow use of leader lines Incorporate the use of leader lines. Allowed Line Crosses permits the number of lines the leader line will be allowed to cross. Leader Width and Arrow Style adjusts the thickness and style of the leader line, respectively.

Allow stacking – Labels are allowed to stack up to a maximum of two, three, or four lines.

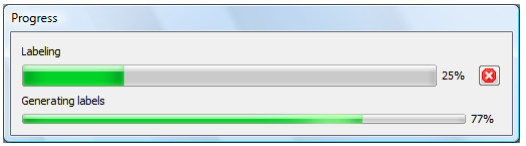
Allow labels to cross lines Labels are allowed to cross line features and area boundaries.

Allow font reduction Automatically reduces the label size incrementally, when necessary. Each step shrinks the selected font by 0.5 pt.

Allow overlapping labels – Check this option to allow point labels to overlap with other labels in the same labelling session.

SAVING AND LABELLING

Once the layers, main configuration, style and rule based options have been completed, proceed to label the map data by clicking the *Save & Label* button. Clicking the *Save & Label* button will save the current settings, close the main MAP LabelPro configuration dialog box and begin the labelling process.



Due to the complexity of the calculations involved in rule based text placement, it is likely that a progress meter will be displayed for most labelling processes except those that are sufficiently simple or small. Cancel the labelling process at any time by clicking on the button in the progress dialog box.

Alternatively, save the current settings without labelling by clicking the *Save* button. This will close the main MAP LabelPro configuration dialog box and will not label any features. The dialog box can be reopened later to edit the saved label settings or be used to label the map.

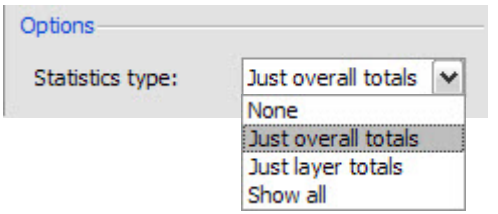
Label Verification

The graphic below shows results of a typical labelling result that options such as stack labels, repeat labels, allow labels to cross lines, and many others.

Verify that labels were successfully placed in accordance to the rule base set out in the MAP LabelPro configuration. Also verify that labels were placed on the appropriate Destination text layers. Text failing to meet the labelling criteria will be placed in a Suppression layer (if one is available and has been set). If no Suppression layer is available, the non-compliant text is ignored and is not generated. Once placed, the labels are considered standard text and may be modified using Adobe Illustrator or MAPublisher operations.

NOTE: Undo and Redo operations are supported when labelling. Be aware that undoing a labelling operation will also undo any changes to rules, styles or settings made at the same time. It may be useful to save without labelling, close the MAP LabelPro Editor, re-open it, then proceed to click *Save & Label*.

OPTIONS



None – (Default) No statistics panel will display after labelling.

Just overall totals – Totals for all placed and unplaced labels (not separated by layer).

Just layer totals – Totals for each layer. Shows both placed and unplaced labels.

Show all – Show all statistics.

The Statistics type drop-down lists several options for displaying statistical information after the labelling process is completed. This information is useful in determining how successful the labelling operation was based on the number of labels written to Destination and Suppression layers. It may help indicate whether adjustments to the rule base are required to necessitate a higher rate of success. Statistics report may be saved as text file to future reference.

MAPublisher Spatial Database

Spatial databases are optimized data repositories for spatial data storage and management. Many GIS environments use spatial databases to easily access and manage GIS data in a central location.

MAPublisher 8.2 introduces support for import of the popular ESRI single-user and multi-user Geodatabases: Personal, File and ArcSDE Geodatabases; and direct access to ArcSDE server.

The MAPublisher Spatial Database importer is built on ESRI software libraries and as such requires a valid ESRI software and license installed on the computer (ArcGIS 9.2 and higher).

MAPublisher Spatial Database functions are available on Windows operating systems only.

Topics covered in this section:

Overview
Import ESRI Personal and File Geodatabases
Import ESRI ArcSDE Geodatabases
Import from Basic ESRI ArcSDE Server

MAPublisher Spatial Database is available as an optional add-on to MAPublisher 8.2. For more information on how to obtain a MAPublisher Spatial Database license please contact *sales@avenza.com* or visit *www.avenza.com*.

For information on how to activate a purchased or evaluation license please refer to chapter 1 of this guide.

Overview

A Geodatabase is a native ESRI ArcGIS data format for storing geographic data. It is a collection of geographic datasets of various types used in ArcGIS and managed in either a file folder or a relational database, such as:

- Feature classes of points, lines, polygons, and annotation for discrete features
- Feature datasets (group of feature classes)
- Descriptive attributes held in tables
- Raster datasets and raster catalogs for imagery

ESRI supports several types of Geodatabases that can all be imported in MAPublisher:

	File extension	User access	Size limit	RDBMS Technology	ESRI Licensing (create)*	MAPublisher Import access
Personal Geodatabase	.mdb	Single	2 GB	Microsoft Access (Jet Engine)	ArcInfo ArcEditor ArcView	Folder browser
File Geodatabase	.gdb	Single	1 TB	No RDBMS - uses local file structure.	ArcInfo ArcEditor ArcView	Folder browser
ArcSDE Desktop Geodatabase *(called Personal in 9.2)*	-	Multiple (limited)	4 GB	SQL Server Express	ArcGIS Engine ArcInfo ArcEditor	ArcSDE server connection
ArcSDE Workgroup Geodatabase	-	Multiple (limited)	4 GB	SQL Server Express	ArcGIS Server Workgroup	ArcSDE server connection
ArcSDE Enterprise Geodatabase	-	Multiple (unlimited)	Depends on the server	DB2 Informix Oracle PostgreSQL SQL server	ArcGIS Server Enterprise	ArcSDE server connection

**For all Geodatabases, an ArcEngine license is the minimum requirement for direct read of vector and raster data.*

MAPublisher has the capacity to import all types of Geodatabases (categorized as Personal, File and ArcSDE Geodatabases), provided that the appropriate ESRI ArcGIS software and license are available on the computer.

As a minimum, a free ESRI ArcReader license allows users to access feature classes on ArcSDE servers, with some limitations on the selection functions.

The connection to a ArcSDE server requires server access, user account and versioning information to be provided by the database administrator. These parameters are exactly the same required to establish a connection using ESRI ArcCatalog — with a small exception for SQL Server Express connections, explained later on in this chapter.

Once imported in Adobe Illustrator, the data does not maintain a link with the original database and database functions are not valid (topology, table/feature class relationships, subtypes and attributes domains rules). However, MAPublisher can make use of the Geodatabases spatial and non-spatial relationships, subtypes and attribute domains information during the import process (to populate layer names and attributes according to the user's preferences).

SOFTWARE REQUIREMENTS

MAPublisher Simple and Advanced Import functions require valid ESRI software and licensing installed on the computer to be able to import ESRI Geodatabases or to access an ArcSDE server.

To use ESRI Geodatabases, the minimum license required is ESRI ArcGIS Engine — higher licenses that apply are ArcView, ArcEditor and ArcInfo.

The direct access to feature classes on an ArcSDE Server requires only the free ESRI desktop application ArcReader. File and Personal Geodatabases cannot be read. With this licensing configuration, the access to files with *Basic ESRI ArcSDE Server* connections is limited compared to the *ESRI ArcSDE Geodatabase* connections (as explained later in this chapter).

NOTE: If ArcReader is not installed on the default installation directory, it might be necessary to edit the binary location in the MAPublisher Preferences, *Basic ESRI ArcSDE Server Editor* (see chapter 1).

MAPublisher supports all ArcSDE server connections and SQL queries supported by ESRI on the user's system.

NOTE: MAPublisher supports 9.2 and higher Geodatabases. However, there are some limitations to the direct connections from 9.2 clients to the ArcSDE 9.3 Geodatabases. Please refer to ESRI documentation on software requirements (service pack etc.) and limitations.

SUPPORTED FEATURES

Data Types

The following is a list of supported and unsupported Geodatabase geometry types for import in MAPublisher:

- Supported:
  - Point
  - Polyline
  - Polygon
  - Circular Arc*
  - Elliptical Arc*
  - Bezier Curve
  - Annotations

** Upon import, MAPublisher will convert the arc to a line wherein a series of vertices will maintain the geometry.*

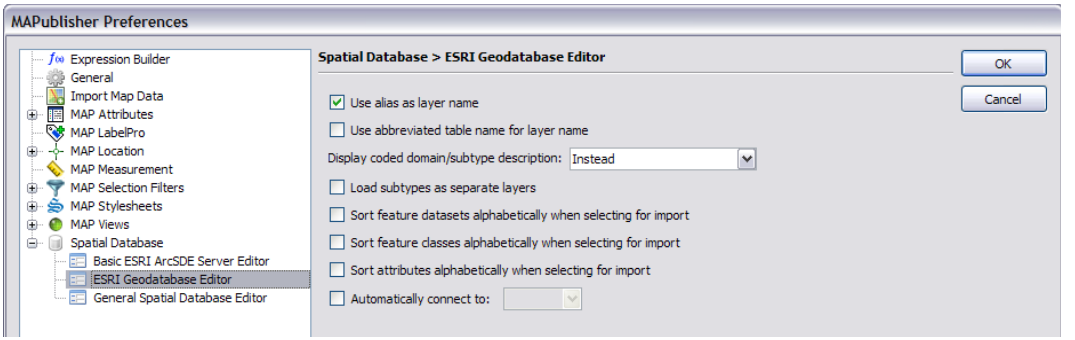
- Unsupported:
  - Raster
  - Grids
  - MultiPatch
  - Dimensions

NOTE: To import a geometry type that requires the use of a *Representation* in ArcGIS (such as Bezier curves), the *Behavior when Representation Geometry is Edited* must be set to *Change the geometry of the supporting feature* — option specified when creating a new Representation in ArcGIS.

Aliases

ArcGIS users can give the feature classes an alias that acts as an alternate name. Unlike feature class names, aliases can contain spaces, punctuations, and start with a number. In ArcMap, feature classes are referred to with their alias name. In ArcCatalog, feature classes are represented by their true names.

In the **MAPublisher Preferences** for **Spatial Database > ESRI Geodatabase Editor,** users can specify to use aliases for layer names.



NOTE: Aliases for attribute field names are imported as *Display Name* and true field names as *Name* of MAP Attributes columns.

Subtypes and Attribute domains

Subtypes are particular attribute fields made to create groups of records in a feature class that share the same types of properties. The attribute fields designated as subtype fields contain numerical coded values and have a data type of short or long integer. Each coded value is associated with a description (textual).In the **MAPublisher Preferences** for **Spatial Database > ESRI Geodatabase Editor**, users may choose to load subtypes as separate layers.

Attribute domains are used to constrain the values allowed in any particular attribute of a feature class (or subtypes). There are two types of attribute domain:

- A *range domain* limits the value of a numerical attribute in between minimum and maximum values — range domains are not relevant to MAPublisher.
- A *coded value domain* specifies a valid set of coded values for an attribute (of any type — text, numeric or date). Both coded values and their meaningful description are stored in the database.

In the **MAPublisher Preferences** for **Spatial Database > ESRI Geodatabase Editor**, users can set the option to import attributes with coded values from subtypes and attribute domains as follow:

- *Instead:* replace the codes by their description (text);
- *Never:* import the actual values (code);
- *In Addition:* create two attribute columns, one containing the coded values and one containing the corresponding descriptions.

Spatial Filters

During the import process, users can enter four coordinate points in any coordinates system unit to limit the geographic area for the data being imported (see next section).

SQL Queries

During the import process, users can use SQL queries on feature classes and tables to limit the objects and attributes to be imported.

Multiple feature classes can be imported using multiple SQL statements as long as all classes share the same source coordinate system. SQL queries can also be used to import a feature class and the attribute information from a related non-spatial table. To apply SQL queries on multiple feature classes with different source coordinate systems, use the *Advanced Import* and add the feature classes in several *Add* sessions (see chapter 3 for more information on the Advanced Import).

MAPublisher uses the ESRI libraries to run the SQL queries. Please refer to the ESRI documentation for more information on the supported SQL expressions and syntax — they can change depending on the Geodatabase and database server type.

Non-Spatial Relationships

MAPublisher supports non-spatial relationships between feature classes and tables during the import process using SQL queries. Here are some examples:

- Import and inner join a feature class to a related table (only features with entries in the related table are imported):
  - *SELECT * FROM Feature_Class,Table WHERE FeatureClass.Id=Table.Id*
- Import and inner join a feature class to a related table and apply a query:
  - *SELECT * FROM Feature_Class,Table WHERE FeatureClass.Id=Table.Id AND Table.Attribute='ABC'*
- Import a feature class without joining to a related table, but use a table value to make a query:
  - *SELECT * FROM Feature_Class WHERE FeatureClass.Id IN (SELECT Table.Id FROM Table WHERE Table. Attribute='ABC')*

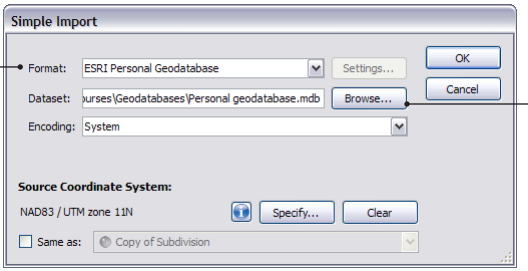
NOTE: SQL syntax may vary depending on the database server type.

Once the vector data is imported into Adobe Illustrator, the database relationships rules do not apply anymore. It is however possible to use the MAP Attributes panel **Join Table** function to join Geodatabase tables with MAPublisher vector data. For more information, please refer to chapter 5.

NOTE: When the non-spatial table information is imported together with the feature class using a SQL query, only the vector features that have a record in the related table are imported. Import first the feature class and use Join Table in a second step: all vector features are imported and the related table information is added where a record match is found. This second option might be recommended if the database is not well known.

Import ESRI Personal and File Geodatabases

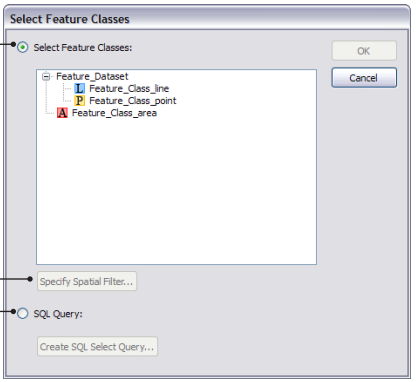
Simple Import
Advanced Import > Add



Format - Select *ESRI File Geodatabase* or *ESRI Personal Geodatabase*. *<Auto detect format>* can only be used for Personal Geodatabases.

Browse - Opens a file/folder browser. File Geodatabases have the extension (*.gdb), Personal Geodatabases end with (*.mdb).

Select Feature Classes

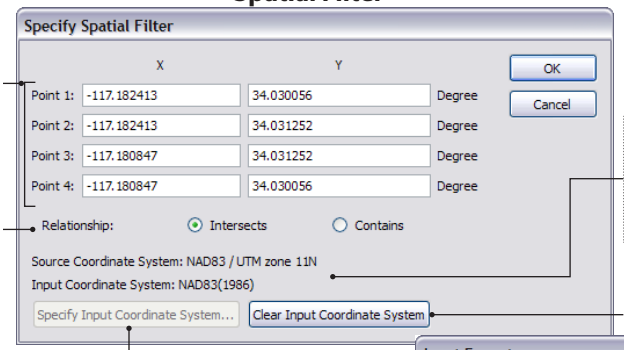


Feature classes - Click one or more feature classes to import - only classes sharing the same original coordinate system (spatial reference) can be imported together.

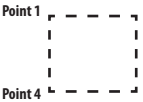
Specify Spatial Filter- Click this button to open the *Specify Spatial Filter* dialog box.

SQL Query - Click this option to open the *Create SQL Select Query* dialog box

Spatial Filter



Point Coordinates - Enter the four corners of the spatial filter boundaries, eg:



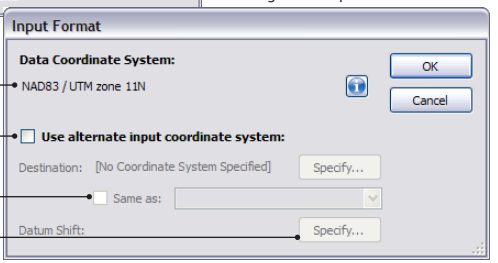
Relationship - Specify which features should be included:

- **Intersects:** includes features that intersects with the boundaries
- **Contains:** includes only features that are entirely contained within the boundaries

Source Coordinate System - Coordinate system of the selected feature class.

Input Coordinate System - Coordinate system specified for entering the filter coordinates (if different from source).

Clear Input Coordinate System - Revert to the source coordinate system for entering the filter positions.

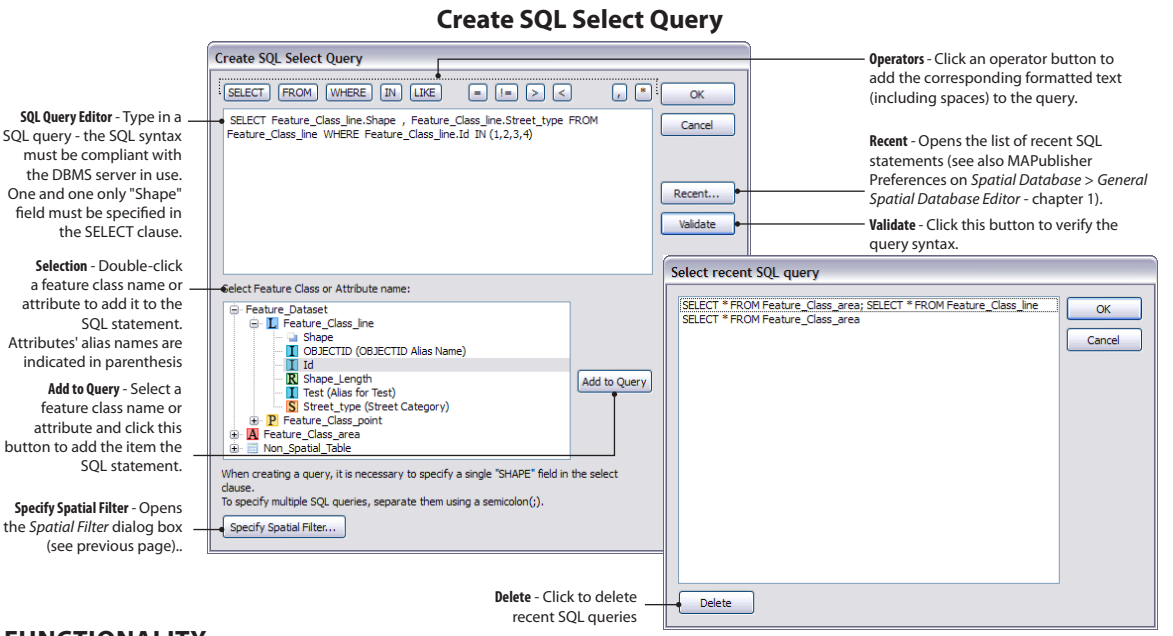


Data Coordinate System - Original coordinate system of the selected file.

Alternate Coordinate System - Check this option and click *Specify* to select an alternate coordinate system.

Same As - Check this option to use a coordinate system that matches an existing MAP View.

Datum Shift - Click this button to specify a new datum shift.



FUNCTIONALITY

ESRI Personal and File Geodatabases can be imported through the **Simple Import** and **Advanced Import** functions of MAPublisher. The file selection is done in two steps: first the database is selected (***.mdb** for a Personal Geodatabase, ***.gdb** for a File Geodatabase), then feature classes are selected directly or through SQL queries. Additionally, a spatial filter can be set to limit the geographic extents of the data being imported.

When feature datasets are present in the database, MAPublisher uses them to group feature classes per parent feature dataset to ease the selection process, but feature datasets are not imported as such. As an import setting, the feature dataset name may be prepended to the name of the data layer created during import.

For each format, multiple feature classes sharing the same source coordinate system may be selected at once in the *Simple Import* or *Advanced Import* > *Add* dialog box. To import feature classes that do not have matching spatial reference, use *Advanced Import* and add the feature classes in several *Add* sessions (see chapter 3 for more information on the Advanced Import).

The feature classes (objects and attributes) are imported on separated MAP layers. The layer naming convention is set in the *MAPublisher Preferences* for *Spatial Databases* > *ESRI Geodatabase Editor*.

USING IMPORT ESRI PERSONAL AND FILE GEODATABASES

In the *Simple Import* or the *Advanced Import* > *Add* dialog box, set the **Format** drop-down list to **ESRI Personal Geodatabase** or **ESRI File Geodatabase** — Personal Geodatabases can be selected with the <Auto detect format> option but not File Geodatabases because they are directories. Click the **Browse** button and select a file with the extension ***.mdb** (Personal Geodatabase) or a directory with the extension ***.gdb** (File Geodatabase) - only one Geodatabase can be accessed at one time. Click the **Open** button to finalize the selection. This opens a new dialog box for the selection of the specific feature classes to be imported.

Select Feature Classes

In the **Select Feature Classes** dialog box, users have the option to directly import one or more feature classes or to build SQL queries to select subsets of feature classes. For a direct selection of feature classes, click the names of the feature classes to import — selected classes are highlighted. To deselect a class, click the selected name. Finally, click OK to start the import process.

Specify Spatial Filter

A spatial filter consists of a four corners polygon defining the extents for the imported data. When first opened, the **Specify Spatial Filter** dialog box displays the four corner coordinates that correspond to the actual data extent of the selected file. Users may enter new coordinates values using the selected file source coordinate system or using an alternate coordinate system - this is achieved by clicking the **Specify Input Coordinate System** button.

No specific order is required for entering the corners' coordinates, but Point 1, 2, 3 and 4 should be entered in a loop so as not to create a crossing polygon — only data included in the crossed area would be imported.

Users can choose whether or not to import objects that intersects with the spatial filter boundaries by setting the **Relationship:**

- **Intersects** allows the import of the whole objects which geometry intersects with the spatial filter
- **Contains** imports only objects fully contained inside the spatial filter limits.

Create SQL Select Query

A SQL statement can be built to limit the number of objects and attributes imported from a single feature class. The SELECT clause should always contain one and one only "Shape" object (actual spatial feature). When possible use the operator button to add formatted query statements (including spaces), to limit the typing errors.
For example:

- In feature class "FC_Point", import all points and the "Valve" attribute (other attributes are not imported).
  - *SELECT FC_Point.Shape, FC_Point.Valve_ID FROM FC_Point*
- In feature class "FC_Line", import lines (vector only) that have the attribute "Id" equals to 1, 2, 3 or 4.
  - *SELECT FC_Line.Shape FROM FC_Line WHERE FC_Line.Id IN (1,2,3,4)*

The *Create SQL Select Query* dialog box offers a **Validate** button to verify the query syntax prior to running the import.

Multiple feature classes can be imported using multiple SQL statements separated by a semi-colon (;) as long as all classes share the same source coordinate system. SQL queries can also be used to import a feature class and the attribute information from a related non-spatial table (see previous section). To perform SQL queries on multiple feature classes with different source coordinate systems, use the *Advanced Import* and add the feature classes in several *Add* sessions (see chapter 3 for more information on the Advanced Import).

Recently used SQL queries are saved and accessed by clicking the **Recent** button. The number of recent queries saved is set in the *MAPublisher Preferences* on *Spatial Database > General Spatial Database Editor* (see chapter 1).

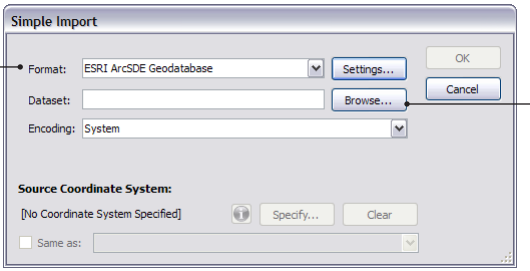
Settings

Parameters relative to the Geodatabases encoding are accessed by clicking the **Settings** button. These settings are described in chapter 3 of this user guide.

Additionally, users can choose to prepend the feature dataset names to the layer name created on import.

Import ESRI ArcSDE Geodatabases

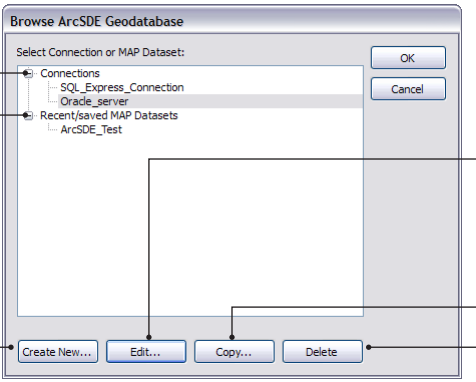
Simple Import
Advanced Import > Add



Format - Select *ESRI ArcSDE Geodatabase*. *<Auto detect format>* cannot be used.

Browse - Opens the ArcSDE Geodatabase browser

Browse ArcSDE Geodatabase



Connections - List of connections already created within MAPublisher.

MAP Datasets - List of recently selected MAP datasets.

Edit -
- If a *connection* is selected: opens the **Edit ArcSDE Geodatabase connection** dialog box.
- If a *MAP Dataset* is selected: opens the **Edit ArcSDE Geodatabase MAP Dataset** dialog box .

Copy - Copies the selected *connection.*

Create new -Opens the **Create new ArcSDE Geodatabase connection** dialog box.

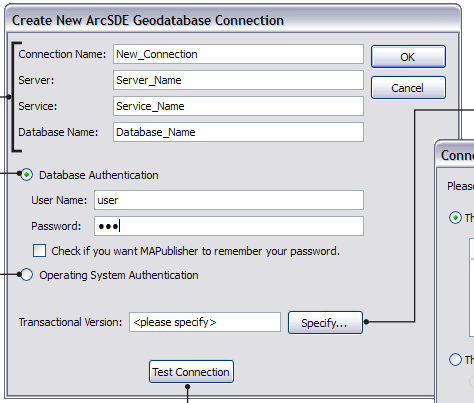
Delete - Deletes the selected *connection* or *MAP Dataset.*

Create/Edit/Copy ArcSDE Geodatabase connection

Connection Settings - Specify the connection settings : **Connection Name, Server, Service** and **Database Name** as specified in the database *Connection Properties* in ESRI ArcCatalog.

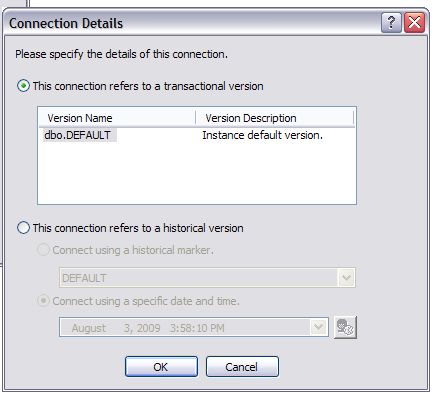
See next page for specific details for SQL Server Express connection (Desktop and Workgroup Geodatabases).

Authentication - Specify the authentication method:
Database Authentication - enter user name and password provided by the database administrator.
Operating System Authentication - the server connection uses Windows authentication. The user must be logged into Windows with a login name that is also valid on the database server.

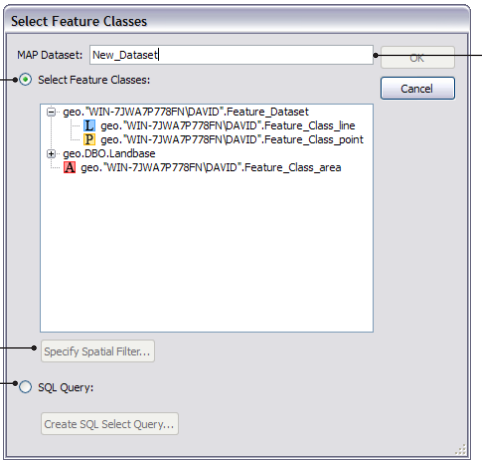


Test Connection - Tests the connection parameters prior to accessing datasets.

Connection Details - Specify the transactional or historical version to be accessed. The interface lists the existing versions for the database.
Information to be provided by the database administrator.



Select Feature Classes



Feature classes - Click one or more feature classes to import - only classes sharing the same original coordinate system (spatial reference) can be imported together.

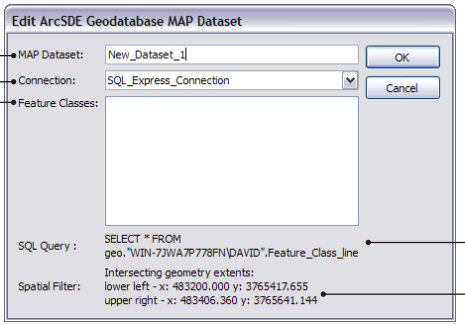
Specify Spatial Filter- Click this button to open the *Specify Spatial Filter* dialog box. - see *Import Personal and File Geodatabases* section

SQL Query - Click this option to open the *Create SQL Select Query* dialog box. - see *Import Personal and File Geodatabases* section

MAP Dataset- Type a name for the selected dataset (by direct selection or SQL query). This name will be displayed in the **Recent/ Saved MAP Dataset** list of the *Browse ArcSDE Geodatabase* dialog box.

The number of default recent MAP Datasets saved is set in the MAPublisher Preferences for *Spatial Database > General Spatial Database Editor.*

Edit ArcSDE Geodatabase MAP Dataset



MAP Dataset - Edit the name of the MAP Dataset. The new name will be displayed in the **Recent/Saved MAP Dataset** list of the *Browse ArcSDE Geodatabase* dialog box.

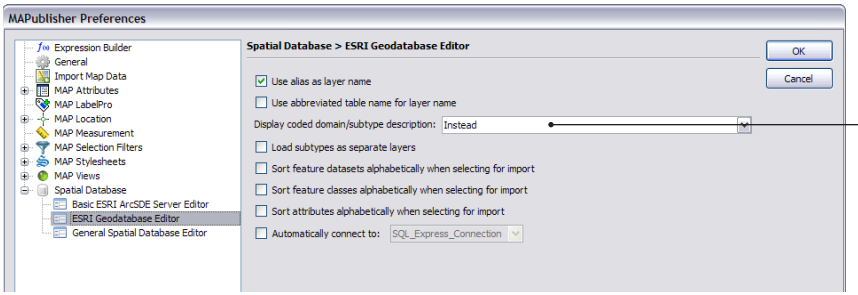
Connection - Set the name of the connection to use to access a dataset

Feature Classes - List of directly selected feature classes

SQL Query - SQL query used to select the data features (when used).

Spatial Filter - Spatial fiter used to limit the import extents (when used).

MAPublisher Preferences
Spatial Database > ESRI Geodatabase Editor



Use abbreviated table name for layer name - ArcSDE Geodatabases' tables are identified as *databaseName.userName. tableName*. The abbreviated version uses only the table name as layer name.

If this option is used in combination with the "use alias" option, the alias is applied first.

FUNCTIONALITY

ESRI ArcSDE Geodatabases can be imported through the **Simple Import** and **Advanced Import** functions of MAPublisher.

Importing ESRI ArcSDE Geodatabases requires users to create a connection to the database server containing the database. Once a connection is established, the feature classes selection is done the same way as for Personal and File Geodatabases — by direct selection or SQL query (see previous section) and using spatial filters..

The connection parameters to an ArcSDE server are saved with the application. The dataset selections (called *MAP Datasets*) are also saved, the maximum number of default MAP Datasets kept is set in the MAPublisher Preferences for *Spatial Database* > *General Spatial Database Editor*. MAP Datasets saved with a specific name (other than the default one given) are always saved.

Like the other Geodatabase formats, multiple feature classes sharing the same source coordinate system may be selected at once in the *Simple Import* or *Advanced Import* > *Add* dialog box. To import feature classes that do not have matching spatial reference, use *Advanced Import* and add the feature classes in several *Add* sessions (see chapter 3 for more information on the Advanced Import).

The feature classes (objects and attributes) are imported on separated MAP layers. ArcSDE Geodatabase tables are identified as *databaseName.userName.tableName*. An abbreviated version using only the table name as layer name can be applied as a preference. This option and other layer naming conventions are set in the *MAPublisher Preferences* for *Spatial Databases* > *ESRI Geodatabase Editor* (see chapter 1 and previous section).

When feature datasets are present in the database, MAPublisher uses them to group feature classes per parent feature dataset to ease the selection process, but feature datasets are not imported as such. As an import setting, the feature dataset name may be prepended to the name of the data layer created during import.

USING IMPORT ESRI ARCSDE GEODATABASES

In the *Simple Import* or the *Advanced Import* > *Add* dialog box, set the **Format** drop-down list to **ESRI ArcSDE Geodatabase**. The format has to be set, because the item <Auto detect format> will not work for ESRI ArcSDE Geodatabases. Click the **Browse** button to open the ArcSDE Geodatabase browser.

The **Browse ArcSDE Geodatabase** dialog box allows users to create, edit and delete connection parameters to ArcSDE servers and also to load previously selected MAP datasets.

ESRI ArcSDE Geodatabase Connection

In MAPublisher, users apply the same connection parameters as they do in the ESRI application interface (such as ArcCatalog) — with an exception for SQL Server Express connections:

- **Connection name**: recognizable name in the list of connection.
- **Server**: server name *provided by the database administrator*.
- **Service:** service name *provided by the database administrator.*
- **Database name**: *provided by the database administrator.*
- Account information: **Database authentication** (user name and password *provided by the database administrator*) or **Operating system authentication** (uses the Windows login name, *must be enabled by the database administrator*)
- Connection details: **transactional version (***provided by the database administrator)* or **historical version** (enter date and time).

The same connections parameters are available when creating a new connection, editing or copying an existing one:

- To *create* a new connection, click anywhere on the **Connections** tree of the **Browse ArcSDE Geodatabase** dialog box. This enable the **Create New...** button that opens the **Create New ArcSDE Geodatabase Connection** dialog box where the connection parameters are to be entered.
- To *edit* an existing connection, click the connection name in the **Connections** tree of the **Browse ArcSDE Geodatabase** dialog box and then click the **Edit** button. This opens the **Edit ArcSDE Geodatabase Connection** where connection parameters can be edited.
- To *copy* an existing connection, click the connection name in the **Connections** tree of the **Browse ArcSDE Geodatabase** dialog box and then click the **Copy** button. This opens the **Copy ArcSDE Geodatabase Connection** where connection parameters can be edited.
- To *delete* an existing connection, click the connection name in the **Connections** tree of the **Browse ArcSDE Geodatabase** dialog box and then click the **Delete** button. Only a connections that has not dataset associated to itcan be deleted, so make sure to first delete all recent/saved datasets using that connection.

Important Note for SQL Server Express Users

There is an exception for connections to SQL Server Express servers — ArcSDE Desktop (called personal in ArcGIS 9.2) and Workgroup Geodatabases. In ArcCatalog, users set a "Database Servers" connection where only the server name followed by *\sqlexpress* is required to establish a connection. In MAPublisher, there is no specific interface for SQL Server Express connections, the same interface as for the other types of ArcSDE Geodatabases must be used with specific settings:

- **Server:** name of the server followed by *_SQLEXPRESS*
- **Service:** the server name must be preceeded by *sde:sqlserver* and followed by *\sqlexpress* (e.g. sde:sqlserver:ServerName\sqlexpress).
- **Database name:** the name of the database must be known.
- **Operating System Authentication** must be set because it is the authentication of SQL Server Express databases.

For example, the name of the database server with SQL Server Express is *MyServer*, the connections parameters are as follow:

- ArcCatalog > Database Servers > Add Database Server
  - **Database Server:** *MyServer*\sqlexpress
- MAPublisher > Import ArcSDE Geodatabase > Server Connection:
  - **Connection name:** as desired
  - **Server:** *MyServer*_SQLEXPRESS
  - **Service:** sde:sqlserver:*MyServer*\sqlexpress
  - **Database name:** as required
  - **Operating System Authentication**
  - **Version:** as required

Select MAP Datasets

To make a new selection of feature classes from a ArcSDE Geodatabase, click a connection name on the **Connections** tree of the **Browse ArcSDE Geodatabase** dialog box and click **OK**. This opens the **Select Feature Classes** dialog box.

The *Select Feature Classes* dialog box for ArcSDE Geodatabases is very similar to the *Select Feature Classes* dialog box of Personal and File Geodatabases described in the previous section: users can directly select one or more feature classes, provided that they share the same spatial reference, or users can build an SQL query to select a subset of some feature classes and apply spatial filters.. The particularity of the ArcSDE Geodatabases is that the feature classes selection is saved as a **MAP Dataset.** When making a new selection, users can type in a specific name for the selection at the top of the dialog box.

The MAP Datasets previously saved are selectable directly from the **Browse ArcSDE Geodatabase** dialog box, by clicking a MAP Dataset name in the **Recent/saved MAP Datasets** tree. The name and connection settings of previously saved MAP Datasets can be changed in the **Edit ArcSDE Geodatabase MAP Dataset** dialog box opened by clicking the **Edit** button.

MAP Datasets may need to be deleted in order to remove the connection that they are based on. Use the **Delete** button to delete a dataset.

The maximum number of recent MAP Datasets saved with the default name is set in the MAPublisher Preferences for *Spatial Database* > *General Spatial Database Editor* (user named datasets are saved until deleted).

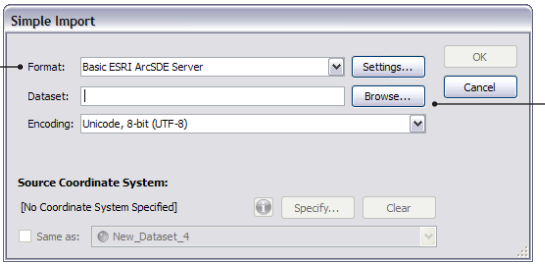
Settings

Parameters relative to the Geodatabases encoding are accessed by clicking the **Settings** button. These settings are described in chapter 3 of this user guide.

Additionally, users can choose to prepend the feature dataset names to the layer name created on import.

Import from Basic ESRI ArcSDE server

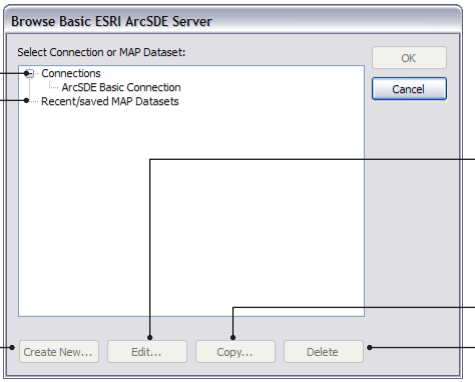
Simple Import
Advanced Import > Add



Format - Select *Basic ESRI ArcSDE Server* <*Auto detect format*> cannot be used.

Browse - Opens the *Basic ESRI ArcSDE Server* browser

Browse Basic ESRI ArcSDE Server



Connections - List of connections already created within MAPublisher.

MAP Datasets - List of recently selected MAP datasets.

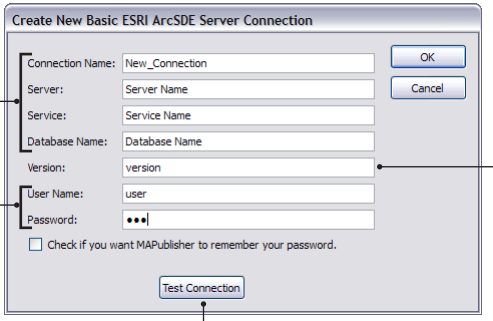
Edit -
- If a *connection* is selected: opens the **Edit Basic ESRI ArcSDE Server connection** dialog box.
- If a *MAP Dataset* is selected: opens the **Edit Basic ESRI ArcSDE Server MAP Dataset** dialog box .

Copy - Copies the selected *connection.*

Create new -Opens the **Create new Basic ESRI ArcSDE Server connection** dialog box.

Delete - Deletes the selected *connection* or *MAP Dataset.*

Create/Edit/Copy Basic ESRI ArcSDE Server connection



Connection Settings - Specify the connection settings : **Connection Name, Server, Service** and **Database Name** as specified in the database *Connection Properties* in ESRI ArcCatalog.

See next page for specific details for SQL Server Express connection (Desktop and Workgroup Geodatabases).

User Name / Password - Specify if the authentication information provided by the database administrator

Version - Enter the transaction version information provided by the database administrator.

Unlike ArcSDE Geodatabases, the ArcSDE server interface does not list the versions existing in the database.

Test Connection - Tests the connection parameters prior to accessing datasets.

NOTE: If ArcReader is not installed on the default installation directory, it might be necessary to edit the binary location in the MAPublisher Preferences, *Basic ESRI ArcSDE Server Editor* (see chapter 1).

FUNCTIONALITY

Users who do not have an ArcGIS license can install the free ESRI desktop application called ArcReader (see ESRI Website for information *www.esri.com*). File and Personal Geodatabases cannot be read and the access to files with *Basic ESRI ArcSDE Server* connections is limited compared to the *ESRI ArcSDE Geodatabase* connections:

- Aliases, sub-types and attribute domains are not supported — only true names and actual values (codes) are imported.
- Feature datasets are not recognized. Feature classes are all listed on the same level, they are not grouped by feature dataset.
- Operating System Authentication is not possible.

USING IMPORT BASIC ESRI ARCSDE SERVER

In the *Simple Import* or the *Advanced Import* > *Add* dialog box, set the **Format** drop-down list to **Basic ESRI ArcSDE Server**. The format has to be set, because the item <Auto detect format> will not work for Basic ESRI ArcSDE Server. Click the **Browse** button to open the Basic ESRI ArcSDE Server browser.

The **Browse Basic ESRI ArcSDE Server** dialog box allows to create, edit and delete connection parameters to ArcSDE servers and also to load previously selected MAP datasets.

Most functions are very similar to ESRI ArcSDE Geodatabases, below are some notes on particularities of the ArcSDE server access.

Basic ESRI ArcSDE Server Connection

In MAPublisher, users apply the same connection parameters as they do in the ESRI application interface (such as ArcCatalog) — with an exception for SQL Server Express connections:

- **Connection name**: recognizable name in the list of connection.
- **Server**: server name *provided by the database administrator*.
- **Service:** service name *provided by the database administrator.*
- **Database name**: *provided by the database administrator.*
- **User name** and **password:** *provided by the database administrator.*
- **Version:** *provided by the database administrator* — no list of the existing settings on the database are provided.

Important Note For SQL Server Express Users:

Some specific settings are required for SQL Server Express connections. See section on ESRI ArcSDE Geodatabase connection.

Select MAP Datasets

The selection of MAP Datasets is done similarly as for ESRI ArcSDE Geodatabases, except that feature classes are not grouped into feature datasets. Please refer to the previous section for more information.

Appendices

Appendix 1: Technical Reference Guide

Graphic File Formats

AI

The *Adobe Illustrator* native postscript file format. Refer to the Adobe Illustrator User Guide for more information.

DOQ

Digital Orthophoto Quadrangle (DOQ) are geographic images from the United States Geological Survey (USGS) and are stored in the JPG format. They can be placed by Adobe Illustrator and registered by the MAPublisher Register Image filter. DOQ are usually very large files (30-40 MB or more) and will require extremely large amounts of RAM.

DRG

Digital Raster Graphics (DRG) are scanned images of published topographic maps from the USGS stored in TIF format. They can be placed by Adobe Illustrator and registered by the MAPublisher Register Image filter. DRG are also usually very large files (30-40 MB or more) and will require extremely large amounts of RAM for any manipulation within Adobe Illustrator.

EPS

The *Encapsulated Post Script* (EPS) file is used to transfer PostScript language artwork between applications (also see PostScript in the glossary section of the User Guide). EPS files are easily opened by Adobe Illustrator because the format is widely supported by most graphics programs. It is the preferred format for export to most illustration and page-layout programs. EPS files are by their nature vector based, but can contain embedded raster graphics and fonts.

GIF

Graphic Interchange Format (GIF) is a colour-indexed graphics format, commonly used for web pages and image file transfer. Adobe Illustrator can export 8-bit indexed-colour or grayscale gifs.

JPEG

Joint Photographic Experts Group (JPEG or JPG) is a compression technique for raster file formats. The Digital Orthophoto Quadrangle geographic images from the USGS are stored in this format, which can be imported by Adobe Illustrator and registered by the MAPublisher Register Image filter. DOQ are usually very large files (30-40 MB or more) and will require extremely large amounts of RAM.

PDF / GEOSPATIAL PDF

Portable Document Format (PDF) is a standardized format developed by Adobe for use across Macintosh, Windows, DOS, and UNIX platforms. Based on the PostScript Level 2 language, PDF supports both raster and vector graphics. A Geospatial PDF is an Adobe Acrobat file that retains geospatial coordinates.

TIF/TIFF/GEOTIFF

Tagged Image File Format (TIFF or TIF) is a common raster graphic file format that can be imported by Adobe Illustrator. Many raster geographic images from GIS systems are stored in this format, which can be imported by Adobe Illustrator and registered by the MAPublisher Register Image filter. A GeoTIFF is a TIFF file with embedded geographic information identifying its position and scale in world coordinates.

OTHERS

Please refer to the Adobe Illustrator User Guide for other graphics file formats supported by Adobe Illustrator.

MAPublisher Import Formats

This section contains descriptions of the GIS formats supported for import by MAPublisher. Here you will find an overview of the structure of each format, as well as information on supported format versions and elements unique to each data type. Each file format will carry a checklist covering which core elements are supported by MAPublisher during its import. You can also refer to the Frequently Asked Questions section in this guide for information on any issues associated with the various file formats.
Also see chapter 2 on Map Data File Formats.

AUTOCAD DRAWING (*DWG) AND DRAWING EXCHANGE (*.DXF)

There are two formats used by AutoCAD: DXF is a CAD data file format, developed by Autodesk as their solution for enabling data interoperability between AutoCAD and other programs. The Dwg format is used for storing two and three dimensional design data and is the internal format for the AutoCAD Computer Aided Design package. DWG is also the common name for AutoCAD proprietary DWG technology developed by Autodesk for their AutoCAD package.

Supported Elements	
Typical File Extensions	*.dwg, *.dxf
Automated Translation	Yes
User-Defined Attributes	Yes
Coordinate System Support	No
Generic Colour Support	Yes
Spatial Index	Never
Schema Required	Yes
3D Support	Yes

Supported Geometry	
Aggregate	No
Circles	Yes
Circular Arc	Yes
Elliptical Arc	Yes
Ellipses	Yes
Polygon	Yes
Donut Polygon	Yes
Point	Yes
Line	Yes
Text	Yes

Supported Versions
Windows: Releases vrs. R12 to 2007
Mac OS X: Releases vrs. R12 to 2007.

Prior to the import process, additional Settings can be made, which will affect how the selected file will import. The following parameters can be applied to the import:

- **Group Entities** - Group entities by Layer Name or Geometry.
- **Hatches** - Check this box if you want MAPublisher to read your hatch patterns upon import.
- **White Lines and Fills** - Enabling the *Import as is* option will instruct MAPublisher to import the data true to the original colour settings contained in the file. Check the *Change white lines and fills to black* box to import black lines instead of the files native white lines. Check the *Create black background* option to incorporate a layer containing a black background to mimic the AutoCAD environment.

DELIMITED ASCII TEXT (*CSV, *TSV,*TXT)

An ASCII file containing a tabular data where delimiters separate the columns and rows. Common delimiters are commas, spaces, or tabs. Microsoft Excel and many other spreadsheet programs will export data in these formats.

Supported Elements		Supported Geometry	
Typical File Extensions	*.csv, *.tsv, *.txt	Aggregate	No
Automated Translation	Yes	Circles	No
User-Defined Attributes	Yes	Circular Arc	No
Coordinate System Support	No	Elliptical Arc	No
Generic Colour Support	No	Ellipses	No
Spatial Index	Never	Polygon	No
Schema Required	Yes	Donut Polygon	No
		Point	Yes
		Line	No
		Text	No

Prior to the import process, additional Settings can be made, which will affect how the selected file will import. The following parameters can be applied to the import:

- **Axis Column** - Specify which columns contain the x and y coordinates for the point data to be read in.
- **Coordinate Format** - Choose the formatting type of the data you wish to import *(e.g. Decimal Degrees, Delimited Degrees Minutes Seconds, Packed DMS)* — formats are described in chapter 6.
- **Use first line as header** - Allows the user to enable the first line of the text file to be used as column headings.

ESRI INTERCHANGE FILE (*.E00)

An archive of files that describes a complete ArcInfo coverage. This is either ASCII or compressed into a binary and is used to transfer files between different versions of ArcInfo. It is a commonly found format for freely distributed data such as that found at the GIS Data Depot *(http://www.geocomm.com)*.

A single E00 file describes a complete ArcInfo coverage. The file itself is actually an archive of several smaller files, referred to as subfiles. Some of these subfiles have fixed names which do not vary from coverage to coverage, and follow a predefined data format. The remainder of the subfiles contained within an E00 are the info files. These files may contain user-defined attributes, and have names which vary from coverage to coverage.

Supported Elements		Supported Geometry	
Typical File Extensions	*.e00	Aggregate	No
Automated Translation	Yes	Circles	No
User-Defined Attributes	Yes	Circular Arc	Yes
Coordinate System Support	Yes	Elliptical Arc	Yes
Spatial Index	Never	Ellipses	No
Schema Required	Yes	Polygon	Yes
Geometry Type Attribute	e00_type	Donut Polygon	Yes
		Point	Yes
		Line	Yes
		Text	Yes

There are essentially four types of geometry defined in E00 files, which will be reproduced as layers during import: Arcs (lines), Points, Polygons, and Text. Prior to the import process, an additional Setting can be made:

- **Tic points layer** - This option enables you to include an additional layer which will hold the registration points for the imported data. The default is to set to Yes.

ESRI ARCINFO GENERATE (*.GEN)

ESRI simple ASCII storage and interchange format. There are three different types of .gen files each with of its own syntax one for points, one for lines, and one for text geometries. This is the format exported by ArcInfo generate command. The gen files are use by ArcInfo to transfer coverages to other mapping systems.

Supported Elements		Supported Geometry	
Typical File Extensions	*.gen	Aggregate	No
Automated Translation	Yes	Circles	No
User-Defined Attributes	No	Circular Arc	No
Coordinate System Support	No	Elliptical Arc	No
Generic Colour Support	No	Ellipses	No
Spatial Index	Never	Polygon	No
Schema Required	Yes	Donut Polygon	No
Geometry Type Attribute	arcgen_geometry	Point	Yes
		Line	Yes
		Text	Yes

ESRI GEODATABASES

A Geodatabase is a native ESRI ArcGIS data format for storing geographic data. It is a collection of geographic datasets of various types used in ArcGIS and managed in either a file folder or a relational database. There are two main types of geodatabases:

- Single-User: Personal Geodatabases (extension .mdb) and File Geodatabases (extension .gdb)
- Multi-User: server based geodatabases, also known as ArcSDE Geodatabases.

Supported Elements		Supported Geometry	
Typical File Extensions	*.mdb (personal), *.gdb (file)	Aggregate	Yes
Automated Translation	Yes	Circles	Yes
User-Defined Attributes	Yes	Circular Arc	Yes
Coordinate System Support	Yes	Elliptical Arc	Yes
Generic Colour Support	No	Ellipses	Yes
3D Support	Yes	Polygon	Yes
Schema Required	Yes	Donut Polygon	Yes
Transaction Support	Yes	Point	Yes
Enhanced Geometry	Yes	Line	Yes
Geometry Type Attribute	geodb_type	Text	Yes
Encoding Support	Yes	Raster	No
		Solid	No
		Surface	No
		Z value	Yes

ESRI SHAPEFILE (*.SHP)

The ESRI Shapefile is a geospatial vector data format for geographic information systems software. It is developed and regulated by ESRI as a mostly open specification for data interoperability among ESRI and other software products. A Shapefile is a digital vector storage format for storing geometric location and associated attribute information. This format lacks the capacity to store topological information

A single logical Shapefile consists of three physical files, each with one of the following file name extensions:

*.shp : Geometric data
*.shx : Index to the geometric data
*.dbf : Attributes for the geometric data

These extensions are added to the base name of the Shapefile , creating separate physical files that must all reside in the same directory. You must select the *.shp file for import. Point, multipoint, polyline, and polygon geometric data can be stored in *.shp files. However, a single *.shp file can contain only one type of geometry. Each entity in a *.shp file has a corresponding entry in the *.shx index file and a corresponding row of attributes in the associated *.dbf file. The order of the entries in each of these files is synchronized. For example, the 3rd geometric entity in the *.shp file is pointed to by the 3rd entry in the *.shx index file and has the attributes held in the 3rd row of the *.dbf.

A single Shapefile may also consist of a number of additional files, with the following file name extensions:
*.sbn / *.sbx : Spatial index files for the geometric data. These two files are only generating by an ESRI product however they are not required by MAPublisher for import and will they be generated when exporting data to the Shapefile format..
*.prj : Spatial coordinate system information.

If a *.prj file exists in your Shapefile directory, holding the coordinate system information of the Shapefile , this will automatically be read by MAPublisher on import. If your Shapefile folder does not contain a .prj file you will be required to specify the coordinate system in order to fully utilize MAPublisher.

Supported Elements	
Typical File Extensions	*.shp (*.shx, *.dbf, *.prj)
Automated Translation	Yes
User-Defined Attributes	Yes
Coordinate System Support	Yes (if have *.prj)
Generic Colour Support	No
3D Support	Yes
Schema Required	Yes
Transaction Support	No
Geometry Type Attribute	SHAPE_GEOMETRY

Supported Geometry	
Aggregate	Yes
Circles	No
Circular Arc	No
Elliptical Arc	No
Ellipses	No
Polygon	Yes
Donut Polygon	Yes
Point	Yes
Line	Yes
Text	No

GEOGRAPHIC MARKUP LANGUAGE - SIMPLE FEATURES (*.GML)

GML was designed as a geographic interface language for the Geo-Web. It is currently in draft as an ISO standard (ISO 19136). The goal of the format is to provide users with a set of abstract base objects that can be built into working real world datasets. It uses as XML base to store geometry and feature information that can easily be transported across the Internet.

The GML simple feature profile was created by the Open Geospatial Consortium as a restricted subset of the GML specification. It provides a reduced geometry and metadata profile that can be shared across many GIS tasks. This simple feature model can be used as a base to generate local application profiles for a specific work area. Since the GML models base abstract classes, these application profiles (schemas) are required for accessing and processing any GML datasets. Generally, GML data has a *.GML extension, and requires any application specific schema files (*.xsd). For more information on GML, and the GML simple features profile, please visit the Open Geospatial Consortium web site: *www.opengeospatial.com*

Supported Elements	
Typical File Extensions	*.gml (*.xml) *.xsd
Automated Translation	Varies
User-Defined Attributes	Yes
Coordinate System Support	Yes
Generic Colour Support	No
3D Support	Yes
Schema Required	Yes (*.xsd)
Transaction Support	No
Geometry Type Attribute	xml_type

Supported Geometry	
Aggregate	Yes
Circles	No
Circular Arc	Yes
Elliptical Arc	No
Ellipses	No
Polygon	Yes
Donut Polygon	Yes
Point	Yes
Line	Yes
Text	No

KEYHOLE MARKUP LANGUAGE (*KML/*KMZ)

KML is an XML-based language for managing the display of three-dimensional geospatial data in the programs Google Earth, Google Maps, Google Mobile and WorldWind. The KML file specifies a set of features for display. Each feature always has a longitude and a latitude and can have other data, such as tilt, heading, and altitude. KML shares some of the same structural grammar as GML. KML files are very often distributed as KMZ files, which are zipped KML files with a .kmz extension. MAPublisher uses KML version 2.2 specifications for import and export.

Supported Elements	
Typical File Extensions	*.kml, *.kmz
Automated Translation	Yes
User-Defined Attributes	Yes
Coordinate System Support	Yes
Generic Colour Support	Yes
Spatial Index	Never
Schema Required	No
3D Support	Yes

Supported Geometry	
Aggregate	Yes
Circles	No
Circular Arc	No
Elliptical Arc	No
Ellipses	No
Polygon	Yes
Donut Polygon	Yes
Point	Yes
Line	Yes
Text	No

Prior to the import process, additional Settings can be made, which will affect how the selected KML file will import. The following parameters can be applied to the import:

- **Allow Random Colour Mode** - This option allows Adobe Illustrator to generate random colour settings for the data.
- **Expand Network Links** - Checking this box will enable the use of network linked KML files.
- **Import KML Properties as Visible** - Check this option to make KML properties visible attributes (hidden by default).

MAPINFO INTERCHANGE (*.MIF/*.MID)

MIF is a published ASCII storage format used by the MapInfo. It is used as a file format for map and database exporting/importing in MapInfo software products. The *MapInfo Reference Manual* describes the MIF format and all constants it uses for colour, style, symbol, and fill patterns. MapInfo Interchange Format Files are often called MIF or MIF/MID files.

A single logical MIF file consists of two physical files, having the following file name extensions:
*.mif : Geometric data
*.mid : Attributes for the geometric data

These extensions are added to the base name of the MIF file, creating separate physical files that must all reside in the same directory. You must select the *.mif file for import.

Each entity in a *.mif file has a row of attributes stored in an associated *.mid file. A single .mif file contains many different types of geometry however, the associated attribute in the *.mid file must have the same number and type of fields for each entity in the *.mif file. The order of the entries in the two files is synchronized. For example, the second geometric entity in the *.mif file has the attributes held in the second row of the *.mid file. The number and type of attributes associated with each entity is specified by the user. There must be at least one attribute field in the *.mid file.

Supported Elements		**Supported Geometry**	
Typical File Extensions	*.mif (*.mid)	Aggregate	Yes
Automated Translation	Yes	Circles	Yes
User-Defined Attributes	Yes	Circular Arc	Yes
Coordinate System Support	Yes	Elliptical Arc	Yes
Generic Colour Support	Yes	Ellipses	Yes
Spatial Index	Never	Polygon	Yes
Schema Required	Yes	Donut Polygon	Yes
Geometry Type Attribute	mif_type	Point	Yes
		Line	Yes
		Text	Yes

Prior to the import process, additional Settings can be made, which will affect how the selected file will import. The following parameters can be applied to the import:

- **Import as Visible Attributes** - Enable this option to view the pen and brush pattern values in the imported attribute table.

The MAPublisher MID/MIF importer supports the storage of point, line, polyline, arc, ellipse, rectangle, rounded rectangle, region (polygon), and text geometric data in .mif files. Each geometric entity present in a *.mif file has display properties such as pen and brush width, pattern, and colour. Supported MID MIF properties are as follows:

MAPublisher supports the import of line weights (0-7), colours (24 bit RGB), strokes (1-71). It also supports fonts (family, style, justification) for text. In order to use line patterns and fill patterns you must have opened or accessed the style library equivalents. Two library files have been created, *MIF_LineStyles.ai* and *MIF_AreaStyles.ai*, which provide support for many of the standard MapInfo pen styles (stroke patterns) and brush styles (fill patterns). These files can be found in the *Helpful Styles & Symbols* folder on the MAPublisher DVD. Please refer to your Adobe Illustrator User Guide for details about how to add these libraries to your Adobe Illustrator Graphic Style panel.

MAPINFO TABLE (*.TAB)

TAB is a proprietary geospatial vector data format for geographic information systems software used by MapInfo mapping products. A minimum of two files are required for the tab format. The .DAT file which stores the attribute data and the .TAB ASCII file which is the link between all other files and holds information about the type of data file. The MapInfo TAB importer is closely patterned after the MapInfo MIF/MID reader and writer. This commonality makes it easy to support both MIF and MapInfo native formats in the same mapping file.

A single logical TAB file consists of a number of physical files, having the following file name extensions:

*.tab : The main file for a MapInfo table, it is associated with the appropriate dat, map, id and ind files.
*.dat : Tabular data for a table in MapInfo native format
*.id : An index to a MapInfo graphical objects (MAP) file.
*.map : Contains geographic information describing map objects
*.ind : An index to a MapInfo tabular (DAT) file

These extensions are added to the base name of the TAB file, creating separate physical files that must all reside in the same directory. You must select the *.tab file for import.

Supported Elements		**Supported Geometry**	
Typical File Extensions	*.tab (*.dat, *.id, *.map, *.ind)	Aggregate	Yes
Automated Translation	Yes	Circles	Yes
User-Defined Attributes	Yes	Circular Arc	Yes
Coordinate System Support	Yes	Elliptical Arc	Yes
Generic Colour Support	Yes	Ellipses	Yes
Spatial Index	Always	Polygon	Yes
Schema Required	Yes	Donut Polygon	Yes
Geometry Type Attribute	mapinfo_type	Point	Yes
		Line	Yes
		Text	Yes

Prior to the import process, additional Settings can be made, which will affect how the selected file will import. The following parameters can be applied to the import:

- **Import as Visible Attributes** - Enable this option to view the pen and brush pattern values in the imported attribute table

The MAPublisher TAB importer supports the storage of point, line, polyline, arc, ellipse, rectangle, rounded rectangle, region (polygon), and text geometric data in .tab files. Each geometric entity present in a *.tab file has display properties such as pen and brush width, pattern, and colour. Supported TAB properties match those described for MID MIF files on the previous page.

Raster TAB files cannot be imported in MAPublisher.

MICROSTATION DESIGN (*.DGN)

DGN are the native files created for Bentley Systems Inc. MicroStation product. These files consist of a header, followed by a series of elements. The header contains global information including the transformation equation from design units to user coordinates, as well as the dimension of the elements in the file. Each element contains standard display information, such as its colour, level, class, and style, as well as a number of attributes specific to its element type. For example, a text element has fields for font, size, and the text string in addition to the standard display attributes.

Supported Elements	
Typical File Extensions	*.dgn
Automated Translation	Yes
User-Defined Attributes	Yes
Coordinate System Support	No
Generic Colour Support	Yes
Spatial Index	Never
Schema Required	Yes
Geometry Type Attribute	igds_type
3D Support	Yes

Supported Geometry	
Aggregate	No
Circles	Yes
Circular Arc	Yes
Elliptical Arc	Yes
Ellipses	Yes
Polygon	Yes
Donut Polygon	Yes
Point	Yes
Line	Yes
Text	Yes

Supported Versions
Windows: V7, V8. Mac OS X: V7,V8

Prior to the import process, additional Settings can be made, which will affect how the selected file will import. The following parameters can be applied to the import. *Note: versions V7 and V8 are supported for import, attached raster files are ignored.*

- **Group Elements** - Choose how you want to group the elements of the file on import. If you group the elements by level, it may result in a large number of output files. *By Level* is the default.
- **Coordinate Units** - Choose *Master* or *UOR* (Unit of Resolution) as the coordinate units. *Master* is the default.
- **White Lines and Fills** - Enabling the *Import as is* option will instruct MAPublisher to import the data true to the original colour settings contained in the file. Check the *Change white lines and fills to black box* to import black lines instead of the files native white lines. Check the *Create black background* option to incorporate a layer containing a black background to mimic the AutoCAD environment.
- **Other** - Check *Drop complex chains* if you want each component of a complex chain to be returned as its own feature, otherwise all elements of the complex chain will be merged into a single linear feature.

S57 FORMAT (*000)

S57format is intended for the exchange of digital hydrographic data between national hydrographic offices and for its distribution to manufacturers, mariners and other data users. It is used for the supply of ENC cells (Electronic Navigational Charts) to ECDIS (Electronic Chart Display and Information System).
The format is public, developed and maintained by the IHO (International Hydrographic Office) CHRIS working committee (Committee on Hydrographic Requirements for Information Systems). The objects spatial geometry can be of Point, Line or Area geometry, while object descriptions are categorized in object classes, organized in specific attributes schemas. For a full format description, please visit *http://www.iho.shom.fr/PUBLICATIONS/IHO_Download.htm#S-*57 (Appendix A in particular). An online object catalog is also available on *www.s-57.com*

An S57 base file has the extension *.000, while the update files have extensions like .001, .002 and so on. It can also be accompanied by other files:
*.000: main file
*.001: update file 1
*.002: update file 2
*.00n: update file n
files.TXT and files.JPG: ancillary text and picture files indicated in attribute definition

Update files contains only the changed (new/deleted/modified) objects and are only used as a complement of a .000 file. Only the *.000 file is required for the import into MAPublisher. The update files will be applied at conversion, when present. However, text and image files linked to attributes will be ignored.

Supported Elements		**Supported Geometry**	
Typical File Extensions	*.000 (*.001 *.002...)	Aggregate	No
Automated Translation	Yes	Circles	No
User-Defined Attributes	No	Circular Arc	No
Coordinate System Support	Yes	Elliptical Arc	No
Generic Colour Support	No	Ellipses	No
3D Support	Yes	Polygon	Yes
Schema Required	N/A	Donut Polygon	Yes
Transaction Support	No	Point	Yes
Geometry Type Attribute	s57_type	Line	Yes
		Text	No

NOTE: Most ENC producers (private and public) publish their .000 files in encrypted formats. Only non-encrypted files can be imported in MAPublisher (from NOAA or USACE for example).

TIGER/LINE (*.RT1) (*.BW1)

Topologically Integrated Geographic Encoding and Referencing (TIGER). TIGER is the United States Census Bureau format for its digital database of geographic features. TIGER includes both land attributes such as roads, buildings, rivers, and lakes, as well as areas such as counties, ZIP codes, census tracts, and census blocks. Some of the geographic areas represented in TIGER are political areas, including counties, congressional districts, school districts, and ZIP codes. Others are statistical areas, including Metropolitan Statistical Areas (MSA), census tracts, census block groups, and census block. The database contains information about these features such as their location in latitude and longitude, the name, the type of feature, address ranges for most streets, the geographic relationship to other features, and other related information. More information on the TIGER/Line file format and data product can be found on the U.S. Census web page at: *http://www.census.gov/geo/www/tiger/*
This web site contains a detailed description of the current TIGER/Line format, with an explanation of field meaning for each feature type. A detailed description of the TIGER/Line 1998 format, with an explanation of field meaning for each feature type, is available at: *http://www.census.gov/geo/www/tiger/tiger98.pdf*

Supported Elements		**Supported Geometry**	
Typical File Extensions	*.rt1, *.bw1	Aggregate	No
Automated Translation	Yes	Circles	No
User-Defined Attributes	Yes	Circular Arc	No
Coordinate System Support	Yes	Elliptical Arc	No
Generic Colour Support	Yes	Ellipses	No
Spatial Index	Never	Polygon	Yes
Schema Required	Yes	Donut Polygon	Yes
Transaction Support	No	Point	Yes
Geometry Type Attribute	tiger_type	Line	Yes
		Text	No

Supported Versions: 1992, 1995, 1997, 1998, 1999, 2000, 2002

USGS SDTS (*CATD.DDF)

SDTS is the USGS robust way of transferring Earth-referenced spatial data between dissimilar computer systems with the potential for no information loss. It is a transfer standard that embraces the philosophy of self-contained transfers, i.e. spatial data, attribute, georeferencing, data quality report, data dictionary, and other supporting metadata all included in the transfer. More info can be found at http://mcmcweb.er.usgs.gov/sdts/. Files in the SDTS format will have the extension *.ddf. More information on this format can be found at: *http://mcmcweb.er.usgs.gov/sdts/*

A group of *.ddf files is normally identified by the catalog file, or *CATD.DDF file, which relates the files of a single SDTS transfer, and binds together all the files with a common prefix. Always select the SDTS file which ends in CATD, i.e. HP01CATD.DDF.

Supported Elements		**Supported Geometry**	
Typical File Extensions	*.ddf	Aggregate	No
Automated Translation	Yes	Circles	No
User-Defined Attributes	No	Circular Arc	No
Coordinate System Support	Yes	Elliptical Arc	No
Generic Colour Support	No	Ellipses	No
Spatial Index	Yes	Polygon	Yes
Schema Required	N/A	Donut Polygon	Yes
Transaction Support	No	Point	Yes
Geometry Type Attribute	sdts_type	Line	Yes
		Text	No

USGS DIGITAL LINE GRAPH (*.DLG) (*.OPT)

DLG is a fixed field record that may or may not have end of line markers. The DLG file structure was designed to accommodate all categories of spatial data represented on a conventional line map. DLG is a published ASCII format developed by the United States Geological Survey (USGS) Federal Agency and is intended to assist in data exchange with the National Digital Cartographic Data Base (NDCDB).

The DLG reader supports all three distinct types of DLG data:

- Large-scale DLG data (1:24,000-scale)
- Intermediate-scale DLG (1:100,000-scale)
- Small-scale DLG data (1:2,000,000-scale)

The three scales of DLG data are physically formatted into files in one of these ways: standard, optional, and graphics formats. MAPublisher supports both the standard and the optional DLG distribution formats; however the graphics format is not supported. Most DLG data is distributed in the optional format. The DLG file structure was designed to accommodate all categories of spatial data represented on a conventional line map. Node, line, and area data types are present within the DLG format, along with linkages and attribute codes. Linkages are references to other features within the same DLG data set, used in a variety of contexts. DLG files do not explicitly store attribute values but use a feature coding approach in which unique feature codes are assigned to the different types of features stored within the data set. MAPublisher will look for the extension .dlg or .opt for the input DLG files.

Supported Elements	
Typical File Extensions	*.dlg, *.opt
Automated Translation	Yes
User-Defined Attributes	No
Coordinate System Support	Yes
Generic Colour Support	No
Spatial Index	Never
Schema Required	No
Geometry Type Attribute	dlg_type

Supported Geometry	
Aggregate	No
Circles	No
Circular Arc	No
Elliptical Arc	No
Ellipses	No
Polygon	Yes
Donut Polygon	Yes
Point	Yes
Line	Yes
Text	No

MAPublisher Unicode Support

This section contains information regarding Unicode character encoding in MAPublisher. MAPublisher supports Unicode character encoding in MAP Views, MAP Attributes, MAP Stylesheets, and MAP Selection Filters. MAPublisher can also reference Adobe Illustrator layers, graphic styles and character styles using Unicode encoding.

To use Unicode character encoding you require a Unicode compliant font. Mac OS X users will have Unicode compliant fonts installed with OS X. Windows users will require Unicode compliant fonts to render Unicode. For more information on Unicode visit *http://www.unicode.org*.

The following tables display Unicode—UTF8 support in MAPublisher, for GIS data formats that are Unicode—UTF8 compliant. Unicode support for importing and exporting data is different, so for each platform two tables have been created. For each data format there are four areas where Unicode character encoding can be used:

1. *File Directory* - when Unicode encoding is used in the path to where the file is located.
2. *Filename* - when Unicode encoding is used in the filename.
3. *Attribute column name* - when Unicode encoding is used in a column name for attributes.
4. *Attribute value* - when an attribute value contains Unicode encoding.

Windows Unicode Support (*Importing*)

Data Format	File Directory	Filename	Attribute Column Name	Attribute Value
Delimited Text	✓	✓	✓	✓
CAD-DWG	✓	✓	FORMAT HAS NO ATTRIBUTES	
CAD-DXF	✓	✓	FORMAT HAS NO ATTRIBUTES	
ESRI ArcInfo Generate	✓	✓	FORMAT HAS NO ATTRIBUTES	
ESRI ArcSDE Geodatabase	✓	✓	✓	✓
ESRI File Geodatabase	✓	✓	✓	✓
ESRI Inter-change File	✓	✓	✓	✓
ESRI Personal Geodatabase	✓	✓	✓	✓
ESRI Shapefile	✓	✓	✓	✓
GML (Simple Features)	✓	✓	✓	✓
MapInfo MIF/MID	✓	✓	✗	✓
MapInfo TAB	✓	✓	✗	✓
MicroStation Design	✗	✗	FORMAT HAS NO ATTRIBUTES	
KML/KMZ	✓	✓	✓	✓
S57	✓	✓	FORMAT USES SIMPLE ASCII TEXT FOR ATTRIBUTE NAMES AND MOST VALUES	

Windows Unicode Support (*Exporting*)

Data Format	File Directory	Filename	Attribute Column Name	Attribute Value
Delimited Text	✓	✓	✓	✓
CAD-DWG	✓	✓	FORMAT HAS NO ATTRIBUTES	
CAD-DXF	✓	✓	FORMAT HAS NO ATTRIBUTES	
ESRI Inter-change File	✓	✓	✓	✓
ESRI ArcInfo Generate	✓	✓	FORMAT HAS NO ATTRIBUTES	
ESRI Shapefile	✓	✓	✓	✓
GML (Simple Features)	✓	✓	✓	✓
MapInfo MIF/MID	✓	✓	✗	✓
MapInfo TAB	✓	✓	✗	✓
MicroStation Design	✗	✗	FORMAT HAS NO ATTRIBUTES	
KML	✓	✓	✓	✓

Mac OS X Unicode Support (*Importing*)				
Data Format	**File Directory**	**File-name**	**Attribute Column Name**	**Attribute Value**
Delimited Text	✓	✓	✓	✓
CAD-DWG	✓	✓	FORMAT HAS NO ATTRIBUTES	
CAD-DXF	✓	✓	FORMAT HAS NO ATTRIBUTES	
ESRI ArcInfo Generate	✓	✓	FORMAT HAS NO ATTRIBUTES	
ESRI ArcSDE Geodatabase	NOT SUPPORTED ON MAC OS X			
ESRI File Geodatabase	NOT SUPPORTED ON MAC OS X			
ESRI Inter-change File	✓	✓	✓	✓
ESRI Personal Geodatabase	NOT SUPPORTED ON MAC OS X			
ESRI Shapefile	✓	✓	✓	✓
GML (Simple Features)	✓	✓	✓	✓
MapInfo MID/MIF	✓	✓	✗	✓
MapInfo TAB	✓	✓	✗	✓
MicroStation Design	✗	✗	FORMAT HAS NO ATTRIBUTES	
KML/KMZ	✓	✓	✓	✓
S57	✓	✓	FORMAT USES SIMPLE ASCII TEXT FOR ATTRIBUTE NAMES AND MOST VALUES	

Mac OS X Unicode Support (*Exporting*)				
Data Format	**File Directory**	**File-name**	**Attribute Column Name**	**Attribute Value**
Delimited Text	✓	✓	✓	✓
CAD-DWG	✓	✓	FORMAT HAS NO ATTRIBUTES	
CAD-DXF	✓	✓	FORMAT HAS NO ATTRIBUTES	
ESRI Inter-change File	✓	✓	✓	✓
ESRI ArcInfo Generate	✓	✓	FORMAT HAS NO ATTRIBUTES	
ESRI Shapefile	✓	✓	✓	✓
GML (Simple Features)	✓	✓	✓	✓
MapInfo MID/MIF	✓	✓	✗	✓
MapInfo TAB	✓	✓	✗	✓
MicroStation Design	✗	✗	FORMAT HAS NO ATTRIBUTES	
KML	✓	✓	✓	✓

Windows Unicode Support (*Working with Images*)				
Data Format	**File Directory** *(Register Image)*	**Filename** *(Register Image)*	**File Directory** *(Export Image)*	**Filename** *(Export Image)*
World File (.tfw)	✓* / ✓♦	✓* / ✓♦	✓* / ✗♦	✓* / ✗♦
Image Report (.irp)	✓* / ✓♦	✓* / ✓♦	✓* / ✗♦	✓* / ✗♦
MapInfo TAB (.tab)	✓* / ✓♦	✓* / ✓♦	✓* / ✗♦	✓* / ✗♦
ListGeo (.lgo)	✓* / ✓♦	✓* / ✓♦	✓* / ✗♦	✓* / ✗♦
GeoTIFF (.tif)	✓* / ✓♦	✓* / ✓♦	✓* / ✗♦	✓* / ✗♦

**When using system encoding on Windows XP*
(for example, using the default Japanese encoding on Japanese Windows XP)

♦When using non-system encoding on Windows XP
(for example, using Japanese encoding on English Windows XP)

Mac OS X Unicode Support (*Working with Images*)				
Data Format	**File Directory** *(Register Image)*	**Filename** *(Register Image)*	**File Directory** *(Export Image)*	**Filename** *(Export Image)*
World File (.tfw)	✓⊙	✓⊙	✓⊙	✓⊙
Image Report (.irp)	✓⊙	✓⊙	✓⊙	✓⊙
MapInfo TAB (.tab)	✓⊙	✓⊙	✓⊙	✓⊙
ListGeo (.lgo)	✓⊙	✓⊙	✓⊙	✓⊙
GeoTIFF (.tif)	✓⊙	✓⊙	✓⊙	✓⊙

⊙*Limited support*
(not all combinations of Unicode characters are supported)

Technical Support Options / FAQ

MAPublisher support is provided free of charge to customers with a current MAPublisher Maintenance Program (MMP) subscription. All new license and upgrade purchases include a one year MMP subscription. Customers without a current MMP subscription may obtain support from a qualified MAPublisher technical specialist at the rate of US$49 per incident.

TECHNICAL SUPPORT

Please consult the FAQs, the additional how-to's on the following pages as well as the following online options before contacting Avenza technical support as your situation may be easily addressed by one of the answers contained therein.

MAPublisher User Forum and FAQ

The MAPublisher User Forum is located at *http://www.avenza.com/forum*. Answers to common technical questions may be found in the **Common Support Issues and FAQs** category. All users with a MAPublisher license (evaluation or permanent) can post and read topics under the **General Questions for Evaluation and Licensed Users** category. Additionally, users with maintenance have access to the **Maintenance Users** category. There, users can find additional information relative to software updates, etc.

Contacting Avenza Technical Support

Avenza offers a number of methods for direct communication with our qualified and experienced technical experts. Please have your MAPublisher registration details handy to get prompt attention and include it in any email correspondence. Support issues are handled on a first come, first-served basis. Avenza does not guarantee a response within any specified time. MAPublisher Maintenance Program subscribers receive free and unlimited support. All others are eligible for support at the rate of US$49 per incident.

- **email:** *support@avenza.com*
- **online form:** *http://www.avenza.com/support/form*
- **phone:** +1.416.487.6442

MAPUBLISHER MAINTENANCE PROGRAM (MMP)

The MAPublisher Maintenance Program is a subscription-based service plan that guarantees its members:

- unlimited priority technical support - guaranteed same business day (9-4 EST) or next business day response
- unlimited telephone support (+1-416-487-6442)
- free MAPublisher updates
- free MAPublisher version upgrades
- additional discounts and offers available to MMP members only

Your MAPublisher purchase includes a one-year membership in the MAPublisher Maintenance Program so you are well on the way to worry-free use of MAPublisher for the first year and will be able to enjoy all the benefits of the MMP immediately. All MAPublisher Maintenance Program subscriptions begin on the date of purchase and run for one calendar year.

Your email address has been automatically entered in the **mp-maintenance-l** online email list for MMP subscribers so that you are assured of receiving all the latest MMP news and access to all the update and upgrade files. If you purchased your MAPublisher license from a reseller or are the end user but not the person who purchased the software, please contact us at *sales@avenza.com* to ensure that we receive your email address and add you to the MMP notification group.

Renewal

Approximately 6-8 weeks prior to the expiration of your annual MMP subscription you will be notified regarding renewal options. You will be contacted a minimum of five times prior to expiration in order to ensure that you have ample opportunity to renew or not at your discretion. You will have the option of renewing your MMP for an additional year at the then prevailing price or canceling without penalty. Of course, if you cancel or let your MMP lapse you will no longer be entitled to the benefits of the program as outlined above and will thus have to purchase future upgrades at the upgrade price.

There is a grace period of approximately 30 days from the time of the MMP expiry during which you may still renew without penalty. All post-expiration renewals will be backdated to the actual expiry date.

Lapsed Subscriptions

Failure to renew your MMP within 30 days from the expiry date will result in a lapsed MMP subscription. Lapsed subscriptions may not be renewed and the licensee will be required to purchase support and upgrades accordingly.

Please direct all MMP questions and purchase inquiries to *info@avenza.com*.

WISHLIST

As either a new or experienced MAPublisher user we value your opinions on how we can improve our product. Please let us know what functions you would like to see incorporated into future upgrades of MAPublisher.

- email us at *support@avenza.com*

Memory Considerations

RAM RECOMMENDATIONS

Occasional User: 2 GB of RAM is recommended.
A graphics or GIS user who uses MAPublisher with medium sized data sets with up to 20 layers, minimal text labels, and some low-resolution or small coverage raster images.

Power User: 4 GB or more of RAM is recommended.
A professional cartographer who uses MAPublisher daily and works with large urban data sets (including large transportation layers) with 20 or more layers, raster based air photographs, large numbers of text labels, complex fill patterns, etc.

RAM USAGE HINTS

Users often ask us why is so much RAM needed to operate MAPublisher. First of all, Adobe Illustrator requires a significant amount of RAM itself in order to run smoothly. Secondly, map data sets are often large which increases the need for RAM even further. Map data sets contain both vector and attribute data which must be stored in memory. Since we are adding a database to Adobe Illustrator this increases the file size, which increases the RAM requirements. MAPublisher builds a mini-GIS application inside Adobe Illustrator so that it can geo-code information and attach data to objects. This also has some overhead.

GIS users also often ask why so much more memory is needed with MAPublisher than is with GIS software. The graphics environment software of Adobe Illustrator loads the entire file into memory rather than just reading it from disk, thus more RAM memory is required.

When you are importing a large number of files into Adobe Illustrator using MAPublisher, you'll notice that the amount of available memory will decrease rapidly and your computer loses speed. This is due to the memory management. MAPublisher reserves a fairly large amount of memory for each import-action, which is not properly returned when the import is done or even when it is cancelled. The solution is simple: save your file, close it and open it again. It's not even necessary to close Adobe Illustrator itself. By closing the file, the reserved memory is properly returned.

RAM SAVING TIPS

Since a percentage of the memory is taken for attribute storage, drop any redundant or otherwise unnecessary attribute fields from the map attributes table.

Many sources of street data include paths/vectors that are segmented based on street addressing information. You can use the MAPublisher Join Lines filter to join these into single linear features based on a selected attribute field. Reducing the number of objects (and data records) in the map file will free up memory.

Many GIS data files are large and when a series of such files is imported, you may find that the import filter starts to run more slowly. This is because scratch and memory allocations are being used up. The best solution is to periodically save your work, quit out of Adobe Illustrator and then restart. This will free up the available scratch memory.

The minimum number of undoes can be reduced (since they ALL reside in memory).

Use polylined or pre-joined linear feature data sets where available.

In your GIS application strip out the attributes you won't be using for queries or labelling before importing the data into Adobe Illustrator.

You can set a primary and secondary scratch disk under the Adobe Illustrator preferences option in order to draw additional storage from a partitioned or multi-drive environment.

Turn off the layer preview icon that appears to the left of each layer name in the Adobe Illustrator layers panel. This can be done by clicking the options menu in the layers panel and then selecting small panel rows in the panel option dialog box.

Online Links

For Geographic Information System (GIS) users, the appeal of graphics is strong and the increasing ability to discover and share GIS across the Internet is fascinating. The Internet offers a large number of free-access GIS-related web sites from which you can access map and information data sets.

For the general public, there's general information about countries, states, and places; simple maps of areas (e.g., GIF, PS format); lists and maps of Internet resources in an area. For cartographers and geography researchers, there are cartographic/ GIS base map files (e.g., USGS Demos, DLGs, TIGER); thematic data of a geographic nature (e.g., census data); and complete GIS data sets (e.g., ESRI Interchange Files).

To find some information on the source listed it, use any internet search browser such as Google to get access to the websites.

FREE MAP DATA

Many sites on the Internet that offer free download of GIS data. Data is available from these and other Internet sites in a wide variety of formats. Please consult the sections in this manual on file formats (chapter 2 and MAPublisher Import Format section) to ensure that you obtain usable data. For example:

- **AUSLING data**: Australian mapping agency.
- **CAST data**: Center of Advanced Spatial Technologies, University of Arkansas.
- **Directions Magazine Data Center** : internet publication.
- **EROS Data Center**: access to USGS digital datasets.
- **Geocommunity and GIS Data Depot**: very good source of free GIS data.
- **Geoconnections/Geoconnexions**: Canada Ministry of Natural Resources site.
- **Geography Network**: world-wide geographic contents.
- **Geogratis**: maps offered by Natural Resources Canada.
- **GISuser**: provides latest news, resources and tools for the GIS industry.
- **National Atlas of the United States**: excellent data source for the United States.
- **NOAA ENC Download**: free download of electronic nautical charts in S-57 format (USA).
- **Doug Price's list of Free Digital GIS Data:** Tennesse Geographic Information Council.
- **Robert E. Kennedy Library @ California Polytechnic State University:** US based map inventory.
- **United State Geological Survey**: various data formats available (DLG, GeoTIFF, etc.) from the USGS website.
- **United States Fish and Wildlife Service**: variety of map data in USGS DLG format.
- **USACE IENC download:** US Army Corps of Engineers, S-57 and ESRI Shapefile of US waterways.

OTHER VALUABLE MAPPING LINKS

In some additional places on the Internet where you can find news, reviews, tips and general GIS, cartographic and geographic information. For example

- **GIS Cafe**
- **GIS Dictionary**
- **GIS Lounge**
- **GIS@Development**
- **University of Edinburgh**
- **University of Florida - Geoplan Center**
- **US Census Bureau**

General Tips and Hints

CREATING ASCII DELIMITED POINT FILES

There may be times when you wish to add a point or a series of points to your map but you do not have a GIS or ASCII file containing these points ready for import. Provided you have the real-world coordinates for the locations you wish to plot *, you can manually create a delimited ASCII file using a text editor (ex. Notepad, BBEdit, SimpleText, Ultra Edit etc.) or a spreadsheet program (ex. Excel, Lotus 123 etc.). This file can then be imported using either Simple or Advanced Import using the ASCII Point Data import format.

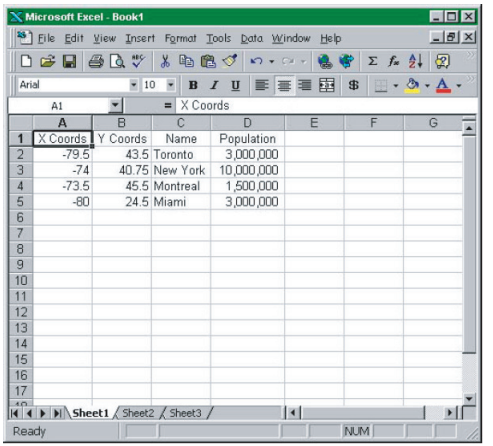
One column in the file must contain the X coordinates of the points and another must contain the Y coordinates. You can add as many additional columns as you wish containing additional information to be imported as attribute data.

If you are using a text editor, you can simply type in your data in the following format:

"Column 1 Header","Column 2 Header","Column 3 Header"...etc
"Column 1 Value 1","Column 2 Value 1","Column 3 Value 1"...etc
"Column 1 Value 2","Column 2 Value 2","Column 3 Value 2"...etc

Note that negative values for the X and Y coordinates denote west longitudes and south latitudes, respectively. Also make sure to enter a carriage return using the *enter* key on your keyboard after the last line of data otherwise the last line may be ignored by the MAPublisher Point Importer.

If you are using a spreadsheet application you can enter your point information as a table and save the file in a text format, preferably .csv or .txt, choosing either comma or tab delimiting. The spreadsheet application will format the text automatically. The screenshot below illustrates an example of such a table in Microsoft Excel prior to exporting as a .csv or .txt for import into Adobe Illustrator using MAPublisher.



** The MAP Location Tool can be used to generate the X and Y coordinate values suitable for building ASCII Point Files. See chapter 4 for more information.*

JOINING SDTS TABLES

The following information should be used in conjunction with the MAPublisher Join a Table function.

When working with United States Geological Survey SDTS files it is necessary to join tables frequently in order to obtain the map attribute table you require to make the map you want. This is due to the fact that SDTS data is constructed such that the primary vector data is held separately from the various attribute tables that one might want to use for a particular mapping purpose. The attribute table that comes as part of the vector file usually contains a unique identifier (RCID) for each map element that is used to join it with the other data tables. For example, a particular vector file containing the geography of rivers would contain a data column called RCID. Various data tables containing information such as vegetation, fish counts or flow rates might be available each also with an RCID column. The desired tables are then joined to the initial map attribute table by RCID value using the techniques described in the previous pages.

To find the SDTS tables to join with the vector map file look for the files which have names that start with the same character string as the name of the vector file. MAPublisher imports SDTS files that have the characters "CATD" at the end of the file name. A typical table to import and join with this file might be called HY01CATD.ddf.

Use the MAPublisher table importer with SDTS file type chosen to import these files. When you join layer and table, you do the join based on the column from the layer matched to the RCID column of the table. Note that the CATD catalog file found amongst the SDTS files explains what each table is.

ROTATING OBJECTS INDIVIDUALLY IN ADOBE ILLUSTRATOR

On some occasions you may wish to rotate selected objects about their own centres rather than as a group about a common origin. This can be accomplished using the native Adobe Illustrator **Transform Each** function. To use this function, first select the objects you wish to rotate. Then go to *Object* > *Transform* > *Transform Each*. In the *Rotate* box enter a desired rotation value and click OK. Each of the selected objects will be rotated individually about their own centres.

You may also use the #Rotation property column to individually rotate point symbols or text items based on a specified value. See chapter 5 for guidelines on how to use this function.

GEOREFERENCING AN ADOBE ILLUSTRATOR FILE

If you are using an existing Adobe Illustrator file that was created without the use of MAPublisher and as such does not contain any geographic parameters or attribute data, the following steps will enable you to georeference your Adobe Illustrator file and ultimately create an attribute-rich and accurate scale and world grid structure for your map. Please note that the steps that follow refer to functions that are outlined in more detail in the body of this user guide. Please familiarize yourself with the main MAPublisher functions and in particular those under the MAP Views section (see chapter 4) before proceeding.

Before beginning to georeference an Adobe Illustrator file you must be in possession of the following information:

1. The real-world scale of your data
2. Details of the coordinate system the data is in (i.e. Projection, Datum etc)
3. The X-Y coordinates of one tie-in point in the coordinate system of your data

When you have this information please use the following guidelines in order to georeferencing data with MAPublisher in Adobe Illustrator.

1. Go to *View* > *Show Rulers*. Set the 0,0 point to the lower left hand corner of the page by double-clicking the cross

hairs in the upper right corner.
2. If you have a completed Adobe Illustrator vector file go to step 3. Otherwise, place and digitize your raster image. Identify a registration or tie-in point in your document. This should be a specific location in your document for which a real-world coordinate location is known or can be easily determined. Record the location of this point in real world coordinates on a piece of paper.
3. Locate the same tie-in point on the Adobe Illustrator document page and determine its X,Y coordinates in page units. Record this number as well using *Window > Info*.
4. You should now have the location of your tie-in point in both map and page units (e.g. –79.5, 43.5 in Lat/Long is located at 4cm, 2cm in the document).
5. Open the *MAP Views* panel, navigate to the *Options* section and select *New MAP View*.
6. Enter a name for the MAP View. Set the *Scale* to the proper scale of the map (i.e. a set distance in document units divided by a set distance in ground units).
7. Click the *Specify* button. Choose a projection which matches that of your vector data and click OK.
8. Click *OK* in the MAP View Editor to apply the information to the new MAP View.
9. In the *MAP Views* panel, navigate to the *Options* pullout, and then click *Specify Anchors*.
10. Set the *Map Anchors* to the value of the tie-in location in map units using the values determined in step 3 (e.g. –79.5, 43.5).
11. Set the *Page Anchors* to the value of the tie-in location in Page Units using the values determined in step 4 (e.g. 4, 2). Then click OK.
12. If you have not previously done so, ensure that each layer in your Adobe Illustrator file contains only one feature type (*Point, Area, Line*, *Text, Legend*).
13. In the *MAP Views* panel drag each of the layers which contain your data in to your new MAP View, ensuring that you set the appropriate Feature Type in the *Define Layer* dialog box.
14. Repeat steps 1-13 for any other coordinate systems which exist in your document (such as inset maps for example).
15. Your document is now a georeferenced MAPublisher file wherein each feature is also georeferenced and capable of accepting attributes using the MAP Attributes function (see chapter 5). You can also use the MAPublisher *Export* function to create a GIS file from this newly georeferenced Adobe Illustrator map.

TIPS ON EXPORTING TO OTHER GIS SOFTWARE WITH MAPUBLISHER

These strategies do not focus on how to do the procedures, as these are discussed in the Export section of the MAP Views chapter, but more on what you need to know and understand for successful export results.

First and most importantly you need to understand that the MAPublisher export was designed to export MP imported or created data one layer and one feature at a time. Why is it important to know this? MAPublisher only recognizes objects that have been imported by or created with its filters. If a layer was not imported with MAPublisher or is not hosted by a designated MAP View, then MAPublisher will not allow you to export the layer.

If you have an entire layer that was not created by MAPublisher then:
1. Ensure that your layer contains only a single feature type (*Point, Area, Line* or *Text*).
2. In the *MAP Views* panel, check that you have a designated MAP View with a matching coordinate system. If you do not, create a new MAP Views.
3. Select the layer in the MAP Views panel.
4. Drag the layer to the MAP View containing the matching coordinate system to georeference the layer.

There are also a couple of additional considerations to be aware of when exporting:

Since the current exported vector formats are GIS formats that do not support the concept of Bezier curves you need to compensate for this. If you have Bezier curves in your Adobe Illustrator file they will not be recognized in the GIS software. In order for these features may be represented correctly you will need to add points to these lines in Adobe Illustrator first. Simply identify and select any objects that use Bezier curves and then select *Object > Path > Add Anchor Points*. Repeat this command until the line has a sufficient number of anchor points that the shape of your curves will not be lost on export.

Adobe Illustrator stores the origin of text that has been applied along paths differently from other text objects. We have found the following steps to be the most successful way to get such Text exported to GIS files:

1. Create a new Adobe Illustrator layer
2. Select any text that has been created along paths.
3. Drag this text to the new Adobe Illustrator layer
4. Select *Type > Create Outlines*. The text will be converted to vector objects.
5. In the *MAP Views* panel, drag this layer back into your MAP View, specifying Area as the feature type

You can now export your Text as Area objects. Since the text is no longer text, you can no longer modify the fonts. We recommend that you make a copy of the original text objects before you do this process. These hints on how to transfer Adobe Illustrator files are necessary because the graphics environment handles text and curves differently and they need some modification in order for the GIS software to represent these accurately.

DOUGLAS-PEUCKER LINE SIMPLIFICATION

The Douglas-Peucker algorithm was primarily designed to reduce the number of points required to represent a vector line. A common problem in digital cartography and geographic information systems can occur when lines are generated automatically from a mathematical function, which records points at a fixed interval regardless if they are all lying along a straight line. A reduction of the number of points makes for a cleaner and more readable cartographic line. As well in cartographic work within Adobe Illustrator the removal of points along a path can significantly improve the speed of file redraws and reduce the overall file size.

The Douglas-Peucker Algorithm was created in Fortran 66 by David H. Douglas and Thomas K. Peucker at the University of Ottawa in 1970-71. It was extensively tested in 1972 and was publicly communicated in the following article: *Algorithms for the Reduction of the Number of Points Required to Represent a Digitized Line or Its Caricature*, Canadian Cartographer, Vol. 10, No. 2, December 1973.

BEZIER CURVES AND OTHER MAPUBLISHER OPERATIONS

Bezier curves are defined using four control points. Two of these are the end points of the curve, while the other two effectively define the gradient at the end points. These two points control the shape of the curve. The curve is actually a blend of the control points. This is a recurring theme of approximation curves; defining a curve as a blend of the values of several control points.

Most GIS formats do not usually support Bezier curves used in graphics packages such as Adobe Illustrator. As such you will typically find that curved sections of GIS data will be composed of a series of small line segments rather than an actual curve. This is also how such features will first appear in Adobe Illustrator when imported with MAPublisher. The Adobe Illustrator *Object > Path > Simplify* filter can be used to convert this type of feature into a Bezier curve (see chapter 8).

If Bezier curves are exported from Adobe Illustrator using any of the MAPublisher Export filters they will be

converted to link and node topology (i.e. the end points of the curve will simply be joined as straight lines). It is therefore necessary to create additional points to curves to retain their true shape. This can be done globally by using the Adobe Illustrator **Add Anchor Points** function via *Object* > *Path* > *Add Anchor Points*.

This version of MAPublisher supports Bezier curve features during the following operations:

- Scale and Projection transformations via the MAP View Editor
- Area and length calculations

CREATING SYMBOLS FOR USE IN POINT STYLESHEETS

A MAPublisher Symbol Library and a National Parks Symbol Library are supplied in the *Helpful Styles & Symbols* folder on the MAPublisher DVD. You may also find that a search on the internet may be useful for finding additional libraries. If you are required to create new symbols, the steps below will help you to quickly create symbols manually in Adobe Illustrator.

6. Use Adobe Illustrator **Tools** for the manual creation of artwork that will comprise the new symbol. If you wish to use a character that are contained in a font library, select the text character instance and click the menu *Type* > *Create Outlines* to convert the text to vector art.
7. Open the Adobe Illustrator **Symbols** panel *(Window* > *Symbols*).
8. Select the artwork that will comprise the new symbol and drag it into the Adobe Illustrator **Symbols** panel double-click the symbol in this panel to assign a name.
9. When **MAP Stylesheet Editor** is accessed for Point Stylesheets, this symbol will be available in the **Style** column.

CREATING A STYLESHEET TEMPLATE

You can create template files with legends to automate the production of a series of similar maps.

1. The procedure when using MAP Stylesheets is as follows:
2. Create a prototype map using the MAPublisher **Stylesheet** function to create the desired "look".
3. Make a copy of your prototype map file. Delete all the layers from the file so that only the designated stylesheets exist
4. Save it to a new template file.
5. Use this template file as a base for future maps as follows:
   a) Make a copy of the template file.
   b) Import all map layers into the template file and do any needed processing.
   c) In the MAP Stylesheets panel, drag your MAP Layers into the desired MAP Stylesheets.
   d) Your new layers will be symbolized by the previously defined Stylesheet.

CREATING A MULTI-CONDITIONAL IF EXPRESSION

In Edit Expression it is possible to assign symbology to map objects by assigning an expression to the #Style column. In the following example this is achieved by creating a multi-conditional IF statement.

In the following example, a point layer represents cities. Each point has the value "Y", "N" or "C" in the CAPITAL attribute column, describing whether the city is a state capital (Y), is not a state capital (N) or is a country capital (C). There are three point symbols to assign to the type of point. In this example the following expressions can be

assigned to the #Style column of the point layer (both expressions have the same result):
Expression 1:
IF(CAPITAL = "Y", "MAP Symbol 01", IF(CAPITAL = "C", "MAP Symbol 02", "MAP Symbol 03"))

Expression 2:
IF_CASE("MAP Symbol 01", CAPITAL="C", "MAP Symbol 02", CAPITAL="N", "MAP Symbol 03")

Therefore: If the capital is "Y", assign the symbol "MAP Symbol 01". If the capital is "C" assign the symbol "MAP Symbol 02". All other symbols assign "MAP Symbol 03".

NOTES FOR EXPORTING IMAGES

If the document colour mode is CMYK, exporting an embedded image may result in increased file size compared to RGB mode.

If the image is LINKED consider the following:

1. The image will be exported in the original colour mode of the image irrespective of the current colour mode of the document (i.e. a linked grayscale image in a CMYK document will be exported as a grayscale image, whereas a linked RGB image in an CMYK document will be exported as a RGB image).
2. A linked image with Alpha channels may be exported in a different colour model. For example a grayscale with two alphas will export as an RGB or an RGB with an alpha channel will export as CMYK.
3. Linked images in CMYK mode (regardless of the color mode of the document) will export with an incorrect result and should therefore be avoided (see chapter 12).

If the image is EMBEDDED consider the following:

1. The image will be exported in the colour mode of document (i.e. an embedded grayscale image in a CMYK document will be exported as a CMYK image, whereas an embedded CMYK image in an RGB document will be exported as an RGB image).
2. Embedded grayscales do NOT pick up the document colour model (i.e. an embedded grayscale image will be exported as grayscale).
3. The export of embedded Bitmap images is not supported.

KEYBOARD SHORTCUTS

This version of MAPublisher supports the use of keyboard shortcuts in order to increase the efficiency of the user and to make it easier to access commonly used dialog boxes and menus. By default the Simple and Advanced Import dialog boxes can be accessed by pressing Shift+Ctrl+I and Alt+Shift+Ctrl+A, respectively. All other MAPublisher tools can have keyboard shortcuts manually set by accessing the Adobe Illustrator Keyboard Shortcut dialog box which is located under *Edit > Keyboard Shortcuts*.

Appendix 2: Coordinate Systems

Overview

In the MAPublisher application, the coordinate system option must be entered at two levels: coordinate system of the source data (when importing GIS data) and coordinate system of the final map.

SOURCE DATA COORDINATE SYSTEM

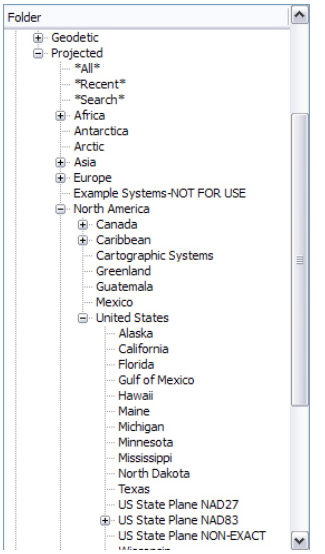
The Source coordinate system is usually detected when the coordinate system information is available with the GIS data being imported and when supported in the native GIS format (such as Shapefile , e00). However, in some cases, this information is not imported because it is not supported in the original GIS format (e.g. DWG, DXF...) or when using a non-referenced Adobe Illustrator files. In that case, the coordinate system must be specified by the user. It generally can be found from an attached metadata document, by contacting the data provider or in textual information on the original data itself (e.g. title of a scanned map).

In all cases, the **source coordinate system must be known with certainty**. Then only can the proper parameter be specified in the MAPublisher interface. A wrongly specified source coordinate system would make the map data unusable for transformations and merging with other datasets.

FINAL MAP COORDINATE SYSTEM

Most of cartographic projects are restricted in the choice of coordinate system for the final map. This parameter is usually part of the project requirement. It is the task of the professional cartographer to analyze carefully the situation to make the wise decision. For general purpose mapping projects (interpretive or marketing maps for example), a more approximative selection of the coordinate systems might be acceptable. Following the request from some of our users, who may not have a cartographic expertise, here are a list of simple considerations to take into account before making a choice:

- Use of a Geodetic Coordinate system (angular coordinates, Lat/Long):
  - Appropriate for overlay with GPS data recorded in Lat/Long format.
  - WGS84 system is required to export vector data to KML format (for display in Google Earth, Google Maps).
- Use of a Projected coordinate system:
  - Appropriate for printed map (so that users can use a ruler to measure distances on the map).
  - Required to add a scale bar.
- Use of a particular system (within the list of projected and geodetic systems):
  - Maps that are part of a portfolio or Atlas have to comply to the same system to be consistent.
  - When a geo-referenced image (geotiff or world tiff) is to be used together with the data, it is easier to use the same coordinate system for the vector data as of the raster.
  - Most countries or geographic areas have published standards or usual way for representing the land (e.g. for road maps or meteorological maps). In this case, the user should make some test with the systems listed in MAPublisher. For a convenient use, coordinate systems are sorted by continent>country>sub-division (state or county for example).

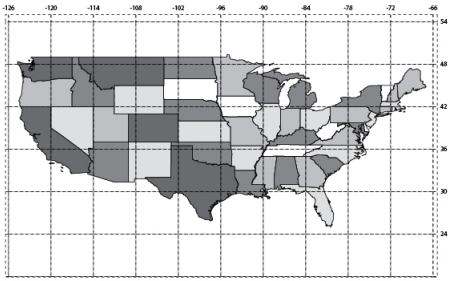


In doubt, it is recommended to test different coordinate systems and visualize the results.

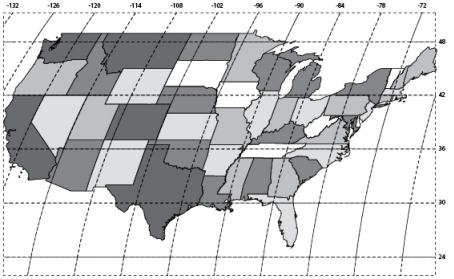
For more information on the supported coordinate systems and projections in MAPublisher, please refer to the *Avenza Projections Guide pdf* document installed with MAPublisher.

Examples of appearance of the USA depending of the chosen coordinate system

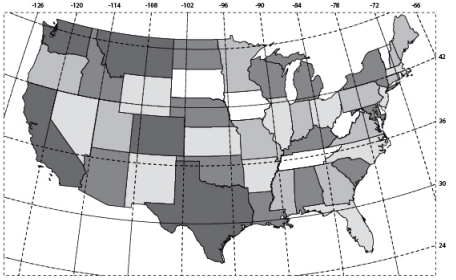
Geodetic > World > WGS84 (unprojected)



Projected > World > Robinson



Projected > North America > United States > US National Atlas



The Geodetic Datasource

MAPublisher includes an extensive geodetic parameter database called the **Geodetic Datasource**. It contains all the latest updates from the widely used EPSG Geodetic Parameter Dataset maintained by the Geodesy Subcommittee of OGP (International Association of Oil and Gas producers)—EPSG v6.18— as well as custom systems maintained by Avenza. In addition, the MAPublisher Geodetic Datasource supports user's custom definitions and allows for importing external WKT (Well-Know Text) and PRJ (ESRI projection file) parameter files.

Over 3500 pre-defined coordinates systems are readily available for use in most cartographic projects. Even though the current list of systems is comprehensive, there may be instances where the end users may wish to add a brand new coordinate system to meet their particular needs, or perhaps to duplicate and modify an existing definition to change the units for example. A complementary *Avenza Projections Guide* is installed with MAPublisher. It describes all the projections and datum shifts methods supported by MAPublisher, to assist users in the process of creating or editing a coordinate system.

The default parameters installed with MAPublisher are stored within read-only XML database files referred to as the Geodetic Datasource (files named geodata.xml and avenza.xsp). The base datasource files shipped with MAPublisher are installed in the *Data Source Files* folder at the following location:

Windows XP: *C:\Program Files\Avenza\MAPublisher 8\Data Source Files*
Windows Vista/7: *C:\Program Files\Avenza\MAPublisher 8\Data Source Files*
Mac OS X: *Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/Data Source Files*

Custom definitions and parameters are saved or loaded from separate XML files that must always accompanied with a file named geocalc.xsd (when not present, this file can be copied from the Data Source Files folder).

The custom and read-only entries are organized into categories and sub-folders — users may create new folders, move entries or create short-cuts. That folder structure is saved in a *view file* (*.xvw).

NOTE: When MAPublisher is un-installed or a newer release is installed, an option will be given to backup the custom coordinates systems and view file (Windows only). The backup files can be found

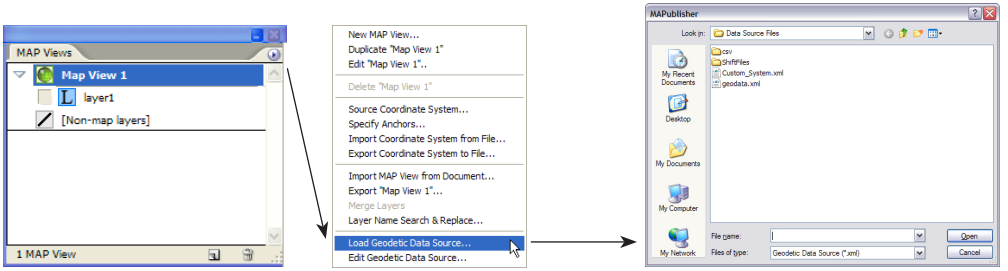
Windows XP: *C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8*
Windows Vista/7: *C:\ProgramData\Avenza\MAPublisher 8*
Mac OS X: *Applications/Avenza/MAPublisher 8/Data Source Backup*

LOADING A CUSTOM COORDINATE SYSTEMS

A geodetic datasource or coordinate system database can be loaded into MAPublisher, thus greatly extending the coordinate systems available for use. You can load a geodetic database within MAPublisher by choosing **Load Custom Coordinate Systems…** from the **MAP Views** panel options menu.

The directory containing the xml file must also contain the file **geocalc.xsd**. This file can be found in the directory of the default geodata.xml file (see above). So the custom xml file can either be copied to the Data Source File directory prior to loading, or geocalc.xsd should be copied from there to the custom xml directory.

Any additional change will be saved into the loaded xml file.



Selecting a geodetic datasource to load

NOTE: Coordinate systems may also be extracted from the input data formats (during import process).

COORDINATE SYSTEM EDITOR

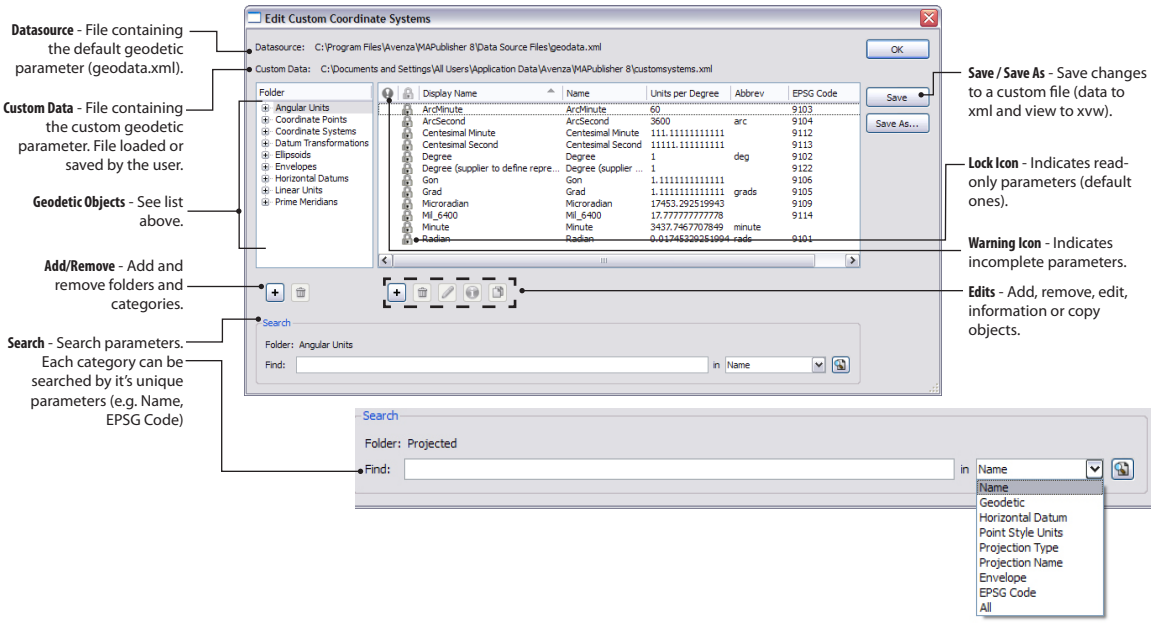
MAPublisher includes an extensive geodetic parameter database. The contents of the Geodetic Datasource can be browsed or searched by using a search frame. Users can extend MAPublisher Geodetic Datasource to support an unlimited number of custom linear and angular units, ellipsoids, datums, datum shifts, and coordinate systems.

MAPublisher Custom Coordinate Systems Editor is accessed from the **MAP Views** panel options menu **Edit Custom Coordinate Systems.** Coordinate systems may also be edited/created from the *Specify Destination Coordinate System* dialog box (started from **Specify** button in **MAP Views** panel and import dialog boxes), but the other geodetic objects are only accessible through *Edit Custom Coordinate Systems*.

Individual entries in the Geodetic Datasource are known as *Objects*. There are different types of objects for different types of definition. Objects contained in the Geodetic Datasource are:

- **Angular Units** - Type of units for measuring rotation (*e.g. degrees or radians*)
- **Coordinate Points** (Point Style)- A coordinate point is used to define the orientation of axes used and the type of units used in the system.
- **Coordinate Systems** (Coordinate Reference Systems) - A coordinate system is a complete definition needed to express the context of a set of map data.
- **Datum Shifts** - Parameters to transform coordinates from one Datum to another.
- **Ellipsoids** - An Ellipsoid gives a horizontal datum its size and shape. An ellipsoid does not have an origin and cannot be used as a base model for coordinates on its own.
- **Envelopes** - Defines a geographic area of use for a particular object.
- **Horizontal Datums** - A horizontal datum, more commonly referred to as just datum is the base model maps are built on. All coordinate systems must have a datum associated with them to be related to any other map. Without a known datum, coordinates are meaningless.
- **Linear Units** - Units for measuring straight line, cartesian distances.
- **Prime Meridians** - The prime meridian represents the line of longitude that is designated as 0 degrees. All other lines of longitude are expressed by the angle by which they deviate from the prime meridian. Together with the equator of an ellipsoid, the prime meridian defines the origin of a geodetic coordinate system. A prime meridian is defined by the angle that separates it from the Greenwich meridian.

Users have the possibility to define new coordinate systems, make copy and modify existing objects. The custom objects are stored in a separate xml file saved by the user. Users can also re-organize the Geodetic Datasource (default and custom parameters) into categories and sub-folders. These changes are saved to a view file (.xvw). The view file may be deleted to reset the Custom Coordinate Systems Editor to its default state.



At the top of the **Edit Custom Coordinate Systems** dialog box two paths are be listed, the path to the main Geodetic Datasource file which is protected from user modification, and the *Custom* parameter file, where all of the user-defined definitions are stored.

On the left hand side of the dialog box, objects are organized into *object type* categories with sub-folders organized in a tree. To explore the sub-folders of a category, click the plus sign (Windows) or arrow (Mac OS) to the left to see categories listed underneath. Click a sub-folder name to list the contained objects on the pane to the right.

New folders or sub-folder can be created by clicking the **New Folder** button [+]. The default name is *New Folder*, right click and click *Rename* to type in another name. Only empty user-defined folders can be deleted using the **Delete Folder** button [🗑].

Recently used objects are listed under the ***Recent*** sub-folder of each object category. To clear this list, right click on the *Recent* folder name and choose *Clear Recent Object History*.

The ***Search Results*** sub-folder contains the recent search results. To run a query, use the Search frame, enter a text string and specify a category specific parameter to search from (e.g. Name, EPSG Code) in the *In* drop-down list. To find the containing sub-folder of an object found by a search query, right-click the object and click the menu *Open Containing Folder*. To clear this list, right click on the *Search Result* folder name and choose *Clear Search History.*

The right hand pane lists the objects contained in the sub-folder selected in the *Folder* list on the left. For all objects, users can copy, query, or use drag and drop to move or create a short-cut. Only custom objects (written in blue) can be edited or deleted—default objects installed with MAPublisher in black and indicated with a lock icon are read-only. Incomplete objects are indicated in red with an exclamation mark (warning icon). Particularly, some of the default datum shifts are pointing to external grid files (.gsb) that are missing. These files cannot be distributed by Avenza due to copyright or government regulations and have be acquired separately. To find the required file, refer to the value column in the Definition tab of the Datum Shift Viewer. For example, the file nb7783v2.gsb from the datum shift "NAD83 (CSRS) (1) Canada - New Brunswick" is provided by Natural Resources Canada can provide the grid NTv2 (*http://www.geod.nrcan.gc.ca/tools-outils/ntv2_e.php*).

Like other databases the columns are re-sizable, and when column headings are clicked will sort information alphabetically/numerically.

When using the **Save** button, changes are saved in the custom parameter file (and when no custom file has previously been loaded, to **customsystems.xml**, located in the following directory):
Windows XP: *C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8*
Windows Vista/7: *C:\ProgramData\Avenza\MAPublisher 8*
Mac OS *Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/Data Source Files*

And the default xvw file (folder structure) is saved as **customview.xvw**, located in the following directory:
Windows XP: *C:\Documents and Settings\All Users\Application Data\Avenza\MAPublisher 8*
Windows Vista/7: *C:\ProgramData\Avenza\MAPublisher 8*
Mac OS X: *Applications/Avenza/MAPublisher 8/MAPublisher Plug-In/*

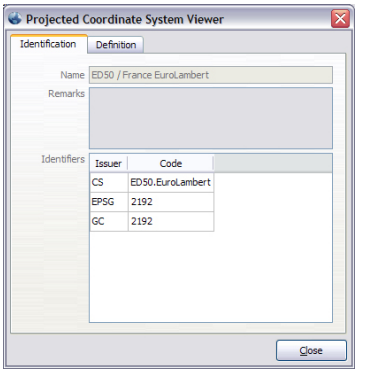
The **Save As** button saves a copy of all the systems (default and custom). This creates xml and xvw files as well as a copy of geocalc.xsd, saved in a directory chosen by the user. These files can then be exchanged between computers. Custom *xml* and *xvw* files are loaded into MAPublisher through the **MAP Views** panel options menu **Load Custom Coordinate Systems**.

NOTE: Please ensure that where the custom xml is saved there is a copy of the geocalc.xsd in the same folder, as this will be needed to load the file (geocalc.xsd is located in the Data Source Files folder).

WORKING WITH GEODETIC DATASOURCE OBJECTS

Creating or editing objects will prompt the object's editor dialog box, each editor contains two tabs: *Identification* and *Definition* tabs.

The **Identification** tab of the editor is used to name the object and associate identifying codes with it (if applicable). The *Name* text box contains the definition name to be used to select the object in the main list. The *Remarks* text box is used to add notes and is optional. In the *Identifiers* list, identifying codes may be added for the object (e.g. reference to other databases). The GC code is a unique identifier assigned by MAPublisher and must not be altered. To enter additional codes use the spaces below. This tab is identical for all object types.

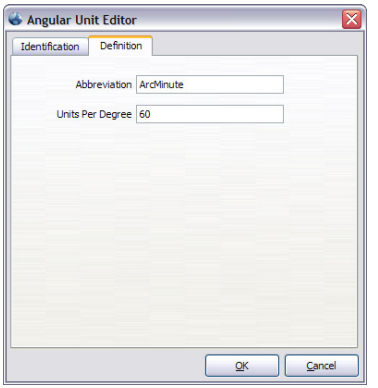


Geodetic Datasource object **Identification** tab

The **Definition** tab is used to define the object's parameters. Parameters are specific to each object type. Specific definition tabs per object are described here after.

Angular Units

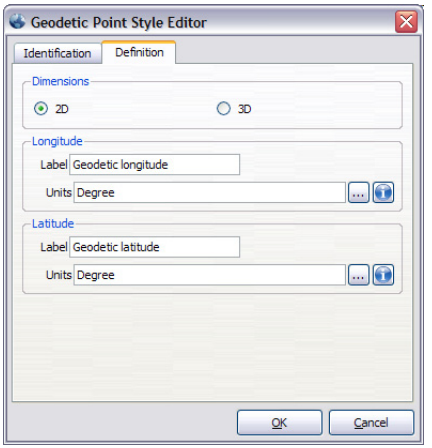
For angular units, the new unit must be defined as a division of the scientific standard Degrees. The abbreviation is used to identify the unit within the application interface (Example: The abbreviation for Degrees is "deg").



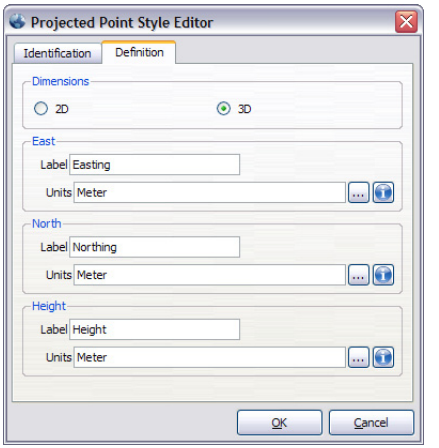
Angular Units Editor - Definition

Coordinate Points

For Coordinate Points you must specify the coordinate point dimensions in either 2D or 3D. For Geodetic and Projected Coordinate Points, the Longitude and Latitude style of units must be entered for all 2D. Dimensional Points. The Longitude, Latitude and Ellipsoid Height style of units must be entered for 3D Dimensional Points.



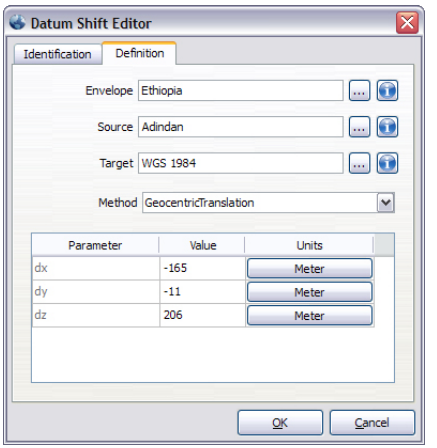
Geodetic Point Style Editor



Projected Point Style Editor

Datum Shifts

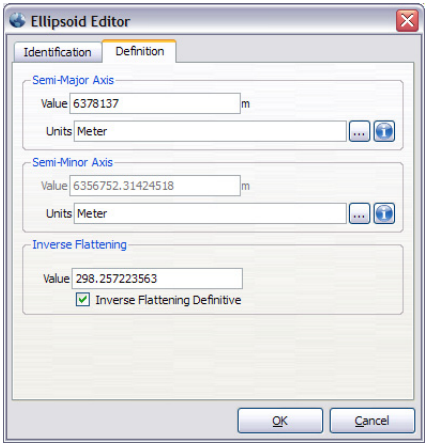
For Datum Shifts, you must select an Envelope (appropriate geographic area of use). If you are unsure of a more specific envelope, leave it se to the default *World* Envelope. The Source and Target text boxes are used to specify the two geodetic models the Transformation is valid for. The Method specifies the necessary parameters to define a particular datum transformation. With the proper method selected, enter the appropriate parameters for your datum transformation. Be sure to define the appropriate units for each parameter by clicking the Units button.



Datum Shift Editor

Ellipsoids

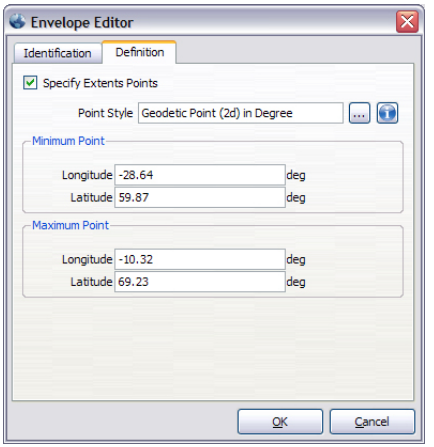
For Ellipsoids you must enter the parameters for the Semi-Major Axis and Semi-Minor Axis (often noted as "a" and "b" respectively) define the linear units the axes are specified in by selecting a predefined unit in the appropriate fields. The Inverse Flattening (often noted as "1/f") will automatically calculate in the field below. Alternately, you can make the Inverse Flattening definitive by enabling the check box at the bottom. You can then manually enter the Inverse Flattening rather than the Semi-Minor Axis parameter.



Ellipsoid Editor

Envelopes

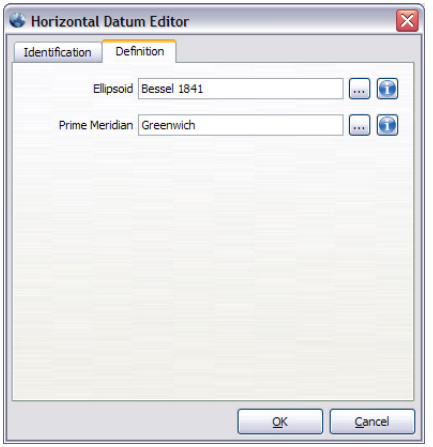
The use of an envelope is not required, but very much recommended to indicate the geographical extents where a given coordinate system is applicable. To define Envelopes you must select whether or not there are extents points, and if so, what point style they are in, and what the values of the minimum and maximum points are.



Envelope Editor

Horizontal Datums

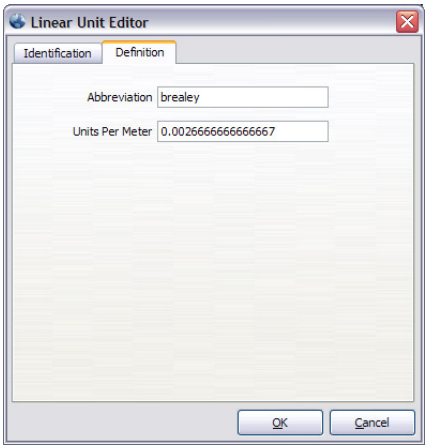
For Horizontal datums you must select the Ellipsoid the datum is based on, as well as the prime meridian used.



Horizontal Datum Editor

Linear Units

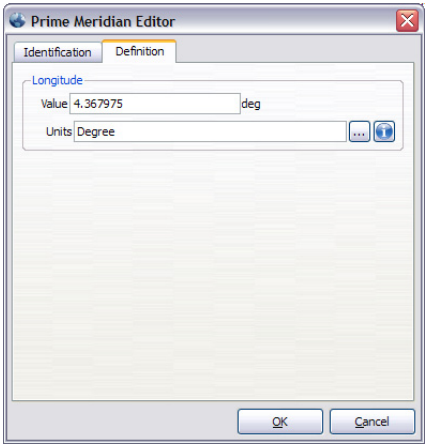
For Linear units you must enter a conversion for the new unit in terms of the scientific standard metres. The abbreviation is used to identify the unit within the application interface (Example: The Abbreviation for metres is "m").



Linear Unit Editor

Prime Meridians

For Prime Meridians you must enter the longitude value of the Prime Meridian and the angular unit that value is in.



Prime Meridian Editor

WORKING WITH COORDINATE SYSTEMS

A coordinate system within MAPublisher defines a mathematical model of the conversion between a specific location on the Earth and a set of coordinates. This model is specified by the coordinate system parameters, including the Earth model (ellipsoid or datum), the units used to measure the coordinates, the projection type, and any parameters specific to the projection type.

Geodetic coordinate systems use Latitude and Longitude to define the position on the Earth and incorporate angular units of measurement such as degrees.

Projected coordinate systems consist of a two or three dimensional system in which each point on the plane is defined by an x,y coordinate and having an origin where the axes intersect. Projected coordinate systems incorporate linear units of measurement for the measurement of area, distance and direction.

Within MAPublisher, coordinate systems are organized in coordinate system categories. This structure allows grouping into a logical collection for convenience (per continent, country or local sub-divisions).

The folders listed below represent the default schema for the coordinate systems in the **Custom Coordinate Systems** dialog box. Each folder option may be expanded by clicking the ⊞ node adjacent to the folder name.

-ALL-
(Lists all the coordinate systems available in the database)

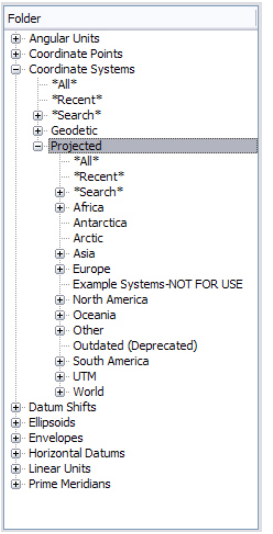
-RECENT-
(Lists the last 10 coordinate systems used)

-SEARCH _____-
(Lists the most recent results of a Search operation)

-GEODETIC-
(Lists the geodetic coordinate systems in the database)

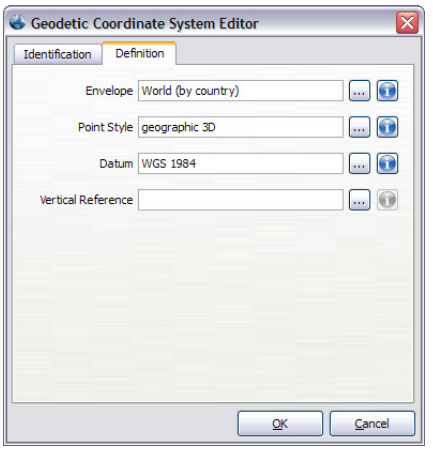
-PROJECTED-
(Lists the projected coordinate systems in the database)

Projected coordinate system options

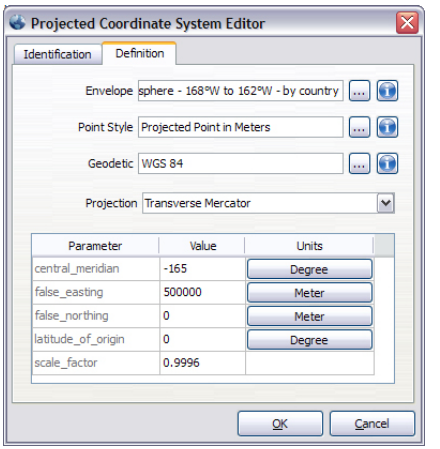


To define or edit Coordinate Systems, you must select an Envelope defining the appropriate area of use. If you are unsure of the appropriate envelope, you can leave it set to the default World envelope. The Point Style is how you will select the style of linear units for your system. For most systems, you will want to select *Projected point in _____* (appropriate units). Then select the Geodetic model that using the appropriate datum for your system. When you select the appropriate Projection for your system, the parameters needed to define the system will appear in the table below. Enter the needed parameters and define the units each parameter is specified in.

NOTE: Information on supported projections and their parameters can be found in the document *MAPublisher Projections Guide.pdf* installed with MAPublisher.



Geodetic Coordinate System Editor



Projected Coordinate System Editor

CREATE, EDIT AND DELETE GEODETIC DATASOURCE OBJECTS

Creating A New Object Category

1. Select **Edit Custom Coordinate Systems** from the options menu from the MAPublisher **MAP Views** panel.
2. When necessary, select the Geodetic or Projected category and then click the *New Category* button to create a new object category.

Deleting An Existing Object Category

1. Select **Edit Custom Coordinate Systems** from the options menu from the MAPublisher **MAP Views** panel.
2. When necessary, select the Geodetic or Projected category and then click the *Delete Category* button to delete an object category.

Creating A New Object Within A Category

1. Select **Edit Custom Coordinate Systems** from the options menu from the MAPublisher **MAP View***s* panel.
2. When necessary, select the Geodetic or Projected category and then click the *New Object* button to create a new object
3. In the New Object dialog box, Identification tab, enter a name for the new object.

NOTE: *The name must be unique.*

4. Select and enter the appropriate parameters for the envelope, point style, geodetic value, projection, vertical reference, angular unit, linear unit, or scale factor unit that the new object is based upon.

NOTE: *For a new coordinate system, the parameters themselves may be customized. Every parameter must be set in the following sequence: ellipsoid, datum, envelop, unit (angular or linear), geodetic system and then projected system....*

5. Press the **OK** button to create the object.
6. Press the **Save** button to commit your update to the Geodetic Datasource file.

Changing An Existing Object

1. Select **Edit Custom Coordinate Systems** from the options menu from the MAPublisher **MAP Views** panel.
2. Select the object, and choose the *Edit Object* button.
3. Enter the modified parameters for the envelope, point style, geodetic value, projection, vertical reference, angular unit, linear unit, oe scale factor unit where appropriate.
4. Press the **OK** button to commit your changes.
5. Press the **Save** button to commit your update to the Geodetic Datasource file.

Deleting An Existing Coordinate System Object

1. Select **Edit Custom Coordinate Systems** from the options menu from the MAPublisher **MAP Views** panel.
2. Select the object, and choose the *Delete Object* button.
3. Press the *OK* button to commit your changes.
4. Press the *Save* button to commit your update to the Geodetic Datasource file.

Copying An Existing Object

1. Select **Edit Custom Coordinate Systems** from the options menu from the MAPublisher **MAP Views** panel.
2. Select the object, and choose the *Copy Object* button .
3. Press the **OK** button to commit your changes.
4. Press the **Save** button to commit your update to the Geodetic Datasource file.

Renaming/Moving An Existing Object

1. Select **Edit Custom Coordinate Systems** from the options menu from the MAPublisher **MAP Views** panel.
2. Select the object, and choose the *Edit Object* button .
3. Enter the modified parameters for the identification name.
4. Press the **OK** button to commit your changes.
5. In order to move the coordinate system object, select the record and drag it to another category if necessary.
6. Press the **Save** button to commit your update to the Geodetic Datasource file.

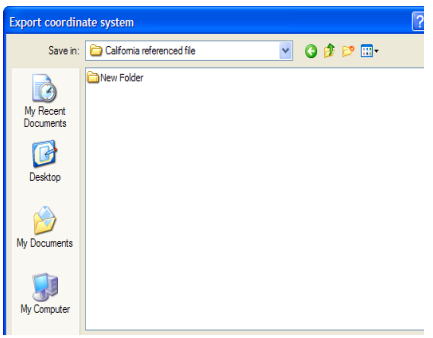
Saving Coordinate Systems xml file

1. Select **Edit Custom Coordinate Systems** from the options menu from the MAPublisher **MAP Views** panel.
2. Customized the coordinate systems (actions above)
3. Click the **Save As** button, type the file name

This file can be exchanged with another computer using MAPublisher using *Load Geodetic Datasource.*

EXPORTING A REFERENCE FILE

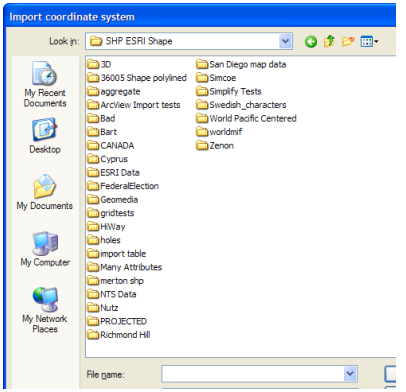
The defined coordinate system for a Map View can be exported as a reference *.wkt* file via MAPublisher **Export Coordinate System to File** option. Select **Export Coordinate System to File** from the **MAP Views** panel options menu to access the export dialog box where you can save the wkt definition.



Exporting a coordinate system

IMPORTING ADDITIONAL COORDINATE SYSTEM DEFINITIONS

By using the **Import Coordinate System from File** menu item in the MAPublisher **MAP Views** panel options menu, additional coordinate system definitions can be imported and merged with the existing datasource information. MAPublisher imports the following coordinate system file formats: WKT definitions (.wkt), MAP files (.map), ESRI PRJ files (.prj), and MapInfo TAB files (.tab).



Importing an Additional Datasource

NOTES:

- The Custom Coordinate Systems must be saved (**Save** or **Save As** button) after the import in order to be able to reuse it)
- New coordinate systems may also be added to the Custom Coordinate Systems during the map data import process; when the file coordinate system is not found in the existing lists of coordinate systems, it is automatically created with the proper required parameters.

Appendix 3: MAPublisher 8 How To's For Legacy Users

Legend Functionality in MAP Stylesheets

A number of functions have been redesigned in MAPublisher 8. Users of MAPublisher 6 or earlier should consult the following pages for information on how to perform common legacy MAPublisher tasks in MAPublisher 8.

BUILDING COLOUR RAMPS TO CREATE STYLES

You can enhance the look of your maps by using colour ramps, rather than random colours, for your area and line styles. A possible use for this would be in the creation of relief maps.

1. Determine the number of new graduated styles you wish to create.
2. Create two rectangles with the Rectangle Tool aligned vertically, one at the top of the page, the other at the base.
3. Colour the first (top) and last (bottom) elements with two end colours for the ramp.
4. Choose *Object* > *Blend* > *Blend Options*.
5. Choose *Specified Steps* from the list. Enter the value you determined in the first step minus two. Click OK.
6. Select the two rectangles. Choose *Object* > *Blend* > *Make*. The legend elements will be blended between the two end colours.
7. Choose *Object* > *Expand,* then choose *Object* > *Ungroup.* This ungroups the art so that the new styles can be added to the Graphic Styles panel and be used in the MAP Stylesheets.

ASSIGNING INCREMENTAL VALUES TO STYLES

It is very straightforward to assign styles to values for stylesheets based on *Equal to* expressions. The following examples can be used as a basis for new stylesheets, providing the functionality which was previously available in the *Unique Occurrences* option in *Auto Assign Legend Info.*

Example 1 (Rule 1 assigned first listed value and first style):

1. Create the first *Equal to* rule, using the first listed style, and an expression based on the first listed value in a specified attribute column, i.e. *Style A* assigned to *Column X = "Value 1"*.
2. Click the *Add* button. The second rule will be automatically assigned an incremental expression, i.e. *Style B* assigned to *Column X = "Value 2"*.
3. Keep clicking the *Add* button until all the values or styles have been used.

Example 2 (Rule 1 assigned first listed value and third style):

1. Create the first *Equal to* rule, using the first listed style, and an expression based on the third listed value in a specified attribute column, i.e. *Style C* assigned to *Column X ="Value 1"*.
2. Click the *Add* button. The second rule will be automatically assigned the first unused style, i.e. *Style A* assigned to *Column X = "Value 2"*.
3. Keep clicking the *Add* button. Assignments will be incremental, but will not include the third style again, i.e. *Style B* assigned to *Column X ="Value 3"*; *Style D* assigned to *Column X = "Value 4"*; etc

CREATING STYLE RULES BASED ON MULTIBLE ATTRIBUTE COLUMNS

Assign Legend Info previously provided options to assign legend criteria to legend elements based on values in multiple attribute columns. This functionality can now be achieved using Advanced expressions in the MAP Stylesheet Editor. Choose the **Advanced** option to compose advanced expressions.

The following are some examples of multi-column expressions in a world countries stylesheet *(using a string type column named CONTINENT and an integer type column named POPULATION).*

CONTINENT="Africa" AND POPULATION<1000000
Result: only African countries with populations less than one million are assigned the selected style.

CONTINENT="Africa" OR POPULATION<1000000
Result: all African countries and all countries with populations less than one million are assigned the selected style.

CONTAINS(CONTINENT,"America" AND POPULATION>1000000
Result: only countries in North and South America with populations more than one million are assigned the selected style.

CONTINENT="Europe" AND POPULATION>1000000 OR CONTINENT="Asia" AND POPULATION>10000000
Result: countries in Europe with populations more than one million and countries in Asia with populations more than ten million are assigned the selected style.

Grid and Scalebar Operations

EDITING CUSTOM ART

Manually editing type (position, font, colour, etc) is not possible on Grids and Scale Bars in their default grouped state. Manual editing is possible but objects must be first expanded (choose *Object* > *Expand*). Note that this will negate any opportunity to subsequently edit the art using MAPublisher editing tools.

If you require a different design to be used for your Grid or Scale Bar, or wish to change any parameter without generating a new version, simply select the Grid or Scale Bar and choose *Object* > *Edit Grid* or *Scale Bar*. This will re-open the *Grids and Graticules* or *Scale Bar* dialog box with the current parameters of the object for subsequent editing. Editing the style of text (text colour, font, alignment, etc) used in the Grid or Scale Bar can be achieved by modifying the properties of the style in the *Character Styles* panel.

Use the bounding box of the generated grid or scale bar (choose *View* > *Show Bounding Box*) to resize. Resizing scale bars horizontally will add or remove intervals from the bar(s). Resizing scale bars vertically will adjust the width of the bar(s). Resizing grids horizontally or vertically will add or remove component cells in the grid.

EXPORTING GRIDS

To export a grid you must first expand the object (choose *Object* > *Expand*), then move it to an *Area* layer. Alternatively expand your grid, move the legend layer to the *[Non-MAP layers]* category, then move it back into the MAP View specifying the feature type as Area.

MISSING DATA IN GRIDS ON PROJECTED MAP VIEWS

Certain projections may cause incomplete grids and graticules to be drawn. Such issues may occur if the MAP View is in a polar projection or the extents of the data cross the 180 degree west/east meridian.

If the generation of a grid/graticule causes blank or incomplete results, the following workflow should be used:

1. Reproject the MAP View to a standard Lat/Long projection (e.g. NAD27 Lat/Long, Degrees).
2. Generate your grid or graticules on this MAP View.
3. Expand the object (choose *Object* > *Expand*).
4. Create a new Area layer in the MAP View. Drag the expanded grid to this new layer.
5. Reproject the MAP View back to the original projection.

Copy and Paste

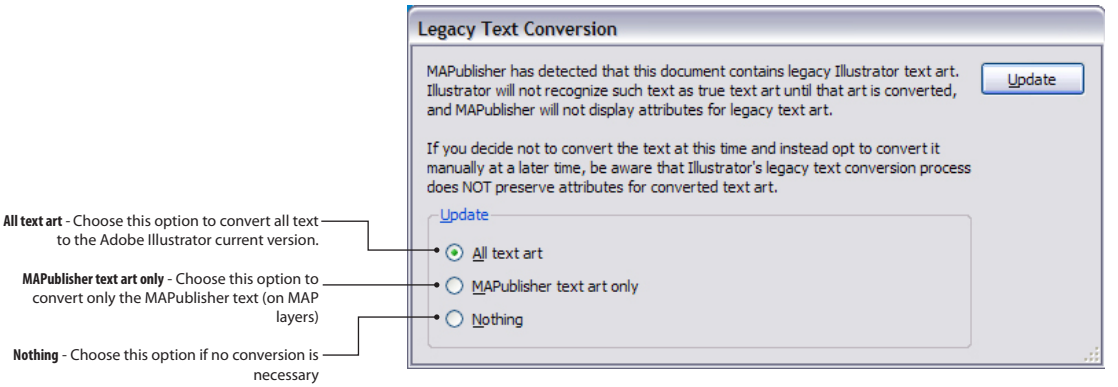
The MAP Copy/Paste function was removed in MAPublisher version 7. You can now achieve the same functionality via Adobe Illustrator native Copy/Paste tools.

1. Use *Edit* > *Copy* or *Edit* > *Cut* to copy art.
2. Deselect the art.
3. Select the destination layer in the Layers panel
4. Use *Edit* > *Paste in Front* or *Edit* > *Paste in Back* to paste the art into the new layer at its previous location.

- When pasting to layers which already contain an attribute structure, the destination layer must have an attribute schema which matches the source layer (only attributes in common will be transferred).
- When pasting to layers which contain no attribute structure, the destination layer will be assigned the same attribute schema as the source layer.
- The destination layer can be contained in any MAP View as required.
- The destination layer must be of a matching feature type as the source layer.
- Pasted data will always maintain its attributes. If you paste into a non-map layer, drag this layer into a MAP View, then recreate the schema, attributes will be populated appropriately.

Legacy Text Conversion

Opening legacy files, you may be prompted to update text (legacy text conversion).
Only text objects that are associated to attributes are required to be updated. For other text with no attributes, you do not necessarily need to update.



Appendix 4: Helpful Styles and Symbols Files

The following files may be found in the Helpful Styles & Symbols files folder on your MAPublisher 8 DVD or with your MAPublisher 8 download.

Windows XP: *C:\Documents and Settings\All Users\Documents\Avenza\MAPublisher 8\Helpful Styles & Symbols*
Windows Vista/7: *C:\Users\Public\Public Documents\Avenza\MAPublisher 8\Helpful Styles & Symbols*
Mac OS X: *Applications/Avenza/MAPublisher 8/Helpful Styles & Symbols*

Helpful Styles & Symbols > QuickMap Styles

QuickMap styles are graphic styles and symbol libraries meant to allow users to quickly style their maps by the use of MAP Stylesheets. To ease the process, areas are classified in land and water styles, lines are classified in borders, contours, roads, rails and rivers styles.

QuickMap Styles - Area.ai Categorized graphic style library , for use in Area Stylesheets.

QuickMap Styles - Line.ai Categorized graphic style library, for use in Line Stylesheets.

QuickMap Styles - Point.ai Symbol library with common map symbols, for use in Point Stylesheets.

Helpful Styles & Symbols > S-57 Symbolization

The S-57 Symbolization folder contains nautical graphic styles and symbols libraries inspired from the International Hydrographic Office M-4 publication (*Regulations of the IHO for international (INT) charts and charts specifications of the IHO*). Graphic styles and symbol names are mostly based on the S-57 naming conventions. The folder also contains templates with a series of MAPublisher Stylesheets linking S-57 imported features to appropriate nautical symbols and graphic styles. The basic template allow users to quickly apply styles to the imported data. The advanced template is more detailed to help users learn the format and make use of the data.

Nautical_Graphic_Styles.ai	Graphic style libraries for use with S-57 data.
Nautical_Symbols.ai	Symbols library for use with S-57 data (main symbols).
S57_Advanced_Template.ait	Adobe Illustrator template with detailed MAP Stylesheets for use with S-57 data.
S57_Basic_Template.ait	Adobe Illustrator template with simplified MAP Stylesheets for use with S-57data.
US5FL12M	Sample ENC file in S-57 format (chart of Tampa Bay, courtesy of NOAA®).

Use of the S-57 templates:

- To create a new document, choose *File > New from Template*. Select **S-57_Advanced_Template.ait**.
- Import a S-57 file (for example, use the sample file).
- In the **MAP Stylesheets** panel, move the layers from [No MAP Stylesheet] to its corresponding stylesheet, when available:
    - → *Advance template:* the corresponding stylesheet has the same name as the layer, but not all layers have a stylesheet (therefore stay under [No MAP Stylesheet]).
    - → *Basic template:* all layers have a stylesheet, with the same name as the layer or, if not, the name "others". The letters A, L and P have be added to the names to sort the stylesheets per feature type (Area, Line or Point).

NOTE: This representation is non-exhaustive and meant to assist users with limited knowledge of the S-57 format to interpret the data contents more easily. The created map must not be used for navigation, unless further processing is supervised by a trained hydrographer.

Helpful Styles & Symbols > Graphic Styles

This folder contains five graphic style libraries with various useful styles for areas and lines.

MAP_AreaStyles.ai	A custom library of styles, for use in Area Stylesheets.
MAP_LineStyles.ai	A custom library of style, for use in Line Stylesheets.
DGN_LineStyles.ai	A library of MicroStation DGN line styles 1-7, for use in Line Stylesheets.
MIF_AreaStyles.ai	A library of MapInfo MIF/MID area styles 1-71, for use in Area Stylesheets.
MIF_LineStyles.ai	A library of MapInfo MIF/MID line styles 1-77, for use in Line Stylesheets.

Helpful Styles & Symbols > Symbols

This folder contains eight symbols libraries, categorized per topics.

Aeronautical symbols.ai	A library of aeronautical point symbols.
Bank Symbols.ai	A library of symbols for major world banks, for use in Point Stylesheets.
MAP Symbols.ai	A library of useful map symbols.
NorthArrows.ai	A library of north arrow symbols, for use in the *Create North Arrow* filter.
Parks Symbols.ai	A library of symbols composed from the US National Parks Service font library.
Subway Symbols.ai	A library of symbols from the major subway lines in the world.
Transit Symbols.ai	A library of symbols for the major transit systems of the world.
Weather Symbols.ai	A library of weather-related point symbols.