

SCALE MANAGER V8.9 (XM)

DESCRIPTION

This application is designed to modify the scale or size of selected point features (text, cells and simple closed shapes) and selected custom linestyles in a design file as they are drawn on the screen or written to a plot file, without changing the original data. This allows such data to be stored in one form but easily presented in a variety of forms according to the users changing requirements.

A simple example is cadastral data with street names and lot numbers. As the scale of presentation changes from one usage to the next, the user can apply Scale Manager to make the textual data an appropriate size for the scale, therefore remaining legible on the plot or screen. Refer to the sample shown below.



Cadastral data without Scale Manager



Text resized using Scale Manager

Map symbols represented by cells or simple polygons may also be scaled up or down to improve legibility and aesthetics. Custom linestyles used to represent linear features may have a scale factor applied to enable consistent presentation at varying plot scales.

The control of element scale may be applied to elements in reference files as well as the master file.

Multiple selection sets may be defined so that different sets of features can be separately scaled according to their own requirements. The definitions of the selection sets and the particular scaling criteria applying to them may be saved to a resource file and recalled for repeated use.

Selection sets are defined based on file, level, symbology, and element properties particular to the element type such as;

- text size, font, justification, view dependence and string pattern for textual elements
- cell name and share mode for cell elements.
- number of edges and fill mode for simple closed shapes
- style name for custom line styles
- graphic group number
- membership of a named group

Scale Manager adds value to data by allowing it to be used for more applications. It also eliminates the costs associated with repetitively modifying data and the redundancy of storing multiple copies of the same data to be presented at varying scales.

INSTALLATION

The application comprises of two files; *ScaleManager.ma* and *ScaleManager.dll*. The two files should be copied to a directory listed in Microstation's MS_MDLM configuration variable.

LICENSING

Scale Manager does not require a license. The application may be freely copied and distributed as long as no charge is made for doing so.

LOADING THE APPLICATION

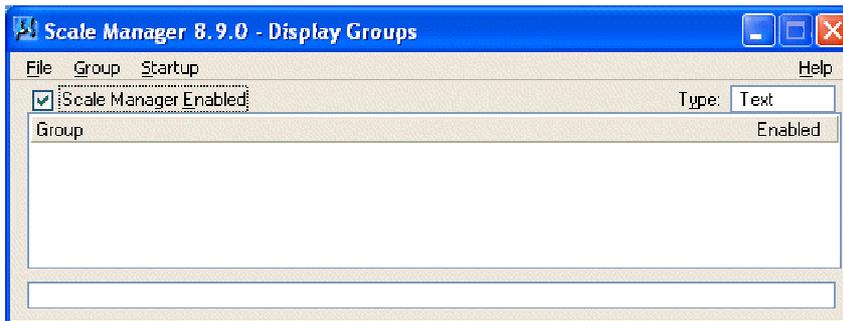
From within Microstation, load the application with the keyin:

mdl load ScaleManager

Alternatively load the application from the *MDL Applications* menu item on the Microstation *Utilities* pulldown menu.

PROCEDURE

Upon loading the application the following dialog box will appear:



The Scale Manager dialog box

The Scale Manager dialog box contains the following items:

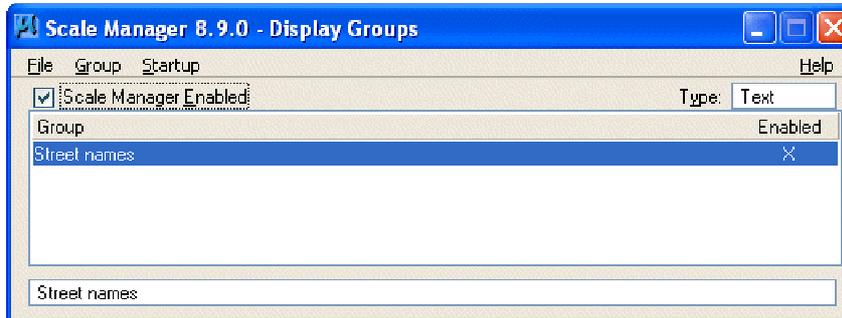
- A pulldown menu bar, the options within which will be explained throughout this document.
- The **Scale Manager Enabled** toggle button. This button is used to toggle on and off the effect of Scale Manager while it remains loaded.
- The **Type** option button which determines the type of display groups displayed in the list box. The valid types of display groups are; Text, Cells, Shapes and Custom Linestyles.
- A list box that lists display groups of the type specified by the **Type** option button that are active in the current session and tells you which individual groups are enabled.

Note: While the **Type** option button is used to display a list of only one group type at a time (Text, Cell, Shape or Custom Linestyle), it is important to remember that all display groups are active when created or retrieved from a saved DGP file while Scale Manager is loaded if their **Enabled** attribute is set, not only the groups currently displayed in the list box.

To create a Display Group:

1. Select the type of group to be created using the **Type** option button.
2. From the **Group** pulldown menu choose the **Create** option. A group called *Unnamed* is added to the list of groups defined.

3. Edit the name of the display group in the text item below the list box and press the Enter key or click in the list box. The name of the display group will be transferred to the list box. Give your display groups a descriptive name of up to 128 characters that tells you what feature it is that you are rescaling.



You have now created a display group. You will need to define the selection set to which the group applies and define its modification parameters. Note that you can toggle the enabled state of individual display groups by clicking the **Enabled** field in the list box.

To define a Display Group selection set and modification parameters;

1. Double click on the group name in the list box or select the **Modify** option from the **Group** item on the pulldown menu. The Modify Group dialog box will open. (See below).
2. Define the selection set criteria and modification details as described below.

Let's deal with the Selection section first. The modifications we will later specify can be applied to a specific set of elements (text elements in the case of our 'Street names' group), such as:

- all text from whatever source
- all text from a particular file or files
- all text from a particular file or files that meet criteria based on the level(s) of the text elements, the symbology (colour, style, weight) of the text elements, the properties (font, width, height, graphic group number, justification, orientation, or characters of the text string) or the type of text element (simple text or text node).

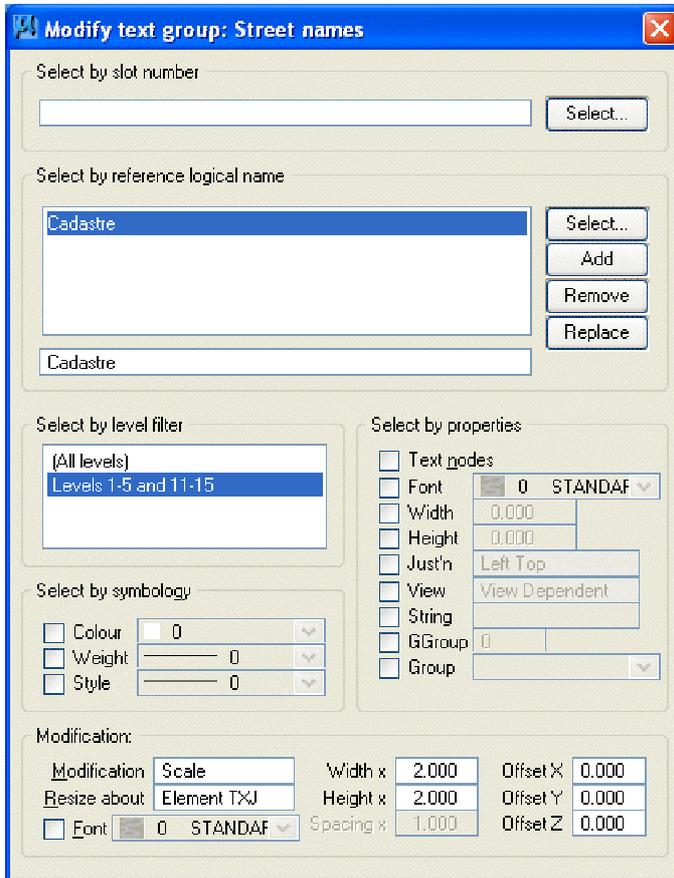
The selection set principle is similar for each of the display group types (Text, Cell, Shape or Custom Linestyle), the only difference being that the Properties selection criteria is particular to the element type.

Now let's deal with the Modification section. This defines the changes to be made to the elements. In our street name example, all text elements in the cadastral reference file passing the filter of levels 1-5 & 11-15 are to be scaled up by 2.0 times, with resizing to be about the justification point of each text element (the Element TXJ) which is known to be centre-centre. Variations to this could have included:

- turning the New font button on and setting a new font number
- changing the Scale option to Text Size, in which case the width and height fields become text size values instead of scale factors; the defaults are the current text width and height settings
- changing the Element TXJ option to a particular text justification setting, in which case the resizing is done relative to that position on the text element. e.g. if the chosen justification is centre-centre, the size will change about the centre of the original text no matter what the justification of the text. (Under Element TXJ, all text elements are resized about their defined justification position.)
- setting the width and height values, either as scale factors to be applied against each text element's size or as a constant size value to be given to all text elements; note that the meaning of the values in these two fields depends on whether Scale or Text Size is chosen as the modification type
- Changing the line spacing of text nodes if the Text nodes toggle button is checked (on) in the Selection section.
- Applying an offset to move the text a specified distance from its original location.

The modification options for Cells and Shape elements are restricted to rescaling the elements in the X, Y & Z axes and applying an offset. The modification option for Custom Linestyles is simply to apply a scale factor to the linestyle.

The definition of our 'Street names' group is now complete as shown below:



The Modify Group dialog box

Other Display Group definitions will be needed if, for our example, the following requirements are to be met:

- for cadastral files: all text are to be scaled up by 2.0 times
- for the contour file: the 'SPOT' cells representing spot heights are to be scaled up 1.5 times.
- for the master file: the filled red circles of weight 2 representing sewer manholes on level 1 are to be scaled up by 2.0 times
 - the single string 'City Center' on level 28 is to be resized to TX=250.
- for all files: all font 7 text is to be presented in font 2 without resizing (scale = 1).

Display Group definitions for each of these requirements are made by the creation and naming step described above in the cadastre example, followed by setting the selection criteria using the appropriate choice of settings - levels defined on a level picker, file(s) that each group applies to, symbology from a weight, style and colour picker, and properties from the list applicable to the group type. Finally define the modification details.

The requirements given above would require display groups such as these:

Text Group -	'Street names'	Scale all text by 2.0 about the Element TXJ and apply to the levels 1-5 & 11-15 in the cadastral file
Cell Group -	'Spot heights'	Scale all cells named 'SPOT' by 1.5 in the contour file
Shape Group -	'Manholes'	Scale red, filled ellipses of weight 2 by 2.0 and apply to the master design file
Text Group -	'City Center'	Set the single text element 'City Center' on level 28 to have width and height of 250 resized about the Element TXJ and apply to the master design file
Text Group -	'Font 7'	Set all text of font 7 to font 2 at scale 1.0. Apply to all files.

The final consideration in making the Display Group definitions is their order in the appropriate list. This is because each element is compared against the set of definitions of its type in the order in which they appear in the definitions list. Once an element satisfies a definition and is resized no further definitions are considered. This means that specific definitions should be made first and general definitions made last and that each definition should be made as specific as necessary.

For example, the order in which the above text Display Group definitions should be made is:

1. Text Group 'City Center' specific change
2. Text Group 'Street names' general change to a specific file
3. Text Group 'Font 7' global change to all files

To assist in creating and maintaining a list of Display Groups in an order that gives the desired result (ie. specific definitions first in the list before more general definitions), the order of the definitions in the list may be modified.

To move a Display Group within the list:

1. In the Display Groups list box select the group to be moved.
2. Select the **Move** option from the **Group** pulldown menu.
3. A modal dialog box with the current list of display groups will open. Click the desired location of the selected group in the list box.
4. Click OK to make the change or Cancel to discard the change.

The list in the Scale Manager - Display Groups list box will be updated.

CREATING A DISPLAY GROUP FROM AN ELEMENT

To easily create a display group matching the attributes of an element in the design file, use the create group from element function. From the **Group** menu select **Create from element**. Identify and accept an element in the design file. A new group (at this stage called *Unnamed*) is created with all the attributes of the selected element set in the selection parameters. The Modify Group dialog box is opened for you to set the modification parameters.

A message box will inform you if a display group already exists that satisfies the selection parameters of the located element.

VIEWING AND PLOTTING

With the definitions of element resizing made, the effect will be seen in all subsequent screen updates while the application is running and the **Scale Manager Enabled** toggle is on. To turn off the Scale Manager effect without unloading the application, toggle the button off. The state of the toggle button controls what is plotted as well as what is displayed.

SAVING DISPLAY GROUP DEFINITIONS

Display Group definitions may be saved to a resource file and subsequently recalled using the **Save** and **Open** options of the **File** pulldown menu on the Display Group Definitions dialog box.

The default name offered for the display group definition file is the master design file name with an extension of '.DGP'. The display group file is a Microstation resource file and cannot be edited or read except by the **Open** option from the **File** pulldown menu.

REMOVING DISPLAY GROUP DEFINITIONS

If a Display Group is no longer required, select it and choose the **Drop** option from the **Group** pulldown menu.

STARTUP ELEMENTS

A startup element may be inserted in the design file which automatically loads Scale Manager with a specified display group definition file when the design file is opened. The program looks for the display group file first in the same directory as the design file, then in the path specified by a user defined configuration variable called *SCALMGR_DGPDIR*. If the display group file is not found, an alert dialog box opens with a warning message.

To create and add a startup element to the design file, select the **Create Startup Element** option from the **Startup** pulldown menu.

To delete the startup element, select the **Delete Startup Element** option.

There are several keyins to add and remove startup elements from your design file that can be used in a batch process:

```
SCALMGR STARTUP CREATE [filename.dgp]
SCALMGR STARTUP DELETE [filename.dgp]
SCALMGR STARTUP PURGE
```

where the square brackets indicate an optional argument.

If the filename is not supplied when creating a startup element, the 'file open dialog' interface is used. You need only supply the filename and extension (with no path), however for the startup element to find the dgp file it must reside in the same directory as the design file, or the directory indicated by the *SCALMGR_DGPDIR* config variable.

The filename argument is only required in deleting a startup element when the display group file associated with a startup element no longer exists. If the filename argument is not supplied then the startup element associated with the currently open display group file is deleted.

The startup purge command removes any Scale Manager startup element regardless of name. This command was added to fix problems where startup elements that referenced display group definition files with embedded spaces were found to cause problems. These startup elements can be removed with this keyin.

FENCE EXPORT TO FILE

This function allows you to create a new design file with the Scale Manager changes made permanent. All elements satisfying the fence criteria, including elements in displayed reference files, are scaled and copied to the new design file. If level symbology overrides are in effect (including reference file level symbology), all settings are honoured and the new elements are resymbolised appropriately.

The resulting file is a merged version of the master file and referenced files.

UNLOADING THE APPLICATION

To unload the application, close the Scale Manager dialog box. The application is unloaded automatically upon opening a new design file. If a startup element is encountered the application will be reloaded with the specified display group file.

DISCLAIMER

Scale Manager is delivered as-is without any warranties whatsoever. You can use it only and solely at your own risk.