

MPCore V2

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1. What's New

Version 2 - Mar26

- Optional Apps now available for the following fabric structures: [...more](#)
 - Arched Shade
 - Conic
 - Framed Shades
 - Pole Tent/Marquee
 - Umbrella
- Multiple Copy - hold shift when copying allows multiple copies [...more](#)
- Aligned Dimension - holding the shift key will force add dimension to be aligned [...more](#)
- Settings now includes option to change screen background colour [...more](#)
- Implied move function added [...more](#)
- Import file now allows for insertion into an existing drawing rather than starting new drawing
- Ctrl-A now selects all objects

Version 1 - 2025 - Base Functionality

- Simple platform with minimal CAD tools and functions required to operate MPanel Pro/Design, Production & FEA
- Open/Save drawings in AutoCAD dwg or Rhino 3dm format
- Operate MPanel Pro/Design, Production, or FEA inside Core platform

2. Introduction

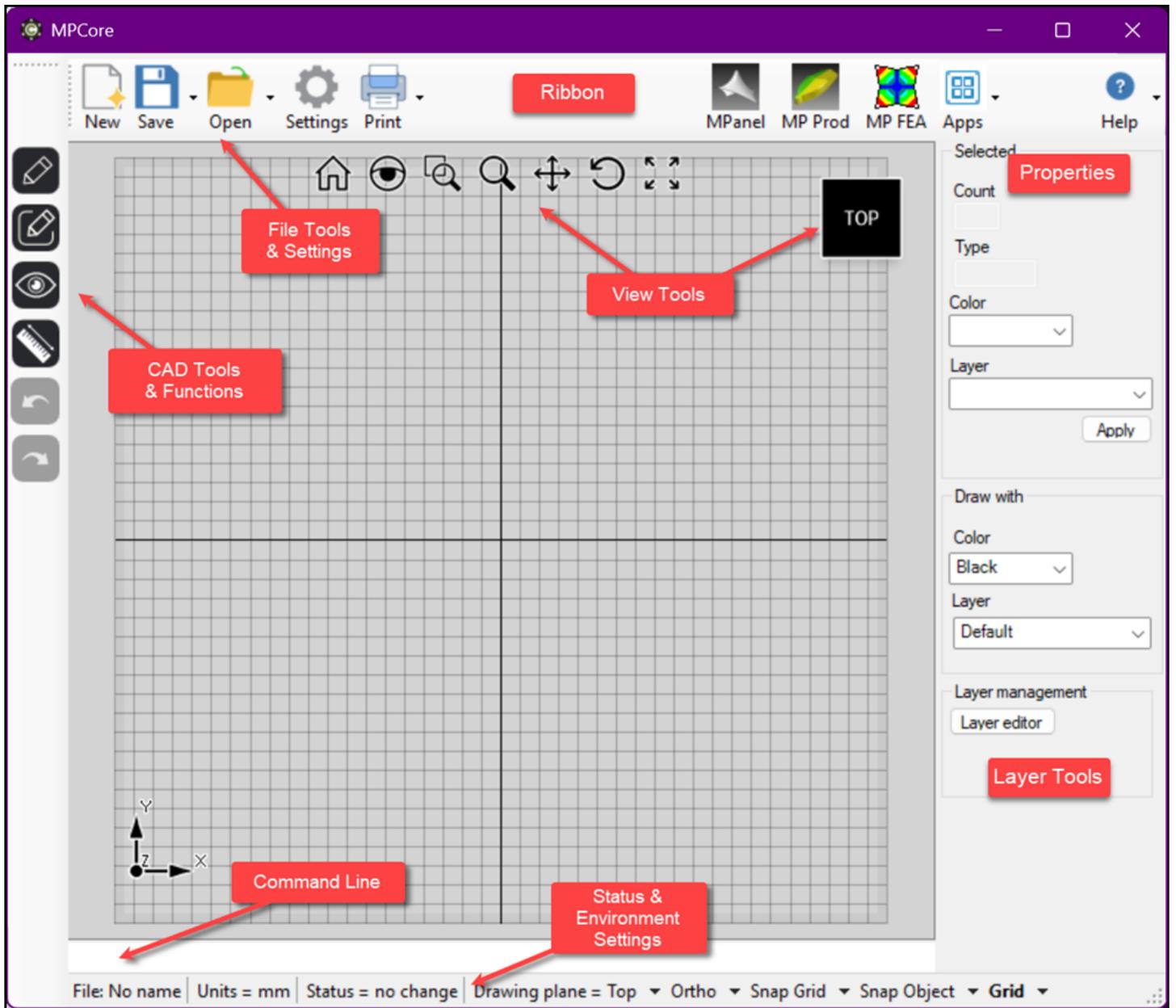
MPCore provides a simple user interface and platform with a minimal set of CAD tools and functions required to support MPanel's prime CAD based products including MPanel Pro or Design, Production, and FEA.

Version 2 adds a range of fabric structure specific Apps to design and pattern a wide range of shade and tensile structures.

MPCore also represents a transition CAD platform for users who do not have an in-house CAD platform or any CAD skills. It provides an opportunity for users to operate any of MPanel's prime products without the previously required AutoCAD or Rhino CAD platforms. As an introduction to CAD, MPCore provides the minimal set of CAD tools/functions required to operate MPanel's prime products. As skills develop and more comprehensive CAD tools/functions are needed then either AutoCAD or Rhino can be added as and when required, and the MPanel prime software License can then be transferred.

Users with a current license for MPanel Pro or Design, Production, or FEA with a current Full Support Subscription can download and use MPCore.

Workflow is similar to other CAD environments when it comes to operating any MPanel prime program - after starting MPCore you then select the relevant MPanel prime product you have a license for from the ribbon to start the program. The prime program once started, will behave in the same way it does in other CAD environments as a "floating toolbar".



3. How to

3.1. Install MPanel Programs

New versions of MPanel (Pro or Design), Production and FEA are available to operate on the MPCore platform. These are listed below (nnn are the product version numbers):

- Setup_MPanel_C_nnn.exe
- Setup_Production_C_nnn.exe
- Setup_FEA_C_nnn_64.exe

Users with a current License of any MPanel prime CAD based products (working in either AutoCAD or Rhino) with a current Full Support Subscription can download and install the MPCore platform and the compatible version of the MPanel prime products you have licensed.

After installing MPCore you should download and install your licensed version of the above listed setup programs to install the MPCore compatible version.

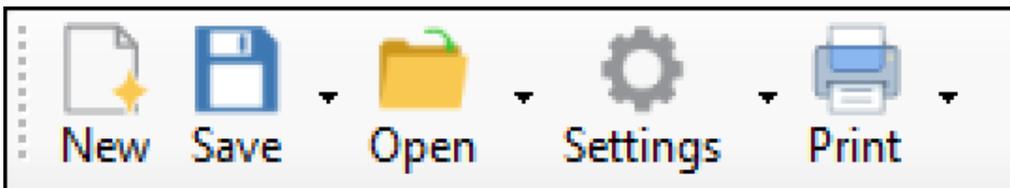
Workflow is similar existing CAD platforms when it comes to operating an MPanel program - after starting MPCore you then select the relevant MPanel prime product you have a license for from the ribbon to start the program. The MPanel program once started will behave in the same way it does in other CAD platforms as a "floating toolbar".

Apps for MPCore are downloaded with MPCore and become active once a subscription is started for the App.

3.2. Ribbon Tools

[Ribbon Tools](#)

MPCore can open and save either AutoCAD (dwg) format files or Rhino 3dm format files. To reduce workload the program provides you the option to save either of these formats as your preferred option. After first starting the program select the Settings button to set your default preferences.

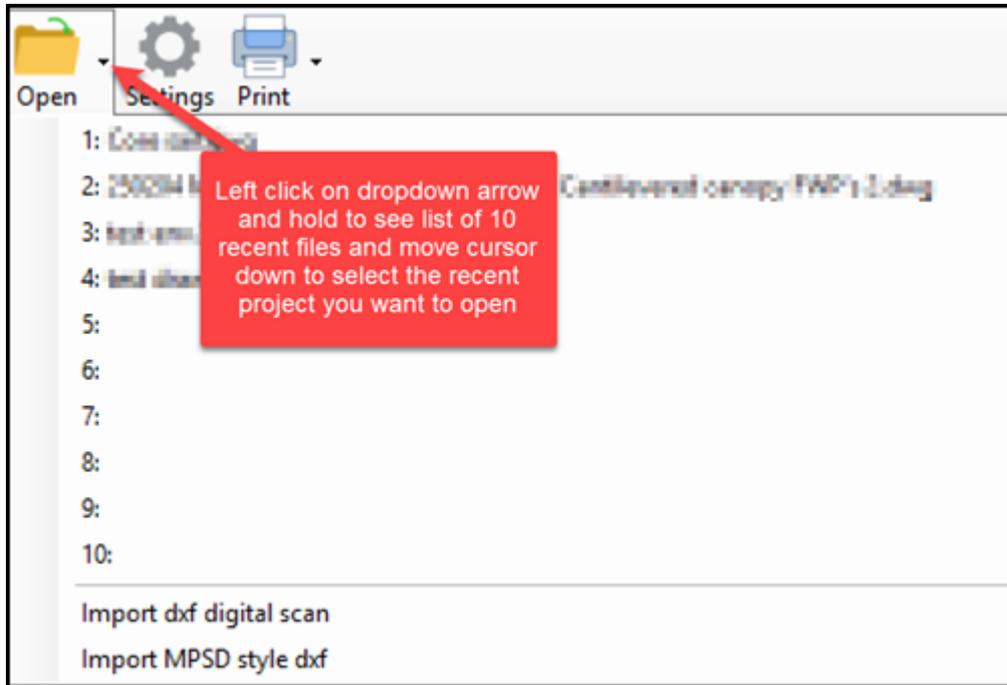


New will start a new drawing - if you have a drawing open that is unsaved then you will be prompted to save the file or discard it.

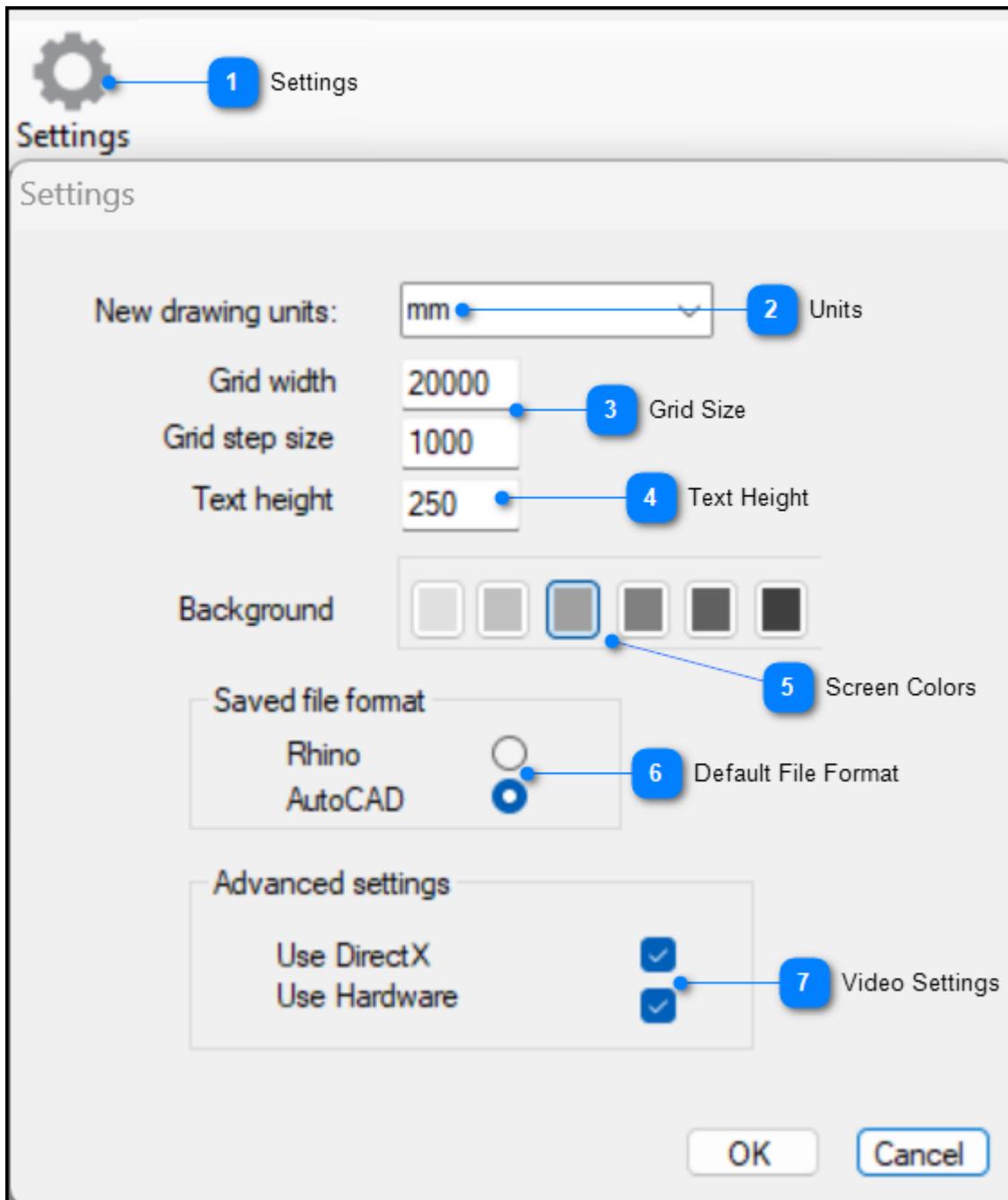
Save will save any open file that has previously been saved and therefore has a name. The drop down arrow to the right provide the option to "Save As"

Save As (left-click and hold on the drop-down arrow) will open a Windows file explorer interface allowing you to select the location where you can name (or rename an existing drawing) and save your new drawing file. It is good practice to use this function immediately after starting a new drawing in order to provide the drawing a name.

Open will open a Windows file explorer interface allowing you to select the location where you have saved your drawing files. It is good practice to locate your drawings inside separate folders for each project. The drop down arrow to the right provide the option to re-open a recent file, "Import a dxf scan or MPSD dxf"

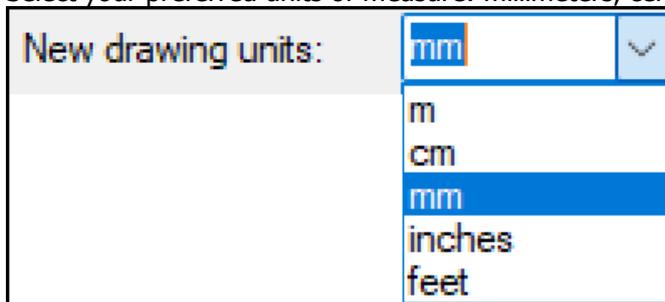


Import dxf will open a Windows file explorer interface allowing you to select the location where you have saved a dxf drawing file you want to import into MPCore. The available options are files created by digital scanning equipment such as lasers and other measuring devices and Import MPSD files which were exported from MPSD for FEA analysis using FEA.



1 Settings
 Sets program defaults for new drawings. Next time you start the program or create a new drawing these settings will be used.

2 Units
 Select your preferred units of measure: millimeters, centimeters, meters, inches, feet.



3 Grid Size
 Defines the drawing grid size in the specified drawing units by specifying the width of the grid (height will be set to the same value) and the grid cell spacing. Note the drawing grid is separated into 4 parts defined by thick vertical and horizontal lines crossing through the center of the grid. The grid size is defining one of the quadrants.

4

Text Height

Defines the drawing grid size in the specified drawing units by specifying the width of the grid (height will be set to the same value) and the grid cell spacing. Note the drawing grid is separated into 4 parts defined by thick vertical and horizontal lines crossing through the center of the grid. The grid size is defining one of the quadrants.

5

Screen Colors

Defines the drawing background color

6

Default File Format

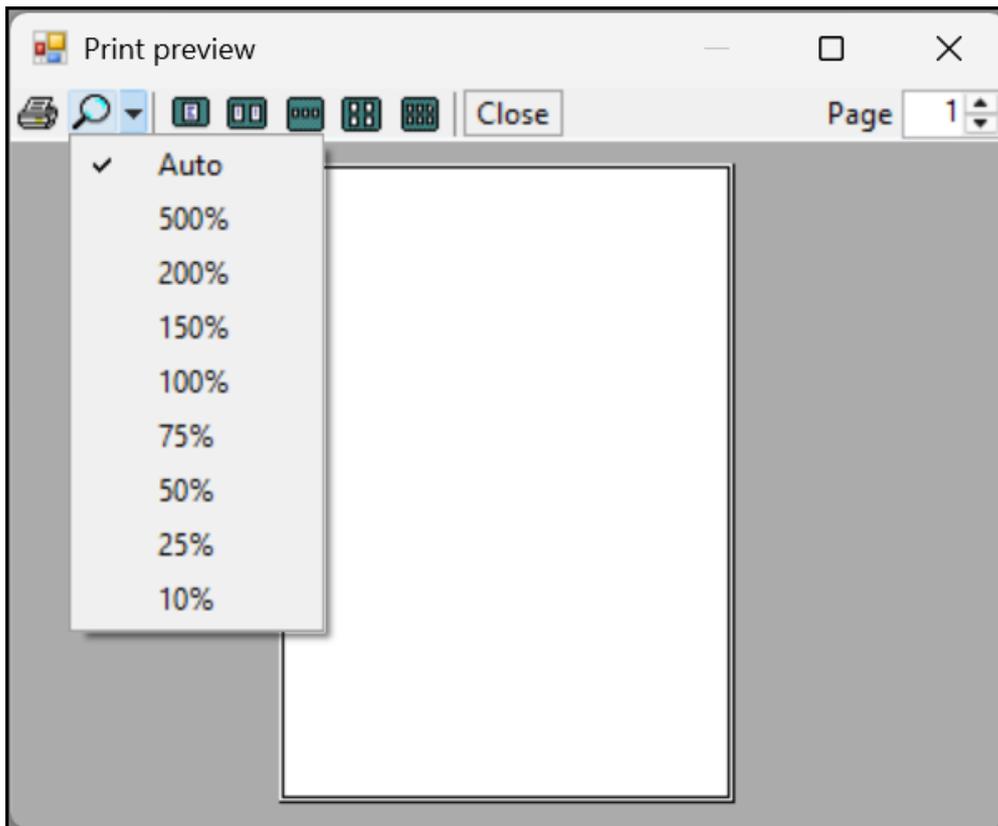
Define your default file format for save and open.

7

Video Settings

Advanced settings - in case you experience display problems with your computer video hardware de-select one of these default settings, then close and re-open the program to see the effect. If ineffective, then re-select and de-select the other setting and repeat.

Print allows you to select the page setup to suit your paper and printer as well as sending the drawing to the printer. After selecting the print button a preview is shown. By default zoom is auto but this can be changed to suit requirements. This setting also "zoom to extents" any selected element in the drawing (e.g. a panel ready for production).

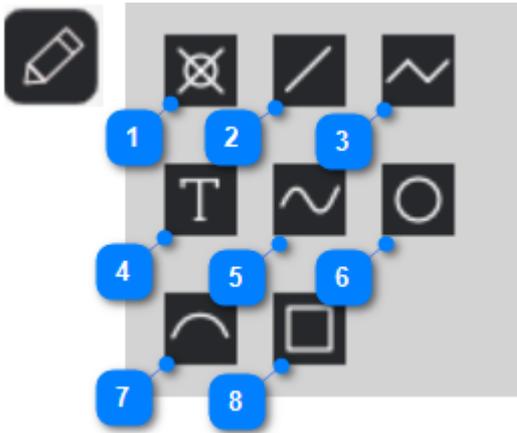


3.3. Draw Tools

Draw tool operations are influenced or limited by many environment settings and controls such as snapping to objects or grid or if orthogonal locks are turned on/off. Refer to the [reference](#) section of the help file for more details on each of these.

Tools are selected by clicking on the small down arrow on the right of the Draw tool then selecting the required tool from the list (image below). Note that the last used tool selection is stored so you can repeat the last function by simply right clicking on the Draw button.

Note:advanced draw options are described below these basic commands ([link](#))



- Draw | Point** will add a CAD point at the selected location in the drawing and will be used by MPanel CAD based programs for different purposes.



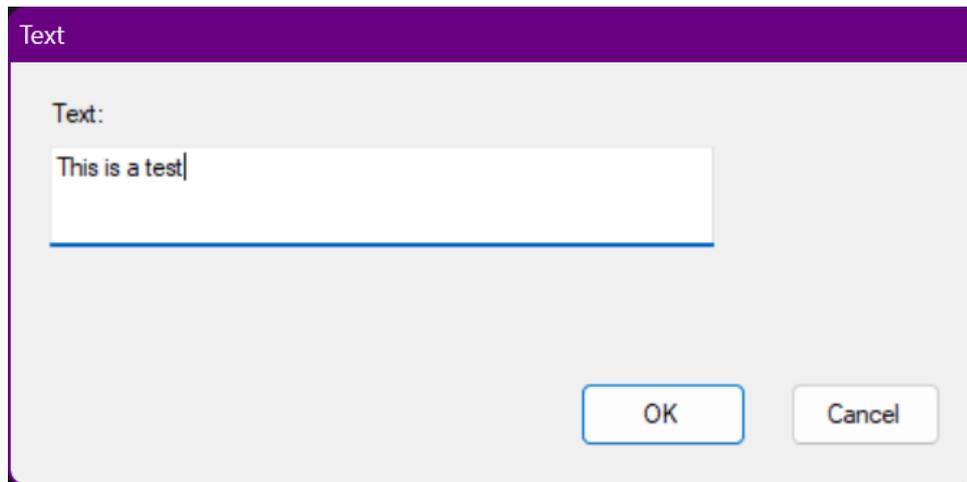
- Draw | Line** will add a line between 2 points - the start point and end point are selected by following the prompts in the command line.



- Draw | Polyline** will add a polyline (see [definitions](#)). To draw the polyline define the start location then any additional locations including the end to complete the poly then right click to exit the function.



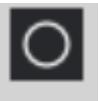
- Draw | Text** will prompt the user with a form (image below) to enter text then when you click the OK button you will be prompted to place the text at the location defined by the cursor (left click to select insertion point).



- 5 **Draw | Curve** will add a spline (see [definitions](#)) between points you select to define the shape - left click to select each point then after selecting the last point right click to exit the function.



- 6 **Draw | Circle** will add a circle between 2 points - the first point is the center of the circle and second point defines the radius of the circle by snapping the circumference to any point which you select by left clicking the mouse button when prompted



- 7 **Draw | Arc** will add an arc defined by 3 points - the start point, then the end point to define the chord then the mid point which defines the dip of the arc and its radius. Select points by left clicking the mouse button when prompted for each point.



- 8 **Draw | Rectangle** will add an arc defined by 2 points - the start point, then the diagonal end point. Select points by left clicking the mouse button when prompted for each point.



Advanced/Command Line Options

The drawing tools are normally operated using the left mouse button to define start, end, and mid points of an entity however, more advanced control over location is available via the command line interface.

For example, when adding a point (**Draw | Point**) the command line offers the options to "click on point" or "(Position)".

Draw point: click on point (Position)

Typing **P** on the keyboard will select the position option which will prompt for a location as X, Y, Z to define the location in the drawing you want to insert the point.

Specify point X, Y, Z =

Draw | Line In the case of drawing after selecting the start point the command line prompt is:

Draw line: click on end point (Position Relative Length)

Typing **P** will prompt for a position

Typing **R** will prompt for a relative (delta) position from the current location

Specify relative point dX, dY, dZ =

Typing **L** will prompt for a length and then an Angle

Specify length =

Click to fix point (Angle)

Draw | Circle Circles can be defined by **R**=Radius or **D**=Diameter

Draw | Rectangles can be defined by (**P**)osition or (**D**)imensions

When multiple points need to be defined such as a poly a right click will end the entry and define the last point:

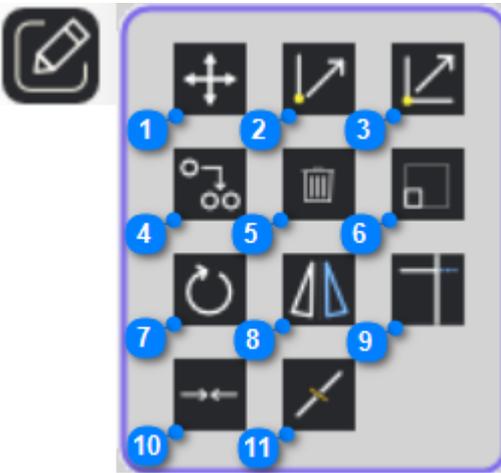
Draw poly: click on next point (Position Relative Length) (right click to end)

3.4. Modify Functions

Modify functions are influenced or limited by many environment settings and controls such as snapping to objects or grid or if orthogonal locks are turned on. Refer to the [reference](#) section of the help file for more details on each of these.

Modify functions are selected by clicking on the small down arrow on the right of the Modify tool then selecting the required function from the list (image below). Note that the last used function selection is stored so you can repeat the last function by simply right clicking on the Modify button.

The modify workflow is to select an item in the drawing and then select the modify function that will be applied to the selected item. e.g. to move a line, select the line first then select the move function and follow the prompts.

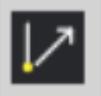


- 1 **Modify | Move** will move a selected item in the drawing from the first point at the cursor location you select when you click the left mouse button to the destination point at the cursor location you select when you click the left mouse button when prompted.

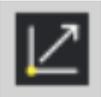
Implied move option was added in V2 which allows moving a single selected item by left clicking and holding on the item - a marquee selection box is shown around the selected item the item can be then be moved to the destination location determined by left clicking on the move-to point.



- 2 **Modify | Move ends** will move an end of a selected item (line/poly/curve etc) in the drawing from the first point at the cursor location you select when you click the left mouse button to the destination point at the cursor location you select when you click the left mouse button when prompted.



- 3 **Modify | Move nodes** will move any node of a selected item (line/poly/curve etc) in the drawing from the first point at the node location you select when you click the left mouse button to the destination point at the cursor location you select when you click the left mouse button when prompted.

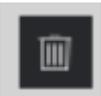


- 4 **Modify | Copy** will copy a selected item in the drawing from the first point at the cursor location you select when you click the left mouse button to the destination point at the cursor location you select when you click the left mouse button when prompted.

Multiple copies - by holding the Shift key allows selection of multiple destinations for multiple copies.

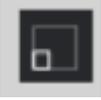


- 5 **Modify | Delete** will delete a selected item in the drawing. This can also be achieved by selecting an item in the drawing then use the DEL key on the keyboard.



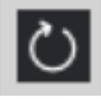
6

Modify | Scale will scale a selected item in the drawing. The scale function requires 3 points to be defined, the first point (e.g. start of line), then a reference point (e.g. any position along the line) then the final scale point. E.g. using snap to grid select a line 1m long and scale. Select the start of the line then the end of the line to define a 1m reference then select 4 grid point to right or left to scale the line by 4.



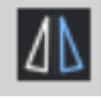
7

Modify | Rotate will rotate a selected item in the drawing. The rotate function requires 3 points to be defined, the first "origin" point (e.g. start of line), then a reference point (e.g. the end of the line) then the final destination point which will define the direction the end of the line will be rotated to around the origin (first point).



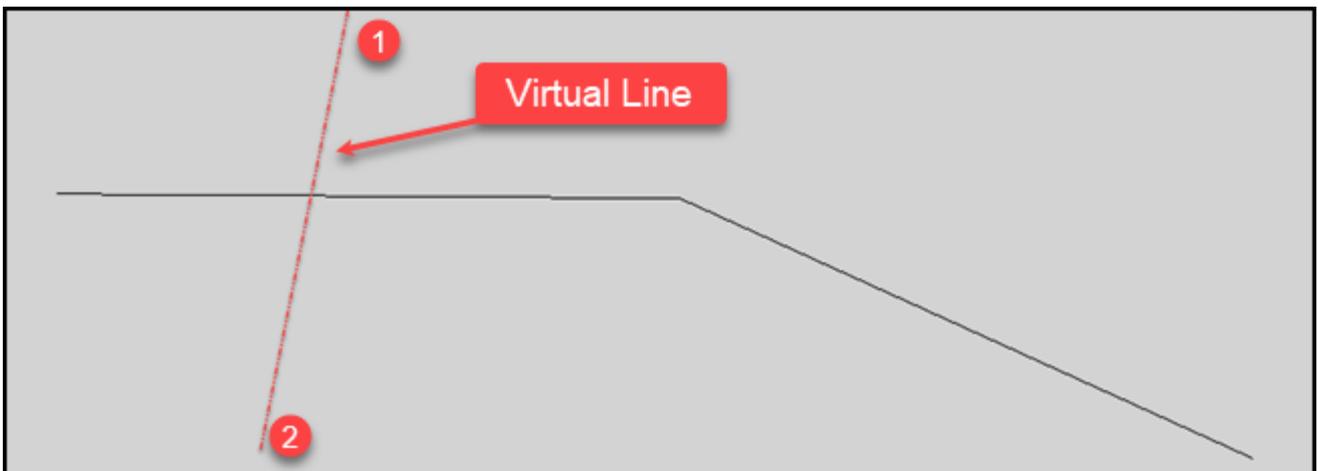
8

Modify | Mirror Copy will mirror (copy) a selected item in the drawing. The mirror function requires 2 points to be defined, the first point (start of mirror line), then a second point (end of the mirror line). The selected item will be copied as a mirror image defined by the mirror line.



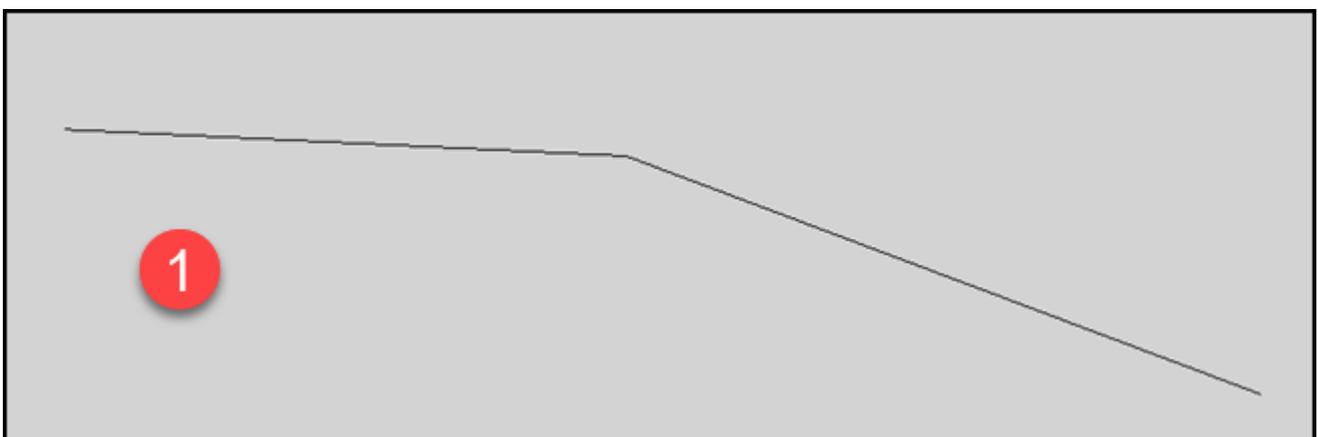
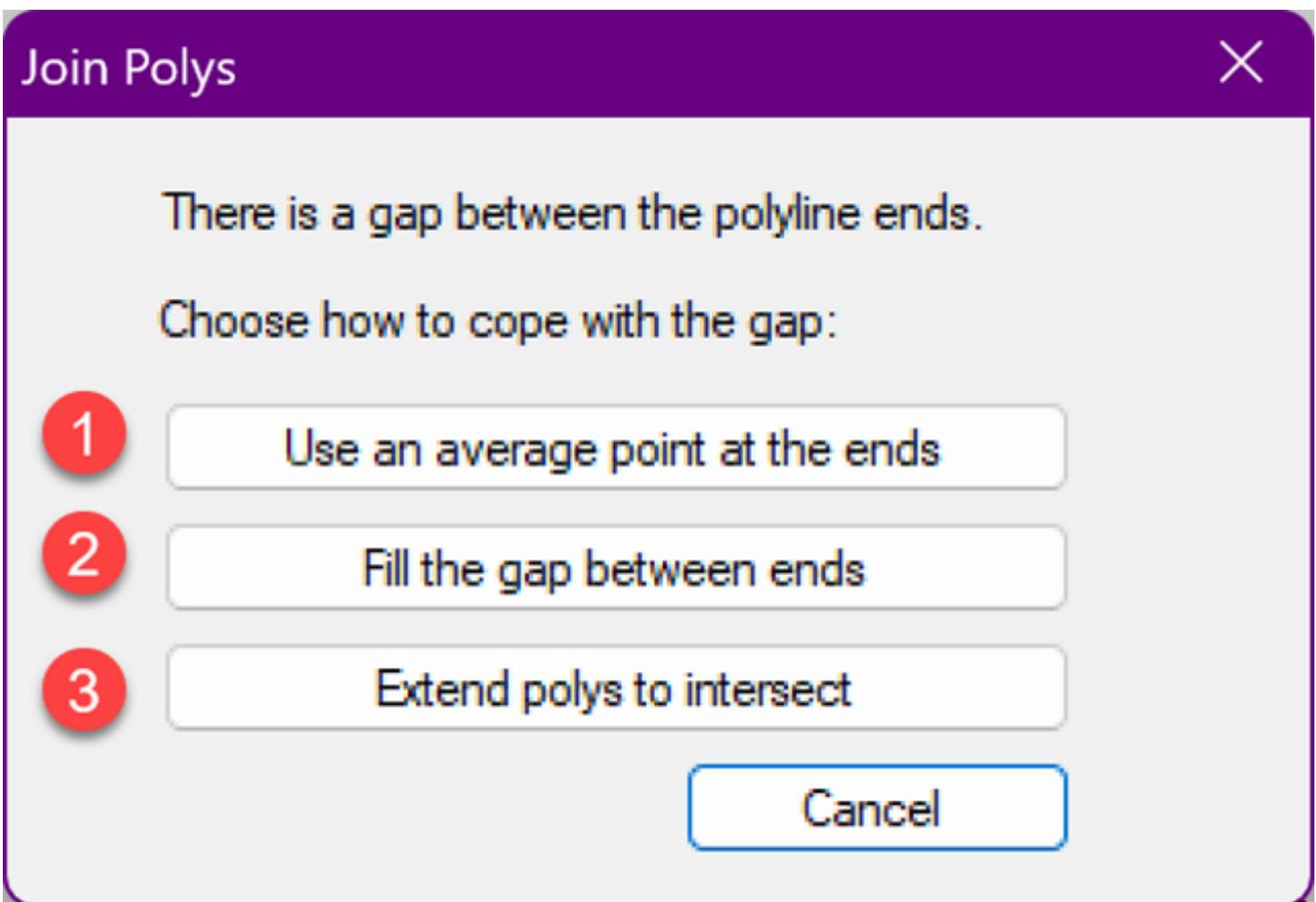
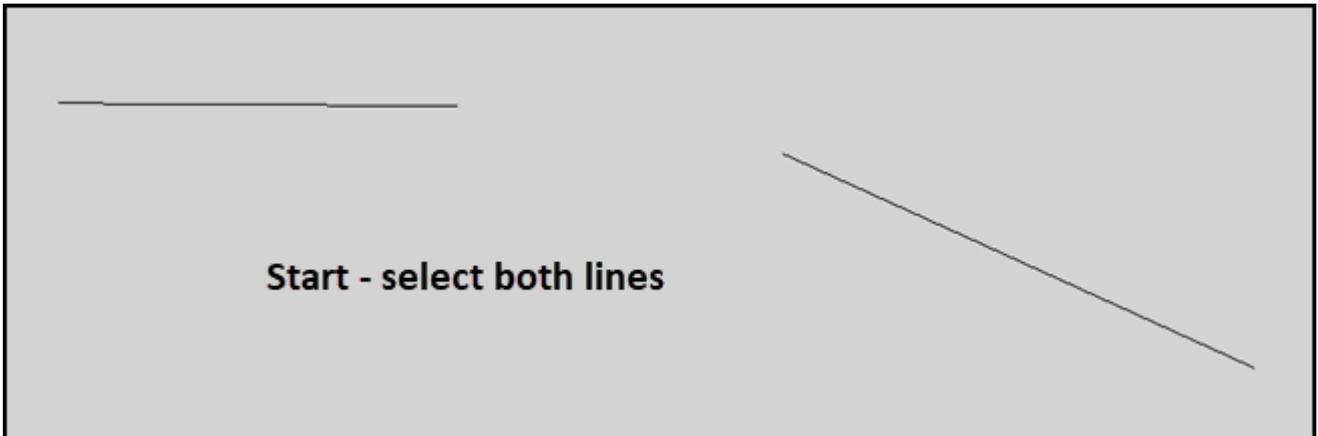
9

Modify | Trim ends will trim the **shortest** end of a selected item in the drawing. The Trim function requires 2 points define a virtual trim line, the first point (start of virtual trim line), then a second point (end of the virtual trim line). The virtual Trim line should cross one end of the selected item to be trimmed.



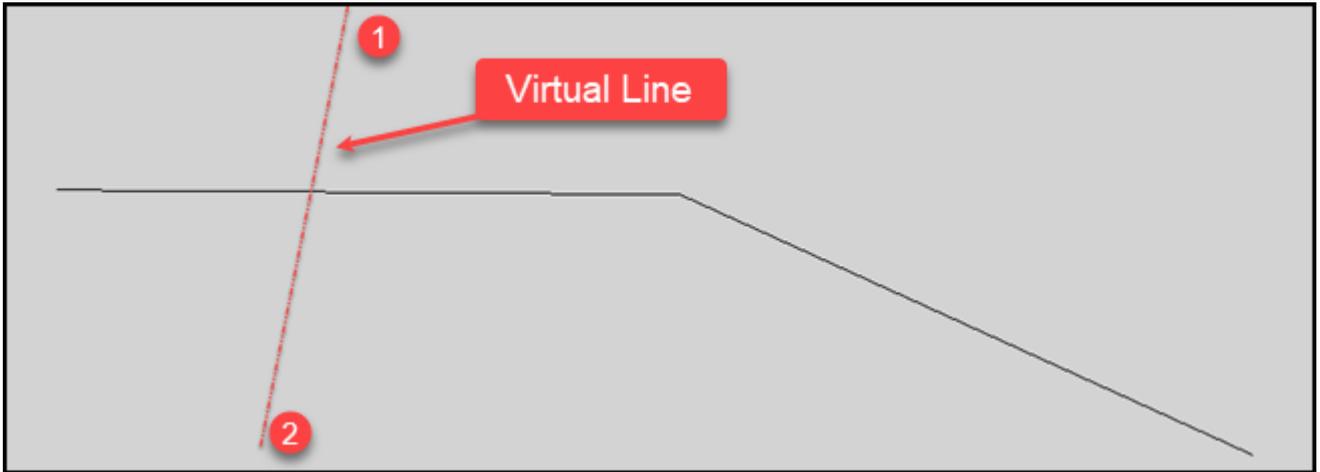
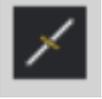
10

Modify | Join will join 2 selected items in the drawing based on the selected options you choose from the 3 available join options (image below). Below shows how 2 lines will be joined based on the 3 join options.

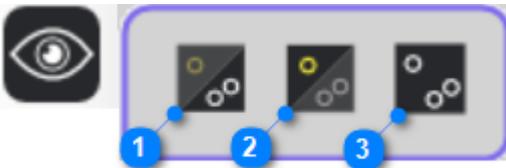


11

Modify | Split will split a selected item in the drawing. The split function requires 2 points to define a virtual split line, the first point (start of virtual split line), then a second point (end of the virtual split line). The virtual Split line should cross the selected item to be split.

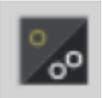


3.5. Visibility Options



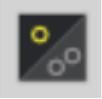
1

Visibility | Hide selection will hide any selected item(s) in the drawing.



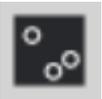
2

Visibility | Hide unselected is the reverse and will hide any item(s) in the drawing that were not selected.

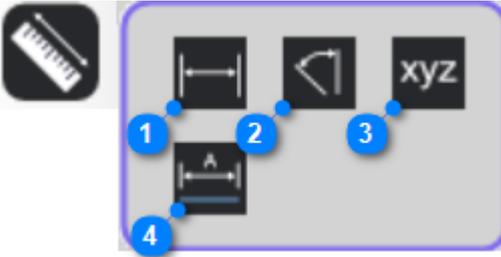


3

Visibility | Show all will show any item(s) in the drawing that were previously hidden.



3.6. Measure Tools



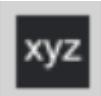
- 1 **Measure | Length** will display the length between any 2 selected points in the command line at the bottom of the screen.



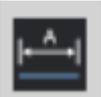
- 2 **Measure | Angle** will display the angle between any 2 selected items in the command line at the bottom of the screen.



- 3 **Measure | Position** displays the live X, Y, Z positions of the cursor in the command line at the bottom of the screen.



- 4 **Measure | Measurement** will add a length dimension between any 2 selected points in the drawing. When adding a dimension to a sloping/angled object will tend to default to orthogonal. By holding the shift key the dimension will force the dimension to be aligned with the object being measured.



3.7. Undo/Redo Tools



- 1 **Undo** will undo the last action in the drawing.



2

Redo will repeat the last action in the drawing.



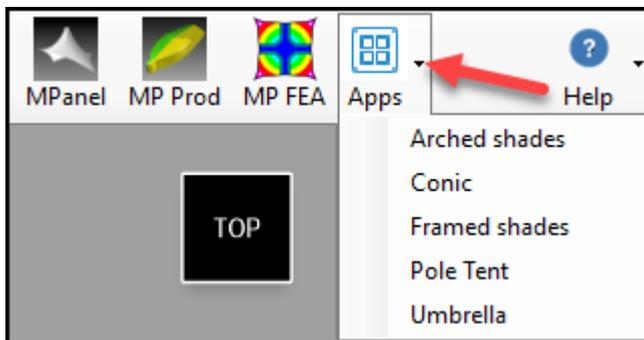
4. Apps

4.1. Apps

MPCore is a minimal CAD platform which supports plug-in applications to produce patterns for range of fabric structures. MPCore is required to operate any of these Apps so when ordering, be sure to select the App including an MPCore License. Note, you only need one MPCore license so once you have MPCore, you can add additional Apps without additional MPCore licenses.

Apps for MPCore are available by subscription from your Dashboard on www.mpanel.com.

Once you have an active App subscription you can access the App from the Apps drop down menu:



MPCore Apps provide form based tools to build 3D fabric structure models. Other tools allow the user to make panels, compensate the panels, add seam and hem allowances and then output the panels for manual or machine cutting. Detailed operating instructions for each App are included inside the App.

Users of MPanel InSite can also import their fabric structure designs from InSite into MPCore Apps to produce fabric patterns

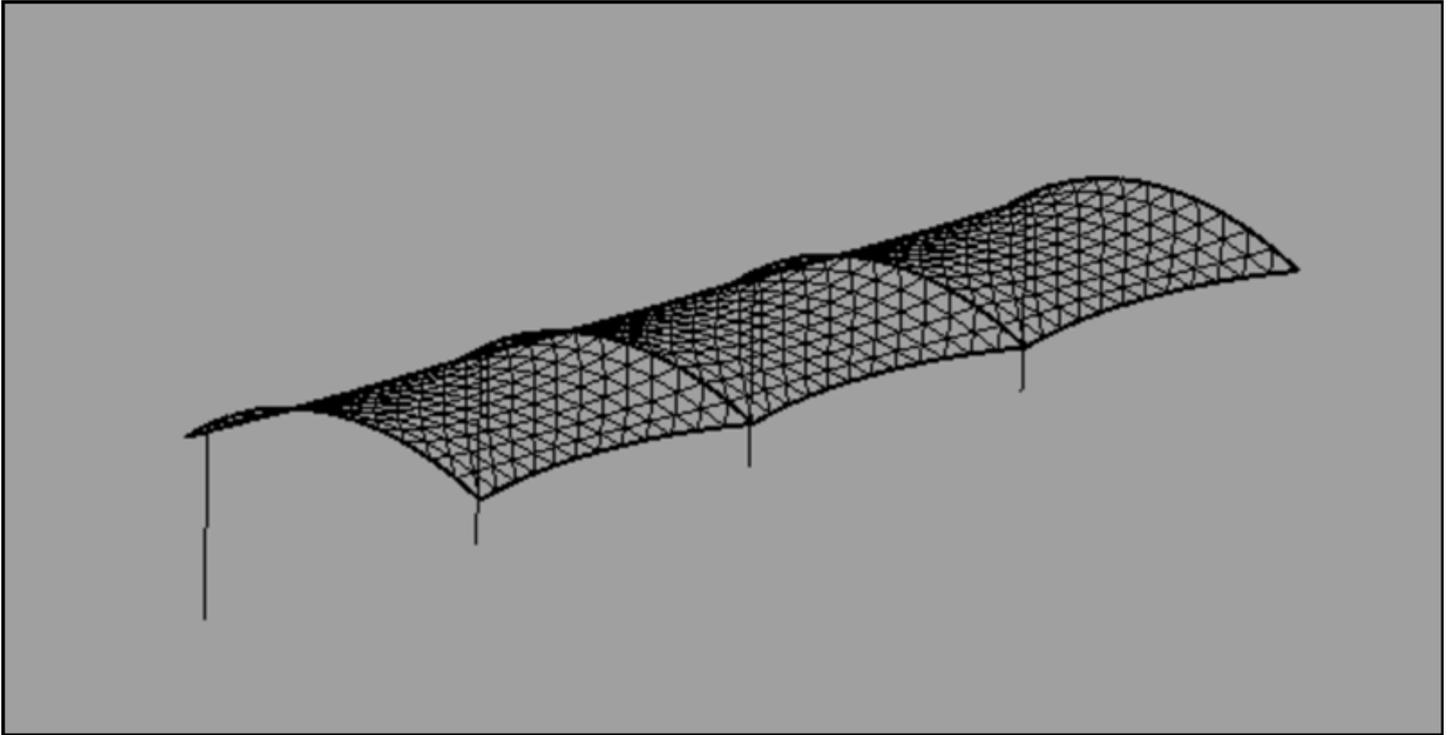
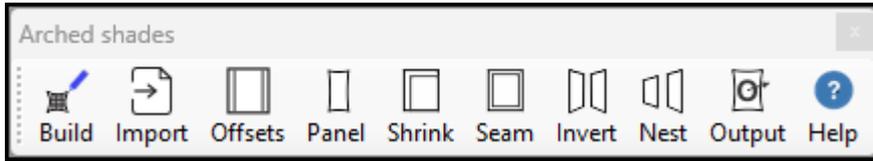
Currently available Apps include:

- [Arched Shades](#) - Define multi-bay arched shade structures and produce patterns which when sewn together produce a form fitting 3D fabric covers. Allowances can be included for keder or rope edges as well as tensioning hardware.
- [Conics](#) - Define multi-sided tensile conic structures or import from InSite and produce patterns which when sewn together produce a form fitting 3D fabric cover.
- [Framed Shades](#) – Define rectangular and polygon framed shade structures and produce patterns which when sewn together produce a form fitting 3D fabric cover. No more forcing flat fabric to fit a 3D frame.
- [Pole Tents](#) - Define simple pole tent/marquee structures with or without valances and produce patterns which when sewn together produce a form fitting 3D fabric cover.
- [Umbrellas](#) - Define multi-sided market umbrella with or without vent covers and produce patterns which when sewn together produce a form fitting 3D fabric cover.
- [Nesting](#) - Is a separate license for MPCore to allow nesting of fabric patterns prior to exporting to plotter/cutter

4.2. Arched Shades App

Arched Shades - Define multi-bay arched shade structures and produce patterns which when sewn together produce a form fitting 3D fabric covers. Allowances can be included for keder or rope edges as well as tensioning hardware.

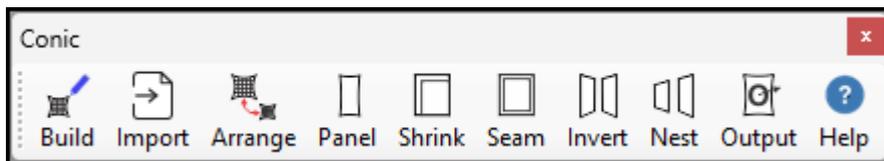
Detailed operating instructions for each App are included inside the App.

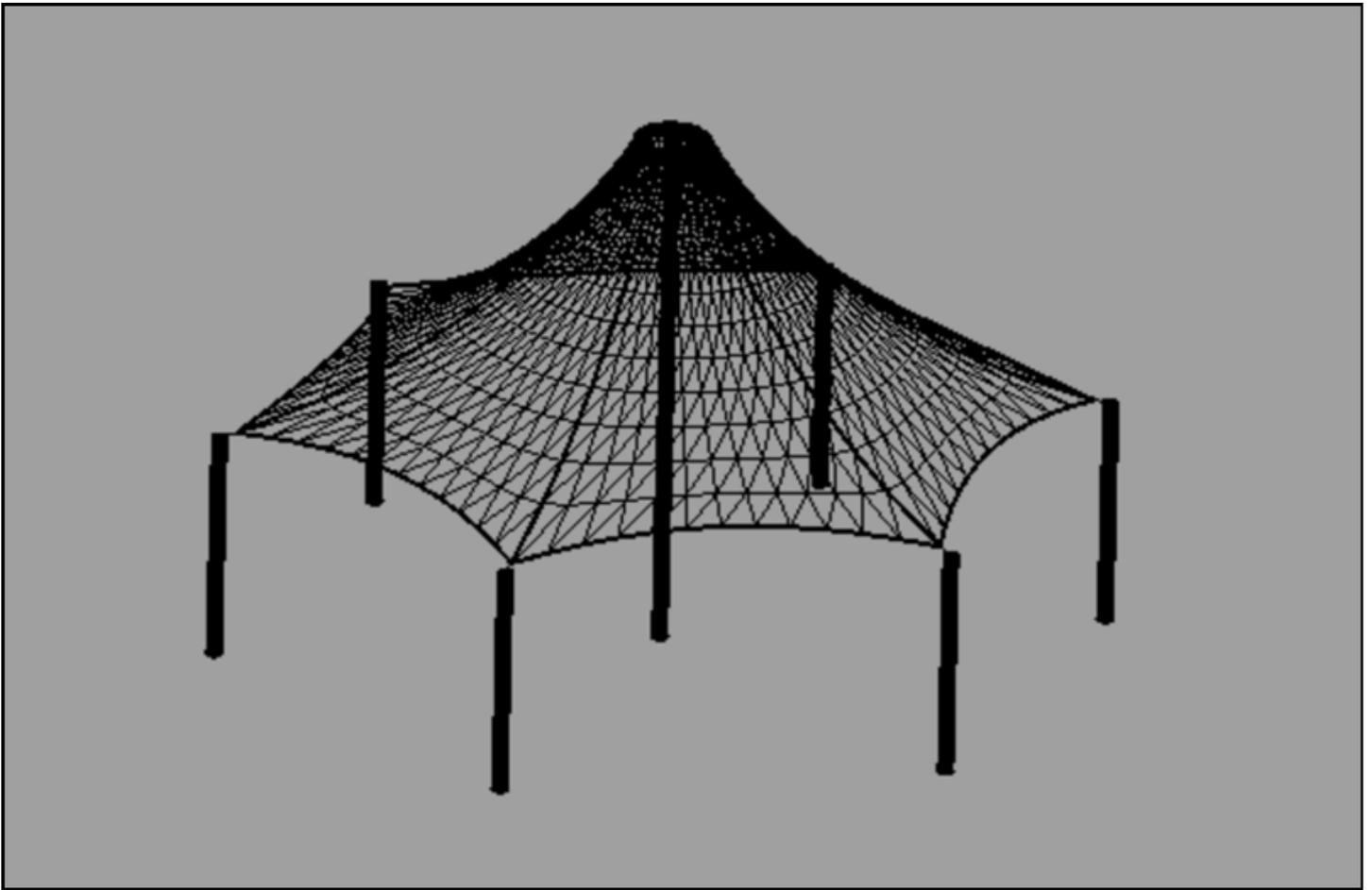


4.3. Conic App

Conics - Define multi-sided tensile conic structures or import from InSite and produce patterns which when sewn together produce a form fitting 3D fabric cover.

Detailed operating instructions for each App are included inside the App.



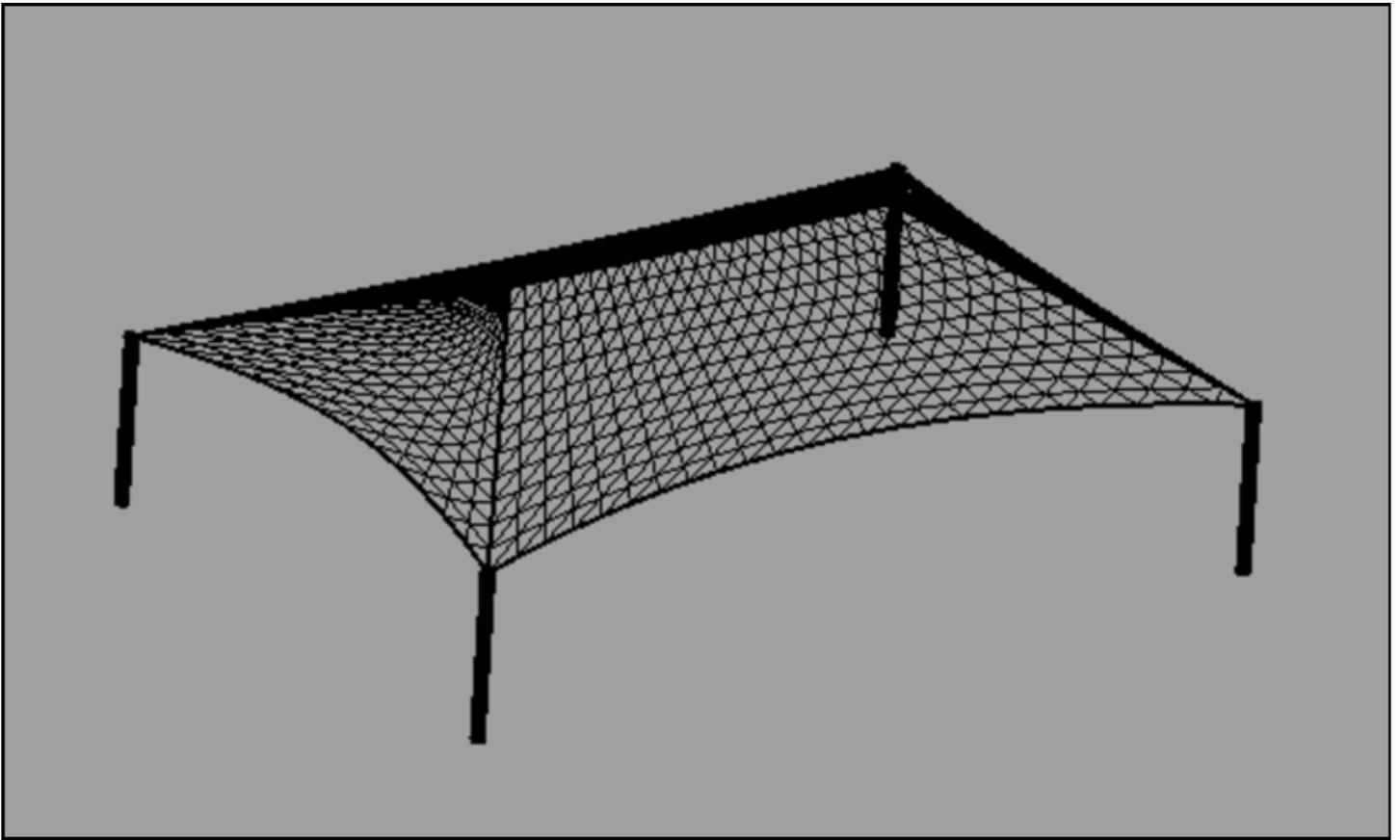


4.4. Framed Shades App

[Framed Shades](#) – Define rectangular and polygon framed shade structures and produce patterns which when sewn together produce a form fitting 3D fabric covers. No more forcing flat fabric to fit a 3D frame.

Detailed operating instructions for each App are included inside the App.

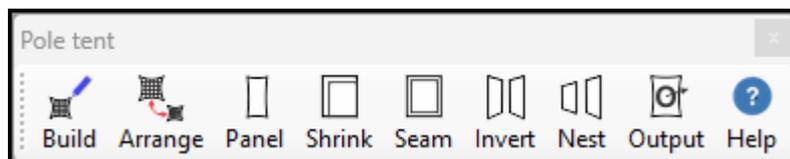


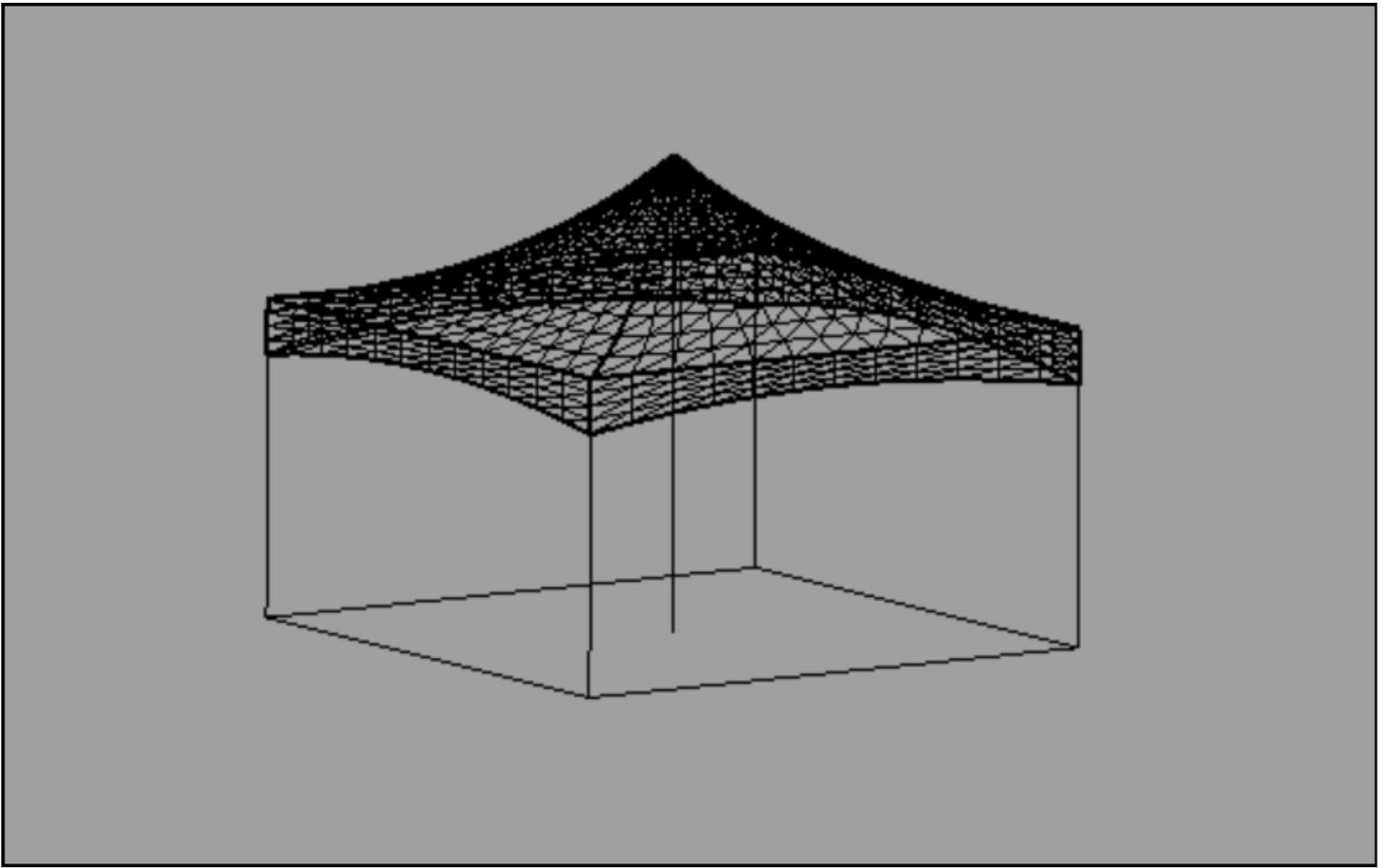


4.5. Pole Tent/Marquee App

[Pole Tents](#) - Define simple pole tent/marquee structures with or without valances and produce patterns which when sewn together produce a form fitting 3D fabric cover.

Detailed operating instructions for each App are included inside the App.

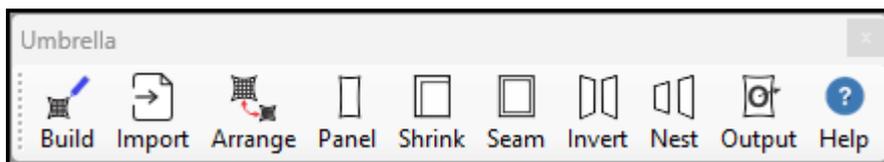




4.6. Umbrella App

[Umbrellas](#) - Define multi-sided market umbrella with or without vent covers and produce patterns which when sewn together produce a form fitting 3D fabric cover.

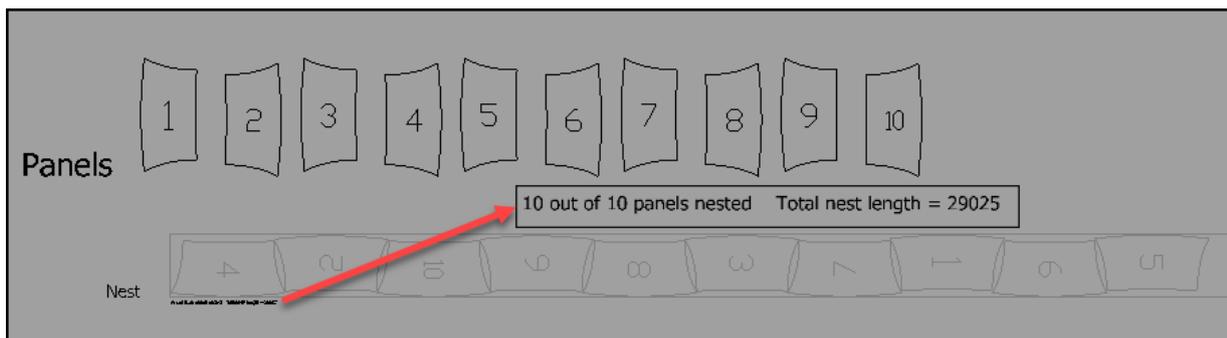
Detailed operating instructions for each App are included inside the App.





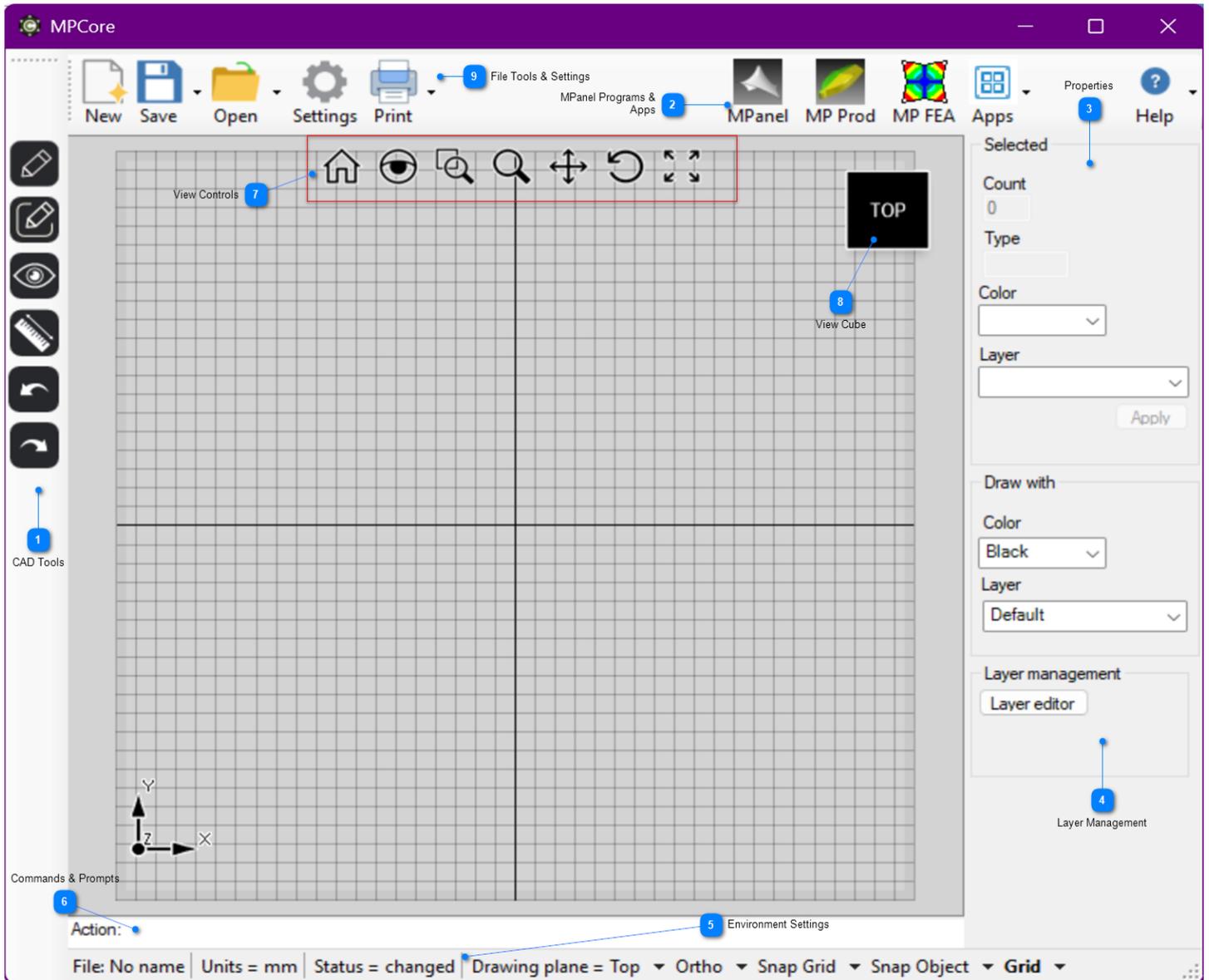
4.7. Nesting App

[Nesting](#) - Is a separate license for MPCore to allow nesting of fabric patterns to reduce fabric waste prior to exporting to a plotter/cutter machine.



5. Reference

5.1. Screen Layout



- 1 CAD Tools**

Drawing tools and functions - refer [How to](#) for more details
- 2 MPanel Programs & Apps**

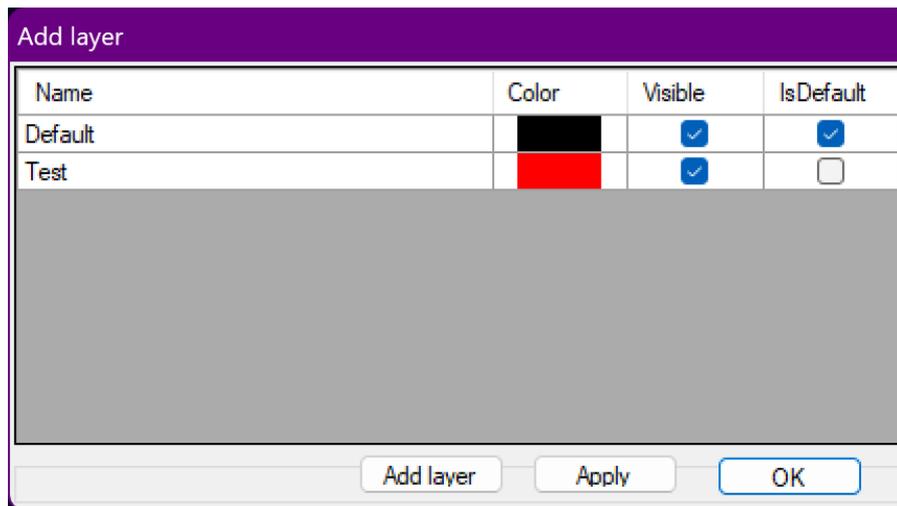
This portion of the Ribbon user interface is assigned to starting MPanel prime programs such as MPanel, Production & FEA along with provision for integrated apps which will become available in future releases. The Help file can be opened by clicking on the blue ? button in the top right of the ribbon (left-click and hold on the drop-down arrow will show the software version number).
- 3 Properties**

Shows the properties of any selected items including the number of items selected, the color used in the drawing and the layer on which the items have been drawn. To change the color of a selected item click on the down arrow to the right to choose a different color then select "Apply" to make the change. Similarly, to change the layer of the selected item, click on the down arrow to the right to choose a different layer then select "Apply" to make the change. To add layers see item 4 below.

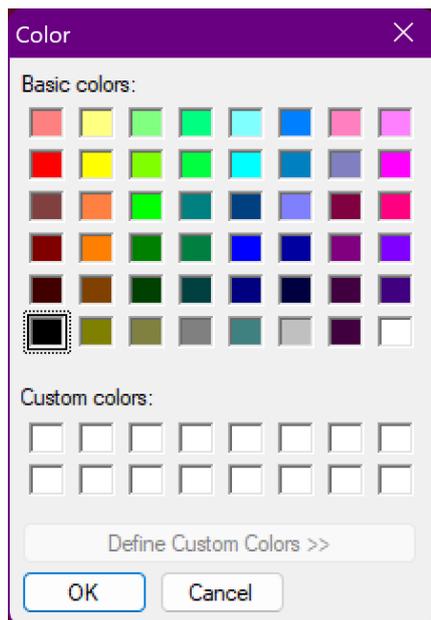
4

Layer Management

Shows the currently selected drawing color and layer. To add/change layer names/colors click the layer editor button to add layers (here you can see we added a layer called test and made it's default color to be red) and made the layer visible in the drawing.



Double clicking on the color swatch will open the color selection options:



5

Environment Settings

- File name - shows currently saved file name or "No name" if file is not yet saves
- Units - shows the currently selected drawing units of measure selected in "[Settings](#)"
- Status - shows if any changes have been made to the drawing since last saved
- Drawing plane - allows to change the drawing plane between Top, Front and Right - see [definitions](#) for more detail
- Ortho - allows you to turn orthogonal lock on or off - see [definitions](#) for more detail
- Snap to Grid - allows you to turn "snap to grid" control on or off - see [definitions](#) for more detail
- Snap to object - allows you to select between - off, snap to an end point of an object, snap to any control points of an object, or snap to anywhere on an object closest to the cursor - see [definitions](#) for more detail
- Grid - visibility can be turned on or off - see [definitions](#) for more detail

6

Commands & Prompts

This area of the screen shows commands and prompts the user e.g. Draw line: "click on start point" etc.

View Controls



1. Home screen
2. Magnifier glass which can be moved anywhere in drawing for more detail.
3. Zoom windows allows you to select a window (hold down left click and drag a rectangle over the area in the drawing you want to zoom into. When you let go of the left mouse button the view will zoom in to the selection.
4. Zoom real-time - after selecting this tool left click and drag the cursor up and down the drawing screen to zoom in and out.
5. Pan real-time - after selecting this tool left click and drag the cursor around the drawing screen to pan the view.
6. Rotate real-time - after selecting this tool left click and drag the cursor around the drawing screen to rotate the view.
7. Zoom extents - will zoom in or out to automatically include all objects in the drawing view.

View Cube

Provides another means to rotate the drawing view including top, bottom, front, back, left & right. If Top, Front or Right are selected the drawing plane will automatically change to match the view cube selection.

File Tools & Settings

- New - creates a new drawing - if the current drawing is unsaved you will be prompted to abandon the drawing
- Save - Saves current drawing or provides Save as function for new drawings
- Open - opens windows file location dialog - if the current drawing is unsaved you will be prompted to abandon the drawing - the down arrow on the right will allow re-open previous files and import dxf
- [Settings](#) - specify drawing units, grid details and the default save filetype (Rhino or AutoCAD) - the down arrow on the right will show version number of the program and the help file.
- Print will provide a preview of the image and allow printing.

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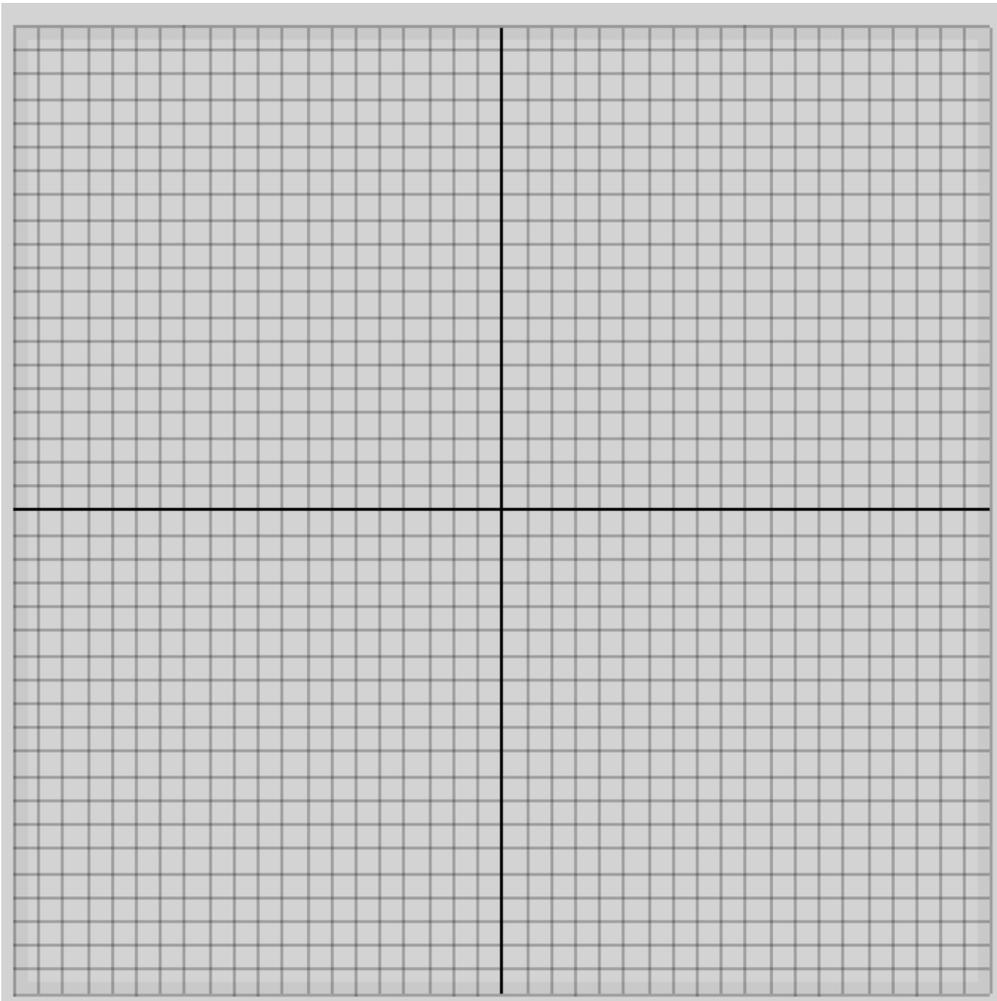
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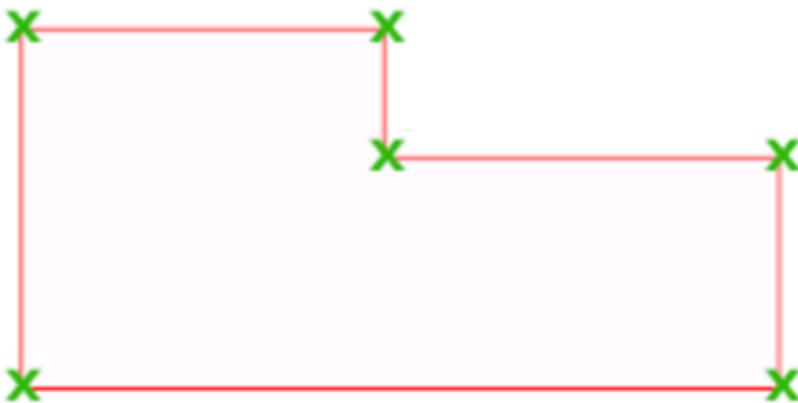
Grid

is the virtual drawing paper (imagine graph paper) with the origin 0x,0y at the center. You can draw using the grid or outside the grid and the grid can be turned on or off.



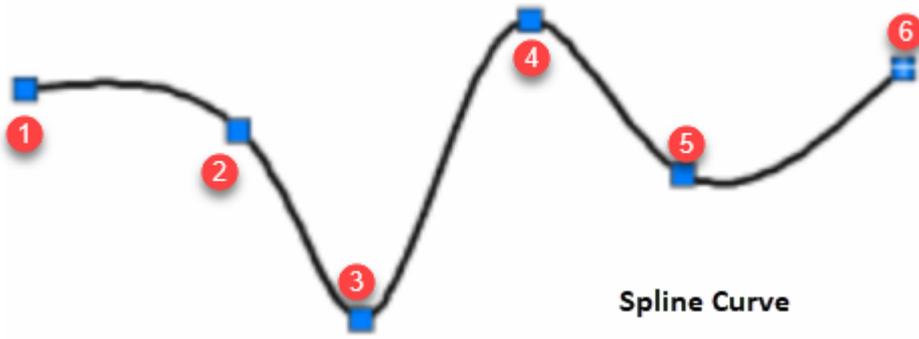
Polyline

A line of many segments with a start and end and points in between shown as green crosses in this image



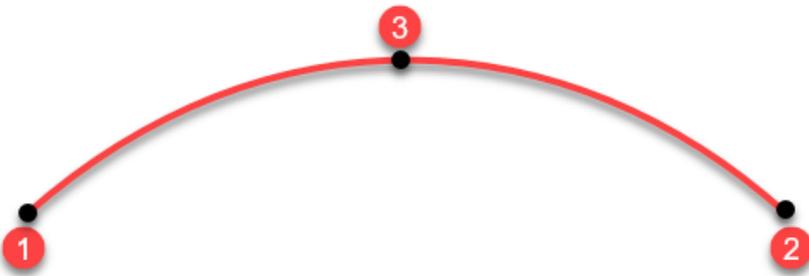
Spline

A smooth curve defined by a set of fit points in this example 1 to 6



Arc

To draw an arc follow the prompts and enter points 1 to 3 as shown in the image below:



Chord

The chord is the distance between points 1 and 2

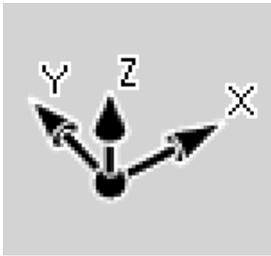
Layers

A drawing can be created on a single or on many layers - imagine each layer is a sheet of tracing paper you can draw on and at the same time see through to other layers below. This facility has many benefits in that layers can be turned on or off (made visible) e.g. reference layer might include a building outline or a drawing grid which you want to turn on to assist with adding new elements to a drawing but turn off later to remove clutter. The same applies with annotations and dimension layers etc.

Drawing Plane

In 2D drawings (such as a piece of paper) we draw in Top view (often referred to as Plan view) and all elements in the drawing are defined by X and Y coordinates. The start of a line can be started at the point $0x, 0y$ and the end point at $5x, 0y$ which will define a line of 5 units drawn from left to right.

MPCore is a 3D drawing environment so we have 3 drawing planes - Top, Front, and Right. The Top plane is the same as described above in 2D drawings. The difference is elements in the drawing now include a Z coordinate point (a height above the XY plane). The drawing coordinates are shown by the 3 arrows at the bottom left corner of the drawing space.



Ortho

Shorthand for Orthogonal which when turned on will restrict the cursor to orthogonal movements i.e. at right angles such as North/South, East/West. This is very useful for drawing straight lines and or squares and cubes.

Snap to

When drawing objects it is often useful to start or end either on a grid point or a point of another drawing object. For example we can snap to grid and draw a line starting at a grid point then end 10 grid points to the right to draw a straight line of 10 units long. Alternatively, we may wish to draw another line that starts at the end of the previous line so we would switch on the snap to end tool and as we come close to the end of the line the cursor will automatically snap to the point making it easy to draw exactly in CAD.

5.4. Limitations

MPCore limitations.

MPCore supports the following entities for drawing:

- Line
- Polyline
- Curve
- Circle
- Arc
- Point
- Text
- Angled dimension
- Mesh (must be generated by MPanel)

Opening AutoCAD and Rhino files only supports these entities. All other entities are ignored. Some examples of ignored entities are:

- Ellipse
- Surfaces
- Images
- Blocks
- Solids
- Linear dimensions

The AutoCAD save/read version is ACAD 2010.

The Rhino save/read is version 7

The import dxf does not support all the entities listed above. It is intended to import data from a Proliner or Leica laser, so imports lines, points, polylines, and text.

5.5. System Requirements

These are the minimum requirements to run MPCore version 1:

Operating system: at least Windows Vista (Windows 7 to 11 are all OK)
Net framework: Net 4.8

Operating systems before Windows 8 will need to have Net 4.8 installed. If this is missing then it will be asked for during program installation.

Due to the requirement for Net 4.8, it is not possible to run this program on Windows XP

5.6. Support/Contact Us

Technical support is available to customers who:

Have a valid annual technical support contract

or purchased MPCore within the previous 12 months

or are evaluating an MPCore demo product

In general, it is best to send the model file (projectfilename.dxf) as an attachment to the email, as this will allow us to respond specifically to your question.

Support questions should be sent to:

support@mpanel.com

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