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Fly Elise-ng
Immersive Mapper PRO v4.6
User Guide

1 Introduction

Immersive Mapper PRO are the ultimate projection mapping software packages for DirectX, OpenGL, Vulkan, Windows 7, 8, 8.1, 10 and 11 Desktop. It is based on the proven Fly Elise-ng image geometric correction technology for multi-projector projection on any type of projection surfaces.

Immersive Mapper PRO utilizes Fly Elise-ng Immersive Display core components for image geometric correction, masking, blending configuration and presentation. With a simple user interface and using the system mouse and keyboard the projected output image can be mapped on any kind of projection surface.

Immersive Mapper PRO supports up to 16 projectors per PC, which can be configured in different horizontal and vertical stacking. Per projectors up to 16 independent mapping grids are supported to map to any kind of projection surface.

Typical application of the software is digital signage, retail advertising, multi-content presentations, etc.

2 System requirements

The following is the required minimal configuration:

- PC with 2.0 Ghz or higher processor (32bit or 64 bit)
- 2 Gb or more RAM
- A moderate graphics card (NVIDIA or AMD/ATI)
- For creating a wide multi projector display in Windows 7, 8 10 and 11 desktops, the following products are required:
  - NVIDIA surround 2D support for NVIDIA graphical cards
  - ATI Eyefinity support for ATI graphical card
  - Or Matrox DialHead2GO or TrippleHead2GO external hardware box
  - Or Nvidia Quadro graphics card with mosaic mode

- Administrator privileges are required to **install** Immersive Mapper PRO.
- Administrator privileges are **NOT** required to **run** Immersive Mapper PRO.

3 Install and uninstall

3.1 Install

Note: Immersive Mapper PRO makes intensive use of DirectX runtime. It is required that the latest version of "DirectX End-User Runtime" is installed on the computer before Immersive Mapper PRO can be used.

At the moment of writing of this document, the latest DirectX End-User Runtime can be downloaded from this location:

https://www.microsoft.com/en-gb/download/details.aspx?id=35&40ddd5bd-f9e7-49a6-3526-f86656931a02=True

Immersive Mapper PRO comes in a single installer package. DirectX End-User Runtime web installer is included in the installer package.

Before the installation begins the installer check the following preconditions:

- If Immersive Mapper PRO is still running
- If Immersive Mapper PRO is already installed

In both cases, the installer will stop and prompt the user to take the appropriate action before staring the setup again: If Immersive Mapper PRO is still running installer will prompt to quit Immersive Mapper PRO first. If Immersive Mapper PRO is already installed the installer will prompt to uninstall it first.

After the install a system restart is needed to complete the post installation steps.

3.2 Uninstall

Immersive Mapper PRO can be un-installed using the uninstall short cut in the Immersive Mapper PRO menu or using the "Add/Remove Programs" from control panel.

After uninstall a system restart is needed to complete the post uninstall steps.
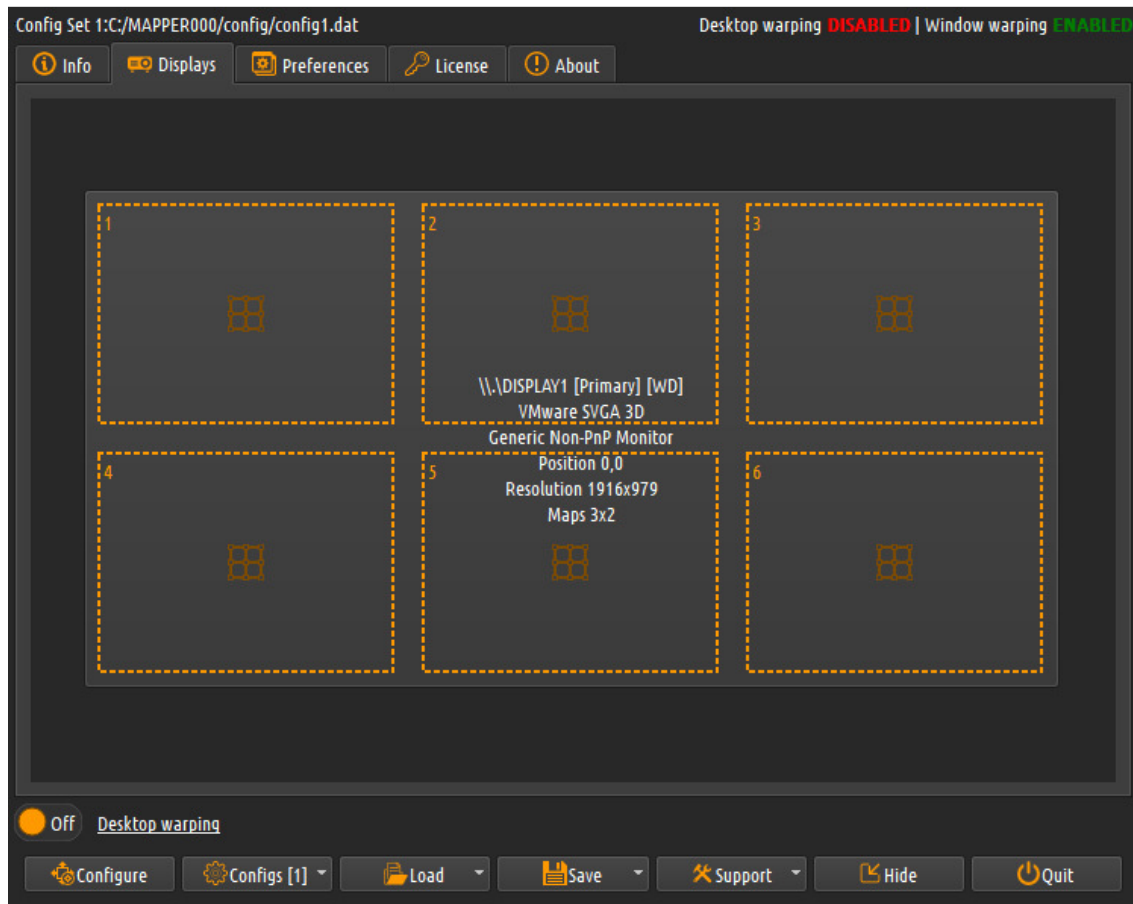
4   Quick Setup Guide

After installing, Immersive Mapper PRO can be started from the start menu. A simple and intuitive control and configuration dialog can be used to configure the needed geometrical correction and masking.


1 – Go to the displays tab and select the desired number of mapping areas (grids) per detected display.
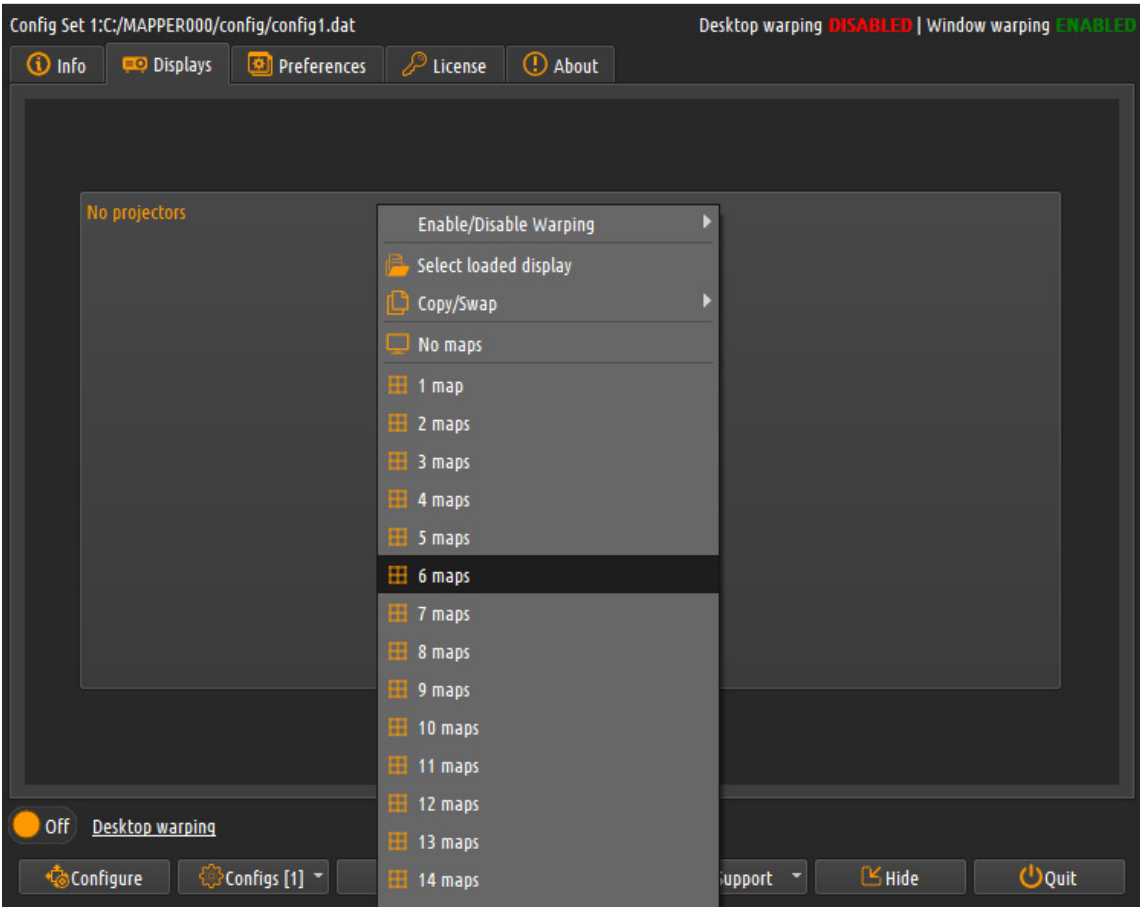
2 – Press the configure button to edit the geometrical correction and masking. A configuration screen will be opened where the user can user the control points to map the projected output on the projection screen, define the masking and configure the mapping depending on the configuration mode.

In the geometrical correction mode, user can use the mouse of keyboard to move the green control points on the screen until the projected image is mapped on the projection surface.
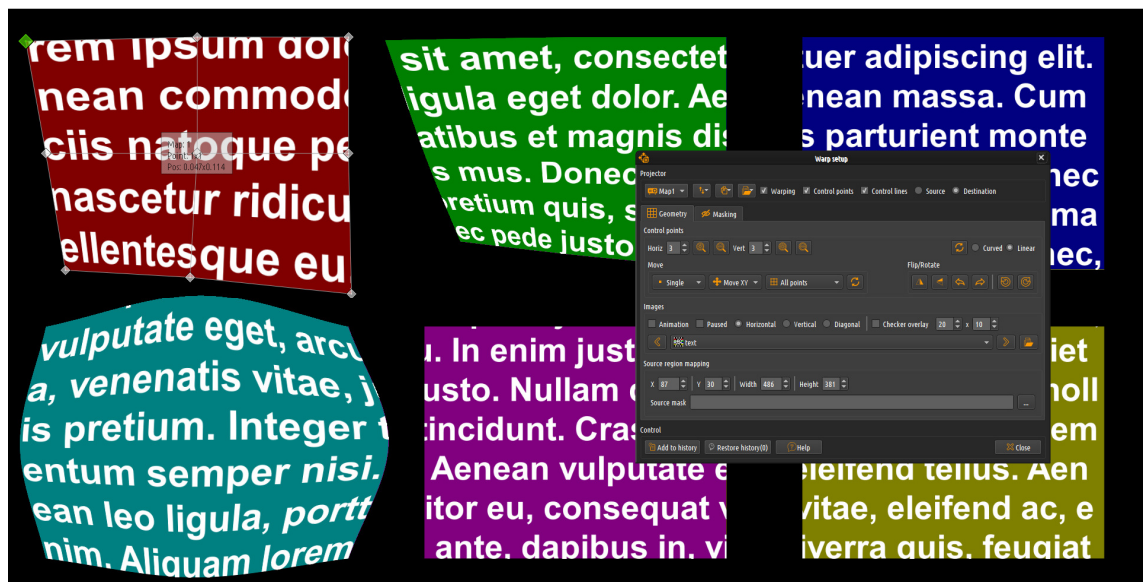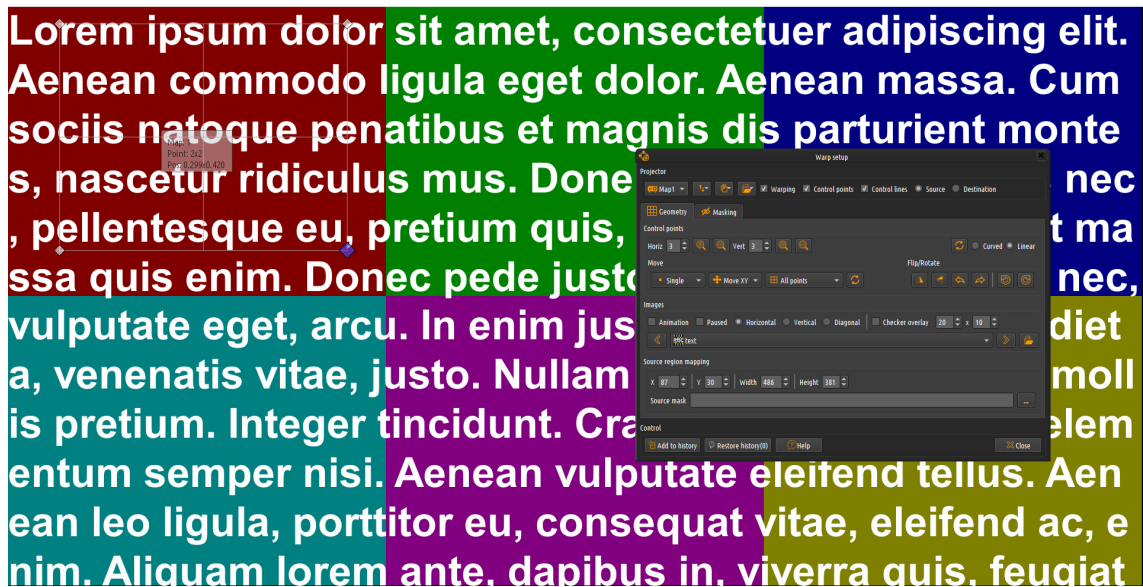
3 – After the configuration is finished, user can press the "Esc" key to exit the configuration screen. The configuration can be saved using the "Save/Save As" button on the control and configuration dialog. This configuration will be used the next time when Immersive Mapper PRO is started again.

4 – When running on Windows 7, Windows 8, Windows 8.1 or Windows 10 System, user can check the "Warp desktop" check box in the control panel. This will enable warping of the complete desktop, including all applications running in windowed and full-screen mode.
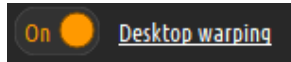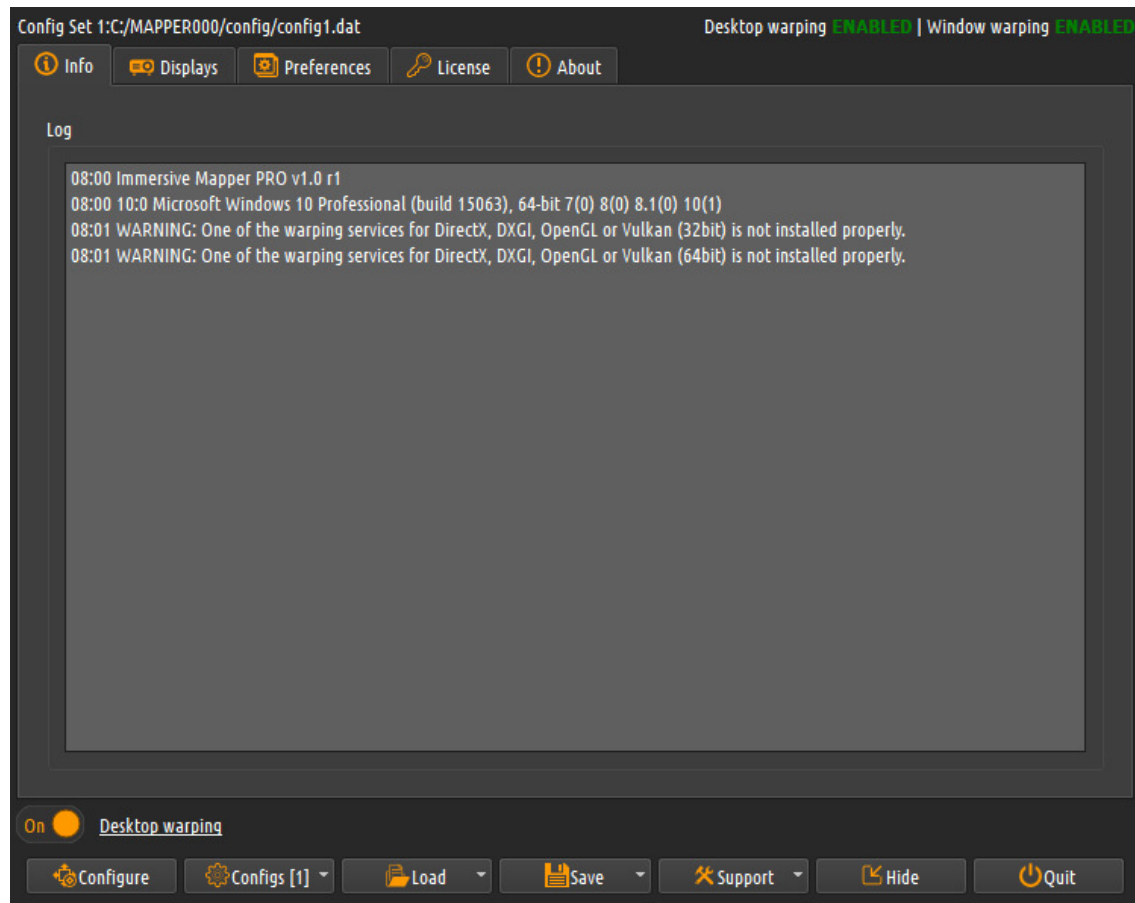
5 – Pressing the "Hide" button, Immersive Mapper PRO will be minimized on the system tray.
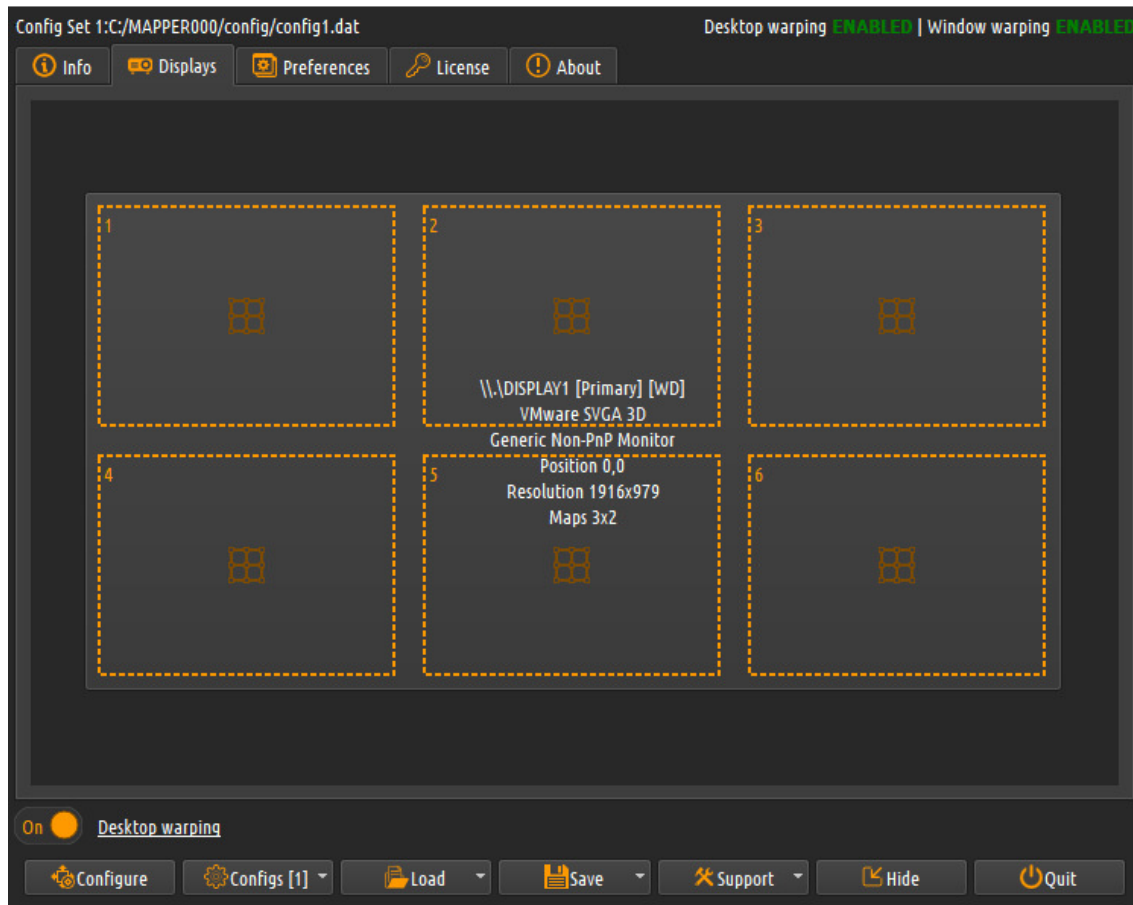
5   Control dialog

The control dialog has four tabs and a button bar.

5.1   Info tab

The info tab contains the log window. Every time an application is started or the warping changes an info line will be added to the Log window.

5.2 Displays tab

The displays tab shows the detected displays on the system. Every time Immersive Mapper PRO is started, it detects all displays present on the system. Every display is presented with a button containing information about the display system name (known to Windows OS), the resolution and the number of mapping grids configured to this display. Initially there are no grids configured to the displays.

By clicking on the display button a popup menu will be presented with all supported grids configurations. Up to 16 grids can be selected per display.

Displays changes

When multiple windows displays are used (or multiple graphical cards) Windows sometimes enumerates and names the displays in an arbitrary order. Because Immersive Mapper PRO stores the warping and blending configuration per display, when Windows enumerates displays differently, the previously

configured display can be renamed differently or can swap position with another display.

When the option "Check for display change" is selected, Immersive Mapper PRO will detect any changes in the displays configuration since the last time the settings have been saved. If changes are detected, the displays tab will be cored red. Pressing the Left or Right mouse button on the display will open the context menu. The first item in the context many will open the previously saved displays configuration and the users can select (take over) the previously saved configuration.

Preferences tab
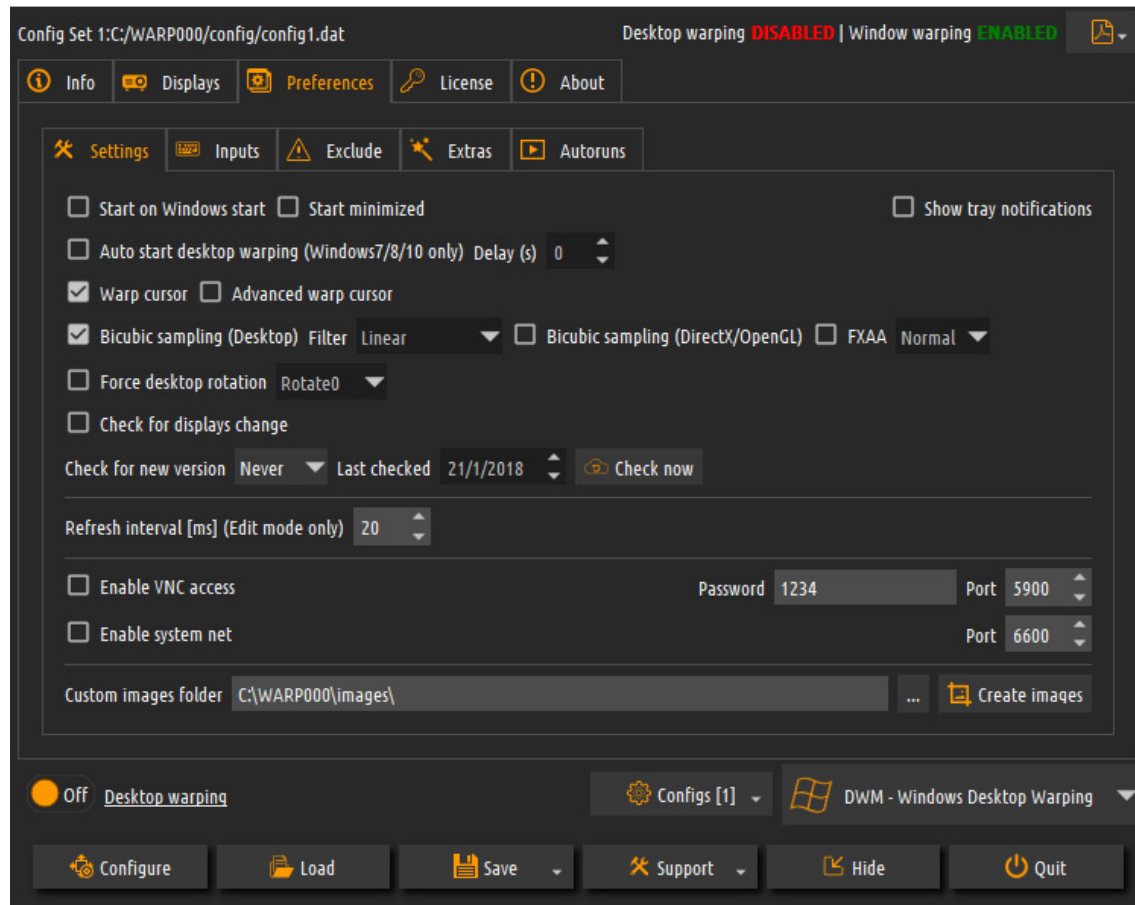
The preferences tab allows the user to configure Immersive Mapper PRO. Under the "Settings" tab the following options are available:

- Start this application when windows is started: If checked Immersive Mapper PRO will be started automatically when windows is started.
- Auto start desktop warping: If checked Immersive Mapper PRO automatically starts the desktop warping on startup.
- Start minimized: If checked Immersive Mapper PRO will be started silently and will be minimized in the tray.
- Show tray notifications: If checked, windows will show notification in the tray whenever desktop or window warping state changes.
- Warp cursor: If checked the system cursor will be shown properly in the geometrically corrected image

- Advanced warp cursor: If checked the software will use a new cursor warping technology that is more robust and should work seamlessly with all programs.
- Bi-cubic sampling (Desktop): Uses advanced bi-cubic sampling to improve the image quality for desktop warping.
- Filter: Select one of the Linear or 4 available anisotropic filtering to be applied when Bi-cubic sampling (Desktop) is not enabled. Higher anisotropic filtering improves the image on highly stretched displays.
- Bi-cubic sampling (DirectX/OpenGL): Uses advanced bi-cubic sampling to improve the image quality for DirectX/OpenGL applications.
- Apply anti-aliasing: Use anti-aliasing techniques to smooth and improve the image quality for desktop warping.
- Force desktop rotation: If checked, user can select the desktop rotation to override the driver provided desktop rotation info. To be used when desktop rotation provided by the driver is not consistent and correct.
- Refresh interval. This value determines how often the configuration screen will be updated. On lower performance computers this value can be set to 50 or 100 ms to prevent freezing if the configuration screen.
- Enable VNC access with VNC password and VNC port. When enabled, a vnc server will be started when the software is running. Users can use any VNC client to connect and configure this PC
- Custom images folder: This is a folder where the user can store its custom images that can be selected inside the geometrical correction configuration window.
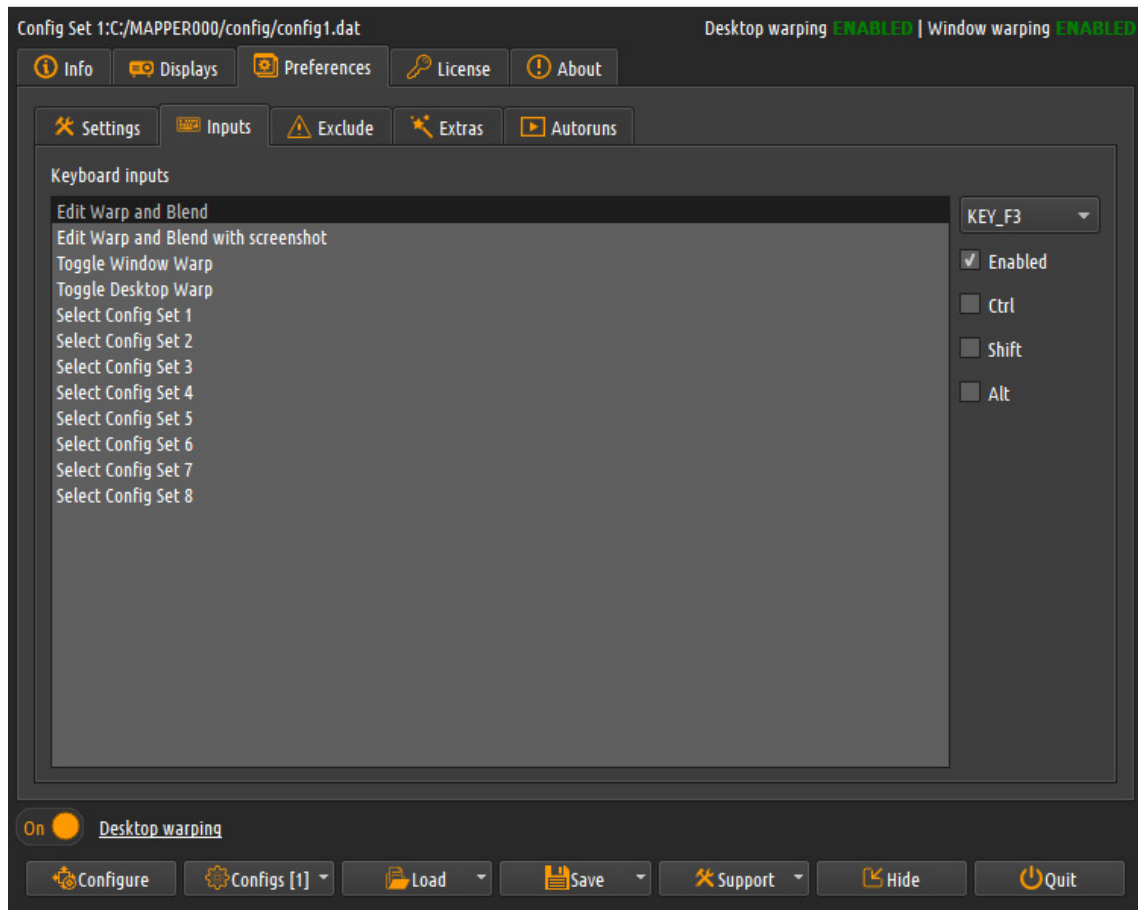
The inputs tab can be used to redefine the standard keyboard shortcuts. The following table shows the default keyboard shortcuts for the config dialog:

Modifiers		Key	Action
		F3	Edit Warp & Blend (Starts the geometrical correction and soft-edge blending editing window for all displays)
Ctrl		F3	Edit Warp & Blend with screenshot (First takes a snapshot of the display and starts the geometrical correction and soft-edge blending editing window for all displays with the snapshot image as the background))
		F4	Toggle window warping (Not available in Immersive Display Desktop)
Ctrl		F4	Toggle desktop warping (Available in Window 7 only)
Ctrl	Shift	1	Select configuration set 1

Ctrl	Shift	2	Select configuration set 2
Ctrl	Shift	3	Select configuration set 3
Ctrl	Shift	4	Select configuration set 4
Ctrl	Shift	5	Select configuration set 5
Ctrl	Shift	6	Select configuration set 6
Ctrl	Shift	7	Select configuration set 7
Ctrl	Shift	8	Select configuration set 8
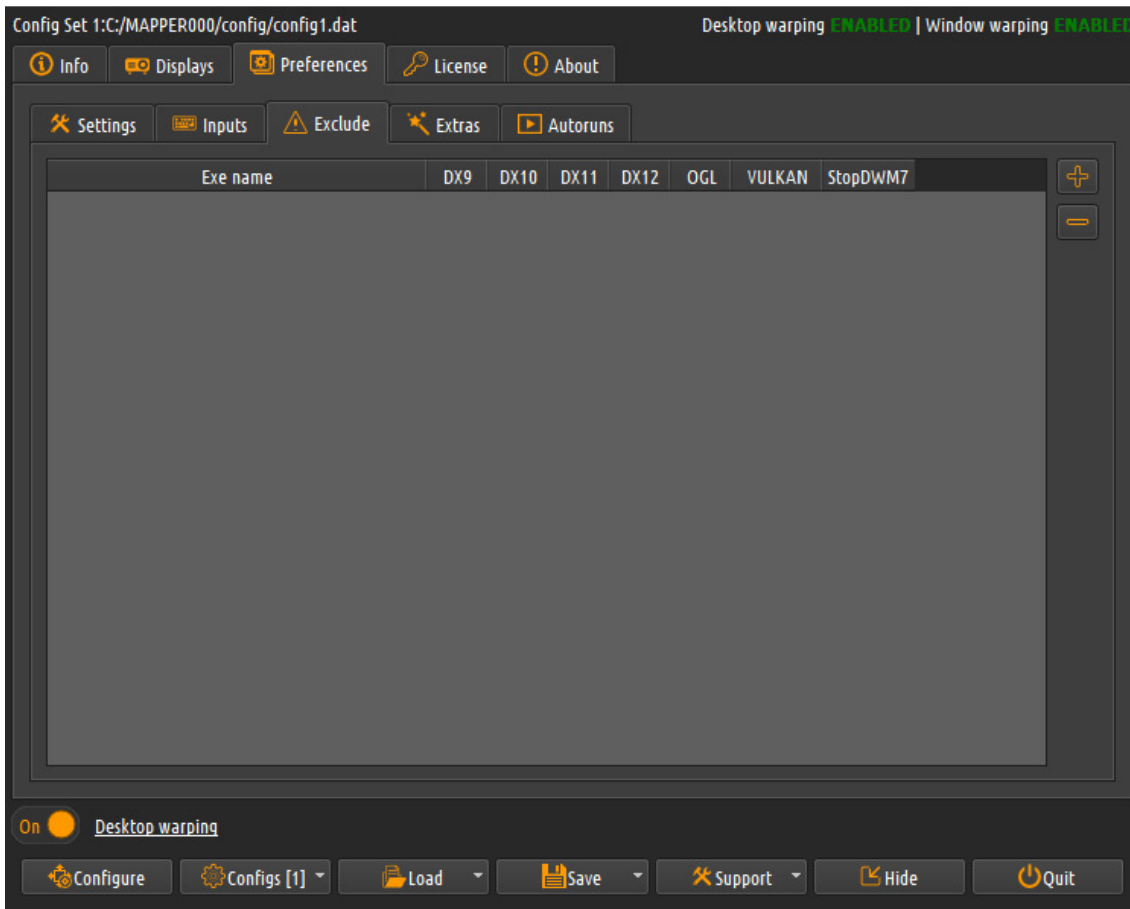
The exclude tab can be used to add or remove programs that should be excluded from warping. Some programs are not designed to be warped and can be put in this list. The software will never apply the warping to those programs.

Excusing can be selected per DirectX 9, 10, 11, 12, OpenGL or Vulkan separately. This allows to enable proper warping of software which uses DirectX, OpenGL and/or Vulkan in the same window and graphics context.

The exclude option StopDWM7 is to be used to stop the desktop composition on Windows 7 when the executable start. Desktop composition will be enabled automatically when executable stops.

This option StopDWM7 is to be used with full screen DirectX, OpenGL or Vulkan software when the desktop warping is enabled and the software seems to be warped by both desktop warping and full screen warping.
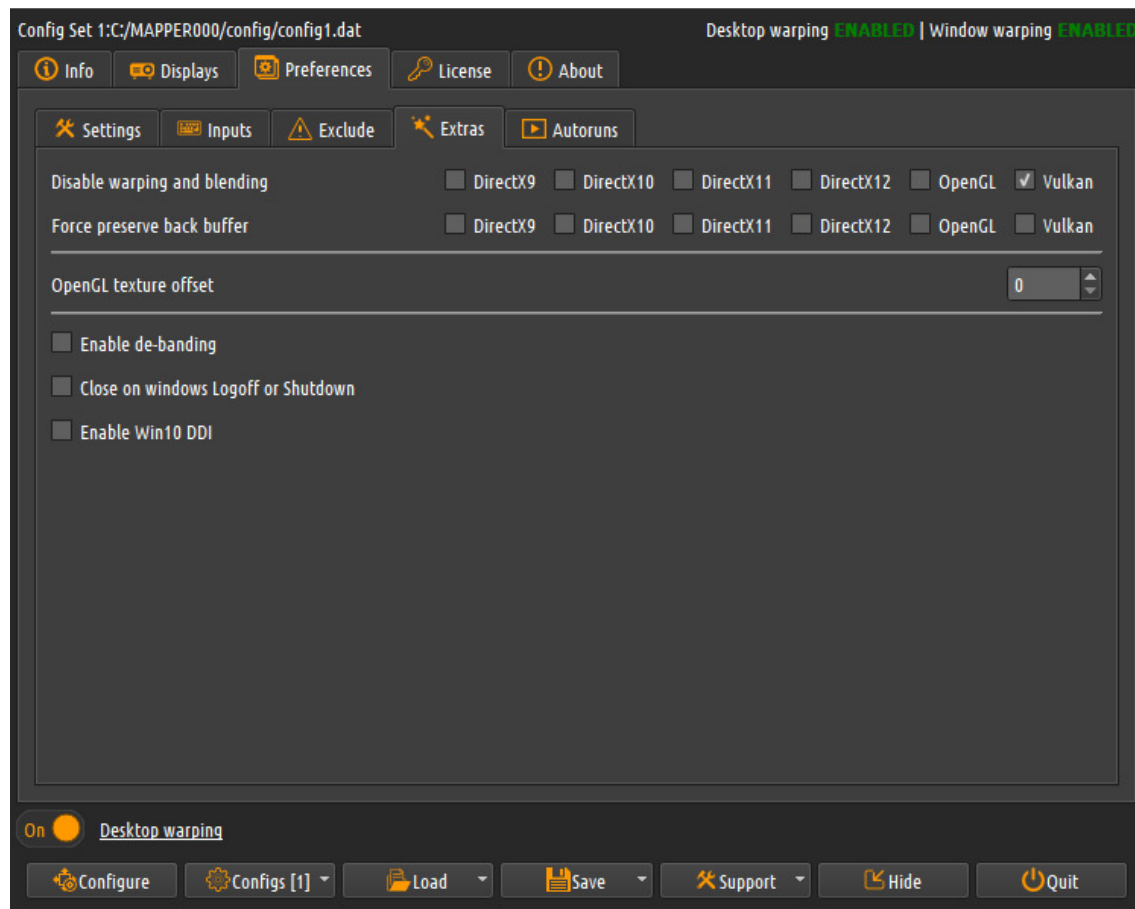

The extras tab can be used to configure additional advanced options.

OpenGL texture offset can be used with some OpenGL programs that use textures without first allocating the texture in the OpenGL system. Those textures can interfere with the textures needed for warping and blending. This offset will make sure that the Immersive Mapper PRO textures are allocated in a range outside of the applications range.

The special option "Force preserve back buffer" is needed when some applications try to use their back buffer even when the back buffer is discarded after presenting it to the projectors.

The enable de-banding option can be used to try to reduce the color banding on some displays when using grayscale of fade images. Some displays will show bands of colors for some images. This can be reduced by selecting this option.
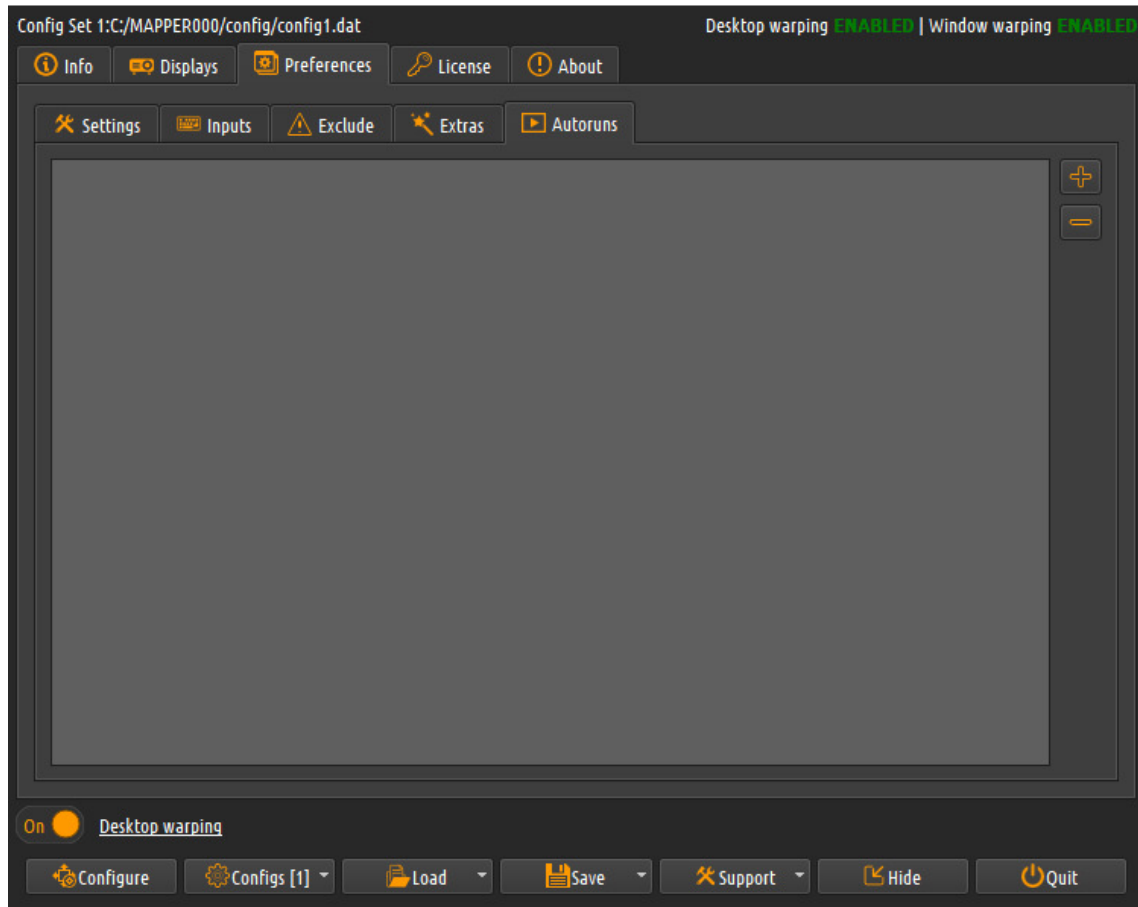
The Autoruns tab can be used to add or remove programs that should be started automatically when Immersive Mapper PRO starts. Using these feature users can specify one of more programs to be started automatically during system startup (if Immersive Mapper PRO is setup to start automatically with system startup) after Immersive Mapper PRO is started and initialized. Programs that are started before Immersive Mapper PRO is initialized will not be warped.

5.3 License tab
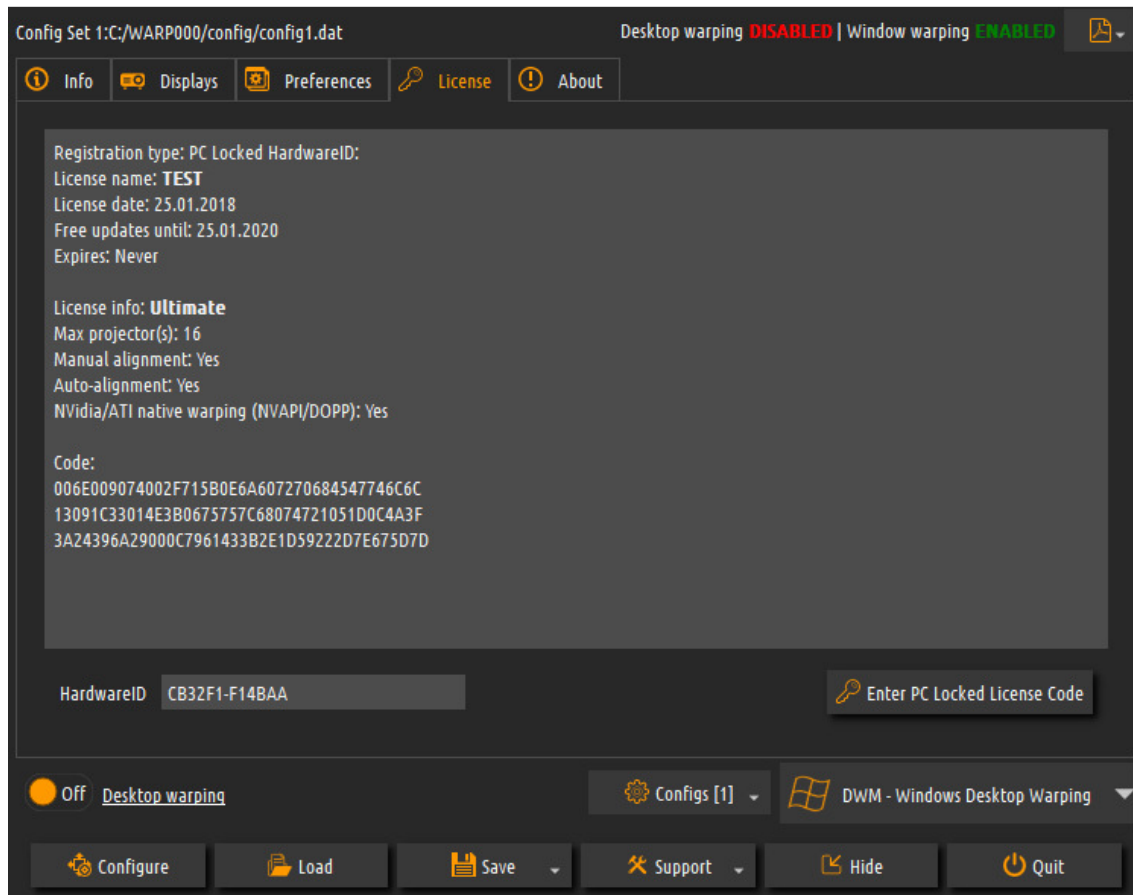
The license tab shows the current license info. The license can be USB key based, HardwareID based or Trial license.

PC Locked Licenses, can be entered using the "Enter PC Locked License Code" button

5.4 Button bar

The button bar contains the following buttons:

- Desktop warping: (Available only on Windows 7, Window 8 and Windows 10). By toggling this button, the user can enable and disable the seamless integration of the Windows 7, Windows 8 or Windows 10 desktop warping and the individual programs warping in windowed and full screen mode. It

is recommended to have this option selected when running on Windows 7 Window 8 or Windows 10.

- Configure: Starts the geometrical correction and masking configuration window if one or more displays are configured with projectors configuration.
- Configs: Opens a sub menu to select one of the 8 available configurations. Users can setup and configure each configuration separately. The warping and blending configurations will be saved per configuration set. The default keyboard shortcuts CTRL+SHIFT+1/2/3/4/.../8 can be used to immediately switch between different configuration sets.
- Load: Opens a load dialog to load another configuration file
- Import xml: Opens a load dialog to import a configuration file config2.xml.
- Save: Saves the current configuration.
- Save As: Opens a save dialog to save the configuration file with a different file name.
- Support: Collect and zip the log files or the configuration files to be sent via email for support.
- Hide: Hides the configuration dialog and minimizes it on the system tray.
- Quit: Quits Immersive Mapper PRO and disables all geometrical corrections and soft-edge blending.

5.5 Config sets

Immersive Mapper PRO allows the user to configure multiple configurations that can be loaded at once and can be switched instantaneously. This can be used to have different warping and masking settings for different scenes and mappings.

The users can switch between one of the 8 possible configurations sets using the default keyboard shortcuts (CTRL+SHIFT+1/2/3/4/.../8). If the game of the screen is warped, the warping will change instantaneously according to the selected configuration.

6 Geometrical corrections and mapping window

Geometrical corrections and mapping window provides warping meshes of control points. By adjusting the position of the control points, the projected display can be mapped on any kind of projection surface.

Depending on the mapping configuration, a number of independent meshes are available (up to 16 per projector). The control points can be moved by mouse or by using keyboard shortcuts.

The number of horizontal and vertical control points can be selected from the advanced setup dialog or using keyboard shortcuts. Up to 50 control points can be selected.

Two editing modes are available:

- Image area selection (source mapping)
- Geometrical correction (destination mapping)

In image areas selection and geometrical correction mode the image can be mapped on any projection surface by dragging the green control points with the mouse or using keyboard shortcuts.

Map: 1
Point: 1x1
Pos: 0.047x0.114
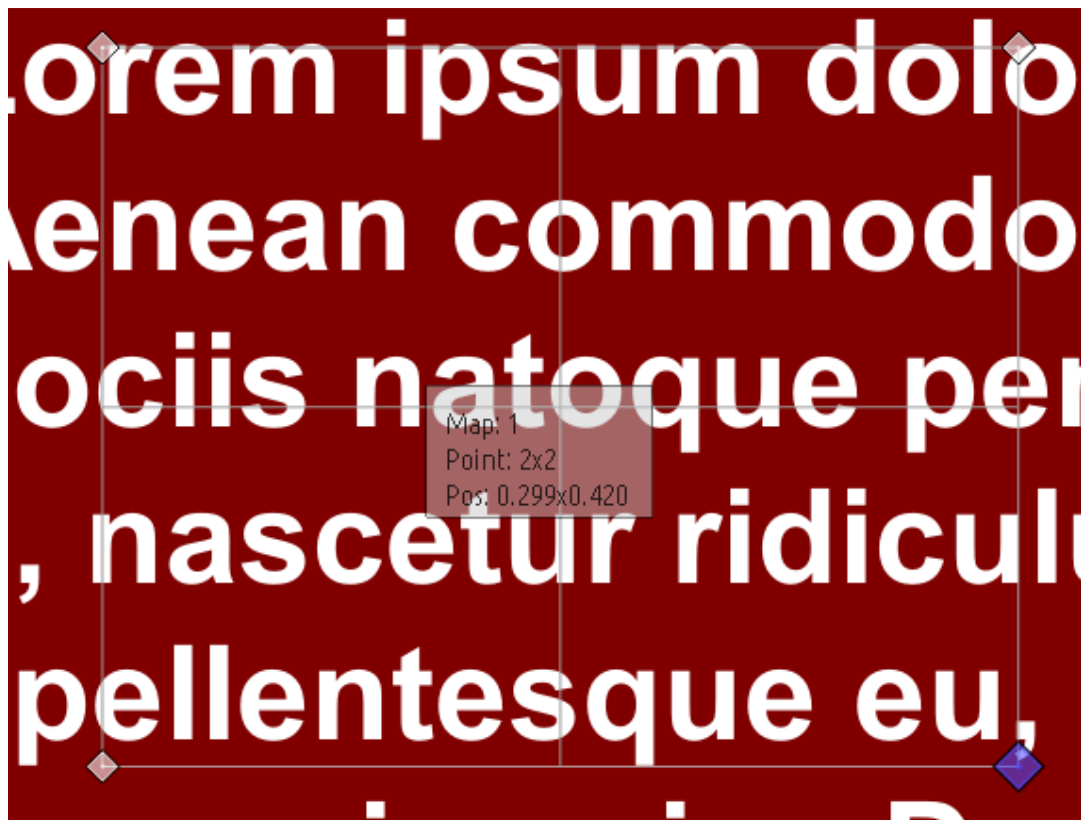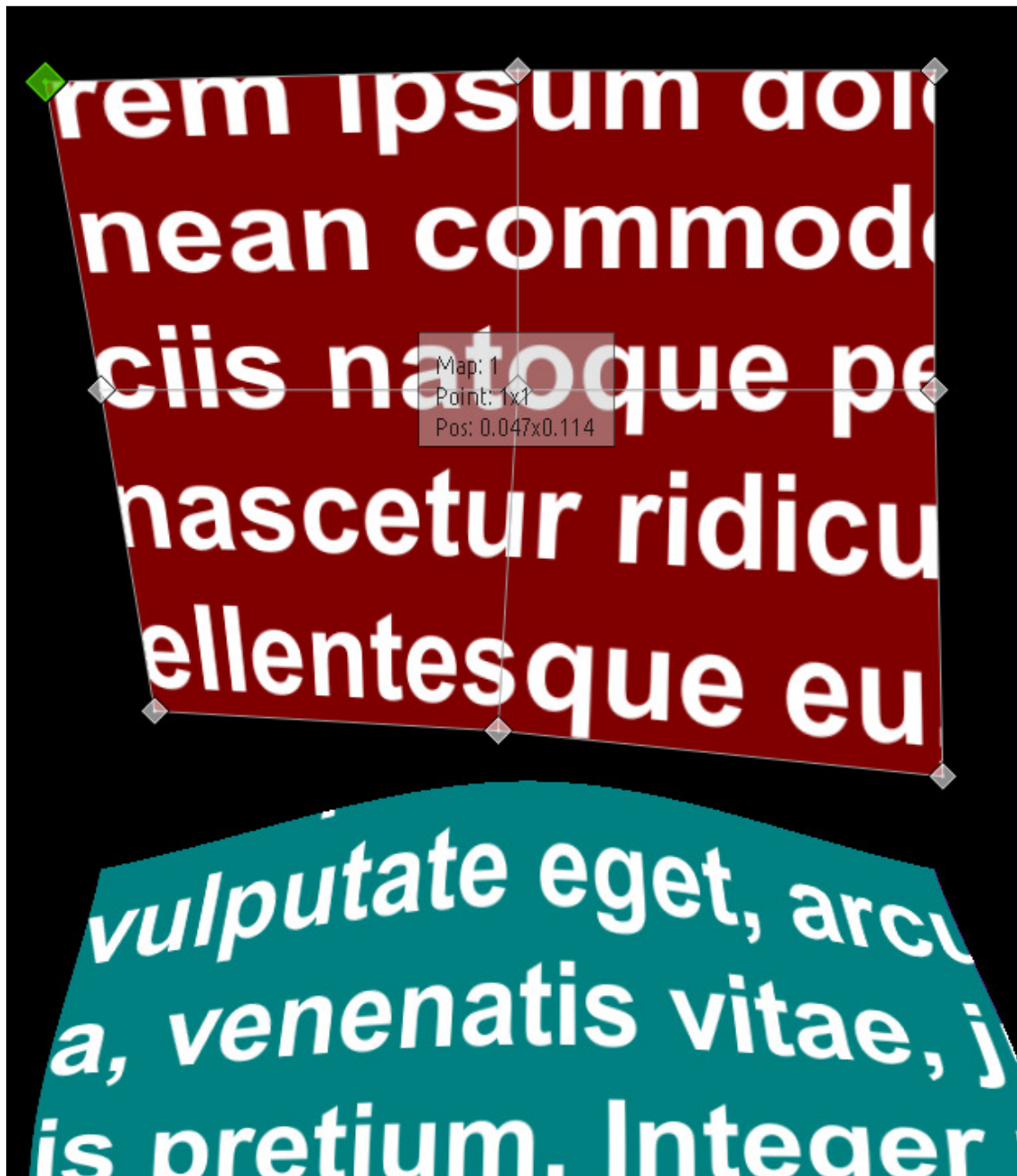
User can switch between Image area selection and Geometrical correction using the mode selection buttons.

es ◉ Source   ◉ Destination
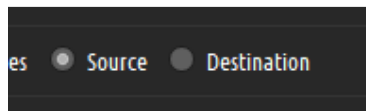
6.1 Keyboard and mouse control

Keyboard shortcuts

Modifiers		Key	Action
		D	Show/Hide advanced configuration dialog
		C	Center the configuration dialog on the projector
		I	Show Hide information window
		Esc	Close configuration dialog and window
		F5	Increase the number of horizontal control points
		F6	Decrease the number of horizontal control points
		F7	Increase the number of vertical control points
		F8	Decrease the number of vertical control points
		N	Select next geometrical correction grid
		P	Select previous geometrical correction grid
		Left	Select left control point
		Right	Select right control point
		Up	Select up control point
		Down	Select down control point
Ctrl		Left	Move control point left by 1 pixel
Ctrl		Right	Move control point right by 1 pixel
Ctrl		Up	Move control point up by 1 pixel
Ctrl		Down	Move control point down by 1 pixel
Ctrl	Shift	Left	Move control point left by 10 pixels
Ctrl	Shift	Right	Move control point right by 10 pixels
Ctrl	Shift	Up	Move control point up by 10 pixels
Ctrl	Shift	Down	Move control point down by 10 pixels
		F10	Toggle between geometrical correction and soft edge blending editing
		F11	Toggle between simple and advanced soft edge blending grid
		F12	Select next soft edge blending grid
Ctrl	Shift	Q	Reset all geometrical correction and soft edge blending grids
Ctrl		Q	Reset all geometrical correction and soft edge blending grids to the whole display area

Mouse operations
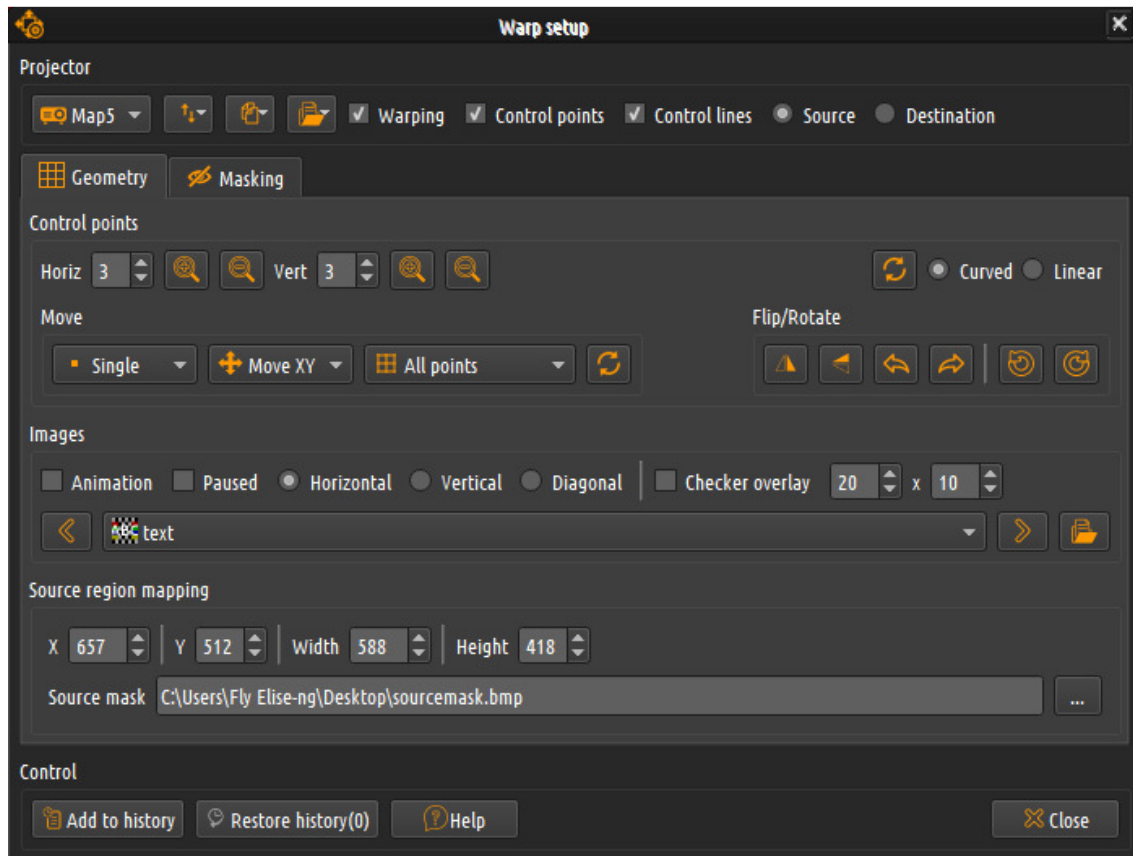
In geometrical correction mode:

- Drag control point with LEFT mouse button normal drag
- Drag control point with RIGHT mouse button fine grained drag
- Key combinations: "H" – drag all points in the same horizontal line
- Key combinations: "V" – drag all points in the same vertical line
- Key combinations: "A" – drag all points in the grid
- CTRL + S + MIDDLE mouse – Select a region to select all control points in the region
- CTRL + D + MIDDLE mouse – Select a region to de-select all control points in the region
- RIGHT mouse double-click – Select and De-select a control point

The list of all keyboard and mouse shortcuts keys can be shown in the calibration screen using the "Help" button. A new window will be shown next to the calibration configuration dialog.

6.2 Advanced configuration dialog

Pressing the "D" key can toggle the visibility of the advanced configuration dialog.

Geometrical correction tab

In the geometrical correction tab, the user can:

- Select the grid to be edited
- Enable/disable the grid output
- Show/hide the control points
- Show/hide the lines between the control points
- Select the number of horizontal and vertical control points
- Double or halve the number of horizontal and vertical control points
- Select the curved or linear geometrical correction
- Select to move single control point, all control points in the horizontal or vertical line, selected points or all control points on the grid
- Select to lock the movement in X, Y or XY directions
- Select to move only the edges control points and let the program interpolate the other control points
- Enable or disable the horizontal, vertical or diagonal animation lines for perfect geometrical correction
- Add additional checker grid overlay on top of the background image. Configure the number of horizontal and vertical checker boxes.

- Control for image mirroring, flipping and rotation
- Select the background image from the list of the built-in image of customer provided images in the images folder
- Load a background image from any location form the hard disk.
- Select the source image region that will be used for warping.
- Load a Black/White source image region masking bitmap that will be used for source masking.

Masking tab
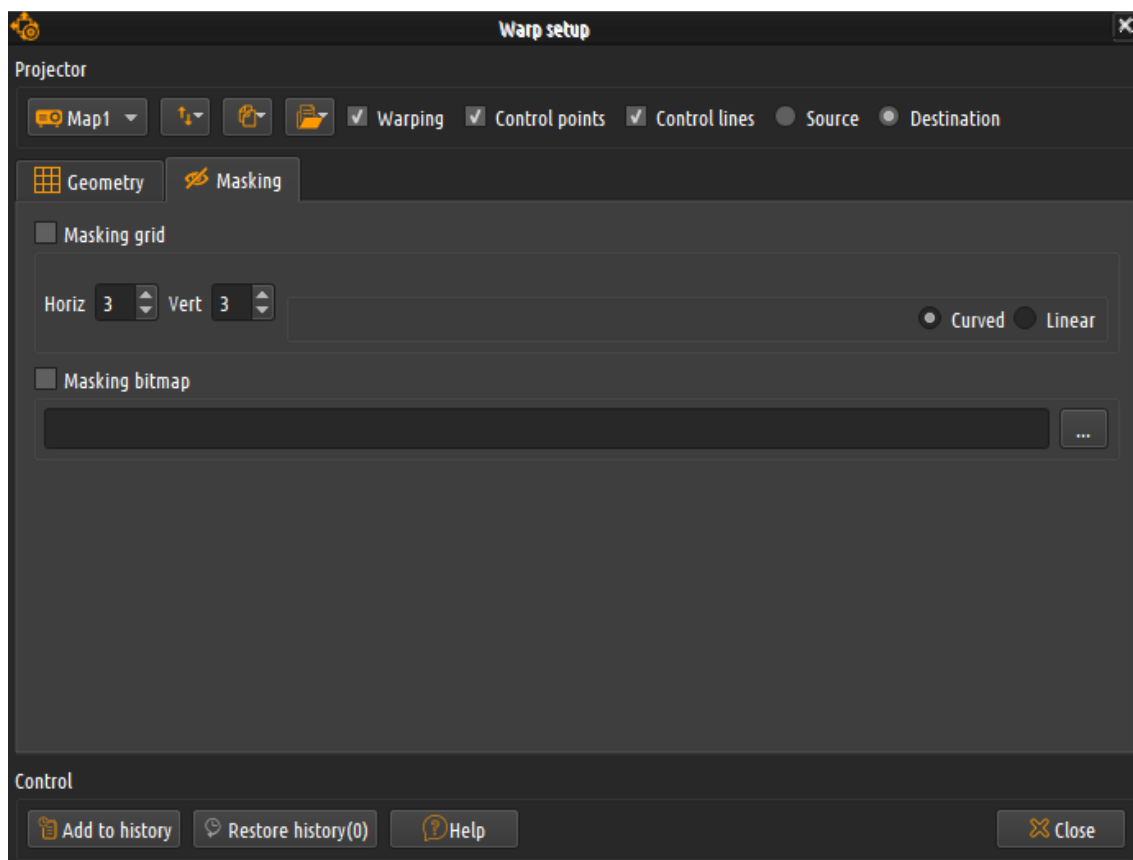
In the masking tab the user can select different masking options per grid or for the whole display.

When a part of the projected image has to be masked for whatever reasons the users can use the masking controls. Masking can be defined in two ways: An interactive masking grid per projector or a masking bitmap per display.

In the masking grid mode, user can use the grid control points in the similar way as with geometrical correction grids. The shape of the grid will determine

which part of the image will be visible and which parts will become invisible and will be masked.

User can select the number of the horizontal and vertical grid control points as well as the mode of the grid: curved edges or linear edges.
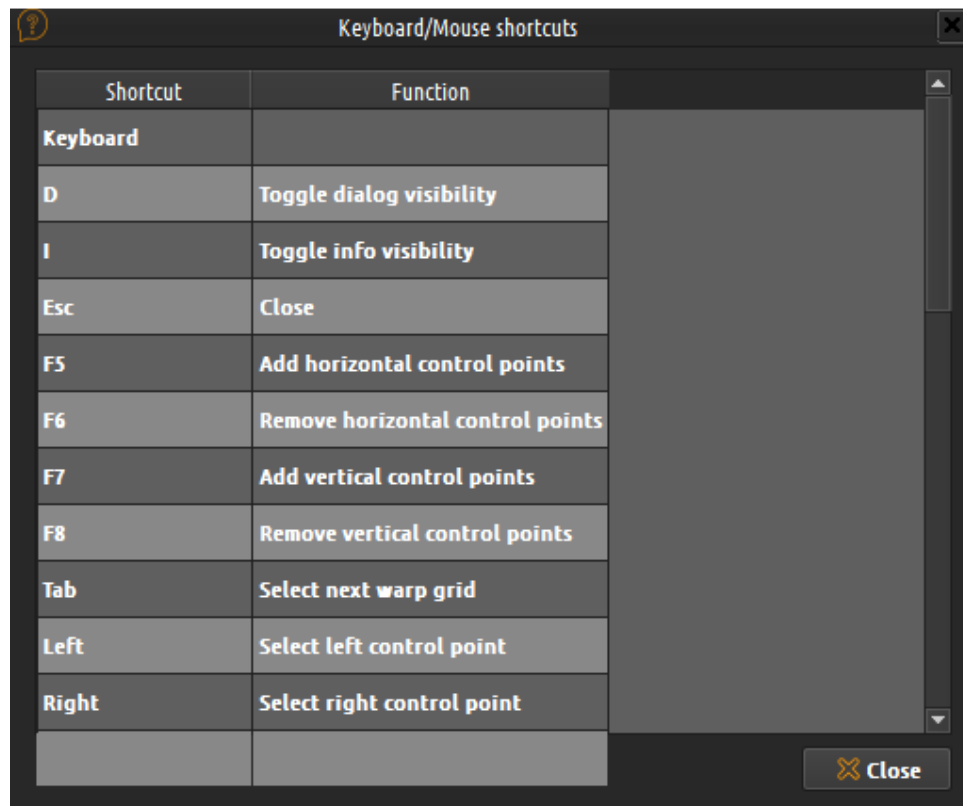
In the masking bitmap mode, the user can select an existing black & white .bmp or .png file. The file can be prepared offline using a paint program.

The black parts of the image will determine which part of the projected image will be masked and will not be displayed.

Only one masking control can be selected at a time. When no masking control is selected the masking will not be applied.

Keyboard and mouse shortcuts help window

Pressing the "Help" button in the advanced configuration dialog will open the keyboard and mouse shortcuts help window. This help window shows all available keyboard and mouse shortcuts to manipulate the warping and blending.

| Shortcut	Function
Keyboard	
D	**Toggle dialog visibility**
I	**Toggle info visibility**
Esc	**Close**
F5	**Add horizontal control points**
F6	**Remove horizontal control points**
F7	**Add vertical control points**
F8	**Remove vertical control points**
Tab	**Select next warp grid**
Left	**Select left control point**
Right	**Select right control point**

7 Projection Mapping

Unlike any other projection mapping software, Immersive Mapper PRO focuses on easy mapping the content to any projection surfaces. It leaves the content creation to the content professionals. Content can be created independently from the mapping and put anywhere on the desktop.
Immersive Mapper PRO will take the desktop output and map it to the projector output according to the warping and masking configuration.
Immersive Mapper PRO is the most intuitive and most flexible projection mapping software. Any part of the desktop can be mapped to a warping grid and geometrically mapped to any projection surface.

Take any projection surface and put one or more projectors to cover all facets of the projection surface to be mapped by projector images.
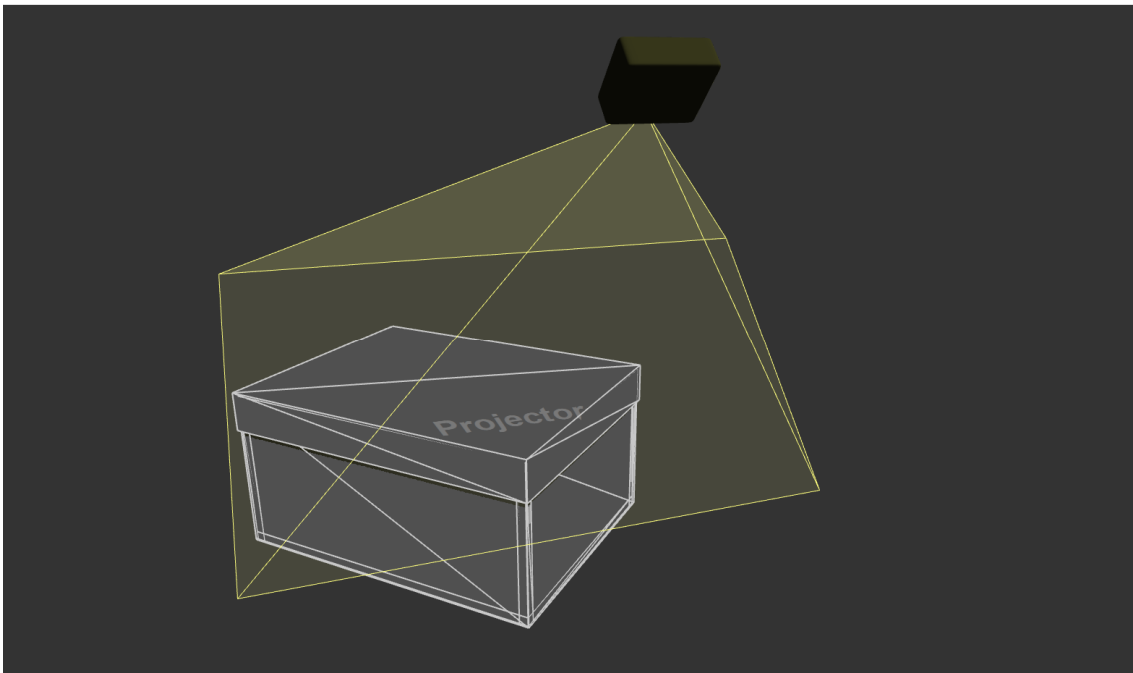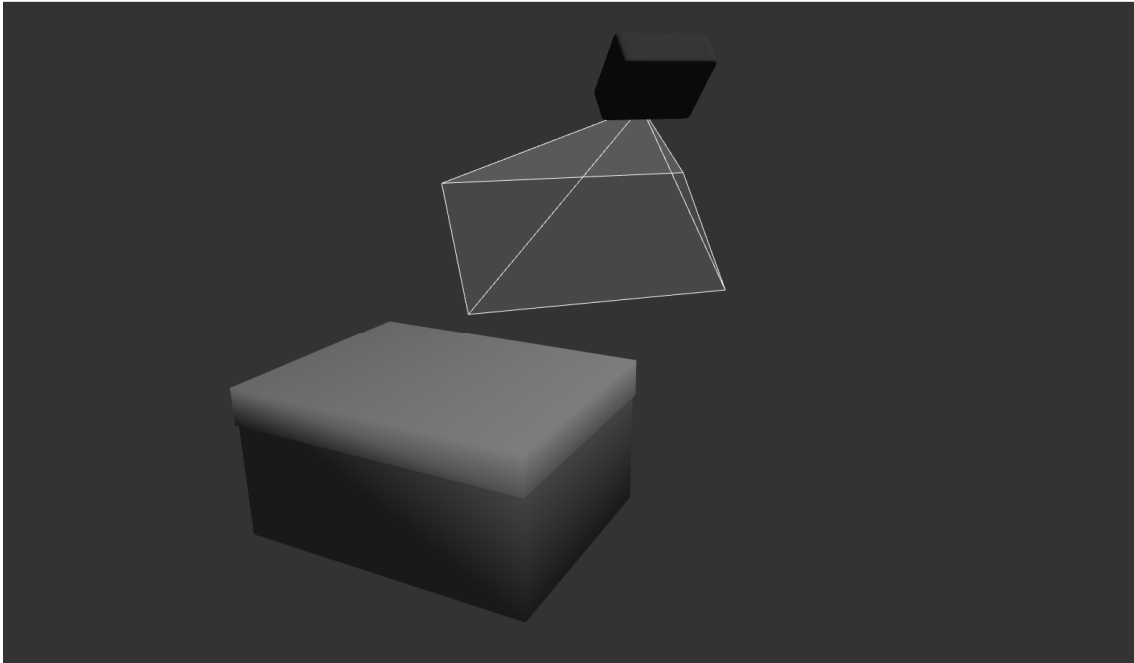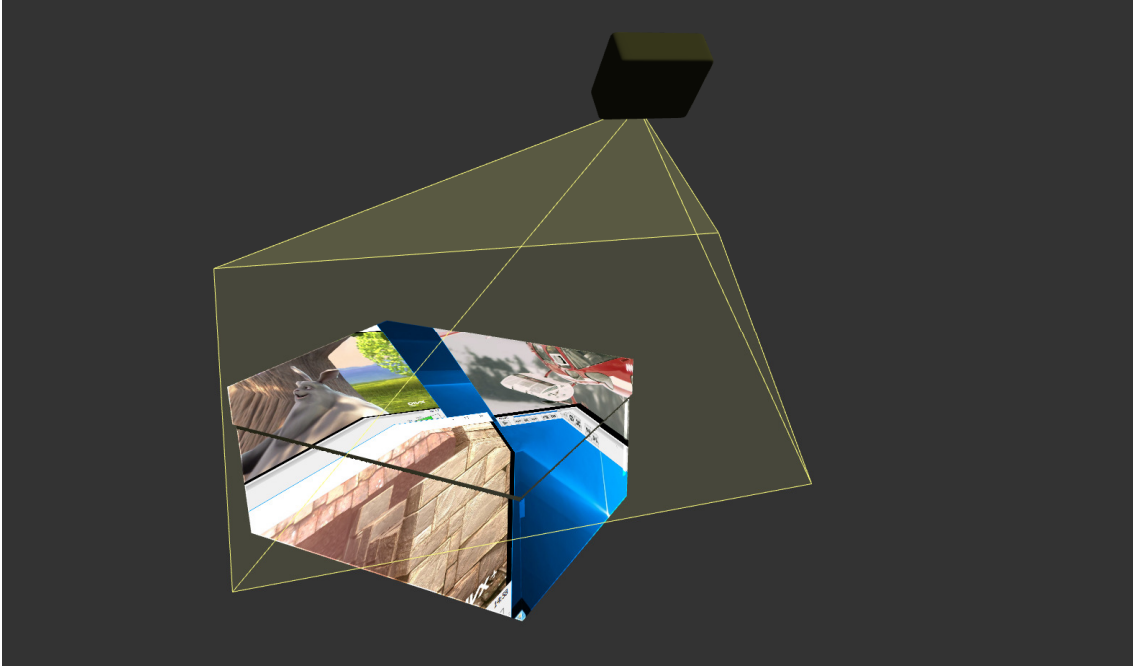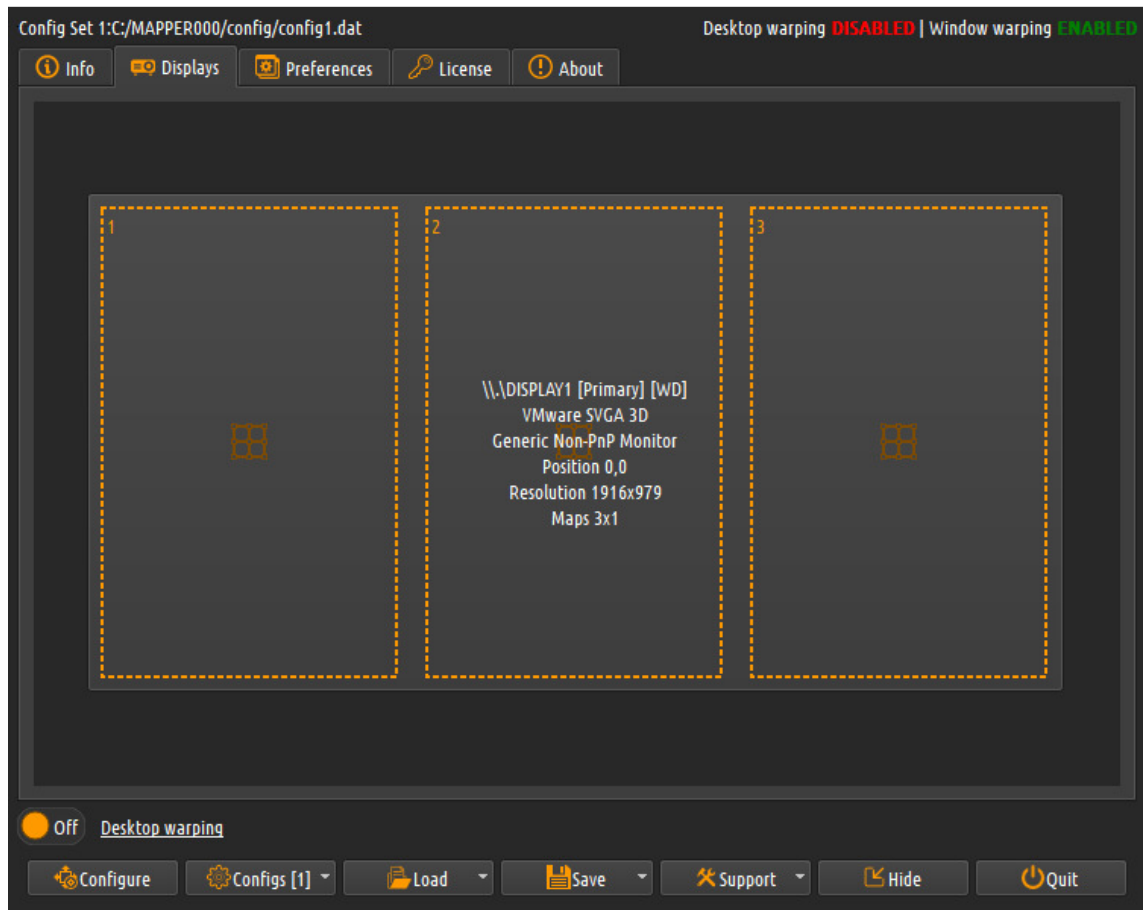
Put your content (video or images) anywhere on the desktop. Content can be later mapped independently to the projection surfaces.
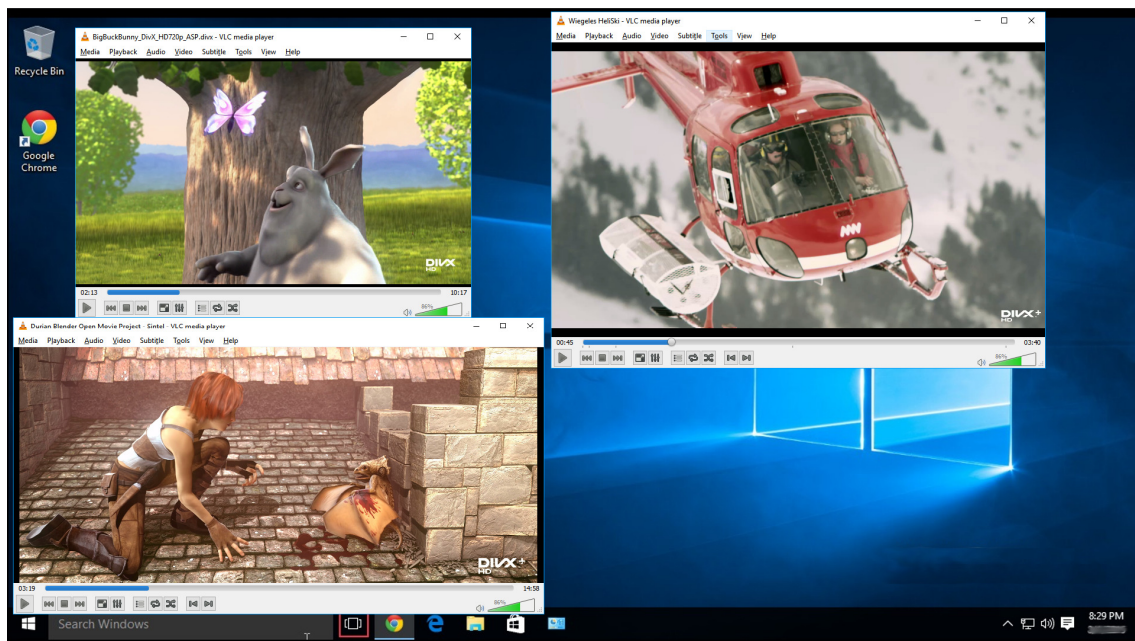
The unmapped content will not fit the projection surfaces before mapping.

Start Immersive Mapper PRO and select the number of the mapping grids to be mapped and enter the mapping configuration mode.

The first step of the mapping is to assign the source region of each warping grid. This is the region of the desktop that will be taken and mapped to the projection surface. Use the source mapping mode to select a rectangular desktop area.
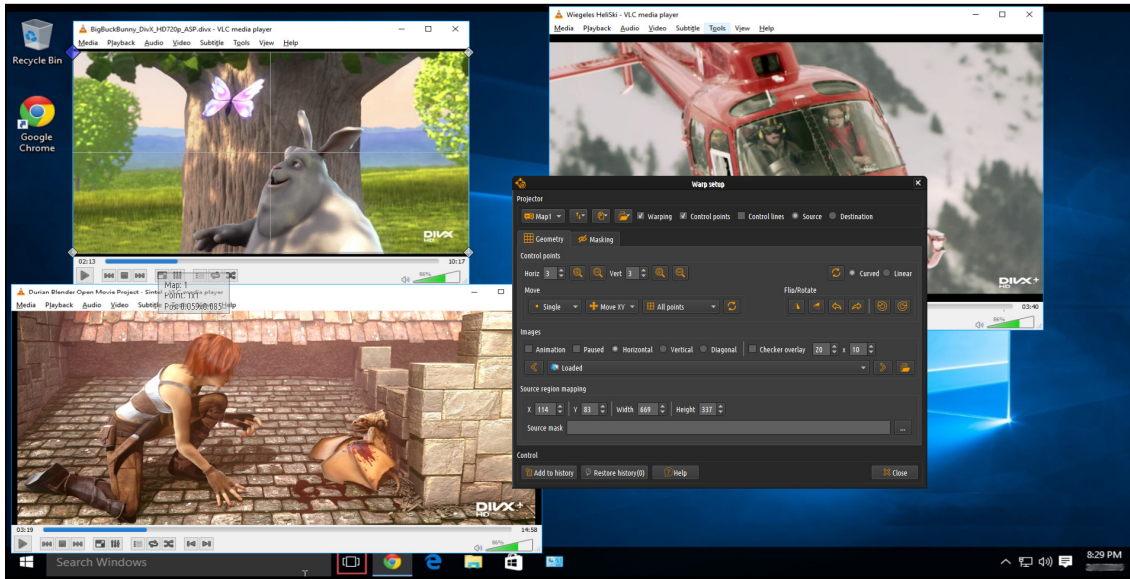
Once the source mapping is completed select destination grid mapping and use the warping grid to map each grid visually to the projection surface.
For each grid use the control points and the different available grid editing modes to manually map the grid content on the projection surface.
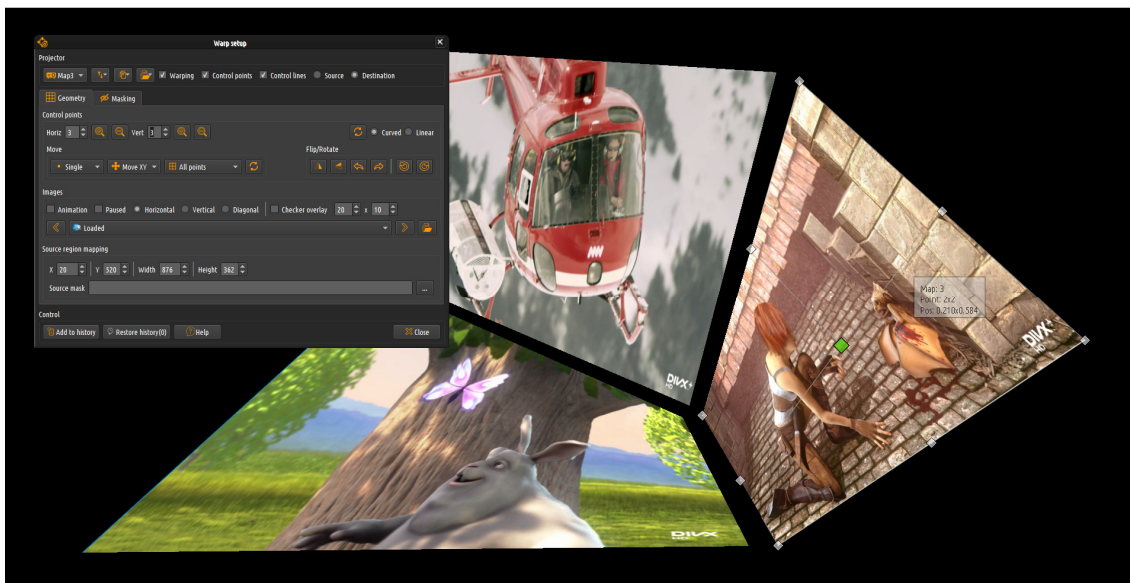

Additionally, when needed, use a black/white bitmap image to mask part of the source image before putting it on the final projection surface. This can be used for more complex and irregular projection surfaces. The black parts of the masking bitmap will be removed from the source images.

When finished, exit the configuration screen, save the configuration and enable the desktop warping. The complete desktop will be geometrically corrected in such a way that the content from the desktop will be perfectly mapped to the projection surface.
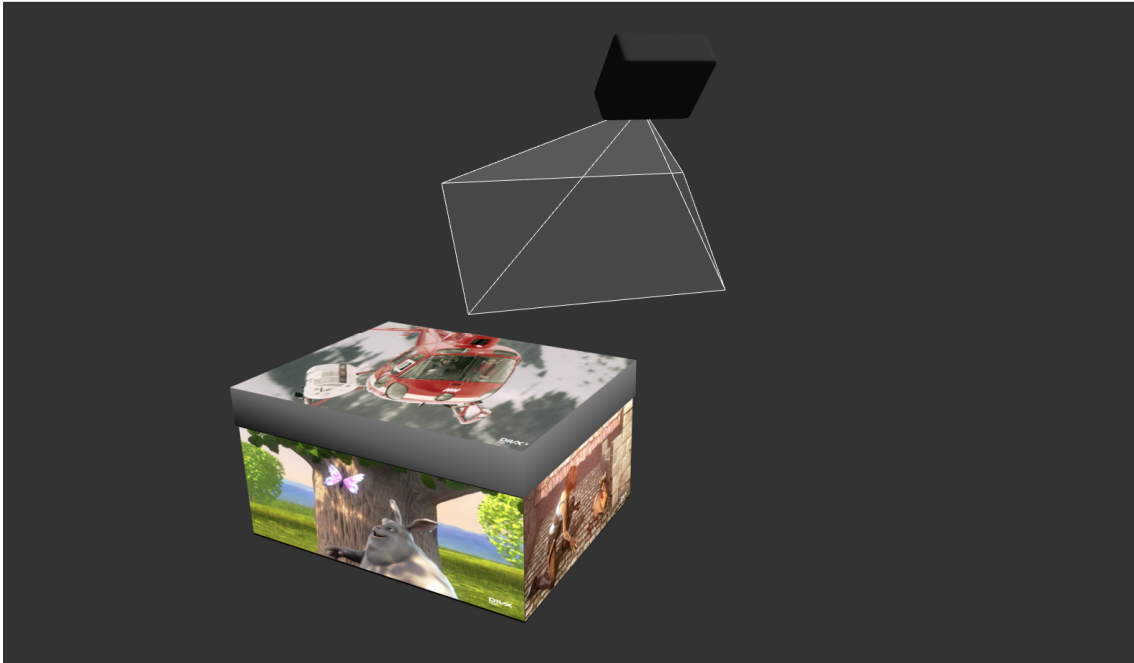
8 License options

The software can be licensed with different license modes. For more information about the available license modes please visit:

https://dev.elise-ng.net/index.php/products

8.1 PC Locked and USB Dongle Licenses

The **PC Locked License** is "locked" to the PC Hardware components. The software will generate a "**HardwareID**", and based on this **HardwareID**, a "License Code" will be generated and emailed. The software can run only on that PC as long as the hardware components do not change. When a hardware component changes, the software will generate another **HardwareID**. Based on the changed **HardwareID**, it can be determined which component has been changed. If only one hardware component has been changed, we can generate a new PC Locked License. If the PC hardware is changed completely or a new PC is used, PC Locked License can NOT be re-generated.
If the software will be used on a changing PC Hardware configurations, or if the software will be used on more than one PC, a **USB Dongle License** needs to be ordered.
The **USB Dongle License** is stored and delivered on a secure "**USB Dongle**". The **USB Dongle License** is independent of the PC Hardware. The software can be used on any PC as long as the USB Dongle is inserted. USB dongles are delivered by post. Shipping costs are included in the price.

8.2 Commercial and Home-User Licenses

A **Commercial License** is for customers who are using the software for commercial applications and receive financial compensation from using the software. Re-sellers and system integrators who use the software in their solutions are considered commercial parties. Commercial license can NOT be ordered as PC Locked License. For commercial use only USB Dongle License must be ordered. If a PC Locked License is ordered and if the PC Hardware components change, PC License will not be re-generated.

A **Home-User License** (non-commercial) is for individual home-use only. It can only be purchased if no financial compensation is received whatsoever from using the software. A Home-user License can be ordered as both PC Locked License and USB Dongle License.

8.3 License validity

Both PC Locked and USB Dongle licenses are **perpetual.** A perpetual license will allow the customer to use the licensed software **indefinitely.** For the first **2 years**, the perpetual license also entitles the customer to download all **updates** to the software and to receive **technical support.**

After the 2 – year period ends, the customer can choose to remain with the last version downloaded or to purchase a 2 – year **Updates & Support** package, for 40% of the license price. There are no penalties for letting Updates & Support lapse for a while before purchasing a new 2 – year Updates & Support package. The new 2 – year Updates & Support period will be extended from the expiry date of the last 2-year period.

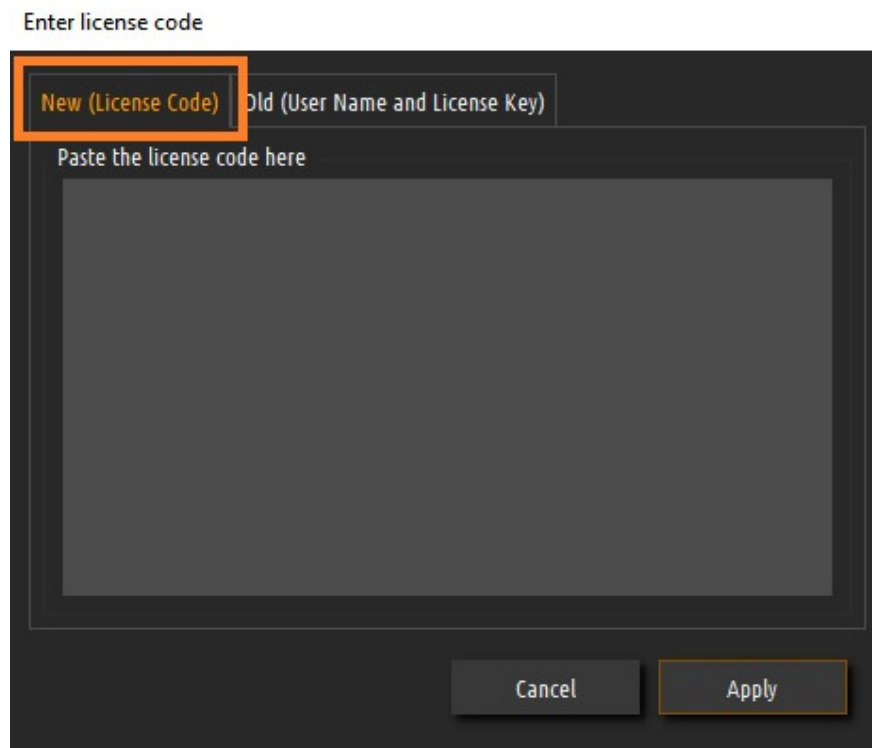## 8.4 Register the software with PC Locked License

After you send us the HardwareID, we will generate the PC Locked License Code.
PC Locked License can be entered using the Software License Window and pressing the **Enter PC Locked License** button.
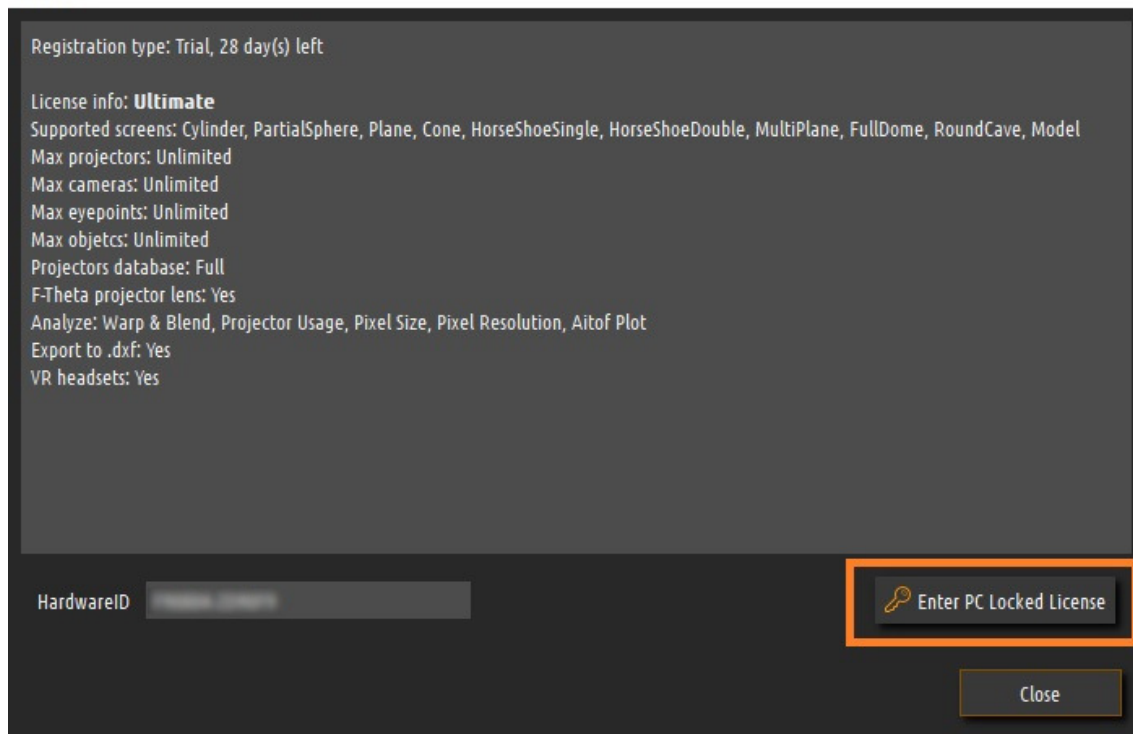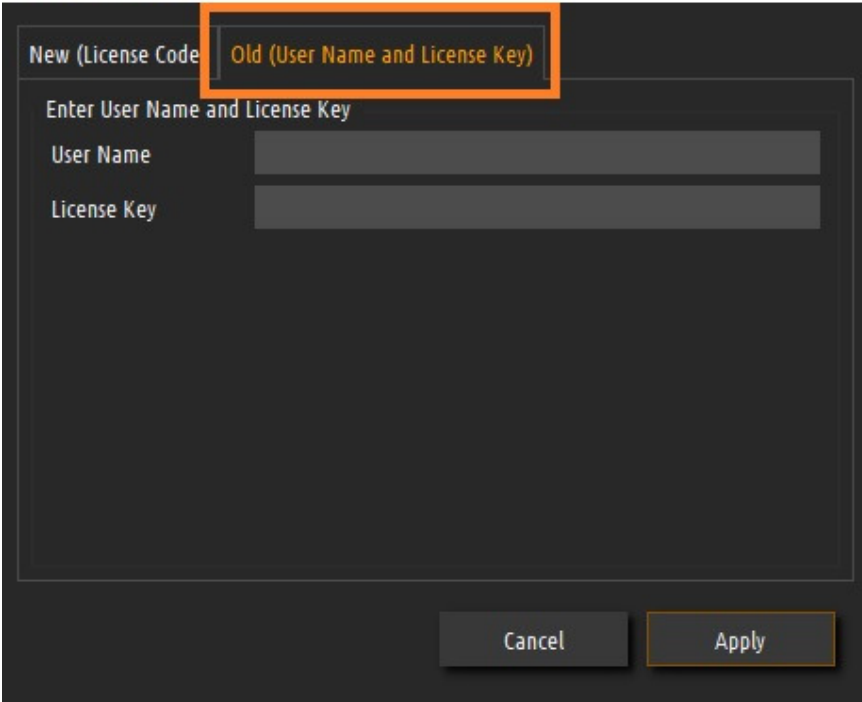
A new window will open to enter the license code.

Paste the license code that you received from us in the window and press Apply. The software needs to be restarted to apply the license.

If you have an "old" license with UserName and LicenseKey, select the "Old" tab.

Enter the UserName and LicenseKey. Press Apply and restart the software to apply the license.

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