MARI

GETTING STARTED GUIDE
VERSION 2.6v5

THE FOUNDRY.

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1 Preface

Mari is a creative texture-painting tool that can handle extremely complex or texture heavy projects. It was developed at Weta Digital and has been used on films such as The Adventures of Tintin: The Secret of the Unicorn, District 9, The Day the Earth Stood Still, The Lovely Bones and Avatar.

The name Mari comes from the Swahili 'Maridadi', meaning 'beautiful' and carrying connotations of 'usefulness'.

About This Guide

This guide provides you with the basic information you need to start painting with Mari.

The first part of the manual, Installation and Licensing, describes how to install, license, and launch Mari.

The rest of the manual consists of a few short chapters describing Mari's basic functionality and five tutorials, which teach you the basics of creating a Mari project and painting textures. The tutorials provide a series of comprehensive walk-throughs, complete with geometries and associated textures. As you follow the steps in these tutorials, you'll gain a good feel for Mari's user interface and workflow. This, in turn, provides a good working knowledge for creating more complex production projects.

For more detailed information on Mari and its functions, see the accompanying *Mari User Guide* and *Mari Reference Guide*.

Contact Customer Support

Should questions arise that this manual fails to address, you can contact Customer Support directly via e-mail at support@thefoundry.co.uk or via telephone to our London office on +44 (0)20 7479 4350 or to our Los Angeles office on (310) 399-4555 during office hours.

2 Installation and Licensing

To make the instructions easier to navigate, specific instructions for how to install, launch, and license Mari are grouped together by operating system so you can quickly find everything in one place.

The operating systems supported by Mari are:

• Windows,

• Linux, and

• Mac OS X.

System Requirements

Each operating system has its own system requirements for Mari, and this includes approved graphics card requirements. To check the individual system requirements for each operating system, see:

• Windows System Requirements

• Linux System Requirements

• Mac System Requirements

Due to the number of cards available in the market, we are unable to test every card and, therefore, cannot officially qualify all of them individually. However, if your machine/GPU specifications meet the requirements mentioned, theoretically Mari should work fine for you. If you encounter any issues, please contact support@thefoundry.co.uk.

Below is a list of approved graphics cards that have been tested for use with Mari.

Mac OS X Tested Graphics Cards

• NVIDIA GeForce GT 650M

• NVIDIA Quadro (Fermi Series) 4000

Windows and Linux Tested Graphics Cards

• NVIDIA GeForce GTX 480

• NVIDIA GeForce GTX 580

• NVIDIA GeForce GTX 680

• NVIDIA Quadro (Fermi Series) 4000

• NVIDIA Quadro (Fermi Series) 5000

• NVIDIA Quadro (Fermi Series) 6000

• NVIDIA Quadro K2000

• NVIDIA Quadro K4000

• NVIDIA Quadro K5000

• AMD FirePro W7000

• AMD FirePro W8000

• AMD FirePro W9000

• AMD Radeon HD 7850

• AMD Radeon HD 7950

Please download and install the latest graphics driver for your card from the NVIDIA or AMD websites.

> **NOTE:** Ensure that you are using 8.982.8.1 (AMD Catalyst 12.10) drivers or higher for AMD cards.

Virtual Memory Requirements

It is recommended that the system running Mari has plenty of virtual memory available to use, especially when handling large projects. The use of virtual memory improves stability, helping to prevent data loss on large projects.

Windows

Windows System Requirements

• Windows 7 64-bit and Windows 8.1 64-bit.

• Quad-core x86-based processor.

• 250GB disk space available for caching and temporary files (or a minimum of 50GB if you're working on a small project).

• At least 4GB RAM.

• Display with 1680 x 1050 pixel resolution.

• An NVIDIA or AMD graphics card with at least 1GB of RAM and OpenGL 3.2 support (see Windows and Linux Tested Graphics Cards).

> **NOTE:** Displacement preview is currently only available on the cards and drivers that support OpenGL 4.0 or newer.

Installation on Windows

Mari 2.6 is available to download from our web site at www.thefoundry.co.uk/products/mari. The download is in a compressed **.exe** format.

1. Download the **.exe** installation file from our web site.

2. Double-click on the installation file to start the installation. Follow the on-screen instructions. By default, Mari is installed to [drive letter]:\Program Files\Mari [version number].

3. That's it! Proceed with Launching on Windows.

Installing Mari from the Command Line

1. Download the correct **.exe** installation file from our web site at www.thefoundry.co.uk/products/mari.

2. To open a command prompt window, select **Start** > **All Programs** > **Accessories** > **Command prompt**.

3. Use the **cd** (change directory) command to move to the directory where you saved the installation file. For example, if you saved the installation file in **C:\Temp**, use the following command and press **Return**:

   ```
   cd \Temp
   ```

4. To install Mari, do one of the following:

   • To install Mari and display the installation dialog, type the name of the install file without the file extension and press **Return**:

     ```
     Mari2.6v5-win-x86-release-64
     ```

   • To install Mari to a specified directory and display the installation dialog, use the **/dir** install option:

     ```
     Mari2.6v5-win-x86-release-64 /dir="E:\Mari"
     ```

   • To install Mari silently so that the installer does not prompt you for anything but displays a progress bar, enter **/silent** after the installation command:

     ```
     Mari2.6v5-win-x86-release-64 /silent
     ```

   • To install Mari silently so that nothing is displayed, enter **/verysilent** after the installation command:

     ```
     Mari2.6v5-win-x86-release-64 /verysilent
     ```

   • You can also use a combination of install options:

     ```
     Mari2.6v5-win-x86-release-64 /silent /dir="E:\Mari"
     ```

> **NOTE:** By running a silent install of Mari, you agree to the terms of the EULA. To see this agreement, please refer to *Appendix D: End User Licensing Agreement* in the *Mari User Guide*, or run the installer in standard non-silent mode.

Launching on Windows

1. Click **Start** > **All Programs** > **The Foundry** > **Mari 2.6v5** > **Mari 2.6v5**.

2. If you haven't installed a license for Mari, you need to choose from one of the options for Licensing on Windows. Once you've done so, click **Launch** in the **Mari Licensing** dialog.

3. Mari checks for Windows and Linux Tested Graphics Cards, and if an untested graphics card configuration is detected, a dialog displays warning you about it. Depending on the configuration detected, you have the option to **Quit** or **Continue** and, in the case of configurations with known issues, also **Ignore Permanently**.

> **NOTE:** If you ignore the warning and run Mari anyway, you may experience instability or performance issues. If a tested graphics card configuration is detected, Mari runs as normal.

4. If you are launching Mari for the first time, you are prompted to select a directory for its cache files. In the **Please Pick Cache Directory** dialog, navigate to the directory you want to use and click **Choose**.

   The Mari graphical interface displays.

   Please note that the cache directory should be:

   • empty

   • local to the machine (not a network mount)

   • as fast as possible

   • a location that's not temporary (to avoid the data disappearing)

   • a directory that the user has read and write permissions to.

Project cache locations are directories that Mari uses to store project data files. These directories must be persistent; not in temporary locations. If more than one cache location is specified, Mari spreads each project's data files across all locations. Once a project has been created for a given set of cache locations, that set must not be changed. In order to move a project between different sets of caches, archive the project.

> **NOTE:** Do not add, remove, or amend cache locations once they have been set unless they are empty. Once projects have been created for a given set of cache locations, that set must not be changed or project corruption will occur.

> **NOTE:** If the MARI_CACHE environment variable has been set, its value is used to determine the location of the cache files. In this case, Mari does not prompt you to select the cache directory. For more information on environment variables that Mari understands, please refer to the Mari *User Guide*.

> **NOTE:** You can also launch Mari in verbose mode by selecting **Start** > **All Programs** > **Mari 2.6v5** > **Mari 2.6v5 (Verbose Output)**. This way, Mari provides a running log of each action that it performs. You can see this log in a command line window.

Licensing on Windows

If you simply want to try out Mari, you can obtain a trial license, which allows you to run Mari for free for 15 days. See Install the License on page 14.

To use Mari after this trial period, you need either a valid **activation key**, **node locked license**, or a **floating license** and server running the Foundry Licensing Tools (FLT):

• **Activation Keys and Node Locked Licenses** - these are used to license applications on a single machine. They do not work on different machines and if you need them to, you'll have to transfer your license.

  Node locked licenses, sometimes called uncounted licenses, do not require additional licensing software to be installed. See Licensing Mari on a Single Machine for more information.

• **Floating Licenses** - these are used to license applications on any networked client machine. The floating license is put on the server and is locked to a unique number on that server.

  Floating licenses, sometimes called counted licenses, require additional software to be installed on a server to manage the licenses and give them out to the client stations that want them. This software is called the Foundry Licensing Tools (FLT) and can be downloaded at no extra cost from our website. See Licensing Mari over a Network for more information.

The instructions below run through both licensing methods. You can also find a more detailed description in the *Foundry Licensing Tools User Guide* available on our website: http://www.thefoundry.co.uk/support/licensing/tools/

Licensing Mari on a Single Machine

Obtain an Activation Key

To obtain a license, you'll need your machine's System ID (sometimes called Host ID or rlmhostid). Just so you know what a System ID number looks like, here's an example: 000ea641d7a1.

> **NOTE:** Bear in mind that, for floating licenses, you'll need the System ID of the license server, not the machines on which you intend to run Mari.

There are a number of ways you can find out your machine's System ID:

• Launch Mari without a license, click **Status**, and then scroll down the error report until you see your System ID.

• Download the Foundry License Utility (FLU) from www.thefoundry.co.uk/support/licensing/ and run it. Your System ID is displayed.

• Download the Foundry Licensing Tools (FLT) free of charge from www.thefoundry.co.uk/support/licensing/ and then run C:\Program Files\TheFoundry\LicensingTools7.0\ Foundry License Utility.exe

When you know your System ID, you can request a license for The Foundry products:

• from The Foundry's Sales Department at sales@thefoundry.co.uk

• from the product pages on our web site, such as www.thefoundry.co.uk/products/mari/

• by launching Mari without a license and selecting:

  • **Buy Mari** - opens a web browser directly to The Foundry website to purchase a license.

  • **Try Mari** - displays the 15-day trial license download screen. Enter your The Foundry account details or create a new account and follow the on-screen instructions to receive a trial license.

> ✏ **NOTE:** By default, if you have installed a temporary license, Mari displays a dialog at start-up alerting you to the number of days remaining. If you want to disable this behavior, you can set the FN_DISABLE_ LICENSE_DIALOG environment variable to 1 to suppress the warning message about imminent license expiration. See *Environment Variables That Mari Recognizes* in the *Mari User Guide* for more information.

Install the License

You are prompted to enter your activation key when you start Mari without a license. Mari skips this step if you've already activated the application.

When you start the application before installing a license, a **Licensing** dialog displays an error, informing you that no license was available. The installation process is dependent on what type of license you requested:

- **License file** - if you requested a license file, typically **foundry.lic**, this option allows you to browse to the file location and install it automatically. See To install a license from disk for more information.
- **Activation Key or license text** - if you requested an Activation Key or license by email, this option allows you to paste the key or license text into the **Licensing** dialog, which then installs the license in the correct directory. See To install an Activation Key or license text for more information.
- **A floating license** - if you requested a floating license to supply licenses to multiple client machines, this option allows you enter the server address that supplies the client licenses.

> ✏ **NOTE:** You must install a floating license and additional software on the license server to use this option.

See Install Floating Licenses for more information.

> 💬 **TIP:** If you later want to check the current status of your license (for example, to see if it's a node locked license or a floating license), select **Tools** > **License** in Mari to display the **Mari Licensing** dialog.

To install a license from disk

1. Save the license file to a known location on disk.
2. Launch Mari.

   The Licensing dialog displays.
3. Click **Install License** to display the available license installation options.
4. Click **Install from Disk**.
5. Browse to the location of the license file.
6. Click **Open** to install the license automatically in the correct directory.

To install an Activation Key or license text

1. Launch Mari.

The Licensing dialog displays.

2. Click **Install License** to display the available license installation options.

3. Click **Activation Key / License Text** and then either:

   • Enter the **Activation Key** string in place of **Insert Activation Key Here**. A license key typically looks something like this:

   ```
   mari-0101-77d3-99bd-a977-93e9-8035
   ```

   OR

   • Copy the license text and paste it over the **Copy/Paste license text here** string. License text typically looks something like this:

   ```
   LICENSE foundry mari_i 2015.1223 permanent 2 share=h min_timeout=30
   start=23-jan-2015 issuer=sf issued=23-jan-2015 replace
   _ck=6dd78e4c69 sig="60PG452MPDMMM6MJAMRGKNQAN3PEAK8JYTHN45022M0C98H
   XFA9N7SAASMRABT8TUJ6FAMX8TWU0"
   ```

4. Click **Install**.

   The license is automatically installed on your machine in the correct directory.

> NOTE: Activation Keys require an internet connection. If you access the internet through a proxy server and cannot connect to the activation server, you may get an error dialog prompting you to either:
>
> -Click **Use Proxy** to enter the proxy server name, port number, username, and password. This enables the application to connect to the activation server and obtain a license. The license is then installed automatically, or
> -Click on the web link in the dialog and use the System ID (also known as hostid) provided to manually activate and install a license.

Licensing Mari over a Network

Obtain Floating Licenses

Alternatively, you can purchase a floating license key from our website.

1. Display your system ID by doing one of the following:

   • Launch Mari without a license, click **Status**, and then scroll down the error report until you see your System ID.

   • Download the Foundry License Utility (FLU) from www.thefoundry.co.uk/support/licensing/ and run it. Your System ID is displayed.

   • Download the Foundry Licensing Tools (FLT) free of charge from www.thefoundry.co.uk/support/licensing/ and then run C:\Program Files\TheFoundry\LicensingTools7.0\ Foundry License Utility.exe

2. Once you have provided us with your System ID number and a license key has been generated for you, you'll receive the license key in an e-mail or Internet download. The license key is contained in a text file called foundry.lic. For information on what to do with the foundry.lic file, see Install Floating Licenses.

Install Floating Licenses

If you requested a floating license from The Foundry, you will receive your license key (foundry.lic) in an email or internet download. You should also receive the Foundry License Utility (FLU) application to help you install the license key on the license server machine. The server manages licenses for the *client* machines on your network.

> 📝 **NOTE:** The FLU is also available to download from www.thefoundry.co.uk/support/licensing/

1. Make sure you have saved both the license key (foundry.lic) and the Foundry License Utility application in the same directory.
2. Run the FLU application.

   The license key automatically appears in the FLU window if the FLU and **foundry.lic** are in the same directory.

> 💬 **TIP:** If they are not in the same directory, you can either copy and paste the contents of the license key or drag-and-drop the file into the FLU window.

3. Click **Install**.

   This checks the license file and, provided that the license is valid, installs it into the correct directory.
4. In order for the floating license to work, you will need to install the Foundry Licensing Tools (FLT) on the license server machine.

   For more information on how to install floating licenses, refer to the *FLT User Guide*, which you can download from our website www.thefoundry.co.uk/support/licensing/
5. Once your license server is up and running, launch Mari on the client machine.
6. Click **Use Server** and enter the server address in the field provided. The format for the server name is: <port>@<servername>, for example, 30001@red.

> 📝 **NOTE:** You must perform steps 5 through 7 on each client machine that requires a Mari license from the server.

> 💬 **TIP:** If you later need to display the **Mari Licensing** dialog again, you can select **Tools** > **License** in Mari.

Further Reading

For more information on licensing Mari, displaying the System ID number, setting up a floating license server, adding new license keys and managing license usage across a network, you should read the *Foundry Licensing Tools User Guide* available on our website.

Linux

Linux System Requirements

• Linux 64-bit operating system (Fedora 12 or Red Hat Enterprise Linux 5.4).

> **NOTE:** Some newer Linux distributions have changed their network device configuration handling and won't work with Mari without some configuration changes. Known affected distributions at this time include Fedora 16, Red Hat Enterprise Linux 6, and CentOS 6 on certain, notably Dell, hardware. Please see our FAQs for more information: http://www.thefoundry.co.uk/support/licensing/faq/

• Quad-core x86-based processor.

• 250GB disk space available for caching and temporary files (or a minimum of 50GB if you're working on a small project).

• At least 4GB RAM.

• Display with 1680 x 1050 pixel resolution.

• An NVIDIA or AMD graphics card with at least 1GB of RAM and OpenGL 3.2 support (see Windows and Linux Tested Graphics Cards).

> **NOTE:** Displacement preview is currently only available on the cards and drivers that support OpenGL 4.0 or newer.

> **NOTE:** In many Linux windows managers, the **Alt** key is used by default as a mouse modifier key. This can cause problems in 3D applications where **Alt** is used for camera navigation in 3D environments.
>
> You can use key mapping to assign the mouse modifier to another key, such as the ⊞ (**Super** or **Meta**) key, but the method changes depending on which flavor of Linux you're using. Please refer to the documentation on key mapping for your particular Linux distribution for more information.

Installation on Linux

Mari 2.6 is available to download from our website at www.thefoundry.co.uk/products/mari. The download is in a compressed **.run** format.

1. Download the **.run** installation file from our web site.

2. Extract Mari from the **.run** archive with the following terminal command, replacing [version number] with the current version:

```
sudo ./Mari[version number]-linux-x86-release-64.run
```

The installer displays the End User Licensing Agreement (EULA) and prompts you to accept it.

3. If you agree with the EULA, enter **y** and press **Return** to accept the EULA. (If you don't agree with the EULA and press **n** instead, the installation is canceled.)

    By default, Mari is installed in an appropriately named folder in the current working directory.

4. That's it! Proceed with Launching on Linux.

> **NOTE:** If you leave out **sudo** from the terminal command, you need to ensure that you have sufficient permissions to install Mari under your current working directory or selected target directory.
>
> After the Mari application files have been installed, the installer also runs a post-installation script that creates the following directory: /usr/local/foundry/RLM
>
> If you don't have sufficient permissions on the **/usr/local** folder for this directory to be created, the post-installation script prompts you for your sudo password as necessary.

> **TIP:** You can also use the following options after the terminal command when installing Mari:
> --info
> This lets you see what the default installation directory is.
>
> -- target MyMariDirectory
> This lets you specify a different directory to install Mari to (in this case, MyMariDirectory).
>
> --accept-eula
> This lets you automate the installation so that you are not prompted to accept the EULA. Note that if you use this option, you agree to the terms of the EULA. To see the EULA, please refer to *Appendix D* in the *Mari User Guide*.
>
> -- help
> This lets you see additional help and installer options.
>
> Here's an example of the syntax using the **--accept-eula** option:
> sudo ./Mari[version number]-linux-x86-release-64.run --accept-eula

Launching on Linux

1. Open a terminal.

2. Navigate to the directory you installed Mari to.

3. Enter **./mari**.

4. If you haven't installed a license for Mari, you need to choose from one of the options for Licensing on Linux. Once you've done so, click **Launch** in the **Mari Licensing** dialog.

Mari checks for Windows and Linux Tested Graphics Cards, and if an untested graphics card configuration is detected, a dialog displays warning you about it. Depending on the configuration detected, you have the option to **Quit** or **Continue** and, in the case of configurations with known issues, also **Ignore Permanently**.

> **NOTE:** If you ignore the warning and run Mari anyway, you may experience instability or performance issues. If a tested graphics card configuration is detected, Mari runs as normal.

5. If you are launching Mari for the first time, you are prompted to select a directory for its cache files. In the **Please Pick Cache Directory** dialog, navigate to the directory you want to use and click **Choose**.

    The Mari graphical interface displays.

    Please note that the cache directory should be:

    • empty

    • local to the machine (not a network mount)

    • as fast as possible

    • a location that's not temporary (to avoid the data disappearing)

    • a directory that the user has read and write permissions to.

Project cache locations are directories that Mari uses to store project data files. These directories must be persistent; not in temporary locations. If more than one cache location is specified, Mari spreads each project's data files across all locations. Once a project has been created for a given set of cache locations, that set must not be changed. In order to move a project between different sets of caches, archive the project.

> **WARNING:** Don't add, remove, or amend cache locations once they have been set unless they are empty. Once projects have been created for a given set of cache locations, that set must not be changed or project corruption will occur.

> **NOTE:** If the MARI_CACHE environment variable has been set, its value is used to determine the location of the cache files. In this case, Mari does not prompt you to select the cache directory. For more information on environment variables that Mari understands, please refer to the *Mari User Guide*.

> **TIP:** You can also launch Mari in verbose mode by using the following command:
> ./mari --verbose
>
> This way, Mari provides a running log of each action that it performs. You can see this log in a terminal window.

Licensing on Linux

If you simply want to try out Mari, you can obtain a trial license, which allows you to run Mari for free for 15 days. See Install the License on page 21.

To use Mari after this trial period, you need either a valid **activation key**, **node locked license**, or a **floating license** and server running the Foundry Licensing Tools (FLT):

• **Activation Keys and Node Locked Licenses** - these are used to license applications on a single machine. They do not work on different machines and if you need them to, you'll have to transfer your license.

Node locked licenses, sometimes called uncounted licenses, do not require additional licensing software to be installed. See Licensing Mari on a Single Machine for more information.

• **Floating Licenses** - these are used to license applications on any networked client machine. The floating license is put on the server and is locked to a unique number on that server.

Floating licenses, sometimes called counted licenses, require additional software to be installed on a server to manage the licenses and give them out to the client stations that want them. This software is called the Foundry Licensing Tools (FLT) and can be downloaded at no extra cost from our website. See Licensing Mari over a Network for more information.

The instructions below run through both licensing methods. You can also find a more detailed description in the *Foundry Licensing Tools User Guide* available on our website: http://www.thefoundry.co.uk/support/licensing/tools/

Licensing Mari on a Single Machine

Obtain an Activation Key

To obtain a license, you'll need your machine's System ID (sometimes called Host ID or rlmhostid). Just so you know what a System ID number looks like, here's an example: 000ea641d7a1.

> NOTE: Bear in mind that, for floating licenses, you'll need the System ID of the license server, not the machines on which you intend to run Mari.

There are a number of ways you can find out your machine's System ID:

• Launch Mari without a license, click **Status**, and then scroll down the error report until you see your System ID.

• Download the Foundry License Utility (FLU) from www.thefoundry.co.uk/support/licensing/ and run it. Your System ID is displayed.

• Download the Foundry Licensing Tools (FLT) free of charge from www.thefoundry.co.uk/support/licensing/ and then run the following command in a terminal shell:

```
/usr/local/foundry/LicensingTools7.0/bin/systemid
```

When you know your System ID, you can request a license for The Foundry products:

• from The Foundry's Sales Department at sales@thefoundry.co.uk

• from the product pages on our web site, such as www.thefoundry.co.uk/products/mari/

• by launching Mari without a license and selecting:

  • **Buy Mari** - opens a web browser directly to The Foundry website to purchase a license.

  • **Try Mari** - displays the 15-day trial license download screen. Enter your The Foundry account details or create a new account and follow the on-screen instructions to receive a trial license.

> **NOTE:** By default, if you have installed a temporary license, Mari displays a dialog at start-up alerting you to the number of days remaining. If you want to disable this behavior, you can set the FN_DISABLE_ LICENSE_DIALOG environment variable to 1 to suppress the warning message about imminent license expiration. See *Environment Variables That Mari Recognizes* in the *Mari User Guide* for more information.

Install the License

You are prompted to enter your activation key when you start Mari without a license. Mari skips this step if you've already activated the application.

When you start the application before installing a license, a **Licensing** dialog displays an error, informing you that no license was available. The installation process is dependent on what type of license you requested:

• **License file** - if you requested a license file, typically **foundry.lic**, this option allows you to browse to the file location and install it automatically. See To install a license from disk for more information.

• **Activation Key or license text** - if you requested an Activation Key or license by email, this option allows you to paste the key or license text into the **Licensing** dialog, which then installs the license in the correct directory. See To install an Activation Key or license text for more information.

• **A floating license** - if you requested a floating license to supply licenses to multiple client machines, this option allows you enter the server address that supplies the client licenses.

> **NOTE:** You must install a floating license and additional software on the license server to use this option.

See Install Floating Licenses for more information.

> **TIP:** If you later want to check the current status of your license (for example, to see if it's a node locked license or a floating license), select **Tools** > **License** in Mari to display the **Mari Licensing** dialog.

To install a license from disk

1. Save the license file to a known location on disk.

2. Launch Mari.

   The Licensing dialog displays.

3. Click **Install License** to display the available license installation options.

4.   Click **Install from Disk**.

5.   Browse to the location of the license file.

6.   Click **Open** to install the license automatically in the correct directory.

To install an Activation Key or license text

1.   Launch Mari.

     The Licensing dialog displays.

2.   Click **Install License** to display the available license installation options.

3.   Click **Activation Key / License Text** and then either:

     • Enter the **Activation Key** string in place of **Insert Activation Key Here**. A license key typically looks something like this:

     ```
     mari-0101-77d3-99bd-a977-93e9-8035
     ```

     OR

     • Copy the license text and paste it over the **Copy/Paste license text here** string. License text typically looks something like this:

     ```
     LICENSE foundry mari_i 2015.1223 permanent 2 share=h min_timeout=30
     start=23-jan-2015 issuer=sf issued=23-jan-2015 replace
     _ck=6dd78e4c69 sig="60PG452MPDMMM6MJAMRGKNQAN3PEAK8JYTHN45022M0C98H
     XFA9N7SAASMRABT8TUJ6FAMX8TWU0"
     ```

4.   Click **Install**.

     The license is automatically installed on your machine in the correct directory.

> **NOTE:** Activation Keys require an internet connection. If you access the internet through a proxy server and cannot connect to the activation server, you may get an error dialog prompting you to either:
>
> -Click **Use Proxy** to enter the proxy server name, port number, username, and password. This enables the application to connect to the activation server and obtain a license. The license is then installed automatically, or
> -Click on the web link in the dialog and use the System ID (also known as hostid) provided to manually activate and install a license.

Licensing Mari over a Network

Obtain Floating Licenses

Alternatively, you can purchase a floating license key from our website.

1.   Display your system ID by doing one of the following:

- Launch Mari without a license, click **Status**, and then scroll down the error report until you see your System ID.
- Download the Foundry License Utility (FLU) from www.thefoundry.co.uk/support/licensing/ and run it. Your System ID is displayed.
- Download the Foundry Licensing Tools (FLT) free of charge from www.thefoundry.co.uk/support/licensing/ and then run C:\Program Files\TheFoundry\LicensingTools7.0\ Foundry License Utility.exe

2. Once you have provided us with your System ID number and a license key has been generated for you, you'll receive the license key in an e-mail or Internet download. The license key is contained in a text file called foundry.lic. For information on what to do with the foundry.lic file, see Install Floating Licenses.

Install Floating Licenses

If you requested a floating license from The Foundry, you will receive your license key (foundry.lic) in an email or internet download. You should also receive the Foundry License Utility (FLU) application to help you install the license key on the license server machine. The server manages licenses for the *client* machines on your network.

> **NOTE:** The FLU is also available to download from www.thefoundry.co.uk/support/licensing/

1. Make sure you have saved both the license key (foundry.lic) and the Foundry License Utility application in the same directory.
2. Run the FLU application.
   The license key automatically appears in the FLU window if the FLU and **foundry.lic** are in the same directory.

> **TIP:** If they are not in the same directory, you can either copy and paste the contents of the license key or drag-and-drop the file into the FLU window.

3. Click **Install**.
   This checks the license file and, provided that the license is valid, installs it into the correct directory.
4. In order for the floating license to work, you will need to install the Foundry Licensing Tools (FLT) on the license server machine.
   For more information on how to install floating licenses, refer to the *FLT User Guide*, which you can download from our website www.thefoundry.co.uk/support/licensing/
5. Once your license server is up and running, launch Mari on the client machine.
6. Click **Use Server** and enter the server address in the field provided. The format for the server name is: <port>@<servername>, for example, 30001@red.

> **NOTE:** You must perform steps 5 through 7 on each client machine that requires a Mari license from the server.

> **TIP:** If you later need to display the **Mari Licensing** dialog again, you can select **Tools** > **License** in Mari.

Further Reading

For more information on licensing Mari, displaying the System ID number, setting up a floating license server, adding new license keys and managing license usage across a network, you should read the *Foundry Licensing Tools User Guide* available on our website.

Mac OS X

Mac System Requirements

• Mac OS X 10.8.5 and 10.9.5.

> ⚠️ **WARNING:** By default, when you first install Mac OS 10.8 or higher, the security preferences are set so that any applications not downloaded from the Apple App Store can't be installed.
> To ensure that Mari installs correctly, navigate to **System Preferences** > **Security & Privacy** on your Mac and select **Anywhere** for the **Allow applications download from** field.

• Quad-core x86-based processor.

• 250GB disk space available for caching and temporary files (or a minimum of 50GB if you're working on a small project).

• At least 4GB RAM.

• Display with 1680 x 1050 pixel resolution.

• NVIDIA Quadro 4000 or NVIDIA GeForce (Fermi Series) 650M.

Installation on Mac

Mari 2.6 is available to download from our web site at www.thefoundry.co.uk/products/mari. The download is in a compressed **.dmg** format.

1. Download the **.dmg** installation file from our web site.

2. Double-click on the installation file and package to start the installation. Follow the on-screen instructions. By default, Mari is installed to /Applications on the chosen hard disk.

3. That's it! Proceed with Launching on Mac.

Installing Mari from the command line

1. Download the correct **.dmg** installation file from our website at www.thefoundry.co.uk.

2. Launch a Terminal window.

3. To mount the **.dmg** installation file, use the **hdiutil** attach command with the directory where you saved the installation file. For example, if you saved the installation file in **Builds/Mari**, use the following command:
   ```
   hdiutil attach /Builds/Mari/Mari2.6v5-mac-x86-release-64.dmg
   ```

4. Enter the following command:
   ```
   pushd /Volumes/Mari2.6v5/
   ```
   This stores the directory path in memory, so it can be returned to later.

5. To install Mari, use the following command:
   ```
   sudo installer -pkg Mari2.6v5-mac-x86-release-64.pkg -target "/"
   ```
   You are prompted for a password.

6. Enter the following command:
   ```
   popd
   ```
   This changes to the directory stored by the pushd command.

7. Finally, use the following command to eject the mounted disk image:
   ```
   hdiutil detach /Volumes/Mari2.6v5
   ```

> **NOTE:** By running a silent install of Mari, you agree to the terms of the *End User License Agreement*. To see this agreement, please refer to the Appendices in the *Mari User Guide*, or run the installer in standard non-silent mode.

Launching on Mac

1. Click **Applications** > **Mari 2.6v5**.

2. If you haven't installed a license for Mari, you need to choose from one of the options for Licensing on Mac. Once you've done so, click **Launch** in the **Mari Licensing** dialog.

   Mari checks for Mac OS X Tested Graphics Cards, and if an untested graphics card configuration is detected, a dialog displays warning you about it. Depending on the configuration detected, you have the option to **Quit** or **Continue** and, in the case of configurations with known issues, also **Ignore Permanently**.

> **NOTE:** If you ignore the warning and run Mari anyway, you may experience instability or performance issues. If a tested graphics card configuration is detected, Mari runs as normal.

3. If you are launching Mari for the first time, you are prompted to select a directory for its cache files. In the **Please Pick Cache Directory** dialog, navigate to the directory you want to use and click **Choose**.

   The Mari graphical interface displays.

   Please note that the cache directory should be:

   • empty

   • local to the machine (not a network mount)

   • as fast as possible

   • a location that's not temporary (to avoid the data disappearing)

• a directory that the user has read and write permissions to.

Project cache locations are directories that Mari uses to store project data files. These directories must be persistent; not in temporary locations. If more than one cache location is specified, Mari spreads each project's data files across all locations. Once a project has been created for a given set of cache locations, that set must not be changed. In order to move a project between different sets of caches, archive the project.

> ⚠ **WARNING:** Do not add, remove, or amend cache locations once they have been set unless they are empty. Once projects have been created for a given set of cache locations, that set must not be changed or project corruption will occur.

> 🖉 **NOTE:** If the MARI_CACHE environment variable has been set, its value is used to determine the location of the cache files. In this case, Mari does not prompt you to select the cache directory. For more information on environment variables that Mari understands, please refer to the *Mari User Guide*.

Licensing on Mac

If you simply want to try out Mari, you can obtain a trial license, which allows you to run Mari for free for 15 days. See Install the License on page 27.

To use Mari after this trial period, you need either a valid **activation key**, **node locked license**, or a **floating license** and server running the Foundry Licensing Tools (FLT):

• **Activation Keys and Node Locked Licenses** - these are used to license applications on a single machine. They do not work on different machines and if you need them to, you'll have to transfer your license.

Node locked licenses, sometimes called uncounted licenses, do not require additional licensing software to be installed. See Licensing Mari on a Single Machine for more information.

• **Floating Licenses** - these are used to license applications on any networked client machine. The floating license is put on the server and is locked to a unique number on that server.

Floating licenses, sometimes called counted licenses, require additional software to be installed on a server to manage the licenses and give them out to the client stations that want them. This software is called the Foundry Licensing Tools (FLT) and can be downloaded at no extra cost from our website. See Licensing Mari over a Network for more information.

The instructions below run through both licensing methods. You can also find a more detailed description in the *Foundry Licensing Tools User Guide* available on our website: http://www.thefoundry.co.uk/support/licensing/tools/

Licensing Mari on a Single Machine

Obtain an Activation Key

To obtain a license, you'll need your machine's System ID (sometimes called Host ID or rlmhostid). Just so you know what a System ID number looks like, here's an example: 000ea641d7a1.

> **NOTE:** Bear in mind that, for floating licenses, you'll need the System ID of the license server, not the machines on which you intend to run Mari.

There are a number of ways you can find out your machine's System ID:

• Launch Mari without a license, click **Status**, and then scroll down the error report until you see your System ID.

• Download the Foundry License Utility (FLU) from www.thefoundry.co.uk/support/licensing/ and run it. Your System ID is displayed.

• Download the Foundry Licensing Tools (FLT) free of charge from www.thefoundry.co.uk/support/licensing/ and then run /Applications/TheFoundry/LicensingTools7.0/Foundry Licence Utility.app

When you know your System ID, you can request a license for The Foundry products:

• from The Foundry's Sales Department at sales@thefoundry.co.uk

• from the product pages on our web site, such as www.thefoundry.co.uk/products/mari/

• by launching Mari without a license and selecting:

  • **Buy Mari** - opens a web browser directly to The Foundry website to purchase a license.

  • **Try Mari** - displays the 15-day trial license download screen. Enter your The Foundry account details or create a new account and follow the on-screen instructions to receive a trial license.

> **NOTE:** By default, if you have installed a temporary license, Mari displays a dialog at start-up alerting you to the number of days remaining. If you want to disable this behavior, you can set the FN_DISABLE_LICENSE_DIALOG environment variable to 1 to suppress the warning message about imminent license expiration. See *Environment Variables That Mari Recognizes* in the *Mari User Guide* for more information.

Install the License

You are prompted to enter your activation key when you start Mari without a license. Mari skips this step if you've already activated the application.

When you start the application before installing a license, a **Licensing** dialog displays an error, informing you that no license was available. The installation process is dependent on what type of license you requested:

• **License file** - if you requested a license file, typically **foundry.lic**, this option allows you to browse to the file location and install it automatically. See To install a license from disk for more information.

- **Activation Key or license text** - if you requested an Activation Key or license by email, this option allows you to paste the key or license text into the **Licensing** dialog, which then installs the license in the correct directory. See To install an Activation Key or license text for more information.
- **A floating license** - if you requested a floating license to supply licenses to multiple client machines, this option allows you enter the server address that supplies the client licenses.

> **NOTE:** You must install a floating license and additional software on the license server to use this option.

See Install Floating Licenses for more information.

> **TIP:** If you later want to check the current status of your license (for example, to see if it's a node locked license or a floating license), select **Tools** > **License** in Mari to display the **Mari Licensing** dialog.

To install a license from disk

1. Save the license file to a known location on disk.
2. Launch Mari.

   The Licensing dialog displays.
3. Click **Install License** to display the available license installation options.
4. Click **Install from Disk**.
5. Browse to the location of the license file.
6. Click **Open** to install the license automatically in the correct directory.

To install an Activation Key or license text

1. Launch Mari.

   The Licensing dialog displays.
2. Click **Install License** to display the available license installation options.
3. Click **Activation Key / License Text** and then either:
   - Enter the **Activation Key** string in place of **Insert Activation Key Here**. A license key typically looks something like this:

     ```
     mari-0101-77d3-99bd-a977-93e9-8035
     ```

     OR
   - Copy the license text and paste it over the **Copy/Paste license text here** string. License text typically looks something like this:

     ```
     LICENSE foundry mari_i 2015.1223 permanent 2 share=h min_timeout=30
     start=23-jan-2015 issuer=sf issued=23-jan-2015 replace
     _ck=6dd78e4c69 sig="60PG452MPDMMM6MJAMRGKNQAN3PEAK8JYTHN45022M0C98H
     XFA9N7SAASMRABT8TUJ6FAMX8TWU0"
     ```
4. Click **Install**.

The license is automatically installed on your machine in the correct directory.

> **NOTE:** Activation Keys require an internet connection. If you access the internet through a proxy server and cannot connect to the activation server, you may get an error dialog prompting you to either:
>
> -Click **Use Proxy** to enter the proxy server name, port number, username, and password. This enables the application to connect to the activation server and obtain a license. The license is then installed automatically, or
> -Click on the web link in the dialog and use the System ID (also known as hostid) provided to manually activate and install a license.

Licensing Mari over a Network

Obtain Floating Licenses

Alternatively, you can purchase a floating license key from our website.

1. Display your system ID by doing one of the following:

    • Launch Mari without a license, click **Status**, and then scroll down the error report until you see your System ID.

    • Download the Foundry License Utility (FLU) from www.thefoundry.co.uk/support/licensing/ and run it. Your System ID is displayed.

    • Download the Foundry Licensing Tools (FLT) free of charge from www.thefoundry.co.uk/support/licensing/ and then run C:\Program Files\TheFoundry\LicensingTools7.0\ Foundry License Utility.exe

2. Once you have provided us with your System ID number and a license key has been generated for you, you'll receive the license key in an e-mail or Internet download. The license key is contained in a text file called foundry.lic. For information on what to do with the foundry.lic file, see Install Floating Licenses.

Install Floating Licenses

If you requested a floating license from The Foundry, you will receive your license key (foundry.lic) in an email or internet download. You should also receive the Foundry License Utility (FLU) application to help you install the license key on the license server machine. The server manages licenses for the *client* machines on your network.

> **NOTE:** The FLU is also available to download from www.thefoundry.co.uk/support/licensing/

1. Make sure you have saved both the license key (foundry.lic) and the Foundry License Utility application in the same directory.

2. Run the FLU application.

    The license key automatically appears in the FLU window if the FLU and **foundry.lic** are in the same directory.

> **TIP:** If they are not in the same directory, you can either copy and paste the contents of the license key or drag-and-drop the file into the FLU window.

3. Click **Install**.

   This checks the license file and, provided that the license is valid, installs it into the correct directory.

4. In order for the floating license to work, you will need to install the Foundry Licensing Tools (FLT) on the license server machine.

   For more information on how to install floating licenses, refer to the *FLT User Guide*, which you can download from our website www.thefoundry.co.uk/support/licensing/

5. Once your license server is up and running, launch Mari on the client machine.

6. Click **Use Server** and enter the server address in the field provided. The format for the server name is: <port>@<servername>, for example, 30001@red.

> **NOTE:** You must perform steps 5 through 7 on each client machine that requires a Mari license from the server.

> **TIP:** If you later need to display the **Mari Licensing** dialog again, you can select **Tools** > **License** in Mari.

Further Reading

For more information on licensing Mari, displaying the System ID number, setting up a floating license server, adding new license keys and managing license usage across a network, you should read the *Foundry Licensing Tools User Guide* available on our website.

3 Mari Model Requirements

Mari has certain modeling requirements that need to be met in order to use geometry, whether the format of the geometry is an Object, Ptex, or Alembic file format.

Model Requirements

Mari requires your model files to be configured in a particular way.

Please bear in mind that Mari allows you to import and paint models with **Overlapping UVs**, like the one shown below. However, if you paint on regions in the 3D views (orthographic or perspective), which also overlap in 2D UV view, then you may encounter painting artifacts, as Mari is forced to choose which of the conflicting overlapping paint strokes to bake down. To avoid this, you should only apply paint to one of the overlapped regions at a time in the 3D views.
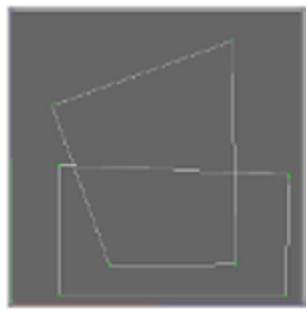
For example, if you paint a face where the left and right halves have been mirrored with overlapping UVs, then you should aim to only paint on one half of the face to avoid paint clashes.

> NOTE: Paint clashing due to overlapping UVs cannot occur in the UV view, so you can always paint your model in that view if you find that your model is particularly tricky to paint in 3D views.

Models to paint in Mari *should not* have:

• **UVs that go over 10 on the U axis** - these are ignored.
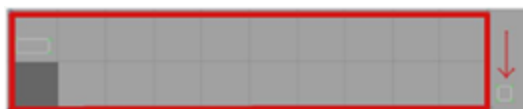
- **Stacked UVs** - these cannot be individually selected in UV view. If you do have stacked UVs and want to select an individual UV, you need to select it in either Ortho or Perspective view first, and then switch back to UV view.

Models to paint in Mari *cannot* have:

- **Negative UVs** - painting on these is not possible.
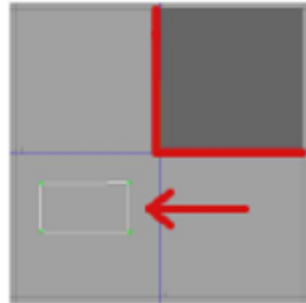
For Ptex modeling, please see the *Ptex Modeling Requirements in Mari* section in the *Mari User Guide* for more information.

For Alembic modeling, please see the *Alembic Modeling Requirements in Mari* section in the *Mari User Guide* for more information.

4 The Mari Workspace

The Mari workspace consists of a the menubar, a canvas, toolbars, and a status bar. Palettes, for working with items such as channels or shaders, can be either docked to the application or made to float wherever you find them most useful.

What It Looks Like

Here is an illustration of the Mari workspace that displays when you first open the program.

Workspace	
Menubar	To select Mari commands (many of which are also available using shortcut keys and/or icons).
Toolbars	To click icons for common Mari functions or settings.
Canvas	Where you view and paint your geometry.
Tabs	To switch between views.
Palettes	Controls for viewing and changing different aspects of what's on the canvas.
Disk Usage Bar	Displays how much of your cache disk has been filled.
Statusbar	Information about the project generally, progress of long operations (such as baking), and icons.

5 Managing Projects

A Mari project stores your work on geometries, and any associated textures. Mari's Project tab holds all the projects you are working on.

Creating a New Project

1. Do one of the following:

Select from **menubar**	*or* click on **toolbar**	*or* click on the **Project tab**	*or* type **shortcut key**
File > **New**		New	**Ctrl**/**Cmd+N**

The **New Project** dialog box displays.
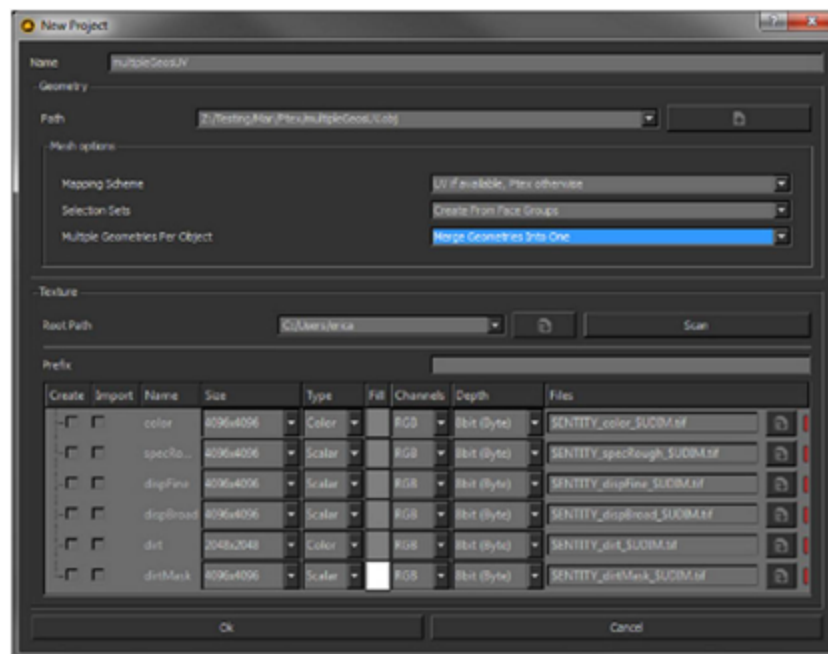
2. Set the project's **Name** (for you to identify it only - this is not a filename).

3. Select the geometry file for the project in the **Path** field. The drop-down lists the last 10 files selected, or you can

    click ![browse icon] to browse to a file.

    Various mesh options display in the dialog directly under **Path**, depending on whether you open an **.obj**, **.ptx**, or **.abc** file.

    •	**.obj** files - you can select options for the **Mapping Scheme**, **Selection Sets**, and **Multiple Geometries Per Object**.
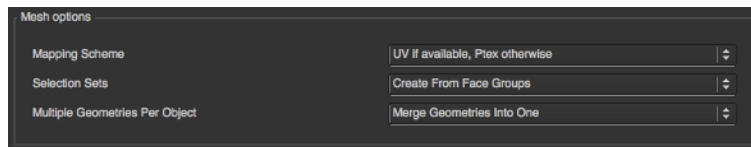
    •	**.ptx** files - you can select whether the mesh data in the file represents a single new object or, when there are multiple input files, if the mesh data in each file represents a separate geometry in a single new object by setting the **Process each geometry file as a** field.
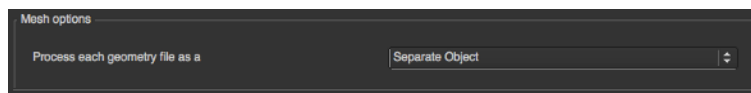
    For more information on the **Mesh options**, please see *Create a New Project* in the *Ptex* chapter of the *Mari User Guide*.

    •	**.abc** files - you can select options for the **Mapping Scheme** and **Merge Type**, as well as set the objects that are to be merged in the object hierarchy.
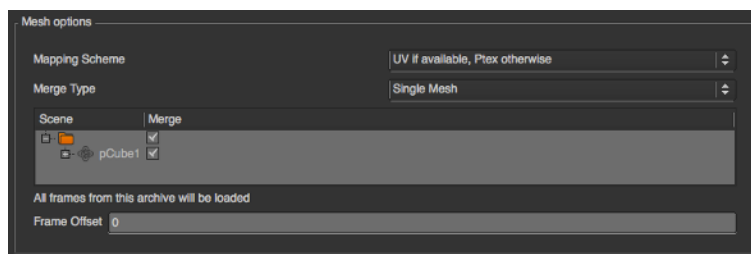
    For more information on the **Mesh options**, please see *Create a New Project* in the *Alembic* chapter of the *Mari User Guide*.

4. If you are loading an animated sequence, **Mesh options** displays with the additional options **Start Frame**, **End Frame**, **Single Frame**, and **All Frames**. These provide the frame range to view either user-defined start and end frames, a single frame, or every frame. A **Frame Offset** also allows you to specify how the Alembic file is loaded into Mari. This is available for **.abc** files only.
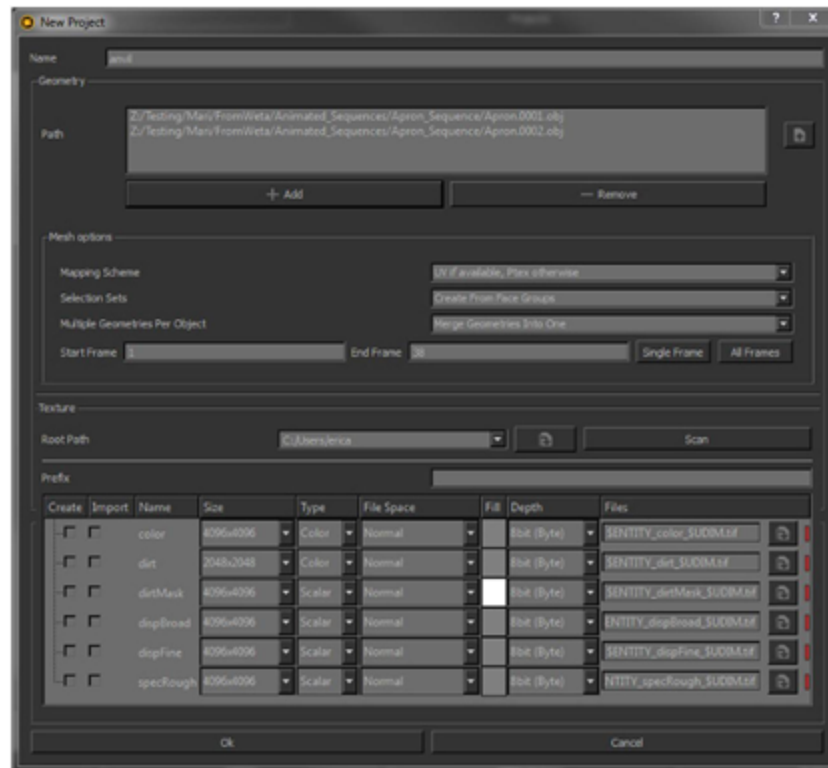
5. To create a project from multiple files, browse to a folder and select multiple files from the directory, before clicking **Open**.

   The selected files are all shown in the **Path** field. These files are stored in the history as a single project under the assigned name.

   > **NOTE:** It's only possible to create a project from multiple files with **.obj** and **.ptx** files. You can only load one **.abc** file when creating a new project.

6. In the **Texture** section, click to select which of the channels in the list to create. You can select a different **Category** from the list – the set of channels updates with channels for your selected category.

   > **TIP:** Click **Scan** to make Mari scan the project's root path for any existing textures. If any textures exist for your channels, Mari shows a green dot next to the channel. You can select to import these textures.

7. Click boxes under **Create** and **Import** to set the options. You can right-click to get a dropdown menu allowing you to easily create or import all the channels. As with the project name, the channel **Name** is for you to identify it only - when you export you can select a different name.

8. Choose **Size**, **Type**, and **File Space** from the dropdown menus for each channel. Under **Type**, select **Color** for anything color-dependent (and Mari applies the viewer LUT automatically), or **Scalar** for a mask or displacement.

9. If you select a different **Depth** or resolution, file sizes can vary dramatically (for example, a 2k RGB "Byte" texture file is 2MB - whereas a 4k "Float" is 172MB).

10. Set the **Fill** to fill a channel with a specified color by default.

11. Click **OK**.

Mari checks the model for any errors that might prevent it from processing; for example, touch border edges. A **Mesh Sanity Check** dialog displays any warnings or errors. (**Errors** cancel opening the model, but you can continue with **warnings**.)

> **NOTE:** For information on model requirements in Mari, refer to Mari Model Requirements on page 31.

12. Click to **Continue**.

Mari renders your selection and displays it on the canvas.

> **TIP:** Depending on the size and complexity of textures, it can take several minutes the first time you load them into a Mari project. Once saved, however, the project should open quickly in future.

Opening Existing Projects

1. Click on the **Projects** tab.

This shows all the projects you have on your computer.

2. Double-click on the project to open.

> **NOTE:** On project load, Mari looks for metadata that is over 250MB and discards anything that is over this size. This is intended to strip corrupt and problematic data, and also affects metadata added via the Python API.

Using the Command Line

You can also open Mari and a specific, existing project, as well as archives using the command line. From the **Run** dialog on your computer, use a command in the format of:

./mari /tmp/testproject.mra

By specifying the project name, UUID, folder path, or project.mri path, you open Mari and the designated project.

The command line can also be used to run scripts that contain a Python call to open a project. From the **Run** dialog on your computer, use a command in the format of:

./mari example_script.py

The **example_script** should contain the Python call to open a project.

Saving Your Project

Do one of the following:

Select from **menubar**	*or* click on **toolbar**	*or* type **shortcut key**
File > **Save**		**Ctrl**/**Cmd**+**S**

> **TIP:** Save your project often!
> -Note that while your textures remain cached locally, saving does not export them, so export often too!
> -If you don't need to save (no changes since the last save), the toolbar icon is gray.

6 Configuring Your Workspace

The Mari workspace is completely configurable. As detailed on the pages that follow, you can customize how palettes display, your own personalized sets of brushes and colors, and shortcut keys.

Palettes

Mari uses a number of palettes - windows that you can move around your workspace, with specific information and tools for working on your project. For example, the **Channels** palette shows all the channels in the project, and has controls for editing the channels.

To open palettes:

Select from menubar	or right-click on the menubar or toolbar and select
View > **Palettes** > <palette name>	<palette name>

To move, size and arrange palettes:

To...	Do this...
Undock and move a palette	Grab and drag it by its title bar to anywhere on your screen. (Or click to undock, and then drag by its title bar).
Dock a palette to the window	Move it to one of the edges of the Mari window. A dotted line displays along the edge where it can dock.
Dock a palette to another palette	Move it over another undocked palette. A dotted line displays where it can dock.
Size a docked palette	Grab and drag the dotted bar along the bottom or side.
Size a floating palette	Drag an edge or corner.
Stack palettes	Drag and drop them directly on top of one another. Tabs appear for selecting which of the stacked palettes to display.

Shelves

The **Shelf** palette lets you store customized "shelves" of brushes, colors, and images. You can also share them with others.

Mari has the following kinds of shelves:

• The **Menu** shelf stores seven items available from the F9 on-screen menu. These items must be numbered from 1-7 to appear.

• The **Personal** shelf stores items you select and configure for all projects.

• The **Basic Brushes** shelf stores a set of predefined basic brushes.

• The **Hard Surface Brushes** shelf stores a set of predefined hard surface brushes.

• The **Organic Brushes** shelf stores a set of predefined organic brushes.

• Customized shelves you create store items you select and configure for all projects.

Customizing Shelves

To add an item (brush, color, or image) to a shelf, drag it onto the shelf.

7 Channels

Channels hold layers stacks, filled with paint layers, procedurals, and adjustments in your project. For example, a project might have channels for diffuse color, displacement, or specularity, but each of those channels contain individual layers for paint, masks, and filters. Channels can then be used in shader inputs so you can adjust the amount of diffuse or specularity, among other things.

Adding a Channel to a Project

1. Do one of the following:

Select from the **Channels** menu	*or* **from the Channels palette, click**	*or* **right-click on the Channels palette and select**
Add Channel		Add Channel

The **Add Channel** dialog box displays, allowing you to set the options for the new channel.
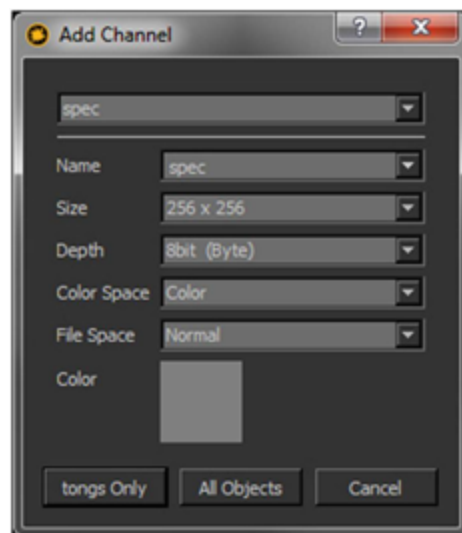
2. Select a name, size, depth, color and file space, and base color for the channel (as with a new project), and click **Ok**.

The new channel displays in the **Channels** palette.

NOTE: If you are working with a Ptex project, the patch **Size** option appears grayed out, as the **.ptx** format doesn't work with patches.

TIP: If there are multiple objects in your project, there is no **Ok** button in the **Add Channel** dialog. Instead, you need to choose whether you want to add the channel to only the current object or **All Objects**.

Adding a Set of Channels

1. Do one of the following:

Select from the **Channels** menu	*or* **right-click on the Channels palette and select**
Channel Presets	Channel Presets

The **Channel Presets** dialog box displays.
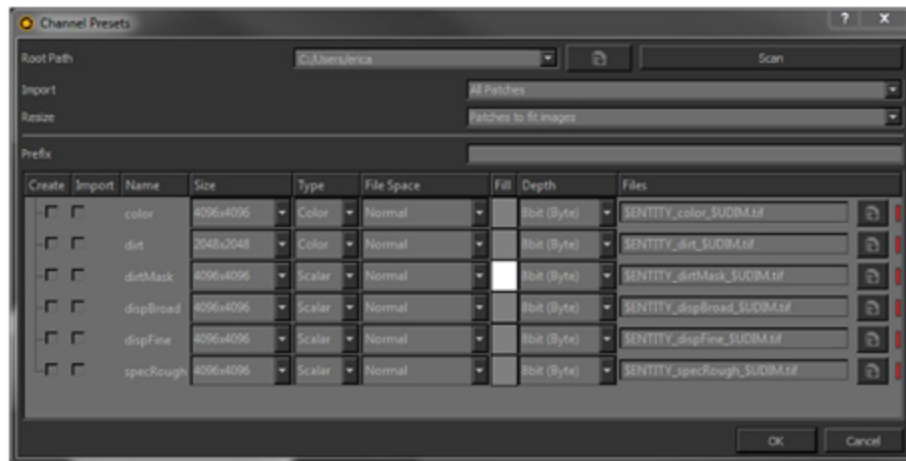
2. Select the **Import** and **Resize** options for the channels you're creating.

   The list of channels at the bottom of the dialog box allows you to set whether you want to create the preset channels from scratch or from an imported file. Set the channel options as you would in the **Add Channel** dialog.

3. If you have existing textures to import into the new channels, set the **Root Path** and make sure that the **Files** for each channel show the correct texture files.

4. Click **OK** to create and import the new channels.

TIP: To toggle quickly between the last two selected channels (while in the painting canvas), press **T**. For other options, such as locking or resizing a channel, right-click in the **Channels** palette or click on the **Channels** menu.

8 Layers

Layers are the source of your paint textures in a project. Layers are created as part of a layer stack, which is in turn held within a specific channel. Each channel has a different layer stack that contains a new set of layers. You can create paint layers, layer masks, adjustments, procedurals, and layer groups within the **Layers** palette.

Add a Layer to a Layer Stack

1. Do one of the following:

Select from the **Layers** menu	*or* from the **Layers** palette, click	*or* right-click on any layer in the **Layers** palette and select
Add New Layer		Add New Layer

> A new layer appears in the **Layers** palette, above any other layers in the layer stack.

2. The paintable icon appears orange when the layer is selected and the paintable component is active.

Add a Mask to a Layer

1. Do one of the following:

Select from the **Layers** menu	*or* from the **Layers** palette, click	*or* right-click on any layer in the **Layers** palette and select
Layer Mask > **Add Mask** > **Reveal All** or **From Alpha**		**Layer Mask** > **Add Mask** > **Reveal All** or **From Alpha**

> A layer mask is added to the selected layer in the **Layers** palette.

2. The mask icon appears orange when the layer is selected and the mask component is active.

> 💬 **TIP:** To switch back and forth between components on a layer, simply click on the component icons.

Add an Adjustment to a Layer Stack

1. Do one of the following:

Select from the **Layers** menu	*or* from the **Layers** palette, click	*or* right-click on any layer in the **Layers** palette and select
Add Adjustment Layer > any adjustment from the dropdown menu		**Add Adjustment Layer** > any adjustment from the dropdown menu

An adjustment layer appears in the **Layers** palette, above any other layers in the layer stack.

2. The adjustment icon appears orange when the layer is selected and the adjustment component is active.

Add a Procedural to a Layer Stack

1. Do one of the following:

Select from the **Layers** menu	*or* from the **Layers** palette, click	*or* right-click on any layer in the **Layers** palette and select
Add Procedural Layer > any procedural from the dropdown menu or sub-menus.		**Add Procedural Layer** > any procedural from the dropdown menu

A procedural layer appears in the **Layers** palette, above any other layers in the layer stack.

2. The procedural icon appears orange when the layer is selected and the procedural component is active.

Group Layers

1. Do one of the following:

Select from the **Layers** menu	*or* from the **Layers** palette, click	*or* right-click on any layer in the **Layers** palette and select
Add Empty Layer Group or **Group Layers**		**Add Empty Layer Group** or **Group Layers**

If you chose to add an empty layer group, this group is added as a new layer in the **Layers** palette, above any other layers in the layer stack.

If you chose to group existing layers together in the layer stack, you must have one or more layers selected. This group is created at the point of the top-most selected layer.

2. To add new layers to an empty layer group, simply drag existing layers into the group.

   Alternatively, once you've added a layer to the group, select any layer within it and **Add New Layer**.

3. All layers within a group maintain any component icons associated with them. The group parent layer has a

   folder icon to distinguish it as the group layer.

9 Shaders

Shaders control how Mari displays the model on the canvas. Mari's default shaders show the paint in either the **Current Channel**, **Current Layer and Below**, **Current Layer**, or **Current Paint Target**. You can also create your own custom shaders by combining diffuse and specular shader types then setting up channels in the shader component inputs to specify how they appear in the shader.

Create a Shader

1. Do one of the following:

Select from the **Shading** menu	*or* from the **Shaders** palette, click	*or* right-click on the **Shaders** palette and select
Add New Shader > any shader from the dropdown menu		any shader from the dropdown menu

The new shader displays in the list, with shader components shown at the bottom of the palette.
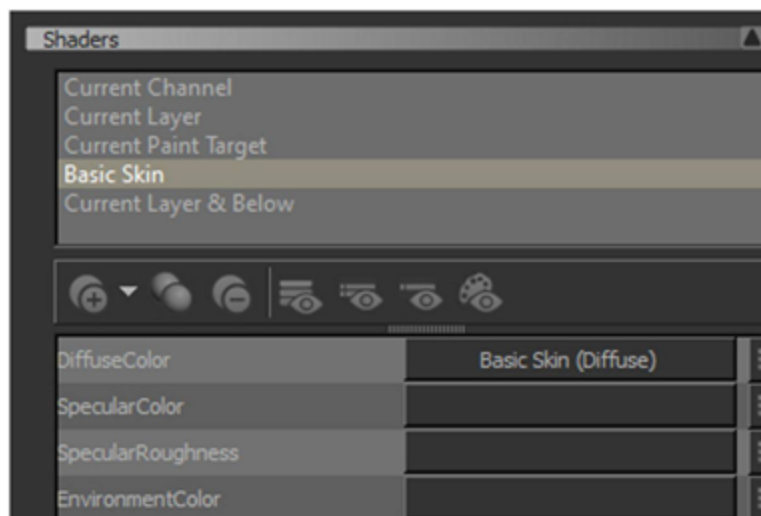
2. Instead of selecting shader types from the menu (**Phong** or **Blinn**, for example) you can specify the diffuse and specular by selecting **Choose Diffuse and Specular** from the menu.

   The **Create Shader** dialog appears.
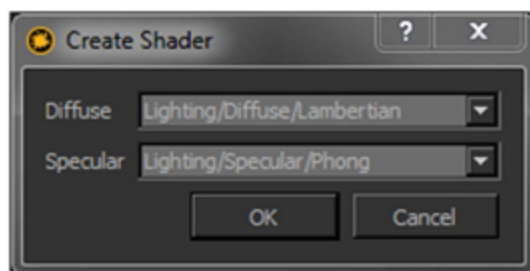
Select your **Diffuse** and **Specular** shader options and click **OK**.

3. All shaders are created with the **Current Channel** in the **Diffuse Color** shader component. You can change this, and set the other components by clicking on the dropdown menu next to the component name and selecting the channel.

4. If you haven't yet created a channel to use in a specific shader component, click the add channel icon next to the shader component.

    The **Add Channel** dialog box appears. Select the options for your channel from the dialog and click **Ok**.

5. Once you've set a channel to the shader component, adjust the value or level of the component, using the sliders.
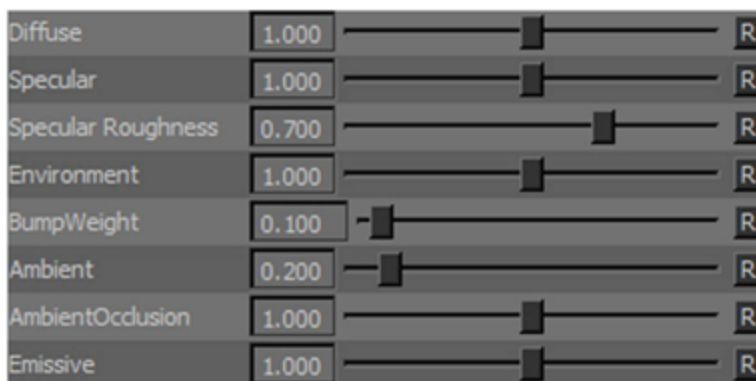
You can add as many shaders as you need and compare them or switch back to the default shaders at any time.

> **TIP:** Shaders don't affect the contents of the channels. For example, if you have a shader with channels set in both the diffuse and specular color inputs, the model on-screen displays the effects of both channels. However, the channels are still separate and contain different data.

> **TIP:** If you build a shader that takes data from multiple channels, it can be hard to remember which channel you're currently editing. In this case, you can switch back to one of the default shaders, which just shows the contents of the current channel, layer and below, layer, or paint target.

10 Changing the View

As described below, Mari includes features for 3D navigation to view your model from various angles and perspectives, change the lighting on the mesh, and change the resolution of textures.

3D Navigation

To...	
Zoom in and out	**Alt+Ctrl**/**Cmd**-click and drag, OR Right-click and drag
Pan left and right	**Alt+Shift**-click and drag, OR Middle-click and drag
Rotate the model	**Alt**+left-click and drag
Spin the camera	**Alt+Ctrl**/**Cmd**+**R**+left-click and drag

NOTE: In many Linux windows managers, the **Alt** key is used by default as a mouse modifier key. This can cause problems in 3D applications where **Alt** is used for camera navigation in 3D environments.

You can use key mapping to assign the mouse modifier to another key, such as the (**Super** or **Meta**) key, but the method changes depending on which flavor of Linux you're using. Please refer to the documentation on key mapping for your particular Linux distribution for more information.

TIP: By default, Mari uses momentum when you are moving the view. When you let go of the mouse button, the model slowly coasts to a stop. You can turn this behavior off so that the model only moves when you are holding the mouse button down.

To do so, change the settings in the preferences by unchecking **Momentum Enabled** via **Edit** > **Preferences** > **Navigation**.

The navigation toolbar also provides the ability to control panning, zooming, rolling, and orbiting, with various settings for each. You can easily access the toolbar, shown below, at any time using the following buttons:

- Reset navigation settings to default.
- Enable panning to move the model on the screen.
- Enable zooming to zoom in or out on the model.
- Enable rolling to turn on the momentum system.
- Enable orbiting mimics the orbiting system in Maya and allows you to move the camera around the model.
- Disable rotational snapping gives options to turn on and change the angle at which the camera view snaps to (45 degrees or 90 degrees).

You can also use the keys **1-6** to switch between preset views (left, right, top, bottom, front, and back).

In the UV view, you can also rotate or reset the model for easier viewing and painting. Press **1** to reset the model back to its default position. Press **2**, **3**, and **4** to rotate the model counter-clockwise in 90-degree increments from the default position.

Press **Home** to cycle between hiding all palettes, hiding docked palettes and showing hidden palettes.

Use the tabs at the top of the canvas to switch between:
- **UV** - a grid view showing the UV patches.
- **Ortho/UV** - a splitscreen showing the UV patches and the orthographic view.
- **Perspective** - a perspective camera view, or
- **Ortho** - an orthographic camera view.

> **TIP:** You can also use the [ ], [ ], and [ ] toolbar buttons or the **F10**, **F11**, and **F12** keyboard shortcuts to activate a particular view on any tab.

Lighting

You can change the lighting on the main mesh by clicking on the toolbar:

Flat	Basic	Full

Flat	Basic	Full
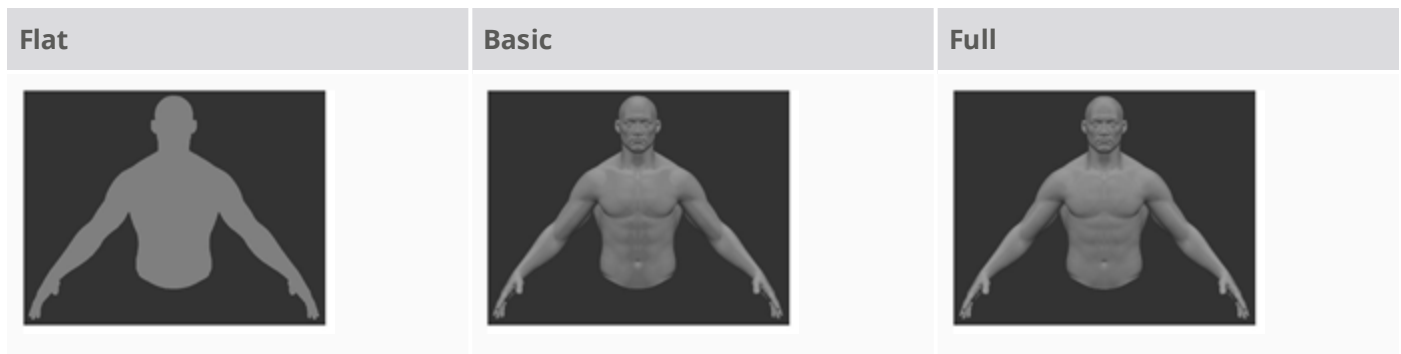
Mari has five lights: four basic point lights, which appear on the drawing canvas, and one environment light.

You can set the light details in the **Lights** palette. Mari uses these in the **Basic** and **Full** lighting modes:

• To turn a light on or off, click on the icon in the list, or use the **General** > **On** checkbox.

• To change a light, click on it in the **Lights** list, and then set the color and strength.

• Select whether the light is fixed to the **Scene** or **Camera**.

• To move a light around, select the **Pan Object** tool , then click and drag the light around on the canvas.

• To move a light to the camera position, click on the icon on the **Lights** palette, or right-click on the light and select **Move to Camera Position**.

You can toggle the shadows on and off in the **Lighting** toolbar:

Shadows on	Shadows off
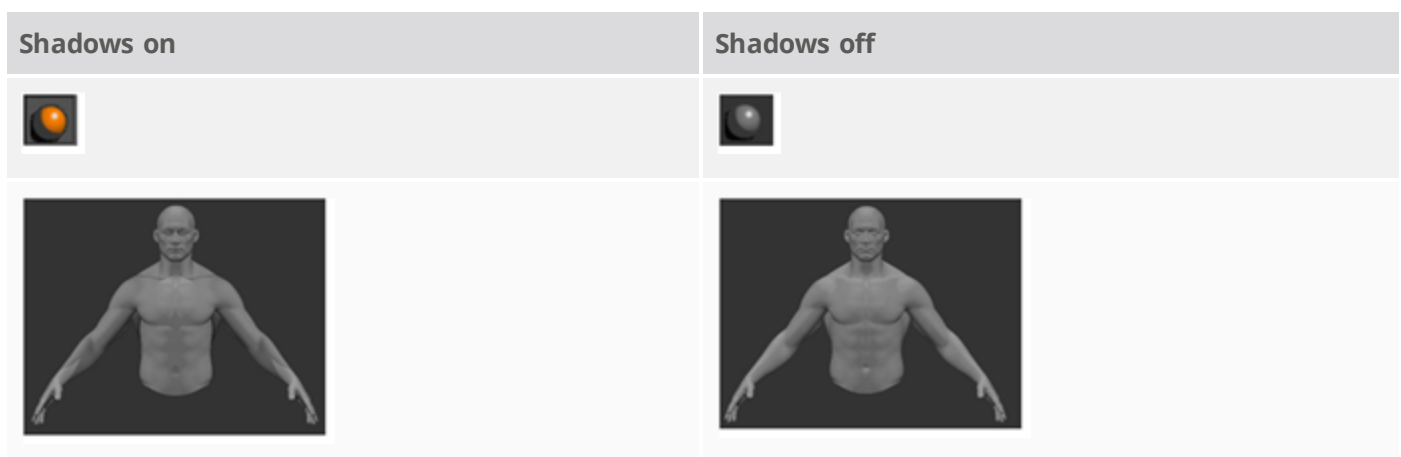
This simply toggles the display of shadows on the canvas, but does not disable shadow processing.

• You can control **Shadow Rendering** through the option on the **Lights** palette**.**

• Toggle shadows by clicking on the **Shadows** icon in the **Lighting** toolbar or the **Shading** menu.

• If you want to enable shadow processing, you need to enable the **Depth Projections** checkbox under **Preferences** > **GPU | Depth Projection.** By default, this preference is disabled.

11 Painting

Painting in Mari is similar to other standard paint programs. Paint using the various tools, then bake it onto your model. Most tools work on unbaked paint, but one or two also work directly on the baked paint on the surface. Each tool has a set of keys that control how it works. By default, the option keys for the current tool are shown on-screen at the top of the canvas.

Paint Tools

To select a tool:

Select from your shelves or the **Tools** toolbar:

| Paint tools			
Select	Marquee select	Transform paint buffer	Zoom paint buffer
Pan object	Vector Inspector	Blur	Warp
Slerp	Pinup	Paint	Vector Paint
Erase	Paint through	Paint gradient	Clonestamp
Towbrush	Color picker/ Pixel analyzer		

Painting a Constant Color

1. Click to select the **Paint** tool.

2. Click and drag to paint on the model.

> **TIP:** You can paint a straight line by clicking one end point, moving the cursor, pressing **Shift** and clicking the second end point, or pressing **Shift** and holding down the mouse button while moving horizontally or vertically.

Customizing Your Brush

1. Open the **Brush Editor** palette.

    The **Brush Editor** displays.
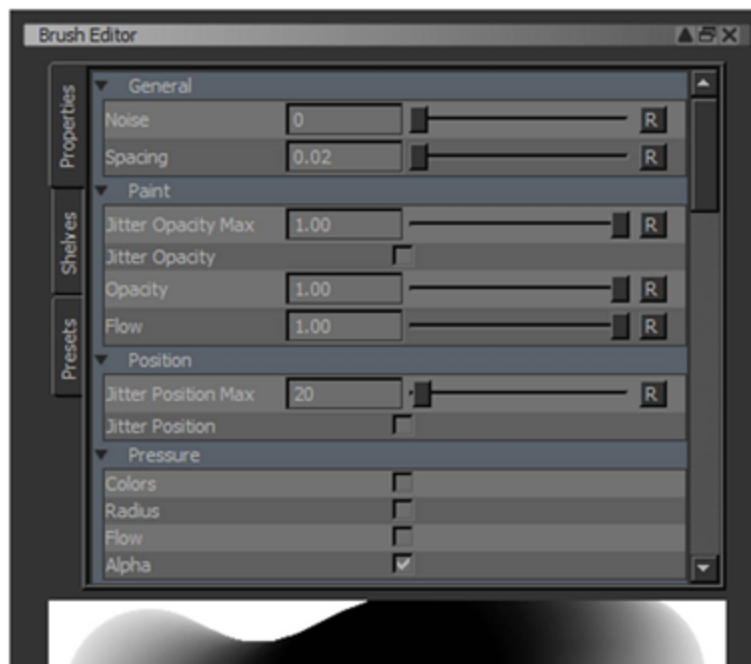
> **TIP:** Resize the brush editor palette to minimize scrolling. There are many options for customizing your brush, including setting values for **Paint**, **Pressure**, **Radius**, **Rotation**, **Bitmaps** to use, **Geometry** and **Noise**. You can test the brush in the scratch pad at the bottom of the palette.

2. You can select a brush to modify from those available in your **Shelves**.

3. When you have finished editing a brush, click to add it to the selected shelf.

"Painting Through" an Image

1. Open the **Image Manager** palette.

2. To load an image, click , navigate to and select the image file, and click **Open**.

   A thumbnail of the image displays, along with information about the selected image.

3. In the **Tools** toolbar, click (the **Paint Through** tool).

4. Drag and drop the image from the **Image Manager** to the canvas.

5. Adjust the image size and position:

| To...	Do this...
Resize	Grab and drag its edges or corners, or press **Ctrl/Cmd**+**Shift** then click and drag.
Move	Grab the "handle" in the center of the image (or press **Shift** and click anywhere on the image), and drag.
Rotate	Click and drag outside the image, or press **Ctrl/Cmd** and drag inside the image. Press **Shift** when dragging outside the image to rotate in increments.
Crop	Double-click the image in the **Image Manager**, drag the area you want to crop, and click .
Change the opacity	In the **Tool Properties** palette, select **Texture** > **Preview**, and change the **Preview Alpha** (enter a number or drag the slider). Pre-multiply alpha if your image has transparency.
Reset the image	In the **Tool Properties** palette, select **Texture** > **Transform** > **Reset**.

6. Paint!

> **TIP:** You can quickly switch between the **Paint** and **PaintThrough** tools by pressing **P** and **U**. To hide the image, hold the **?** key, to paint the whole image onto the model in one step, press the **'** (apostrophe) key. Toggle repeat image to paint past the edge of the floating image and have the paint continue, by pressing the **;** (semicolon) key.

Clone Stamping

1. Click ![clone icon] to select the clone stamping tool.

2. Use the **Source** menu on the toolbar to select where to take the clone source from. You can select the current paint target, an image, or any of the paint layers in the project.
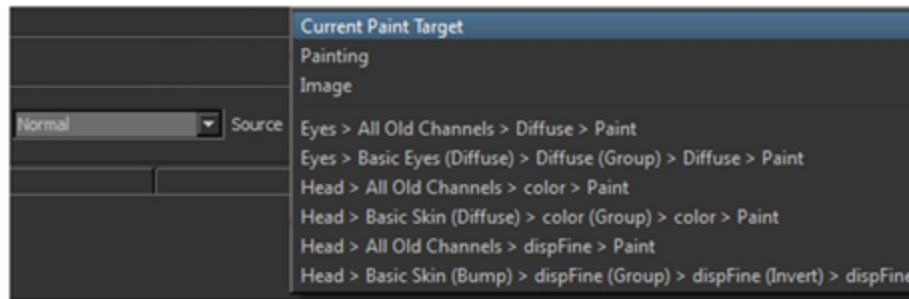
3. If you're using an image as your clone source, hold down the **Ctrl/Cmd** key over the image and click to select the clone source point.

> **TIP:** When cloning from a paint layer, you can clone directly from the surface. In this mode, the tool clones the paint from the paint layer surface straight up into the paint buffer directly above that point. This lets you copy the model's surface into the paint buffer so you can edit it and then re-bake.
>
> To use this mode, hold down **Ctrl**+ ![windows key] (or **Windows** key) when you click to set the origin point. For Mac, this shortcut is **Cmd+Ctrl**.

4. Paint to clone your selection on the model.

Moving and Warping Paint

To move paint on the model before baking:

1. Click ![hand icon] to select the transform tool.

2. Left-click anywhere on the paint buffer and drag to move the painting around on the model.

3. **Ctrl/Cmd**+left-click and drag to rotate the painting, or left-click and drag outside the paint buffer.

4. **Ctrl/Cmd**+**Shift**+left-click and drag to resize the painting, or grab the corners of the paint buffer and drag.

> **TIP:** The paint buffer is visible on-screen as a white box, but it may be larger than the view window and not visible. It becomes obvious if you move or resize the painting. To reset the paint buffer to its default values click the **Reset** button in the **Painting** palette under **Paint Buffer** > **Transform**.

To warp paint before baking:

Using this tool...	You can...
Warp	**Shift**-click and drag to create a warp grid. Click and drag the points around to warp the paint. To increase or decrease the grid resolution, press the up or down arrow keys.
Slerp	Use the **Slerp Mode** menu on the toolbar to set the mode (from **Pull**, **Grow**, **Shrink**, or **Rotate**). Click and drag to apply your effect. **Erase** distortion by selecting the **Erase** mode.
Pinup	**Shift**-click to set "pins". Then click and drag to move the pins. You can use pins to protect parts of the paint that you don't want affected by the distortion.

Baking Paint onto the Model

To bake paint onto your model:

1. Make sure all patches you want to bake are selected.

2. Do one of the following:

Type **shortcut key**	*or* click on **statusbar** icon
B	

> **TIP:** Whenever you change your view of the model, it bakes automatically. You can change this setting in the **Projection** palette if required.

Blurring Baked Paint

1. Click to select the blur tool.

2. Left-click and drag to blur paint baked on the surface.

> **TIP:** As with the paint tools, you can edit the blur brush tip. When you have finished blurring the paint, you need to bake.

12 Exporting and Importing

You can export and import both channels and layers in your project, both in 'flat' formats, such as **.png**, and in layered formats, such as **.psd** or **.psb**. This is especially useful when exporting multiple layers or channels that you don't want to take up a lot of space, or when you want to use the final output of a channel in another application.

Exporting Channels

To export the current channel, select a single channel to export and do one of the following:

Select from the **Channels** menu	*or* right-click on the **Channels** palette and select
Export > **Export Current Channel**	**Export** > **Export Current Channel**
Export > **Export Current Channel Flattened**	**Export** > **Export Current Channel Flattened**

The **Export** dialog box displays.
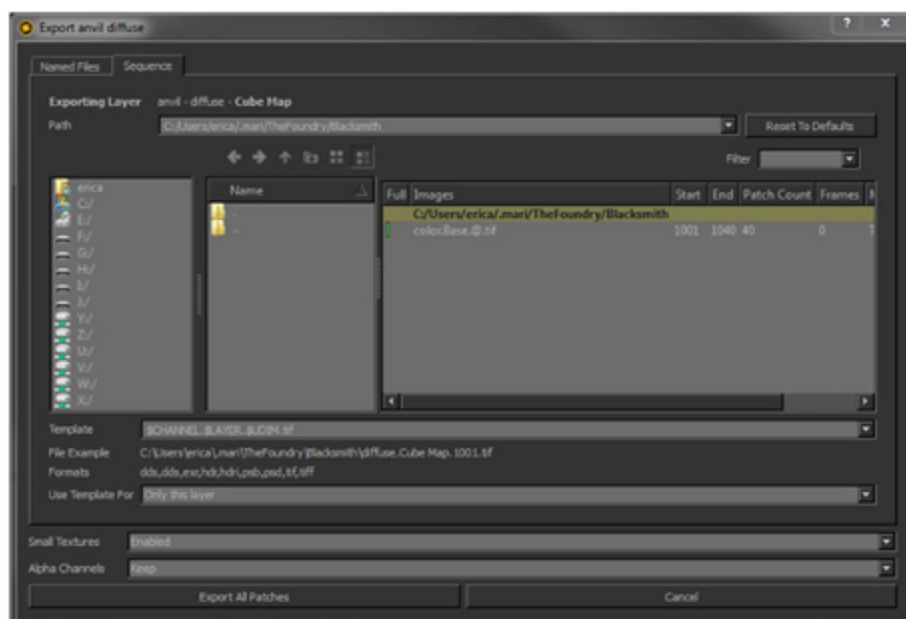
To export all channels in your project, do one of the following:

Select from the **Channels** menu	*or* right-click in **Channels** palette and select
Export > **Export All Channels**	**Export** > **Export All Channels**
Export > **Export All Channels Flattened**	**Export** > **Export All Channels Flattened**

The **Export** dialog box displays.

To export everything in your project, including all layers, channels, and patches, do one of the following:

Select from the **Channels** menu	*or* right-click in **Channels** palette and select
Export > **Export Everything**	**Export** > **Export Everything**
Export > **Export Everything Flattened**	**Export** > **Export Everything Flattened**

The **Export All** dialog box displays.

> **NOTE:** All of the methods for exporting textures shown above follow the same instructions once they reach the **Export** dialog.

1. On the **Sequence** tab, enter the **Path** where you want to store the export, or use the browse panes (the navigation panes below) to browse to it.
2. If you are looking for a specific folder or file, you can use the **Filter** field to specify a name or file format to search for.
3. For the **Template**, either use the default filename template or edit it as required.
4. Click **Export All Patches** (to export all patches in the current channel) to export with the settings you've selected

> **NOTE:** If **Small Textures** is enabled, Mari exports any patches that you haven't painted yet, or have painted as a single color, as 8x8-pixel textures. When you start to paint on a particular patch, Mari exports it as the correct size.

> **NOTE:** The steps above assume you are exporting a sequence of patches with the udim number (1001, 1002, etc.) in the file names. For more information on how UDIM numbers are allocated to patches, please see the section on *Using UDIM Values in the Working with Patches* chapter of the *Mari User Guide*.

NOTE: If you'd rather assign individual files to each patch, you can do so on the **Named Files** tab of the **Export Channel** dialog. Click the buttons on the right to open a file browser and pick a file for each patch. Then, click **Export All Patches** to export the files. Note that by default the **Named Files** tab doesn't display if you have more than 20 patches in your object. To change this number, you can use the **Patch Cutoff** preference or set the MARI_NAMEDFILEIMPORT_SEQUENCELIMIT environment variable to a new value.

TIP: Make sure you check the path and name carefully, especially if you have been swapping between assets - Mari defaults to the last place you've exported. Don't risk overwriting your textures!

Exporting Layers

To export selected layers, select any layers you want to export and do one of the following:

Select from the **Layers** menu	or right-click on the **Layers** palette and select
Export > **Export Selected Layers**	**Export** > **Export Selected Layers**
Export > **Export Selected Layers Flattened**	**Export** > **Export Selected Layers Flattened**

The **Export** dialog box displays.

To export all layers in the channel, do one of the following:

Select from the **Layers** menu	or right-click in **Layers** palette and select
Export > **Export All Layer**	**Export** > **Export All Layers**
Export > **Export All Layers Flattened**	**Export** > **Export All Layers Flattened**

The **Export All** dialog box displays.

NOTE: All of the methods for exporting layers shown above follow the same instructions as for exporting channels once they reach the **Export** dialog. These instructions begin with step 1 in Exporting Channels.

Importing Channels

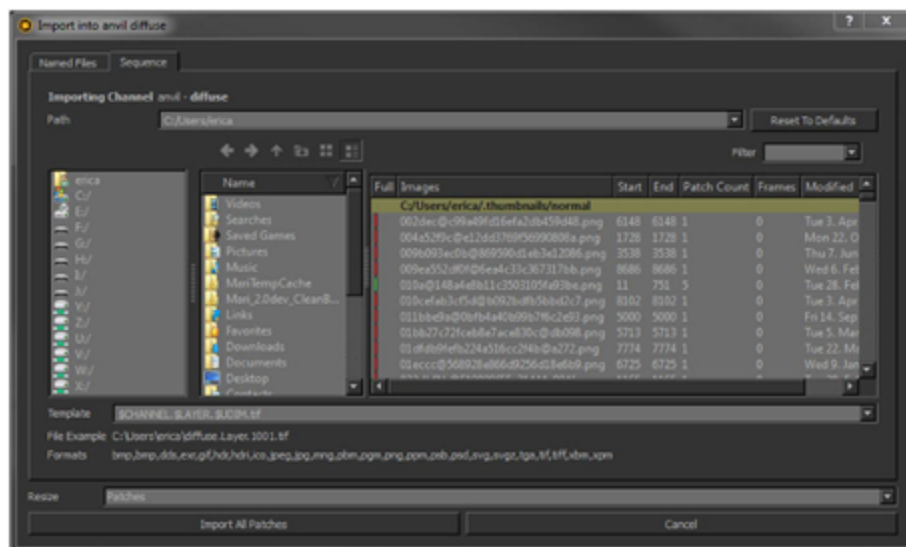To import into your current channel's layer stack, do one of the following:

Select from the **Channels** menu	*or* right-click in **Channels** palette and select
Import > **Import into Layer Stack**	**Import** > **Import into Layer Stack**

The **Import** dialog box displays.

1.   Enter the **Path** to the files to import, or use the browse panes (the two left-hand navigation panes) to browse to them.

2.   If you are looking for a specific folder or file, you can use the **Filter** field to specify a name or file format to search for.

3.   For the **Template**, either use the default filename template or edit it as required.

4.   To import all patches from their matching files, click **Import All Patches**. This imports files with the settings you've selected.

NOTE: The steps above assume you are importing a sequence of patches with the UDIM number (1001, 1002, etc.) in the file names. For more information on how UDIM numbers are allocated to patches, please see the section on *Using UDIM Values* in the *Working with Patches* chapter of the *Mari User Guide*.

NOTE: If you'd rather assign individual files to each patch, you can do so on the **Named Files** tab of the **Import Channel** dialog. Click the buttons on the right to open a file browser and pick a file for each patch. Then, click **Import All Patches** to import the files. Note that by default the **Named Files** tab doesn't display if you have more than 20 patches in your object. To change this number, you can use the **Patch Cutoff** preference or set the MARI_NAMEDFILEIMPORT_SEQUENCELIMIT environment variable to a new value.

To import into a new channel, do one of the following:

Select from the **Channels** menu	*or* right-click in **Channels** palette and select
Import > **Import into New Channel**	**Import** > **Import into New Channel**

The **Add Channel** dialog box displays.

1. Follow the instructions for setting up a new channel in Adding a Channel to a Project on page 41, and when you've finished, click **Ok**.

   The **Import** dialog box displays.

2. Enter the **Path** for the files to import, or use the browse panes (the two left-hand navigation panes) to browse to them.

> NOTE: The steps above assume you are importing a sequence of patches with the UDIM number (1001, 1002, etc.) in the file names. For more information on how UDIM numbers are allocated to patches, please see the section on *Using UDIM Values in the Working with Patches* chapter of the *Mari User Guide*.

> NOTE: If you'd rather assign individual files to each patch, you can do so on the **Named Files** tab of the **Import Channel** dialog. Click the buttons on the right to open a file browser and pick a file for each patch. Then, click **Import All Patches** to import the files. Note that by default the **Named Files** tab doesn't display if you have more than 20 patches in your object. To change this number, you can use the **Patch Cutoff** preference or set the MARI_NAMEDFILEIMPORT_SEQUENCELIMIT environment variable to a new value.

Importing Layers

To import into the current layer, do one of the following:

Select from the **Layers** menu	*or* right-click in **Layers** palette and select
Import > **Import into Layer**	**Import** > **Import into Layer**

The **Import** dialog box displays.

To import as a layer in the current layer stack, do one of the following:

Select from the **Layers** menu	*or* right-click in **Layers** palette and select
Import > **Import into Layer Stack**	**Import into Layer Stack**

The **Import** dialog box displays.

1. Enter the **Path** for the files to import, or use the browse panes (the two left-hand navigation panes) to browse to them.

2. If you are looking for a specific folder or file, you can use the **Filter** field to specify a name or file format to search for.

3. For the **Template**, either use the default filename template or edit it as required.

4. Click **Import All Patches** (to import all patches from the file) to import with the settings you've selected

> **NOTE:** The steps above assume you are importing a sequence of patches with the UDIM number (1001, 1002, etc.) in the file names. For more information on how UDIM numbers are allocated to patches, please see the section on *Using UDIM Values in the Working with Patches* chapter of the *Mari User Guide*.

> **NOTE:** If you'd rather assign individual files to each patch, you can do so on the **Named Files** tab of the **Import Channel** dialog. Click the buttons on the right to open a file browser and pick a file for each patch. Then, click **Import All Patches** to import the files. Note that by default the **Named Files** tab doesn't display if you have more than 20 patches in your object. To change this number, you can use the **Patch Cutoff** preference or set the MARI_NAMEDFILEIMPORT_SEQUENCELIMIT environment variable to a new value.

13 About the Tutorials

As part of the Getting Started Guide, there are several tutorials that give you a chance to try your hand at setting up a project and getting started with the basics. The tutorials are self-paced but designed to take roughly 10 to 45 minutes each. You might find yourself breezing through one while spending a lot of time on another to soak up details you're not quite sure about.

The tutorials included in this manual are:

• Tutorial 1: Setting up a Project
• Tutorial 2: Setting the View
• Tutorial 3: Painting!
• Tutorial 4: Painting Through and Clone Stamping
• Tutorial 5: Exporting and Importing

Download Sample Files

Sample files are provided for use with all of the tutorials. You can download these files from our web site at www.thefoundry.co.uk/mari and try Mari out on them. From the Mari product page, click on the **Demo Assets** link.

Tutorial Format

Mari tutorials include steps, which are the specific instructions for you to perform. Steps are organized into major actions. For example, all the steps involved in loading the geometry when creating a project are grouped on a page with the title "Load geometry". The individual steps are numbered, and describe what you should do and what happens in Mari. For example:

1. Next, to bring in the geometry, click .

    The **Pick Mesh** dialog box displays.

Note that the response to each step (what happens when you do it) is in *italics*, and the name of any dialog box or UI item that displays as part of that response is **bold**.

Tutorial 1: Setting up a Project

This lesson teaches you what Mari projects are, and how to create them.

What You Should Know Before Starting This Lesson

This lesson assumes:

• a basic knowledge of computers and graphics applications

• that you have read the *Mari Getting Started Guide* up to this point

• that you know how to start Mari (see Launching on Windows, Launching on Linux, or Launching on Mac).

Resources You Need to Complete This Lesson

To complete this lesson, you need access to a computer that can run Mari, and the following sample file:

• **blacksmith_body.obj**

How Long Should It Take?

Plan on spending about 20 minutes to complete this lesson.

About Mari Projects

A Mari project holds your work on geometries and associated textures. Once you've created a Mari project, you can work on it, save and close - and then re-open it to continue working on the same textures later.

Projects also hold other items, such as projectors, shaders, and so on. Mari saves some settings at the project level. For instance, each project has:

• a project **shelf**, to hold brushes, colors, and images for you to use specifically in that project, and

• contents of the various palettes - **Image Manager**, **BrushEditor**, and so on.

When you first create a project, you can specify its parameters, including:

• the details (such as resolution and color depth) of the initial channel in the project.

• the range of animation frames to import.

Steps for Creating Mari Projects

To create a Mari project, follow these steps:

1. Open a New Project
2. Specify Project Options
3. Load Geometry
4. Save Your Project

Open a New Project

1. Start Mari.

    The Mari workspace displays, showing the **Projects** tab. This holds all the projects you have been working on.

2. As with most commands in Mari, you can select the **New Project** option a few different ways:

    • from the **File** menu, select **New**,
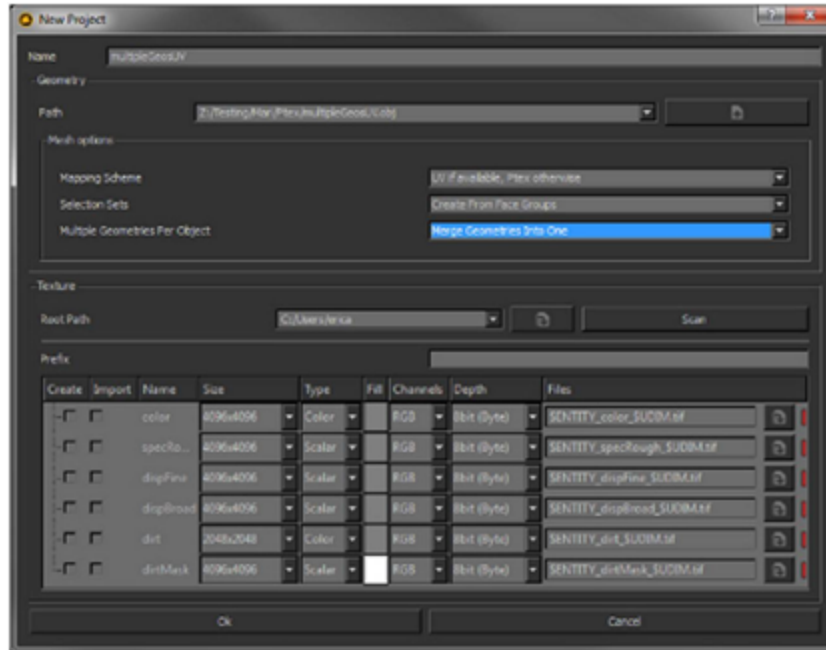
    • click on the toolbar,

    • click the **New** button,

    • right-click in the **Projects** tab and select **New** from the dropdown menu, or

    • press the **Ctrl**/**Cmd**+**N** shortcut key.

    Pick any one of the options above.

    The **New Project** dialog box displays.

The **New Project** dialog box has three parts:

• **Name** - a name for your project.

• **Geometry** - the model you'll be painting on.

• **Texture** - parameters for the textures you'll be creating.

Next we'll specify the name and texture options, and then select the geometry.

NOTE: For more information on what kind of models Mari expects, see Mari Model Requirements. This model displays with no errors. Mari loads the geometry and displays it in your workspace.

TIP: For more on the different options in the **NewProject** dialog box - and other dialog boxes illustrated in this tutorial, see the *Mari Reference Guide*.
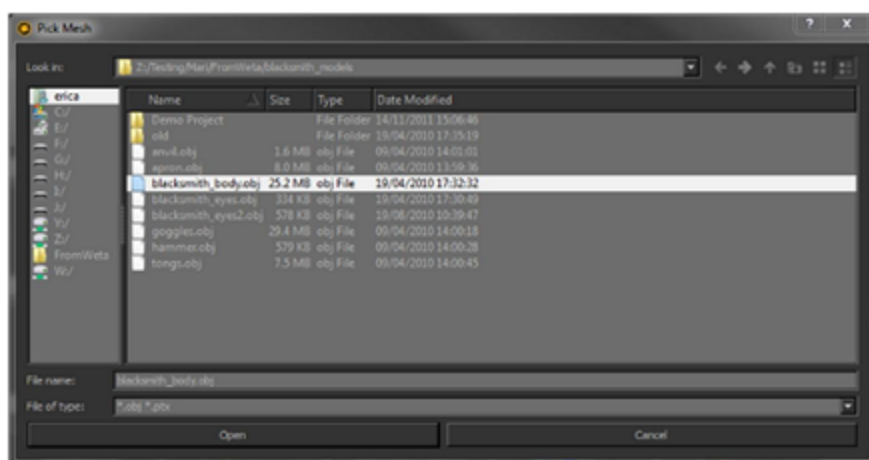
Specify Project Options

1.   For the project **Name**, type **1-Blacksmith**.

2.   For the Texture options, right-click on the list of channels and select **Create All**.
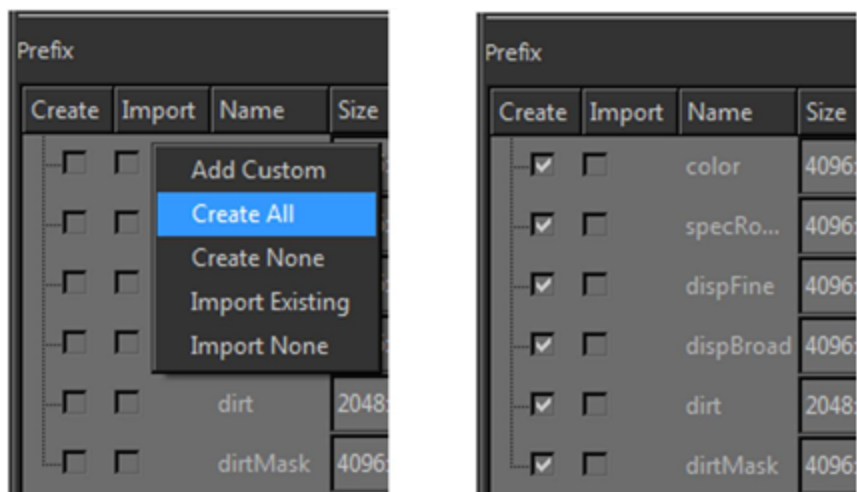
Load Geometry

1. Next, to bring in the Geometry, click .

    The **Pick Mesh** dialog box displays.

2. Navigate to your tutorial folder, click to highlight **blacksmith_body.obj**, and click **Open**.

    > ✎ NOTE: When you load geometry, **Mesh Options** appear for the model you've entered in the **Path** field. For this tutorial, leave the mesh options as they are, but for more information on the **Mesh Options** refer to the *New Project Dialog* chapter in the *Mari Reference Guide* and the *Ptex* chapter in the *Mari User Guide*.

3. Click **Ok**.

    Mari conducts a quick "sanity check" on the model to make sure there are no obvious problems. If there are any problems, it displays **warnings** or **errors**. If there are warnings, you can continue. If there are errors, you must stop and fix them.

> 💬 **TIP:** Depending on the size and complexity of a model, it can take several minutes the first time you load it into a Mari project. Once saved, however, the project should open quickly in future.

Save Your Project

Save your project - again you can do this a few ways:

• from the **File** menu, select **Save**,

• click on the toolbar, or

• press the shortcut key **Ctrl**/**Cmd**+**S**.

Mari saves the project into its cache directory. Now, if you click on the **Projects** tab at the top of the screen, you see your new project in the list.
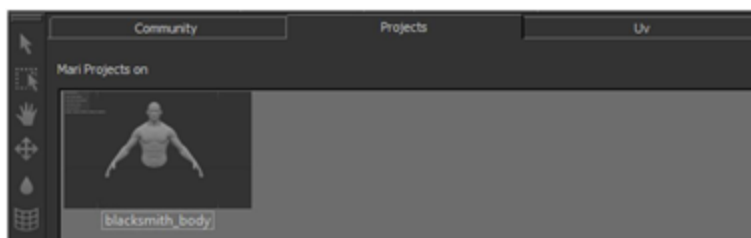
Where Do You Go from Here?

At this point, you should have a basic idea of what a Mari project is and how to create one. You learned how to:

• Name the project.

• Set texture options.

• Load geometry.

• Save the project.

Next, you'll use this project to practice some basics about setting the camera and lighting on the geometry in your project, before you begin to paint on it. When you're ready, proceed to Tutorial 2: Setting the View.

Tutorial 2: Setting the View

This lesson teaches you how to open a Mari project, and then set the view and lighting on your geometry (before painting on it).

Setting the **view** includes:

• rotating

• zooming in or out

• panning

• viewing from six basic directions

• displaying a split view showing a 3D view plus UV patches

Setting the **lighting** includes:

• picking "flat", "basic", or "full" lighting,

• toggling shadows on or off,

• moving lights around and adjusting their properties.

What You Should Know Before Starting This Lesson

This lesson assumes:

• a basic knowledge of computers and graphics applications

• that you have read the *Mari Getting Started Guide* up to this point

• that you know how to start Mari (see Launching on Windows, Launching on Linux, or Launching on Mac)

• that you have completed Tutorial 1: Setting up a Project.

Resources You Need to Complete This Lesson

To complete this lesson, you need access to a computer that can run Mari, and the following sample file:

• **1-Blacksmith** - the Mari project file you created in Tutorial 1


How Long Should It Take?

Plan on spending about 25 minutes to complete this lesson.

About Mari View and Lighting

The **view** in Mari is a view on the object you are painting. By default, Mari has four types of view:

• **UV** - this gives you a "flat" view of the patches in the model.

• **Perspective** - this show the model as a whole in 3D space, through a perspective camera.

• **Ortho** - this shows the model as a whole in 3D space, through an orthographic camera.

• **Ortho/UV** - this is a split screen, showing both the UV patches and the orthographic view.
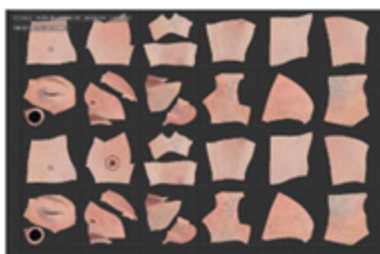
UV View   Ortho View

Ortho/UV View

You can move each view separately.

> **TIP:** You can also use the [ ] , [ ] , and [ ] toolbar buttons or the **F10**, **F11**, and **F12** keyboard shortcuts to activate a particular view on any tab.

Within the views, you can:

• **Spin** or **rotate** the model (3D views only). Spinning turns the model on one axis, while rotating lets you turn the model in all three axes. Think of spinning as like turning the model on a turntable, while rotate is turning it around in midair.

• **Pan** to move the view across the model.

• **Zoom** in or out.

• **Focus** on a selected patch.

You separately configure the **lighting** on the object by selecting preset settings for "flat", "basic", or "full", or specifying fine details such as shading parameters and separate lighting for each of the four configurable lights.
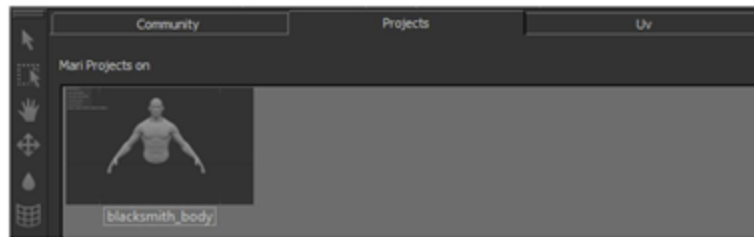
Steps for Setting the Camera and Lighting

To set the camera and lighting, follow these steps:

1. Open Your Project
2. Adjust the View
3. Adjust the Lighting

Open Your Project

1. Start Mari.

   The Mari workspace displays.

2. On the **Projects** tab, double-click on your **1-Blacksmith** project to open it.

Your project opens and switches to the **Ortho** view.

Adjust the View

To adjust the view on your project, you can zoom, pan, rotate, select one of six preset views, display your model and patches in a split screen, or use perspective and orthographic views.

1. To **zoom out** and **in**, hold down the **Alt** key, right-click and drag the cursor to the left and right.
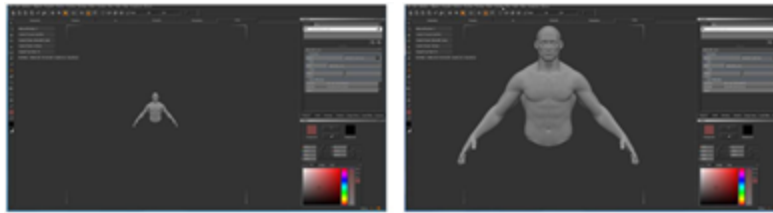
2. To **pan**, hold down the **Alt** key and middle-click (or hold **Alt** and **Shift** and left-click and drag).

3. To **rotate**, hold down the **Alt** key and left-click and drag.

> TIP: You can also "spin" around a fixed point by pressing **Ctrl/Cmd+R**, left-clicking, and dragging. When you rotate or spin, the pivot point is located in the center of the current view.

4. To view from six basic preset angles (camera "left", "right", "top", "bottom", "front", and "rear"), press **1**, **2**, **3**, **4**, **5**, or **6**, or select the angle from the **Camera** menu.
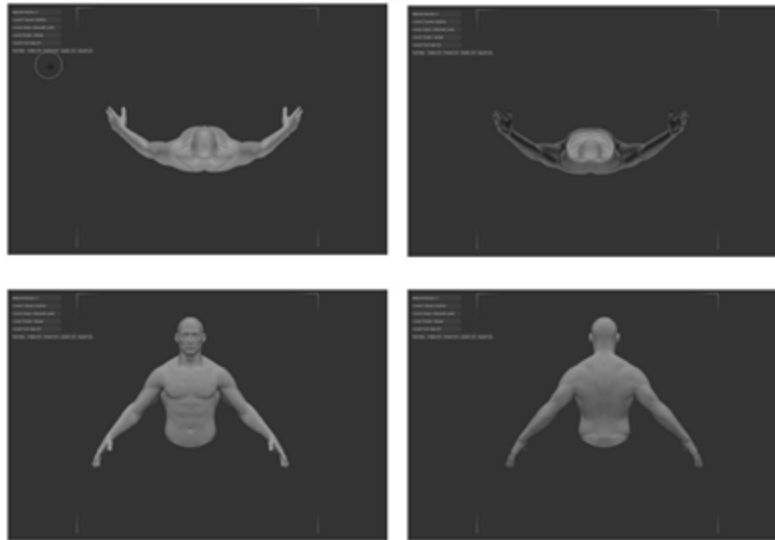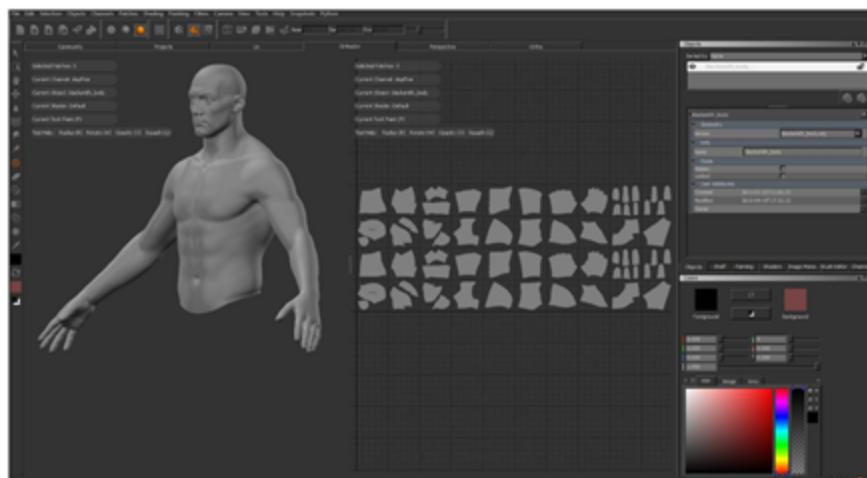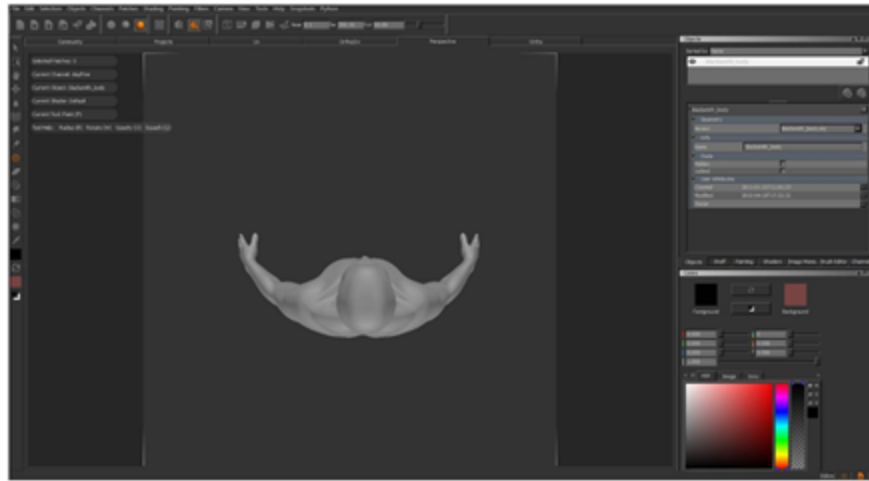
5. To see a flat view of the UV patches on the model, click the **UV** tab.
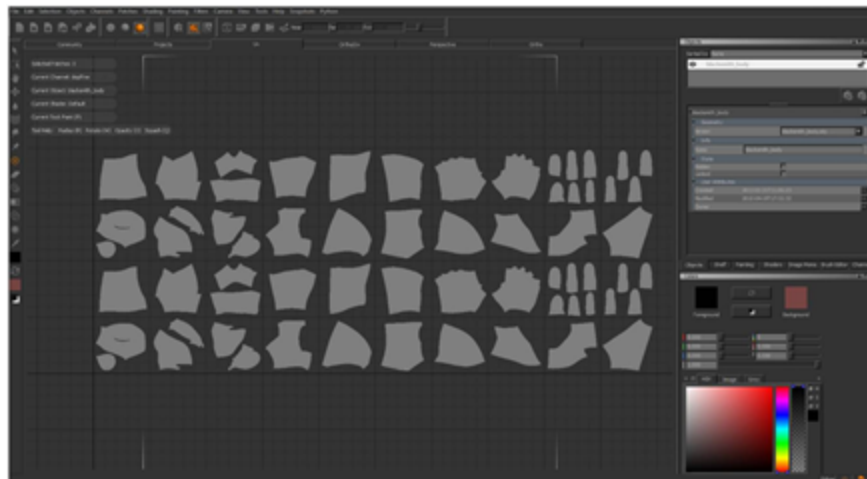
To see a split screen showing both the Ortho and UV views, click the **Ortho/UV** tab.

6. To see a perspective view of your model, click the **Perspective** tab (or press **F11**).

In the **Perspective** view, you can alter your model's appearance in the viewer by entering **Near**, **Far**, and **FoV** values in the **Canvas** toolbar. See *Setting the Perspective Camera Details* in the *Customizing the View* chapter in the *Mari User Guide* for more information.

7. To see an orthographic view of your model, click the **Ortho** tab (or press **F10**). This is the default view mode, that is, the view you see when you start Mari.
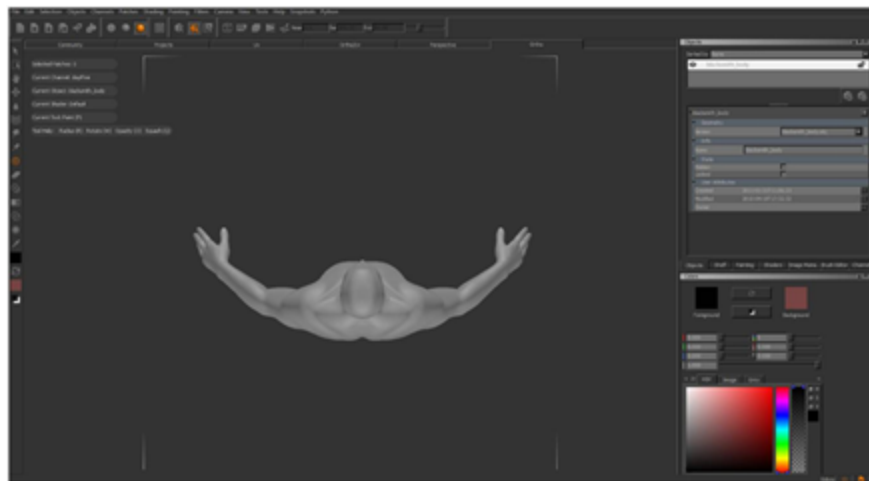
> ✎ NOTE: The model is in the same position in steps 7 and 8; only the view mode has changed. Notice that the model's arms appear closer to the body due to the application of perspective.

8. To switch the view to display all selected patches, press **A**.

    If you don't have any patches selected, the view focuses on the model as a whole (changing to show the whole model).

> 💬 TIP: If you find that the view starts cutting through the front clipping plane, try pressing **A**.

9. To center the view at a particular place on the model, move the cursor there and press **F**.

At the current size and angle, the view changes to focus on the cursor point. If you hover the cursor over the canvas where no part of the object is present, pressing **F** brings the focus on the entire object.

> 🗨 TIP: You can paint in any of the views.
>
> Moving the view bakes the current paint if **Bake Behavior** is set to **AutoBakeAndClear**. You can set this on the **Projection** palette, under **Projection** (if you can't see the **Projection** palette, select **View** > **Palettes** > **Projection** to display it).

> ⚗ EXPERIMENT: Play around with zooming, panning, and rotating the camera. Try changing between **Ortho** and **Perspective** modes. Notice that objects closer to the camera distort far more than objects further away?

Adjust the Lighting

Mari comes with three lighting presets: flat, basic, or full. In basic and full modes, you can move the lights around the model.

1. To change the lighting:

    • from the **Shading** menu, select **Flat**, **Basic**, or **Full**, or

    • click 🟠 , 🟠 , or 🟠 on the toolbar.

2. Notice the four lights on the canvas (you may need to select the **Pan Object** tool ![icon] to see them).

   By default, the lights appear as gray spheres ![icon] .

3. To move a light around, select the **Pan Object** tool ![icon] (if you didn't already). Click on a light and drag it around the canvas.
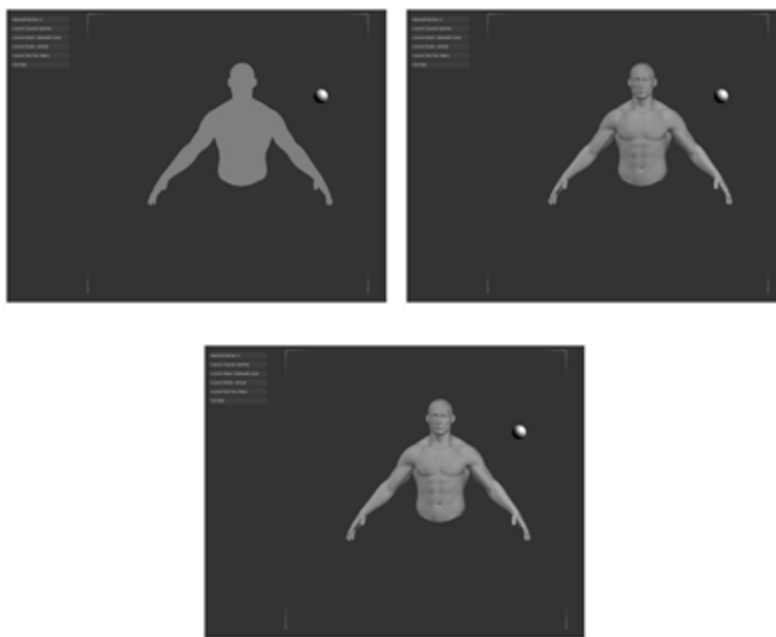
   As you move the light, you can see the effect on the model.

4. You can also make fine adjustments to lighting using the **Lights** palette. If it's already open, click the **Lights** tab to give it focus; or if it's closed, right-click in the toolbar area on top of the Mari workspace and select **Lights** to open it.
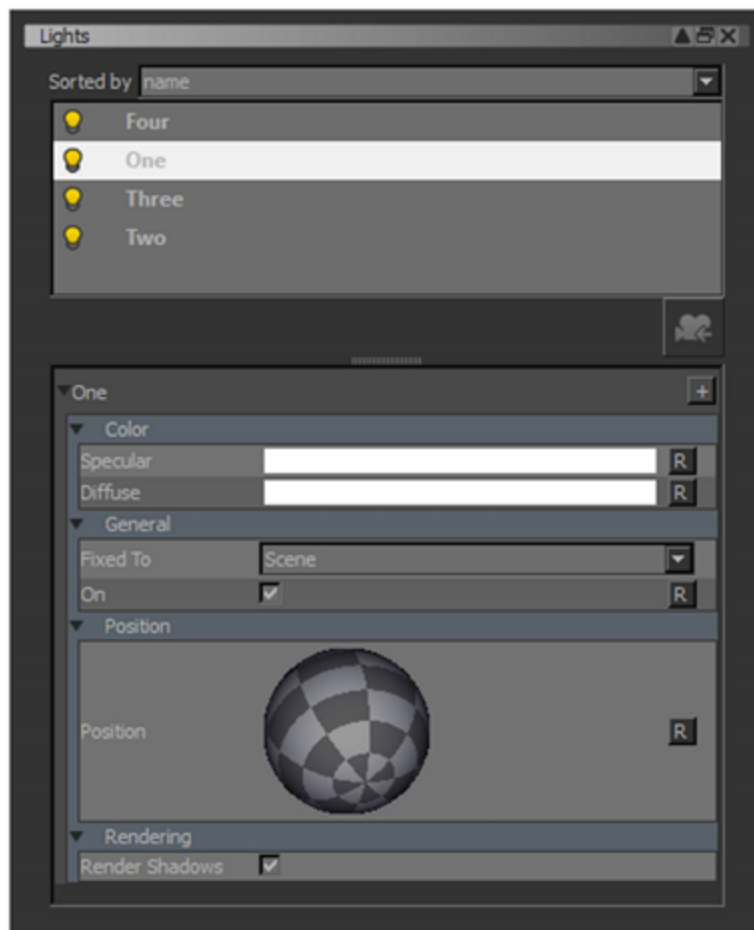
The **Lights** palette displays details of four basic lights, which you can enable or disable, and customize by adjusting their **Color** and **Fixed To** information, and an environment light, which you can adjust to add environment lighting from an image. For details, see the *Customizing the View* chapter in the *Mari User Guide*.

5. Lighting can be relative to the **Scene** or a **Camera**:

   • **Scene** (default) - the light is fixed to the model, for example if a light is set at the model's back, it always points at the model's back, no matter how you move the view.

- **Camera** - the light is fixed to a camera view, for example you can have a light always shining from above the camera, allowing you to move the model around and cast light on different areas.

6. A single light can be moved to the position of the current camera by right-clicking the light and selecting **Move to Camera Position** or clicking on the **Move to Camera Position** icon when the desired light is selected.

7. Select the **Render Shadows** checkbox to produce shadows for an individual light.

   Shadows render and display immediately for the selected light.

8. Shadows can be enabled or disabled in the display by toggling the **Shadows** icon in the **Lighting** toolbar or the **Shading** menu.

> **NOTE:** Mari saves custom lighting with the project. If you need the same lights in another project, you need to set them up separately.

Where Do You Go from Here?

At this point, you should have a basic idea of the different options for adjusting the view and lighting on your model. You learned how to:

- zoom, pan, and rotate
- select one of six preset angles
- toggle split view
- change to flat, basic, or full lighting
- move and configure lights.

Now that you know how to create a project, load geometry, and adjust the position of the view and lighting, you can (finally) begin to paint! When you're ready, proceed to Tutorial 3: Painting!.

Tutorial 3: Painting!

This lesson teaches you the basic steps to painting on a model in Mari. This includes, selecting a brush, selecting a color, and painting with that brush and color.

What You Should Know Before Starting This Lesson

This lesson assumes:

• a basic knowledge of computers and graphics applications

• that you have read the *Mari Getting Started Guide* up to this point

• that you know how to start Mari (see Launching on Windows, Launching on Linux, or Launching on Mac)

• that you have completed Tutorial 1: Setting up a Project and Tutorial 2: Setting the View.

Resources You Need to Complete This Lesson

To complete this lesson, you need access to a computer that can run Mari, and the following sample file:

• **1-Blacksmith** - the Mari project file you created in Tutorial 1 and configured in Tutorial 2

How Long Should It Take?

Plan on spending about 25 minutes to complete this lesson.

About Painting in Mari

Painting in Mari is similar to painting in other standard paint programs - you can select and configure both brushes and colors, and then use them to paint an object. In Mari, you configure brushes through the **BrushEditor** and colors through the **ColorPalette**. You also have the option of saving colors and brushes to your **Shelf** for easy access. The Mari **Shelf** comes with lots of presets, as well as any items you have created or customized for yourself (and saved there).

After you paint (also as with other programs), in Mari you need to **bake** the paint buffer into the object. Mari includes various ways of baking onto selected patches, including an **Autobake** option that bakes by default every time you move the camera.

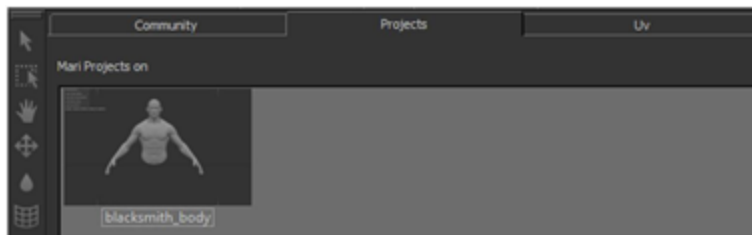## Steps for Painting in Mari

To paint in Mari, follow these steps:
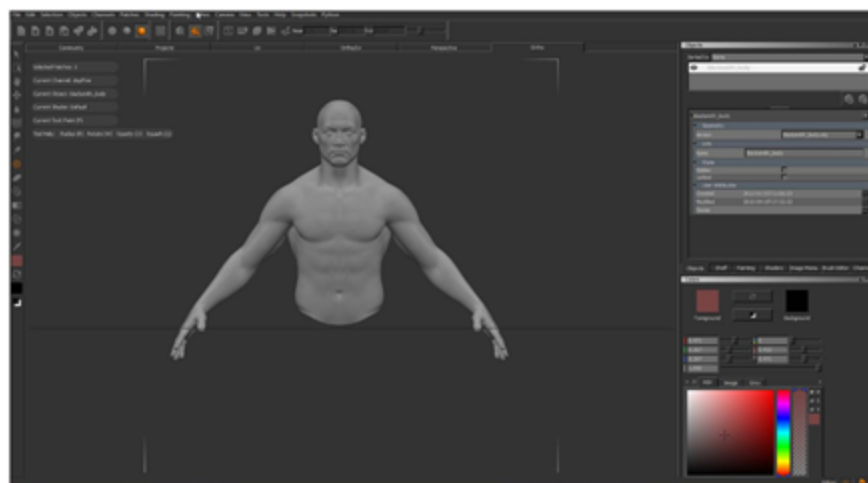
1. Open Your Project
2. Open the Colors and Shelf Palettes
3. Select a Color
4. Select a Brush
5. Paint!
6. Bake Your Painting

Open Your Project

1. Start Mari.

   The Mari workspace displays.

2. On the **Projects** tab, double-click on your **1-Blacksmith** project to open it.

Your project opens and switches to the **Ortho** view.

Open the Colors and Shelf Palettes

Basic painting on your model involves selecting a brush, selecting a color, and using them to paint. In the steps below, you'll select a color from the **Colors** palette and a brush from your **Shelf**. To begin, let's open and arrange those palettes.

> TIP: By default, the **Colors** and **Shelf** palettes are already open when you start Mari (but follow the instructions below to see how to open and close palettes).

1. To open the **Colors** palette:

    • from the **View** menu, select **Palettes** > **Colors**, or

    • right-click in the toolbar area and select **Colors** from the dropdown menu.
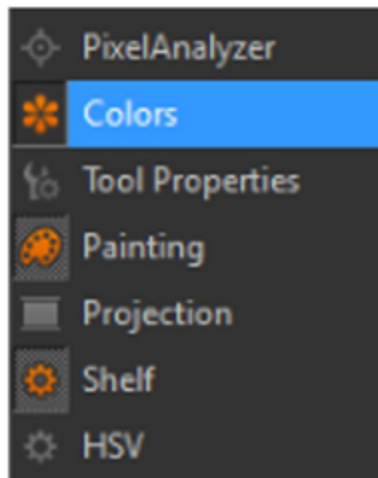
    The **Colors** palette displays.
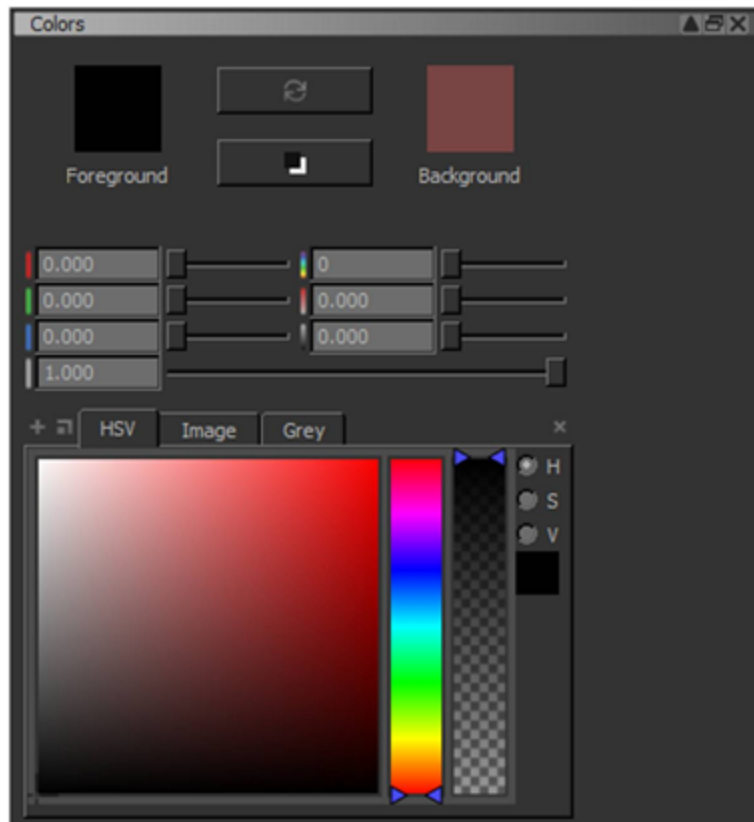
2. To open the **Shelf** palette:

    • from the **View** menu, select **Palettes** > **Shelf**, or

    • right-click in the toolbar area and select **Shelf** from the dropdown menu.

    The **Shelf** palette displays.
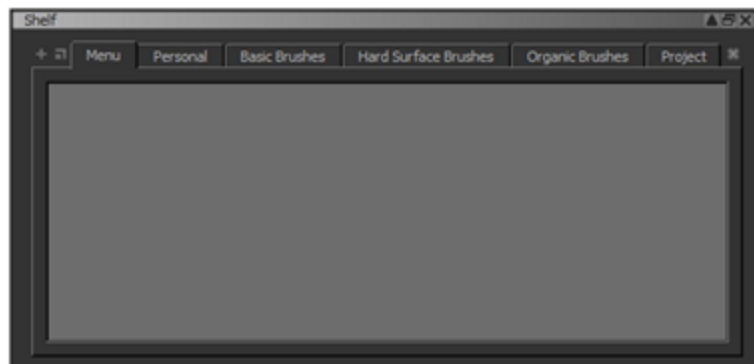
The shelf can hold your customized sets of colors and brushes - but when you first start Mari, the shelf is empty.

EXPERIMENT: The *Mari Reference Guide* outlines the different options for arranging palettes. Take a few minutes to experiment with docking, undocking, sizing, moving, collapsing, and stacking palettes (including the **Colors** palette and **Shelf**). Over time, you'll find a configuration that works best for you. And when you exit Mari, it remembers that configuration for the next time you re-start the program.

Select a Color

1. You can select a color from the **Colors** palette a few different ways:

    • click in the color field
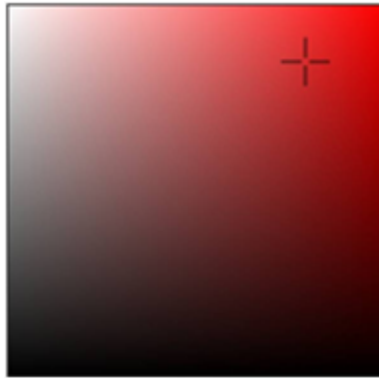
    • click to select the **H**, **S**, or **V** next to the vertical sliders (to the right of the color field), then click and drag the sliders up or down to select color and alpha

    • enter an **Intensity** value or drag the slider to adjust the intensity of the color

    • drag the horizontal sliders left or right, or type specific values in the boxes, to specify:

    RGB( )or HSV( ),and Alpha( )

    The selected color displays in the **Foreground** swatch (and in the swatch to the right of the vertical sliders).

TIP: In addition to adjusting the intensity with the **Intensity** slider, you can also adjust it by selecting the **V** component, to the right of the color swatch, and dragging the ▯ slider or dragging the RGB slider.

2. When the color you want is selected in the **Colors** palette, drag the swatch to the **Shelf**.
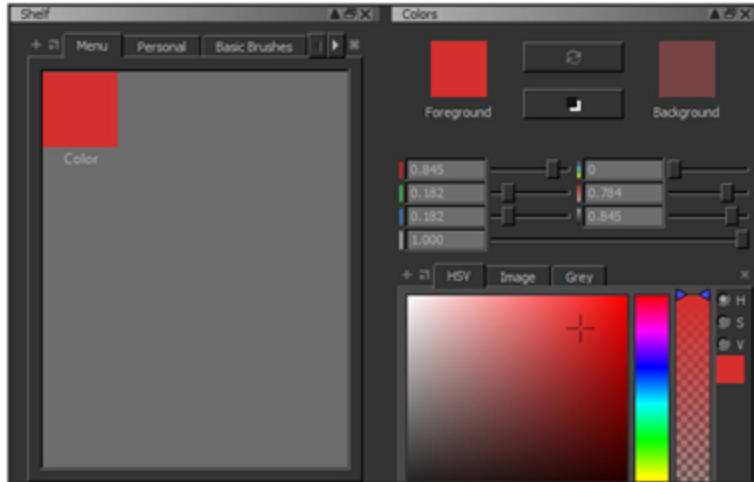
You don't have to drag the color to the shelf to use it, but it's useful for storing colors you use regularly.

EXPERIMENT: Play around with all the different options for selecting colors. See if you can get these:

TIP: If you hover the mouse over a swatch, it displays RGB, HSV, and Alpha values:

Select a Brush

1. To select a brush, open the **Brush Editor** palette:
   - from the **View** menu, select **Palettes** > **Brush Editor**, or
   - right-click in the toolbar area and select **Brush Editor** from the dropdown menu.

   The **Brush Editor** palette displays.
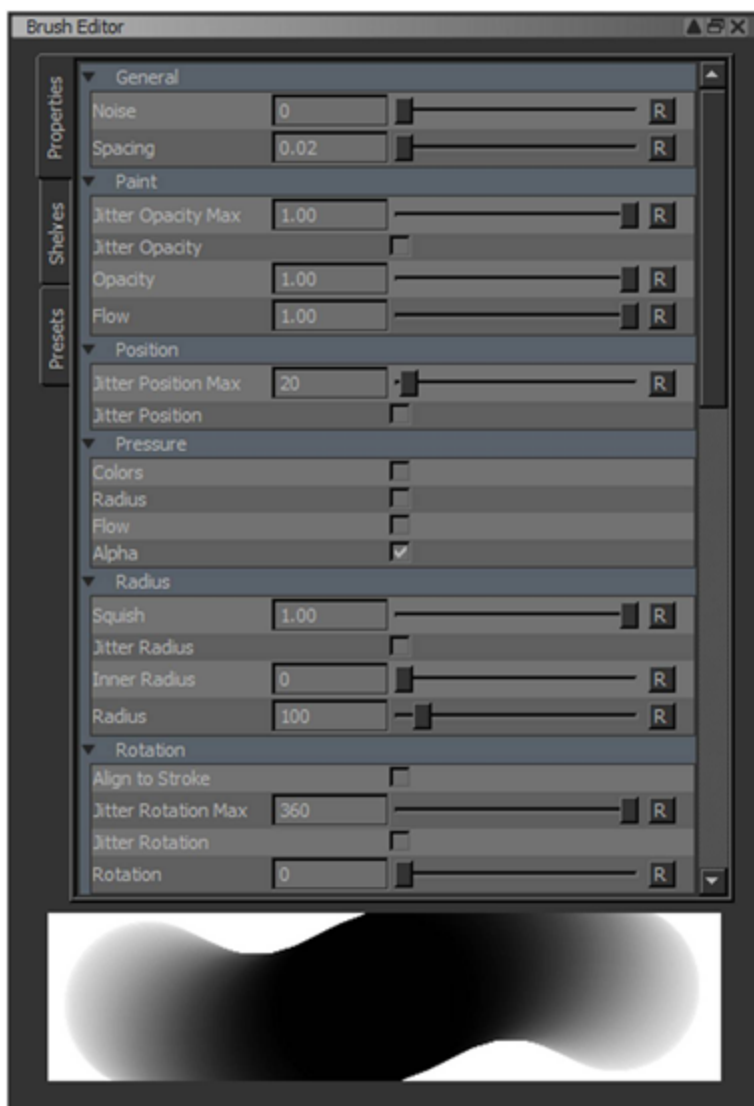
The **Brush Editor** has three tabs:

　　• **Properties** - configurable properties of the selected brush (see the *Mari Reference Guide* for details).

　　• **Shelves** - the same shelves that display in your **Shelf** palette.

　　• **Presets** - an array of predefined brushes that come with Mari.

2.　Click the **Presets** tab.

　　Three tabs display along the top for different sets of predefined brushes.
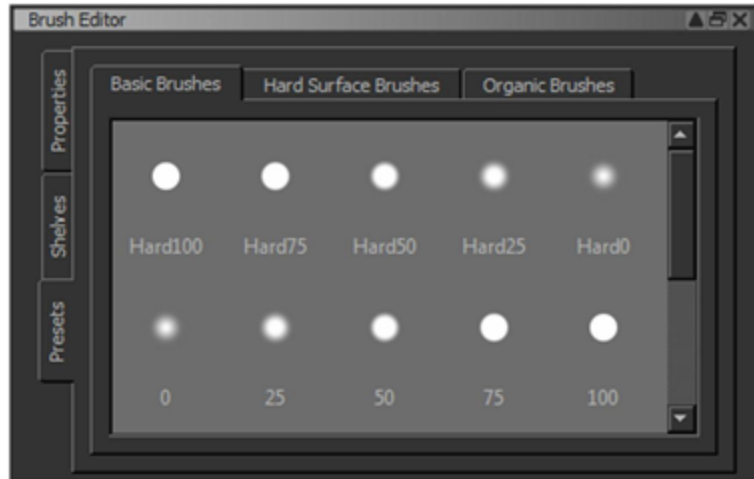
3. Click a brush to select it.

> **TIP:** At the bottom of the **Brush Editor** is a scratch area for you to test out the selected brush. You can press **N** to swap back to the last brush tip you used. This lets you quickly swap back and forth between two brush tips.

> **TIP:** You can also customize brushes from the **Brush Editor**, and save them to the **Shelf**. This is covered in the *Mari User Guide*, but basically involves selecting a preset brush from the **Presets** tab, custom-configuring that brush by selecting options on the **Properties** tab, or saving it by clicking the
>
> button on the **Shelves** tab.
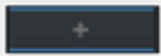
Paint!

1. When you have selected a color and a brush (from the **Colors** palette, **Brush Editor**, and/or **Shelf**), you can use them to paint on the model. First select the paint tool:

   • click on the toolbar, or

   • press **P**.

2. Then paint!

TIP: You can undo and redo any action by pressing **Ctrl/Cmd+Z** and **Ctrl/Cmd+Y**, or clicking [icon] and

[icon] on the **Project** toolbar, or selecting **Undo** and **Redo** from the **Edit** menu.
And, you can undo or redo multiple actions at once, by clicking on a specific action in the **History View** palette (from the **View** menu, select **Palettes** > **History View**).
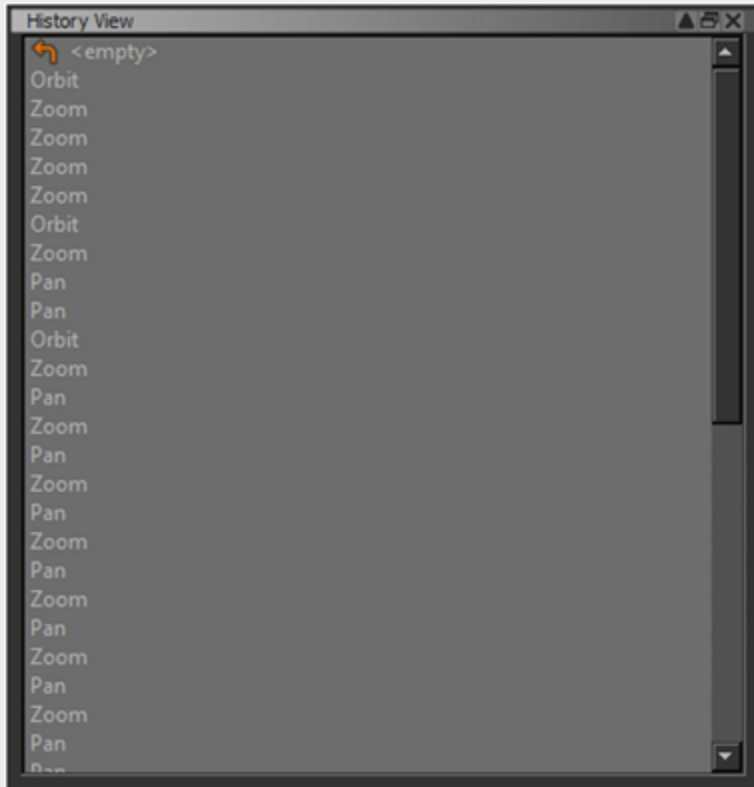
The **History View** palette lists all actions you've performed since opening the project. There is no limit on the size of the action history, but it clears when you close the project.

Redoing an action in Mari only reverses a previously undone action. You cannot use the Redo command in Mari to repeat a command - it's reversing an Undo (not a "do that again").

Bake Your Painting

1. As with other paint programs, what you paint stays in a paint buffer until you "bake" it onto the model. To bake in Mari, make sure all patches with unbaked painting are selected, and then:

   • from the **Painting** menu, select **Bake**, or

   • click [icon] on the status bar, or

• press **B**.

> TIP: The **Projection** palette also includes a **Bake Behavior** option, which by default (**AutoBakeAndClear**) automatically bakes every time you adjust the view.

2. When you exit Mari, **do not save** the project. (We'll start the next lesson with the unpainted blacksmith you imported in Tutorial 1.)

Where Do You Go from Here?

This lesson covered the most basic options for painting in Mari:

• selecting a color in various ways, and dragging it to the **Shelf**

• selecting a brush from the **Brush Editor**

• painting on the model and baking.

The next tutorial, Tutorial 4: Painting Through and Clone Stamping, covers two main options for using images to create textures in Mari.

Tutorial 4: Painting Through and Clone Stamping

This lesson introduces using images to create textures in Mari. This includes "painting through" an image onto your model and "clone stamping" part of an image onto your model.

What You Should Know Before Starting This Lesson

This lesson assumes:
• a basic knowledge of computers and graphics applications
• that you have read the *Mari Getting Started Guide* up to this point
• that you know how to start Mari (see Launching on Windows, Launching on Linux, or Launching on Mac)
• that you have completed Tutorial 1: Setting up a Project, Tutorial 2: Setting the View, and Tutorial 3: Painting!

Resources You Need to Complete This Lesson

To complete this lesson, you need access to a computer that can run Mari, and the following sample files:
• **1-Blacksmith** - the Mari project file you created in Tutorial 1 and used in Tutorial 2 and Tutorial 3
• **Tattoo.png** - an image of a tattoo, in your Mari tutorial directory

How Long Should It Take?

Plan on spending about 25 minutes to complete this lesson.

About Painting from Images in Mari

Like with other paint programs, Mari lets you superimpose image files onto the surface of an object. To manage image files, Mari includes the **Image Manager** palette. To paint with images you've loaded into the **ImageManager** palette, Mari has two main tools: **Paint through** and **Clonestamp**:

• The **Paint through** tool ( ) lets you position an image *over* an object, and then as you paint, copy from the image directly onto what's under the brush.

- The **Clonestamp** tool ( ) lets you position an image *alongside* an object, with a source point on the image relative to where the brush is on the object. Then as you paint, the source point on the image moves in sync with the brush on the object, and Mari copies from the image onto the corresponding spot under the brush on the object.

  You can also clone stamp from painting already on an object, in the paint buffer, or in another channel.

Steps for Painting Through and Clone Stamping

To paint through and clone stamp in Mari, follow these steps:

1. Open Your Project
2. Load an Image
3. Paint Through
4. Clone Stamp

Open Your Project

1. Start Mari.

   The Mari workspace displays.

2. On the **Projects** tab, double-click on your **1-Blacksmith** project to open it.
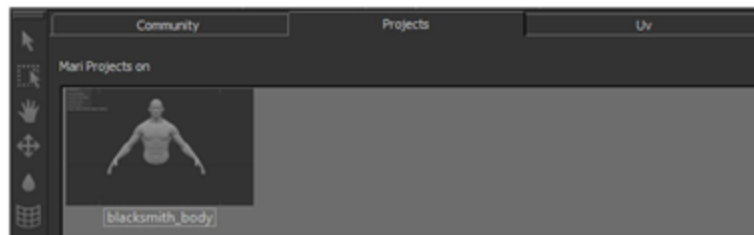
   Your project opens and switches to the **Ortho** view.

Load an Image

For both painting through and clone stamping, we'll use an image of a tattoo that looks like this:

We'll start by loading that image in Mari's **Image Manager** palette.

1.   To open the **Image Manager**:

> • click the **Image Manager** tab if it is already open but hidden (as in the default Mari layout),
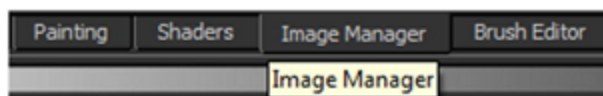
> • from the **View** menu, select **Palettes** > **Image Manager**, or

> • right-click in the toolbar area and select **Image Manager** from the dropdown menu. The **Image Manager** palette displays.
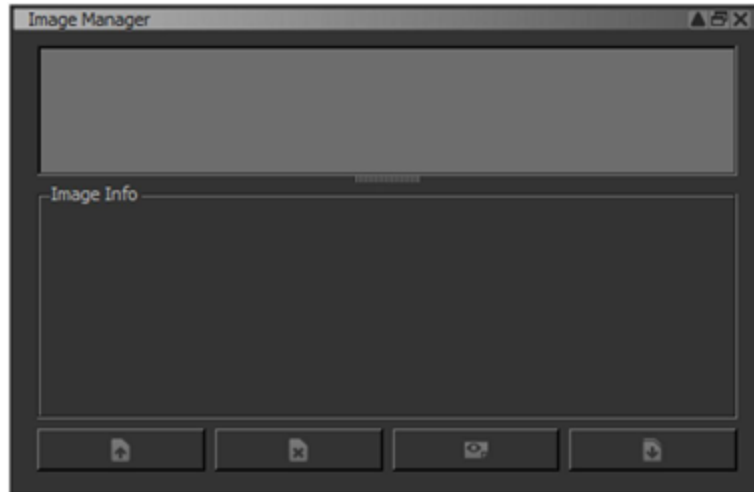
2. To load an image, click   .

    The **Open an Image** dialog box displays.
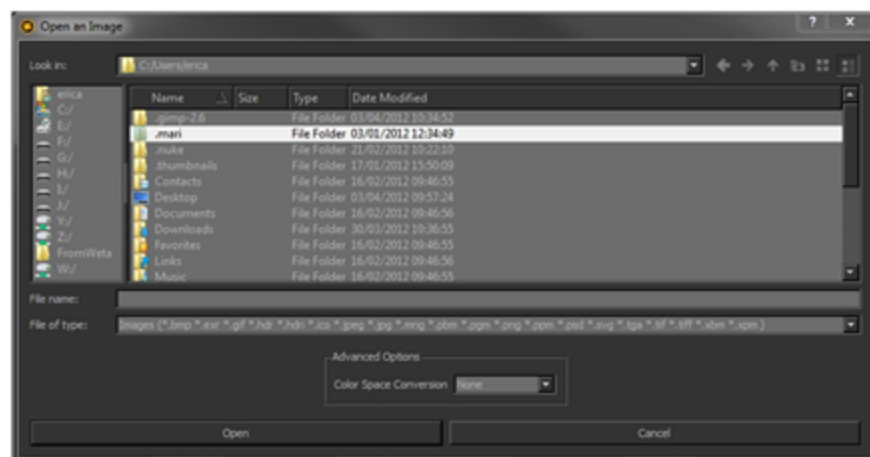
3. Navigate to your tutorial folder, and select **Tattoo.png**.

    The tattoo.png image displays in the **Image Manager**.
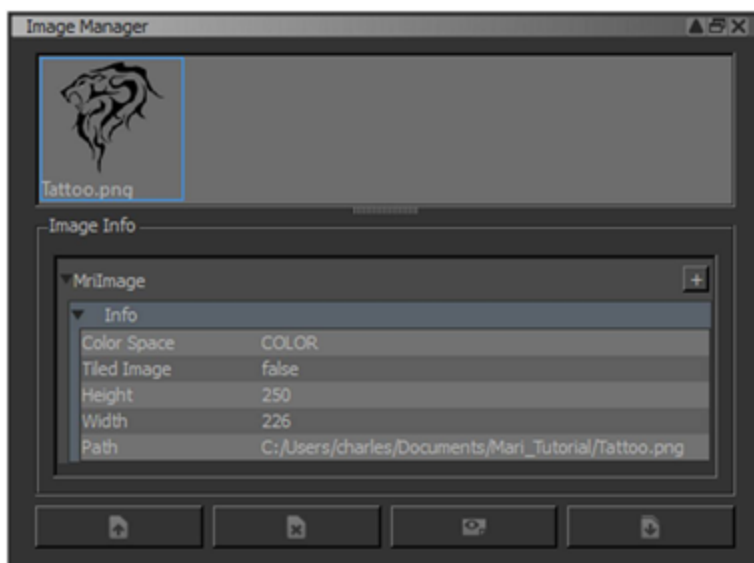
Paint Through

Painting through an image basically involves:

• selecting the **Paint Through** tool,

• dragging an image onto the canvas, and

• painting.

1. Select the **Paint Through** tool by:

    • clicking on the toolbar, or

    • pressing **U**.

2. Drag the image from the **Image Manager** and drop it onto the model.
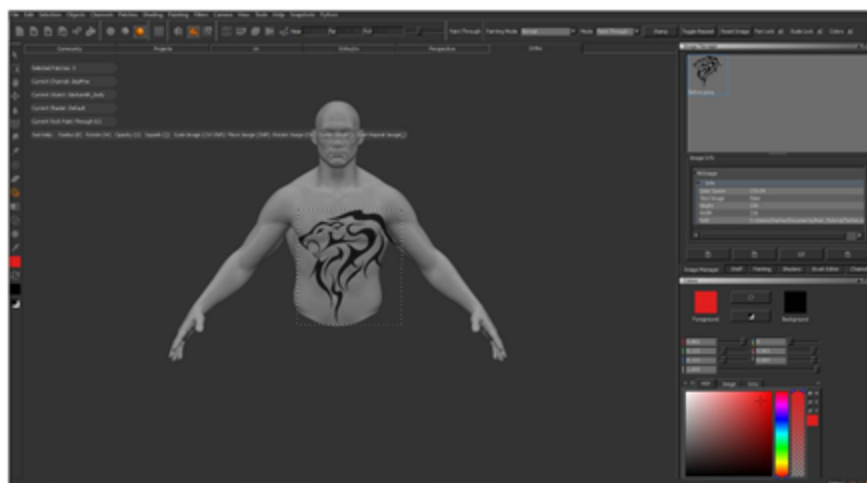
3. Move and resize the image:

    • To resize the image, hold down **Ctrl/Cmd**+**Shift**, click and drag.

    • To move the image around the canvas, hold down **Shift**, click and drag.

    • To rotate the image, hold down **Ctrl/Cmd**, click and drag.

> **TIP:** The **ToolProperties** palette includes many options for manipulating paint-through images.
>
>
>
> You can also double-click the image in the **ImageManager**, and crop a smaller portion to use for painting through and clone stamping.
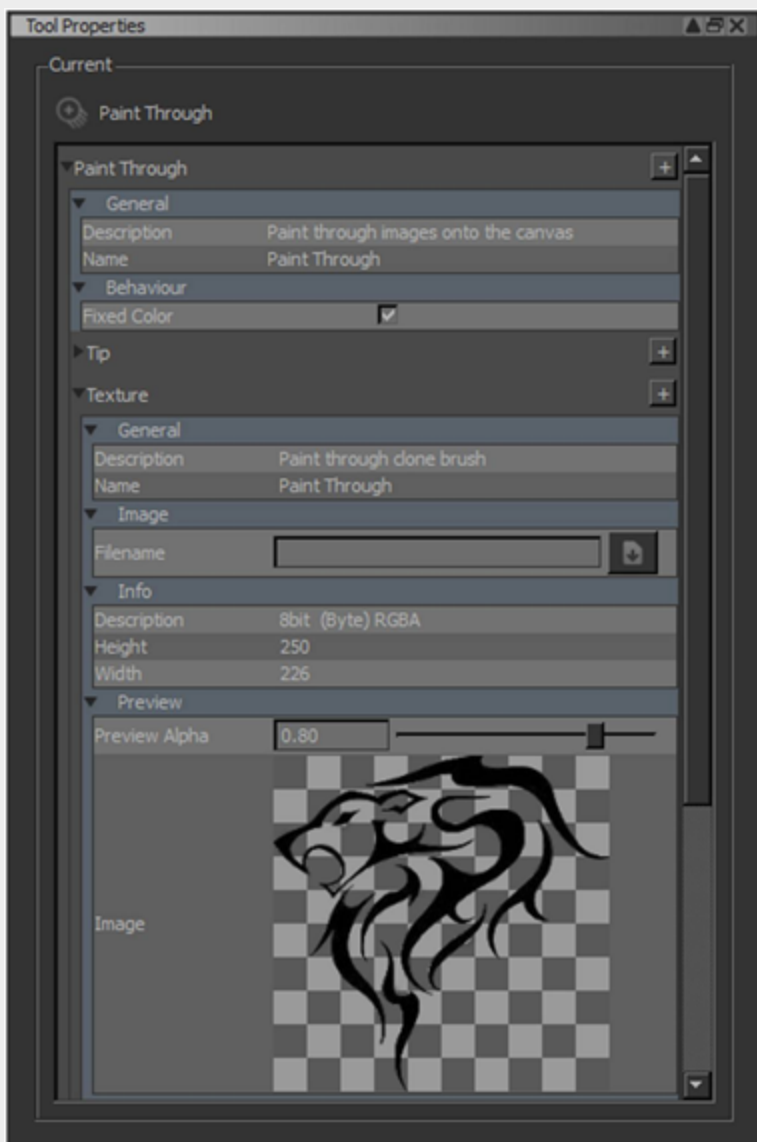
EXPERIMENT: Try sizing, moving and rotating the image. See if you can get it to look like this:
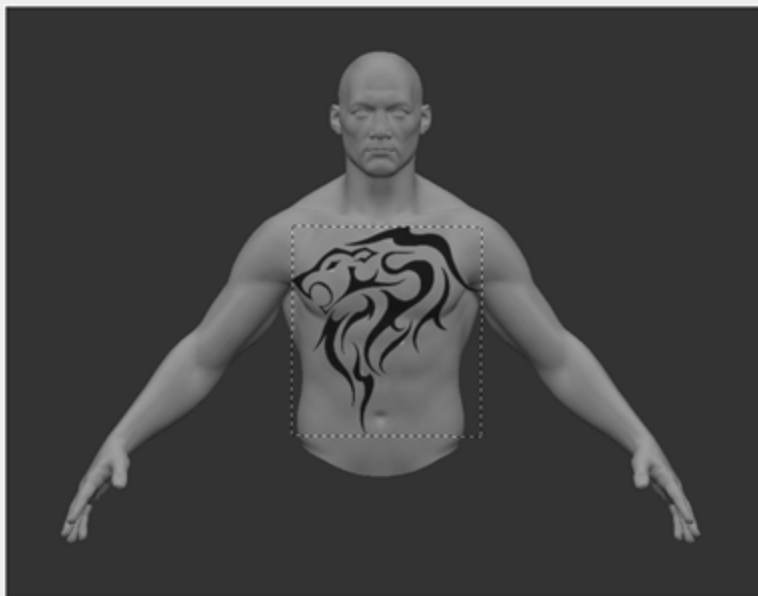
4. Paint through the image onto the model (hold down the left mouse button and move, as you do in any standard paint program).

5. When you're done painting through, press **P** to go to the **Painting** tool to see just the painted-on object.

TIP: To hide the overlying image, press the **?** (question mark) key. To paint the whole image onto the model in one step, press the **'** (apostrophe) key. To repeat the source image (so you can paint past the edges and have the source image repeat), press the **;** (semicolon) key.

Clone Stamp

Clone stamping is like painting through, but the image does not have to sit directly on top of the model.

1. First, clear the painted-through textures:

   • from the **Painting** menu, select **Clear Painting**, or

   • click on the toolbar.

   This removes any unbaked painting on the model. In this case, the model re-displays as imported.

2. Select the **Clone Stamp** tool: click on the toolbar.

3. Drag the image from the **Image Manager** and drop it onto the canvas.

   The image displays in a separate window.

4. Re-size and position the image window alongside your model. To scale the image within the window, hold down **Alt**, right-click and drag. To pan the image, hold down **Alt**, left-click and drag.
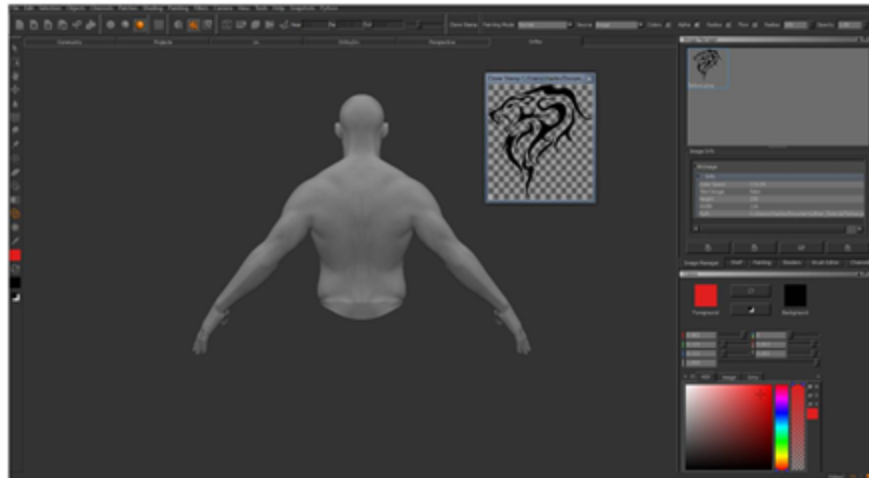
5. To select the source point for cloning on the image, press **Ctrl/Cmd** and click.

   Once you start painting, a magenta + displays the source point on the image.

6. Once you've selected the source, you can paint. The cursor moves on the image in sync with the cursor on the model as it clone stamps from the image onto the model.

> 💬 **TIP:** You can also clone stamp from existing textures - painted on the surface of the object, in the paint buffer, or painted in another channel. To select a clone source, use the **Source** menu in the **Project** toolbar and select from the origins available.
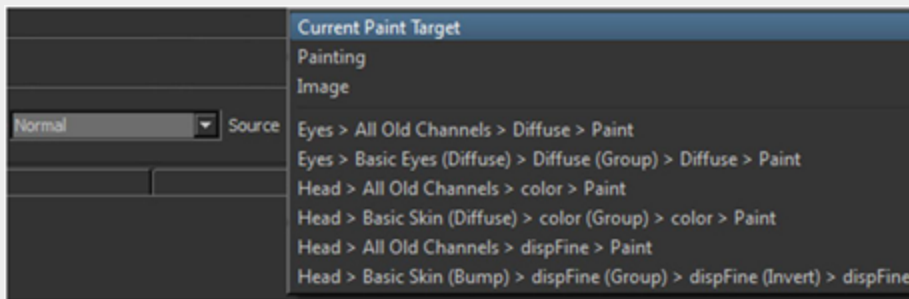
> 🧪 **EXPERIMENT:** Change the view (as covered in Tutorial 2: Setting the View), and try both painting through and clone stamping the image onto another side of the object. Do you like one method of using images to paint more than the other?

Where Do You Go from Here?

This lesson covered the two main options for painting images onto a model:

- dragging an image and positioning it on top of an object, then **Painting through** the image onto the surface of the object

- dragging an image and positioning it on the canvas next to an object, then **Clone stamping** from a part of the image to the surface of the object.

The next tutorial, Tutorial 5: Exporting and Importing, covers procedures for saving and re-importing your work.

Tutorial 5: Exporting and Importing

This lesson explains how you can **export** channels or layers you've painted in Mari as a set of image files, then re-**import** them into your project. This familiarizes you with just a few of the methods for exporting and importing.

What You Should Know Before Starting This Lesson

This lesson assumes:

• a basic knowledge of computers and graphics applications

• that you have read the *Mari Getting Started Guide* up to this point

• that you know how to start Mari (see Launching on Windows, Launching on Linux, or Launching on Mac)

• that you have completed tutorials 1 through 4 - so you know the basics of creating a Mari project, setting up the camera and lighting, and painting textures.

Resources You Need to Complete This Lesson

To complete this lesson, you need access to a computer that can run Mari, and the following sample files:

• **1-Blacksmith** - the Mari project file you created in tutorial 1 and used in tutorial 2, tutorial 3, and tutorial 4.

How Long Should It Take?

Plan on spending about 25 minutes to complete this lesson.

About Mari Exports

Mari includes the facility to **export** the painting in a project to a series of image files. You might use this, for example, to modify part of your work in an external program, and then re-**import** those modifications into the project. Mari lets you select formats and naming conventions for the export. Each export contains the painting baked in a selected channel, one image file per patch. When you import a series of previously exported files, Mari lets you know whether it's a complete set.

Steps for Exporting and Importing

To export and import Mari painting, follow these steps:

1. Open Your Project
2. Export a Channel
3. Export a Layer
4. Import a Channel
5. Import a Layer

Open Your Project

1. Start Mari.

   The Mari workspace displays.

2. On the **Projects** tab, double-click on your **1-Blacksmith** project to open it.
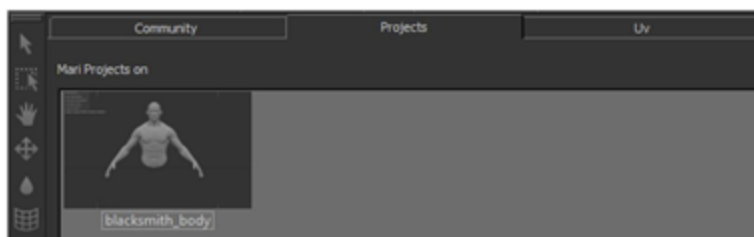
Your project opens and switches to the **Ortho** view.

Export a Channel

1. To export the current channel, **Diffuse**, from the **Channels** menu, select **Export** > **Export Current Channel**.

    This exports the currently selected channel, **Diffuse**. To export any channel, right-click the channel you want to export in the **Channels** palette, and select **Export** > **Export Current Channel** from the dropdown menu.

    The **Export** dialog box displays.
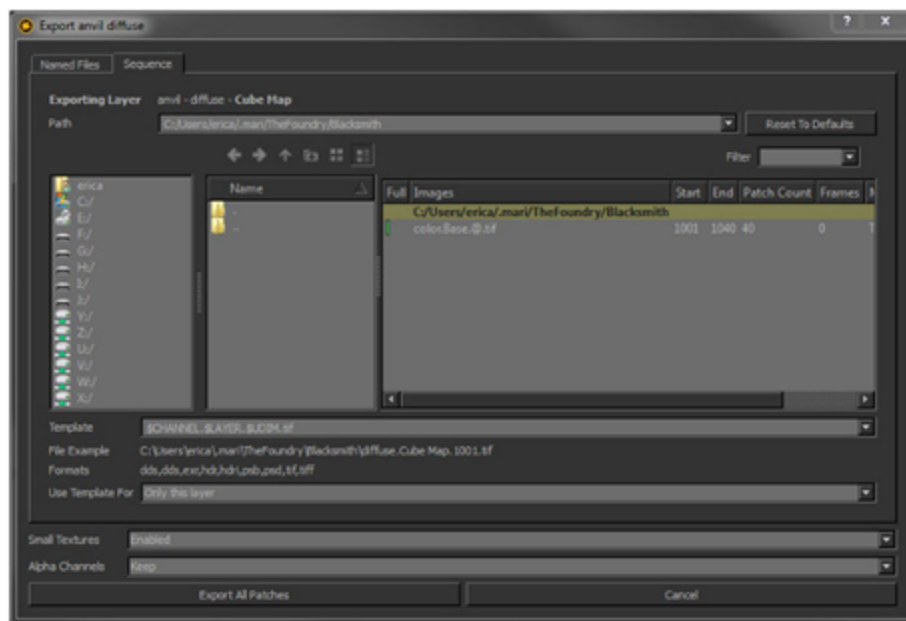
2. If necessary, use the two left-hand navigation boxes to navigate to the folder you want to export to.

3. In the **Template** field, Mari names each image file in the export, one per layer and per patch, based on this template. The default is **$CHANNEL.$LAYER.$UDIM.tif**

> NOTE: Notice the **File Example** below it, which displays what a filename looks like with that template. In the illustration, it's: **diffuse.Base.1001.tif**
>
> So each filename includes the following (with examples from the illustration):
> -**$CHANNEL** - the name of the channel you're exporting layers from: **Diffuse**.
> -**$LAYER** - the name of the layers you're exporting: Base.
> -**$UDIM** - an incremental number identifying each patch in those layers: **1001** (followed by **1002**, **1003**, and so on).
> -**tif** - the extension for the selected file format. You can set the format for the exported files by changing this extension. Mari supports standard image formats (such as **.png**, **.jpg**, **.tga**, and **.dds**).

> NOTE: For more information on UDIM number, please refer to the *Working with Patches* chapter in the *Mari User Guide*.

> **TIP:** The formats available to export depend on the color depth of the channel. Channels with color set to Half-Float or Float can only be exported to **.psd**, and **.psb** format. On Windows, channels with color set to Half-Float or Float also can be exported to **.dds** format.

4. Set the **Use Template For** field to determine if the template above is used for **Only this layer** (to only use the template for the layer displayed at the top of the dialog) or **Everything** (to apply the template to all layers in the stack).

5. Click **Export All Patches**.

   This exports all patches. You may be notified that the selected directory does not exist, and prompted about whether you want to create the directory.

> **NOTE:** If **Small Textures** is enabled, Mari exports any patches that you haven't painted yet, or have painted as a single color, as 8x8-pixel textures. When you start to paint on a particular patch, Mari exports it as the correct size.

> **TIP:** For a complete explanation of export fields, see the *Mari Reference Guide* and the *Exporting and Importing Textures* chapter in the *Mari User Guide*.

Export a Layer

1. To export selected layers, from the **Layers** menu, select **Export** > **Export Selected Layers**.

   This exports any selected layers in the layer stack (in this case, **Base**). The **Export** dialog box displays.
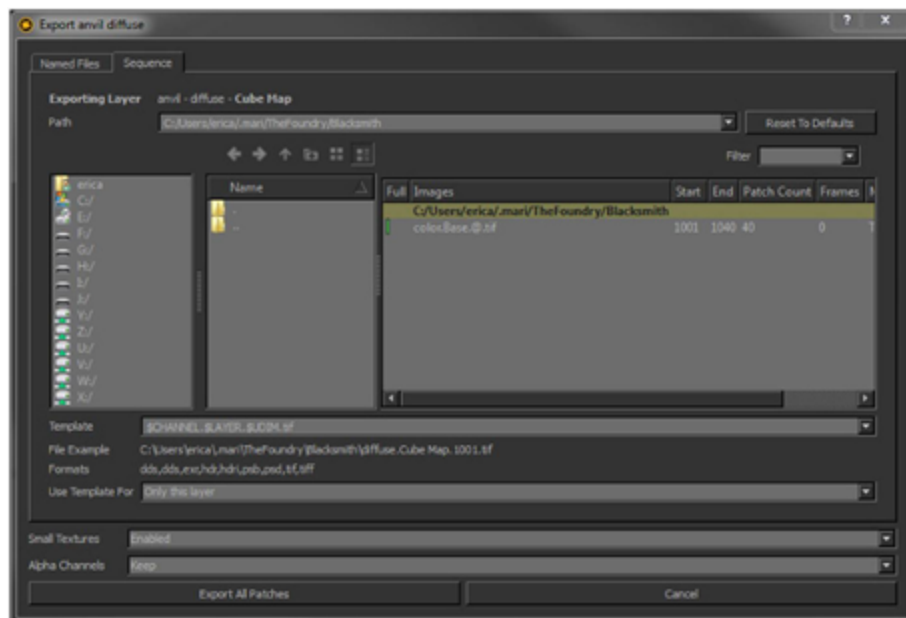
2. If necessary, use the two left-hand navigation boxes to navigate to your tutorial folder.

3. In the **Template** field, Mari names each image file in the export, one per channel, layer and patch, based on this template. The default is **$CHANNEL.$LAYER.$UDIM.tif**.

> NOTE: Notice the **File Example** below it, which displays what a filename looks like with that template. In the illustration, it's: **diffuse.Base.1001.tif**
>
> So each filename includes the following (with examples from the illustration):
> -**$CHANNEL** - the name of the channel you're exporting layers from: **Diffuse**.
> -**$LAYER** - the name of the layers you're exporting: Base.
> -**$UDIM** - an incremental number identifying each patch in those layers: **1001** (followed by **1002**, **1003**, and so on).
> -**tif** - the extension for the selected file format. You can set the format for the exported files by changing this extension. Mari supports standard image formats (such as **.png**, **.jpg**, **.tga**, and **.dds**).

> TIP: The formats available to export depend on the color depth of the channel. Channels with color set to Half-Float or Float can only be exported to **.psd**, and **.psb** format. On Windows, channels with color set to Half-Float or Float also can be exported to **.dds** format.

4. Set the **Use Template For** field to determine if the template above is used for **Only this layer** or **Everything.** If **Only this layer** is selected when attempting to export, Mari asks you for each individual layer whether you want to use the template. Setting the files to **Everything** can save time if you want all your selected layers to use the template.

5. Click **Export All Patches**.

   This exports all patches.

> NOTE: If **Small Textures** is enabled, Mari exports any patches that you haven't painted yet, or have painted as a single color, as 8x8-pixel textures. When you start to paint on a particular patch, Mari exports it as the correct size.

> TIP: For a complete explanation of export fields, see the *Mari Reference Guide* and the *Exporting and Importing Textures* chapter in the *Mari User Guide*.

Import a Channel

1. To import a channel (for example if you've tweaked some exported image files in another application and now want them back in your texture):

   • from the **Channels** menu, select **Import** > **Import into Layer Stack** for the currently selected channel, or

   • right-click on the channel where you want to import the textures (in this case, **Color**) in the **Channels** palette, and select **Import** > **Import into Layer Stack** from the dropdown menu.

   The **Import** dialog box displays.

2. Select the path for the imported images, by either:

    • typing it in the **Path** field at the top of the dialog,

    • clicking on it in your directory bookmarks (to the left), or

    • browsing to it in the middle panes.

    If you are using the middle panes to browse to the directory, you can use the buttons above the view to navigate back, forward, up one directory level, create a new directory, or switch between icon-only and full-details directory views.

3. Select the texture set to import.

    Mari shows all the texture sets available under the selected directory, arranged by sub-directory.

    For each texture set, the **Import** dialog box includes:

    • **Full** - shows a green bar if the selected image sequence has a full set of images for the current model, a yellow bar if the selected image sequence has a partial set of images for the current model, or a red bar if the selected image sequence has no images for the current model.

    • **Images** - the name of each image to import, with the UDIM number represented as @ (in this case, **diffuse.@.tif**) and frame number (if present) represented as #.

    • **Start** and **End** - the first and last UDIM numbers in the image set (in this case, **1001** to **1055**).

    • **Patch Count** - the number of images in the set (in this case, **50**).

4. In the **Template** field, Mari names each image file in the import, one per layer and patch, based on this template. The default is **$CHANNEL.$LAYER.$UDIM.tif**.

NOTE: Notice the **File Example** below the **Template** field, which displays what a filename looks like with that template. In the illustration, it's: **diffuse.Base.@.tif**

So each filename includes the following (with examples from the illustration):
-**$CHANNEL** - the name of the channel you're importing: **Diffuse**.
-**$LAYER** - the name of the layers you're importing: Base.
-**$UDIM** - an incremental number identifying each patch in those layers: **1001** (followed by **1002**, **1003**, and so on).
-**tif** - the extension for the selected file format. You can set the format for the exported files by changing this extension. Mari supports standard image formats (such as **.tif**, **.exr**, **.png**, **.jpg**, **.tga**, and **.dds**).
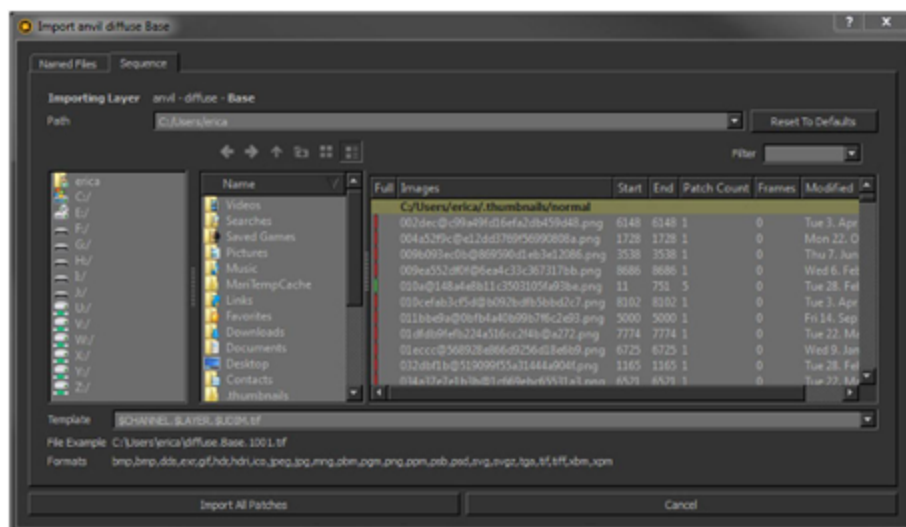
5. Click the **Import All Patches** to import the files into your project.

    Mari imports the textures from the selected files.

Import a Layer

1. To import textures into a layer, from the **Layers** menu, select **Import** > **Import into Layer.**

    This imports all selected textures into the current, selected layer (in this case, **Base**). The **Import** dialog box displays.

2. Select the path for the imported images, by either:

    • typing it in the **Path** field at the top of the dialog,

    • clicking on it in your directory bookmarks (to the left), or

    • browsing to it in the middle panes.

    If you are using the middle panes to browse to the directory, you can use the buttons above the view to navigate back, forward, up one directory level, create a new directory, or switch between icon-only and full-details directory views.

3. Select the texture set to import.

   Mari shows all the texture sets available under the selected directory, arranged by sub-directory.

   For each texture set, the **Import** dialog box includes:

   • **Full** - shows a green bar if the selected image sequence has a full set of images for the current model, a yellow bar if the selected image sequence has a partial set of images for the current model, or a red bar if the selected image sequence has no images for the current model.

   • **Images** - the name of each image to import, with the UDIM number represented as @ (in this case, **diffuse.@.tif**) and frame number (if present) represented as #.

   • **Start** and **End** - the first and last UDIM numbers in the image set (in this case, **1001** to **1055**).

   • **Patch Count** - the number of images in the set (in this case, **50**).

4. In the **Template** field, Mari names each image file in the import, one per channel, layer and patch, based on this template. The default is **$CHANNEL.$LAYER.$UDIM.tif**.

> NOTE: Notice the **FileExample** below the **Template** field, which displays what a filename looks like with that template. In the illustration, it's: **diffuse.Base.@.tif**
>
> So each filename includes the following (with examples from the illustration):
> -**$CHANNEL** - the name of the channel you're importing: **Diffuse**.
> -**$LAYER** - the name of the layers you're importing: Base.
> -**$UDIM** - an incremental number identifying each patch in those layers: **1001** (followed by **1002**, **1003**, and so on).
> -**tif** - the extension for the selected file format. You can set the format for the exported files by changing this extension. Mari supports standard image formats (such as **.tif**, **.exr**, **.png**, **.jpg**, **.tga**, and **.dds**).

5. Click **Import All Patches**.

   This imports all patches.

> TIP: For a complete explanation of export fields, see the *Mari Reference Guide* and *Exporting and Importing Textures* chapter in *Mari User Guide*.

Where Do You Go from Here?

This lesson showed you how to:

• **export** a current channel or selected layer in a Mari project to a series of image files.

• **import** textures into a channel's layer stack or into a selected layer, for example after having manipulated the exported textures in another program.

Congratulations! You have now completed all modules in the Mari Tutorials. To better familiarize yourself with the features you are particularly interested in or to get answers to specific problems that arise during painting, please refer to the accompanying *Mari User Guide* and *Mari Reference Guide*.