iClone3

3D Movie Machine

Manual

Features

3.1 Features

There is much to discover inside iClone3 and we are excited to set you on your journey into the most powerful toolset in real-time 3D animation. What we have not included in iClone3 is your stories and your imagination; the heart of iClone. All of the engineers and Reallusion visionaries have spent countless hours pioneering and fine-tuning this release, yet the real killer feature and true magic of iClone is YOU. Welcome to the 3D Movie Machine, iClone3..

iClone BackStage - Live Content Access

- Preview hundreds of models and motions for free inside your iClone3 scene.
- Easy search and preview features to find what you are looking for.
- Manage your purchases and downloads with the Online Inventory System.
- Audition actors and get them quickly with Live Activation.
- New marketplace for Certified Content Developers (CCD) - debut in December.

WidgetMe (Beta) - Transparent Flash Movie for the Web

- Turn your iClone 3D movies to transparent Flash videos (iWidgets).
- Directly transfer an iWidget movie to WidgetMe editor after rendering.
- Send your animated WidgetMe greetings with custom iClone avatars.
- Share your creations by placing your widget stickers on any websites.
- Free content hosting by Reallusion.
- Cross platform web browser display of your WidgetMe creations.

Flexible Spring for Natural Movement

- Spring is a dynamic effect that can be added to the following targets: hair, accessories, props, and actors.
- Want more movement? Strengthen or weaken the effect on your chosen target.
- Female or obese characters can move with more natural body-weight displacement.
- Create amazing creatures with natural movement of long ears, antennas, etc.
- Three ways to enhance your characters' natural movement: the strength of the flex, how soft or hard the object is, and how long the spring action sustains itself.

Material Key Frame Editing and Animation

- Double-click texture map icons to open a new map.
- Directly select the target material from a 3D model via Material Picker, quickly locate and edit the material settings for your props, accessories and actor skins.
- Color Adjustment for the individual texture channel.
- Support PNG files for transparency maps, the diffuse and opacity maps go into their corresponding channels.
- Each texture channel has its own material UV setting (tile, offset).
- Materials such as glow, opacity, bump, specular, glossiness, reflection and color can be set with animation keys on the Timeline.
- One additional timeline track of material key for props enabling material animation, eg. fade in/out props, change color, reflect, glow, or make the bump animation.
- New material library provides multi-textured materials with seamless tiling.

Enhanced CloneBone Character System

- Enhanced UI controls for CloneBone for easier modification and selection. Instead of selecting the attached prop, you can now select the bone itself.
- Enhanced control so you can now enable "look at"’or "link" objects to the bone root itself.
- Easily transform any body part before or after attachment to CloneBone.
- Directly pick specific parts of CloneBone characters for quick motion editing - just like with other avatars.
- Accessories now support iProp animation, and have the option for inheritance - you can scale the bone and the CloneBone part will simultaneously scale accordingly.

AML Templates and Interactivity

- New Dummy Objects for character to character interaction, eg. say hello, kick, and hit.
- New AML templates and Dummy Objects for sitting and grabbing, eg. users can attach the sit dummy to any chair to make the character sit there, or attach an object to the grab dummy so the character can grab it.
- Reduce walk foot sliding after stop if invoked by right click menu - move forward in Editor mode.
- Remove rotate snapping when a character sits down and stands up.

Other Enhancement

- Fit hair to any head with correct scaling and offset: add hair offset setting in the head modify panel and allow users to define the hair offset value for different head shapes. The offset value stores in the head and actor files.
- Add water, tree ON/OFF option in the scene manager.
- Press Esc to escape from the grass plant or mower mode to the camera mode.
- Clear UV animation with Reset Animation and right click menu "clear all animation".
- iProps can be attached to actors as accessories. iProps remain interactive after attachment.
- When replacing a character to a currently highlighted character, all animation settings including talking scripts can be reserved.
- Users are able to load FLEX templates settings.
- In the default setting, the Auto Add Idle Motion is turned off, which makes animation editing easier for beginners. To turn Auto Add Idle Motion on, select the actor, go to Actor - Persona, turn on Auto Add Idle Motion.
- Enhance facial animation and reduce jitters.

Content Updates

- Update Vehicle Dummy in Props gallery.
- Use G3 Heads to replace all G2 heads including Jack and Jane.
- New high realism spotlight and point light templates in Stage - Light - Light Room.
- New seamless multi-texture materials in Material Library.
- Enhanced animation when actors operate iProps (sofa, drink, bed).
- Remove the seam between the sky and the terrain by replacing all sky contents with sphere models.
- Add Dynamic Spring Objects - tail, antenna, blob, eyes. The objects can bounce with the actor's motion.
- Include complete 3D Surface content (20 items).
- Include complete 3D Blocks content (more than 100 items).
- Fix UV iProp control naming – fast, medium, slow.
- New demo projects - available in the default library or content resource pack.

3.0 Features

Reallusion has reinvented **iClone** with an ideology: **CREATE** - **PLAY** - **EDIT** - **SHARE**. **iClone** combines the interactive productivity and play experience of a videogame-based Machinima tool with the power of a professional multiple timeline 3D animation program, that is easy to use and packed with features.

Two Production Modes

- **Editor Mode** and **Director Mode**.
- **Reallusion** saves the time and cost to have a dual-engine 3D power PC.
- **Use Editor Mode** to create your scene and place your actors.
- **Use Director Mode** to command how your **Actors** and **iProps** move just like playing a videogame.
- **Then** use **Editor Mode** again for fine-tuning, editing and exporting your footage.

Right-click Menu System

- Each type of object has its own actions and tools, just right-click to bring up the objects associated menu with options for editing and interactivity.
- **The Right-Click Menu** system saves you from having to search everywhere around the user interfaces for the right tool.

DramaScript

- It is an **Action Script** that allows you to define custom interactivity, use hot keys and the right-click menu to control the actors' movement on the terrain, to sit on the chair, to drive the car or even ignite an explosion, etc. Almost anything is possible with DramaScripts.
- **You** are able to create your own unique movement, set the actor's personality and invent your own interactive Props (iProps).

Tab Track Editing for Standard users

- You may record what you play and re-record what you don't like.
- You will find the yellow highlighted action segments when you tab or reverse tab on the play bar.
- The segments in the play bar correspond to the active selected object or actor.
- Tab **Track Editing** helps you to easily jump to a motion editing point, delete old motions or record new ones.

Multi-Actor Timeline Editing for Pro Users

- You don't need the Ctrl + F7 any longer. Simply **Drag and Drop** your actors into the scene, and each has its own set of timeline tracks for total control.
- Now, everyone can talk to each other simultaneously. You can have a group of actors all talking or singing with their own voices all at the same time.

Multi-Camera System

- You may now add many cameras to the scene and switch to them as often as you like.
- iClone provides **Depth of Field (DOF)**, **Lens MM** features and you are able to set keys to animate all these to create mesmerizing effects.

Enhanced Lighting System

- Point**-light**, **Spotlight** and **Directional lights** are all available in **iClone**. Now you can setup spectacular lighting effects with ease.
- You may attach the light to a stick to make a flash light or torch, use **Spotlights** that can follow your actors around and use the **Point light** to add incredible atmosphere and enrich the mood. Creating that eerie horror scene will now be a breeze.

Direct 3D Object Manipulation

- Inside the 3D viewer, you may make multiple object selections and directly click and drag to move, rotate, scale, copy, and delete.
- You no longer need to touch the Modify panel to position your objects. Just think how much more productive you can be with this feature.

Attach and Link

- You may attach or link any selected object to a parent and no more flattened merged props.
- You can detach your objects and reuse them again after you add them to the library.
- You can link and unlink the object relationship in the animation any time you want, no need to hide the ball in your hand if you wish to throw it away.

Motion Editing

- The external Motion Editor is eliminated from **iClone** (though it is still provided as a legacy download to pro users who still want it).
- An all **In-Scene Motion Building System** is introduced to replace the external editor.
- You may utilize the FK (Forward Kinematics) and IK (Inverse Kinematics) to directly pick the target segment of the body and pose your actors with ease.
- All the motion editing features of the previous **Motion Editor** are replaced by the new advanced in-scene motion builder.
- The new **Motion Layer** function allows you to easily modify motions in a layer-concept similar to what you use in photo editing.

Material Editing

- You may directly adjust the color of props and apply multiple texturing effects to objects directly from the **Material library.**
- Animated textures are available to create moving water and more.

CrazyTalk5 CTS import

- You may enjoy the power of advanced real-time facial puppeteering, and clips-editing using the power of CrazyTalk 5.

Water

- **iClone** provides beautiful water effects with refraction, reflection, custom speed, clarity, color and underwater fog.

Grow Your Own LivePlants, Grass and Trees

- You now have a virtual green thumb and can grow your own plants in **iClone** with just a few mouse clicks.
- Thousands of trees will come in stages after **iClone 3** is released.
- Experience the **iClone 3** virtual landscaping with a variety of included vegetation content.

G3 Character

- Meet Trey and Trinity, the incredible new **iClone 3 G3 actor body styles**.
- G3 characters are with lower polygon than G2 avatars, with better performance, amazing look and higher quality..

Scene Manager
• All your assets in your 3D project are listed in the Scene Manager. • There is no need to scroll the scene to search for an elusive target item. • Select the item from the list and press the **F** key to instantly pop to that object view in your 3D window. • You can also use Scene Manager to rename the object. • Use the Scene Manager to hide items so you don't waste your precious 3D rendering power in complex scenes.
Shader Options
• Any object can have its own shader type such as **Pixel Shader** (the best), **Quick Shader** (by default), **Wireframe**, **Bounding Mesh**, or even **Hidden**.
Content Creation Pipeline
• You may use plug-ins for **3DS Max Character Studio** to generate your own character motions. • Use Zbrush to generate normal maps, and with the **iClone 3** actor templates, you can create actors with wrinkles or better body definition and muscle tone. • Collaboration with 3DXchange will meet all your content needs straight from the internet.

User Interface

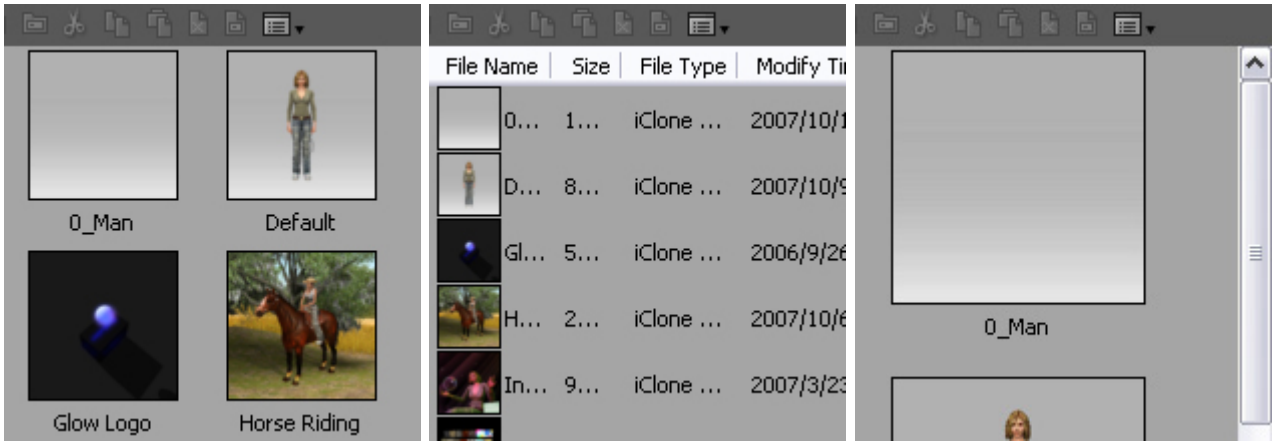
Content Manager and Scene Manager

The content manager and the scene manager are contained in the panel on the left of the screen. You may show/hide the whole panel by clicking the triangle in the middle of the right border of the panel or drag the border to adjust the panel to your chosen width. Click the button in the upper-right corner of the two managers to collapse/expand them individually.

Content Manager

The content manager is used for managing the various iClone 3D files including models, animation and contents associated with a project.

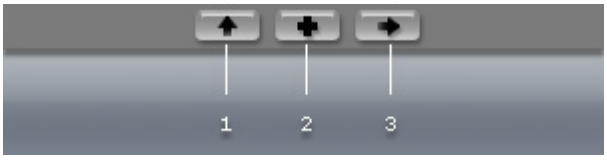
Contents are displayed as tiles by default, but contents can also be displayed as listed icons or thumbnails. Click the content display button to cycle through the content display options. Click the list category headers to sort the content by Name, Size or Date created for quick access to content selection.



In most cases the content manager has two tabs, **Template** and **Custom**. The **Template** tab contains all the predefined content. The **Custom** tab contains all the custom content you have created with iClone and saved to the various Custom asset libraries.

The **Content Manager** changes according to the current mode. For instance, if you click the **Project** tab to enter project mode, the **Content Manager**/**Template** tab displays the project template files. Double-click a project template to apply it. The **Custom** tab contains all the projects that you have previously saved.

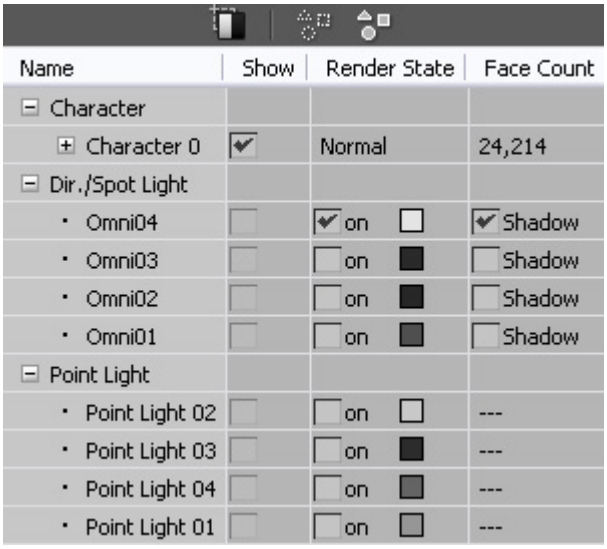
Overwrite, Add and Apply



The 3 buttons below the content manager

1	**Overwrite**	Select an item then click the **Overwrite** button to replace it with the content from the current project. Only content in the **Custom** tab can be over-written.
2	**Add**	Add the current content being edited to the **Custom** tab to save it for later use in any iClone project.
3	**Apply**	Apply the selected content to the current project. This does the same as double-clicking the content thumbnail.

Scene Manager



The Scene Manager displays all the objects and actors included in the current project. You may select multiple items, show/hide the objects altogether, or even adjust the render state of them. It also shows the face count of each object for your reference.

Rename Items: Click on the desired object once to select it, if you click again on its name, it will enter the name-editing mode. You may rename all the items as you wish.

Select Items: Click on the items in the Scene Manager to select them. You may press and hold your **Ctrl** key and click on other items to make multiple choices.

Select Invert: This button helps you to deselect your chosen items and then select all the others.

Hide Unselected: Click this button to uncheck all the boxes in the **Show** column, so the unselected objects will be hidden in the 3D viewer. It also saves you from un-checking the boxes individually.

Unhide All: Click this button to display all the objects in the 3D viewer, and check all the **Show** boxes of the objects in the current project.

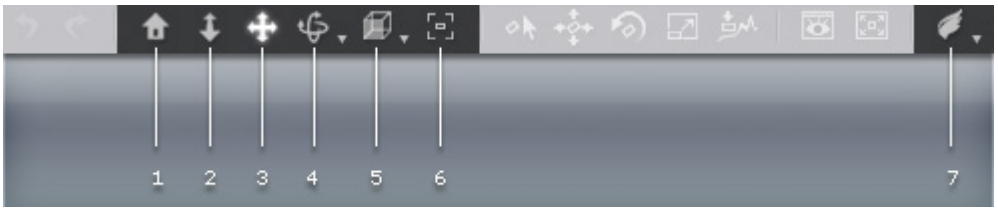
Control Bar

The control bar is used to undo/redo actions, manipulate the view of the camera and the objects position and rotation, align objects to the terrain, render the current view into an image and to enter full screen mode. You can find the **Control Bar** on the top of the 3D viewer.

Undo/Redo

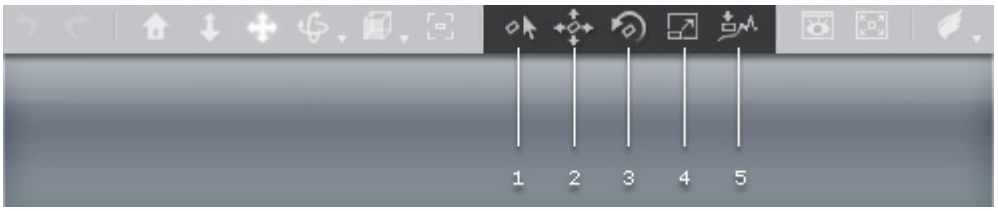
1	Undo	To undo the last action made for the current project. The maximum number of actions you can undo can be set in the **Preference** panel. It is also limited by the amount of space on your hard disk.
2	Redo	To redo the last action.

Camera Tools



1	Home	To snap the camera to a 45 degree perspective to the selected object.
2	Zoom	To zoom in and out of the scene.
3	Pan	To pan the camera.
4	Orbit/Roll	To rotate the camera. Click its down arrow to switch to **Rotate** or **Roll** mode.
5	Camera View	To switch the camera to different view, click the down arrow and choose from Front, Right, Top, Left, Bottom, Back, Face or All.
6	Center	Click this button so the camera snaps to view the selected object in the current project.
7	Walk/Fly	Switch the camera into **Walk** or **Fly** mode. You can then move the camera in game-like fashion by using the **W.A.S.D.**, or other specified keys on your keyboard. If you want to switch back to the normal camera mode, press **ESC** key.

Manipulation Tools



1	Select Object	Toggles the **Select** mode. You may then directly pick the object in the 3D viewer. You may also drag a rectangle around multiple objects to select them in this **Mode**.
2	Move Object	To switch to **Move** mode. You may then directly move the selected object in the 3D viewer instead of manually entering the values on the **Modify** page. **Left Mouse Button**: Move object. **Mouse Roller**: Uplift/Downshift object. **Right Mouse Button**: Rotate object.
3	Rotate Object	To switch to **Rotate** mode. You may then directly rotate the selected object in the 3D viewer instead of manually entering the values on the **Modify** page. **Left Mouse Button**: Rotate by Z axis. **Right Mouse Button**: Rotate by X axis. **Both Mouse Buttons**: Rotate by Y axis.
4	Scale Object	To switch to **Scale** mode. You may then directly scale the selected object in the 3D viewer instead of manually entering the values on the **Modify** page. **Left Mouse Button**: Uniform scale object. **Right Mouse Button**: Scale object along Z axis. **Both Mouse Buttons**: Scale object along X - Y axis.

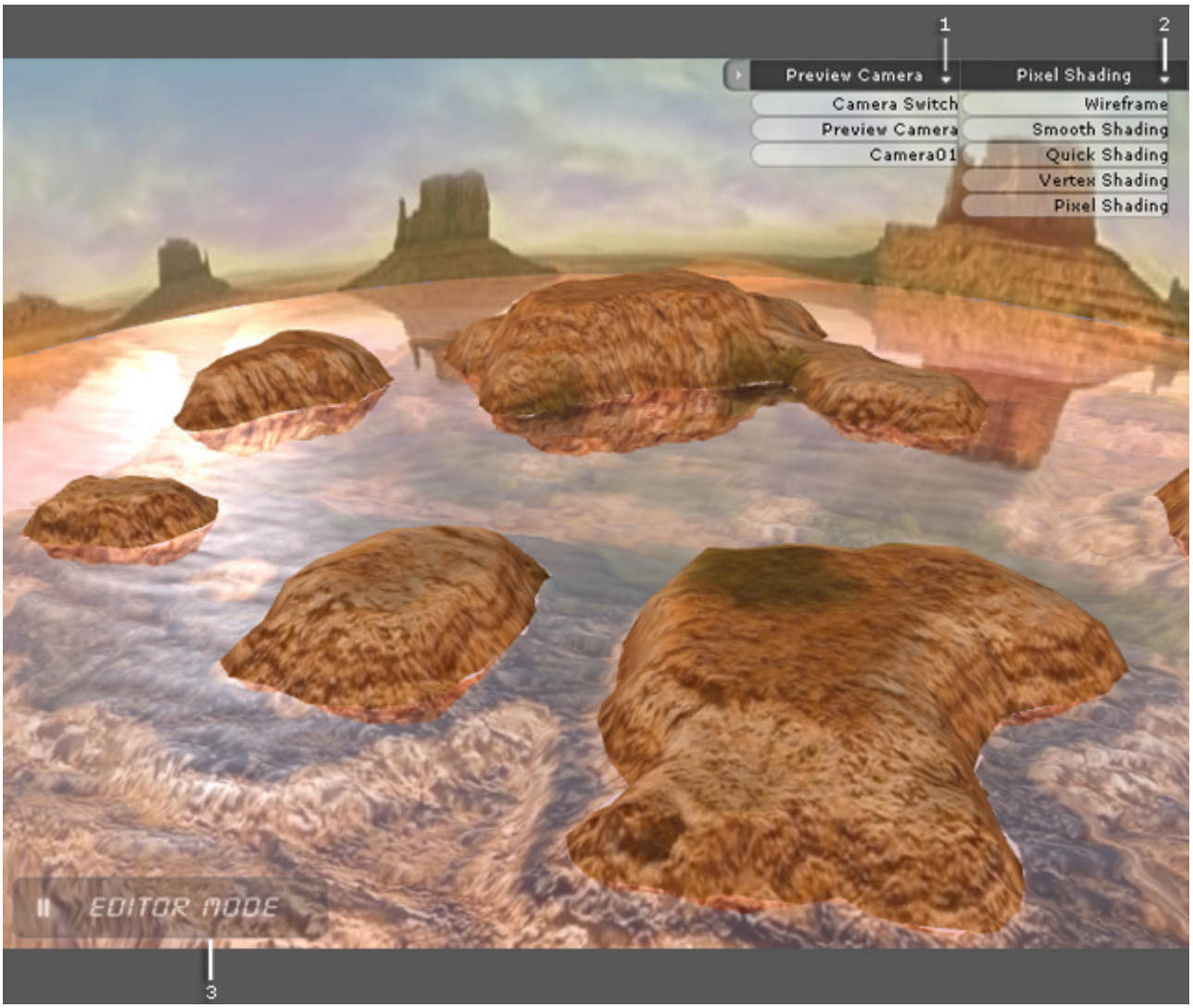
In **Move Object**, **Rotate Object** or **Scale Object** modes, you may even:
Alt - Left Mouse Button: To Pan the camera.
Alt - Right Mouse Button: To Rotate the camera.
Alt - Both Mouse Buttons: To Zoom the Camera.

5	Align to Terrain	Click this button so the selected objects will always be moved along the terrain, if present. And if you switch to **Snap to Terrain** or **Follow Terrain** modes, movement is constrained to the ground and will follow the contours of the terrain as you move. You must select **Off** to cancel the constrain.

Preview and Full Screen

1	Preview	To render the current view of the 3D viewer into an image. You may then save this image afterwards.
2	Full Screen	To enter full screen mode.

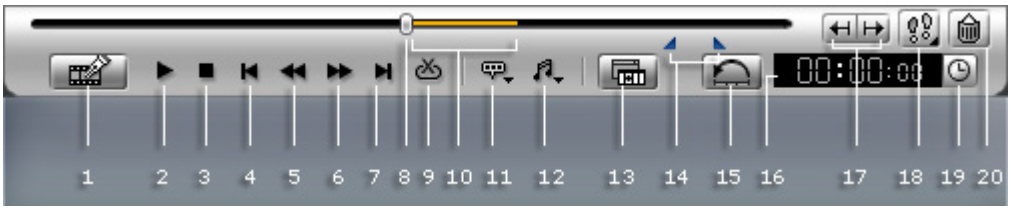
3D Real-time Viewer (Preview Window)



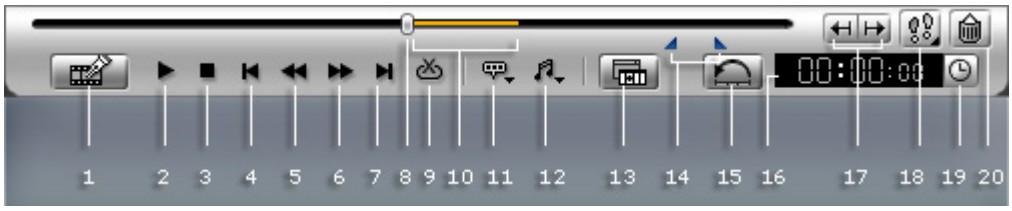
1	Camera List	Click this drop down list to switch to different camera view.
2	Shading List	To set the 3D Viewer to a different rendering mode.
3	Mode Information	This tab shows the current mode, **Editor Mode** or **Director Mode**.

Play Bar

The play bar is used to control the real-time playback of **iClone** scenes.

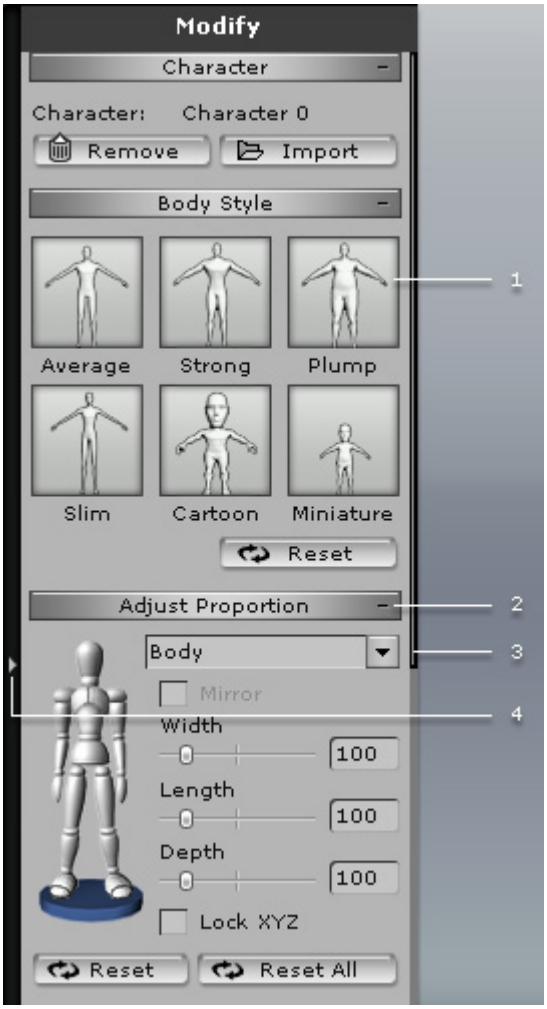


1	Editor/Director Mode	To toggle between **Editor Mode** and **Director Mode**.
2	Play	To play back current project.
3	Stop	To stop playing.
4	Jump to Start Frame	To jump to the cue in frame of the playback range or the start frame of the whole project.
5	Previous Frame	To jump one frame backward.
6	Next Frame	To jump one frame forward.
7	Jump to End Frame	To jump to the cue out frame of the playback range or the end frame of the whole project.
8	Play Head	Shows the current frame of the project. You may also drag it to any desired frame quickly.
9	Loop On/Off	To toggle playback loop on/off.
10	Action Segment	Highlights the existing or recorded clips of animation.
11	Vocal Volume	To adjust the volume of the sound effect.
12	Music Volume	To adjust the volume of the background music.



13	Show Timeline	To evoke the **Timeline**.
14	Cue In/Out of Playback/Export Range	Drag this mark to set the cue in/out frame for playback or exporting.
15	Reset Project Animation	Click this to **Reset** all recorded animation data for this session.
16	Current Time	To show the current time/frame.
17	Action Tabs: Next & Previous	To move the **Play Head** to the beginning or the end of each **Action Segment**.
18	Action Track Selector	To switch to another track in the list.
19	Time Setting Panel	Use the **Time Setting** panel to set the total length of the current project and the time unit to be shown in the **Current Time** box.
20	Delete	To delete the current **Action Segment**.

Modify Page

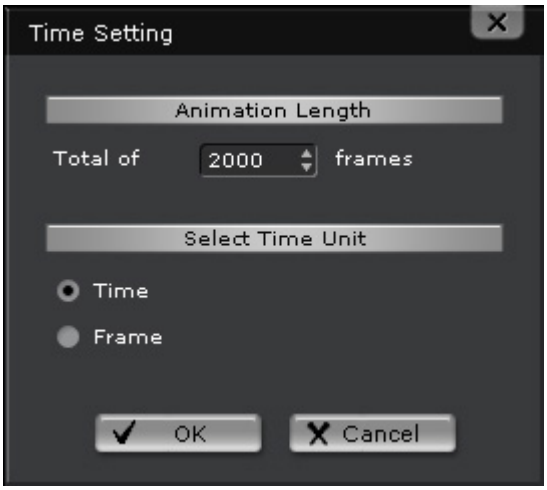


1	The modify page is contained in the panel on the right of the screen and is used for adjusting the different parameters associated with the objects in the current project.
2	You may expand or collapse each section by clicking the **+/-** symbol.
3	There is a scroll bar at the right of the panel. Click and hold the mouse down any where on it and drag up/down to navigate the whole panel when it is longer than one page. Alternatively, you may click on the empty space of the panel then drag to scroll it up/down.
4	You may click the triangle in the middle of the left border to show/hide the whole panel.

Time Setting Panel

The **Time Setting** panel enables you to adjust the **Length** and **Time Unit** of the project. Click the clock button next to the current time counter below the 3D view port window to open the Time Setting Panel.

This button opens the **Time Setting** dialog box for further adjustment.



- **Animation Length**: Shows the total length of the project in frame count. The default length for each project is 2000 frames and the maximum number is 18000.
- **Select Time Unit:** You may decide to display the time unit in either frame or time format**.**

Tip:

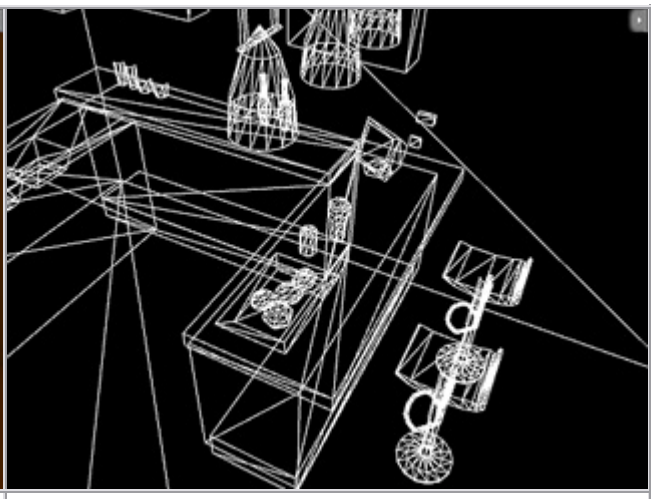
- If you intend to set desired project length as the default length, please switch to **Project**/**Modify** page and click **Set Default** button after you change the **Animation Length** in this panel.

Shading Methods of 3D Viewer (Preview Window)

3D viewer provides several shading methods when you are using **iClone**. It may reduce the workload of your system resource for editing or recording. Each method supports various mapping methods or effects individually. You may find them in the **Shading List** on the top of the 3D viewer.

Wireframe

It displays all the objects in Wireframe, which increase the performance most of your system.

	
Pixel Shading Mode	Wireframe Mode

Smooth, Quick, Vertex and Pixel Shading

	Smooth Shading	Quick Shading	Vertex Shading	Pixel Shading
Diffuse Map		Support	Support	Support
Opacity Map		Support	Support	Support
Bump/Normal Map				Support
Specular Map			Support	Support
Glow Map			Support	Support
Reflection Map			Support	Support
Reflection Effect			Support	Support
Refraction			Support	Support
Diffuse Color	Support	Support	Support	Support
Ambient Color	Support	Support	Support	Support
Specular Color	Support	Support	Support	Support
Opacity		Support	Support	Support
Self-Illumination		Support	Support	Support
Specular	Support	Support	Support	Support
Glossiness	Support	Support	Support	Support
2 - Sided	Support	Support	Support	Support
Tree			Support	Support
Grass			Support	Support
Water			Support	Support
Channel UV Offset and Tiling			Support	Support
Animated Texture			Support	Support
Pixel Lighting				Support
Self-cast Shadow			Support	Support
DOF			Support	Support

Operating with Camera and Transform Tools

For the ease of use and convenience, **iClone** is designed with the same mouse controls for both camera operation and object transformation. This method of control allows you to edit scenes with one hand on the mouse and the other on the keyboard, saving you from moving your hand back and forth among the keys.

		Icons	Mouse Operations (Buttons pressed and drag)	Hotkeys
Camera Tools	**Zoom In/Out**		• Roll Mouse Wheel • Both Mouse Buttons	Z
	Pan		Left Mouse Button	X
	Rotate		Right Mouse Button	C
	Focus to Selected - Perspective view		Select the object and press the hotkey.	Home A: Left S: Right D: Back F: Front G: Top H: Bottom J: Face K: Long
	Focus to Selected		Select the object and press the hotkey.	
	Walk/Fly Camera		• Toggle **Walk**/**Fly** mode to navigate your selected camera view to specific spot. • Press **+** or **-** to **Accelerate** or **Decelerate** the movement of the camera.	N/M

		Icons	Mouse Operations (Buttons pressed and drag)	Hotkeys
Transform Tools	**Select**		• In **Transform Mode**, single click on the target object. • In **Camera Mode**, double-click to select the target object. • In **Select Mode**, hold down the **Ctrl** key and single click on objects may **Multi-select** them. • Alternatively, you may drag a box on the 3D viewer to enclose desired objects.	Q
	Move		• **Along X Axis**: Left Mouse Button + Cursor Moves Left/Right • **Along Y Axis**: Left Mouse Button + Cursor Moves Up/Down • **Along Z Axis**: Roll Mouse Wheel	W
	Rotate		**Rotate Along Z Axis**: Press Left Mouse Button and drag. **Rotate Along Y Axis**: Press Right Mouse Button and drag. **Rotate Along X Axis**: Press Both Mouse Buttons and drag.	E
	Scale		**Uniform Scale**: Press Left Mouse Button and Drag. **Z Scale**: Press Right Mouse Button and Drag. **XY Scale**: Press Both Mouse Buttons and Drag.	R

Note:

Throughout all the documents, we assume that you are using your right hand to control your mouse. Therefore, clicking the **Left Mouse Button** means click the **A** button as shown in the illustration, while **Right Mouse Button** means the **B** button.

- **Quick Switch**: Press the **~** key to switch between **Camera Mode** and **Transform Mode**.
- **Temp Switch**: Hold down the ALT key will switch to the **Pan** of the **Camera Mode** temporarily.
- **Accelerating**: Hold the SHIFT key to 10X the operation unit.
- **Ctrl + G**: Turn on/off the Grid for 3D space reference.
- **Snap to Terrain**: Locates at the top toolbar. Press it and the Z movement will be locked to the terrain as you manipulate the camera or objects.
- **Follow Terrain**: Locates at the top toolbar. Press it and the Z movement will be locked to the terrain as you manipulate the camera or objects. Besides, the angle of the camera or objects also aligns to the face normals of the terrain.

Picking and the Right-click Menu

Picking

- **Editor Mode**:
    - You are allowed to pick almost every object directly in the 3D viewer window except the **Grass**, the **Sky**, the **Terrain** and the **Particle Emitter**.
    - You may use the **Transform Tools** above the 3D viewer to **Move**/**Rotate**/**Scale** objects.
- **Director Mode**:
    - You can only pick the **Actors** and the **iProps**.
    - The **Transform Tools** are disabled in this mode.

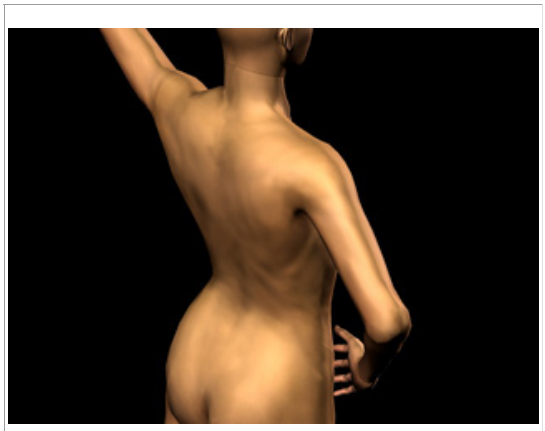
Right-click Menu

- **Editor Mode**: Click the right mouse button on the objects to pop up the **Right-click Menu** in which various operation functions relevant to the object can be found.
- **Director Mode**: Click the right mouse button on the **Actor** or **iProp** to pop open the **Right-click Menu** in which only the **Move**, **Perform**, **Operate** and their sub entries exist.

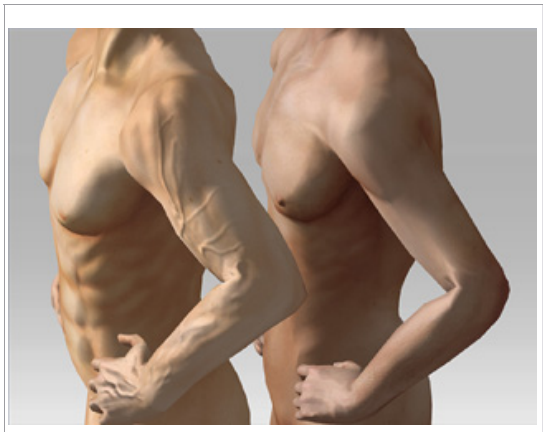
Actor

Enhancement of G3

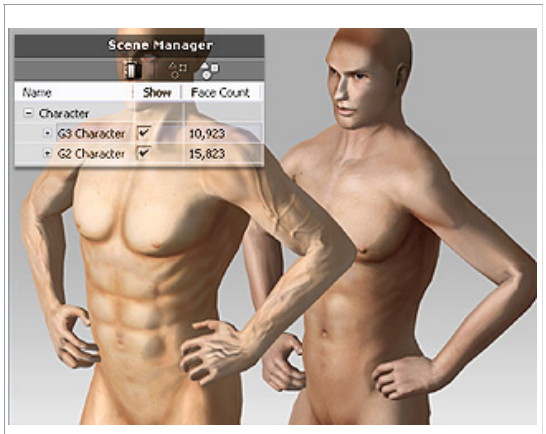
Bring your movies to life with the new enhanced G3 actors:



- Better Body Shape: The G3 actor now has a much smoother outline to the body which is retained even when the actor is moving with exaggerated motions.



- Normal Map: With the normal map, each G3 actor now has more skin detail without increasing the face count or affecting performance.



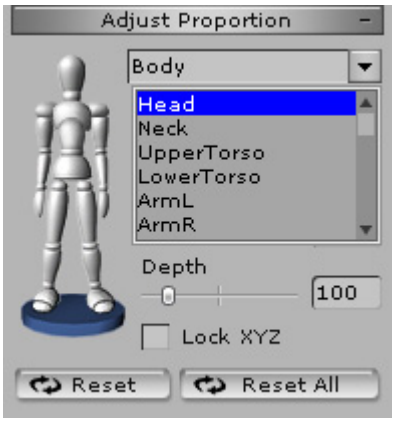
- Lower Face Count: The G3 actor actually possesses a much more realistic look while amazingly the face count is lower than G2 actors.
- Better Skin Texture: The skin texture of G3 actors is designed to contain more defined skin detail, ideal for those close-up scenes.

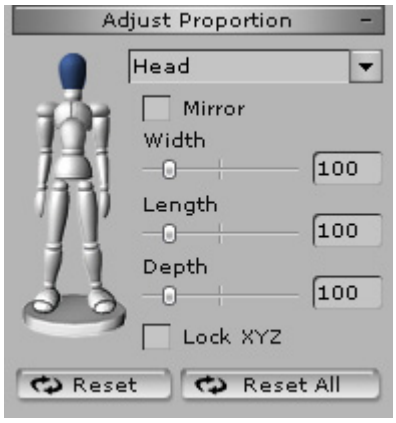
Adjust Sub Nodes of Actors

iClone allows you to adjust the size, length and thickness of each sub node (parts of the body) of the actors. You may adjust the sub nodes of each finger as well.

Adjust Proportion

1. Select the sub node of the actor in the drop-down list. You may also click directly on the nodes of the dummy.





2. Adjust the **Width**, **Length**, or **Depth** to change the proportion of the node.

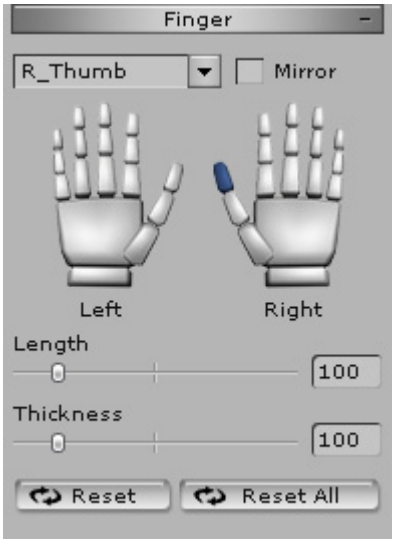
		
Default Character	Slim Model	Strong Woman

Note:

- If you plan to adjust the size of the actor, in addition to the six preset templates in the **Body Style** section, you may select the **Body** part in the drop down list, or use the dummy image, and then adjust the **Size** value.
- If you want to adjust the node of the limbs of both sides at the same time, check the **Mirror** box and repeat step 1 and step 2 to modify the node.
- The **Width**, **Length**, **Depth** settings can be locked according to the node you picked.
- If you are using a **None-Human** actor, you may not utilize the **Mirror** feature; the **Length** and **Width** values are switched.

Adjust Finger

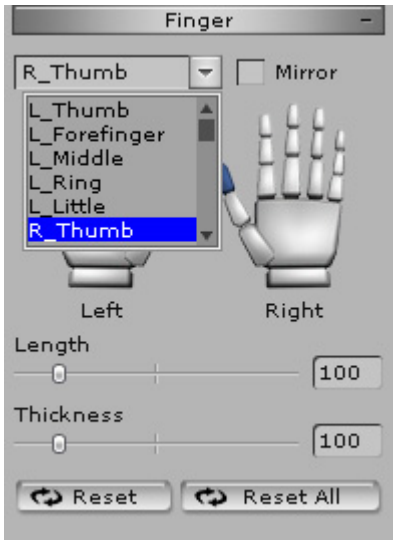
1. Select the sub node of the finger for right/left hand in the drop-down list.

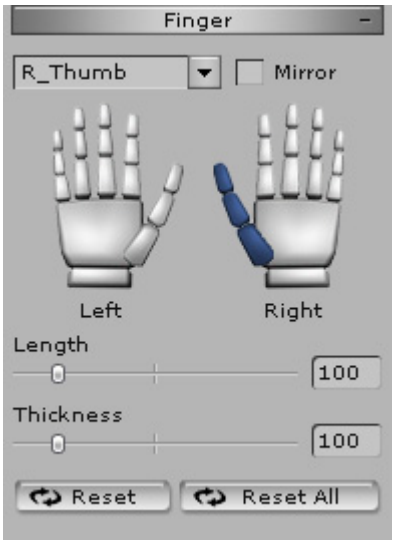


2. Adjust the **Length** or **Thickness** to change the look of the target finger.

Note:

- To select the whole finger, you need to select it in the drop down list first.





- If you want to adjust the node of the fingers, or the whole finger, of both hands at the same time, check the **Mirror** box and repeat step 1 and step 2 to modify.

CloneCloth - Creating Your Own Fashion Designs and Collections (G3 and G2 Actors Only)

iClone provides you an easy and powerful method to create a custom actor wardrobe. Using an image-editor application installed on your system, you can be a fashion designer too.

Please note that there are two categories of G3 and G2 actors. One is with only a single layer of skin, like the G1 actors. The other is more realistic since the actors are designed to be garmented with clothes on them, which means there are two layers (the body layer and the cloth layer) for each avatar. Simply modify the opacity texture of the upper body and you will see the differences. CloneCloth is designed to work only with G3 and G2 avatars that possess an outer garment 2nd layer mesh.

Single Layer

Double Layers (body & cloth)

Note:

- The **Upper Body**, **Lower Body**, and **Shoes** for the G3, G2 and G1 are not interchangeable due to the different skeletal systems used by each actor body style.
- For purchasing more actors, please visit our website: http://www.reallusion.com/templates/linkcount/linkcount.asp?lid=iceus59 .

Modify CloneCloth or Single Mesh G3 and G2 Actors

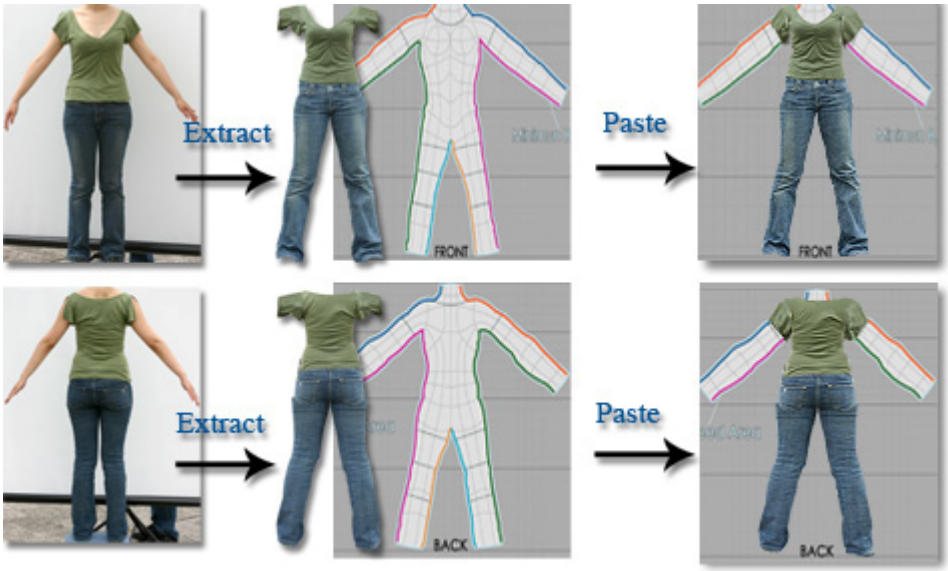
If you want to design clothing for the upper body of your actor, please follow the steps:

1. Apply the actor's upper/lower body in the **Template** library. 

2. Go to **Modify** page, scroll down to the **Material & Texture Settings** section.

3. Press the **Launch** button of the **diffuse** map setting. It will open the diffuse for the cloth in the image-editing software.

4. Paint or edit the image in accordance with the body mesh. Remember to save it.



5. Press the **Launch** button of the **opacity** map setting. The opacity texture will be opened in the image-editing software in grayscale format.

6. Paint the part you want to cut off in black, white for clothing that will be seen or paint in gray to make the cloth semi-transparent. Save the texture image.

7. Save the image in your image editor and then click the **Update** button in iClone to apply the customized texture to your model.

8. You can click the **Save** button to save the texture of the cloth for further use or for packaging the texture map for a Texture Pack.

Modify Shoes (G3 and G2 Actors Only)

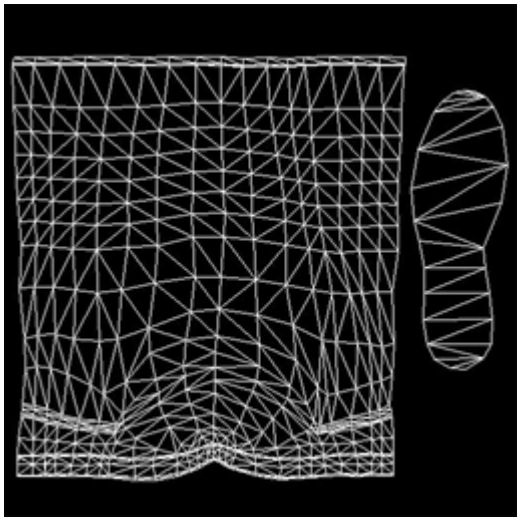
To create, apply and save G3 and G2 customized shoes, please follow the steps:

1. Apply the G3 and G2 actor's shoes.
2. Go to **Modify** page.
3. Press the **Launch** button of the diffuse map setting. It will open the diffuse texture map for the shoes in the default image-editing software.

4. Paint, edit and save the image in your image-editing software.

5. Click the **Update** button in iClone to change the diffuse texture map of the shoes.

6. Press the **Launch** button of the opacity map setting, then press the **UV Ref.** button to open the mesh image of the shoe. The opacity texture and the mesh will be opened in the image-editing software in grayscale format.



UV reference of the shoe

7. Paint the part you want to cut off in black, or paint in gray to make the shoe semi-transparent, in accordance with the mesh image. Save the opacity texture.

8. Click the **Update** button.

9. You can click the **Save** button to save the texture of the shoes for further use or packaging for Texture pack.

CloneCloth Tutorial

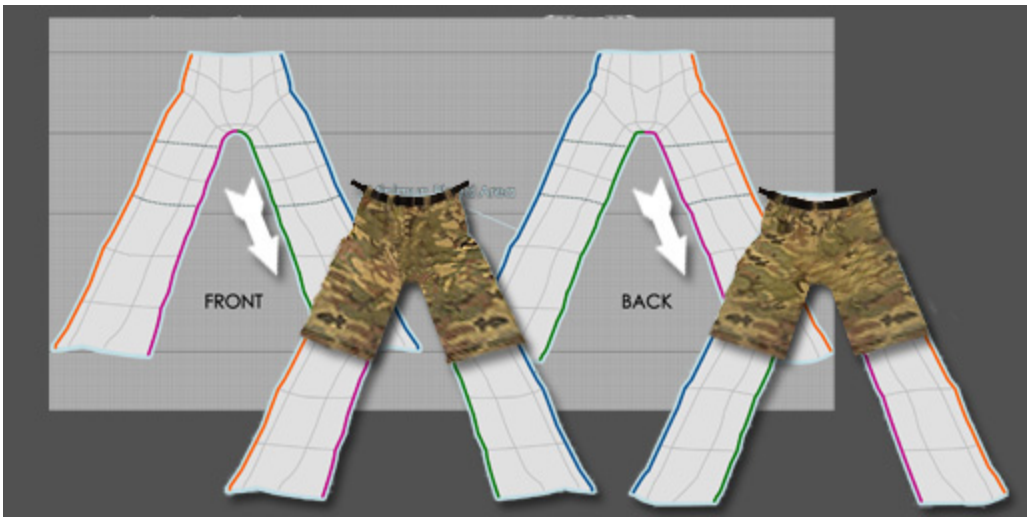
In this section, you will see some examples on how to create customized outfits.

You may generate limitless character CloneCloth fashions guided by your imagination.

1. Photograph your shirt and pants first.

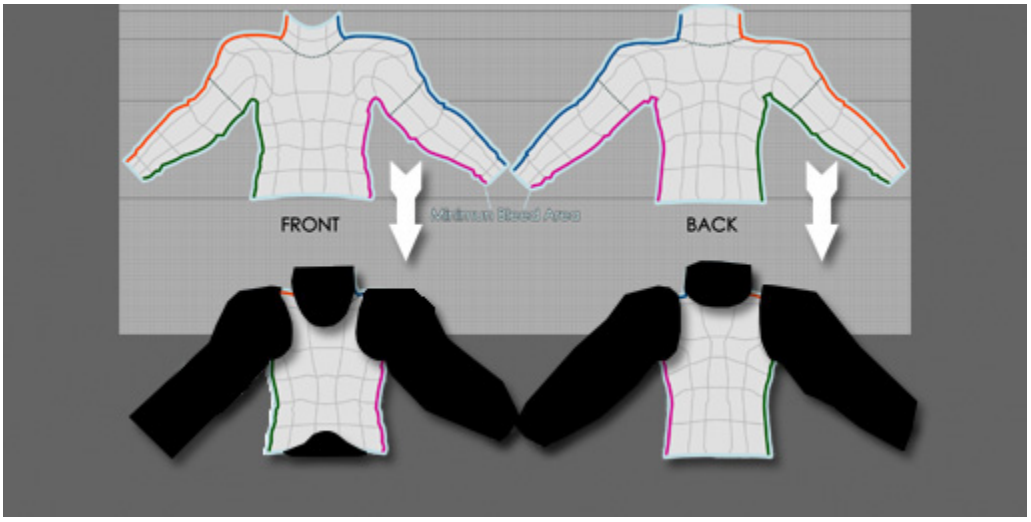
2. In the image editing software, paste your shirt and pants onto the diffuse image texture of your character. Update the texture in iClone.

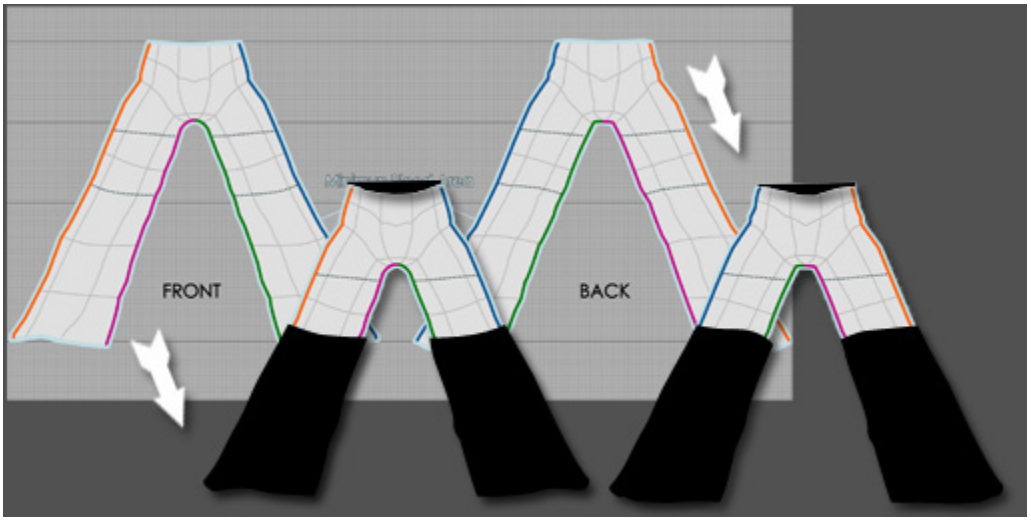
Upper body



Lower body

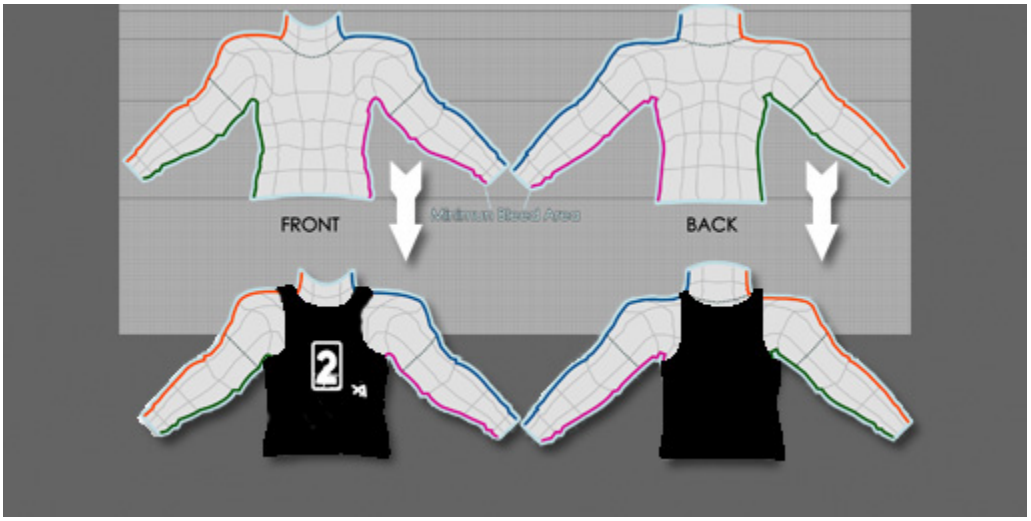
3. Now, edit the opacity to cut off the part in black just like you are cutting a real cloth.



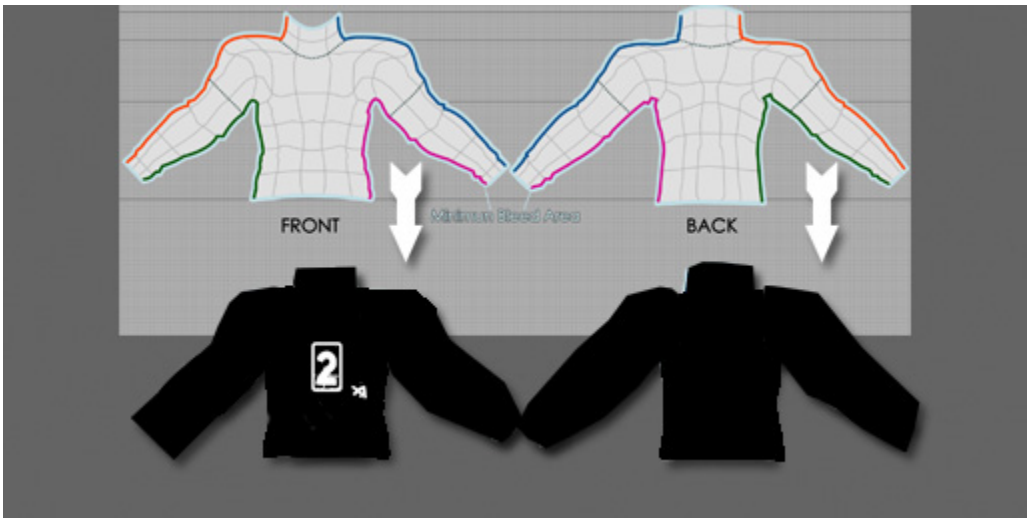


4. Save the result of each image and simply click the **Update** button and you will see the result of the outfit.

5. Click the **Launch** button of the **Bump** map setting, and draw wrinkles or the brand's tags on the outfit.



6. Use the glow map as seen in the following image, the brand on your cloth glows and attracts your audience's attention more!



7. Optionally, if you want to create a plastic wrapping or latex effect, you may use the **Reflect** map as well.

Tips:

- The **Minimum Bleed Area** in the UV reference image indicates you to fully overlap your cloth texture paint or image. This can prevent image-distortion at the side seam of the outfit.
- The edges of the same color contour lines will later be stitched together.

Edges with color contour lines

Stitched result

Actor - Look At

Instead of manually adjusting the head of an actor to look at a moving target, you may use this time saving feature instead.

Look At

1. Double click on the desired actor.
2. Go to the **Actor**/**Avatar**/**Modify** page. In the **Look At** section, click the **Pick Target** button.
3. In the 3D viewer, click on a target.

Note:

- You can have the actor **Look At** the target object over a certain period of time and then have it stop looking outside that time range.
- You may optionally select the sub node of the target by clicking on the button and select a desired node in the tree view.

	
The actor looks at the whole object	The actor looks at the sub-node (the front wheel)

Look At the Camera

If you want the actor to **Look At** a camera all the time, simply click **Look At Camera** button.

The actor rotates head and looks at the camera all the time even the camera moves away.

	
The actor looks at the camera	The camera moves away (the actor rotates head to keep looking at the camera)

Weight and Convergence

You may drag the **Look At Weight** slider to adjust the rotation weight of the eyes or the head.

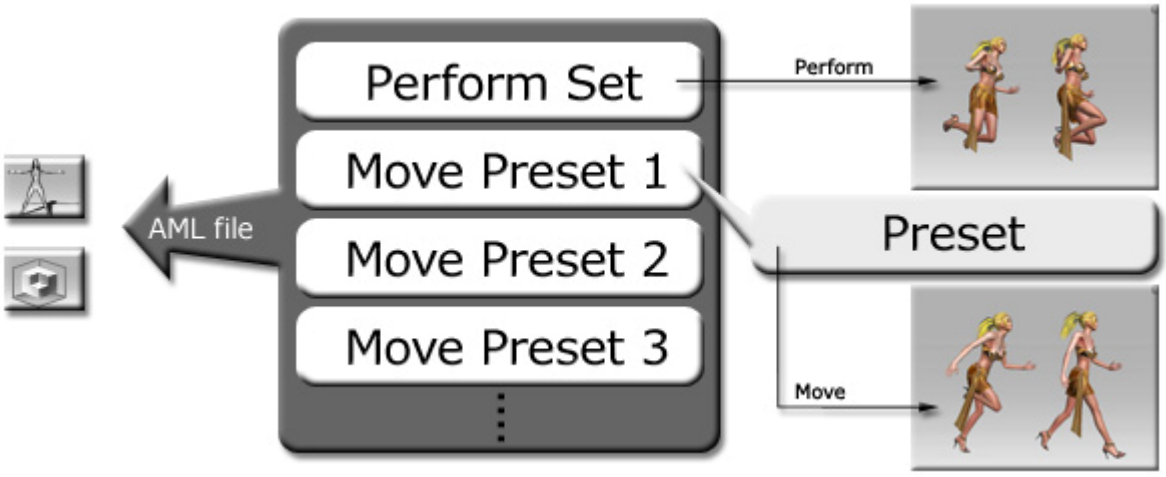
	
The slider near the **Head** end	The slider near the **Eyes** end

To adjust the **Eye Convergence**, drag the slider to the **Inward** or **Outward** side.

	
The slider near the **Outward** end	The slider near the **Inward** end

Behavior Switch

The term **Behavior Switch** means to change an **Actor Persona or iProps Action Behaviors**.

Diagram of the AML file		
		
Actor iProp	• The AML file is either embedded or imported to the actor or iProp. • One AML file contains only one set of **Perform** motions/animations. • Each AML file contains one or more presets of motion/animation clips for the **Move** command. • Press **X** key will toggle among the **WASD** animations of these presets, run, walk etc.	• You may use **Hotkeys** or right-click to direct the actor to act these motions.

- Basically, an **iClone** actor is embedded with several mode presets. In each preset, various **Motion Clips** for moving forward, backward, left, right or even idle movement are defined.
- The definition is saved in an AML file (Animation XML), you may export this file from one **iClone** actor and then apply it to another **iClone** actor.
- This feature applies to any **iProp** only if it is embedded with several **Action Clips**.
- In the **Director Mode**, only one preset with clips are listed in the **Right-click Menu**, and you may use **Hotkeys** to toggle these motion/animation clips.

  (In the **Editor Mode**, only one preset with clips can be shown in the **Right-click Menu**/**Perform** or **Move** for controlling the actor or the iProp.)
- The way to switch to another **Move** preset is pressing the **X** key anytime as you are recording. The whole set of the moving behavior corresponding to **WASD** will be replaced by another embedded preset.

- You can create your own **Motion/Animation Clips** presets by editing the AML file.
- The **Multiple Behavior** modes are defined in the AML file, which is called **Persona** for **Actors** or **DramaScript** for **iProps**.
- Please refer to http://www.iclonewiki.com for more information about creating and modifying **Persona**.

Persona

What is Persona

A **Persona** is the characteristics given to the actor so that the actor can animate in a unique style, e.g. a sexy dancer acts differently from a ninja warrior. The definition of the persona is stored in an **AML** file (Action XML), which defines the actor's multiple idle animations, keyboard moving behaviors, and special perform actions. One **Persona** file may include several sets of movement behaviors. Use **Behavior Mode Switch** (hotkey X/Z, next/previous mode) to trigger different animation sets, such as walk mode, run mode, or even a custom defined fly mode. Animation defined in the **Persona** can be either triggered by hotkey or right-click menu.

Export and Import Persona

You may export the persona of a specific actor, modify the content of the file and apply it to the original or another actor.

To export a persona, you may:

- Right click on the actor and select **Persona**/**Export Persona**.
- Alternatively, you may go to **Actor**/**Persona**/**Modify** page and click **Export Persona** button.

What does Persona do

In the AML file, codes and index tables are contained to populate different animation files (called iMotion files) for the target actor. Basically, you can have your actor possessing unlimited animations. An **iClone** actor is embedded with several mode presets for **WASD** keyboard movement, you can use **X** to toggle **WALK** and **RUN** mode for moving a character. Even if you don't command the actor to act, the actor acts the **Idle Motion** embedded in the **Persona**.

When is Persona Available

You can toggle the **Director Mode** to activate the **Persona** for actors. In the **Director Mode**, you may direct actors to move or act and record these motions for further tuning. It is a game-like method, which you use **W**, **A**, **S**, **D or X** or some other previously specified keys to command your selected actors to do different actions.

Please refer to http://www.iclonewiki.com for more information about creating and modifying **Persona**.

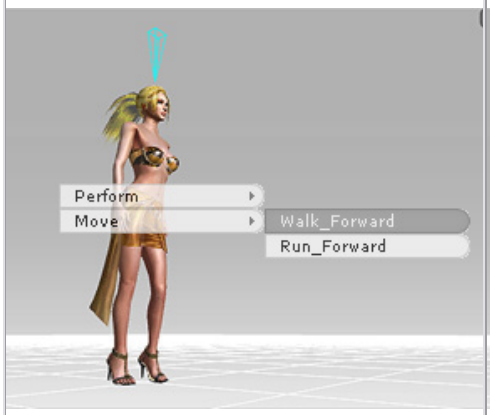
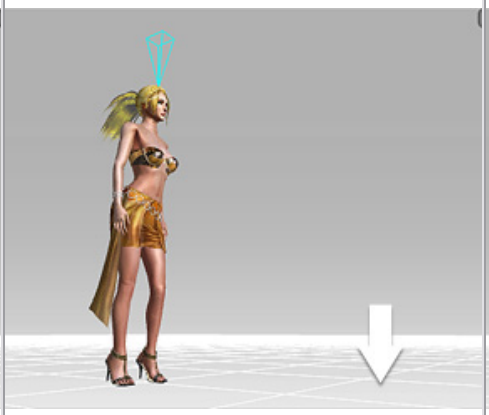
Actor and the Right Menu

Once you load an **AML** file to an actor, a preset of motion clips are assigned to this actor. You will find the names of these clips in the **Right-Click Menu**. Select the desired clip name and the actor will then start to perform the content of the motion clip.

Director Mode - Move

Since the **Director Mode** presents you with an easy to use **Game-like** control mode, there are only few commands in the **Right-Click Menu**.

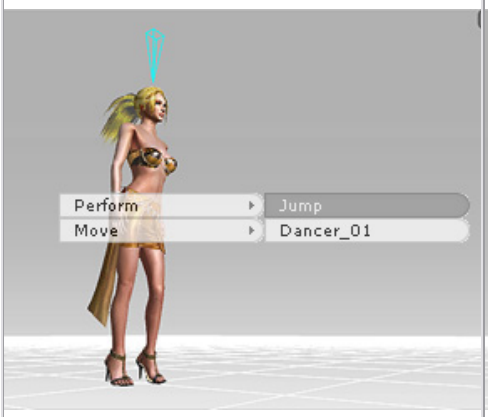
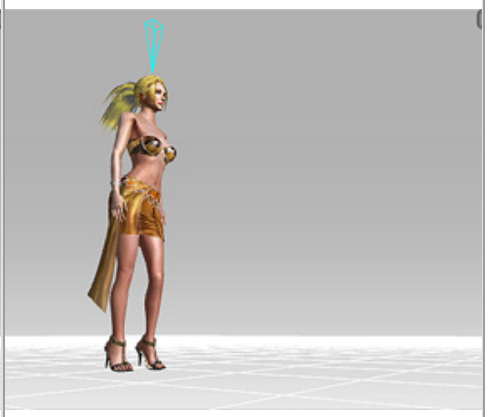
1. Switch to the **Director Mode**.
2. Right click on the desired actor to animate.
3. You may select the sub-items in **Move** to command the actor to move with specific motions.
4. Click on the destination spot to which you desired the actor to move to.

		
Select **Move**/**Walk_Forward**.	Click on the destination spot.	The actor walks to the spot automatically.

Director Mode - Perform

1. Select the sub-items in **Perform** to command the actor to act motions other than walk or run.

2. If the actor is in **Moving** process, this will force the actor to perform the motion specified and then finish the rest of the **Moving** phase.

		
Select **Perform**/**Jump**.	The actor performs instantly.	The actor retrieves the pose or motion before the **Perform** command was used.

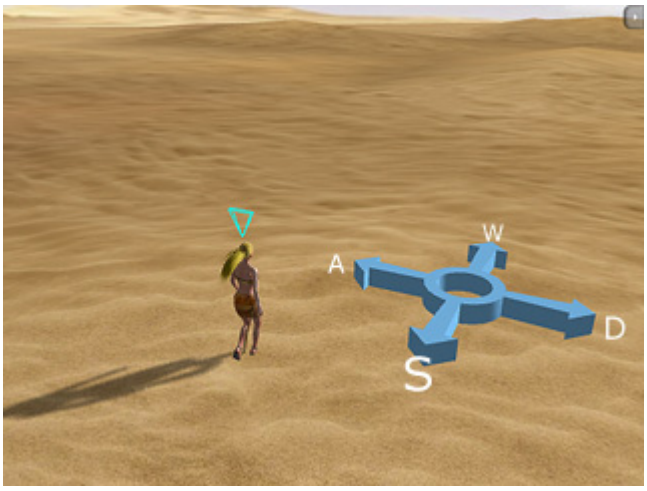
Please refer to http://www.iclonewiki.com for more information about creating and modifying **Persona**.

Two Methods to Direct the Actor

In the **Director Mode**, you have two ways to direct the virtual actor in **iClone** like playing games.

Hotkey (Keyboard Control)

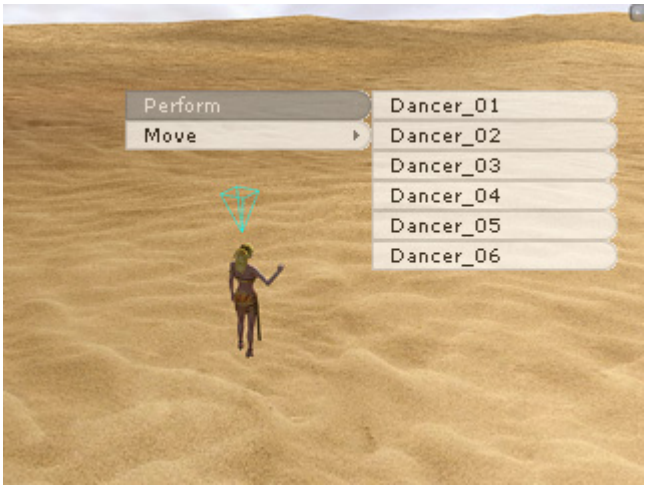
You may use the **WASD** keys to move your actor just like you would play a computer game.



- **W**: Move Forward
  S: Move Backward
  A: Turn Left
  D: Turn Right
  X: Toggle between **Walk**/**Run** modes for moving.
- While holding **W** or **S** key, press **A** or **D** key to turn while walking.
- **Shift + A**: Slide to the Left
  Shift + D: Slide to the Right
- You may use the **Number** keys (1, 2, 3...) to start the actor's preset animations.

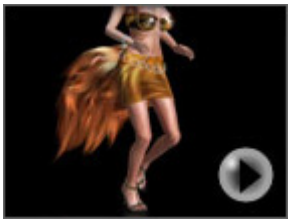
Mouse and Menu (Mouse Control)

- **Ctrl + Click Left Mouse Button on the ground** to set the target location for the actor to walk to.
- **Ctrl + Double Click Left Mouse Button on the ground** to set the target location for the character to run to.
- **Ctrl + Click Left Mouse Button on the target object** to trigger the **default action**. e.g. Ctrl + click on a car, the currently selected actor gets into the car.
- Click the **Right Mouse Button** on the target actor to bring up the list of actions available for that character.



Bouncing Body Parts (iClone 3.1)

iClone simulates the natural gravity movement of female body with spring effects. Please refer to the **Spring Props** section for description on parameter tuning. Click the thumbnails below to view demo videos.

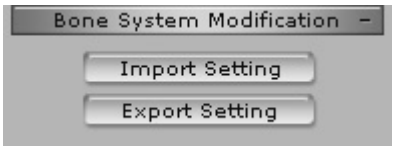



Turn On Bouncing Body Parts for G2 and G3 Characters

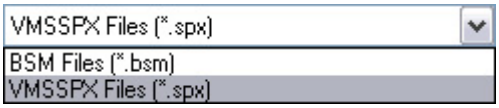
For G2 and G3 female actors without prior setting of bouncing effect, you may turn on this effect through the following process.

1. Select the G2 or G3 character (female only).

2. Go to the **Avatar**/**Modify** page and scroll down to the bottom. Click **Import Setting** button in the **Bone System Modification** section.



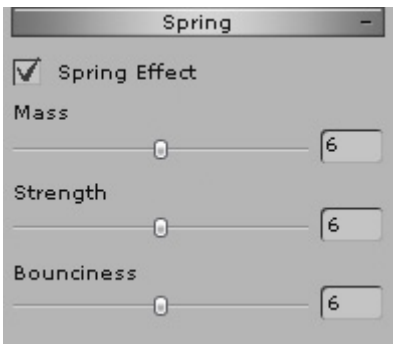
3. Switch the file extension to VMSSPX files (*.spx).



Select either **Soft-Breast.spx** or **Mild_Soft.spx** and click **Open** button. (The .spx files are located in C:\\Program Files\Reallusion\iClone 3\Template\iClone Template\Avatar Setting)

After the target character is assigned with the spring settings. You may turn on the **Spring Effect** and modify parameters to create your custom effects.

Note:



- To enable the real-time rendering of spring effect, please turn on the **Flex/Spring FPS Sync** option in the **Preference** panel.
- Turning on **Flex/Spring FPS Sync** option may increase graphics process loading, you may check it off to keep the optimal rendering speed.
- The **Flex/Spring FPS Sync** feature affects only to the 3D viewer. If you export project with spring props, **iClone** always renders with **Flex/Spring FPS Sync** feature on even if you check this feature off from the **Preference** panel.

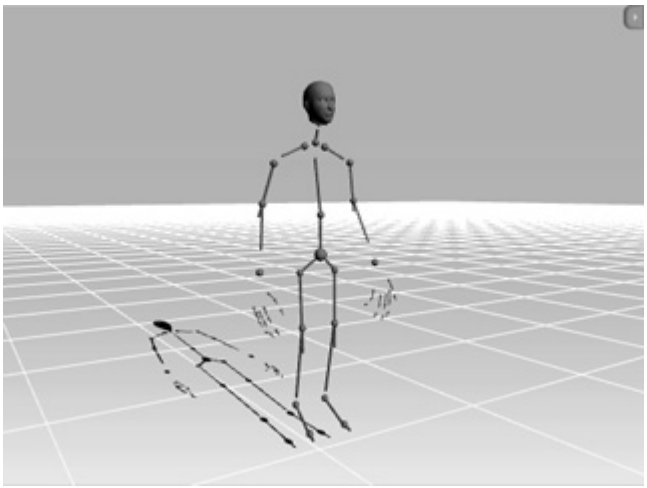
CloneBone (iClone 3.1)

CloneBone is an universal human bone which users can create any creature by attaching props as body parts. Since **CloneBone** is designed with the standard human bone structure, any **CloneBone** actor can share standard human motion data, or do motion editing in **iClone 3.1**. Once you attach a prop to the selected bone segment, it turns into an accessory of the **CloneBone** actor. You may then save the whole actor as a custom **CloneBone** actor. Please view **CloneBone** download page for more information: http://www.reallusion.com/contentstore/csproduct.aspx?contentid=080808-2&MenuItem=ic_bonus&Type=Bonus

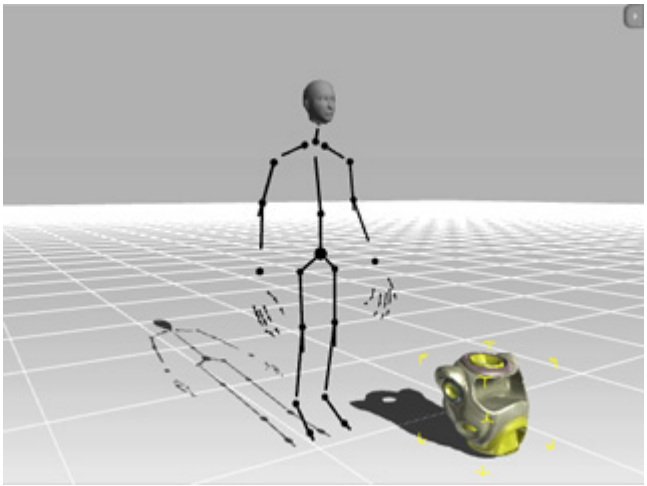
Creating CloneBone Actors (iClone 3.1)

If you plan to create a **CloneBone** actor, please follow the steps below:

1. Apply a **CloneBone** actor from the **Content Manager**.



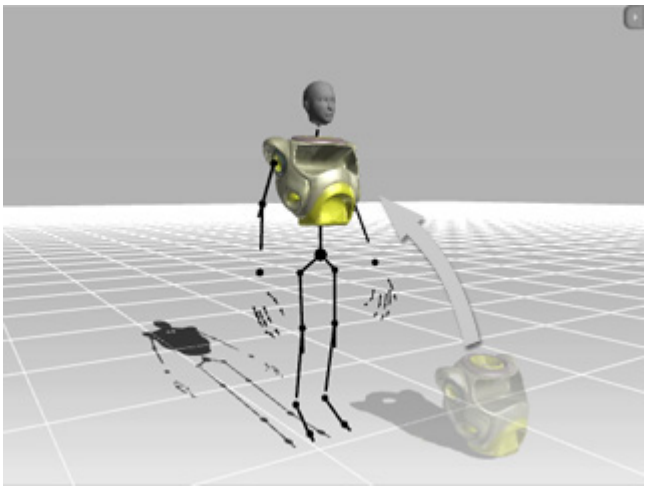
2. Prepare desired prop for one bone node.



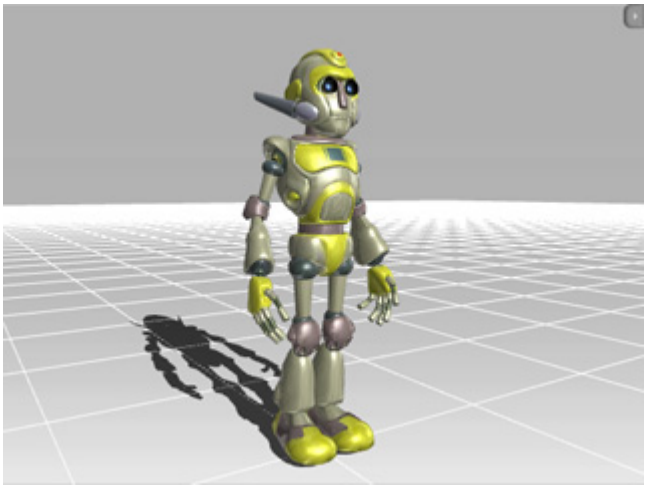
3. Right click on the selected prop and select **Attach**, then click on the target bone node.

4. Make sure you the prop is selected and go to **Accessories**/**Modify**/**Attach** section. Check **Move**, **Rotate** and **Scale** boxes. (This step ensures the prop to follow the motion of the bone)

5. Click the button, in the coming dialog box, make sure the target bone node is picked and check **Align to Parent** box. Click **OK** to confirm.



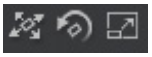
6. Repeat the steps to attach props piece by piece till the actor is completed.



Adjusting Body Parts of CloneBone Actors (iClone 3.1)

Adjusting after Attaching

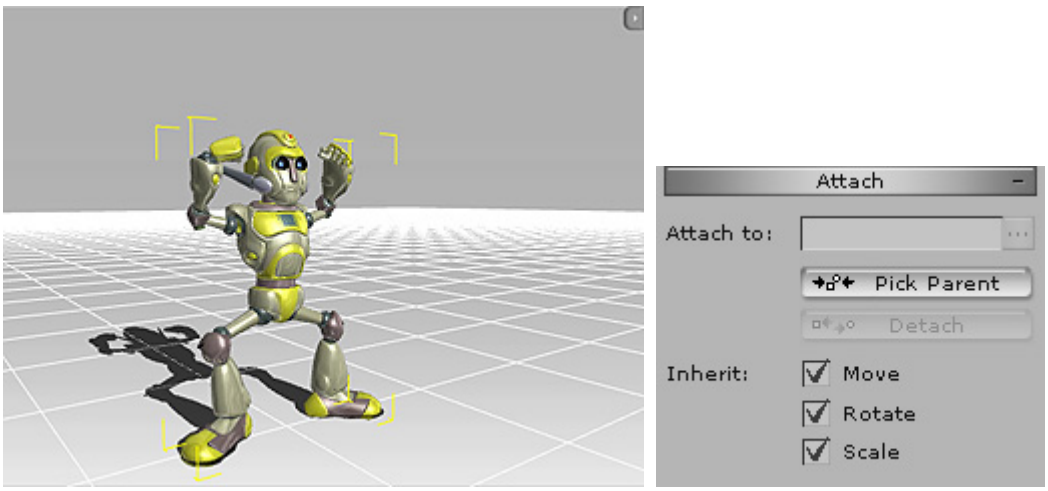
After you attach and align a prop to the **CloneBone**, the position, size or orientation may still in need of some adjustment:

1. Pick the desired part. (If you are using any camera tools, you may not select the specific piece of the part but the **CloneBone** only. Please switch to the  tool to click on or the  tools to double-click on the desired part to select it instead of picking the whole **CloneBone**.)
2. Go to the **Accessories**/**Modify** page and adjust the data in the **Transform** section to fine tune the part.

Adjusting Along the Body Proportion

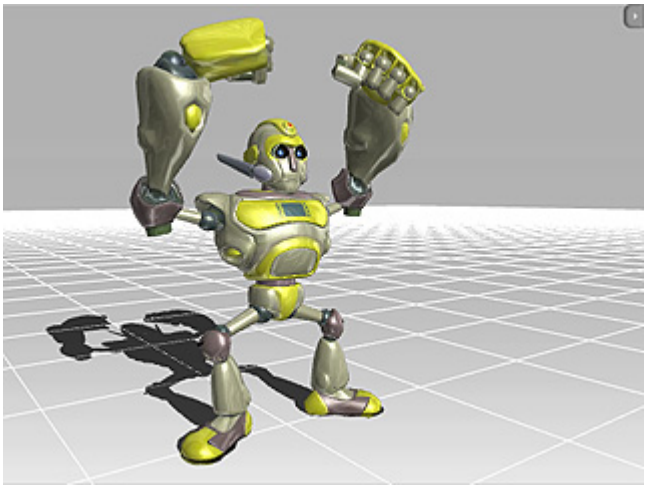
If you intend to have the part to be changed along with the **CloneBone**'s specific bone node, you may follow the steps:

1. Pick the actor and make sure the **Inherit** relationship (Move, Rotate, and Scale) between the target part and the bone node are all checked.



2. Go to **Actor**/**Avatar**/**Modify** page.

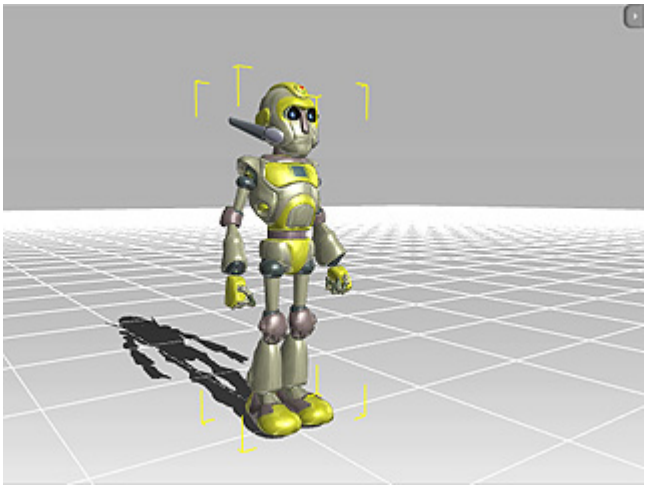
3. Change the body proportion in an ordinary manner. Please refer to the **How to Change the Proportion of Each Sub Node of an Actor** section for more information.



Motion Editing for CloneBone Actors (iClone 3.1)

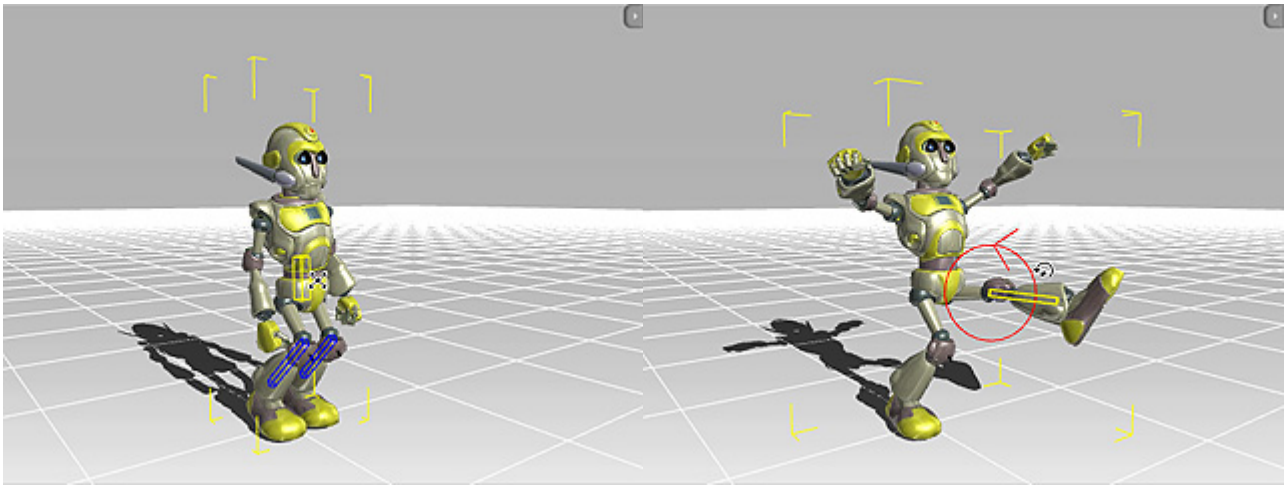
Since a **CloneBone** actor behaves totally the same as the standard actors, you may modify its motion the same as normal human actors.

1. Pick the **CloneBone** actor and right click on it.



2. Select **Motion Menu**/**Edit Motion** item in the right-click menu.

3. Select  or  tools to utilize the IK or FK method to modify the motion of the **CloneBone** actor.



Note:

- You may directly pick the specific bone node without being hindered by the props or accessories attached to it when you are using IK or FK methods.
- Please refer to the **The Concept of Motion Layer Editing** section for more information.

Head

Loading the Facial Image

If you choose to use a photograph to create the head of your actor, it should be a clear, well lit picture of a full head facing front, with nothing obscuring the facial features. It can be a BMP, JPG, or GIF image file.

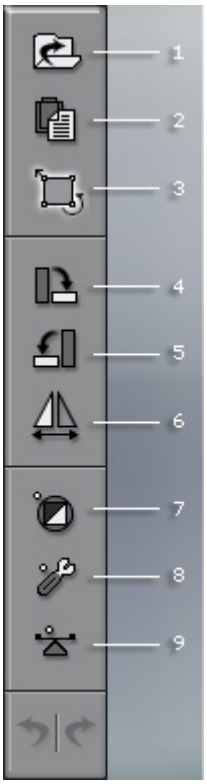
To load the image:

1. Click the **Head** tab.
2. Click the **Load Image** button to open the browser window.
3. Browse to the location of the facial photo and click the **Open** button to load the selected image file.
4. The facial image is loaded and can be adjusted and enhanced if necessary.

Photo Enhancement

The photo enhancement screen helps you adjust an imported facial image to make it ready for creating a head. After importing a head image, the photo enhancement screen is displayed.

Use the tools on the left side of the image processing menu to adjust the usable area, quality and color settings of the image as follows.



1	**Import an Image**	To open the browser window and select another face image.
2	**Paste the image from Clipboard**	To paste the image from Windows clipboard. This works only when an image has already been copied to the Clipboard.
3	**Cropping an image**	To select only a part of the image. This can be useful when you want to select a face from a group photo or remove a large background area which is not needed for the model.
4	**Rotating an image**	To rotate the image 90 degrees in the clockwise direction.
5	**Rotating an image**	To rotate the image 90 degrees in the counter clockwise direction.
6	**Mirroring an image**	To create a mirrored reflection of the image. This function is useful for images obtained from scanners or cameras.
7	**Adjusting color levels automatically**	To adjust the color levels of the image automatically. The program analyzes the color levels and adjusts the brightness, contrast, hue, and saturation levels to achieve optimum image quality.
8	**Adjusting color levels manually**	To adjust the brightness, contrast, hue, and saturation levels of the image manually. Use the sliders in the menu box to adjust the values or enter the numerical values for each parameter in the boxes next to the sliders.
9	**Adjusting color balance**	To adjust the color balance manually. Drag the sliders to adjust the Cyan - Red, Magenta - Green, and Yellow -Blue levels. The box next to each of the respective properties shows positive or negative values depending on the position of the slider, with the center being zero. Click Highlights to apply these color settings to emphasize the brighter areas. Click Midtones to apply these color settings to the entire image with average intensity. Click Shadows to apply these color settings to emphasize the darker areas in the image.

Importing Photo Image

Creating a face for your actor is simple. Click the **Head** tab on the top of the iClone user interface to begin the facial settings. You can select one of the pre-made face styles from the selection in the file manager pane, or you can create one from a photo of your own. If you decide to use a photo, be sure to use a clear, front-view photo with no hair hanging or blocking the view of the face. The mouth of the face in the picture should be closed and with a normal emotionless expression. You may crop and adjust the image using a photo editing application before you attempt to use it with **iClone**.

To import a face photo:

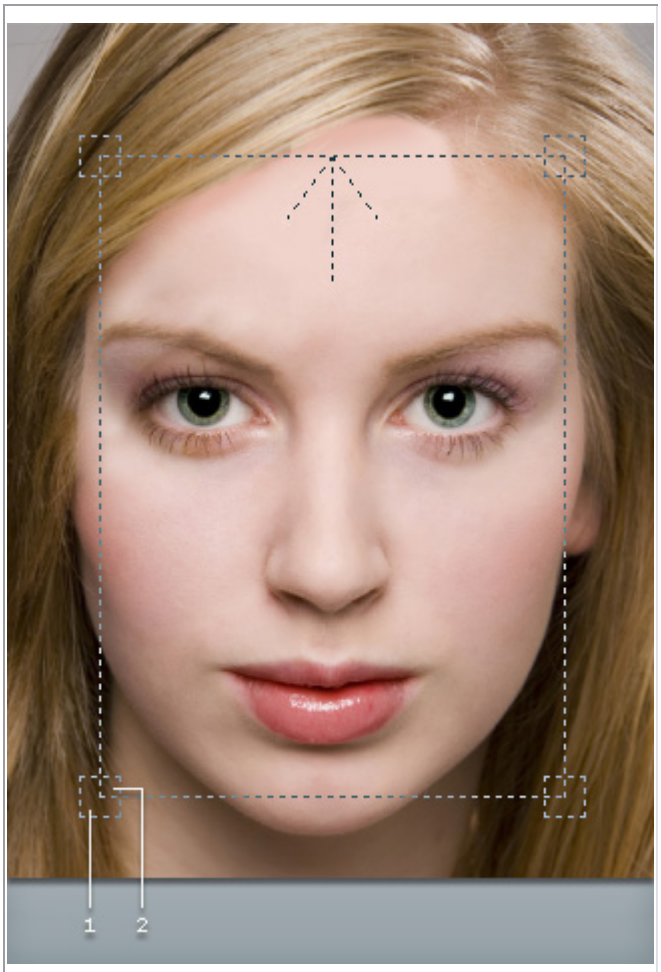
1. Click the **Load Image** button to open the browser window.
2. Browse to the folder where your face image file is saved using the **Look in** drop down menu.
3. Click the **Open** button to select the highlighted image file.
   The Import Photo Image Window opens.
4. Use the side toolbar to make any adjustments to the image as required.
5. Click the **Next** button to proceed to the next step.

Defining the Facial Angle

If the picture is not straight you will need to correctly define the angle of the image. Use the **Crop** tool to frame the outline of the face with the arrow pointing to the top of the head. Draw the rectangle around the face and drag the corners with the mouse to rotate it. Use the guide in the upper right corner to see how to properly correct a tilted head.

Note:

- Each corner of the rectangle has a small square round it. Click in the square, inside the rectangle to resize the rectangle. Click the square outside the rectangle to rotate it. Click and drag inside the rectangle to move it.
- Click and drag outside the rectangle to redraw it.



Click point 1 to rotate.

Click point 2 to resize.

When your face is properly framed with the rectangle, click the check mark button. Click the abort button to abort.

Tip:

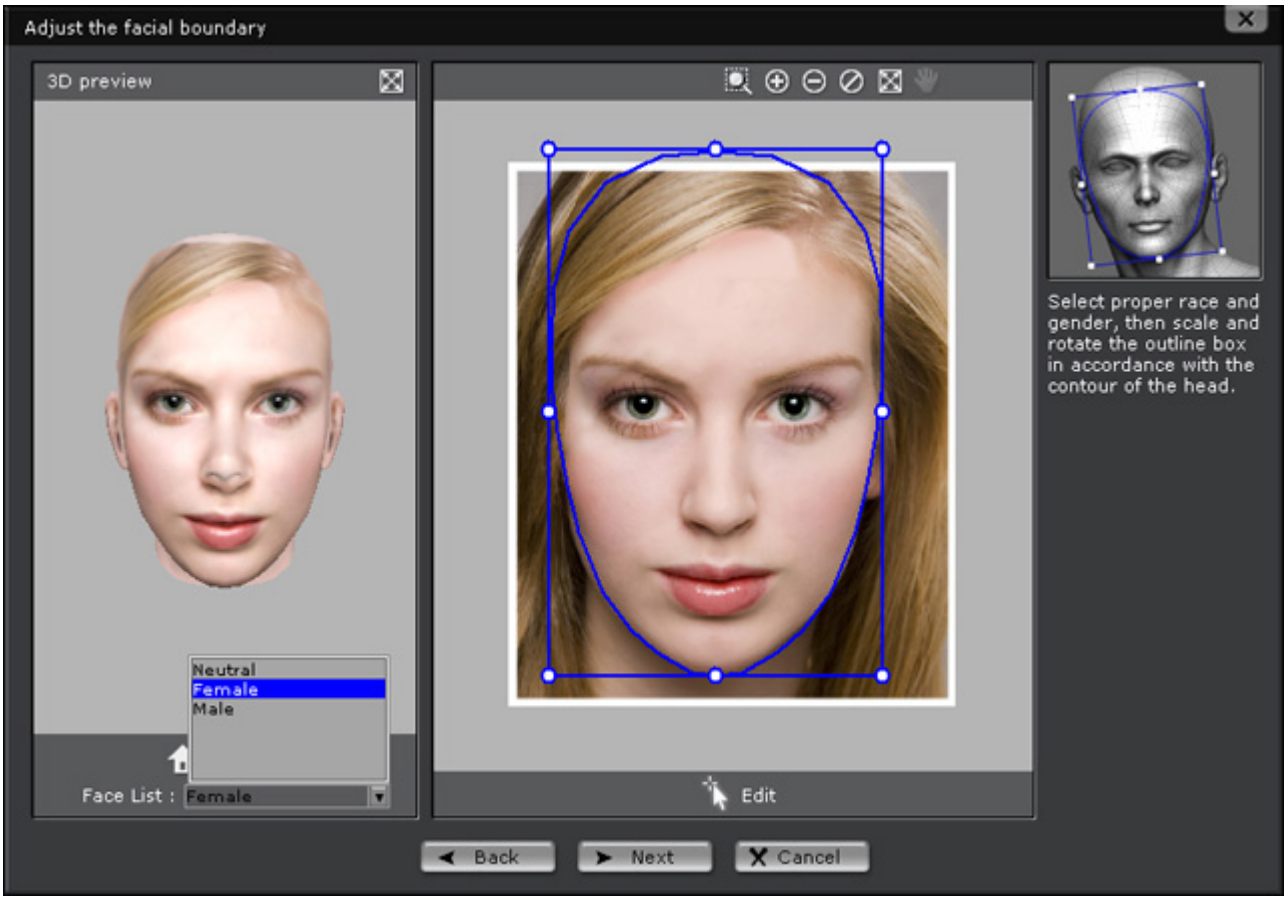
- Zooming during the fitting process is recommended to ensure a good fit for your facial image.

Use the buttons on the left-side toolbars to rotate or flip the image, or adjust the color balance or contrast settings.

Adjusting the Facial Boundary

When you import an image to use with **iClone**, you must define facial boundaries.

1. First, Use the drop-down menus below the 3D viewport to define the gender, race, and age of the face.



2. Then drag the facial boundary points to frame the oval face exactly.

   Click and drag inside the rectangle to move it.

   Drag the left or right boundary points to scale the rectangle horizontally.

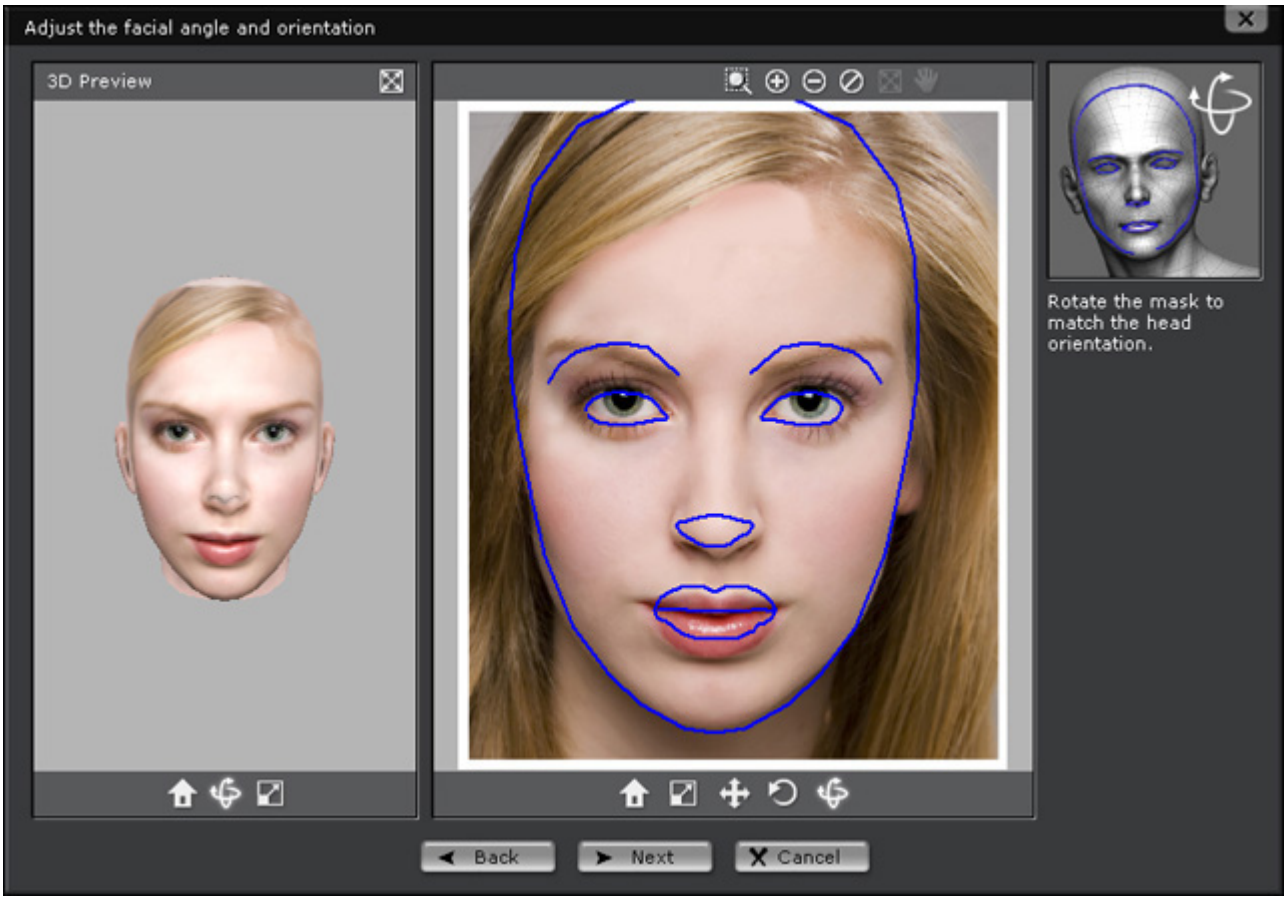
   Drag the top or bottom boundary points to scale the rectangle vertically.

   Drag the corner boundary points to scale or rotate the rectangle.

Click the **Next** button to proceed to the next stage, **Adjusting the angle and orientation of the face**.

Adjusting the Angle and Orientation of the Face

The face you have imported may not be facing directly forward. In this case, adjust the angle of the face slightly using the **Roll X-Z** tool. Drag the mask left and right or up and down to match the mask to the angle of the face in the photo.



The other tools below are:

Home: reset the position and angle of the 3d contour.

Zoom: adjust the scale of the 3d contour.

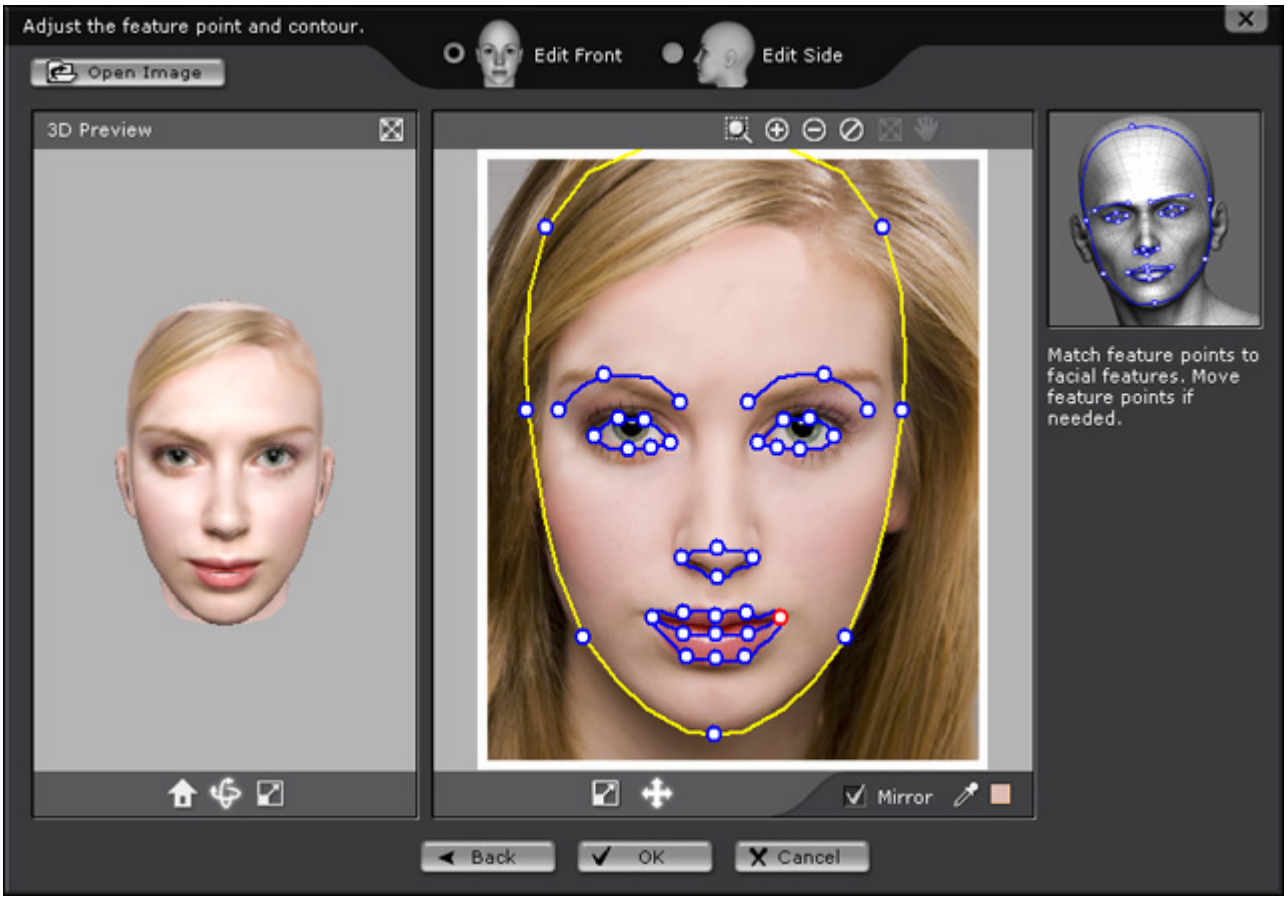
Pan: move of the 3d contour.

Roll X-Y: roll the 3d contour.

Click the **Next** button to proceed to the next stage, **Adjusting feature points and contours**.

Adjusting Feature Points and Contours

Adjust the eye, nose, mouth and eyebrow points to exactly match your imported picture.



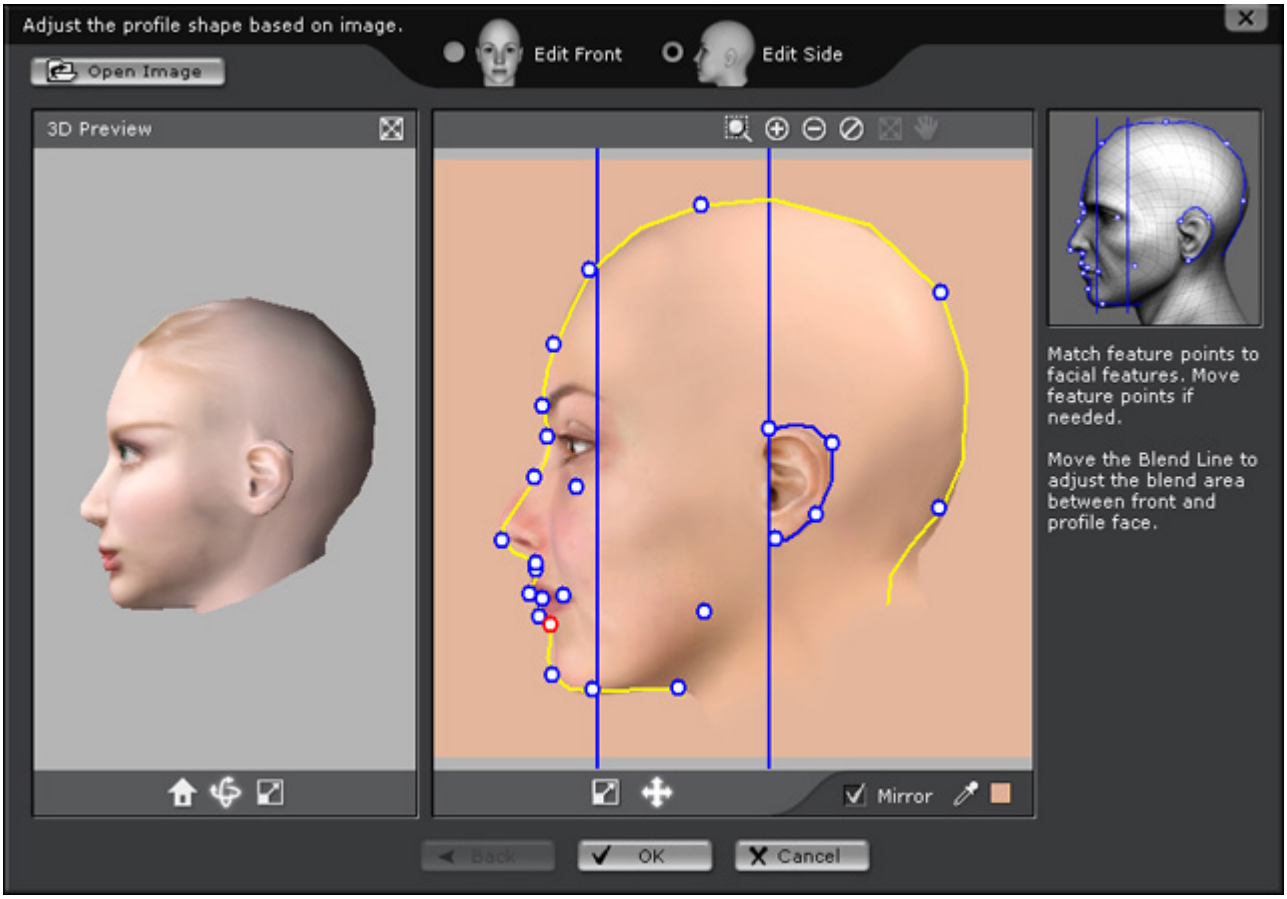
Select **Pan** tool and drag a point to move it or drag on a contour (ex. the mouth contour) to move the group of points.

Select **Zoom** tool and drag on a contour to scale the group of points.

Check **Mirror** option to adjust the points symmetrically, uncheck it to switch to independent point adjustment. The default setting is on.

Use **Dropper** tool to pick the middle tone of the skin color. iClone samples the skin tone automatically for matching the skin color. Check how the front photo blends with the profile image, if the skin tone doesn't match properly (this could happen when the face is covered by something or the contrast of the photo is too high), you can pick the middle skin color manually and check the 3d head to get a better result.

When the features and contours on the front of the face are properly set, click the **Edit Side** button to set the profile if necessary

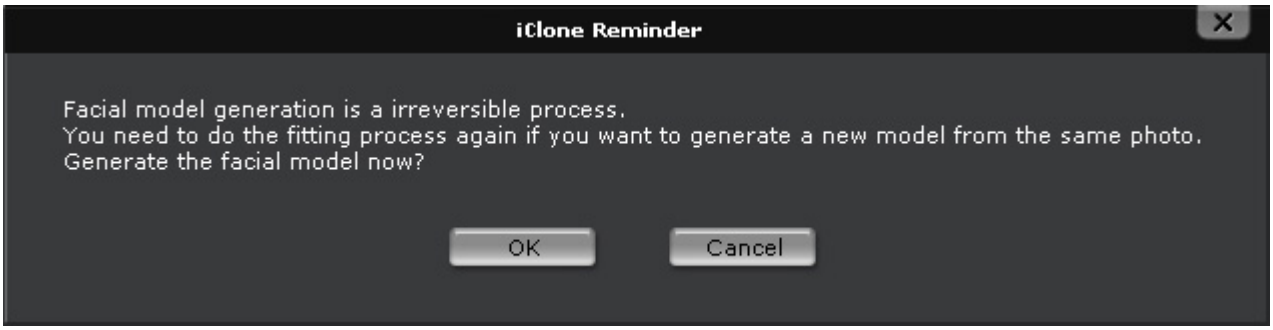


Move the points or the group of points the same way as front. Drag the 2 vertical lines to define the texture blend area and check the result on the 3D head.

You can import your own profile photo by clicking **Open Image** button.

Click the **OK** button when you are happy with your settings.

When the following dialog box appears, click the **OK** button to apply the changes.



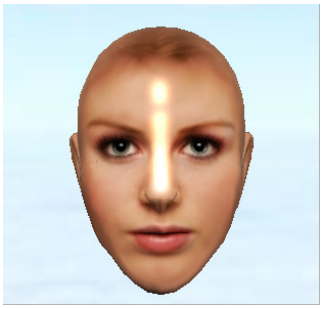
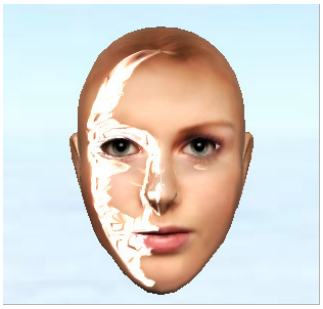
Give the 3D head a name and save it in the default facial folder. The new head you have created is automatically applied to the current project.

You have now created a 3D head that can be applied to any new project by double-clicking it. The new head you have created can be found in the list of custom faces.

The Texture of Face

Channel Mapping

iClone provides you with multiple channels to modify the texture individually. The channels are **Diffuse**/**Glow**/**Opacity**/**Bump** and **Reflection**. With the **Paint Tools** provided, you may draw on the pane directly or edit the channel in your **Image Editing Software**.

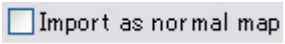
 Diffuse	 Glow	 Opacity
 Bump: You may add a grayscale image or a **Normal Map** to create bump or wrinkle effect on the face.	 Reflection	

Normal Map and Wrinkle Effects

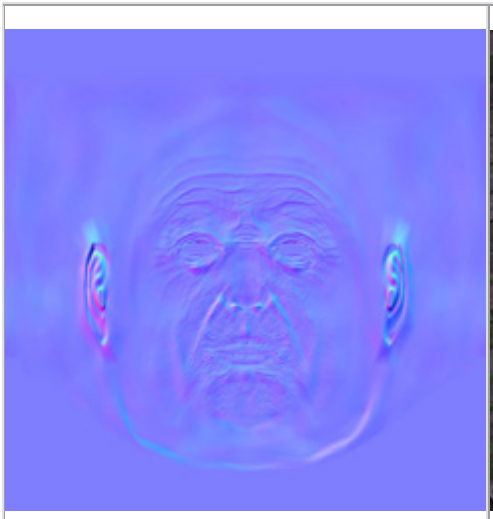
iClone3 provides the bump map channel to add facial wrinkle effects. You may import the normal maps from iClone program folder \iClone Template\texture\face normal. Using **Pixel shader**, normal map can create sophisticated texture effect without increasing the face count of the head.

The original head without normal map

Import Normal Map

1. Select **Bump** in the drop-down list.
2. Click the **Import** button.
3. In the bottom of the browser, check the **Import as normal map** 

box. Select your normal map image and click **OK**.
4. Click **OK** to exit the **Adjust the facial texture** panel.

	
The Normal Map image	The result after the normal map is applied

Shortcut to Import Normal Map

Other than importing normal map via the **Adjust the facial texture** panel, you may have another shortcut to import it.

1. Go to the **Actor**/**Skin**/**Modify** page.
2. Scroll down to the **Material & Texture Settings** section.
3. Select the **Face** in the **Select Material** drop-down list.
4. Select the **Bump** channel and click the **Import** button.
5. Check the **Import as normal map** box. Select your normal map image and click **OK**

Enhance the Normal Map Effect

To enhance the normal map effect after applying, you may need to adjust some objects to enhance the normal map effect.

- Click the **Head**/**Texture** button to invoke the **Adjust the facial texture** panel. Increase the **Specular** value.

  The normal map effect turns to be more obvious.

- Decrease the **ambient color** in the **Adjust the facial texture** panel and the **ambient light** brightness.

Reflection and Refraction

If you wish to change the overall **Reflection** and **Refraction** effect of the face, you would follow the steps below.

Reflection	Refraction
	
The scene is reflected on the head	The scene is refracts through the head

Note:

- The **Reflection Channel** reflects a given **2D image**. However, the **Reflection** setting specifies the head to reflect only the surrounding **3D objects**.

Texture Settings

You may adjust other settings to change the appearance of the head.

Diffuse, Ambient, and Specular Color Settings

These three settings specify how the head reflects the surrounding light. The **Diffuse Color** specifies the overall color reflected from the head when the light hits it, and the **Specular Color** represents the color of the brightest spot of the head.

		
Original Appearance	Diffuse Color:  (Adjust the skin color)	Specular Color:  (Create the suntan effect)
• You have to increase the value of the **Specular** to see the color effect.		

Independent from the Diffuse Color

Self-illumination defines how the actor's head ignores the **Diffuse** color. The higher the value, the less the **Diffuse** color affects the head.

	
Diffuse color:  Self-illumination: 15	Diffuse color:  Self-illumination: 100
• The **Light** color is white in this example. • The **Diffuse** color is totally ignored as the value is 100.	

Independent from the Light Effect

Self-illumination defines how the actor's head ignore the effect from the light. The higher the value is, the less the light affects the head.

	
Light color:  Self-illumination: 15	Light color:  Self-illumination: 100

- The **Light** color is totally ignored as the **Self-illumination** value is 100.
- When the light effect is ignored, the shadow effect will decrease as well.

Create Oily or Wet Look Face

If you plan to create an actor with oily or wet look face, you need to adjust two parameters: **Specular** and **Glossiness**.

Specular reflection is the mirror-like reflection of light from the head, in which light from a single incoming direction is reflected into a single outgoing direction.
Glossiness is based on the interaction of light with physical characteristics of a surface. Materials with smooth surfaces appear glossy, while very rough surfaces appear mat.

	
Specular: 10 Glossiness: 10	Specular: 100 Glossiness: 30

Full Head Morph

After you create a head for the actor, you may adjust the features on the face individually. However, you can also apply one of the built in **Full Face Morph** templates to automatically change your actors look in one click.

1. Double click the desired actor and switch to **Head**/**Faces**/**Modify** page.

2. Select  icon in the **Facial Features** section.

3. Pick one of the templates to apply the full facial morph.

4. Drag the **Weight** slider to adjust the strength of the facial features. You may click the **Reset** button at any time to remove the effect of the template.

	
Weight = 20	Weight = 80

Note:

- You may adjust facial feature deformation after the **Face Morph** has been applied, however, you can only apply one **Full Face Morph** template at a time.

Multi-Full Head Morph Effects

If you want to blend two or more **Face Morph** templates to one actor, please follow the steps:

1. Pick the desired actor and apply one **Face Morph** template. Adjust the **Weight** value.

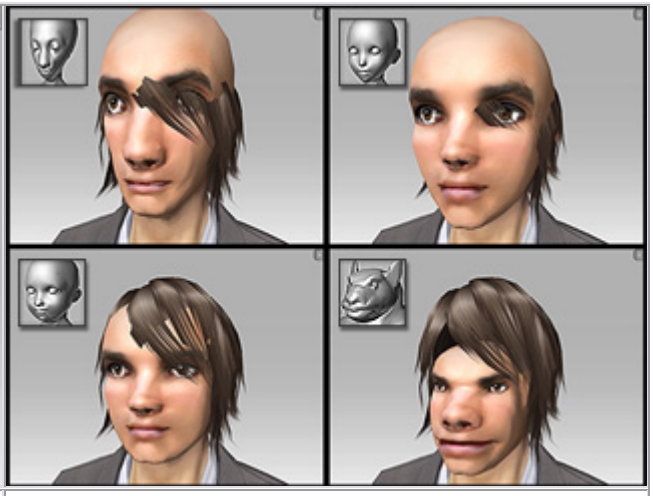
2. If you want to blend two **Face Morph** templates together, you may first apply one of them, save it by adding it to the **Content Manager**/**Custom** library, apply it back and then add the other **Face Morph** template.

3. Pick any other **Face Morph**.

Thus, two **Face Morph** templates take effect to one same actor.

Full Head Morph and Hair Offset (iClone 3.1)

iClone provides the **Full Head Morph** feature for you to change the whole face features altogether. Due to the head shape variations which can be caused by photo fitting, scale, and morph, no simple rule can be applied to perfectly fit any hair to the head without adjustment. **iClone** provides a new UI which allows users to keep the hair offset setting, and store the values in the head. When another hair is applied, it offsets correctly to fit the particular head.

	
Actor's Default Head	Various Head Morph Applied. (The hair fails to fit them all)

iClone provides a new UI to keep the offset relation between the head and the hair. The offset data will always be stored in the **Head**. Thus, whenever you apply a new hair, it will always follow the setting defined.

1. Double click the actor that has been applied with one of the face morph templates.

2. In the **Modify** page, scroll to the **Hair Offset** section. Modify the parameters to fit the hair to the head.

3. Apply another hair style from **Actor**/**Hair**/**Content Manger**. Since the hair offset is kept, the hair applied will be fit perfectly to each head.

Hair Offset VS. Hair Transform Data

Hair Offset (in **Head**/**Faces**/**Modify** page):

- Maintains the offset relationship between hair and head.
- The offset data is stored in **Head**.
- No further adjustment is needed after another hair is applied to the same head.

Hair Transform Data (in **Actor**/**Hair**/**Modify** page):

- For adjusting and customizing the hair style only.
- The transform data is stored in individual **Hair**.
- The transform style is refreshed when a new hair is applied.

	
The hair transform data are adjusted to create new hair style.	Apply another hair and the hair transform data is renewed as well.

Animation

Workflow of Editor Mode and Director Mode

iClone splits the program into two exciting and revolutionary ways to unleash your creativity , **Director Mode** and **Editor Mode**. With this new design, **Machinima Filmmaking** and **Animation Creation** are integrated into one single program. Not only are those but iClone actors and iProps now preset with interactive controls for immediate use. In **Director Mode**, users can simply use the **WASD** hotkeys and the right-click menus to control movement across any user defined terrain.

The Workflow of Director/Editor Mode

The recommended steps to begin creating movies with **iClone** are as follows:

1. Use the **Editor Mode** to build your 3D world, including placing the actors, the props, the terrain and so on.
2. Switch to the **Director Mode** to move your actors or iProps automatically as you would playing any 3D game. The animations and movement of them are recorded as you "play".
3. Switch back to the **Editor Mode** to edit all the animations and motion clips recorded in the last step.
4. Export your project as a media file.

Director Mode

Starting the Director Mode

iClone splits the program into two exciting and revolutionary ways to unleash your creativity , **Director Mode** and **Editor Mode**. With this new design, **Machinima Filmmaking** and **Animation Creation** are integrated into one single program.

1. Pick an actor and click on the  button to enter the **Director Mode.** You will see the selected mode displayed in the bottom left corner of the 3D viewer.

2. Now you can work as a movie director to command and control the interactive scene elements (e.g. actor and cars). Please click **WASD** to have the object to **Move** or **1**, **2**, **3**... keys to have the object to **Perform**.

3. **iClone** locks all the user interfaces for **Editor Mode** to separate **Editor Mode** from the interactive **Director Mode**. You may then focus on **Directing the movie**.

4. Double click to select the actor. A pyramid indicator shows which is the currently selected object.

5. Click the **Record** button or alternatively press the space bar, to start the action recording. (You may press the space bar again to **Pause** recording at any time)

Note:

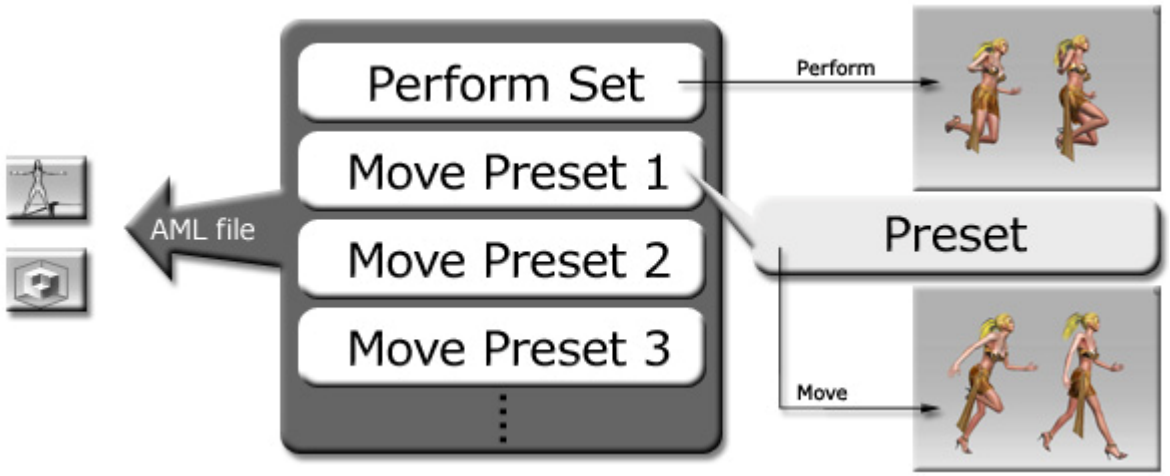
- After you click the  button, you will see the **Director Mode** panel.
  - Click the **Action** button to start recording.
  - Press the **Enter** or **X** button at the right-top of this panel to adjust camera or switch target before recording. You may press **Space bar** later to start recording.

- Press **F7** to switch between the follow cam-actor and follow cam-bird.
- If you don't do anything, you will see the play-head advancing along the timeline and the time meter will begin counting up, while your actor stands there with life-like idle motions.
- You can start to interact anytime with your actor.

The Actor

Behavior Switch

The term **Behavior Switch** means to change an **Actor Persona or iProps Action Behaviors**.

Diagram of the AML file		
		
Actor iProp	• The AML file is either embedded or imported to the actor or iProp. • One AML file contains only one set of **Perform** motions/animations. • Each AML file contains one or more presets of motion/animation clips for the **Move** command. • Press **X** key will toggle among the **WASD** animations of these presets, run, walk etc.	• You may use **Hotkeys** or right-click to direct the actor to act these motions.

- Basically, an **iClone** actor is embedded with several mode presets. In each preset, various **Motion Clips** for moving forward, backward, left, right or even idle movement are defined.
- The definition is saved in an AML file (Animation XML), you may export this file from one **iClone** actor and then apply it to another **iClone** actor.
- This feature applies to any **iProp** only if it is embedded with several **Action Clips**.
- In the **Director Mode**, only one preset with clips are listed in the **Right-click Menu**, and you may use **Hotkeys** to toggle these motion/animation clips.

  (In the **Editor Mode**, only one preset with clips can be shown in the **Right-click Menu**/**Perform** or **Move** for controlling the actor or the iProp.)

- The way to switch to another **Move** preset is pressing the **X** key anytime as you are recording. The whole set of the moving behavior corresponding to **WASD** will be replaced by another embedded preset.
- You can create your own **Motion/Animation Clips** presets by editing the AML file.
- The **Multiple Behavior** modes are defined in the AML file, which is called **Persona** for **Actors** or **DramaScript** for **iProps**.
- Please refer to http://www.iclonewiki.com for more information about creating and modifying **Persona**.

Persona

What is Persona

A **Persona** is the characteristics given to the actor so that the actor can animate in a unique style, e.g. a sexy dancer acts differently from a ninja warrior. The definition of the persona is stored in an **AML** file (Action XML), which defines the actor's multiple idle animations, keyboard moving behaviors, and special perform actions. One **Persona** file may include several sets of movement behaviors. Use **Behavior Mode Switch** (hotkey X/Z, next/previous mode) to trigger different animation sets, such as walk mode, run mode, or even a custom defined fly mode. Animation defined in the **Persona** can be either triggered by hotkey or right-click menu.

Export and Import Persona

You may export the persona of a specific actor, modify the content of the file and apply it to the original or another actor.

To export a persona, you may:

- Right click on the actor and select **Persona**/**Export Persona**.
- Alternatively, you may go to **Actor**/**Persona**/**Modify** page and click **Export Persona** button.

What does Persona do

In the AML file, codes and index tables are contained to populate different animation files (called iMotion files) for the target actor. Basically, you can have your actor possessing unlimited animations. An **iClone** actor is embedded with several mode presets for **WASD** keyboard movement, you can use **X** to toggle **WALK** and **RUN** mode for moving a character. Even if you don't command the actor to act, the actor acts the **Idle Motion** embedded in the **Persona**.

When is Persona Available

You can toggle the **Director Mode** to activate the **Persona** for actors. In the **Director Mode**, you may direct actors to move or act and record these motions for further tuning. It is a game-like method, which you use **W**, **A**, **S**, **D or X** or some other previously specified keys to command your selected actors to do different actions.

Please refer to http://www.iclonewiki.com for more information about creating and modifying **Persona**.

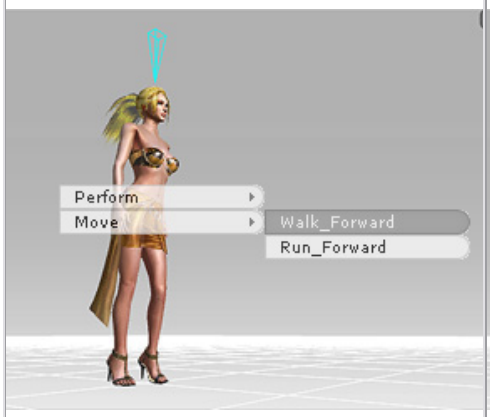
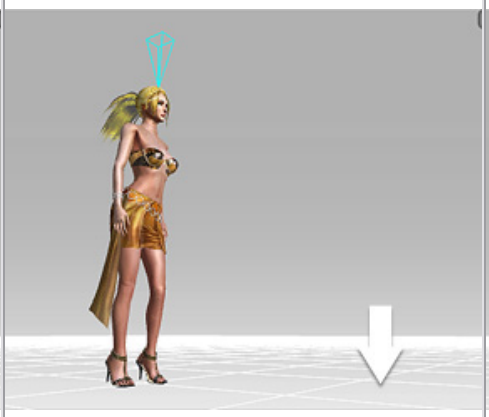
Actor and the Right Menu

Once you load an **AML** file to an actor, a preset of motion clips are assigned to this actor. You will find the names of these clips in the **Right-Click Menu**. Select the desired clip name and the actor will then start to perform the content of the motion clip.

Director Mode - Move

Since the **Director Mode** presents you with an easy to use **Game-like** control mode, there are only few commands in the **Right-Click Menu**.

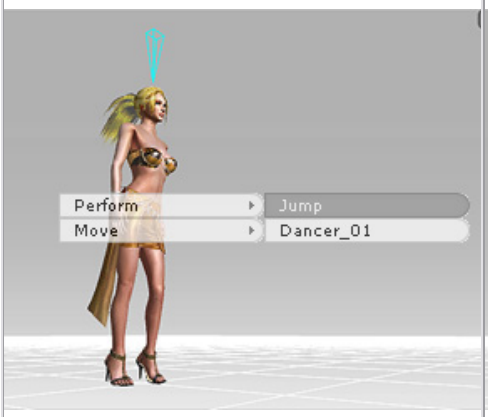
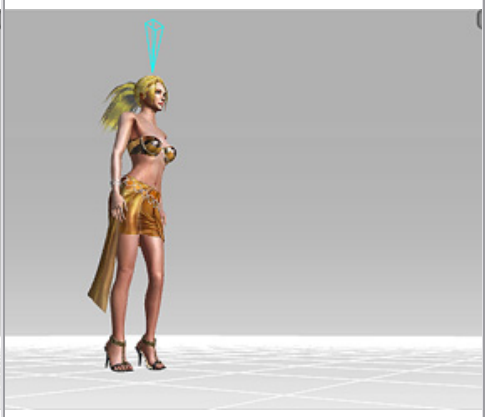
5. Switch to the **Director Mode**.
6. Right click on the desired actor to animate.
7. You may select the sub-items in **Move** to command the actor to move with specific motions.
8. Click on the destination spot to which you desired the actor to move to.

		
Select **Move**/**Walk_Forward**.	Click on the destination spot.	The actor walks to the spot automatically.

Director Mode - Perform

5. Select the sub-items in **Perform** to command the actor to act motions other than walk or run.

6. If the actor is in **Moving** process, this will force the actor to perform the motion specified and then finish the rest of the **Moving** phase.

		
Select **Perform**/**Jump**.	The actor performs instantly.	The actor retrieves the pose or motion before the **Perform** command was used.

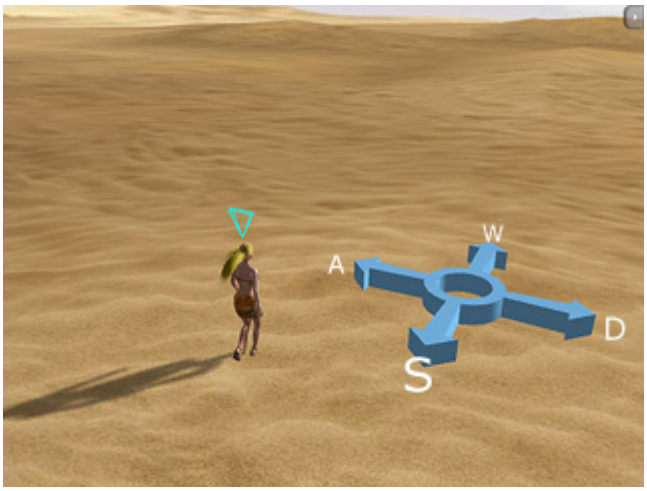
Please refer to http://www.iclonewiki.com for more information about creating and modifying **Persona**.

Two Methods to Direct the Actor

In the **Director Mode**, you have two ways to direct the virtual actor in **iClone** like playing games.

Hotkey (Keyboard Control)

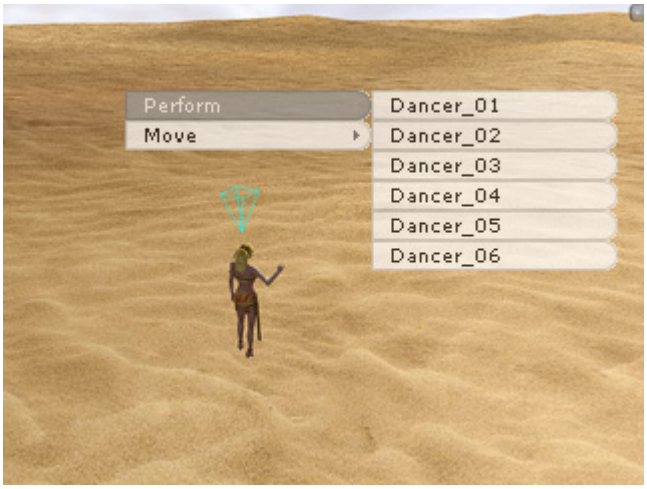
You may use the **WASD** keys to move your actor just like you would play a computer game.



- **W**: Move Forward
  S: Move Backward
  A: Turn Left
  D: Turn Right
  X: Toggle between **Walk**/**Run** modes for moving.
- While holding **W** or **S** key, press **A** or **D** key to turn while walking.
- **Shift + A**: Slide to the Left
  Shift + D: Slide to the Right
- You may use the **Number** keys (1, 2, 3...) to start the actor's preset animations.

Mouse and Menu (Mouse Control)

- **Ctrl + Click Left Mouse Button on the ground** to set the target location for the actor to walk to.
- **Ctrl + Double Click Left Mouse Button on the ground** to set the target location for the character to run to.
- **Ctrl + Click Left Mouse Button on the target object** to trigger the **default action**. e.g. Ctrl + click on a car, the currently selected actor gets into the car.
- Click the **Right Mouse Button** on the target actor to bring up the list of actions available for that character.



The iProp

Two Methods to Direct the iProp

In the **Director Mode**, You have two ways to direct the iProp in **iClone**. It is done in much the same way as with **Actors**.

Hotkey (Keyboard Control)

You may use **WASD** keys to move your iProp.

- **W**: Move Forward
  S: Move Backward
  A: Turn Left
  D: Turn Right
  X: Toggle between different presets containing different movement animation clips.
- While holding **W** or **S** key, press **A** or **D** key to turn during the move motion.
- **Shift + A**: Shift Left (only for certain types of vehicles)
  Shift + D: Shift Right (only for certain types of vehicles)
  Shift + E: Turn Up (only for certain types of vehicles)
  Shift + C: Turn Down (only for certain types of vehicles)
  Shift + W: Fly Up/Down, airplane, bird etc.
- Use **Number** key (1, 2, 3...) to trigger the pre-defined performance actions (if any are applied to the selected iProp).

Mouse and Menu (Mouse Control)

- **Ctrl + Double Click Left Mouse Button on the ground** to set the target location for the iProp to move to.
- **Ctrl + Click Left Mouse Button on the target object** to trigger the **default action**. E.g. Ctrl + click on a car and the currently selected actor start to get in the car.
- Click the right button of the mouse on the target iProp to bring up the action list from the **Right-click Menu**.

Please refer to http://www.iclonewiki.com for more information about creating and modifying **DramaScript**.

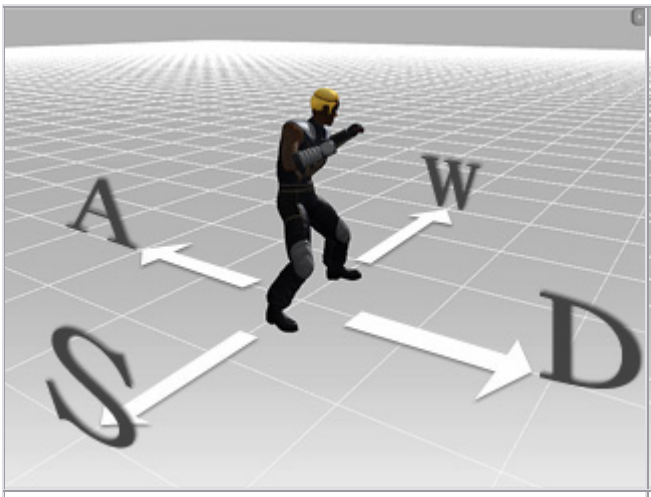
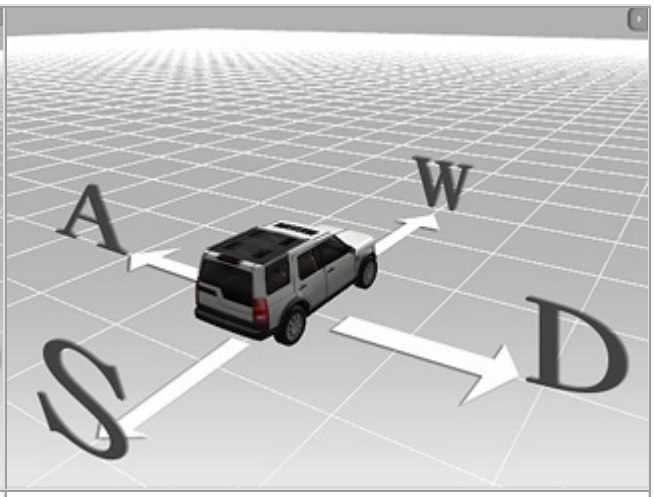
The Actor and the iProp

Move, Operate and Perform

Each Actor or iProp can contain three types of animations: **Move**/**Operate**/**Perform**. This may be triggered in different circumstances.

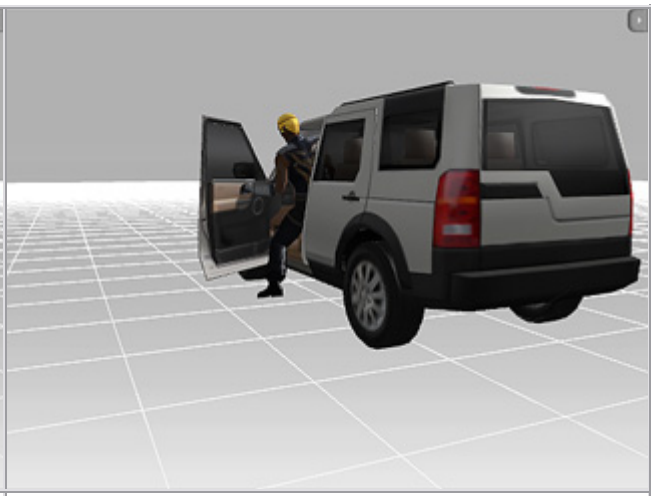
Move

When you use the **WASD** in the **Director Mode** or **Right-click Menu**/**Move** list in both the **Director Mode** and the **Editor Mode** to direct the Actor or iProp to move, the selected animations are thus recorded into the **Move** track.

	
Use **WASD** to direct the actor.	The basic **Move** commands for the iProp.

Operate

As the selected actor interacts with the iProp, the **Operate** animations will be recorded into the **Operate** tracks of both the actor and the iProp; therefore, there are two objects involved: The iProp and the Actor.

	
Two objects are involved in the **Operate** process.	The interaction after the **Operate** command.

Perform

When you command an Actor or an iProp to **Perform**, it will then add an animation clip for the actor or iProp accordingly. In addition to that, it may also add an animation for some other objects that are already connected to it.

Please also refer to http://www.iclonewiki.com for more information about creating and modifying **Persona** and **DramaScript**.

iProp Interaction

iClone presents you with a brand new type of prop, iProps. Each iProp contains built-in animation clips that enable you to **Perform Actions**, **Move Around** or even allow your actor to **Operate** it.

Operating an iProp allows your target actor to interact directly with the iProp. We will take an iProp jeep, as an example to describe the way you use the iProp in your scenes.

Default Interaction

If you want your actor to interact with the iProp using its default action, please follow the steps below:

1. Select the actor you want to use first.
2. Press and hold the **Ctrl** key and click on the target iProp.

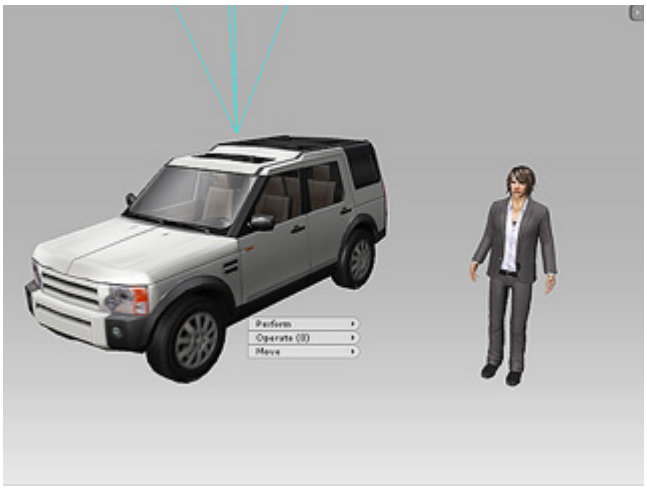
The actor will then walk towards the iProp and start to interact with the iProp using the default animation.

Additional Interactions with iProp

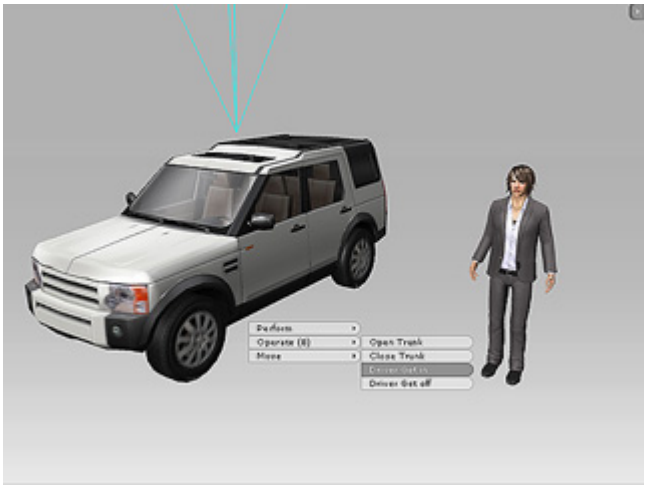
If you want the actor to interact with the iProp using a different action, please follow the steps below. In this example, the jeep is the target iProp and the man is the actor.

1. Drag and drop the jeep from the library.
2. Select the actor that you intend to interact with the jeep.

3. Click the right mouse button on the jeep to pop up the context menu. Move your mouse over the **Operate** entry.



4. Select the desired Operate function from the sub-menu.



5. The actor then automatically interacts with the jeep, performing your chosen action.

The actor walks to the jeep and opens the door.

The actor gets in the jeep.

Please refer to http://www.iclonewiki.com for more information about creating and modifying **Persona** and **DramaScript**.

To Redo the Recording in the Director Mode

You may follow the steps below to re-record if you are not satisfied with the result of the last Director Mode recording.

Switched to Editor Mode Already

1. Click the right mouse button on your actor or prop.
2. In the **Right-click Menu** select the **Remove All Key** option.

The recorded keys and clips in all tracks belonging to this object will be removed. You may then go to the **Director Mode** to record again.

Note:

- This may affect the selected object only.

Still in the Director Mode

If you stay in the **Director Mode** and you want to remove all the previously recorded clips and record again, please follow the steps below.

1. Click on the **Reset** button on the **Quick Tab Bar**.
2. Click **OK** to reset and remove all recorded data for this session.

The data in all tracks are reset to their initial status the moment you switched to the **Director Mode**. You may then start to record again.

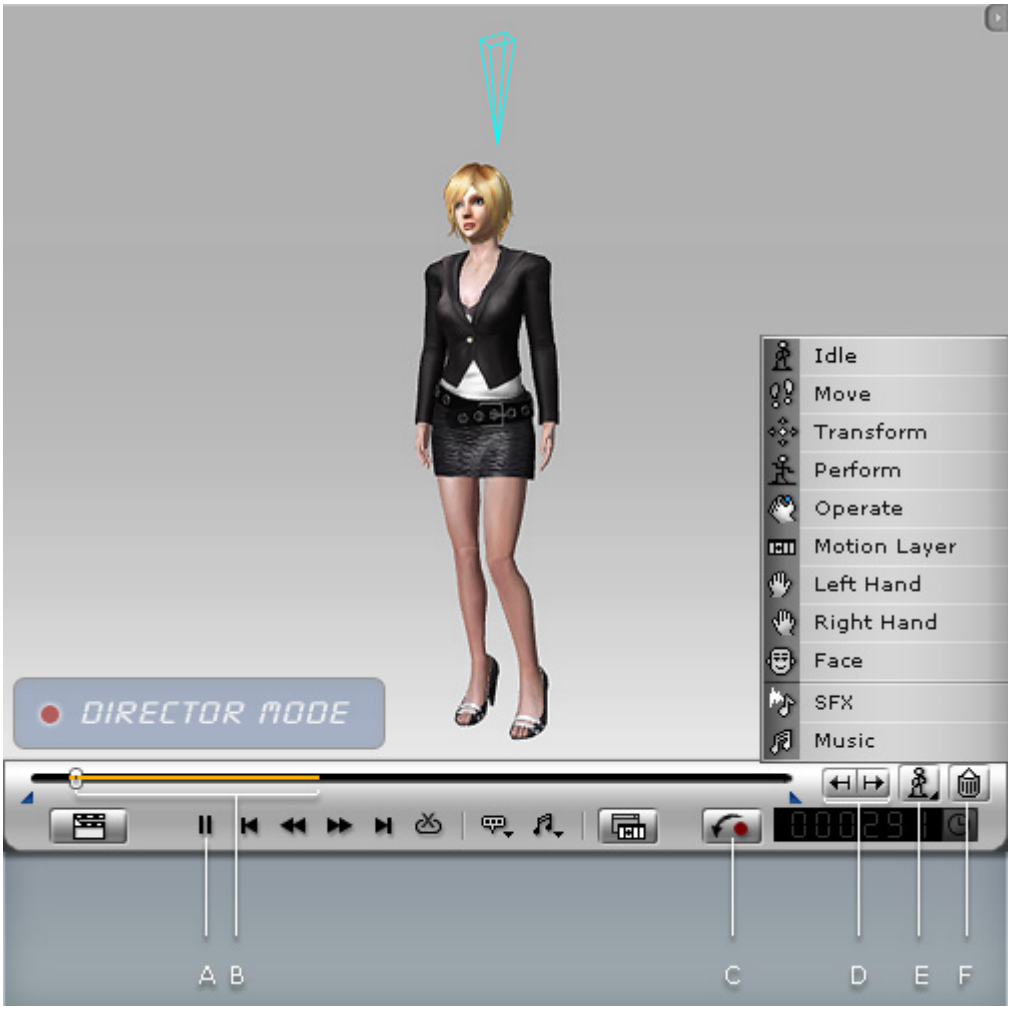
Note:

- This may affect all the animated objects in the project.

Quick Tab Bar for Simple Timeline Editing

Director Mode

In the **Director Mode**, like real-life movie directing, you do not have to anticipate how your actors will move by having your actors move and perform exactly the way you want them to using the **Quick Tab Bar**.



A. You may click the **Record/Pause** button or press the **Space Bar** to start/pause **Action Recording**.

B. Recorded action segments will be highlighted in yellow on the play bar.

C. Click the **Reset** button to retrieve the status of all action segments in all tracks from the moment you entered the **Director Mode**.

This can undo all the motion/animation clips recorded during the current **Director Mode** session.

D. Click the **Action Tabs** buttons or **Tab/Shift Tab keys** to move to the next/previous action segments.

- You may move to the desired action segment and then press **Space Bar** to play the recorded result.
- Please note that any command or action performed while previewing the results in **Director Mode** would overwrite the action segments.
- You may then move the time head to any frame to start recording by **Hotkeys** or **Right-click Menu**.
- The **Action Tabs** provide a quick way to jump to the start/end frame of a recorded clip which you may want to re-record or delete. You may then execute some basic operations to clips without using the **Timeline Editor**.

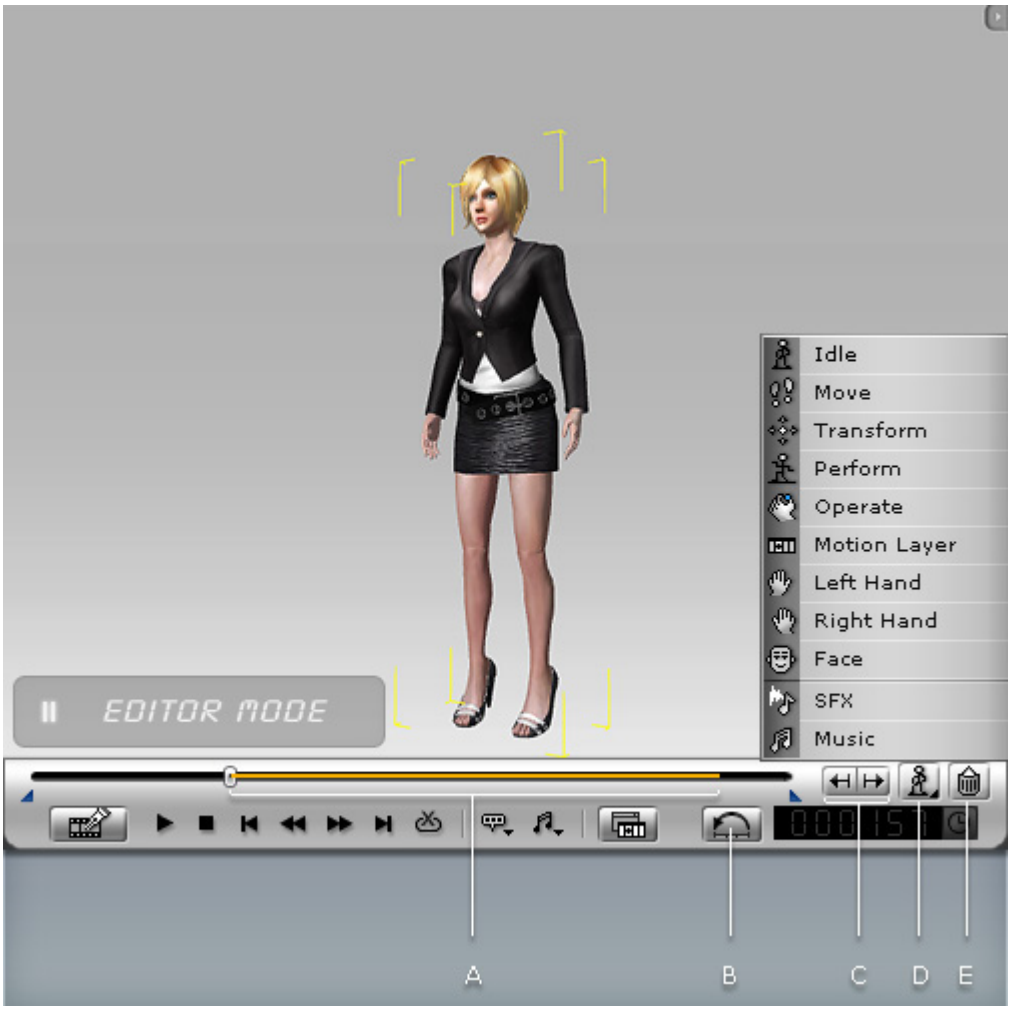
E. The relevant action segments will be recorded into corresponding tracks. You may click the **Action Track Selector** button to toggle to another track to see the action segments.

- This feature allows you to fix action segments by tracks.
- Click on the **Action Track Selector** button and you will see a list of available tracks to switch to.
- Walking actions will be recorded in the **Move** track while other motions such as jumping will be recorded in the **Perform** track.

F. Click the trash button to delete the action segments.

Editor Mode

In the **Editor Mode**, you may select and edit different clips in corresponding tracks with the **Quick Tab Bar**.



A. Recorded action segments will be highlighted in yellow on the play bar.

B. Clears all keys and clips in every track except keys on the **Transform** and **Motion Layer** tracks in the start frame.

- An actor's look/pose in the first frame due to clips and/or a **Motion Layer** key will be merged into single key and added to the start frame of the **Motion Layer**.

C. Click the **Action Tabs** buttons or **Tab/Shift Tab keys** to move to the previous/next action segments.

- You may move to the desired action segment and then press **Space Bar** to play the recorded result.
- You may then fine tune the action clips by setting keys in the **Motion Layer**, **Transform**, **Look At** etc. tracks.
- The **Action Tabs** provide a quick way to jump to the start/end frame of a recorded clip which you may want to re-record or delete. You may then execute some basic operations to the clips without using the **Timeline Editor**.

D. You may click the **Action Track Selector** button to toggle to another track to see the action segments.

- This feature allows you to fix action segments by tracks.
- Click on the **Action Track Selector** button and you will see a list of available tracks to switch to.
- Walking actions will be recorded in the **Move** track while other motions such as jumping will be recorded in the **Perform** track.

E. Click the trash button to delete the action segments.

Editor Mode

The Concept of Motion Layer Editing

After you use **Director Mode** to generate a motion clip of an actor, you may want to fine tune the offset (position) for each bone for more precise control. This can be done via the **Motion Layer** feature. The pose with the edited bones will be kept as a key in the **Motion Layer** track, and it will remain in effect throughout the clip unless another key is set to replace it.

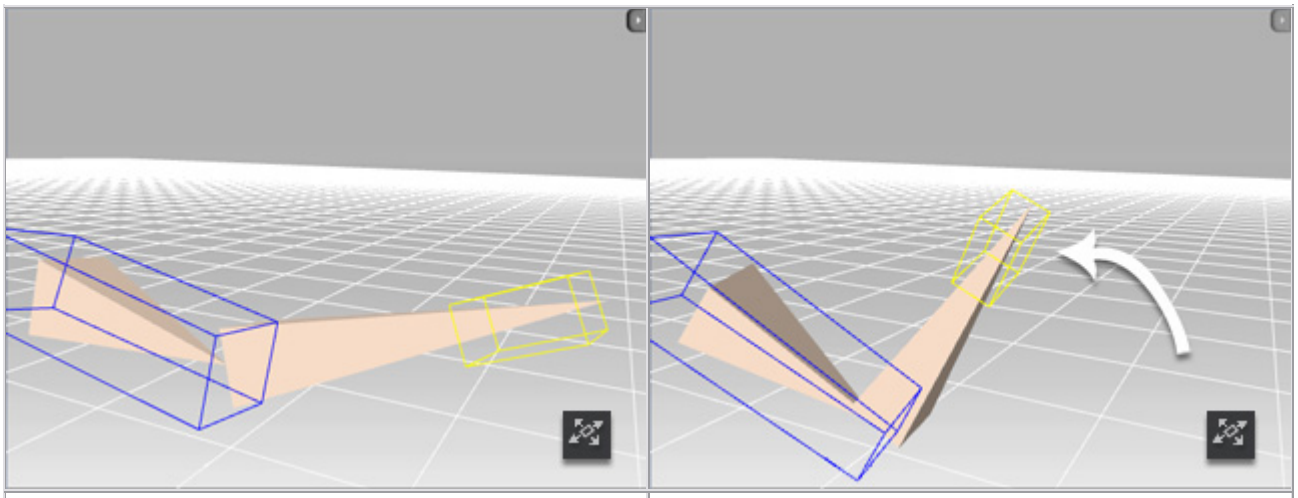
1. Record a motion clip in **Director Mode**, or apply a motion clip from the template library in the **Content Manager**.
2. Switch to **Editor Mode**.
3. Go to the specific time when you want to overlay the offset key to the clip.
4. Click the **Edit Motion Layer** button in the **Animation**/**Motion**/**Modify**. Alternatively, you may click the secondary button of your mouse on the actor and select **Motion Menu**/**Edit Motion**.
5. Adjust the bone you wish to edit with IK or FK. The key will be automatically added into the **Motion Layer** track.

Fine Tuning the Actor with IK, FK

What is IK

IK, **Inverse Kinematics**, refers to a process utilized in 3D computer graphic animation. In this process, the parameters of each articulation, in a jointed flexible object (a kinematic chain), will be automatically calculated to achieve a desired pose, especially when the end point moves.

Basically speaking, IK is how the child node, as it moves, effects all the parents' position and orientation values.



Child node selected	Offsets of all nodes in the chain gets affected

How to Use IK

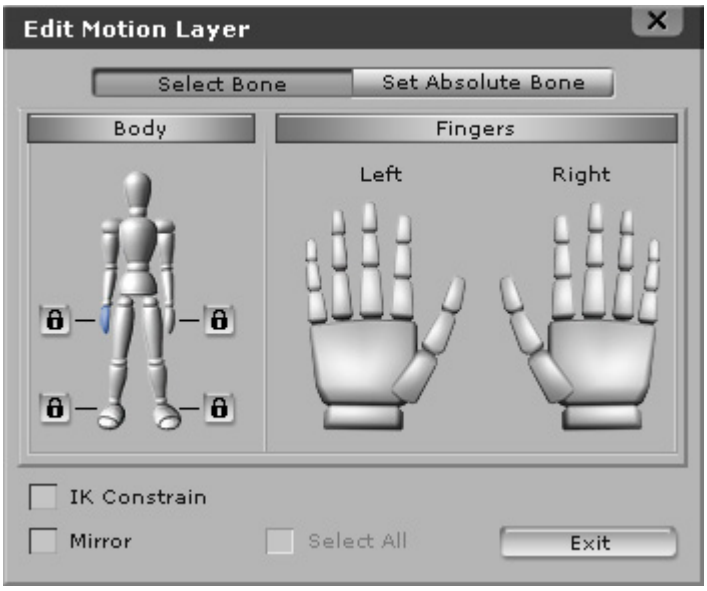
Before you utilize IK to animate your actor, be sure that you have switched to the **Editor Mode**.

1. Double click on the target actor.

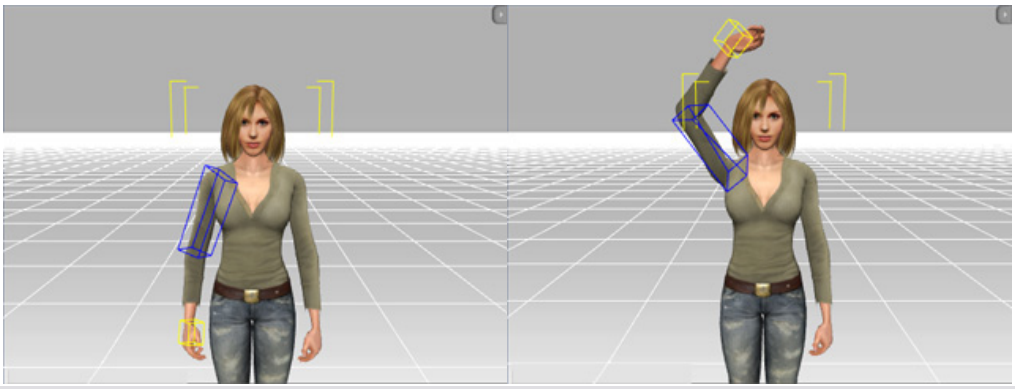
2. Click the **Edit Motion Layer** button in the **Animation**/**Motion**/**Modify** page. Alternatively, you may click the secondary button of your mouse on the desired actor and select **Motion Menu**/**Edit Motion**.

3. Change to the  tool in the control Bar.

4. In the **Edit Motion Layer** panel, pick the hand shown in the illustration below.



5. Drag your mouse in the 3D viewer, the right arm thus moves along with your cursor in the 3D scene. To precisely move the target node in the 3D scene from a 2D mouse movement, please make your target body parts face right to the camera.



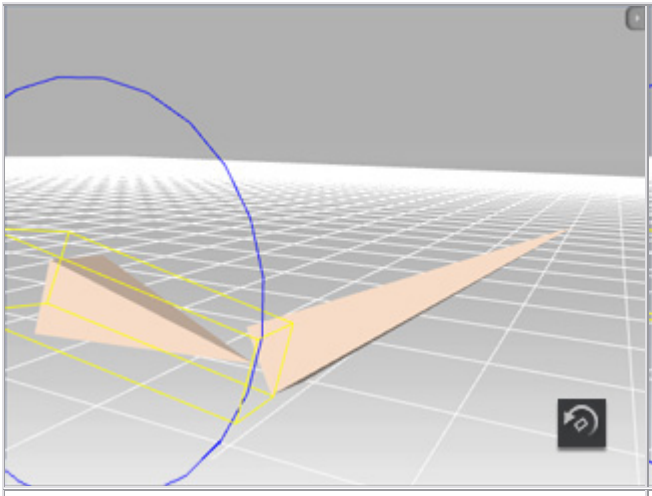
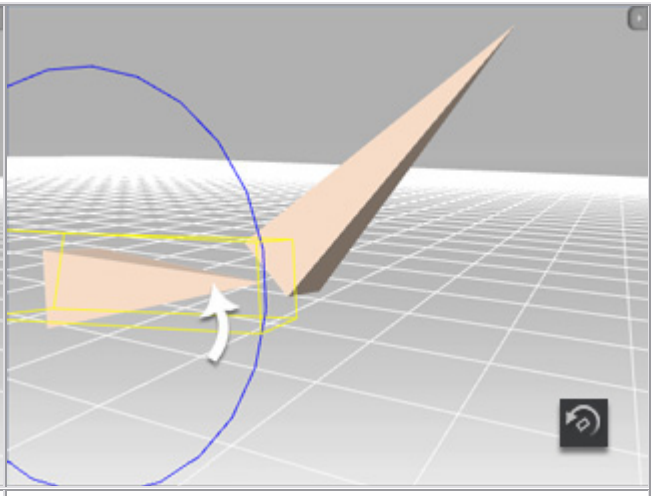
Note:

- The blue box shows the start bone of the IK chain, which means the parent of the start bone will be fixed to prevent from moving, so only from the Blue Box to the Yellow Box will move.

What is FK

FK, **Forward Kinematics**, is how the positions of particular parts of a model at a specified time are calculated from the position and orientation, together with any information on them of an articulated model.

To sum up, FK refers to the effect on the child nodes as the parent moves or rotates.

	
Parent node selected	Only parent's offset gets affected

How to Use FK

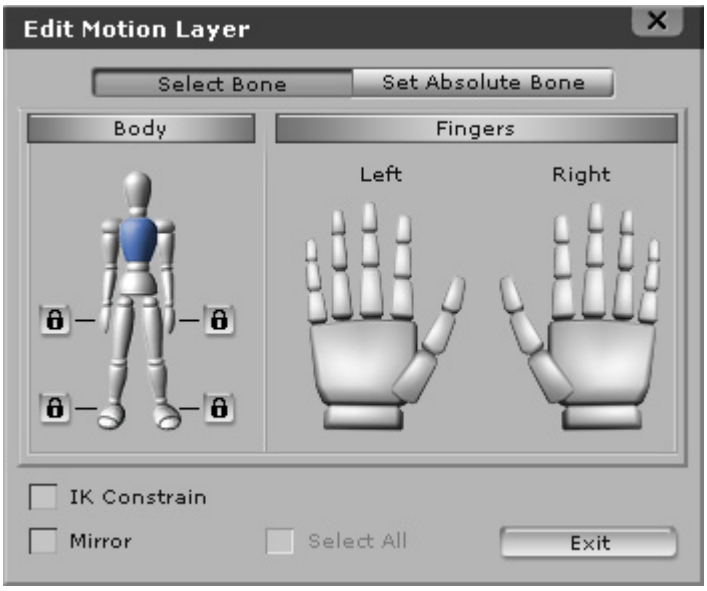
Before you utilize FK to animate your actor, be sure that you have switched to the **Editor Mode**.

1. Double click on the target actor.

2. Click the **Edit Motion Layer** button in the **Animation**/**Motion**/**Modify** page. Alternatively, you may click the secondary button of your mouse on the desired actor and select **Motion Menu**/**Edit Motion**.

3. Change to the  tool in the control Bar.

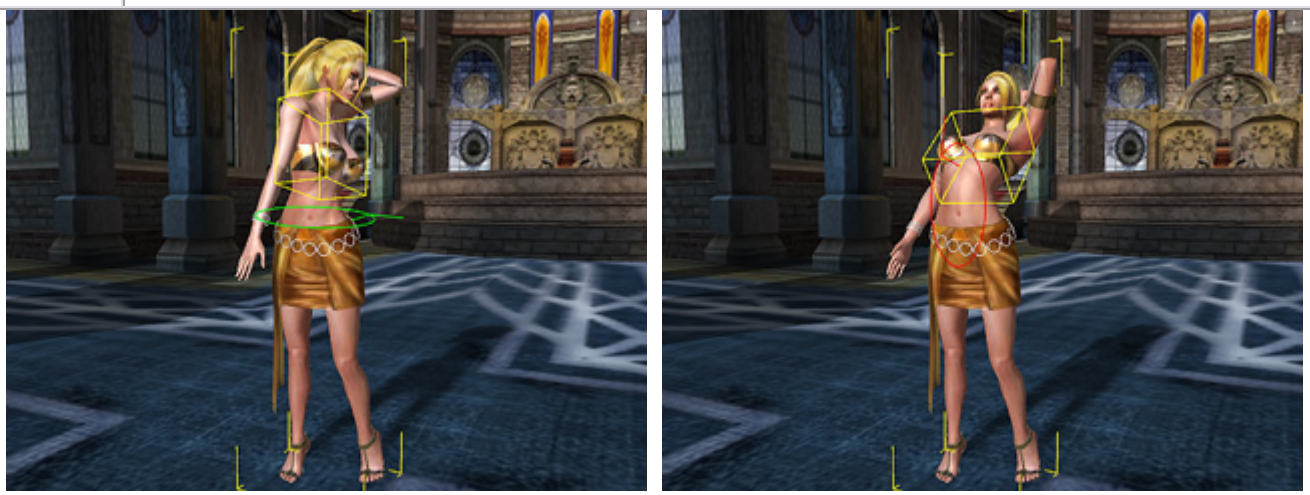
4. In the **Edit Motion Layer** panel, pick the upper torso shown in the illustration below.



5. Drag your mouse or roll the mouse wheel on the 3D viewer.

Note:

You may toggle among rotation axis by right-clicking in the 3D viewer and then either drag on the 3D viewer or roll the mouse wheel to rotate the selected bone.



Right-click to change the axis and drag or roll the wheel to adjust offset position.

IK, FK for Non-Human Actor

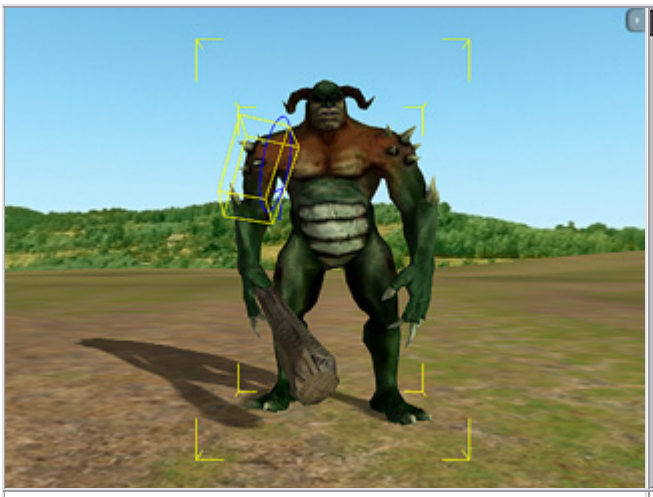
If you have non-human actors in **iClone**, you may also utilize IK and FK to adjust the poses and generate motions for them.

FK for Non-Human Actor

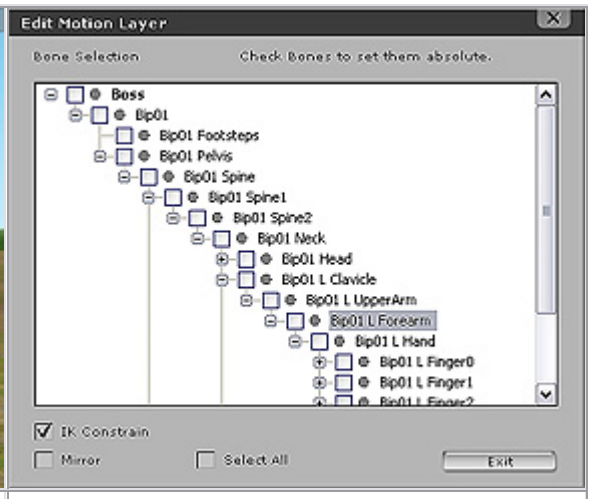
1. Right-click on the non-human actor and select **Motion Menu**/**Edit Motion**.

2. Select **Rotate** tool in the control bar.

3. Click on the non-human actor to pick a bone. Alternatively, you may pick a bone by clicking on the node in the tree view in the **Edit Motion Layer** panel.

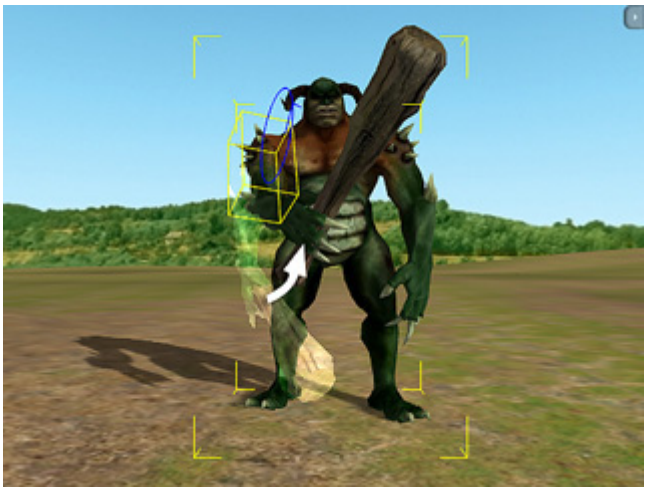


Click on the actor to pick the bone.



Click bone in the panel.

4. Drag **Left Mouse Button** to rotate the selected bone.



IK for Non-Human Actor

Since IK relates to a chain of nodes, it is necessary to anchor the head of the chain so you may move the end node with IK method.

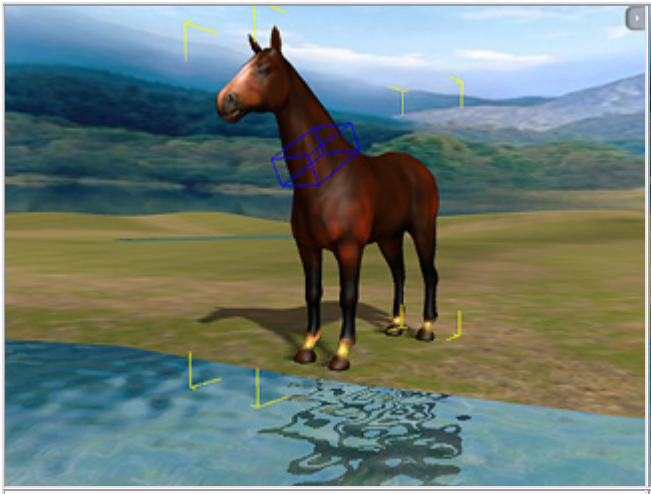
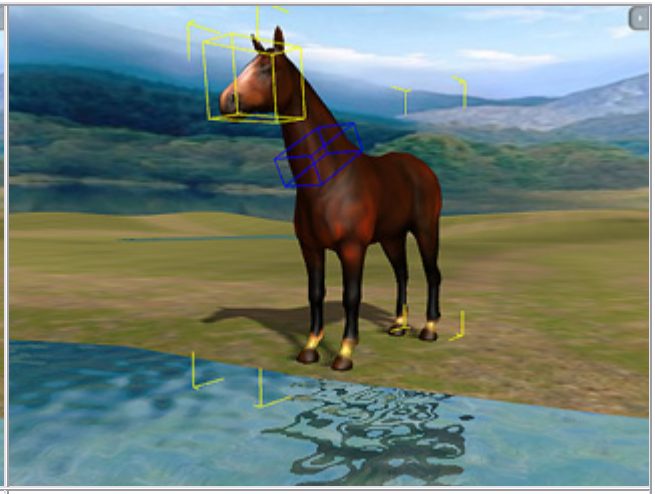
1. Right-click on the non-human actor and select **Motion Menu**/**Edit Motion**.

2. Select the **Move** tool in the control bar.

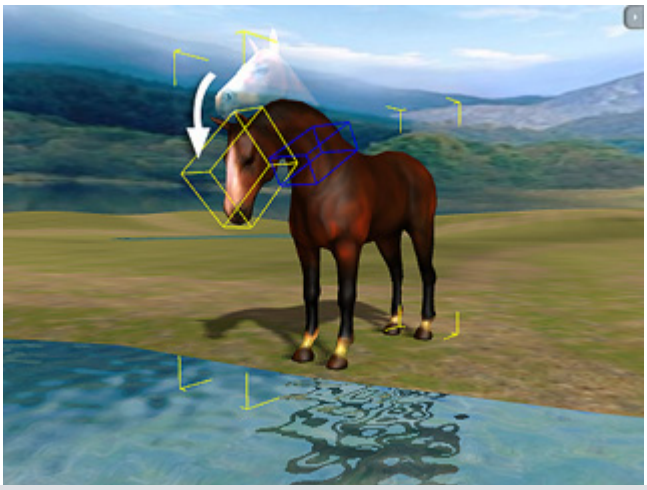
3. Hold down **Ctrl** key and click on a node to define it as the start of the IK chain. It then is marked with a blue box.

   You may **Ctrl** click again to cancel the anchor.

4. Pick another node to be the end node of the chain. (don't hold Ctrl key)

	
Ctrl-click to anchor the start of the IK chain.	Click another bone as the end of the IK chain.

5. Drag across the 3D viewer to modify the whole chain with **IK** control.

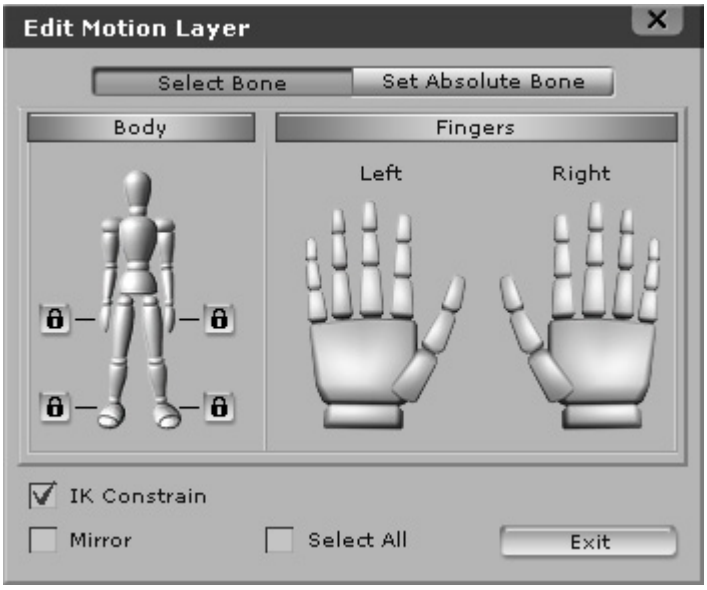


Note:

- If you intend to set a node as **Absolute**, check the box next to the node in the **Edit Motion Layer** panel.

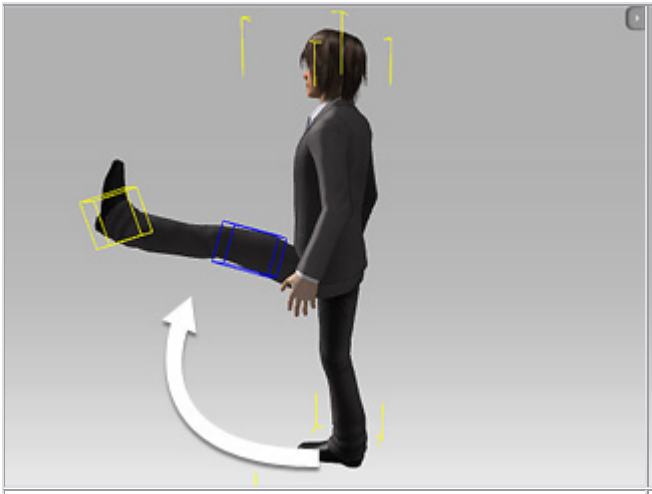
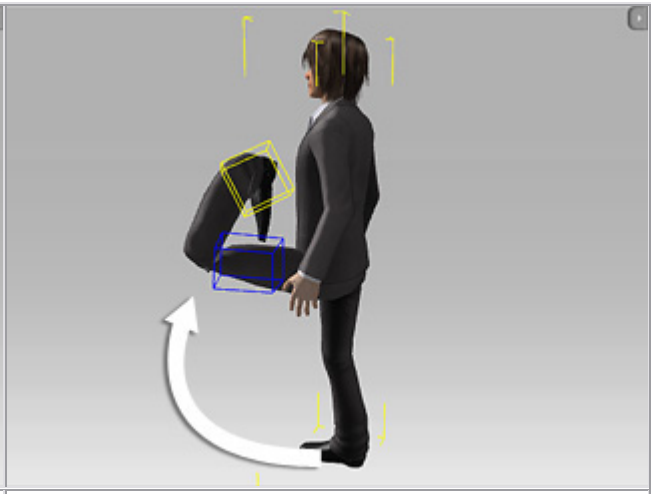
Select Bone

Once you open the **Edit Motion Layer** panel, you are ready to set a **Motion Layer** key with **Pose** and **Absolute/Relative** data.



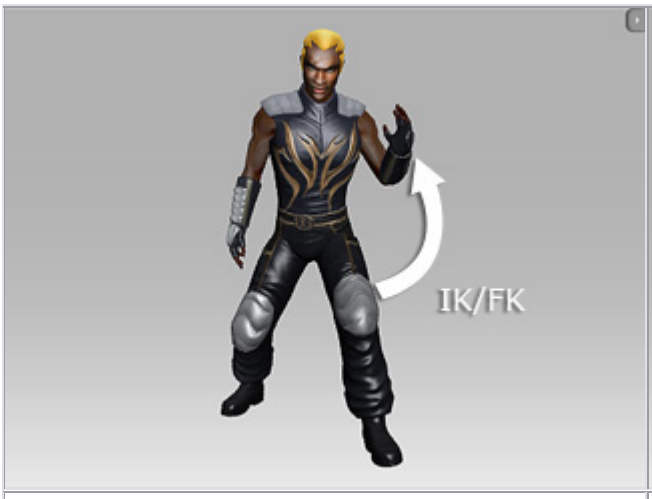
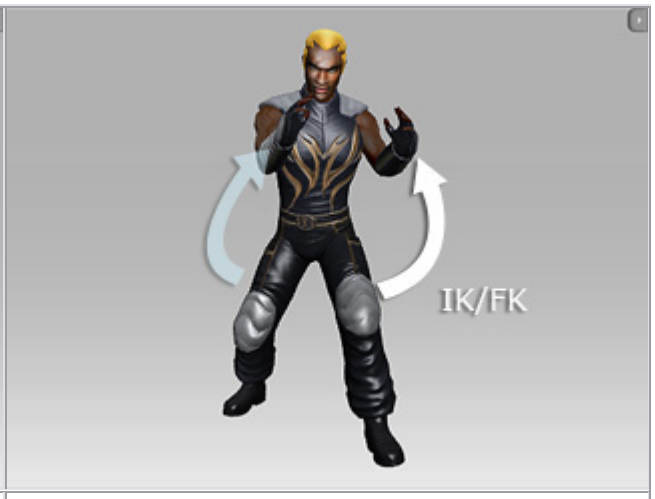
IK Constrain

IK Constrain is designed especially for the **IK** operation. When you check this button, **iClone** calculate the most logical angle for each bone as you move the end node of the **IK** chain. However, this may slow down the performance for repeating calculations. Basically IK Constrain prevents you moving your actor into a position that is physically impossible for a human to naturally achieve.

	
• IK Constrain On • Normal knee and ankle angle	• IK Constrain OFF • Abnormal knee and ankle angle

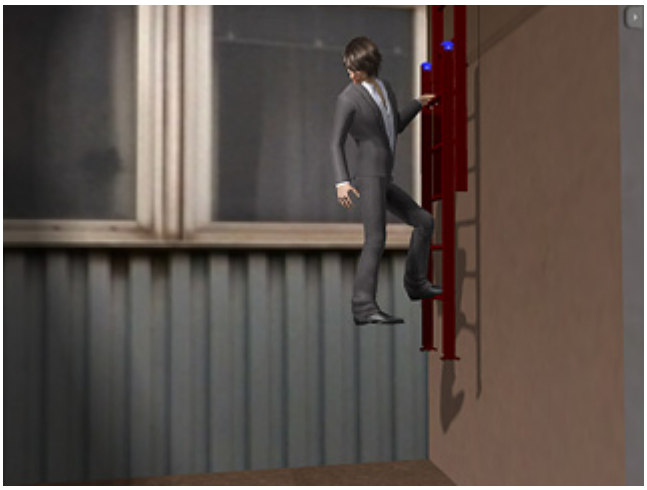
Mirror

Check this box so you may adjust both arms or legs by **IK** or **FK**, at the same time.

	
Mirror OFF	Mirror ON

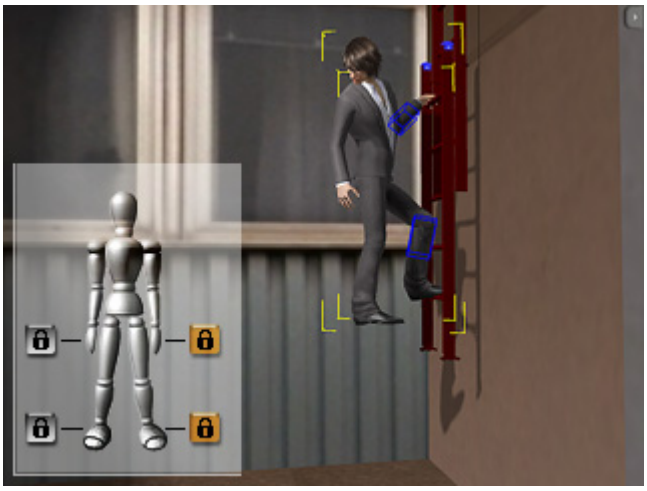
Lock Bone

This feature locks up the position of specific bones to prevent them from moving as you are posing the actor with **IK** operation. It is very useful when you want to put the actor's hands on another object and move the rest of the bones away or even to have the actor to squat without affecting the location of the feet.

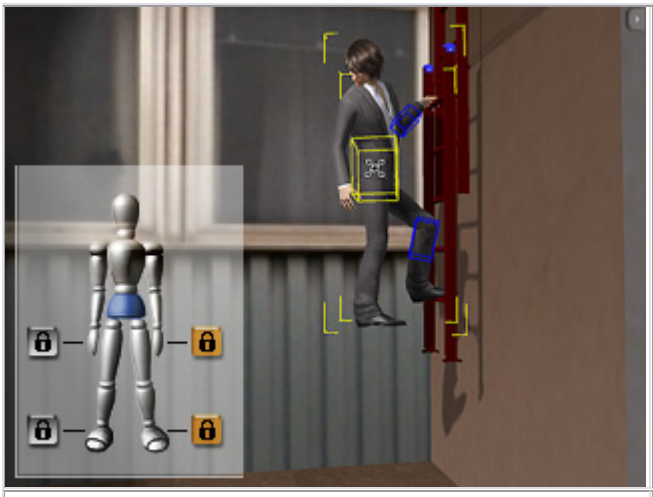
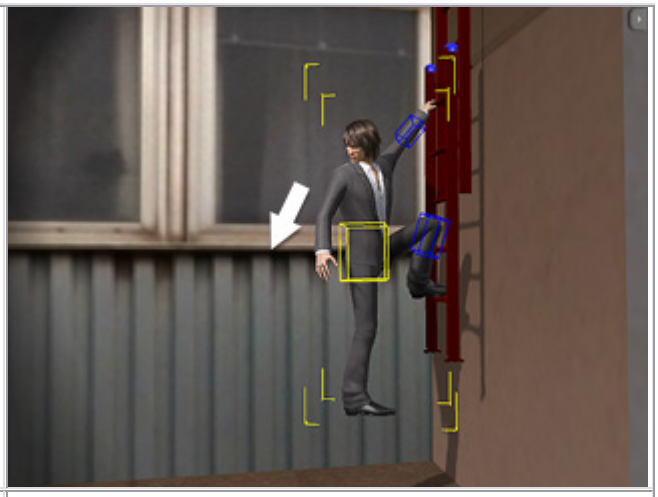


The original pose of the actor

1. Right-click on the actor and select **Motion Menu**/**Edit Motion**.
2. In the **Edit Motion Layer** panel, click one or more of the **Lock** icons to set the desired bone to be locked.



3. Pick one of the bones that you want to move by the **IK** operation. In this example, the pelvis bone.

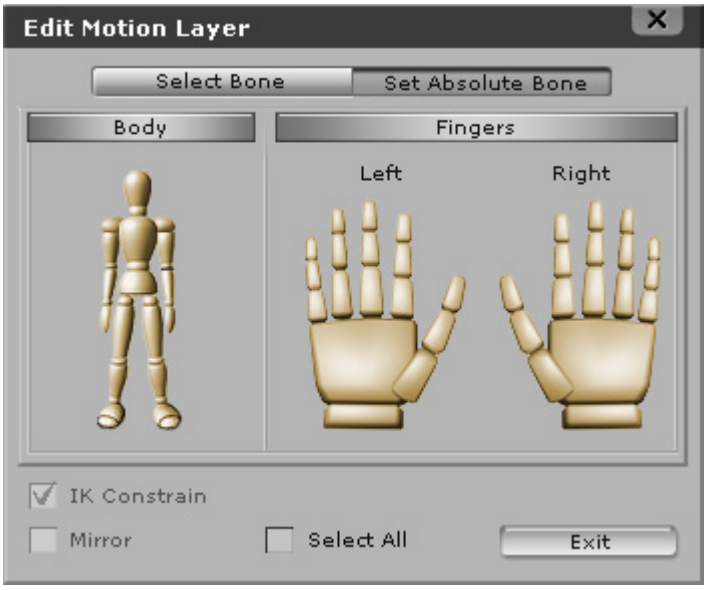
	
The pelvis bone is selected for moving while the actor's left hand and foot are locked in position.	Move the bone to see the result.

Note:

- The pelvis bone (LowerTorso) can be rotated in **FK** mode. However, in **IK** mode, you must enable at least one of the four locks to have the pelvis be moved.

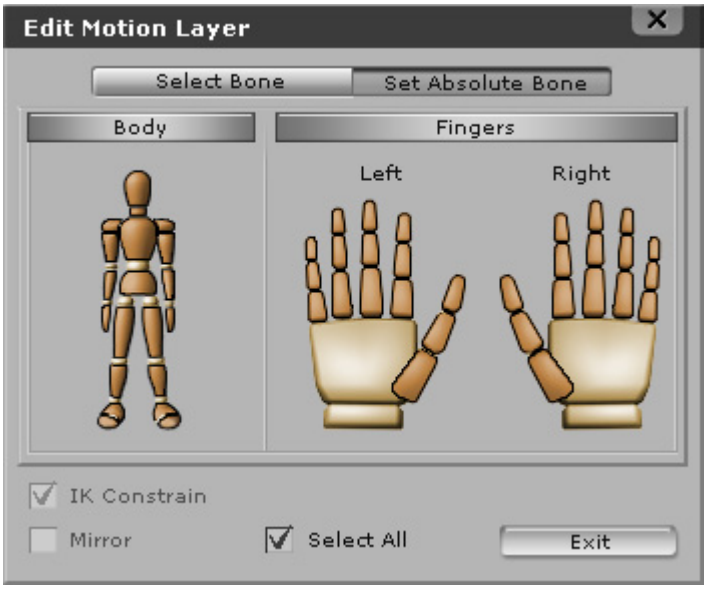
Set Absolute Bone

When you want to have specific bones be free from the effects of the motion clips from the **Perform**, **Walk** or **Operate** tracks, you may need to set the desired bone to be **Absolute**.



Switch to **Set Absolute Bone** if you haven't already. Pick the desired bone in the panel by clicking on it in the graph, the selected bone then will be taken as **Absolute**. The absolute statuses of the bones are to be added into the **Motion Layer** key along with the pose data.

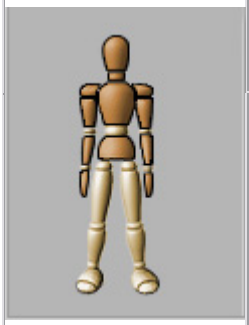
You may also select all the bones by checking the **Select All** box.



Absolute and Relative Bone

In the **Motion Layer** track, each key contains two pieces of data, one is the pose of the actor, the other is the **Absolute/Relative** status of each bone. In this section, we will describe the details of the latter.

Absolute? Relative?



Set Absolute Bones

- The actor's bones that are set **Absolute**.
- If a bone is set to be **Absolute**, the result is to sum up the offset from the clip ***in the current frame only*** with the offset data from the key.
- The result then remains and ignores any offset from the clip after that key.

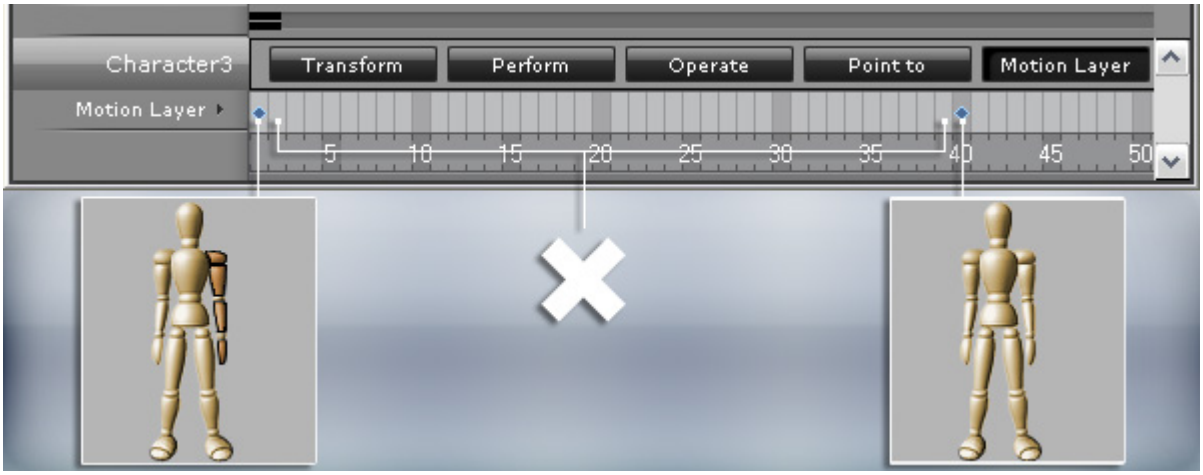
Set Relative Bones

- The actor's bones that are set **Relative**.
- If a bone is set to be **Relative**, the result is to sum up the offset from the clip ***in each frame*** with the offset data from the key.

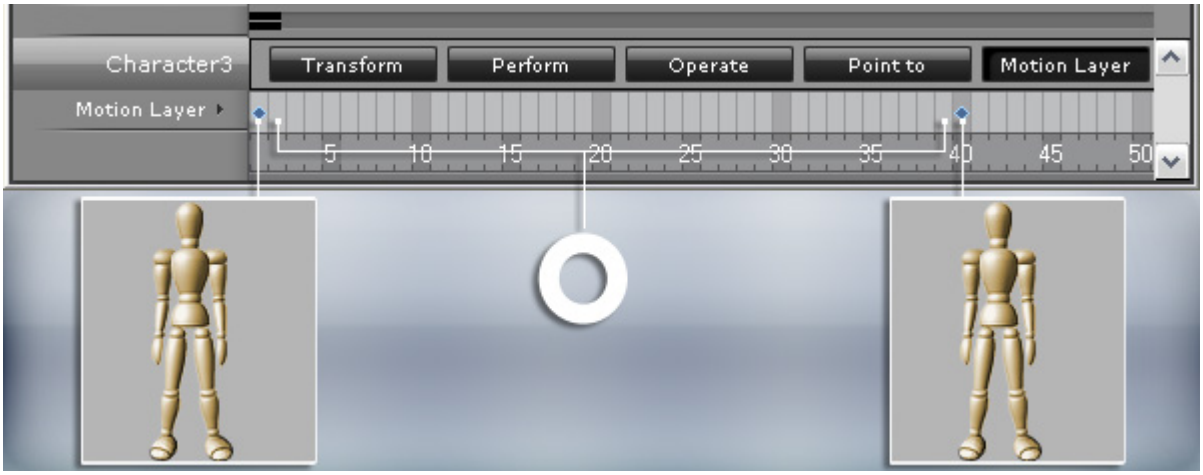
Absolute/Relative for Pure Key-Frame Motion

The **Pure Key-Frame Motion** means to generate motion only by keys in different frames. There is no other motion clips in another tracks.

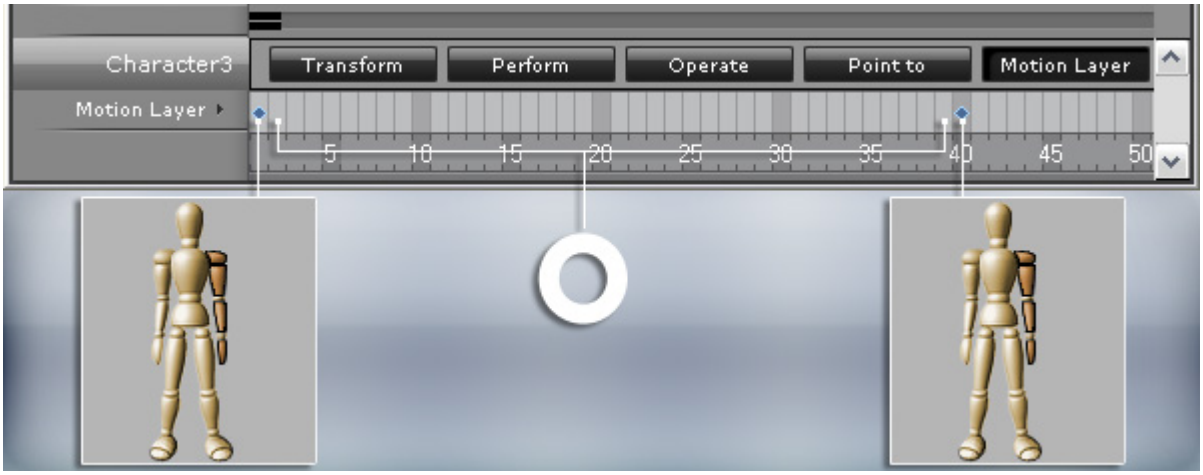
In this case, only the **Transition Effect** between two adjacent keys will be different in accordance with the status of these two keys. Here are the rules for the transition effect.



No transition effect between **Absolute** and **Relative** keys.



Transition effect is generated between **Relative** and **Relative** keys.

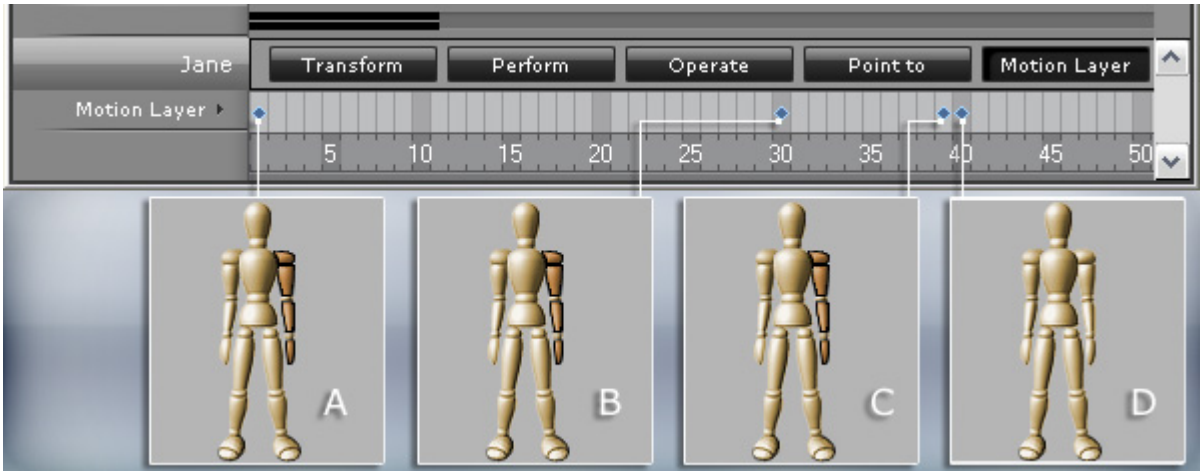


Transition effect is generated between **Absolute** and **Absolute** keys.

Absolute/Relative for Motion Clip

If we want to have the motion layer key affect the motion clips in **Move**, **Perform** or **Operation** tracks, we need to use both **Absolute** and **Relative** alternately.

Given a lady walking on the street (Walking motion applied already in the Perform track), we want her to hold her bag with her left hand from frame 0 to 30 and to reach down and swing the hand naturally from the 40th frame, we need to do it as described in the following illustration.



	
A. Set this key **Absolute** so the lady's hand holds the bag without being influenced by the motion clip from another track.	**B**. Since we don't want the lady to reach down her hand abruptly, we need to generate a transition effect from frame 30.
	
C. Set both the keys in frame 30 and 39 **Absolute** will then generate a transition effect of stretching hand. The key in frame 39 is relatively crucial hereupon.	**D**. Set the key in frame 40 **Relative** so her hand starts to swing along with the motion clip in another track.

Link and Attach

In **iClone**, the **Link** function is now enhanced. You are allowed to link your object to another one at a specific point of time and then unlink it at another time.

The **Attach** method allows you to combine objects into one piece while the individual sub nodes are still available for modifying.

Basically, the **Link** never changes the **Hierarchy Structure** of the current project while **Attach** does change the structure unless you detach a combined object.

The Comparison of Linking and Attaching

This chapter provides the comparison table for **Linking** and **Attaching**.

	Linking	**Attaching**
When to Use	• Passing an object from one parent node to another in a specific time. • Changing the camera's view to another actor's or object's view. • Having the light to move with another moving object.	• Creating a merged object and add it into the **Custom** library of **Props**. • Adding an actor with accessories into the **Custom** library of **Actor**. • Converting a model with an **iProp Helper** to become a custom iProp.
Same Behaviors	• The child node follows the parent's transform data - R/T (no option) • The child can still be transformed after linking. • Picking the bone nodes directly is available.	• The child node follows the parent's transform data - R/T/S (optional) • The child can still be transformed after attaching. • Picking the bone nodes directly is available.
Picking Parent/Child	• Single click to pick the parent, as well as the child. • When the parent is not selected, right click on the child node will turn on it's right-click menu.	• Single click on the parent or the child to pick the grouped object. • Double click to pick the child. • When the parent is not selected, right click on the child node will turn on it's right-click menu.

	Linking	Attaching
Generating Keys in Timeline	• Available.	• Not Available.
Saving Parent to Library	• Parent-child relation is broken. • Only parent is saved.	• Parent-child relation is saved.
Prop to Actor	• The prop remains a prop.	• The prop converts to an accessory.
Levels	• Multiple levels available. • Recursive linking is forbidden.	• One level only. • Merging parent and child as one new object allows attaching more children. • The merged child becomes a permanent component of the parent and is no longer able to be detached or transformed.
Hierarchy in Scene Manager	• No change.	• Changes. • Child is moved under the parent node.

Link

Link is a very convenient function for you to simultaneously move, rotate or scale one or more objects, such as an actor, accessories or props, without adjusting them one by one. You do this by linking them to a specific parent object.

The linking relationship can be set as a key, therefore, you may set a link key at one time and set an unlink key at another. By means of this concept, you may have the object specified to be transformed during different time frames.

We will use props to describe the linking process.

Link

1. Drag and drop the desired prop(s) into current project.

2. Double click on the prop to pick it.

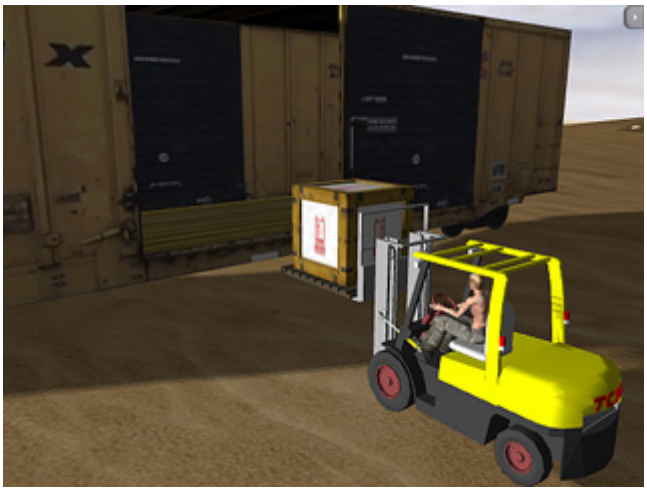
Drag and drop the crate

3. Scroll to the **Linkage** section and click **Pick Parent** button.

4. Navigate on the 3D viewer and click on the target object. The prop may be still at the wrong position.

Pick the lifter of the forklift as the parent of the crate

5. Adjust the position of the prop for better placement if necessary then click the button and check the correct sub-node is selected in the **Align Position to Parent** box and click **OK**. The prop then will be forced to align to its parent.



The crater is aligned to the lifter

6. Move the parent object to test the result.

Note:

- The **Link** relationship can not be stored along with the parent if you add the parent into the **Content Manager**/**Custom** library. It can only be saved in the project.
- If you wish to keep the relationships between the parent and the child, **Attach** method is highly recommended.

Change Link Parent

You may link your object in one frame to a target and then link to another target at another frame. The transform data of the object then will be driven by different parents in different frames. Following the example above, we will now go on more to describe this feature.

1. Go to the desired frame when the prop will be linked to another parent.

Go to the frame for changing the linking parent

2. Click the **Link** button again.

3. Click on the desired parent on the 3D viewer. Now the parent is changed.

The crate is now linked to the train.

4. Move the new parent object. The transform data of the prop will now be controlled by the new parent.

The train moves away with the crate

Attach

Attach is more similar to the traditional **Merge** function used in previous versions of **iClone**. However, **Attach** allows you to modify each node individually in the attached objects. You may then add the combined object into your custom library without destroying the relationship.

We will use a prop to describe the attaching process.

Basic Attach

1. Pick the prop you wish to be the child in the attaching relationship.
2. Go to **Set**/**Props**/**Modify** page and scroll to the **Attach** section, click the **Pick Parent** button. Alternatively, you may right-click on it and select **Attach** in the **Right-click Menu**.
3. Navigate in the 3D viewer and click on the target object.
4. a. If you are using **Manipulating Tools**, click once on either parent or child node will pick the whole group; and double-click on the child to pick it.

   b. If you are using **Camera Tools**, double-click to pick the whole group. You may only use the **Scene Manager** to pick the child node.
5. You may optionally click ... to pop up the **Attach to Sub-Node** panel and check the **Align Position to Parent** box to have the child aligned to the parent instead of adjusting it manually.
6. Click the button in the bottom of the **Content Manger** to save the merged object into library while the attaching relationship is kept as well.

Note:

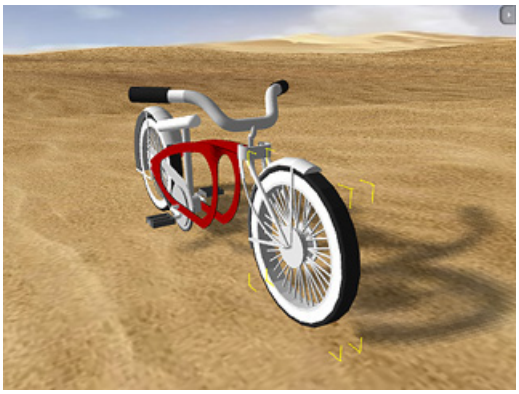
- Please notice that all the props attached to an actor will be converted into accessories. You may modify their parameters in the **Avatar**/**Accessories**/**Modify** page.
- The **Attach** relationship can not be set as keys throughout the current project. Please use the **Link** method for this purpose.

Inherit Move, Rotate Scale

You may choose to have the child inherit the **Move**, **Rotate** and/or **Scale** data from the parent object. They are checked by default.

In the following example, the rare tire is attached already to the frame and inherits the move, rotate and scale data of it.

The front tire will now be attached to the frame while the **Move**/**Rotate**/ **Scale** boxes are **unchecked** individually.



Attach the front tire to the frame while:

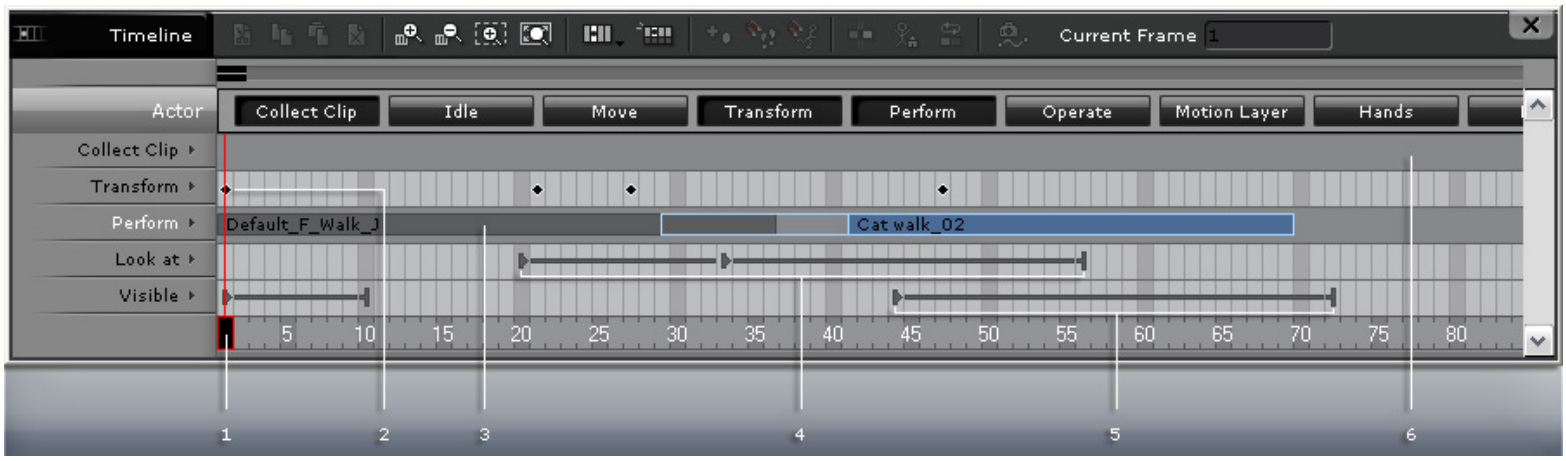
Move: **Unchecked** Rotate: **Checked** Scale: **Checked**	 Move the frame away	Move: **Checked** Rotate: **Unchecked** Scale: **Checked**	 Rotate the frame
Move: **Checked** Rotate: **Checked** Scale: **Unchecked**	 Scale the frame		

Timeline

Animation Timeline Editing

Basic Concepts

There are **four types** of data in tracks and **one special** track for **Timeline Editing** in **iClone** - **Key**, **Clip**, **Target-switching**, **On/Off** and **Collect Clip**.



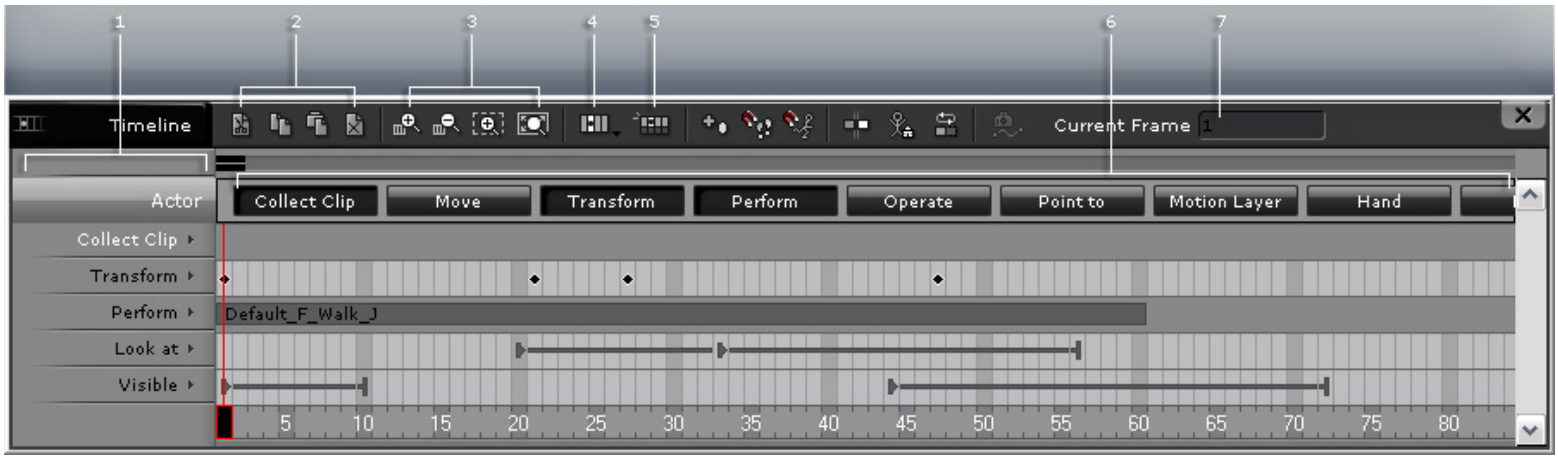
1	Timeline Pointer	Drag the pointer on the Timeline frame meter for quick frame review.
2	Key	**Animation Key** stores RTS (Rotation, Translation, Scale) data for all objects in iClone 3D space, including camera, lighting, actors, props, accessories. **Parameter Key** stores settings of specific objects such as Color, Range, Beam, Falloff of **Lights** and Lens, Focal Length of **Cameras**.
3	Clip	Animation **Clip** stores the motion/animation clip segments of animation data corresponding to animated objects. A clip can be accelerated/decelerated, looped or blended into another clip.
4	Target-switching	**Target-switching** data resembles the key concept. It stores the targeting relationship between one object and its target. The target can be changed or even dissolved at any time frame.
5	On/Off	The **On/Off** data on the **Visible** track stores only one status of the objects. The **On/Off** data can also control the emitter of the particle effect to start/stop sending out the particles.

6	Collect Clip Track	This special track doesn't keep any data or clips. It helps you with selecting a range in the **Timeline** and then merges and saves the motion/animation-related data into library for actors or embeds the data to props. **Actors**: Data in **Move**, **Transform**, **Perform**, **Operate**, **Motion Layer** and **Hand** tracks will be merged and saved. **Props**: Data in **Move**, **Transform**, **Perform**, **Operate**, tracks will be merged and saved.

Key/Clip Selections

- **Select single key** - Single click on the target key/clip, the selected key/clip is highlighted in blue.
- **Tab Key** - Press **Tab** to jump to the next key/clip, **Shift + Tab** to jump to the previous key/clip.
- **Select All keys** - Double-click on the target track name.
- **Multiple key selection**
  - Drag the cursor in the specific track to highlight the keys/clips covered under.
  - Use Ctrl + LBM (Left Mouse Button) to select multiple keys/clips.
  - Use Shift + LBM to select the adjacent keys/clips.
- **Copy Keys or Clips** - Use Ctrl + drag keys or clips to duplicate them.

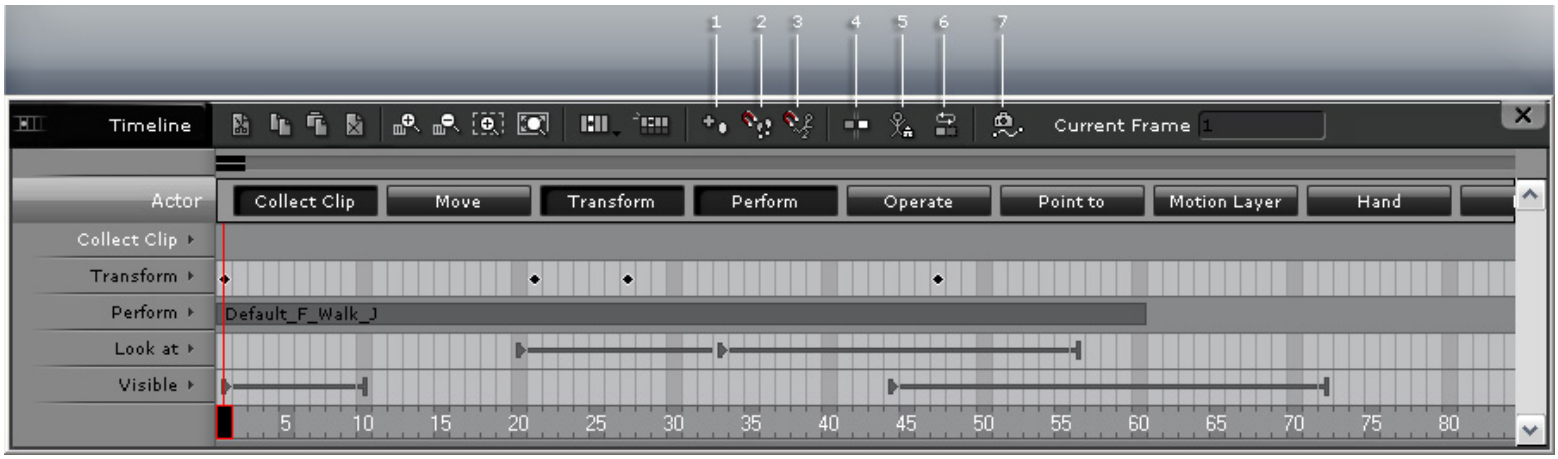
Timeline Operation-Basic



1	Track Name	• This panel shows an object's name and its sub track names. • Single click on the name to select the object. • Double click on the name to select all the data in the track.
2	Cut/Copy/Paste/Delete	• **Cut**: Click the **Cut** button to cut the target key or clip into the clipboard. • **Copy** and **Paste**: Click on the copy and paste button, or use hotkey Ctrl + C on selected keys or clips to copy, and Ctrl + V to paste to the target frame (single or multiple keys) • **Delete**: Click on the **Delete** key or **Delete** button to delete highlighted keys or clips.
3	Zoom in/out Actual size Fit window	• Click the **Zoom in/out** buttons to increase or decrease the time (cell) unit size. • Click the **Actual Size** button to show the time unit represented as 60 frames per second. • Click the **Fit window** button to view the whole timeline items within the timeline window space.
4	Track list	Click **Track list** drop-down list and check on/off track items to show/hide the individual track.
5	Object-related track	When you pick any object on the 3D viewer with this button down, the Timeline displays only the track of the picked object.
6	Sub tracks	Click these buttons to show/hide the corresponding tracks that belong to the picked object.

7	Current Frame	This field shows the current frame number when you click on the target frame on the timeline. You may also type in the frame number to jump to the target frame. This allows you to go to your precise target location; especially convenient for animation with clear timing control.

Timeline Operation Advanced



1	Add key	• Double click on the timeline cell area to add key, or press this button to add key. • The key also can be automatically added when users alter any key information in the **Modify Panel**. • **Add Key** button only works for the **Transform**, **Motion Layer**, **Visible**, and all tracks for cameras and lights.
2	Zero Transform Key	• **Zero Transform Key** works only for the **Transform** track. • Click the **Zero Transform Key** button to add a neutralizing key. • This key is used to add a key to ignore all of the transform keys in the same track.
3	Reset Pose Key	• **Reset Pose Key** works only for the **Motion Layer** track for **Actors**. • Click the **Reset Pose Key** button to add a key to ignore all the **Motion Layer** Keys in the same track, which stops the bone offset effects from the anterior keys.
4	Break	• **Break** works only for **Move**, **Perform**, **Operate** tracks. • Click the **Break** button to split the selected clip at the current frame into two new clips.
5	Reset Motion Pivot	• **Reset Motion Pivot** button works only for the **Perform** track. • When a clip contains motion that offsets the actor away, you may click this button to have the whole motion to proceed on the same position where the motion starts. • You may then store your own animations into the library to be prepared for being used by the AML, so you may create your own perform, walk or operate animations.

6	Loop/Speed Switch	• **Loop/Speed Switch** button only works for the animation/motion clip tracks. • Press the **Loop/Speed Switch** button up and drag the end edge of the clip toward right to change the speed. • Press the **Loop/Speed Switch** button down and drag the end edge of the clip toward right to repeat the clip.
7	Smooth Camera Movement	• Press the **Smooth Camera Movement** button to insert one key into the interval between two transform keys automatically by **iClone**. • The keys inserted may smooth the transform course of the camera.

Basic Operation for Animation Clips

- Right click on the target clip, it brings additional motion options.

Objects	Tracks	Right-click Items
Actors, Props, Accessories	Move, Operate	**Cut**, **Copy**, **Paste**, **Delete**, **Break**.
Actors	Perform	**Cut**, **Copy**, **Paste**, **Delete**, **Break**, and **Align**, **Align Whole Clip**, **Reset Pivot** to the clips or **Import** motion files.
Props	Perform	**Cut**, **Copy**, **Paste**, **Delete**, **Break**, **Import** animation files.
iProps, 3D LiveProps	Perform	**Cut**, **Copy**, **Paste**, **Delete**, **Break**, add clips from **Animation List**, **Import** animation clips.

- **3D LiveProps** will use **Idle** animation by default if there are no specific animation clips defined on the Timeline.
- Idle animation is a looping animation of a selected **LiveProp**, if no **Idle** animation is defined in the original project, the prop will be static by default.

Turn On Auto Add Idle Motion

iClone provides auto-add-idle-motion feature for each actor you apply into the project. Actors then generate automatically the vibrating or breathing motions as playing or recording. However, the feature is turned off by default.

If you want **iClone** to automatically add idle motion in the **Director Mode** or the **Editor Mode**, you may turn on this feature.

1. Select an actor.
2. Go to **Actor**/**Persona**.
3. In the **Modify Page**, check the **Auto Add Idle Motion** box.
4. Start playback in the **Editor Mode**, the actor will present idling motion.

Note:

- In **Director Mode**, the **Auto Add Idle Motion** feature is always on. You may not disable it.
- Please refer to **Idle Track** section for more information.

The Rules of Animation Tracks

When **iClone** is playing a project it will follow a specific priority as it encounters multiple clips or keys in the same frame. The priority of the tracks for actors or iProps is as follows (from highest to lowest):

Priority	Animation Tracks	Source of Motion
1	**Motion Layer** and **Transform** tracks.	Motion Layer keys are generated by users' custom motion editing from Edit Motion Layer Each time you adjust the actors' **Transform** data, a key will generate in the **Transform** track.
2	Operate tracks.	Operate tracks keep the actors' motion when interact with iProps
3	Perform tracks.	Perform tracks keep the motion applied directly from the content library in Editor Mode or generated from the Director Mode perform commands, e.g. hotkey 1,2,3,4.
4	Move tracks.	Move tracks keep movement animation generated from Move commands, e.g. WASD walk and run motions in the Director Mode or right-click menu command.
5	Idle tracks.	Idle motion is automatically generated when you playback the project, the longer you play, the longer the idle motion clips are randomly generated. You can turn off the idle motion generation by check off Persona - Auto Add Idle Motion If any given time there is no other motion track data exists, idle motion will take place. Idle motion clips and random probabilities are defined in Persona AML file.

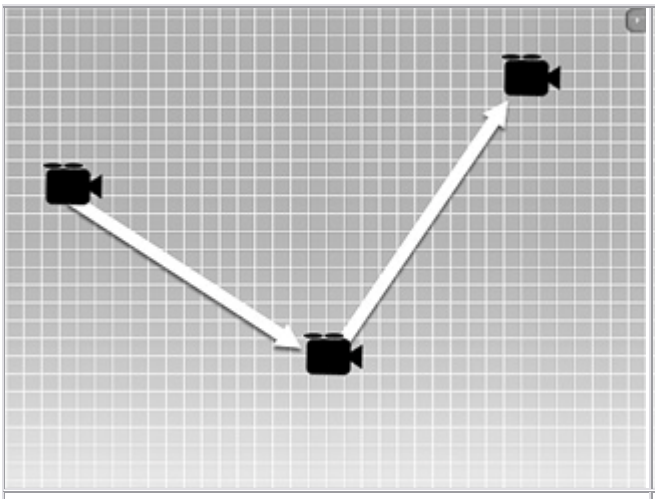
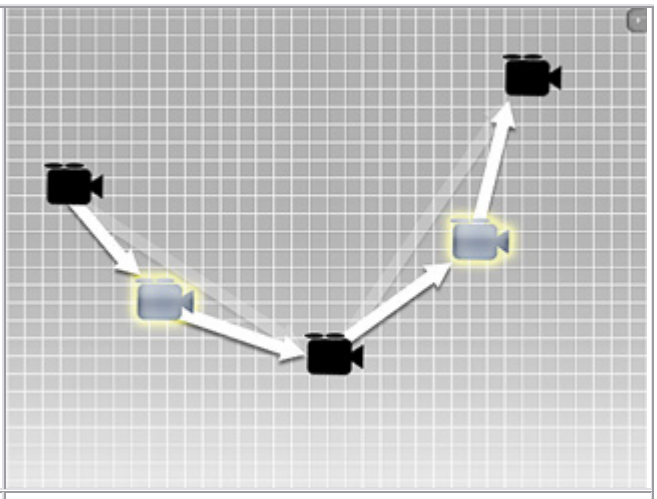
Note:

- Please note that although clips in the **Perform** track possess higher priority than ones in the **Move** track, all the **Perform** clips that are applied from the **Content Manager**/**Template** or **Custom** libraries will have lower priority than the ones in the **Move** track.
- The priority of Move and Perform tracks can be defined by DramaScript AML file, it means you can have your actor walk, in the same time perform fight or smoke on the upper body part.

Smooth Camera Movement

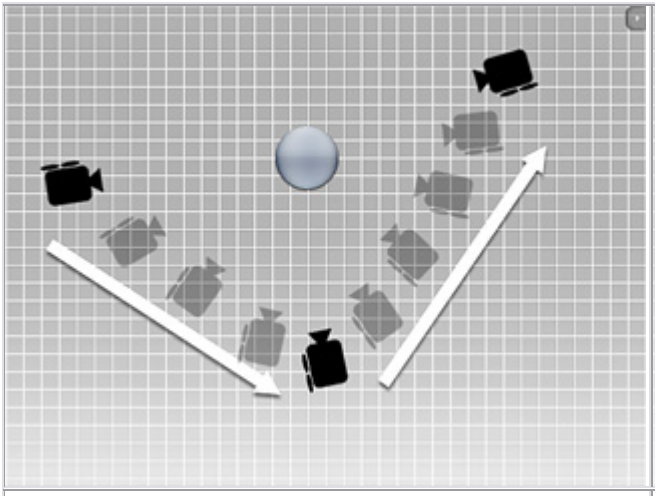
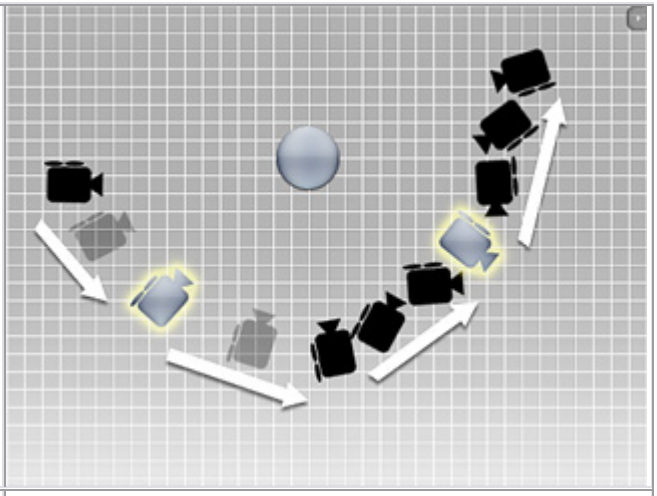
Since **iClone** interpolates between two keys (especially for the **Transform** keys) in a linear method so a camera's path may not be smooth enough. Using the **Smooth Camera Movement** feature will have **iClone** insert transform keys to make the camera move on a curve-like path.

The illustrations below describe the path before/after the **Smooth Camera Movement** feature is applied.

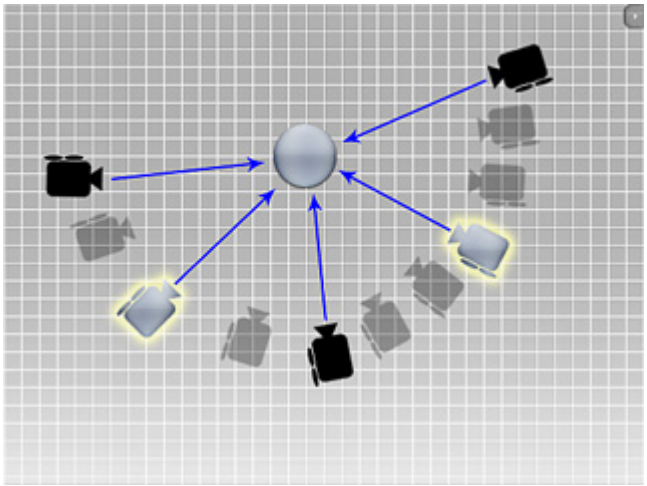
	
Before **Smooth Camera Movement**.	After **Smooth Camera Movement**.

Enhance the Use of Smooth Camera Movement

Since **iClone** interpolates between two transform keys using a linear calculation you may sometimes find an unexpected rotation of the camera after you apply the **Smooth Camera Movement**, especially when the transform data of the camera involves **Rotation**.

	
• Rotate Keys Involved. • Before **Smooth Camera Movement**.	• After **Smooth Camera Movement**. • Camera Rotates Unexpectedly.

It is highly recommended to make the camera **Look At** the target to prevent this behavior because the **Look At** feature will fix the camera on your desired target even during movement.



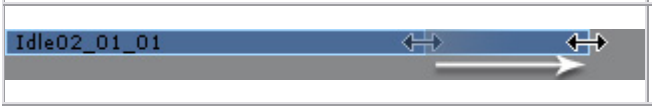
Clip Editing

Speed, Loop and Blending

In **iClone**, you may change the speed and loop status of any clip in any track of the timeline. Intervals between clips will have a blending effect generated automatically. Adjusting the length of speed, loop and blending is possible.

Speed

1. On the timeline, select any track in which a clip exists.
2. Pick the clip.
3. Press **UP** the **Speed/Loop Switch** button on the timeline.
4. Drag the end (right edge) of the clip to change its speed. The longer the clip is, the slower it is and vice versa.

	Move your cursor to the end of the clip, it will change into a double-headed arrow.
	Squeeze the clip to accelerate the action.
	Stretch the clip to decelerate the action.

Loop

1. On the timeline, select any track in which a clip exists.
2. Pick the clip.
3. Press **Down** the **Speed/Loop Switch** button.
4. Drag the end (right edge) of the clip to change its loop time. The clip then shows in a series of connective triangles, each triangle means to loop once.

	Move your cursor to the end of the clip, it will change into a double-headed arrow.
	Move your cursor right to loop the clip.

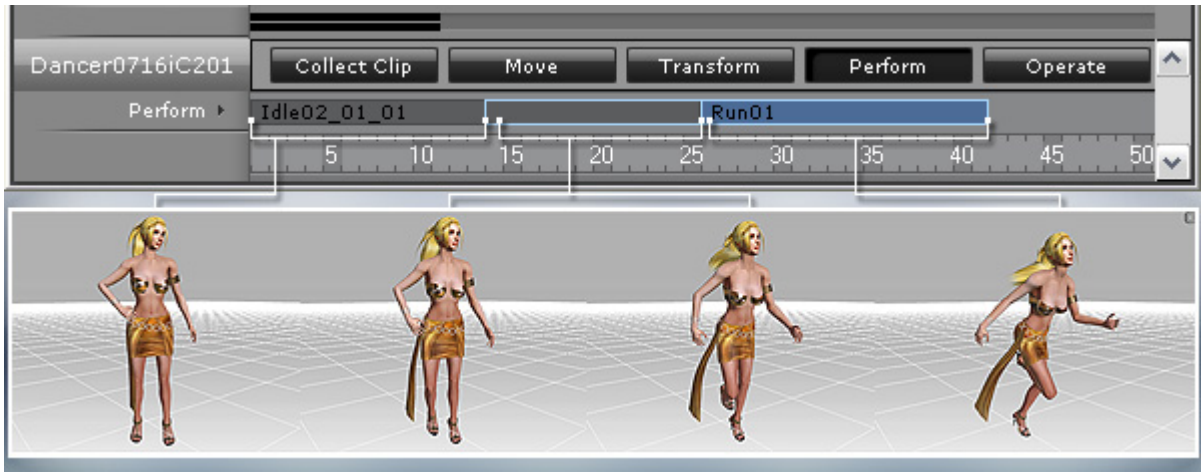
Blending

Each clip possesses two blending parts, one at the head and the other at the end. The head blending part can be adjusted while the end blending part can not.

- When there is no previous clip to connect to the blending part of a clip will blend with the idle motion.
- The adjustable blending part will only show when there is no gap between two clips.

Follow the steps below to have two motions blend with each other:

1. Have two clips applied into the **Perform** track (Idle and Run motions).
2. Pick the latter clip. The blending part will be shown before the clip. (Empty rectangle)



3. You may decide the start frame of the blending effect by dragging the left edge of it.

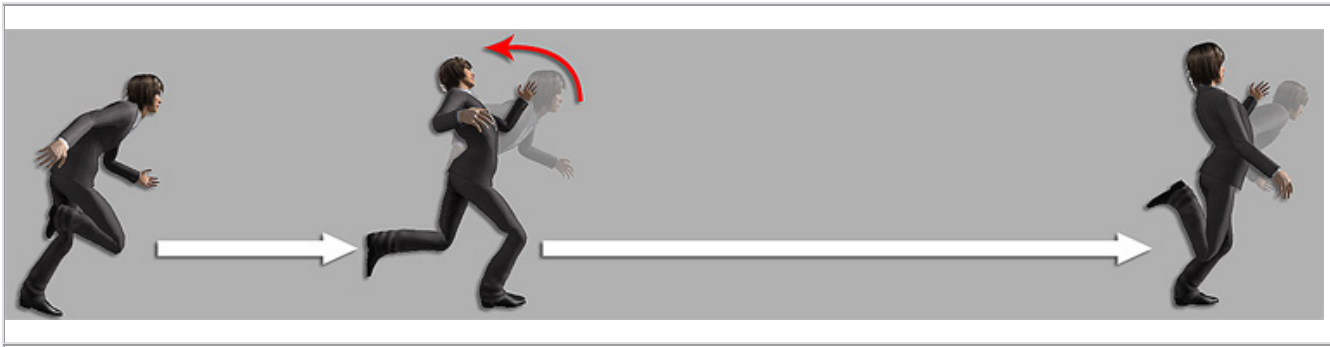
Motion Layer and Clips - Reset Pose Key

This feature is designed especially for the **Motion Layer** track. Press the button to add a pose key to counteract the **Motion Layer** effect of the previous key.

1. On the timeline, apply a motion clip to the **Perform** track and select the **Motion Layer** track.

The actor performs a Run motion from the start frame.

2. Go to the desired frame, set one **Motion Layer** key to tune the bone offsets for the **Perform** motion.

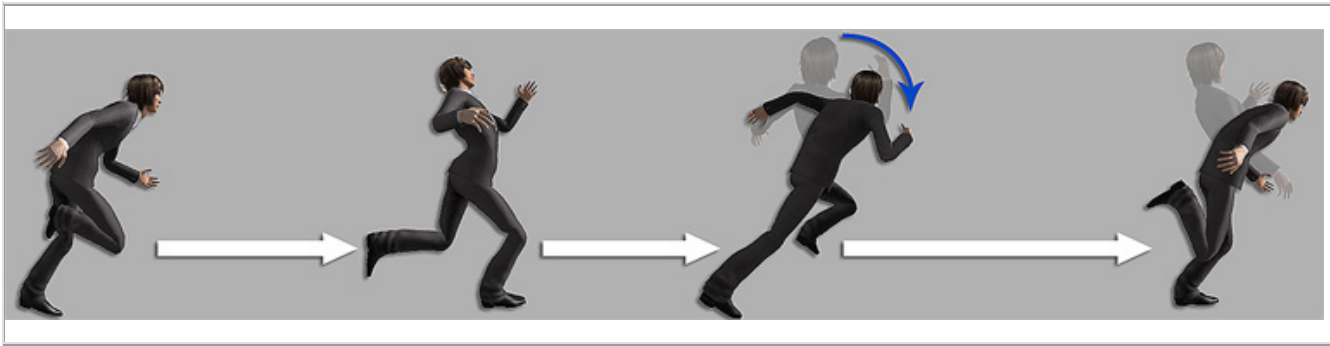


- The upper torso is modified by setting a key in the **Motion Layer** track.
- The upper torso is influenced by the key afterward till the end of the motion.

3. If you are not satisfied with the result and you want to reset all the offsets, you may either:
   - Delete this key and add a new key again.
   - Click the **Reset Pose Key** button.

   And then adjust the pose again in the same frame.

4. Go to another frame. Click the **Reset Pose Key**. **iClone** then adds a neutral key to cancel all the effects from the previously added keys.



- The **Reset Pose Key** cancels the effects of all previous keys.

Transform and Clips - Zero Transform Key

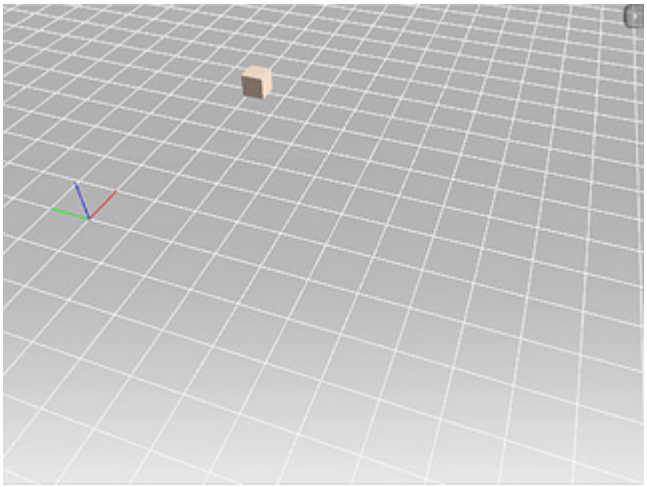
This feature is designed especially for the **Transform** track. Press the button to add a transform key to neutralize the **Transform** effect of the previous keys. The transform data of the prop when it is modeled is retrieved and set as the zero transform key.

The **Zero Transform Key** feature is used to resume the move course of an actor/iProp after you add transform keys to it.

Meanwhile, when you are modifying the transform data and you are not satisfied with the result, you may also click this button to neutralize the data in the key and start all over again.

Zero Transform Key - Regular Props

1. Apply one regular prop and open its **Transform** track. The current transform data is added into the first frame in the track.

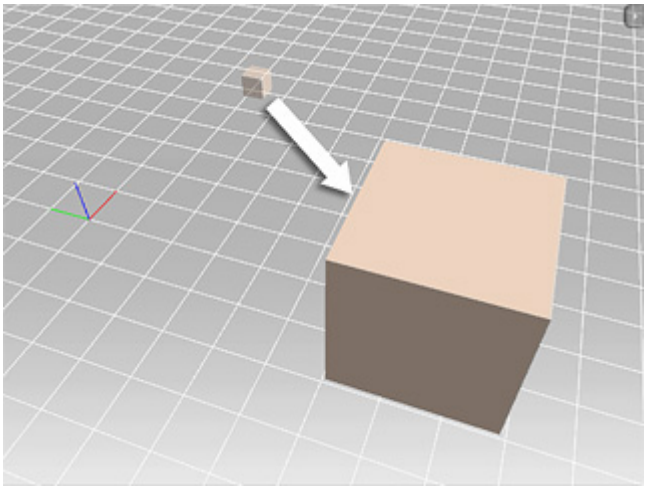


2. Go to desired frame; add one key by moving, rotating or scaling the object.

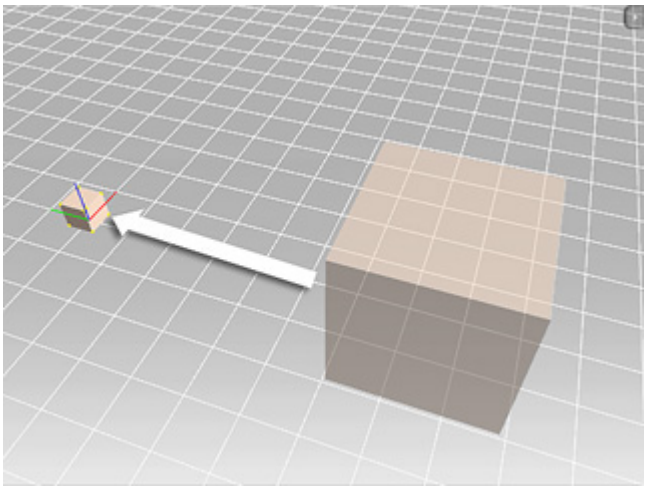
3. If you are not satisfied with the result and you want to reset the data, you may either:

   - Delete this key and add a new key again.
   - Click the **Zero Transform Key** button.

   Adjust the transform again in the same frame.



4. Go to another frame later than the key added in step 3. Click the **Zero Transform Key**. **iClone** will then add a neutral key to cancel the effect of previous keys.

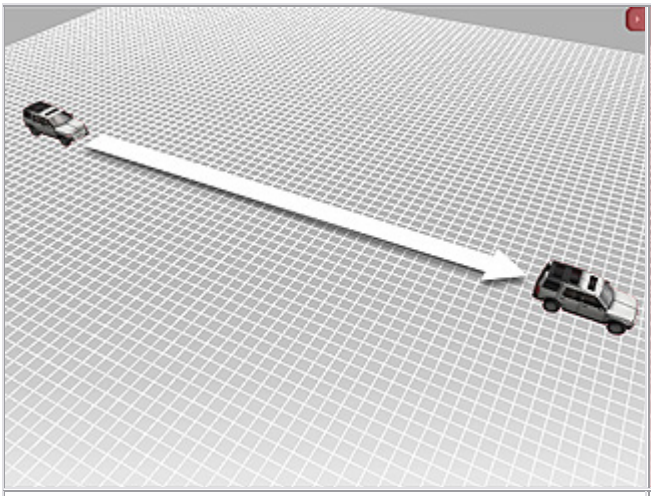
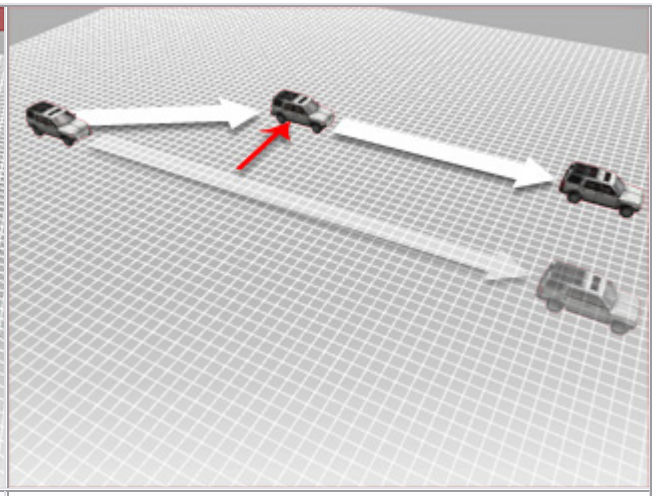


Zero Transform Key - iProps

In this section, we intermix the motion/animation (in the **Move** track) with the keys (in the **Transform** track) and introduce the result as a new **Zero Transform Key** is added.

1. In the timeline, apply a motion clip to the **Move** track select the **Transform** track.

2. Go to desired frame, set one **Transform** key to tune the transform data which effects the **Move** motion.

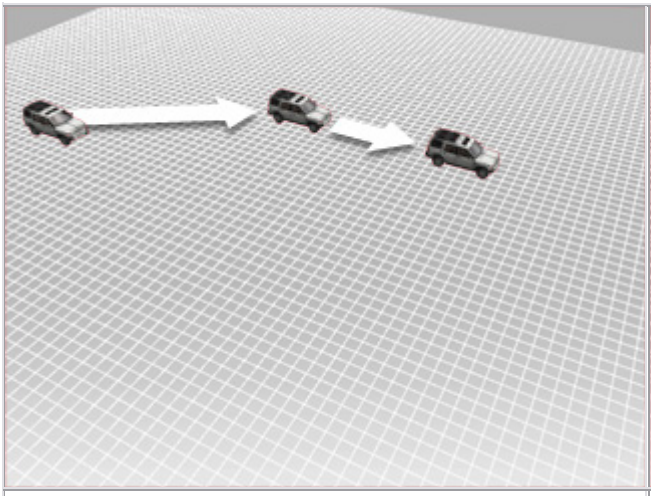
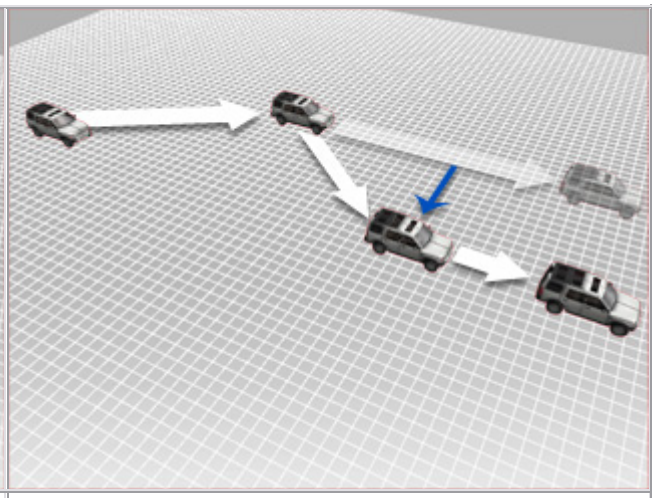
	
• The original moving path of the iProp. • Moving animation is saved in the **Move** track.	• A transform key (offset along the X axis) is added. • The path is modified by the transform key.

3. If you are not satisfied with the result and you want to reset the data, you may either:

   - Delete this key and add a new key again.
   - Click the **Zero Transform Key** button.

   Adjust the transform again in the same frame.

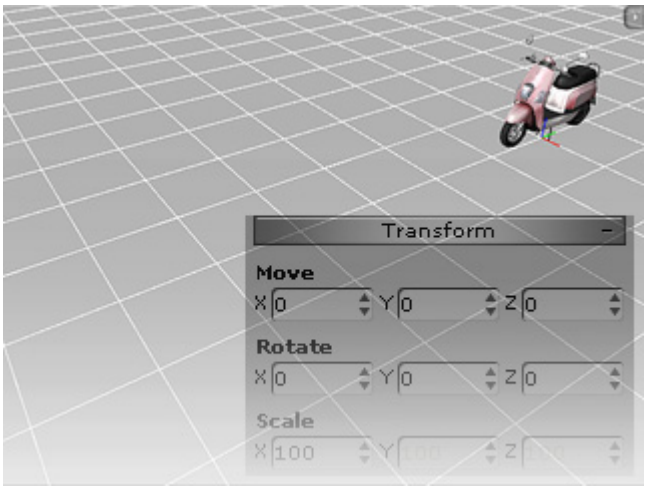
4. Go to another frame. Click the **Zero Transform Key**. **iClone** will then add a neutral key to cancel the effect of all the previous keys in the track.

	
• When the car moves to the location as shown in the illustration, press the **Zero Transform Key** button.	• A new **Zero Transform Key** key neutralizing the prior effect is then added. • The path is back to the original one.

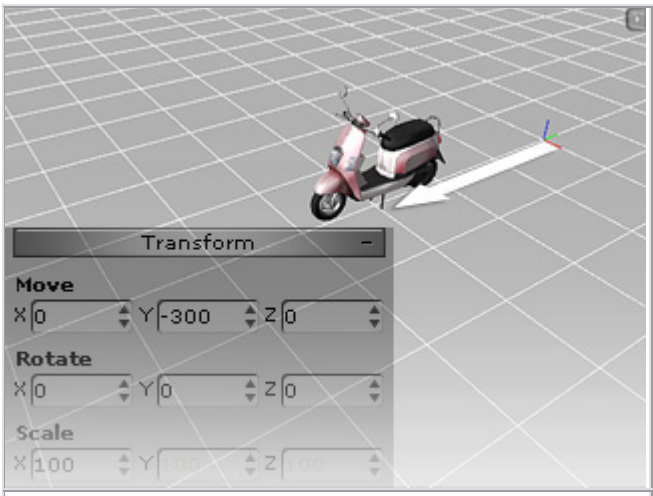
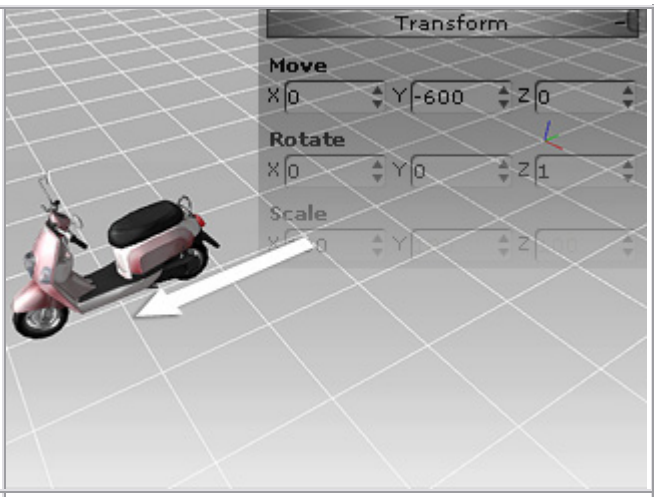
Formula: Transform in Move Clip and Transform Data

The transform values in the **Modify** page can be described by the following formula:

Transform by Move Clip (**Move Track**) + **Transform Key** (**Transform Track**) = **Transform Values** (**Modify Page**).



Initial Position

	
Set a **Transform Key**.	Use **Move Command** to move the iProp. The **Transform Data** are modified following the formula above.

Clip Preparing

Reset Motion Pivot

You may notice that sometimes the actor moves away as we apply an animation to it. You may want to modified this motion and make it a custom one to be used later as **Perform**, **Walk**, **Operate** motions. To achieve this goal, it is better to have the whole motion to happen in the same position. You may then utilize this feature to prevent from setting the pose back to the same location manually frame after frame.

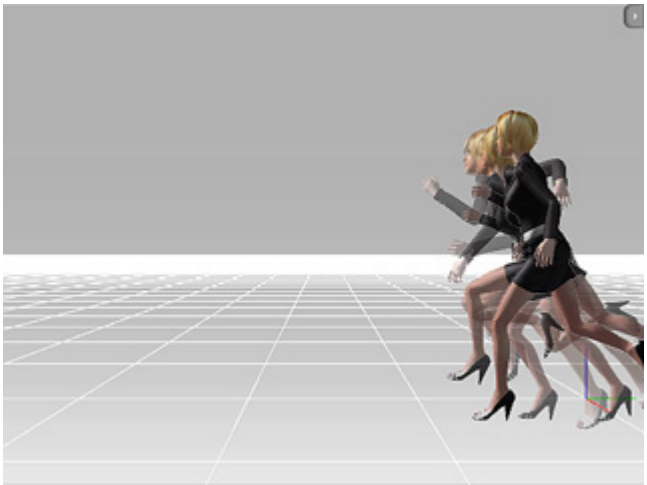
Prepare Custom Motion

1. Pick one actor to apply a motion to.

2. Open the actor's **Perform** track. Apply a motion that moves the actor away.

   You may optionally modify the motion via the **Motion Layer** track.

3. Select this motion clip in the **Perform** track. Click **Reset Motion Pivot** button. The whole motion then happens at the same position.



4. Open the **Collect Clip** track. Drag in the track to make a range to include all the motion in the **Perform** track.

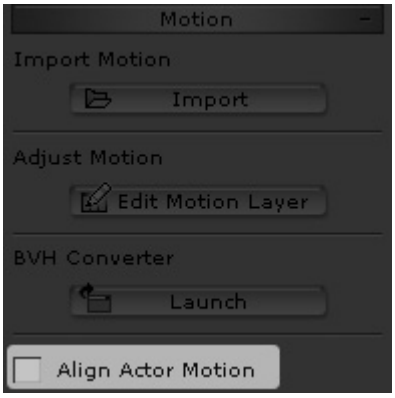
5. Right click in the range and save it to your desired directory.

Note:

- You may optionally create a loop motion for **Persona** file to refer to.
- If your actor is not at the origin as you apply it into **iClone**, you may add a transform key to set the actor to the origin.

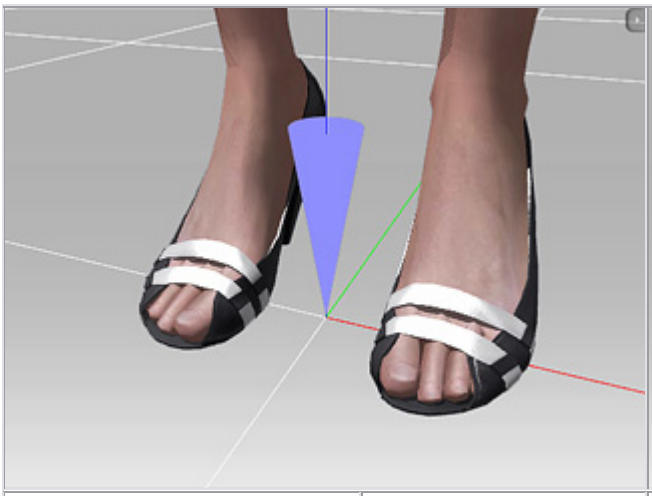
Align Actor Motion

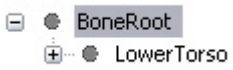
As you are combining motions for the actor, you may find it hard to locate the actor to start a motion at the same location as the one at the end of the previous motion. **iClone** provides a feature, **Align Actor Motion** to auto align the actor pivot, and let the next motion start from the ending location of the previous motion.



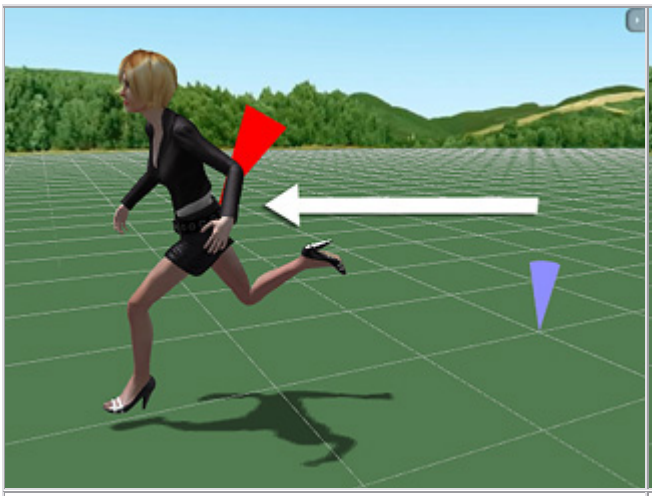
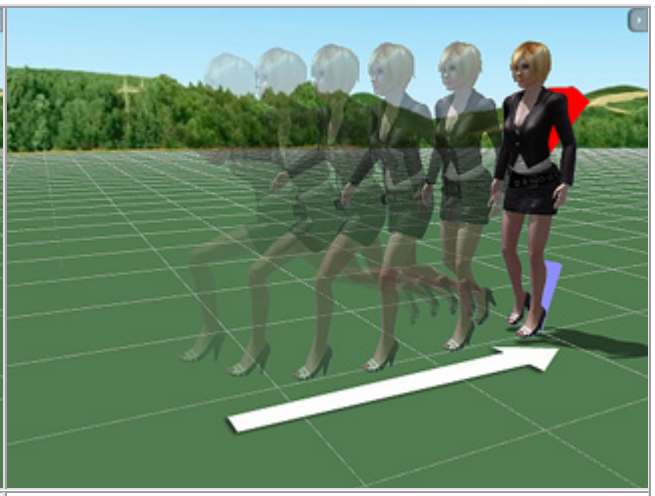
Actor Root? Motion Root?

Before we start to describe the **Align Actor Motion** feature, we need to understand what **Actor Root** and **Motion Root** are.



	The **Actor Root** (BoneRoot, Pivot)		The **Motion Root** (LowerTorso)
Actor Root: It is also known as the **BoneRoot** or the **Pivot** of the character, which determines the actor's actual location, i.e., the value of the transformation data (**Move**, **Rotate**). Actor Root changes only when transformation is being applied in the **Editor Mode**, **WASD** or right-click menu/**Move** command is used in the **Director Mode**. The data is kept on the **Transform** track. 		**Motion Root**: It is also known as the **LowerTorso** node in the actor's bone hierarchy. All applied motion clips affect the transformation change of this node, thus you might see kick or dance motion. However the **Actor Root** remains in the original position. All applied motion clips, either from the **Editor Mode** or from the perform command in the **Director Mode**, are kept on the **Perform** track. 	

Problem: When you apply motions to an actor the **Motion Root** will sometimes be moved away from the **Actor Root**. Each time a motion finishes, the **Motion Root** aligns back where the **Actor Root** in order to blend with the **Idle Motion**. (The **Idle Motion** is designed to have the two roots aligned) Therefore, a motion composed of several motion clips will always have annoying back-to-the origin situation at the interval among clips.

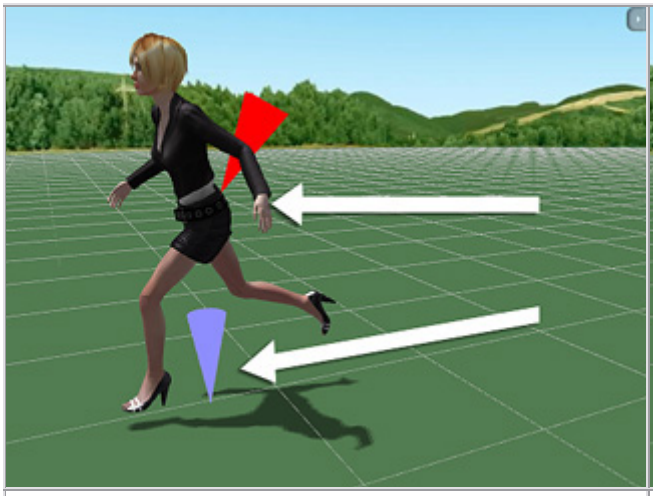
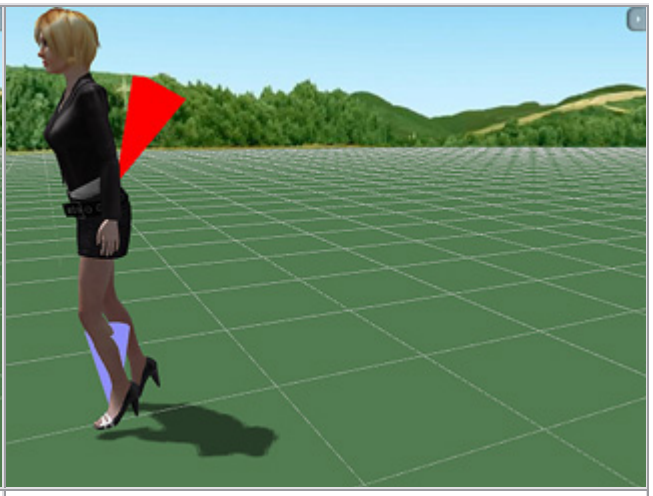
	
A "Run" motion is applied to the **Motion Root**. The motion clip brings the **Motion Root** away from the **Actor Root**.	If the **Auto Add Idle Motion is on**, you might find the motion being **dragged back to the Actor Root**, because the **Actor Root** is still there, and the idle motion always aligns with the **Actor Root**.

Purposes of Align Actor Motion

Connective Motions without Back to Origin

1. Please select an actor and go to the **Animation**/**Motion**.
2. In the **Modify** page, check the **Align Actor Motion** box.
3. Apply a motion template from the **Content Manger**.

The actor will remain where it is after the motion finishes instead of going back to the origin to align with the idle motion. With the **Align Actor Motion** box checked, you may add as many motions without caring about the back-to-origin issue.

	
The **Actor Root** moves with the **Motion Root**.	The other motions (idle motion included) will start at the new location.

Motion along the Terrain

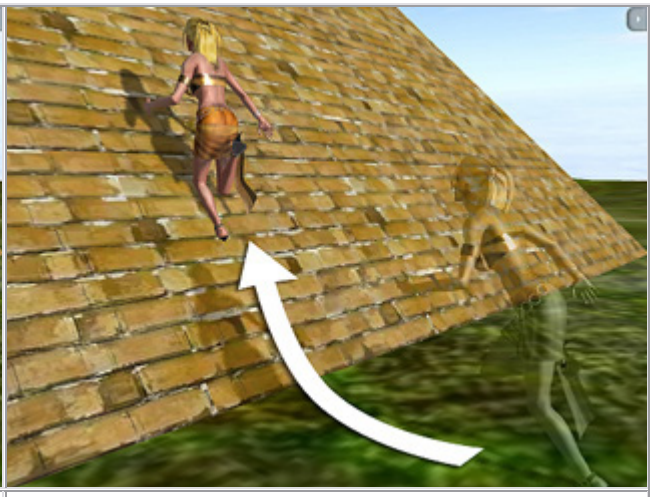
The most powerful function of the **Align Actor Motion** feature is to have an actor snap to or follow the terrain as you apply a motion to it.

1. Select **Snap to Terrain** tool in the control bar.
2. Select one actor; go to the **Animation**/**Motion**/**Modify** page.
3. **Uncheck** the **Align Actor Motion** box.
4. Go the start frame of the project; apply "Run" motion to the actor.

	
Snap to Terrain is on but the **Align Actor Motion** is **OFF**.	The actor runs through the terrain.

5. Select another actor; go to the **Animation**/**Motion**/**Modify** page.
6. **Check** the **Align Actor Motion** box.
7. Go to the start frame of the project; apply the same "Run" motion to the actor.

Because the **Actor Root** is affected by both the **Snap to Terrain** and the **Motion Root** at the same time the latter actor will run along the terrain.

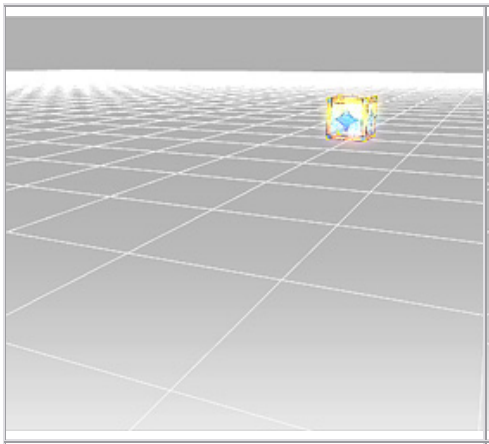
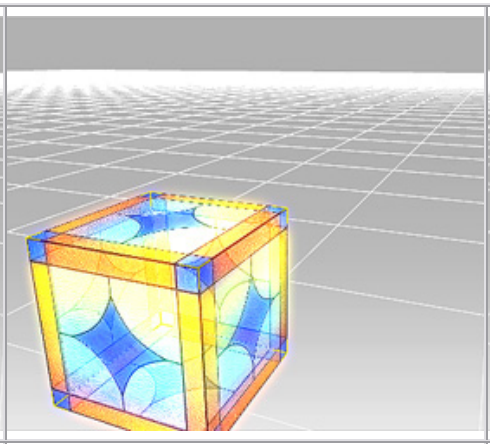
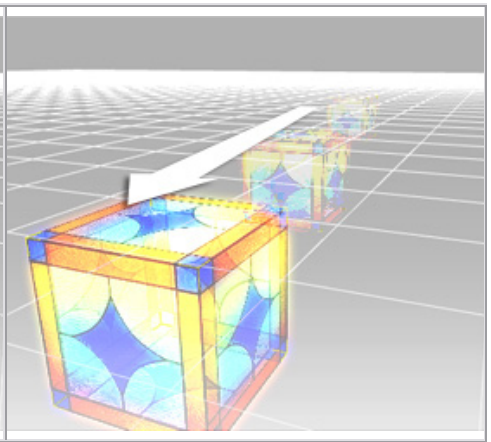
	
Snap to Terrain and **Align Actor Motion** are **ON**.	The actor root snaps along the terrain.

General Track

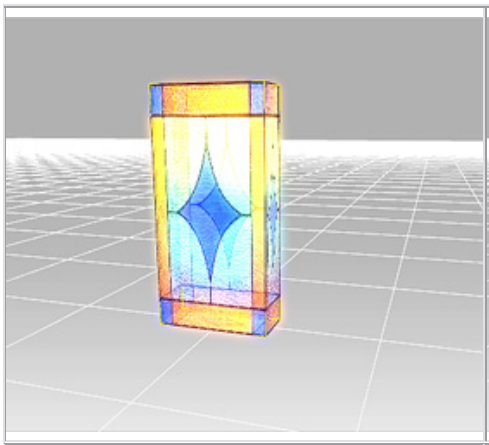
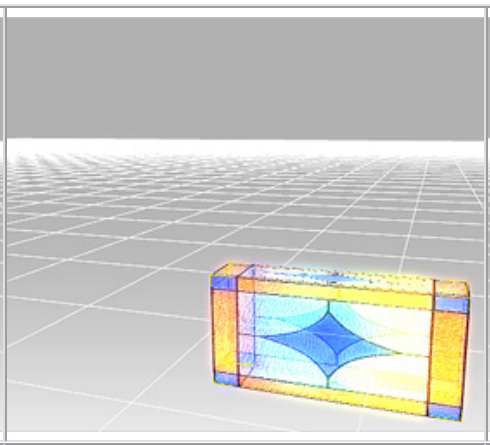
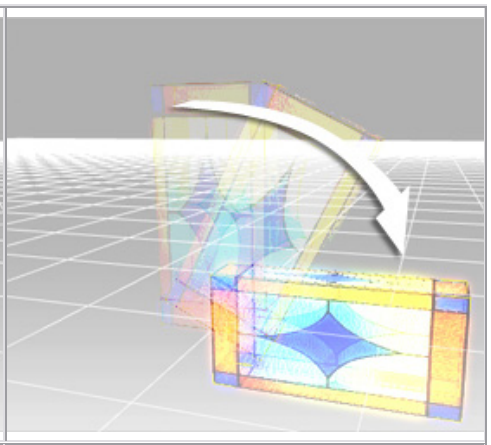
Transform Track

You can find this track grouped in the sub-track set of **Actor**, **Props**, **Camera**, and **Light**. In the **Transform Track**, you may set keys in different frames; **iClone** will generate the transition animations automatically. Each key in the track stores the **Move**, **Rotate**, and **Scale** data of the target object in the current frame.

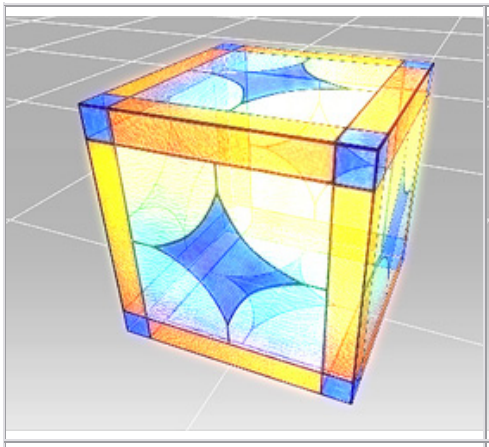
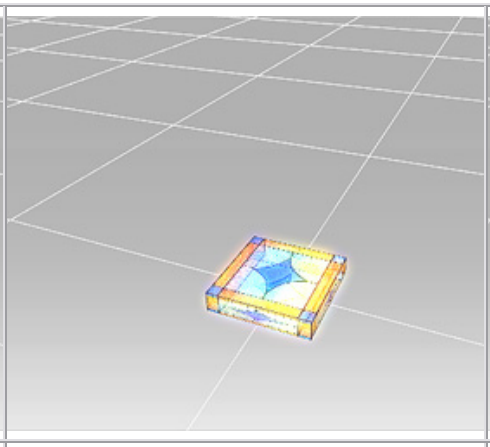
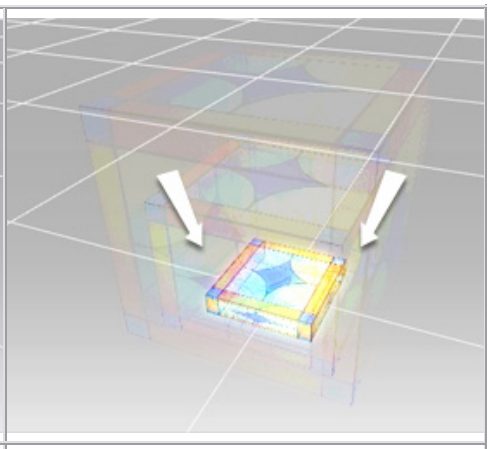
Move

		
Start Frame: 0 Move Key Added: (-100, 500, 0)	End Frame: 300 Move Key Added: (0, 0, 0)	Start play back and the box will move automatically from (-100, 500, 0) to (0, 0, 0) within the frame range.

Rotate

		
Start Frame: 0 Rotate Key Added: (0, 0, 0)	End Frame: 300 Rotate Key Added: (0, 90, 0)	Start play back and the box will rotate automatically from (0, 0, 0) to (0, 90, 0) within the frame range.

Scale

		
Start Frame: 0 Scale Key Added: (0, 0, 0)	End Frame: 300 Scale Key Added: (50, 50, 10)	Start play back and the box will scale automatically from (100, 100, 100) to (50, 50, 10) within the frame range.

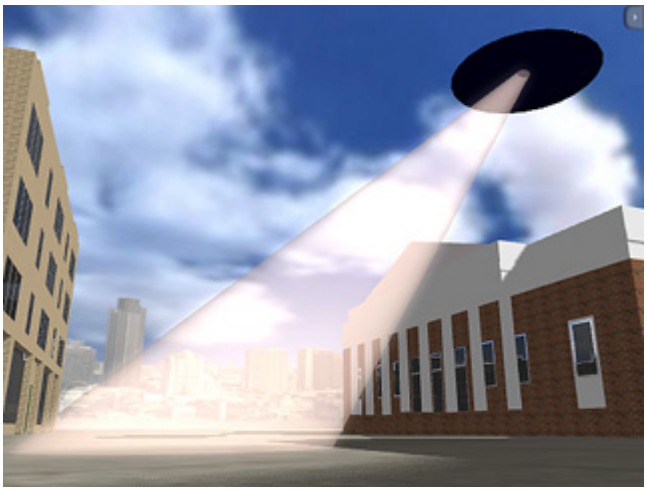
Visible Track

Setting keys in the **Visible** track may show/hide the selected objects temporarily in specific frames. Basically, every object is **Visible** by default, that is, the key for each object in the start frame of the project is **On**.

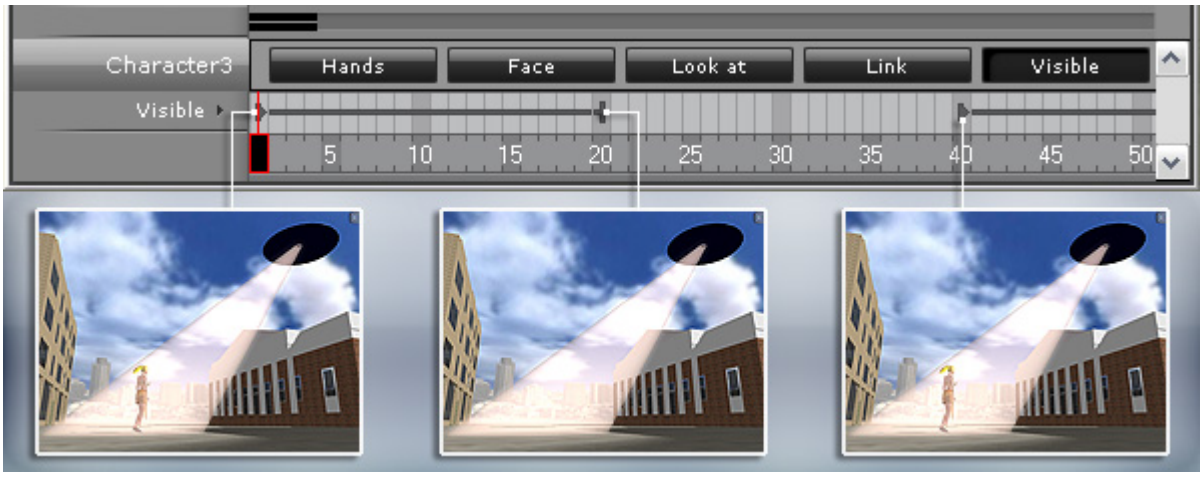
1. Select the actor and go to the desired frame for hiding.

2. In the **Modify** page, scroll to the **Display** section.

3. Set the **Visible** parameter to **Off**. A key will then be added into the **Visible** track instantly.



4. Go to another frame and set the **Visible** parameter to **On**. The actor shows and a key is added into the **Visible** track automatically.



Actor Private Tracks

Idle Track

This unique track contains the idle motions of an actor. Since its priority is relatively low, the **Idle** motion will be ignored during playback if there is any **Move**, **Perform**, or **Operate** motion at the same frame.

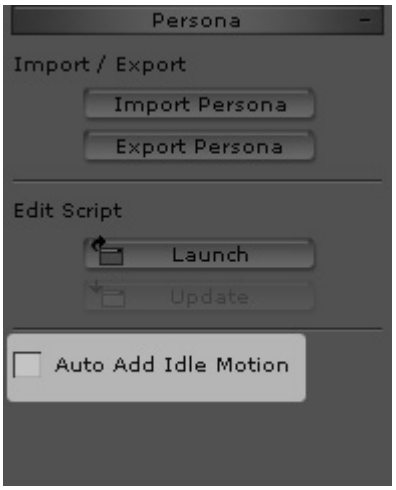
Characteristics of idle motion

- Empty slots will always be filled up with the idle motions in the **Director Mode** when there are no **Move** or **Perform** motions.
- Idle motions are generated automatically onto the **Idle** track each time the play head **plays** to a frame in which no idle motions are present in the **Editor Mode**.
- Idle motions are randomly chosen from a pre-defined set of idle motions to fill the **Idle** track.

Stop Generating the Idle Motion

Auto Add Idle Motion feature is off by default. However, if you want to auto-generate idle motions in the **Editor Mode**, Please follow the steps below:

1. Click the **Idle** track.
2. Go to the **Modify** page.
3. Check the **Auto Add Idle Motion** box.

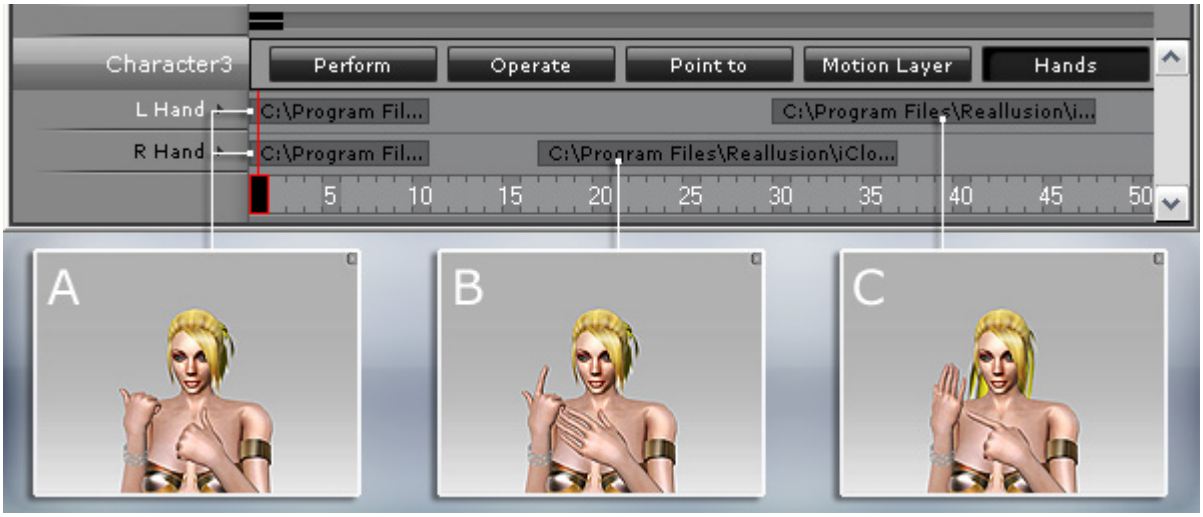


Play the project and the idle track will not be filled with new idle motions automatically.

Hands Track

Toggling the **Hands** button on the timeline will show two tracks. One is for storing the motion of the **Left** hand and the other is for the **Right** hand.

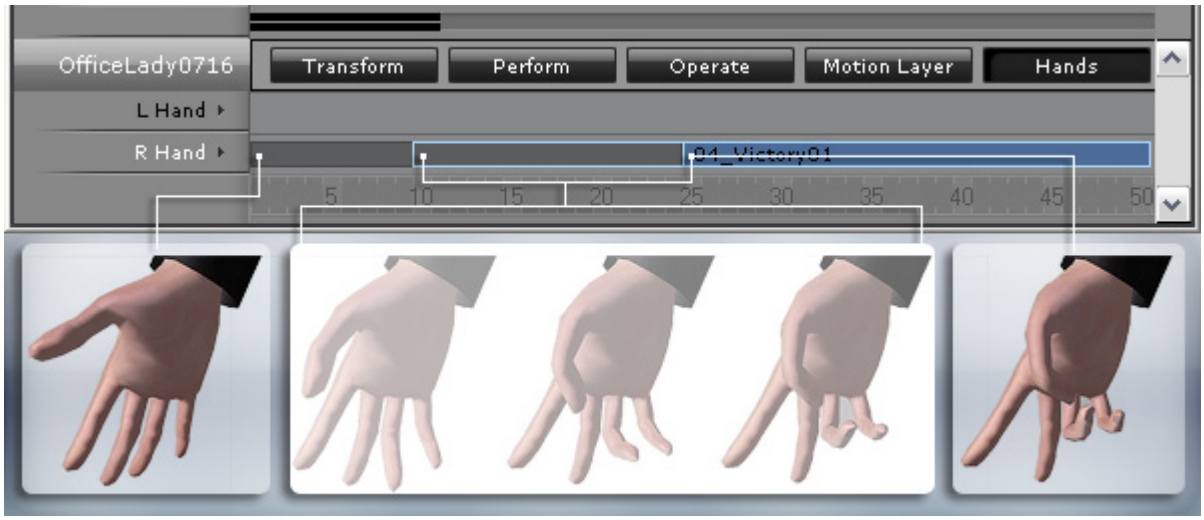
1. Pick an actor and go to the desired frame for changing hand motions.
2. Go to the **Animation**/**Hands**/**Modify** page, scroll to the **Gesture Library** section.
3. Select one of the three radio buttons (Left, Right or Both) in accordance with the hand(s) you want to add motions to.
4. Click the drop-down list to select a template. The motion will be added instantly.



A: Apply to Both Hands B: Right Hand Only C: Left Hand Only

Note:

- The blending effect between two hand motion clips will be generated automatically.

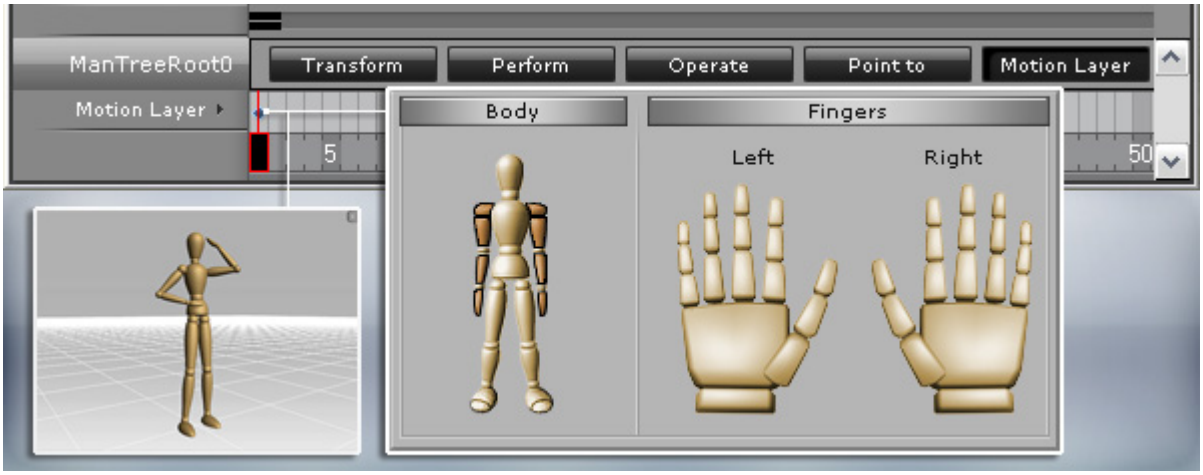


Motion Layer Track

The **Motion Layer** track is a very important track for fine-tuning an actor's motion. You may generate simple **Key Frame Animation** or add **Animation Layer** to an existing animation clip. Before explaining these two subjects, you will have to know the data that is stored in a single key.

Key Data

Each key in this track contains two types of data: The **Body Pose** and the **Absolute Bone**. The **Body Pose** depicts the XYZ offsets for each joint of the body. The **Absolute Bone**, however, stores the relative/absolute status for each bone.



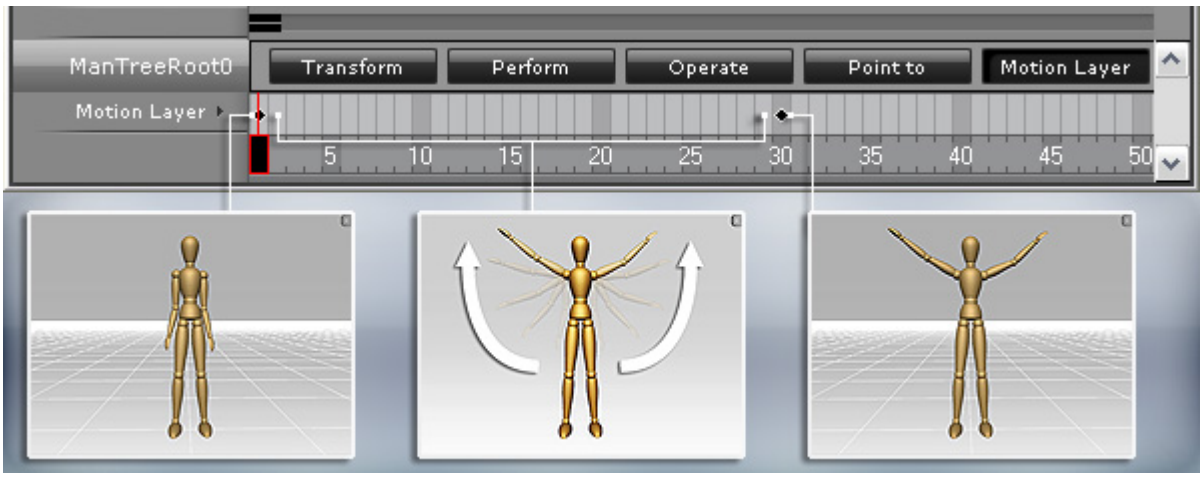
A single key stores the body pose and the absolute/relative status of each bone

Key Frame Animation

To fully understand **Key Frame Animation** we need to remove all the animation clips in the **Move**, **Perform** and **Operate** tracks. Please double click on the title of these three tracks on the timeline and click the **Delete** key. Follow the steps below to generate **Key Frame Animation**.

1. Go to the desired frame for creating the first motion layer key with IK / FK methods.
2. In the **Edit Motion Layer** window, switch to **Set Absolute Bone** mode. Pick the bone that you want to set as absolute. (Non-selected bones are set relative by default)
3. Go to another desired frame to add a key.
4. Play the project to see the result. The transition effect is generated automatically between these two keys.

You may then create your own motion for the actors key by key.



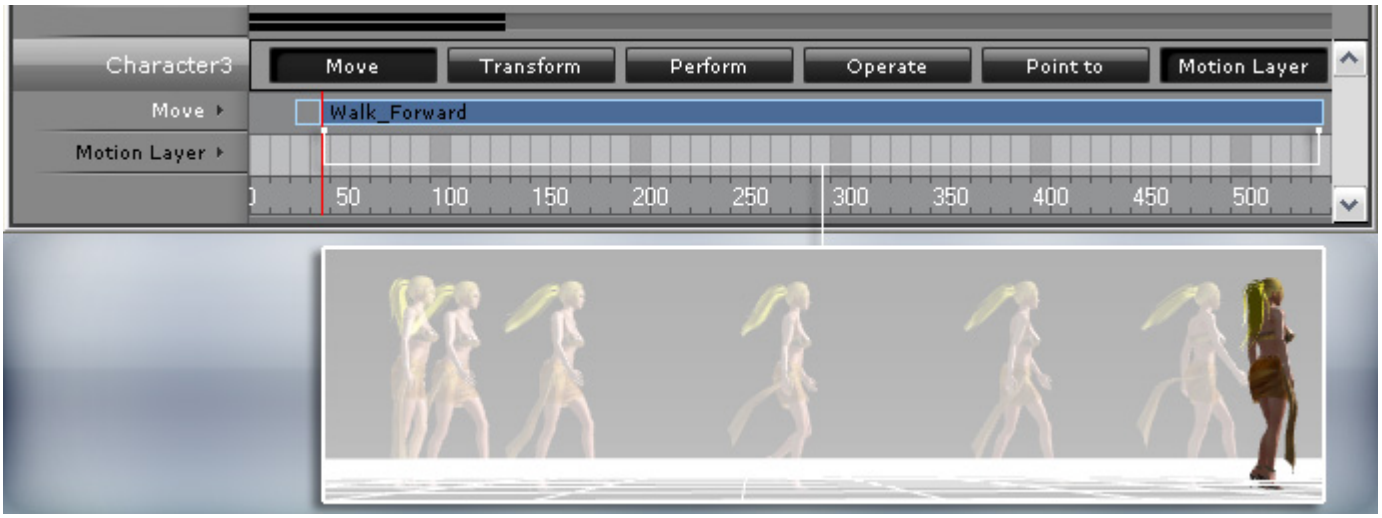
Note:

- Please note that the transition effect between two adjacent keys can be different for the relative/absolute status of them.

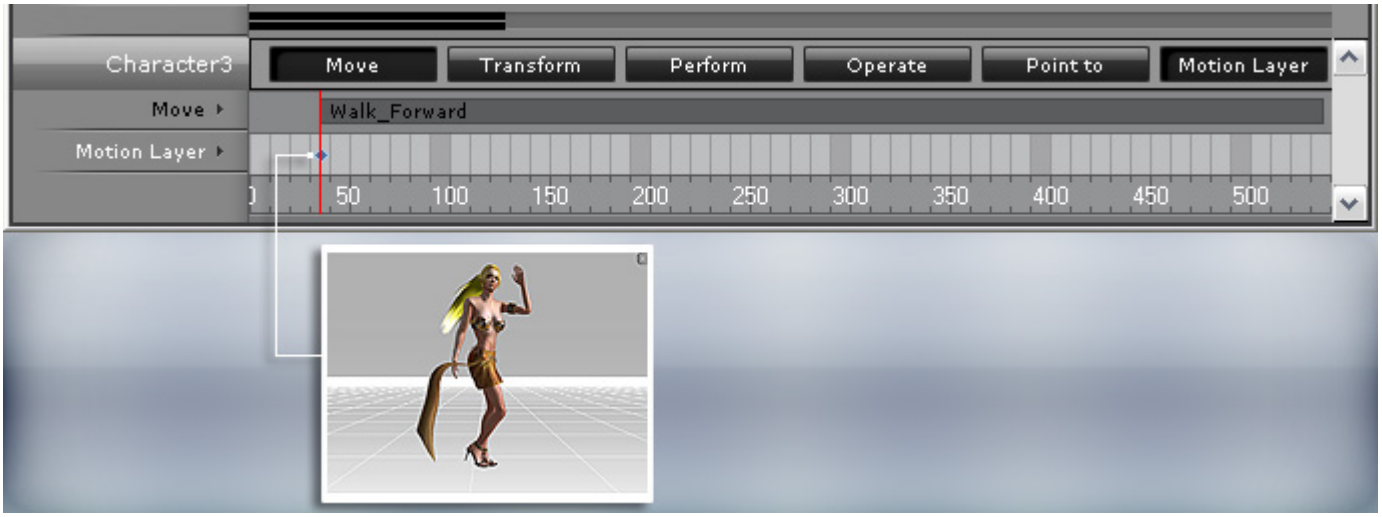
Animation Layer

The other powerful feature of the **Motion Layer** is to fine-tune the motion clips on the **Move**, **Perform**, or **Operate** tracks. The keys of the **Motion Layer** track have the highest priority for the bone offset.

1. You may first record any motions in the **Director Mode** and then switch to the **Editor Mode**.



2. In the **Motion Layer** track, add a fine-tuning key in any desired frame. (If you don't set any other key later on this key will affect all following motions)



The key rotates the actor's body and raises her left hand.

The key will affects the whole motion clip.

3. You may optionally add more keys in this track to further tune the motion.

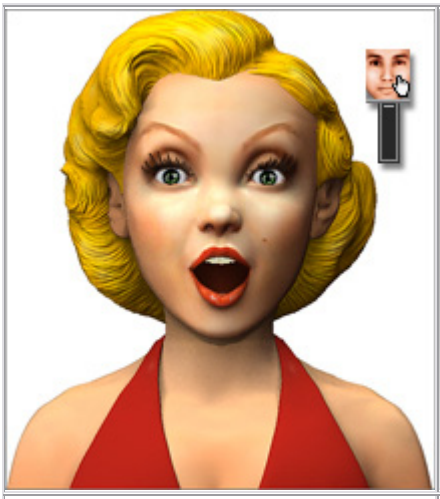
Facial Animation Track

Toggle the **Face** button on the timeline and the face track of the actor will show. If you have created a script via **CrazyTalk**, you may click the **Import** button to load it. You may either record your voice or load a .wav file as the voice of the actor. If you don't like either you may use the **TTS** engine to convert text into voice output.

Because the voice file is kept on the track as a clip you can have your actors speak at different times. You may also have multiple actors having conversations through out the whole project.

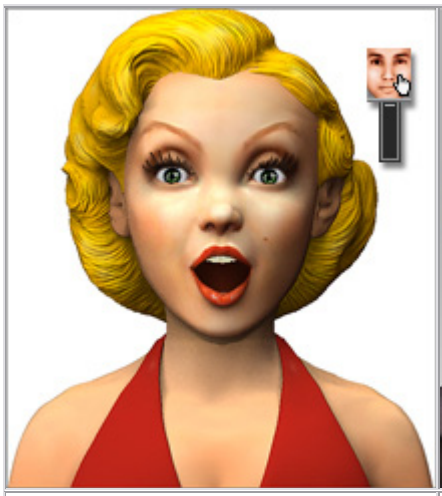
1. Pick an actor and go to the desired frame to start speaking.

2. Go to the **Animation**/**Facial Animation**/**Modify** page, scroll to the **Facial Animation** section to load a **CrazyTalk** script, or scroll to the **Import Voice/Add Emotion** section to record your voice or to utilize **TTS** to create the actor's voice.
3. Optionally, select any one of the **Expression Style** templates and the **Expression Strength** to apply to the selected CTS clip with Timeline or action tabs.
4. If you are not satisfied with the result and you want to fine tune the facial features, click the **Launch** button in the **CrazyTalk** section.
5. Feel free to edit the script in **CrazyTalk** and click **Add** button to add the script into the **Script**/**Custom** library in **CrazyTalk**.
6. Go back to **iClone**, in the **Content Manager**/**Custom** library, you may then find the script.

	
Set a Key in **CrazyTalk 5** and save as **CTS** file.	Import the **CTS** file into **iClone**.

The Jaw Bone of CrazyTalk and iClone

The actors in **iClone** contain jaw bone to generate more realistic speaking facial motion, as well as the jaw bone for the avatar in **CrazyTalk 5**. So the actor may speak with open mouth and lower jaw instead of open mouth only. However, since the G1 and G2 actors do not contain the jaw bone, the jaw bone effect from the CrazyTalk 5 may be ignored.

	
The avatar opens mouth with a down-moving jaw in **CrazyTalk 5**.	The G3 actor (Left) opens her mouth with a down-moving jaw while the G2 actor (Right) slightly opens her mouth without moving her jaw.

Actor/iProp Private Tracks

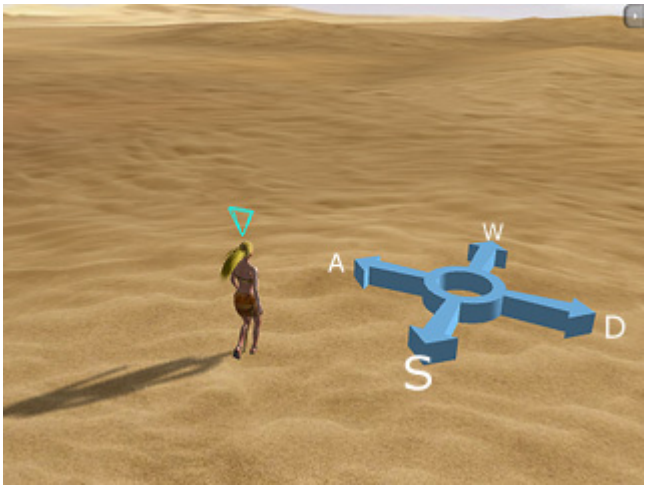
Move Track

The **Move** track is only grouped in the sub-track set for **Actors** and **iProps**. It stores the motion clips as the actors or props are instructed to move. You may command these two objects in **Director Mode** or **Editor Mode**.

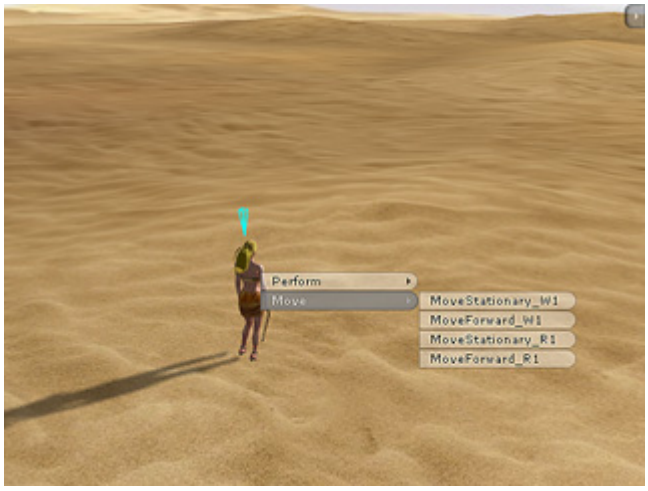
Director Mode

In the **Director Mode**, you may command your actors or props to **Move** via the **Right-click Menu** or **Hotkeys** during the recording process. Once the moving process is done, the motion during the recording will be stored right onto the **Move** track.

1. Toggle the **Director Mode** by clicking the  button if you are in the **Editor Mode**.
2. Make sure that you have selected the desired actor or iProp.
3. You may move your object in three methods as it is recording:
    - Use **WASD** hotkeys to move the selected object with motions/animations. (If it is not recording, press **Space Bar** to start recording) You may also press **X** key to switch to another set of motion/animation for these four hotkeys.

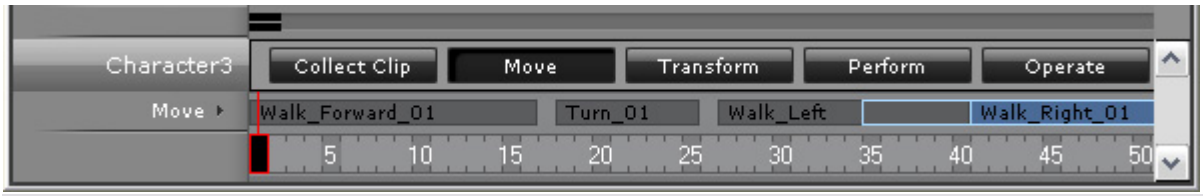


    - Alternatively, you may right-click on the 3D viewer to pop up the **Right-click Menu**. Select any sub-command in the **Move** entry and click on the destination spot on the 3D viewer.



- Use **Ctrl + Double-click** on the 3D viewer may also have the actor/prop to move toward the destination with default motion/animation, which is the most convenient method to move the object.

4. The motion/animation clip will be stored into the **Move** track instantly as the move process finishes.



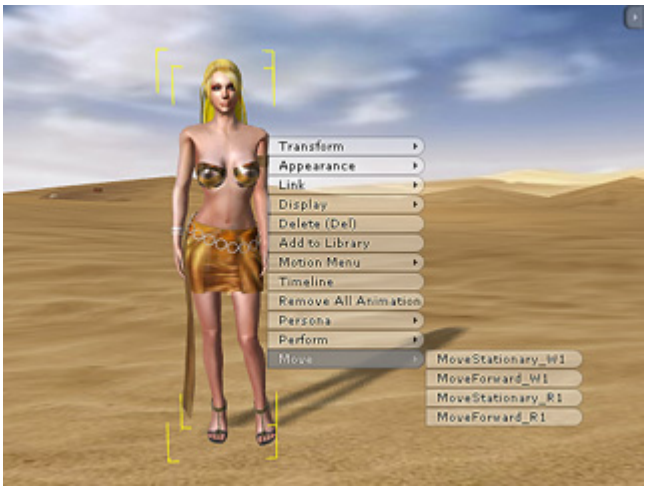
Note:

- In the **Director Mode**, by using **Shortcuts** or **Ctrl - Clicking** each event may generate one new motion clip segment as shown in the illustration above.

Editor Mode

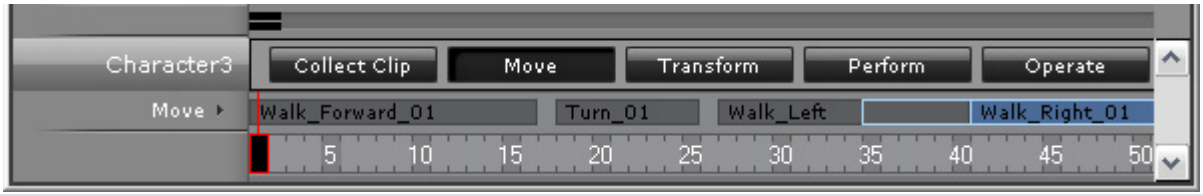
In the **Editor Mode**, you may also add motion/animation clips onto the **Move** track. You can only achieve this goal by using the **Right-click Menu** however.

1. In the **Editor Mode**, right click on the actor/iProp for moving.



2. Select any sub-command in the **Move** entry and click on the destination spot on the 3D viewer .

3. The motion/animation clip will be stored onto the **Move** track instantly as the object arrives at the destination.



Note:

- Please note that whenever a **Move** clip ends up at a frame when an **Operate** clip starts, the latter will be removed to prevent chaotic results.

Perform Track

The **Perform** track is only grouped in the sub-track set for **Actors** and **iProps**. It stores the motion/animation clips as the actors or props perform specific motions/animations. You may command these two objects in **Director Mode** or **Editor Mode**.

Director Mode

In the **Director Mode**, you may command your actors or props to **Perform** via the **Right-click Menu** or **Hotkeys** during the recording process. Once the performing process is done, the motion during the recording will be stored right onto the **Perform** track.

1. Toggle the **Director Mode** by clicking the  button if you are in the **Editor Mode**.
2. Make sure that you have selected the desired actor or iProp.

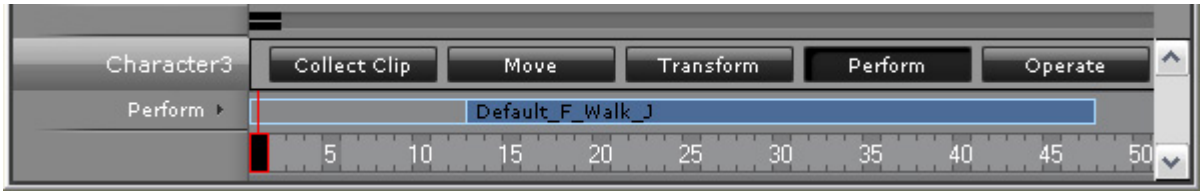
3. You may have your object perform in two methods as it is recording:

   - Use **1234...** hotkeys to command the selected object to perform the predefined motions/animations. (If it is not recording, press **Space Bar** to start recording)

     (The amount of the hotkeys depends on how many sub-commands are listed under the **Perform** entry of an object's **Right-click Menu**.)

   - Alternatively, you may right-click on the 3D viewer to pop up the **Right-click Menu**. Select any sub-command in the **Perform** entry.

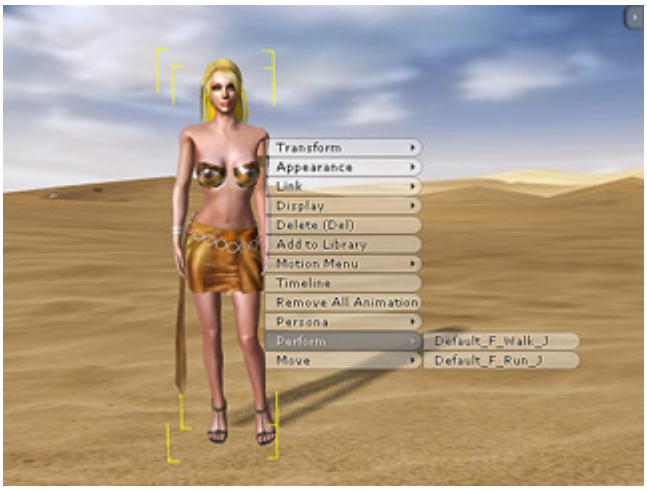
4. The motion/animation clip will be stored into the **Perform** track instantly as the perform process finishes.



Editor Mode

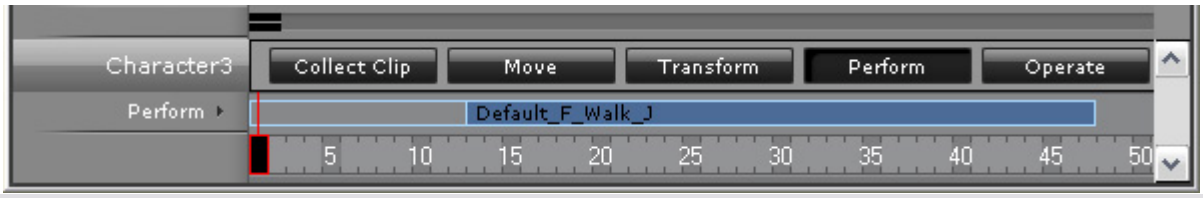
In the **Editor Mode**, you may also add motion/animation clips into the **Perform** track. However, you can only achieve this goal by using the **Right-click Menu**.

1. In the **Editor Mode**, right click on the actor/iProp perform actions.



2. Select any sub-command in the **Perform** entry.

3. The motion/animation clip will be stored into the **Perform** track instantly.



Note:

- **Motion** data applied from the **Content Manager** are recorded in the **Perform** track and can be connected together as used to from the **iClone 2.x Motion Editor**.

Operate Track

The **Operate** track is a very unique track since it works only when an interaction between an **Actor** and an **iProp** occurs. After the interaction is finished, **iClone** stores the motion from the actor and the animation from the iProp into their individual **Operate** tracks.

Director Mode

In the **Director Mode**, you may command your actors and iProps to **Interact** via the **Right-click Menu** or **Hotkeys** during the recording process. Once the interacting process is done the motion and animation from both the actor and the iProp will be stored right onto their **Operate** tracks.

1. Toggle the **Director Mode** by click the  button if you are in the other mode.
2. Make sure that you have selected the desired actor to interact first.

3. You may have your actor interact with the iProp through two methods as it is recording:

   - Press down and hold the **Ctrl** key, and then **Single-click** on the desired iProp that you want the actor to interact with.

     This method triggers the default interaction for the two objects involved.

   - Alternatively, you may right-click on the iProp to pop up its **Right-click Menu**. Select any sub-command in the **Operate** entry.

4. The motion and animation clips will be stored into the **Operate** tracks individually as the interaction finishes. These two tracks store the motion of the actor and the animation of the iProp. (The play bar displays the actor-related tracks only.)

Editor Mode

In the **Editor Mode**, you may also add motion/animation clips into the **Operate** tracks. However, you can only achieve this goal by using the **Right-click Menu**.

1. In the **Editor Mode**, click on the actor for interacting.

2. Right-click on the desired iProp.

3. Select any sub-command in the **Operate** entry.

4. The motion and animation clips will be stored into the **Operate** tracks individually. (The play bar displays the actor-related tracks only.)

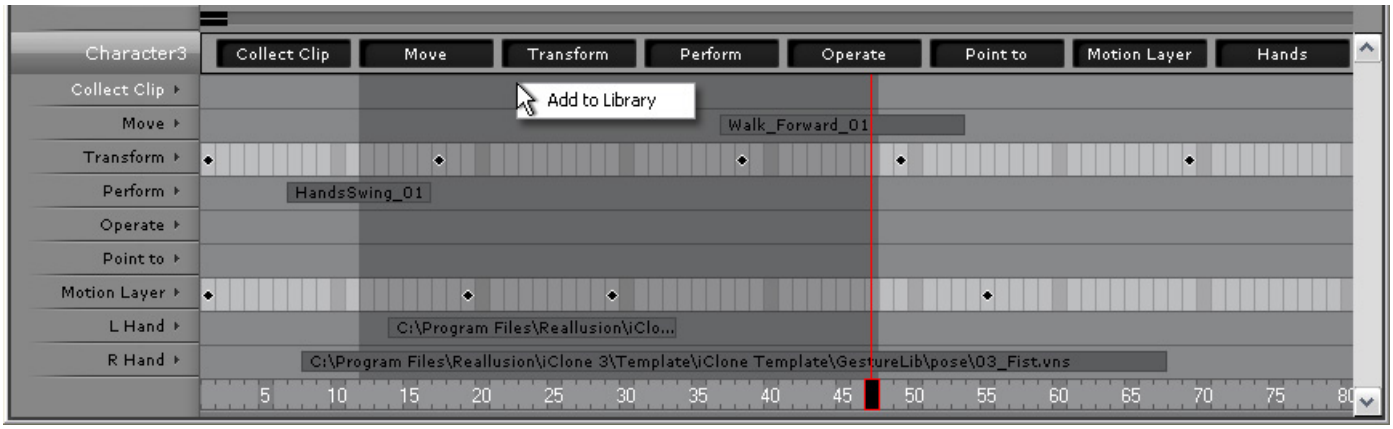
Collect Clip Track

The **Collect Clip** track is a very unique track. You can not set keys in it nor can you add any clips to it. However, it allows you to collect keys and clips, merge them together and then generate a whole new perform clip.

Collect Clip for Actor

1. Please make sure that some of the tracks (**Idle**, **Move**, **Transform**, **Perform**, **Operate**, **Motion Layer**, **Hands**) for the actor contain keys or motion clips. If these tracks are empty the motion you generate will be only turn into a default idle motion.

2. Press the **Collect Clip** button to show the track, click and drag to include a range in which the desired motion clips or keys exist.



3. Right-click within the range of the **Collect Clip** track and select **Add to Library**. Name the clip and click OK.

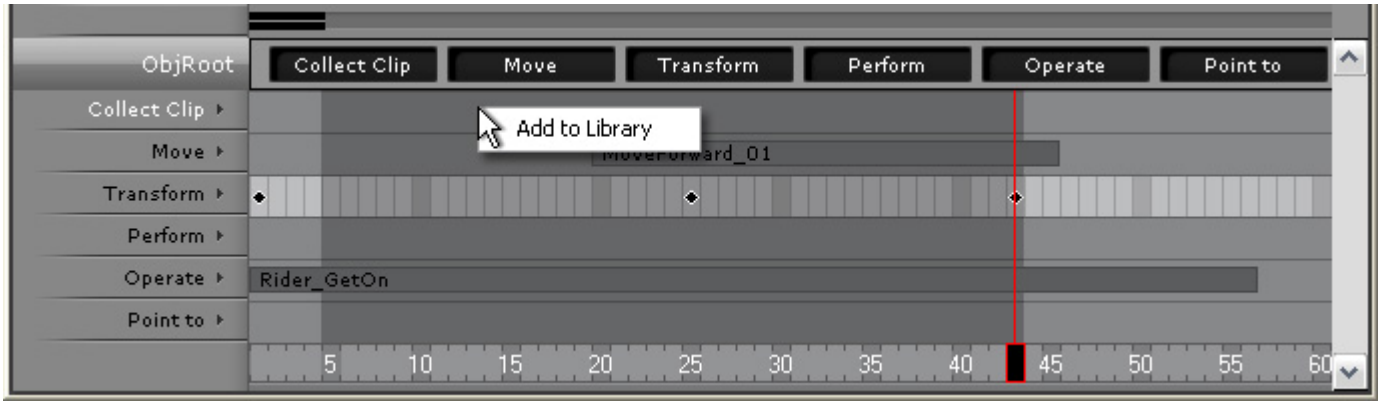
4. Browse to a location where you want to save the motion to and click **Save** button.

All the clips and keys in the tracks listed above will be merged and compacted into a motion file. You may then import it back by right-clicking on the **Perform** track and selecting the **Import** command.

Collect Clip for iProp

1. Please make sure that some of the tracks (**Idle**, **Move**, **Transform**, **Perform**, **Operate**) for the iProp contain keys or motion clips. If these tracks are empty the motion you collect will be completely empty.

2. Press the **Collect Clip** button to show the track, click and drag to include a range in which the desired animation clips or keys exist.



3. Right-click within the range of the **Collect Clip** track and select **Add to Library**. Name the clip and click OK.

4. The animation clip will be embedded to the prop and added to the **Perform** list.

All the clips and keys in the tracks listed above will be merged and compacted into an animation file. You may then import it back by right-clicking on the **Perform** track and selecting the **Import** command.

Collect Clip for Prop

This is a very practical feature for you to create your own animated props, or so-called, **Helper**. You may attach other static objects to the helper and then generate the animation for the objects along with the helper.

1. Apply any desired 3D block to the current project. Make sure the position is at the origin, (0, 0, 0).
2. Open the **Collect Clip** and **Transform** tracks of the block.
3. Add keys at different frames on the **Transform** track to generate key-frame animation for the block.
4. Drag in the **Collect Clip** track to make a range for generating new animation clip.
5. Right-click within the range of the **Collect Clip** track and select **Add to Library**. Name the clip and click OK.

All the keys in the transform tracks will be merged and compacted into this prop. You may then right-click on the **Perform** track and apply the animation in the **Animation List**.

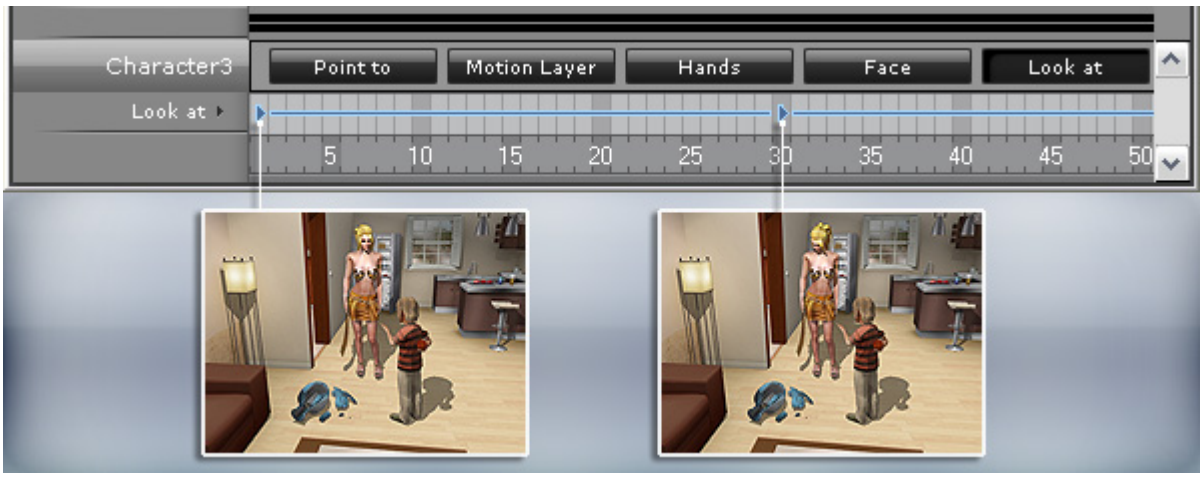
Actor/Camera/Spotlight Private Track

Look At Track

Setting keys on the **Look At** track can make an **Actor**, **Camera** or **Spotlight** look at a target at one point in time and then look at another target or stop looking at the target at another point in time.

1. Pick the lady and go to the desired frame to look at the boy.
2. In the **Modify** page, scroll to the **Look At** section.
3. Click the **Pick Target** button and click on the boy.

4. Go to another frame, click the **Pick Target** button again, and then click on the broken vase on the floor.

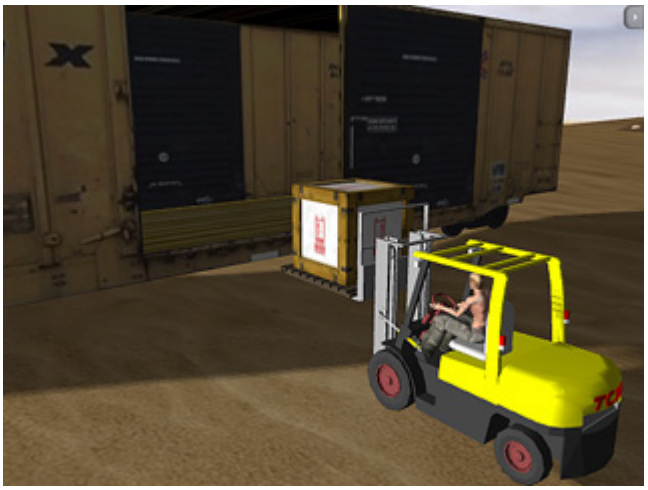


Actor/Camera/Light/Prop Private Track

Link Track

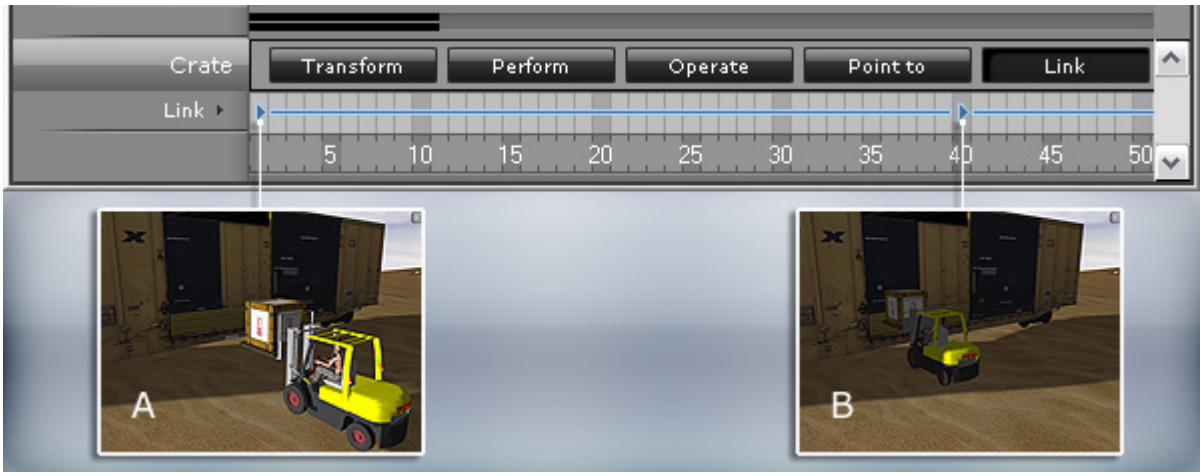
Setting keys on the **Link** track can make an **Actor**, **Prop**, **Camera** or **Spotlight**/**Point Light** link to a target at one point in time and then link to another target or unlink at another point in time. Thus the transition of an **Actor**, **Prop**, **Camera**, **Spotlight**/**Point Light** comes from the target's moving and rotating animation even though they may or may not be static.

1. Pick the crate and go to the desired frame to link it to the forklift.
2. In the **Modify** page, scroll to the **Linkage** section.
3. Click the **Pick Target** button and click on the forklift. You may optionally align the crate to the forklift if its position is not adequate.



4. Go to another frame, click the **Pick Target** button again, and then click on the train as the new target.

5. The crate will be brought away by the train afterward.



A: Link the crate to the forklift

B: Link the crate to the train

Prop/Accessories Private Track

Material Track (iClone 3.1)

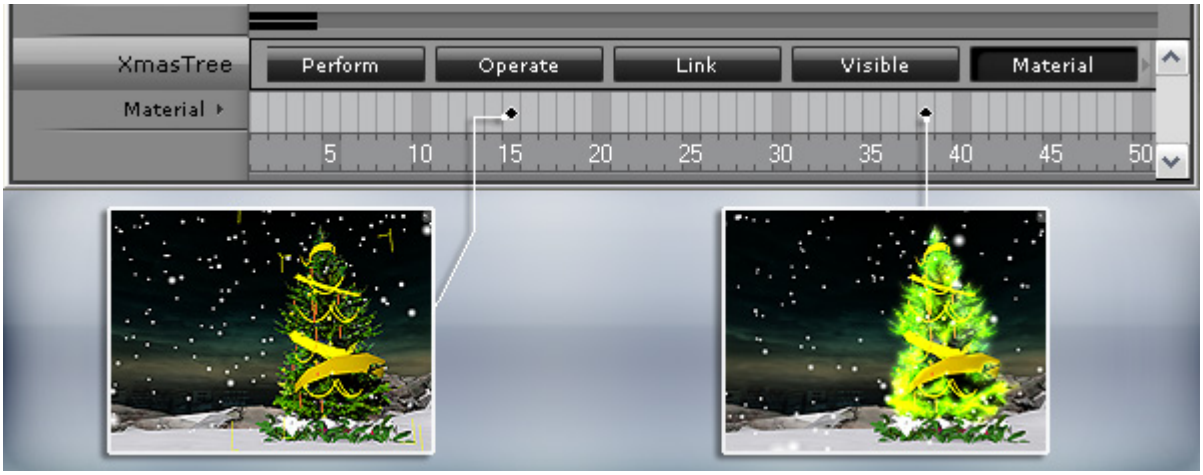
Once you change the parameter settings in any of the texture channels, you set **Material keys** within the timeline. If you set material keys in different frames, you can create material animation. Please refer to **Material Key and Material Key Frame Animation** and **Saving Keys to Material Template** sections for more information.

1. Select the prop and go to the desired frame, in this case we take frame 15.

2. In the **Modify** page, scroll to the **Material & Texture Settings** section. Use the  tool to pick the material for glowing.

3. Add one image to the **Glow** channel. Set the **Strength** to zero. A key will then be added into the **Material** track instantly.

4. Go to frame 38 and set the **Strength** of the **Glow** map to value 50. When you move the slider you can see the model glows, and a key is added into the **Material** track automatically.



Glow Strength = 0 Glow Strength = 50

Camera Private Tracks

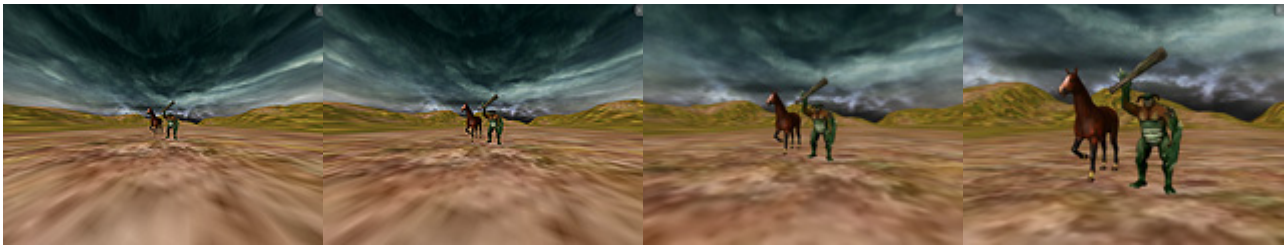
Lens Track

1. Select one camera from the **Camera and Shader Floating Menu** drop-down list. Go to the desired frame you want to set the lens key.
2. In the **Modify** page, scroll to the **Camera** section.
3. Choose one of the template buttons for lens focal length or drag the slider to define custom focal length. A new key then will be added into the **Lens** track automatically.

4. Go to another frame and change the lens value.

5. The transition effect between two keys generates by **iClone**.

The transition effect looks like the following illustrations. The camera looks like it is moving but it is actually the result of changing the lens focal length.



DOF Track

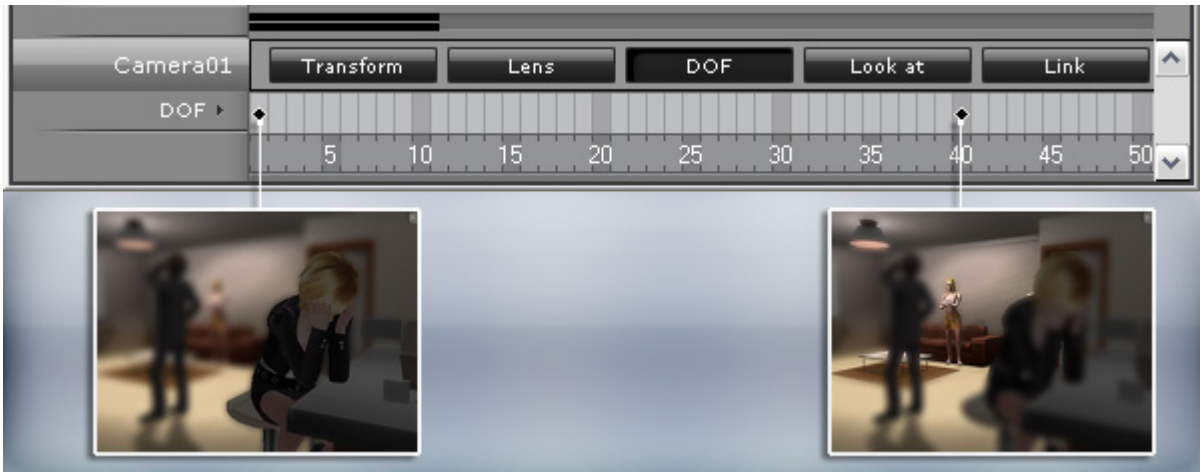
Follow the steps to set keys on the **DOF** track to create DOF animation.

Select a camera from the **Camera and Shader Floating Menu** drop-down list. Go to the desired frame you want to set the DOF key.

1. On the **Modify** page, scroll to the **Camera** section.
2. Check the **Depth of Field** box to enable this feature. You may set the distance manually or use the **Pick Target** button to let **iClone** select the correct value.

3. Go to another frame and change the DOF value.

4. The transition effect between two keys generated by **iClone**.



The transition effect looks like the following illustrations.

Spotlight/Point Light Private Tracks

Color Track

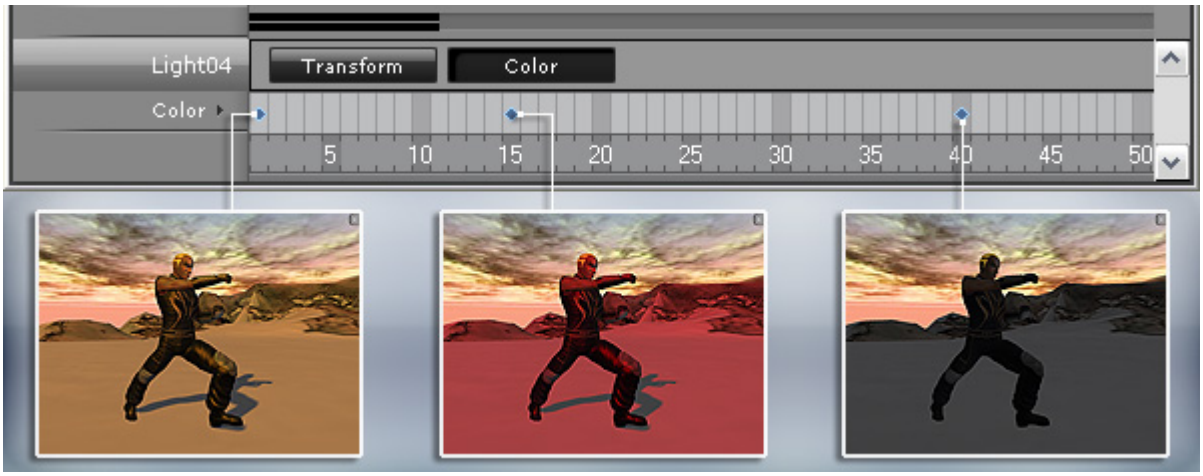
The **Color** track stores the color information of lights. These can be used to create animated light color in your project. You may even imitate light on/off effect by setting keys in this track. **Directional Light**, **Spotlight** and **Point Light** all possess the **Color** track for you to create complicated light effects.

1. Select one light from the **Scene Manager**. Go to the desired frame you want to set the color key.
2. In the **Modify** page, scroll to the **Light Setting** section.
3. Click the color picker to specify a color for the start frame of the light color animation.

4. Go to another frame and set another color key for the light.

5. If you want to turn off the light, set the light color to **Black**.

6. The transition effect among these keys will be generated by **iClone**.



The transition effect looks like the following illustrations.

Parameter Track

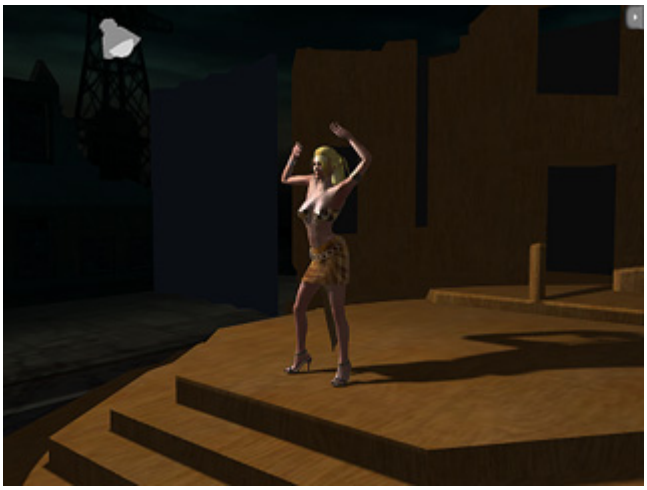
In addition to the **Color** track, the **Spotlight** and **Point Light** tracks contain a **Parameter Track** in which the **Range**, **Angle** and **Falloff** key data is stored.

Turn On the light with Parameter Track

Since there is no On/Off key for lights we will use the **Range** parameter to simulate a **Turn On** effect for a **Spotlight** or **Point Light**.

1. Go to the desired frame and set the **Range** value to 0.

2. Go to the next frame and increase the **Range** value.



The light is turned on by setting two keys in the **Parameter** track.

Stage

Camera

The Comparison of Cameras

	Preview Camera	Follow Cameras	Custom Cameras
Purpose	• To provide basic operations in **Editor Mode**. • To observe scene and objects from different angle. • To easily transform and move objects. • Not adding camera keys to timeline	• To simulate **Game Camera** in the **Director Mode, always keep your target in the center of the screen**. • Use F7 to toggle **Action Game** mode (back view) or **Strategy Game** mode (view from top right). • To follow the selected actor or iProp when you control them via **WASD** hotkeys. • To provide availability to custom offset for the cam angle.	• To set camera keys for playback. • To finely adjust in the **Timeline**. • To be switched among cameras in **Timeline**. • To be able to **Link**/**Unlink** or **Look At**/**Set Free** in different point of time.

	Preview Camera	Follow Cameras	Custom Cameras
Key Generating	• Not Available • You may access the **Preview Camera** and modify it's parameter, but no key is set. • Use **Preview Camera** for data preparation, object transform editing, tasks not involving in changing the final camera keys, or just for previewing the project.	• Not Available • You may access the **Follow Cam** and modify it's parameter, but no key is set.	• **Editor Mode**: A key in a particular frame can be changed or added as soon as the camera view is changed. • **Director Mode**: A key in a particular frame can be changed or added as soon as the camera view is changed. But it pauses the recording process.
Being Toggled by Camera Switcher	• Available	• Not Available because the **Follow Cam** only appears when an actor or an iProp is picked. • You must link and adjust a custom camera to the target object to film if the result from the **Follow Cam** is preferred.	• Available.
Camera Selection	• You may select the **Preview** camera from the **Camera and Shader Selector** in the 3D viewer.	• It is the default camera when you enter the **Director Mode**. • You may select the **Follow Cam** from the **Camera Selector** in the 3D viewer. Alternatively, press **F7** to quickly switch between **Follow Cam – Actor** and **Follow Cam – Bird**. • The **Follow Cams** are eliminated as no actor or iProp is picked.	• You may select the **Custom** camera from the **Camera Selector** in the 3D viewer.

	Preview Camera	Follow Cameras	Custom Cameras
Walk/Fly Navigation (Press + or - to modify the navigation speed. The speed can be saved in project)	• Available • The navigation course can not be filmed.	• Available • The navigation course can not be filmed.	• Available • A key in a particular frame can be changed or added as soon as the camera view is changed by the navigation. • If you navigate the whole scene while recording (**Director Mode**), the navigation course can be automatically filmed as a clip. • In the **Editor Mode**, **Walk**/**Fly Navigation** is a method to set the camera view. Only one camera transform key is added instead of recording the navigation course.
Look At	• Not Available	• Always keeps the relative position and angle to the actor/iProp. • You may adjust the relative camera position and angle if necessary, but no key added.	• Available • You must enable/disable the **Look At** feature manually, and it is added as **Look At** key in the **Timeline**.

The Walk and Fly Modes

iClone provides two modes to navigate the current project, **Walk** and **Fly**. You may then manipulate the camera view by the combinations of hotkeys and mouse movements.

You may switch between these two modes by clicking the rightmost down arrow button in the control bar.

Difference

In **Walk** mode, the camera will follow the terrain as you move the camera. While in the **Fly** mode, the camera is freed from the restrain of the terrain.

	
• **Walk Mode** • shows in the center of the 3D viewer • The camera moves along the folds of the terrain	• **Fly Mode** • shows in the center of the 3D viewer • The camera moves and ignores the folds of the terrain

Manipulation

Both of the modes use the same method to control the camera to move:

Keyboard Shortcuts	Mouse Movements
• **W** key: Camera Moves Forward. • **S** key: Camera Moves Backward. • **A** key: Camera Moves Leftward. • **D** key: Camera Moves Rightward. • **+** key: Accelerate **WASD**. • **-** key: Decelerate **WASD**.	• **Mouse Forward**: Camera Looks Up • **Mouse Backward**: Camera Looks Down • **Mouse Leftward**: Camera Looks Left • **Mouse Rightward**: Camera Looks Right
• The moving speed of the camera specified by the **+** and **-** keys is allowed to be saved along with the project.	

Consequences

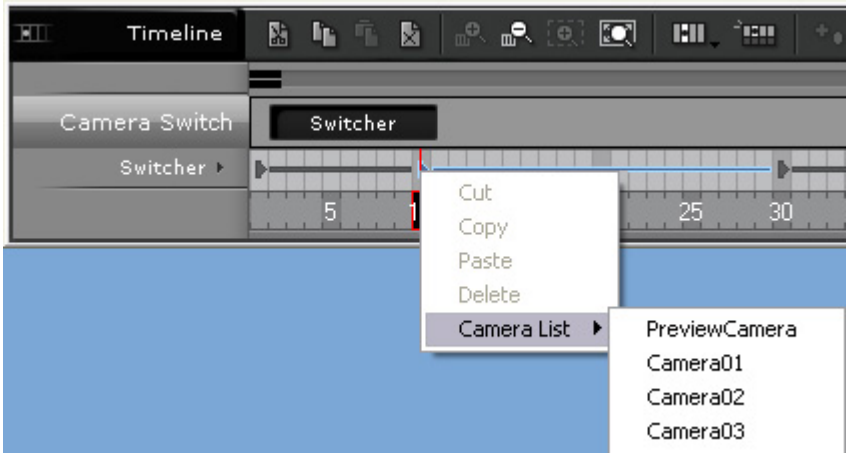
Director Mode: You may record the camera navigation course as a clip.

Editor Mode: Each time the camera view is changed, it will add a new key or adjust the existing key in the **Timeline**.

Multiple Camera Switcher

In the multiple camera system of **iClone**, you may queue the camera to shoot the film as you are a real director. By assigning different camera names in the timeline, you may easily complete this technique.

1. Go to **Stage**/**Camera**/**Modify** page.
2. In the **Camera** section, click **Add** button. (You may add up to 16 custom cameras and **Camera 01** is added by default)
3. Click the **Multiple Camera Switcher** drop down list in the **Camera and Shader Selector** at the top of the 3D viewer and select the desired camera.
4. You may record a camera navigation course into a clip in the **Director Mode**, or alternatively, edit or add keys in different frame in the **Timeline**.
5. Repeat step 3 and 4 till you are satisfied with all the cameras' courses.
6. Press down the **Track List** button in the **Timeline** and select **Camera Switcher** track. Press the **Camera** tab to display its sub track.
7. Click your secondary button of your mouse in different time frame, select a desired camera that you want to switch to in this time frame from the **Camera List**.



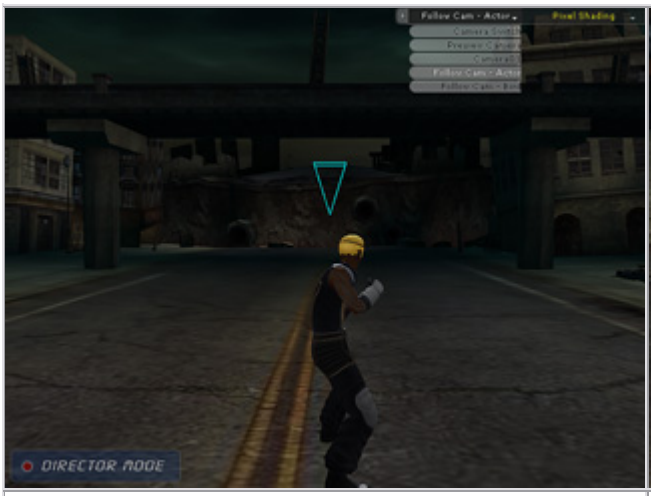
Follow Cam

For the purpose of more **Game-Like** operation, **iClone** provides another sort of camera called **Follow Cam**. This sort of camera only exists as you select one actor or iProp.

The **Follow Cam** films the scene, with the actor locked to the center all the time, in a fixed angle of the camera. It keeps on the same perspective and follows the moving object throughout the project unless you adjust the perspective manually.

Follow Cam in the Director Mode

- You may switch back and forth the **Follow Cam - Actor** mode (view from the back) or **Follow Cam - Bird** mode (view from top right) by using the hotkeys **F7**. You can record the course as a clip and send the result back in the **Editor Mode**. If you are not satisfied with the angle of the follow camera view, you may adjust it manually.



The Follow Cam - Actor Mode

The Follow Cam - Bird Mode

- Once you enter the **Director Mode**, the follow cameras keep focusing on the last-selected actor or iProp before entering the **Director Mode**, even if you double click on another actor or iProp.

- If you want the follow camera to change its target, hold down the **Shift** key and click on the new target.

Follow Cam in the Editor Mode

- You may switch back and forth the **Follow Cam - Actor** mode (view from the back) or **Follow Cam - Bird** mode (view from top right) by using the hotkeys **F7**.

- In the **Editor Mode**, the follow cameras keep focusing on your current object.

DOF

DOF, also known as **Depth of Field**, adds extremely dramatic effects to the results. You can pick an object at a specific distance to be rendered clearer while all the others are blurred. The **DOF** can be set as a key on the Timeline to generate an even more stunning animation.

Set the DOF

1. Go to **Stage**/**Camera**/**Modify** page.
2. In the **Camera** section, check the **Depth of Field** box.
3. Manually enter a value in the **Focus** field to define the distance for the camera to render most precisely. Alternatively, you may click the **Pick Target** button and click on the desired object to let **iClone** decide the value of **Focus**.

Before Setting the DOF	After Setting the DOF

4. Enter a value in the **Range** field to have all the objects within the range rendered clear.

Range Increased

Create a DOF animation

1. Go to a specific time frame, follow the steps described above to set a **DOF** key on the **Timeline**.

2. Go to another time frame and repeat the same procedure to add another **DOF** key. You may repeat as many times as you want to generate the **DOF** animation.

Another Object Picked

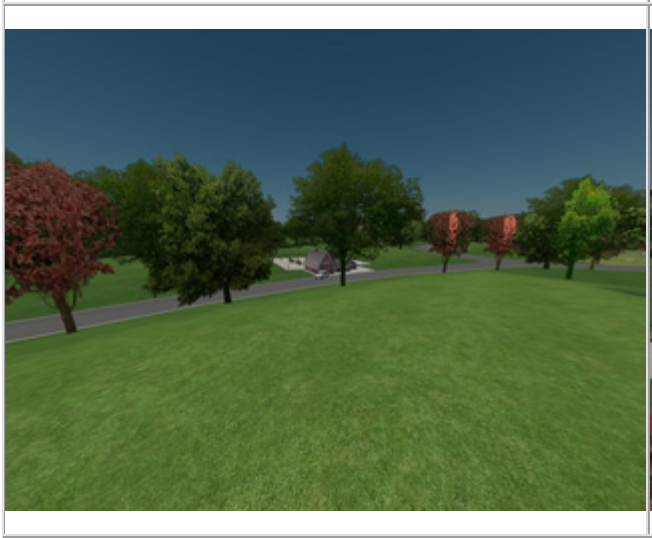
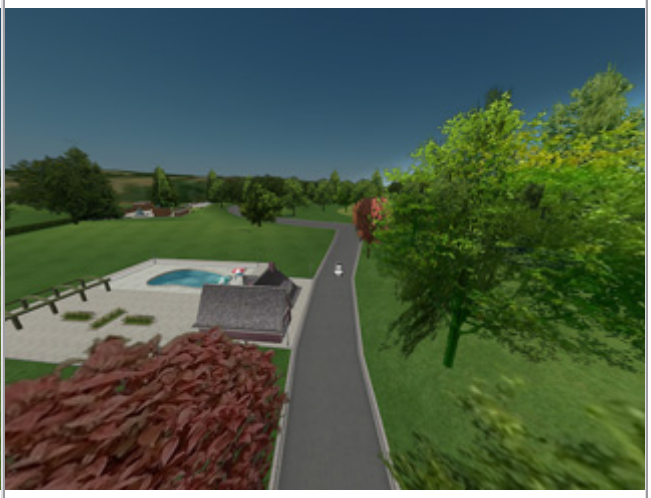
3. Play the project to view the result.

Camera Lens Function

The **Lens** has a variable focal length so that **Camera Moves** can be made without actually moving the camera. You can modify the camera view using the lens function and the **Lens** can be set as a key on the **Timeline**. You may then create fisheye or vertigo effects with this feature.

1. Go to **Stage**/**Camera**/**Modify** page.

2. In the **Camera** section, click on one of the template buttons.

	
Lens = 80 mm	Lens = 50 mm
	
Lens = 30 mm	Lens = 20 mm

Note:

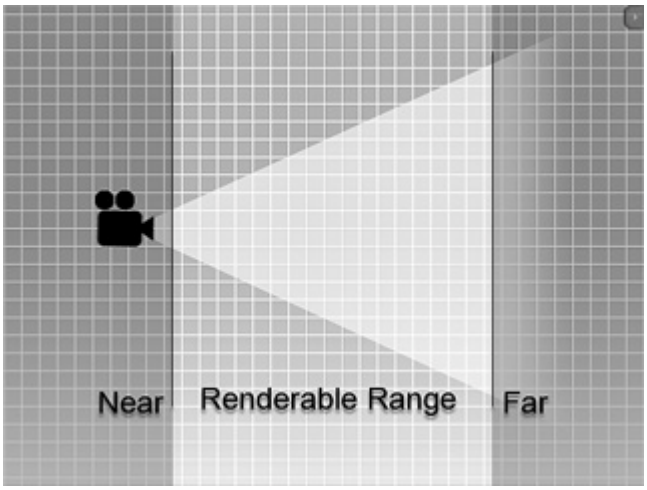
- You may set different **Lens** keys in different time frames to create **Lens** animation.
- Basically, the lower the value, the more of the scene can be seen. However it will be more distortion generated near the edge of the view.

Clipping Planes of the Camera

If your actor moves in a building, you may want to ignore the walls or furniture between the actor and the camera, you may use the **Clipping Planes** feature. By defining the range consists of **Near** and **Far** parameters, you may see the actors behind the wall or relieve the load of your system. This feature can not be set as a key in the **Timeline**.

Rule of Clipping-planes

The **Clipping-Planes** provide two parameters, **Near** and **Far**, to define the render-able range of a camera.

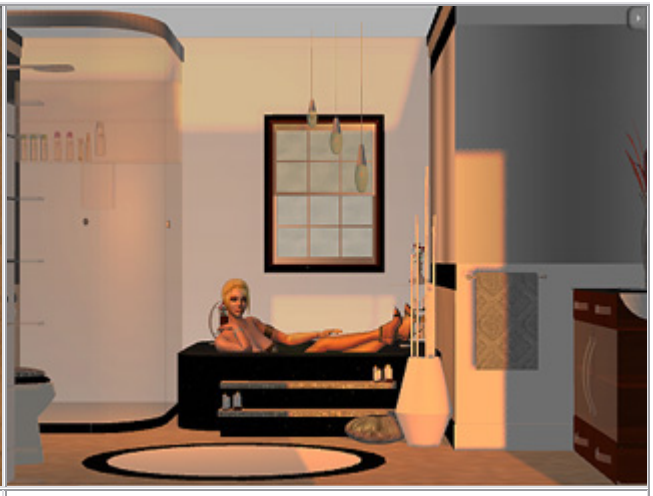


Setting the Near Value

If your actor is indoor, the wall of the room will always hinder the view. You may use the **Clipping Planes - Near** to filter out the objects within this distance.

1. Go to **Stage**/**Camera**/**Modify** page.

2. In the **Camera** section, click the up arrow of the **Near**.

	
Near = 0	Near = 40

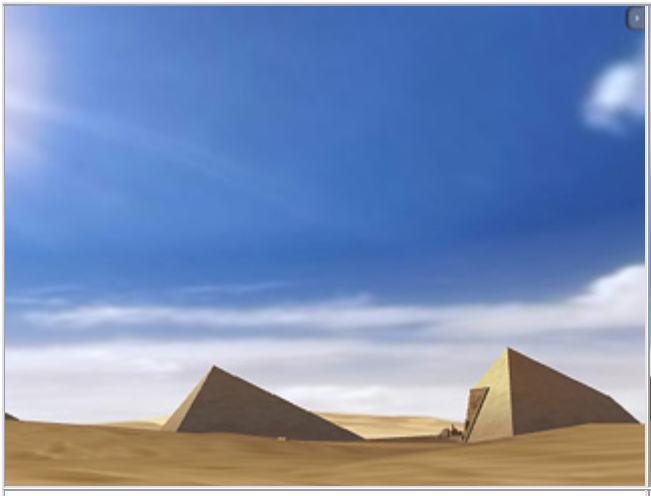
Note:

- If you encounter Z-fighting situation (Two extremely close faces cause the flicking result), increase the **Near** value by 1 or 2 may solve this problem.
- **Clipping Planes** affects only the rendering result instead of actually cutting any entity in the project.

Setting the Far Value

If your **Terrain** is so wide that it is beyond the camera's rendering range, you may adjust this value to solve this issue.

1. Go to **Scene**/**Camera**/**Modify** page.
2. In the **Camera** section, click the up arrow of the **Far**.

	
Far = 9999	Far = 12000

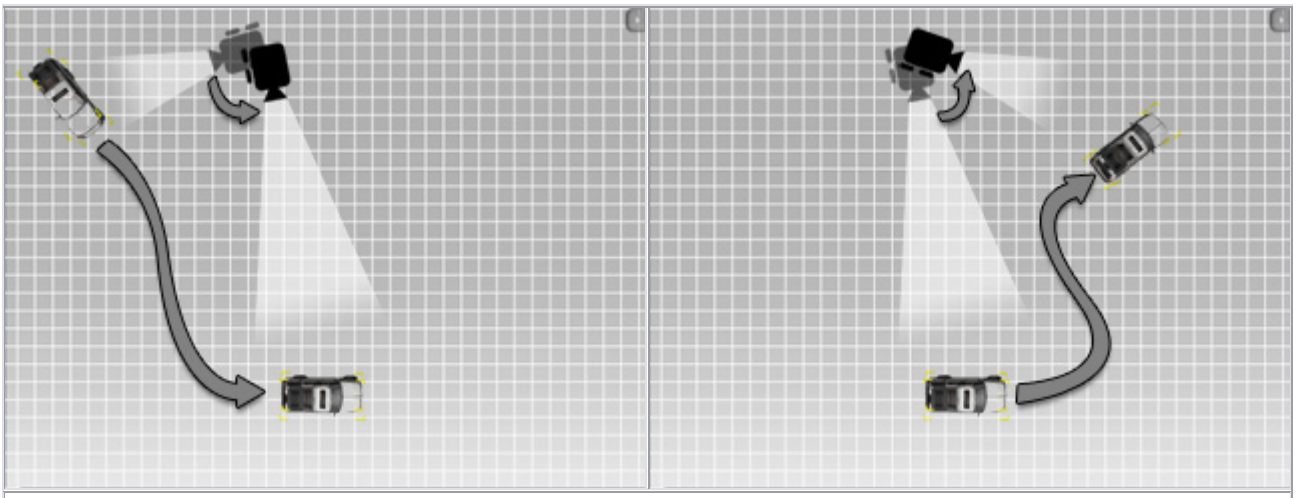
Note:

- The **Sky** will always be shown without considering the value of the **Clipping Planes - Far**.
- It is highly recommended to decrease this value if your scene is not so wide since increasing the **Far** value can also increase the load of the system.

Camera - Look At

It is hard to keep the camera stable while aiming an object in a scene. Thus, **iClone** introduces the **Look At** feature for the camera to achieve this goal in several simple steps.

3. Select the desired camera.
4. Go to the **Stage**/**Camera**/**Modify** page, in the **Look At** section, click **Pick Target** button.
5. In the 3D viewer, click on a target.
6. Move the target object away to see the result.



The camera is driven to rotate and follow the moving car.

Example: A lady walks down the street while the camera looks at her.

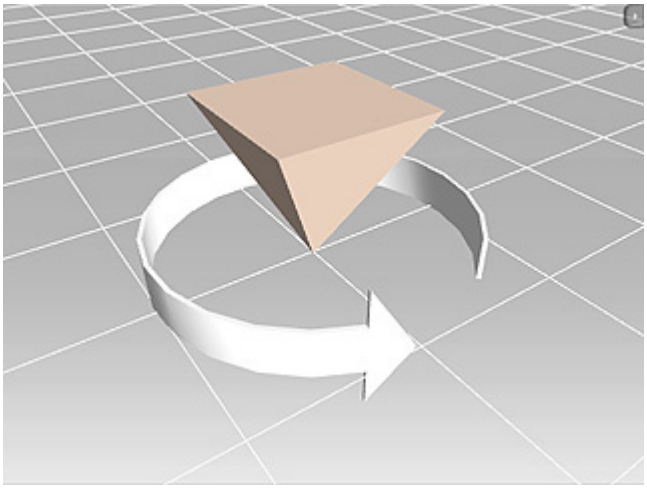
Note:

- You may have the camera **Look At** the target object over a fixed period of time and use **Set Free** outside the time range to stop looking.

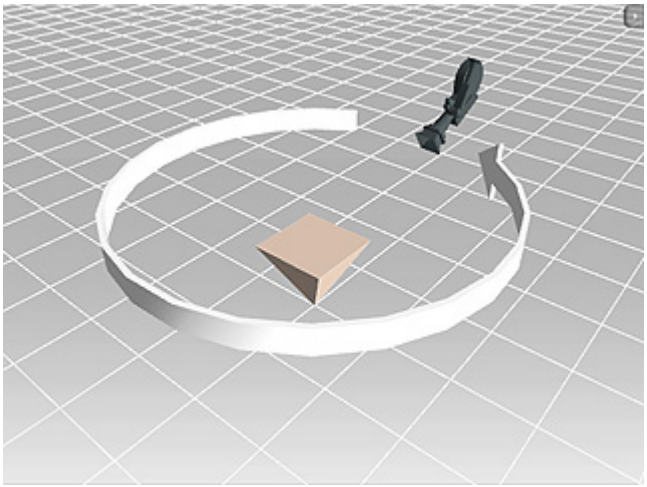
Creating Perfect Orbit Path for Camera (iClone 3.1)

With the current camera system, it's very hard to create a perfect camera orbit path which keeps the camera looking at a target, as it orbits it in a perfect circle. Here is the tip to create a perfect orbit shot by linking a camera to a rotating dummy object:

1. Apply one 3D block into the origin of the scene.
2. Add rotation keys in **frame 0**, **30**, **60**, **90** with the **Rotation Z** values of **0**, **120**, **240** and **359** degrees. This step ensures the block to rotate a single round in 90 frames.



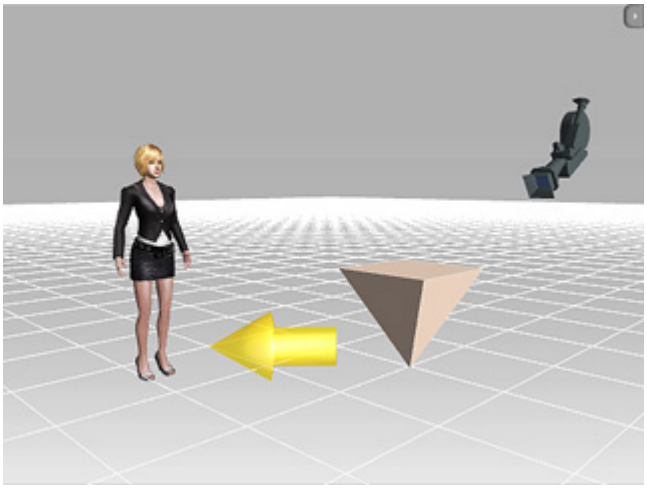
3. Add one new camera and adjust it to the desired position.
4. In the **Modify/Linkage** section, press the **Pick Parent** button and click on the 3D block. Play the project and the camera now is driven to move in an orbit path.



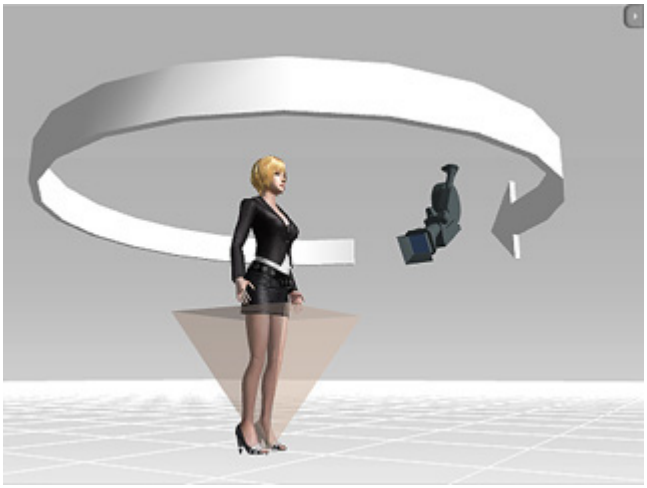
Camera is driven to move around the 3D block

5. Select the 3D block.
6. In the **Modify/Linkage** section, press the **Pick Parent** button and click on the target object as the center of the orbit.

7. Press button and check the **Align to Parent** box in the dialog. Click **OK**.



8. Select the camera again, in the **Modify/Transform** section, and click the **Pick Target** button of the **Look At** feature and click on the target object. Play back the project and the camera now films surrounding the target object with an orbit path.



The camera is moving around the actor while looking at her when filming.

Lighting

The Comparison of Lights

	Ambient Light	Point Light	Directional Light	Spotlight
On/Off	Always On	Adjustable	Adjustable	Adjustable
Type Switching	Not Available	Not Available	Available to Switch to Spotlight	Available to Switch to Directional Light
Shadow	No Shadow	No Shadow	Shadows Available: • None • Drop Shadow • Self-Cast Shadow • Wall Shadow	Shadows Available: • None • Drop Shadow • Self-Cast Shadow • Wall Shadow
Setting Keys	Not Available	Available	Available	Available
Picking	• Not Available • Color Changing Only	• In Scene Manager: Available • In 3D Viewer: Available	• In Scene Manager: Available • In 3D Viewer: Not Available	• In Scene Manager: Available • In 3D Viewer: Available
Intensity	Not Available	Available	Not Available	Available
Beam and Falloff	Not Available	Not Available	Not Available	Available
Look at Another Object	Not Available	Not Available	Not Available	Available
Link to Another Object	Not Available	Available	Not Available	Available

Ambient Light

The **Ambient Light** is the light for giving an overall tone to the whole scene in **iClone**. Changing the color of the ambient light allows you to create atmosphere.

iClone provides only one ambient light which you may change the color settings of. You can't set keys to it, you can only set the light color to affect the whole project.

Default Color of Ambient Light

1. Go to **Stage**/**Light**/**Modify** page.
2. In the **Light Setting** section, click the color box for the **Ambient Light**. Pick the desired color in the palette panel.

	
Black Ambient Light	Red Ambient Light

Note:

- If you want to turn the scene dark then pick **Black** or **Dark Gray** as the ambient light color.
- The **Ambient Strength** option from iClone 2.x is no longer available. You may create the same result by picking various colors.
- The **Ambient Light** is not selectable in the **Scene Manger** or the **3D Viewer**.

Spotlight

iClone provides you with adjustable parameters for the **Spotlight** to generate different types of spotlights. By changing these values, you may create various effects and styles. You may even change the settings on the timeline to set keys (**Shadow** and **Decay** boxes are excluded) and produce light animation effects.

Intensity

In the **Intensity** section, you may define the end of the light by adjusting the **Range** slider. Thus, the objects out of the range may not be affected by the spotlight. This may not be true in the real world but very useful in the 3D world.

1. Drag the slider to 470 to extend the distance of the light effect.

2. Drag the slider to 250 to limit the range for the light.

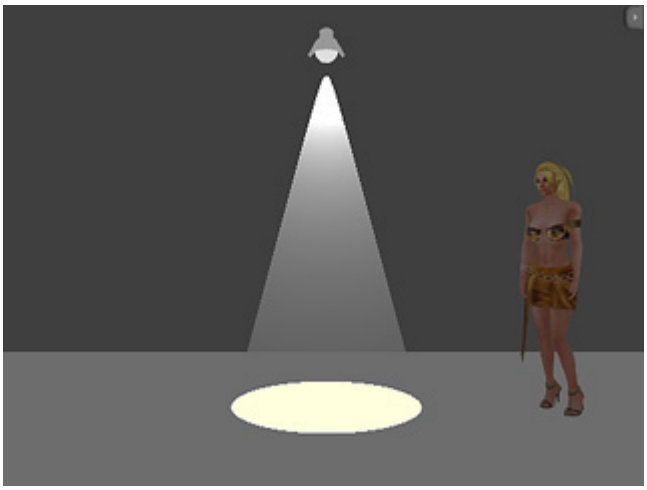
Usually, you will turn on **Decay** to have the spotlight strength decrease gradually from the light source at the end of the **Range**. This prevents a sharp end edge as shown in the illustrations.

	
Range = 470 Decay = **OFF**	Range = 470 Decay = **ON**

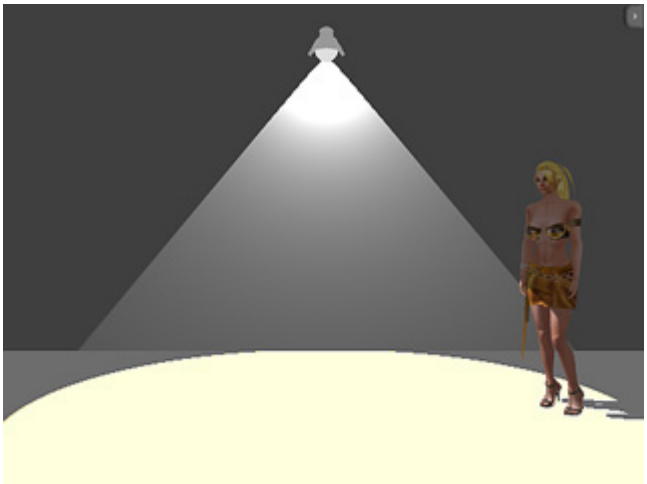
Beam

The style of the spotlight **Beam** can be customized by changing the **Angle** and **Falloff** values of the spotlight. The beam generated from the light is in the form of a cone, like you would get from a flashlight. The bottom circle size of the cone is decided by the Angle slider.

3. Drag the **Angle** slider to 30.

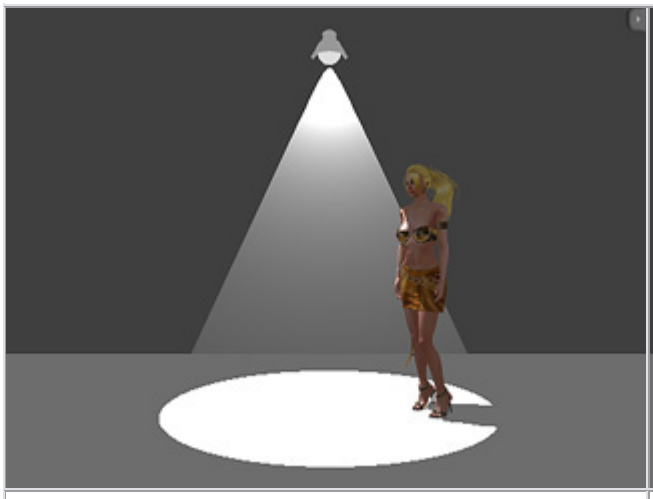


4. Drag the **Angle** slider to 80.



Falloff

If you feel the beam is too sharp, you may blur the edge of the light beam by dragging the **Falloff** slider.

	
Angle = 50 Falloff = **99**	Angle = 50 Falloff = **15**

Link for a Spotlight

If you want to create a light, such as a flashlight, being held by an actor, you don't have to adjust the transform data key after key if the actor moves away. All you need to do is to link the spotlight onto the flashlight in the actor's hand.

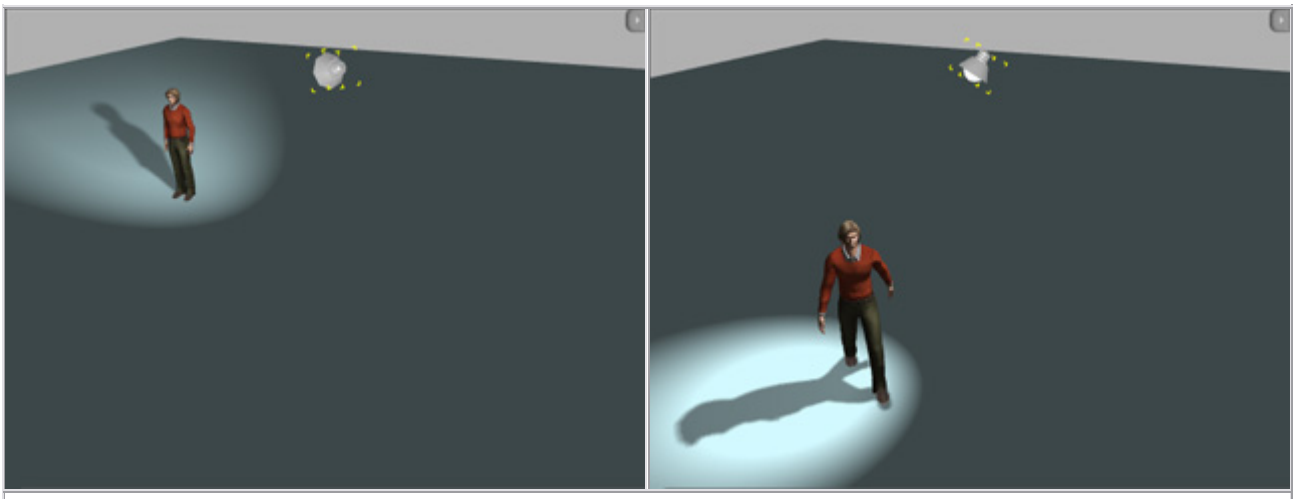
1. Go to the **Scene Manger**, click on one idle light under **Dir./Spotlight**.
2. In the **Stage**/**Light**/**Modify** page, go to the **Light Setting** section.
3. Select **Spotlight**.
4. Go to the **Linkage** section and click **Pick Parent** button.
5. Click on the target object you want the spotlight to link to.

6. Move the parent of the **Spotlight** to view the result.

Spotlight - Look At

When you want to shine a spot light on a target object, you may use the **Look At** feature.

1. Select an unused directional light in the **Scene Manager**.
2. Go to the **Stage**/**Light**/**Modify** page, in the **Light Setting** section, select **Spotlight**.
3. In the **Look At** section, click the **Pick Target** button.
4. In the 3D viewer, click on a target.
5. Move the target object away to see the result.



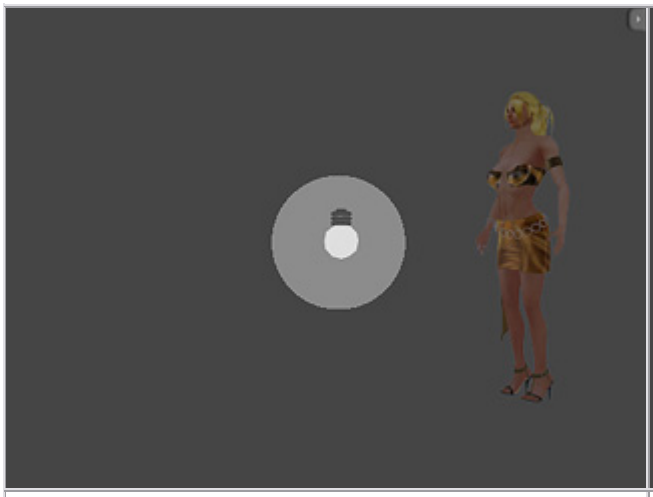
The spotlight rotates and follows the moving actor

Point Light

Range and Decay of Point Lights

The effect of a point light is relatively simple since you need to adjust only the **Range** and the **Decay** parameters.

Range: The radius from the point light. Since the point light sends light in all directions, all objects in this range can receive the light.

	
Range = 40	Range = 130

Decay: Check the **Decay** box to have the light strength decrease gradually from the light source to the end of the Range.

	
Range = 200 Decay = **Off**	Range = 200 Decay = **ON**

Utilizing Point Light

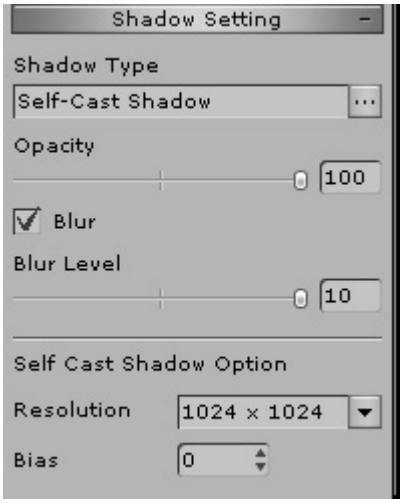
In the following example, the candle flame is actually a prop mapped with glow texture, it does not give off real light at all. We will locate a **Point Light** at the same place as the prop to imitate the candlelight.

The original appearance of the project

1. Go to the **Scene Manger**, click on one idle light under **Point Light**.
2. Move the **Point Light** in the 3D viewer to the correct position.
3. In the **Stage**/**Light**/**Modify** page, go to the **Light Setting** section.
4. Change the color of the light.
5. Adjust the **Range** and/or **Decay** to specify the effect of the point light.

Shadow

In **iClone** all the lights (**Directional light**, **Spotlight**) generate shadow except the **Point Light**.



Shadow Type

In the **Shadow Type** drop down list, you may decide to turn the shadow effect to **None/Self-Cast Shadow/Drop Shadow/Wall Shadow**:

None	**Self-Cast Shadow** (Directional Light)	**Self-Cast Shadow** (Spotlight)
		
The **Shadow** is turned off.	The **Shadow** is turned on with directional light.	A realistic way to calculate the physical projection of shadows from the light source via the shadow map technology. Cast and receive shadows both from characters and props/scene. Shadows can be cast to the source's own surface as well.

Drop Shadow	Wall Shadow
	
A quick way for characters to drop shadow **Only** on the virtual floor (X-Y plane) or 2D background.	Wall Shadow shows an offset shadow directly behind the character creating a 2D shadow effect. If you select this option, the **Offset X**, **Y** will be enabled for you to define the position of the shadow. Please notice that the **Wall Shadow** casts merely on the **2D Background** and **Sky** but not on the **Terrain**.

More about Self-cast Shadow

- Spotlight cast best self-cast shadow because of restricted effect range, keep the best shadow map resolution.
- The stronger light may cast higher opacity shadow, especially the directional light.
- Higher resolution shadow map is required if you wish that all scene elements to cast shadows.
- Self-cast shadow can only be projected on 3D objects but not on the virtual floor (X-Y plane) or 2D space.
- If self-cast shadow casts on objects with alpha transparency effect, it might cause some artifacts.

Shadow Opacity

Adjust the **Opacity** value may define the transparency of the shadow. Basically, the stronger light casts higher opacity shadow, especially the directional light

	
Opacity = 60	Opacity = 100

Blur

Check the **Blur** box to enable this feature. Adjust the **Blur Level** value may define the softness at the edge of the shadow.

	
Blur Level = 1	Blur Level= 10

Shadow map resolution

Large scene takes larger size shadow map to make the self-cast shadow with higher resolution. However, it takes more resource of your system as well.

	
Resolution = 512 x 512	Resolution = 4096 x 4096

Shadow Bias Adjustment

This function helps to correct some shadow displacement caused by extreme shadow angle.

	
Bias = 1	Bias = -3

* iClone Self-cast Shadow function supports NVIDIA series graphics card only

Set

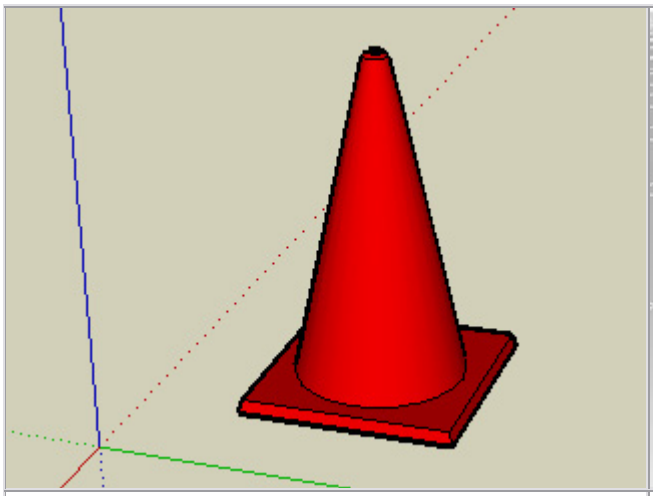
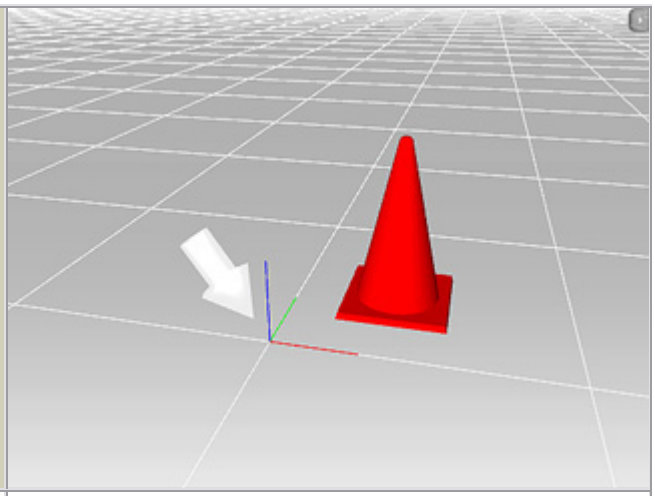
Prop

Pivot of Prop

In **iClone**, each object has its own **Pivot**, which is the base for the **Transform** data. It can also be taken as the **Center** of the object.

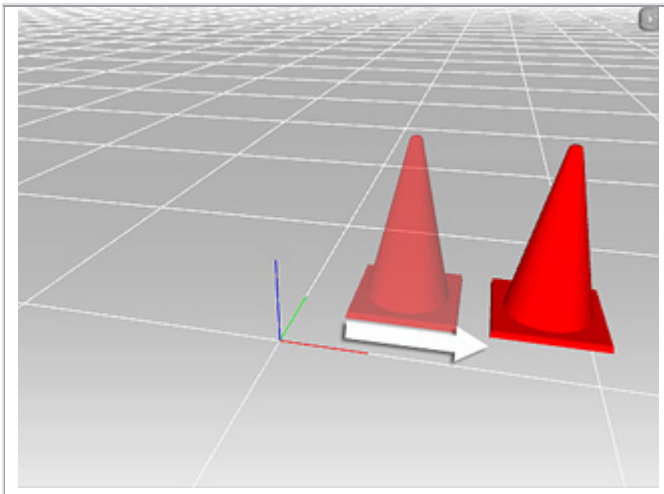
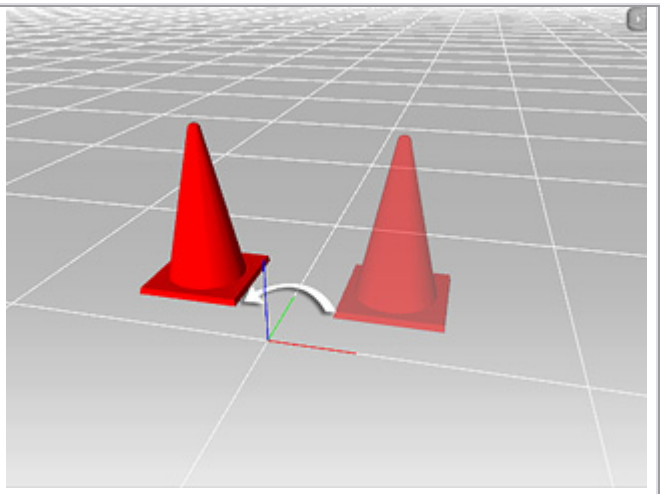
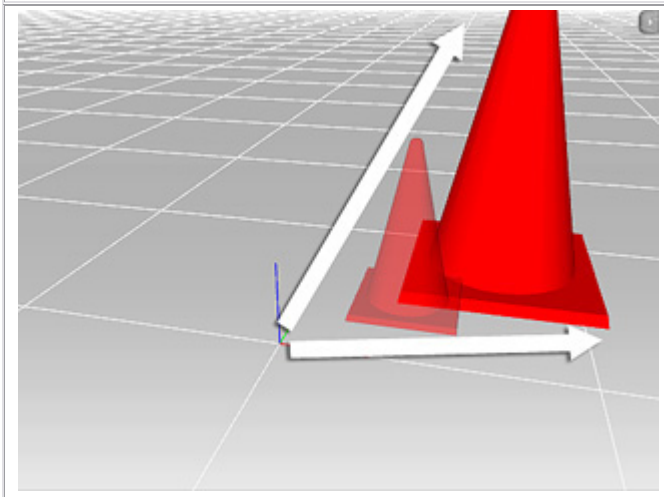
How do the pivot generate

After you create an object via your favorite 3D softwares (such as SketchUp), the pivot is generated automatically. In general, the pivot is set to be located at the origin. Therefore, if you create your object away from the origin, the pivot of it will be eccentric. **iClone** also loads objects with their pivots align to the world axis if you double-click to apply them.

	
• Create Model in SketchUp. • The pivot of the model is set at the origin.	• Double-click to load the model. • The pivot aligns to the world axis.

How do the pivot affect Transform Data

Since the pivot is the base for the transform data to refer to, the **Move**, **Rotate** and **Scale** work according to the pivots of objects. If a pivot is outside of the model entity, the unexpected result happens, especially **Rotate** and **Scale**, when you adjust the transform data of the object.

 Move	 Rotate
 Scale	

Set the pivot location

iClone provides the **3DXchange**which may solve the eccentric issue. All you have to do is to load the object into **3DXchange**, utilize the **Align to Ground** or **Align to Center** features to reset the pivot location.

Creating Animation Helper

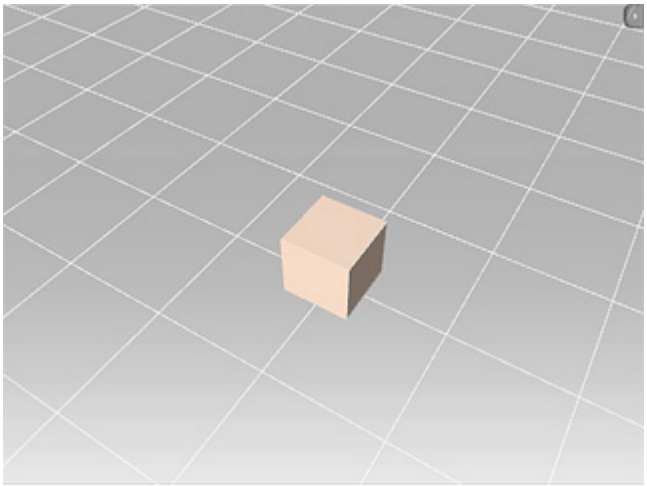
In **iClone**, you may create your own animation helper by setting **Transform** keys and using the **Collect Clip** track. Saving the custom helper into the content manager allows it to be applied to any project multiple times. This will save a lot of time when creating objects with the same animations in different projects.

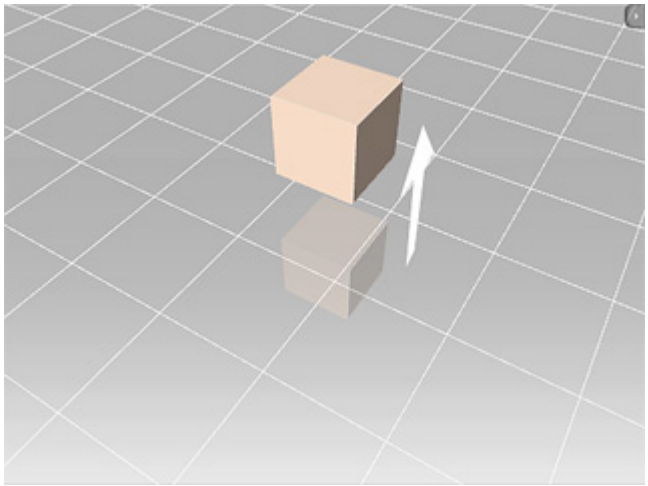
In the following sample, we will create a helper containing taking-off and rotating wings animations.

Collect Clip

1. Apply any 3D block to your scene. If you drag a prop into the scene click the **Zero Transform Key** button on the timeline to set the centralize the object.

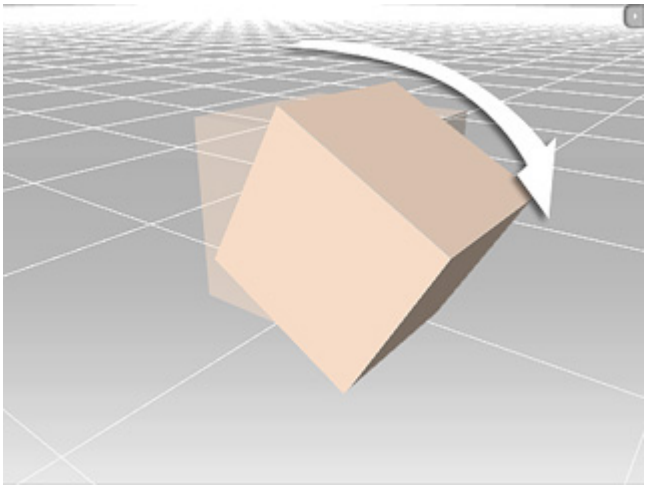
2. Open the **Transform** track. There will be one key already in frame 1. Go to frame 20 and move the block up the **Z axis** to your desired height. You now have a taking off animation ready.

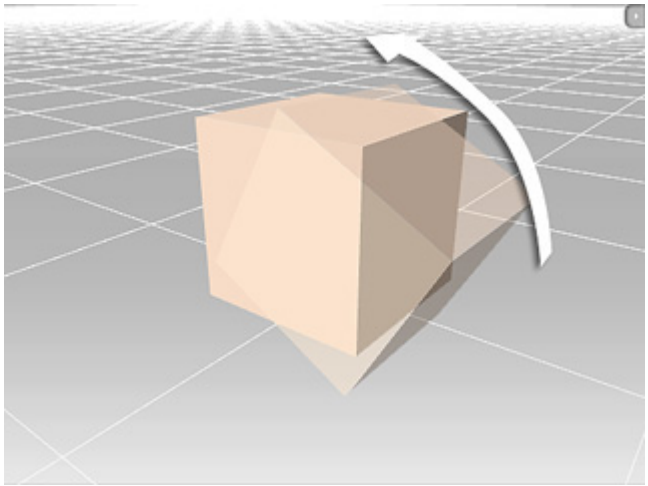




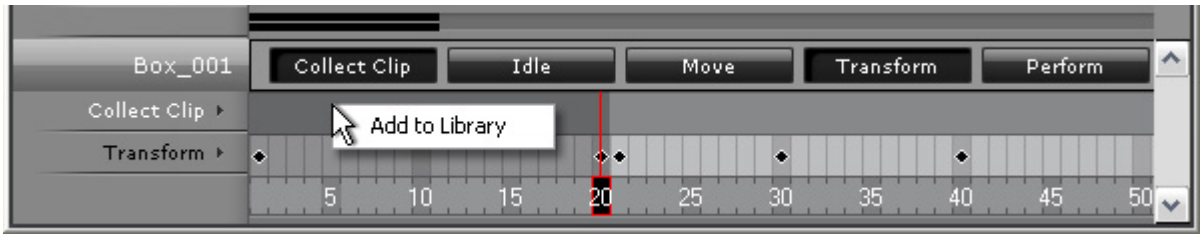
3. Go to frame 21 and click **Zero Transform Key** button again.

4. Go to frame 30 and rotate the block along the **Y axis**. Click **Zero Transform Key** at frame 40. Now your rotating animation is ready.

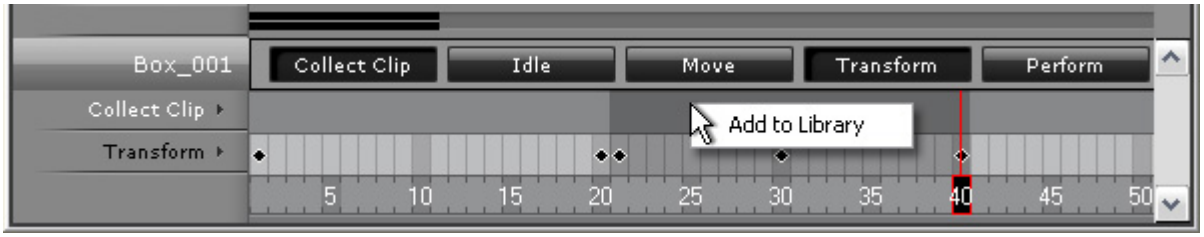




5. Open the block's **Collect Clip** track and drag to select a range to include frame 1 and frame 20. Right-click in this range and select **Add to Library**. Name it as **Taking Off**.

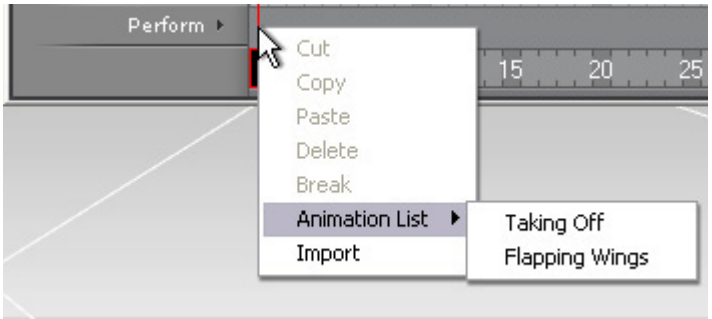


6. Drag to select a range to include frame 21 to 40. Right-click in this range and select **Add to Library**. Name it as **Flapping Wings**.



7. Add this Helper to the custom library by clicking the button at the bottom of the **Content Manager**.

You may examine the recorded clips in the **Perform** track. Right-click at any frame in this track and browse the **Animation List**. Optionally, you may right click on this prop in the 3D viewer and look in the **Perform** entry to see the animation clips.



Prop Animation with Helper

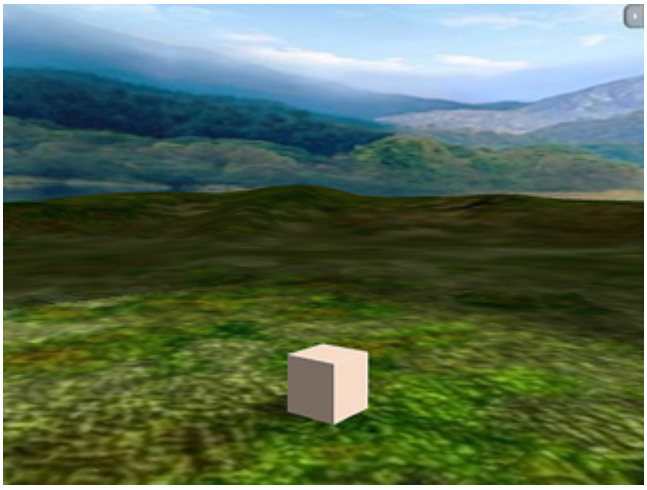
An **Animation Helper** helps you to pre-define some specific animations and embed the animations in the helper itself. The helper then can be re-used unlimited times and add the same animations to a different prop.

Basic Rules

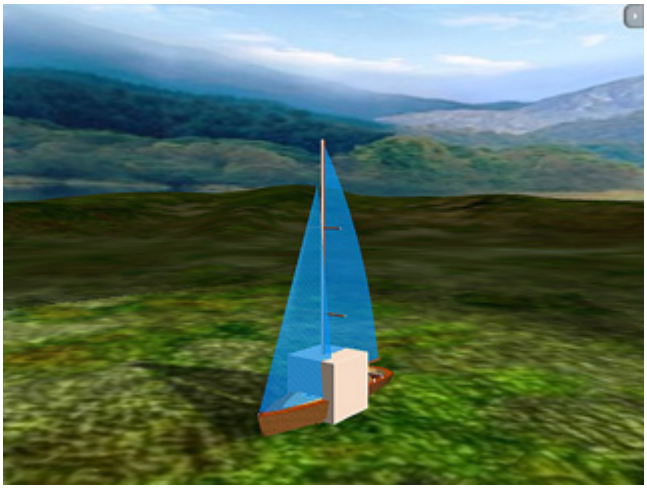
- Creating Animation Helper at the origin.
- One level attaching only.
- Merging models and helpers before assembling them as one composite prop.

Attach Single Model to One Helper

1. Apply the helper created in Creating Animation Helper section.



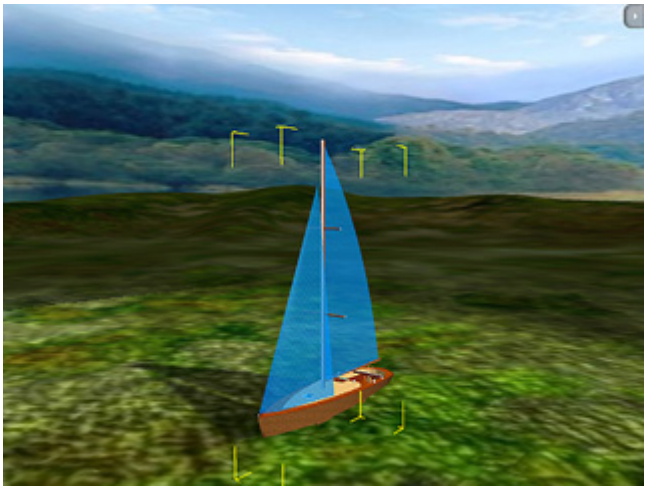
2. Apply a desired model into the project. Overlapping the pivots of them.



3. Pick the model and go to the **Modify** page. In the **Attach** section, click on the **Pick Parent** button and click the helper.

Prop ✔ Normal • Box_001 ✔ Normal 12 • SailingBoat ✔ Normal 15,672	Prop ✔ Normal Box_001 ✔ Normal 15,684 • SailingBoat ✔ Normal 15,672
The hierarchy before attaching	The hierarchy after attaching

4. Select the helper again and set it's **Opacity** value to 0.



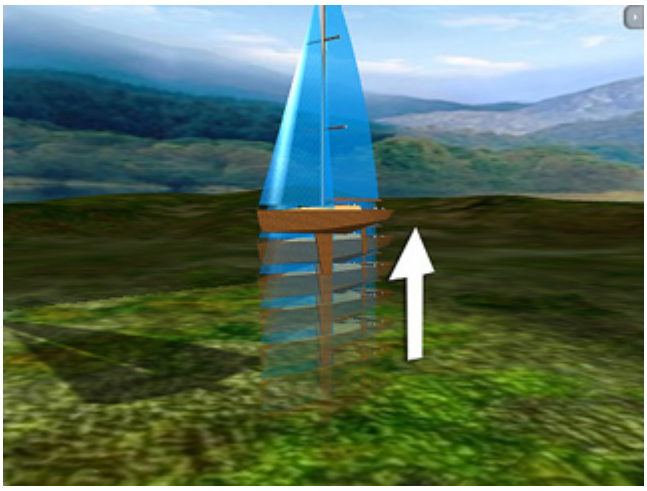
5. Click the **Merge** button in the **Attach** section.

6. Please follow the same steps to create more parts to be combined later:

		
Apply the helper.	Apply a wing model and attach it to the helper.	Set the helper's **Opacity** to 0.

7. You may open the **Perform** track, right click on it and select the desired animation from the **Animation List**. Alternatively, you may also right-click on the merged object and apply the animation clip from the **Perform** list.

   Examine the perform clip for each part:

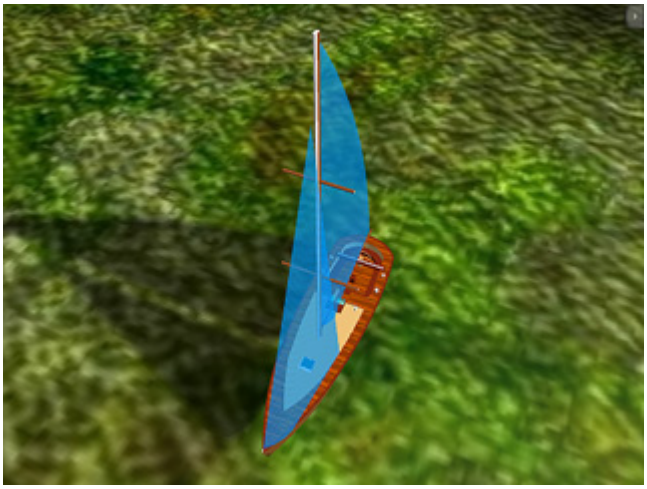



The "Taking Off" is applied to the sailing ship. The "Flapping Wings" is applied to the wing.

Assembling Parts

Once you have merged several models and helpers as parts, you may then start to assemble them as one composite object.

1. Decide a part to be the **Parent Node**.



The sailing boat is assigned to be the parent.

2. Pick other parts and then click **Pick Parent** in the **Attach** section.

Attach the two pieces of parts to the parent.

3. Repeat last step till all the parts are attached to the parent node.

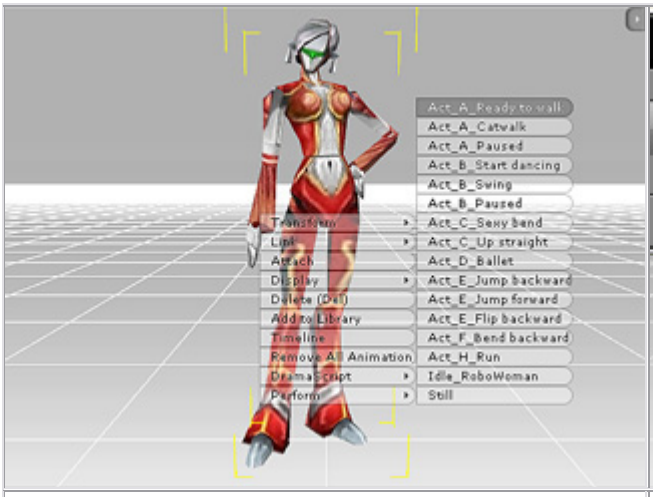
The model now can take off with flapping wings.

4. You may then control the composite object and command each helper individually to act its animation at different times via the **Perform** track.

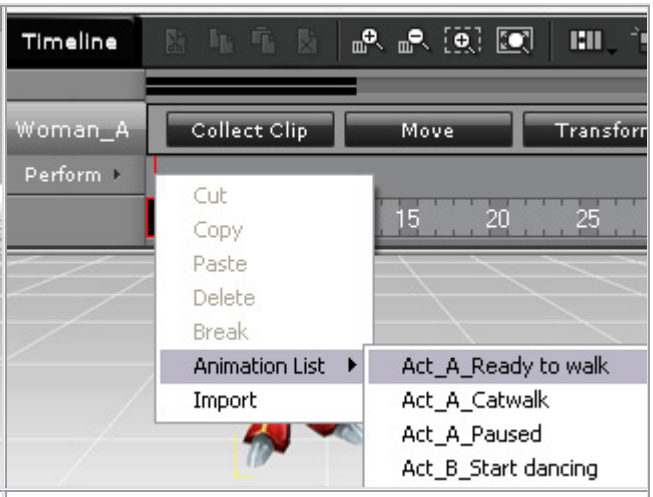
3D LiveProp Animation

The **LiveProps** from **iClone** 2.x are converted into **iProps** with **Perform** animation clips embedded when you load them in **iClone 3**.

1. Go to **Set**/**Props**.
2. In the **Content Manager**, switch to **Template** tab and in the tree view, select **3D LiveProps** entry. Apply one of the templates.
3. Go to desired frame and select one of its embedded animations.
    - You may right-click on the prop and select the animations in the **Perform** list.
    - If you are using the **iClone Pro** version, you may also open the timeline, choose the **Perform** track of the LiveProp and right click at the desired frame and pick one of the animations from the **Animation List**.



Right-click on the LiveProp and select animation clips in the **Perform** list.



Right-click on the Perform track.

Plants

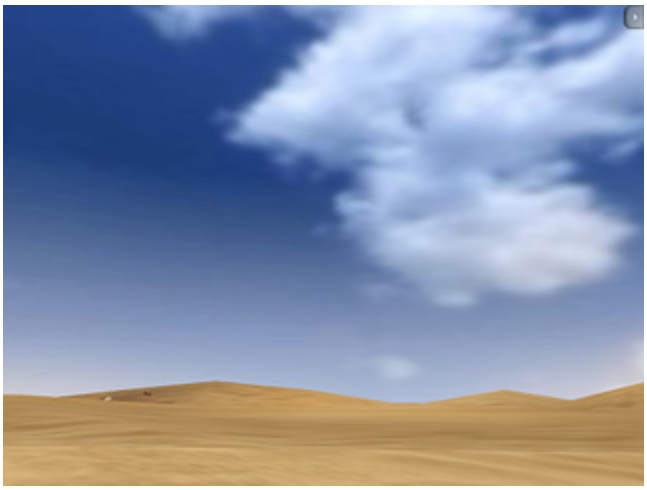
The Tree

iClone facilitates you with tree system in which parameters are provided for various effects of the tree planted. You may plant trees on the terrain or even link or attach them to some other target objects. The trees can cast and receive shadow or sway with the wind during play back. You may then create a forest or potting in your project.

To Plant a Tree

It is relative easy to plant a tree:

1. Apply your desired terrain and sky. Go to **Prop**/**Tree**.



2. In the **Content Manger**, drag and drop your desired tree into the 3D viewer.

   You may even move the trees with the **Move**, **Rotate** and **Scale** tools to manipulate the tree as you do to the props.

Wind

If you increase the **Strength** value, the trees you plant sways harder when you play the project and vice versa.

Link

Because the tree is similar to the prop, you may then link your tree to a target such as a flowerpot.

	
Before linking.	• Link to the flowerpot. • **Align to Parent** box checked. • **Transform** data modified.

Note:
• Please be noticed that since the tree does not possess any track in the timeline, you must be careful when you set **Link** or **Unlink** keys to the trees.

The Grass

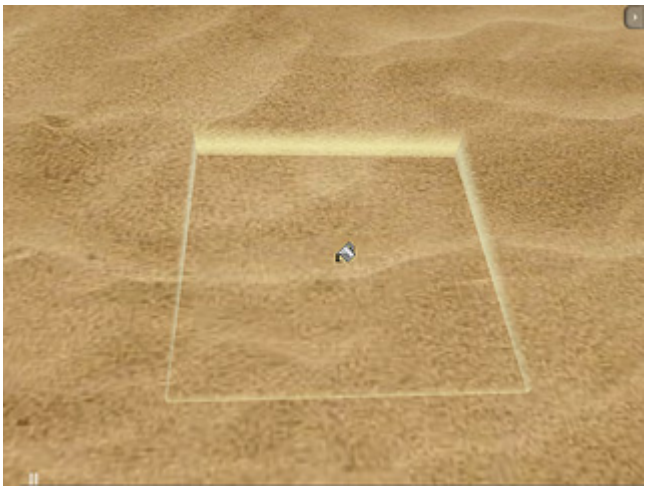
iClone gives you a realistic grass system in which you plant various types of grass and plants in your scene.

The Concept of Grass Instance

Once you apply one of the grass templates from the **Content Manager**, you choose the **Seed** of the Grass you wish to plant. Each click of your mouse button will place another instances of that seed so you can build up patches of grass throughout your scene. However, you will only see one name of the chosen seed in the **Scene Manager**. Note you will delete all the instances of your grass by deleting the name in the **Scene Manger** so use this carefully.

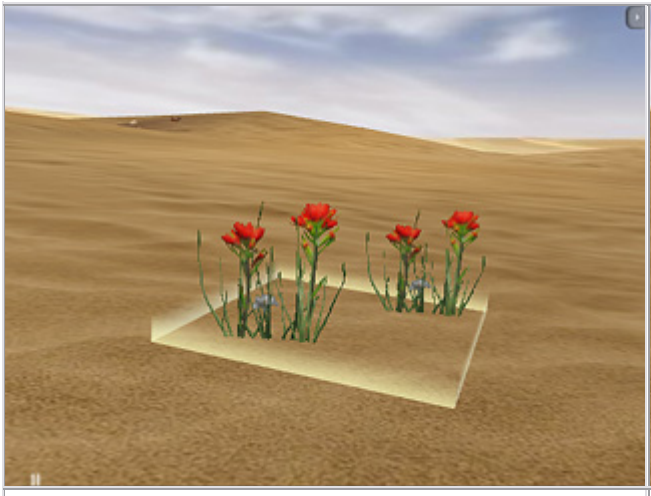
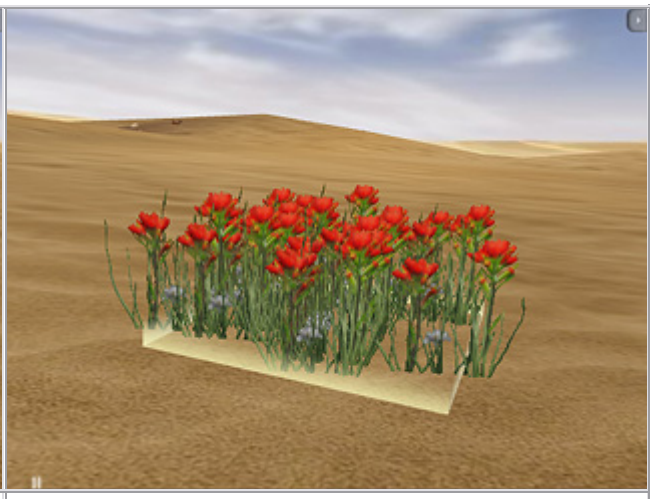
To Plant the Grass

1. Go to **Props**/**Grass**/**Content Manager**.
2. In the **Template** tab, double click on your desired grass template (or drag it into the preview window).
3. Be sure to change to any one of the following in the tools  panel.
4. You will see a grass gizmo display in the 3D viewer to indicate the location for planting grass and the cursor turns to be a paint bucket.

   The Grass Gizmo.
5. Drag the **Size** slider to define the size of the **Gizmo**.
6. Drag the **Strength** slider to define the number of grass seeds being planted in the range of the **Gizmo**.

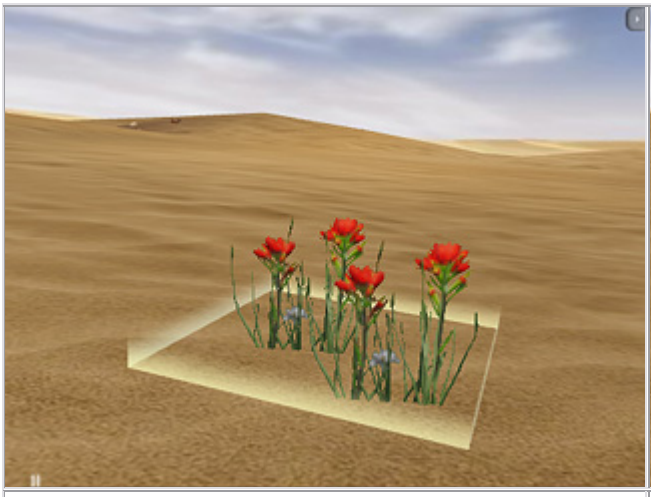
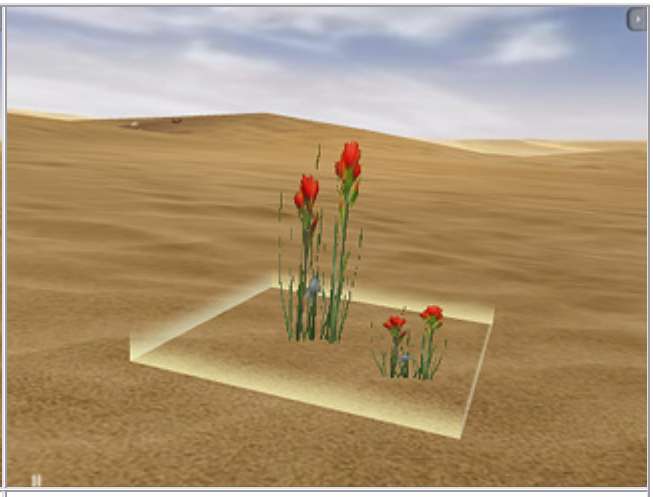
7. Move the gizmo to your target location and click your primary button of the mouse to plant.

	
Strength = 1	Strength = 10

To Change the Look of Grasses

If each piece of the grass looks too much alike and you want to have a varying look, you may need to adjust the parameters in the **Dimension** section.

1. Go to the **Dimension** section in the **Modify** page.
2. Set the **Width** and **Height** values to change the size for each piece of grass.
3. If you want the height of the grass to be different, increase the value of **Variation**.

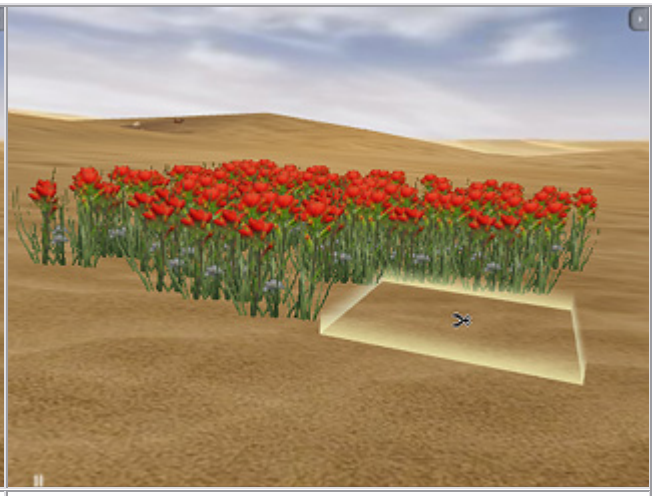
	
Variation = 1	Variation = 100

To Remove, Clear or Mow?

Remove: Click the **Remove** button, the grass node in the **Scene Manager** will be deleted permanently.

Clear: Click the **Clear** button, all the grass belonging to this grass node will be removed. But the node remains in the **Scene Manager**.

Mow: Select the **Mower** radio button and click in the 3D viewer, the grass in the range of the **Gizmo** will be cut.

	
Before Mowing	After Mowing

Note:

- You can also drag the thumbnail image to the target location for planting.
- Roll the mouse wheel to change the size of the planter. Click mouse left button to plant or mow.
- **Right-click to toggle between planting and mowing mode**.

Save Your Grass

You may click **Add** button to store custom grass in the **Content Manager**/ **Custom** library. The settings saved are:

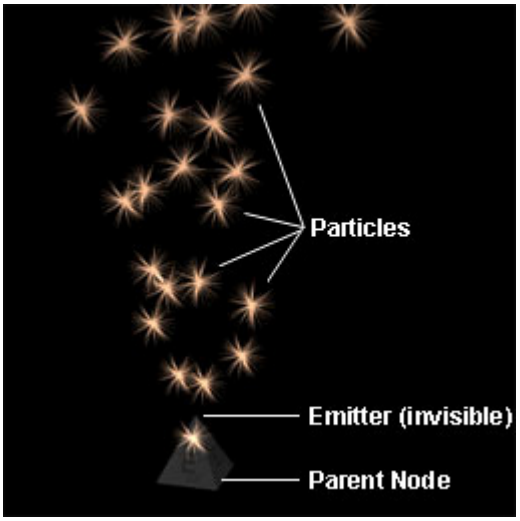
- Diffuse and Opacity
- Dimension
- Wind

Particle

Structure of Particle System

Usually, a powerful mechanism is constructed with very simple structure. So is the iClone particle system. The components of iClone particle system are: Emitter, particles ejected from the emitter and optionally, a parent node of the emitter.

- **Emitter (Invisible)**- An invisible object from which the particles are animated from. It is like a faucet that gives particles instead of water. Therefore, it can be turned on and off, the direction, the volume and so on, can be adjusted through several easy-to-controlled attributes.
- **Particle** - The image objects ejected from the emitter. By means of adjusting the attributes of the particles, such as the image sizes, the blend methods, and so on, you can create sandstorm, fire, smoke and lots more in your scene.
- **Parent node (Optional)** - The parent node can be viewed as the linked target of the emitter. It can be a prop, an accessory or even a joint of the bone of an avatar. Since emitters and particles can not have keys in the timeline, this is the best way to move or rotate the emitter for sending various particles. Besides, it facilitates seeing the location of your emitters when you want to create a moving emitter such as a firework.



Generating Particles

iClone provides several categories of particles for you. They are:

- **Environment** - The templates simulate the environmental phenomena such as fog, cloud and so on.
- **Fire and Smoke** - Many kinds of fires can be applied to your projects.
- **Miscellaneous** - Some other templates for further use.
- **Text** - You can have your own logos, texts with special effects to amaze your audience.
- **Tunnel** - You will find many tunnel effects in this category, such as time tunnels, wormholes, etc.
- **Water** - Springs, waterfalls, any type of water you want can be found in this category.

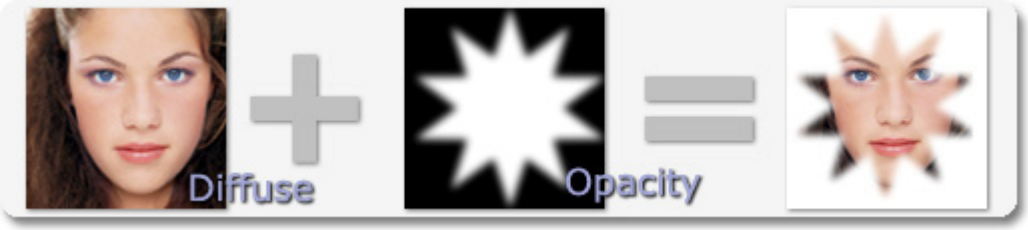
1. Please click the **Set** tab in the navigation pane.
2. Press down the **Particle** button.
3. Switch to the template tab. Simply double click on any one template in these categories and your project generates particles accordingly.
4. Play back the project to see the result.

Alternatively, you can apply any template in the folder named **Effect Pack** in **Project**, **Accessories**, **Props** menu to have particles in your project.

Adjusting Particles

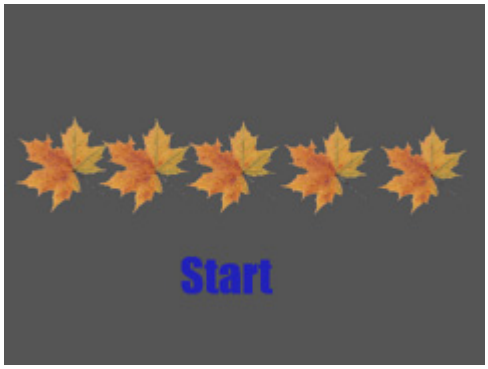
We will explain the usage of all the parameters for the particles in this section. Please switch to **Modify** tab in **Particle** mode. Keep your focus now to the section with **Particle Setting** tab on it.

Please Click each sub-title at the left side of the table to view the illustrations on the web.

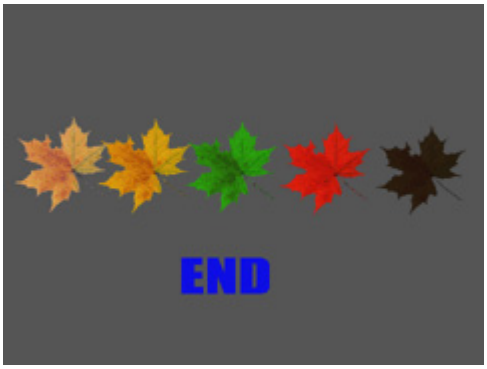
Particle Setting	
Texture	• **Diffuse** - You can change the color or image for each particle. • **Opacity** - This parameter decides the shape and the transparency of your particles. 

Color

- **Start/End Color** - Define a color to be blended with the image you load for the particles when they are generated/eliminated.

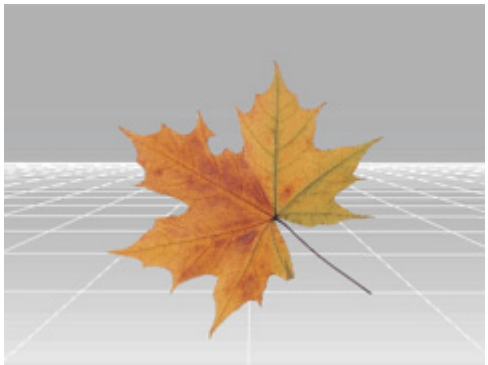


Start color:
white, white, white, white, white

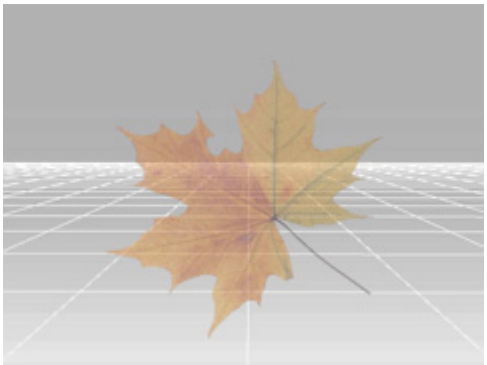


End color:
white, yellow, green, red, black

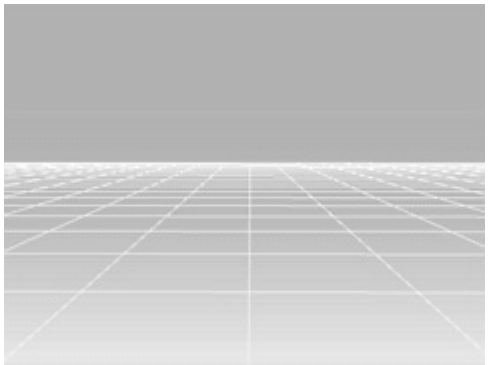
- **Start/End Opacity** - Set the level for each particles to be transparent as it is generated/eliminated. Set 0 to make it totally transparent and 255, opaque.



First frame



Middle frame

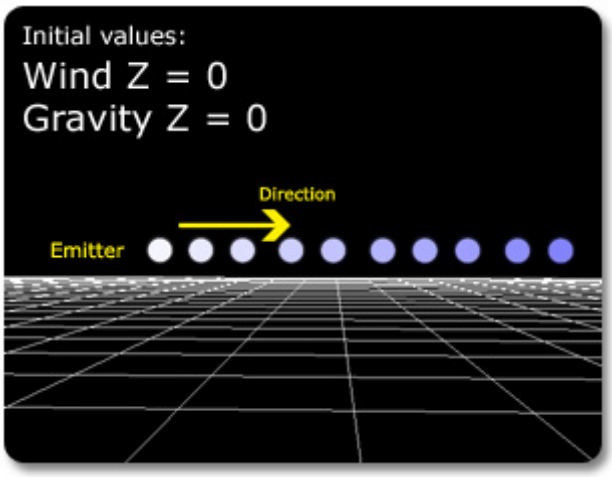


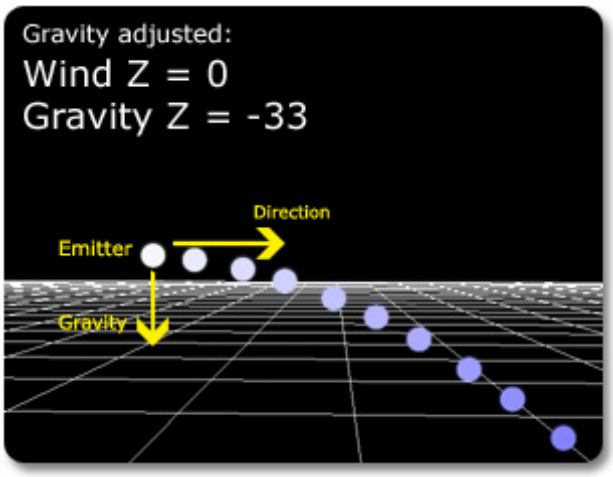
Last frame

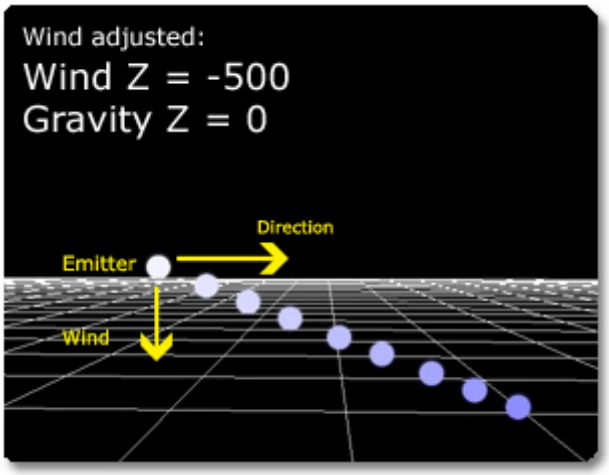
Blend Mode	These three radio buttons in this group defines how the particles to be blended with the background. • **Alpha** - You may see the original color of the image for each particle. • **Addition** - The RGB color of the image for each particle will be added onto the color of the background. This parameter is useful especially when you want to create glowing particles in your projects. • **Subtraction** - The RGB color of the image for each particle will be subtracted from the color of the background.  Alpha  Addition  Subtraction

Size	The size of each particle can be modified via the settings in this group so it transforms gradually and linearly within its life span. • **Start** - You may decide the **Width** and **Height** as soon as each particle is emitted. The range is from (0 X 0) to (99999 X 99999). • **End** - These two parameters set the **Width** and **Height** of each particle when it vanishes. The range is from (0 X 0) to (99999 X 99999).
	 **Start:** 10 x 10 **End:** 10 x 10  **Start:** 3 x 3 **End:** 30 x 30
Rotate	The particles rotate as long as you modify the settings in this group. • **Initial Angle** - By setting the value in this box, each particle tilts clockwise in the angle of this value as being generated. The range is from 0 to 359 degrees. • **Angular Velocity** - These settings keep each particle rotating individually in different velocity. You may set the range from 359 degrees to 359 degrees. A positive/negative number constrains the particles to rotate clockwise/counterclockwise. The larger the number is, the faster the particles rotate. The relationship of the **Min** and the **Max** follows the formula: **Min <= Max**.
Life (frame)	The parameters define how long each particle lives. You can make your particles disappear at random ages from **Min** to **Max** frames. • **Min** - The least number of frames for each particle to live. The value can be set from 0 to **Max**. • **Max** - The highest number of frames for each particle to live. The value can be set from **Min** to 99999.

Force	
Gravity	• It creates a force field to pull particles in a fixed direction specified by three parameters. The strength of the field increases as the values move up. The speeds of the particles are accelerating per unit of time. • X - Particles are pulled along the X-axis. The range is from -99999 to 99999. • Y - Particles are pulled along the Y-axis. The range is from -99999 to 99999. • Z - Particles are pulled along the Z-axis. The range is from -99999 to 99999.
Wind	• It simulates the effect of wind on the particles. The particles increase their velocity along the direction you set. However, the speed is constant instead of accelerating per unit of time. • X - Particles are blown along the X-axis. The range is from -99999 to 99999. • Y - Particles are blown along the Y-axis. The range is from -99999 to 99999. • Z - Particles are blown along the Z-axis. The range is from -99999 to 99999.







Adjusting Emitters

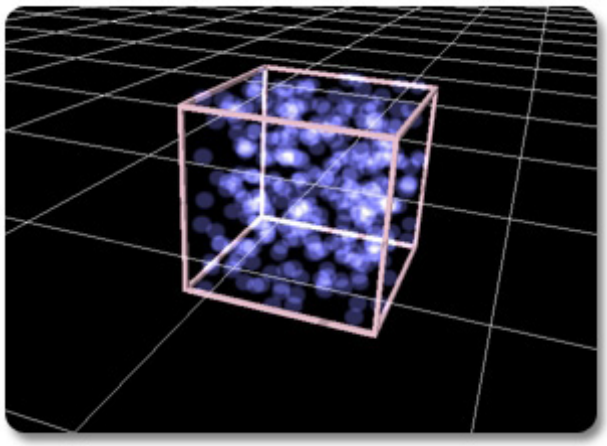
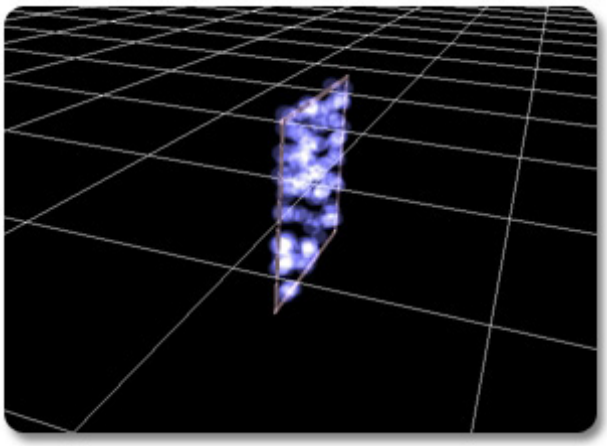
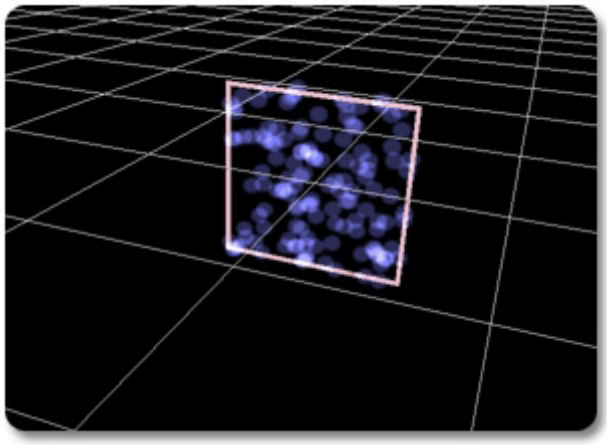
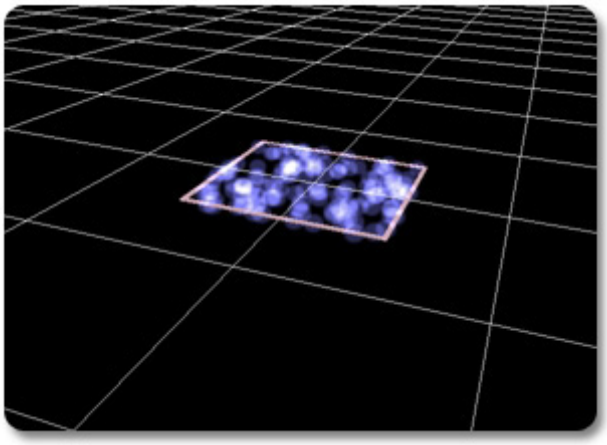
Before we go on for this section, please keep in mind that all the particles must be generated by emitters. Therefore, modifying the settings for the emitters, such as the direction or the volume etc., crucially affects particles.

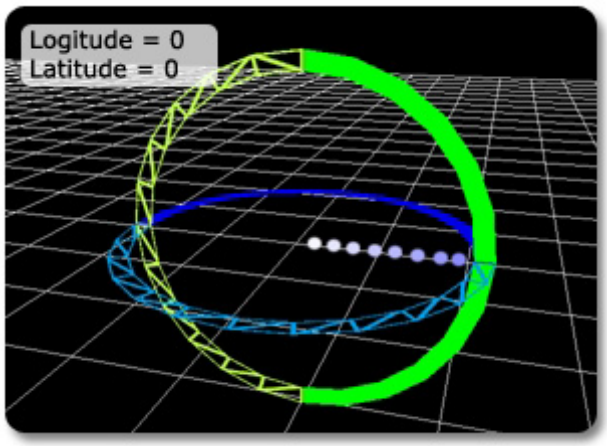
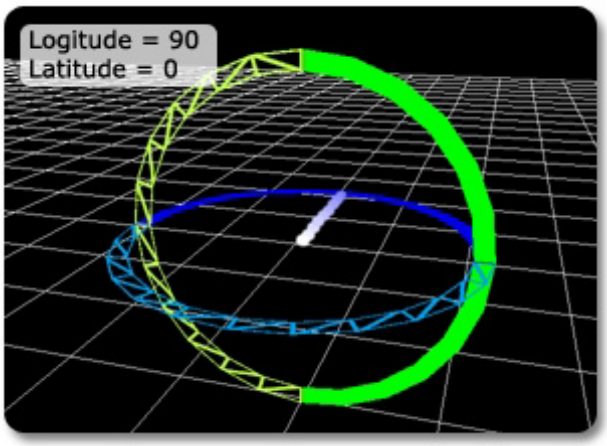
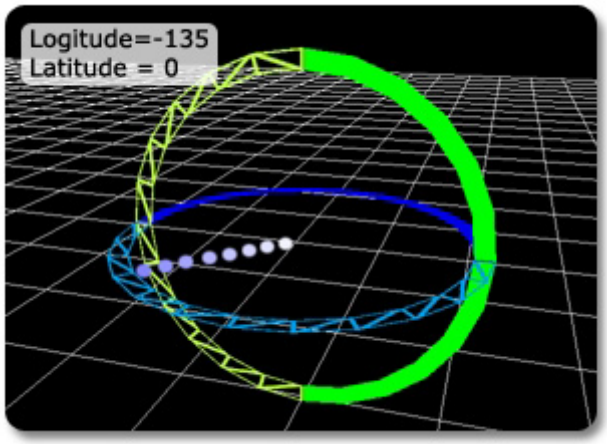
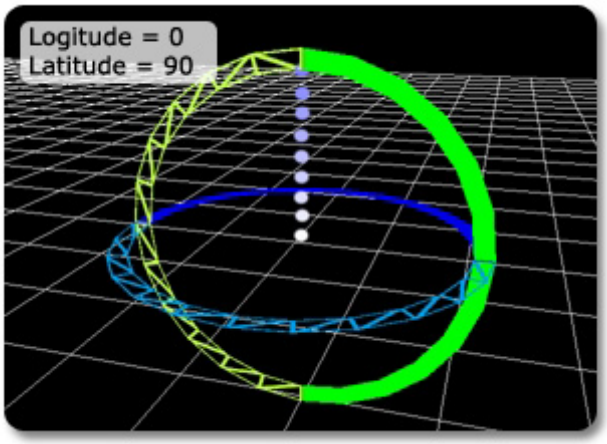
Please scroll up to the top of the **Modify** tab. You will see the **Effect** tag.

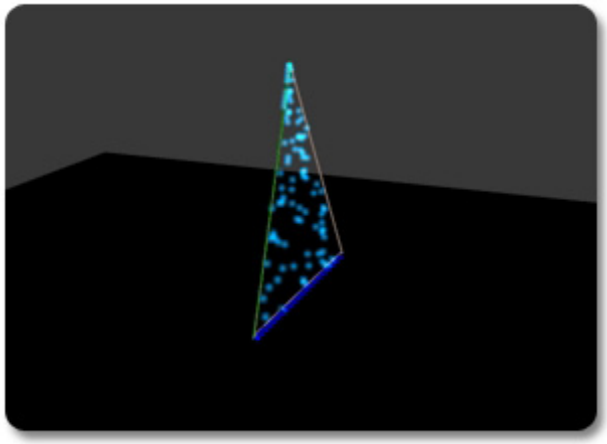
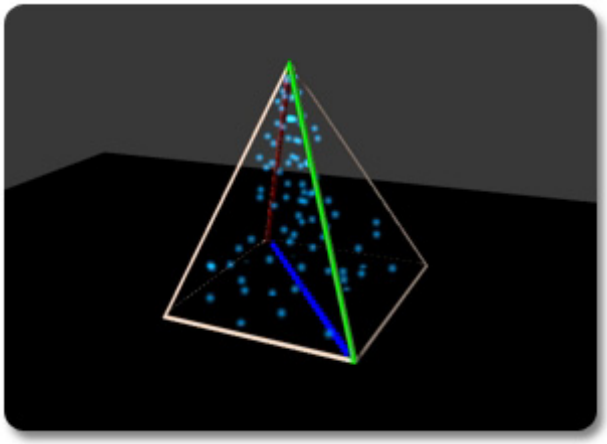
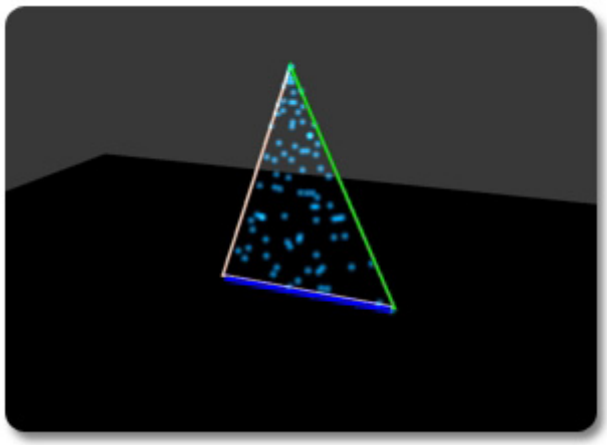
Emitter	
Attach to	• The **Attach to** drop down list contains everything that can be taken as the linked target. Once you select an emitter, this list will be updated to the linked target accordingly. • Press the button and you will be prompted the **Link to Sub-Node** panel in which the node hierarchy of the linked target shows. • You may link your emitter **RELATIVELY** to any node by simply click to one of them.
Import Emitter	• Press the button to locate the emitter files. When the capacity of your custom folder is too small and you must move away your customized emitter files to another directory, this feature is quite useful to import them back.

If you totally understand how the emitter links to its parent, please read the following section for further adjustments to the emitter itself.

Emitter Setting	
Emit On/Off	You may define when the emitter starts to emit and when to stop by clicking the **On**/**Off** buttons in the **Emitter Setting** section. Once you click any one of the two buttons, you set an **Emit** key on the timeline. Therefore, one emitter is able to send particles intermittently.
Quota & Emit Rate	• **Quota** - This defines how many particles are provided when the project plays back. Once the amount of the particle alive hits the number of **Quota**, the emitter pauses to send off particles. • **Emit Rate** - This enforces the emitter to eject specified number of particles per second.

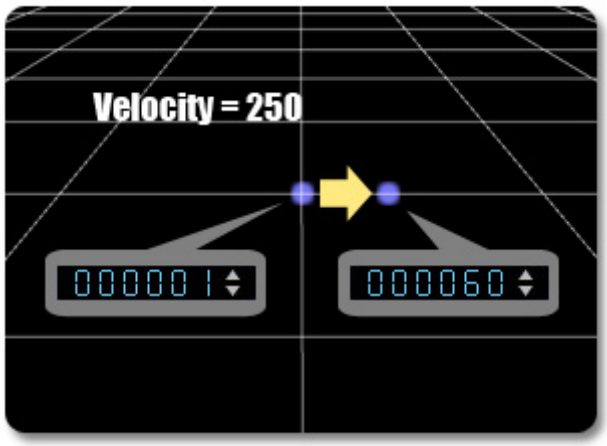
Emit Volume & Position	Please keep in mind first that there is an invisible cube container in which emitters distribute averagely. • **Emit Volume** - There are three parameters which modify the dimension of the container. Since the emitters spread averagely within this container, they can create an illusion that the volume of the particles is increased. • **Position** - These X-Y-Z parameters move the cube of emitters to a specific position in your project.  (100, 100, 100)  (0, 100, 100)  (100, 0, 100)  (100, 100, 0)

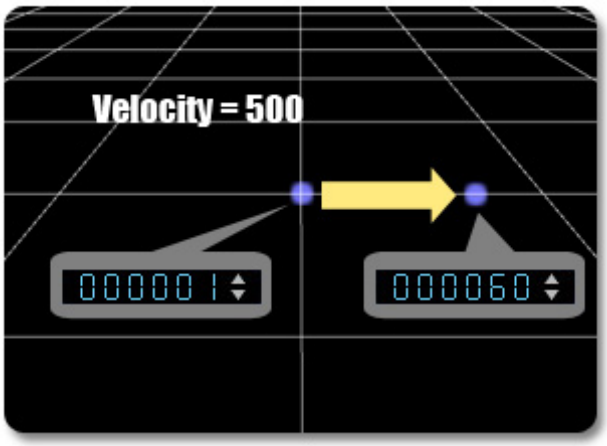
Direction	With the idea of longitude and latitude system, the emitter obtains the direction for sending off the particles. Please notice that the effect can be observed when the Velocity parameter increases. • **Longitude** - This value decides the degree of the angle on the floor. 0 degree sets the direction along the positive X-axis. The range is from -180 to 180 degrees. • **Latitude** - This value lifts up/push down the direction to the north/south pole. The range is from -90 to 90 degrees in which 90 degrees set the direction to up.
	 (0, 0)  (90, 0)  (-135, 0)  (0, 90)

Spread & Diagonal	To understand these two parameters, you must think of a pyramid in your mind first. The top of the pyramid is the position for the emitter and it ejects particles straight to the bottom of the pyramid. • **Spread** - This value decides the angle of the two opposite sides (the red and green lines in the illustration as **Diagonal** equals to 0) of the pyramid. The range is from 0 to 180. • **Diagonal** - This value specifies the rotation angle of the diagonal line (the blue line in the illustration) of the pyramid bottom. The range is also from 0 to 180. Please notice that the area will be maximized when the **Diagonal** is set to 45 and 135 degrees.
	 Diagonal = 0 degree  Diagonal = 45 degrees  Diagonal = 90 degrees "*Diagonal value changes from 0 to 90 degrees*"

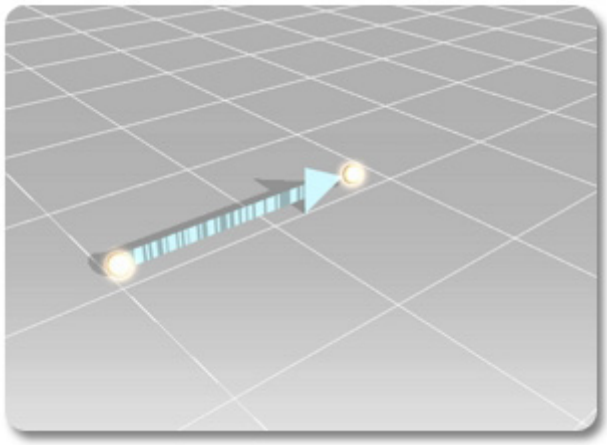
Velocity & Direction Randomness

- **Velocity** - This value assigns the speed to each particle for moving. The range is from 0 to 99999.

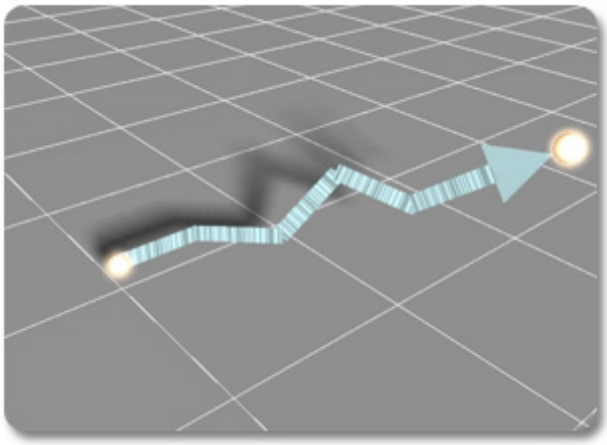




- **Direction Randomness** - Initially, each particle moves along a path of a fixed straight line. This attribute distorts this line so the particles move individually along different distorted lines. The range is from 0 to 359. Each particle slightly changes its direction randomly in accordance with the angle from x, y and z axis. It is useful when you want the particles to imitate the motion of the snow or falling leaves.



Direction Randomness = 0



Direction Randomness = 30

Moving, Rotating Emitters

In this section, we will describe how to move or rotate emitters since setting keys into timeline for particles and emitters is not available in this version. Once the emitters are modified, the particles ejected from they will be influenced automatically.

As you will find that once an emitter is added into the project, you can not see it in the 3D view port. But how do we move or rotate the emitter if we don't know where it is? Please follow the steps below:

1. Please add a prop into your project.
2. Apply the particle effect you want.
3. Go to **Set**/**Particle**/**Modify** page.
4. Select the emitter in the **Scene Manager**.
5. Click **Pick Parent** button; select the prop we added in step 1.
6. Modify the transform data of the prop.
7. Change the **Opacity** of the prop to 0 so it turns totally transparent after you are satisfied with the motion of the emitter.

Terrain

The Concept of Terrain System

The **Terrain** serves as the solid ground that **Actors** and **iProps** can stand or move along but not pass through the surface. With the use of **Terrain**, users have several benefits:

Benefits

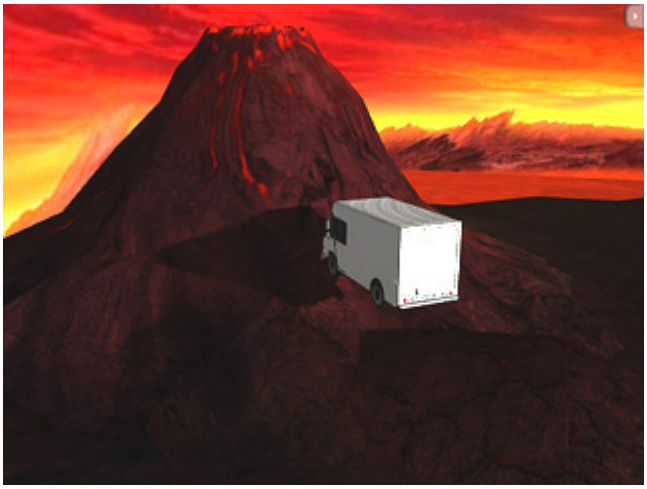
- **Director Mode**:
    - You may control your actors, animals or vehicles movement along the (terrain) surface just like playing 3D games.
- **Editor Mode**:
    - You may directly place objects right on the terrain, and edit the movement and positioning along the terrain, without the need to worry about making height adjustments.
    - You are allowed to grow grass or trees on the terrain surface.
    - It automatically locks the terrain from mouse picking. This prevents you from accidental selection of the terrain or making unwanted changes.

Limitation

- There can be only one terrain per project.
- The moving object can not move up a 90-degree angle. It will instead jump to the higher surface abruptly.
- Any linking or attach relationship will be removed once the prop is converted to be part of the terrain.

Snap To or Follow Terrain

iClone allows you to drag and move actors or props along the terrain in three modes: **Off**, **Snap to Terrain** and **Follow Terrain**.



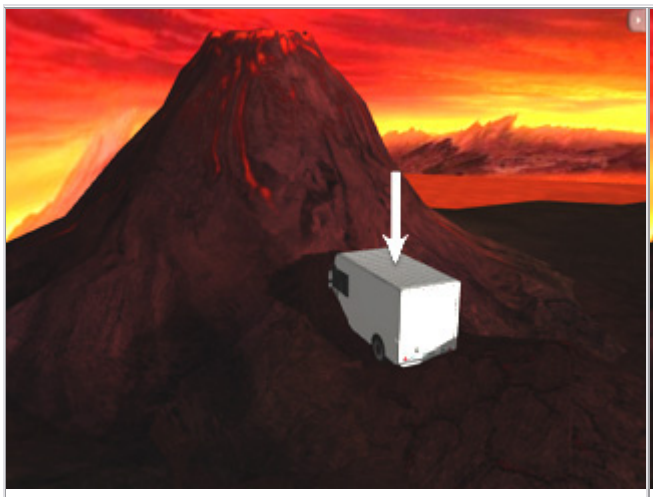
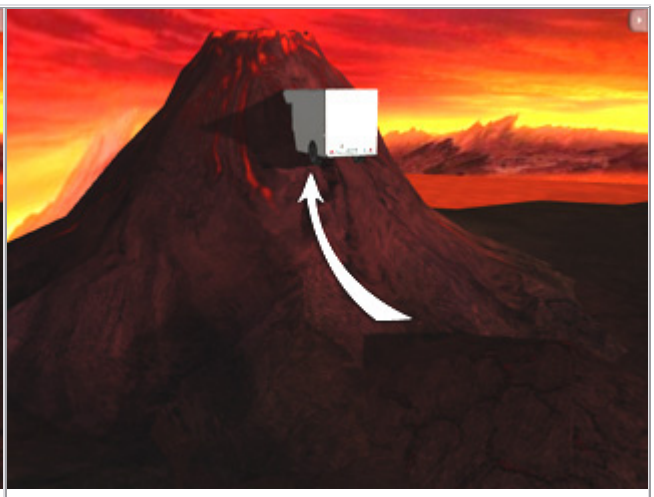
Drag and Drop a Prop to the Scene

Off

Off is the method to move objects where the contours of the terrain have no effect. You can always move in any direction and the object will pass through the terrain as though it is not a solid object.

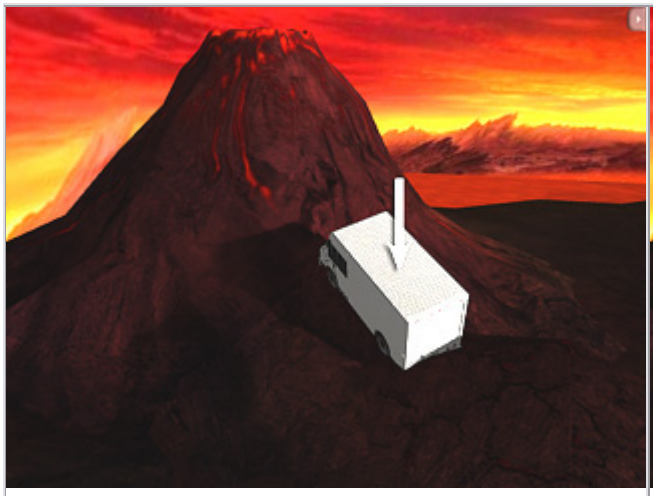
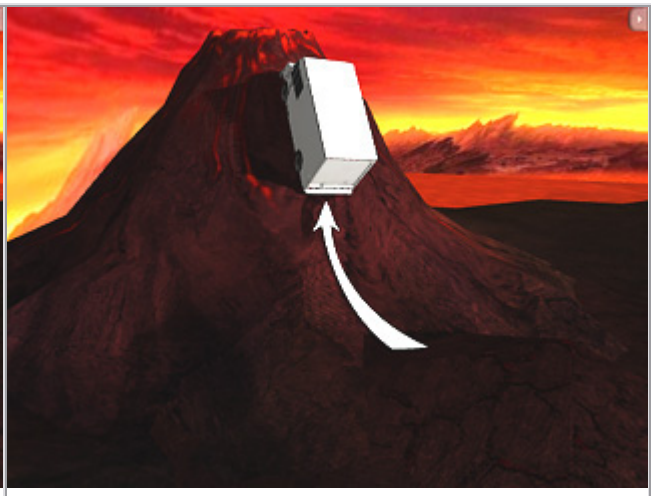
Snap to Terrain

When you drag an object to move along the terrain, the **Move - Z** data of the object adjusts automatically. This way the object's pivot will always move high and low along the contours of the terrain. This method is unrealistic for vehicles such as cars or bikes.

	
Snaps instantly when drag and move	Z value changes to snap the terrain

Follow Terrain

When you move an object along the terrain, not only the **Move - Z** data of the object adjust automatically, but the **Rotate - X, Y, Z** also adjusts because **iClone** tries to match the angle of Z-axis of the object with the **Normal Directions** of each face in the Terrain. This is the ideal method to use for all kinds of vehicles.

	
Snaps instantly when drag and move Rotate - X, Y, Z changes to fit the normal	Z value changes to snap the terrain Rotate - X, Y, Z changes to fit the normal

Create Your Own Terrain

Other than loading **iClone** terrain from supplied templates, you can also load a large-sized 3D surface (or prop) and turn it into terrain. In addition to that, you can also add any static 3D props and make them part of the terrain. For **iClone 2**.X users, you may apply a 3D Scene and then convert it to **Terrain** since the 3D Scenes are considered as props in **iClone3**. Please note that if there is no terrain defined in the project, **iClone** takes the floor (Z axis = 0) as the default terrain.

Convert Large-size 3D Surface or Props to Terrain

1. Go to the **Set**/**Props** or **Stage**/**3D Scene**.
2. In the **Content Manager**, apply the desired large-size surface or prop to the project.
3. Right click on this object and select **Add to Terrain**.

The surface or prop then will be converted to the **Terrain** in the project.

How to Add a Terrain

1. Go to **Set**/**Terrain**, in the **Content Manager**/**Template** tab, apply the desired terrain template into the 3D viewer as the base terrain.

Note:
You can also use the following steps to create your own detailed terrain..

2. Apply props that you intend to be part of the terrain from the **Template** or **Custom** library.

3. Right Click on the props individually and select **Add to Terrain** in the context menu .

4. Press down the  button and use move tool to move your actor or iProp over the terrain. Watch as it follows the contours of the terrain, including the bridge in the example below.

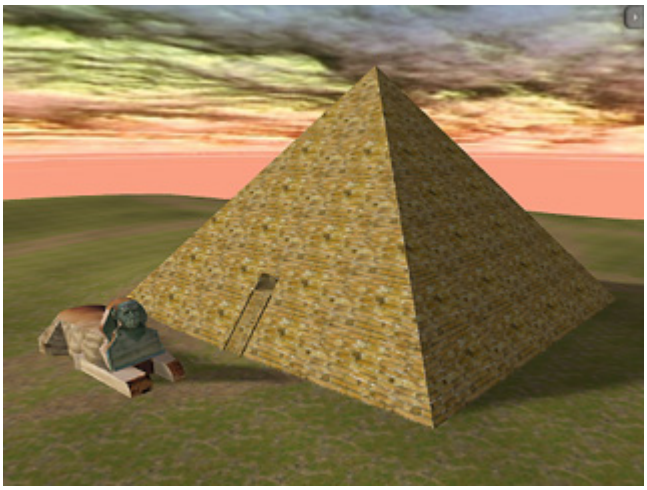
	
Select the prop for moving	Use the move tool to move it and it will follow and snap to the terrain

Turn Bounding Mesh On or Off

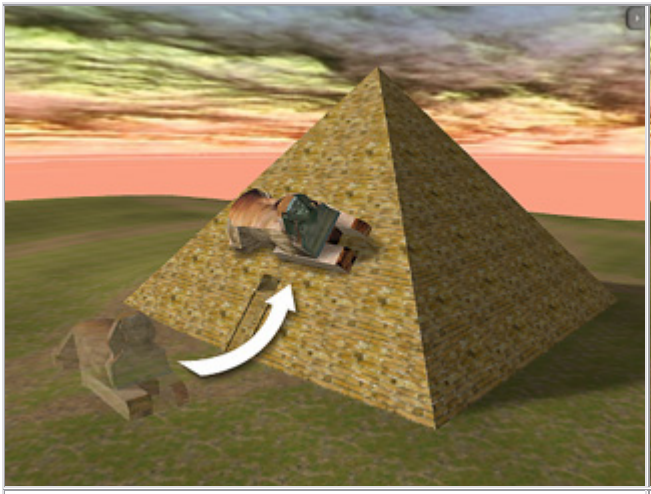
You may decide to turn bounding mesh on or off after you convert the object to be part of the terrain. Then you may move objects or plant vegetation over the mesh itself or the bounding mesh that surrounds it.

The Difference between On and OFF

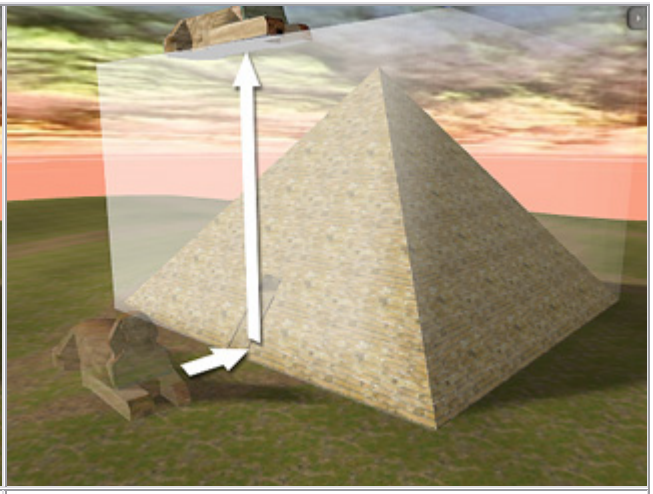
1. In the 3D Viewer control bar, switch the mode to **Snap to Terrain** or **Follow Terrain**.
2. Apply one prop (Pyramid) to the project. Right-click on it and select **Add to Terrain**.



3. In the **Scene Manager**, pick the prop under the **Terrain** entry.
4. Go to the **Terrain Component** section of the **Modify** page. Uncheck the **Use Bounding Mesh** box.
5. Apply another prop (Sphinx) and drag across the terrain to see the result.
6. Check the **Use Bounding Mesh** box. Drag the prop across it again and see the different result.



Use Bounding Mesh = **OFF**



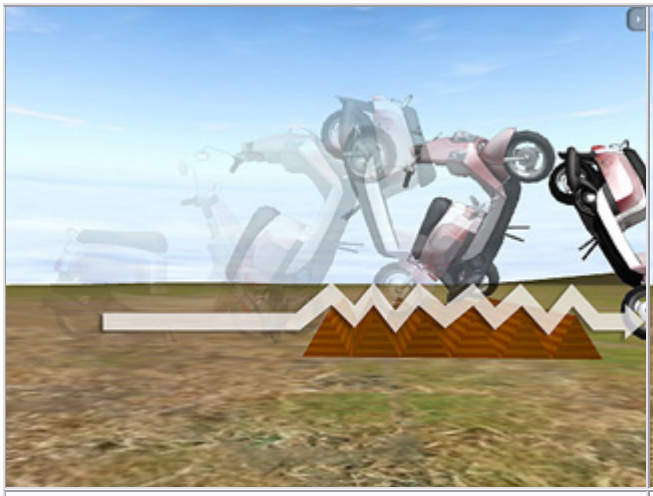
Use Bounding Mesh = **ON**

Note:

- To examine the bounding mesh of a prop before adding it to the **Terrain**, go to the **Scene Manager** and change the setting from Normal to Bounding Mesh. You can also **Right Click** on the prop and choose **Display** then set the **Render State** to **Bounding Mesh**.

Why Turn Bounding Mesh On?

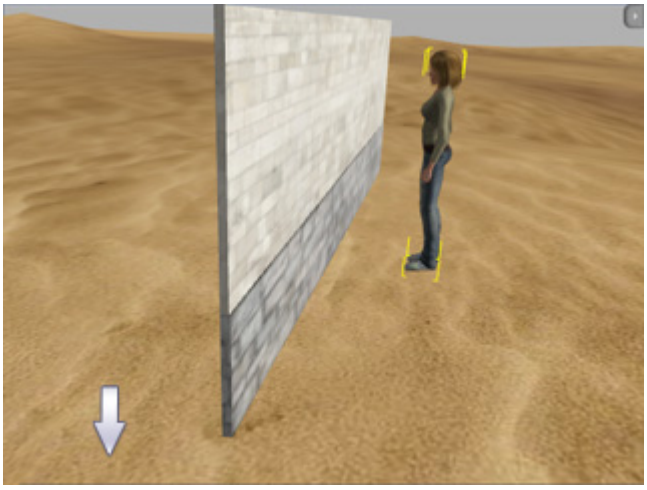
This feature is useful if you want to utilize the **Follow Terrain** or **Snap to Terrain** function in iClone. It avoids your objects from twitching as they are crossing a complicated but small fold of the terrain components.

	
Use Bounding Mesh = **OFF**	**Use Bounding Mesh** = **ON**

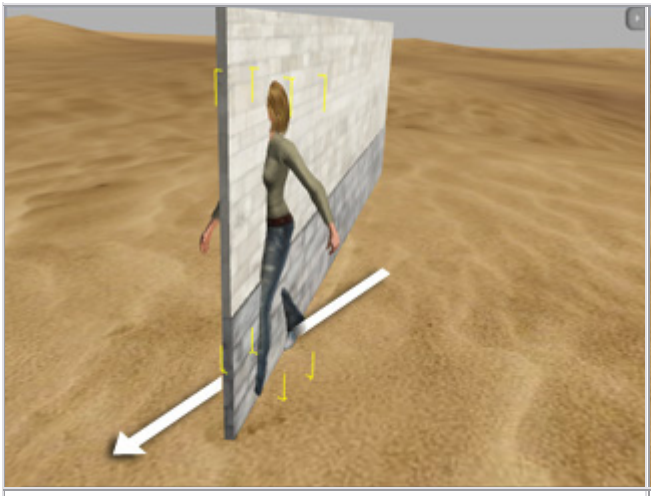
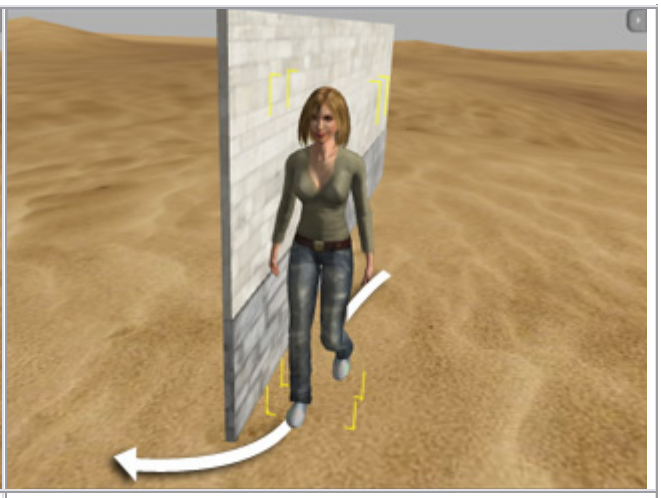
Customize a Terrain with Collision Detection

If props are added, they can be made part of the terrain. If the prop is high enough, then the actor will not be able to pass through it if the **Collision** setting is on.

1. Select the prop you want to be a block to hinder the moving object, such as a wall.
2. Go to **Set**/**Props**/**Modify** page. In the **Prop** section, check **Collision** box.
3. Click the right button of your mouse on the prop and select **Add to Terrain** in the context menu.
4. In the **Director Mode**, direct the moving object to try to move through the terrain wall.



Click on the position of the arrow to set the destination to which the actor walks

	
The **Collision** of the wall is **Unchecked**	The **Collision** of the wall is **Checked** The actor tries to bypass the wall.

Note:

- It is like adding a sensor in front of the **Actors** or **iProps**, **iClone** probes the distance that is blocked ahead of these two types of objects and determines whether to stop or bypass the object that is blocking it.
- The probe distance is starting from the pivot of the object.

Technique to Set Blockage

If you convert a prop to part of the terrain but still want the actor or iProp to be able to pass through the holes or gates on the prop, you will not be able to achieve this just by turning on the **Collision Detection**. In this section, we will show you how to achieve this goal by using hidden 3D blocks to set the Collision Detection.

1. Please apply the Arc de Triomphe prop into project.

2. Turn on the **Collision** of it and **Add to Terrain**.

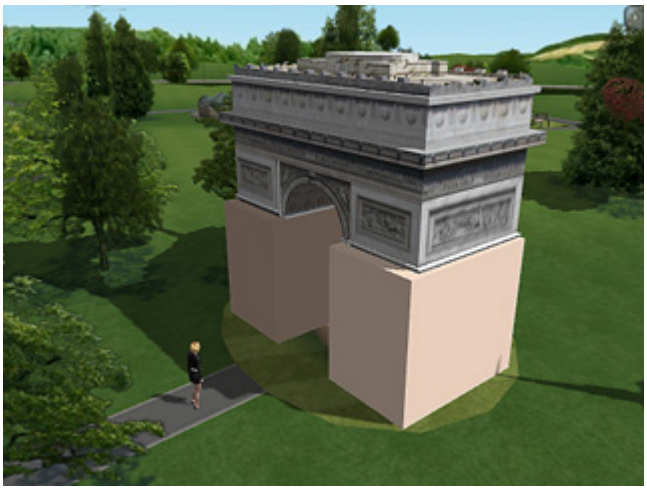
3. Command the actor move through the gate to the place marked with a blue circle.

You will find the actor stops in front of the gate instead of passing through it. This is because we turned on the **Collision** detection and the prop generates blockage according to its entire bounding mesh.

	
The actor stops in front of the prop.	The blockage of the prop.

To solve this problem, please follow the steps below.

1. Apply the Arc de Triomphe into project.
2. **Do Not Turn On** the **Collision** and **Add to Terrain**. This will allow the actors or iProps to pass through it.
3. Apply two **3D Blocks** to the project. Adjust the size and the location of the blocks.



4. Set the **Opacity** of them to 0.

5. Turn their **Collision** on and then **Add to Terrain**.

	
The blockage of the two 3D block props.	The actor may now pass through the gate.

Flexible Props

iClone provides you flexible props, **Flex Props**, to simulate soft objects such as the skirts, ponytails or curtains. This type of prop sways and vibrates along with the wind or any moving objects if it is attached to them.

After you apply a **Flex** prop, you may adjust settings to change the behavior of it:

1. Select the flex prop.
2. Go to **Set**/**Props**/**Modify** page. Scroll to the **Flex** section and click the **Flex Setting** button.

The **Flex Setting** panel pops for you to adjust the settings.

Note:

- You may play and modify the settings simultaneously to see the real-time result of how the settings influence the **Flex** props, just like the **Particle** effect.
- You may click the **Save Settings** to save all the settings into a file and then apply to another **Flex** prop by clicking the **Load Settings** button.
- If you find it hard to have the best result, please refer to the settings of the flex props in our template library which are all optimized.

Flex Property - Stiffness and lift

The **Stiffness** defines the resistance of the **Flex Props** to deflection or deformation by an applied force. The higher the value, the more stiff the prop is and vice versa.

	
Stiffness = 100	Stiffness = 2000

The **Lift** is aerodynamic force that is perpendicular to the surface of the **Flex** props. Increasing the value may have the surface raise higher. If one side of the flexible surface is fixed, the **Lift** may influence the angle for it to fly.

Flex Force - Gravity, Wind and Centripetal Force

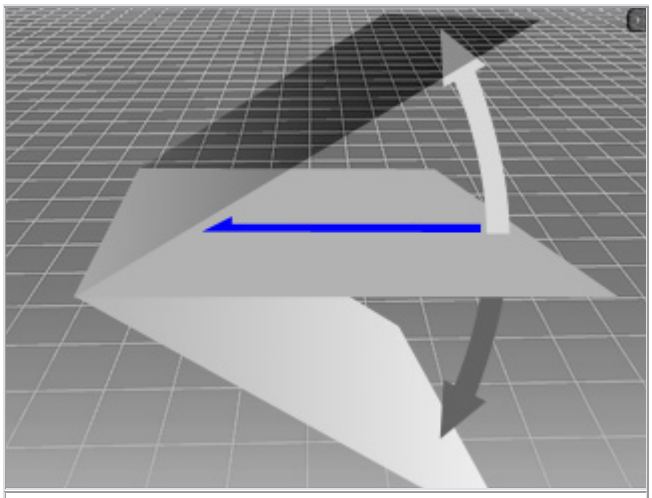
The **Gravity** is the agency that gives objects weight. In **iClone**, this value may be manually set to go along the three axis. This value causes the **Flex** prop to accelerative move along the specific direction.

	
Gravity Z = -200	Gravity Z = 200

The **Wind**, however, influences the **Flex** prop to move along the specific direction in fixed speed.

	
Wind X = -200	Wind X = 200

The **Centripetal Force** is the external force required to make a body follow a curved path. Hence centripetal force is a kinematics force requirement, not a particular kind of force. For a **Flex** prop, **Centripetal Force** is the force toward the fixed ends.



The blue arrow represents the direction of the **Centripetal Force** when the surface rotates.

Turbulence - Frequency and Strength

The **Turbulence** is a fluid regime characterized by chaotic, stochastic property changes. You may modify the **Frequency** to adjust the number of occurrences of the turbulence in a unit of time. The **Strength** value, however, defines how hard the Flex props can withstand the force influence of the turbulence.

Spring Props (iClone 3.1)

iClone provides **Spring Props** to simulate the dynamic behavior of bouncing objects. This type of flexible props can spring back and forth by its own momentum, or affected by the movement from the parent object it is attached to. You may also refer to the **Bouncing Body Parts** section for more information about the spring effects on human body parts. Please go to **Set**/**Props**/**Template**/**Props**/**Spring** folder to choose any of the spring prop templates.

Parameters:

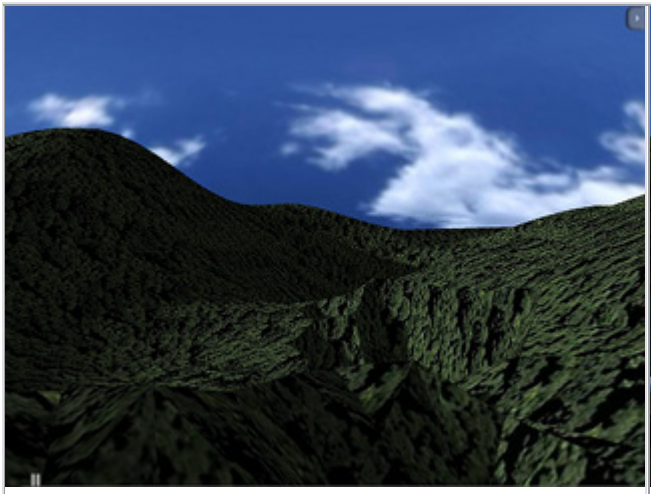
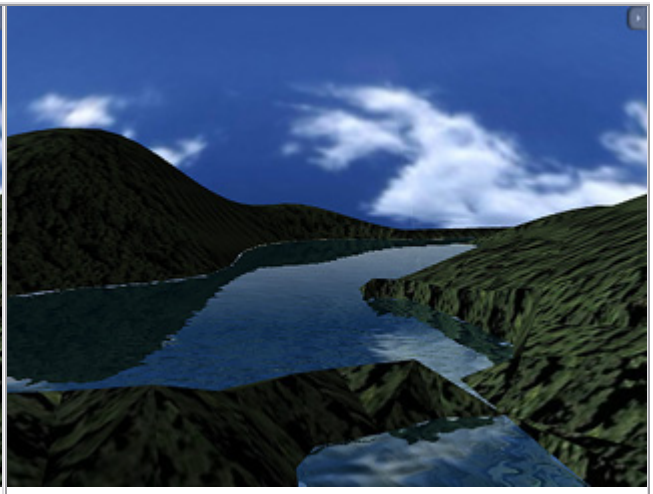
You can do custom setting on the spring dynamics via altering the following parameters:

- **Mass**: It defines the object's weight which influences the prop's bouncing angle. The higher the **Mass** value is, the larger the bouncing angle is. A higher value makes the props bounce heavier.
- **Strength**: It defines the softness of the prop. The higher the value is, the stiffer the prop turns to be. It also can be seen as the duration for the prop to finish its bouncing reaction.
- **Bounciness**: It defines the remaining bounce times after the master movement stops.

Water

iClone introduces you to the **Water Prop**. It is not a static prop, but actually a floating one instead. With the reflection and refraction characteristics, it presents realistic moving water in your scene.

1. Go to **Set**/**Water**.
2. In the **Scene Manager**, apply any one template to the current project.
3. In the **Basic Water Parameters** section, adjust the value to see the changes.
4. Press Play to see the result.

	
Before Water Applied	After Water Applied

You may use **Ctrl - F7** to turn on/off the effect of water, or go to **Modify** page to uncheck the effect of **Reflection** and **Refraction** to decrease the loading of your system resources.

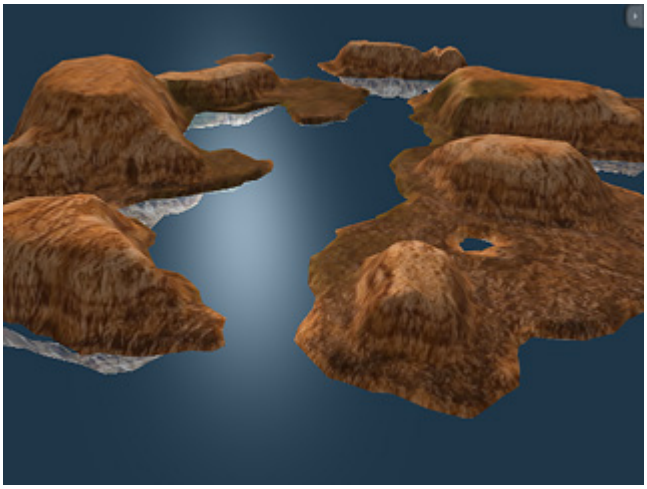
Basic Water Parameters - Color

Change the Color

The Initial Look of the Water.

1. Go to the **Set**/**Water**/**Modify** page.

2. In the **Basic Water Parameters** section, click the color box to select the desired color.



In this example the Color changes to blue.

Note:

- Because the water reflects the color of the **2D Background**, if you want to see the real color of the water, please change the **2D Background** to pure black.
- The lower the **Saturation** and **Luminosity** of the color, the more realistic the water will look.

The blue water with an unrealistic high saturation and luminosity.

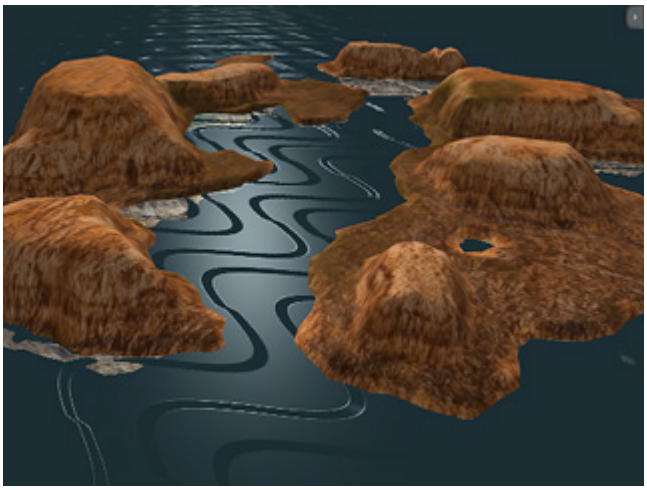
Basic Water Parameters - Wave

The wave of the water utilizes the **Normal** mapping technique so that the face count of the water remains minimum size while the waves can still be extremely realistic.

Change the Wave

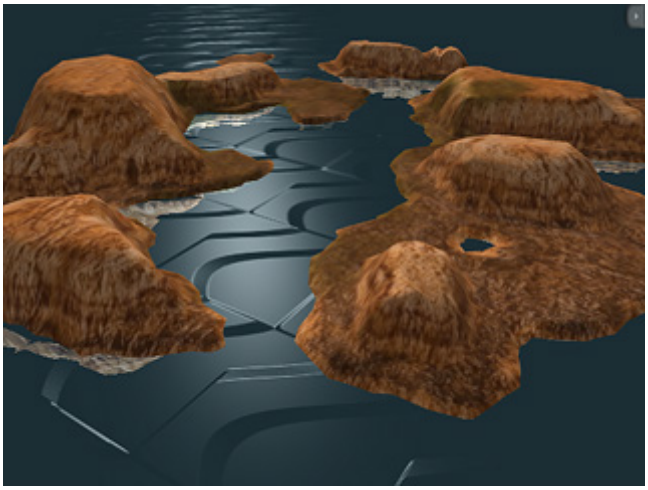
1. Please click the **Launch** button to start your favorite image editor to paint on the image. Remember to save the image after editing.

2. Click **Update** button in **iClone** to see the result.



Note:

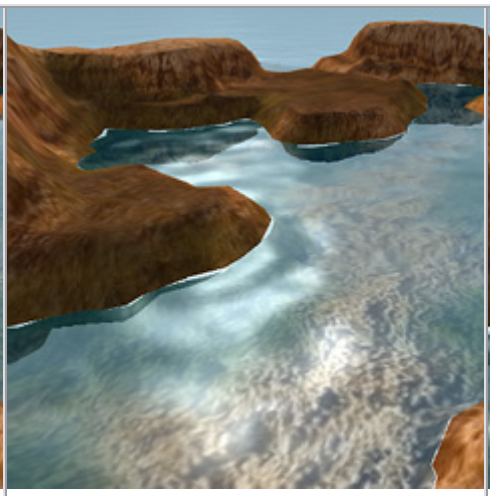
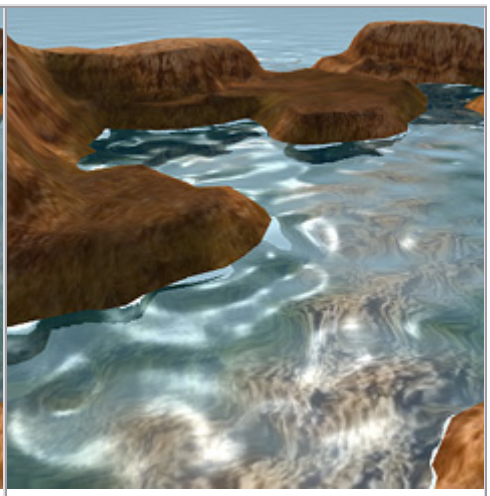
- You do not have to worry if you paint a color or a grayscale image because **iClone** automatically renders the image as a grayscale one.
- You may alternatively click button to load an image to form the wave.
  Click the button to remove the wave style and click the button to save the style as an image file.
- It is highly recommended to wrap around the edges of the image to prevent sharp edge lines and provide a seamless flow.



Non-wrapping images will cause an unrealistic look to the water.

Size and Strength

You may specify the density of the wave image in the water prop by setting the **Size** value. If you want to change the altitude of the wave, adjust **Strength**.

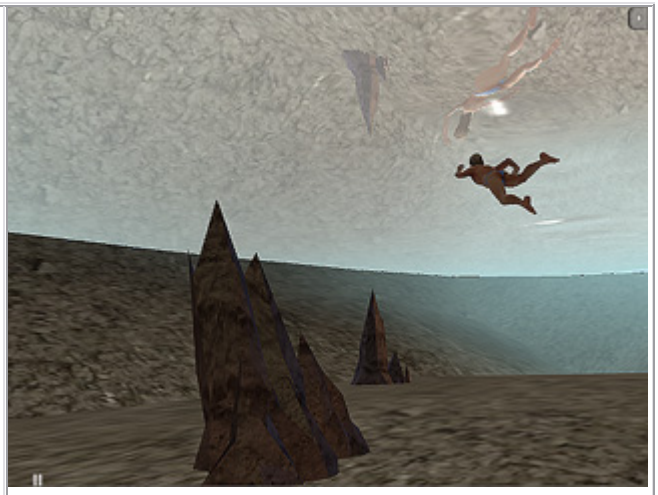
		
Size = 5 Strength = 30	Size = 30 Strength = 30	Size = 30 Strength = 100

Advanced Water Parameters - Underwater Fog

If you want to create a mysterious or eerie atmosphere under the water, you can turn on the **Underwater Fog** feature.

Underwater Fog OFF

1. Go to the **Set**/**Water**/**Modify** page and then scroll to the **Advanced Water Parameters** section.
2. Check the **Underwater Fog** box.
3. Click the color picker and select the desired fog color.
4. Enter a value for **Start** to specify where the **Fog** starts.
5. Specify the value for **End** to specify where the **Fog** ends.

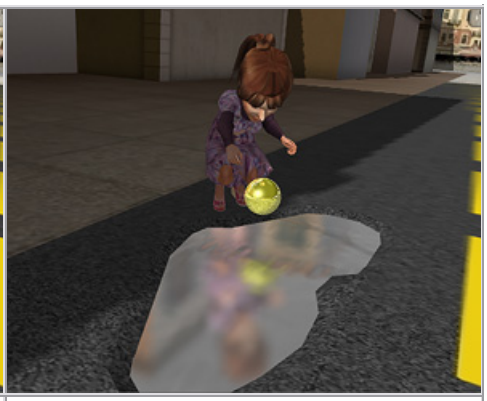
	
Start = 0 End = 3500	Start = 1500 End = 3500

Advanced Water Parameters - Reflection

You may want to change the way water reflects more of the surrounding environment to create a different look.

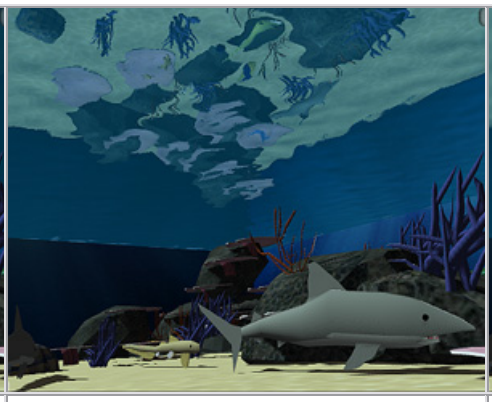
Reflection above the Water Surface

1. Go to the **Set**/**Water**/**Modify** page. In the **Display** section, check the **Reflection** box.
2. Scroll up to the **Reflection** parameters.
3. If you intend to modify the reflection strength above the water surface, drag the **Above Surface Strength** slider.
   The higher the value, the stronger the reflection shows on the water.
4. Increase the **Blur** value so the reflection is not so clear.

		
Reflection = 10	Reflection = 100	Blur = 2

Reflection under the Water Surface

You may follow the same steps as above to adjust the reflection under the water surface. This time use the **Under Water Strength** slider.

		
Reflection = 10	Reflection = 100	Blur = 2

Note:

- If you can not see the result, try to adjust the **Above Water Clarity** slider since it can change the **Transparency** of the water, which weakens the effect of reflection.

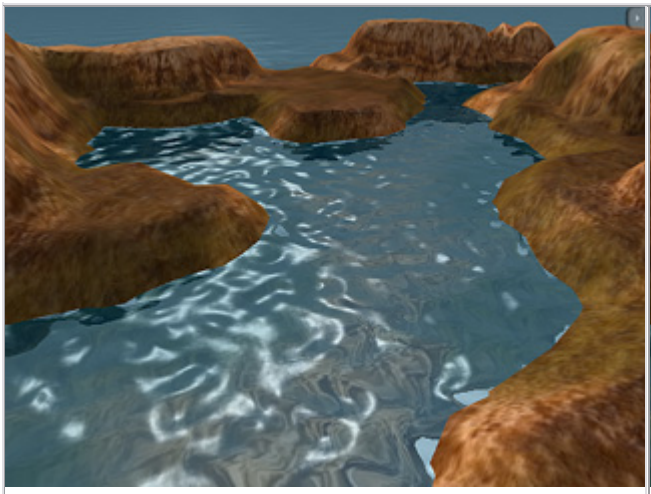
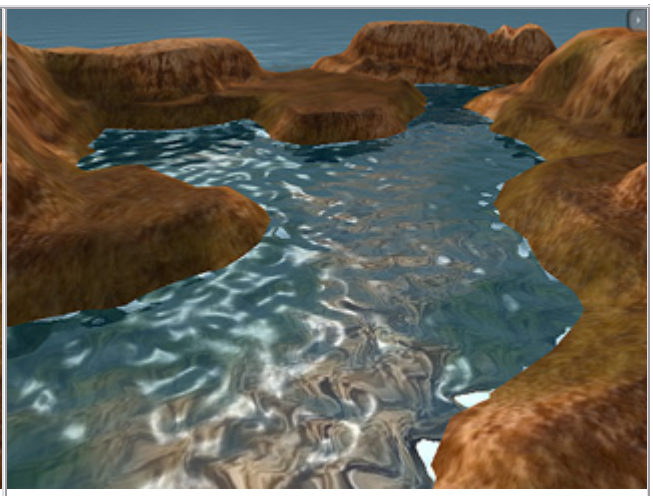
Advanced Water Parameters - Refraction

In optics, refraction occurs when light waves travel from the water with a given refractive index into the air with another. **iClone** simulates this phenomena on the water surface.

Before we start this section, it is important to adjust the **Above Water Clarity** which species the purity of the water.

The Above Water Clarity

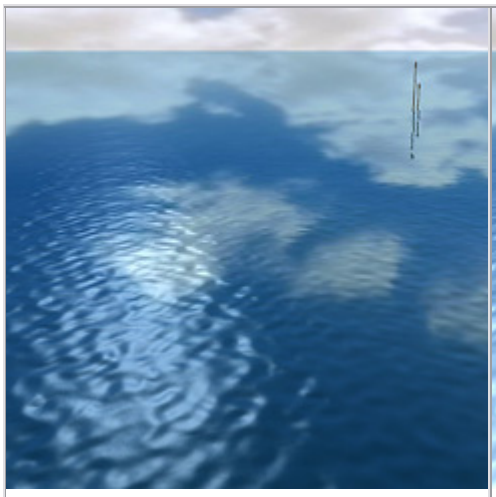
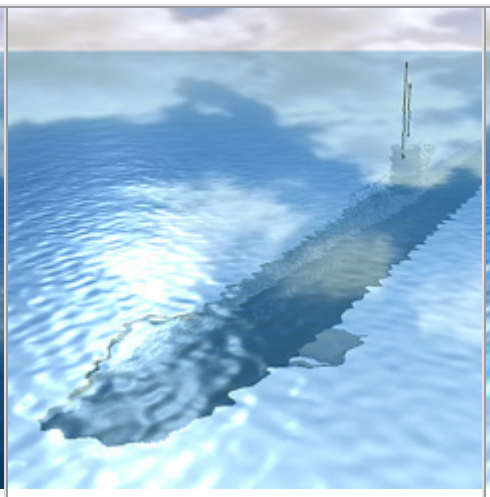
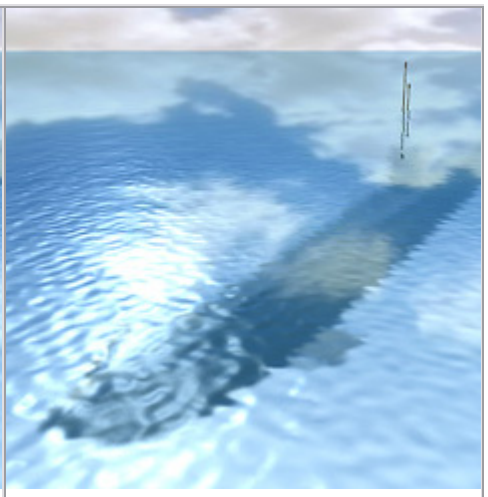
1. Go to the **Set**/**Water**/**Modify** page. Scroll to the **Advanced Water Parameters** section.
2. Drag the **Above Water Clarity** slider. The higher the value is, the clearer the refraction becomes.

	
Above Water Clarity = 30	Above Water Clarity = 100

Refraction above the Water Surface

This parameter specifies how intensive the refraction effect be rendered when the camera is above water.

1. Go to the **Set**/**Water**/**Modify** page.
2. In the **Display** section, check the **Refraction** box.
3. Scroll up to the **Refraction** parameters.
4. If you intend to modify the refraction strength above the water surface, drag the **Above Surface Strength** slider.
   The higher the value is, the stronger the refraction shows when the camera is above the water.
5. Increase the **Blur** value so the refraction turn to be more vague.

		
Refraction = 0	Refraction = 100	Blur = 1

Refraction under the Water Surface

You may follow the same steps as above to adjust the refraction under the water surface. This time use the **Under Water Strength** slider.

Multiple Channel Texture Mapping

The Maps for Objects

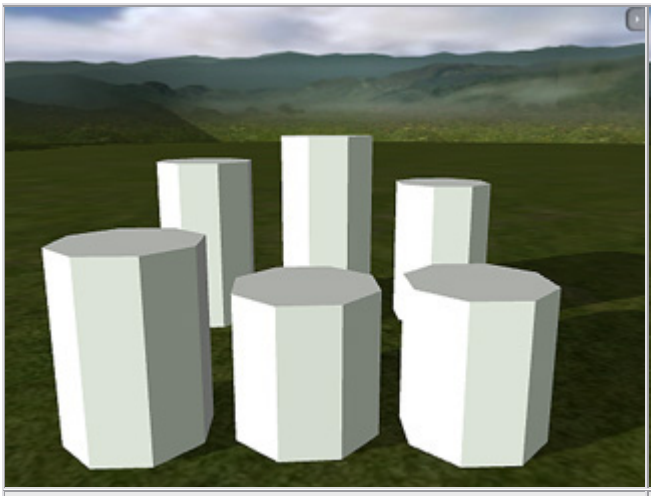
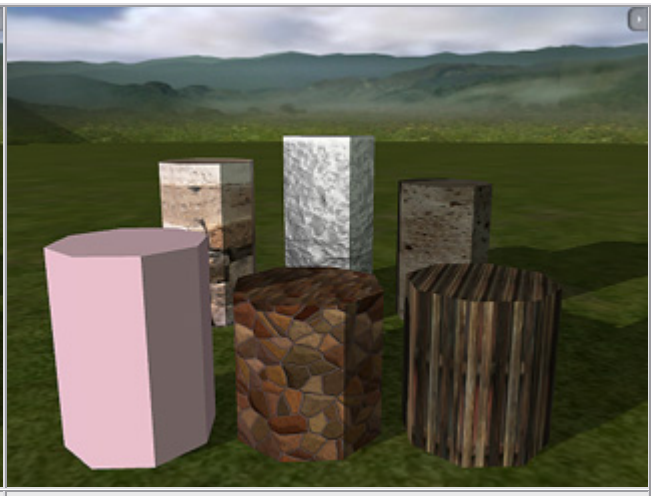
iClone provides several texture mapping effects, however, certain objects only possess some, but not all, texture mapping types.

	Diffuse Map	Opacity Map	Glow Map	Specular Map	Bump Map	Reflection Map
Image Layer	Available	Available	Available	Not Available	Not Available	Not Available
Props	Available	Available	Available	Available	Available	Available
Grass	Available	Available	Not Available	Not Available	Not Available	Not Available
Particle	Available	Available	Not Available	Not Available	Not Available	Not Available
Water	Not Available	Not Available	Not Available	Not Available	Available	Not Available
Sky	Available	Available	Available	Available	Available	Available
Hair **Upper Body** **Lower Body** **Shoes** **Accessories** **Skin**	Available	Available	Available	Available	Available	Available
Head - Texture **Eyes** **Oral**	Available	Available	Available	Available	Available	Available

Types of Maps

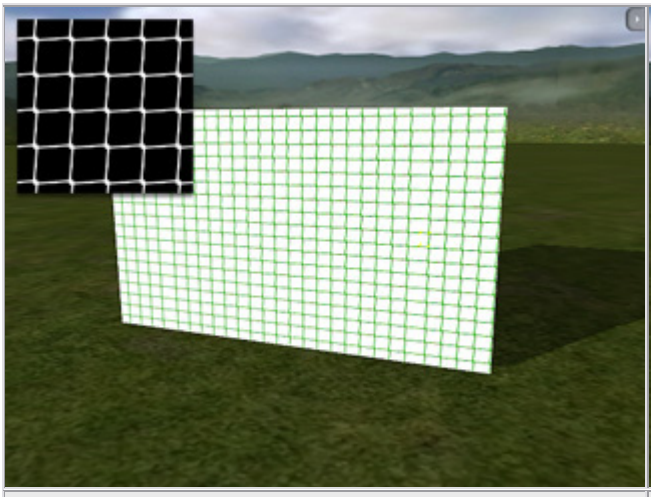
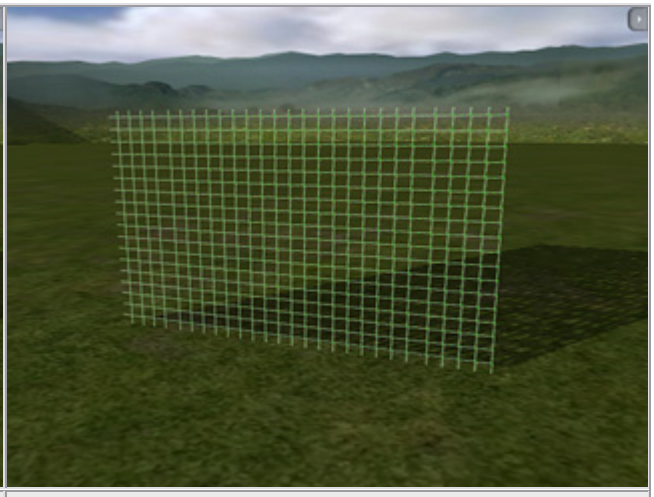
Diffuse map (supported by Quick Shader and Pixel Shader)

- The most frequently used texture mapping method. It wraps the bitmap image onto the 3D geometry surface while displaying its original pixel color.
- Any bitmap image, such as scanned images or images captured by digital camera, can be used as diffuse map to represent photo realistic quality.
- Users can also use image software to make pre-rendered texture effects such as shadow, bevel, bump, lighting or weathering effects. This approach can effectively simulate real-world 3D effects while greatly saving system resources and rendering time.

	
Props with no texture	Props with different textures.

Opacity map (supported by Quick Shader and Pixel Shader)

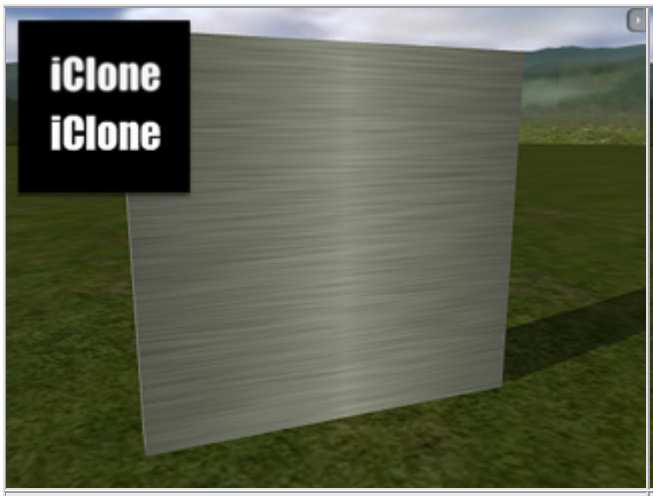
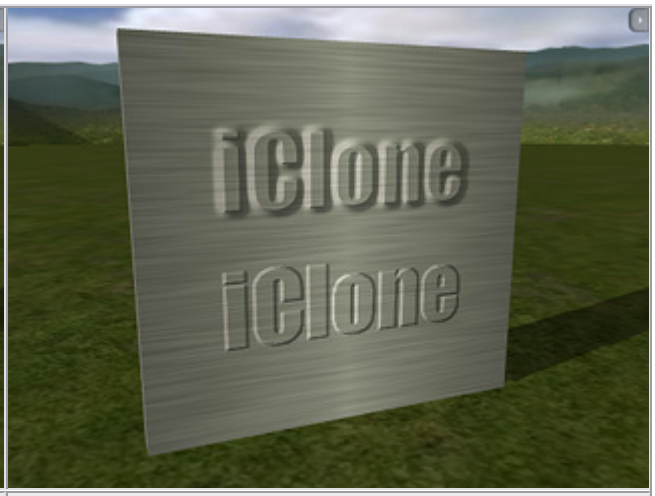
- Make transparency and cut-out effects from grayscale images. The black part will get cut out; the white part will be fully displayed; the gray values determine the transparency (alpha) level of the object.
- Use bright gray RGB(253,253,253) on the Opacity map to make 2-sided 3D Surface from Plane mesh.

	
Prop with texture and an image as the mask	Prop masked out

Bump map (Pixel Shader only)

Bump mapping uses the grayscale values of an image map to create variations in the shading of the surface to which the map is applied. It adds details to 3D models without increasing the number of polygons. In **iClone**, white areas of a bump map are shown as high and black areas are shown as low.

By moving around the light source we can see how the angular light projection changes the bump look. If the light is facing the surface from a straight 90 degrees angle it the bump effects are the least noticeable.

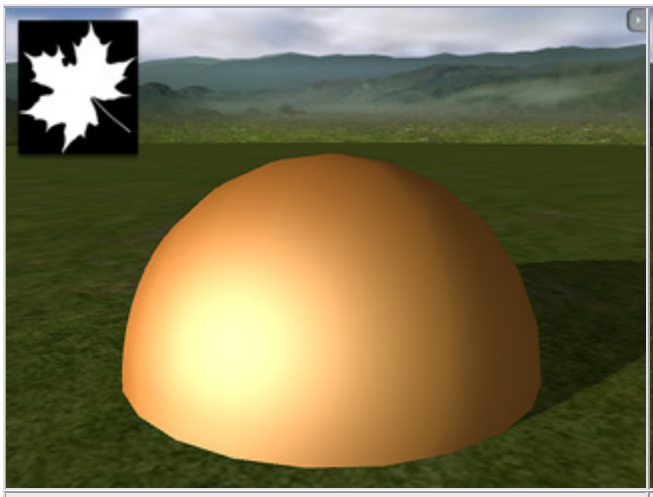
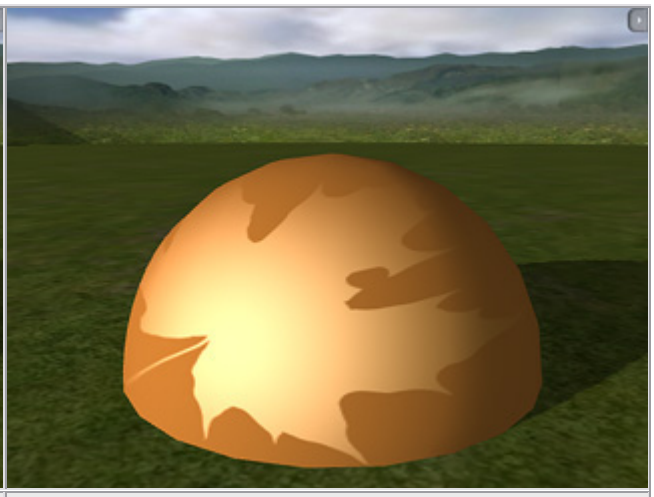
	
Prop with texture and an image as the bump	Bump - the edge blur from the bump source image causes a softer bevel effect

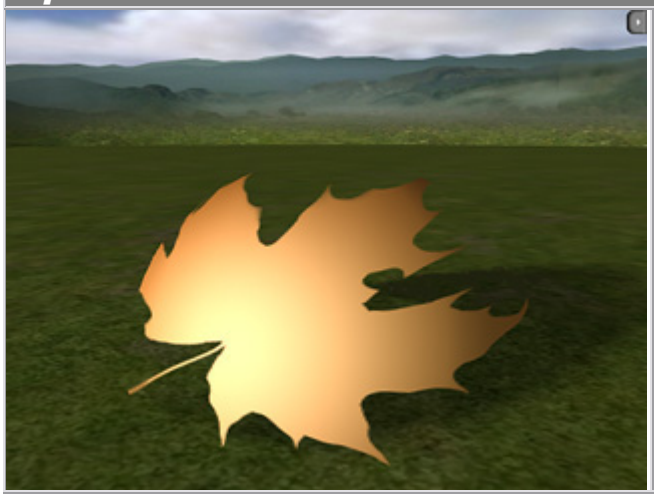
Normal map (Pixel Shader only)

- When you click the **Import Bump** button you will find. Check this box if the map you are loading is a **normal map**.
- A **Normal map** (Pixel shader only) is made from a high polygon model. Its color representation will affect surfaces like a regular bump map while providing higher degrees of detail.
- iClone can import normal maps created in ZBrush or 3D Studio Max. By using **Normal Maps** you can make simple low-poly models appear as highly detailed 3D objects.
- If the image you are loading is not a specially designed **normal map** the result will not be as good.

Specular Map (Pixel Shader only)

This texture mapping method allows parts of an object to have a **Specular** effect.

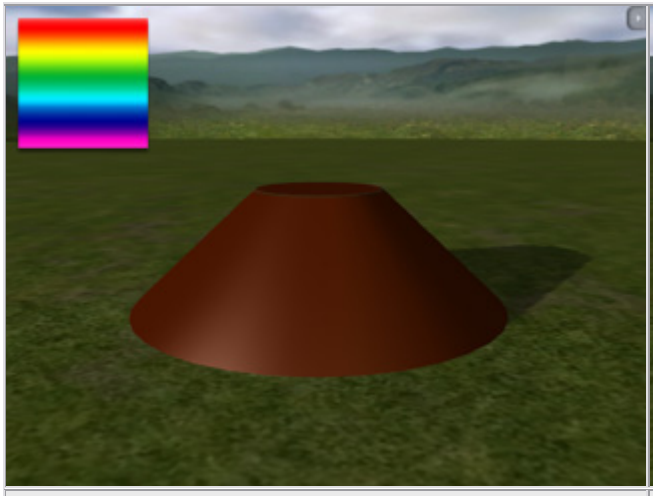
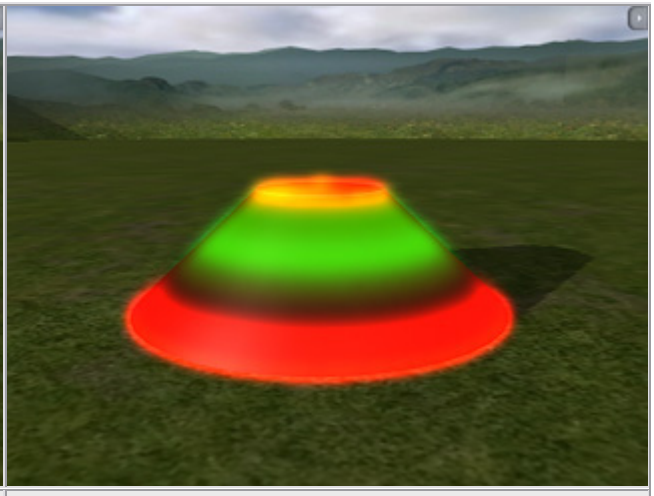
	
Prop with texture and an Specular image	Specular map only has effect within the shape

Tip:	
	Using the same image as both **Specular** and **Opacity** maps allows you to create special objects.

Glow map (Pixel Shader only)

This texture mapping technique allows users to control the glow shape, color and strength.

- Glow maps will blend with your original diffuse maps, so the lighter the diffuse color (or glow color), the stronger the glow effect.
- A bright diffuse map in combination with a bright glow map might cause overexposure.

	
Prop with texture and a Glow image	Diffuse and Glow maps blended together

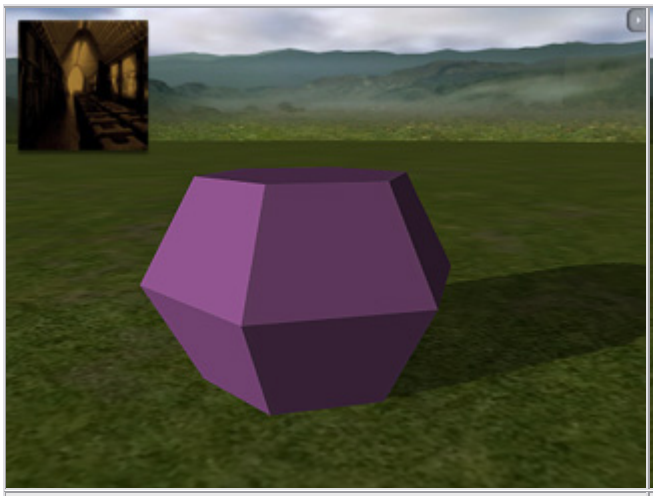
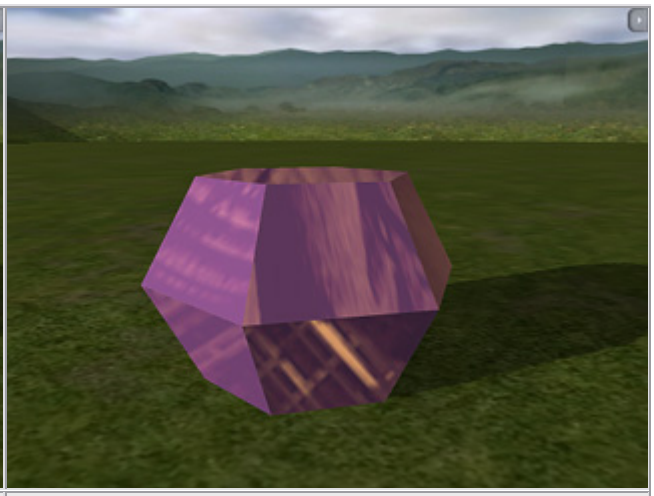
Note:

Tips to create a subtle and effective glow effect:

- Choose a diffuse image which could ideally glow in the real world.
- Prepare the glow map, pattern and color design
- Start by testing from a darker glow map, then increase the brightness step by step to see the best brightness setting
- Decrease the overall ambient light

Reflection Map (Pixel Shader only)

Reflection map is also referred to as environment map. The image map is projected onto a 3D surface to represent a reflection of the environment.

	
Prop with texture and a Reflection image	Reflection image projected onto the object

Tips:

To create good Reflective effects you should start by using an object that has high specular highlight and gloss values. Then apply black or darker images as the Diffuse map to help making the surface work like a mirror which can fully reflect the reflective map content. If the diffuse map itself is too bright the front light plus reflective setting could cause the result to be overexposed.

- Most 3D Blocks items are preset with a non-glossy material setting. To achieve high gloss and specular objects, check the \Props\Gloss folder
- Adjust the camera and light direction to see the natural changes to the reflective surface.

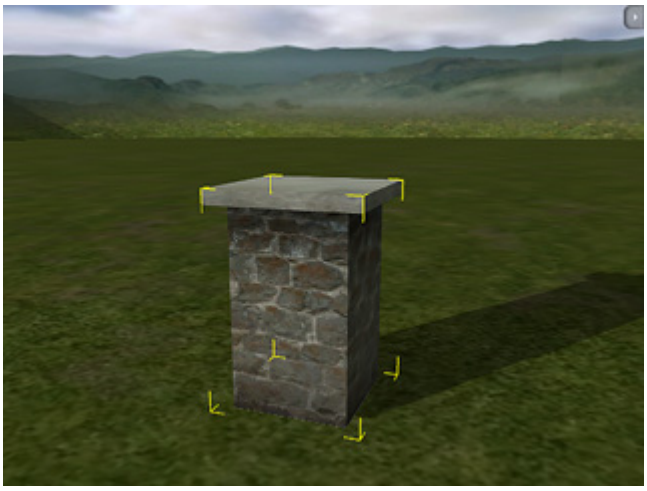
If you place a reflective object on a simple 2D background you can use high contrast scenery images to mimic the reflective look by importing them as reflection map.

Modifying Texture Settings - Basic

We will take **Prop** as the example to describe the method to modify texture settings of the six channels.

Basic Settings

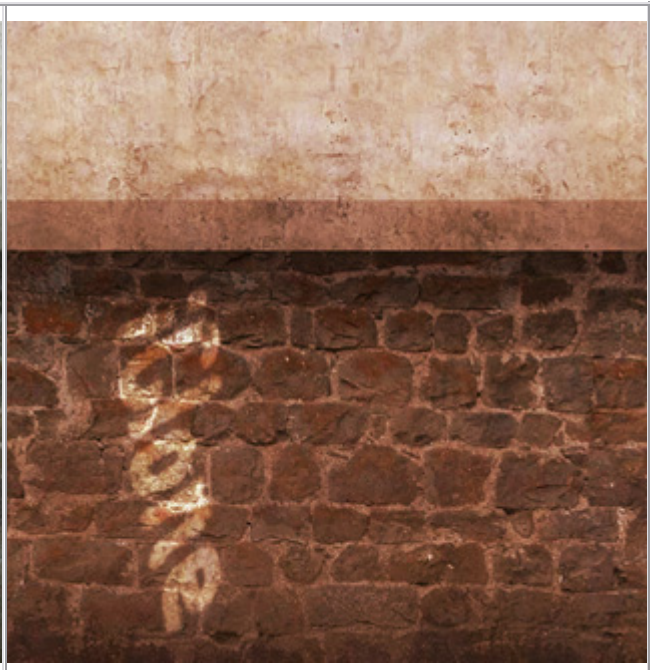
1. Pick the prop in the project.



2. Generally, **iClone** goes to **Set**/**Props**/**Modify** page automatically. In the **Material & Texture Settings** section, select one of the texture channels and click **Launch** button to open the texture image with selected image editors.

- You may set your favorite image editing software as the default texture editor in the **Preference** panel.
- The **Strength** slider defines the display weight of the channel as it is mapped to the object.

3. Modify the image in the texture editor. Remember to **Save** the image after you finish adjusting the image.

	
Before Editing	After Editing

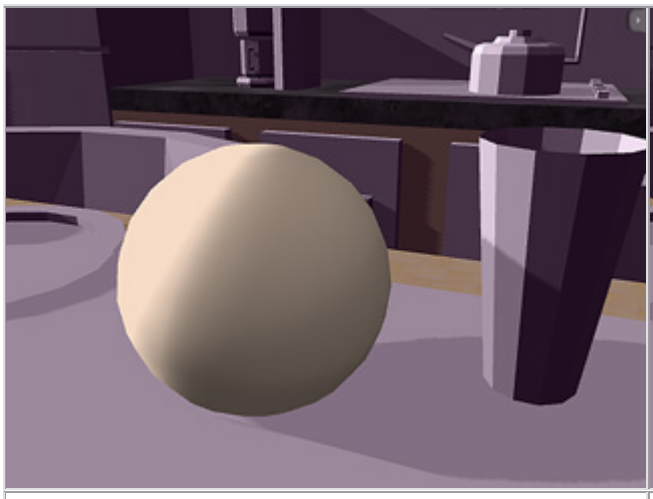
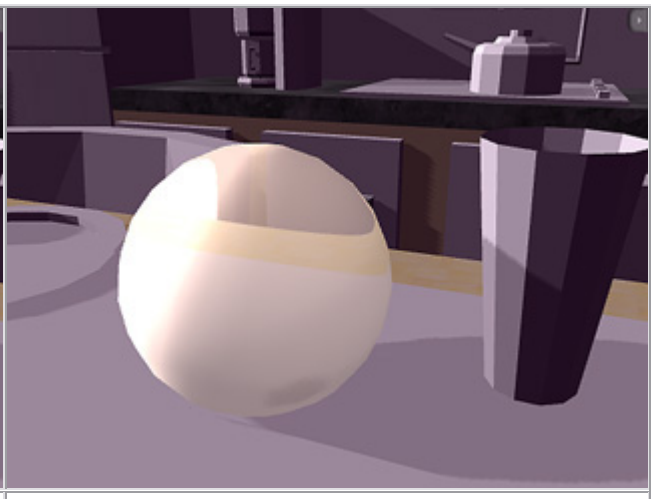
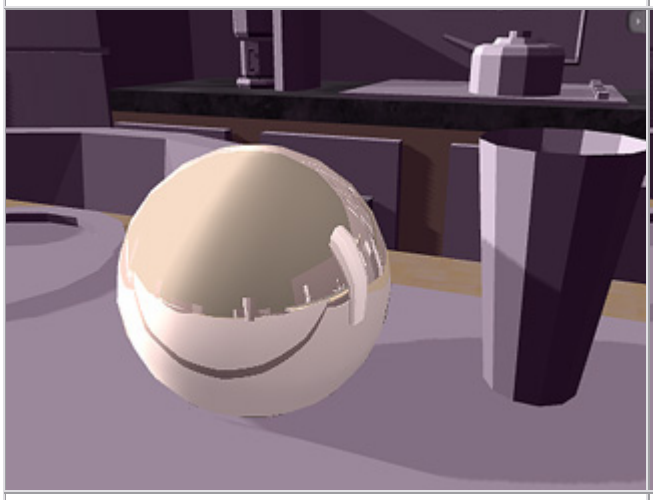
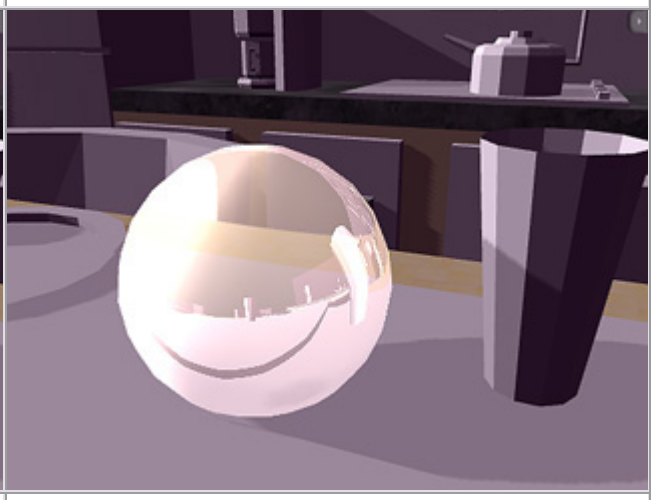
4. Go back to **iClone**, click **Update** button. The prop will update its texture automatically.

Note:

- Every time you change the texture in another image editor, you need to save the texture with its original temp file name and click the **Update** button to apply the result when you switch back to **iClone**.
- : You can select an image file directly to replace the texture by clicking the **Import Map** button.
- : If you save the texture as another image file, you have to use the **Import Map** button to load the image.
- : If you want to remove the texture, click the **Remove Map** button.
- UV Ref.: Press the **UV Reference** button to launch the image editing software opening the UV image of the selected object; you can paint the texture base on UV position.
- : If you want to keep the texture for further use on another object, click the **Export** button for each channel of the textures.

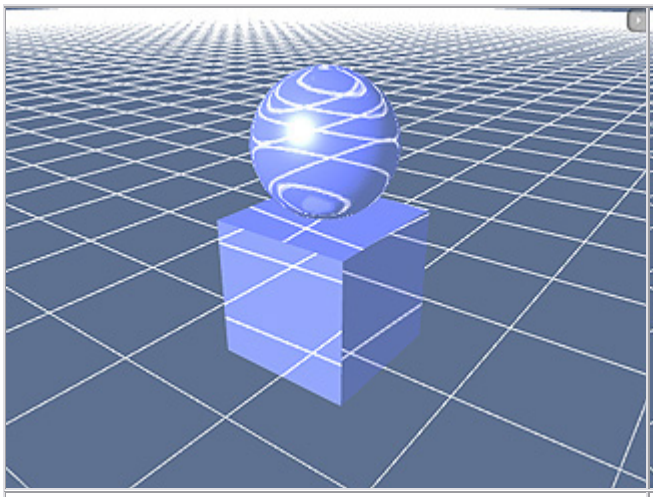
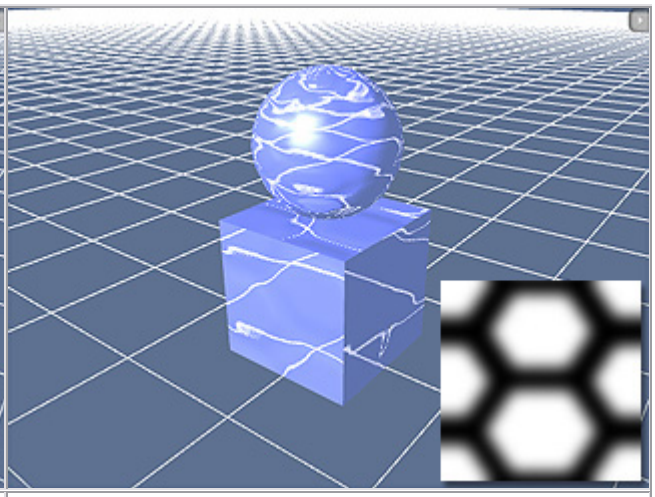
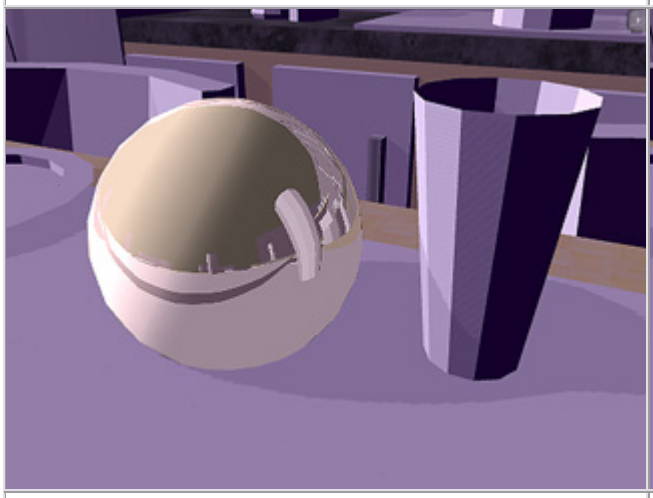
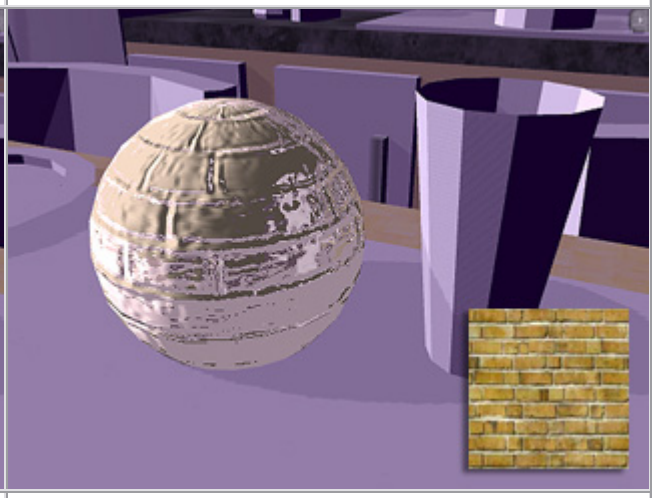
Modifying Texture Settings - Advanced

Refraction and Reflection: These two settings allow users to have the environment reflected by the objects. Please be advised that darker base colors provide clearer **Reflection** and **Refraction** effects.

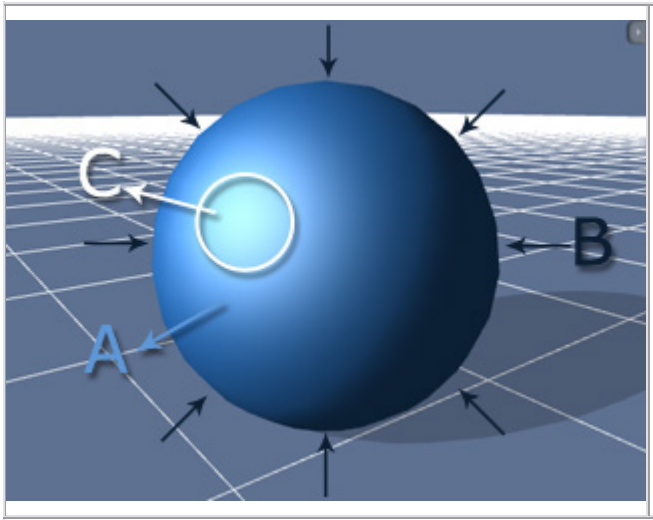
	
Refraction = 0 Reflection = 0	**Refraction** = 50 Reflection = 0
	
Refraction = 0 Reflection = 50	**Refraction** = 50 Reflection = 50

Effect of Bump to Refraction/Reflection

Combining **Bump** maps with **Refraction** and **Reflection** maps to give you even higher levels of realism.

	
Refraction without Bump	Refraction with Bump
	
Reflection without Bump	Reflection with Bump

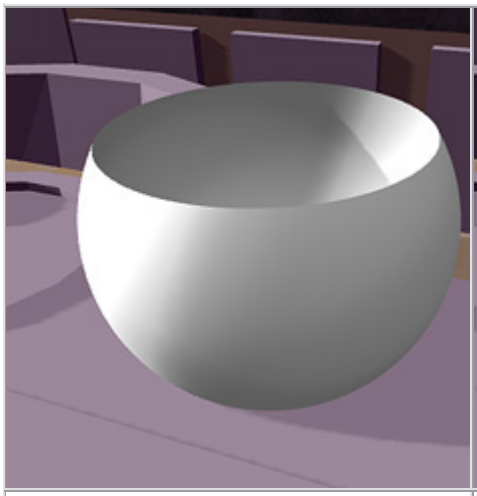
Diffuse, Ambient and Specular Color:



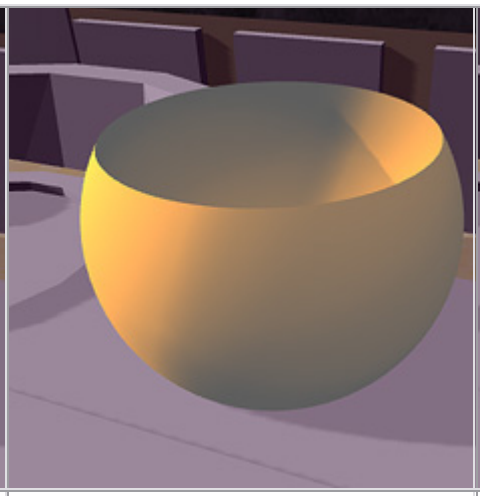
A. Diffuse Color: The **Diffuse** color defines the overall color that is reflected from an object when the light hits it.

B. Ambient Color: The **Ambient** color refer to the illumination surrounding a subject or scene.

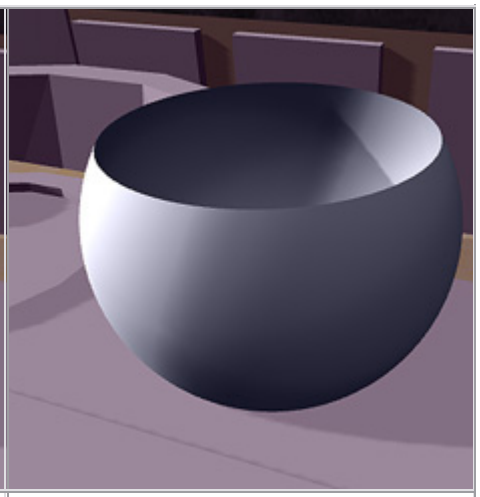
C. Specular Color: The **Specular** color defines the color of only the highlighted area of an object. Therefore, you must decrease the **Diffuse** color to see the effect.



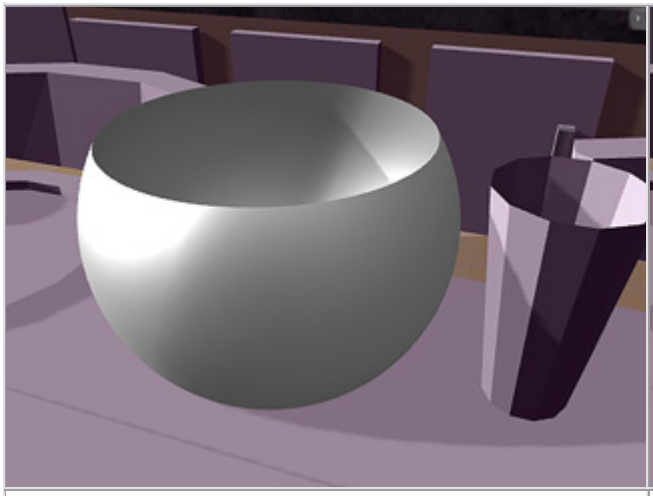
Diffuse Color =
Ambient Color =



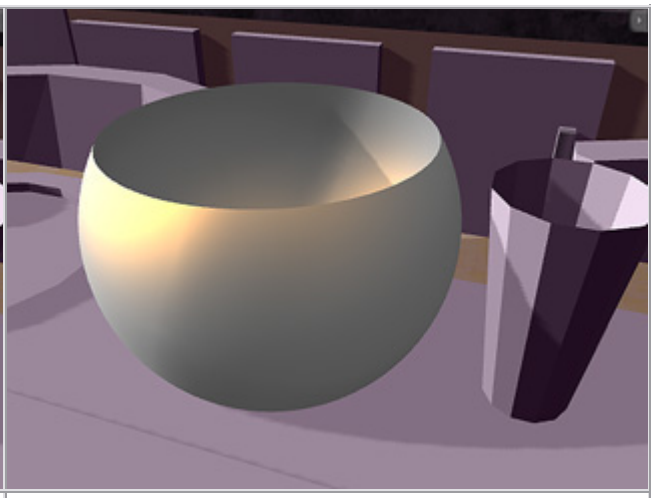
Diffuse Color =
Ambient Color =



Diffuse Color =
Ambient Color =

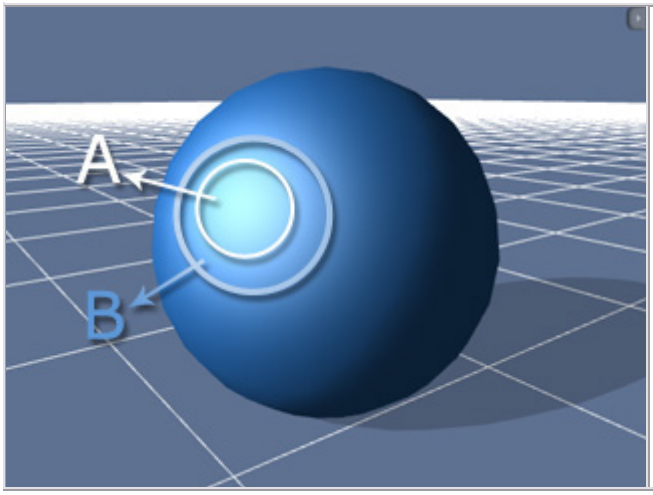


Diffuse Color =
Specular Color =



Diffuse Color =
Specular Color =

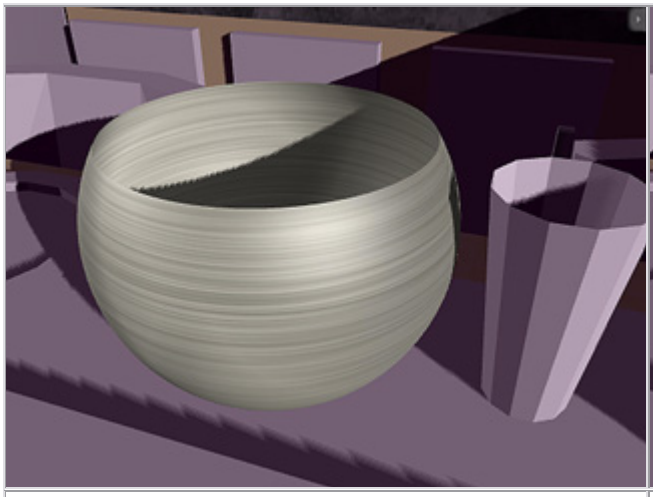
Specular and Glossiness



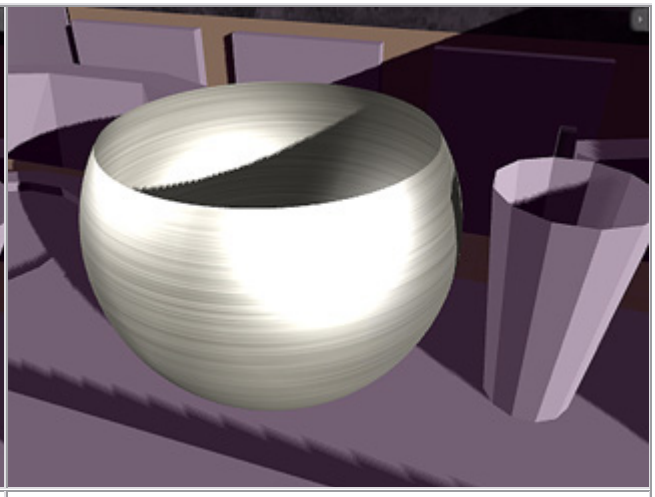
A. Specular: The **Specular** value defines the strength of the highlighted area of an object.

B. Glossiness: The **Glossiness** value defines the range of the specular to simulate the type of the material.

You may find two sliders, **Specular** and **Glossiness**, near the bottom of this section in the **Modify** page. You may utilize them to create metallic or plastic objects.



Plastic:
Specular Value = 35
Glossiness Value = 15



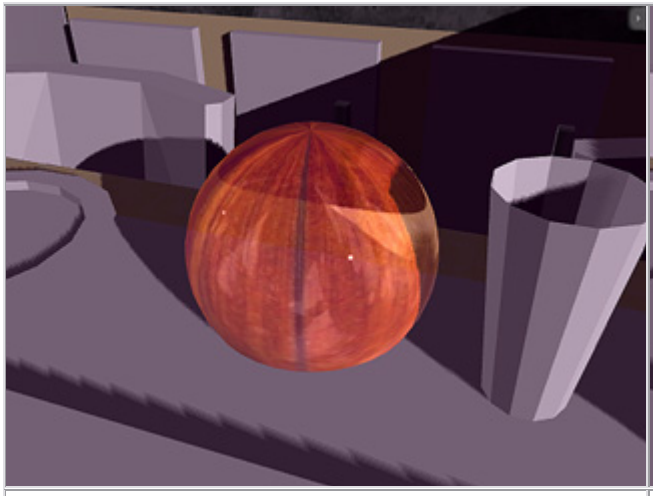
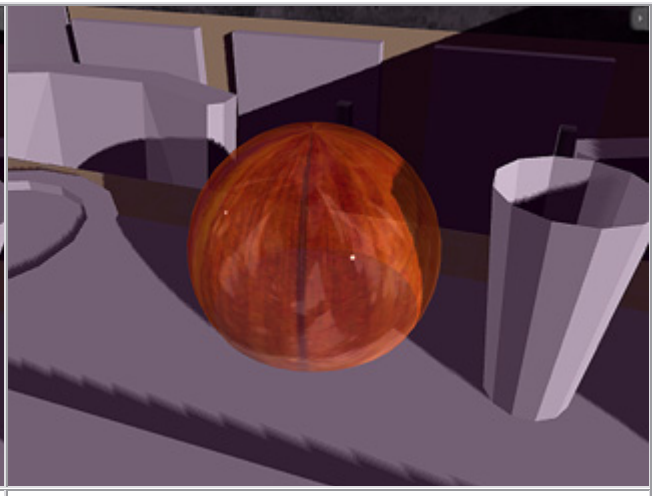
Metal:
Specular Value = 200
Glossiness Value = 10

Opacity

Both **Opacity** and **Refraction** can turn an object transparent; however there is still something different between them.

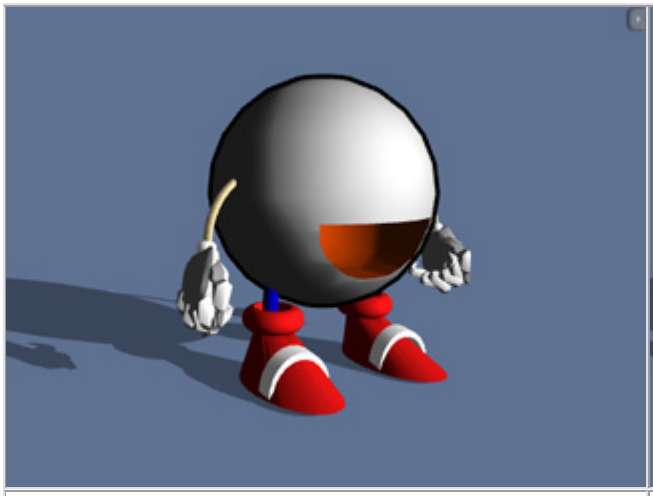
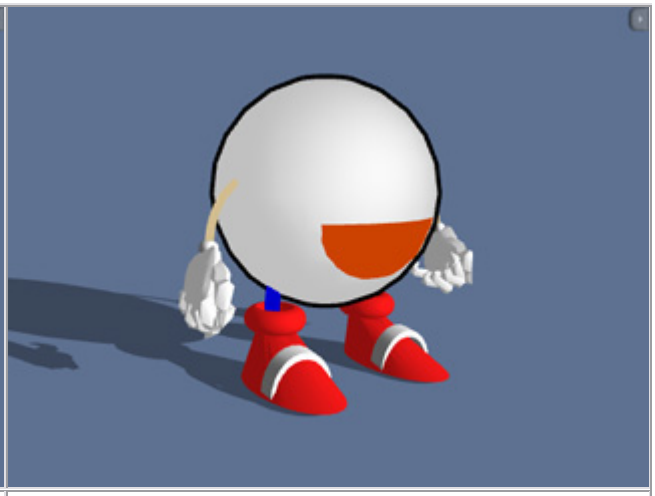
The scene behind the transparent object distorts when **Refraction** is on, but no such real

life distortion appears when using **Opacity**.

	
Transparency of Refraction	Transparency of Opacity

Self-illumination

Increasing the **Self-illumination** value of an object will decrease the ambient lighting or ambient color effects. The shadow on an object will decrease as well. You may use this feature to create a sky dome or cartoon-like 3D models.

	
Initial appearance	Self-illumination = 100

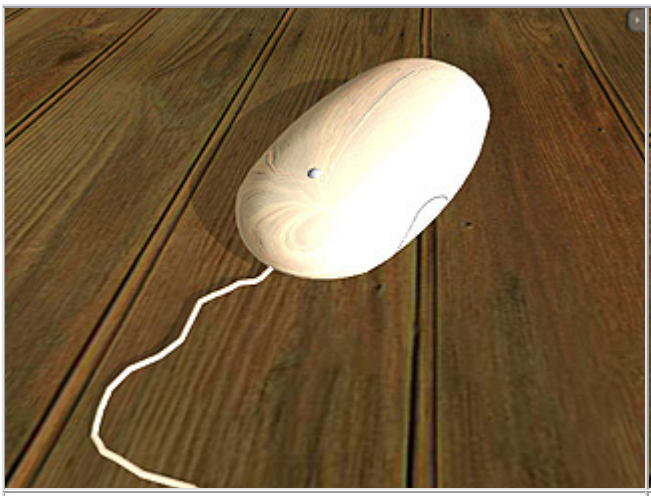
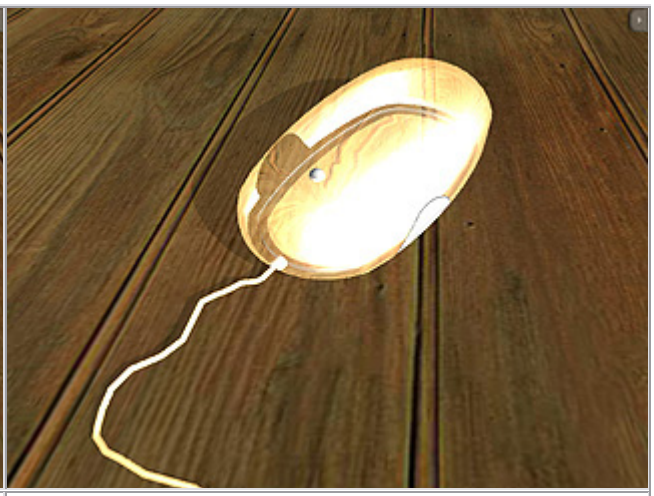
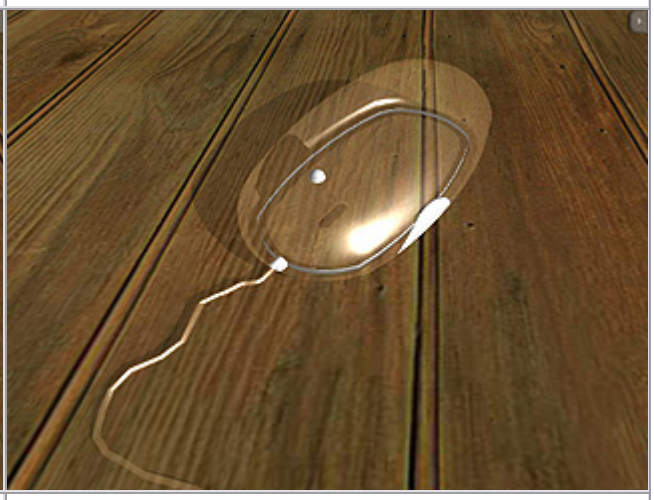
Optimization for Diffuse Color, Ambient Color and Specular Color

If you intend to have your models to be more impressive and solid, please set the **Diffuse Color**, **Ambient Color** and **Specular Color** to **Pale**, **Dark** and **White**:

	
Diffuse Color: Ambient Color: Specular Color:	Diffuse Color: Ambient Color: Specular Color:

Tip for the Opacity Keys

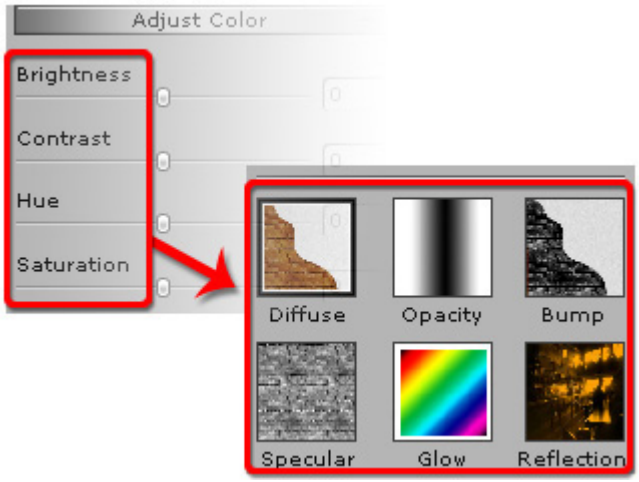
When you want to use **Opacity** setting to fade off an object, you may find, even the opacity value is 0, the specularity or reflection remains. To solve this problem, remember to decrease the **Specular** channel (or value) and the **Reflection** channel (or value) along with the **Opacity** value. (Unless you intend to have a crystal effect by keeping the **Specular** and **Reflection** values.)

	
The original look of the model.	**Opacity** decreased. (The reflection and specularity remain high)
	
Reflection decreased.	**Specular** and **Glossiness** adjusted.

Adjusting Colors on Six Texture Channels (iClone 3.1)

Adjust Color

In **iClone** 3 or earlier version, the sliders in **Adjust Color** section may only adjust the color of the **Diffuse** channel. However, you may now adjust color on any selected channels from **iClone 3.1**. This powerful feature allows you to change texture color or opacity/bump patterns without need to open external image-editing softwares.



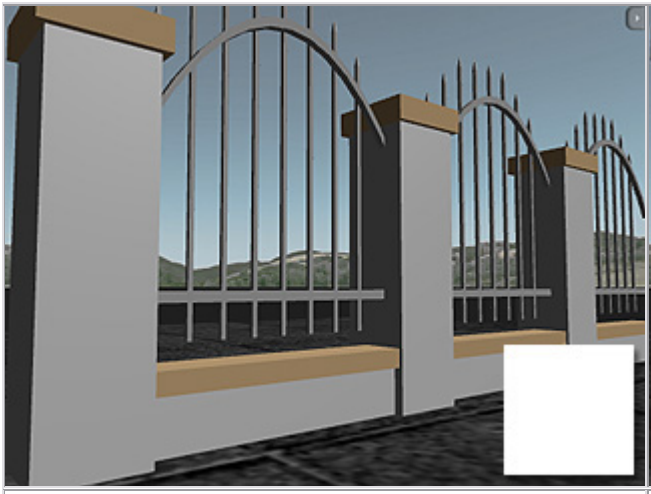
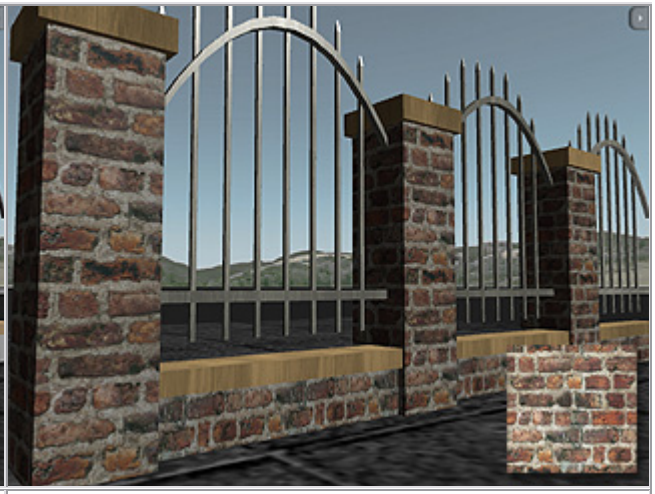
By setting the **Brightness**, **Contrast**, **Hue** and **Saturation**, you may create countless texture effects of your 3D models. In this table you may see how the color adjustment can affect each texture channel.

	Diffuse	Opacity	Bump	Specular	Glow	Reflection
Brightness	Effective	Effective	Effective	Effective	Effective	Effective
Contrast	Effective	Effective	Effective	Effective	Effective	Effective
Hue	Effective	Less Effective	Less Effective	Less Effective	Effective	Effective
Saturation	Effective	Less Effective	Less Effective	Less Effective	Effective	Effective

- The item put with **Less Effect** means no effect at all or the effect is not obvious.

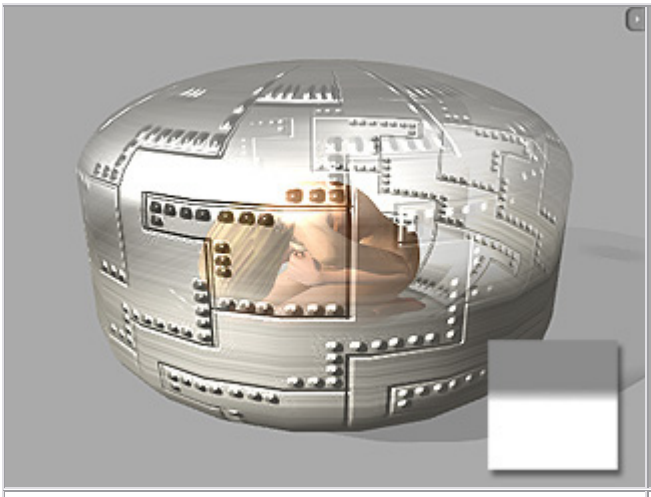
Diffuse

If you modify the **Diffuse** image, the 3D model may then present various appearances.

	
Brightness = 100 (Over Exposure) Contrast = 80	Brightness = 0 (Original Texture) Contrast = 0
	
Hue = 17 Saturation = 0	Hue = 17 Saturation = -20

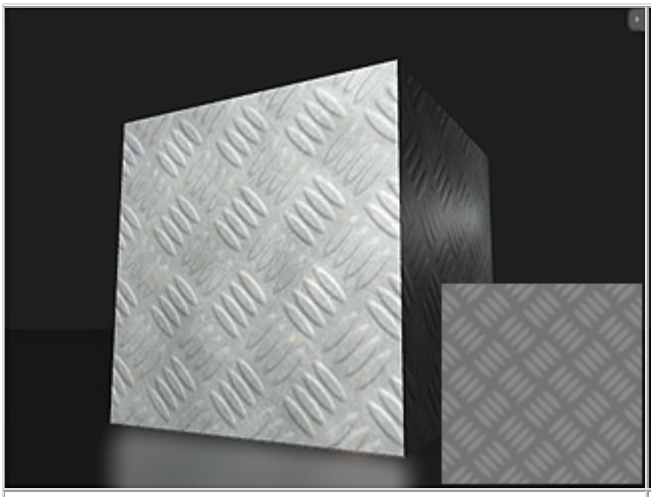
Opacity

By adjusting the **Contrast** of the opacity texture, you may define the level of the face to be masked out. In the following example, the model is mapped with a gradient image shown in this illustration.

	
Brightness = 27 Contrast = -3	Brightness = 0 Contrast = 100

Bump

When you adjust the **Contrast** setting of the **Bump** channel, you are defining the smoothness or bumpiness of the face.

	
Contrast = -90	Contrast = 100

Specular

The **Specular** setting is very useful when you want to create a damp or oily effect on your object.

	
Brightness = 0	Brightness = 100

Glow

Adjust the **Glow** map to change the level of glowing effect of your objects.

	
Saturation = 0	Saturation = 100 (The glow texture is modified.)

Note:

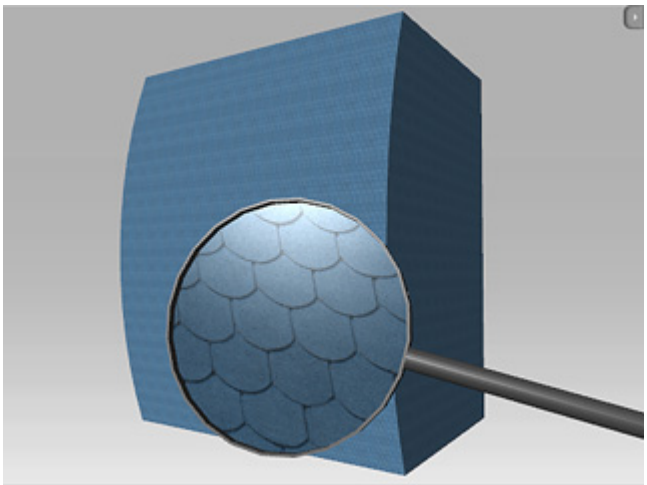
- These features in the **Adjust Color** section can not set animation keys to the channels.
- Please refer to **Types of maps** for more information.
- Please also refer to **Material Key and Material Key Frame Animation** for more information about texture animation.

Texture Channel UV Offset and Tiling (iClone 3.1)

Mapping Issues from Google SketchUp and 3D Warehouse

We can easily download SketchUp (SKP) 3D models and convert them into **iClone** via **3DXchange**. We can also alter the material settings; even apply multiple texturing effects to make the model look more realistic.

However, if the original model from **SketchUp** has no prior texture assignment (purely color material), once you apply texture from **iClone**, the result is not what you expected, you may find massive grainy texture tile one the model. This is because **SketchUp** has a rather small default unit value for texture tiling.



As the image shows, applying texture to **SketchUp** model in **iClone** with default 1x1 tiling settings, it shows extremely grainy texturing result.

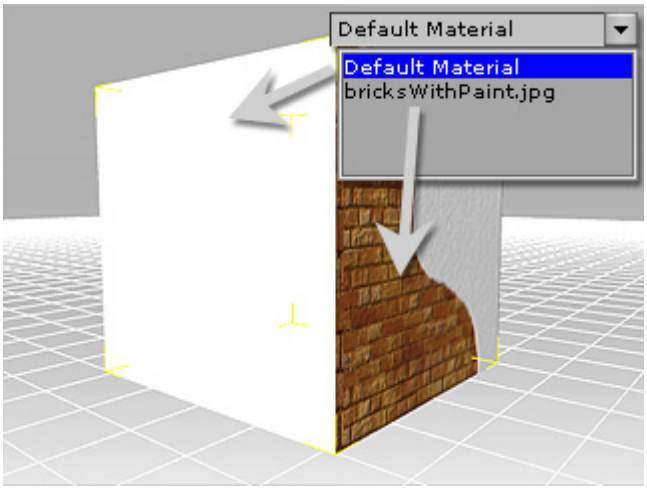
Offset and Tile

iClone 3.1 provides **Texture Channel UV Offset** and **Tiling** feature to solve this problem. You may then customize the offset and tiling values to individual texture channels without changing the original **Global UV Setting**.

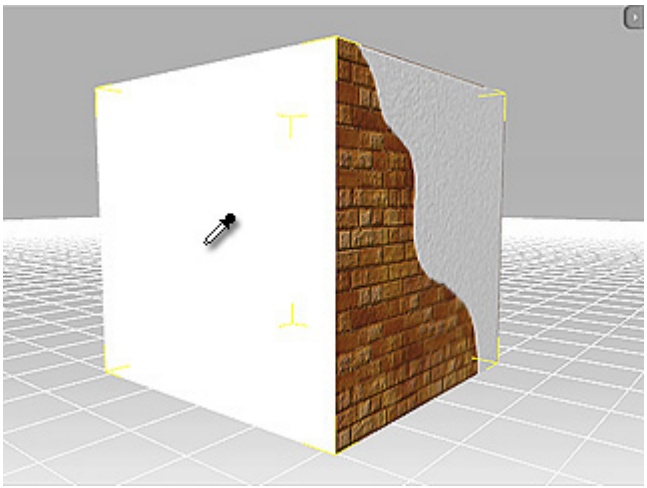
Note:

- The **Texture Channel UV Offset** and **Tiling** settings can only be seen under **Pixel Shading** mode.

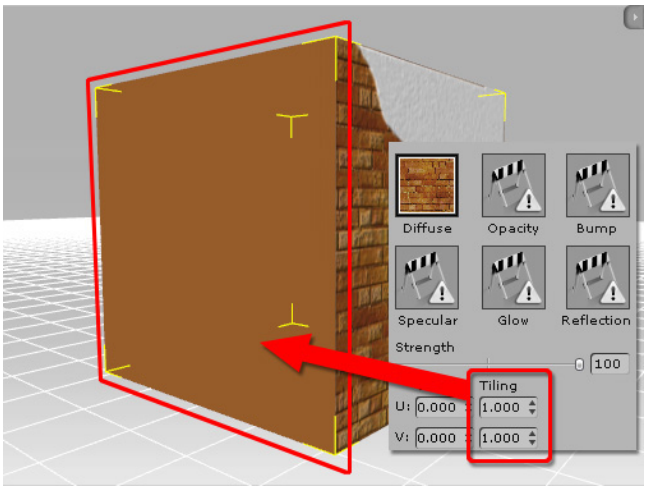
1. Select a prop (in this case, some faces contain no texture) converted by **3DXchange** from **SketchUp**.



2. Press the **Material Picker** and click on the face without any texture to retrieve its material and texture settings.



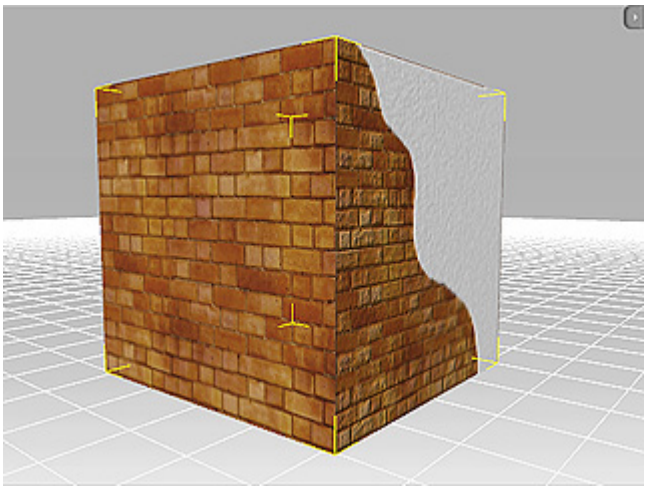
3. Select the **Diffuse** channel and click the buttons to load an image as the diffuse texture. The massive grainy texture tile makes it look like a solid color as the illustration below.



4. Adjust the **Tiling** value to make the texture shows appropriate mapping result. In most **SketchUp** cases, it is a small value such as:

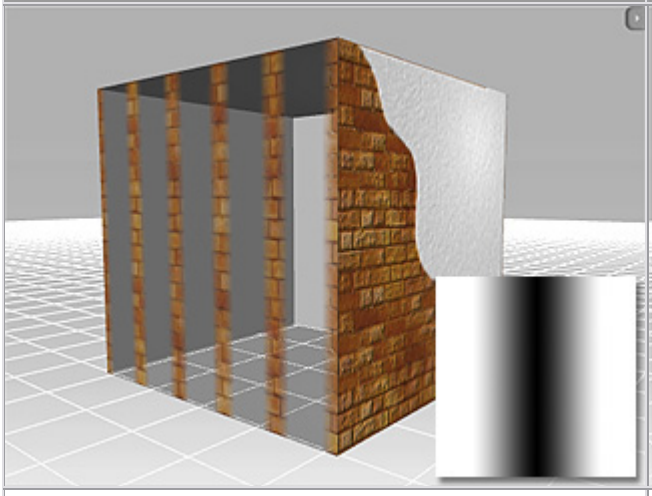
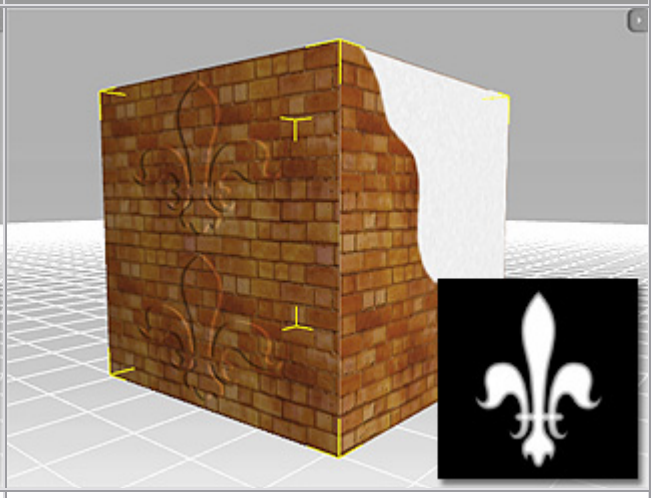
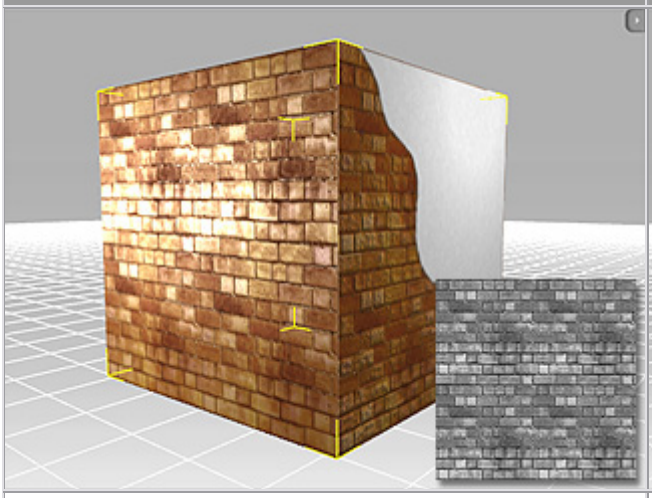
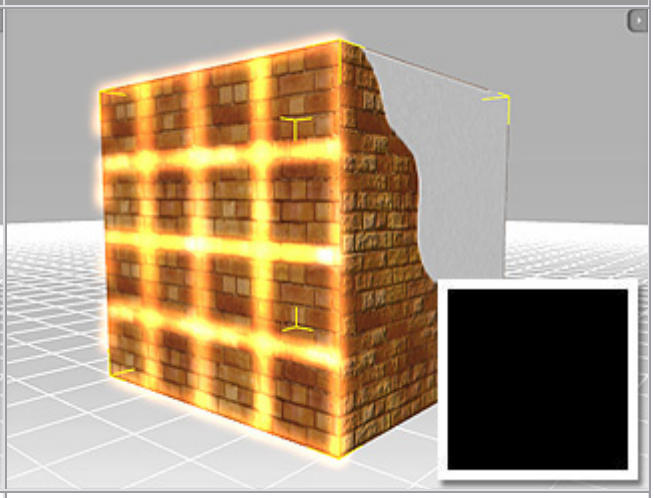
   Tiling U = 0.010

   Tiling V = 0.010



Adjust Each Texture Channel

By means of altering the values of **Offset** and **Tiling to different texture channels**, we can create all possible multi-texturing effects to **SketchUp** models.

Opacity	Bump
	
Tiling U: 0.050 Tiling V: 0.010	Tiling U: 0.010 Tiling V: 0.020
Specular	**Glow**
	
Tiling U: 0.010 Tiling V: 0.010	Tiling U: 0.040 Tiling V: 0.040

UV Reference

Relationship between UV Reference Map and Diffuse Map

When you apply a texture to any existing iClone object, iClone uses the predefined mapping coordinates to precisely map the image onto the 3D surface. To find the relationship between diffuse map and UV Reference, press the corresponding launch buttons to open both image files in image editor

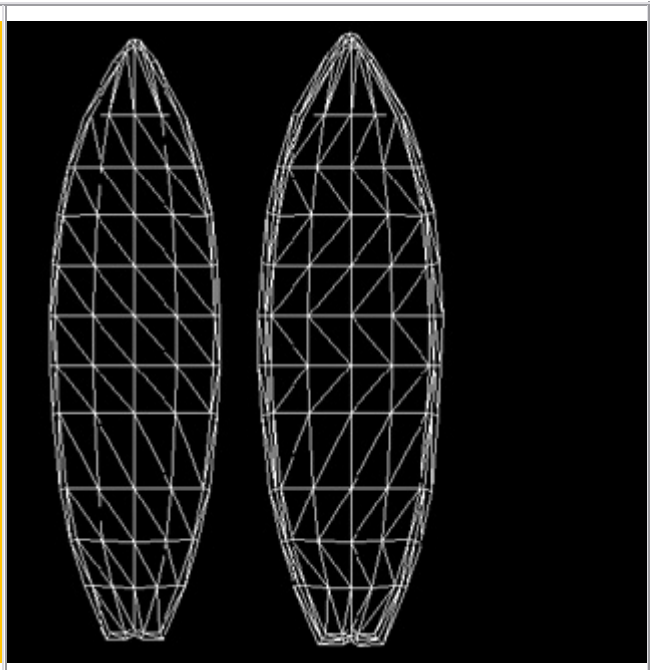
We will use a surfboard as an example to describe the UV reference.

1. Select the prop in the current project.

2. Select the **Diffuse** channel and click 

and 

buttons to open the diffuse and UV Reference images at the same time.



You may find that the texture orientation (left illustration) is based on the texture coordinate definition in the UV map (right illustration)

Resolution of UV-reference based Texture Map

The default size of UV reference images is 512 x 512 pixels. If you use the same resolution for your diffuse maps the allocated pixel for each 3D surface is relatively small because they share the same image dimensions. Although this will save texture memory resources objects will appear less detailed when they are zoomed-in on.

If you intend on using high-detail objects you need to increase the texture resolution proportionally (e.g. 1024x1024, 2048x2048, or 4096x4096) and keep the same layout as indicated by the UV map. To increase the diffuse map size while keeping the same ratio, multiply the size of UV texture first and then paint according to the layout of the UV reference map.

Replacing and Regenerating Model UV

The objects in **iClone** are sometimes with or without included UV reference. However, we can always replace the original UV ref. or re-generate a new UV ref. for them.

Generating UV Reference

The easiest way to generate UV reference for an object is to:

1. Pick any **Channel**.
2. Click 

button. Edit the image corresponding to the channel.
3. Save the image and click 

button in **iClone**.

iClone assigns a UV reference map for the object automatically.

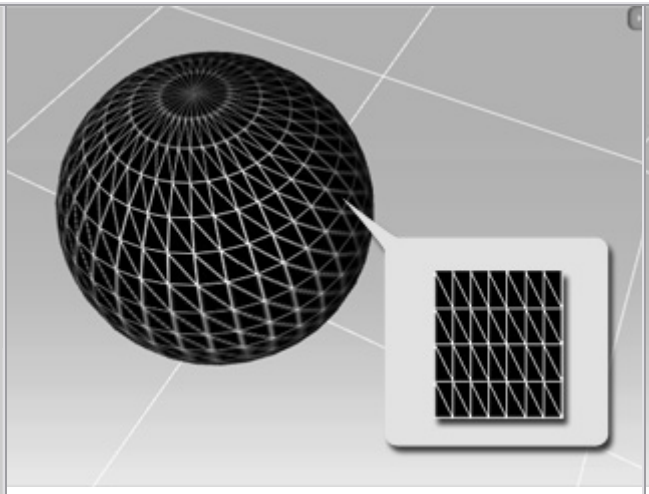
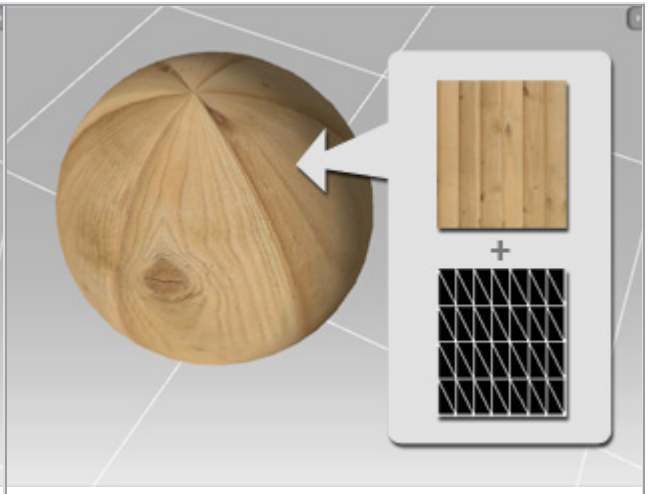
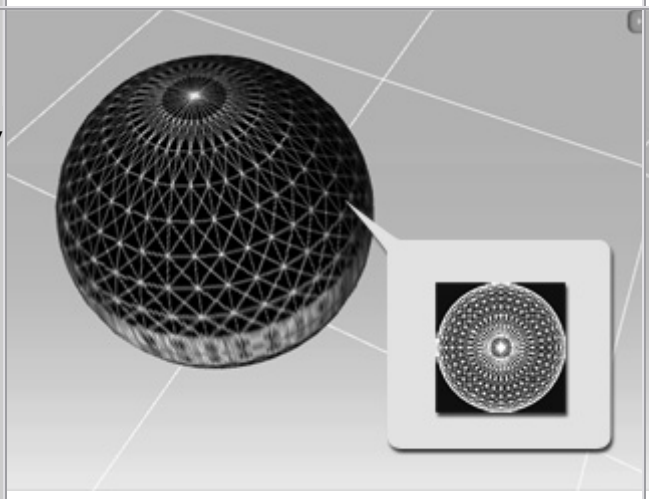
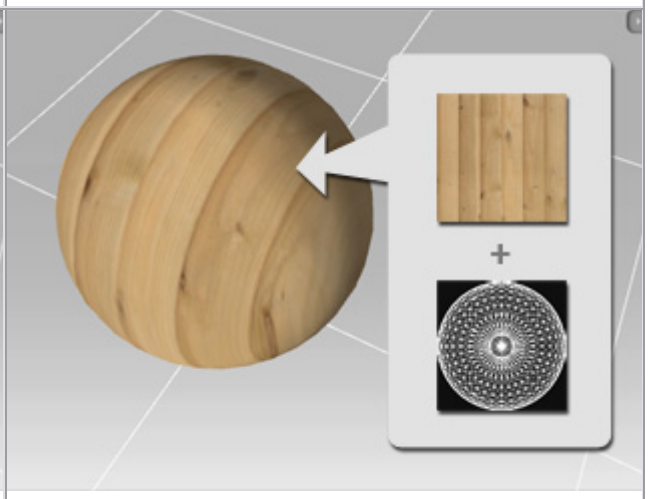
Replacing/Regenerating UV Reference

With the mapping method, you can define the UV reference for the objects which have no UV reference data attached. So that you can enable the entire map setting controls of the objects for further editing. Even objects that already contain UV reference data can be assigned with new ones instead.

1. Go to the **UV Settings** section in the **Modify** page.
2. Select a desired **UV Type** radio button.
3. Select a desired **Align** radio button.
4. Optionally adjust the **Offset**, **Tiling** or **Rotate** value.
5. Click 

button.

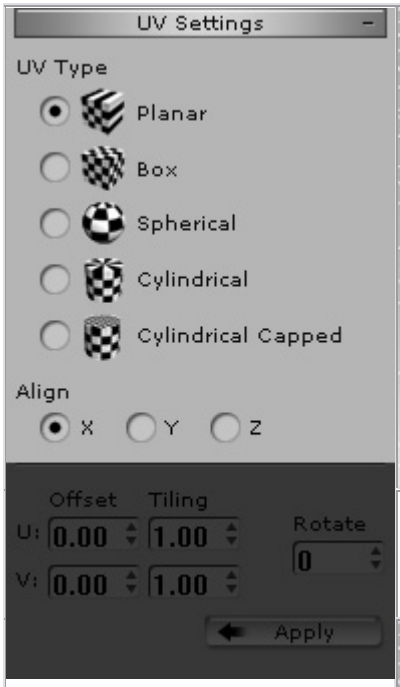
iClone will then assign a new UV reference to the selected object in accordance with your settings. The original UV reference will be replaced.

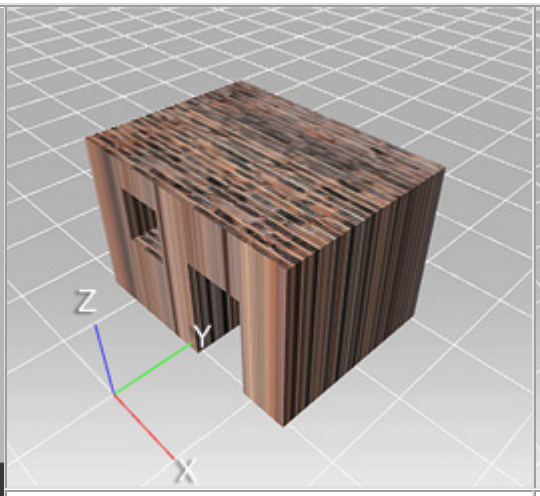
Original	 Initial UV reference of the ball (UV reference map expanded)	 Image mapping result (Based on the UV reference map)
Defined by iClone UV Type: Planar Align: X (Projecting image on the X plan)	 New polygonal UV reference map assigned to the ball by iClone (UV reference map expanded)	 Image mapping result (Based on the new UV reference map)

Model Mapping Method

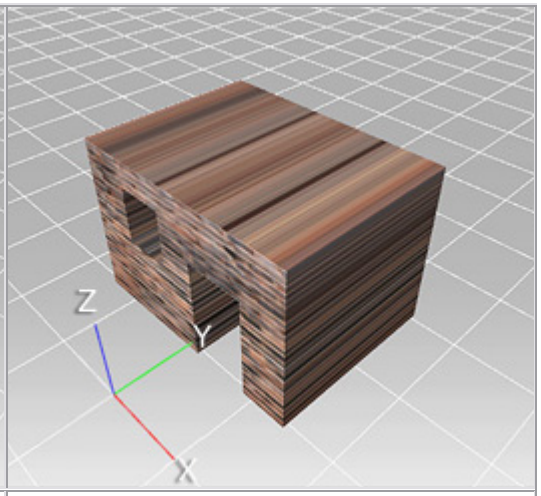
Types of Texture Mapping - ways to wrap bitmap Images around a 3D surface

Users can use the following UV Types to wrap a bitmap image around a 3D surface regardless of its original UV coordinates. Simply choose the UV type that fits the topology of your target 3D model the best. Please refer to the **Mapping Method for Multi-Material Object** section for more information.

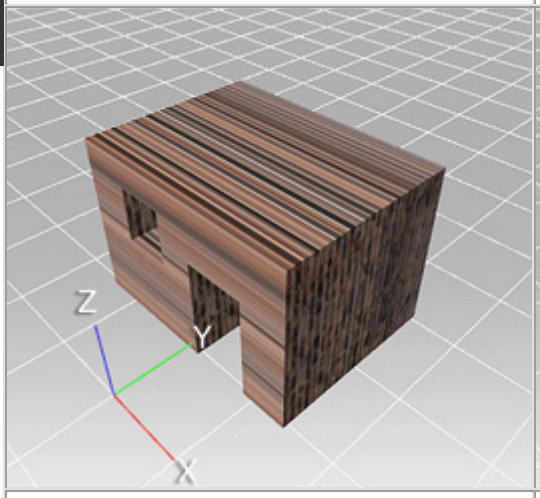




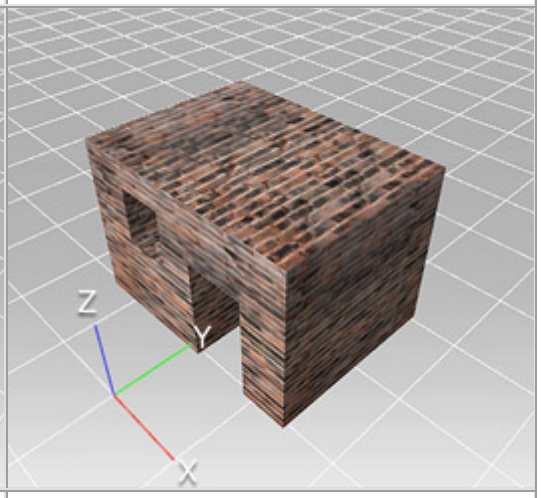
UV Type: Planar
Align: X (Project image on X plane)



UV Type: Planar
Align: Y (Project image on Y plane)



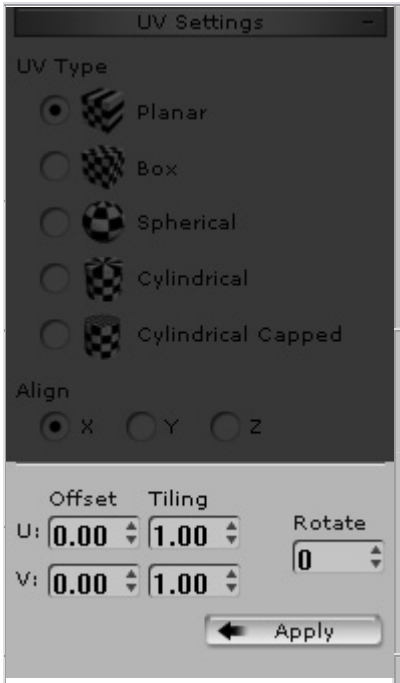
UV Type: Planar
Align: Z (Project image on Z plane)

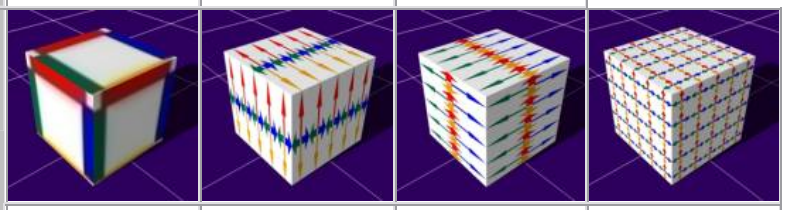
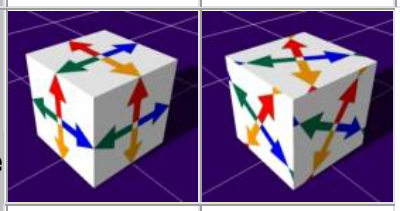


UV Type: Box
Align: X

Offset, Tiling and Rotate

- Tile number - adjust the repeat number of the tile in x or y direction or fine tune the texture size. If the number is < 1, then it enlarges the size of the texture. iClone allows the tile number value to be changed in steps of 0.1.
- UV Offset - offset the texture location on the 3D object to fine tune the size and alignment. (can be changed in steps of 0.01)
- Rotation - rotate the angle of texturing.



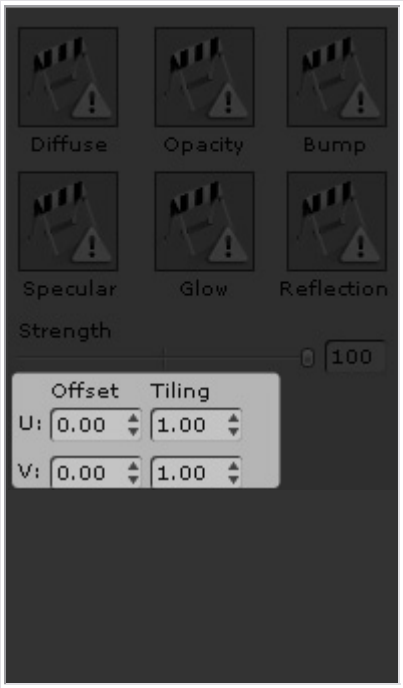
Offset				
	Initial Appearance	Offset U: 0.1	Offset V: 0.1	
Tiling				
	Tiling U: 0.1 Tiling V: 0.1	Tiling U: 5 Tiling V: 1	Tiling U: 1 Tiling V: 5	Tiling U: 5 Tiling V: 5
Rotate				
	Initial Appearance	Rotate: 30		

Texture Channel UV vs. Model UV Setting (iClone 3.1)

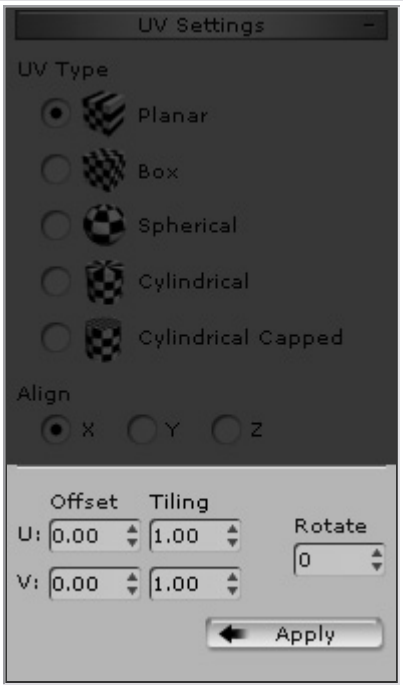
When you modify the **Offset** or **Tiling** settings in the **Material & Texture Settings** section, you are merely modifying the specific texture to affect only the faces which covered under the same material ID. The UV of the face and the model are not re-built.

However, once you click the **Apply** button in the **UV Settings** section, **iClone** generates new UV for the whole model based on the selected UV type, and all your previous UV settings are replaced.

The result of the texture is to multiply the number from both them.



Channel UV Settings

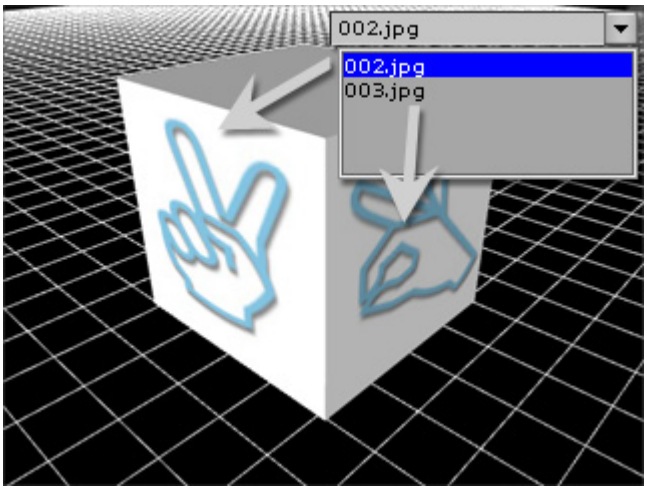


Global UV Settings

Here we illustrate the difference on **Global UV Setting** and texture **Channel UV Setting**.

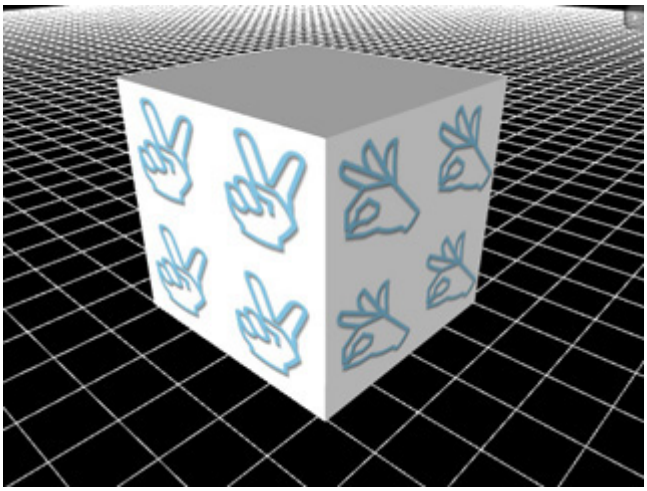
Global UV Setting

1. Given a box with two faces mapped with two different materials.



2. Go to **Modify**/**UV Settings** section for global adjustment.

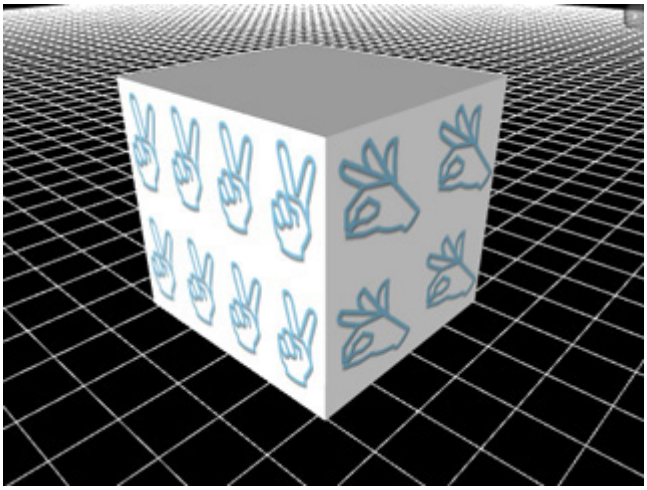
3. Select **Box**/**Z** radio buttons and then set both the **Tiling U** and **Tiling V** to 2. Click the **Apply** button. Two materials are affected simultaneously.



Channel UV Setting

4. Go to **Material & Texture Settings** section. Use the **Material Picker** tool to retrieve the material of the left face.

5. Set the **Tiling U** to 2. Press Enter key.



Only the material on the left face is affected.

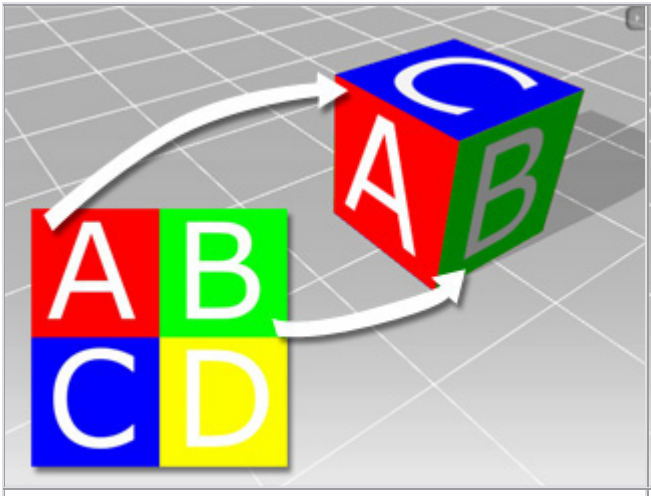
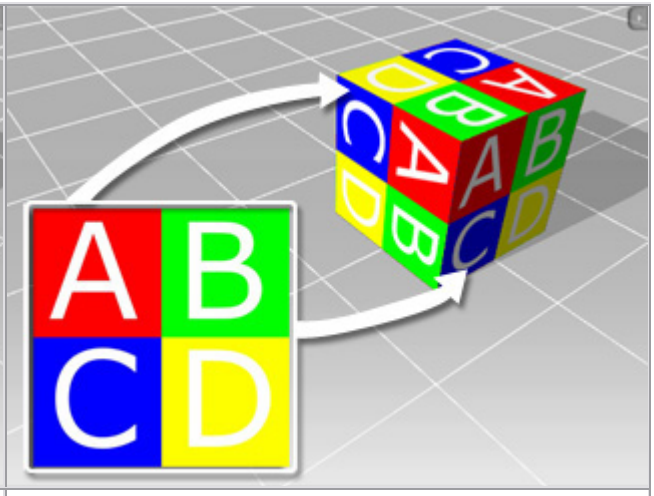
Mapping Method for Multi-Material Object (iClone 3.1)

If you have a compound model in which each component model has its own material or texture, re-generating UV has basic rule as follows. We will take **Box UV Setting**/**X**/**Tiling (U, V)=(1.00, 1.00)** as the mapping method as an example.

(When you do material assignment or texture mapping to individual faces in **SketchUp**, it generates a compound model with several material settings.)

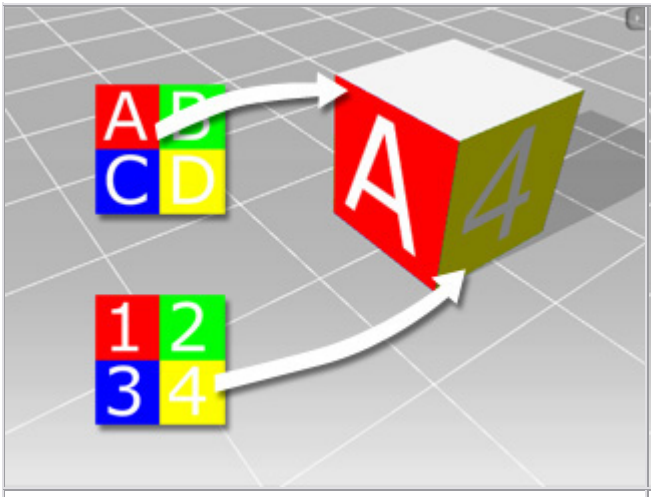
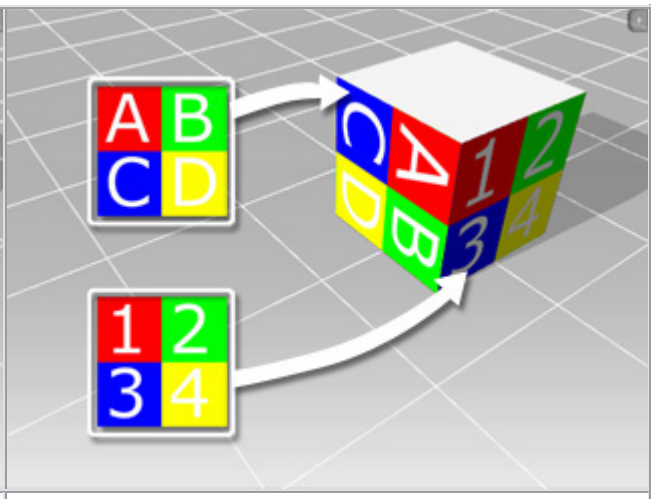
Single Model, Single Image as Texture

When you have a single model with its faces mapped by one single image, and you apply the UV setting as describe above, the result will be as the illustrations.

	
Partial parts of one image are mapped to different faces.	**UV Setting**: **Box** **Align**: **X** **Tiling (U, V)**: **(1.00, 1.00)** The whole image will fit into each face.

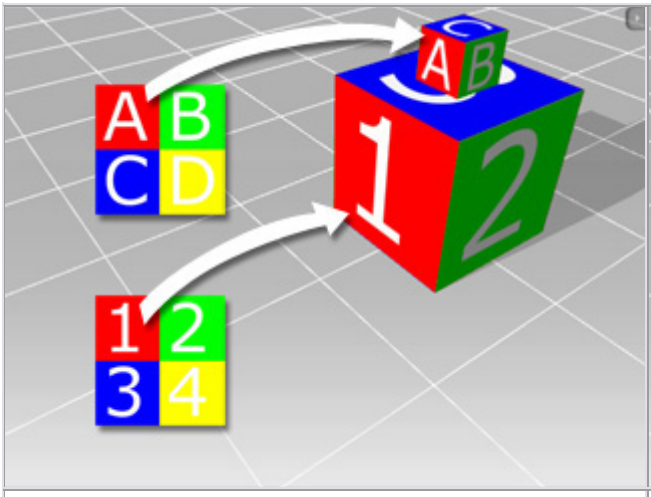
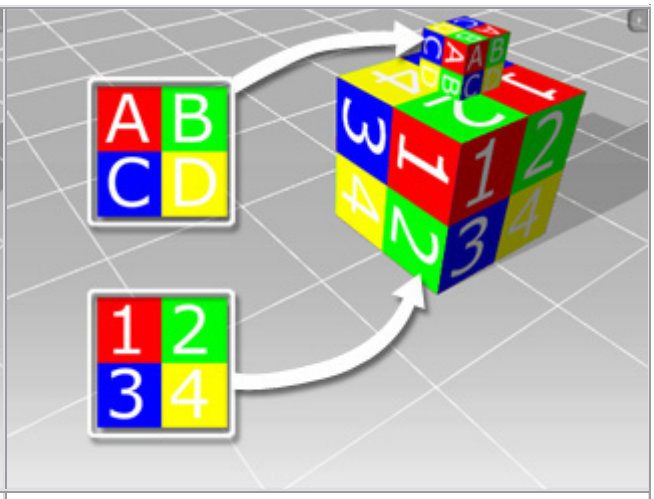
Single Model, Multi Images as Textures

When you have a single model with its faces mapped by several images individually, and you apply the UV setting as describe above, the result will be as the illustrations.

	
Partial parts of two images are mapped to different faces.	**UV Setting**: **Box** **Align**: **X** **Tiling (U, V)**: **(1.00, 1.00)** Each image will fit into corresponding face.

Compound Model, Multi Images as Textures

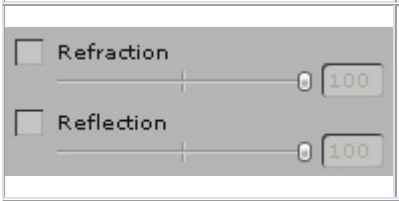
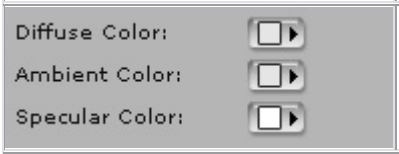
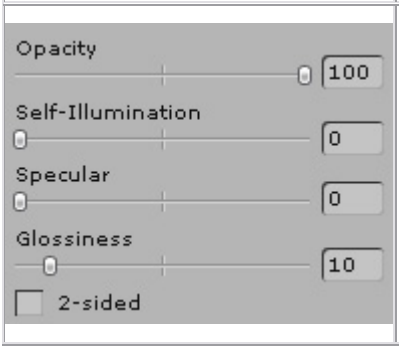
With the concept above, if you have a compound model with multiple textures, once you apply the UV settings, it will effect all the component individually with the setting, which is different from the traditional mapping method.

	
Partial parts of two images are mapped to different faces of two components for the compound model.	**UV Setting**: **Box** **Align**: **X** **Tiling (U, V)**: **(1.00, 1.00)** Each image will fit into corresponding faces of the two components for the compound model.

Save and Load Materials

In **iClone**, you may compact the six channels (**Diffuse**, **Opacity**, **Bump**, **Specular**, **Glow** and **Reflection**) with settings into one **Material Template** file and then load this file to any other objects that contains textures settings of these six channels.

Saved Settings in One Material Template

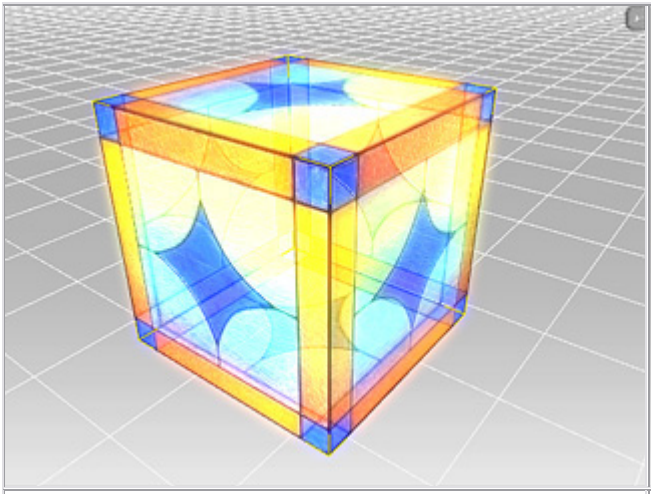
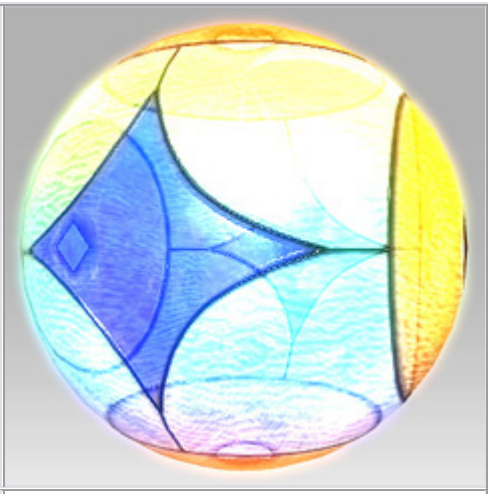
	• The appearance of the six channels. Please refer to the **Adjusting Colors on Six Texture Channels** and **Texture Channel UV Offset and Tiling** sections for more information. • The **Strength** of each channel.
	• The values of **Reflection** and **Refraction** are saved. Please refer to the **Modifying Texture Settings - Advanced** section for more information.
	• The **Diffuse**, **Ambient**, **Specular** colors are saved. Please refer to the **Modifying Texture Settings - Advanced** section for more information.
	• The **Opacity**, **Self-Illumination**, **Specular** and the **Glossiness** values of individual material are saved. Please refer to the **Modifying Texture Settings - Advanced** section for more information. • The **2-sided** status is also be saved.

Compacting Multi-channels as Material File

In **iClone**, you may compact the six channels (**Diffuse**, **Opacity**, **Bump**, **Specular**, **Glow** and **Reflection**) with settings into one single file and then load this file to any other objects that contains textures settings of these six channels.

1. Modify the texture settings for the six channels.

2. Click the Save Material button to save these settings as a so-called **Material Ball** in **iMtl** format. The detailed values in the **Material & Texture Settings** section are all saved.

	
Source object	All the settings for the box are saved into a iMtl file. (The icon for this file is shown in a sphere shape)

Loading Material to Objects

The material saved as a file in the previous section can then be applied to another object.

1. Pick an object (with one mesh node only) that contains six texture channels.

2. Click the Load Material button to browse to the material **iMtl** file, click button to apply it to the target object.

Texture settings are retrieved and applied to the prop.

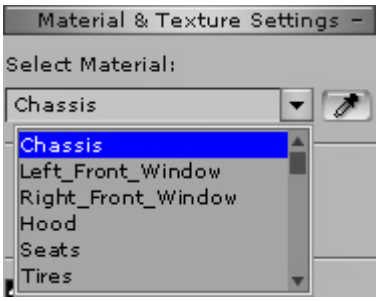
Multiple Materials

If your object is a compounded one, it may possess several material balls. You may modify and save them individually. Optionally, you may also change their settings simultaneously by a check box.

1. Apply one prop into current project. (Take an ambulance as an example)

2. In the **Modify** page, scroll to the **Material & Texture Settings** section.

3. Click the **Select Material** drop-down list.



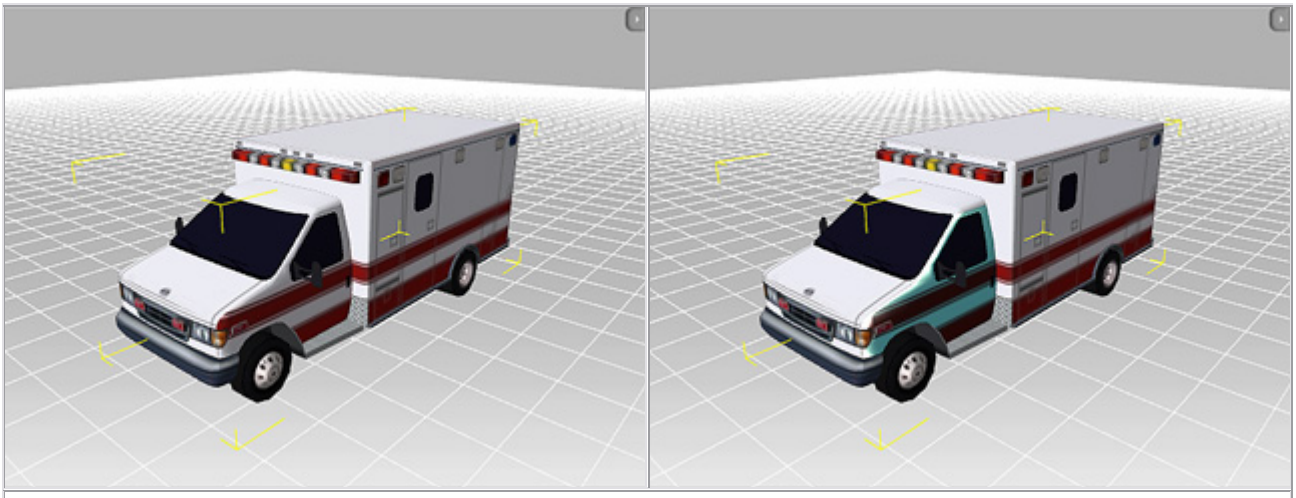
You may find many material names listed in it, which means the textures of this prop are consists of several **Material** settings.

Effect All Materials

When an object contains numerous materials, it may be a hard task for you to adjust their texture settings one after another. **iClone** provides a feature for you to change them all at once.

1. In the **Select Material** drop-down list, pick either one material for changing.

2. Modify the parameters: **Diffuse Color**, **Ambient Color**, **Specular Color**, **Opacity**, **Self-illumination**, **Specular** and **Glossiness**.

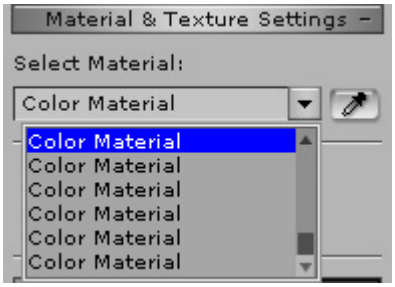


The texture settings of the door are adjusted.
Diffuse Color: Light Yellow
Ambient Color: Light Blue
Specular: 155
Glossiness: 4

3. Check the **Effect All Materials** to apply these settings to all the materials on the list.

Retrieving Material Settings (iClone 3.1)

For compound models or model with multiple textures or material settings, it is tedious to search for the target material through the **Material** drop-down list. Though you may use the up/down arrow keys to browse through all materials if you wish. Meanwhile, applying multiple texture to the target mesh can make a simple model look ultra-realistic.



(As the illustration above, **SketchUp** names all materials only with color assignment as **Color Material**, so it looks all the same in the **Select Material** drop-down list. However it's easier to identify textured material with it's jpeg file name.)

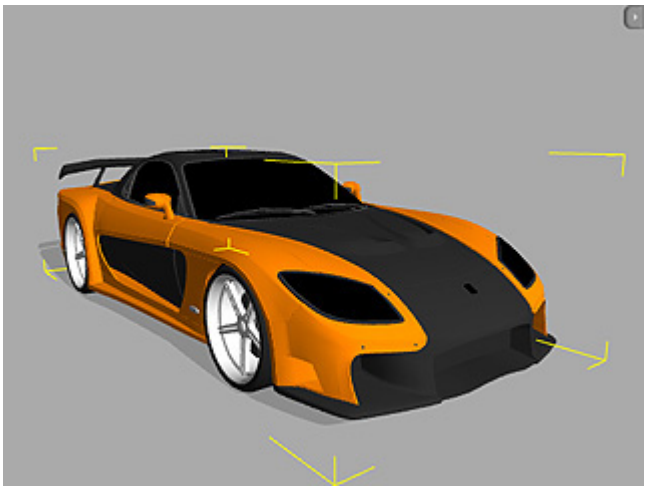
Parameters Stored in a Material Template

In addition to the images of the six channels are retrieved, the parameters of the channels are also retrieved individually. Please refer to the **Save and Load Materials** section for more information:

- The **Strength** of the textures.
- The **Refraction** and **Reflection** settings.
- The **Diffuse**, **Ambient** and **Specular** colors.
- The **Opacity**, **Self-Illumination**, **Specular** and **Glossiness** strength.
- The **2-sided** status.

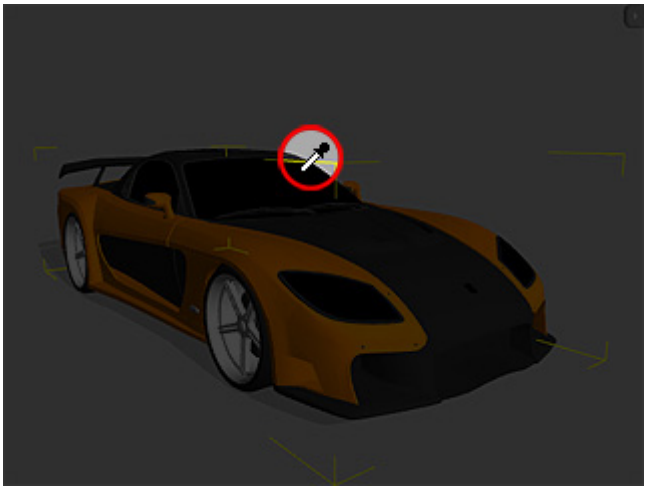
Retrieving and Modifying Materials with Material Picker.

1. Select the model with the texture you desire to modify.

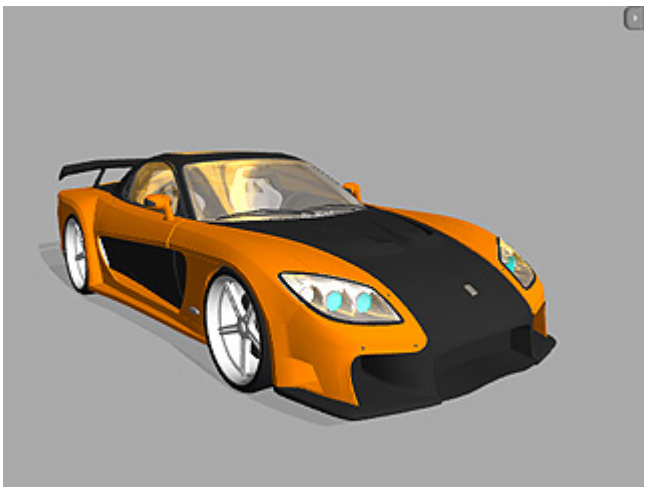


2. Press the **Picker** tool beside the **Material** drop-down list.

3. Click on the face with the desired material in the 3D viewer.



4. The material of the face is retrieved. You may then modify the settings to change the texture.



The glass of the car is mapped with reflection and opacity images.

5. Repeat the steps till the materials of the model are all adjusted.

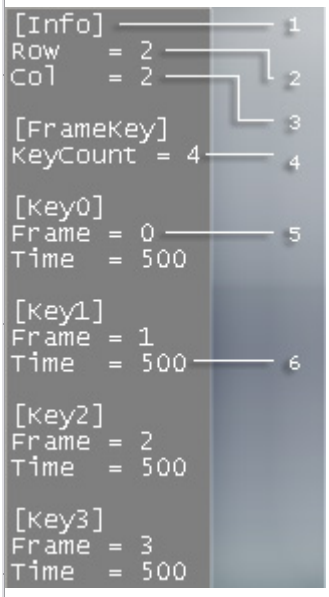
Animated Texture

To generate animated texturing effect from one single texture source, iClone allows you to import a specially arranged image file into any texture channel. By accompanying it with an ini definition file uses the identical name; iClone can recognize this image texture as an animated texture file.

You can access the sample animated texture files from \iClone template\texture\animated

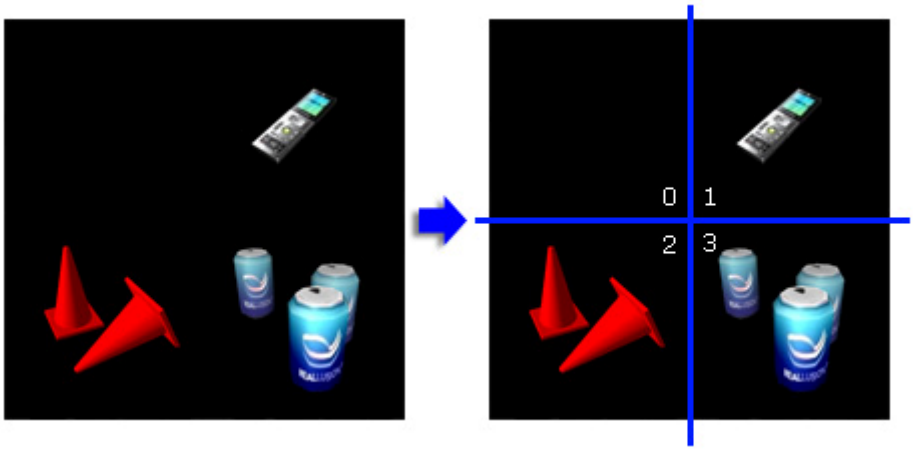
Please use either **Vertex** or **Pixel Shader** for correct Animated Texture display.

The ini file is represented in the following format:

<table>
<tr><td rowspan="6"> 
</td><td>1</td><td>The header name for declaration section.</td></tr>
<tr><td>2</td><td>Row: Assign a value to this parameter to decide how many rows you intend to divide the source image into.</td></tr>
<tr><td>3</td><td>Col: Assign a value to this parameter to decide how many columns you intend to divide the source image into.

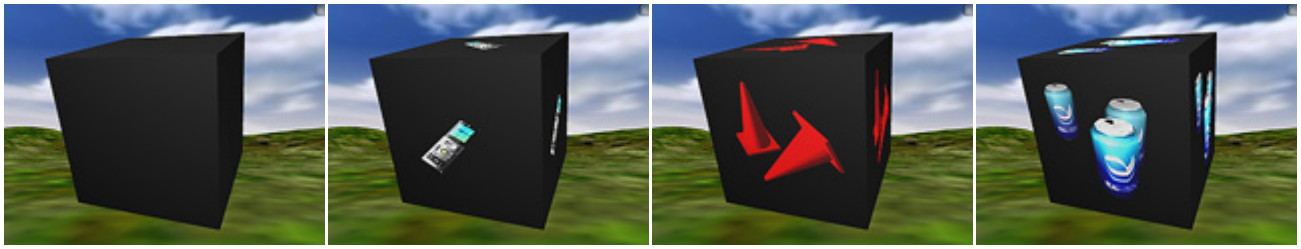
After you set the Row and Col values, the source image is mapped into a matrix containing Row x Col cells.</td></tr>
<tr><td>4</td><td>KeyCount: Assign a value to this parameter to decide the total number of the cells you intend to display after it is imported.

If the KeyCount number is less than the number of [Key N], the excessive [Key] will be ignored during playback.</td></tr>
<tr><td>5</td><td>Frame: This is the cell number of the matrix.</td></tr>
<tr><td>6</td><td>Time: This value is the delay time of the key cell in 1/1000 sec.</td></tr>
<tr><td colspan="2">This ini file defines:

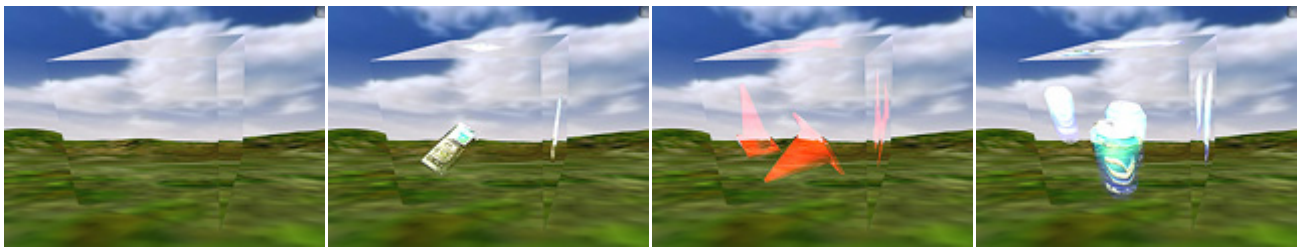
• Divide the source image into 4 key cells. (Row x Col)
• The cells are numbered from 0 to 3.
• Displaying order is from key cell 0 to key cell 3.
• Each cell display for 0.5 sec.</td><td> 
</td></tr>
</table>

Please follow the steps to generate one animated texture for the **Diffuse Channel**.

1. Use any text editor to create a new text file.
2. Use the structure as shown in the illustration above. Change the parameter values accordingly.
3. Prepare an image file. Save the text file with a filename identical to the image file with the extension .ini.
4. In **iClone**, click the **Open** button of the **Diffuse** channel to load the image file.
5. Start Playback to see the result. (The animated texture loops forever by default.)



You may generate various effects if you apply this image into another channel:



Animated Diffuse + Animated Bump + Refraction

Change the Display Order

By modifying the content of the ini file you can change the order or the frequency which each key cell image shows in one loop.

In the next example, we want to have six key cell images to show up in different order in one single loop.

1. Change the **KeyCount = 6**. (This defines 6 key cells to show up in one loop.)

2. Change the rest part:

[Key0]

Frame = 0

Time = 500

[Key1]

Frame = 0

Time = 500

[Key2]

Frame = 0

Time = 500

[Key3]

Frame = 0

Time = 500

[Key4]

Frame = 0

Time = 500

[Key5]

Frame = 0

Time = 500

3. Modify the order for each key cell image to show (The order is 3, 1, 0, 2, 3, 2):

[Key0]

Frame = 3

Time = 500

[Key1]

Frame = 1

Time = 500

[Key2]

Frame = 0

Time = 500

[Key3]

Frame = 2

Time = 500

[Key4]

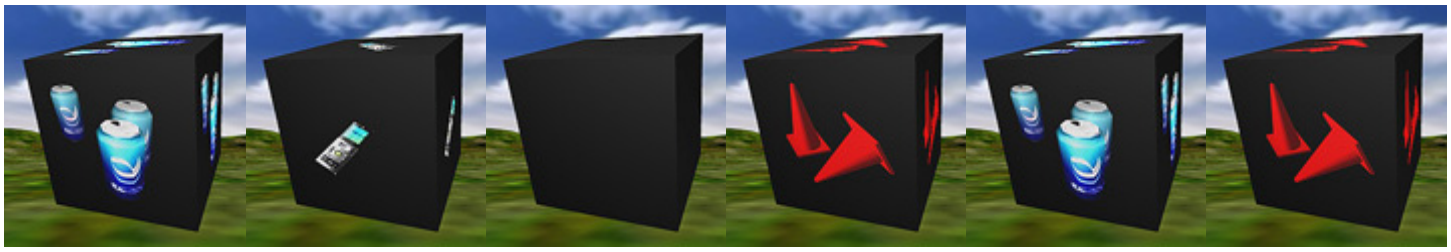
Frame = 3

Time = 500

[Key5]

Frame = 2

Time = 500



Note:

Wide-ratio images can cause severe resolution loss or cropping problems. It is highly recommended that you use square-format images which can save memory and preserve the best resolution.

Material Key and Material Key Frame Animation (iClone 3.1)

iClone allows you to set keys of specific parameters for the six material channels. Thus, you may generate texture animation to enrich the look of your projects.

Saving Material Template VS. Material Key

The parameters that can be saved in the **Material Template** and **Material key** are slightly different as described in the following table.

	6 Channel Textures	Textures UV	Textures Strength	Reflection Refraction	Diffuse Color Ambient Color Specular Color	Opacity Value Self-Illumination Value Specular Value Glossiness Value	2-Sided
Material Template (.iMtl file)	Saved	Saved	Saved	Saved	Saved	Saved	Saved
Material Key (Material Track)	Saved	Not Saved	Saved	Saved	Saved	Saved	Not Saved

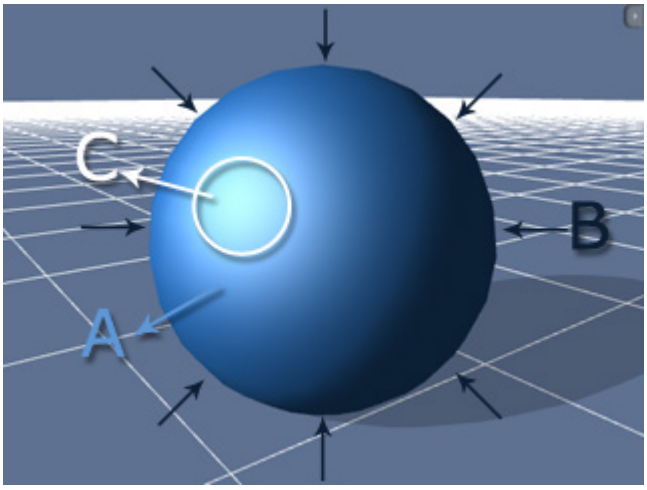
Material key and the Settings

One **Material Key** stores the following settings:

A. The Strength for each texture channel

- The **Strength**.
- The values of **Refraction** and **Reflection**.

B. The Material Color: Please refer to the **Modifying Texture Settings - Advanced** section for more information.

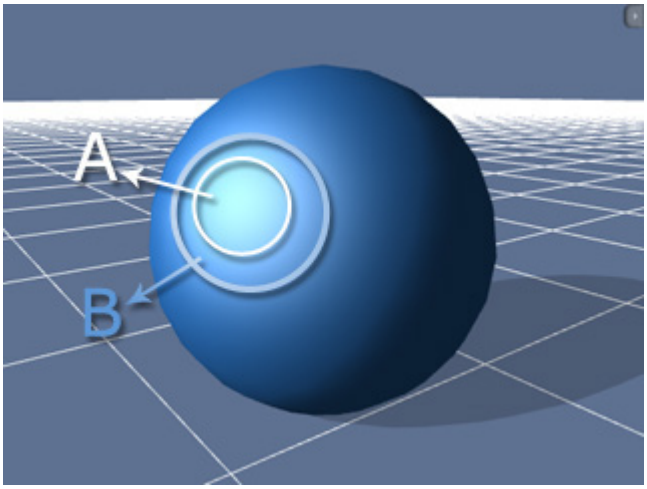


- A: The **Diffuse** color.
- B: The **Ambient** color.
- C: The **Specular** color.

C. The Opacity Value

- The value of **Opacity**: The values affect the selected material only while the other faces applied with other materials can not be influenced.

D. The Material Responding to Light: Please refer to the **Modifying Texture Settings - Advanced** section for more information.



- A: The value of **Specular**.
- B: The value of **Glossiness**.

E. The value of Self-Illumination.

Note:

- Material keys can only be set to **Props** and **Accessories**.
- Once you click the  button, the material keys for all the props or accessories will also be deleted.

Saving Keys to Material Template (iClone 3.1)

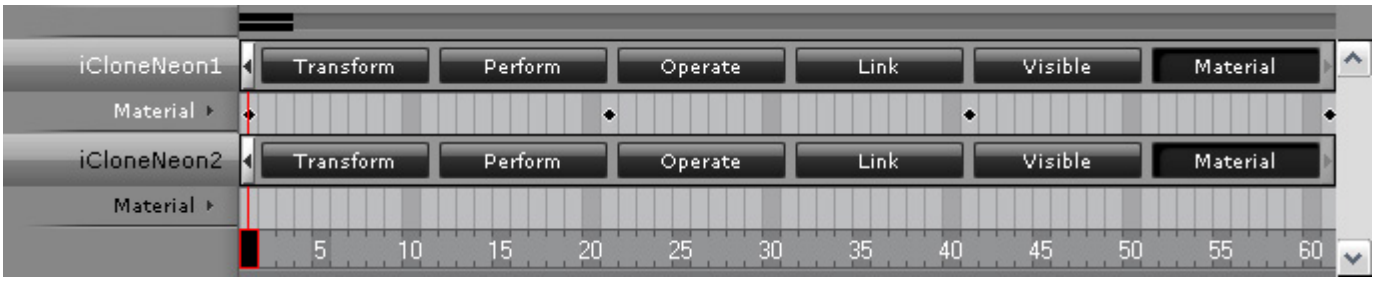
Save your material setting as **Material Template** files can greatly save your time when you want to apply the same material to different targets.

Suppose we want to have the same neon glow effect (using the **Glow** channel) applied on several models, it is really tedious to add keys of the glow texture one model after another.

The look before adjusting textures.

1. Pick the texture for creating glowing effect of the model.

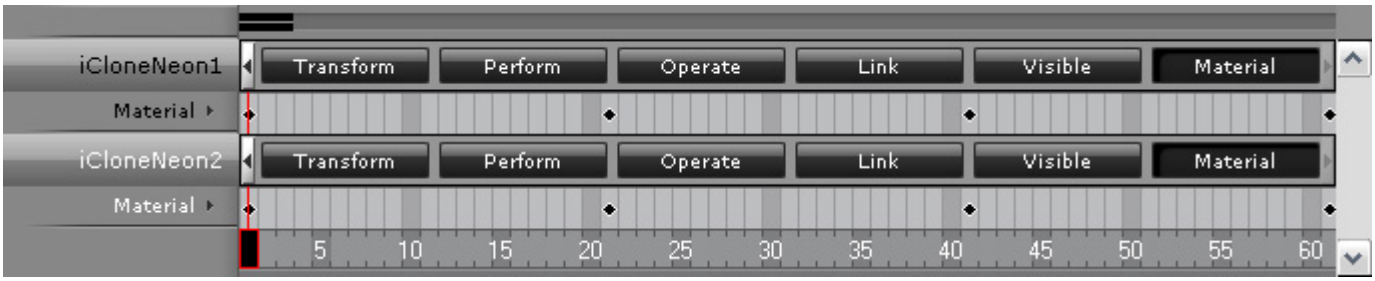
2. Add keys to create shimmering effect of glowing.



3. Click **Save Material** button to save the settings and **Keys**.

4. Select another model and pick its texture for glowing effect.

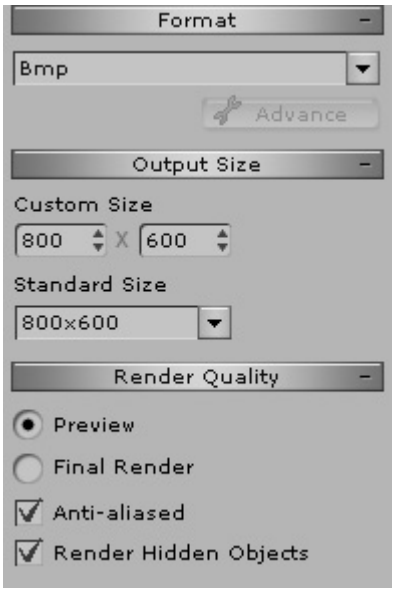
5. Click **Load Material** button to load the file saved in step 3.



Export

Exporting an Image

The export images area is split into three sections: **Format**, **Output Size** and **Render Quality**



Format

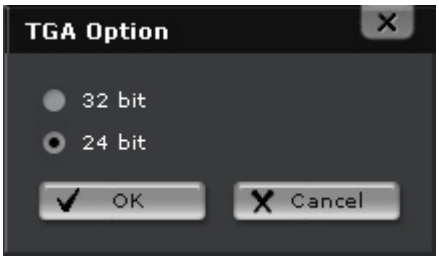
1. Use the drop down list to choose BMP, JPG, TGA, or Gif format.
2. Click the **Advanced** button to display the advanced options. Advanced options depend upon the output format you have selected.

JPG

Use the slider to assign JPG quality.

TGA

Select 32 or 24 bit TGA output. 32 bit TGA images containing Alpha channels are more suitable for image and video composition.



GIF

Select the number of colors and transparency options for a GIF output. When exporting GIF images with transparency, turning off the Anti-Aliased option will produce cleaner edges.

Output size

You can define the size of the exported image in the **Output Size** field. To define output size:

Select either a **Standard Size** or define a **Custom Size** using the spinner arrows.

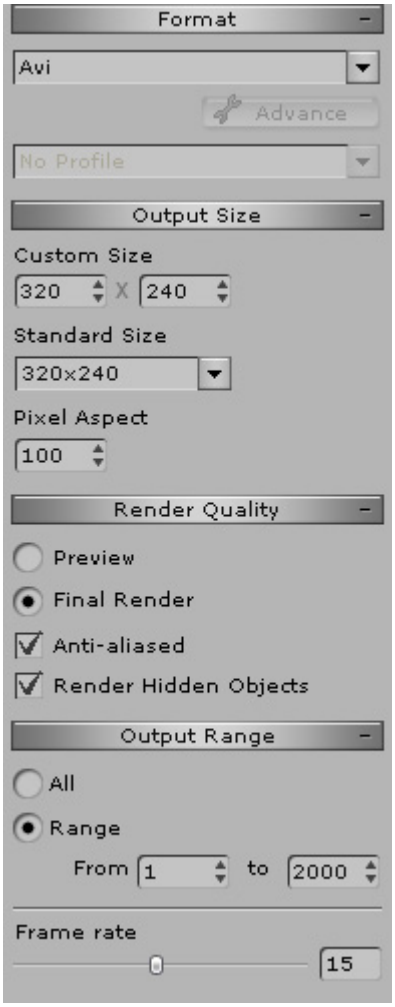
Render quality

The render quality can be set to **Preview** or **Final Render** using the radio buttons. Check the **Anti-Aliased** checkbox to export an anti-aliased image. An anti-aliased output will produce an image with less jagged edges and pixilated areas. You may also check the **Render Hidden Objects** in case some objects are hidden during the editing process.

Click the **Export** button to export the image.

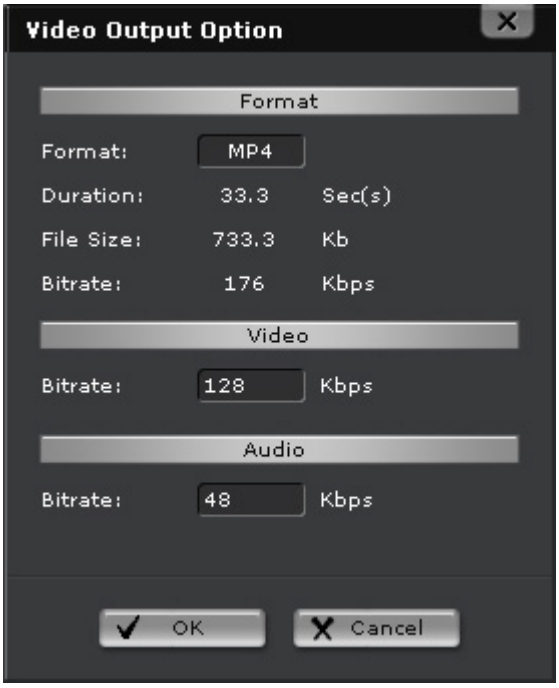
Exporting a Video

The export video area is split into 4 sections: Format, Output Size, Render Quality, and Output Range.

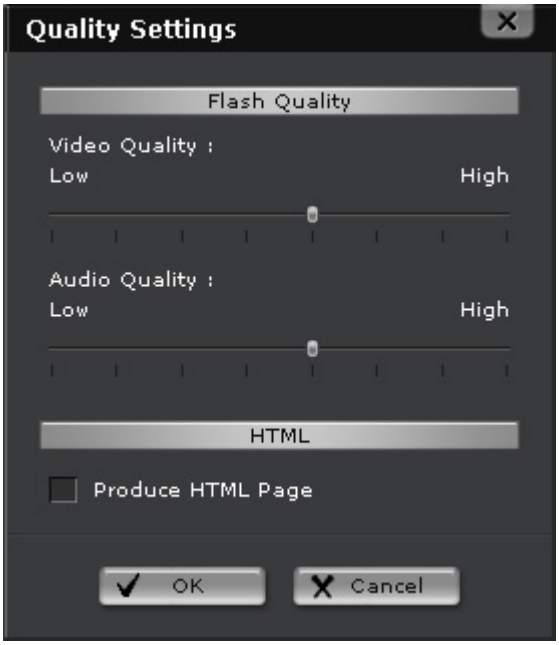


Format

1. Use the drop down list to choose AVI, RM, WMV, MP4 or Flash Movie format.
2. Click the **Advanced** button to display advanced options. Advanced options are only available when you select MP4 for PC format or Flash Video.



MP4 for PC settings



Flash Video settings

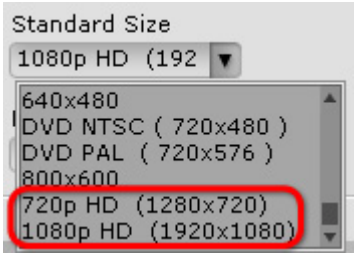
Output size

You can define the size of the exported image in the **Output Size** field. To define output size:

Select either a **Standard Size** or define a **Custom Size** using the spinner arrows.

Note:

- The **HD** media files of the AVI format can be selected in the **Standard Size** dropdown list.



- The flexibility of the output size depends on the video format you choose. WMV and MP4 have specific restriction on output size defined by the profiles.

Render quality

The render quality can be set to **Preview** or **Final Render** using the radio buttons. Check the **Anti-Aliased** checkbox to export an anti-aliased image. An anti-aliased output will produce an image with less jagged edges and pixilated areas. You may also check the **Render Hidden Objects** in case some objects are hidden during the editing process.

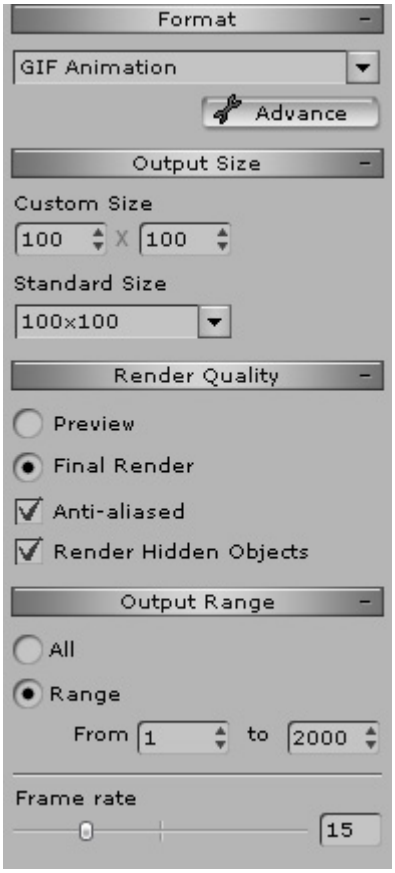
Output range

You can either export the entire video, or just a range of frames. Select the output range using the radio buttons in the **Output Range** field. You can also select the **Frame Rate** here using the slider bar. The output range can also be set using the 2 triangle markers below the play bar.

Click the **Export** button to export the video.

Exporting an Image Sequence

The export image sequence area is split into 4 sections: **Format**, **Output Size**, **Render Quality**, and **Output Range**.



Format

1. Use the drop down to choose GIF animation, BMP sequence, JPG sequence or TGA sequence format.
2. Click the **Advanced** button to set image options depending upon your output format.

GIF animation

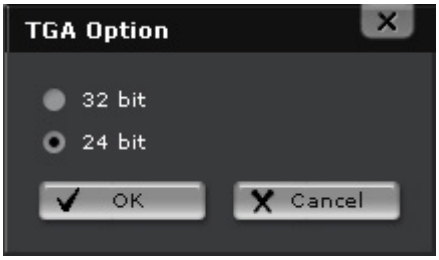
Select the number of colors and transparency options for a GIF output. When exporting GIF images with transparency, turning off the Anti-Aliased option will produce cleaner edges.

JPG sequence

Use the slider to assign the JPG quality.

TGA sequence

Select 32 or 24 bit TGA output. 32 bit TGA images containing Alpha channels are more suitable for image and video composition.



Output size

You can define the size of the exported image in the **Output Size** field. To define output size:

Select either a **Standard Size** or define a **Custom Size** using the spinner arrows.

Render quality

The render quality can be set to **Preview** or **Final Render** using the radio buttons. Check the **Anti-Aliased** check-box to export an anti-aliased image. An anti-aliased output will produce an image with less jagged edges and pixilated areas.

Output range

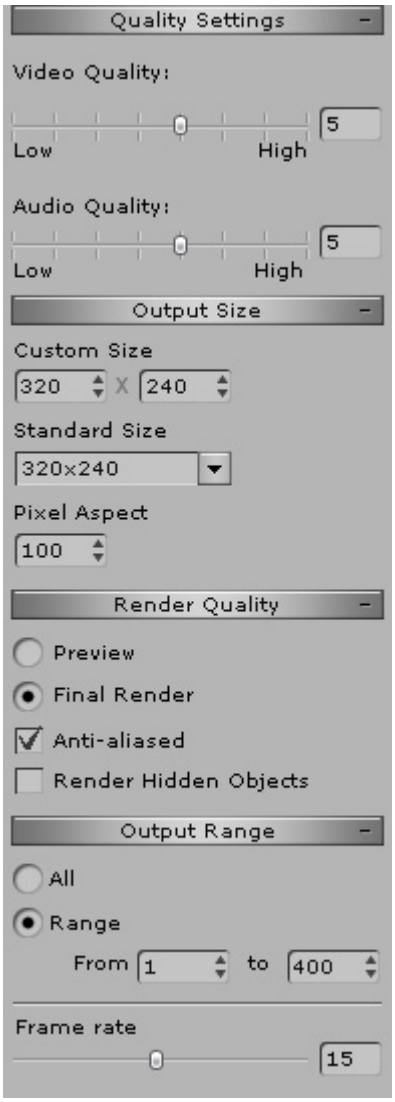
You can either export the entire video, or just a range of frames. Select the output range using the radio buttons in the **Output Range** field. You can also select the **Frame Rate** here using the slider bar. The output range can also be set using the 2 triangle markers below the play bar.

Click the **Export** button to export the video.

Exporting an iWidget (iClone 3.1)

iWidget is a **Flash**-based video file with **Transparent** background which users can publish **iClone** content to the web. The exported file can be edited in **WidgetMe**. For more information about **WidgetMe**, please refer to http://widgetme.reallusion.com/help/.

The export iWidget area is split into 4 sections: Quality Settings, Output Size, Render Quality, and Output Range.



Quality Settings

Use the scroll bar to define the quality for exporting the **Video** and **Audio**.

Output size

You can define the size of the exported image in the **Output Size** field. To define output size:

Select either a **Standard Size** or define a **Custom Size** using the spinner arrows.

Render quality

The render quality can be set to **Preview** or **Final Render** using the radio buttons. Check the **Anti-Aliased** checkbox to export an anti-aliased image. An anti-aliased output will produce an image with less jagged edges and pixilated areas. You may also check the **Render Hidden Objects** in case some objects are hidden during the editing process.

Output range

You can either export the entire video, or just a range of frames. Select the output range using the radio buttons in the **Output Range** field. You can also select the **Frame Rate** here using the slider bar. The output range can also be set using the **2 triangle markers** below the play bar.

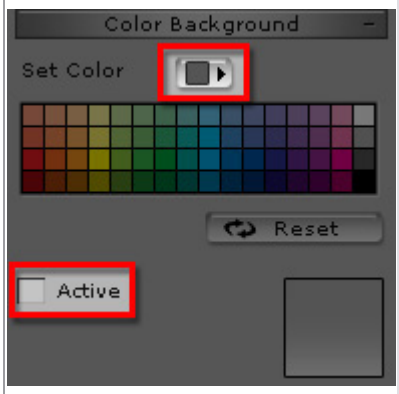
Click the **iWidget File** 

button to export the iWidget file.

You may alternatively click **Launch iWidget** 

button to export .iWidget file and open it instantly in **WidgetMe**.

Note:



- Through iWidget file, users can export transparent flash video from iClone and publish to the web.
- To make a transparent **iWidget** output, please go to **Stage**/**2D Background**/**Modify** page, uncheck the **Active** box and select a **Grey Color** as the background color.
- Grey color can make the transparent **iWidget** a neutral edge blending result when overlaying with different colored background in **WidgetMe**.

Troubleshooting

Troubleshooting

For the latest troubleshooting information, visit the support section of our web site at http://www.reallusion.com/support.asp.

Frequently asked questions

Please visit our web site for the complete FAQ contents: http://www.reallusion.com/iclone/ic_faq.asp.

If you can't find the answer you desire, please fill in the form for further service: http://www.reallusion.com/CusomerSupport/user/QForm.aspx.

Technical Support and Feedback

By purchasing iClone, you are eligible for premium support from our technical support team, should the need arise!

Please take a look at our support resources available from our website (http://www.reallusion.com/CustomerSuppoert/user/FAQList.aspx). In many cases this will be able to immediately answer your questions; if you have any comments or concerns about iClone, or you desire to contact our support team, please fill in the support form in www.reallusion.com/CustomerSupport/user/QForm.aspx.

Contacting Reallusion

Contact us:

Technical and Customer Service: http://www.reallusion.com/CustomerSupport/user/FAQList.aspx

Reallusion forum:

http://forum.reallusion.com/

Reallusion Developer Center:

http://developer.reallusion.com/

Web:

http://www.reallusion.com/

Address:

Reallusion Inc.

2033 Gateway Place

Fifth Floor, San Jose

CA 95110