

# Microsoft V-Chat™ SDK 1.0 BETA Version

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## Documentation

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Version 1.0

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# D R A F T

**Virtual Worlds Group**

**Advanced Technology**

**Microsoft**

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# 1. Introduction

## 1.1 This Document

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This document contains information for both artists and technical staff, but both parties will benefit from reading the entire document.

## 1.2 Overview of V-Chat 1.0 Client

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Microsoft's V-Chat technology allows the creation of multimedia, multi-person, social environments. V-Chat lets users communicate on-line from within a 2-D/ 3-D graphical environment using gestures in addition to text. Sounds and imagery create new contexts for chat spaces, letting users socialize in environments with very different "looks and feel." The V-Chat chatrooms with their unique "personalities," are creative new contexts for personal interaction.

V-Chat supports the following:

- Microsoft Reality Labs general purpose rendering engine
- Avatar gestures allow you to express yourself!
- Easy custom avatar creation, and easy custom avatar publishing
- Collision detection of objects
- "Spinning" 3D objects
- Animated texture maps
- Audio -- MIDI and .WAV files
- Hotspots to any MSN object, or Internet site

V-Chat will be distributed on-line through MSN and the Internet. The minimum client configuration is a 486/66 with 8 MB of RAM.

## 1.3 Overview of V-Chat 1.0 SDK (Beta Version)

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The V-Chat SDK 1.0 consists of the following:

- **The V-Chat Client** with several V-Chat spaces, and general avatars.
- **The V-Chat Authoring Tool** which allows you to create new V-Chat environments by importing 3D models in Microsoft SoftImage 3D™, Autodesk 3D Studio™, or VRML format.
- **3D and 2D Templates** in 3D Studio format. Use these models jumpstart your effort to create custom spaces. You can load these 3D models into 3D Studio, and add to them, or you can keep them as they are, and just change the bitmaps!

As a V-Chat 1.0 content provider, you are able to do the following:

- Build custom 3D or 2D spaces, either by starting with a template and replacing texture maps, or by starting from scratch with 3D modeling software such as SoftImage, 3D Studio, or VRML.
- Build custom avatars for your spaces -- including private, or public custom avatars.
- Create custom sounds -- including background sounds, and enter/exit sounds.
- Create the 'About Box' text for copyright information.
- Create a welcome message that the user will see upon first entering your space.
- Link objects in your space to MSN or Internet content.
- Set up your files on MSN

## 1.4 Technical Support

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### 1.4.1 V-Chat Authoring Tool Technical Support

Technical support will be provided by e-mailing *Content\_Provider@MSN.COM* for all of the following issues:

- Fulfillment of the V-Chat SDK
- Questions about V-Chat SDK installation.
- Questions about the V-Chat Authoring Tool, including questions about the subset of SoftImage, 3D-Studio, and VRML formats that V-Chat supports.
- Questions about deploying your V-Chat on MSN

Also, please check the Forum Managers Only forum on MSN periodically for important V-Chat announcements and updates to documentation and software.

### 1.4.2 SoftImage Technical Support

Questions about how to use SoftImage should be directed to the Microsoft SoftImage Product Support Group. Their phone number is 800-387-2559, or 514-845-1636. An operator will answer. Ask for "SoftImage Technical Support."

## 1.5 Bug Reporting

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We have set up an alias for bug reports - [vchatbug@microsoft.com](mailto:vchatbug@microsoft.com)

In the bug report, we would like to see the following information

1. Machine brand name, CPU speed and RAM size, (i.e. Gateway P90, 16 MB RAM)
2. Modem connection speed to MSN - 9600, 14.4k, 28.8k
3. Video card—to find this right click your Computer icon ( this is usually located in the top left corner of screen). In Properties, click Device Manager, then click Display adapter.
4. Video Mode—you can find this in the Control Panel, under Display Settings. I would be interested in both Color Palette and Desktop Area.
5. Version number—you can find this in the V-Chat Help About dialog
6. If you are working with a custom environment, please make this available to me by placing it on a public server.
7. When you send in your bug report, please outline the steps that led you to the error. Please notify us of any bugs you find, even if you cannot reproduce it.

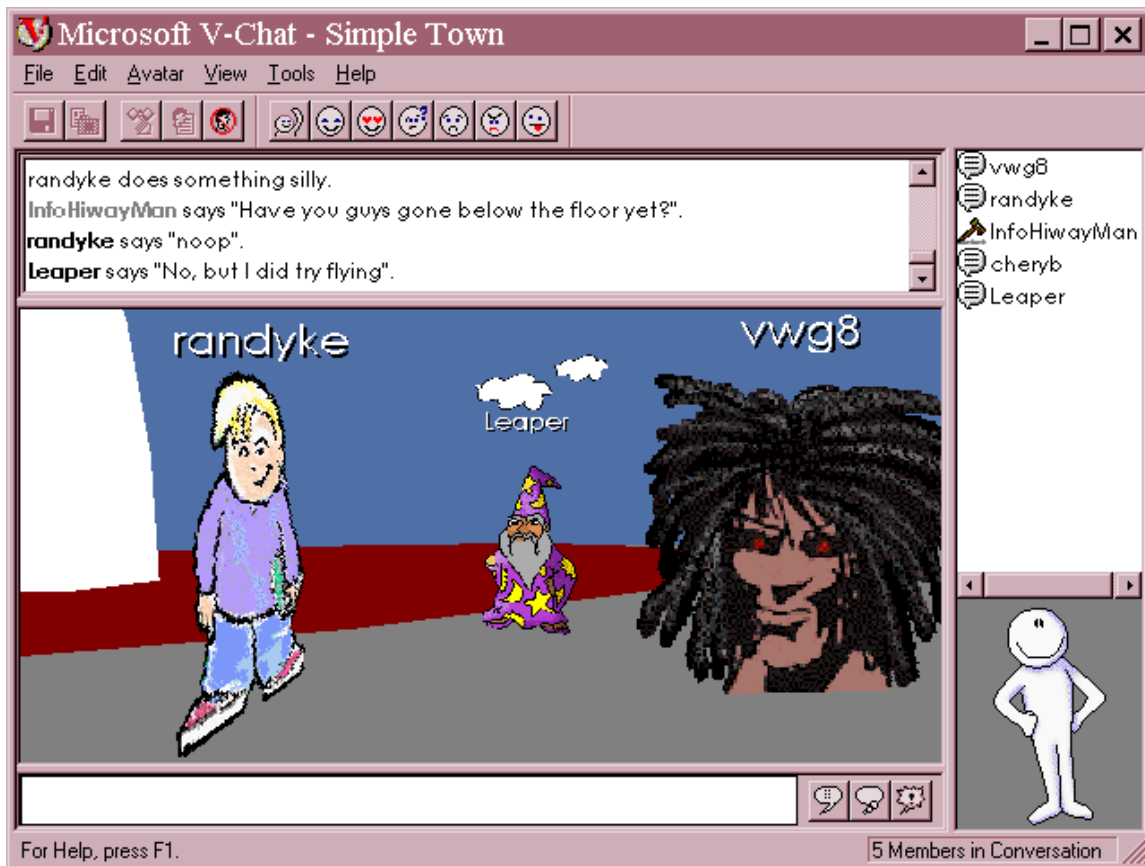
## 2. The V-Chat Client

### 2.1 Setup of V-Chat Client

To setup the V-Chat client, run SETUP.EXE from the \VChat directory on you CD. The V-Chat sample spaces will be installed in your start menu under Programs\V-Chat.

*IMPORTANT: If you have already installed the V-Chat client (either from a previous CD, or via MSN, please re-install the V-Chat client from the V-Chat SDK CD. This is necessary in order for the V-Chat SDK template spaces to be installed correctly.)*

### 2.2 A Quick Tour



#### *History Pane (Upper Left)*

The chat history pane contains a record of the conversation, and can include gestures, and events (entering, leaving rooms). The history begins the moment the user joins the chat room, and ends when the user exits the room. This history can be cleared any time during the chat session by the user by selecting "Clear history" from the Edit menu, and can be saved at any time by selecting "Save History (as)..." from the File menu.

When a user first enter a chat room, the Chat History Window may contain a Welcome and/or description of the chat room which has been provided by the content provider. (To learn how to customize this welcome message, see the section on Customizing V-Chat Text in this document).

***View Pane (Middle Left)***

This is where you see the world. Some worlds will be 3D, some will be 2D. In the alpha release of V-Chat, you have to click on the view pane before you can use the arrow keys to navigate.

***Message-Entry Pane (Lower Left)***

When a user begins typing, he automatically switches to the type mode, and their text is displayed in the Message-Entry pane. The user can send the message one of three ways: “say,” “think,” and “emote.” using the three buttons to the right. “Say” is the default.



Message entry window

<b>Mode of speaking</b>	<b>What I type</b>	<b>What shows up in chat history pane</b>
Say	Hello	<b>Lili says</b> , “Hello”.
Think	I like Ice Cream	<b>Lili</b> .oO (I like Ice Cream)
Do (emote)	jumps up	<b>Lili</b> jumps up.

Comparing Say, Think, and Emote modes

***Gesture Toolbar (Middle Top)***

The gesture toolbar allows you to control your avatar.

***Member-List Pane (Upper Right)***

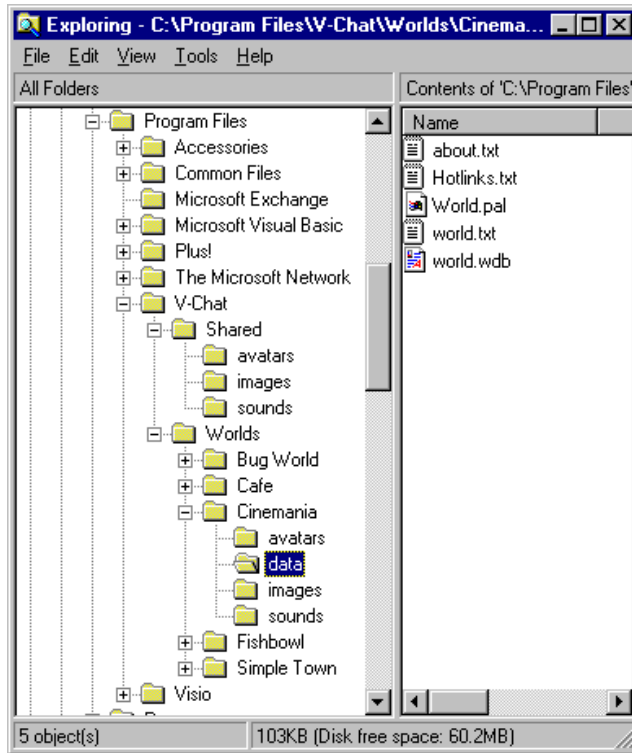
The member-list contains a list of all the members currently in the chat-room. By right-clicking on a member, you can ignore them, get more details, find them, and download their custom avatar.

***Self-View (Mirror) Pane (Lower Right)***

The self-view pane acts as a mirror so you can see what your avatar is doing.

## 3. The V-Chat Client -- Behind the Scenes

### 3.1 V-Chat Client Directory Structure



The screenshot above shows the directory structure of the \Program Files\V-Chat directory after running V-Chat client setup. In addition to these files, a Windows\SYSTEM\RL directory is created, and a file, RLDDF.DLL is installed into your Windows\SYSTEM directory.

**IMPORTANT:** Because the content creation process is only semi-automated, you will have to become *intimately* familiar with the nuances of the V-Chat Client directory structure in order to deploy your content successfully. The next page documents the important files, and directories in the above picture.

<p><b>\V-Chat:</b></p>	<p>The V-Chat directory contains V-CHAT.EXE, which is the V-Chat Client. When you launch V-CHAT.EXE, you can use command-line parameters to specify which directory contains the world (environment) you want to display. There are many other command-line arguments, and they are very important to understand. See the section 'Launching V-Chat' for a complete listing of V-Chat command line parameters.</p>
<p><b>\V-CHAT\Shared:</b></p>	<p>The \V-Chat\Shared directory contains three sub-directories (Avatars, Images, and Sounds). The files located in these directories can be used by any world -- unless you specify a different shared directory via the command-line when you start V-CHAT.EXE.</p>
<p><b>\V-CHAT\Shared\Avatars:</b></p>	<p>This directory contains .GIF files of Avatars that are available in all environments -- unless you specify a different shared directory via the command-line when you start V-CHAT.EXE.</p>
<p><b>\V-CHAT\Shared\images:</b></p>	<p>This directory contains .GIF files of texture maps that are available to</p>

	all environments -- unless you specify a different shared directory via the command-line when you start V-CHAT.EXE.
<b>\V-CHAT\Shared\sounds:</b>	This directory contains .WAV and MIDI sound files that are used if your custom world's \Sounds directory does not contain any sounds -- unless you specify a different shared directory via the command-line when you start V-CHAT.EXE..
<b>\V-CHAT\Worlds:</b>	The \V-Chat\Worlds directory contains one sub-directory for every unique world. The \V-Chat\Worlds directory is the only place you can install a new world.
<b>\V-CHAT\Worlds\Cinemia:</b>	This directory defines the world called 'Cinemia'. If you create a new world, you will name it something else. A world directory contains four sub-directories: Avatars, Data, Images, and Sounds.
<b>\V-CHAT\ Worlds\ Cinemia \ Avatars:</b>	The Avatars directory contains .GIF or .PNG files of avatars that are unique to your world.
<b>\V-CHAT\ Worlds\ Cinemia \Data</b>	The Data directory can contain the following files: ABOUT.TXT: Used to customize the about box (optional) WORLD.PAL: Used to customize your world's palette (optional) WORLD.TXT: Used to customize your world's welcome message (optional) WORLD.WDB: This file is created by the V-Chat Authoring Tool. It contains your world's geometry, cameras, and lights. This file is required. HOTLINKS.TXT This file specifies which objects in your 3D model should be hotlinks to MSN or Internet sites.
<b>\V-CHAT\ Worlds\ Cinemia \images:</b>	The Images directory contains .GIF files of texture maps that are unique to your world.
<b>\V-CHAT\ Worlds\ Cinemia \sounds:</b>	This Sounds directory contains .WAV and MIDI sound files that are unique to your world.

## 3.2 Launching V-Chat

To deliver your content successfully, you will need to understand all of them, when to use them, and why. Of all the ways to start V-Chat, the command line method is the most important to understand because all the other options derive from it.

V-CHAT.EXE will accept a number of command line parameters.

### 3.2.1 Valid Command-Line Parameters:

Required Parameters	Description
-a avatar	Specifies initial avatar for area (first time user enters a world). Note: This is a required parameter
-w worldldir	Specifies which world directory is to be used. World directories are located under the V-Chat\World directory. Note: If your world directory has a space in it, you must use quotes around the name of the world. For example: -w "Simple Town"

Semi-Required Parameters	One of the following parameters is required
-c	Run locally (w/o connecting).



-i cid1 cid2	Cid1 specifies MSN chat room id. Cid2 specifies deid of .VCH or MSNCALL object. Cid2 will be used when the user selects 'Create Shortcut' from the file menu.
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Optional Parameters	Description
-q	No sound at all
-qs	No background music
-qf	No sound effects
-2D	2D world
-r	RGB mode (this may increase display quality in some worlds, but does impact performance)
-f	Disables "fast" navigation mode. Fast-mode allows users to navigate faster by decreasing rendering quality while moving.
-s	Turns on frames per second display in release build, off in debug build.
-d dir	Specifies shared directory, starting at the \V-Chat directory level. For example, -d myworld\shared would be a valid usage. If the -d parameter is used without a directory, no shared directory will be used. <b>Note:</b> Publishing and downloading custom avatars is disabled if you use the -d parameter. Using "-d shared" will disable publishing and downloading of custom avatars while still allowing users to use the \shared directory for avatar selection. <b>Note:</b> If the directory is a long-filename, you need to use quotes around the name. For example, -d "Simple town\shared"
-m n1 n2 n3 n4	Specifies acceleration parameters. n1: Time threshold when accel starts (in msec). Default = 1000 n2: Acceleration rate - time to double speed (in msec). Default = 500 n3: Initial speed factor (float). Default = 1.0 n4: Max speed factor (float). Default = 12.0

### 3.2.2 Examples of Command-line Arguments

Example Syntax 1: "C:\Program Files\V-Chat\v-chat.exe" -c -w "Fishbowl" -a duggan.gif  
Example Syntax 2: "C:\Program Files\V-Chat\v-chat.exe" -c -2D -w "Nightclub" -a duggan.gif  
Example Syntax 3: "C:\Program Files\V-Chat\v-chat.exe" -w "Fishbowl" -i 26578 35723  
-a duggan.gif

Example #1 will run V-Chat locally (no connection to MSN) using the world located in the V-Chat\worlds\FISHBOWL directory. Since the -2D flag was not set, V-Chat will assume this is a 3D world. The -a parameter (which is required) specifies the *initial avatar*. This syntax will be a very common way for you to test your 3D worlds for usability.

Example #2 is very similar to #1, except that it's a 2D world. Again, this will run V-Chat locally (no connection to MSN), and is a common way to test your 2D worlds for usability.

Example #3 will connect to MSN, using the Fishbowl world, connecting to MSN Chat Room #26578. If the user selects "Create Shortcut" from the file menu, a shortcut to object# 35723 will be created.

NOTE: To obtain the MSN chat room ID, connect to MSN, empty out your favorite places folder, add the target chat room to your favorite places, go to the start menu, select RUN, type REGEDIT.EXE. Then use Regedit to search for 'Favorite Places'. On the right hand side, you should see a value named, 'Node0'. It's data element should be something like, "S,1:26578:0:0". The five or six digit number in the middle, (in this case 26578) is the MSN ID of the chat room. In MSN terms, this is known as the DEID of the Chat Room. You can use this method to get the MSN ID of any MSN object -- BBSs, DNR files, etc.

### 3.2.3 .BAT Files

.BAT files are quick and easy ways to start up a V-Chat session with pre-coded command line parameters (See section on Command-Line parameters above).

However, .VCH files have two advantages over .BAT files. First, .VCH files have the V-Chat icon. Second, .VCH files don't have to contain a hard-coded path to V-CHAT.EXE.

### 3.2.4 Win95 Shortcut

In its most basic level, a Windows 95 Shortcut is simply an icon that executes a command-line. The VChat Setup program will place a number of Win95 shortcuts in the user's Start menu. You may decide to add some of your own as you create your own worlds. To create a new Win-95 Shortcut, open the Explorer, and select 'File-New-Shortcut'.

.VCH files have one advantage over Win95 Shortcuts, however; they don't have to contain a hard-coded path to V-CHAT.EXE.

### 3.2.5 Start Menu

The current VChat Setup program will place a number of Win95 shortcuts in the user's Start menu. You may decide to add some of your own as you create your own worlds.

### 3.2.6 .VCH Files

A .VCH file is an ascii text file that contains the command-line arguments for V-CHAT.EXE. When V-Chat setup is run, the .VCH extension is linked to V-CHAT.EXE. So, the following example will connect to MSN, using the Simple Town world, connecting to MSN Chat Room #26578.

```
-w "Simple Town" -i 26578 63435 -a duggan.gif.
```

Right now there are two advantages of .VCH files.

- First, you can upload .VCH files into your MSN folder, so they become a quick way to launch a V-Chat from within MSN. This is the only way to launch V-Chat from MSN at this time, NOTE: The V-Chat program must be installed first, or else .VCH files will not be linked to V-CHAT.EXE.
- Second, .VCH files have an advantage over .BAT files and Win-95 Shortcuts, in that .VCH files don't require a hard-coded path to V-CHAT.EXE.

### **3.2.7 MSNCALL Object (MSN Custom Application & Library Loader)**

MSNCALL is a new setup technology (a new MSN Object type to be specific) that MSN is expecting to be released in late '95, or early '96. To the user browsing the MSN directory tree, an MSNCALL object looks just like any other object... it's an icon with a caption that they can double-click on.

When the user double-clicks on the MSNCALL object, MSNCALL determines whether or not the required files are installed on the users system. If they are installed, it launches the executable on the client machine. If they are not installed, MSNCALL will install them. Due to some smart client-side caching algorithms, MSNCALL can determine if everything is installed with only a few bytes transferred over the slow-link.

Using MSNCALL has two advantages

- 1) It eliminates the need for a separate setup set.
- 2) It allows things like hot-links, and texture-map images to be updated dynamically. This enables content providers to sell advertising spots inside their spaces.

### **3.2.8 MSN Shortcuts**

An MSN Shortcut can be created from any MSN Object in the MSN directory tree. So in a sense, this method of set-up is a derivative form of the other two MSN Setup options -- .VCH files, or the future MSNCALL Object.

## 4. V-Chat Environment Authoring Tool

The V-Chat Authoring Tool is an application which lets you import 3D Studio files, VRML 1.0 models, and SoftImage files, and then convert these models to .WDB files, which is V-Chat's file format.

*Note:* The VRML 1.0 standard is a relatively new file format. We have found that many software packages that support VRML currently do not follow the VRML 1.0 standard. If your package does not support the VRML 1.0 standards fully, we recommend you use SoftImage, or 3D-Studio.

### 4.1 Setup of V-Chat Authoring Tool

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To setup the V-Chat SDK, run SETUP.EXE from the \VChatSDK directory on your CD.

Shortcuts to the V-Chat Authoring Tool will be installed in your Start menu under Programs\V-Chat SDK

### 4.2 Summary of V-Chat Authoring Tool Features

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- Import 3D Studio, VRML 1.0, and SoftImage files.
- Scale the environment up or down.
- Compress models for better performance
- Set initial and overview camera positions
- Set the background color of a scene
- Set and test collision detection boundaries
- Specify initial avatar
- Set introductory text and about-box text
- Set the DEID of the desired MSN chat-room
- Set the DEID of the MSNCALL or .VCH object which launches your V-Chat space
- Specify a shared directory
- Indicate whether your space is 2D or 3D
- Save the environment as a world with the proper directory structure.
- Create a shortcut to launch your new V-Chat environment

If you have requests, bugs, or suggestions, please send them to [vchatbug@msn.com](mailto:vchatbug@msn.com). We will be improving and adding features to Author and welcome your feedback.

### 4.3 The V-Chat Development Life Cycle

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1. **Create your 3D or 2D model** using the guidelines in the next section.
2. **Save your model** in .3DS, VRML, or SoftImage file format.
3. **Import your model** into the V-Chat Authoring Tool by selecting 'Import' from the 'File' menu.
4. **Add the finishing touches** like initial camera, overview camera, collision detection, and lights, and background color if necessary.
5. **Save your new world** by selecting 'Save As World' from the 'File' menu. This will create a new directory for your new world, including directories for avatars, images, sounds and data. It will also create a short-cut on your desktop! (Click on the 'Information' button to set additional options before you save.) Your world directory has been created in the C:\program files\v-chat\worlds directory.
6. **Test your world** by double-clicking on the shortcut that was placed on your desktop when you saved your world.
7. **Deploy your world on MSN.** Once you've tested your world, send e-mail to [Content\\_Provider@MSN.COM](mailto:Content_Provider@MSN.COM) for instructions for how to deploy your V-Chat Environment on MSN.

## 4.4 A Real Life Example

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Follow the steps below, and you will see how easy it is to create new V-Chat spaces:

1. **Launch Author** from the Start menu under
2. **Select 'Import' from the 'File' menu**, and open C:\VChatSDK\3Dmodels\3Dbillbd.3DS. When it asked for the file 'M0.GIF' select C:\program files\v-chat\worlds\3dbilldb\images\m0.gif.
3. **Select 'Save As World' from the 'File' menu**, and hit the 'OK' button after giving your world a one-word name. Your world directory has been created in the C:\program files\v-chat\worlds directory.
4. **Launch your new V-Chat** by double-clicking the shortcut that was added to your desktop in step 3.

Now try it again, and this time, play around with some of the options and tools. Hint: There are a lot of options you can set by hitting the 'Information' button on the 'Save As World' dialog.

## 5. How To Create Your V-Chat Environment

There are eight aspects to creating your custom V-Chat environment.

- Creating a 3D or 2D space using templates
- Creating a 3D or 2D space from scratch
- Creating custom avatars
- Deciding on the Palette
- Creating Audio
- Setting Welcome-text and About-box-text
- Defining Hotlinks to MSN content, or the Internet
- Deploying your V-Chat environment via MSN

### 5.1 Creating 3D/2D Environments Using Templates

#### 5.1.1 2D templates

##### Overview

2D worlds are actually special-case 3D worlds with special camera and navigation logic. Therefore to create a 2D space, you still need to use a 3D modeling package. To quickly create V-Chats without using a 3D modeling program, we have provided two 2D templates, 2Dtemp1 and 2Dtemp2. Both spaces are the same size, but have different entry points.

**2Dtemp1:** The Entry Point is located in center of the image. This means the end user always enters the space in the center of the image.

**2Dtemp2:** The Entry Point is located near the center of the upper left quadrant. This means the end user always enters the space in this location.



2D Templates: 2Dtemp1 and 2Dtemp2

##### Using the 2D Templates

Follow the steps below to make a quick and easy 2D environment using one of the 2D V-Chat templates.

1. Create your background image (512 x 1024 pixels) in a paint program.
2. Save the image as BACKGROUND.GIF (in .GIF format of course!)
3. Launch the V-Chat Authoring Tool
4. Select 'Import' from the 'File' menu, and select one of the 2DTEMP1.3DS or 2DTEMP2.3DS from the C:\VChatSDK\3Dmodels. Note: If the space appears in V-Chat as a flat line, you are in 3D mode. Switch to 2D mode via the options menu.
5. When it asks for the background.gif file, select your file.
6. Select 'Save As World' from the file menu, and give you world a one-word name. Click on the 'Information' button, and make sure to check the '2D' box in the 'Miscellaneous' tab.
7. Your space has now been created in the c:\program files\v-chat\worlds directory.
8. Test your space by double-clicking on the shortcut that was automatically created on the desktop.

9. To add sounds or a custom palette, you need to follow the instructions in section 5.1.2

## 5.1.2 3D templates

### Overview

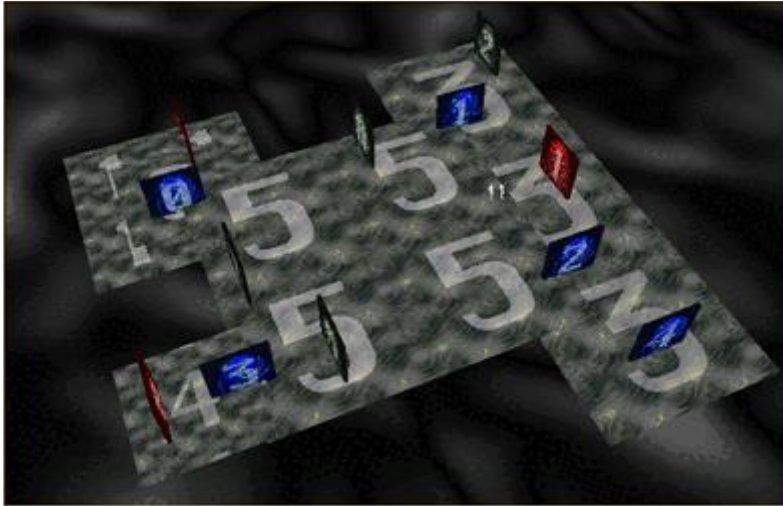
To quickly create V-Chats without using a 3D modeling program, we have provided two 3D templates, 3Dbillbd.3DS and 3Droom.3DS.

#### 3Dbillbd.3DS:

This template is a large open space with horizontal planes (ground) and vertical planes (billboards). You can change the images on the ground, as well as the images on the billboards.

To determine the name of the image you are replacing, look at the color and number on the billboard. For example, the red billboard with a #1 is image R1.gif, the red billboard with a #2 is image R2.gif, the green billboard with a #1 is G1.gif, the blue billboard with a #1 is B1.gif, and the ground with a #1 is M1.gif.

When creating hotspots, you need to know the name of the objects. In this world, we made it easy. The name of the image is also the name of the object (without the .gif, of course). For example, image R1.GIF is mapped to object R1.

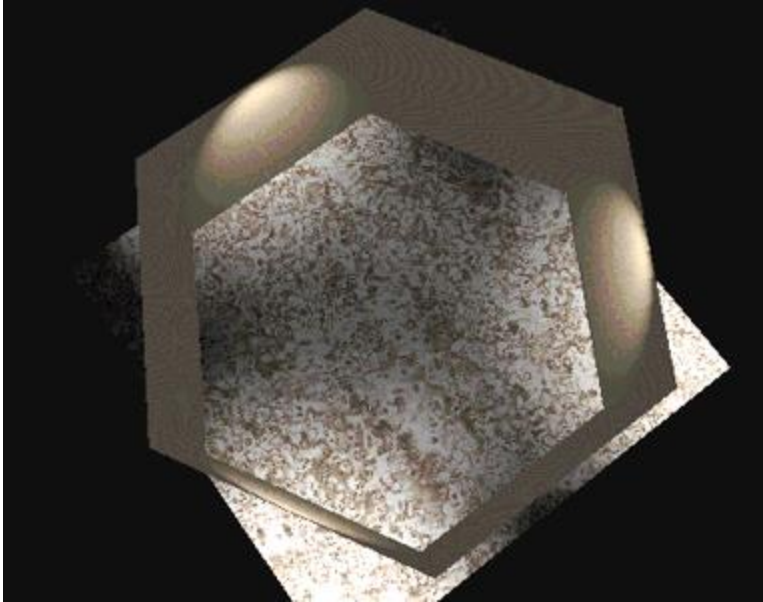


Overview of 3Dbillbd.3DS

**3DRoom.3DS:** This template is a medium sized room. You can change the images on the walls or the “wallpaper” as well as the floor texture.

To determine the name of the image you are replacing, the images on the walls are named: Wall1.gif- Wall6.gif, and wrap clockwise. The floor is named Floor.gif.

When creating hotspots, the name of all the objects corresponding to the texture maps are identical, without the .GIF file extension. For example, image wall3.gif is mapped to object wall3.



3D Template: 3DRoom

### **Using the 3D Templates**

Follow the steps below to make a quick and easy 3D environment using one of the 3D V-Chat templates.

1. Create your new images in a paint program. Use the same filenames as the current images. M0.GIF, or FLOOR.GIF, for example. It will look best if the images you create have the same proportions of the images you replace.
2. Launch the V-Chat Authoring Tool
3. Select 'Import' from the 'File' menu, and select either 3DBILLBD.3DS or 3DROOM.3DS from the C:\VChatSDK\3Dmodels directory.
4. When it asks for one of the image files, select the new image you made by that name.
5. Select 'Save As World' from the file menu, and give your world a one-word name. Click on the 'Information' button, to set additional options..
6. Your space has now been created in the c:\program files\v-chat\worlds directory.
7. Test your space by double-clicking on the shortcut that was automatically created on the desktop.
8. To add sounds or a custom palette, you need to follow the instructions in section 5.1.2

## **5.2 Creating 3D/2D Environments From Scratch**

Totally custom environments start out as 3D Studio, SoftImage, or VRML 1.0 files. After you run them through the V-Chat Authoring Tool, your file is converted to the .WDB format. The models and their texture maps must follow guidelines regarding file size, file format, palette, naming, and complexity. Please read this chapter thoroughly before beginning the construction of your space.

### **5.2.1 High-Level Design Considerations**

#### **Set Design, Not Architecture**

In many ways the design process for V-Chat environments is more like set design than architecture. When designing an environment, think of the avatars in the scene, and the types of activities and conversations which may take place in the scene.

#### **Keep it Simple**

For many reasons, we highly recommend creating simple environments: Due to the real time rendering of the scene, performance is a critical issue. Performance of rendering is greatly affected by large texture



maps, transparent textures, and complex geometries. Therefore designing simple geometries and small textures is absolutely crucial to the design of a successful V-Chat environment. Carefully construct your models and textures, and check performance often by testing in V-Chat. There are many methods for simplifying spaces. For example, image quality of texture maps vs. performance in V-Chat can be assessed by incrementally lowering the resolution of your textures and testing in V-Chat to determine the lowest acceptable resolution of individual textures.

### **Space Complexity**

Rendering speed, texture maps, animation, sounds, etc. in V-Chat, etc., are items best explored through quick iterative design. We highly recommend testing your designs by iterative testing in V-Chat as early in the design process as possible.

### **Scale of the Space**

It is possible to create spaces of enormous scale relative to the avatars, which are a fixed size. For example, you can create a bowling alley 20 miles long. This makes the avatars appear to move very slowly. To fix this, reduce the scale of the environment to match the scale of the avatars. An avatar is 2 units tall, therefore 1 unit is about 3 feet.

### **Cost**

Depending on this concept, the environment may be simple or complex. As a guideline, we suggest first deciding whether your environment will be 2D or 3D. For 2D spaces which follow the template, we approximate costs between \$500 and \$5000. Complex 2D spaces and 3D spaces will cost approximately \$5000-\$15000. These costs will vary greatly depending on the concept and designers.

### **Target Platform**

When designing V-Chats, you must design for the medium. Two thirds of MSN users have 486 machines, with 66mhz being the most popular processor speed, and 8mb being the most popular memory. Therefore you should use a 486/66 8mb machine to test the performance of your spaces, and design for this platform.

### **Total Byte Size**

V-Chats are distributed by downloading over MSN, and MSN customers are mainly using 14.4 modems. We recommend that the total size of your space be 1 megabyte or less in size (compressed) for branded sites, and 500k for topical chat rooms. This includes all environments, the textures, sounds, and all avatars.

### **Make Avatars Stand Out**

We highly recommend incorporating the design of the avatar into the design of the space, and testing both your avatars and the general avatars in your environments. When testing, check to make sure the visual complexity of textures and geometries in the environment do not overpower the avatar design, and check that the scale of your environment is not too small or large in relation to the scale of the avatars.

### **Practice Makes Perfect**

Before you create your first V-Chat environment, we highly recommend creating a “quick and dirty” initial space to better understand the production process of V-Chat design. Although creating each element may not be difficult, making sure all of the parts: MSN setup, avatars, sounds, texture maps, palettes, etc., work together to make a cohesive, compelling environment can flush out a lot of issues that will help you in the design of your first production space..

## **5.2.2 Creating 2D Environments From Scratch**

### **General**

2D worlds are actually special-case 3D worlds with special camera and navigation logic. Therefore to create a custom 2D space, you still need to use a 3D modeling package.

2D environments support animation, layering (the avatars can move behind foreground objects), and hotspots. The content provider must follow the guidelines described below when building custom 2D environments.

## **Modeling Your Space**

In order to create a custom 2D scene, you must create the model of the environment in a 3D modeling program. For your first 2D space we recommend that you take 3D-Studio, and modify one of our 2D template spaces. This way, issues like the camera height are taken care of for you. To build your model, follow the conventions below. (The example space “Bug World” is a good example of a custom 2D space with animation and layering. After building the model, the 2D scene should be converted to the .WDB format (via author) and located in your worlds folder, and must be named world.wdb.

- **Model construction.** When creating the model of your environment, make sure the polygons you are texture mapping onto do not intersect. The Z buffer in Rendermorphics is limited and may cause “redraw errors” during playback in V-Chat.
- **Avatar layer.** Avatars will automatically appear at a height of the camera named 'Avatar'. Do not create any objects which will appear at this height. Layers below the avatar will appear in the background. Layers above the avatar will appear in the foreground.
- **Background layer.** The background plane(s) must be located behind that avatar. It is best to create a plane which has the same dimensions (in plan) as the image you are texture mapping in order to prevent distortion.
- **Foreground layer.** The foreground plane(s) must be located above the avatar. Again, is best to create a plane which has the same dimensions as the image you are texture mapping in order to prevent distortion.
- **Lights.** For best performance, delete any lights in your V-Chat space.
- **Scale.** Test the size of the avatar in relation to the scale of your environment. For 2D worlds, the avatar and images should both appear in their original size (and should not be scaled, preventing distortion of the image(s)).
- **View Window.** The default view window size is approx.: 256 x 512 pixels. The default opening position (either centered in the middle of the picture, or centered in the upper left quadrant of the picture) cannot be changed. Keep this in mind as you design your image.

**Viewpoints:** The end user always begins the V-Chat session at the Entry Point. The user can also switch viewpoints, and see an overview or context shot. For all 2D V-Chats, the end user can switch between the “Overview” and the “Entry Point.” If you do not or cannot specify an overview and/or entry point camera in when modeling in your 3D software package, you may place the camera by using the V-Chat Author tool.

- **Entry Point.** If you are using a SoftImage, the origin (0,0,0) of your environment will determine the default “Entry Point” of your scene. (the origin will appear in the center of the view window). If you are using 3D Studio or VRML 1.0, you may create a camera named “Avatar” to determine the Entry Point (if there is no camera named avatar, we will default to the origin as Entry point, also be careful with the orientation of this camera, or the avatar could start out looking into the ground, or sky, or be on it's side).
- **Overview.** For 2D spaces, V-Chat automatically determines an overview by “scaling the model to fit” to the view window.

**Textures:** Place all textures in the images folder of your world folder in the V-Chat directory. Textures must be carefully constructed. Keep in mind that it is important to keep the file-sizes down.

- **Image Size.** The dimensions of all textures must be powers of 2 (for example 512 x 512, 64 x 256, etc.)
- **Image Resolution.** To prevent poor performance, we recommend using 72 dpi images.
- **Transparent color.** The transparent color for V-Chat environments and avatars is: R:0 G:255 B:0. (position number 250) Note: If you create a totally custom palette, you have to reserve the first and last ten colors.

- **Palette.** You must use an 8 bit palette in .PAL format. We highly recommend using the MSN palette, or merging your custom 90 color index palette into the VChat.pal. See Section 8: Palettes, for more information
- **File Format.** Files must be .GIF.

**Animating textures:** After creating the “animated strips” as described below, place the texture file in the images folder of your world folder in the V-Chat directory. Be aware that you will be unable to properly view your animations when viewing the model in 3DS, SoftImage, etc., as the entire texture will appear as if it has been “squeezed vertically” onto the object associated with the texture map. To test your animations, run the model in V-Chat, and frames on the strip will animate as specified. In V-Chat, if the frames do not appear to be aligned properly, check to make sure the textures have been mapped precisely onto its corresponding object in the model, and make sure you have specified the correct number of frames in the animation file’s name.

- **File Format.** Files must be .GIF
- **Naming, speed of animation, number frames.** The frames (# determined by the content provider) of the animation will loop at a constant speed (determined by the content provider). Animations cannot play “back and forth” and individual frames cannot play at a varied rates. Animation objects must be named: ANIMXXXX, where the first XX = Number of frames for animation in bitmap texture, second XX = period of animation (100's of seconds). e.g. ANIM0830 = 8 frames of animation, each held for 0.3 seconds.

**Collision detection:** In 2D worlds, you can only set boundaries in “plan” In other words, users cannot zoom in and out of the image.

- **Collision detection, plan.** To create “boundaries” for your 2D world, place a plane along the boundary edge. Any collision detection object must be named: \_CDname. In other words, underscore CD must be the first three characters of a collision detection object. We have had examples of end users not detecting the collision detection in the corners. To prevent users from “slipping out of the corners of your space, OVERLAP collision detection planes at the corners. Also, we have had cases of “stair stepped” collision detection planes. To prevent jagged collision detection boundaries, make sure your collision detection objects are “perfectly horizontal or vertical.”

### **Viewing Your 2D Space in the V-Chat Authoring Tool**

Note: When you view your 2D space in the Authoring Tool, it will appear on it's side (as a flat line). Make sure you set the '2D' check-box when you 'Save As World' so that it appears correctly in V-Chat.

### **Conclusion:**

In 2D, navigation is more simple and you can see yourself in the scene. Tasks like “standing on top of another avatar”, and “aligning my avatar with a background poster” are items “easier” to do in 2D than 3D. The 2D environments as less immersive, but may be more abstract. They are typically more easily and more economically constructed. Determine whether to use 2D or 3D environments depending on your concept, the time available, and your audience. Most of all, have fun and take advantage of the fact that the end users bring “life” to your V-Chat environment.

## **5.2.3 3D spaces**

### **General:**

In order to create a 3D environment, the content provider must use one of the template spaces or build a model in 3D, using 3D Studio, SoftImage, or VRML file formats. The 3D environments support animation and spinning. The animation and spinning objects must follow specific rules regarding size, and modeling.

Keep in mind that there is no gravity in V-Chat! This means that if you create a multi-level environment, especially an environment with stairs, it won’t have the effect / usability you might expect.

## Modeling Your Space

As with 2D custom environments, you may want to begin by modifying a template space before constructing your own custom 3D V-Chat environment.

To build your model, follow the conventions below. (The example space “Fishbowl” is a good example of a custom 3D space with animation and spinning objects. After building the model, the 2D scene should be converted to the .WDB format (via author) and located in your worlds folder, and must be named world.wdb.

- **Polygon Count.** We advise you use no more than 2000 polygons in your environment and that you spread out the complex objects so that rendering rate is consistent no matter where the user is looking.
- **Texture size.** Large texture maps will slow down the performance of your V-Chat. Keep textures fairly small (256x256 or smaller) if possible.
- **Transparent textures.** In general, use transparency very sparingly. We have found that textures without transparency are rendered significantly faster. When using transparent textures, crop images close to reduce the amount of transparency. Keep transparent textures simple and small in size.
- **Model construction.** When creating the model of your environment, make sure the polygons you are texture mapping onto do not intersect. The Z buffer in Rendermorphics is limited and may cause “overdraw errors” during playback in V-Chat.
- **Background image.** When creating a “background” image in V-Chat, you must texture map an image onto a polygon. Remember, large textures will significantly affect the performance of your environment. Tile small textures whenever possible.
- **Lights.** For best performance keep the number of lights down. Lights are not required if all your surfaces are texture-mapped.
- **Scale.** Test the size of the avatar in relation to the scale of your environment. To determine “proper” scale, remember an avatar is generally two units tall, and takes steps of one unit wide. Small spaces, such as a bedroom, bathroom, kitchen, etc., when modeled as a “proper architectural space,” appear too small and confined in V-Chat. Check avatar size in your environment by connecting with several other users over MSN, and make sure the avatar size is correct. Try navigating your space with the keyboard as well as with the mouse. Finally, count the number of seconds it takes to “cross” your environment. If it takes less than five seconds to “cross” you space, try enlarging the space or adjusting the default speed of the environment.
- **View Window.** The default view window size is approximately 256 x 512 pixels. The default opening position is set by the entry point (see section on viewpoints). Keep this in mind as you design your environment.

**Viewpoints:** The end user always begins the V-Chat session at the entry point. If designed, the user can also switch viewpoints, and see an overview or context shot. If an Overview has not been specified by the content provider, this item will be grayed out in the View menu. (note: Be careful with the orientation of the cameras, or the avatar may start out looking into the ground, or sky, or be on it's side!). If you do not or cannot specify an overview and/or entry point camera in when modeling in your 3D software package, you may place the camera by using the V-Chat Author tool.

- **Entry Point.** If you are using a SoftImage, the origin (0,0,0) of your environment will determine the default “Entry Point” of your scene. (the origin will appear in the center of the view window). If you are using 3D Studio or VRML 1.0, you may create a camera named “Avatar” to determine the Entry Point (if there is no camera named avatar, we will default to the origin as Entry point. Again, be careful with the orientation of this camera, or the avatar may start out looking into the ground, or sky, or be on it's side). The V-Chat Authoring Tool can add an entry point camera if you model did not have one.
- **Overview.** For 3D environments, V-Chat does not automatically create an overview. If you are using Autodesk 3D Studio™ or VRML 1.0 to create your environment, you may create a camera named “Camera1” to determine an Overview. If there is no camera named “Camera1” the overview option will be disabled from the menu in the V-Chat application. The V-Chat Authoring Tool can add an overview camera if you model did not have one.

**Textures:** Depending on your distance from an object in a 3D environment, it is viewed larger or smaller than its actual size. Therefore, texture maps (including avatars) are typically seen somewhat distorted in 3D V-Chat environments, and must be carefully constructed. It is necessary to design your texture maps with this in mind; be aware that your textures should be legible from very far away, and should look good close-up.

Keep in mind that the maximum size of your V-Chat, including all textures, models, sounds, and avatars should be less than 2 megs compressed. In order for an image to be read in to the V-Chat, it must be located in the images folder of your world folder in the V-Chat directory.

- **Image Size.** The dimensions of all textures must be powers of 2 (for example 512 x 512, 64 x 256, etc.) Remember, the maximum size of your compressed files, including sounds, and all images should be under 2 megs.
- **Image Resolution.** To prevent poor performance, we recommend using 72 dpi images.
- **Transparent color.** The transparent color for V-Chat environments and avatars is: R:0 G:255 B:0 (position number 250) Note: If you create a totally custom palette, you have to reserve the first and last ten colors.
- **Palette.** You must use an 8 bit palette in .PAL format. We highly recommend using the MSN palette or merging your custom 90 color index palette into the VChat.pal.
- **File Format.** Files must be .GIF

**Animating textures:** After creating the “animated strips” as described below, place the texture file in the images folder of your world folder in the V-Chat directory. Be aware that you will be unable to properly view your animations when viewing the model in 3DS, SoftImage, etc., as the entire texture will appear as if it has been “squeezed vertically” onto the object associated with the texture map. When displayed in V-Chat, the frames on the strip will animate as specified. In V-Chat, if the frames do not appear to be aligned properly, check to make sure the textures have been mapped precisely onto its object, and make sure you have specified the correct number of frames in the animation file’s name.

- **File Format.** Files must be .GIF
- **Naming, speed of animation, number frames.** The frames (# determined by the content provider) of the animation will loop at a constant speed (determined by the content provider). Animations cannot play “back and forth” and individual frames cannot play at a varied rates. Animation objects must be named: ANIMXXXX, where the first XX = Number of frames for animation in bitmap texture, second XX = period of animation (100's of seconds). e.g. ANIM0830 = 8 frames of animation, each held for 0.3 seconds.

**Spinning objects:** In 3D V-Chat environments, objects can spin. The spinning objects spin around the y axis of the object. Grouped objects, will spin around the y axis of the group of objects. Objects do not necessarily need to spin “horizontally.” For example, to rotate objects vertically, rotate the object so the y axis is directed horizontally.

- **Naming, speed of spin, degrees of rotation.** The degrees of rotation (determined by the content provider) of the spin will occur at a constant speed, determined by the processor speed of the end user’s machine. Content providers cannot specify a speed of rotation, and user with different processor powers will see spinning objects move at different rates. Spin objects must be named: SPINXXXX, where XXXX = degree of rotation \* 110 per frame about a vector which is central to the object and pointing vertically up. e.g. SPIN3550 = -5 degrees rotation.

**Collision detection objects:** For 3D environments, you can set maximum and minimum boundaries in “plan,” as well as maximum and minimum vertical heights. As defaults, the plan boundary is “infinity”, and the vertical height is set to zero (if there are no vertical collision detection objects you cannot move in the vertical direction.)

- **Collision detection, plan.** To create “boundaries” for your 3D world, place a plane along the boundary edge. Any collision detection object must be named: `_CDname`. In other words, underscore CD must be the first three characters of a collision detection object. We have had examples of end users not detecting the collision detection in the corners. To prevent users from “slipping out of the corners of your space, OVERLAP collision detection planes at the corners.
- **Collision detection, vertical.** Two objects may be optionally included in each world. One named `"_CDYMAX"` will be used to define the maximum height the avatar may move, and one named `"_CDYMIN"` be used to define the minimum height the avatar may move in. To be precise, V-Chat will actually take the lowest vertex point of `"_CDYMAX"` and the highest vertex point of `"_CDYMIN"` to define the maximum/minimum height. For example, these objects could be 2 small cubes, placed well out of the way of the world itself (remember it's only their Y-coordinates we're interested in). If not `_CDYMIN` and `_CDYMAX` are not defined, the avatar will simply not be allowed to move vertically, and can only move along the “ground plane.”

### **Conclusion**

In 3D, the scene is immersive and end users tend to think 3D environments are “cooler and more exciting.” We have found that many of the initial 3D V-Chat designs simulate “real” environments, have been typically more difficult to design and more expensive to create than 2D spaces. When thinking of a V-Chat concept, determine whether a 2D or 3D environment will better achieve your goals, and again, have fun with these relatively quick and easy expressive environments.

### **5.2.4 SoftImage Tips**

Following is a list of SoftImage tips. When using SoftImage, all of the guidelines mentioned above apply. SoftImage requires some additional guidelines. SoftImage allows for more complex modeling and texture mapping than allowed in V-Chat. This means that you should not expect to be able to import existing models you may have. So, when you use SoftImage, design for V-Chat.

#### **General Modeling Tips**

1. We recommend keeping your triangle count under 2000. After building, convert all models to polygons (Effect>convert>polygon). Base your triangle count from this model (Info>scene).
2. In order to read your texture files on the PC, first save a copy of all textures in .tga format in your PICTURES directory on the SGI. After bringing your files to the PC, convert these to .gif files.
3. The Render Morphics z buffer has less resolution than the SoftImage z buffer, and may cause overdraw errors. To avoid this problem, keep some distance between objects, and do not make “thin” objects.
4. When building your environment, do not overlap or intersect objects.
5. Your performance will improve if complex models are spread out. Don't cluster lots of objects in one viewing area.
6. We recommend you test your environment in V-Chat as early as possible. The best way to evaluate and balance the appearance and performance of your design is to test in V-Chat.

#### **Texture Mapping Tips**

1. When texture mapping in SoftImage, only use local textures.
2. There can be no offset or change in the scale of the textures.
3. Don't use the SoftImage texture tool to translate, scale or rotate your textures.
4. All textures must be powers of two, no smaller than 4 pixels in any direction.
5. In flat mapping, use XY coordinates.
6. Cylindrical and spherical texture mapping, when tiled, sometimes gives unpredictable results- These are best avoided.
7. Adjustments and placement of the texture maps can be made through the center of the objects.

The centers should be positioned in the center of each object, with the blue “Z” arrow pointing towards the direction of viewing. when using cylindrical texture mapping, translate the center to the base of the object.

### **Other Objects**

1. When naming collision detection, animated objects and spinning objects, ignore SoftImage prefixes.
2. To create collision detection objects, start with a primitive square, convert to a face, do an effect> convert twice, so the object is triangulated. Name the object \_CD1, continue to duplicate this object for other collision detection's. SoftImage will name each duplicated object correctly. After positioning collision detection objects, select them all and freeze> transformations on all.

### **Reading your model in V-Chat Authoring Tool**

1. Edit the DatabaseDir.rsrc file. Add the path to the folder containing your SoftImage database.
2. We suggest keeping the DatabaseDir.rsrc file and the SoftImage files in the same folder.
3. After editing the DatabaseDir.rsrc file, be sure to hit carriage return at the last line of the file, then save.
4. After saving your file, copy it and rename it Relations.rsrc. This needs to only be done the first time you save your file.
5. Author does not support custom palettes, animations, or sounds at this time. To fully test your environment, bring it into V-Chat.
6. There is no substitute for bringing a scene all the way into V-Chat to test. Using “Save as world” in Author will allow you to save a series of “rough draft” spaces while you fine tune your V-Chat space.

## **5.2.5 SoftImage/SGI File Transfer**

Getting your SoftImage file to the PC is a time consuming parts of creating a V-Chat environment. First, you must have a way of transferring files (for example, both your PC and you SGI must be networked, and you must be able to FTP files from one to another). You must make sure you prepare you SoftImage file properly, and load it properly on your PC. Be aware that task is not specific to V-Chat or Author, therefore, this paper does not describe all of the ways that is possible. Ask your network administrator for help.

### **To transfer your SoftImage file to your PC from the SGI, follow the steps below:**

1. Go to your SoftImage database directory on the SGI
2. tar your SoftImage database into 1 file (see A below)
3. Determine the IP address of your PC (see B below)
4. ftp the file to your PC
5. untar the file onto your PC hard drive (see C below)
6. Create (or edit) your DatabaseDir.rsrc file to point to the new SoftImage database(see D below)
7. Copy the DatabaseDir.rsrc file to Relations.rsrc (see E below)

### **A. To tar your SoftImage database into 1 file, follow the steps below:**

```
tar -cvf <destination filename> <directory you want to tar>
c - create new tar file
v - list the files we're archiving
f - the next thing is file we are going to tar into
```

Note: We strongly advise you to tar relatively. In other words, tar from a local directory and not from a root directory.

### **B. Transferring Your File To Your PC**

To transfer your file over the network from your SGI to your PC, you will need to know the IP address of your PC. One way of determining this address is to “ping” your machine. For example:

```
C:\userid>ping userid
Pinging userid [154.56.140.21] with 32 bytes of data:
Reply from 154.56.140.21: bytes=32 time<10ms TTL=32
Reply from 154.56.140.21: bytes=32 time<10ms TTL=32
```

If you are unable to ping your machine, ask your system administrator or try pinging from Windows NT. Once you have the IP address of your PC, you can ftp to it from the SGI. "FTP"ing is somewhat complicated. If you are unfamiliar with "FTP"ing, ask your system administrator for assistance.

**C. To untar the file once it is on your PC's hard drive do the following:**

You need the tar.exe in order to detar the file you made on the SGI. If you don't have tar.exe, you can get the file from the V-Chat server or V-Chat CD.

Put the tar file in its desired location (for example, where you want your SoftImage database to be)

```
tar xf <your tar file name that you ftp'd from the SGI>
x - extract files from the archive
f - use this file to get the directories from
```

**D. To create (or edit) your DatabaseDir.rsrc file to point to the new SoftImage database, do the following:**

Put your DatabaseDir.rsrc file into your personal (or other) directory. Double click on the icon and At first, the information will point to the location on your SGI. Delete that information and add a line pointing to your new file. It's a very simple file, for example:

```
DATABASE test
PATH d:\test
```

If you have a new database, create a new DATABASE with PATH lines underneath, using the same format as the DatabaseDir.rsrc file on the SGI

**E. To copy the DatabaseDir.rsrc file to Relations.rsrc do the following:**

You must have the Relations.rsrc in the same directory as your DatabaseDir.rsrc file, or the SoftImage libraries will crash. To avoid this problems, type:  
Copy DatabaseDir.rsrc Relations.rsrc

With your DatabaseDir.rsrc file in place, Author can be run through its interface. When you run Author it will ask you to locate the DatabaseDir.rsrc file. To load the file, a dialog box listing the scenes in your database will appear. Choose a scene from this list to load the file.

## 5.3 Avatars

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### 5.3.1 General

The term avatar, often used in science fiction literature, is used in V-Chat to describe the representation of the user in the virtual environment.

Avatars are .GIF files (the next beta will support .PNG format) which consist of twenty frames. Follow the template instructions below to create avatars. The artwork for each avatar must follow specific rules regarding file size, file format, palette, number of frames, number of gestures, etc.



We recommend conceptualizing the “personality” of your avatar. This will “give meaning” to the 20 frames of animation necessary to develop the avatar. Keep in mind, that unlike designing movie or cartoon characters, end users will be representing themselves by these images.

After creating an avatar, and making the 20 frames, cleanup of the images is absolutely necessary. Each frame of each avatar must not have an anti-aliased edge. Load your avatar into V-Chat and look at each frame of each avatar to make sure the edges of the avatars are not “fuzzy,” and to make sure the animations are correctly registered. See the section on 'Launching V-Chat' for details about how to launch V-Chat off-line. This will speed the iterative design process.

Development time can vary a great deal depending on a number of factors, such as the complexity of the design, copyright and other legal issues, the structure of your company, and the skill of the animator/painters. Typically, we have found that it takes about a week to create an avatar. It takes about one to two days to create a character, about two days to generate the twenty frames of animation, and about two days to paint and clean-up the file. This week does not include any allocation for redesign and user testing.

The number of avatars designed for a space will depend on the overall concept of the space. The cost of the avatars will also depend on the concept. As a guideline, we suggest approximately zero to ten context specific avatars (in addition to the 15 general avatars) at a cost of \$500-\$1500 each (including avatar design, animation, ink and paint, and cleanup) for a typical space. Note: There are a maximum of 25 members in a V-Chat.

### **General Avatars vs World-Specific Avatars**

General avatars can be seen in any V-Chat content space (unless prevented via the -d command line parameter) Microsoft will provide a set of 15 general avatars. General avatars files are located in the avatar folder in the \V-Chat\Shared directory.

Content providers can design context specific avatars. These avatars can be accessed only from within their associated V-Chat environment. These files must be located in the avatar folder in the directory of the specific world within the V-Chat folder.

### **Gestures**

V-Chat avatars have gestures! In addition to the happy, sad, silly, etc gestures that the user controls, each avatar also has several idling behaviors. For example, these behaviors can include looking left/right, blinking, scratching head, nodding head, etc.

A user can access the gesture controls in various ways. A dockable gesture toolbar graphically indicates the available gestures. Moving the mouse pointer over the buttons in the toolbar reveal the tooltip, a short text description of the gesture. The gestures can also be accessed by selecting individual gestures from the Avatars menu, or by typing a keyboard command. Gestures currently cannot be controlled by entering the name of the gesture in the type in window.



The Gesture toolbar

### **Avatar Environment Design**

We highly recommend incorporating the design of the avatar into the design of the space. We have found that people, who “inhabit” the avatars are the “life” of the space. The more exaggerated, expressive avatars have been our users’ favorites.

Avatar gesture is created by flipping between frames. We recommend using expressive, exaggerated gestures, as in addition to being more popular, they are more visible. We recommend testing avatars in V-Chat both to determine which avatars are “favorites” as well as to test image quality.

The size of each avatar frame is 128 x 128 pixels per frame. There are 20 frames per avatar.

### **End-User Custom Avatars**

End users can customize and create their own avatars by using any paint program which outputs .GIF or (in the next beta) .PNG files using the same guidelines. We will be releasing an 'Avatar Wizard' to help end-users create custom avatars.

### **Avatar Publishing Mechanism**

End users can publish their custom avatars. When an avatar is published, it is given a unique name, and stored in an on-line database, on MSN. When you come in contact with someone who is using a custom avatar that you do not have, you see them as a 'ghost' avatar. When this happens, you can download the avatar they are using by right-clicking on their name, and selecting 'Download Custom Avatar'.

### **Public and Private Avatars**

When users publish their avatars, they can chose to do so *publicly*, or *privately*. Public avatars are avatars that anyone can use. Private avatars are avatars that only their author can use. Anyone can download a private avatar, but only the author can 'be' the avatar. Unauthorized use of the avatar is prevented by encryption.

### **Installing Private Avatars At Setup Time**

You can install private avatars at setup time. For example, in 'Santa Chat' you would want to install the Santa avatar on everyone's system. But you don't want everyone to be Santa, you only want your hosts to be Santa. The exact details on how this will be done have not been finalized. Look in the Forum Manager's Only forum for an update to this document, or e-mail Content\_Provider@MSN.COM.

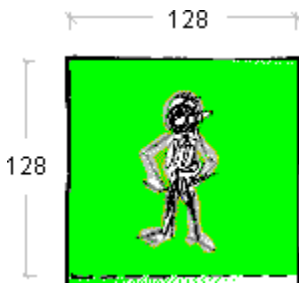
## **5.3.2 Avatar Template**

### **Template Frame:**

There are 20 total frames per avatar. . The avatar gestures only on the front. When viewed from behind, the frame "rear" is displayed.

Each frame must be 128 x 128 pixels. The color green (-R:0 G: 255 B:0 ) has been assigned as the transparent color. Anytime this color is used (it must be in the correct position in the palette), the area will appear transparent when viewed in V-Chat. The palette for V-Chat is restricted. For palette information, please review the section Palettes.

All files must be received in .GIF format.

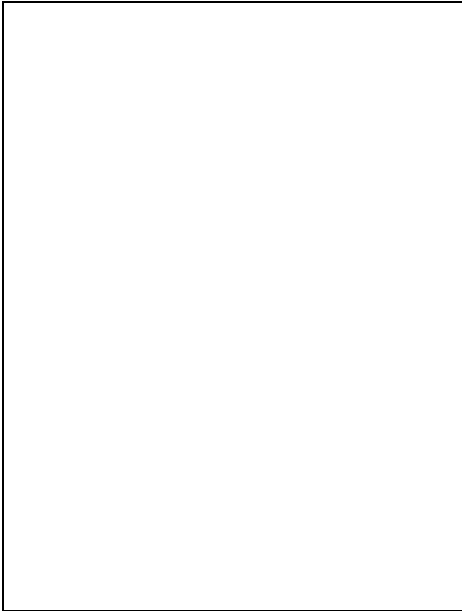


Example template frame

### **Template Overview:**

When the user clicks a button on the gesture toolbar, (or users a control key) the avatar "flips" to the associated frame and "plays" according to the associate time. All avatars must be designed to fit the standard V-Chat template. As there is no look up table for individual avatars, the timing and number of frames for each gestures is pre set.

Users select their avatars via the Avatar Selection dialog. In this dialog, the default frame and the idling frames of the selected avatar are displayed to the user. When designing the default frame, keep in mind that this frame is the most prevalent representation of the avatar. We suggest not having a “strong mood” associated with the default frame. For example, if the default frame is an extremely happy pose, it will appear odd when the user wants to display an angry gesture, as after showing the angry gesture, the avatar animation will return to the happy default image.



Template Overview

#### **Default/Read Images**

Default This image is seen from the front - it changes if the user gestures or idles  
Rear This image is seen from the back - it never changes, even when gesturing

#### **Idle behavior:**

IdleA Happens once every 30 seconds and holds for one second.  
IdleB Happens once every 10 seconds, and holds for one half second.

#### **Explicit Gestures:**

Happy holds 4 seconds.  
Wave has 2 frames (waveA and waveB). Each frame holds one half second, and repeats, A-B-A-B.  
Sad holds 5 seconds.  
Angry holds 5 seconds.  
Shrug holds 2 seconds  
Flirt has 2 frames (flirtA and flirtB). Frame A holds one half second, then frame B holds 4 seconds

#### **Wildcard Gestures (Sillies):**

1silly has two frames (1sillyA and 1sillyB). Frame A and B repeats on 12s (half second) for 6 times (total animation time: 3 seconds).  
2silly has two frames (2sillyA and 2sillyB). Frame A and B repeat very fast, on 3s (1/8 second) for 24 times (total animation time: 3 seconds)  
3silly has two frames (3sillyA and 3sillyB). Frame A and B repeats on 6s (quarter second) for 12 times (total animation time: 3 seconds).  
4silly has two frames (4sillyA and 4sillyB). Frame A holds one half second, then Frame B holds 2 seconds, no repeats.

### **Installation Note**

An avatar shows up on the 'Select Avatar' dialog if the avatar .GIF or .PNG file is placed in the \V-Chat\Worlds\MyWorld\Avatar directory, or if it is a general avatar, in the \V-Chat\Shared\Avatar directory. For details about the directory structure, see the sections in this document entitled 'V-Chat Client Directory Structure' and 'Launching V-Chat'

## **5.4 Palettes**

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### **5.4.1 Questions and Answers**

#### **MSN Palette vs V-Chat Palette**

We recommend you use either the MSN palette, or the V-Chat palette.

The MSN palette is the standard 8 bit palette used for all banners and icons in MSN. If you use the MSN palette, you will not experience "palette flash" as the user moves between a folder in MSN and your V-Chat will be consistent with MSN.

VChat.pal is an 8 bit palette, designed with various color ramps. In this palette, ninety of the 256 colors have been "blackened," allowing customization by the content provider. If using this palette, your palette will consistent with all general and custom avatars, but will not be consistent with MSN. Because there is space for 90 custom colors, the appearance of your V-Chat may be improved.

We suggest you use either the MSN palette or the V-Chat palette, but *do not use a totally custom palette*. We expect hundreds and thousands of custom avatars to be created, and these custom avatars will be designed to work with the MSN and the V-Chat palettes. If you *are* creating your own 8 bit palette, it is highly recommended that the palette be broad in color range (to allow acceptable re-mapping of the general avatars), and that the general avatars be tested in V-Chat using the new environment palette.

If you are disabling custom avatars by using the -D parameter, then you should either use the MSN palette to eliminate palette flash, or else you should feel free to use a palette optimized just for your needs.

#### **Customizing the 90 extra colors on the V-Chat palette**

The content provider can create an 90 color custom palette based on the images used and merge this 90 color palette into the "blackened" spaces in the VChat.pal to create a new 8 bit palette.

The colors in V-Chat will not look exactly the same as they appeared in your modeling environment. For this reason, it is highly recommended that you frequently test your environment and avatars in V-Chat, and design for the V-Chat environment.

#### **Color Depth**

Currently you must use an 8 bit palette for all of your images. All environment textures must use the environment palette, and all avatars (specific and general) will be mapped to the environment palette. Avatars and texture maps with a different bit depth will most likely not appear in V-Chat.

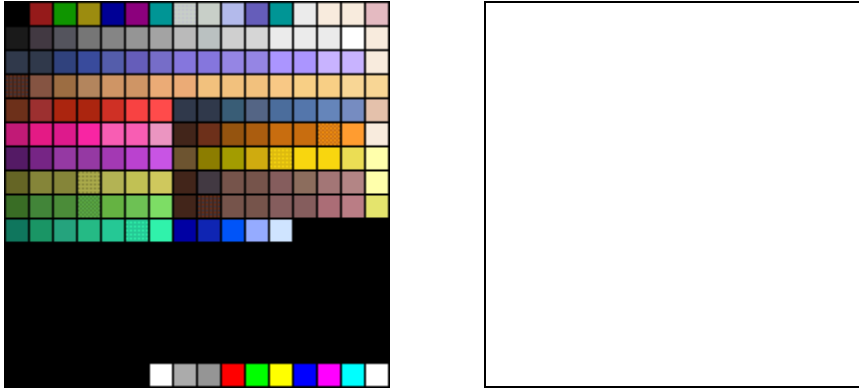
We suggest you keep your original artwork in the highest bit depth possible for future use.

#### **Using Your Palette**

Save your palette (either the MSN.pal, customized VChat.pal or your new palette) in .PAL format. Name this palette World.pal and put it in the data folder of your world directory in V-Chat.

#### **Palettes & The V-Chat Authoring Tool**

Currently V-Chat Author does not support the display of custom palettes. Try temporarily running in RGB mode. In this mode the colors may be more accurate. Your palette will work in V-Chat, so run your world in V-Chat to test your space. Make sure you have placed the palette in your world directory and make sure to name your palette world.pal.



Picture of V-Chat palette and MSN palette

## 5.5 Audio

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### 5.5.1 General

#### Overview

Virtual environments should contain more than just visuals. Audio is an important component in creating an immersive environment, and yet often sound design is left to the last minute, or completely ignored. When designing a V-Chat make sure to leave time and budget for a sound designer. The audio will greatly effect the quality of your V-Chat environment.

V-Chat supports a background sound(s) and some event sounds. The background sound is the sound which plays continuously while the user is in the V-Chat environment. This sound must be carefully designed so that it is enhances the environment, yet is non intrusive. sound at different times. Event sounds are heard when a user enters, exits, the world. An event sound will also be played when the user “runs into” boundary or collision detection object. These sounds should be designed and tested “on top of” the background sound. Make sure to design all your sounds so they work together.

#### Default Sounds vs Custom Sounds

If you do not provide collision detection and/or enter/exit sounds, the default sounds will be used. However, if you do not provide a background sound, your space will not have a background sound.

#### Processor Time

Your sound may tend to break down if the rendering of the environment uses too much of the user’s processor. We do not set aside a portion of memory for sound. Therefore, we recommend you test your V-Chat on the minimum configuration machine, with avatars in the space, to determine whether or not your graphic files need to be reduced in size in order to let the audio files to play properly.

#### Issues with the V-Chat Authoring Tool

The V-Chat Authoring Tool does not yet support the playback of sounds. Also, it does not import/copy sounds for you when it creates the world for you. What it does do is create the directory structure so all you need to do is create the world, and then drop the sound files into your v-chat\worlds\myworld\sounds folder.

## 5.5.2 Design Guidelines

When designing sounds, present audio that enhances the environment yet is non-intrusive. Unlike some game design, the sounds should not interfere or inhibit interaction between users. After designing a background sound, listen to the sound for up to fifteen minutes. If the sound becomes annoying, redesign!!! We have found that audible loops, and high audio levels (sounds which play too loud) can be extremely irritating.

The size of your sound files should be kept to a minimum. When using .WAV sounds in the background, try using two short looping sounds of different lengths instead of one long sound. Long .WAV sounds take longer to download and take more disk space. Take advantage of the multiple looping background sounds. Use different length multiple loops to hid looping, and do all “mixing” before hand. Set volume levels on the .WAV files themselves, as V-Chat does not allow any mixing.

The sound design for V-Chat is limited. You are not able to design avatar specific sounds, or dynamic background sounds. V-Chat does not support mixing nor long .WAV sounds. When designing sound for V-Chat, make sure to design each sound so that it enhances the V-Chat environment, and at the same time, is small and efficient in size.

## 5.5.3 Background Sounds

V-Chat will support background sounds (ambient sound) in both MIDI and WAV formats. V-Chat supports either one MIDI file, or up to 2 WAV files (which will be mixed on the fly) as background sound(s). Also, if another application is using MIDI, no V-Chat MIDI will be played. This means that if the user is running two V-Chat, and both are using MIDI files, the V-Chat launched first will “take control”, and only this first MIDI file will play.

All .WAV sounds should be mono, 22Khz, 8 bit .WAV files. We realize that any standard involves trade offs, and found that this setting worked best for the majority of V-Chat example spaces

The background sound will only “play” when the V-Chat session is in the foreground. Different members connected to a V-Chat may hear sections of the background.

When creating sounds, make sure to name them as follows, and place them in the sound folder of your world directory. Again, for all background sounds, if you do not provide a background sound, you V-Chat will have not background sound, and the corresponding options will be grayed in the dialog box.

<b>song.wav</b>	looping background sound
<b>song2.wav</b>	looping background sound
<b>song.mid</b>	looping background MIDI song

## 5.5.4 Event Sounds

Content providers can provide custom entry, exit, and collide (boundary) sounds for their V-Chat environment, or use the default event sounds. V-Chat will support event sounds in WAV format only. If the content provider does not specify sound effects, the default sounds will be played. The sound effects can all be turned off via the options dialog. Single event sounds cannot be turned on and off, and the event sounds will only “play” when the V-Chat session is in the foreground.

The same collision sound will be triggered for all collisions, both avatar to objects, and avatar to edge of space. The Enter and Exit events are triggered when a member enters or leaves the space.

When creating sounds, make sure to name them as follows, and place them in the sound folder of your world directory. Again, for event, if you do not provide the event sound, the default sound will be played. The default event sounds can be found in the sounds folder in the shared directory of your V-Chat folder.

**collide.wav** plays when an avatar walks into a collision detection boundary  
**enter.wav** plays when a new user enters the world  
**exit.wav** plays when a user exits the world

## 5.6 Customizing the Welcome Message and About Box

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### 5.6.1 Customizing the Introduction Text

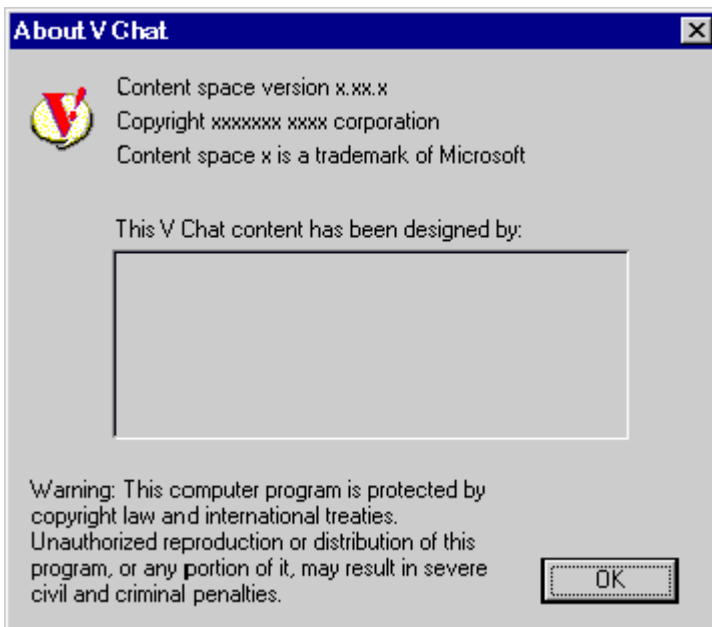
Content providers may provide a brief introduction to their V-Chat which will appear in the Chat History Pane when the end user launches the V-Chat. We recommend keeping the welcome message concise as there is not much space available in the Chat History Pane.

To customize the welcome message, you can either change it when you save the world using the V-Chat Authoring Tool, or you can manually replace the WORLD.TXT file that was created in the \v-chat\worlds\myworld\data directory.

### 5.6.2 Customizing the About Box Credits

Content providers can display credits via the about box. If the text does not “fit” in the allocated space, it will automatically scroll when the about box is opened.

To customize the about-box message, you can either change it when you save the world using the V-Chat Authoring Tool, or you can manually replace the ABOUT.TXT file that was created in the \v-chat\worlds\myworld\data directory.



About box

## 5.7 Hotspots

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### *Does V-Chat support hot spots??*

End users can double click on objects and connect to any MSN object, or Internet location. A new window is opened for the new linked content, and the V-Chat remains open.

These links are stored in separate file called HOTLINKS.TXT. This file is stored in the \v-chat\worlds\myworld\data directory. Here is a sample file:

```
ObjectName2, MSN, "-F 1:56598:0:0", "Hockey Forum"  
ObjectName3, URL, "http://www.mywebsite.com", "My Web Site"  
ObjectName3, URL, "mailto:xyznet.freddy@netwave.com, "Send Mail to Fred"
```

- The first column contains the list of object names, as specified in the 3D modeling tool
- The second column denotes the type of hotlink, either MSN, or URL
- The third column is a quoted string that contains the exact arguments that should be passed to the viewer.
- The fourth column is the description of the link.
- ALL COLUMNS ARE REQUIRED. The user will see a brief error message if the file is formatted incorrectly.

## 5.8 Deploying your V-Chat Environment via MSN

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### 5.8.1 Deployment Instructions

MSN is in the process of switching to a new setup technology called MSNCALL. When you are ready to deploy your new V-Chat environment on MSN, please e-mail Content\_Provider@MSN.COM, and you will be given up-to-date instructions.

### 5.8.2 Deployment Considerations

#### 1. What happens to Text-Chat?

MSN is a growing service, and it is very important to minimize growth pains. In Chat, the users themselves are the content. Therefore, if you force V-Chat users to use different chat-rooms than the V-Chat users, then you are splitting your user community in half, and that's the last thing you want to do! The solution is this: V-Chat users and text-chat users can be in the same chat-room!

Here's how you do it.

1. Take your existing text-chat object, and determine it's DEID. (See section above entitled 'Launching V-Chat'.
2. Now create a DNR object in the same folder, and determine it's DEID. This is where we will upload the .VCH file to start V-Chat.
3. Now create the .VCH file. Lets say the DEID of the chat room was 34723, and lets say the DEID of the new DNR object was 113985. And lets say you wanted to use the 'Fishbowl' V-Chat space. In this case, you would create the following .VCH file:

```
-w Fishbowl -i 34723 113985 -a duggan.gif
```

Remember, all a .VCH file is, is a .TXT file that has been renamed to .VCH.



4. Now upload the ,VCH file into the DNR object you created.

So what does all this do? It allows users who have text-chat to use the text-chat UI, and it allows people who have v-chat to use the v-chat UI. But it's the same chat-room! So everyone is in one conversation, and V-Chat users don't have to make a choice between V-Chat, and text-chat.

#### **Number of people in a V-Chat room**

V-Chat has the same capacity metrics as text-chat. When you're moving, you aren't talking. So it all averages out. Most chat-rooms are limited to 25 to 40 people. Most auditoriums are limited to 1000 people.

#### **Topical Chat Rooms**

If you have a topical chat-room in your offering, turning that room into a V-Chat room is an easy decision. For example, what better place to have a football chat than in a football stadium!

#### **Branded Chat Rooms**

A high-quality V-Chat is a great way to build brand awareness.

#### **V-Chat is a Launch Pad To Your Web-Site**

Even if you are not an MSN ICP, you might consider creating a custom V-Chat environment to act as a rich, engaging "lobby" area on MSN, that draws MSN users into you web-site.

#### **Actors**

You may decide to hire an 'actor' to bring an avatar to life. For example, if a company decided to have a Santa Claus Chat, they might hire someone to actually 'be' Santa, by using a Santa avatar. You can prevent other people from using your avatar with the 'Private Avatar' feature.

#### **Events**

A very popular thing to do in on-line chat rooms is to schedule a special event with a famous person. MSN chat rooms can be designated as auditoriums so that people can see the conversation, but cannot speak. You can do this with V-Chat too. When a person enters an auditorium using V-Chat they become a spectator. They can navigate around the space, and they can see the speaker and the hosts, but no one can see them, and they cannot talk.

## **6. If you have any questions...**

For support or further questions, please e-mail [Content\\_Provider@MSN.COM](mailto:Content_Provider@MSN.COM).