PlayStation

Alias V8.0

ã 1996-7 Alias/Wavefront, a division of Silicon Graphics Limited

110 Richmond St. East
Toronto, Ontario
Canada M5C 1P1
(416) 362-9181

Hotline support: 1-800-465-0868, or email hotline@aw.sgi.com

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Not all features described are available in all products.

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PlayStation™ Development

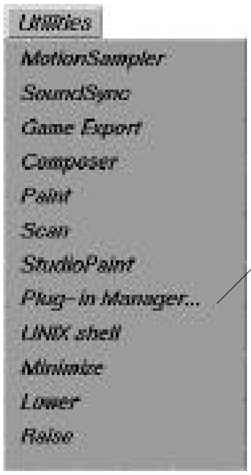
The PlayStation game console translator supports:

- Hierarchical animation
- Support of per-poly shaders and per-poly textures
- Output of animation separately from modeling data
- Optimized output of TOD data (removes Identity TRS components)
- MetaCycle Preview on PlayStation
- Output of VDF / NDF files for MIME animation
- Output of sequences of TMD files
- Control of STP bit in TIM files

How to Use

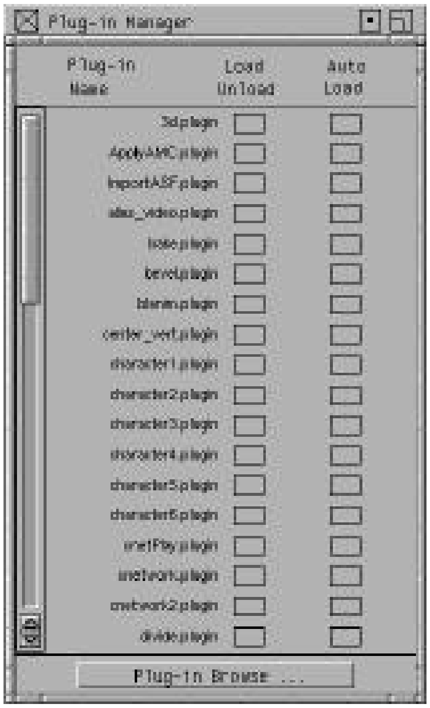
You load the PlayStation development system from the Make Game translator window, which means you first have to load the mgame.addin plug-in.

1. Select *Plug-in Manager* from the Utilities menu to open the Plug-in Manager window.



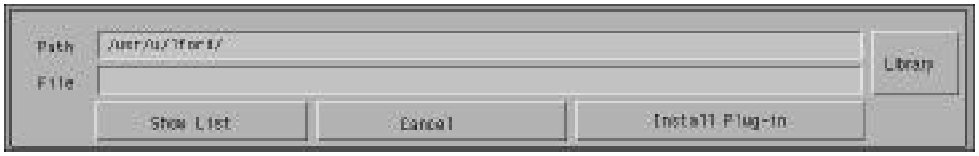
Select this option

to open this window



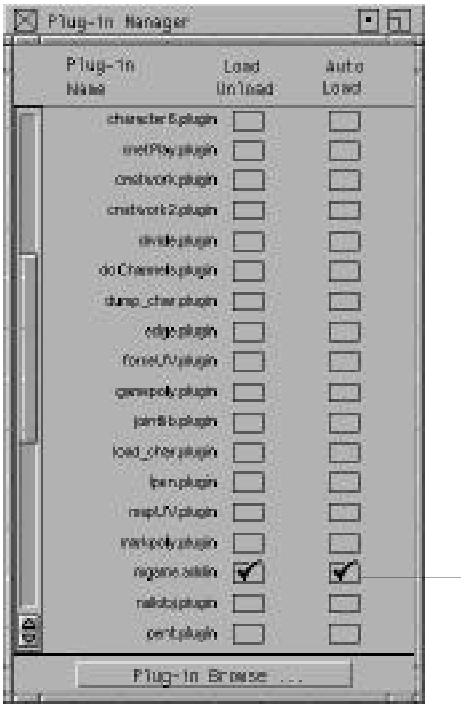
2. Select mgame.addin from the list if the $GAMES_LOCATION/Games/plugins is in the default plugin search path.

   If mgame.addin is not in the list, click the Plug-in Browse... button at the bottom of the Plug-in Manager window to open the File Requestor.



Path /usr/u/?ford/
File

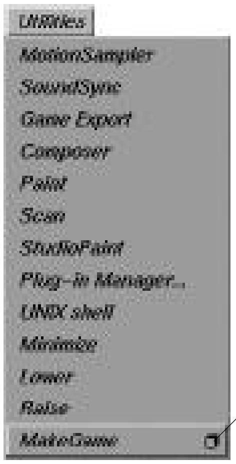
3. Click Show List to display a list of available plug-ins and select the mgame.addin icon from the File Lister, or type mgame.addin in the File box.
4. Click the Install Plug-in button.
5. Click the boxes beside mgame.addin in the Load and Auto Load columns.



Plug-in Name	Load Unload	Auto Load
character6.plugin	□	□
cnetPlay.plugin	□	□
cnetwork.plugin	□	□
cnetwork2.plugin	□	□
divide.plugin	□	□
doChannels.plugin	□	□
dump_char.plugin	□	□
edge.plugin	□	□
forceUV.plugin	□	□
gamepoly.plugin	□	□
jointlib.plugin	□	□
load_char.plugin	□	□
lpen.plugin	□	□
mapUV.plugin	□	□
markpoly.plugin	□	□
mgame.addin	☑	☑
nailobj.plugin	□	□
pent.plugin	□	□

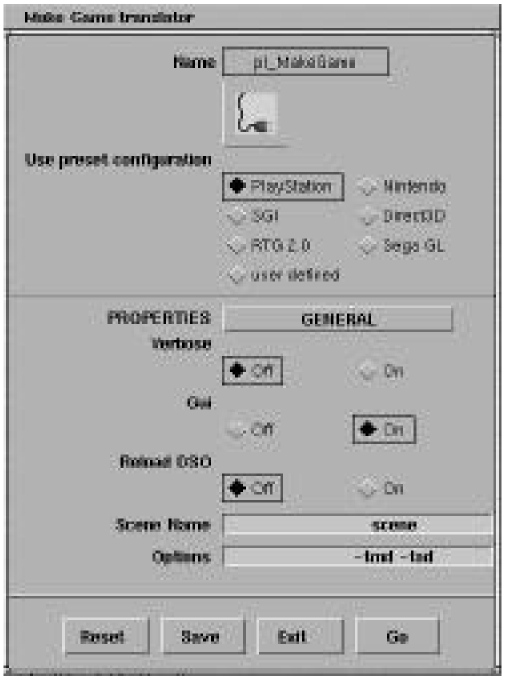
Click in these boxes.

6. To open the Make Game translator window, select *MakeGame* − ❐ from the Utilities menu.



Click here to open the
Make Game translator window.

7. Select the PlayStation radio button from the Game Box section.



Make Game translator

Name: pl_MakeGame

Use preset configuration

◆ PlayStation ◇ Nintendo
◇ SGI ◇ Direct3D
◇ RTG 2.0 ◇ Sega GL
◇ user defined

PROPERTIES: GENERAL

Verbose: ◆ Off ◇ On

Gui: ◇ Off ◆ On

Reload DSO: ◆ Off ◇ On

Scene Name: scene

Options: -lmd -lsd

This will set up the default settings to use with the PlayStation development tools translator. You can then change any of the settings for the particular type of output you require.

8. To run the translator, click the Go button at the bottom of the Make Game translator window.The *PlayStation Export* window is displayed.

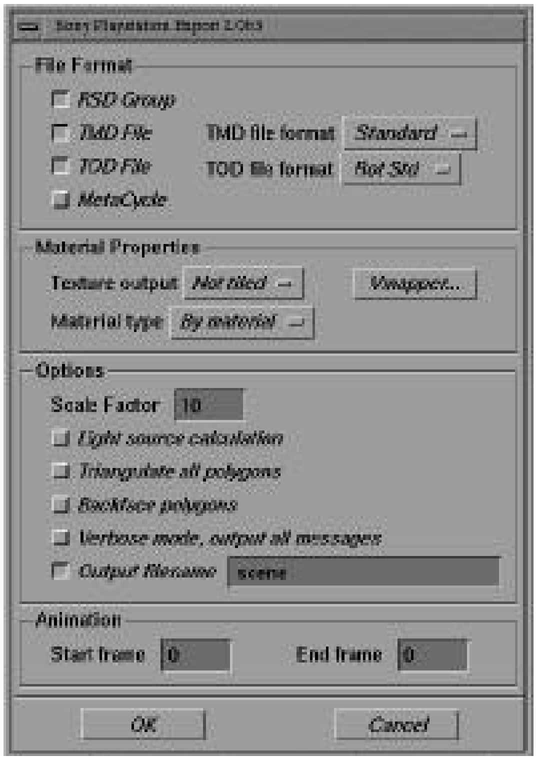
Notes

The default setting for *PlayStationExport* is the GUI (Graphical User Interface) mode, which gives you access to the Video Mapping (*VMapper*) utility for placing texture images.

- While the GUI mode translator is running, the Alias window is “frozen” and will not update. You may see some ghost images from the *PlayStation Export* and *VMapper* windows until the translator is complete and control is returned to Alias.
- If the GUI mode is turned off, the settings from the Make Game translator window are used as options to the command line invocation of the translator, and *PlayStationExport* does not output texture information.

PlayStation Export window

As well as setting various options such as file formats and the animation start and end frames, this window gives you access to the *Vmapper...* window.



File Format

☐ RSD Group

☐ TMD File — TMD file format: Standard

☐ TOD File — TOD file format: Rot Std

☐ MetaCycle

Material Properties

Texture output: Not tiled — Vmapper...

Material type: By material

Options

Scale Factor: 10

☐ Light source calculation

☐ Triangulate all polygons

☐ Backface polygons

☐ Verbose mode, output all messages

☐ Output filename: scene

Animation

Start frame: 0 — End frame: 0

OK — Cancel

File Format section

The PlayStation utility can output several of the PlayStation file formats including the RSD group (PLY, MAT, GRP, and RSD files), TMD, TOD, and TIM image files.

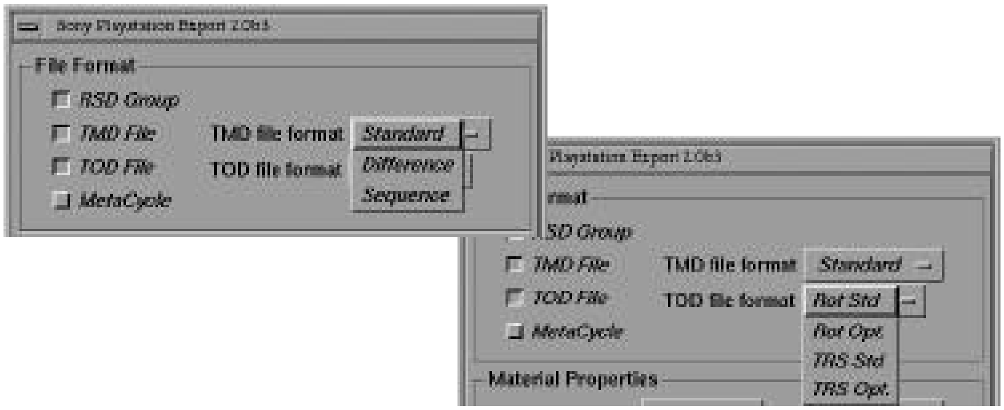
RSD Group

The RSD Group option outputs the RSD group (PLY, MAT, GRP, and RSD files) for all geometry loaded in the scene.

TMD File

The TMD File option outputs the TMD file for all geometry loaded in the scene.

If the toggle button beside TMD File is selected, you can change the TMD file format by selecting the items in the popup menu:



Standard

The Standard option outputs a TMD file for the selected frames of an animation.

Frames are selected using the Start frame and End frame boxes at the bottom of the PlayStation Export options window.

Difference

The Difference option outputs VDF and NDF file for the selected frames of an animation for MIME animation.

Sequence

The Sequence option outputs a sequence of TMD files for the selected frames of an animation.

TOD File

The TOD File option is only available if the scene contains animation data. Selecting this option outputs a TOD file for the animation.

TOD format can be either *Rotation matrices* or *TRS components.*

Rotation matrices

These are more accurate, and transfer the Alias rotation matrix directly.

TRS components

This takes the Alias rotation matrix and decomposes it into TRS values that can be used in the Alias viewer program. The axis orientation is slightly different than that of the “standard” PlayStation TOD demo program, and needs to be transposed for pre/post multiply differences.

Both formats have an option to suppress the output of data for objects that have Identity matrices or TRS components.

MetaCycle File

The MetaCycle file option outputs a NET file, which is the animation definition file for the MetaCycle previewer. If the MetaCycle option is not selected, the selected range of animation will be output.

Material Properties section

The Material Properties section contains options for customizing your texture output attributes.

Texture output menu

These options are used to determine how the texture (TIM files) are output.

Off

The Off option turns texture output OFF.

Tiled

Select the Tiled option if the UV coordinates for the texture are out of the 0.0 - 1.0 range. This option tiles the texture to account for the texture wrapping. The size of the texture is maintain.

Not tiled

If you choose Not tiled, no tiling occurs on a texture if the UV coordinates are out of the range 0.0 - 1.0. The UV coordinates are clipped to a 0.0 - 1.0 range.

Material type menu

By material

This option outputs the texture according to the materials assigned to it in PowerAnimator.

Flat

This option is used to convert all materials to flat shading.

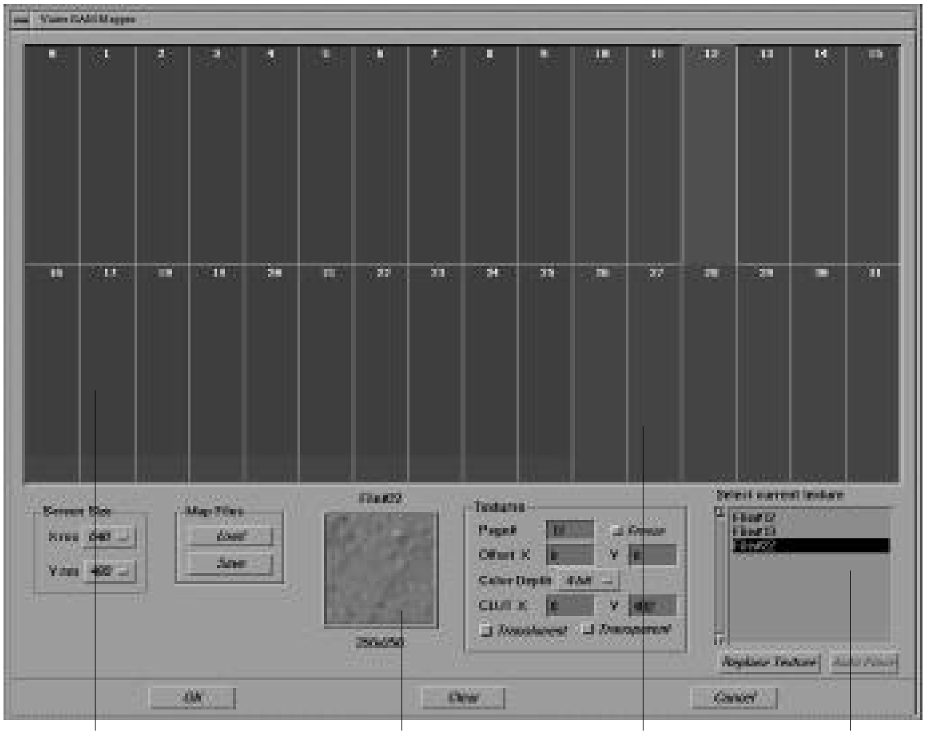
Gouraud

This option is used to convert all materials to Gouraud shading.

Video RAM Mapper window

The Video RAM Mapper, also called the VMapper, allows you to place the textures used in the scene into the video RAM of the PlayStation development system. The video RAM contains 32 pages, as indicated by the two rows of vertical bars.

Click the Vmapper button to display the Video RAM Mapper window.



active video area

texture swatch window

texture pages

click a texture name to select it

Placing textures

To place a texture into video RAM, select a texture from the Select current texture list by clicking its name. The texture you select appears in the texture swatch window.

Place the texture in a page by clicking in the texture page window.The texture appears as a rectangle. The rectangle represents the size of the texture in video RAM.

You can click-drag the texture to fit as many in each page as possible. Some rectangles may overlap more than one page, but you cannot place a texture over the active video area (the light blue area) of the video RAM. The texture pages with a few textures placed appear as in the following:

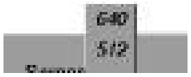
Each texture page is numbered from 0 to 31 and represents a texture page in PlayStation development system hardware.

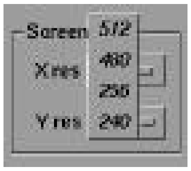
Active Video Area

The active video area (the light blue rectangles) is the area reserved for the active video screen. You cannot place a texture in this area. You can modify the size of your active video screen using the Screen Size menus in the lower left corner of the Video RAM Mapper window.

Screen Size Menus

The Screen Size menus specify the size of your video screen. Changing these values changes the video screen area in the texture page window.





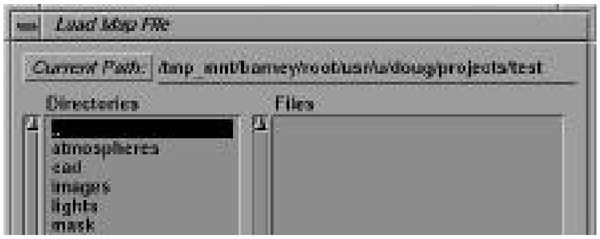
X res specifies the X resolution of the video screen area.
Y res specifies the Y resolution of the video screen area. The 240 option represents single buffer. The 480 option represents double buffer

Save Map File window

If you click the Map Files ***Save*** button, the following file browser is displayed so that you can save the video RAM map (vrm) to a file in your DT_VRM_DIR directory:

Load Map File window

If you click the Map Files ***Load*** button, the following file browser appears so that you can load an existing video RAM map (vrm) file:



Load Map File

Current Path: /tmp_mnt/barney/root/usr/u/doug/projects/test

Directories

.
atmospheres
cad
images
lights
mask

Files

This file places textures where they were previously saved in video RAM.

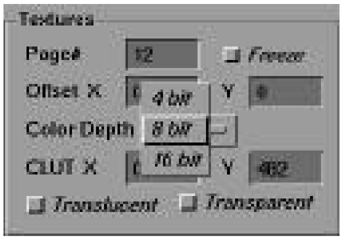
The texture swatch displays the selected texture.

Note: If the textures have not been loaded in the current session, they will appear black and you will not be able to move them.

Note: If the PlayStation DSO is not set to reload each time it is selected, the texture swatch area may not be updated properly on the screen.The textures will be output correctly.

Textures section

The Textures section displays the current video RAM information for the selected texture.



Textures

Page# 12 □ Freeze

Offset X Y 0

Color Depth 8 bit (menu: 4 bit, 8 bit, 16 bit)

CLUT X Y 482

□ Translucent □ Transparent

Page #

This represents the current texture page in which the texture resides.

Offset X/Y

This value is used to specify the X and Y offset into the texture page.

Color Depth

This popup menu is used to specify the color depth for the texture to be output.

- If you choose 4 bit, the texture rectangle is the smallest possible and has a yellow outline.
- If you choose 8 bit, the texture rectangle is medium size and has a green outline.
- If you choose 16 bit, the texture rectangle is the largest possible and has a blue outline.

CLUT X Y

This value specifies the position of the color look-up table (CLUT) in the video RAM.

Note: After changing a value in any number field, you must press either the Enter or Return key for the new value to be used.

Freeze

This allows the texture to be frozen in position and not accidentally moved.

Translucent

This option controls the STP bit of the color entries. See the following table.

Transparent

This option controls the STP bit of the color entries. See the following table

Translucent	Transparent	Black STP	Color STP
not set	not set	0	1
not set	set	1	1
set	not set	0	0
set	set	1	0

Select current texture section

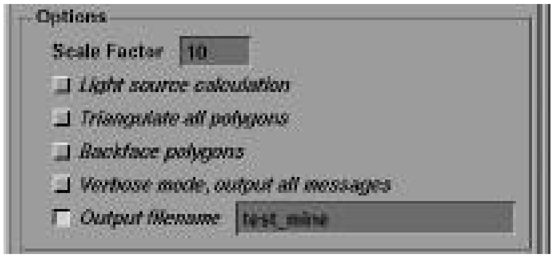
The Select current texture listing lets you to select a texture. When you have placed all the textures in your animation and have customized the settings the way you want them, click OK to export the file.

If you decide not to use the textures showing in the window, click Clear.

If you want to close the window without exporting the file, click Cancel.

The name shown here is the name of the texture as set in the multi-lister shader texture window.

Options Section



Options

Scale Factor 10

□ Light source calculation

□ Triangulate all polygons

□ Backface polygons

□ Verbose mode, output all messages

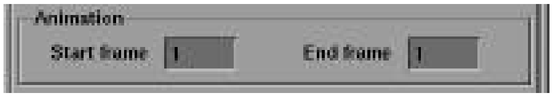
□ Output filename test_mine

Type in the Scale Factor box to scale the model on output by a specified factor.

Toggles

- If Light source calculation is toggled ON and there is a light in the scene, the light is replaced with a material that has been calculated to simulate a light source.
- If Triangulate all polygons is toggled ON, all polygons in the scene are triangulated.
- If Backface polygons is toggled ON, backfacing is turned on in the MAT file.
- If Verbose mode, output all messages is toggled ON, all messages are output to STDERR during the export.
- If Output filename is toggled ON, you can select the output filename for the TMD and TOD files.

Animation Section



Animation

Start frame 1

End frame 1

This section lets you select an animation range for the TOD file format output.

- Enter a number in the Start frame box to set the beginning frame of the animation.
- Enter a number in the End frame box to set the last frame of the animation.

When you have set all the options in the PlayStation Export options window the way you want them, click the OK button to export the file.

GetPlayStation Command Line Options

The GetPlayStation Dt Translator has the following options that can be used with the mgame plugin with the option field.

GetPlayStation Options

-v	Verbose mode, print out all messages
-rsd	Output RSD group
-tmd [option]	Output TMD file: normal difference sequence
-tod [option]	Output TOD file: 0 (r) Rotation matrices not optimized 1 (R) Rotation matrices optimized 2 (t) TRS not optimized 3 (T) TRS optimized
-net	Output Character Network file.
-flat	Convert all material to flat shading.
-gouraud	Convert all material to gouraud shading.
-s #	Set scale of models
-lightSource	Turn Pre-light sourcing ON
-b	Turn backface polygons ON
-t	Triangulate all polygons
-x scriptname	Shell script to run at completion
-o [filename]	Set output filename of TOD file
-d	Output Dynamic Properties file

Most of the command line options match the GUI user controls. See the description of the *PlayStation Export window* on page 5 for details of the settings.

Options with no corresponding GUI mode

-x

Lets you specify a shell script to run at the end of the translation process. The PlayStation also looks at the following environment variables:

DT_PSX_BEGSCRIPT
DT_PSX_ENDSCRIPT

for commands that should be run at the beginning and the end of the translation process. The end script process is given the name of the output scene directory and name as command line options.

Additional user controls with environment settings

DT_PCNAMES

This changes the names of the output files to be in a PC dos compatible format of DTF#dddd where dddd is a 4 character digit. At the moment, there is no easy mapping of the numbers to the original files.

Note: File names that fall within the DOS limitation of 8.3 are not changed.

WF_TIM_DIR / DT_TIM_DIR

Use this command line option to pre-define the directory to open when using the replace texture button.

DT_VRM_DIR

Use this command to specify where to find the *vrm* files that can be saved and / or loaded.

DT_EXPORT_DIR

Use this command to specify where the exported files should be placed. They will be displayed in the Export directory field of the mgame plug-in.

PSX_RSD_SCALE

Use this command to use the 7.5.1 method of saving UV coordinates in the RSD material file. The default is to use the texture UV size and not the position of the texture in the VRAM space.

Note: Environment variables can be entered into the text fields of mgame and will be expanded internally.

PlayStation Demo Viewer Setup

The following information shows how to set up and use the example viewer program for the PlayStation development system.

Demo Viewer

The demo viewer for the Playstation development tool is based on one of the demo TOD viewers from the PlayStation programmer tools CD. The program has been modified to support the MetaCycle feature of Alias and the PlayStation translator. Also, due to differences in the pre/post multiply differences in matrix applications the component (TRS) packet code for the viewer has been tuned to the output of the translator. The rotational matrices packet is the same for the original demo program.

It views TMD files and TMD/TOD files, with or without texture TIM files.

It also supports the MetaCycle NET files that are created with the PlayStation translator GetPlayStation.

The files that are found in this area are used for running the PlayStation utilities on an Intel platform. (These were used under Windows 95).

chk_bios.com	executable to check for existence of dexbios and return errorlevel depending whether or not it is loaded.
makefile.mak	make file for building the example viewer netv.c
netv.bat	batch file to load in the TMD/TIM/TOD/NET files to the expected memory locations for netv.cpe

The batch file looks for the files test.tmd, test.tod, test.net, and *.tim files in the user supplied directory.

Run as:

```
netv h:\GET\download
```

where

```
h:\GET\download
```

will have the files test.tmd...

The batch file is setup to look for known file names (test.*)in the directory specified as a parameter.

Unix Scripts

The unix scripts psx_begscript and psx_endscript have been supplied to show how one might use them to implement a *one button* download from Alias to the PlayStation development system.

On the SGI workstation, you have to set the environment variables PSX_BEGSCRIPT and PSX_ENDSCRIPT to the full path names of shell scripts to be run before and after the translation process takes place.

netv.c	source code to the example viewer
netv.cpe	example viewer executable file
rerun.bat	batch file to check for dexbios loaded and reset the PSX development boards if necessary.
shownetw.bat	batch file to check for the file “test.use” in a user supplied directory, to see if there is a new file to be loaded into the PSX development system.

This can be used as a simple auto-load script for continuous hands-free one button downloading from within Alias.

You would normally have to have the PC on the network with the SGI workstations. There are many ways to do this, one of which is using *Samba* (a freeware program from Australia that runs on the SGI and makes it look like a Microsoft network machine).

Installation Notes

Installing PlayStation Translator

This section describes how to install a translator as supplied directly from Sony Computer Entertainment’s BBS or developer’s CDROM.

Distribution of PlayStation Translator

The PlayStation translator is distributed by Sony Computer Entertainment on their BBS and developers CD. The file that can be downloaded or copied from the CD is an un-encrypted compressed tar file containing the PlayStation translator, PlayStation TIM image module, source code and make file to build the translator locally.

To install the PlayStation translator, use the *InstallGame* script file that is found in the $ALIAS_LOCATION / ODS / Games / bin directory. This script is installed as part of the standard Alias installation process.

This script file takes the compressed tar file, uncompresses it, and untars it to the location you specify. There are command line arguments to override the default installation locations.

Installing the new downloaded version of PlayStation Translator

The shell script *InstallGame* is run to extract the components of the translator and place them into the proper directory tree for use within the Alias game tools environment. The command line options that are available for *InstallGame* can be found by running the script with the parameter -h as shown below:

```
$ALIAS_LOCATION / ODS / Games / bin / InstallGame -h
```

outputs the command line options that can be used.

```
 Usage: InstallGame <-hdeaftsk>

where: -h prints this usage info
-e assume files are not encrypted
-d decrypt the library file only
-a dir alias directory location
-f dir install from this directory
-t dir install to this directory
-s System install this System

Default with no options on command line is to use the $ALIAS_LOCATION/ODS/
Games/support directory as the source directory and to install back into the ODS/
Games directory. Use absolute paths for the from and to directories
```

Note: When running as root, ensure that $ALIAS_LOCATION is set correctly

What you need to know:

1. where the original compressed file is located
2. where the expanded file is to be placed. ($ALIAS_LOCATION / ODS / Games)
3. where Alias 8.0 is installed

Defaults:

1. original compressed file has no default location. It is wherever you placed it.
2. For an expanded file, the default is in the Games area under Alias 8.0 installation $ALIAS_LOCATION / ODS / Games
3. Alias 8.0 defaults to / usr / aw / alias if ALIAS_LOCATION is not set.

Access:

If the installation is to write out to the Alias installation area, you will need to have access to the root password in order to become the super-user.

For local installations, root access is not necessary.

For example, to change to root and install the PlayStation translator from the compressed tar file SO in your home directory to the expanded tree under the Games tree of Alias 8.0, type:

```
su -l root

setenv ALIAS_LOCATION /usr/aw/alias

ALIAS_LOCATION/ODS/Games/bin/InstallGame -e -f $HOME -s SO
```

How to run the translator

The translator is run from within Alias using the *Makegame* plugin. See the Games Data Transfer book for more information on makegame usage.

How to rebuild the translator

The following method is recommended to rebuild the PlayStation translator:

1. Create a games tree under your $HOME directory somewhere.

   Fill it with the following directories: lib, include, Dtplugins, PlayStation

```
cd $HOME
mkdir Games
cd Games
mkdir lib
mkdir include
mkdir Dtplugins
mkdir PlayStation
```

2. Copy the source files from the following directory

$ALIAS_LOCATION / ODS / Games / source / PlayStation / src

... to this new Games / PlayStation directory

```
cp $ALIAS_LOCATION/ODS/Games/source/PlayStation/src/* PlayStation
```

3. Check the *Makefile* for the proper setting of GAMES_LOCATION.

For example:

$SITEROOT defines the “Site” directory of the development tree. It is a relative path from this current directory. All other $variables in this Makefile should be relative to SITEROOT.

```
$SITEROOT = $(GAMES_LOCATION) INCDIR = $(SITEROOT)/include
```

GAMES_LOCATION set to $ALIAS_LOCATION / ODS / Games will then use standard Games include and library files. If the library *DtOMio* is to be changed as well, it is easiest to point GAMES_LOCATION to the root of the “local Games” tree. (In the example above, $HOME / Games.) Make sure that the files in the include directory are copied over to the modified Games tree.

4. Type **make**

This should rebuild the translator DSO GetPlayStation

5. In order for makegame to see the new version of the DSO, you will need to set the following environment variable.

```
setenv DT_PLUGIN_LOCATION $HOME/Games/PlayStation
```

- Using standard libraries, you only need to set DT_PLUGIN_LOCATION to point to the location where the DSO is found.

Note: The PlayStation translator is normally located in the same directory as GetPlayStation

- Using modified libraries, set GAMES_LOCATION to point to the root of the modified Games tree.

Note: The libDtxxx.so files from the $ALIAS_LOCATION / ODS / Games / lib directory should either be copied to this new tree or have symlinks created.

6. Run Alias or DtExport to test the new version of the translator.

Release Notes

Version 2.0b3 Improvements

- control of STP bit in TIM files has been added
- control of material UV coordinates has been extended

Version 1.0 Improvements

- 256 and 512 PAL screen sizes have been added
- The default TIM depth has been changed to 4 bit

Limitations:

Solid textures are not supported directly in the Dt translators

TOD format for TRS data is in Alias orientation and not standard TOD.

The example TOD viewer supplied with the Alias translator shows the matrix order that the angles are supplied in.

Modeling Limitation

TOD format has a maximum scaling factor of 8.0 in the 16 bit fixed point format that is specified. Scaling is (1,3,12), with 1.0 = 4096.

Model in Alias so as the scaling components of the transformations are less than 8.0.

User Interface - WorkFlow notes

- When entering numeric data into the fields on the VMapper window, you must press Enter to actually set the data
- Similar to the above, when you change focus, the values in the numeric text fields will only be set when you press the Enter key.
- Screen area definition does not relate to programming (for example double buffering using the 2x screen area
- Running the VMapper window multiple times causes the texture swatch area to become corrupted. Textures still output correctly. (Run the translator in “Reload DSO” mode if this is a problem, but note that it will start up slower.)
- It is possible to position TIM over a page boundary illegally when the texture is placed between two other textures already placed.
- It is possible to overlap a larger TIM over a smaller TIM.
- Default numbering of color look-up tables (CLUTs) may position them over the 511 limit.