

# Art Tools

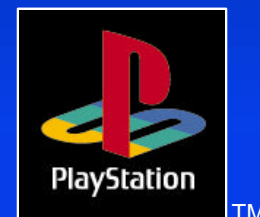
## ❖ Introduction

### – Goals

- ◆ Create art for “Next Generation” games.
- ◆ Combine Gouraud, flat, and preshaded textured polygons to create an immersive 3D world.
- ◆ Choose from the pathways available and implement them efficiently.

# Overview

- ❖ File Formats
- ❖ Tools Overview
- ❖ Modeling
- ❖ Texturing
- ❖ Displaying Your Artwork
- ❖ Animation
- ❖ Full Motion Video



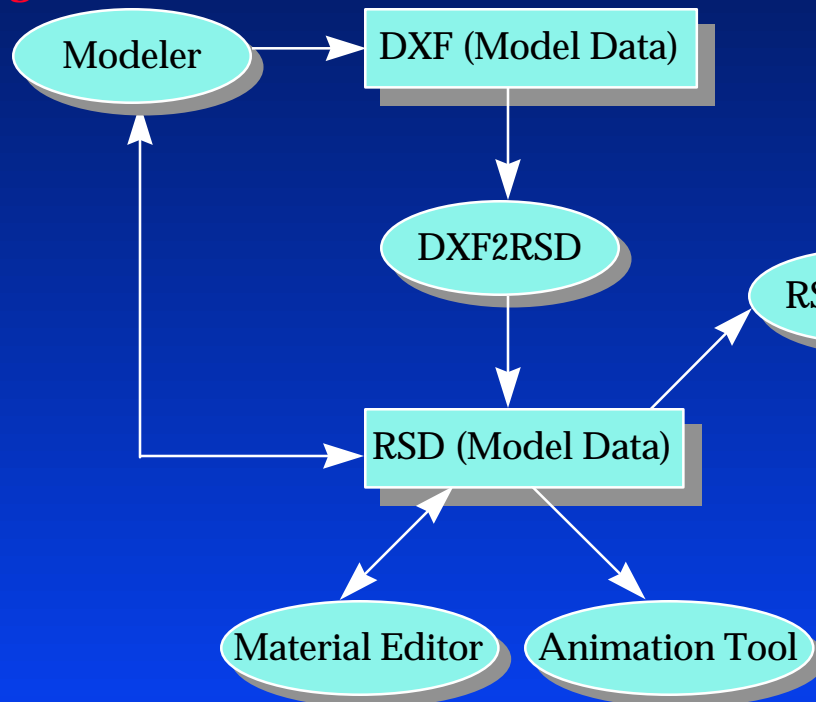
# *File Formats*

- ❖ RSD - Text description of model data and surface attributes
- ❖ TIM - Data for textures
- ❖ TMD - Binary RSD
- ❖ PMD - Preshaded model data
- ❖ TOD - Animation data
- ❖ VDF, NDF - MIMe animation data
- ❖ BGD - Background map data

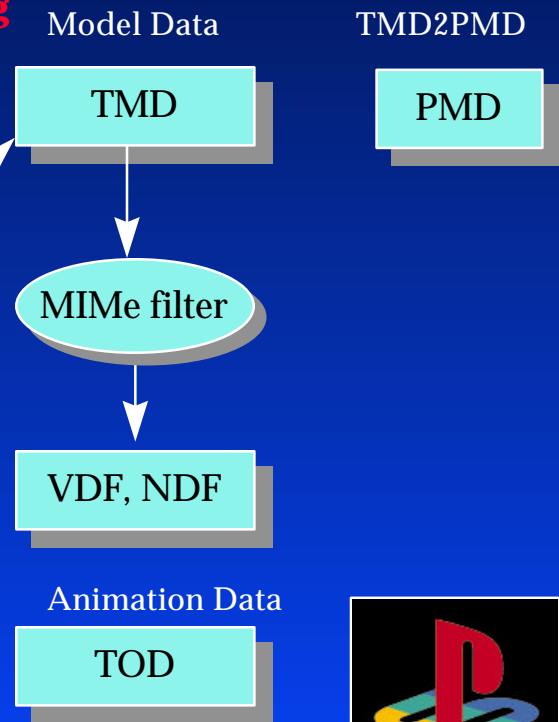
# File Formats

## ❖ How the tools and data formats work together

Authoring



Programming



# *Tools Overview*

## ❖ Different Types of Tools

- Materials Editor
- MIMe Utilities
- Sprite Editor
- 2D Utilities
- 3D Utilities
- Movie Converter/Movie Packer
- Plugins

# *Tools Overview*

- ❖ Material Editor v1.71ae
- ❖ MIMe Wave Editor v1.0e
- ❖ Movie Converter v1.98e
- ❖ Movie Packer v1.4e
- ❖ Animator v1.1.5
- ❖ Sprite Editor 1.7e

# *Tools Overview*

- ❖ TIM Utility v1.36e
  - Incorporates all these DOS utilities
    - ◆ BMP2TIM v2.2
    - ◆ PICT2TIM v3.1
    - ◆ RGB2TIM v2.0
    - ◆ TIM2BMP v1.1
    - ◆ TIMPOS v1.0
    - ◆ TIMVIEW v1.2
      - Use with Graphic Artist Card

# *Tools Overview*

## ❖ 3D Utilities

- DXF2RSD v2.7
- DXF2RSDW v1.10e
- MKTOD v1.3
- RSD2DXF v1.00
- RSDCAT v1.02
- RSDFORM v1.8
- RSDLINK v3.65
- TMD2PMD v1.14
- TMDINFO v1.1
- TMDSORT v1.1
- ANIMATIO v1.1.5



# *Tools Overview*

## ❖ DOS Utilities

- Useful when doing batch processing
  - ◆ use .mak files to do batch processing

```
# Sample.mak
#
files.all: file1.tim file2.tim
        Echo Go To Work.
file1.tim: file1.bmp
        bmp2tim -org 640 0 -plt 0 480 -b file1.bmp

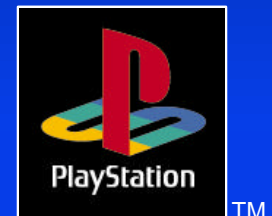
file2.tim: file2.bmp
        bmp2tim -org 768 0 -plt 0 481 -b file2.bmp
```

# *Tools Overview*

## ❖ 3DStudio Plugin

– TOD v4.0f

- ◆ Converts 3D Studio models to PlayStation file format
- ◆ Writes hierarchy information
- ◆ Can't export textures directly



# *Tools Overview*

## ❖ Photoshop

- timexpe.8be v1.2e
  - ◆ imports and exports textures
- timfmte.8bi v1.2e
  - ◆ displays onto Artist Board

# *Tools Overview*

## ❖ 3rd Party Plugins

- Animetix (soon)
- Alias | Wavefront
  - ◆ GameExport v1.0(soon)
- Nichimen Graphics



# *Tools Overview*

## ❖ Caligari trueSpace v1.0

### – Advantages

- ◆ Reads and writes RSD format directly.
- ◆ Converts data formats to PlayStation format

### – Considerations

- ◆ Uses quadrangles
- ◆ Different user interface
  - Difficult to weld vertices

# Modeling

## ❖ Good Models

- Low polygon count
  - ◆ Optimizes performance
    - use transparent textures
  - ◆ Still needs to look good
  - ◆ Avoid certain polygon patterns
    - Fence is an example.

## ❖ Bad Models

- long skinny textures

# Modeling

## ❖ Footnotes

### – MIP mapping

- ◆ swapping textures for optimal display and performance

### – Model mapping

- ◆ swapping models for different distances
  - sub-dividing polygons may be a better solution

# Texturing

- ❖ Mapping textures
  - Material Editor
- ❖ Try to fit in the 2K texture cache
  - 32x32 16 bit
  - 64x32 8 bit
  - 64x64 4 bit



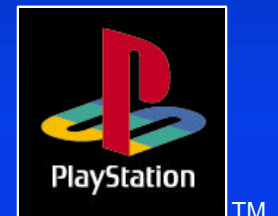
# Texturing

## ❖ Material Editor

- Pasting textures onto model
  - ◆ grouping polygons
    - allows precise texture placement
- Change model specifications
  - ◆ change flat to Gouraud
  - ◆ change color of polygons with color table
  - ◆ set transparency
  - ◆ modify vertices

# *Displaying your Artwork*

- ❖ Z-Sorting
- ❖ 2D/3D Graphic Libraries



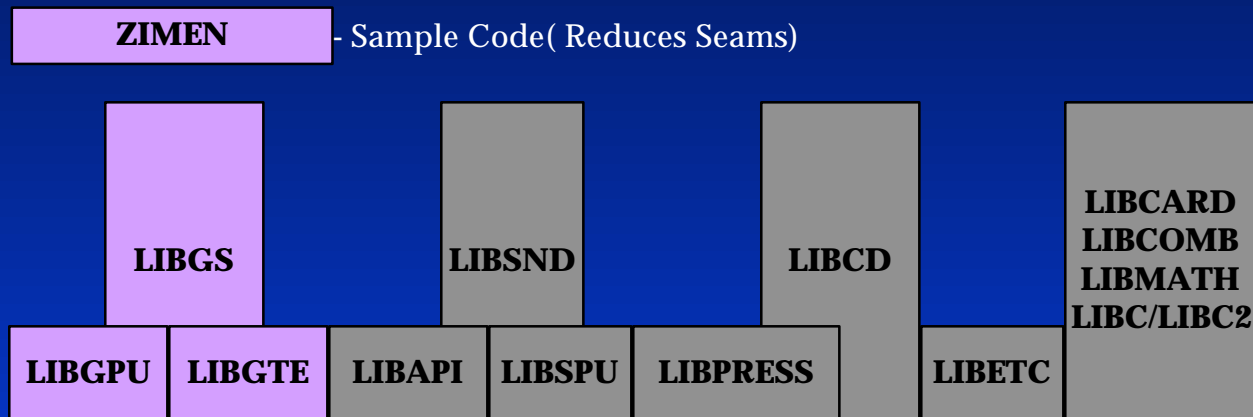
# *Displaying your Artwork*

## ❖ The Z-sort problem

- popping of polygons is visually distracting
- make similar colors about the joints of a polygon to lessen the effect
- adjust the otz from average z to near z
- increase resolution of Z-sorting
- must subdivide long polygons

# Displaying your Artwork

## ❖ 2D/3D Graphics Libraries



Graphic Libraries  
Other Libraries



# *Animation*

## ❖ Overview

- TOD animation
- MIMe animation
  - ◆ give models ability to flex and bend
- Sony's Animator

# Animation

## ❖ MIMe animation

### – Principals of Vertex and Normal based MIMe

- ◆ deformed model - basic model = difference vector
- ◆ changes in composite ratio of difference vectors are “waveforms”
- ◆ basic model + Sigma (difference x waveform) = MIMe animation

# Animation

## ❖ MIMe animation

- Only vertices (and normal vectors) are needed
- The texture is needed only for the base model
- Difference data formats (VDF, NDF)
- Optimization of difference data (mimesort)

# Animation

## ❖ MIMe animation continued

### – Considerations

- ◆ Vertices can not be increased or decreased
- ◆ The ordering of vertices can not be changed
- ◆ use triangles



# Animation

## ❖ MIMe Wave Editor

- Making waves (Convolution Editing)
  - ◆ How to use the wave editor
  - ◆ Wave editor is a software tool to animate your models
  - ◆ Waves define interpolation between models

# *Full Motion Video*

## ❖ Movie Converter

- Uses DCT compression
- Original Movie Formats
  - ◆ D1, Beta, Beta SP, S-Video, NTSC / PAL / SECAM.

## ❖ Movie Packer

- Interleaves your movies

# *Full Motion Video*

## ❖ Movie Converter

- Writing scripts
  - ◆ Sample Script
- Adjusting the quantization
  - ◆ Changes look of the movie
  - ◆ Can be done frame by frame
- Mapping FMV to polygons

# *Full Motion Video*

## ❖ Movie Packer Overview

### – Interleaving

- ◆ Combining different data types in a stream of data in an organized manner
- ◆ Method to display multiple movies simultaneously
- ◆ Method to load data in background
  - a checksum would have to be used as a safeguard



PlayStation

TM