AU 2014 Social Media Feed

http://aucache.autodesk.com/social/visualization.html
Go With the Flow: Common Workflow Process in Autodesk VRED Professional

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About Me

- Renu Muthoo, Instructional Designer
- Used Autodesk Products since 1996
- Writing Courseware since 1997
- With ASCENT (Rand Worldwide) since 2010
In this class you learn the common workflow process for VRED Professional software to create high-quality, real-time renderings that realistically visualize design ideas.
Key learning objectives

At the end of this class, you will be able to:

- Work with Scenegraph and optimize the model geometry
- Learn how to assign and modify materials
- Learn how to apply an HDR image and set it as a background environment
- Learn how to work with different render setting options in OpenGL rendering method and create an image
Introduction
Autodesk VRED Professional Software

- Visualize
- Evaluate and review
- Real-time graphic renderings
- Design Presentation
- Photorealistic Images
Overall Suggested Workflow

1. **Open native .vpb file**
   - Open non native VRED file
     - Import Options
     - Set Preferences
     - Save as .vpb
2. **Data Preparation**
   - Organize Parts using Scenograph
   - Adjust Surface Normals
   - Transform Geometry
3. **Materials**
   - Converting Materials
   - Creating New Materials
   - Ambient Occlusion
4. **Camera, Environment and Lighting**
   - Add Camera Views
   - Add Environments
   - Add Lights
5. **Visualize**
   - Render Settings
   - OpenGL Renderings and Creating Images
   - Raytraced Renderings and Creating Images
Interface

1. Menu Bar
2. Icons Bar
3. Quick Access Bar
4. Modules
5. Render Window
6. Status Bar
Open Scene/Import

- Icons Bar; File>Open
  - .vpb file
  - Non native file

- Import Options
  - Apply Materials from Asset Manager - clear
  - Center in Origin – selected
  - Put onto the Ground – selected
  - Adjust Object Size – selected
  - Tesselllation Quality - High
Selecting Objects

- Mouse: <Shift> + click
- Window: <Shift> + click and drag (left to right)
- Crossing: <Shift> + click and drag (right to left)
- Scenegraph: Select

Selection Display
Work with Scenegraph and optimize the model geometry
**Scenegraph**

*Access: Quick Access Bar > ; Scene > Scenegraph; Shortcut menu > Scenegraph*

- Hierarchical tree structure
- Objects as Nodes
- Node types
  - ![Regular group](image)
  - ![Transform group](image)
  - ![Animation group](image)
  - ![Geometry Transform](image)
  - ![Environment](image)
  - ![Cloned group](image)
  - ![Material](image)
  - ![Geometry](image)
  - ![Nurbs geometry](image)
  - ![Light Transform](image)
Scenegraph

- Reorder Nodes
- Sort and Group Objects - Shortcut menu
- Optimize geometry - (Optimize module)
- Create, modify nodes - Shortcut menu
- Isolate Parts

Consolidating and Optimizing nodes

Converting nodes
Adjust geometry

- Check Geometry - Vertex/Face Normal Rendering Mode (Visualization; <F5>)
  - Green - Correct
  - Blue - Reverse
  - Gold - Reverse
  - Violet - Reverse

- Fix Geometry – Geometry Editor (Scene>Geometry Editor; Shortcut Menu)
  - Repairs blue
  - Repairs gold
  - Repairs violet
  - <Alt> + Right-click
Learn how to assign and modify materials
Create materials
Convert materials
Modify materials
Assign materials

Material Editor
Access: Quick Access Bar; Scene>Material Editor; Shortcut menu>Materials

17 VRED Truelight materials – Designed for automobile visualization.
Create Materials

- Group, Tags section > shortcut menu > Create > select material

Convert Materials

- Group, Tags section > shortcut menu > Convert > To Truelight Material > select material
Modify Materials

- Attributes section – common rollouts
  - Incandescence
  - Transparency
  - Displacement
  - Raytracing
  - Common
Modify Materials

- Attributes section – Specific attributes
  - Texture Channels
  - Use Structure

![Texture Channels Diagram]

- Load
- Delete
- Reload
- Save

- Planar XY
- Higher Size U
- Lower Size U
- Radial XY
- Radial YZ
- Higher Size U

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Some VRED Truelight Materials
Assign Materials

- Drag and drop in the Render Window
- Copy and Paste Material
- Drag and drop in Scenegraph
- Using Material Editor shortcut menu
Ambient Occlusion

- Simulate shadows
- Not physically accurate
- Check AO – Visualization>Ambient Occlusion Rendering; <F7>
- Calculate AO – Ambient Occlusion Module (Scene>Ambient Occlusion)

AO issues

AO modified

Ambient Occlusion Module
Learn how to apply an HDR image and set it as a background environment
Environments

Access: Quick Access Bar > ; Scene > Material Editor; Shortcut menu > Materials

- Background HDR Image
- Lighting
- Highlights
- Reflections
Environments

- Create Environment (Load HDR Image)
- Color Correction
- Transformation
- Environment Attributes in Material Editor
Environments

- New Shadow plane for new Environment
- Calculate Ambient Occlusion for new shadow plane
- Copy the original AO settings and load into new shadow plane

No AO for new Shadow Plane  AO calculated for new Shadow Plane
Learn how to work with render settings and create an image
Rendering

- OpenGL render method
  - Fast Calculations
  - AO shadows
  - Decent visualizations

- Raytracing (Global Illumination)
  - Physically correct lighting, reflection, refraction, shadows
  - Time consuming
  - Photorealistic visualizations
Rendering

- Real-time rendering
- OpenGL render method (default)
  - Icons Bar> clear ; clear Visualization>Toggle Raytracing; <F3>
- Raytracing
  - Icons Bar> ; Visualization>Toggle Raytracing; <F4>
- Status Bar
  - RR-GL - OpenGL
  - RR-RT - Raytracing

9814MB RR-GL  12451MB RR-RT
Render Settings OpenGL

Access: Quick Access Bar> ; Rendering>Render Settings; Shortcut menu>Render Settings

- File Output tab – Options for render image
- General settings tab - Antialiasing options
Render Settings Raytracing

Access: Quick Access Bar > ; Rendering > Render Settings; Shortcut menu > Render Settings

- Raytracing tab – Illumination Modes

- Region Render
Rendering OpenGL

- Background: white color
- Image Size: HD 1080
- Render Quality: Production

Rendering OpenGL
Rendering OpenGL

- Background - HDR Image
- Image Size – HD 1080
- Render Quality – Production
Rendering Raytracing

- Region Render
- Illumination mode - Precomputed illumination
Rendering - Raytracing

- Illumination mode - Precomputed illumination
Session Feedback

- Via the Survey Stations, email or mobile device
- AU 2015 passes given out each day!
- Best to do it right after the session
- Instructors see results in real-time
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THANK YOU!

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