AUTODESK **UNIVERSITY** 2014

VRED Essentials for Transportation Design Visualization

Dawn McArdle – Linkage Design

ID5521-L-P his class will teach you the basics of Autodesk VRED real-time visualization software, and afterward you should be able to import, stage and render vehicle. Dawn McArdle will demonstrate first-hand the simple workflows and tips and tricks gained from hours of her experience. You will learn this program quickly and should be able to immediately implement it with confidence.

Learning Objectives

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

- navigate, import, and prepare the vehicle model
- assign materials
- set up lighting/shadows
- animate the camera and learn about camera effects
- set up variants
- understand raytracing options
- set up moving parts on the vehicle

About the Speaker

Dawn works at Linkage Design, in Royal Oak, MI. She specializes in teaching Autodesk VRED visualization software, including designing courseware for classroom and on-site instruction as well as hosting webinars. Previously, she lead the Animation & Rendering team at General Motors Design, which created digital visualizations depicting vehicle concepts and functionality for in-house executive reviews and international auto shows. Dawn has been using Autodesk/Alias products since the early '90s when she created animations for broadcast, for Home Run Pictures, in Pittsburgh, PA. She studied Cinematography / Animation at Edinboro University of Pennsylvania.

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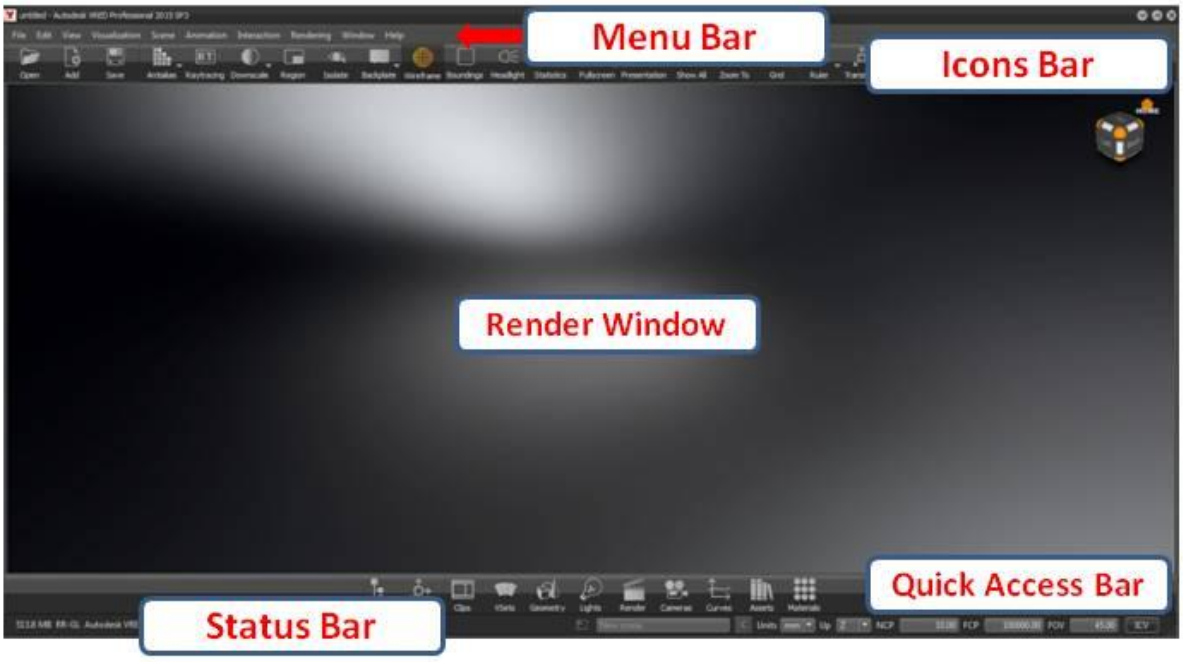
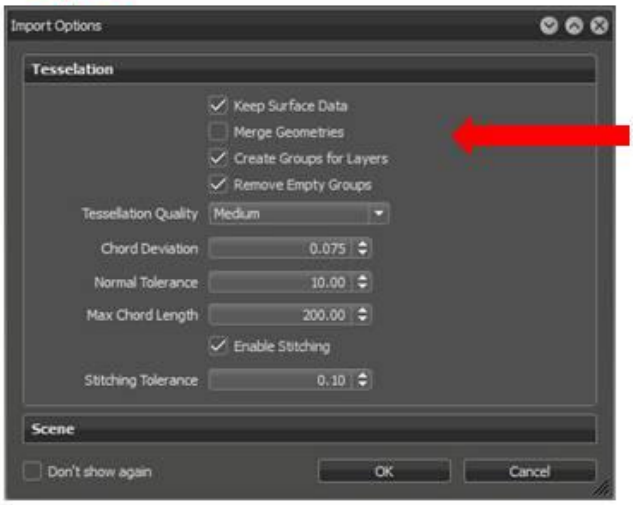
VRED INTERFACE



IMPORTING GEOMETRY

Open



Uncheck Merge Geometries

To convert Autostudio shaders to VRED Truelight materials with the same name

Add

Uncheck these 3 options

Select "class_materials" folder in Asset Manager.

VRED Cheat Sheet

Navigation

Tumble — Translate (pan) — Zoom (dolly)

Navigation Cube
- Affects only selected object
- Not truly orthographic view
- Home brings you to ICV view

- **Initial Camera View** sets home view

F Fit (selected)
- Same as 

Selecting

Shift +  To select objects

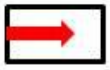
Shift + Control +  To add to the selection

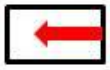
Shift +  To deselect all

Shift + Control +  To deselect one object at a time

- **Red = X**
- **Green = Y**
- **Blue = Z**

RENAME:
CTRL + R
Or 

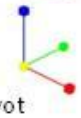
Shift +  To select all objects within box

Shift +  To select all objects touching box

Transforming

Shift + W Translate 

Shift + E Rotate 

Shift + R Scale 

Shift + Q Move pivot

Control + H Hide selected

Control + J Unhide selected

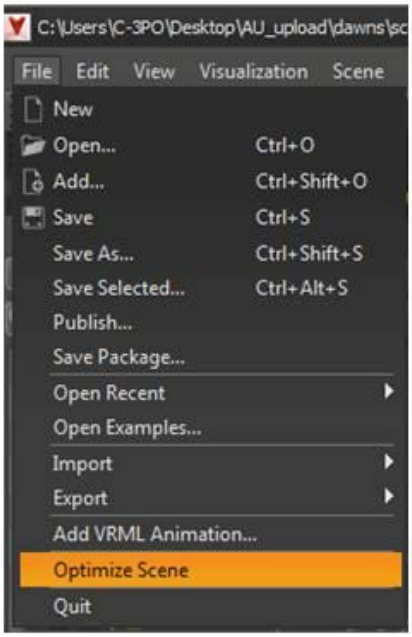
Set rotation point (not pivot)
In Render View

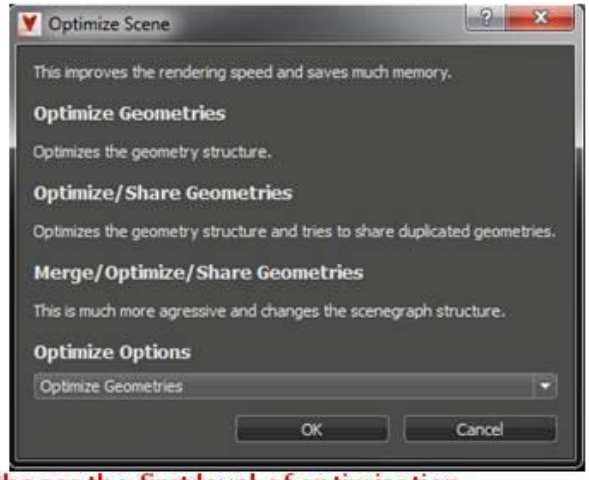
Set rotation point and center object
in Render View

Roll camera
- To undo, set Roll to 0 in Camera Editor > Camera Settings

- View > **Show All** from Scenegraph

OPTIMIZING





Choose the first level of optimization
From the dropdown arrow

OPTIMIZING

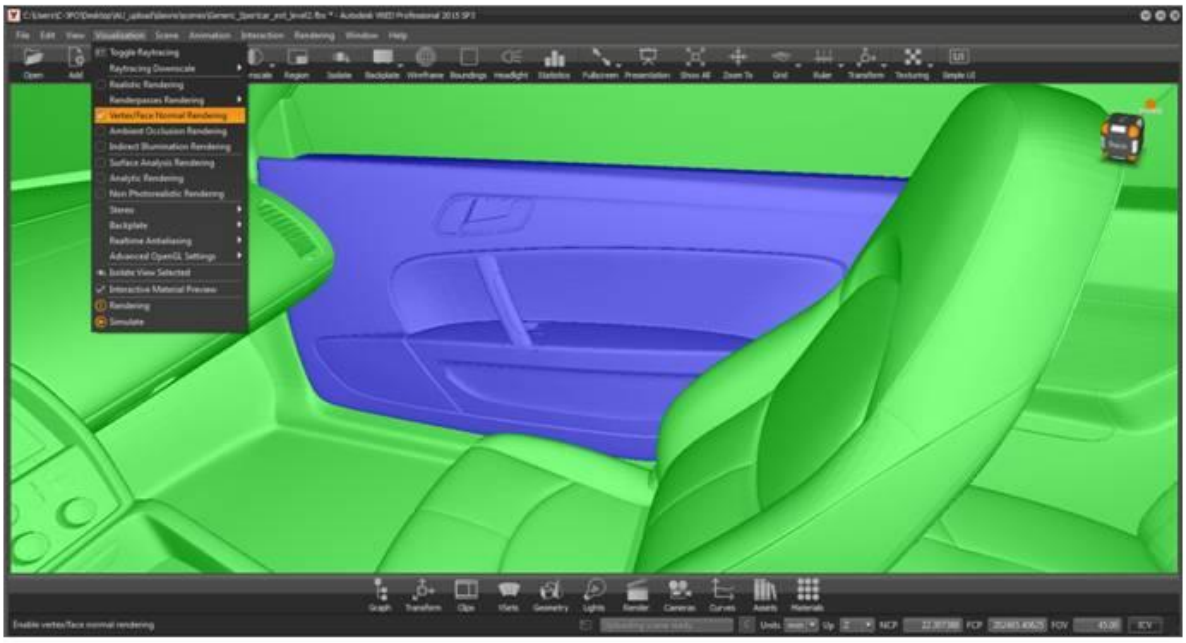
In the Material Ediitor, Optimize Materials to delete unused materials.

Click this broom icon to delete unassigned materials.

CORRECTING NORMALS

Change the Visualization mode from Realistic Rendering to Vertex/Face Normal Rendering

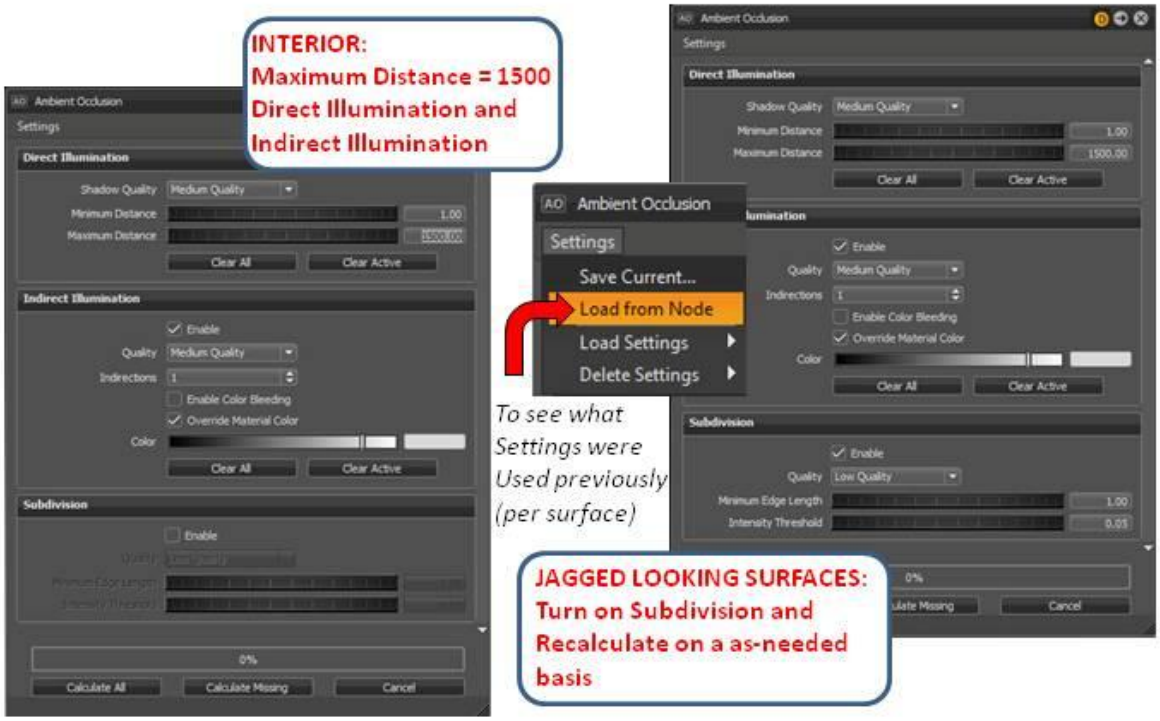
ALT +  **to make blue surfaces green**



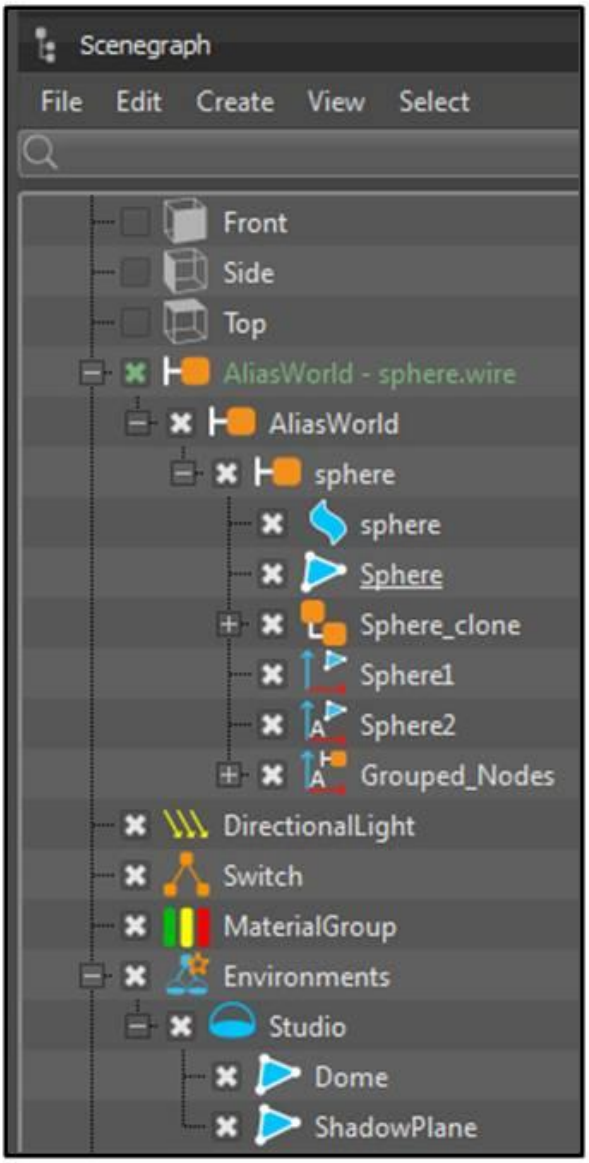
Additional options can be found In the Geometry Editor.

AMBIENT OCCLUSION

** Hide transparent objects*



SCENEGRAPH



Green text = **imported data**

Group- expand to show contained nodes

NURBS data

POLY data

Cloned geometry

Geometry has been **transformed** from 0.0.0

Contains **animation**

This group is **animated**

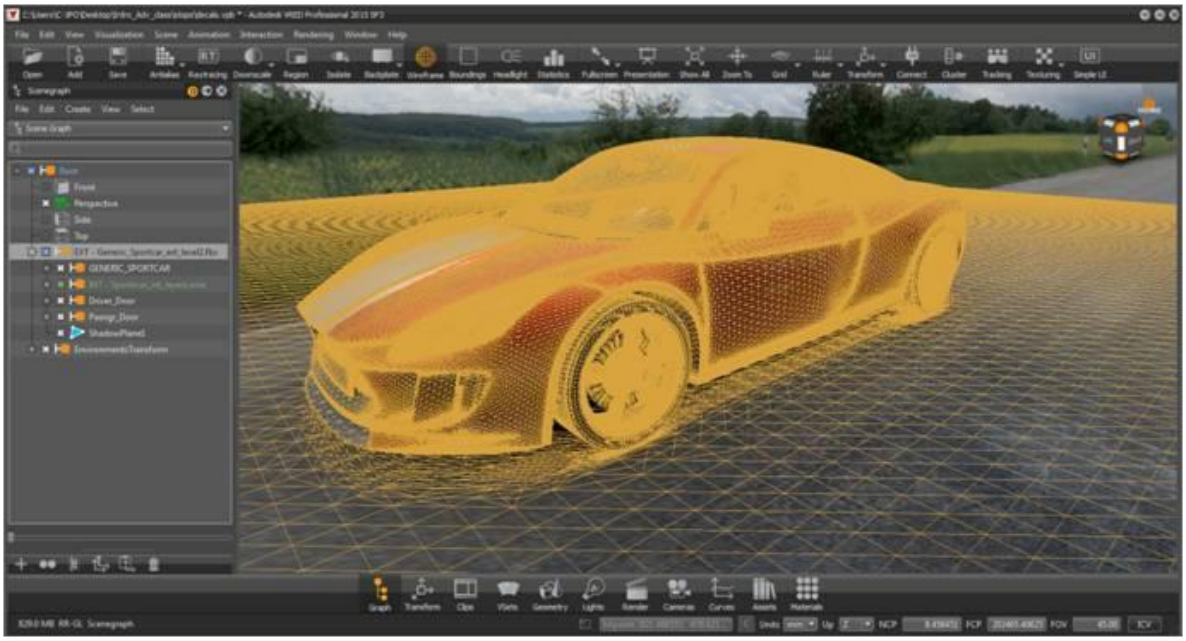
Light

Switch Node (contains geometry options for which you can switch visibility)

Material Node (all geometry contained takes on the assigned material)

Environment- contains dome and floor

GROUPING



To correctly group for animation, make sure the interior, doors and floor plane are grouped under the exterior.

MATERIAL EDITOR

LIST **PREVIEW** (shader balls) **ATTRIBUTES**

Select Nodes to select geometry assigned to selected material
Apply to Selected Nodes to assign to selected geometry *or*:

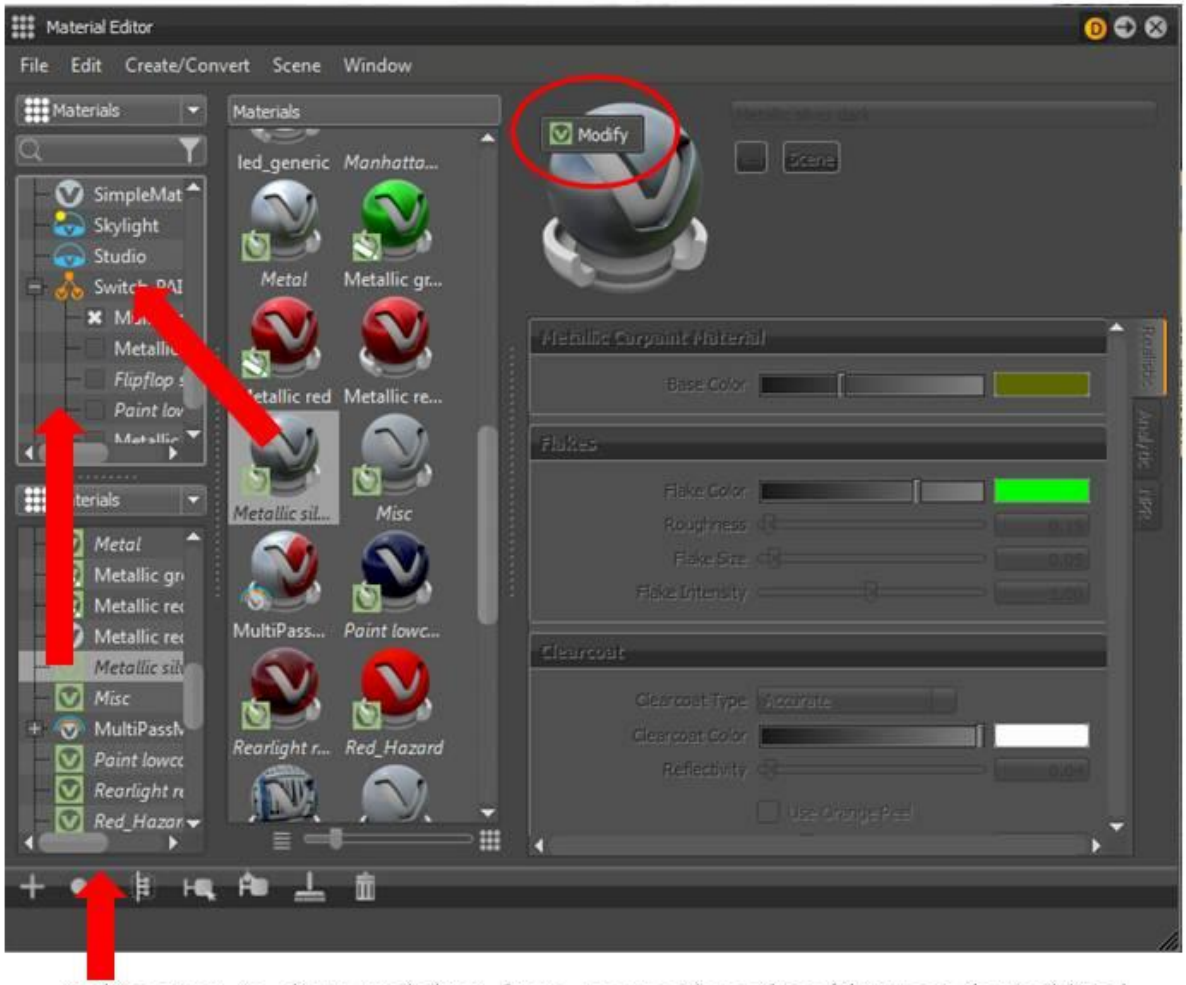

+ drag onto surface
to assign


+ drag onto surface
to assign to all surfaces
with the same material

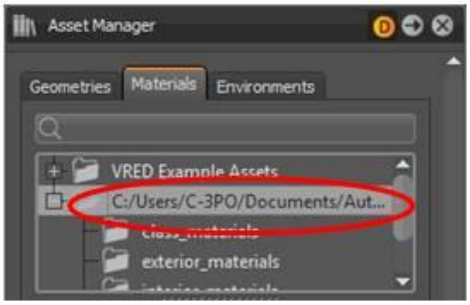

+ drag onto surface
to replace material
as a Switch or Multi Pass

MATERIAL EDITOR

LIST **PREVIEW** (shader balls) **ATTRIBUTES**



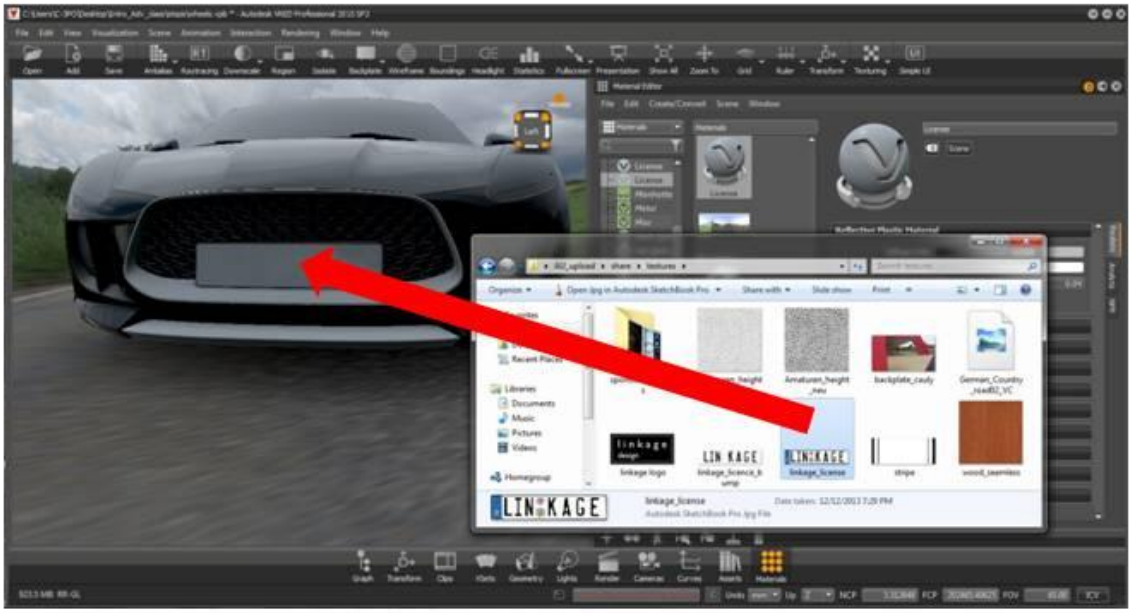
Split screen to drag and drop from one to the other (drag on dotted line) or drag the Preview ball onto SwitchPaint to populate the Switch Material with carpaints Materials.



If attributes are locked, click MODIFY. (Assets are locked by default.) Save to your custom folder in C:/

TEXTURE MAPPING

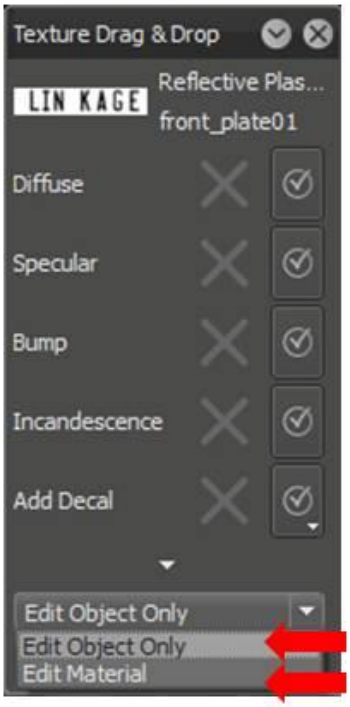
Drag "linkage_license" onto the license plate.



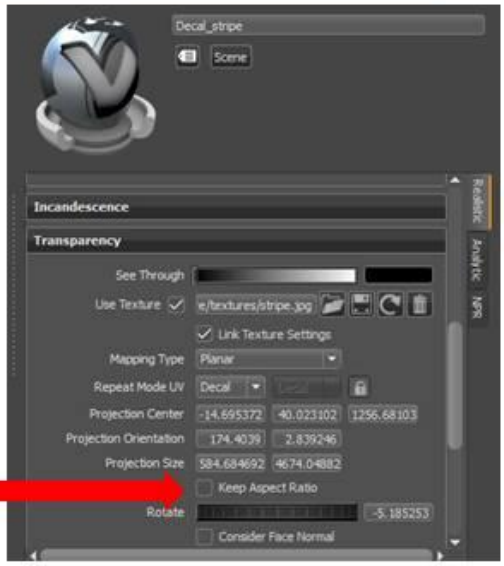
In the pop-up box, choose "Diffuse".

Repeat, dragging "linkage-license-bump"
And choosing the Bump channel

TEXTURE MAPPING

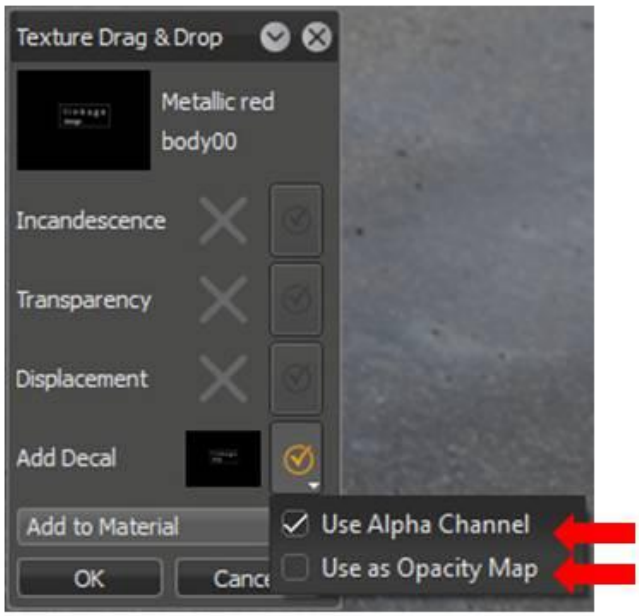


If you aren't able to Non-proportionally scale (stripe decal), Uncheck ***Keep Aspect Ratio.***



Edit Object Only *applies texture to surface you dragged texture onto.*

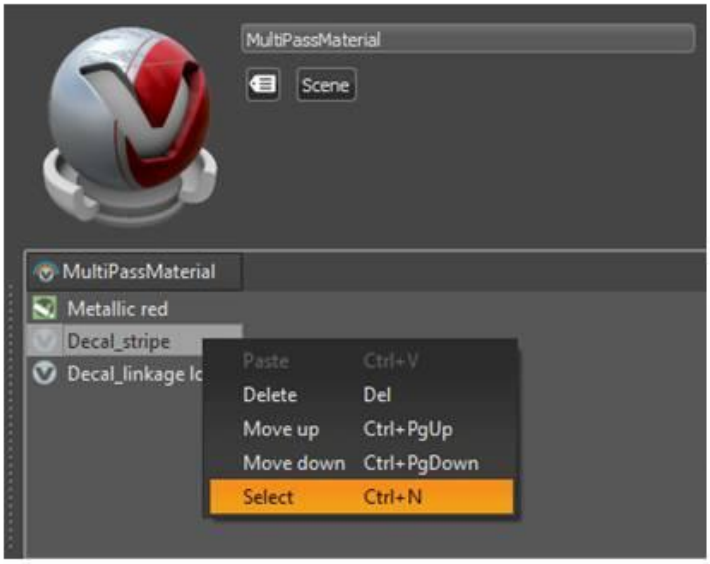
Edit Material *applies texture to all surfaces sharing this material.*



Use Alpha Channel
if your texture was created with one.

Use as Opacity Map
Uses black and white information for transparency (white is opaque)

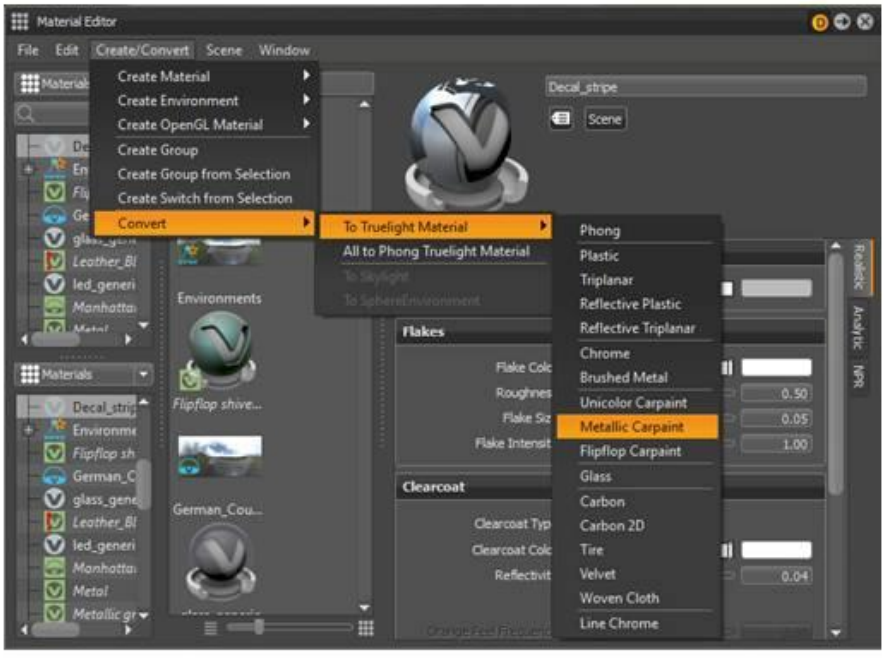
TEXTURE MAPPING



When you add a texture, the material Is automatically changed into a ***Multipass Material.***

The decal is added as a ***Plastic*** *material By default. To change the material type,*

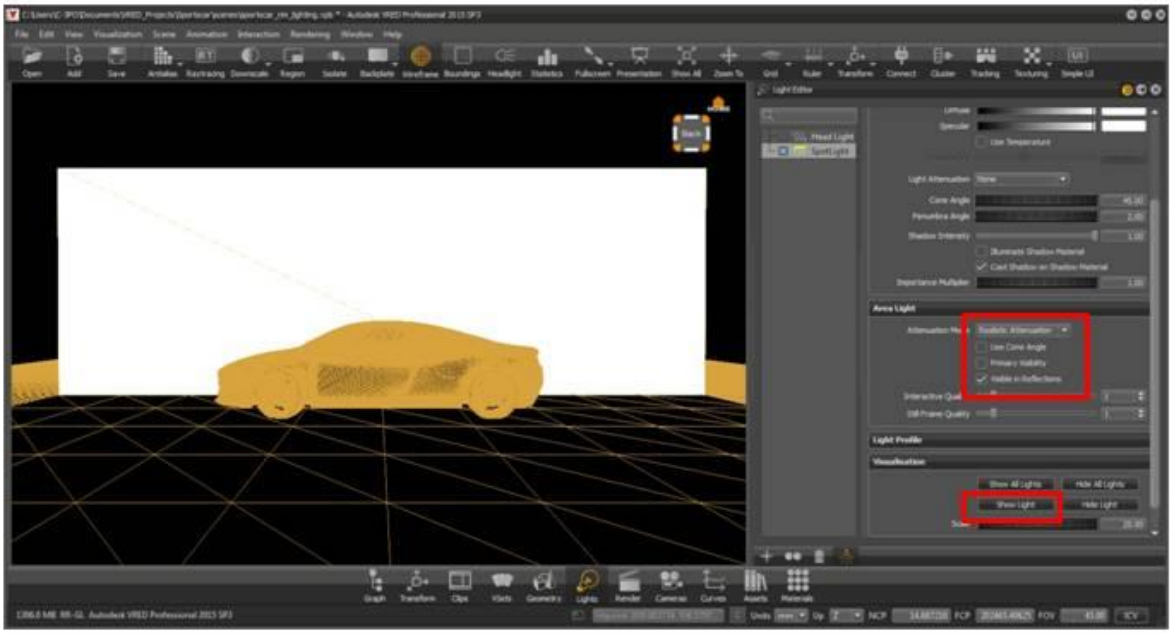
on the texture name and ***Select.***



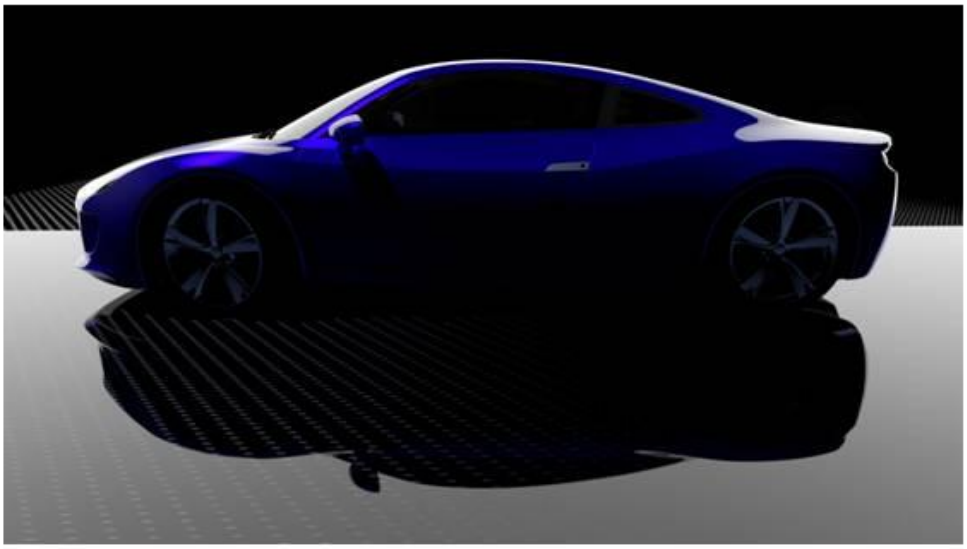
Then, ***Convert*** *it to another material type, such as* ***Metallic Carpaint.***

LIGHTING

Rim Lighting setup using a Rectangular Area Light

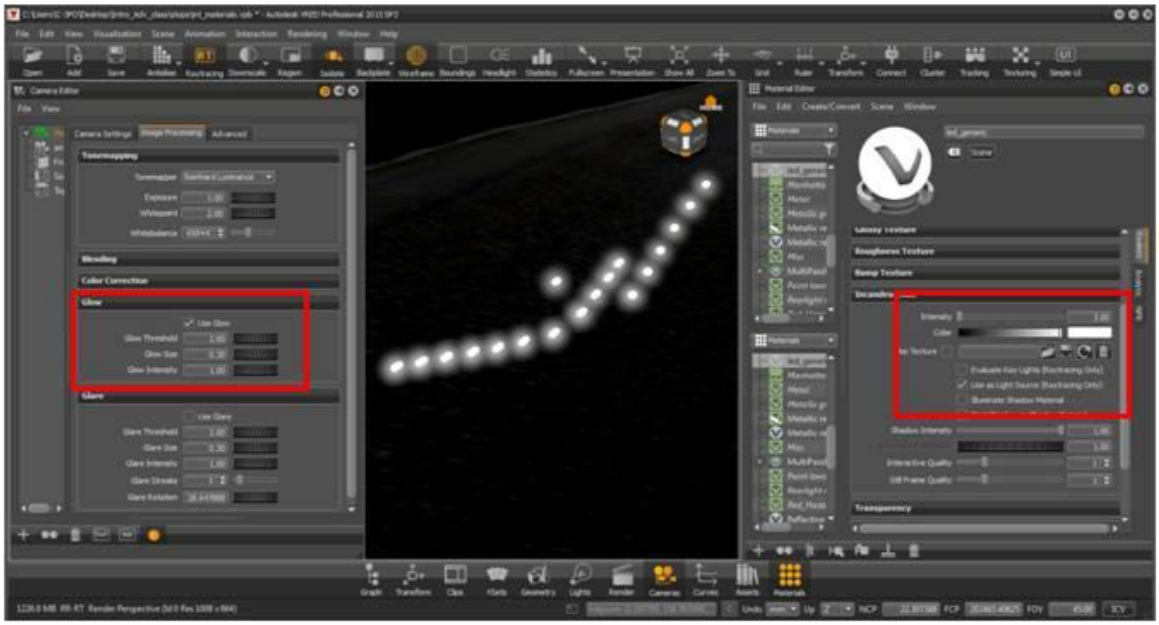


*Turn on **Visible in Reflections***
*And **Show Light***



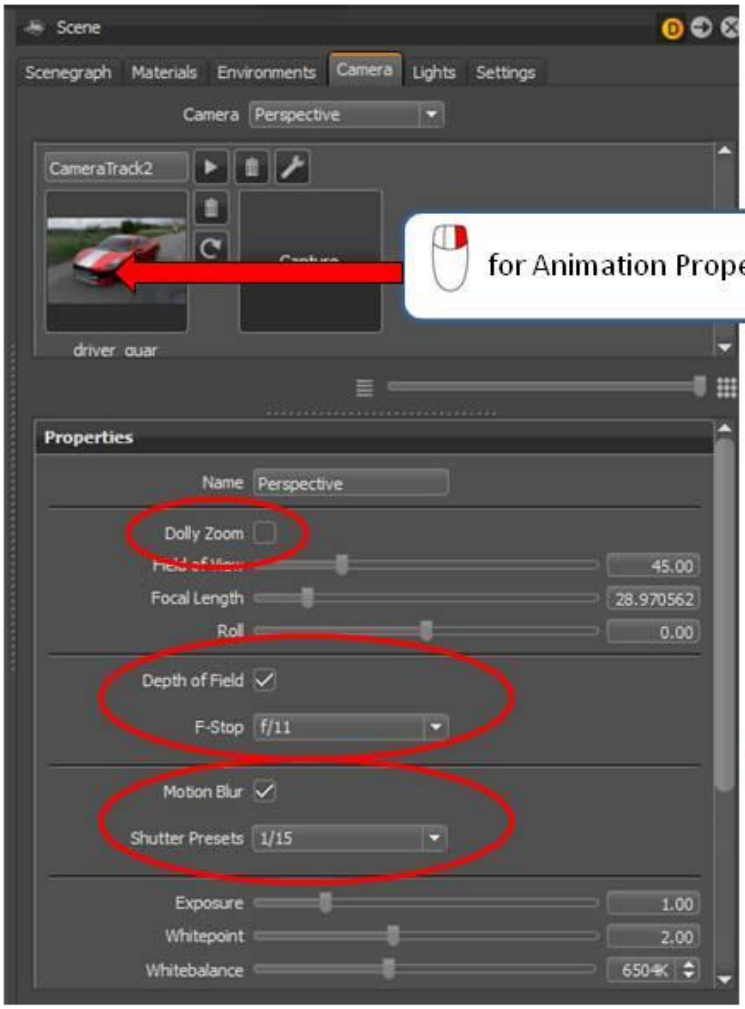
LIGHTING

Any object can be turned into an Object Light if assigned a material with incandescence.



In the **Incandescence tab**, increase the **Intensity**, **Color**, turn on **Use as Light Source** (optional) In the **Camera Editor**, turn on **Glow**.

CAMERA

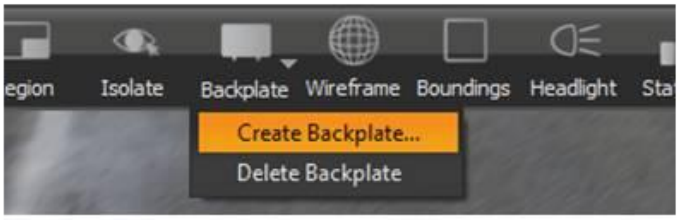


Dolly Zoom keeps the camera static While you adjust the **Field of View**.

Control **Depth of Field** by adjusting the **f stop** to set the focal point.

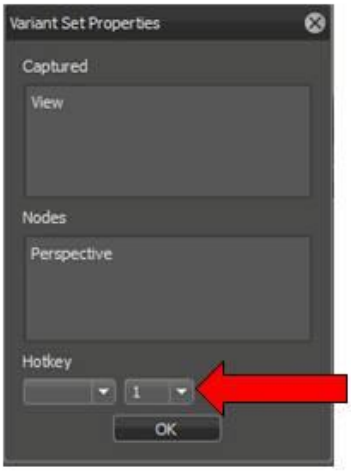
Control **Motion Blur** by adjusting the **shutter speed**

Antialiasing must be on.



VARIANTS

Using your set Viewpoints as reference,
Capture the same 3 views as Variants.

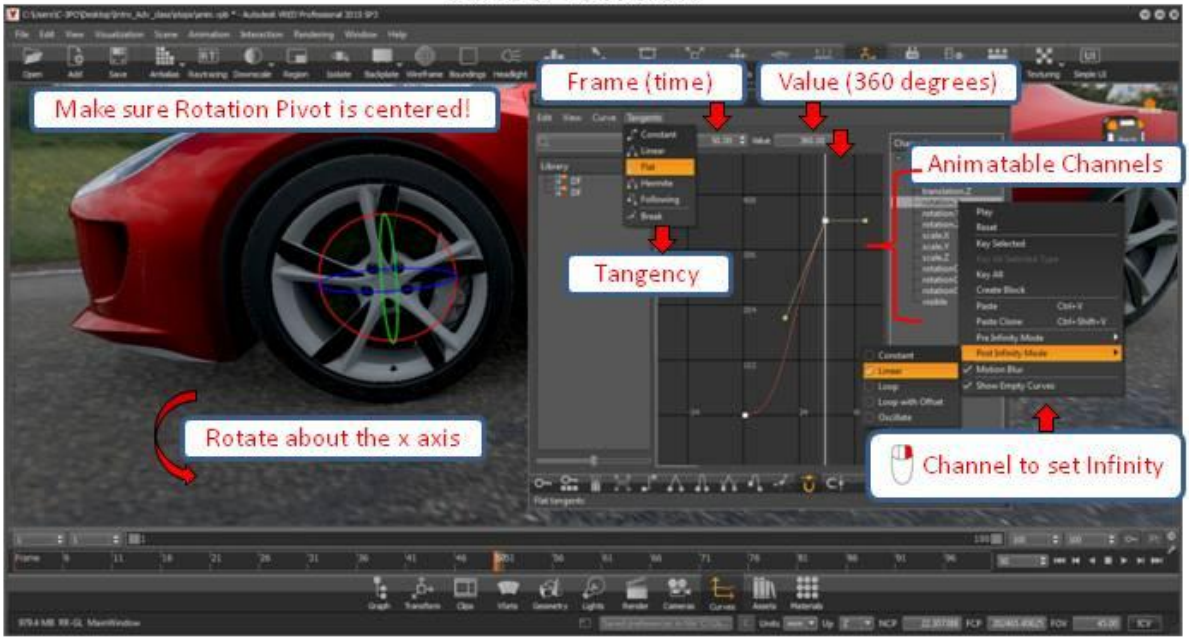


Set a hotkey to activate the Variant.

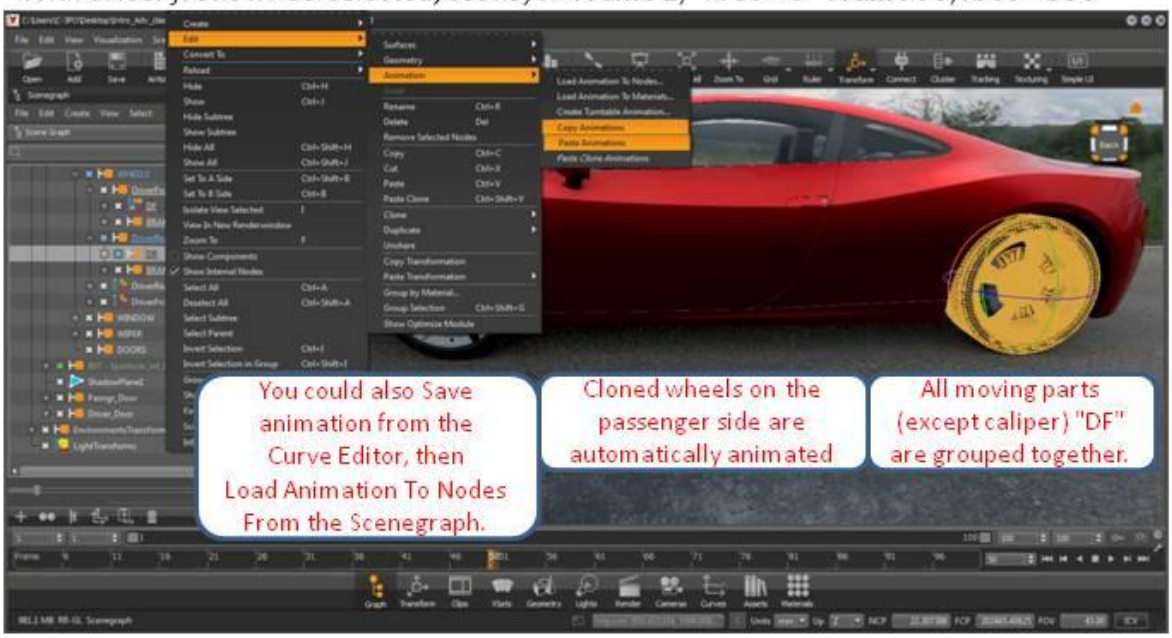
You can set Variants for Geometries, Materials, Lights, Enviroments, Views, Animations, Scripts…

ANIMATION

Wheel rotation



With driver front wheel selected, set keys: **Frame 1**, **xrot = 0** **Frame 50**, **xrot = 360**



Copy and Paste animation from front to rear wheel.

ANIMATION

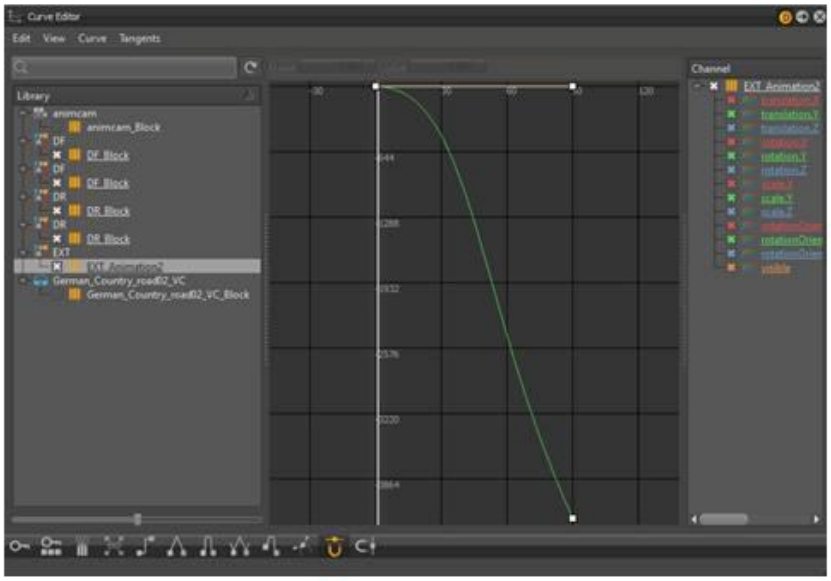
Driving the vehicle using the Animation Wizard

Capture the initial position. Move the vehicle forward in Ytrans and Capture the end position.

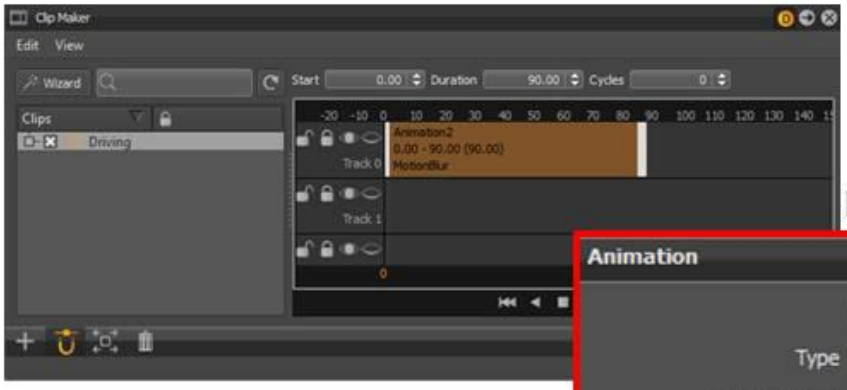
Start= **0**, Duration = **3**, Interpolation = **Ease In**

ANIMATION

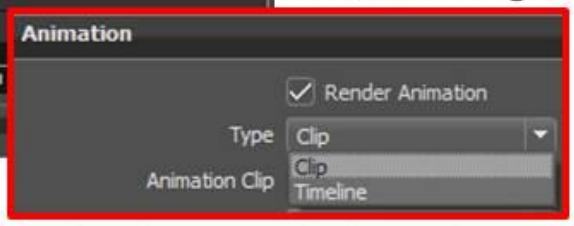
*A block is automatically created in the **Curve Editor**...*



*And a Clip is automatically created in the **Clip Editor**.*



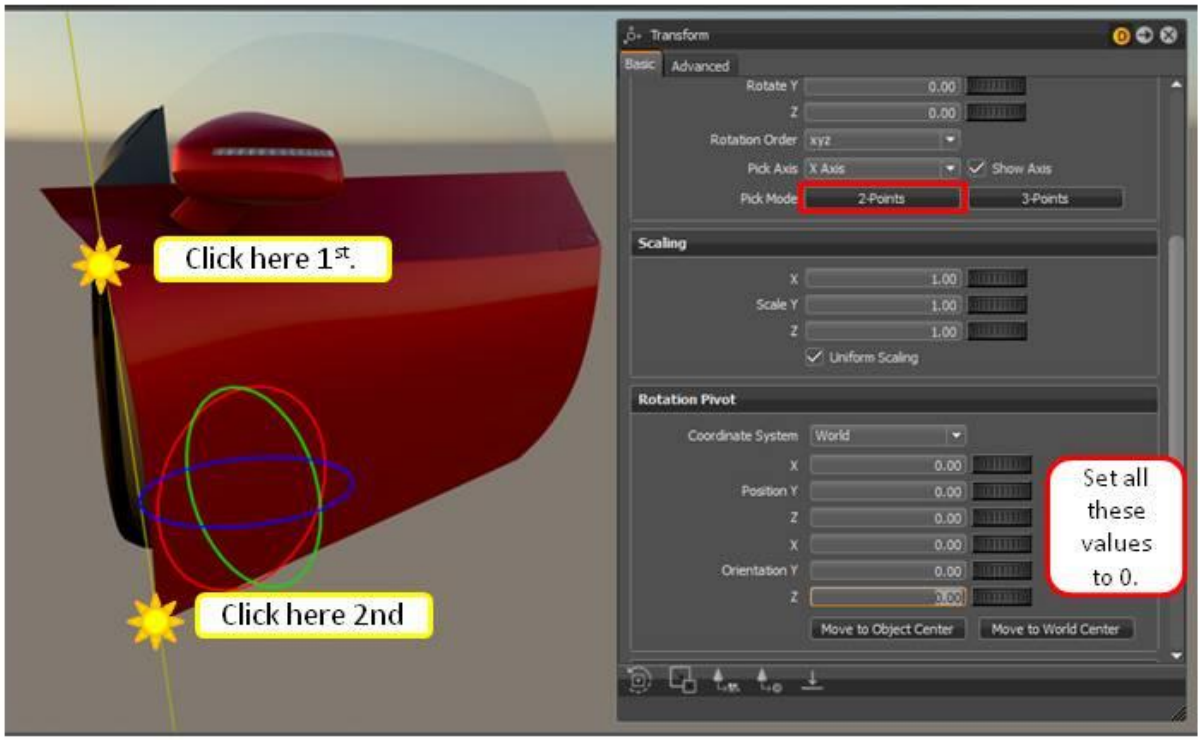
Render Settings



You can expand or compress the timing by dragging the box edges.
You can move where this block happens in time.
Other Blocks can be dragged into New Clips.
The animation Curves can be refined and automatically update.
Make sure you choose the intended animation type before rendering!

ANIMATION

Setting up a 2- point pivot for door animation



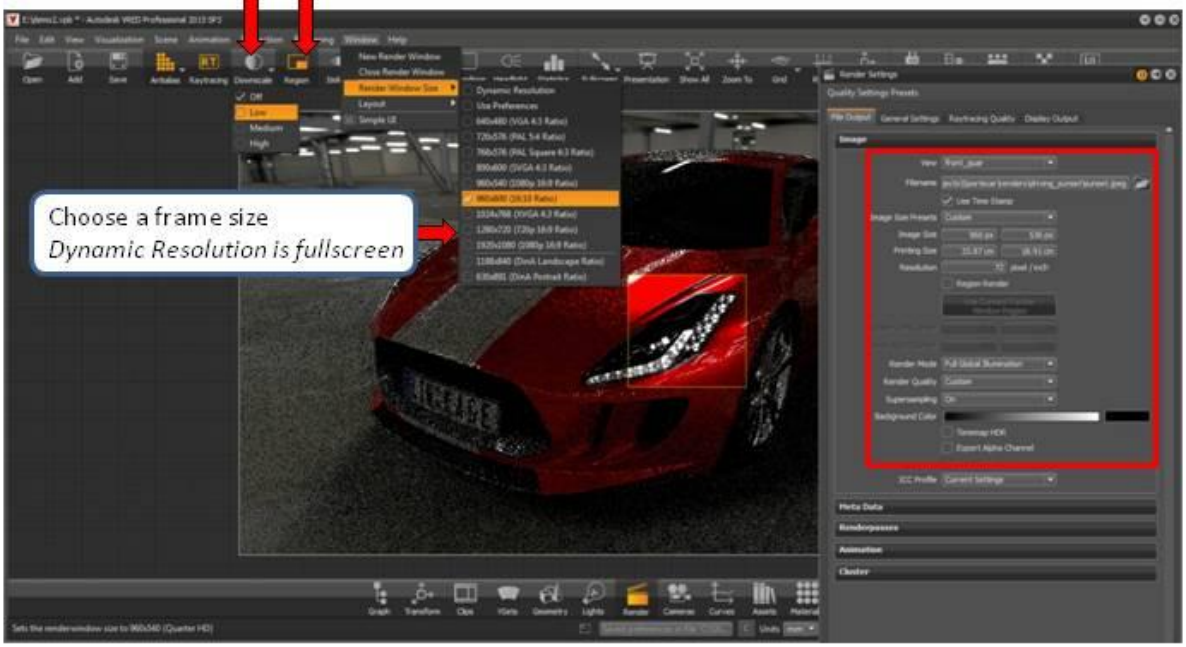
Show Axis *to see a line about which the door will rotate* ***(Z)***.

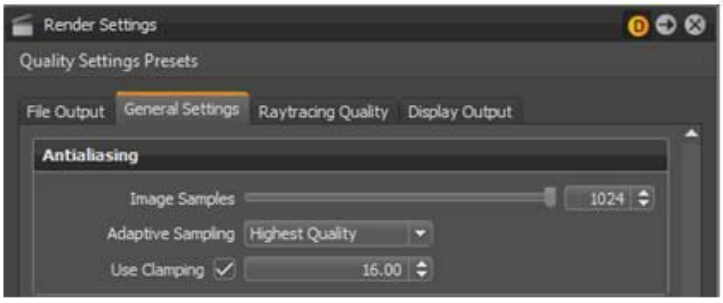
RENDERING

Downscale- lower quality Raytracing, but faster

Render Region- + drag a box

Render Settings





Increase **Image Samples** if spotty

Interactive:
Tumbling around,
with Antialiasing off

Still Frame:
When you stop navigating,
with Antialiasing on,
Also used for output renders

RENDERING

Raytracing Illumination Modes

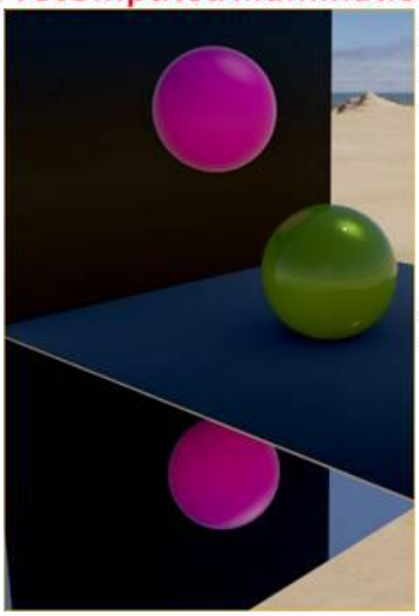
CPU Rasterization

Realistic lighting

**Same look as OpenGL*

**Good with heavy data*

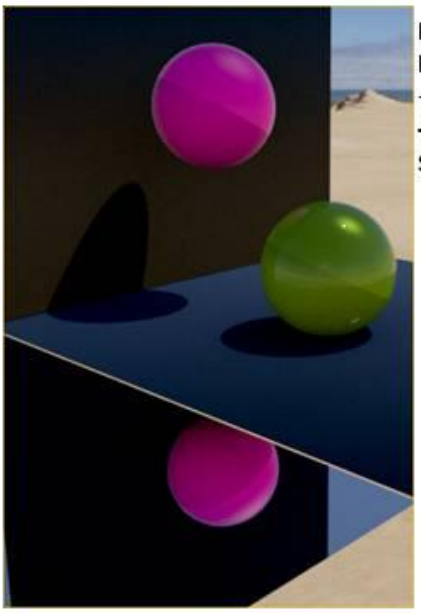
Precomputed Illumination



Realistic Lighting **+ Reflections**

**use with Ambient Occlusion*

Precomputed + Shadows



Realistic Lighting + Reflections **+ Interactive Shadows**

Precomputed + IBL

Realistic Lighting + Reflections + Interactive Shadows **+ Glossy Reflections**

RENDERING

Raytracing Illumination Modes

Full Global Illumination

Realistic
Lighting
+ Reflections
+ Interactive
Shadows
+ Glossy
Reflections
+ Specular
Reflections

** Most physically accurate- best quality*

**Most time consuming*

Thank you all so much for attending this AU Hands-On-Lab. Feel free to contact me with questions: dawn@linkage-d.com

For inquiries regarding software sales, training, and design resource placement, please contact Rita: rita@linkage-d.com, 248-268-2777 and visit our website: http://www.linkage-d.com/