

# Walk-in Slide: AU 2014 Social Media Feed

1. Click on the link below, this will open your web browser

<http://aucache.autodesk.com/social/visualization.html>

2. Use “Extended Display” to project the website on screen if you plan to work on your computer. Use “Duplicate” to display same image on screen and computer.

# VRED Essentials for Transportation Design Visualization

**Dawn McArdle**

*Visualization Specialist*

<http://www.linkage-d.com/>

# l i n k a g e design

resources | design | education

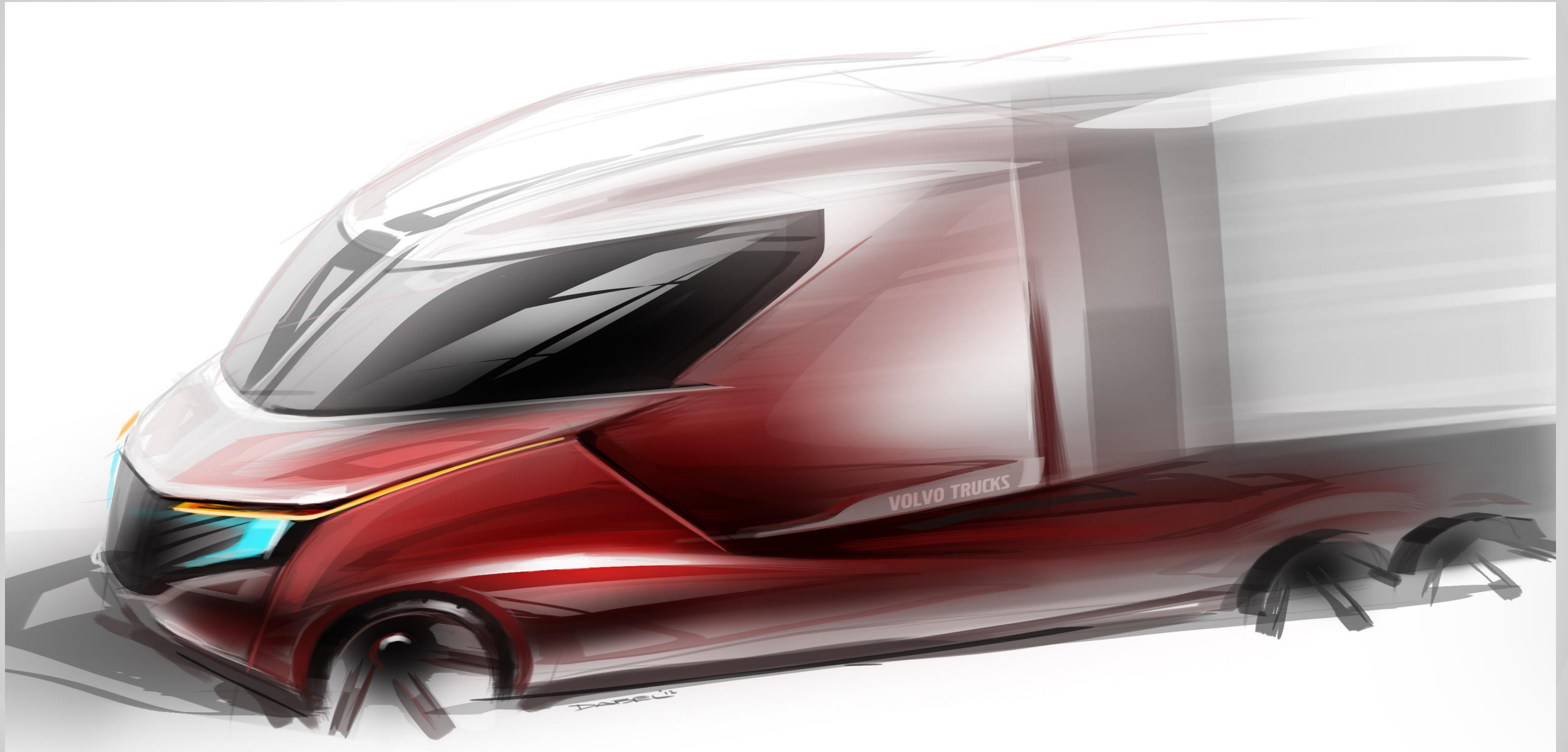
# Profile – Linkage Design

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- founded in 2008
- mission: *care for our customers, care for our employees...simple*
- Linkage employs high-end design resources
- focus on transportation digital design using Autodesk Alias tools
- offices in Detroit, Greensboro and London
- customers: Volvo Truck, Chrysler, Google, US NAVY, Ricardo, Visteon, Astro Design & others
- growth 2011 vs 2010: 260% (actual)
- growth 2012 vs 2011: 110% (actual)
- growth 2013 vs 2012: 65% (actual)

# sketching

# Profile – sketching



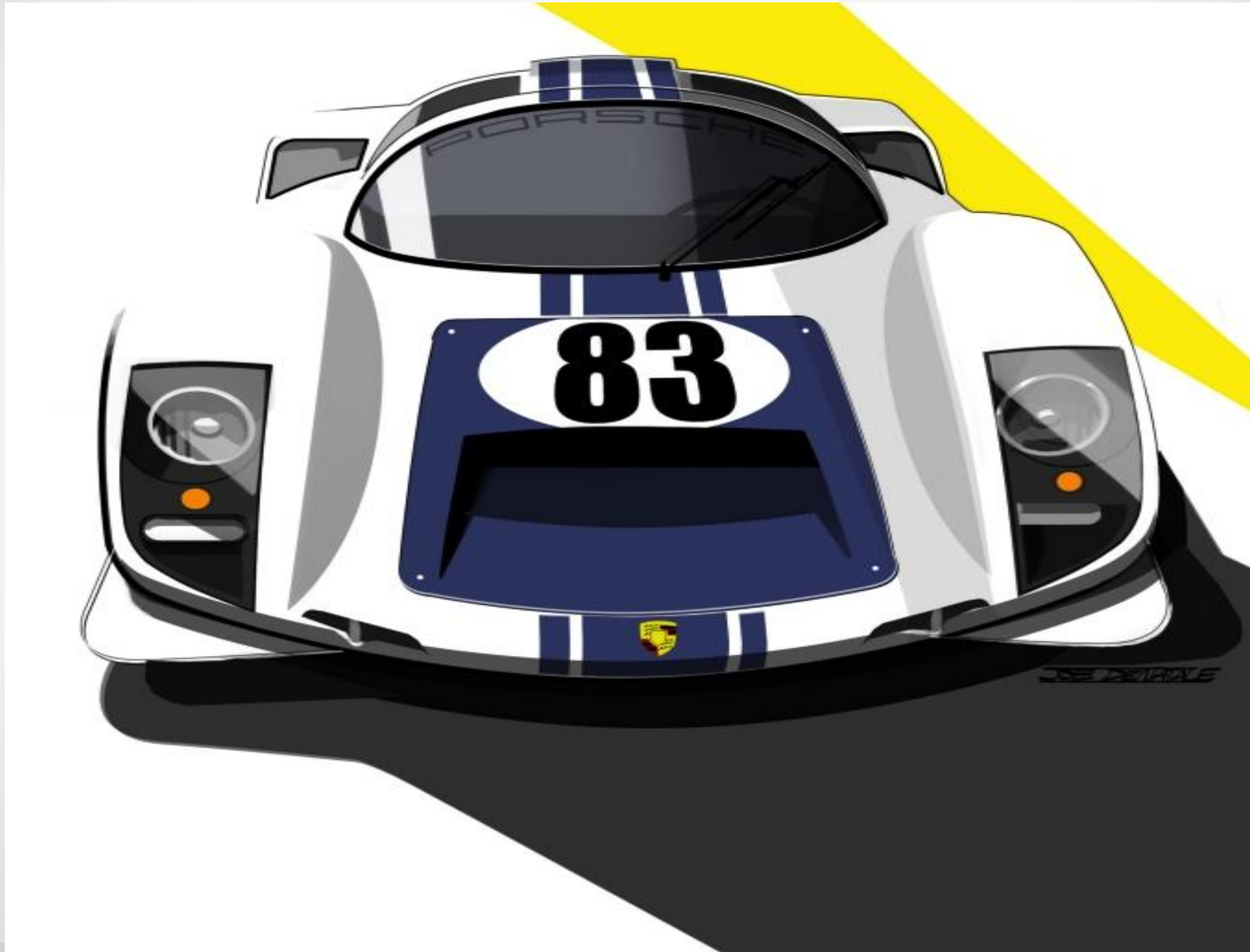
# Profile – sketching



# Profile – sketching



# Profile – sketching



# Profile – sketching

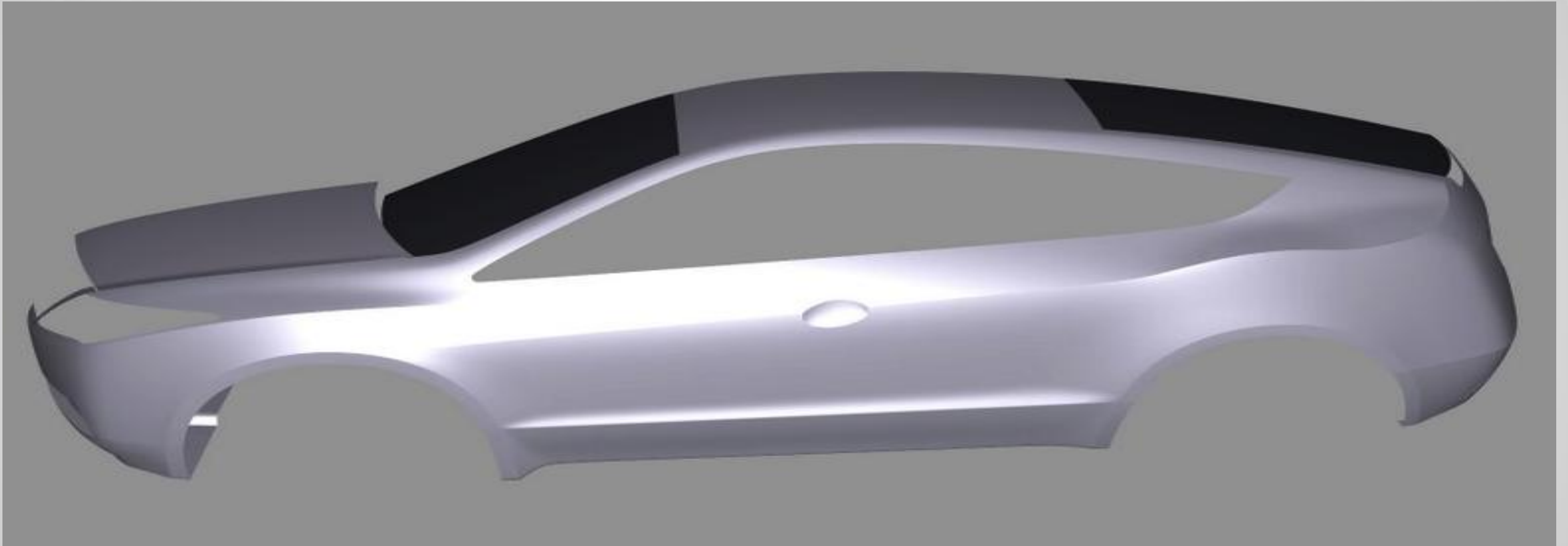


# modeling

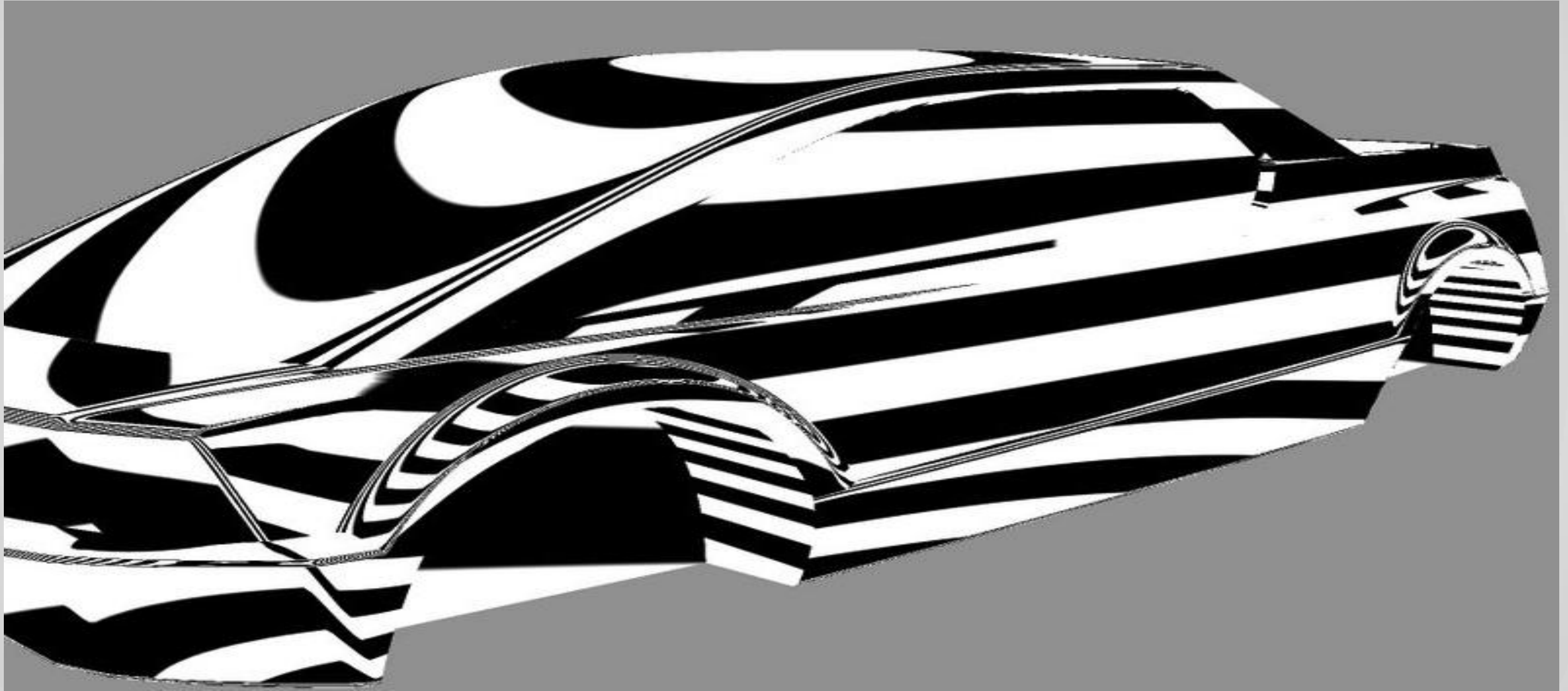
# Profile – modeling



# Profile – modeling



# Profile – modeling



# Profile – modeling



# Profile – modeling



viz

# Profile - VRED



# Profile - VRED



# Profile - VRED



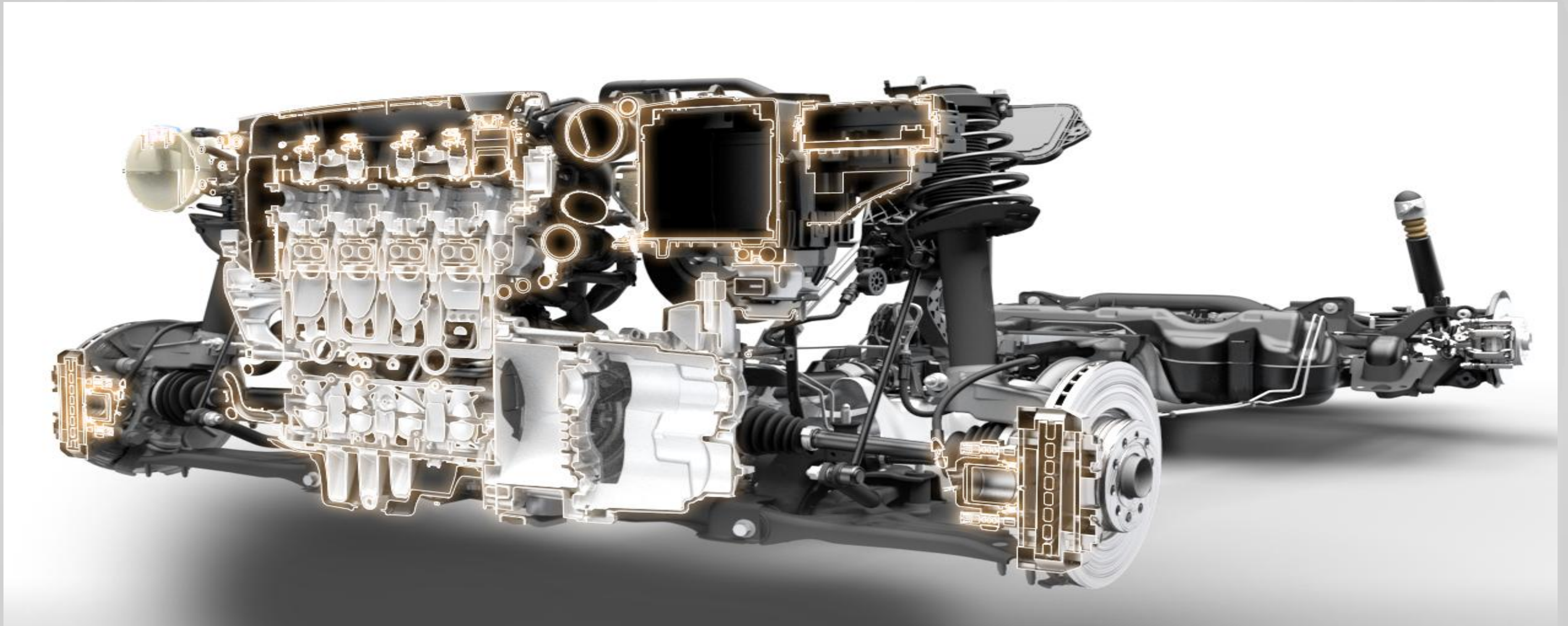
# Profile - VRED



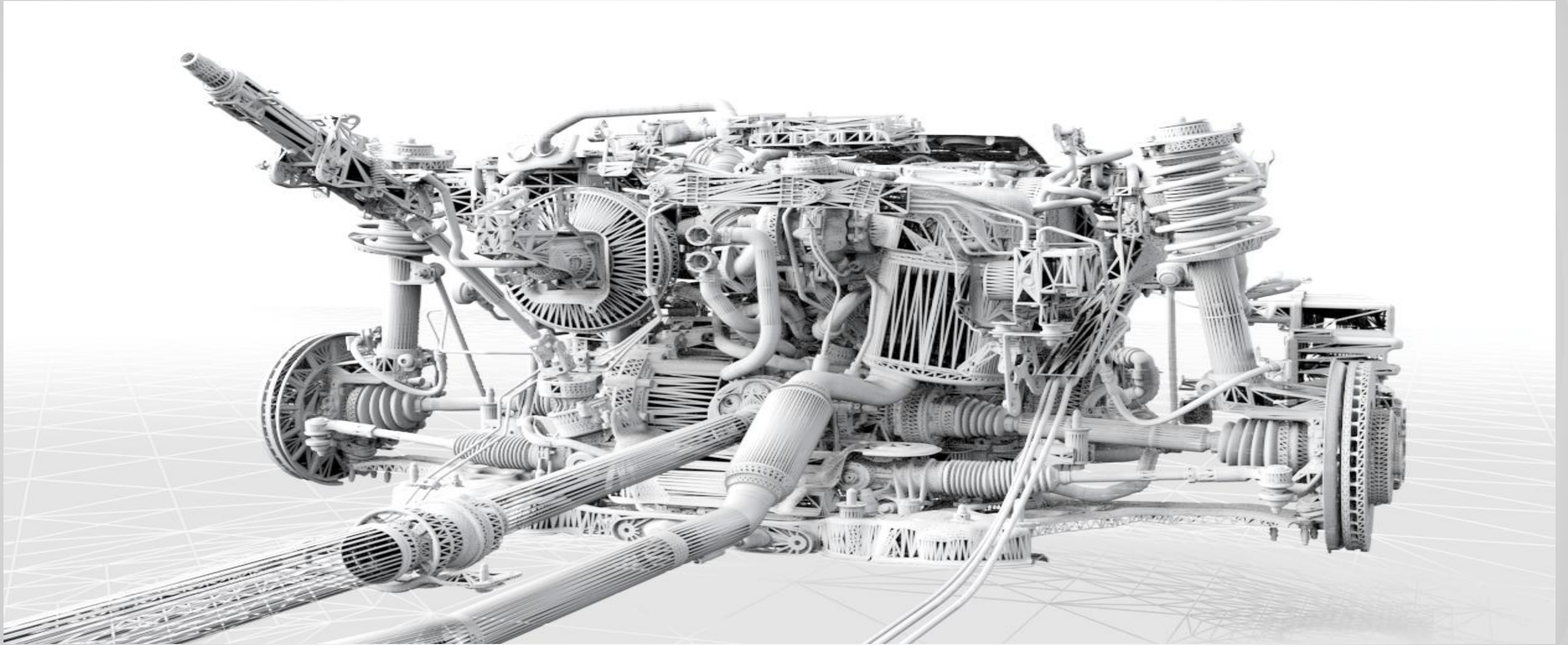
# Profile - VRED



# Profile - VRED



# Profile - VRED



# Class summary

- This class will teach you the basics of Autodesk VRED real-time visualization software, and afterward you should be able to import and stage any 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.
- Using provided 3D vehicle files and 2D texture files, you will learn how to navigate, import, and prepare the vehicle model, assign materials, and set up lighting/shadows. Students will set up moving parts on the vehicle, and animate the camera. Some camera effects, such as depth of field and motion blur will be demonstrated. Finally, we will pull it all together by setting up variants (key-prompted commands to show variations during presentations) and output rendered images, with an understanding of the many options available for OpenGL and raytracing.

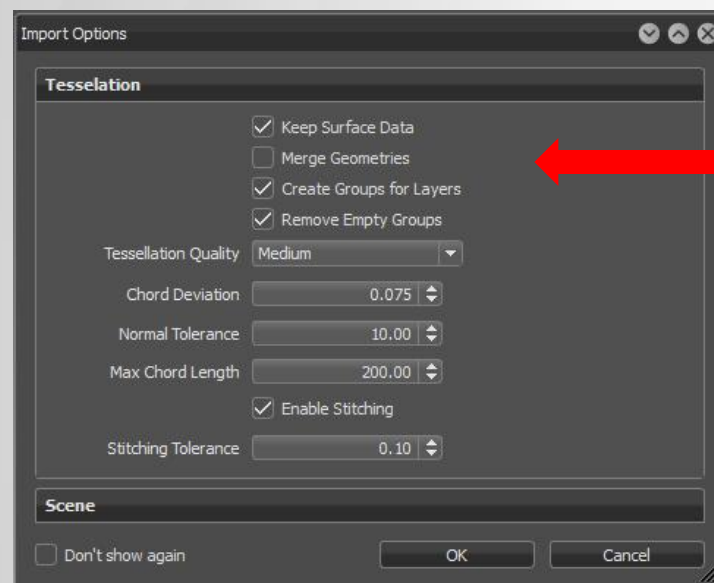
# Key learning objectives

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

- navigate, import, and prepare the vehicle model
- assign materials, and set up lighting/shadows
- set up moving parts on the vehicle
- animate the camera and set camera effects
- setting up variants
- output rendered images

# IMPORTING GEOMETRY

Open

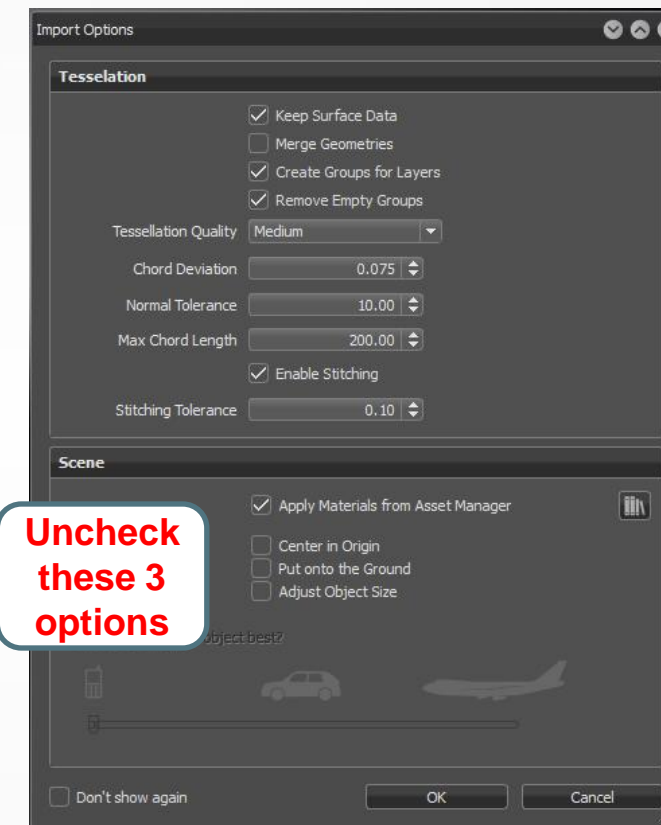


Uncheck Merge Geometries

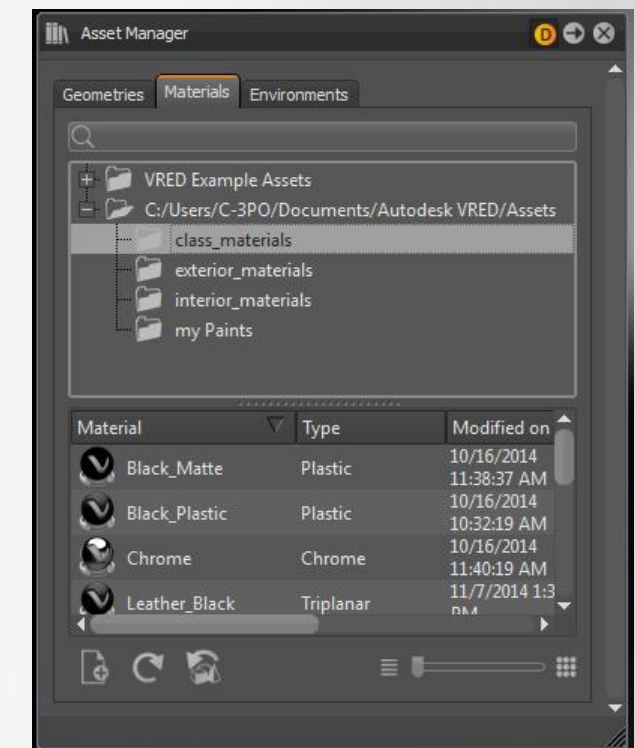
To convert Autostudio shaders to VRED Truelight materials with the same name:

Select “class\_materials” folder in Asset Manager.

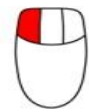
Add



Uncheck these 3 options



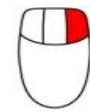
# VRED Cheat Sheet



Tumble



Translate (pan)



Zoom (dolly)



Navigation Cube

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

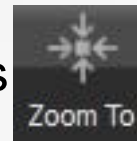


•Initial Camera View  
sets home view

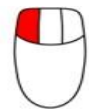
**F**

Fit (selected)

•Same as

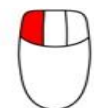


**Shift +**



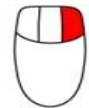
To select objects

**Shift + Control +**



To add to the selection

**Shift +**



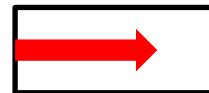
To deselect

**Shift + Control +**



To deselect one object at a time

**Shift +**



To select all objects within box

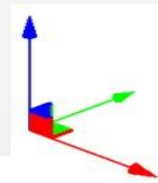
**Shift +**



To select all objects in box + environment

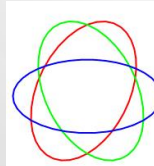
**Shift + W**

Translate



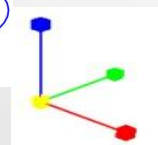
**Shift + E**

Rotate



**Shift + R**

Scale



**Control + J**

Hide selected

**Control + H**

Unhide selected

**Shift + Q**

Move pivot

## Navigation



**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

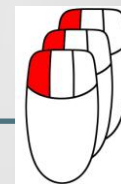
## Selecting

•Red = X

•Green = Y

•Blue = Z

RENAME:  
CTRL + R or



## Transforming

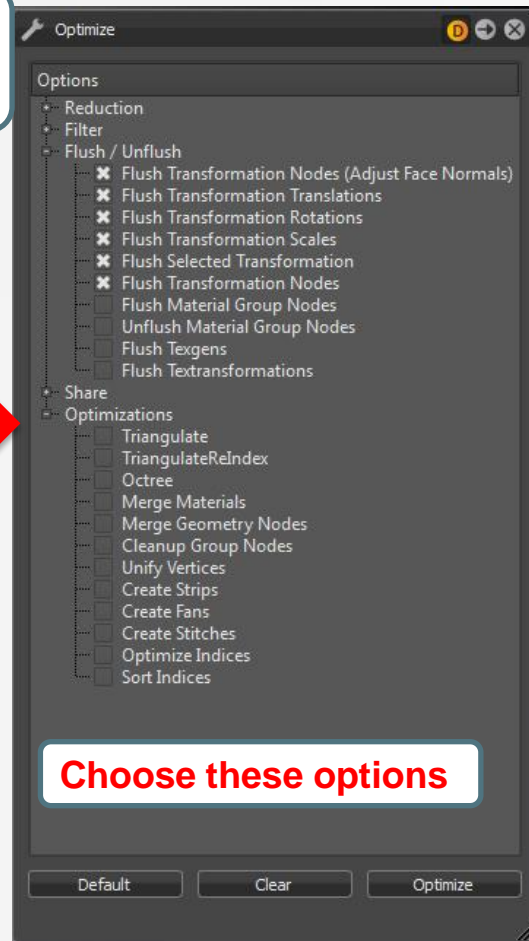
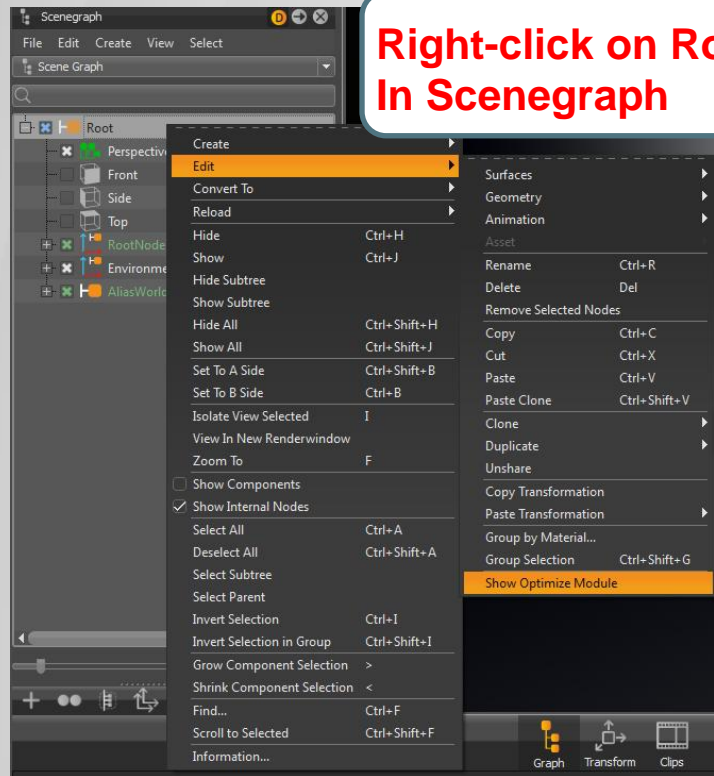
l i n k a g e  
design

Dawn McArdle dawn@linkage-d.com

# OPTIMIZING

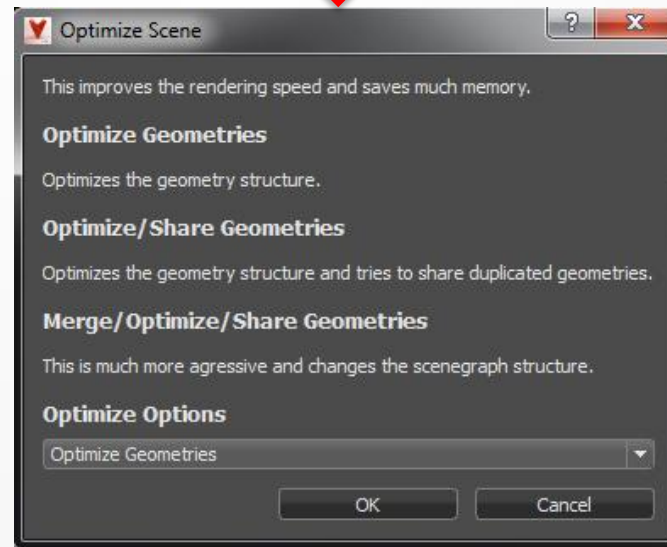
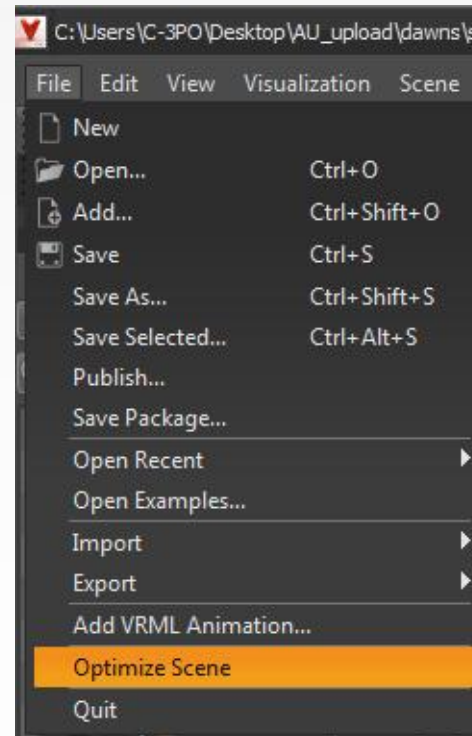
Right-click on Root  
In Scenegraph

1



Choose these options

2



Choose the first level of optimization  
From the dropdown arrow

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

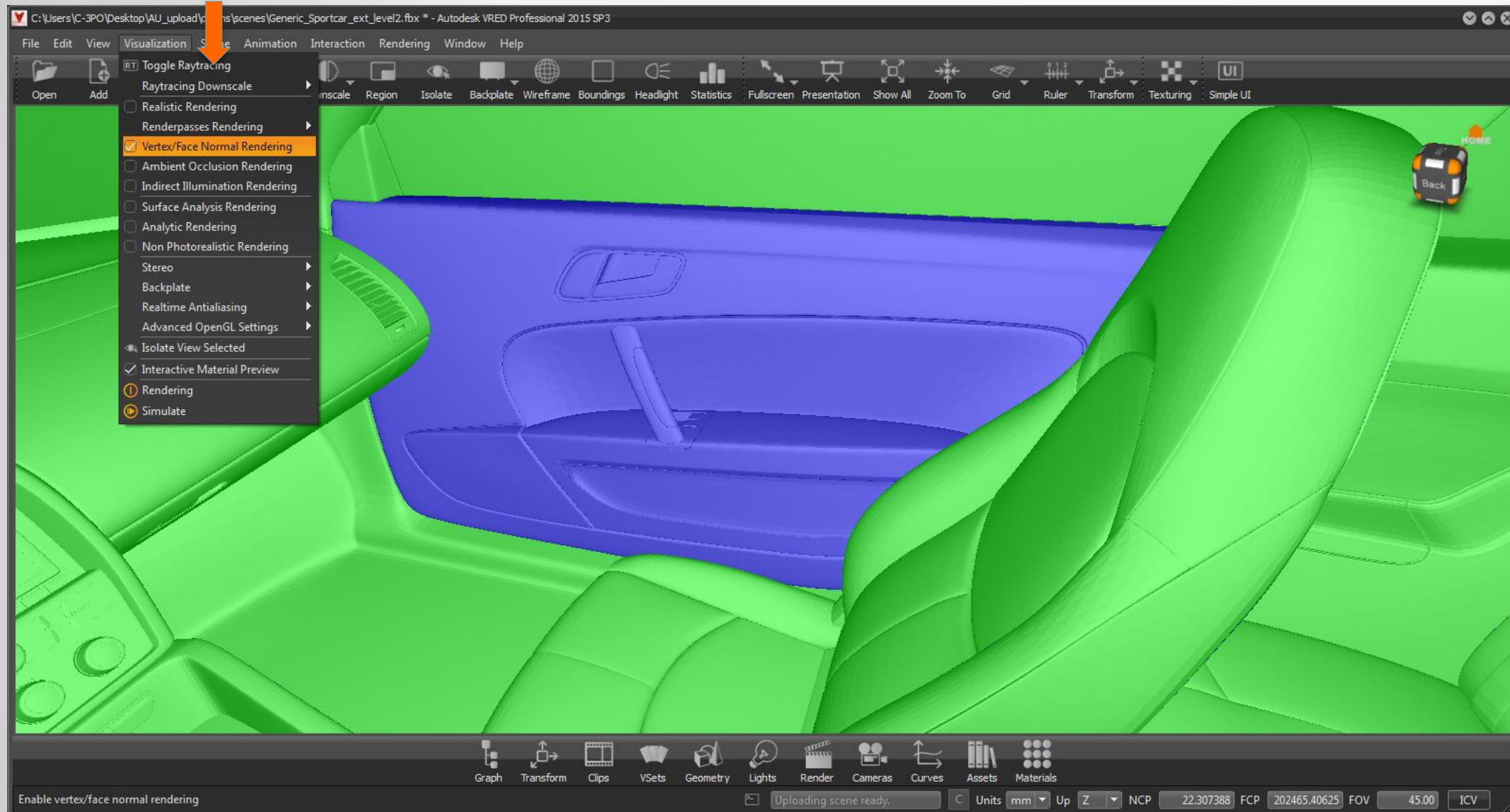


Click this broom icon  
to delete unassigned materials.

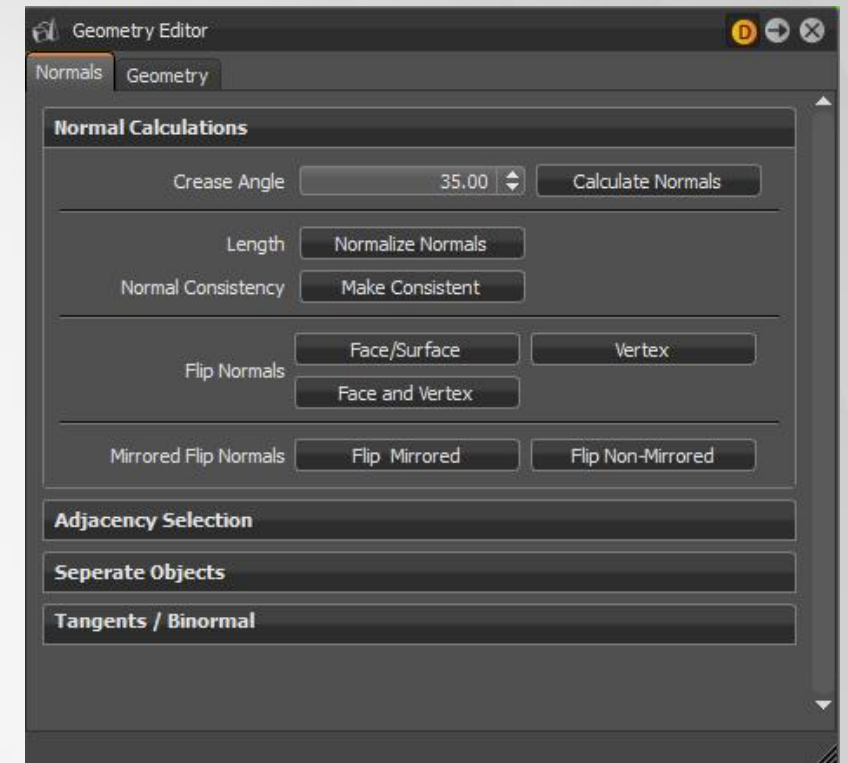
3

# NORMALS

## Vertex / Face Normal Rendering



ALT+  to flip normals so they face the camera.



Additional options can be found  
In the **Geometry Editor**.

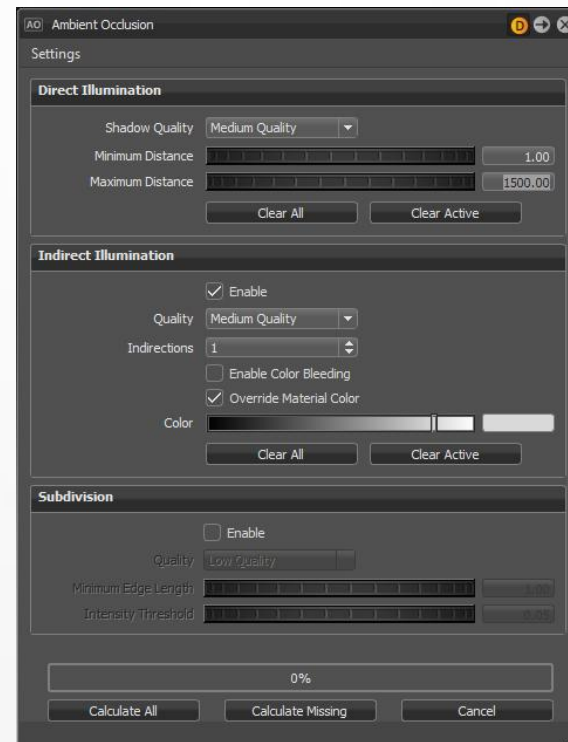
# AMBIENT OCCLUSION

*\* Hide transparent objects*

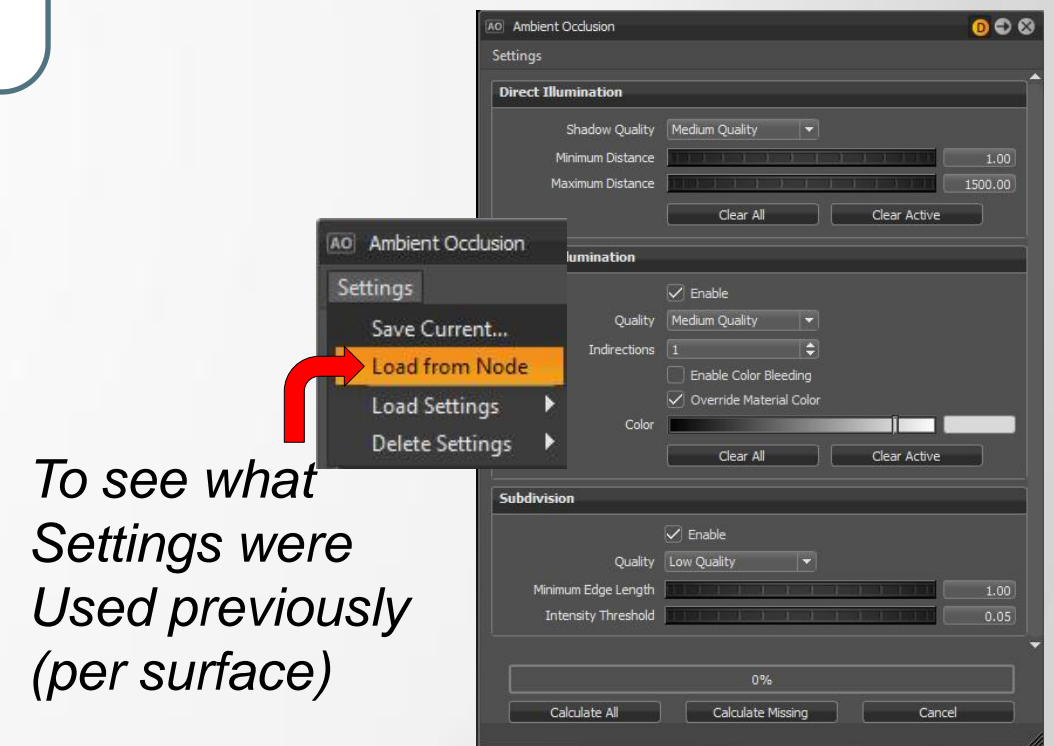


**EXTERIOR:**  
**Maximum Distance = 3000**  
**Direct Illumination only**

**INTERIOR:**  
**Maximum Distance = 1500**  
**Direct Illumination and Indirect Illumination**

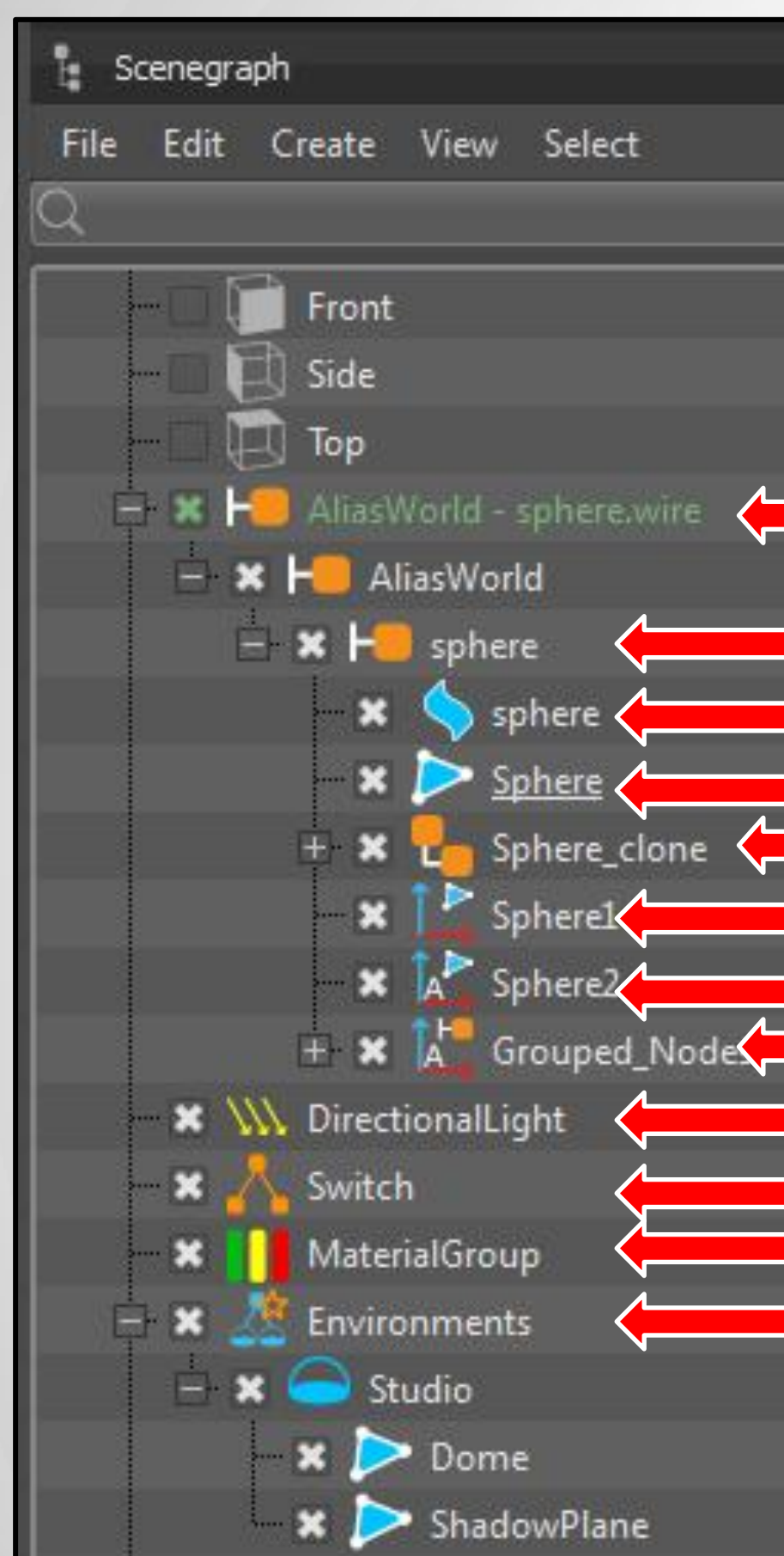


**JAGGED LOOKING SURFACES:**  
**Turn on Subdivision and Recalculate on a as-needed basis**



*To see what Settings were Used previously (per surface)*

# 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)

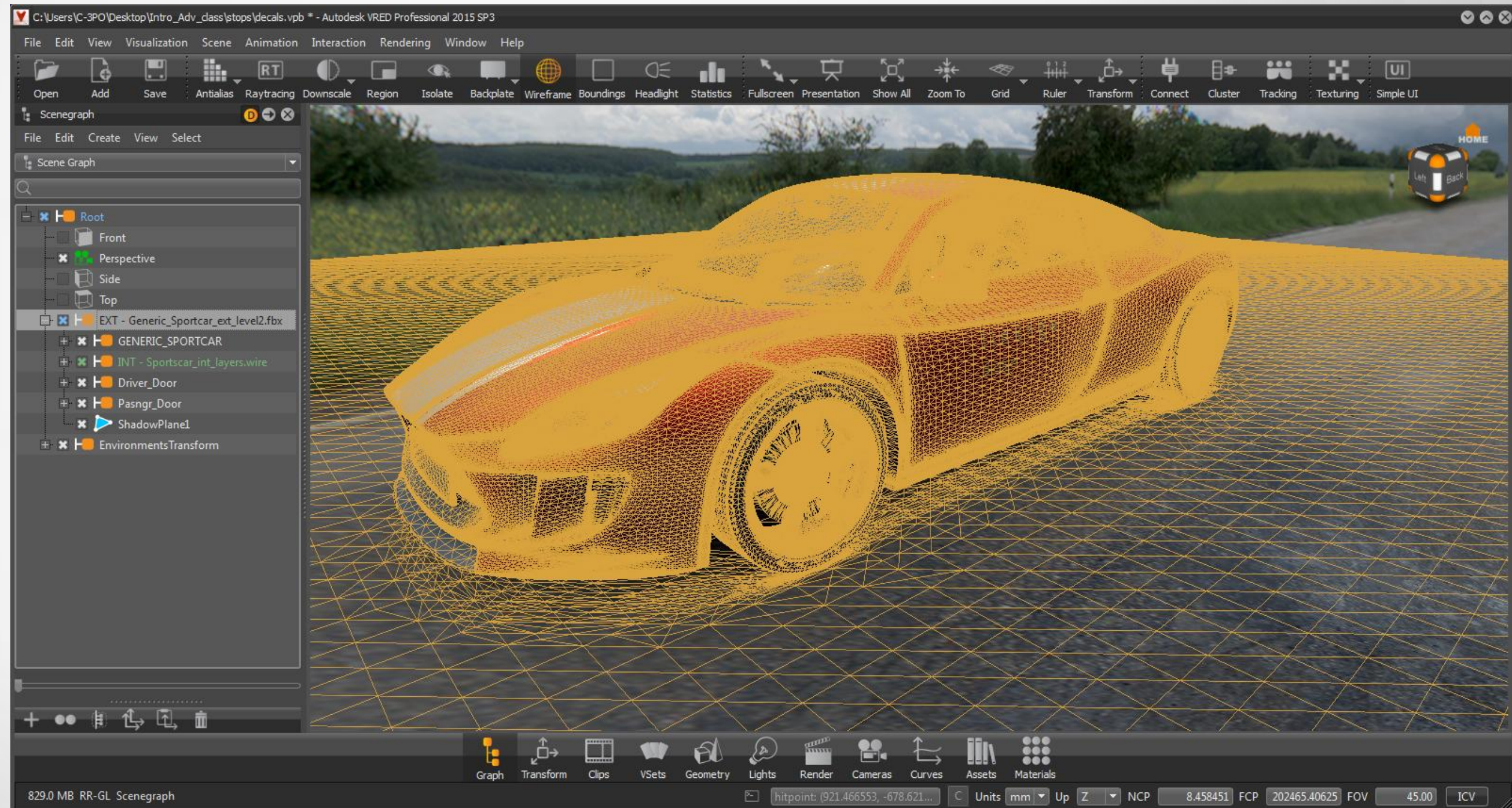
**Material** Node (all geometry contained takes on the assigned material)

**Environment-** contains dome and floor

# GROUPING

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

Exterior  
Interior  
Driver Door  
Passenger Door  
ShadowPlane

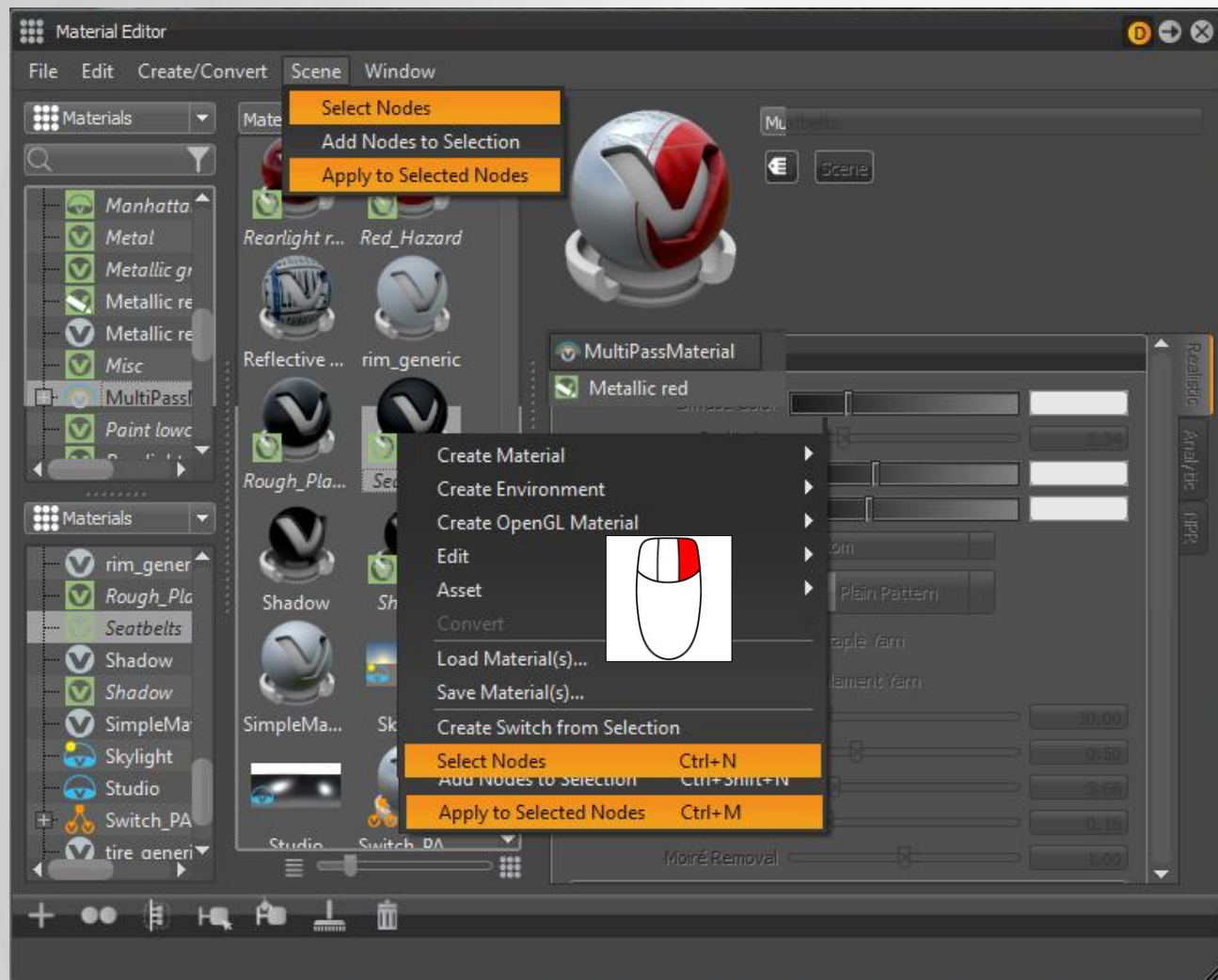


# MATERIAL EDITOR

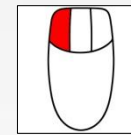
LIST

PREVIEW

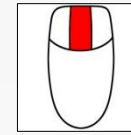
ATTRIBUTES



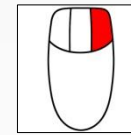
**Select Nodes** to select geometry assigned to selected material  
**Apply to Selected Nodes** to assign to selected geometry



+ drag onto surface to assign



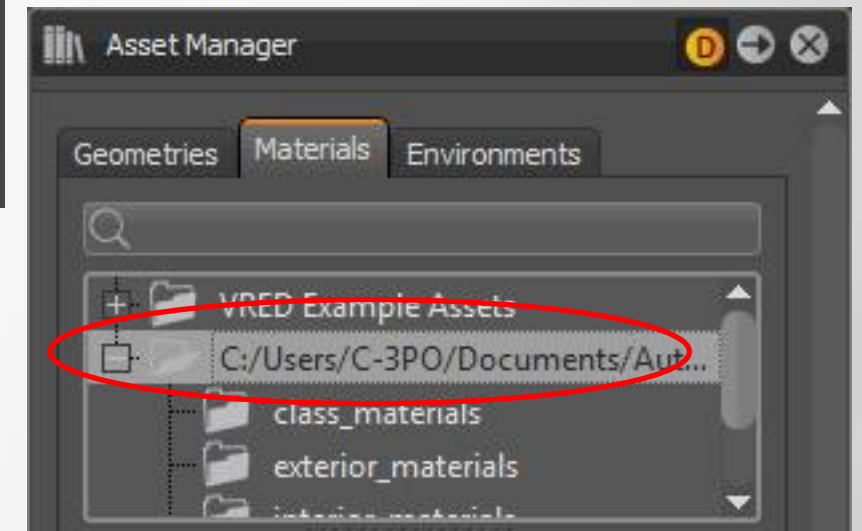
+ drag onto surface to assign to all surfaces with the same material



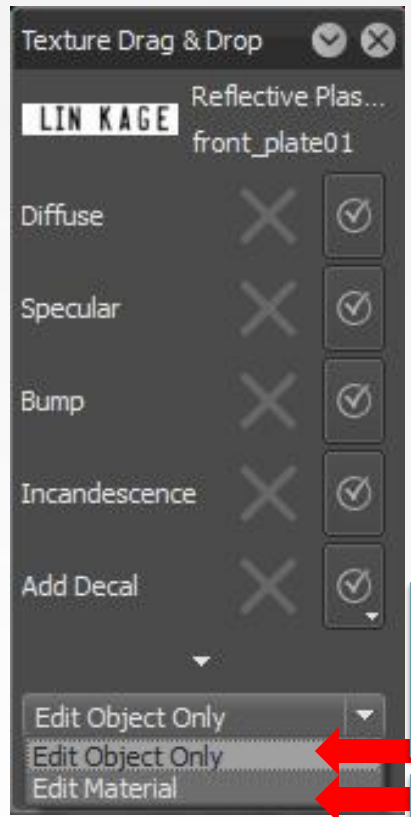
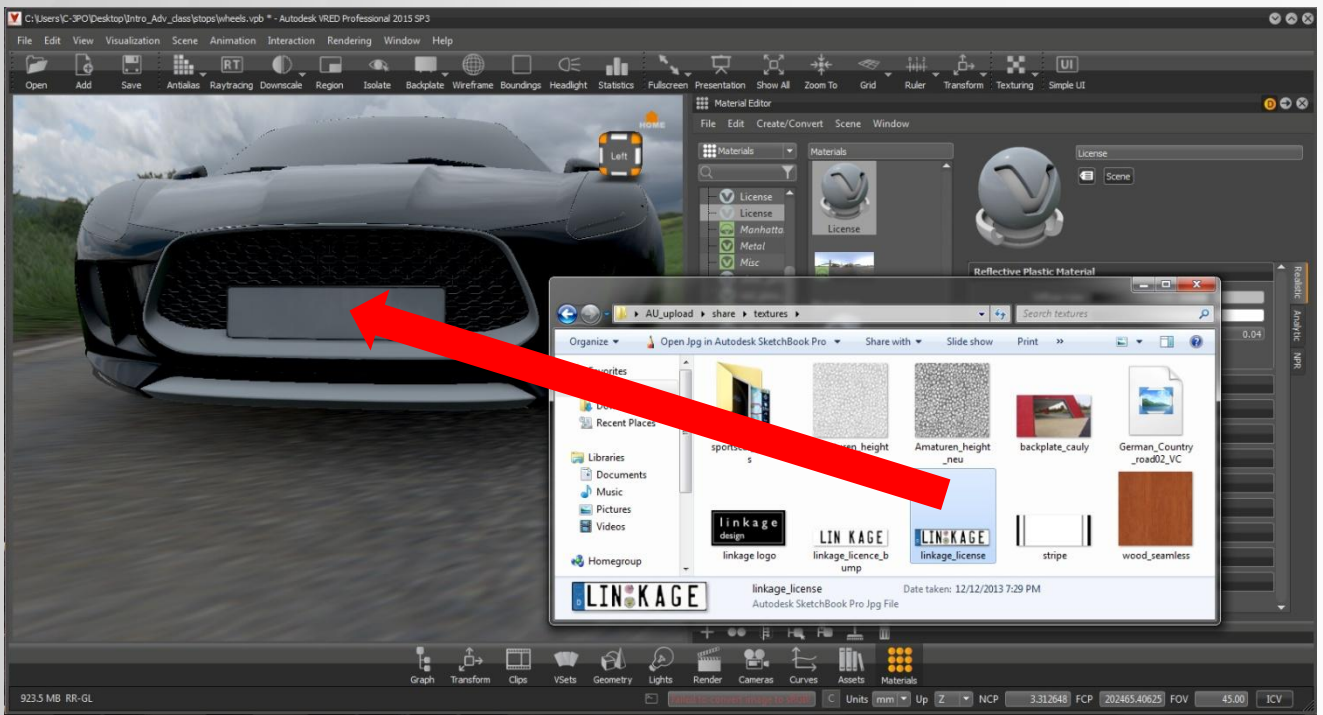
+ drag onto surface to replace materials as Switch or Multi Pass



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

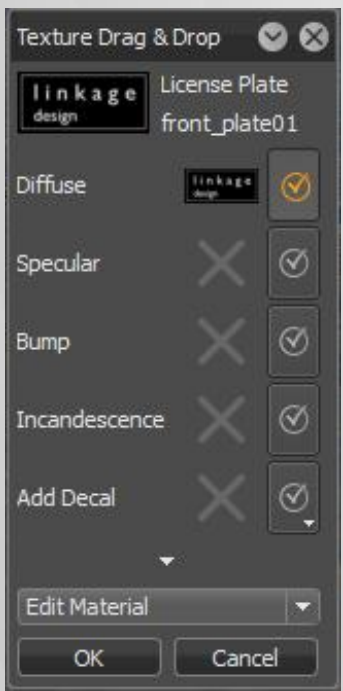


# TEXTURE MAPPING

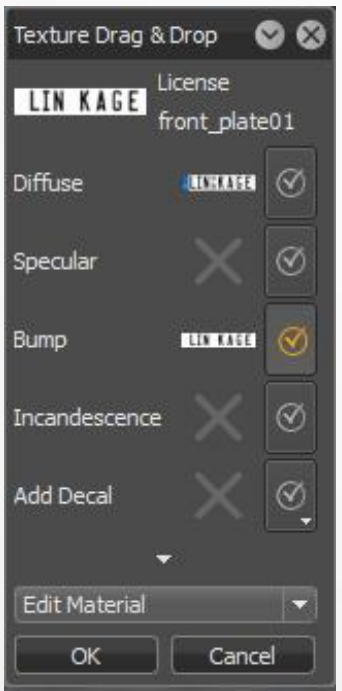


**Edit Material** applies texture to all surfaces sharing this material

**Edit Object Only** applies texture only to surface onto which you dragged texture



Diffuse



Bump

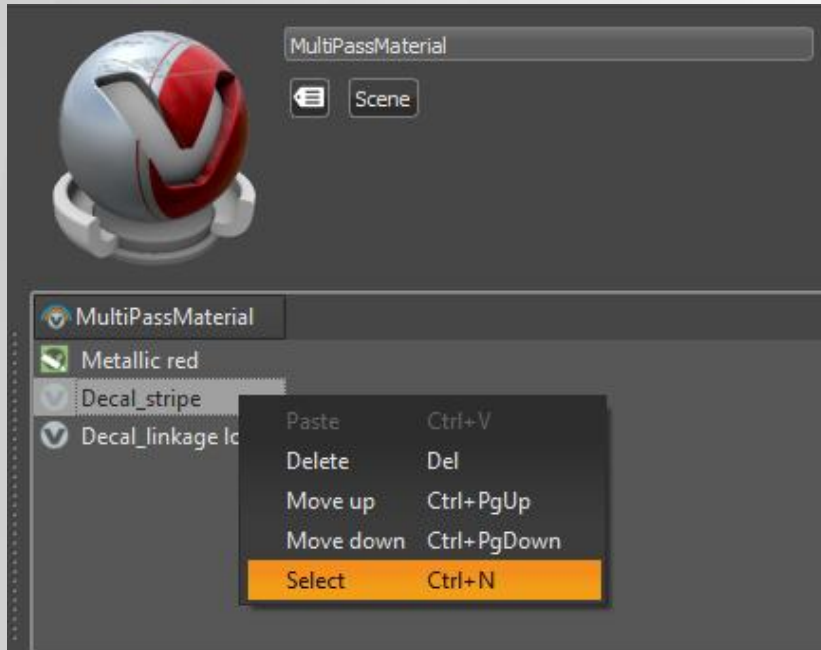


**Use Alpha Channel**  
If your texture was created with one

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

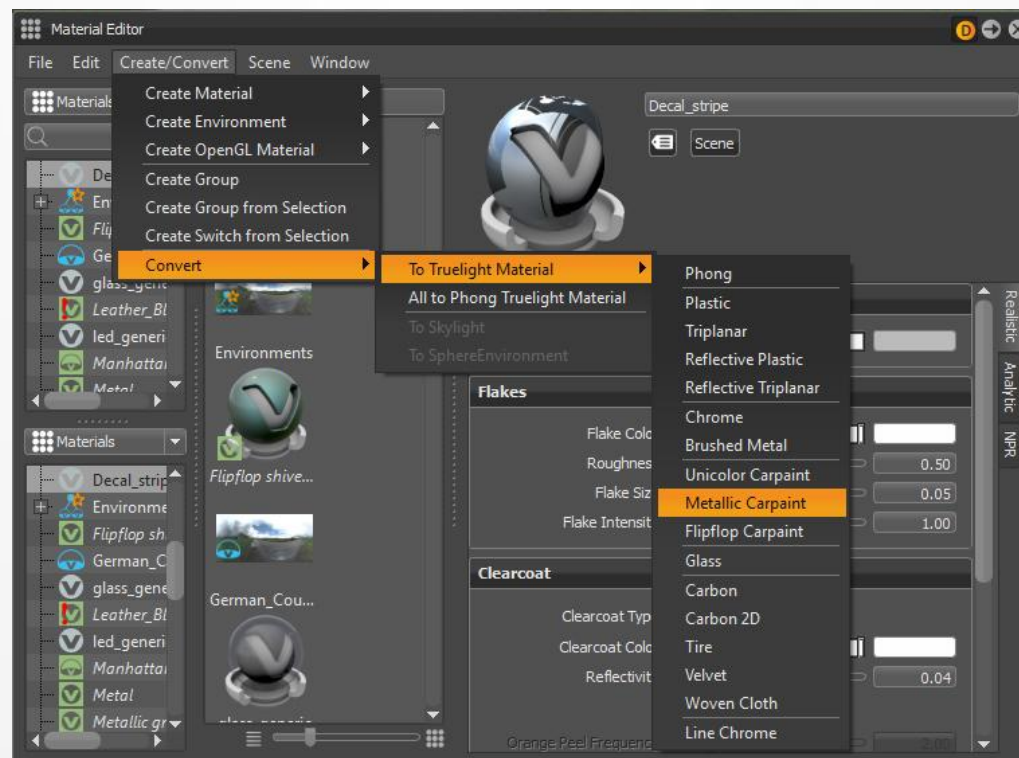
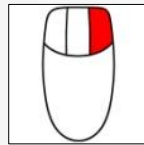


# TEXTURE MAPPING



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**.

# MATERIAL EDITOR

## Switch Material

LIST

PREVIEW

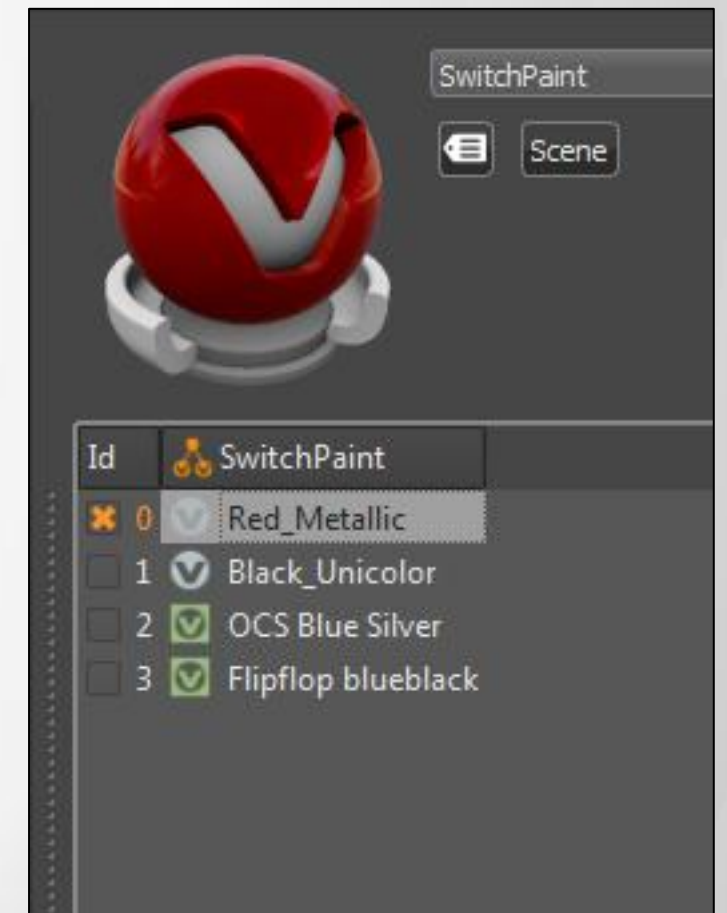
ATTRIBUTES



Or drag Preview ball onto Switchpaint  
To populate the Switch Material with carpaint Materials.



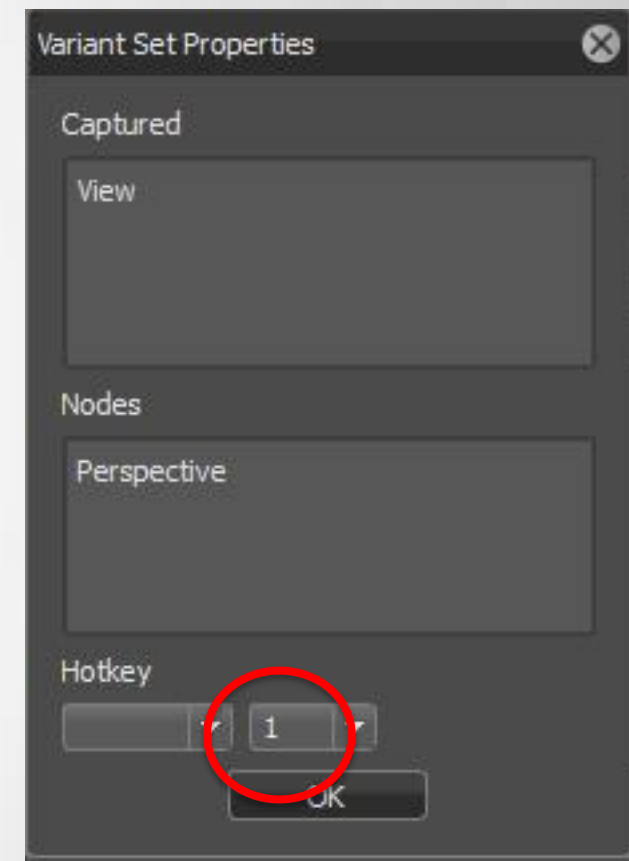
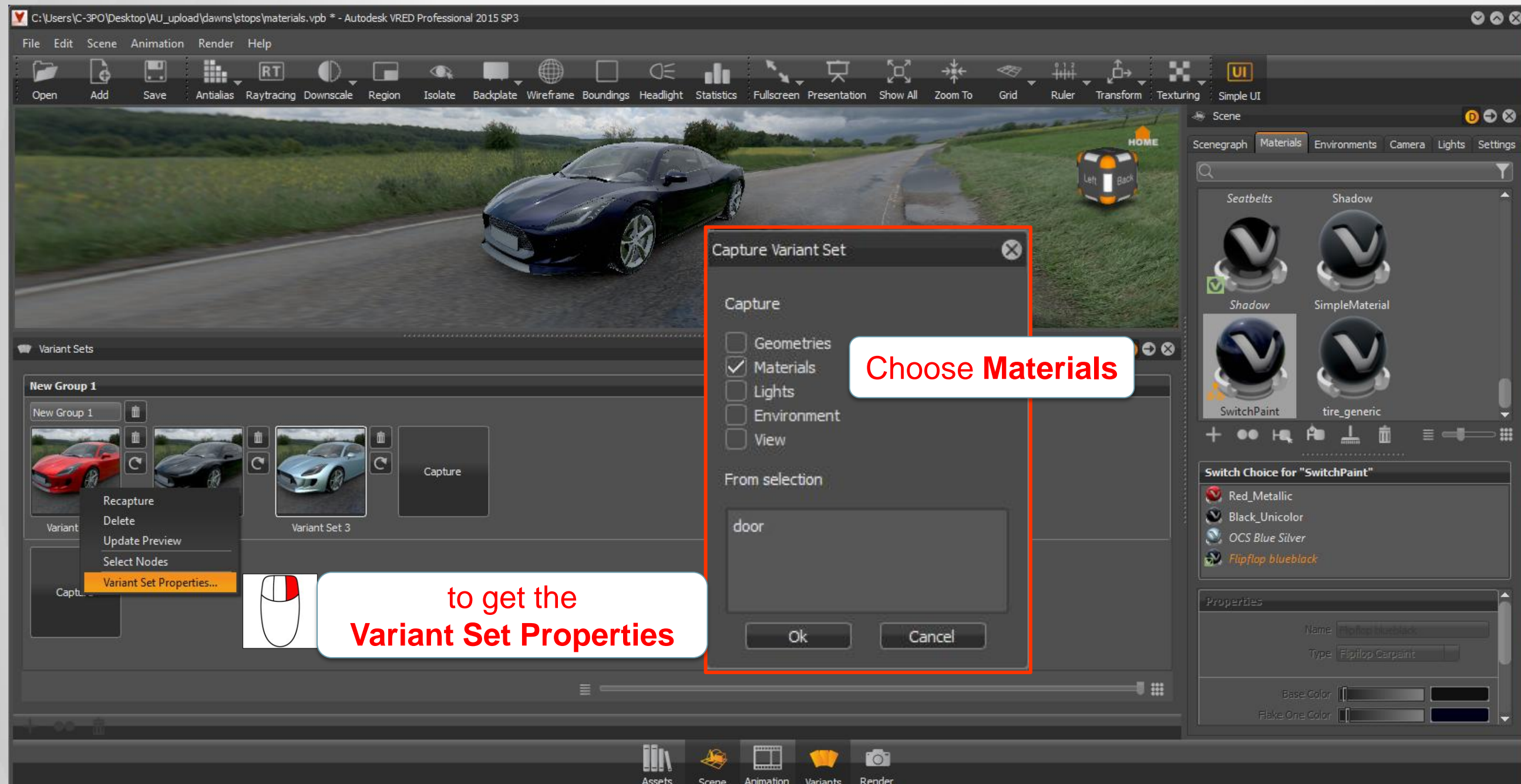
or **x** to change the current paint color



Split screen (drag on dotted line)  
to drag and drop from one to the other

# VARIANTS

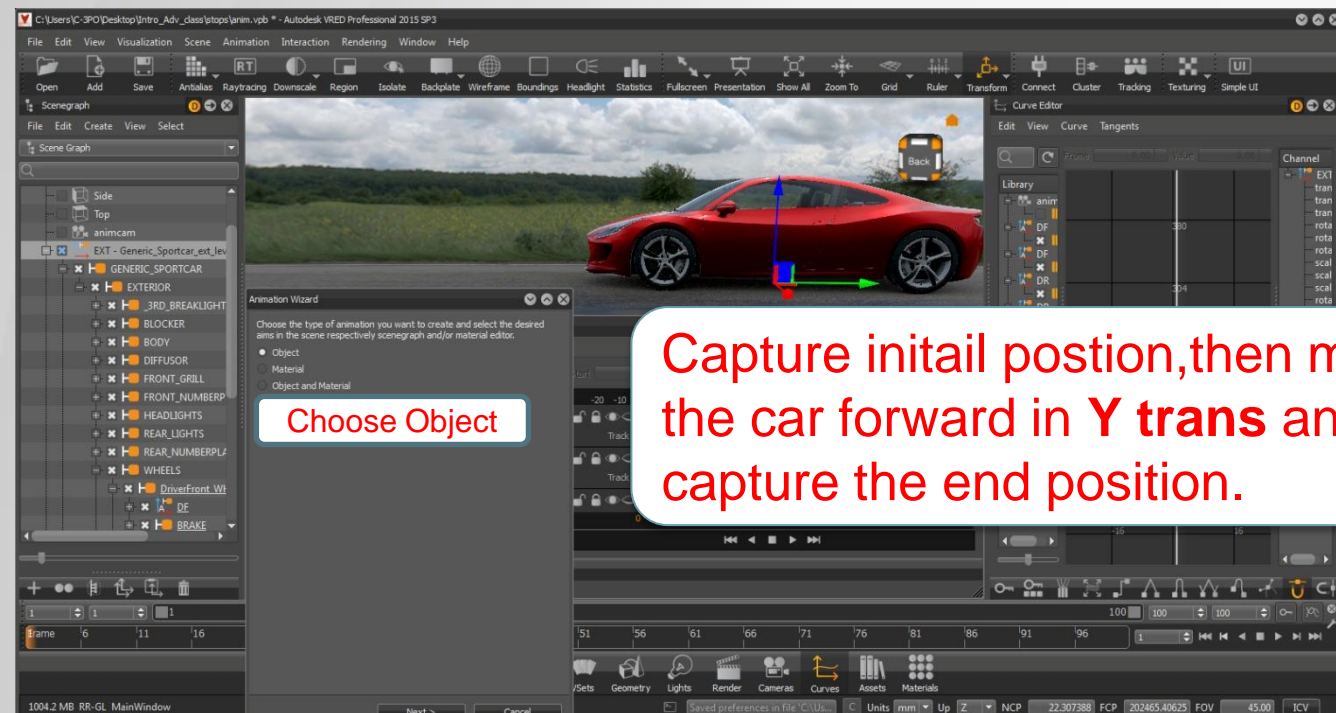
*You can set Variants for Geometries, Materials, Lights, Environments, Views, Animations, Scripts...*



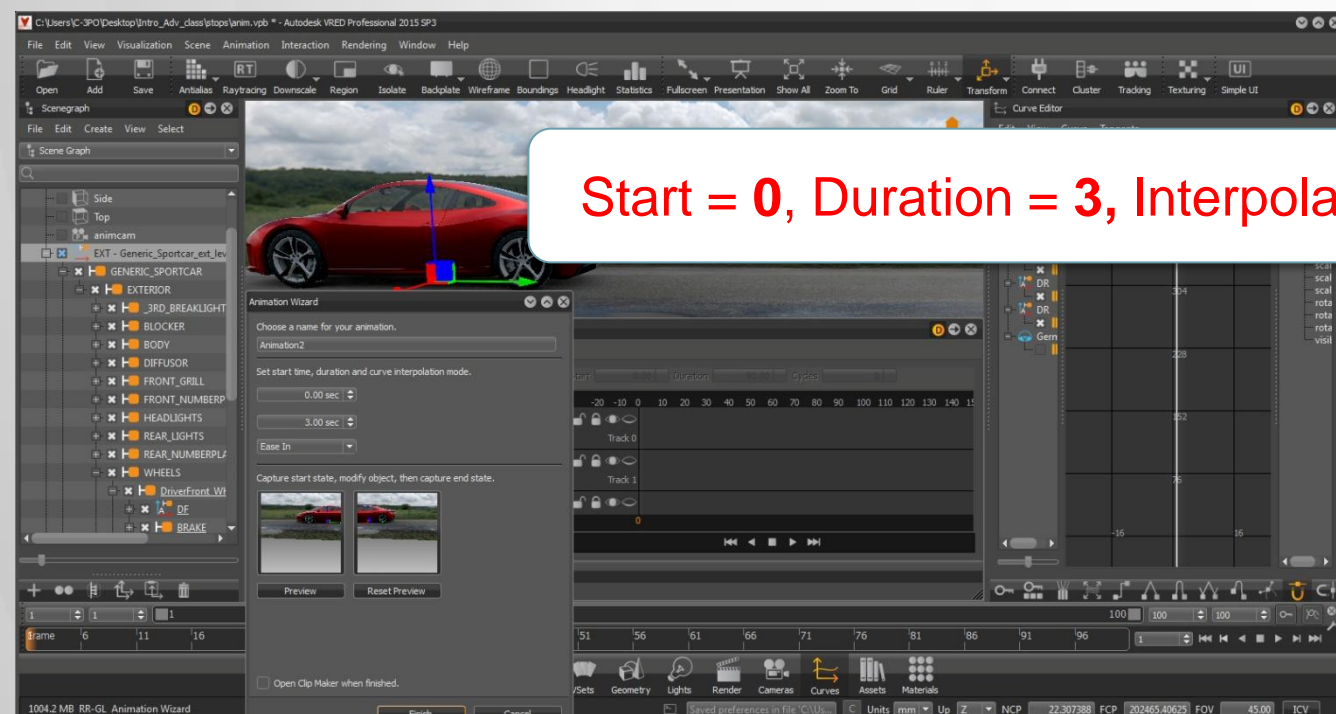
Set a hotkey to activate the Variant.

# ANIMATION

## Driving the vehicle using the Animation Wizard

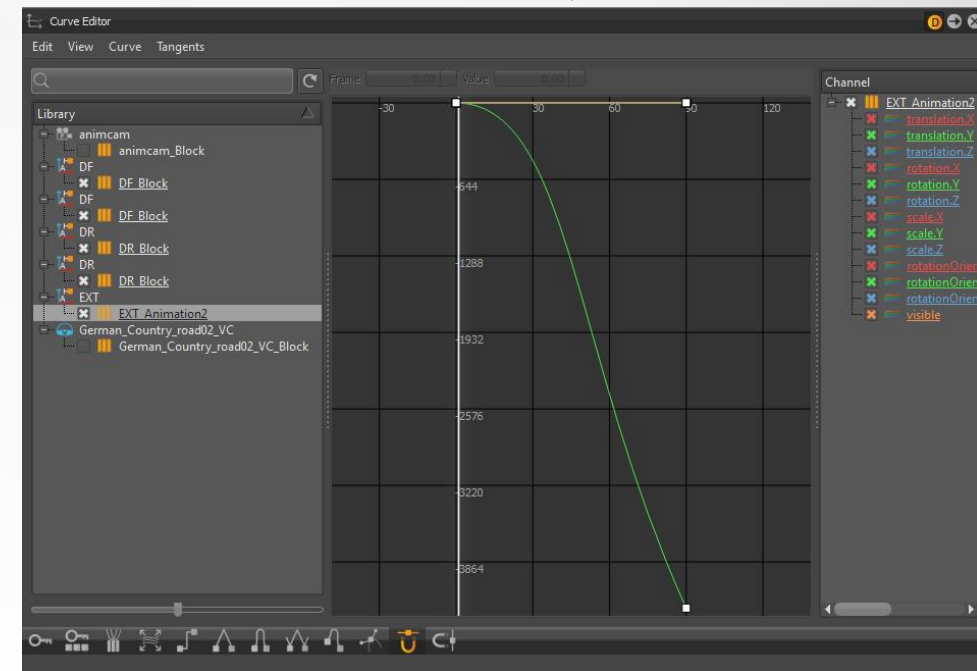


Capture initial position, then move the car forward in **Y trans** and capture the end position.

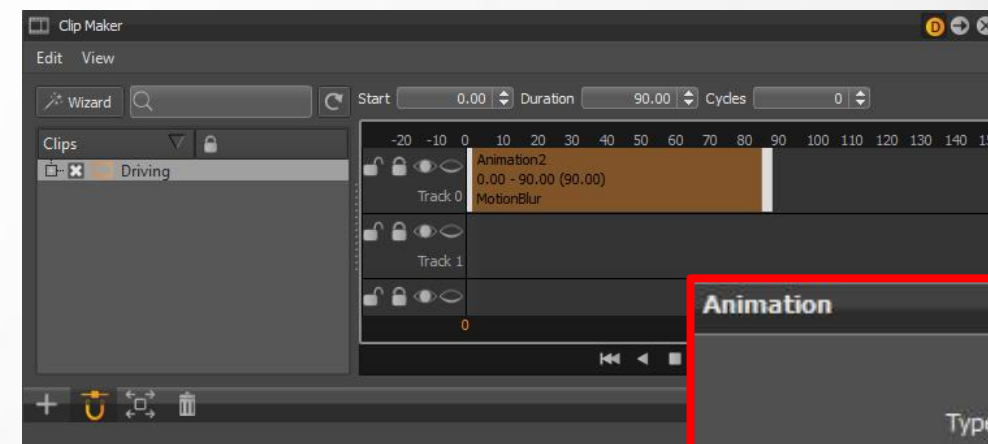


Start = 0, Duration = 3, Interpolation = **Ease In**

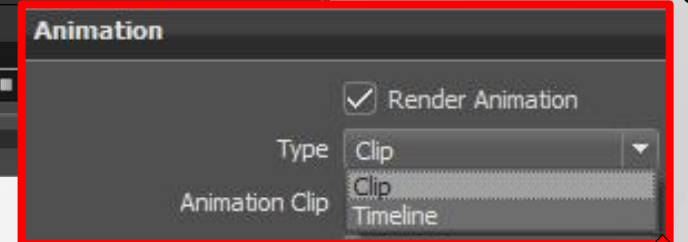
A block is automatically created in the **Curve Editor**...



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



Render Settings

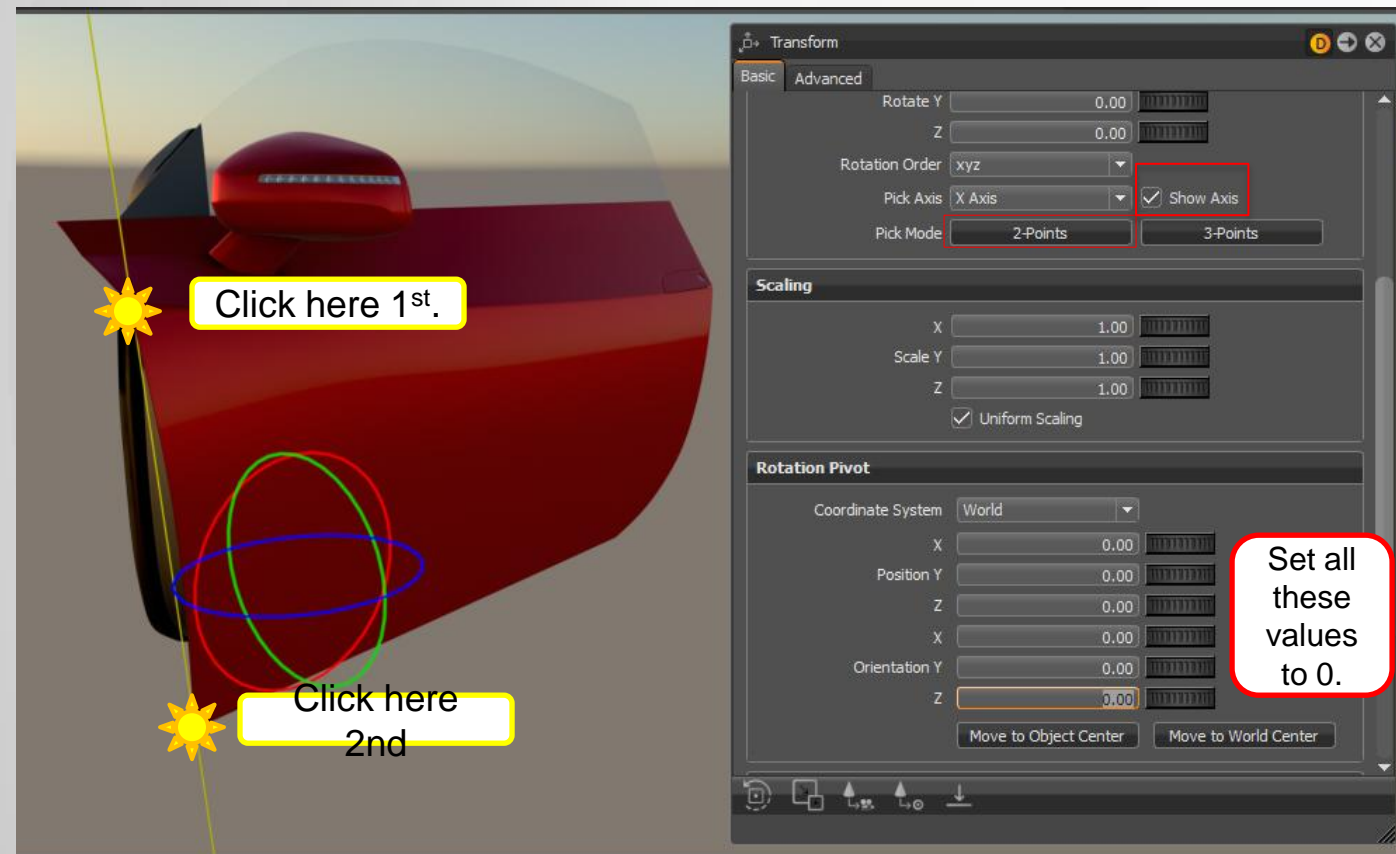


- You can expand or compress the timing by dragging the box edges.
- You can move where this block happens in time.
- Other Blocks can be dragged into New Clips.
- The animation Curves can be refined and automatically update.
- Make sure you choose the intended animation type before rendering!

# ANIMATION

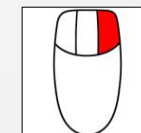
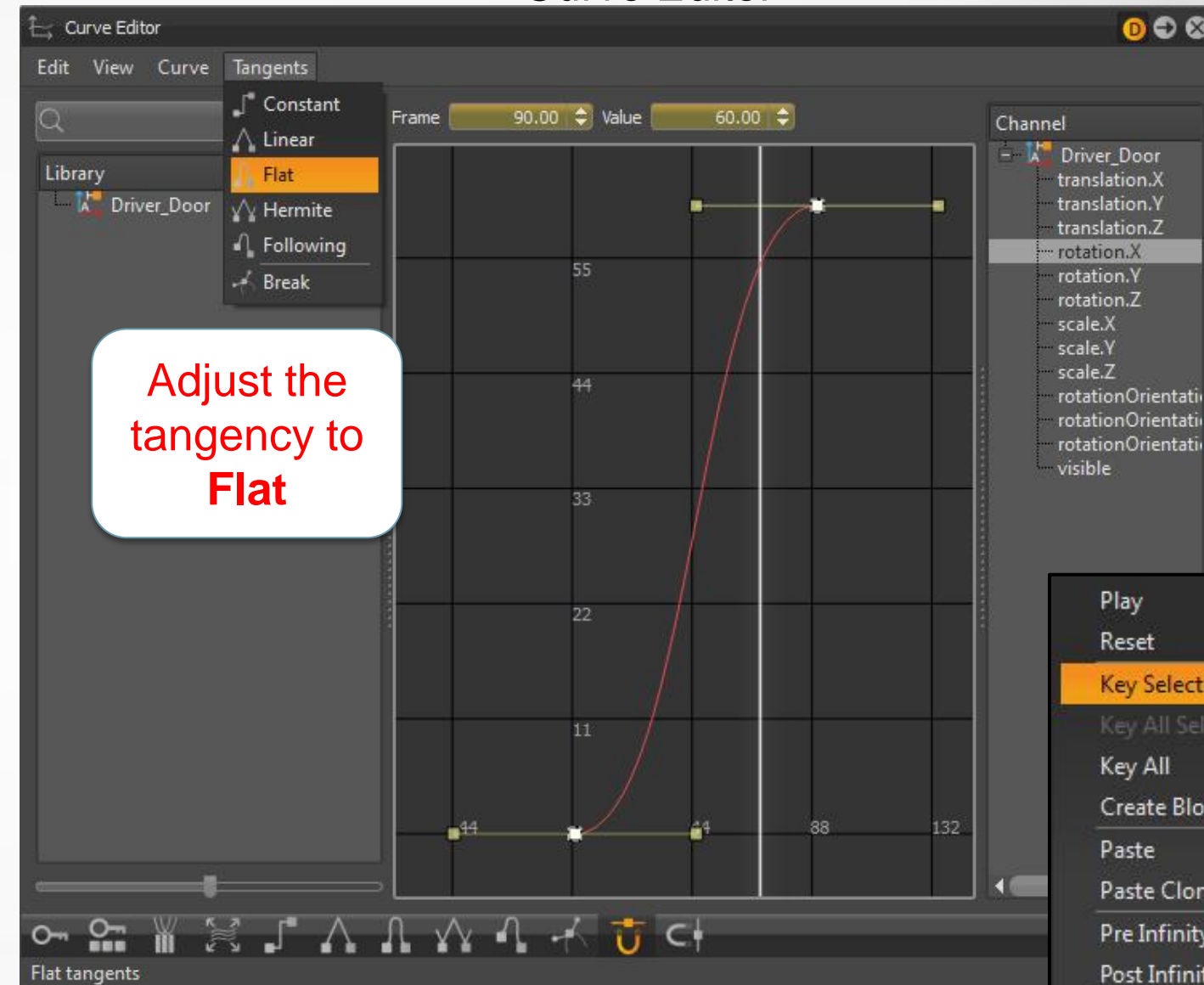
Setting up a 2- point pivot for door animation

Transform Window



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

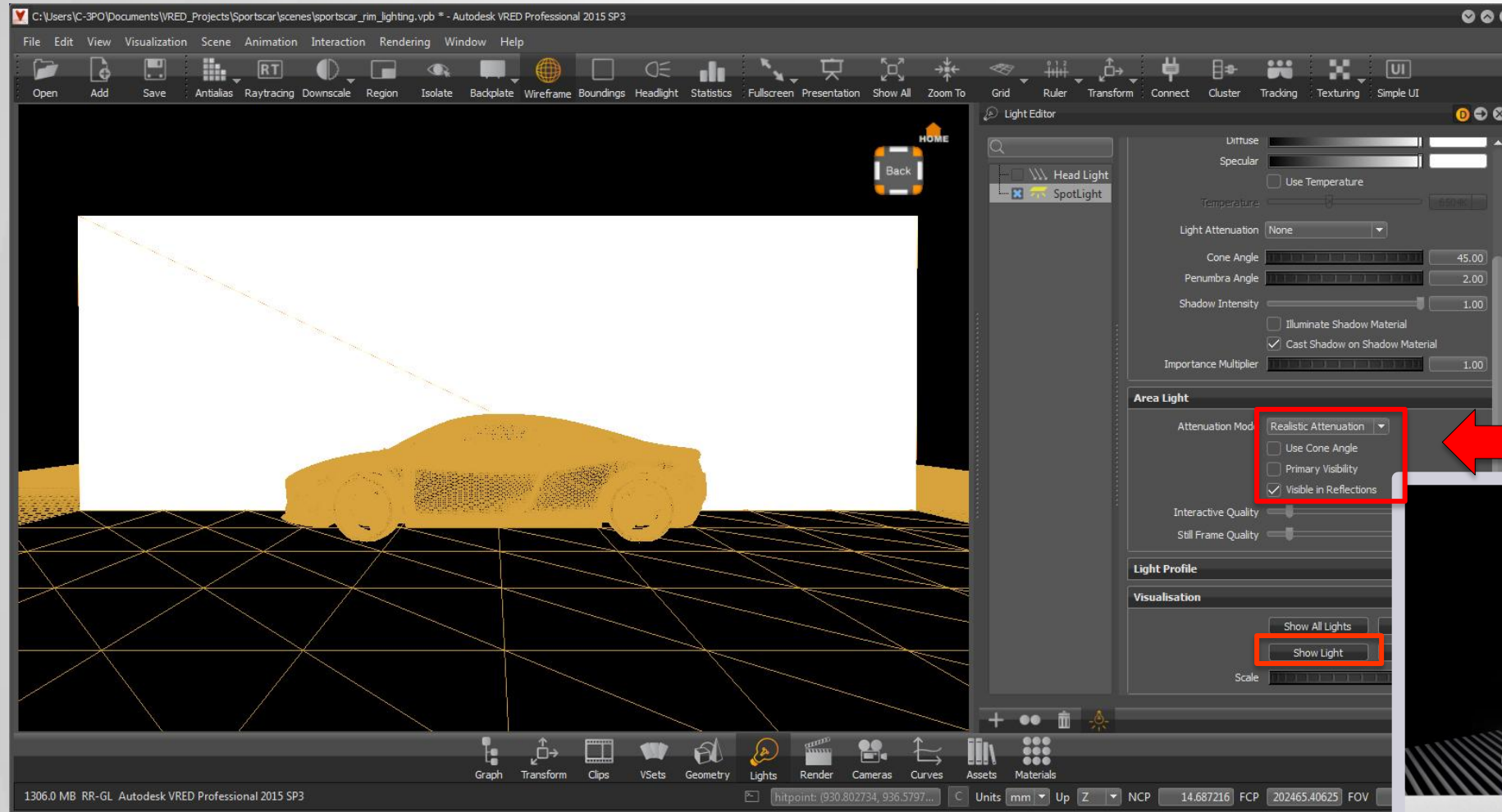
Curve Editor



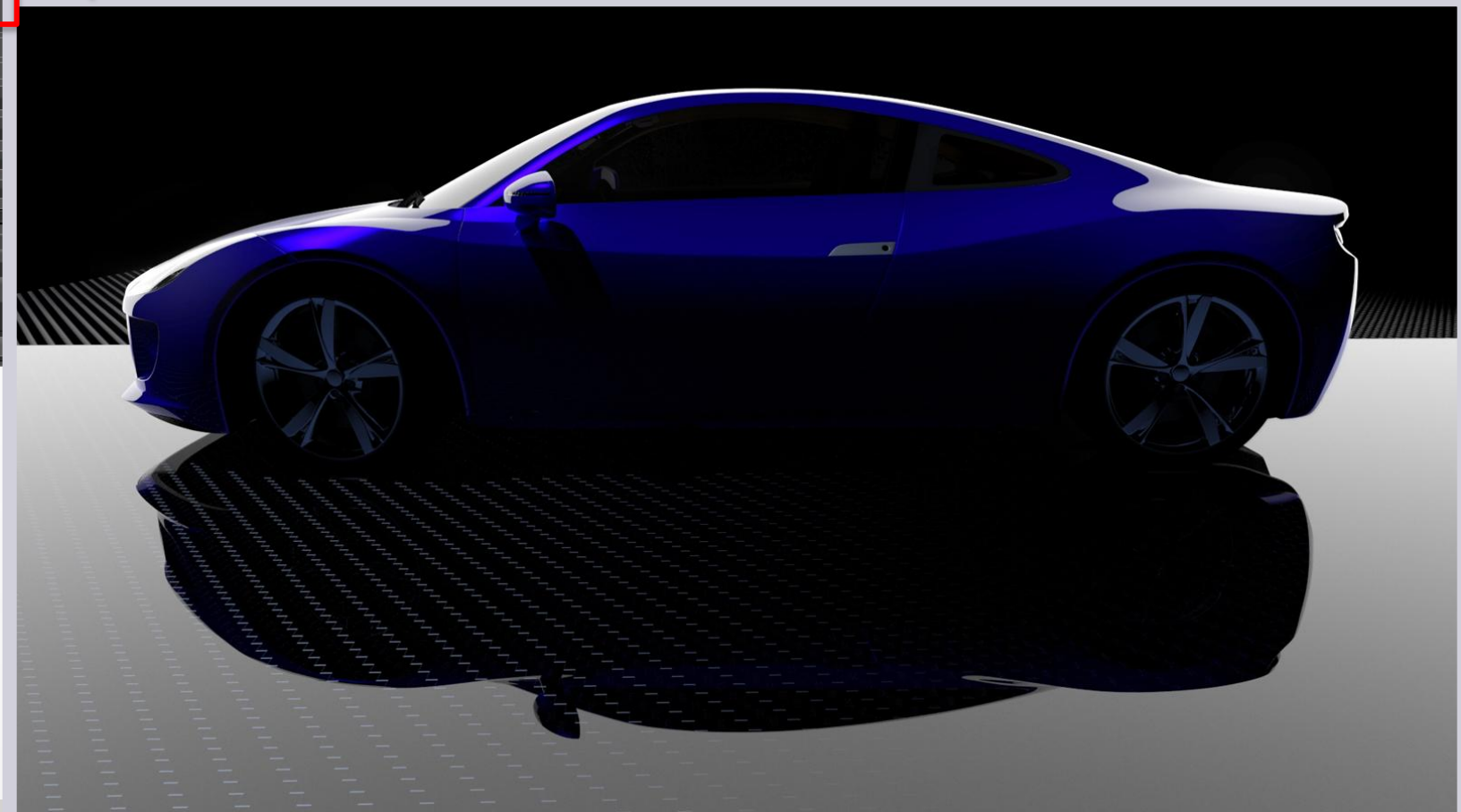
on the rot x to key selected

# LIGHTING

## *Rim Lighting setup using a Rectangular Area Light*

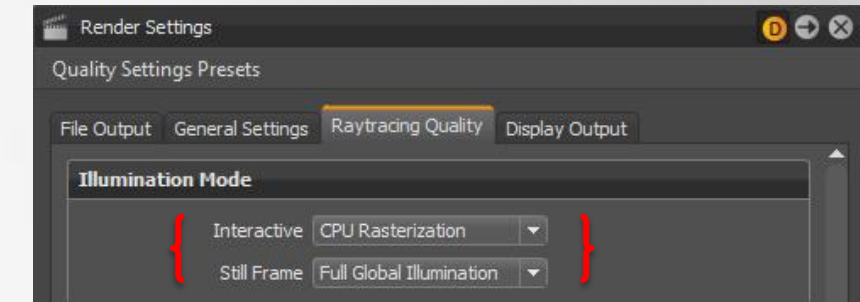
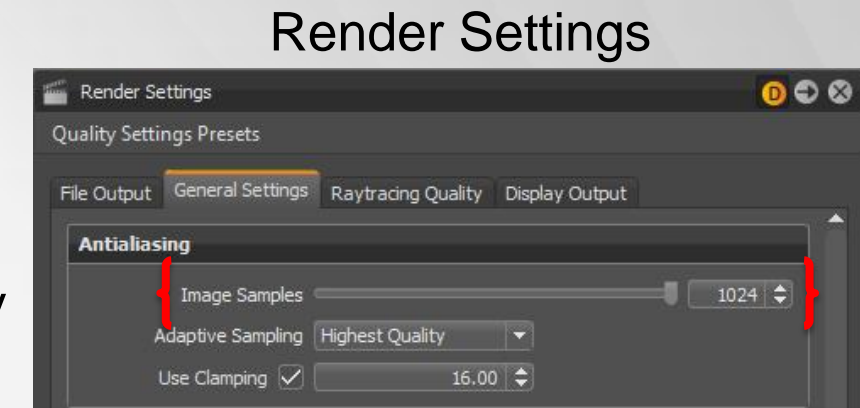


Turn on:  
**Visible in Reflections and Show Light**



# RENDERING

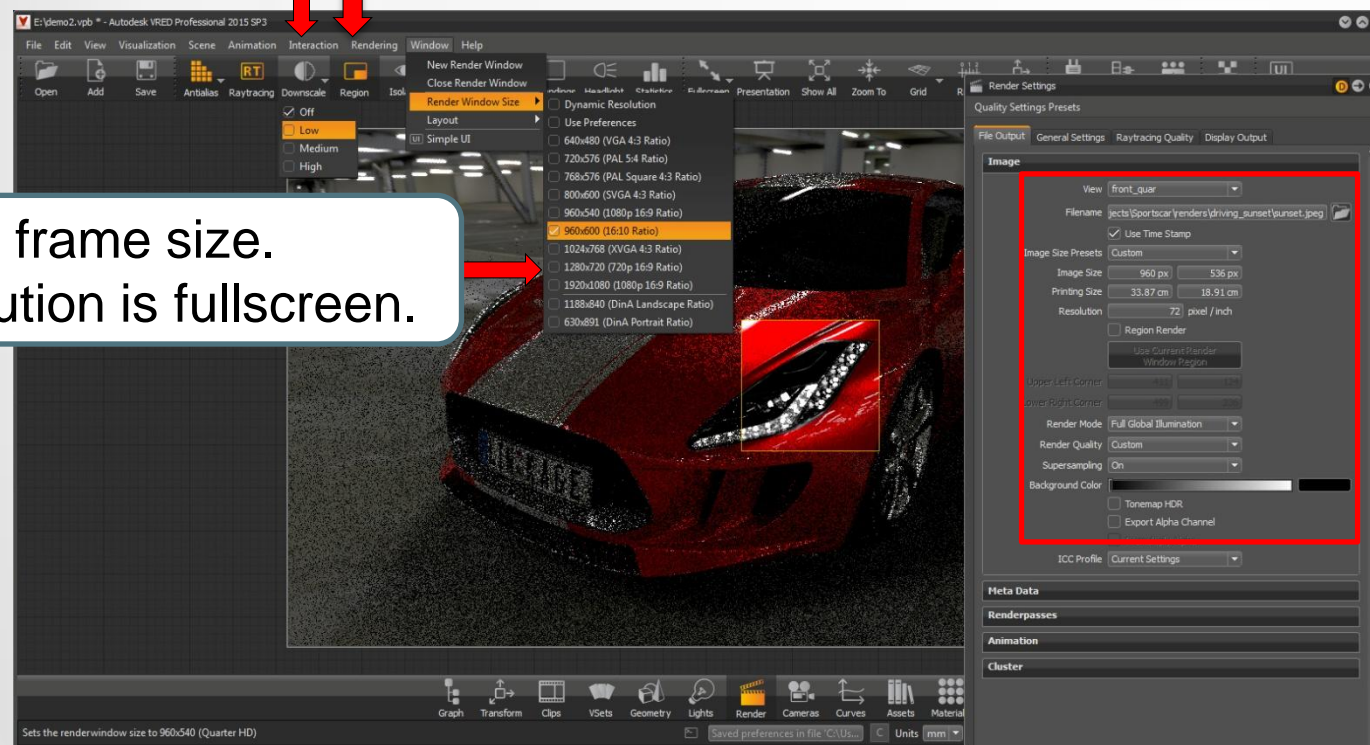
Increase **Image Samples** if spotty



**Downscale-** lower quality Raytracing, but faster

**Render Region-** R  + drag a box

Choose a frame size.  
Dynamic Resolution is fullscreen.



**Interactive:**

Tumbling around, with Antialiasing off

**Still Frame:**

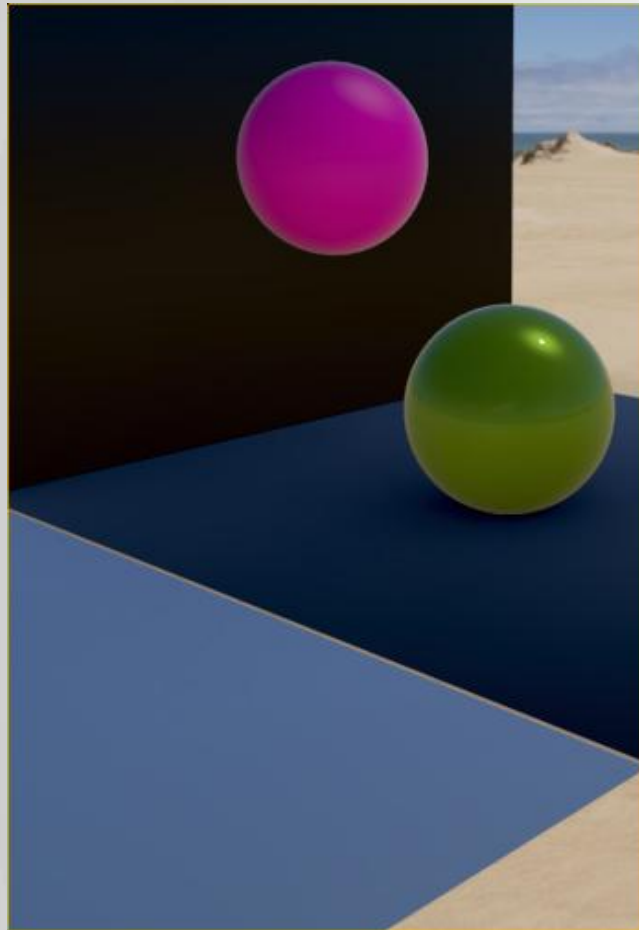
When you stop navigating, with Antialiasing on,  
Also used for output renders

# RENDERING

## Raytracing Illumination Modes

- *Most physically accurate*
- *Most time consuming*

### CPU Rasterization



#### Realistic Lighting

- *Same look as OpenGL*
- *Good with heavy data*

### Precomputed Illumination Precomputed + Shadows



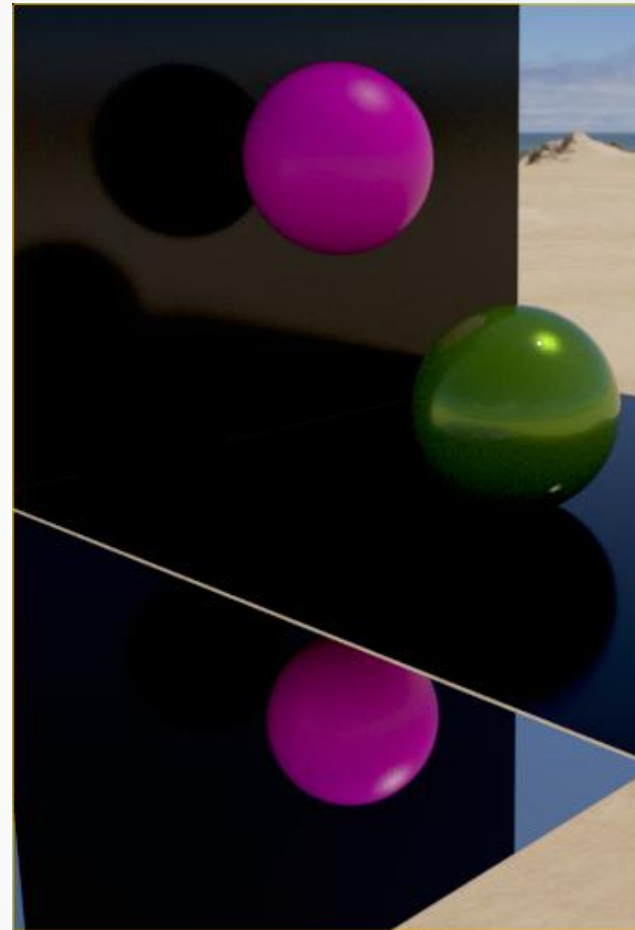
#### Realistic Lighting + Reflections

- *Use with Ambient Occl.*



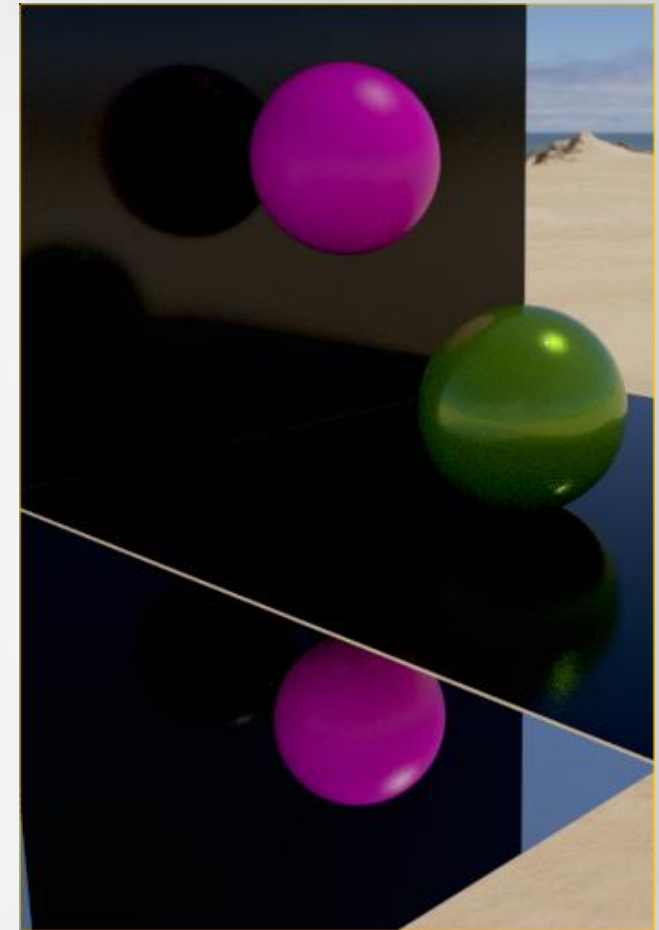
#### Realistic Lighting + Reflections + Interactive Shadows

### Precomputed + IBL



#### Realistic Lighting + Reflections + Interactive Shadows + Glossy Reflections

### Full Global Illumination



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

# Session Feedback

- Via the Survey Stations, email or mobile device
- AU 2014 passes given out each day!
- Best to do it right after the session
- Instructors see results in real-time







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