ID7244-L-P Fast Automotive Concept Modeling – Autodesk Alias SpeedForm

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Autodesk

Class summary

In this “Fast Automotive Concept Modeling with Autodesk Alias Speedform” lab, we will explore polygon/T-Spline workflows and see how they can add value to our current workflow/pipeline.

This Lab will be both lecture based as well as hands-on with the Autodesk Alias SpeedForm application.

Key learning objectives

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

- Understand Polygon Modeling and what Polygons are
- Understanding the Benefits of Polygon Workflows
- Understand what Autodesk Alias Speedform is
- Gain Fundamental Knowledge Using Alias Speedform

A Brief History Lesson…..

Concept modeling milestones

1908

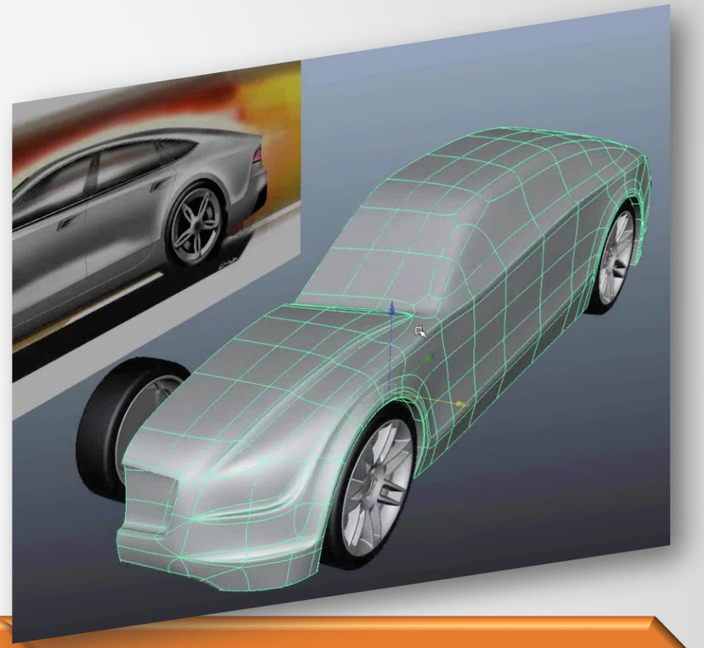
No styling

1927

Clay

1960s

NURBS



2000s

Polygons

Maya polygon modeling

Maya polygon modeling

Polygon modeling in automotive

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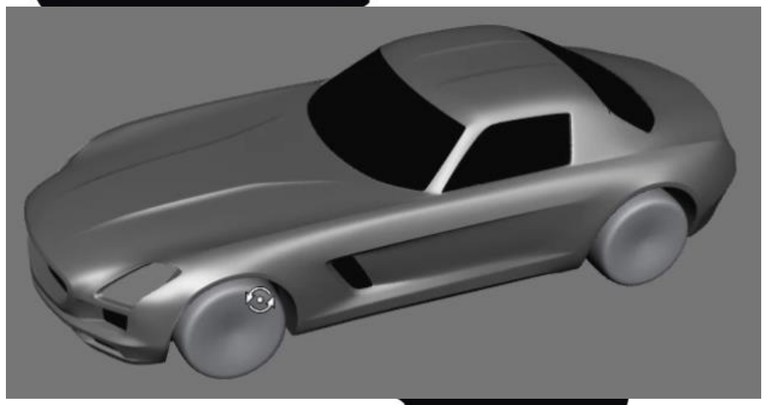
VIRTUELLE GESTALTUNG



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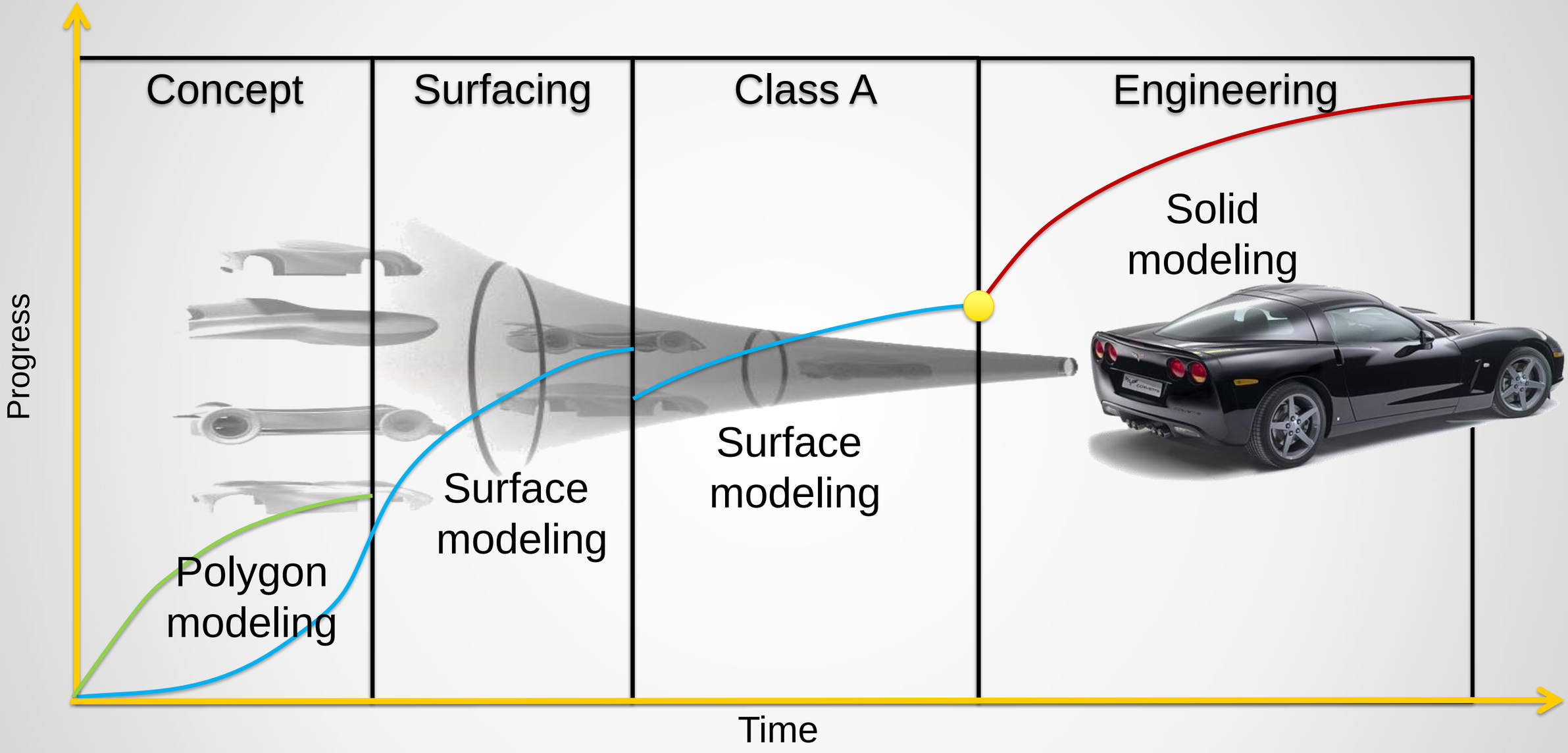
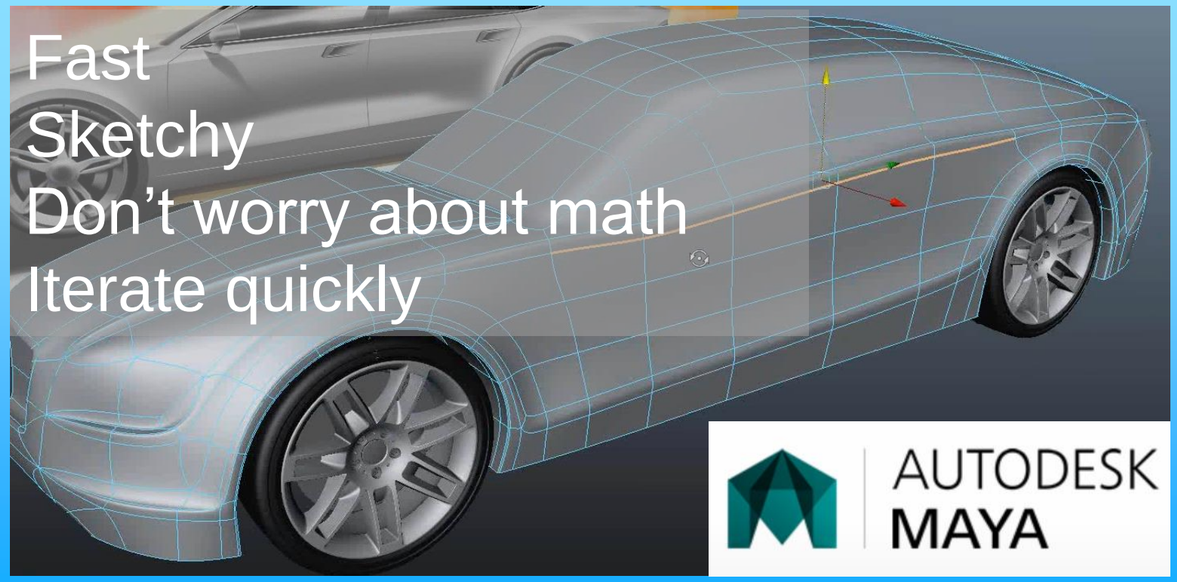

Concept
Surfacing
Class A
Engineering
Progress
Time
Polygon modeling
Surface modeling
Surface modeling
Solid modeling

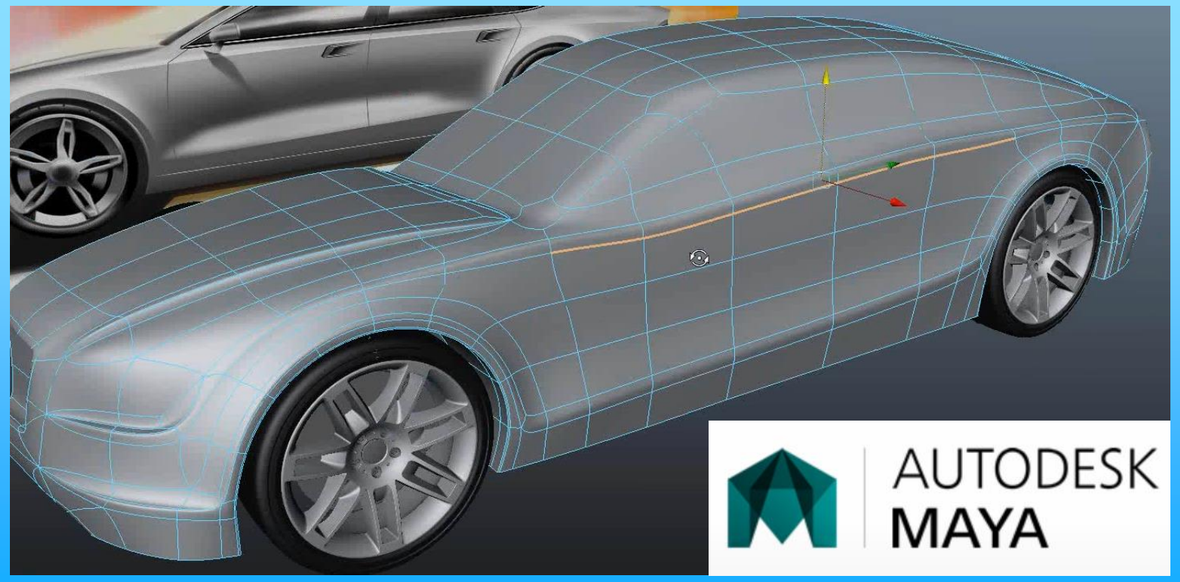
Concept Modeling

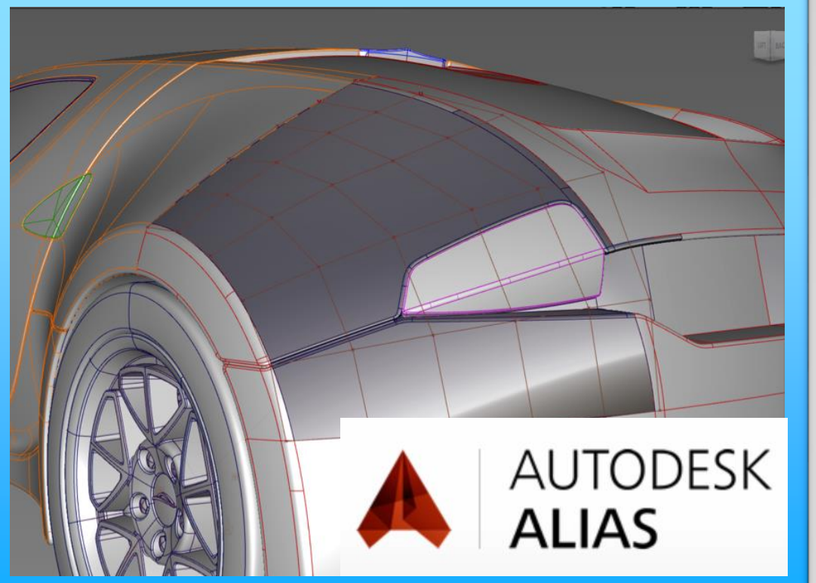
Today:
Two
workflows



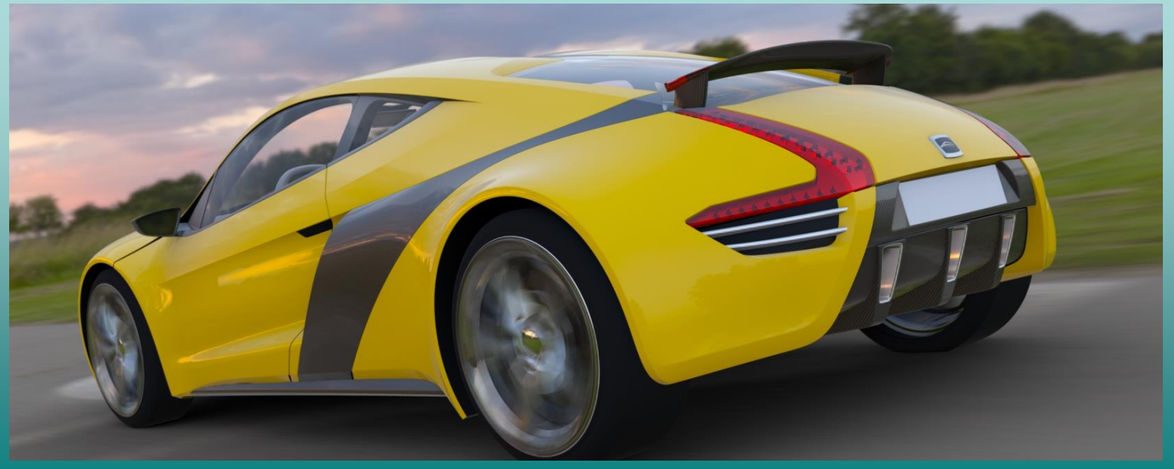
Concept Modeling

Today: distinct workflows





Future: hybrid workflow

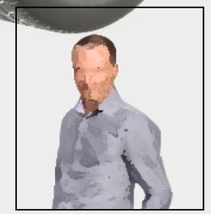


Alias SpeedForm

Concept modeling: Alias SpeedForm

Focused on automotive workflows

Easy enough for designers to use



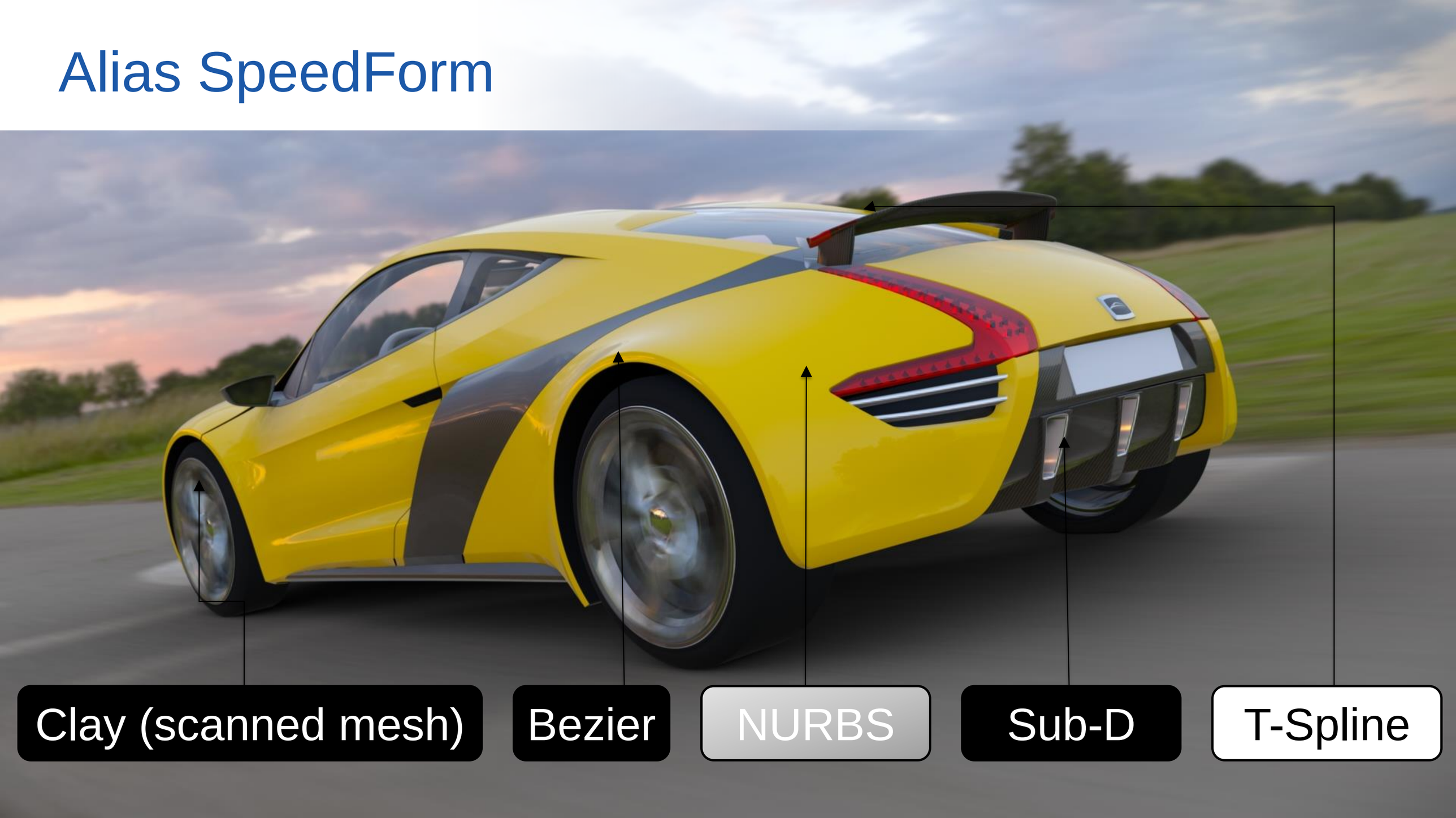
Designer

Surface Modeler

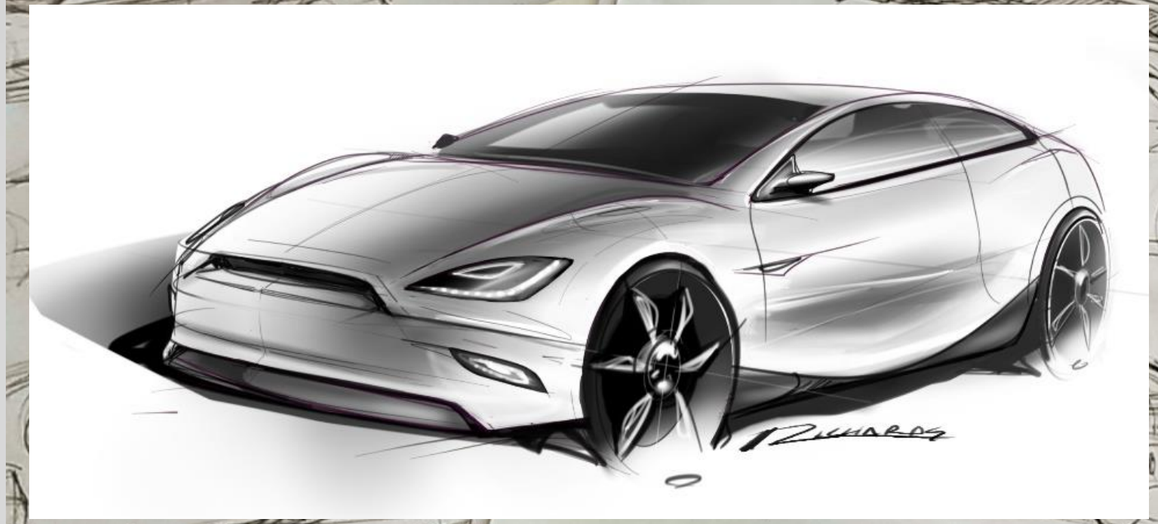
Alias SpeedForm

AUTODESK ALIAS

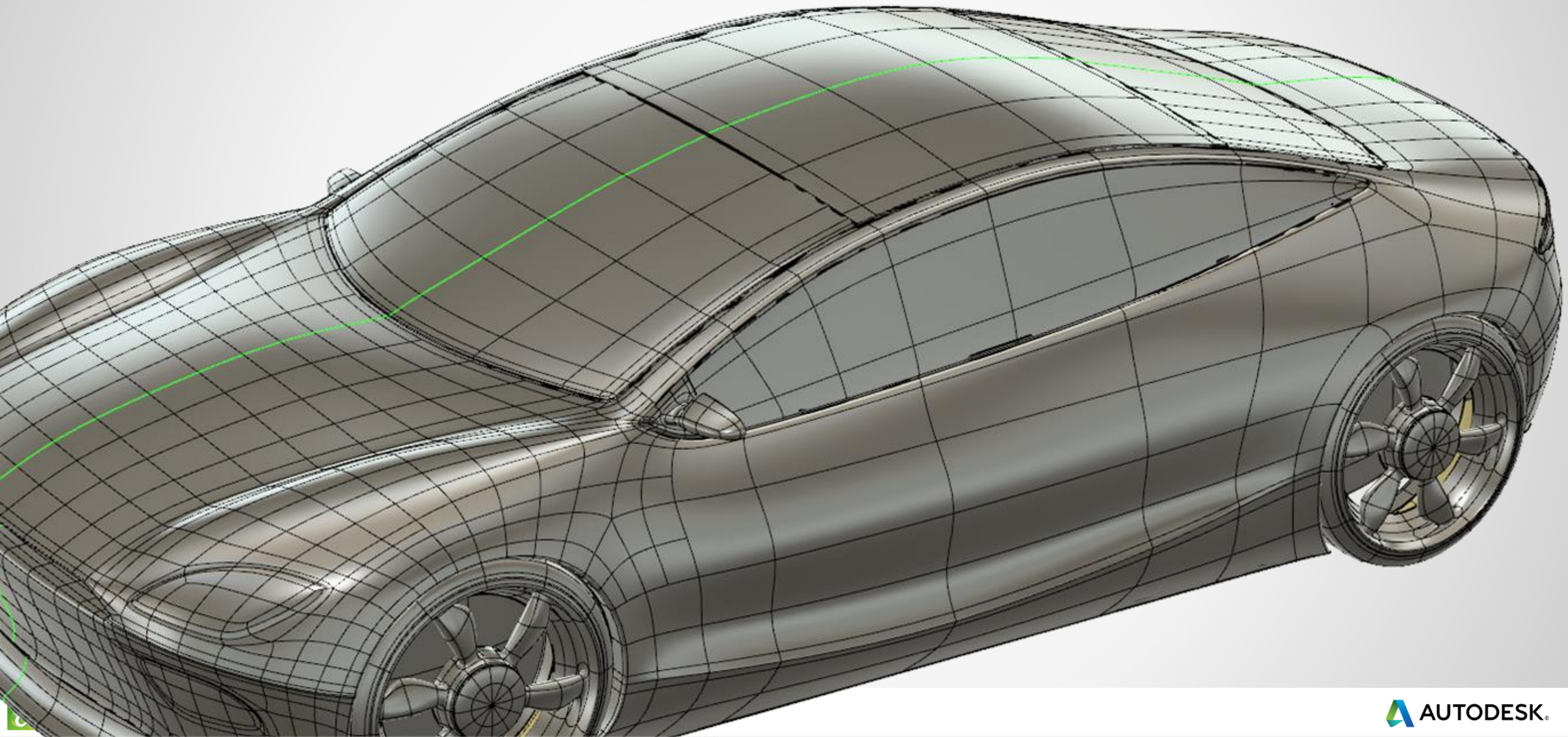
Alias SpeedForm



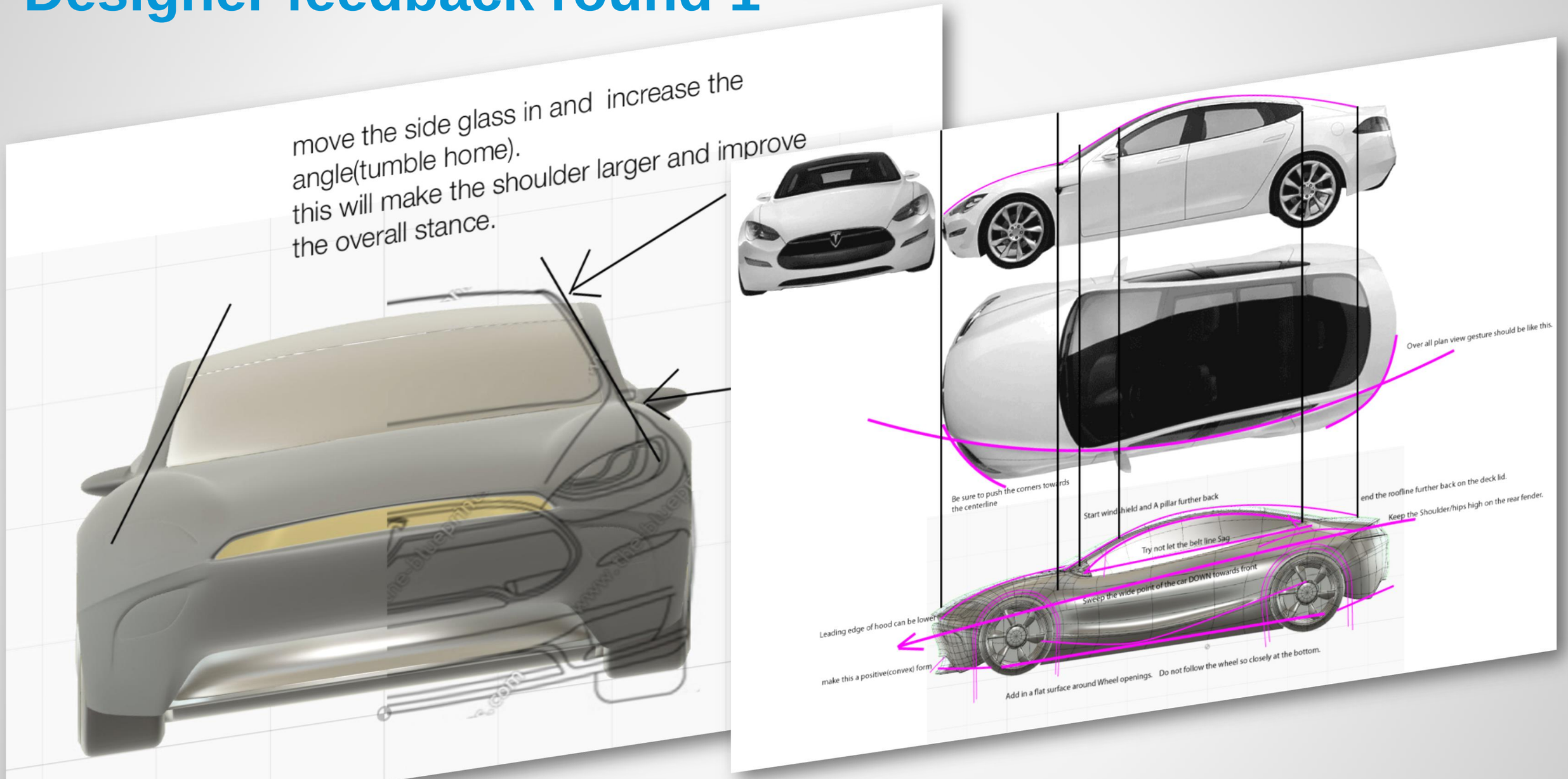
Alias SpeedForm today



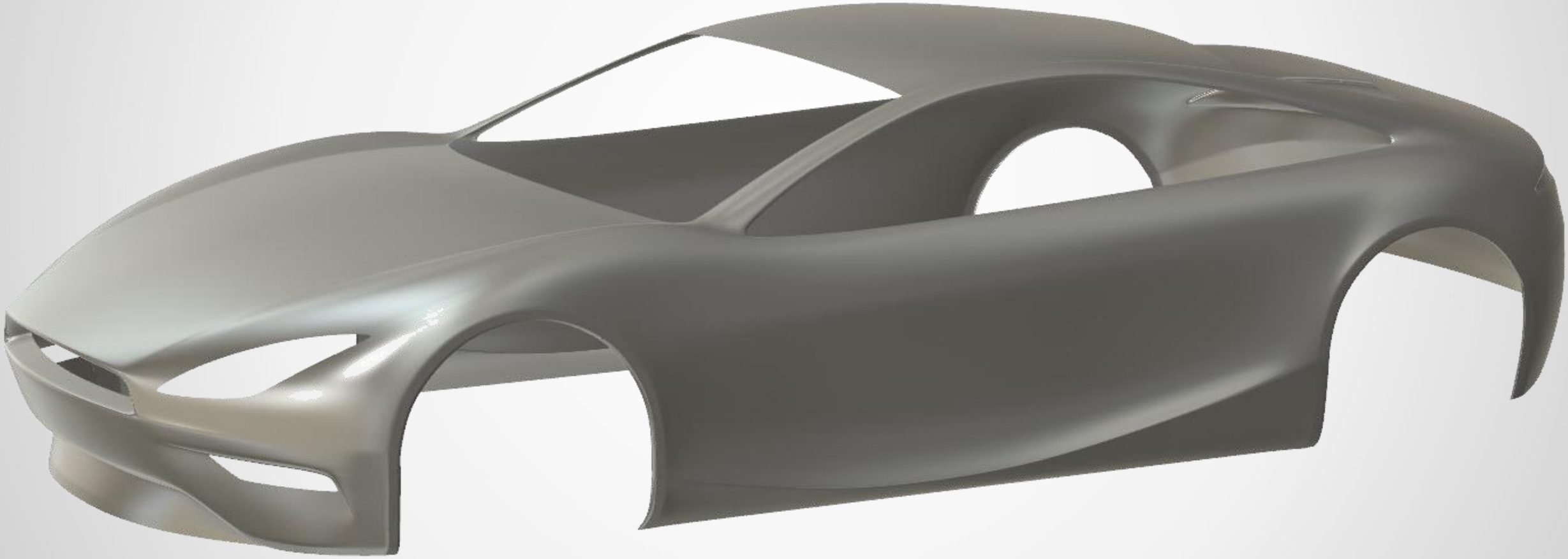
Initial SpeedForm concept model



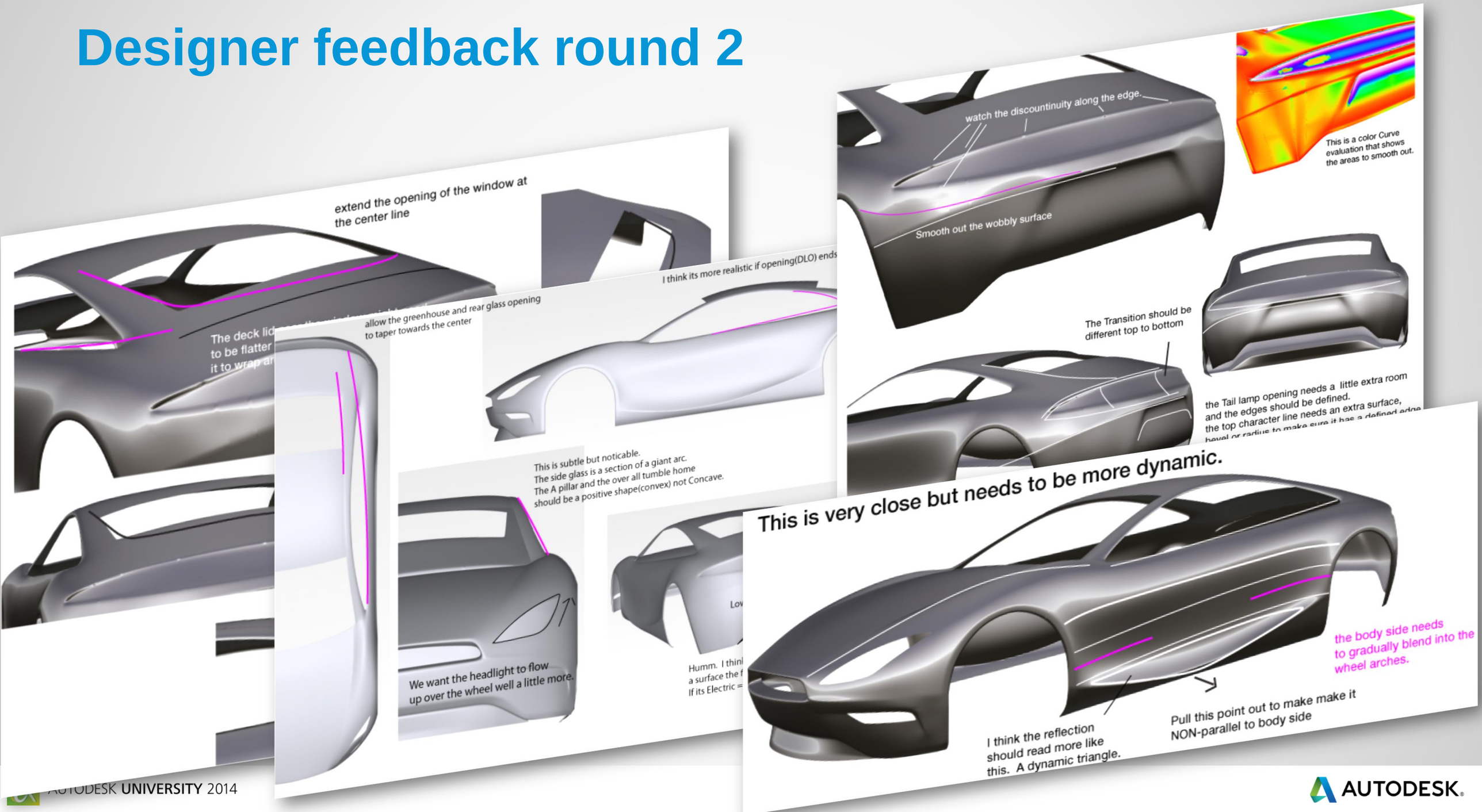
Designer feedback round 1



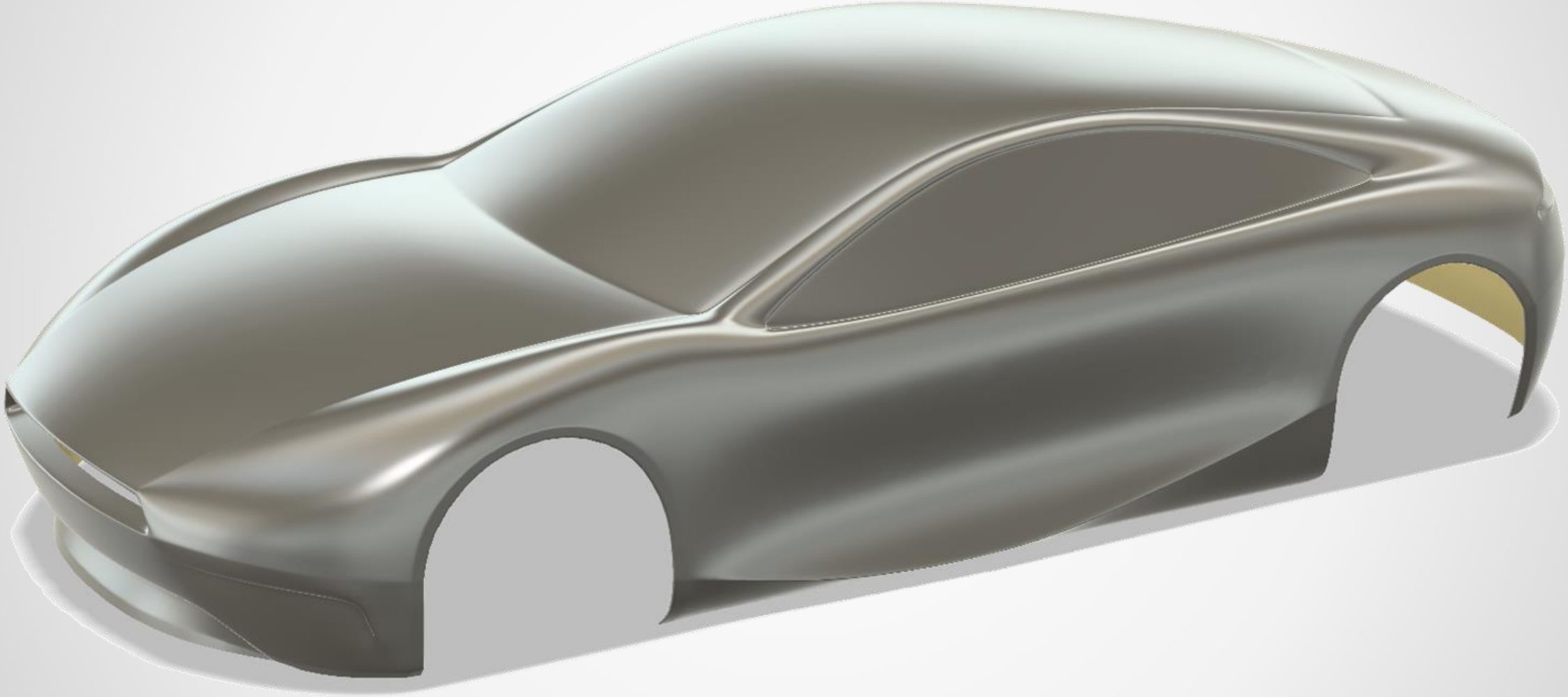
2nd SpeedForm concept model



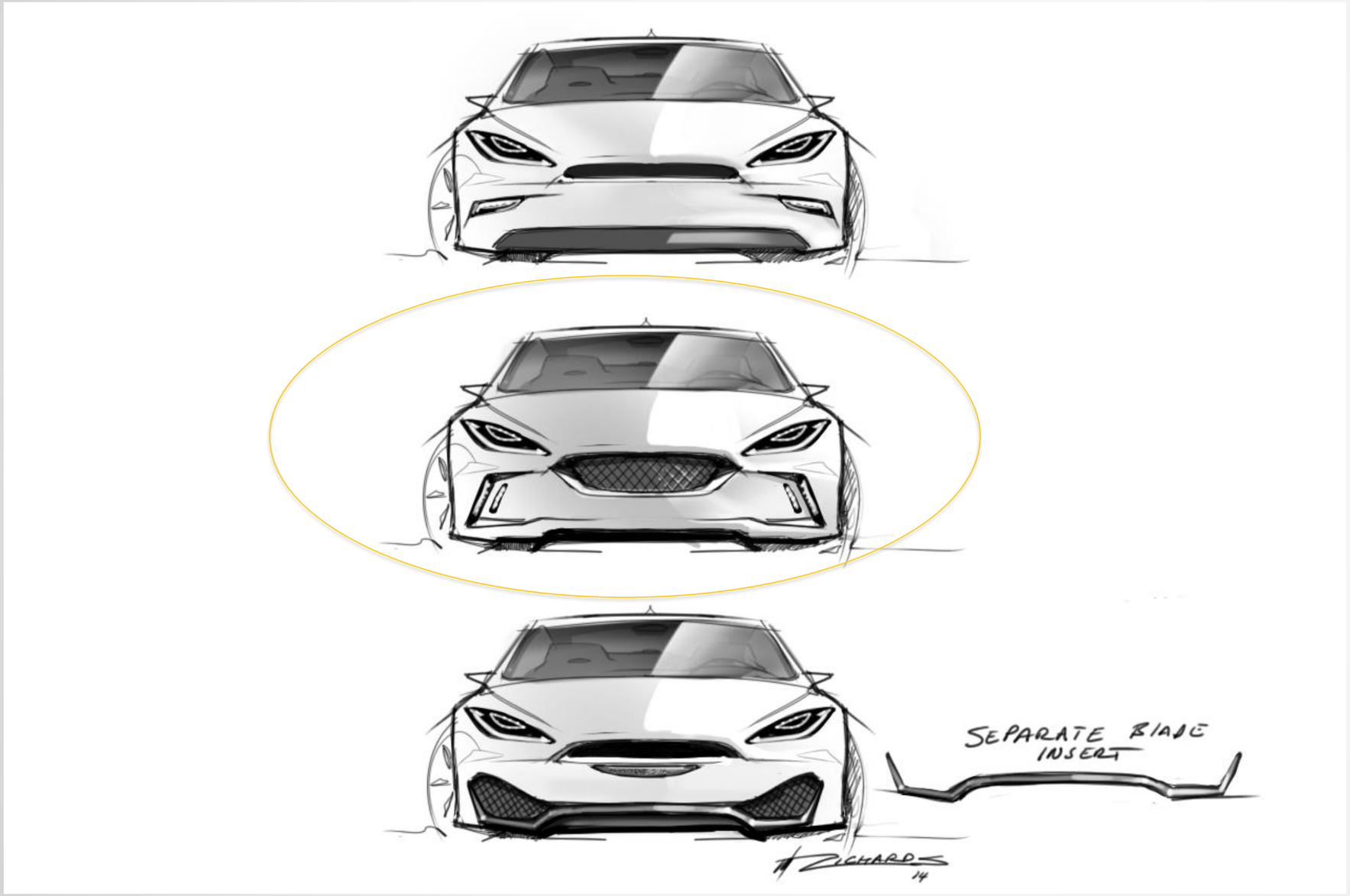
Designer feedback round 2

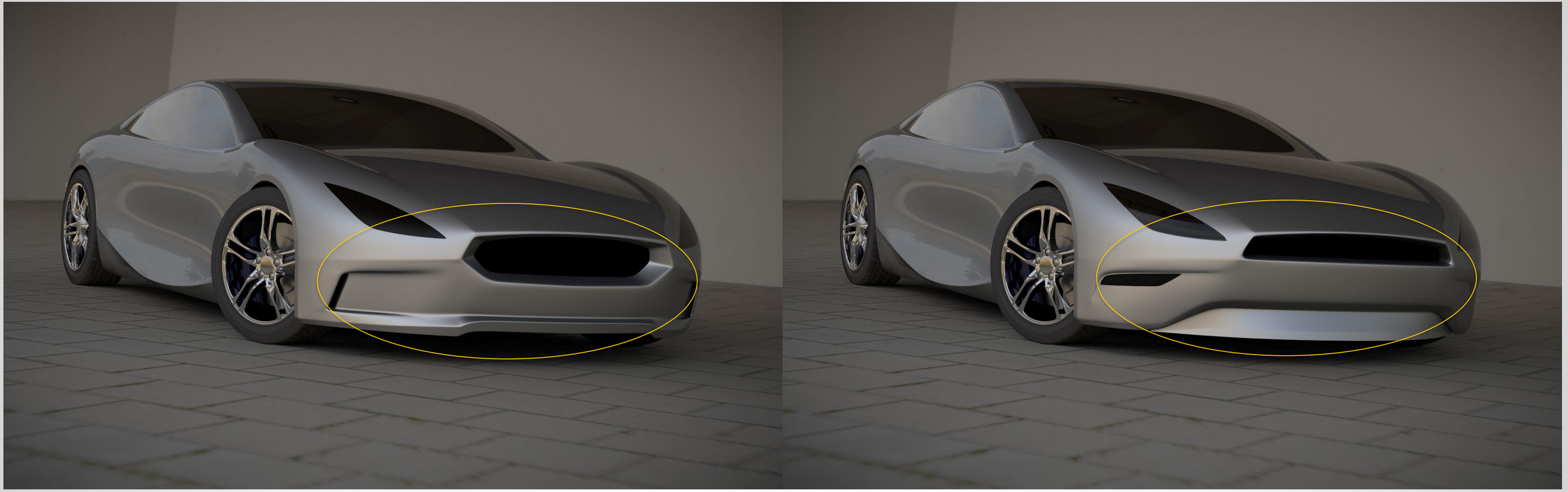


3rd SpeedForm concept model

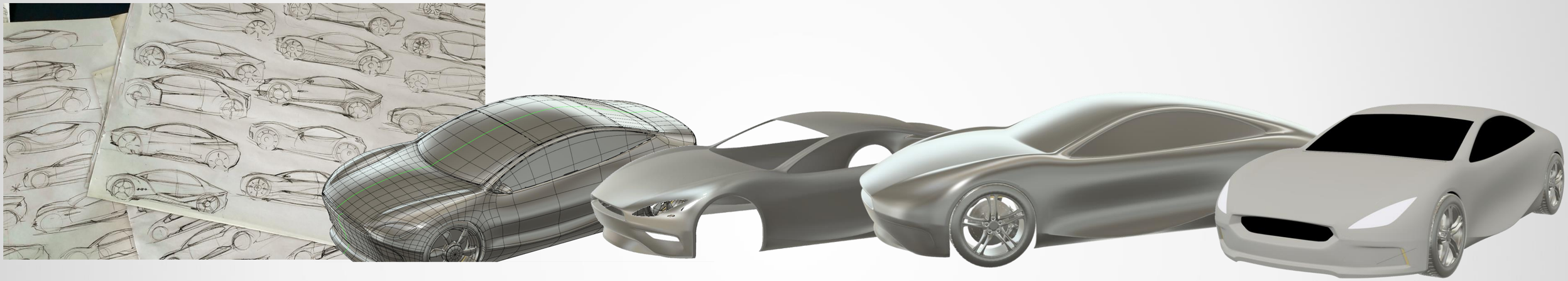


Front iterations





Speeding up concept modeling



Sketches:
3 days

1st model:
15 hours

2nd model:
10 hours

3rd model:
7 hours

Front iteration:
4 hours

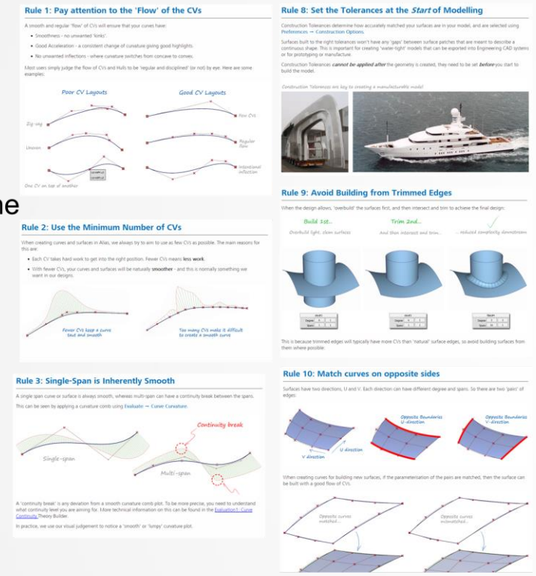
36 hours in SpeedForm Alpha

(compare to ~80 hours in NURBS)

Modeling with SpeedForm: Golden Rules

Alias Golden Rules

1. Pay attention to the “Flow” of the CVs
2. Use the minimum number of CVs
3. Single span is inherently smooth
4. Ensure tangency and symmetery across the center lines
5. Aim to use four sided surfaces
6. Use trimming for boundaries that are not 4 sided
7. Build to theoretical edges
8. Set the tolerances at the start of modeling
9. Avoid building from trimmed edges
10. Match curves on opposite sides

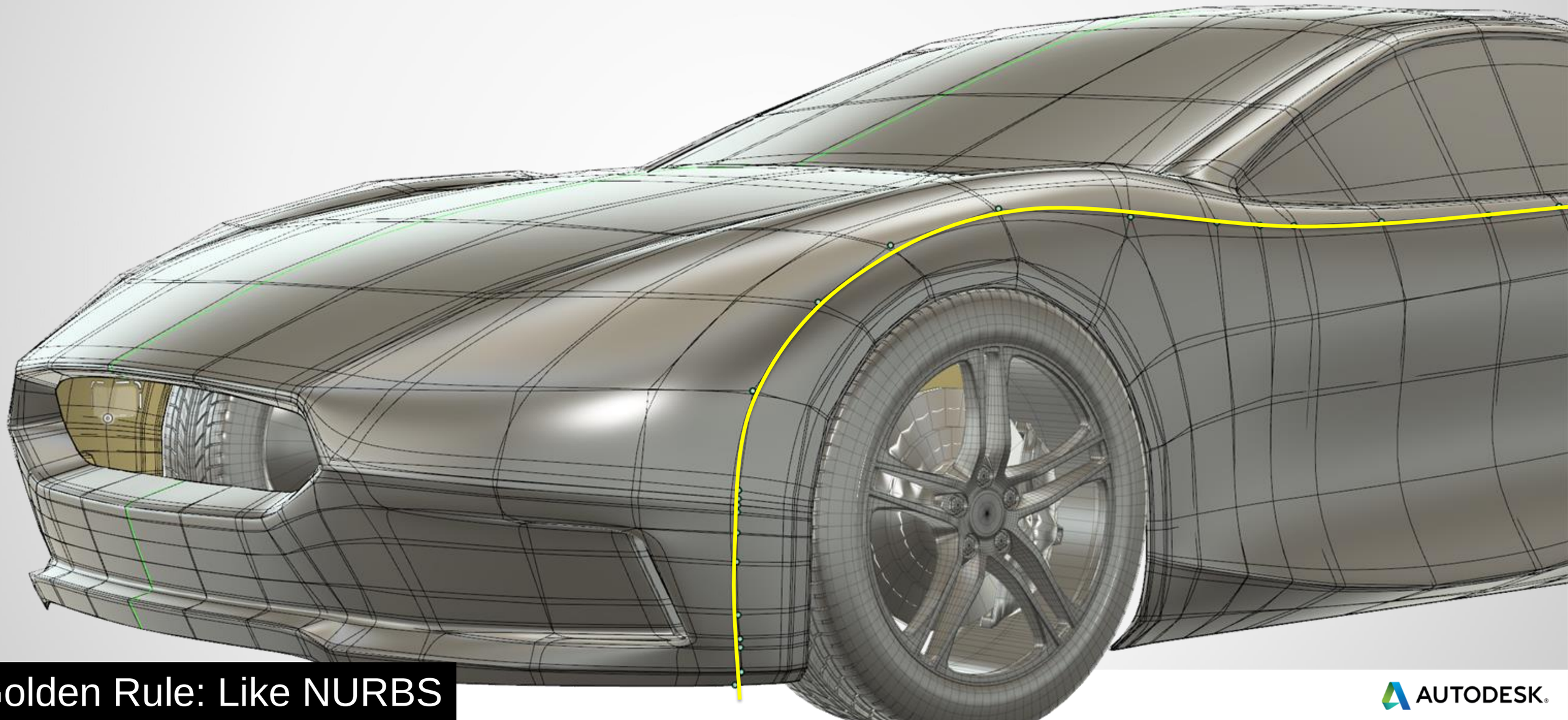


T-Splines Golden Rules

1. Pay attention to the “flow” of the CVs
2. Place CVs close together for tight curvature
3. Use the minimum number of CVs
4. Aim to use 4-sided faces
5. Use star points or n-gons for areas that aren’t 4-sided
6. Proportions first, then details
7. Star points change direction
8. T-Points transition detailed areas

Like NURBS
Like polygons
Unique

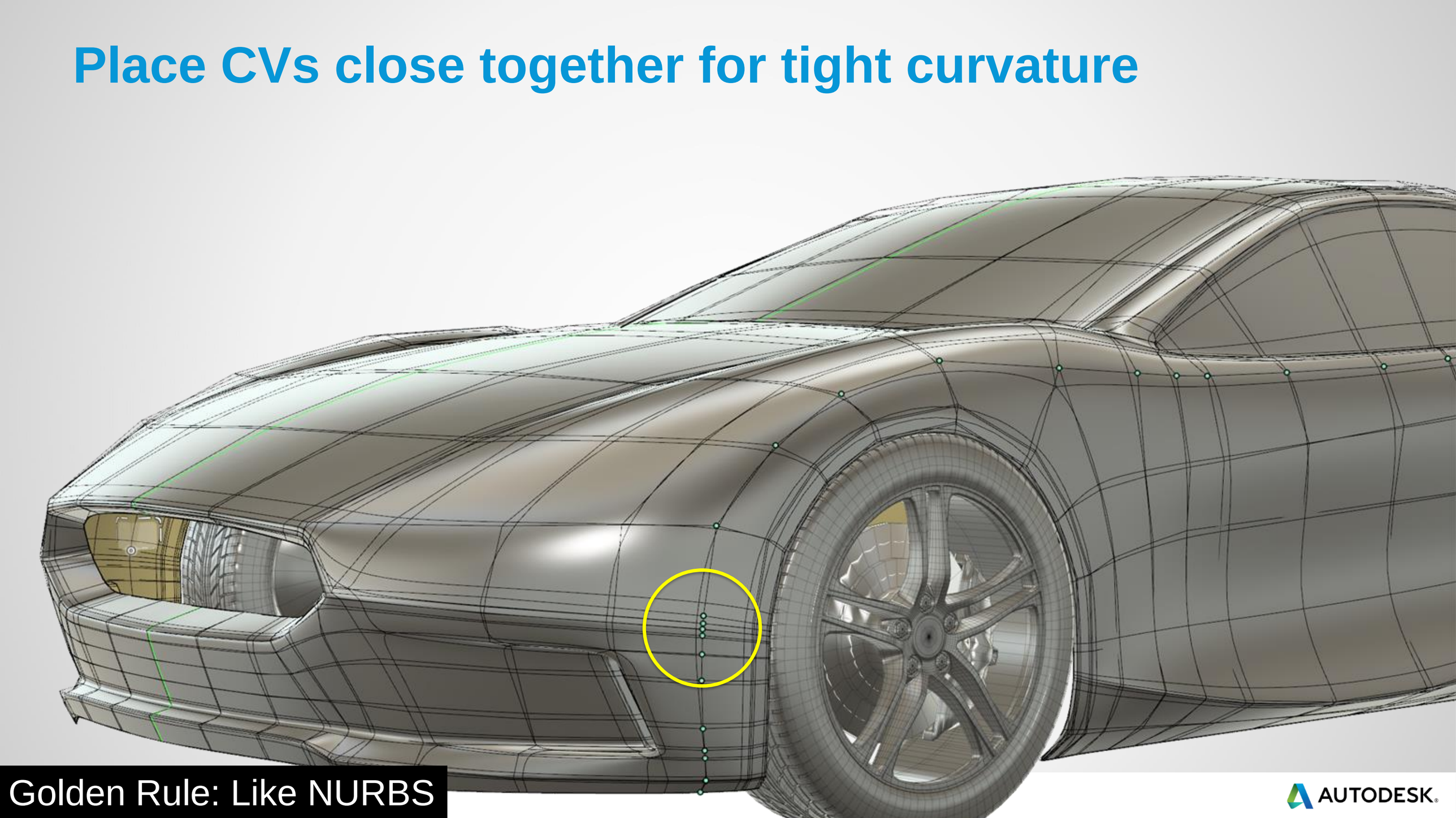
Pay attention to the “flow” of the CVs



Golden Rule: Like NURBS

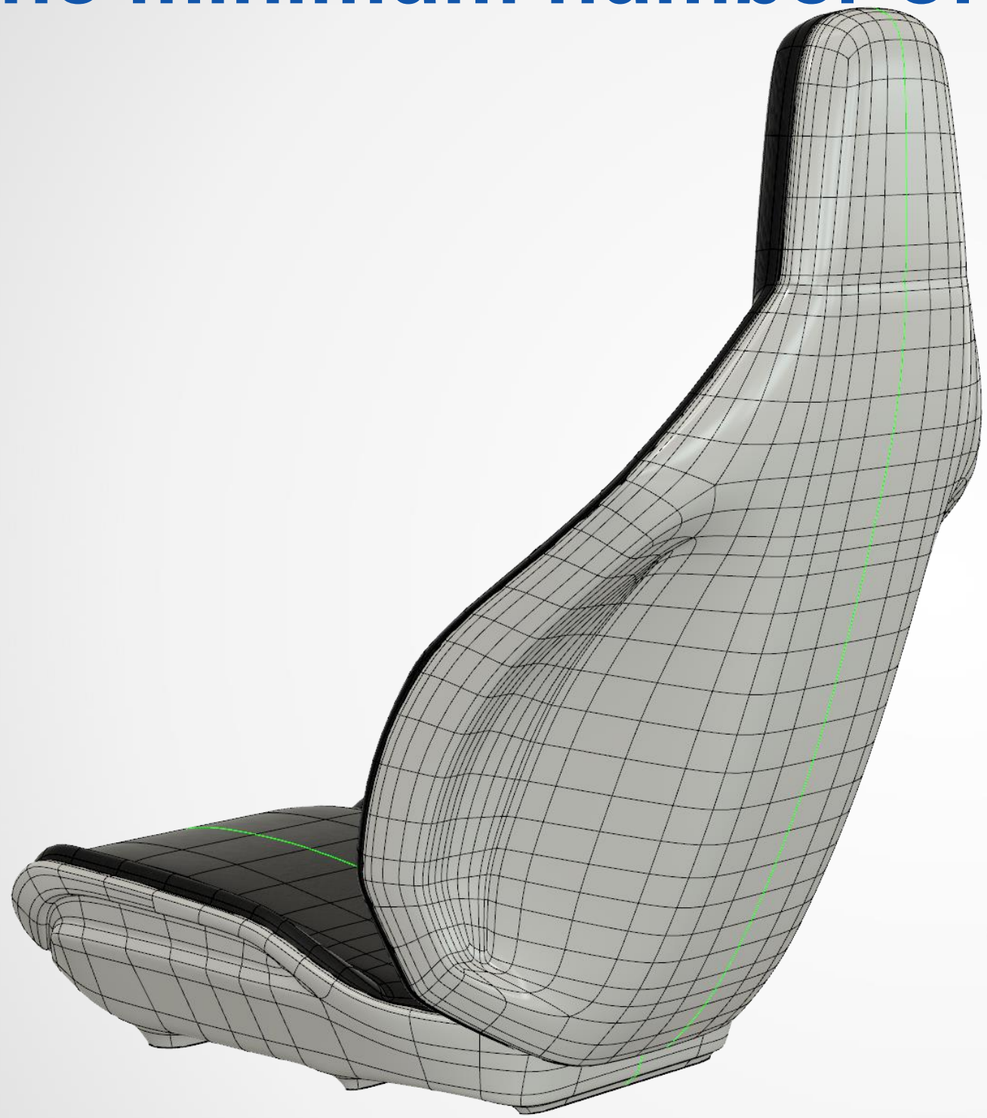
AUTODESK.

Place CVs close together for tight curvature

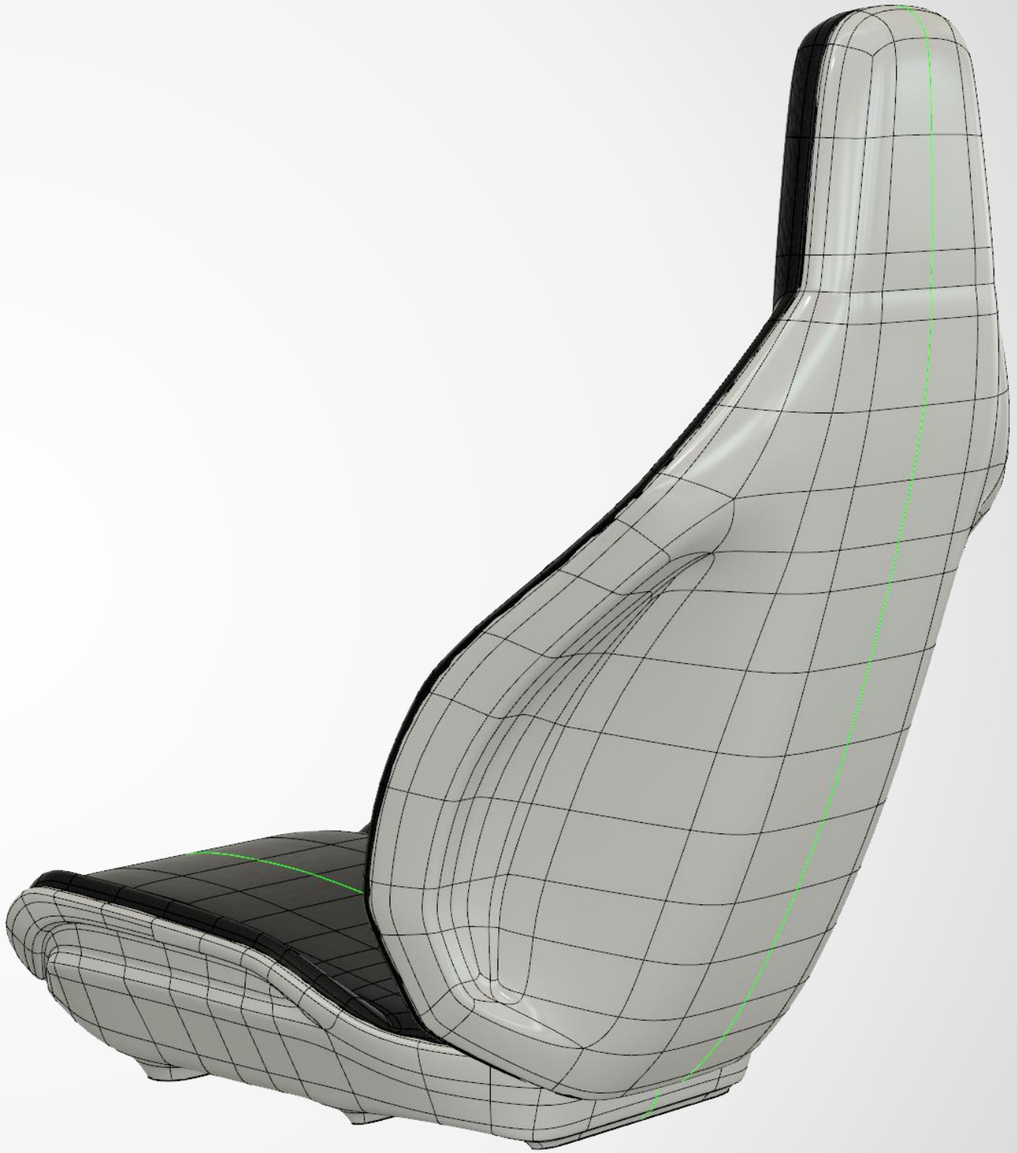


Golden Rule: Like NURBS

Use the minimum number of CVs



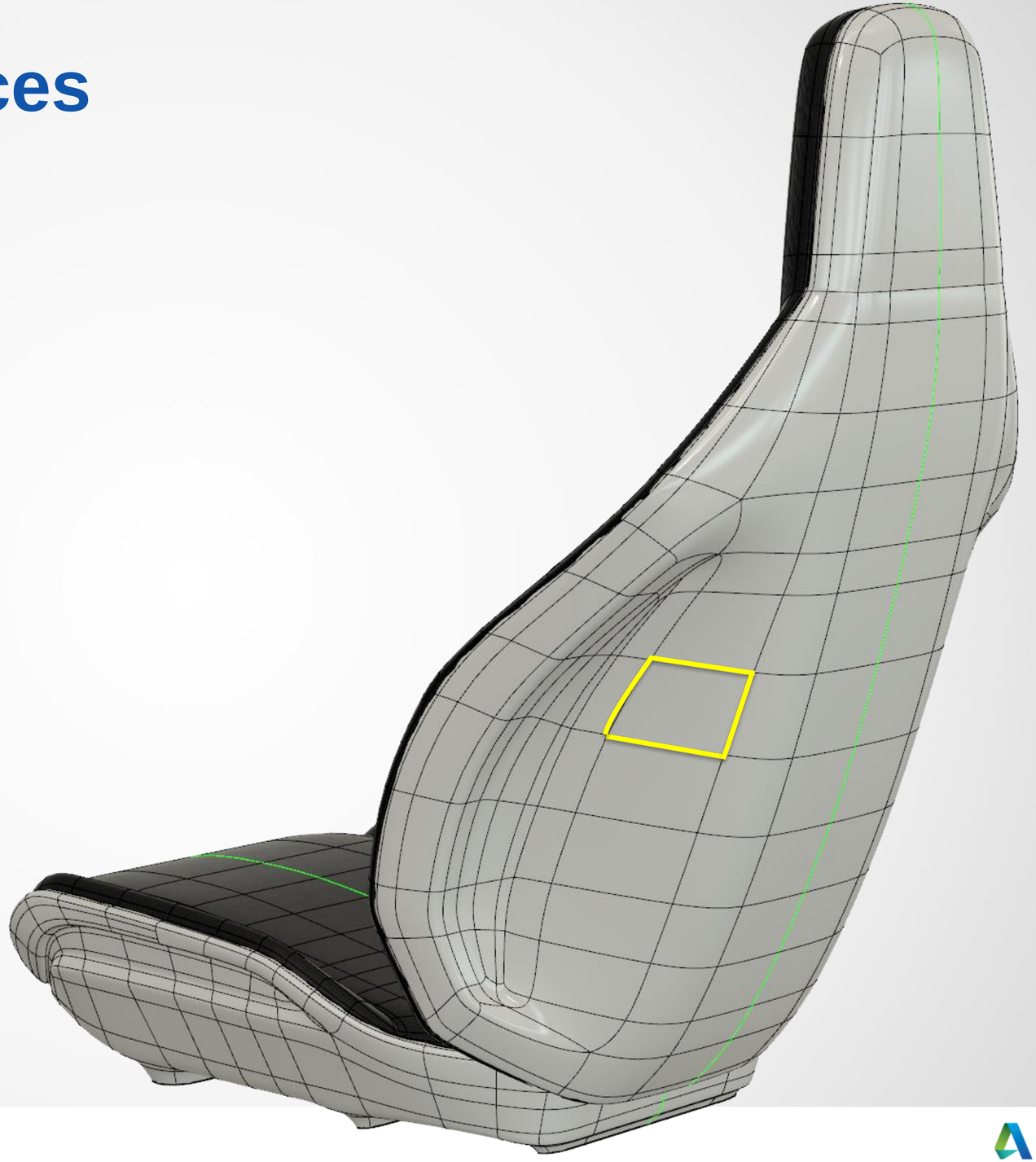
Worse



Better

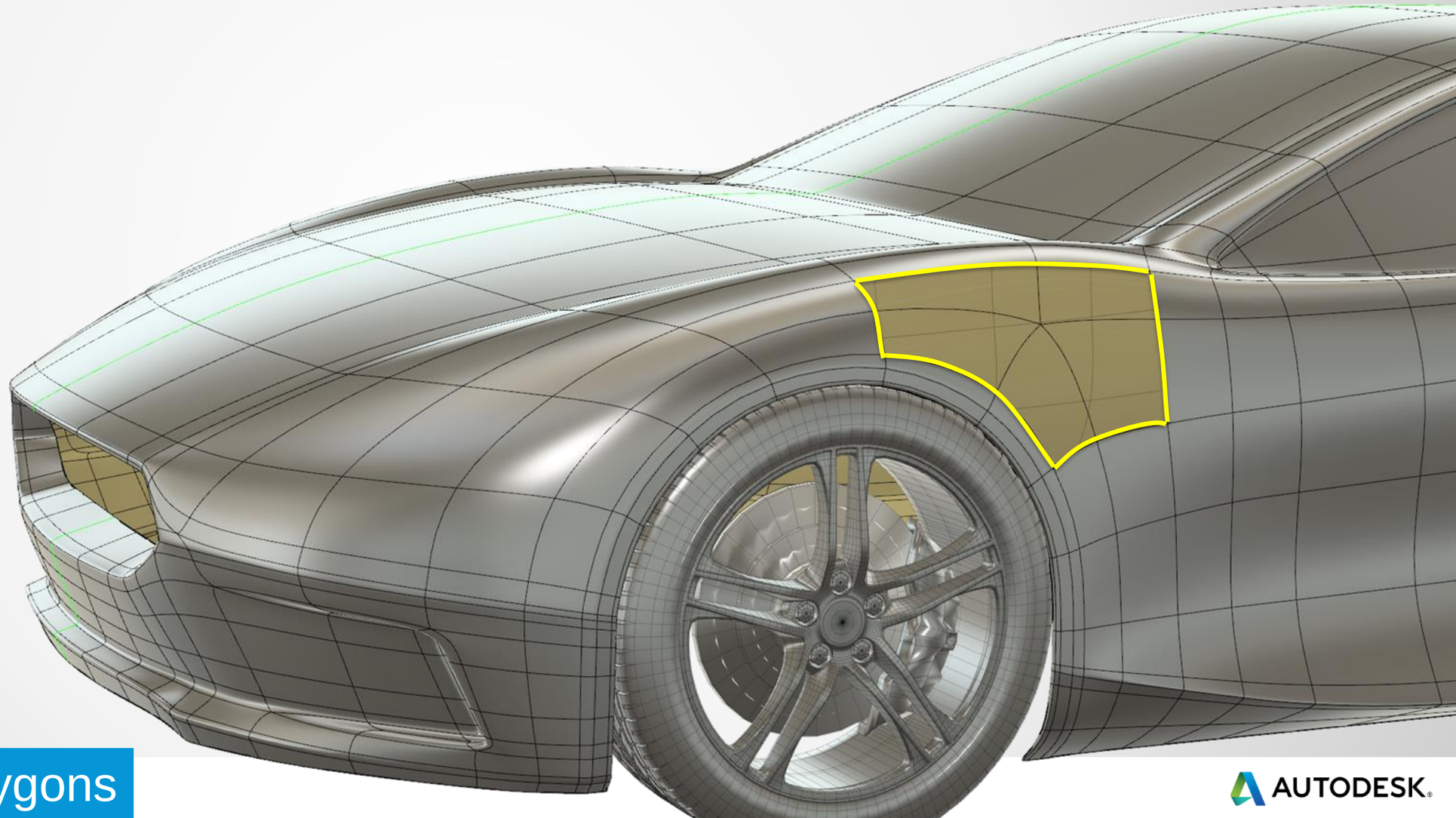
Golden Rule: Like NURBS

Aim to use 4-sided faces



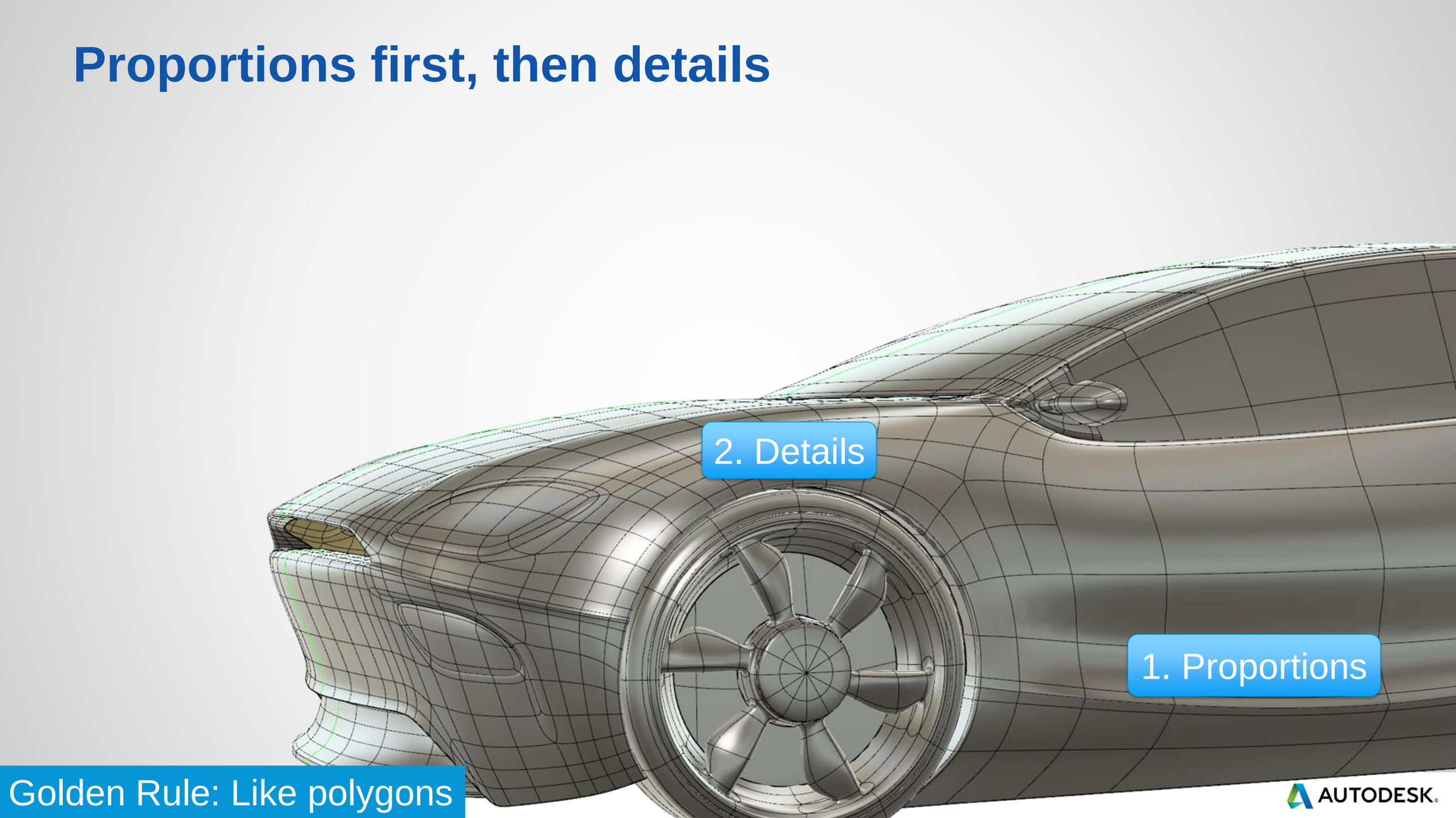
Golden Rule: Like NURBS

Use star points for areas that aren’t 4-sided



Golden Rule: Like polygons

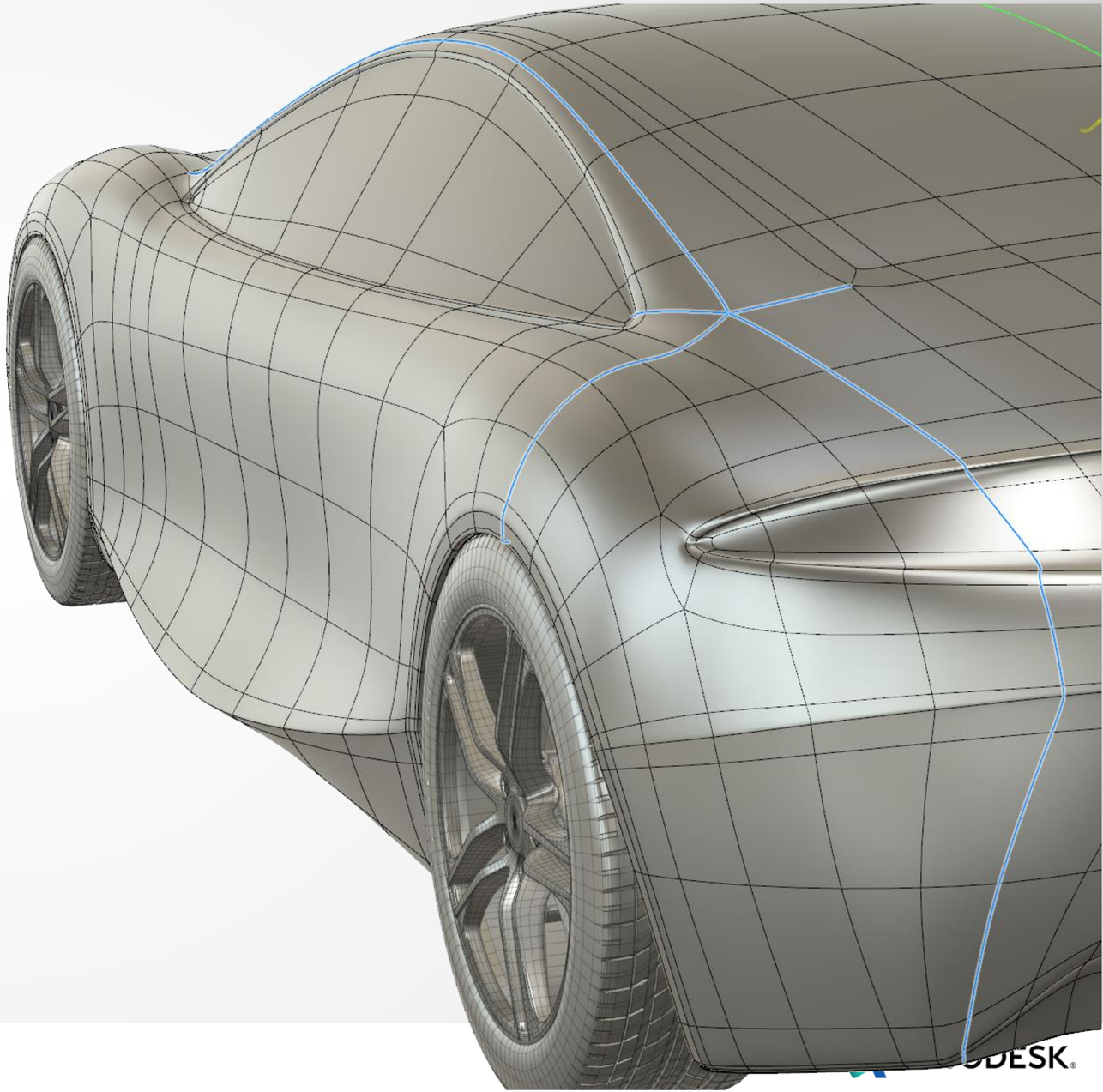
Proportions first, then details



Golden Rule: Like polygons

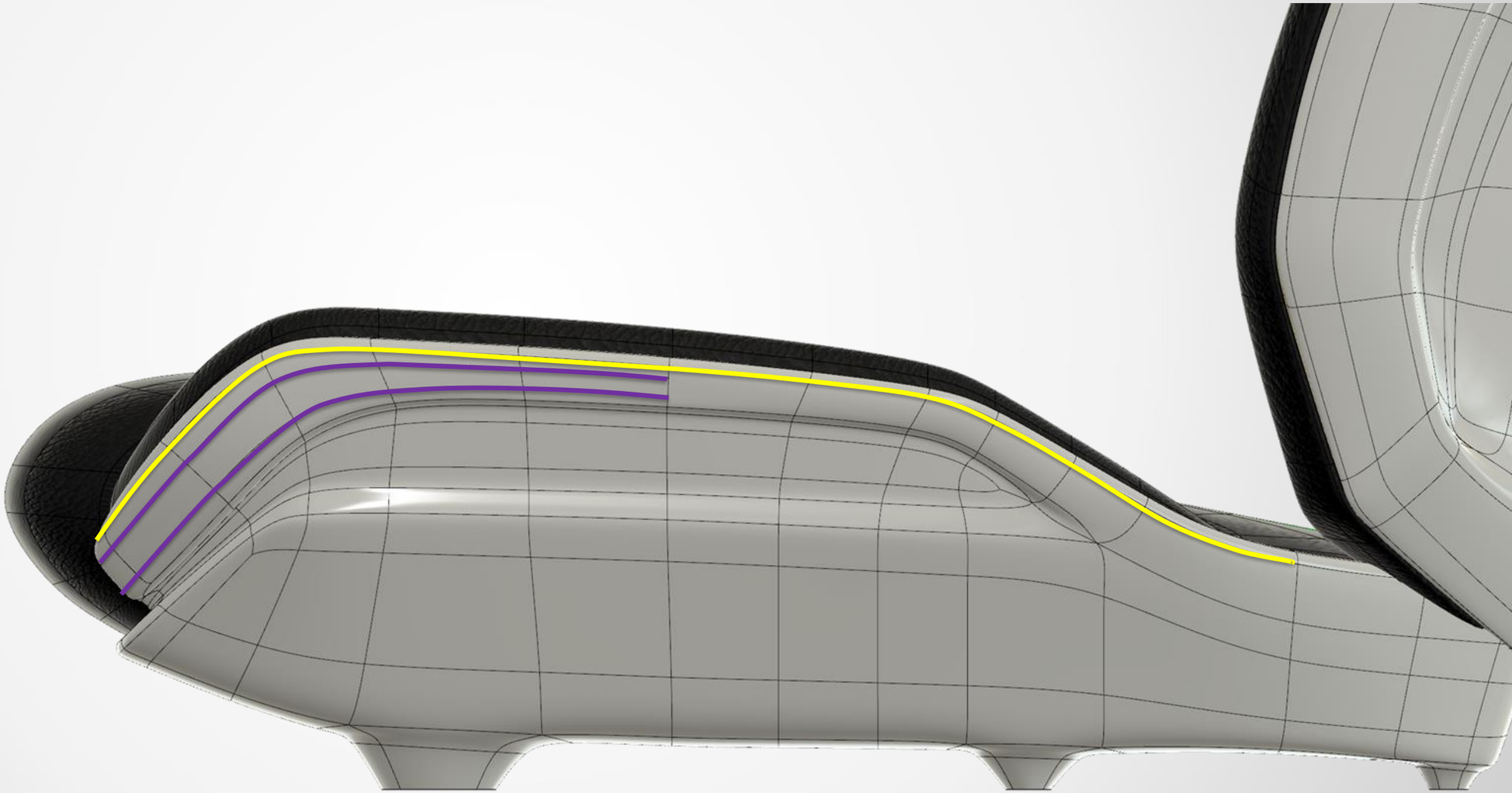
AUTODESK.

Star points change direction



Golden Rule: Like polygons

T-Points transition detailed areas



Golden Rule: Unique

AUTODESK.

Modeling with SpeedForm: Golden Rules

T-Splines Golden Rules

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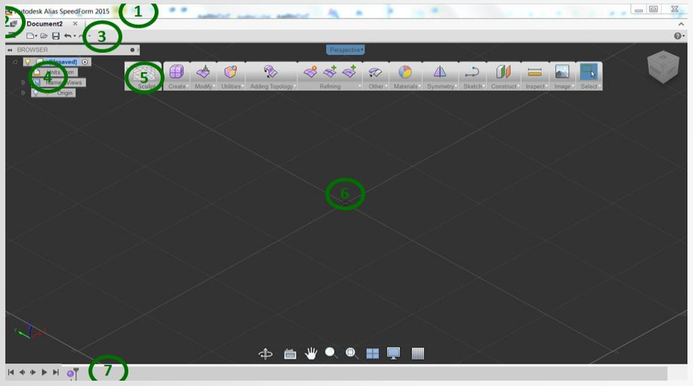
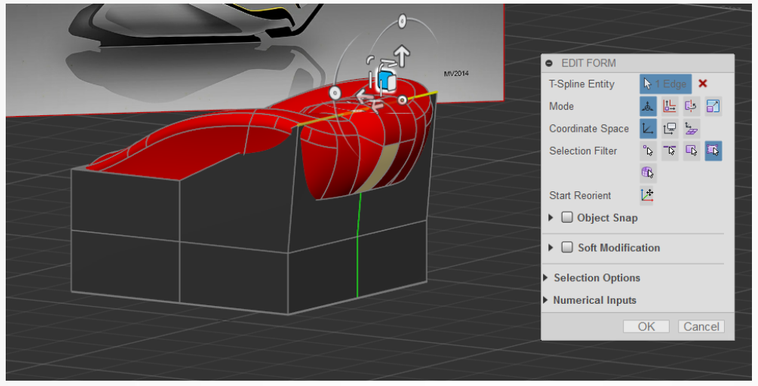
Like NURBS
Like polygons
Unique

Alias SpeedForm Hands-On

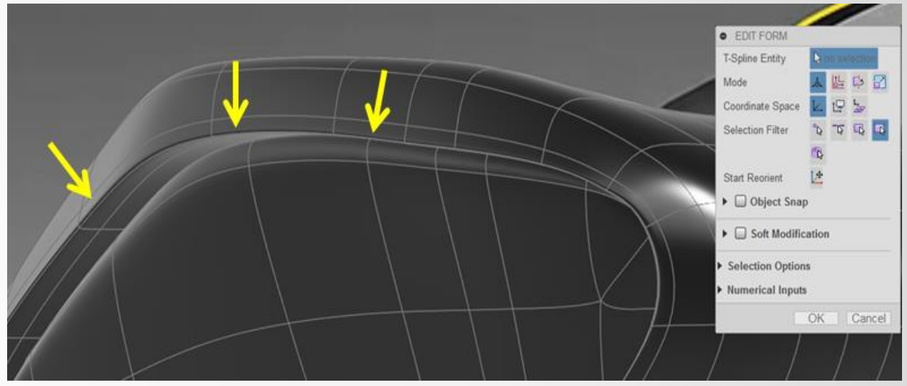
1. User interface introduction



2. Start modeling a seat cushion



3. Add details to a seat cushion



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- Contact us to be added to the beta portal

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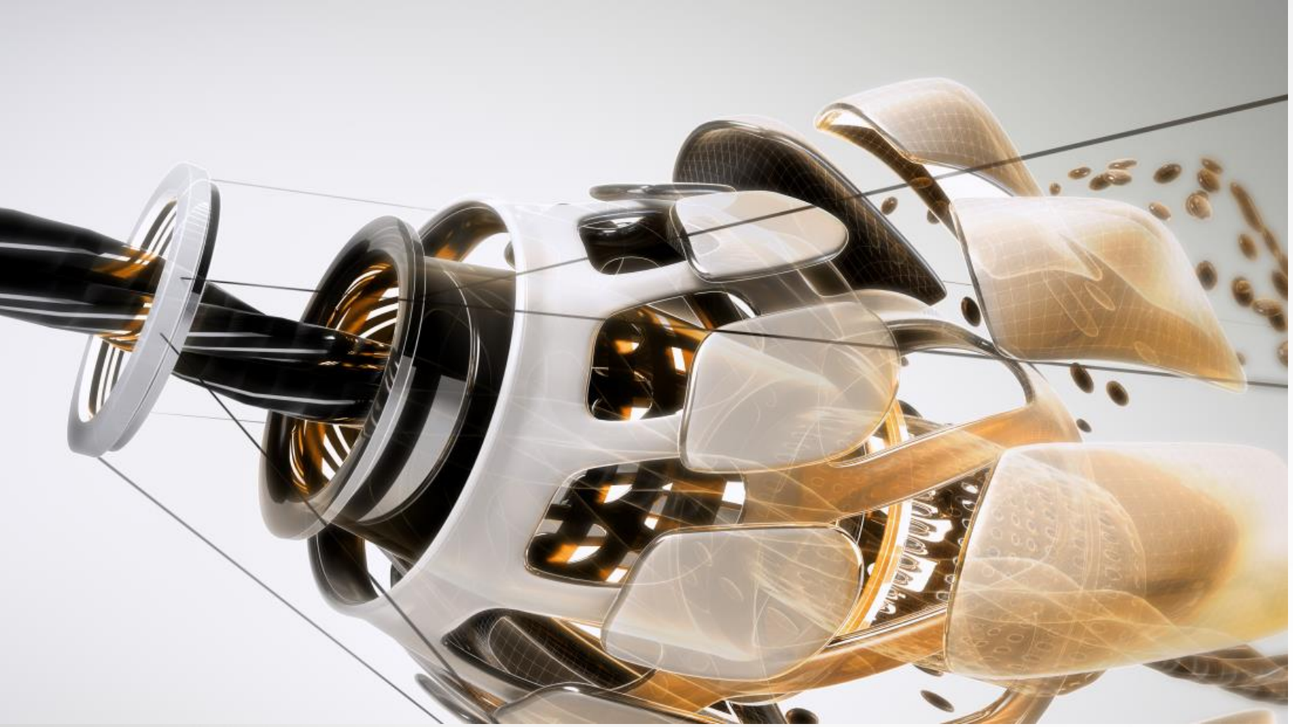

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