

MD6091: Getting the Most Out of Inventor Professional

Adam Smith and Dan Szymanski
Product Management and Customer Experience



Help drive the development of your favorite Autodesk products!

All sessions held in the Captain's Boardroom – North Center, Lower Level

Wednesday, December 3

1:00-2:30 PM: Inventor Publisher. RSVP to Adam.Smith@autodesk.com

2:30-4:00 PM: Additive Manufacturing/Composites. RSVP to Janna.Spicer@autodesk.com

Thursday, December 4

1:00-2:30 PM: Autodesk Inventor. RSVP to Daniel.Graham@autodesk.com

2:30-4:00 PM: Future Engineering Trends. RSVP to Brian.Repp@autodesk.com



Students, educators, and schools now have

FREE access to Autodesk design software & apps.

Download at www.autodesk.com/education



Earn your professional Autodesk Certification at AU

Visit the [AU Certification Lab](#)

Class Objective

Learn about the Inventor Professional software features for advanced mechanical engineering design, motion simulation, routed systems and component design, and enhanced CAD productivity.

Extra Credit: Learn more about how to leverage apps and entitlements you might now be aware of.

Case Study: Vimek AB

- Vimek offers the marketing leading and complete product range of modern low-impact forestry. Tough, reliable, fuel-efficient and service-friendly machines.
- Based in Vindeln, Sweden
- Worldwide customer base



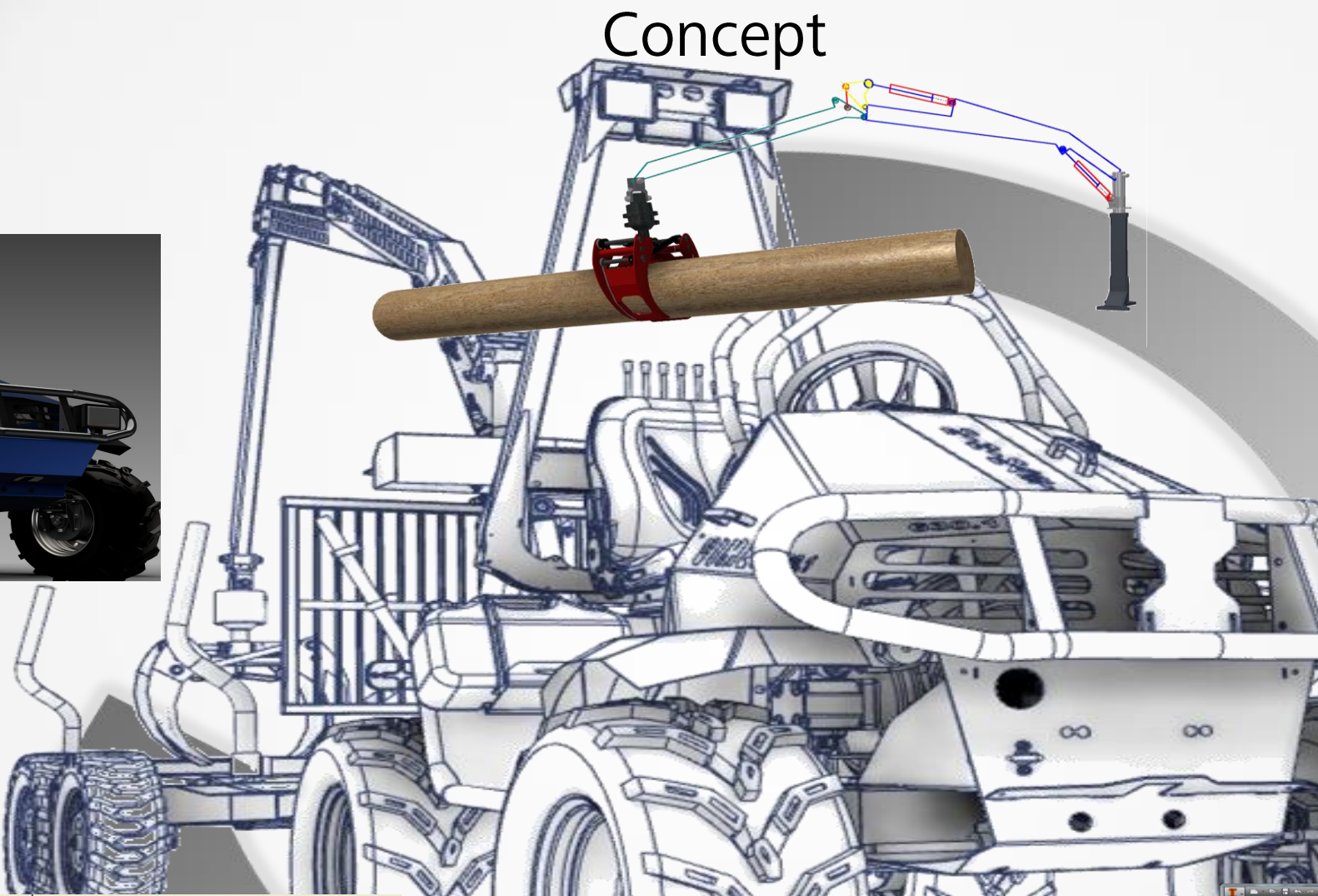


Case Study: Getting the most of Inventor Professional

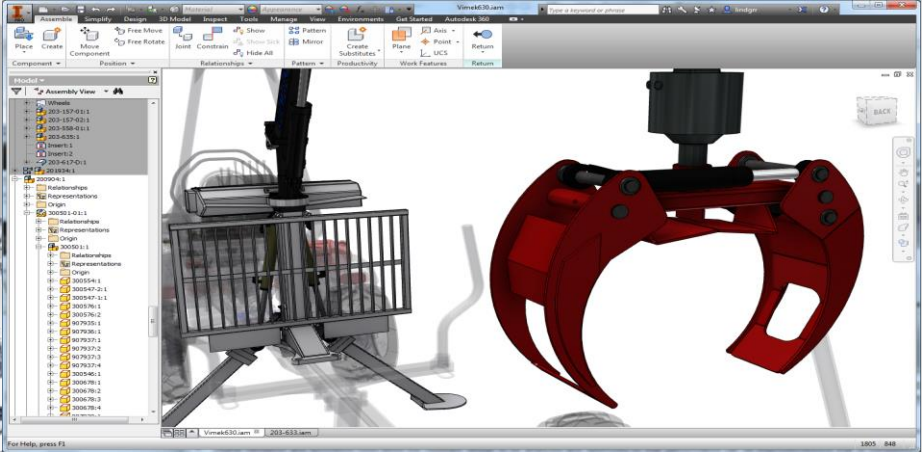
Visualization



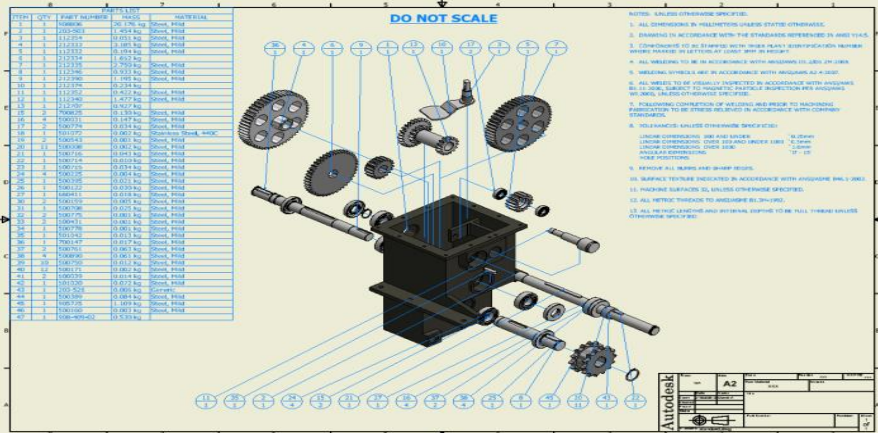
Concept



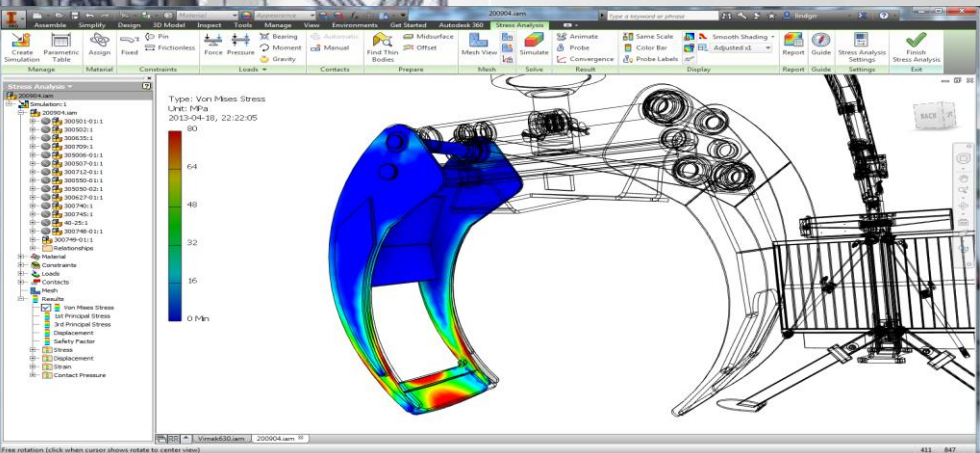
Engineering Design



Engineering Documentation



Simulation

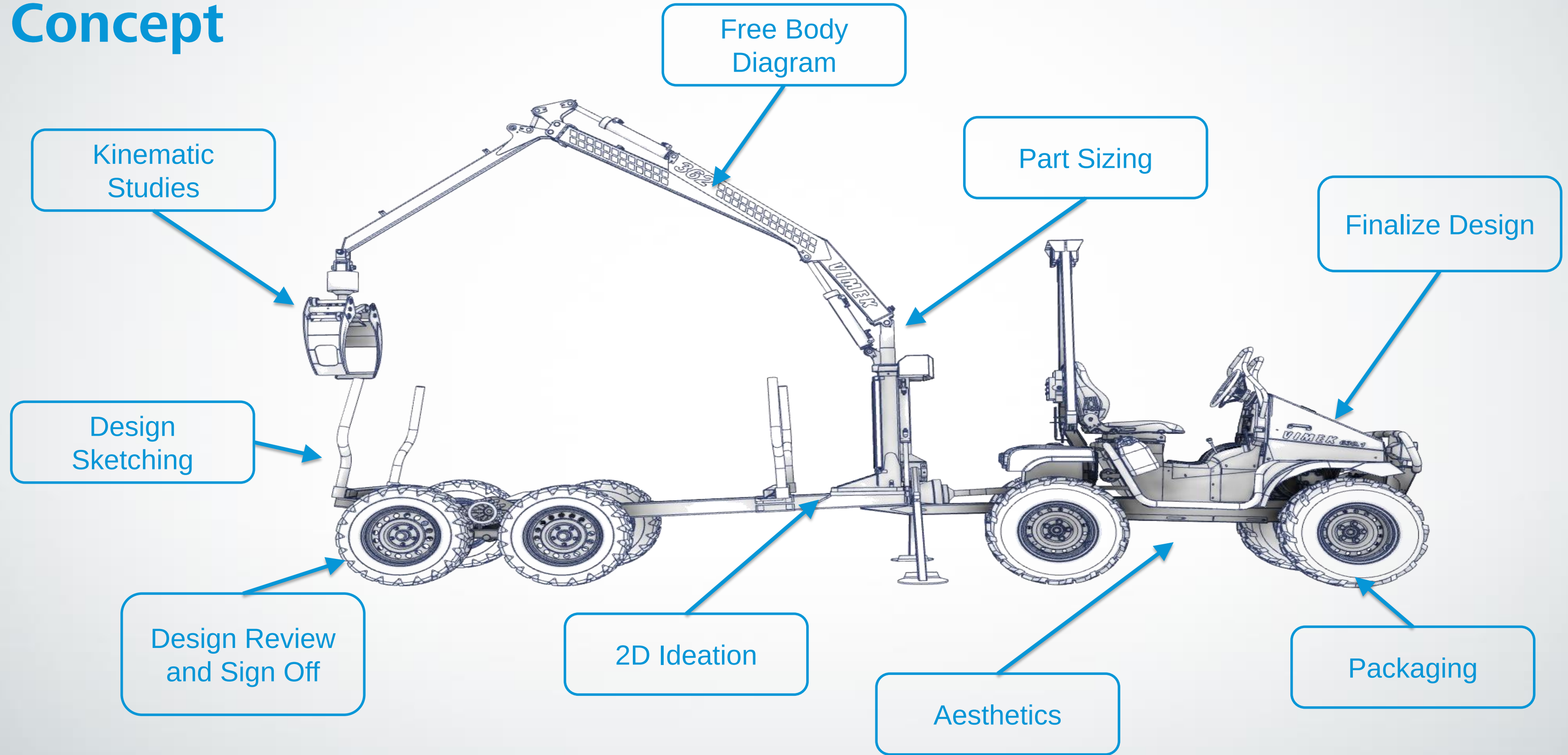


A high-speed train is shown in a station, with a wireframe overlay highlighting its aerodynamic design. The train is white with a blue stripe and is positioned on tracks. The station has a large, arched glass and steel roof. The text "Conceptual Design" is overlaid in blue on a semi-transparent white background.

Conceptual Design



Concept



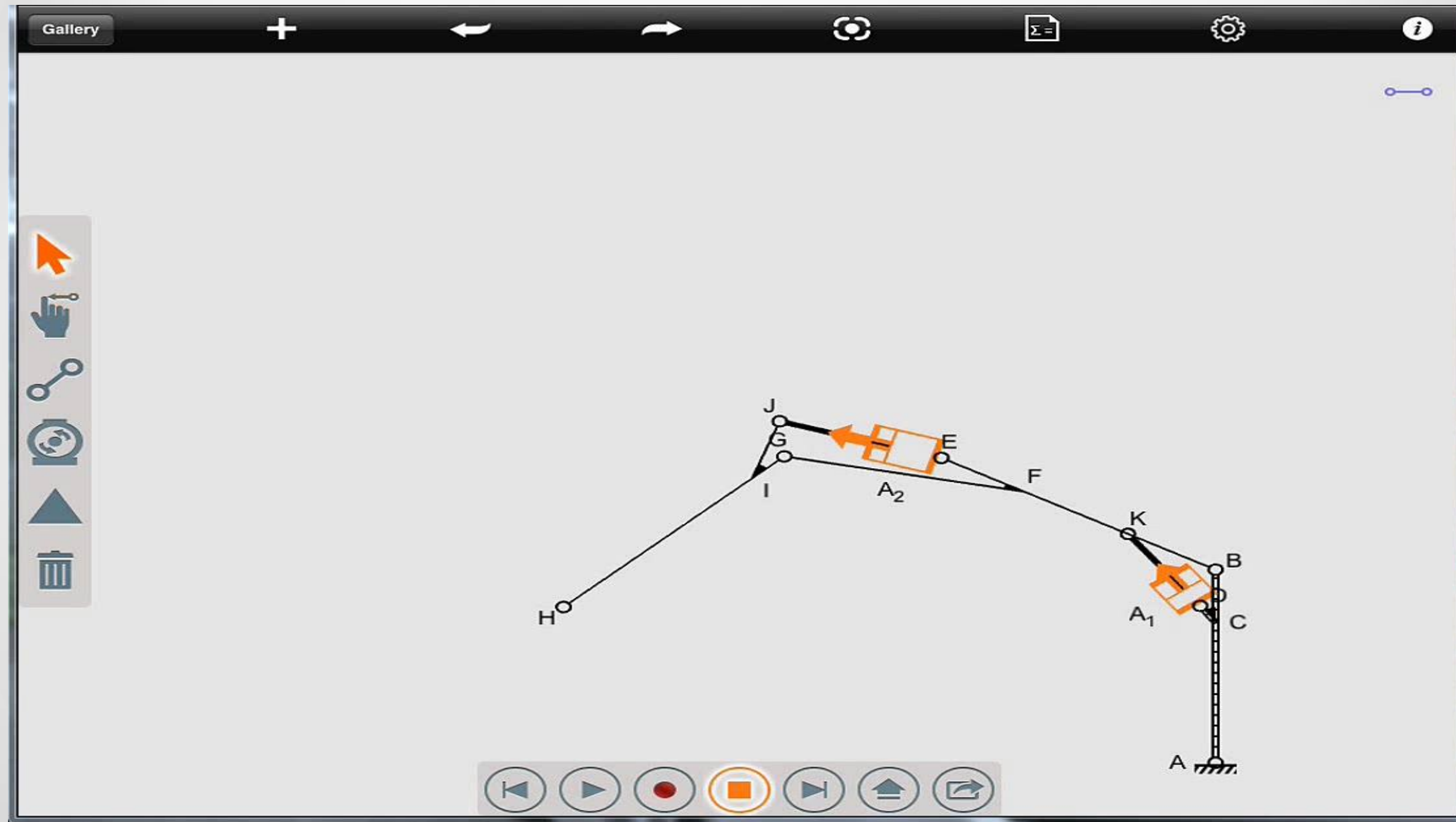
Concept

Free Body
Diagram

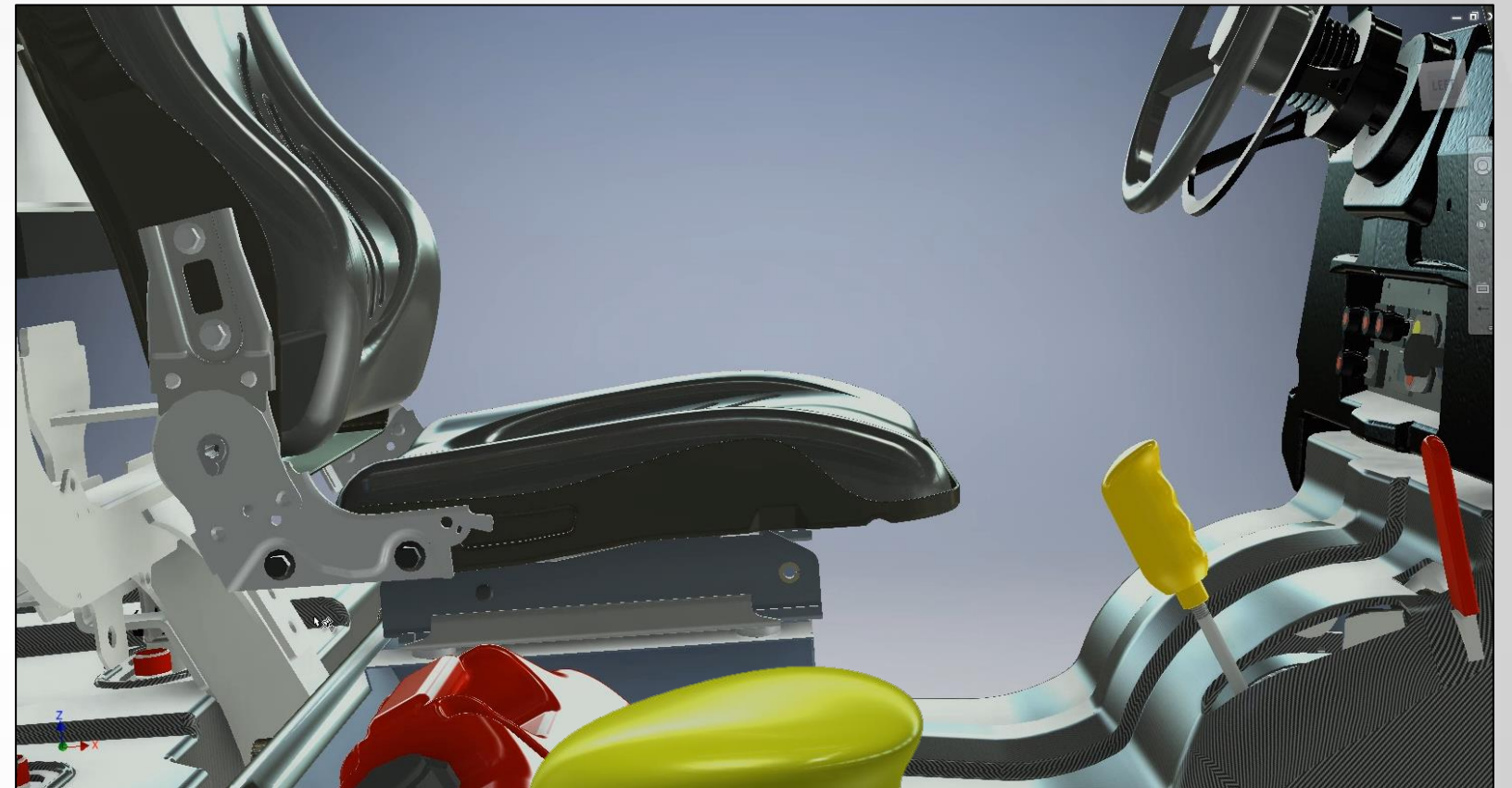
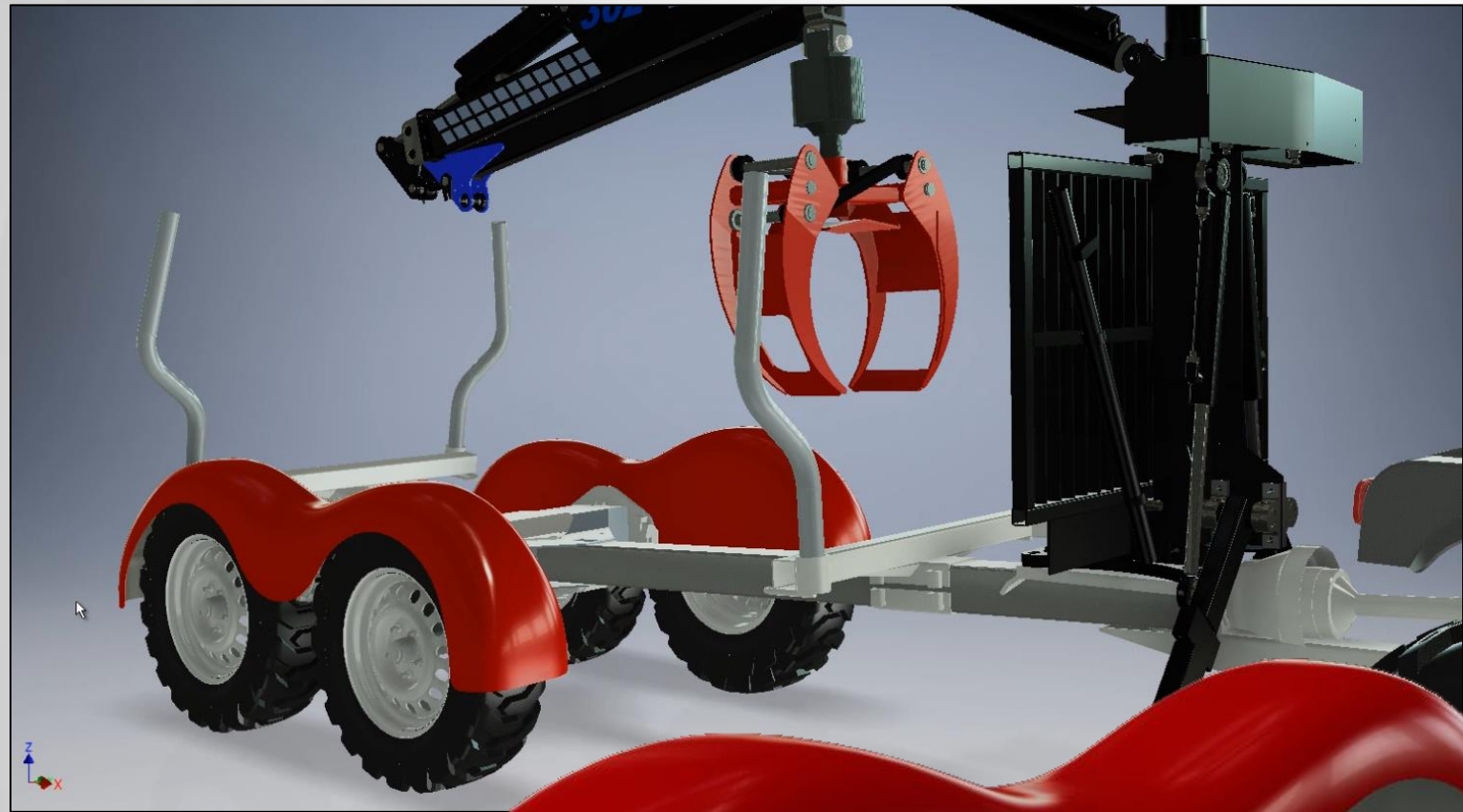
- Interactive Napkin Sketch
- Explore Multiple Designs
- Understand Motion
- Sizing of Actuators



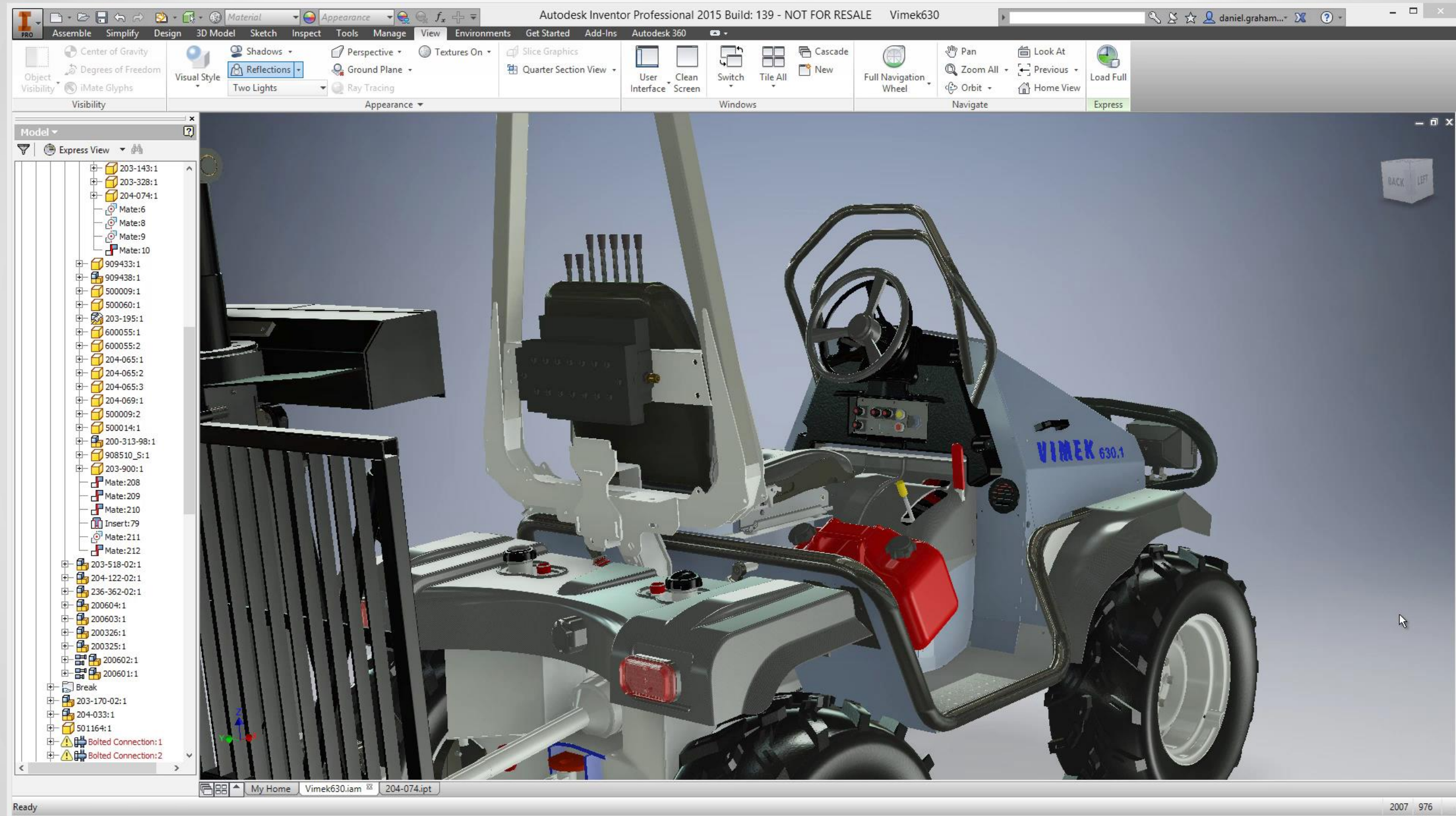
Concept – Force Effect Motion to Force Effect



Inventor Freeform



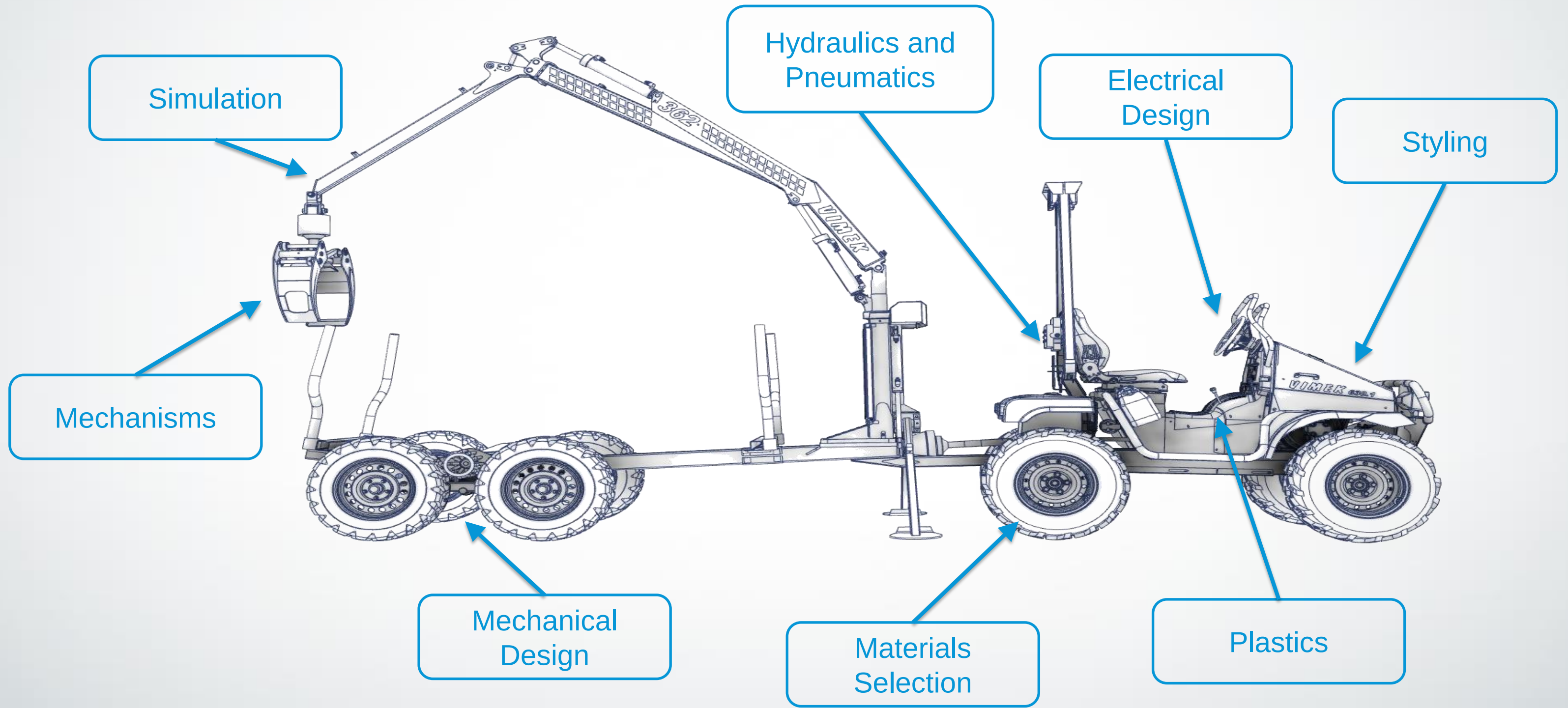
Complex Shape & Aesthetic Design Flexibility



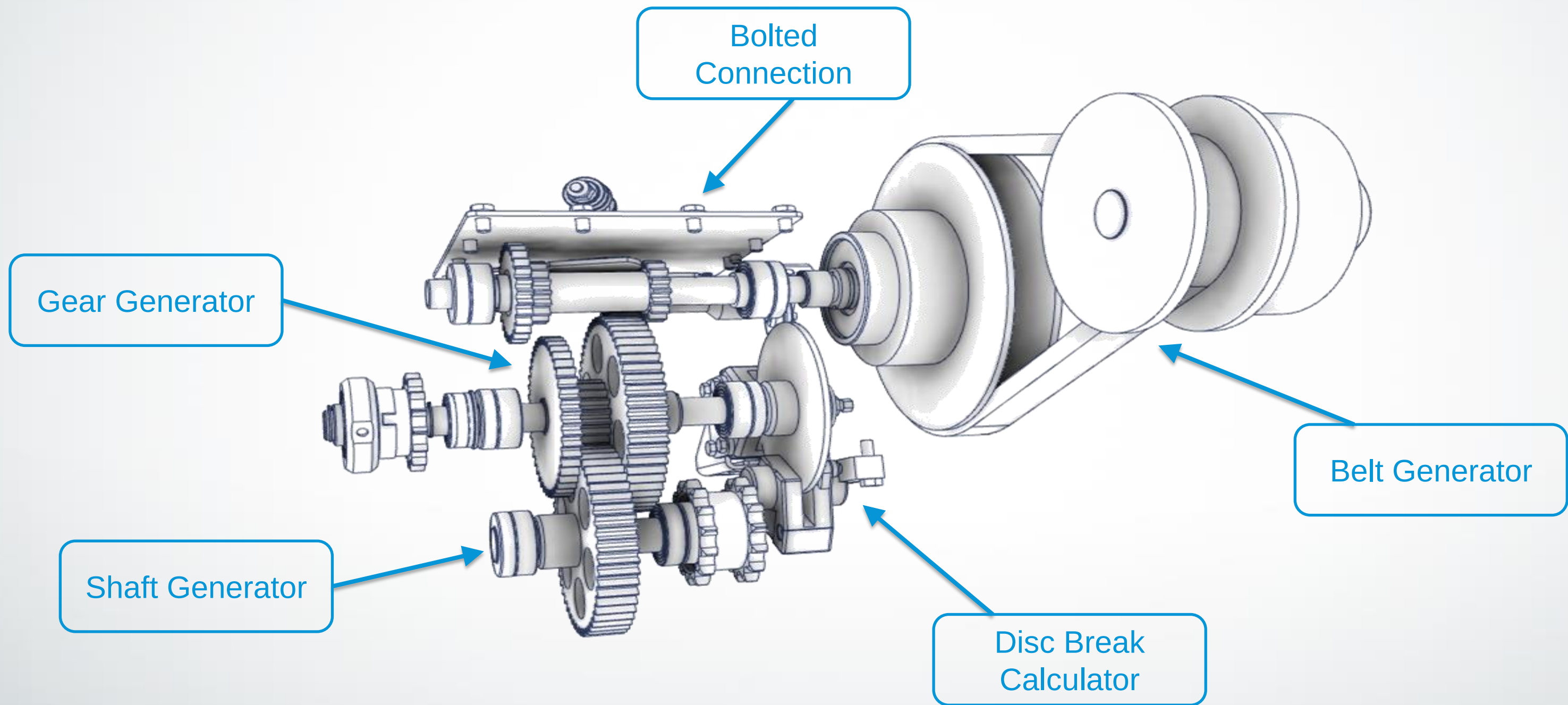
Engineering

A high-speed train is shown at a station platform. The train is white with a blue stripe and has a wireframe overlay on its front and side, indicating a 3D model or simulation. The station has a large, arched glass and steel roof. The train is on tracks with gravel ballast. The platform is visible on the left side of the image.

Engineering

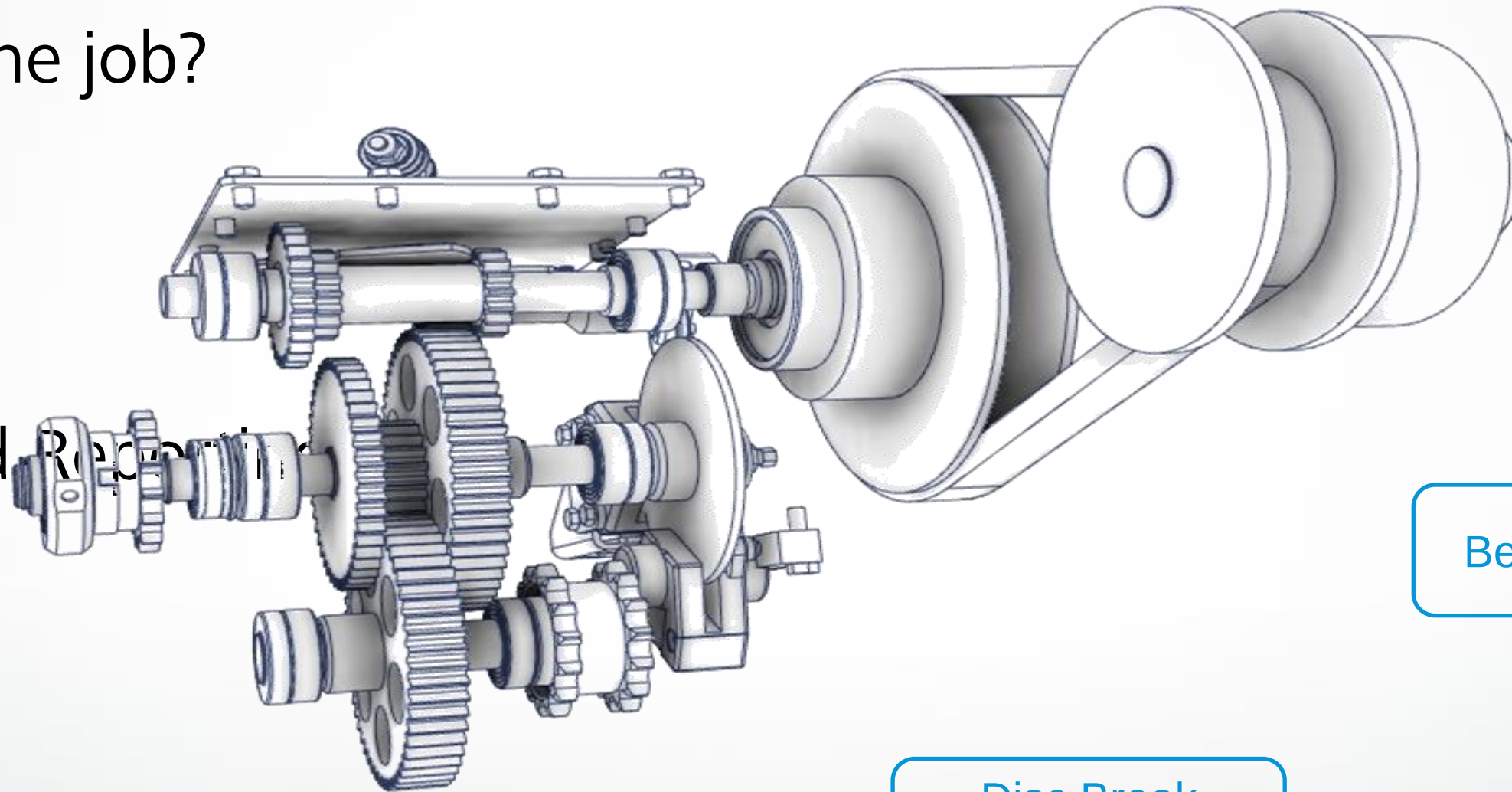


Design Accelerators



Design Accelerators

- Will it do the job?
- Sizing
- **Gear Generator**
Strength
- Automated Reporting

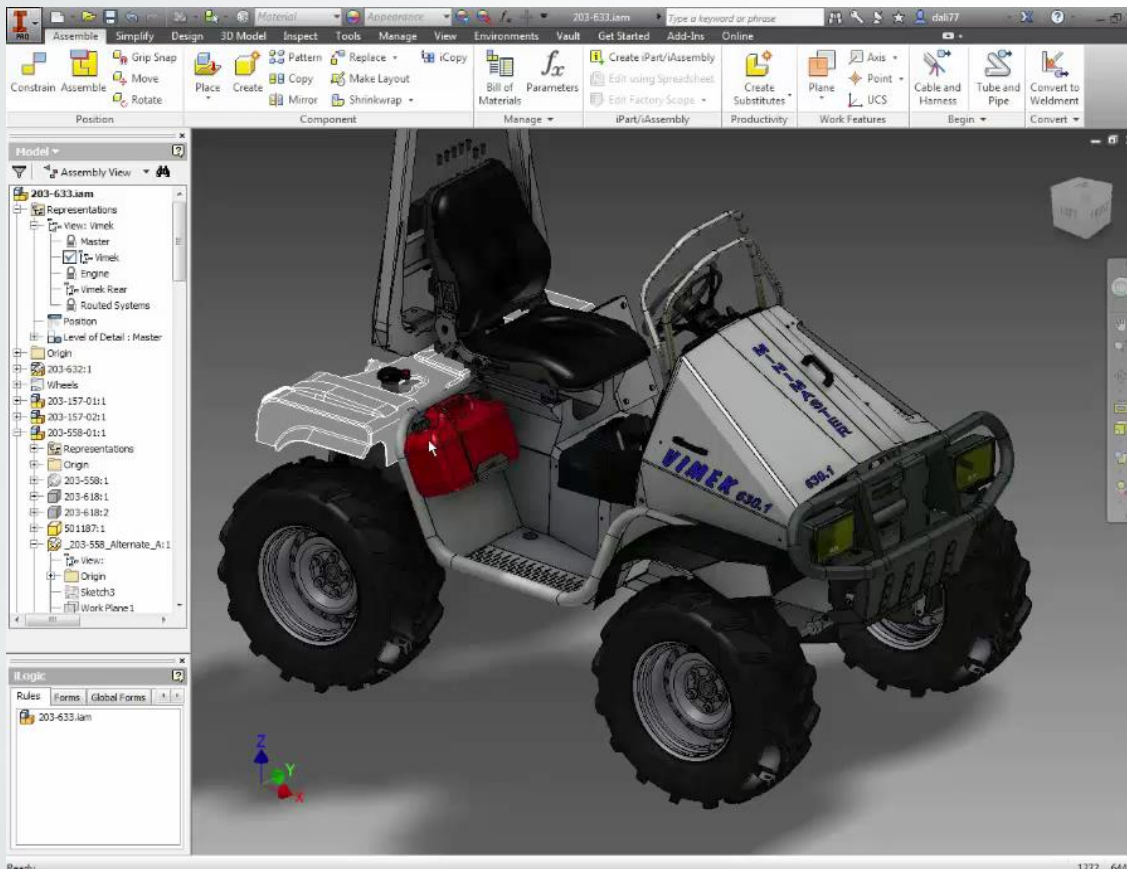


Belt Generator

Disc Break
Calculator

Design Accelerators

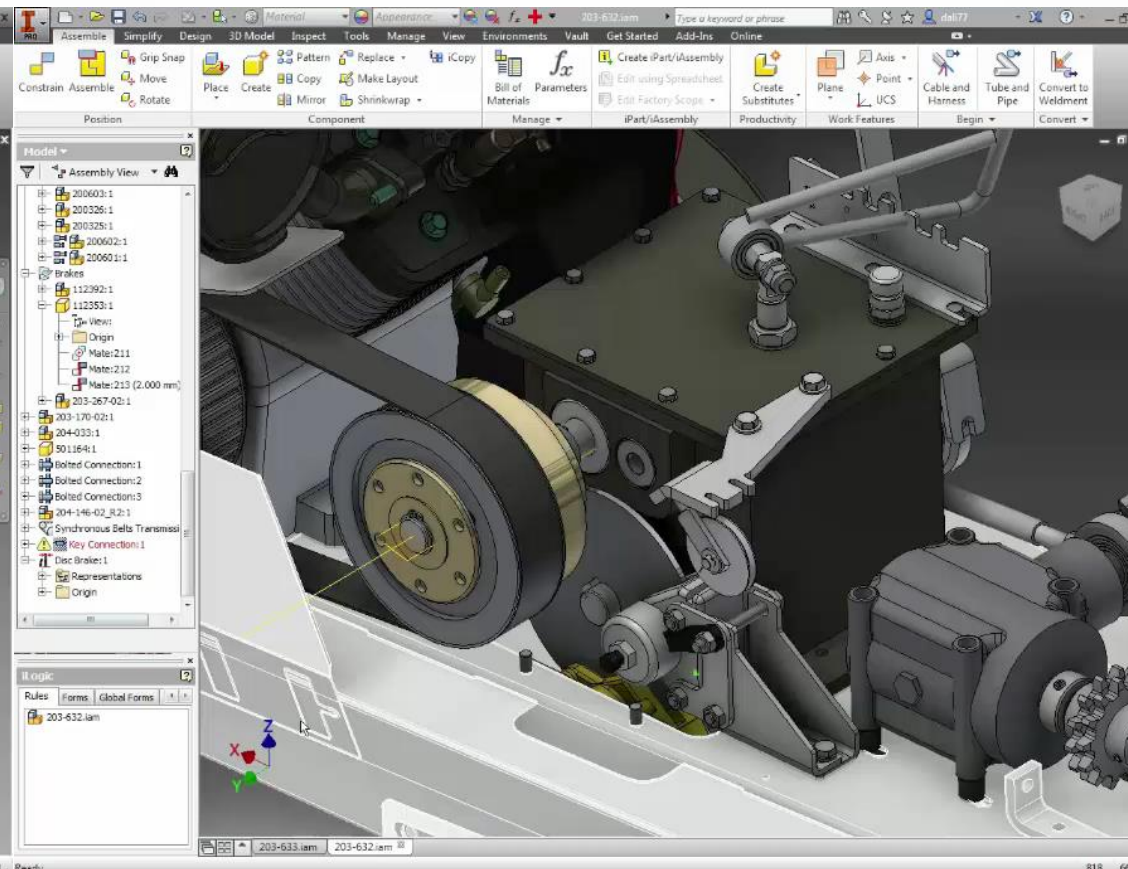
Belt Generator



Belt Generator

- Sizing
- Strength
- Power Ratio
- Key Way

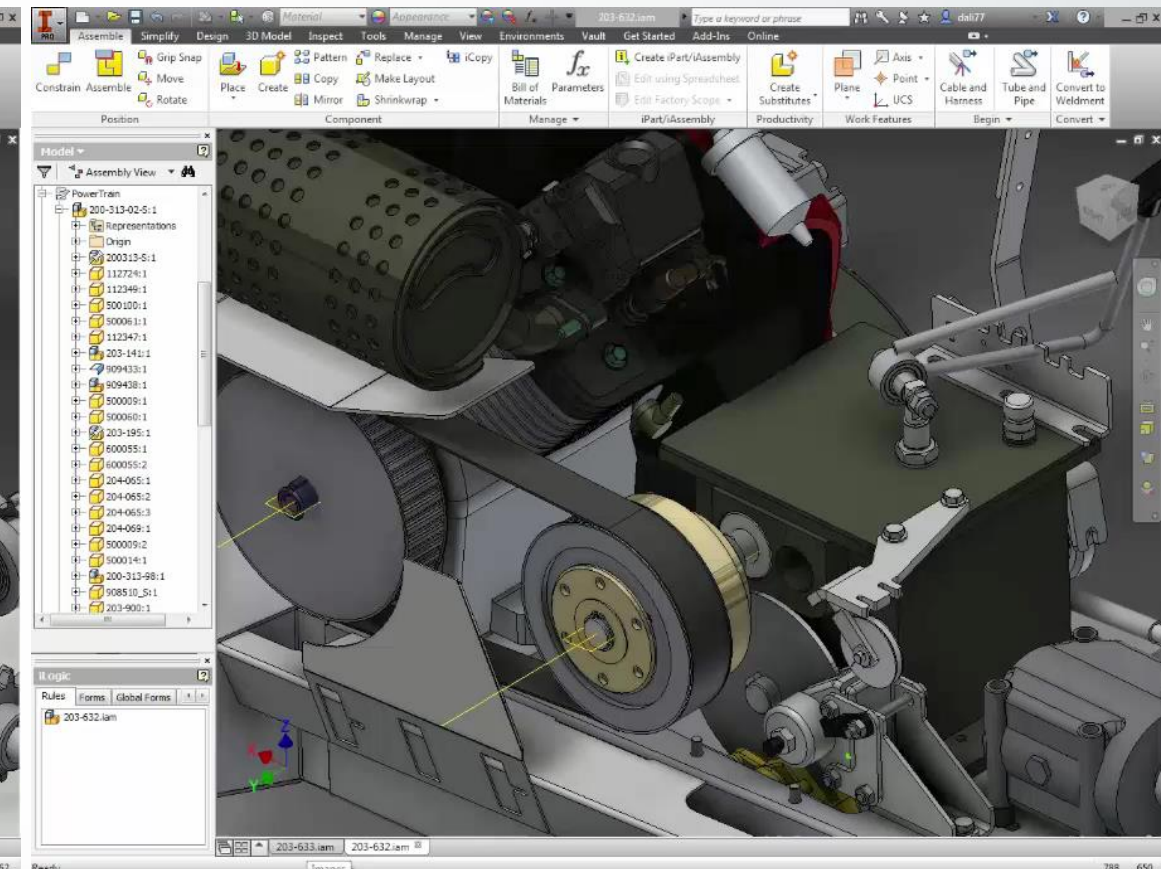
Disc Break Calculator



Disc Break Design

- Sizing

Gear Generator

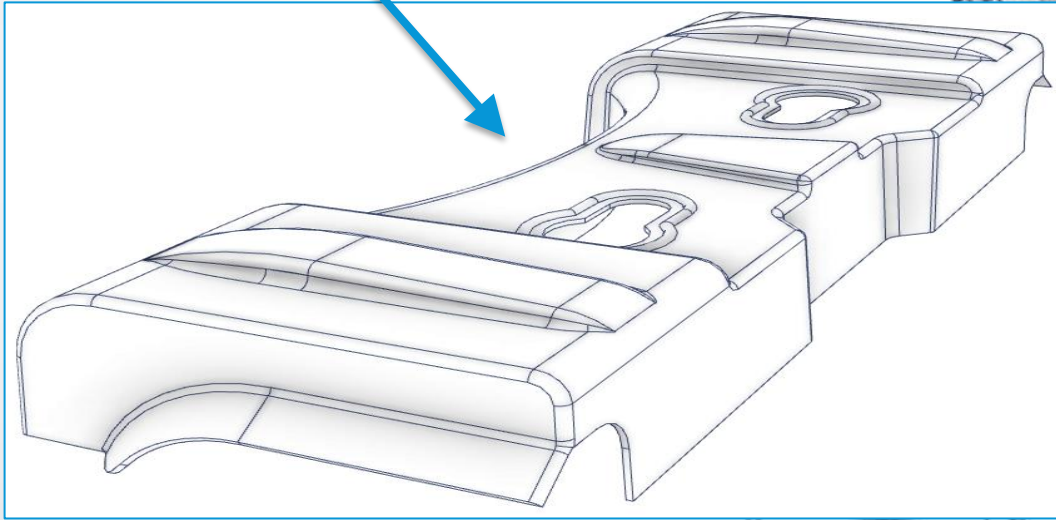


Transfer Box Design

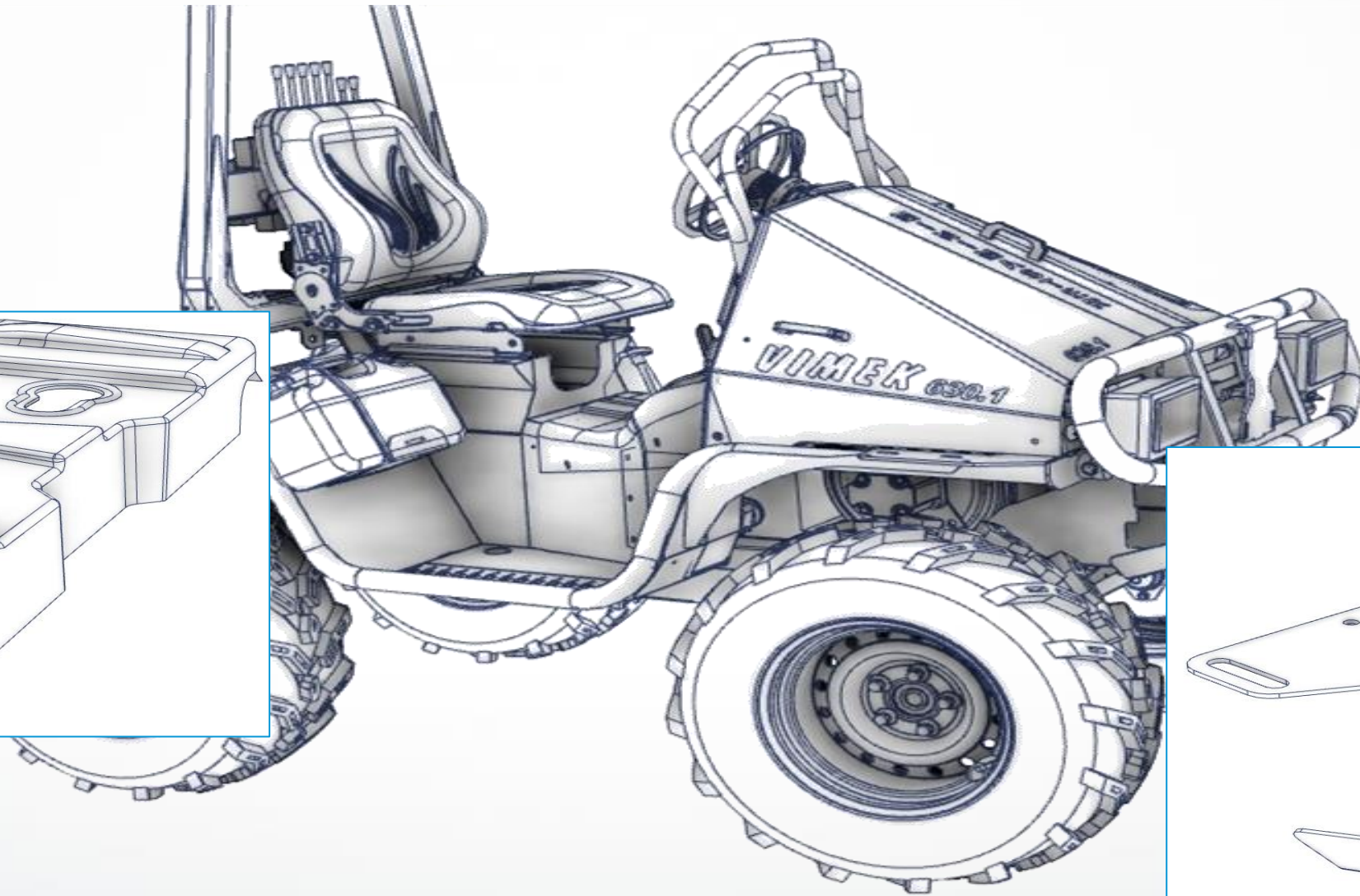
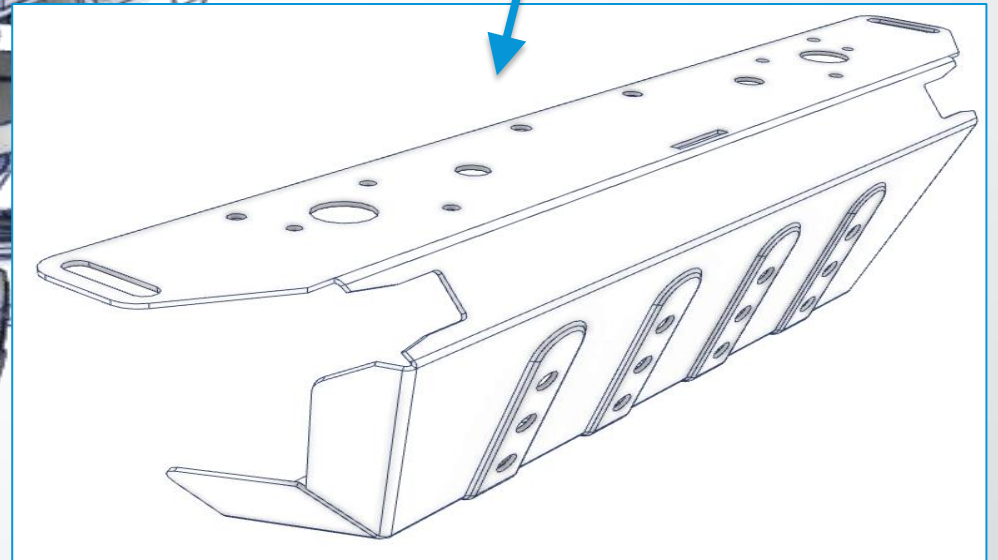
- Gears
- Shaft
- Bearing
- Bolted Connection

Component Design

Plastic Part



Sheet Metal



Component Design

- Interactive guides for...
 - Plastic Part
 - Challenges during Manufacturing?

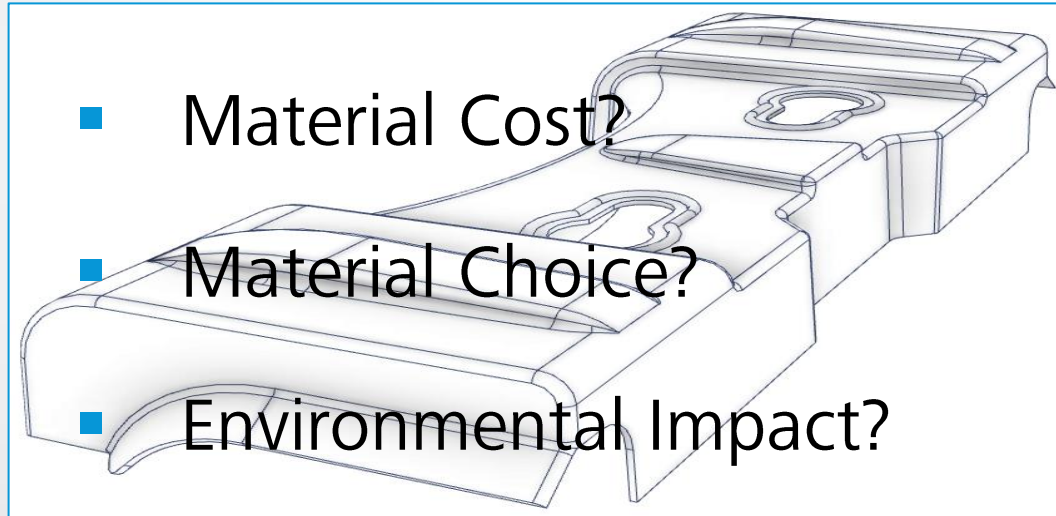
- Will it Fill?

- Material Cost?

- Material Choice?

- Environmental Impact?

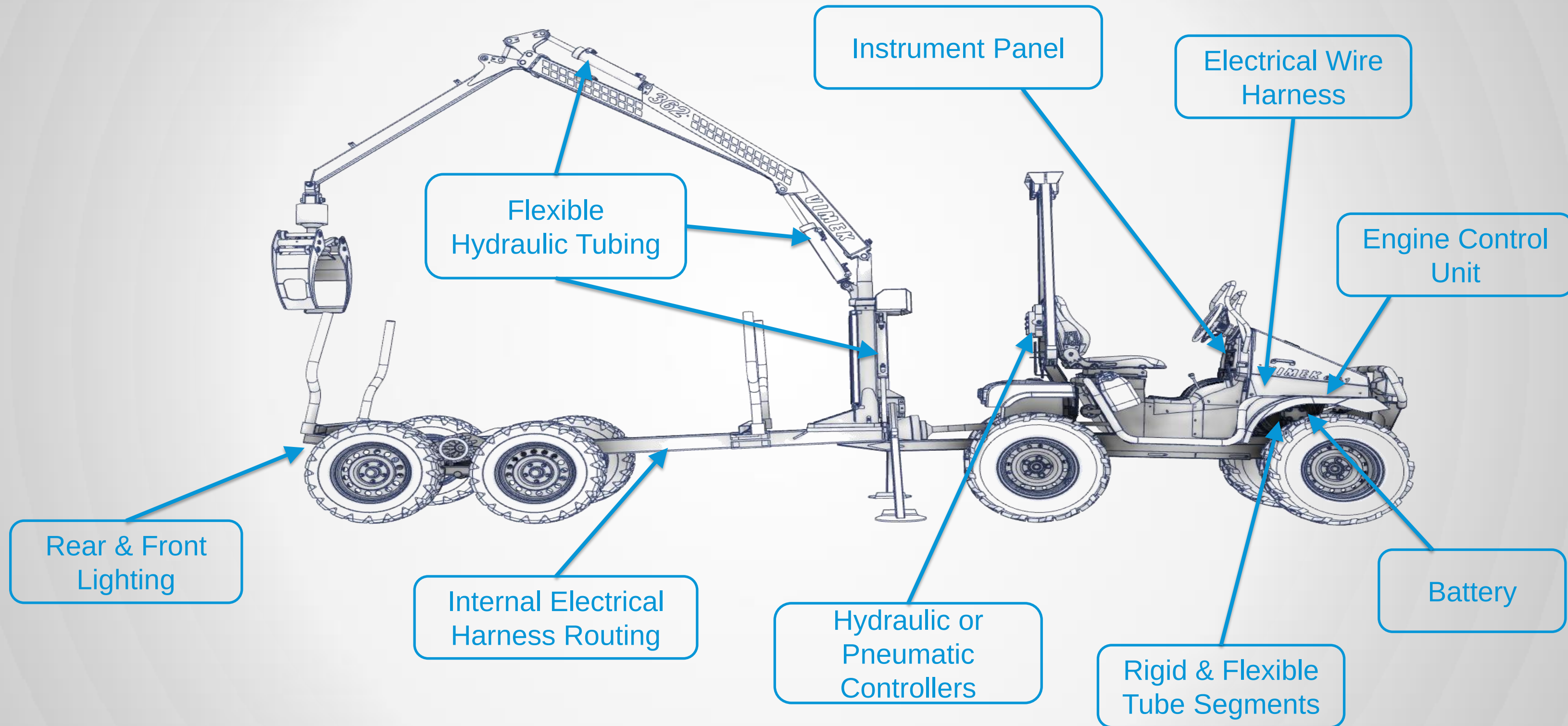
- Water Usage?



A high-speed train is shown at a station platform. The train is white with a blue stripe and has a wireframe overlay on its front section. The station has a large, arched glass and steel roof. The text "Routed Systems" is overlaid in blue on a white background.

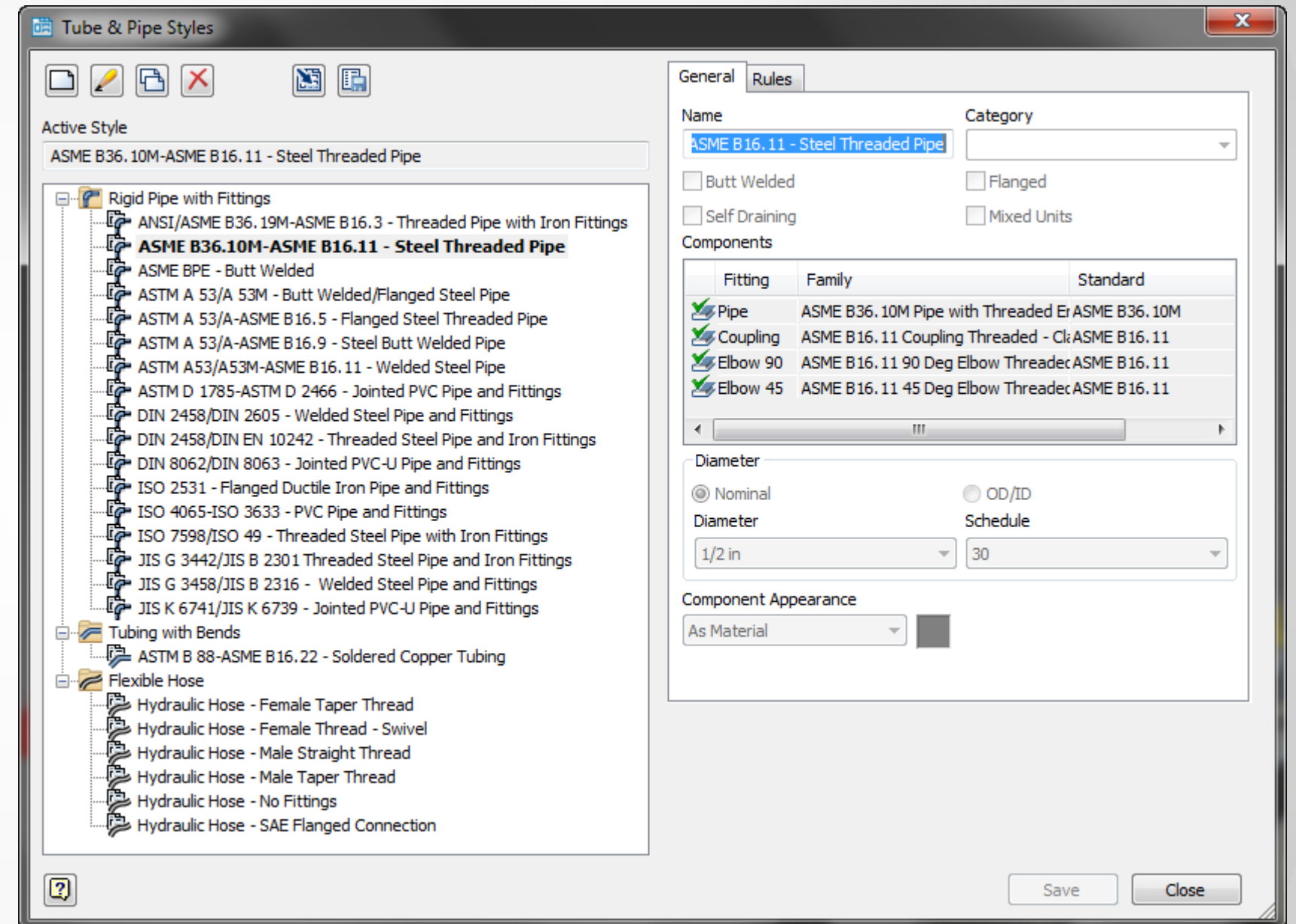
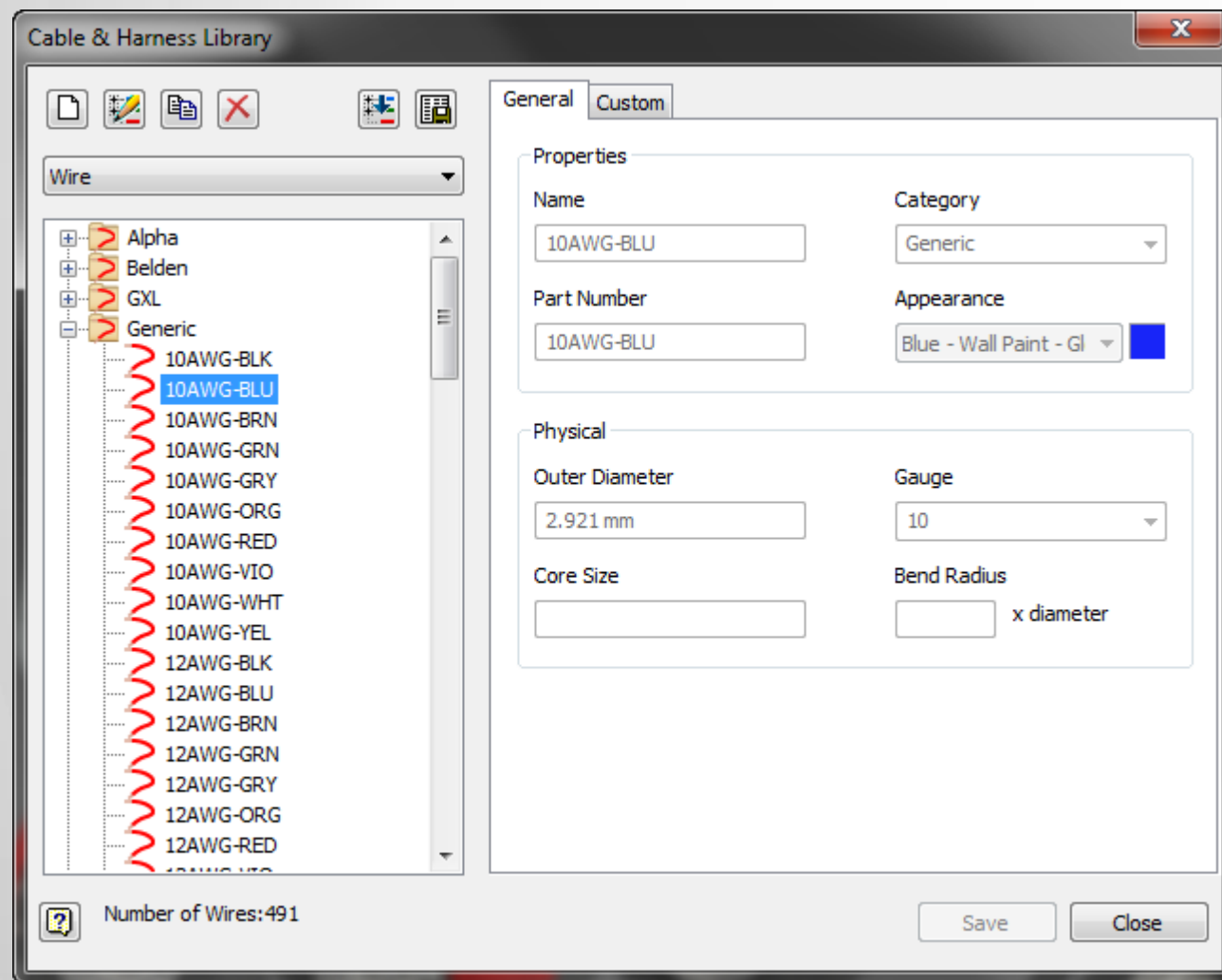
Routed Systems

Routed Systems

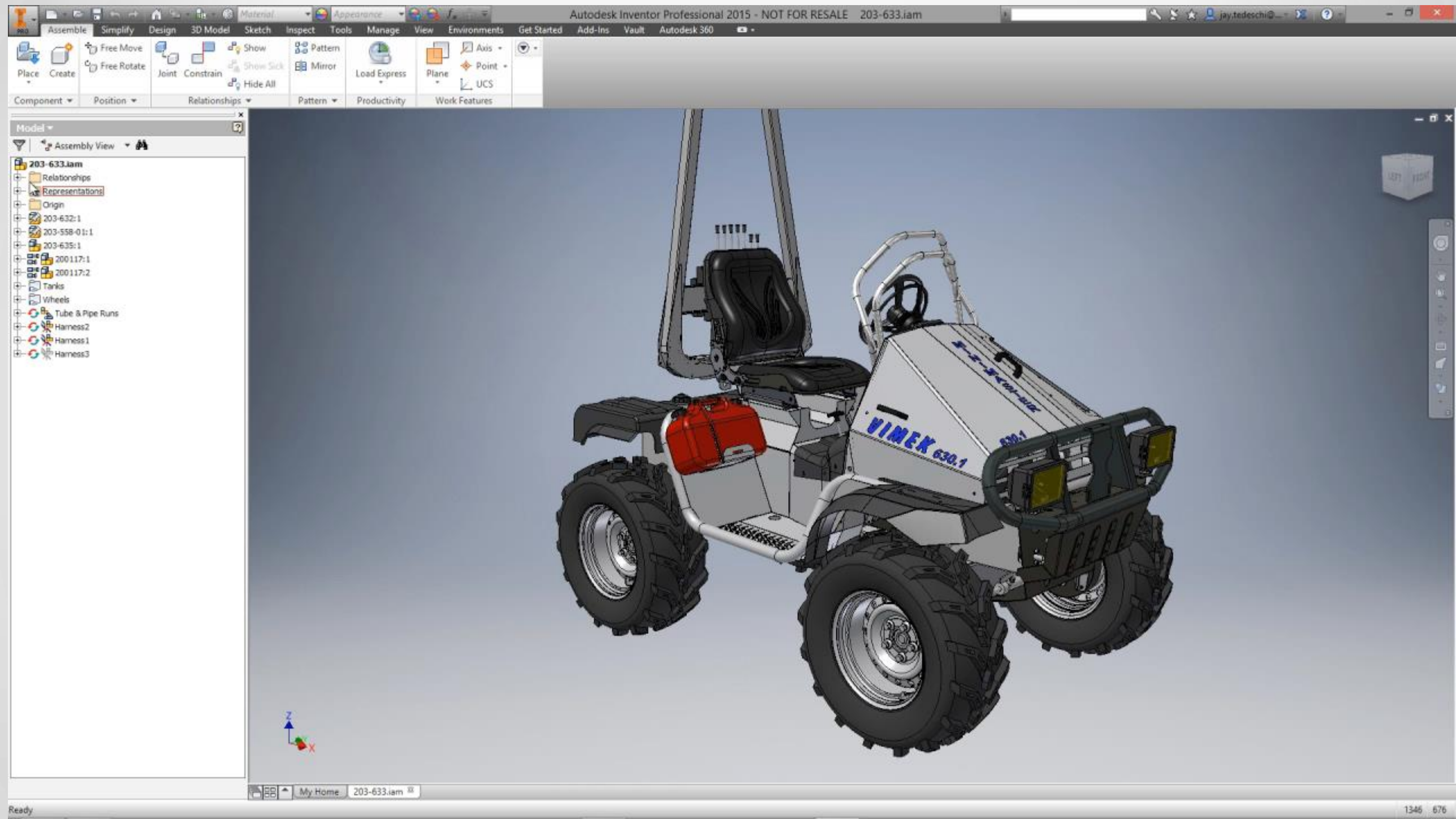


Configure & Customize Content

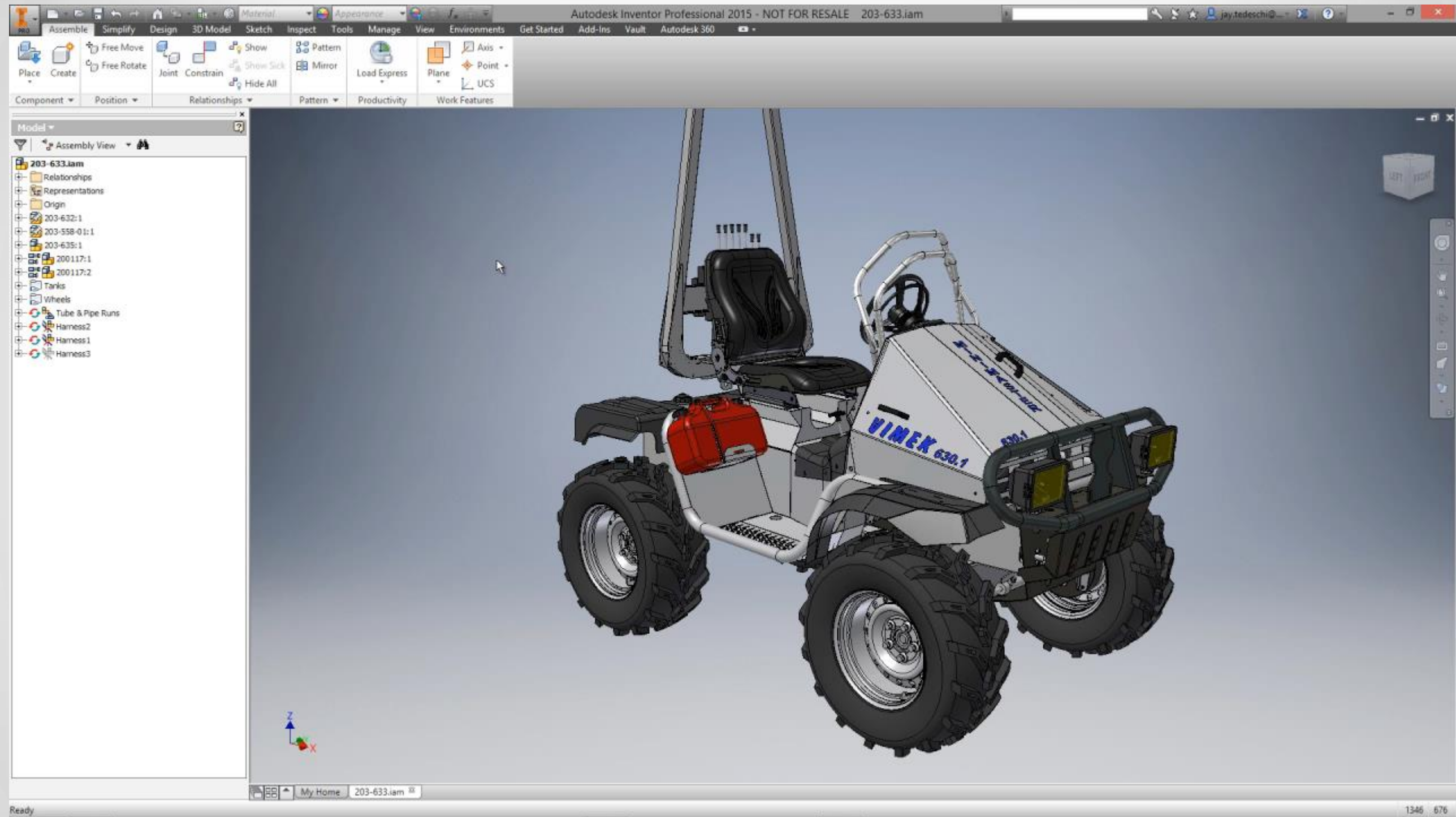
- Tube & Pipe Styles
- Cable & Harness Library



Tube & Pipe – Flexible Hose Routing



Cable & Harness – Route Imported Wire Data



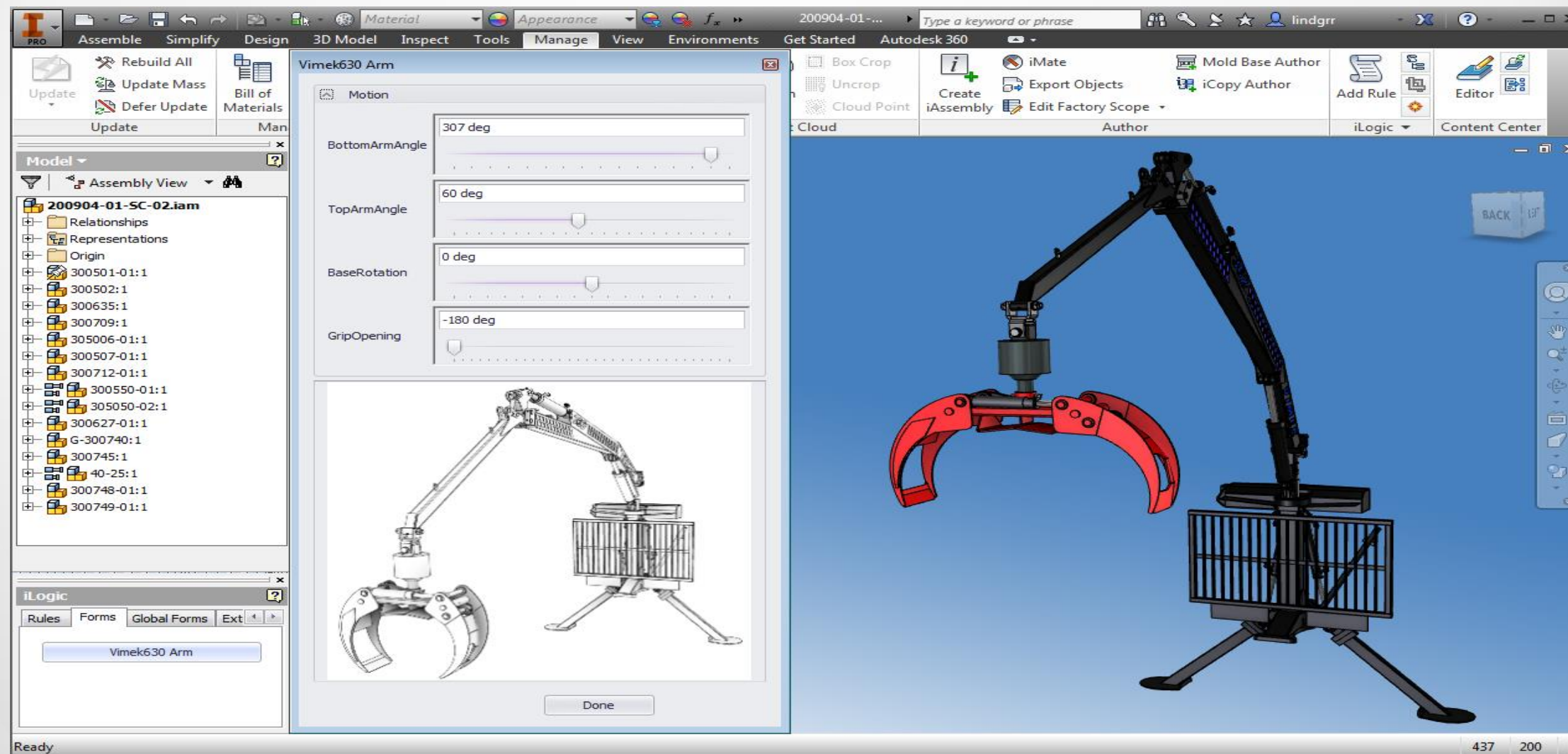
A high-speed train is shown at a station platform. The train is white with a blue stripe and has a wireframe overlay on its front section. The station has a large, arched glass and steel roof. The text "Configuration & Automation" is overlaid in the center.

Configuration & Automation

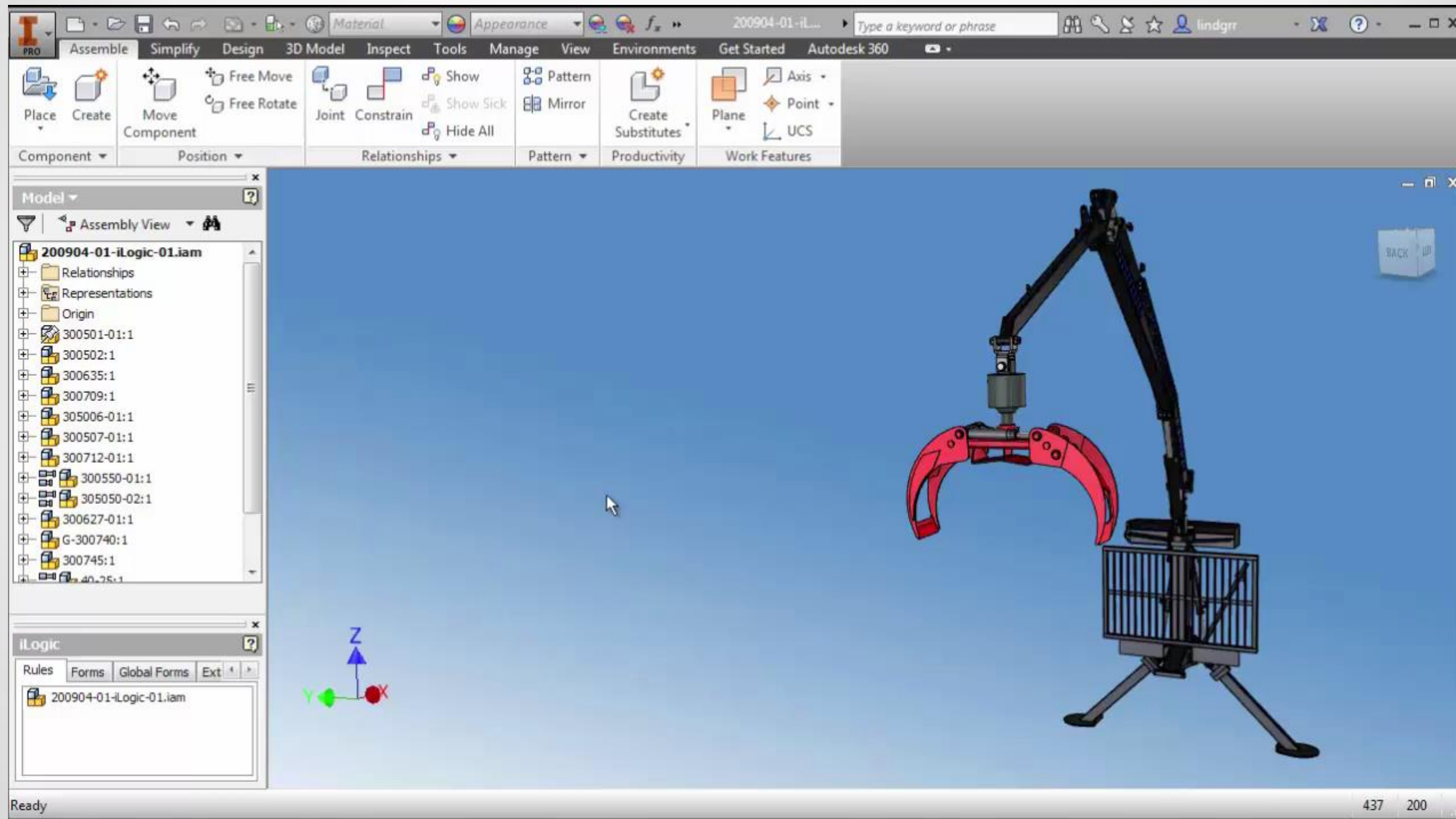


Configuration & Automation

- Capture Intellectual Properties in the models
- Automate routines



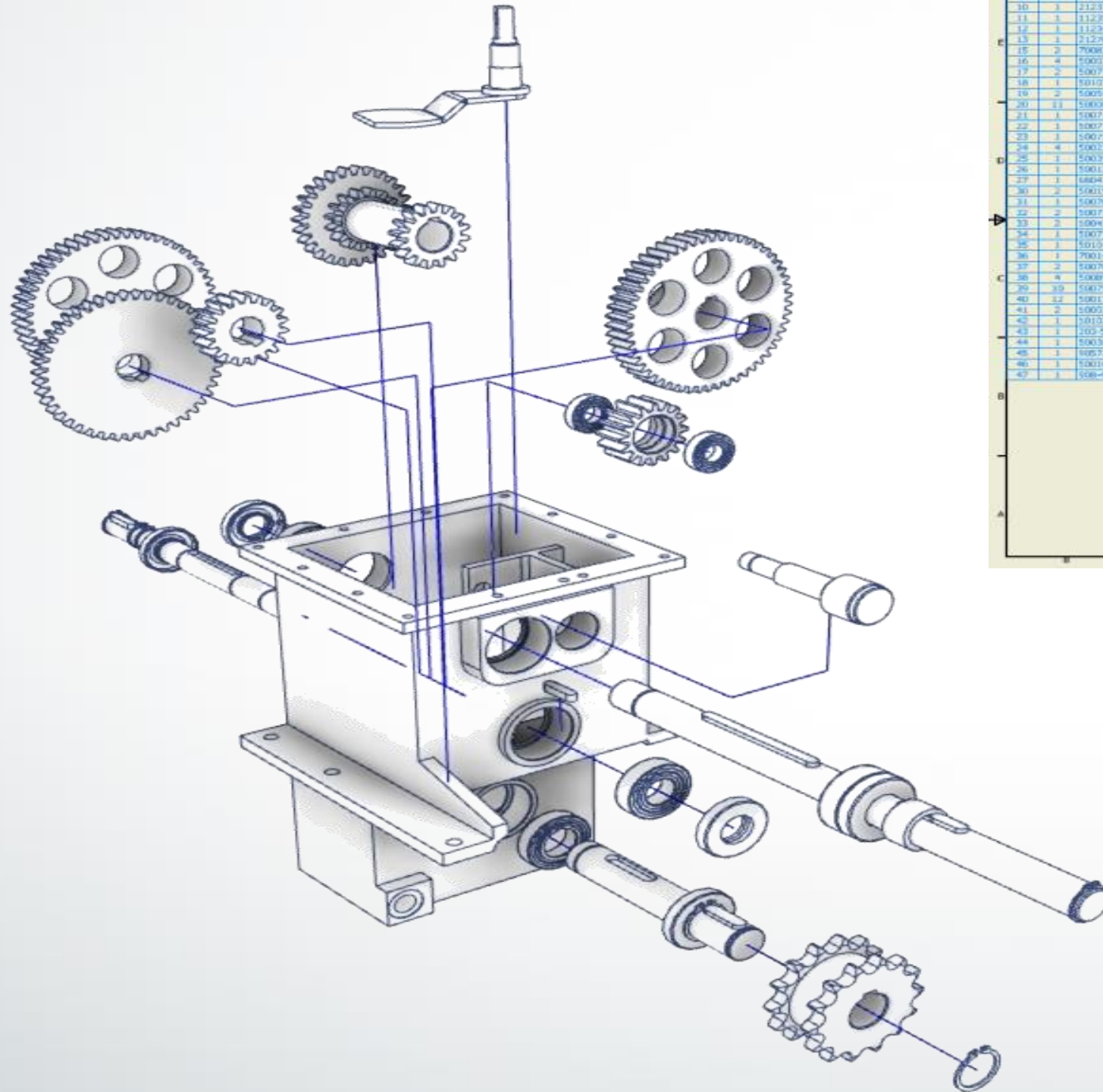
Configuration & Automation



A high-speed train is shown at a station platform. The train is white with a blue stripe and has a wireframe overlay on its front section, indicating a 3D model or simulation. The station has a large, arched glass and steel roof. The text "Documentation & Visualisation" is overlaid in the center.

Documentation & Visualisation

Documentation



PARTS LIST				
ITEM	QTY	PART NUMBER	MASS	MATERIAL
1	1	500000	0.176 kg	Steel, Mild
2	1	203-003	1.494 kg	Steel, Mild
3	1	112354	0.051 kg	Steel, Mild
4	1	212337	1.185 kg	Steel, Mild
5	1	112333	0.194 kg	Steel, Mild
6	1	112334	1.652 kg	Steel, Mild
7	1	212335	2.792 kg	Steel, Mild
8	1	112336	0.933 kg	Steel, Mild
9	1	212390	1.195 kg	Steel, Mild
10	1	212396	0.234 kg	Steel, Mild
11	1	112352	0.422 kg	Steel, Mild
12	1	112340	1.477 kg	Steel, Mild
13	1	112307	0.927 kg	Steel, Mild
14	2	700025	0.130 kg	Steel, Mild
15	4	500031	0.147 kg	Steel, Mild
16	2	500774	0.034 kg	Steel, Mild
17	1	501070	0.002 kg	Stainless Steel, 304
18	2	500543	0.001 kg	Steel, Mild
19	11	500000	0.002 kg	Steel, Mild
20	1	500716	0.043 kg	Steel, Mild
21	1	500714	0.010 kg	Steel, Mild
22	1	500715	0.034 kg	Steel, Mild
23	4	500135	0.004 kg	Steel, Mild
24	1	500725	0.021 kg	Steel, Mild
25	1	500122	0.030 kg	Steel, Mild
26	1	680411	0.018 kg	Steel, Mild
27	2	500159	0.001 kg	Steel, Mild
28	1	500700	0.025 kg	Steel, Mild
29	2	500775	0.001 kg	Steel, Mild
30	2	500471	0.001 kg	Steel, Mild
31	1	500778	0.001 kg	Steel, Mild
32	1	501042	0.013 kg	Steel, Mild
33	1	700147	0.017 kg	Steel, Mild
34	2	500761	0.003 kg	Steel, Mild
35	4	500890	0.001 kg	Steel, Mild
36	39	500750	0.012 kg	Steel, Mild
37	12	500171	0.002 kg	Steel, Mild
38	2	500759	0.014 kg	Steel, Mild
39	1	501020	0.072 kg	Steel, Mild
40	1	203-528	0.005 kg	Steel, Mild
41	1	500389	0.004 kg	Steel, Mild
42	1	500725	1.109 kg	Steel, Mild
43	1	500100	0.003 kg	Steel, Mild
44	1	500-000-00	0.533 kg	Steel, Mild

DO NOT SCALE

- NOTES: UNLESS OTHERWISE SPECIFIED:
1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
 2. DRAWING IN ACCORDANCE WITH THE STANDARDS REFERENCED IN AND Y-14-5.
 3. COMPONENTS TO BE SHOWN WITH THEIR PLANT IDENTIFICATION NUMBER WHERE MARKED IN LETTERS AT LEAST 3MM IN HEIGHT.
 4. ALL WELDING TO BE IN ACCORDANCE WITH AWS/AAS 11.205.2M.100A.
 5. WELDING SYMBOLS ARE IN ACCORDANCE WITH AWS/AAS 11.205.2M.100A.
 6. ALL WELDS TO BE VISUALLY INSPECTED IN ACCORDANCE WITH AWS/AAS 11.205.2M.100A. SUBJECT TO MAGNETIC PARTICLE INSPECTION PER AWS/AAS 11.205.2M.100A. UNLESS OTHERWISE SPECIFIED.
 7. FOLLOWING COMPLETION OF WELDING AND PRIOR TO MACHINING, FABRICATION TO BE STRESS RELIEVED IN ACCORDANCE WITH COMPANY STANDARDS.
 8. TOLERANCES: UNLESS OTHERWISE SPECIFIED:

LINEAR DIMENSIONS: 300 AND UNDER	±0.25mm
LINEAR DIMENSIONS: OVER 300 AND UNDER 1000	±0.50mm
LINEAR DIMENSIONS: OVER 1000	±1.00mm
ANGULAR DIMENSIONS	±1°
HOLE POSITIONS	±1.5°
 9. REMOVE ALL BURRS AND SHARP EDGES.
 10. SURFACE TEXTURE INDICATED IN ACCORDANCE WITH AWS/AAS 11.205.2M.100A.
 11. MACHINING SURFACES TO, UNLESS OTHERWISE SPECIFIED.
 12. ALL METRIC THREADS TO AWS/AAS 11.205.2M.100A.
 13. ALL METRIC LENGTHS AND INTERNAL DEPTHS TO BE FULL THREAD UNLESS OTHERWISE SPECIFIED.

Autodesk		A2		REVISED		DATE		BY		CHKD	
PROJECT		SHEET		TITLE		DATE		BY		CHKD	
DRAWN		CHECKED		APPROVED		DATE		BY		CHKD	
SCALE		MATERIAL		FINISH		TOLERANCE		THREADS		WELDS	

Visualization

Animations

3D Prints

Rendered
Images

Design Reports

Assembly
Instructions



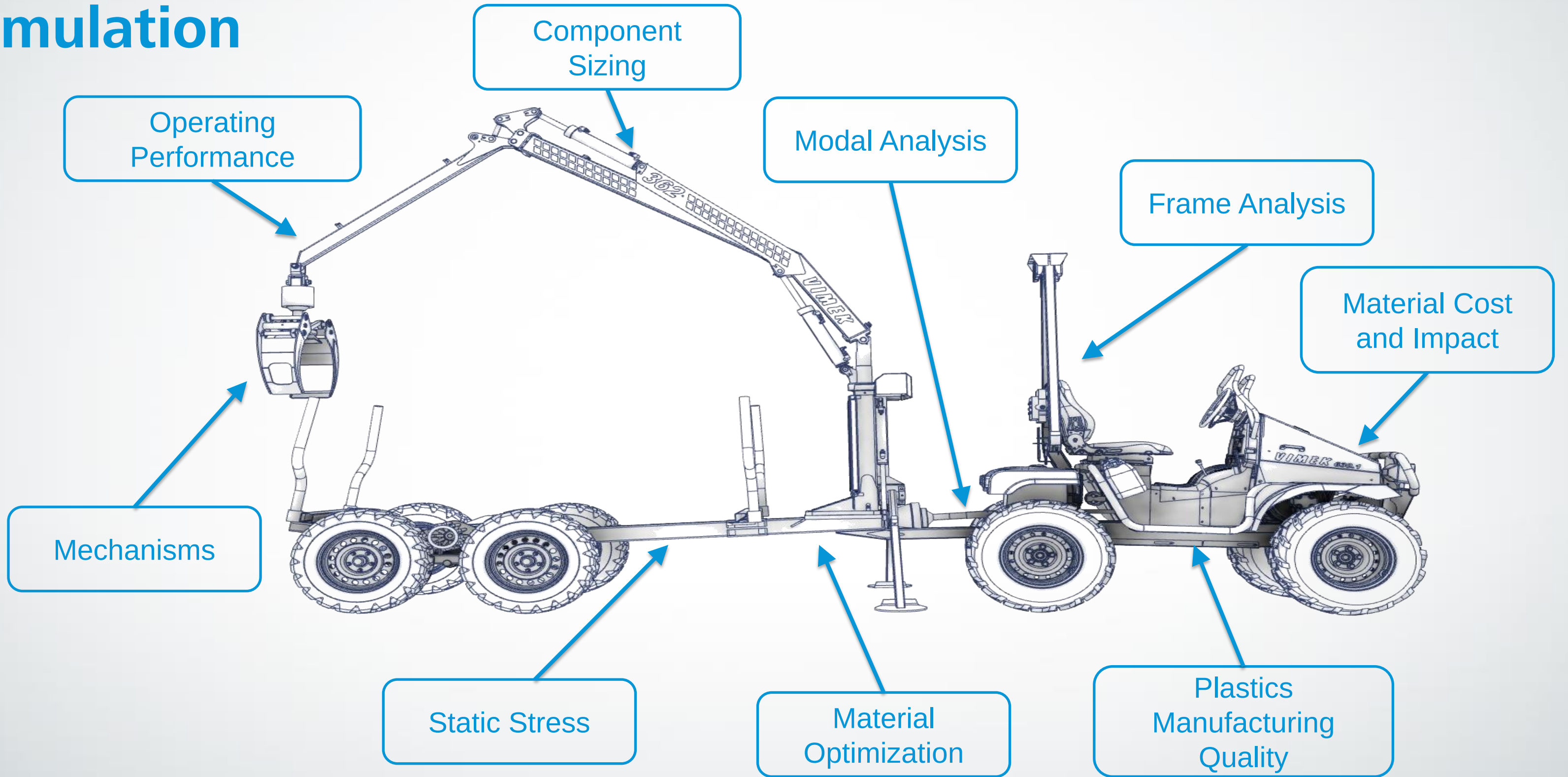
Visualization



Simulation

A high-speed train is shown in a station, with a wireframe overlay indicating a simulation. The train is white with a blue stripe and is moving along the tracks. The station has a large, arched glass and steel roof. The word "Simulation" is written in blue text on the left side of the image.

Simulation

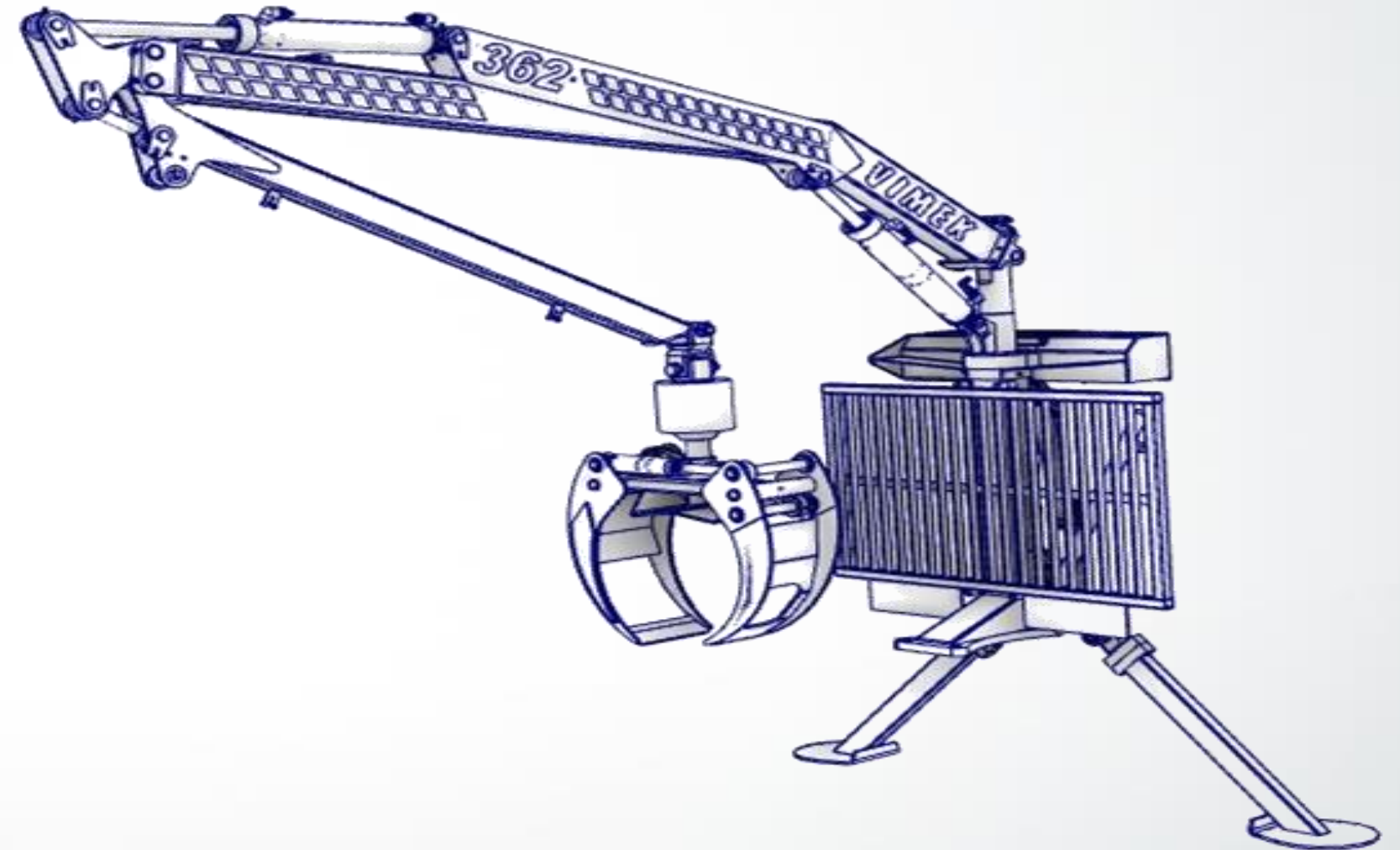


Simulation

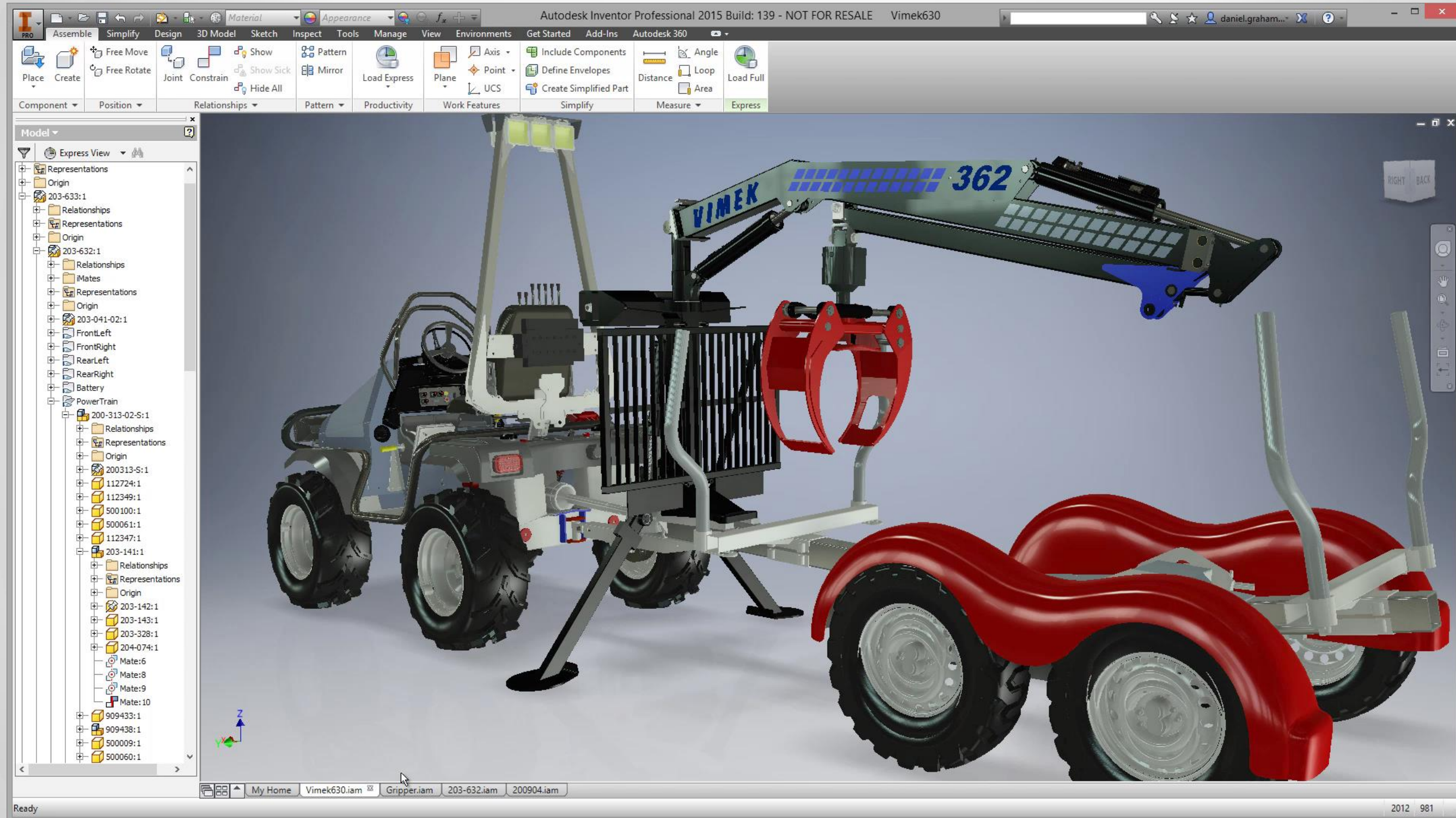
- Will it do the job?
 - Reach
 - Motion
- Forces and reaction forces
 - Sizing of actuators
 - Sizing of arms and support

Mechanisms

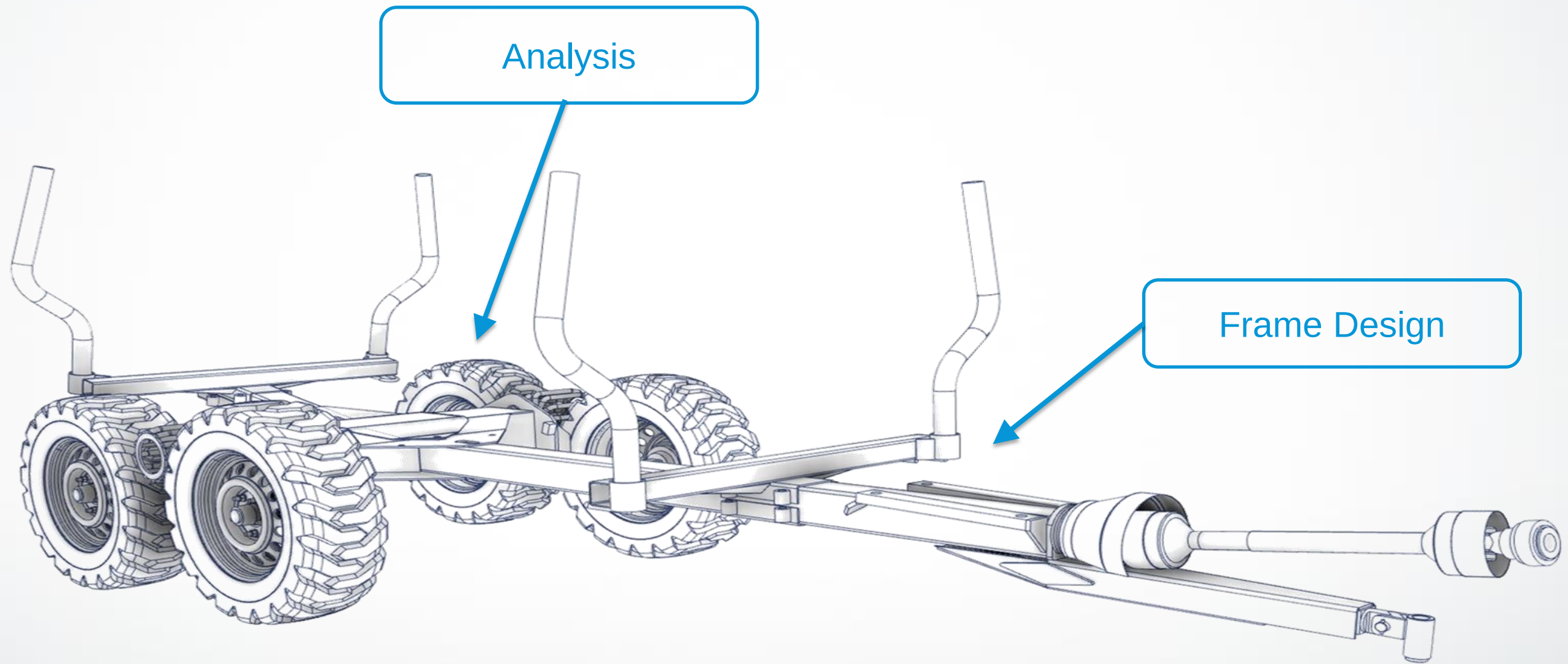
Static Stress



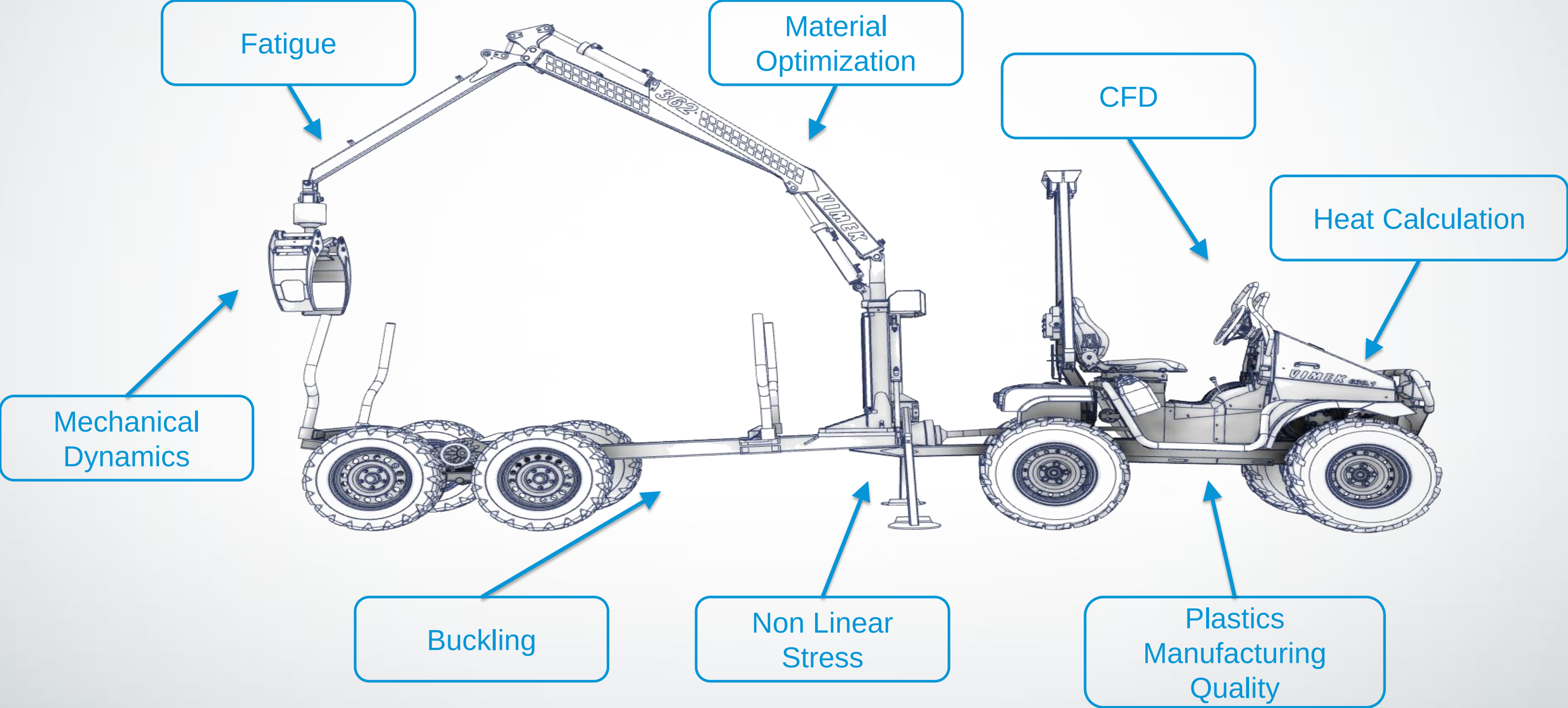
Stress Analysis Simulation



Frame Layout and Analysis



Advanced Simulation

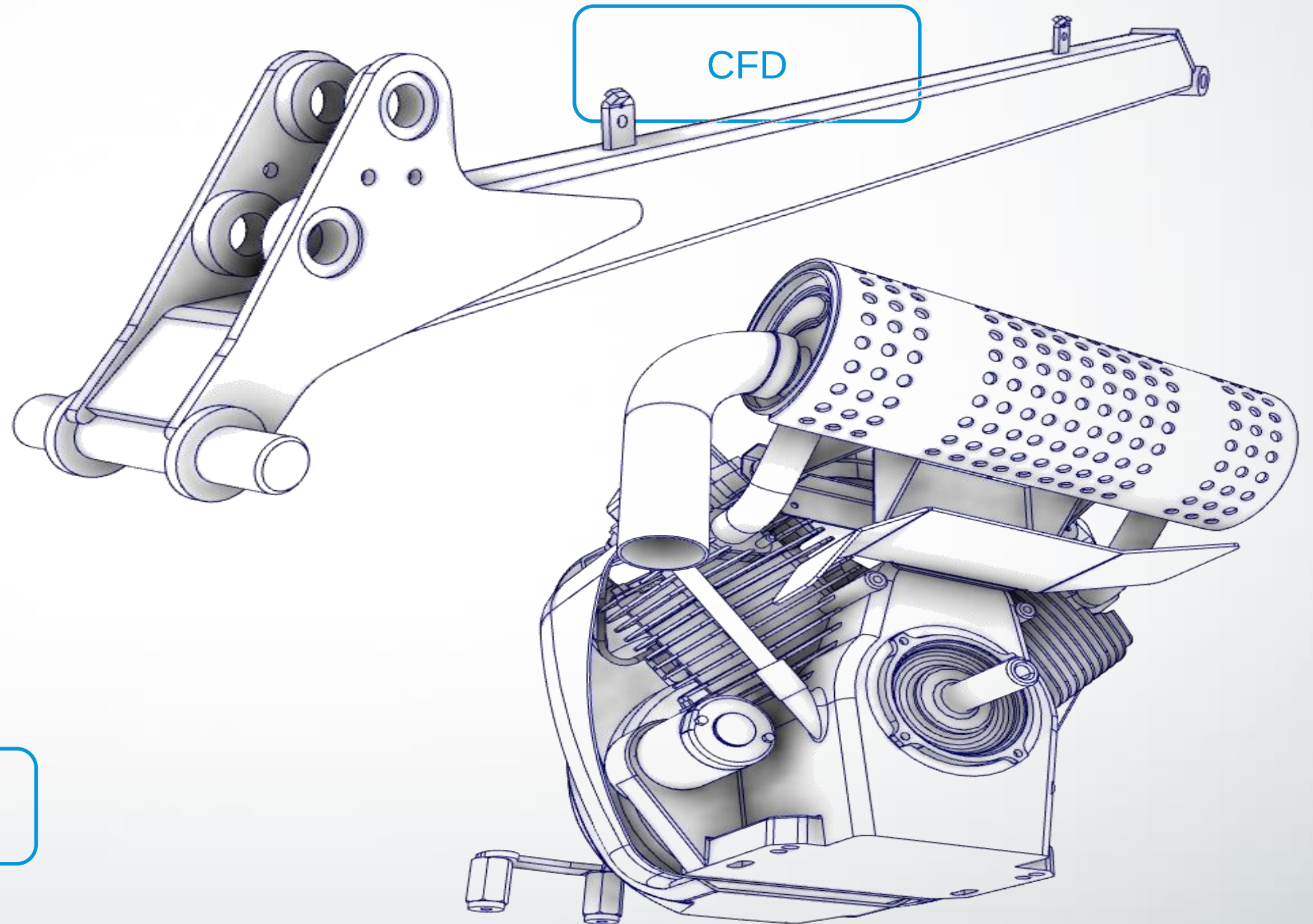


Advanced Simulation

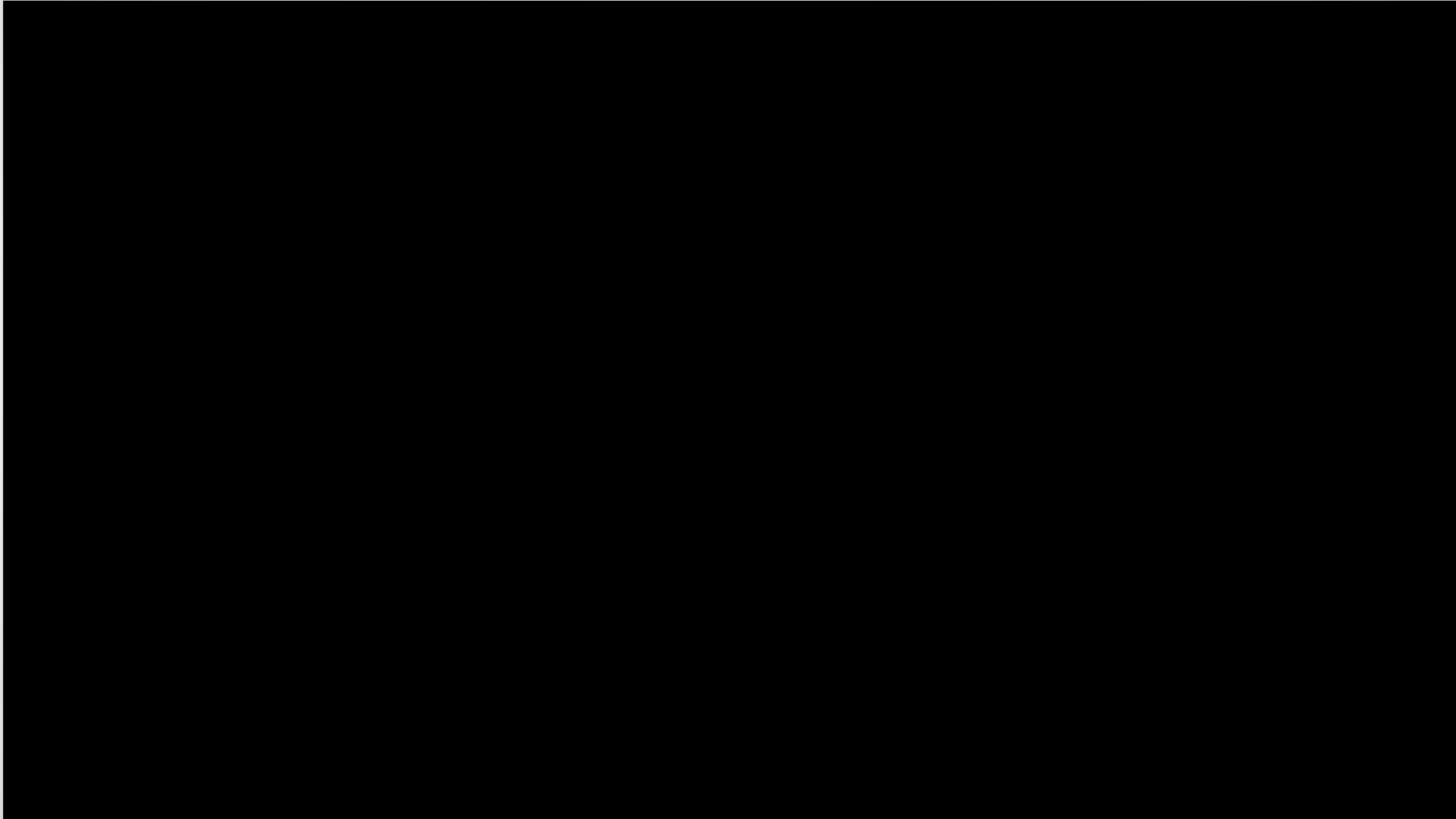
- Will it collapse?
 - Buckling
- Flow
- Heat
- Combined Results

Buckling

CFD



Vimek: Case Study Closing Summary



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



