

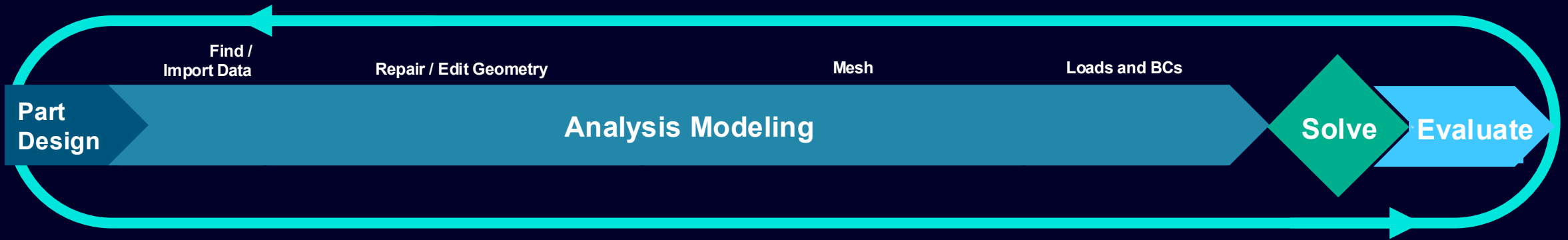
Simcenter Simsolid

Let's transform engineering with
simulation at the speed of design

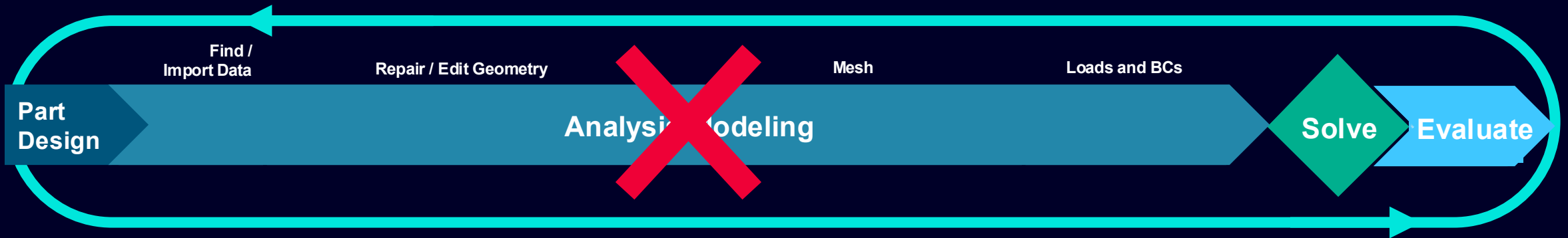


Simulation has already proven its worth

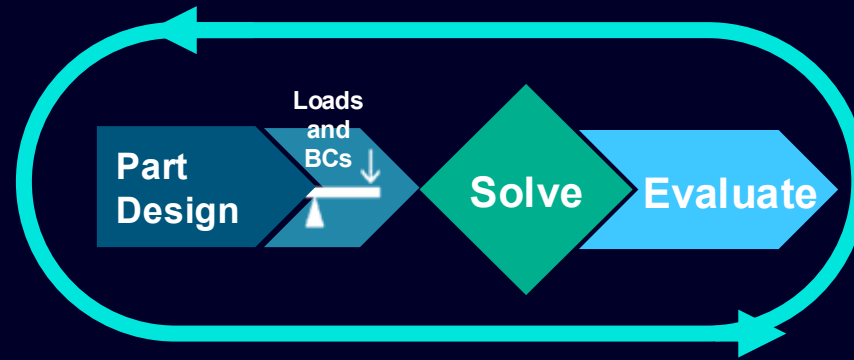




The traditional CAE process is too slow



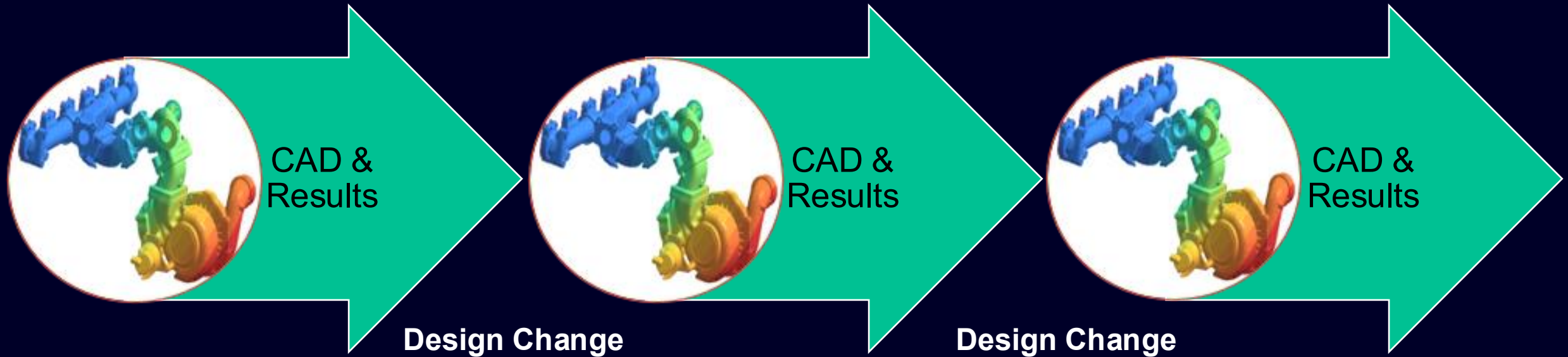
How much time could you save without analysis modeling?

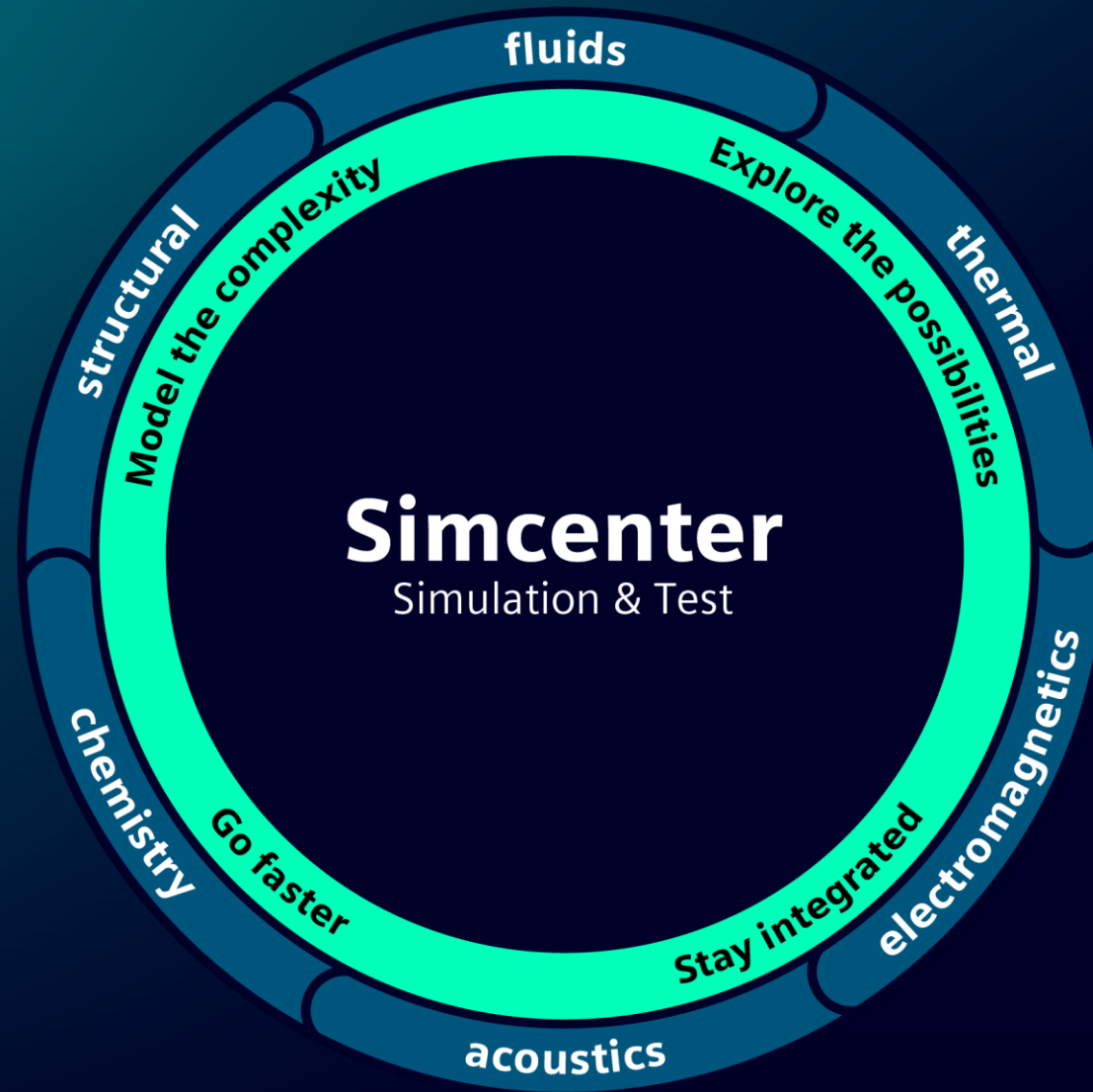


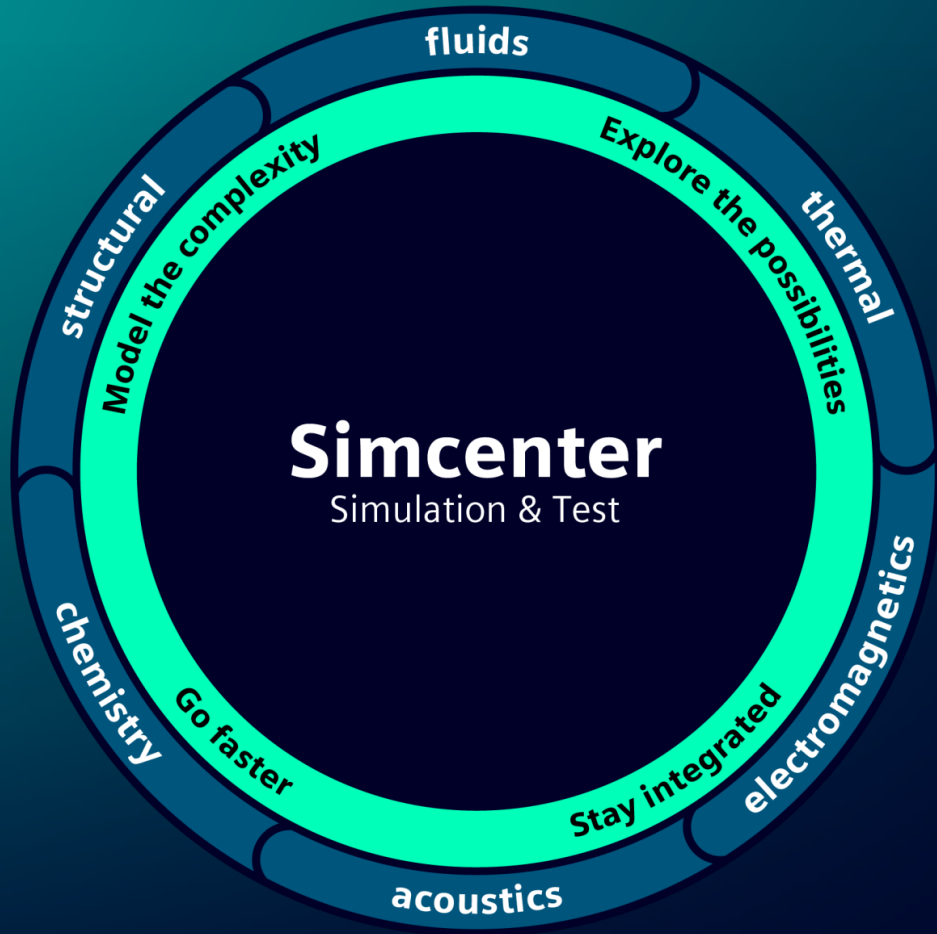
How much time could you save without analysis modeling?

Ideal design validation workflow

Quickly evaluate performance early in the design process







Mechanical & manufacturing simulation

Simcenter Simsolid

Efficient, meshless structural simulation



Structures



Dynamics



Durability



Thermal

What is Simcenter Simsolid?

A new paradigm for simulation

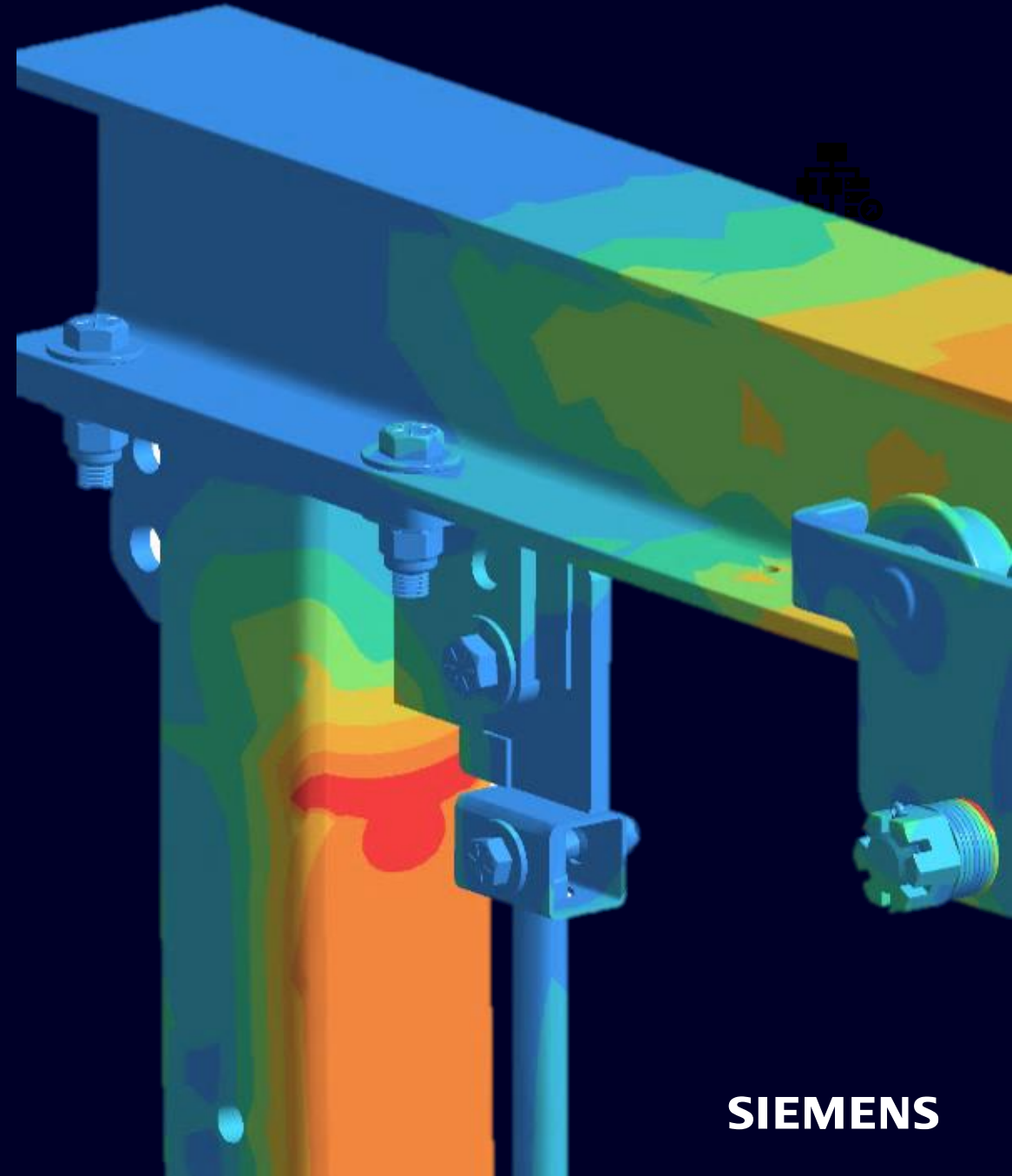
Operates directly on **original, un-simplified CAD assemblies**

No more geometry cleanup or **meshing**

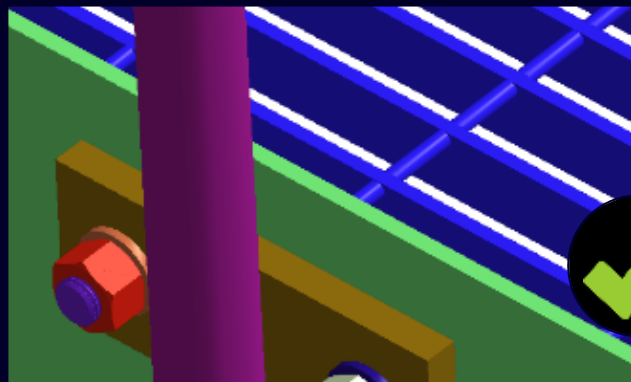
Results in **seconds to minutes**

Handles **large assemblies**

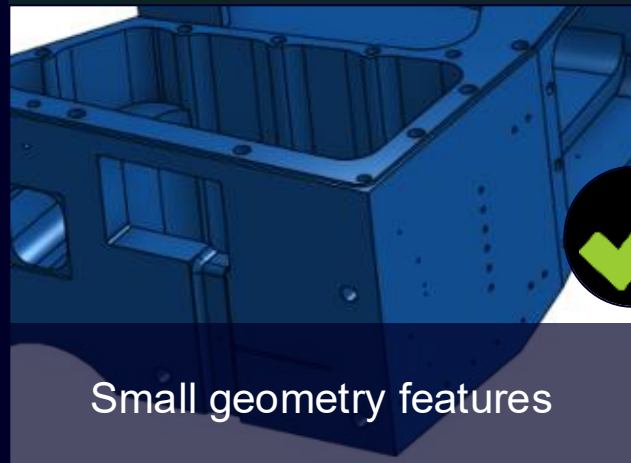
Available on **Desktop, Cloud and HPC**



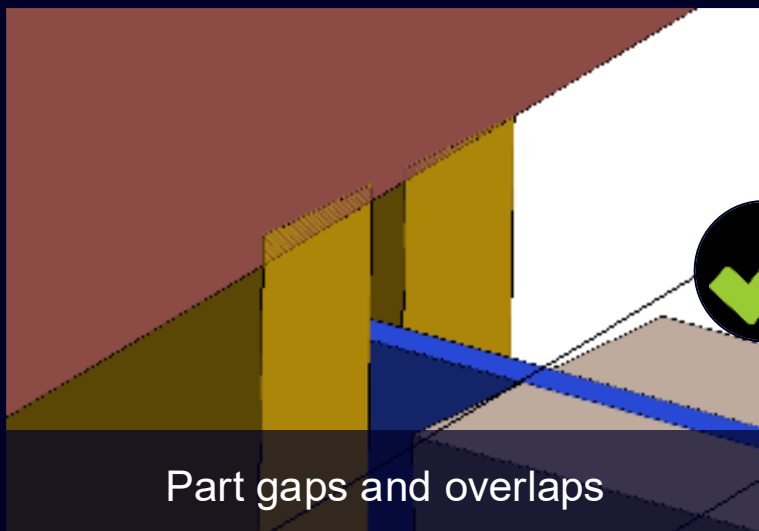
Eliminate traditional FEA meshing roadblocks



Assemblies with big/small or thick/thin parts



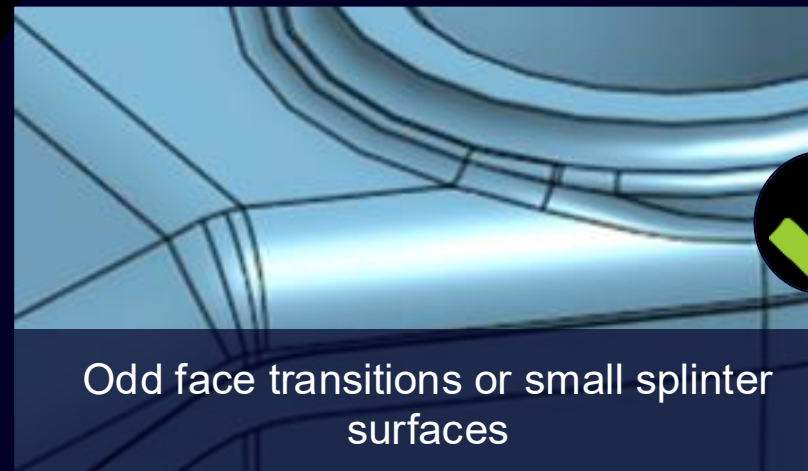
Small geometry features



Part gaps and overlaps



Extreme geometric complexity



Odd face transitions or small splinter surfaces

Simcenter Simsolid

Technology Innovation

Operates on CAD

Doesn't require a finite element meshed model or simplifying the geometry

Discretization

Arbitrary regions compared to simple regions in finite elements

Degrees of freedom

Integrals over geometrical objects and not nodal

Boundary compatibility

Is met approximately and not precisely

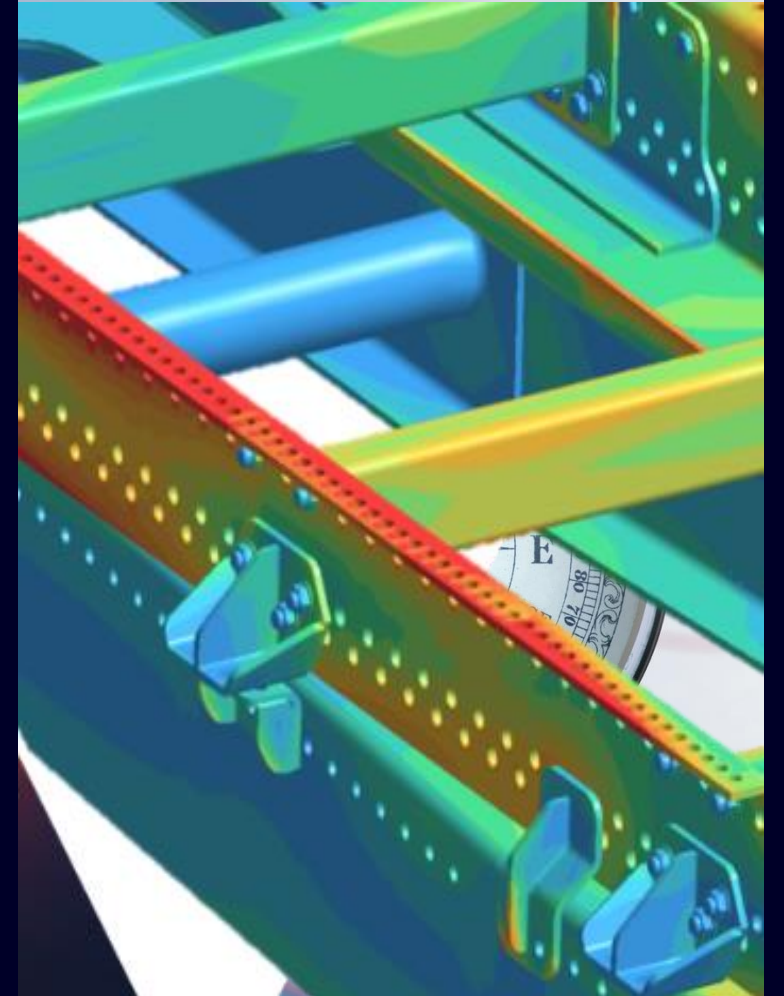
Shapes functions

Can be of arbitrary class and not limited to interpolation polynomials

Solution adaptation

Locally adjusted during solution passes based on errors

Results are stored as functions and not at nodes



Simcenter Simsolid

Proven accuracy



Q

£

0.00

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2022 Regional Conferences

NWC23

Training

Events

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SimSolid Code Verification

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Code Verification

SimSolid Code Verifica...

SimSolid Code Verification

Software Code - SimSolid

Code Vendor - Altair Engineering

Code Version - 2022.1

Click to Download the Verification Manual

Linear Static

Linear Dynamic

Contact

Heat Transfer

NAFEMS ID	Benchmark Description	Attributes	NAFEMS Publication
P18.LE6	Skew Plate Normal Pressure	Normal pressure loading, Bending action	The Standard NAFEMS Benchmarks

NAFEMS

Benchmark testing

// The software was easy to use, and all of the benchmarks evaluated here took a matter of minutes to set up and analyze.

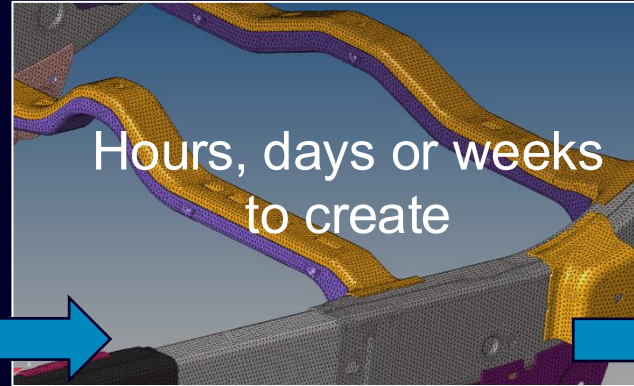
These tests have shown that, for the selected problems, it is possible to obtain accurate results without user involvement in the discretization (meshing) process.”

What if you need results **now?**

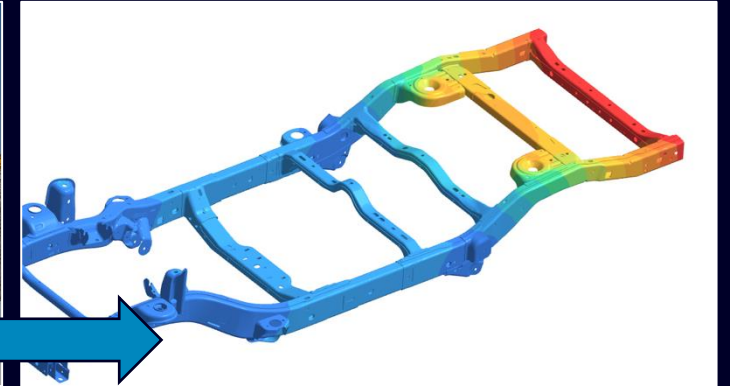
Traditional
FEA



CAD Geometry

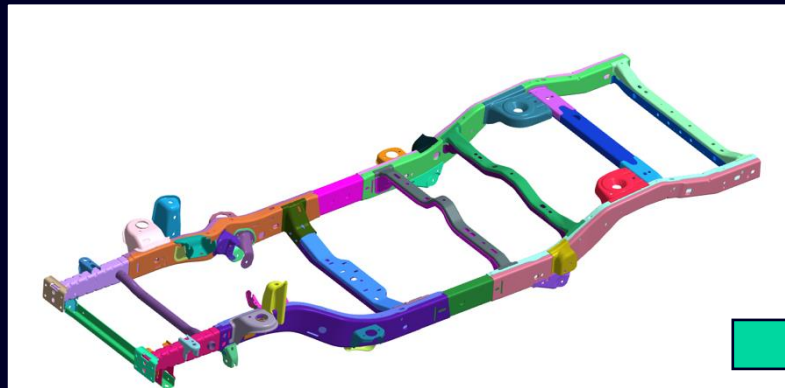


Finite Element Model



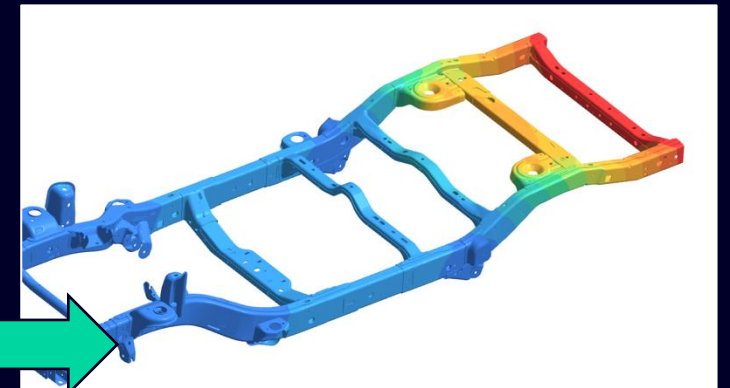
Results

Simcenter
Simsolid

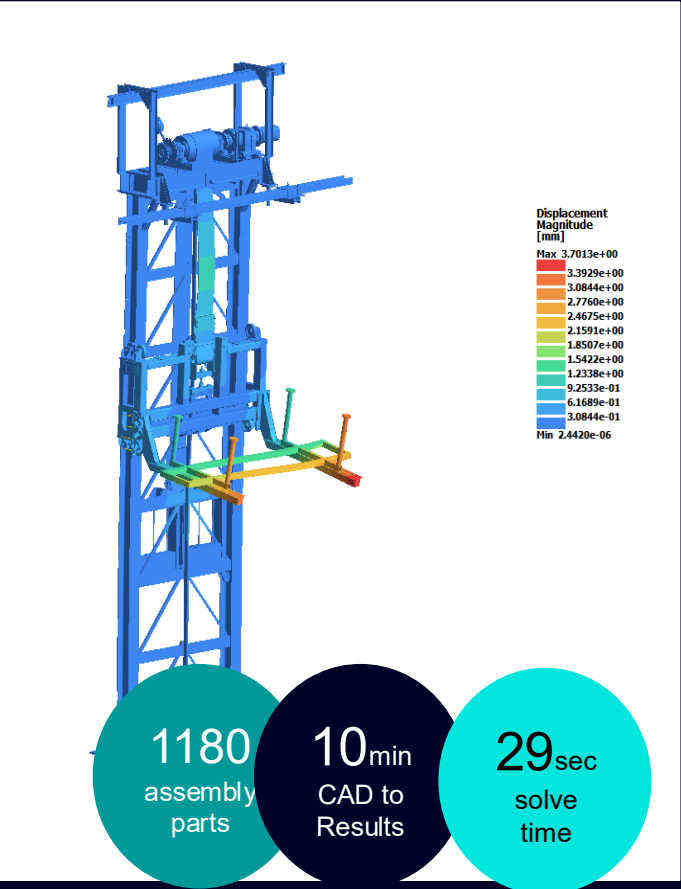


Skip the mesh!

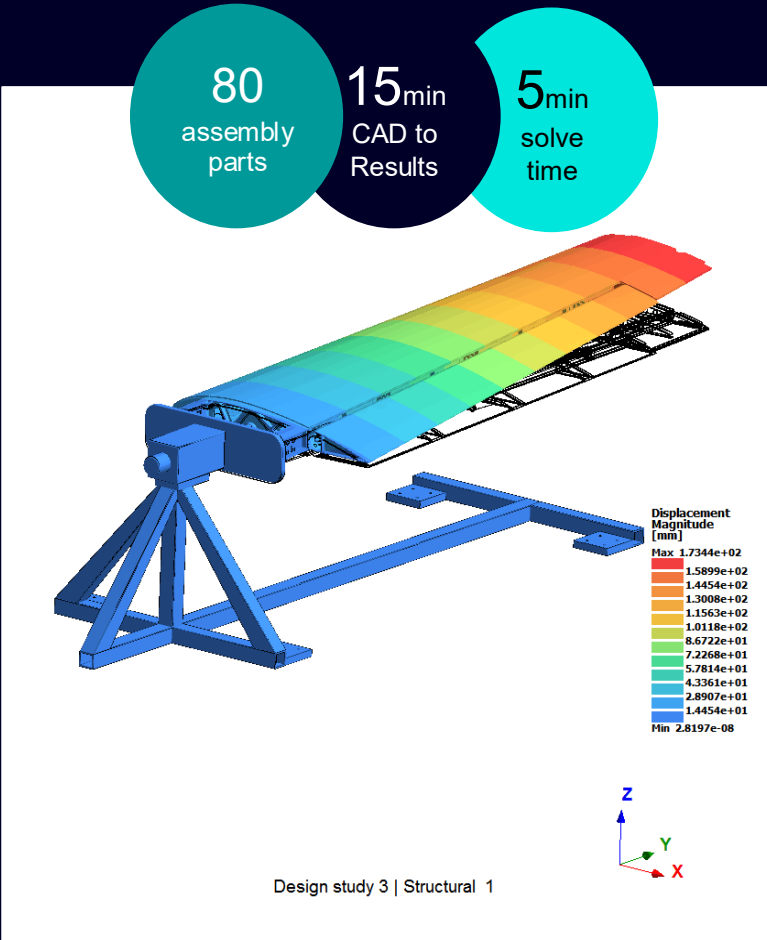
25x-100x Faster!!



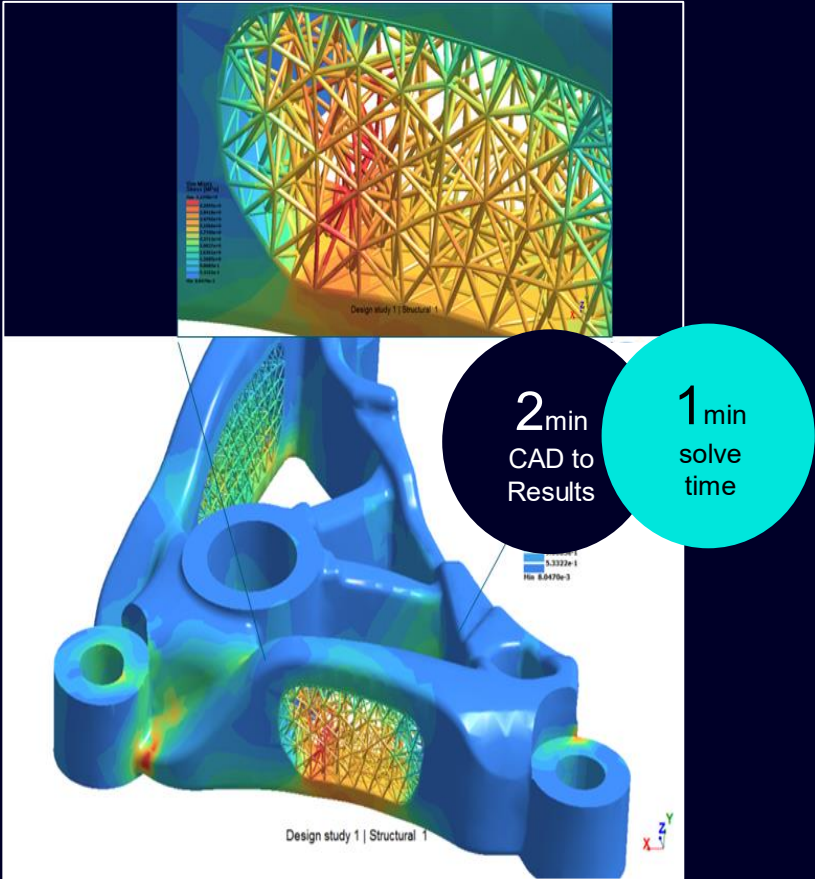
What if you need results **now?**



Vertical Lift Model



Wing on a Test Fixture



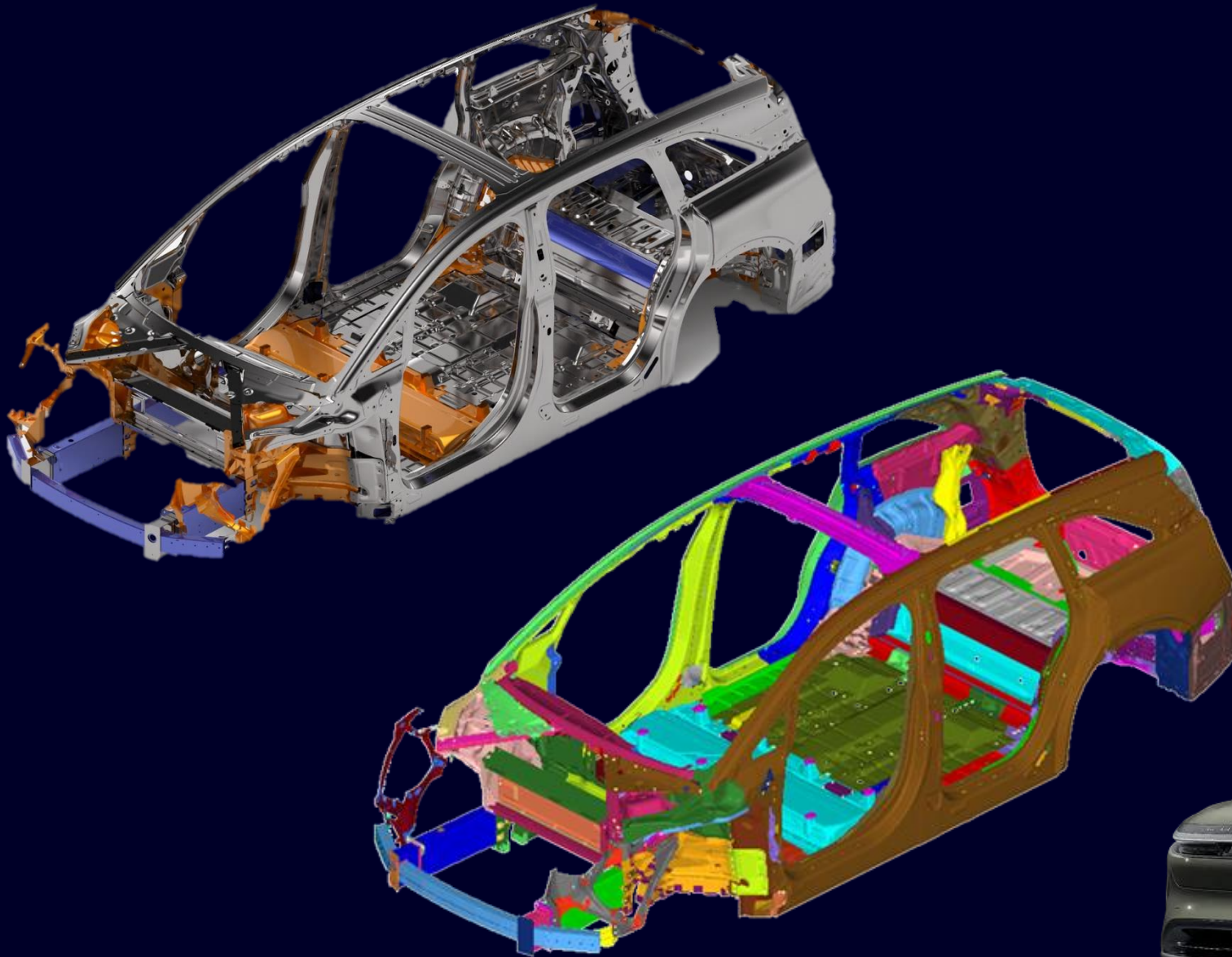
Lattice Structure

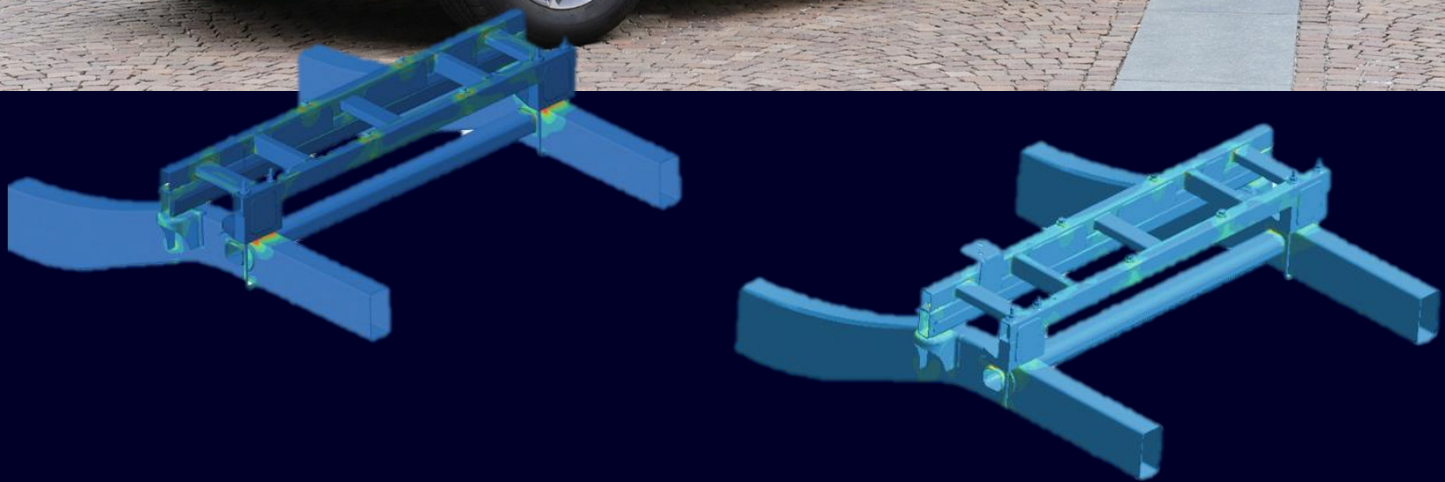
LUCID

Analyzing large assemblies faster
than traditional FEA

1-2 weeks
with conventional solvers

4 hours
with Simcenter Simsolid





DUMAREY

Streamlines modeling by
eliminating geometry preparation
and meshing

75% Reduced development
time

//
Now we can efficiently and accurately
solve complex problems in a few
days, compared to the weeks it would
take with traditional methods. And
better still, the tool is easy to learn
and has a very intuitive interface.”

*Mario Saracino
Analysis Technical Leader, Structural
Analysis
Dumarey*

SIEMENS

Airbus

Reducing delivery times while building better products



By using Simcenter SimSolid, our teams can explore more design possibilities in a simple, easy-to-implement environment. By not requiring our teams to clean geometries beforehand, Simcenter Simsolid helps us significantly reduce delivery times and build better products.

*Christophe Brand
Head of airframe methods & tools
Airbus Commercial*

ZEROe Hydrogen combustion demonstrator



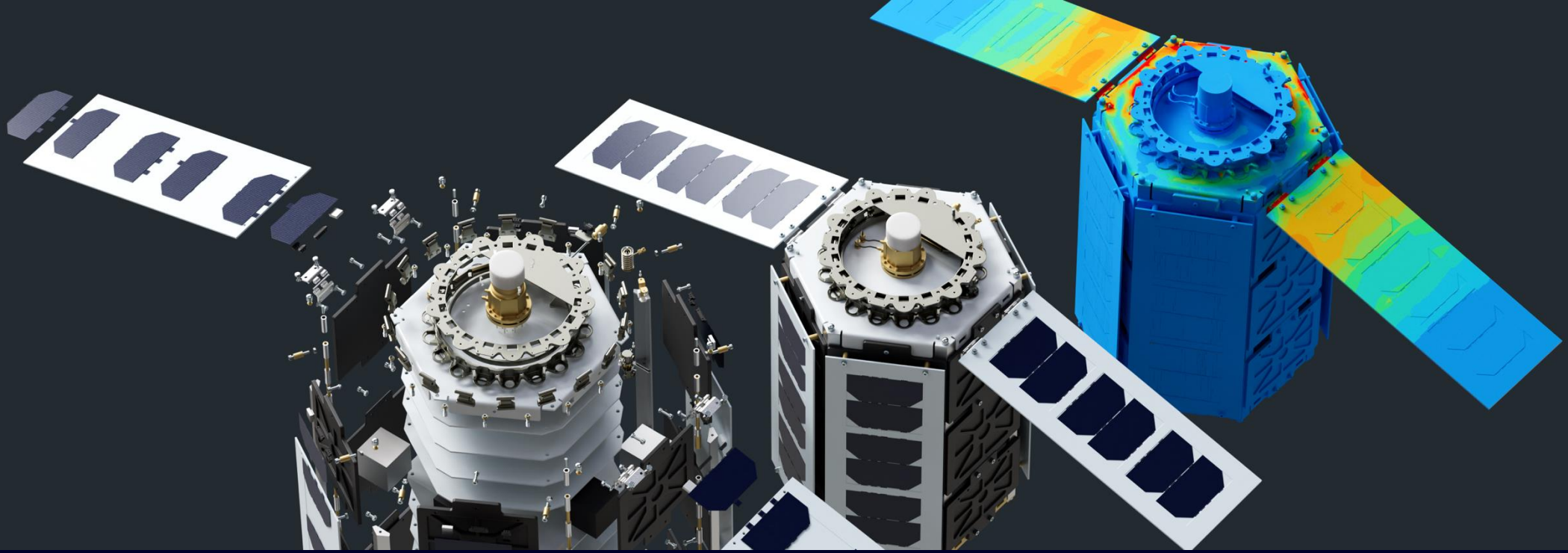
A380 multimodal test platform
with its capacity to store large hydrogen tanks

Hydrogen combustion engine
located along the rear fuselage

4 liquid hydrogen tanks
stored in a caudal position

Liquid hydrogen distribution system

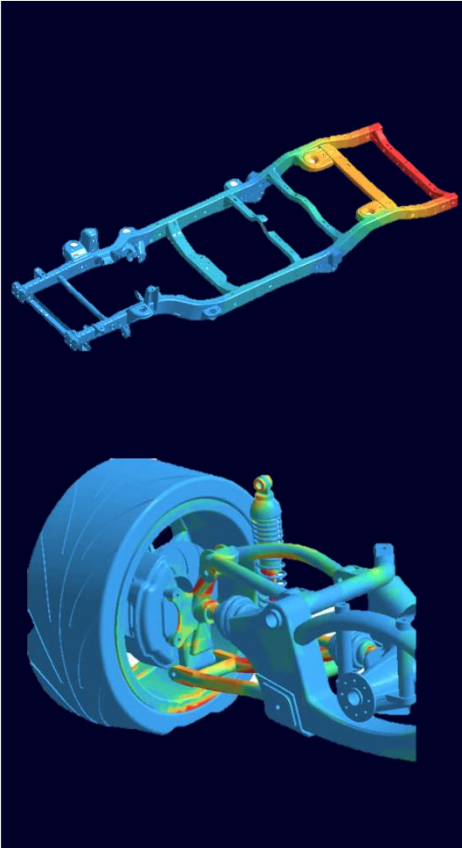
AIRBUS



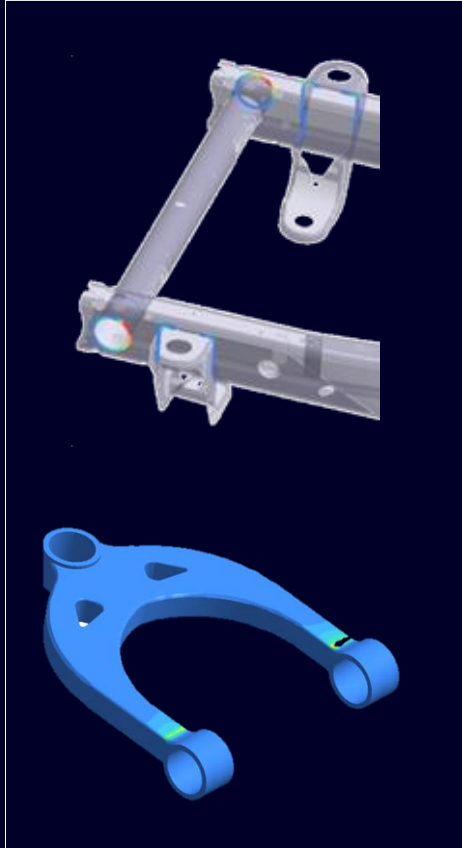
Explore the possibilities

Simcenter Simsolid

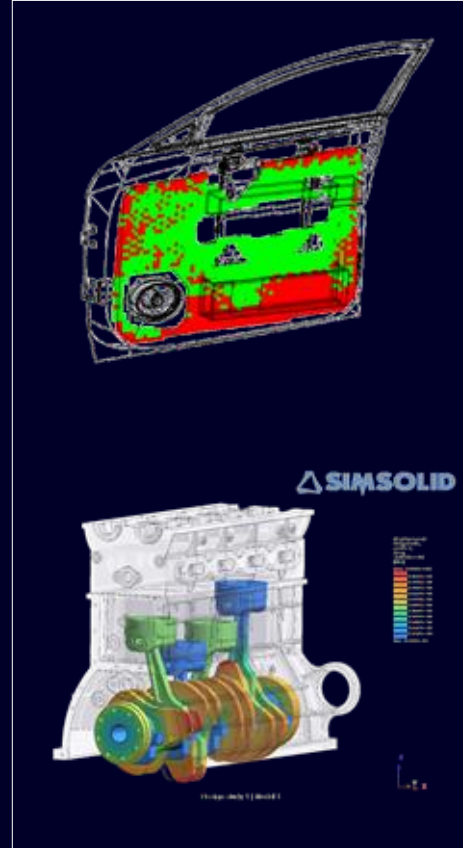
Broad analysis capabilities



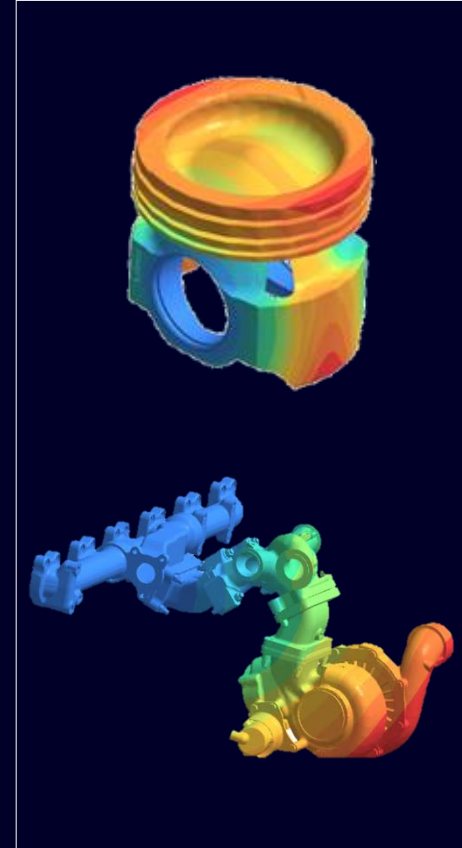
Structural



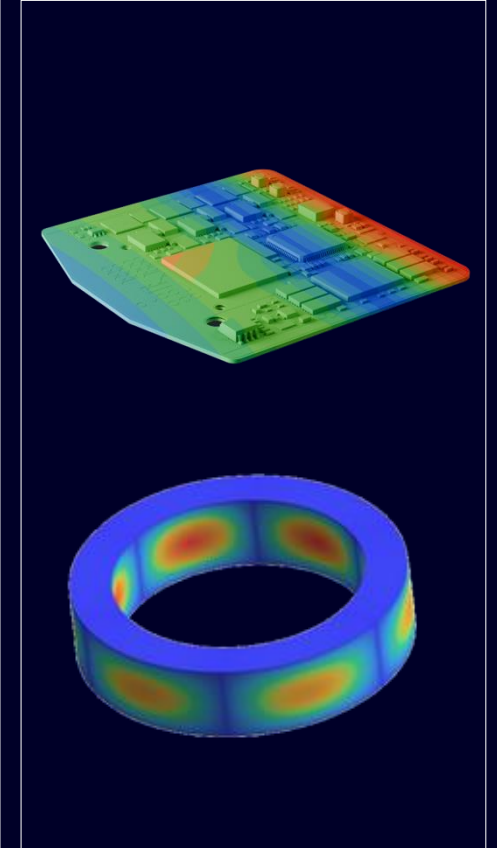
Fatigue



Dynamics



Thermal



**Emag &
Electronics**

Simcenter Simsolid

Technical details



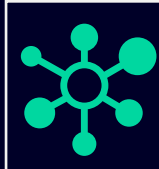
Solutions

- Modal
- Linear Statics
- Nonlinear Statics
- Fatigue
- Frequency Response
- Linear Transient
- Random Response
- Thermal
- Thermal-Stress
- Global-local
- Prestressed and Sequential Analysis
- Inertia Relief
- Bolt Pretension
- Linear Superposition
- Linearized stresses



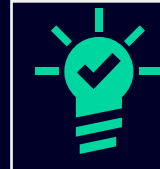
Materials

- Isotropic
- Orthotropic
- Composites
- Elastoplastic
- Rigid
- Fluid bodies
- User Extensible



Connections

- Auto-connections
- Bonded, Sliding and Separation with Friction
- Bolts
- Spot Welds
- Solid Seam Welds
- Bushings
- Rivets
- Virtual Connectors
- Adhesives
- Joints

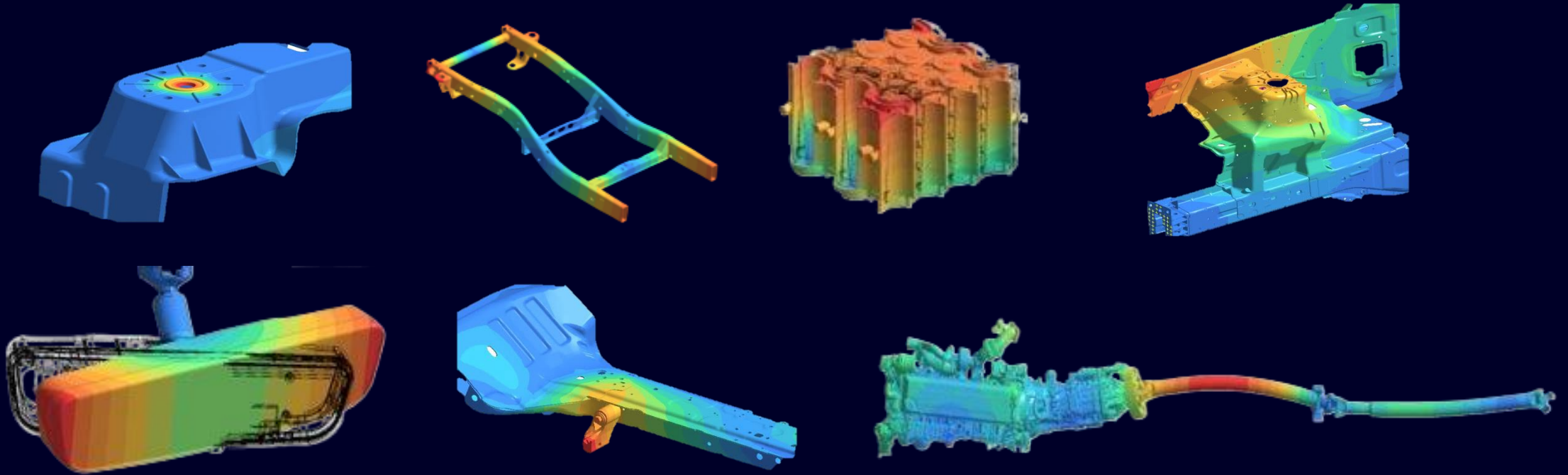


Results

- Contours and Animations
- Displacement, Stress, Strain, Velocity, Acceleration, ERP
- Frequency and Mode Shapes
- XY Plots
- Modal Participation Factors
- Forces: Reaction, Contact, Bolts and Welds
- Safety Factors
- Contact Responses
- Strain Energy Density
- Total Strain Energy

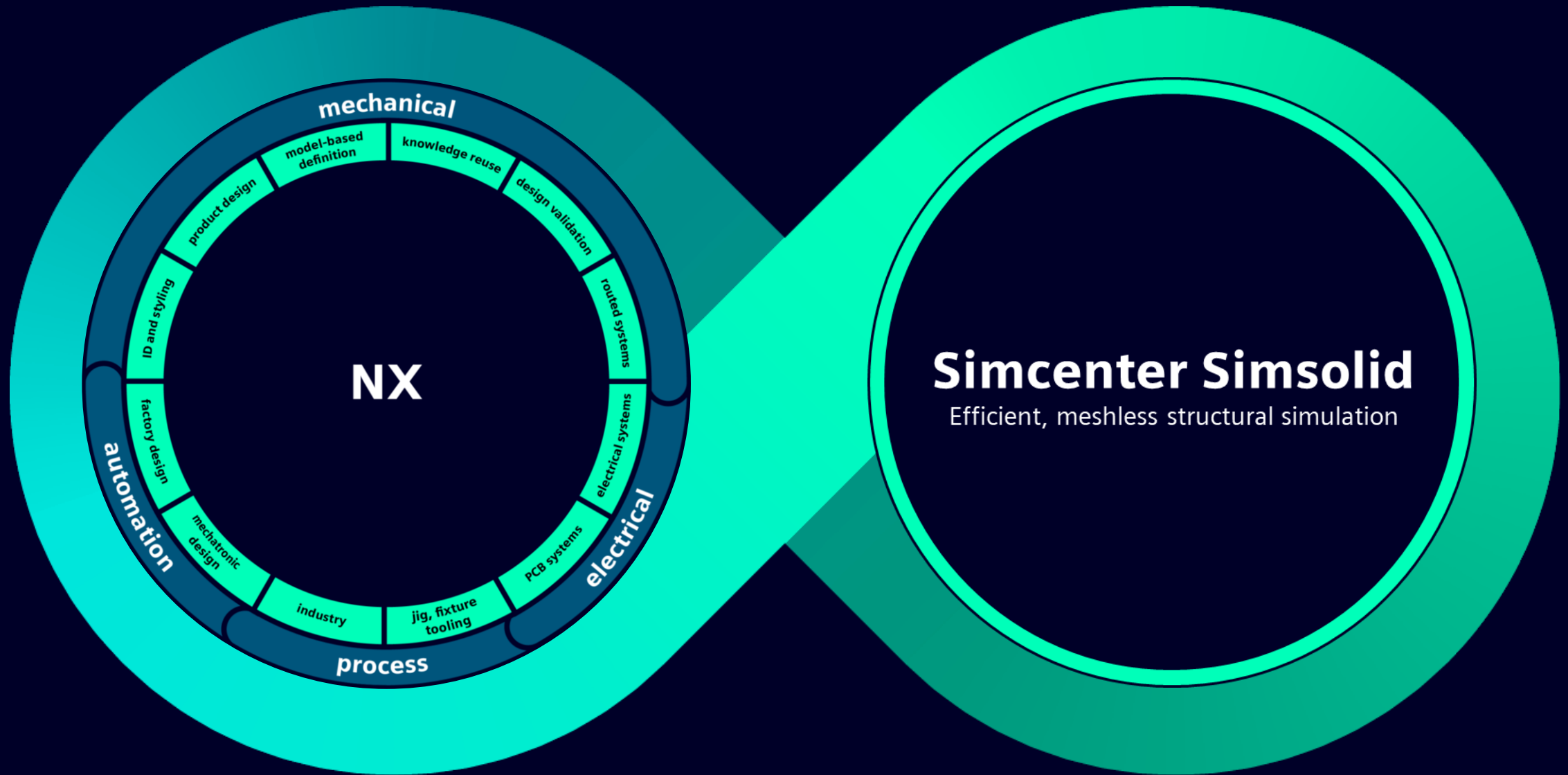
Scalable complexity

from component to assemblies



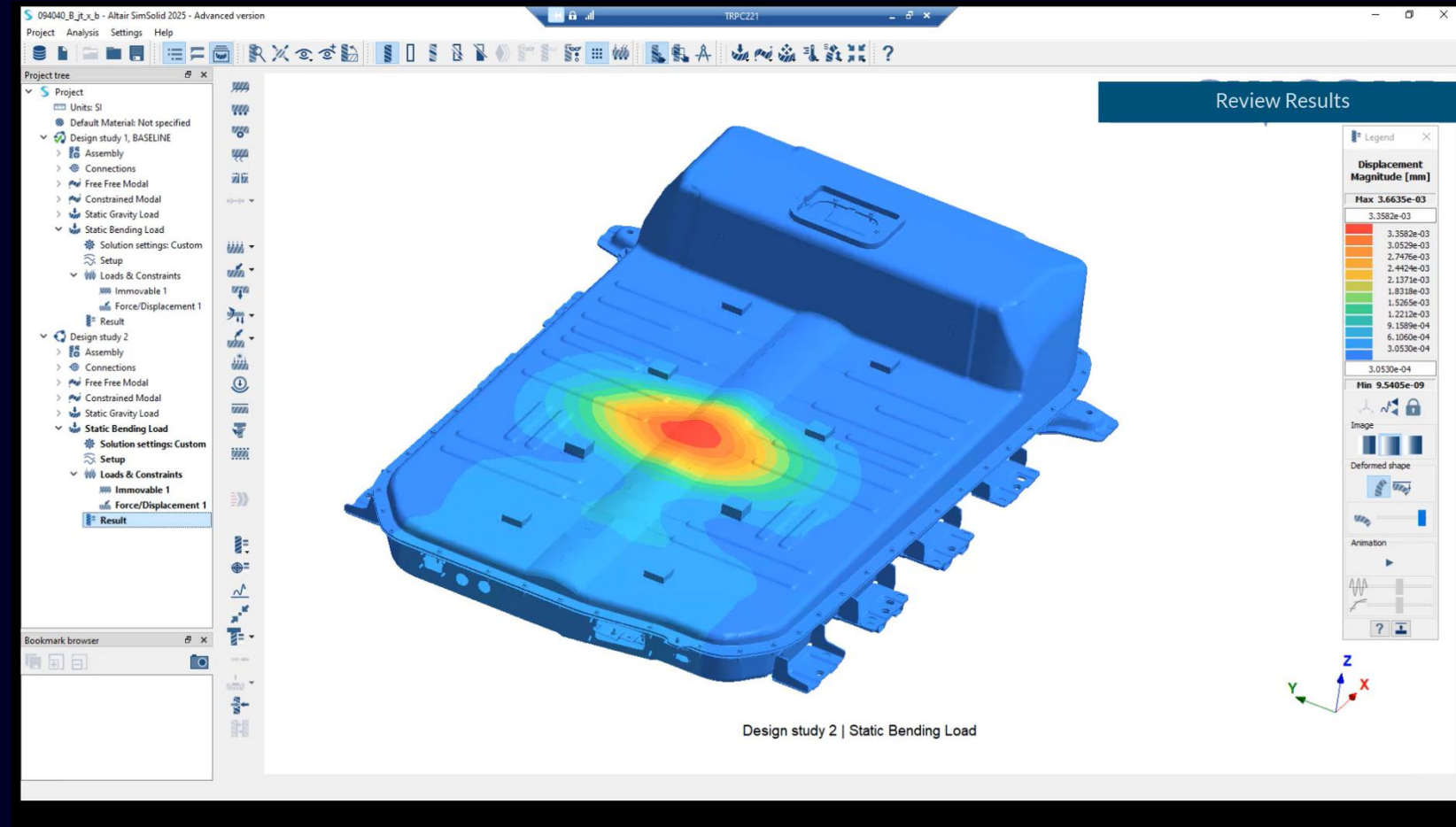
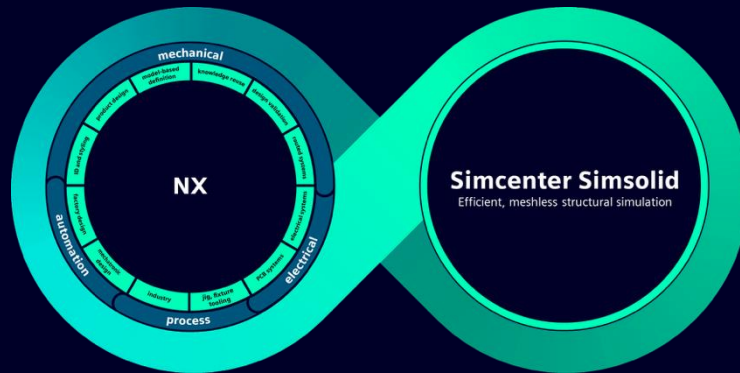
Vehicle Structure (Sub-system, systems), Powertrain, Chassis, Electrical, Manufacturing (Clamping, Tolerancing)
Ensure nothing makes onto the vehicle without performance attribute evaluation (from bracketry to multi-parts)

Quickly go from CAD design to simulation results

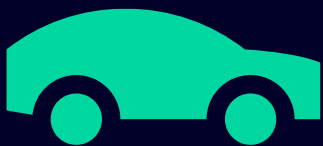


CAD/PLM Integration

- NX Plug-in
- Teamcenter Integration
- Download CAD and Materials

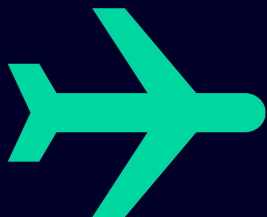


Wide adoption across diverse industries



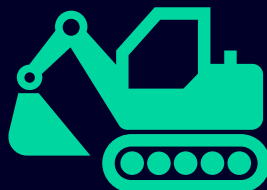
Auto

GM
Ford
JLR
Renault
Tata motors
Lucid



Aero

GE Aviation
Airbus
Astra
INESPASA



Heavy

CNH
Hino motors
TAFE
Volvo Eicher
Tata Hitachi



AEC

Faraone
Serapid
Digital
Architects
Doppelmayr



Energy

Technipfmc
Subsea
Applied
Materials
HHI

Thank You!

