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GETTING STARTED WITH SIMSOLID

Joyce Tang – Application Engineer – September 2021

SimSolid

Agenda

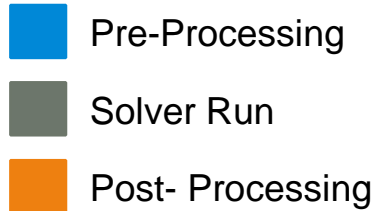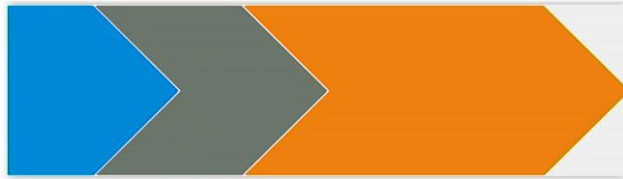Capabilities and Benefits

Demo of the Software

Q&A

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Simulation Driven Design Using SimSolid

Altair SimSolid introduces a new technology

that operates on original, un-simplified CAD geometry directly,

and does not create a mesh

Results in seconds to minutes

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SIMULATION DRIVEN DESIGN USING SIMSOLID

- Quicker and shorter process

- Opportunity to run numerous additional studies

- Significant impact in early design phase

Pre-Processing

Solver Run

Post- Processing

SIMULATION REVOLUTION WITH SIMSOLID

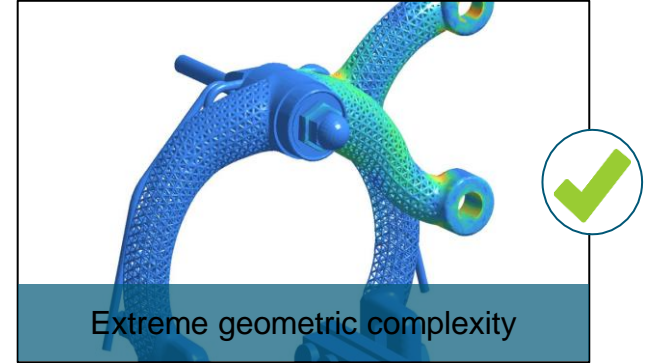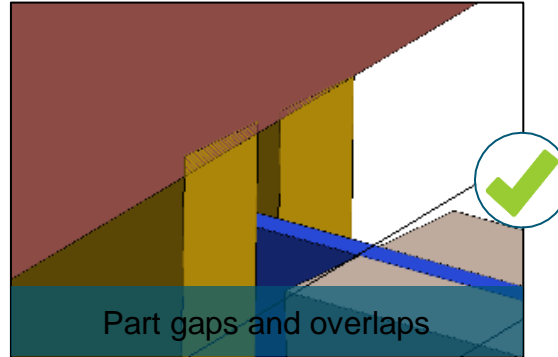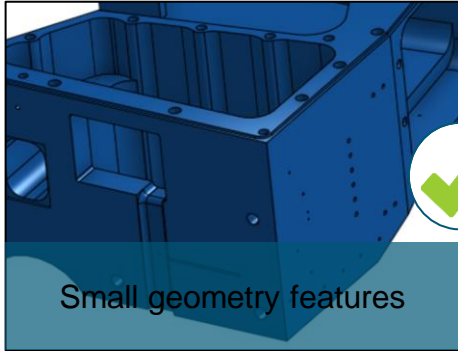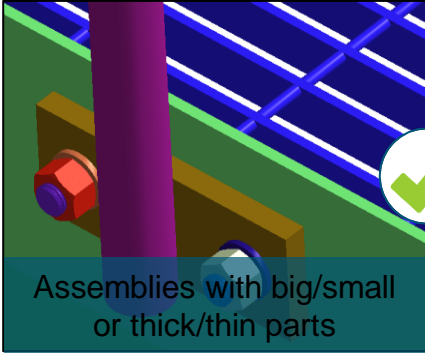| New Technology	• Meshless • Original CAD Geometry
High Capacity	• Large Assemblies • Complex Parts
Accurate	• Multi-pass Adaptive Process • Smart Functions
Fast	• Speed and Scalability • Results in Minutes

SIMULATION REVOLUTION WITH SIMSOLID

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

BENEFIT OF SIMSOLID

Pace of design

Slow

Fast

Assembly Size

Small   Large   Minutes   Days

Required Time to Solution

High

Low

Geometry Complexity
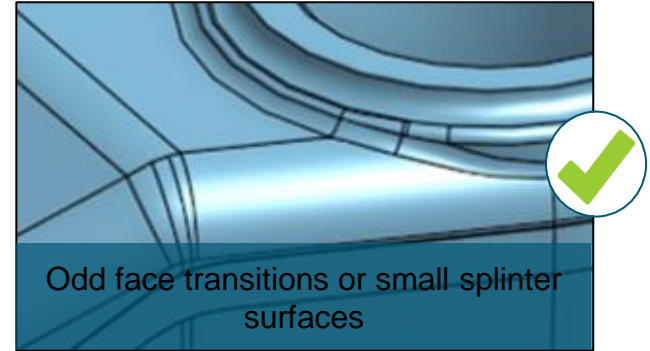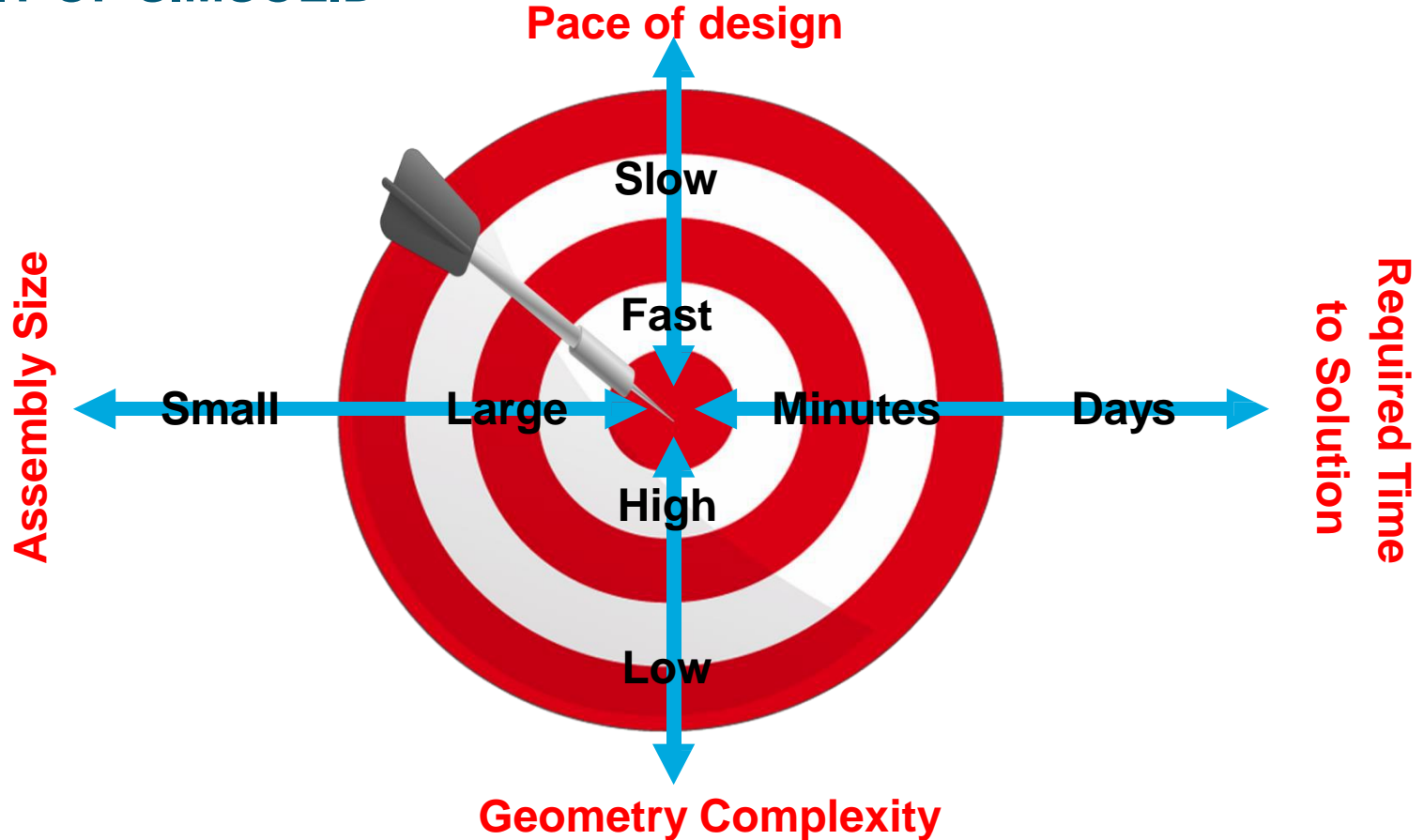
SIMSOLID TECHNOLOGY STEPS
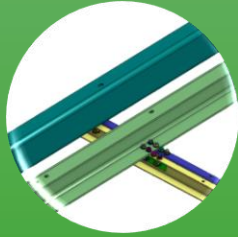
Modeling
- Process geometry
- Classify geometry
- Create connections
- Create analysis parameters

Solving
- Geometry evaluation
- Solution pass
- Error analysis
- Solution adaption

Results
- Create response mesh
- Evaluate quantities of interest to contour plot
- Display reactions
- Fast re-analysis
- Efficient coupled analysis

Notable Features

Solutions
- Modal
- Linear Statics
- Nonlinear Statics
- Frequency Response
- Linear Transient
- Random Response
- Thermal
- Thermal-Stress
- Inertia Relief
- Bolt Pretension
- Linear Superposition
- Partial Dynamic Response
- SN and EN Fatigue
- Multi-Loadcases

Materials
- Isotropic
- Elastoplastic
- Rigid
- Fluid Bodies
- User Extensible
- Orthotropic
- SN/EN curves

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

Results
- Contours and Animations
- Displacements, Stresses/Strains,
- Velocity, Acceleration, ERP
- Frequencies and Mode Shapes
- XY Plots
- Modal Participation Factors
- Forces: Reaction, Contact, Bolts and Welds
- Min/Max Labels
- Safety Factors
- Bookmarks

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Customer Stories

Webinars, case studies, etc

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SOFTWARE DEMONSTRATION

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Recommendations

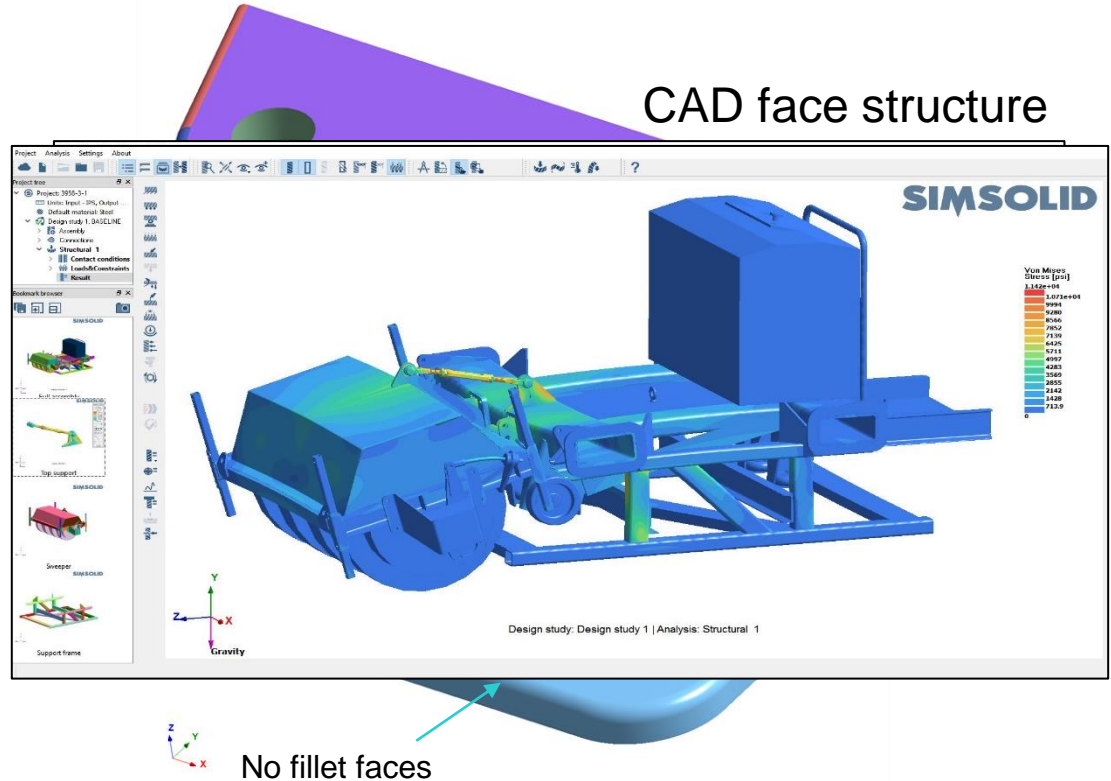**Import only solids**
- No surfaces, No open solids

High Fidelity CAD Models

Use CAD Geometry as is

Large Assemblies are Fine
- Do Not Merge them

CAD face structure

No fillet faces
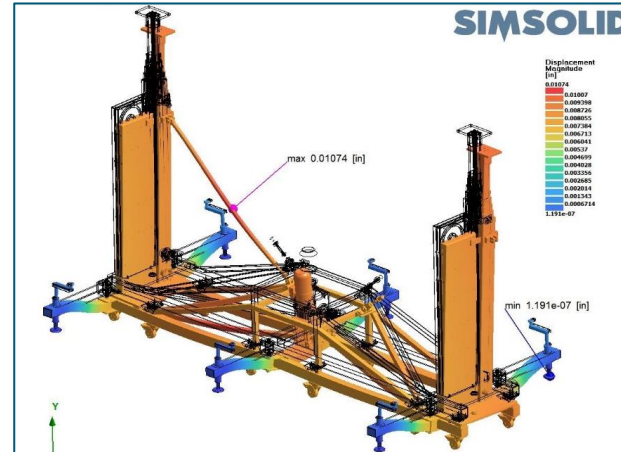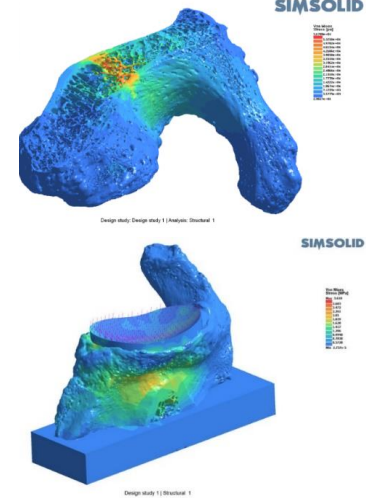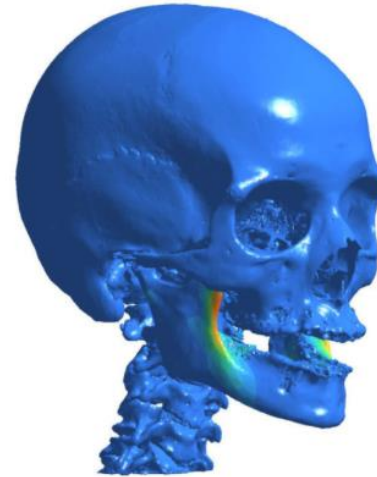
Conclusion

Why SimSolid will be beneficial for your workflows

- ✓ Game changing rapid design iterations

- ✓ Seamless workflow and easy to use GUI

- ✓ Eliminates geometry simplification

- ✓ Analyses complex and large assemblies

- ✓ Get results in minutes on a standard PC

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NAFEMS about SimSolid

SimSolid in the News

Benchmark	Description	Quantity	Target Solution	SimSolid Results	Discrepancy
1	Pressure component	Von Mises stress	534MPa	532MPa	<1%
2	Coil spring	Spring rate	20.8N/mm	20.76N/mm	<1%
3	Skew plate	Maximum principal stress	0.82MPa	0.82MPa	<1%
4	Plate with hole	Maximum principal stress	314MPa	325.7MPa	3.7%
		Minimum principal stress	-114MPa	-117.9MPa	4.2%
5	U-shaped notch	Maximum principal stress	48.2MPa	47.6MPa	1.2%
6	Cantilevered plate	Mode 1	0.42Hz	0.42Hz	<1%
		Mode 2	1.02Hz	1.02Hz	<1%
		Mode 3	2.58Hz	2.56Hz	<1%
		Mode 4	3.29Hz	3.27Hz	<1%
		Mode 5	3.75Hz	3.72Hz	<1%
7	Cantilever under pure bending	Sxx	221MPa	221.7MPa	<1%
		Uz	0.0247m	0.0247m	<1%
8	Cantilever realistic support	S_{VM}	356.5MPa	366.5MPa	2.8%

A summary of results for all benchmarks(NAFEMS)

Check for Other Media Testimonials:

https://www.nafems.org/publications/resource_center/bm_jan_20_1/

https://www.digitalengineering247.com/article/altair-simsolid-walkthrough/simulate

https://www.develop3d.com/reviews/review-altair-simsolid-simulation-CAD-design-engineering

THANK YOU

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#ONLYFORWARD

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