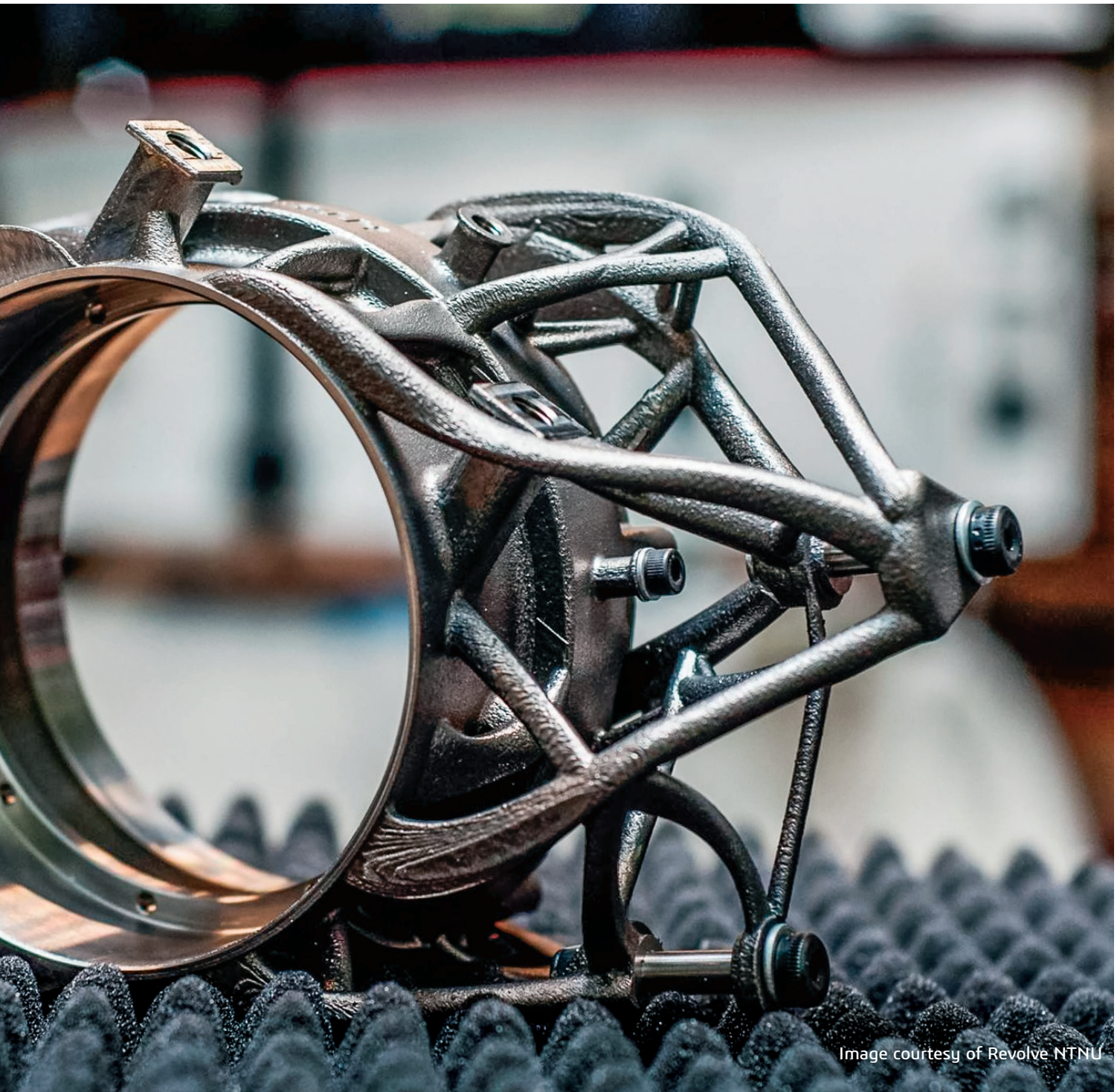




3DEXPERIENCE®

ADDITIVE MANUFACTURING FOR GENERATIVE DESIGN



Solution Update

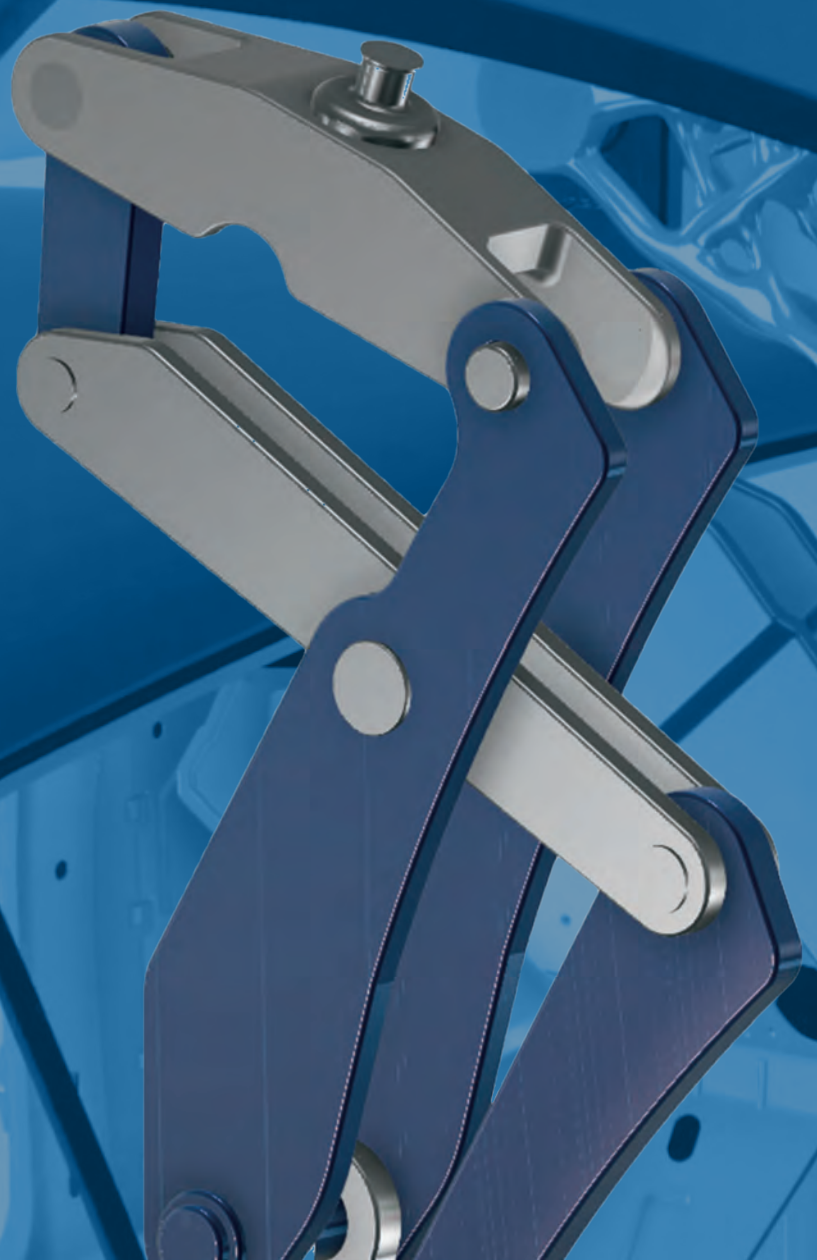
DIGITALLY ACCELERATING ADDITIVE MANUFACTURING

MAKING PARTS THAT WORK



DESIGN

PROCESS PLANNING



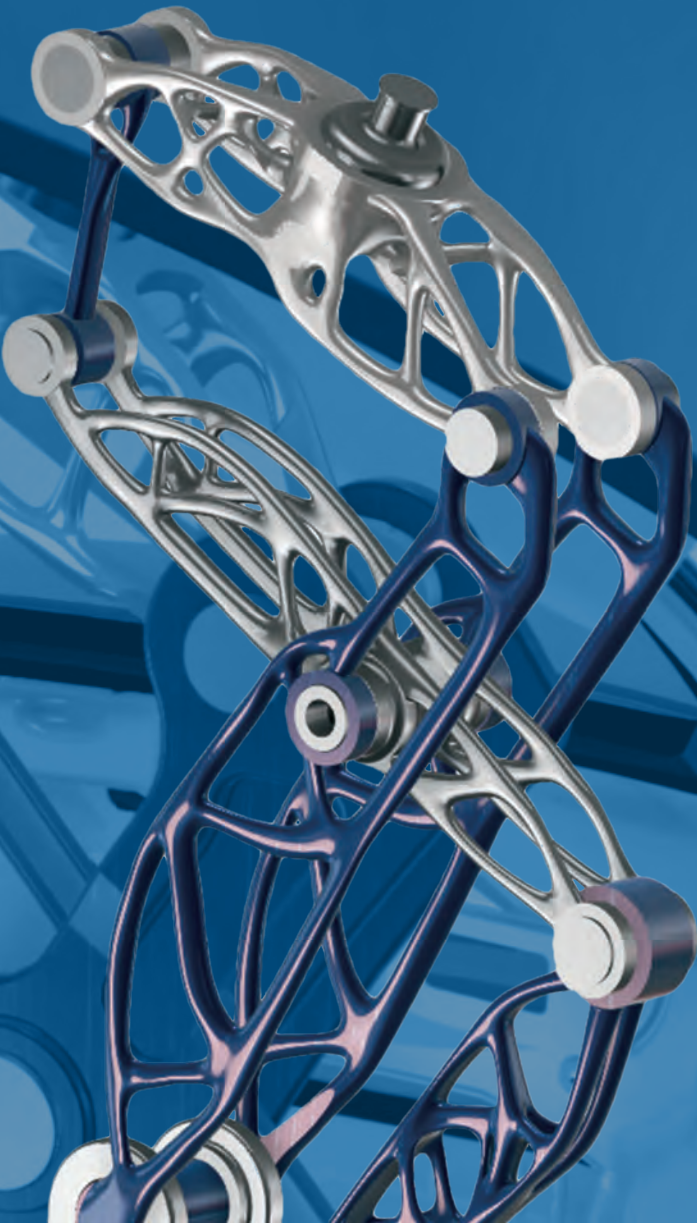
ADDITIVE MANUFACTURING FOR GENERATIVE DESIGN

Dassault Systèmes offers a full portfolio of integrated applications for additive manufacturing that work seamlessly across design, manufacturing, and in-service performance.



VIRTUAL PRINTING

POST-PROCESSING



AM AND GENERATIVE DESIGN REVOLUTIONIZE HOW PRODUCTION PARTS ARE CONCEIVED AND PRODUCED

3DEXPERIENCE

- Additive manufacturing empowered by generative design is revolutionizing how production parts are being conceived and produced
- A digital thread that connects, integrates and intuitively captures design, materials and manufacturing, is key for functional parts
- **3DEXPERIENCE**, backed by multiphysics-based simulation, enables such a transformation through a unified and simplified interface
- Provides designers, simulation analysts and manufacturing specialists a rich set of additive manufacturing applications for generative design, build planning, virtual print and shape compensation

GENERATIVE DESIGN WITH THE FUNCTIONAL GENERATIVE DESIGNER ROLE

- Design with topology optimization in a single environment
- Create parts in context of the manufacturing process using guided workflows
- Automatically generate variants of conceptual and detailed organic shapes
- Make informed business decisions based on physics-based analytic tools

PROCESS PLANNING WITH THE ADDITIVE MANUFACTURING PROGRAMMER ROLE

- Define and customize the manufacturing environment
- Automatically nest parts on the build tray
- Design and generate optimal support structures
- Create machine specific slicing and scan path, ready for print

VIRTUAL PRINTING WITH THE ADDITIVE MANUFACTURING RESEARCHER ROLE

- Automatically includes machine inputs for energy, material and supports into the simulation
- Access built-in simulation best practices with minimal user-level intervention

- Simulate at layer, part and build levels for any additive manufacturing process
- Accurately predict part distortions, residual stresses and as-built material behavior
- Evaluate and correct for build failure because of interferences such as recoater collision

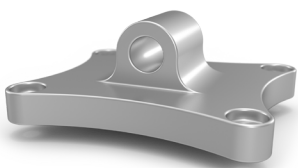
POST PROCESSING WITH THE REVERSE SHAPE OPTIMIZER ROLE

- Use simulation to guide support-structure strategy for enhanced build yield
- Guide post-processing efforts such as removal from build plate and heat treatment
- Compensate distortion effects without the need to redesign the product tooling
- Produce high-quality morphed surface geometry with unchanged topology
- Perform final in-service performance validations of manufactured part

SUMMARY VALUE

- Native integration of design, manufacturing and simulation applications
- On-premise and on-cloud with high-performance computing and visualization
- Define reusable rules for each step of the additive workflow.
- Make informed business decisions based on physics-based analytic tools

For More Information
www.3ds.com/simulia



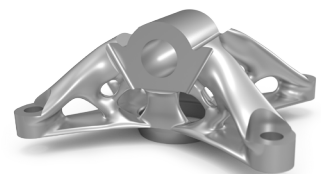
LEGACY
0.7 kg



3-AXIS MILLING
0.45 kg



CASTING
0.36 kg



ADDITIVE
MANUFACTURING
0.295 kg

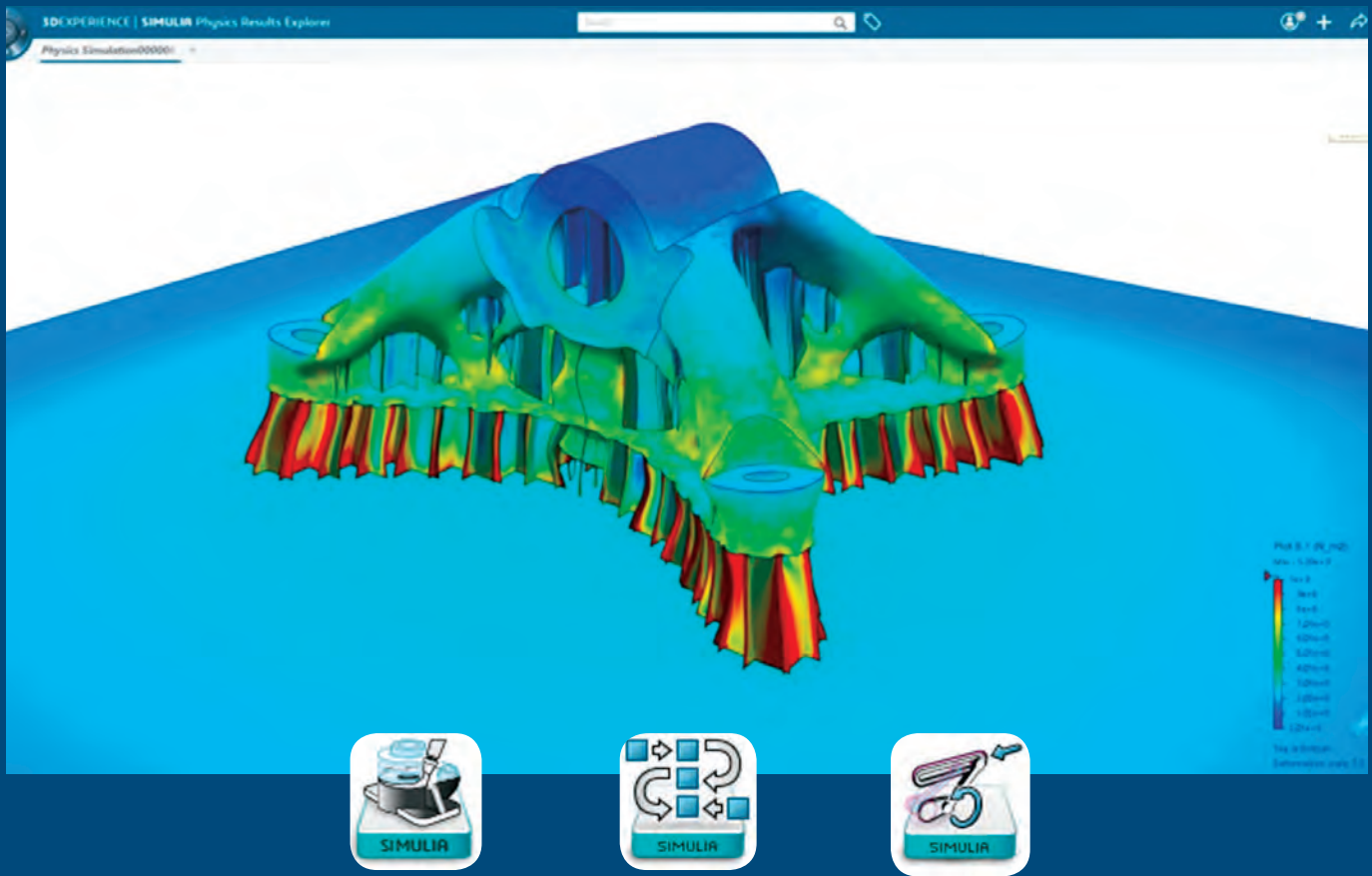
ADDITIVE MANUFACTURING RESEARCHER ROLE OVERVIEW

HIGHLIGHTS

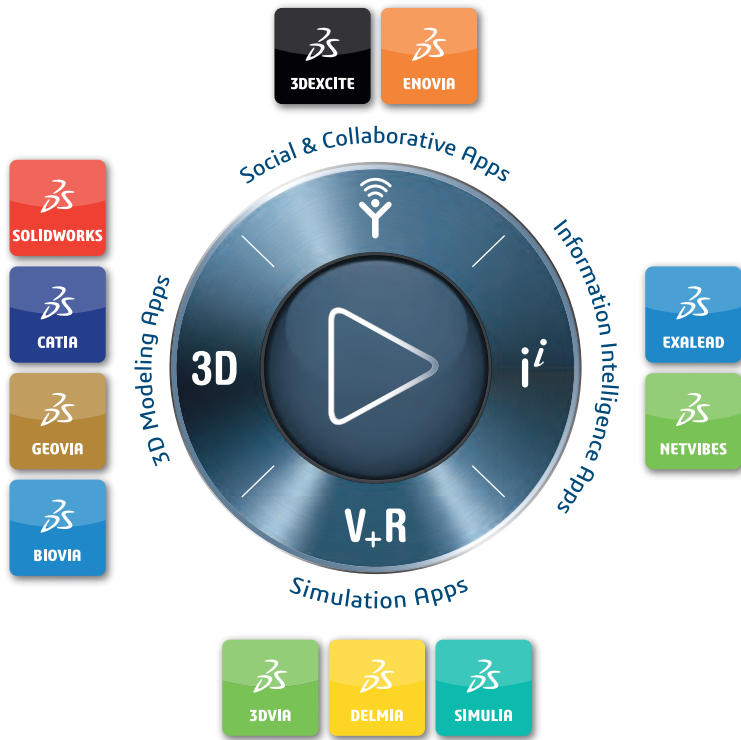
- Physically realistic simulation of 3D printing of parts including laser scan paths, material deposition and solidification, thermal distortion and residual stress, and support structures
- Allows powder bed, polymer extrusion, and direct energy deposition (plus user defined) manufacturing process simulation
- Offers a high level of automation and guidance to allow the user to easily setup complex simulations
- Provides an easy-to-use experience on top of the sophisticated technology of the Abaqus solver while allowing customization for more advanced users
- A guided user assistance panel provides a step-by-step workflow to set up a simulation
- Uses part build information, automatically set build times and populate supports for some features

USER VALUE

- Seamless integration to design and manufacturing
- In-built simulation best practices to allow usage by additive experts
- Automatically applies settings to conform to additive manufacturing simulation best practices
- Process-level, part-level and build-level simulations in a single environment for metals or polymers.
- Reduce residual stress and distortion in completed parts
- Increase dimensional accuracy
- Optimize part orientation
- Minimize print time and material usage
- Post-processing methods for build plate removal and heat treatment
- In-service performance validations of functional part



Virtual Printing using 3DEXPERIENCE Platform



Our 3DEXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the 3DEXPERIENCE® Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 210,000 customers of all sizes in all industries in more than 140 countries. For more information, visit www.3ds.com.

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