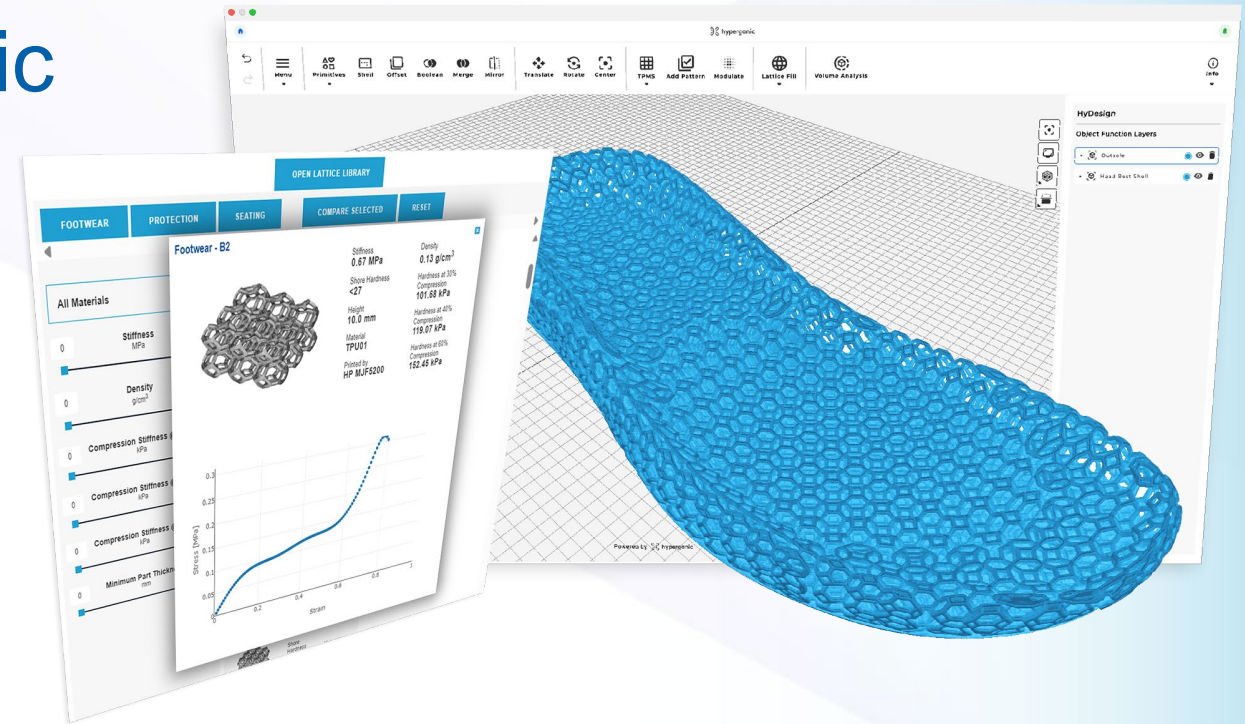


Tech Talk: BASF Forward AM x Hyperganic HyDesign Open Beta

Marius Haefele | Moritz Valentino Huber

Apr. 9th, 2024, 3:00 PM CET – 3:45 PM CET (9:00 – 9:45 AM EST)



Agenda



1) Welcome and Context

- Introduction by the speakers
- What challenge are we trying to solve?
- Recap of Ultrasim[®] 3D Lattice Engine & Library
- Introduction of HyDesign

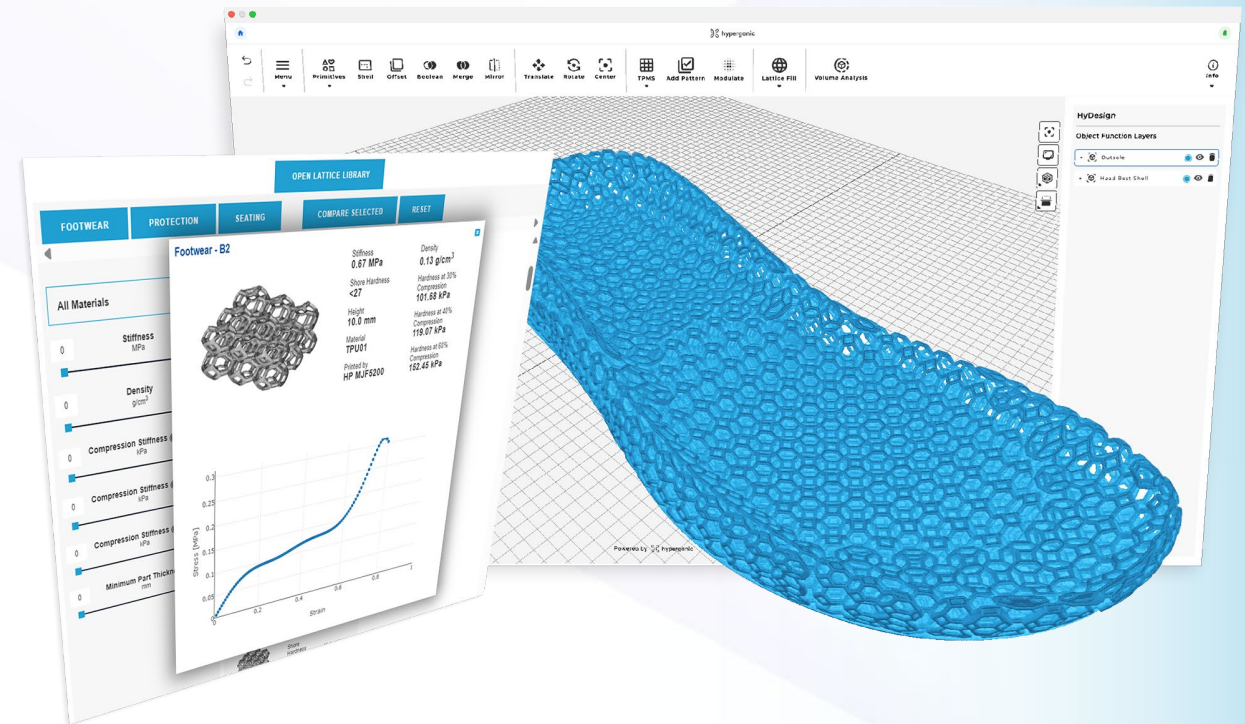
2) HyDesign Walkthrough

- Cloud-based Access to HyDesign
- Lattice and TPMS structures creation
- Validated BASF Forward-AM Lattice Library
- BASF Forward AM Lattice Modulation

3) Open Beta

- Free 90-day Open Beta

4) Questions and Answers



Our Speakers Today



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Moritz Valentino Huber

Director of Engineering
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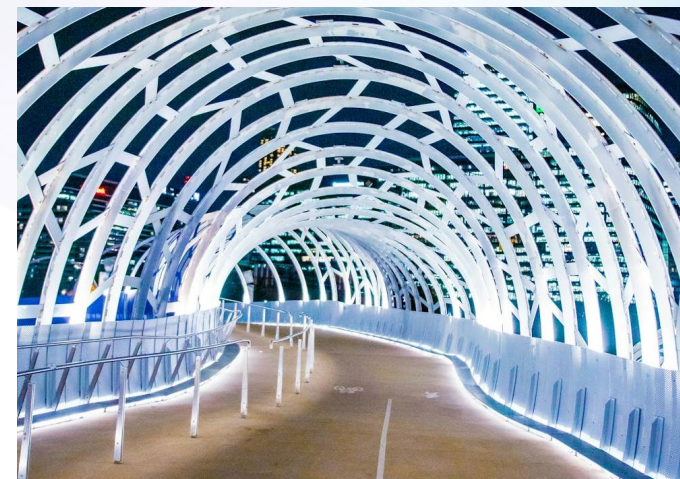
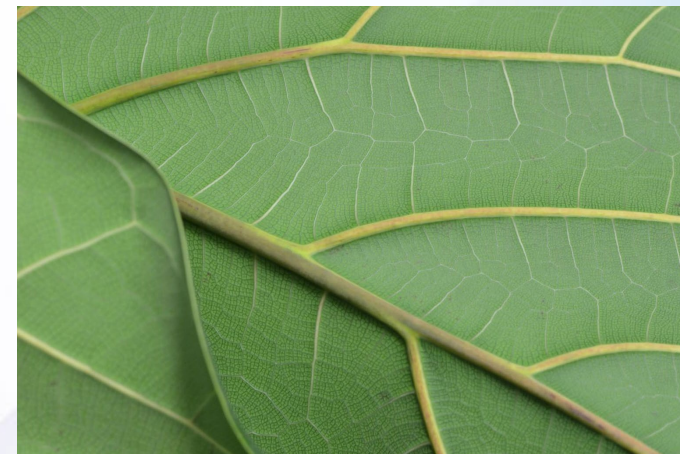
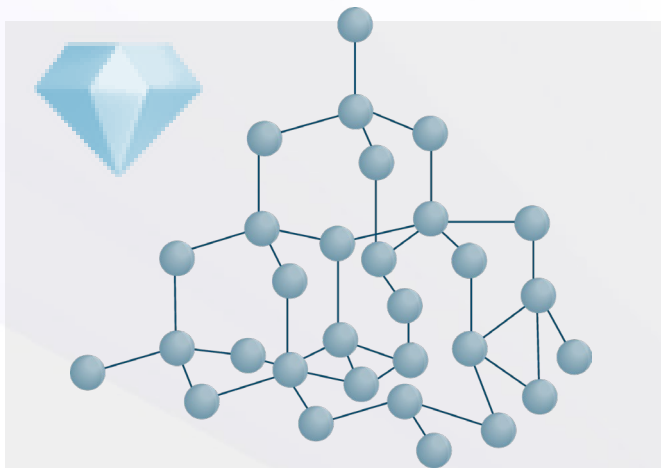


Christopher Eisele

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What Are Lattices?

“ Lattices are structures with repeating patterns of interconnected elements. ”



3D-Printed Lattice Applications Are On The Rise

Sandals - Hilos



Bike Saddle – Posedla Joyseat



Motorbike Saddle - Erpro



Prosthetic Socket - Proffit



Insole - Podomesh



Football Helmets - Xenith



Car Seat – Oechsler



Motorbike Saddle – Oechsler



Furniture - Oechsler



Ventilation



Design Flexibility



Lightweight



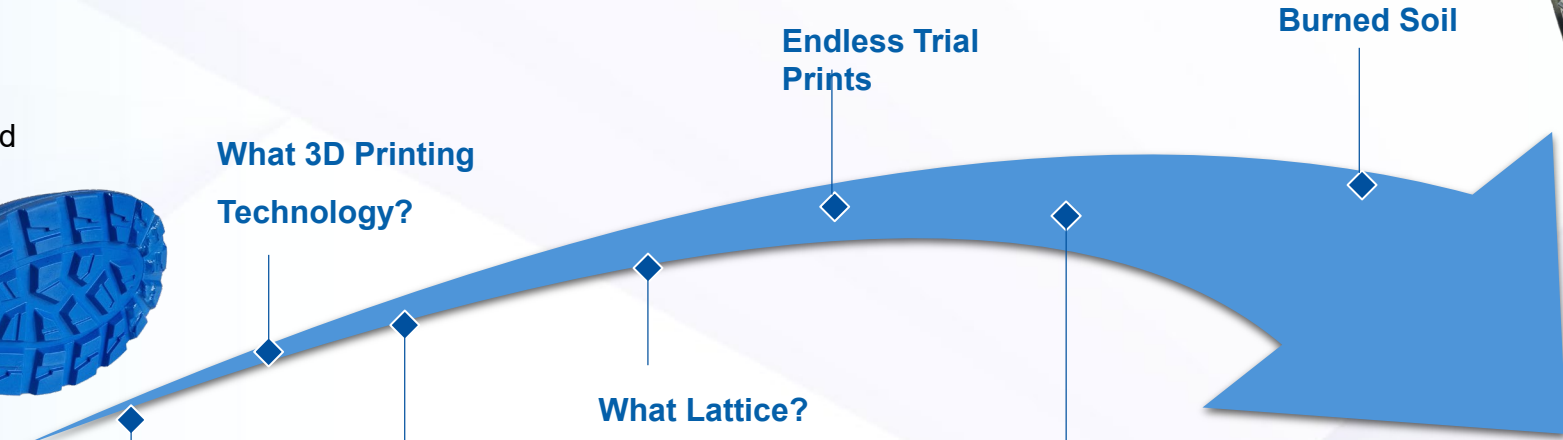
Customization



One material, many lattices, many behaviors

Avoiding the “Lattice Road to Hell”

The concept:
Replacing a foam-based midsole with a lattice structure



What Material?

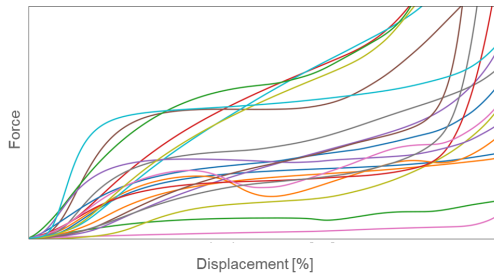
What 3D Printing Technology?

What Lattice?

Endless Trial Prints

Rising Acquisition Cost

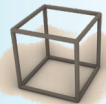
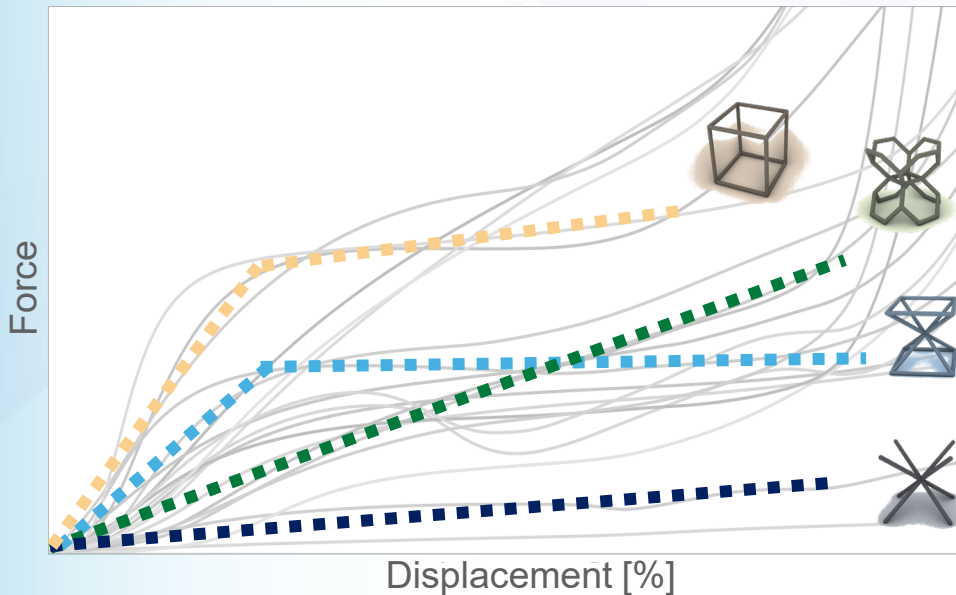
Burned Soil



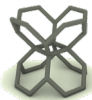
The desired outcome:
Midsole based on functional lattice design

Ultrasim® 3D Lattice Library – Finding The Right Lattice for Your Application

Lattice behaviour matched with application requirements



High energy absorber



High linear stiffness

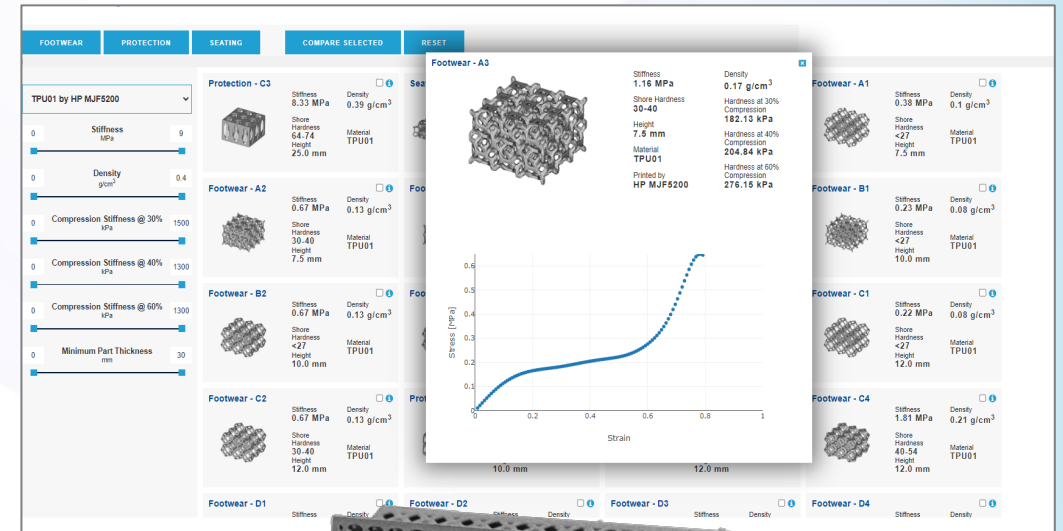


Low energy absorber



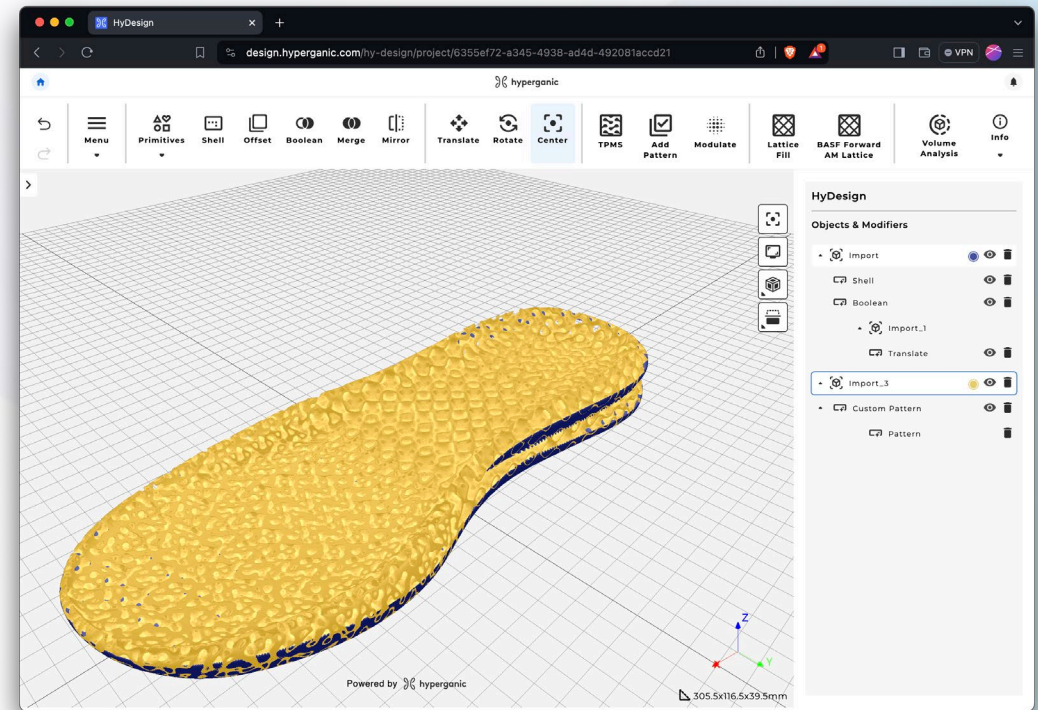
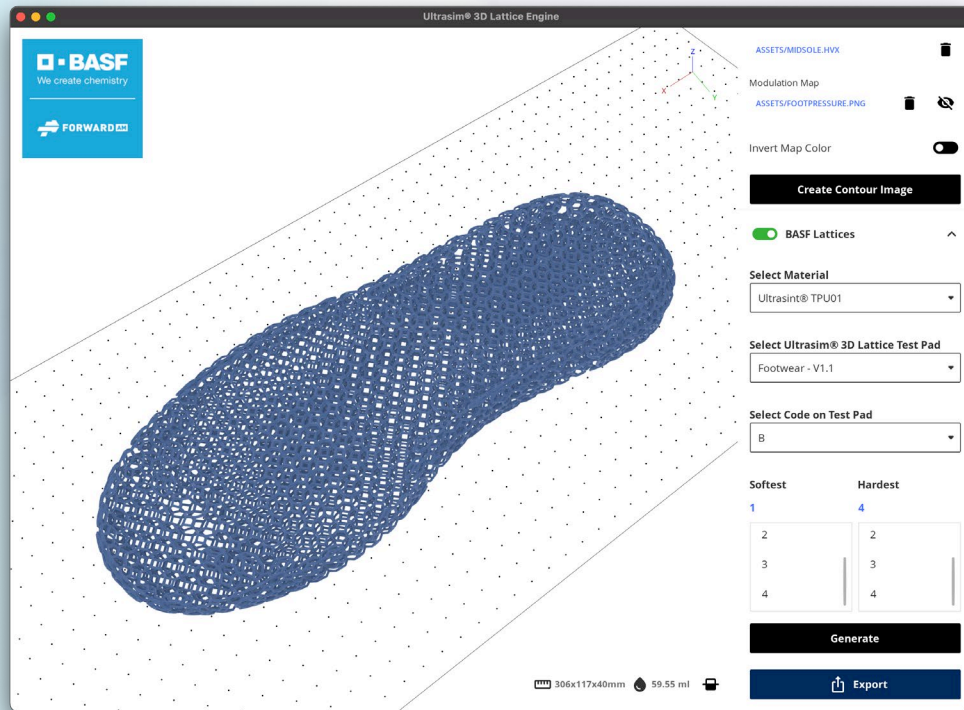
Low linear stiffness

Choose from a large database of validated lattices in the Ultrasim® 3D Lattice Library



From Ultrasim® 3D Lattice Engine to HyDesign

Effortless Lattice Design, Simplified Access

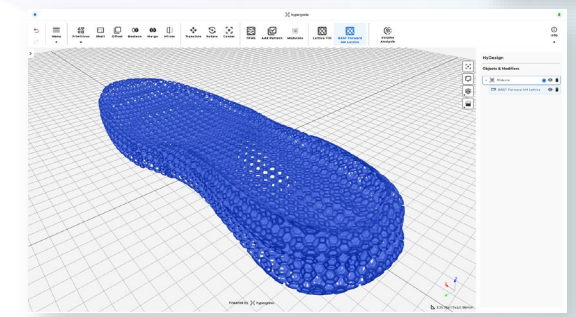
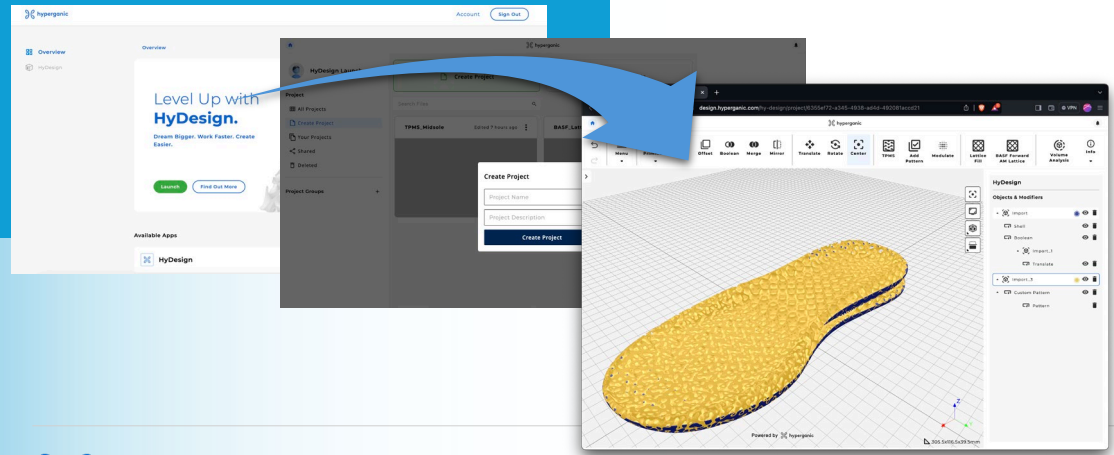
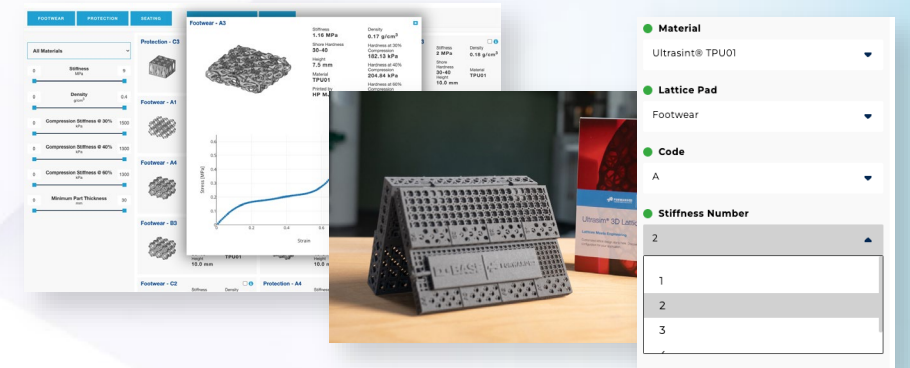
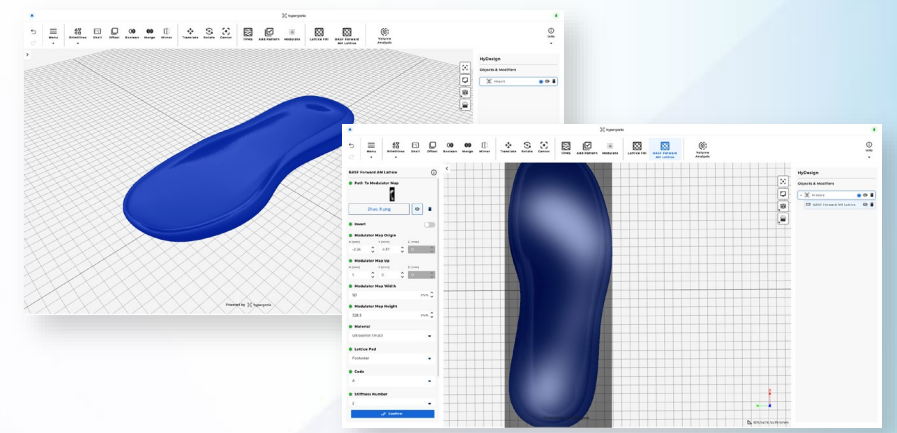


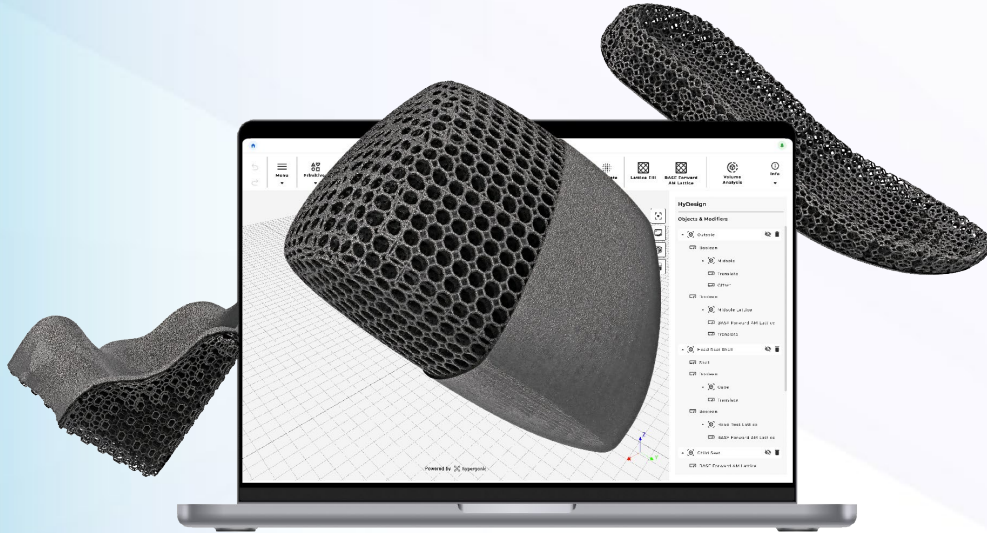
Ultrasim[®] 3D Lattice Engine vs. HyDesign

	HyDesign	Ultrasim [®] 3D Lattice Engine
Cloud-native vs on-premise	<ul style="list-style-type: none"> All functionality available through your browser Immediate access Project files automatically saved to the cloud, access them from any device Export and download to local drive 	<ul style="list-style-type: none"> Download and install Hyperganic Core and open a .hyapp Save files locally
Validated Lattices by Ultrasim [®] 3D Lattice Library	<ul style="list-style-type: none"> ✓ Validated Lattices for Footwear, Seating, Protection application ✓ Mechanical data incl. Stress-strain curve available for material-machine-combination ✓ MJF and SLS based on Ultrasint[®] TPU01, TPU 88A ✓ Depowderable, not broken lattice beams 	
HyDesign has all the basic geometry operations you need	<ul style="list-style-type: none"> ✓ Shelling ✓ Booleans ✓ Offsets ✓ Skinning ✓ Transforms 	<ul style="list-style-type: none"> ✗ Shelling ✗ Booleans ✗ Offsets ✗ Skinning ✗ Transforms
New & improved UIUX Ability to work with more than 1 object at a time, change their appearance independently	<ul style="list-style-type: none"> Any number of objects Apply different colours/"materials"? 	<ul style="list-style-type: none"> Only 1 object in default Hyperganic blue
"Lattice Playground"	Do more with TPMS <ul style="list-style-type: none"> Vary cell sizes in 3 axes Spherical mapping Cylindrical mapping Noise-type patterns not available	Grid-based TPMS only
Trial Period	90 Days	14 Days

Live Demo:
Go from PU
midsole to
validated lattice
part in
10 minutes

- 1** *Import base geometry.*
- 2** *Upload pressure map.*
- 3** *Select the suitable lattice cell size and thicknesses.*
- 4** *Generate latticed midsole and export for print.*





HyDesign Open Beta Now Live

- 90 days free access (including unlimited exports)
- More attractive features
- Feature roadmap is packed with exciting new developments:
 - Meshless simulation integration (Structural and Fluids)
 - Conformal latticing and further extensions to TPMS

Access Now



hyd.sg/register-ref

Q&A session

We value and appreciate your active participation!

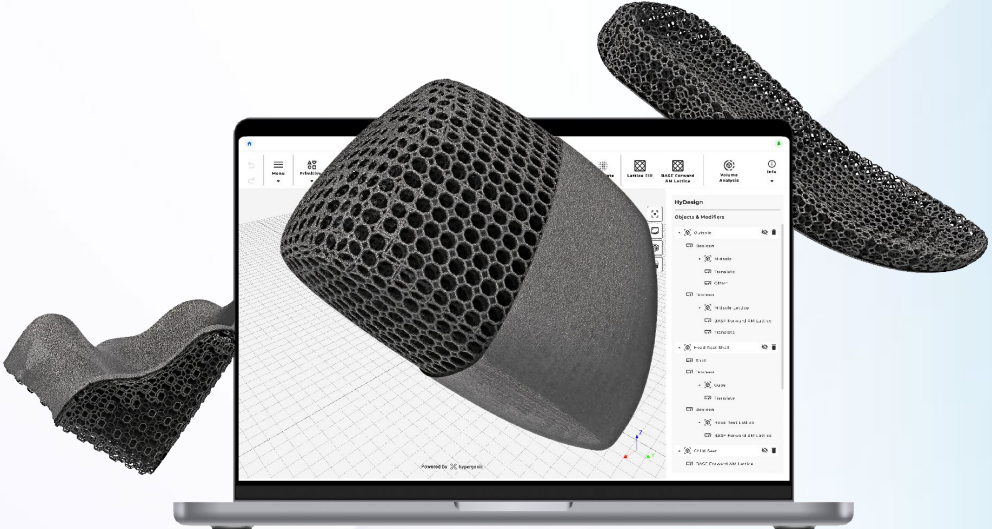
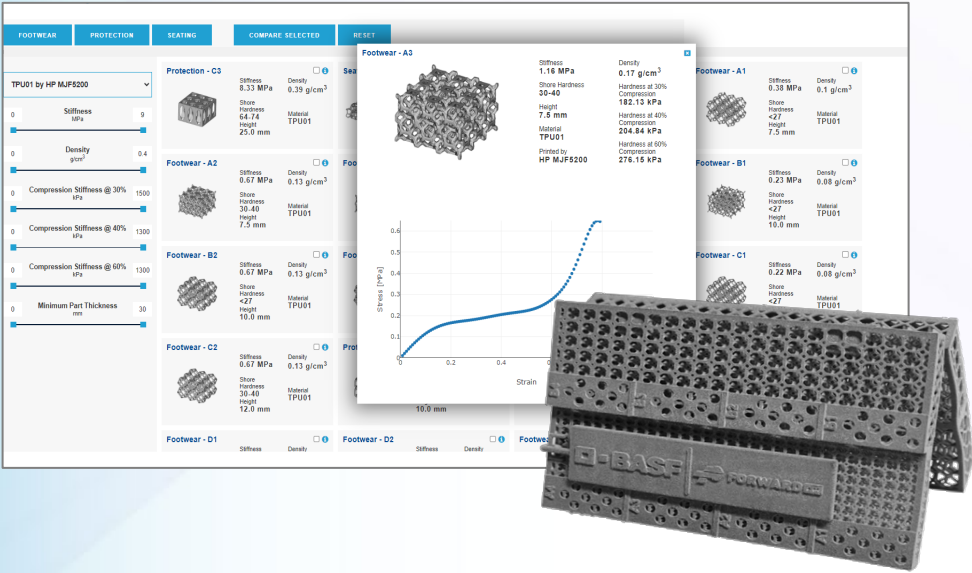
Feel free to ask questions or share insights using the chat feature.

Our team will address them during designated Q&A sessions at the end of this webinar. If due to time constraints not all questions can be answered, we will make sure to follow-up in a separate mail.

Frequently Asked Questions

Questions	Answers
<p>What are the advantages of utilizing cloud-based software for design projects?</p>	<ul style="list-style-type: none"> • Enabling collaboration among remote members • No need for software installations or specific hardware requirements • Work on designs seamlessly across multiple devices • Increased flexibility and convenience for users
<p>How much will HyDesign cost?</p>	<ul style="list-style-type: none"> • More affordable than the Ultrasim 3D Lattice Engine but packs more capabilities. • Advanced features in the roadmap, such as simulations, will be priced separately
<p>What are some examples of use cases under protection?</p>	<ul style="list-style-type: none"> • Helmet Liners: Improves shock absorption and reduces head injury risks in sports, construction, and military sectors. • Protective Casings: Cushions sensitive equipment from impacts while maintaining airflow and ventilation. • Fall Protection: Absorbs energy during falls, reducing injuries in construction and industrial settings. • Sports Equipment: Enhances impact resistance for athletes in cycling, skateboarding, and snowboarding.

Any further Questions?



Get in Touch Now!

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Get in Touch Now!

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*Source references

To present today's webinar we've made use of some external sources;

- Photo by Ion Ceban @ionelceban: <https://www.pexels.com/photo/yellow-and-black-bees-on-brown-and-black-textile-3194327/>
- Photo by Luke Aeyra: <https://www.pexels.com/photo/trellis-over-walkway-and-cycle-path-12703282/>
- Photo by Skylar Kang: <https://www.pexels.com/photo/textured-veins-of-green-plant-leaf-in-daytime-6044486/>

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