

AGENDA

18:30 - 19:00

Check-in, drinks & snacks

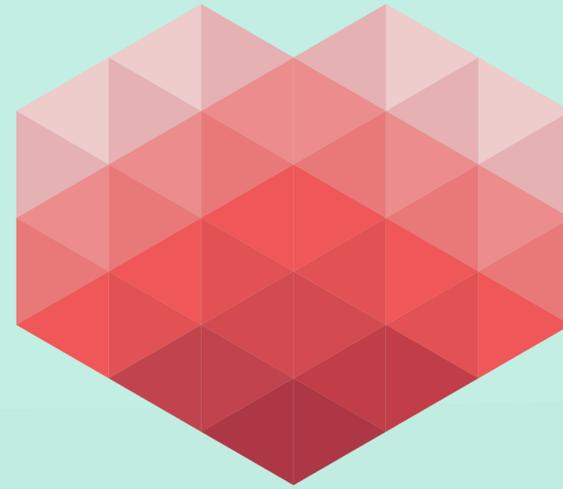
19:00- 19:45

Presentation Workshop

19:45 - 20:30

Discuss, drinks & snacks

THE WORLD'S LARGEST 3D PRINTER NETWORK



3D HUBS

“3D Hubs tapped into a market that needed tapping”

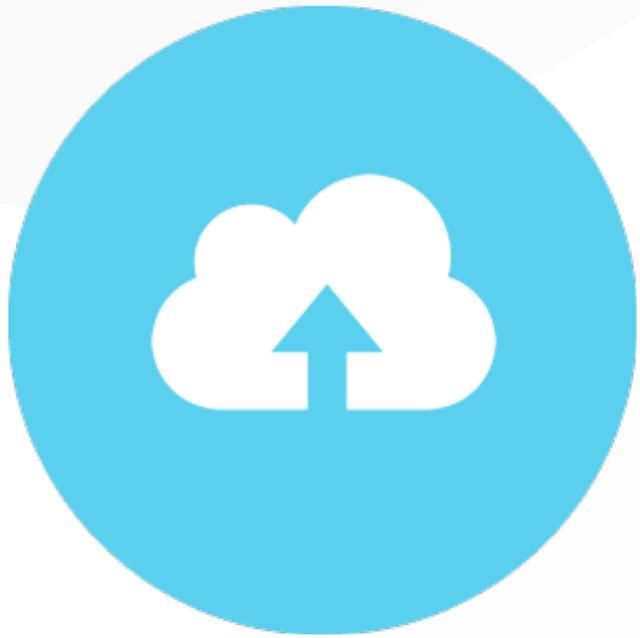
Forbes

“3D printing on demand is now locally available”

FAST COMPANY

www.3dhubs.com

@3dhubs



Upload Design



Select Printer



Local Production



20K+ PRINTING LOCATIONS IN 160 COUNTRIES

maps.3dhubs.com

#WEARE20K

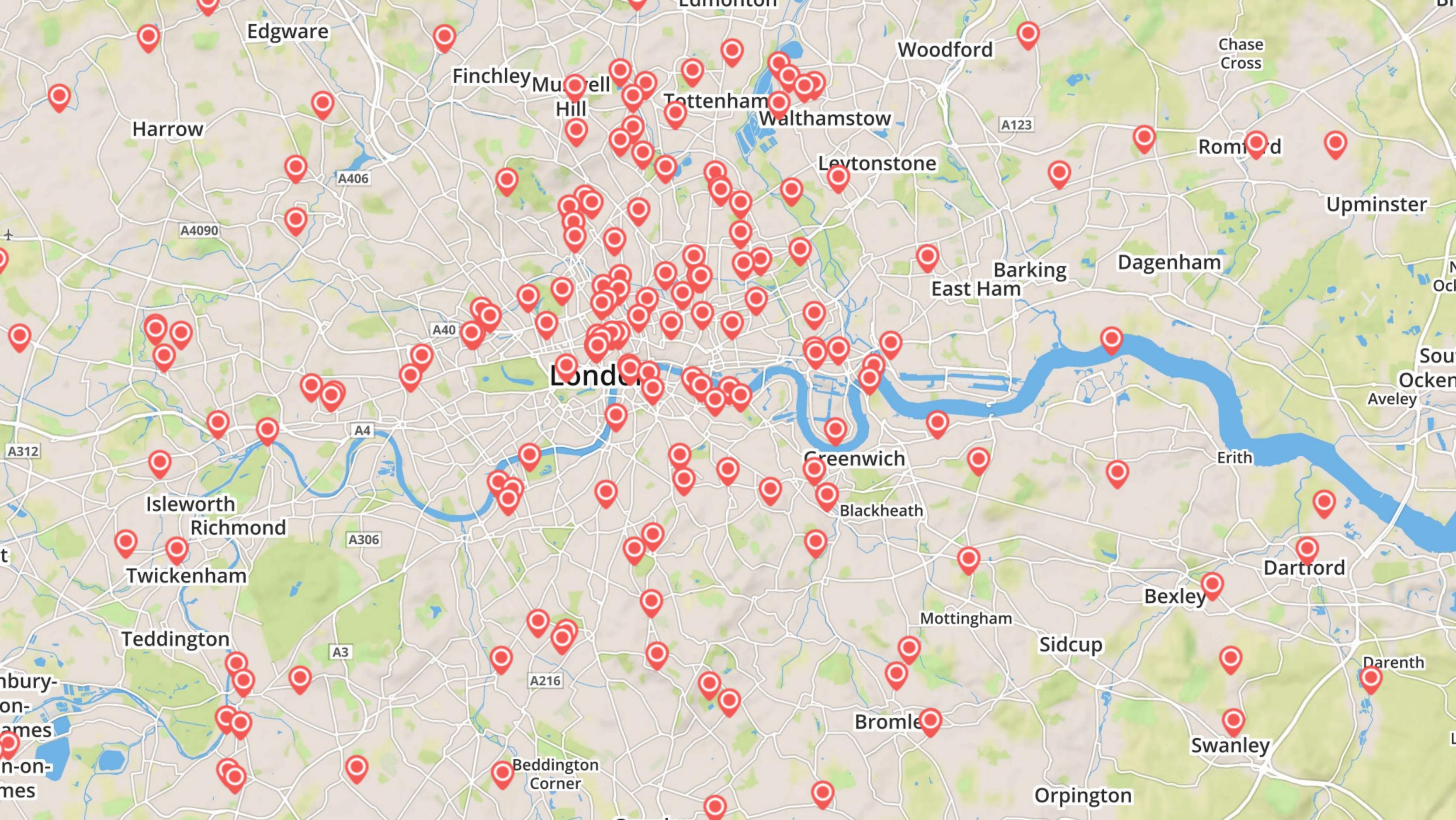
CONNECTING YOU TO **20,000** LOCAL 3D PRINTERS



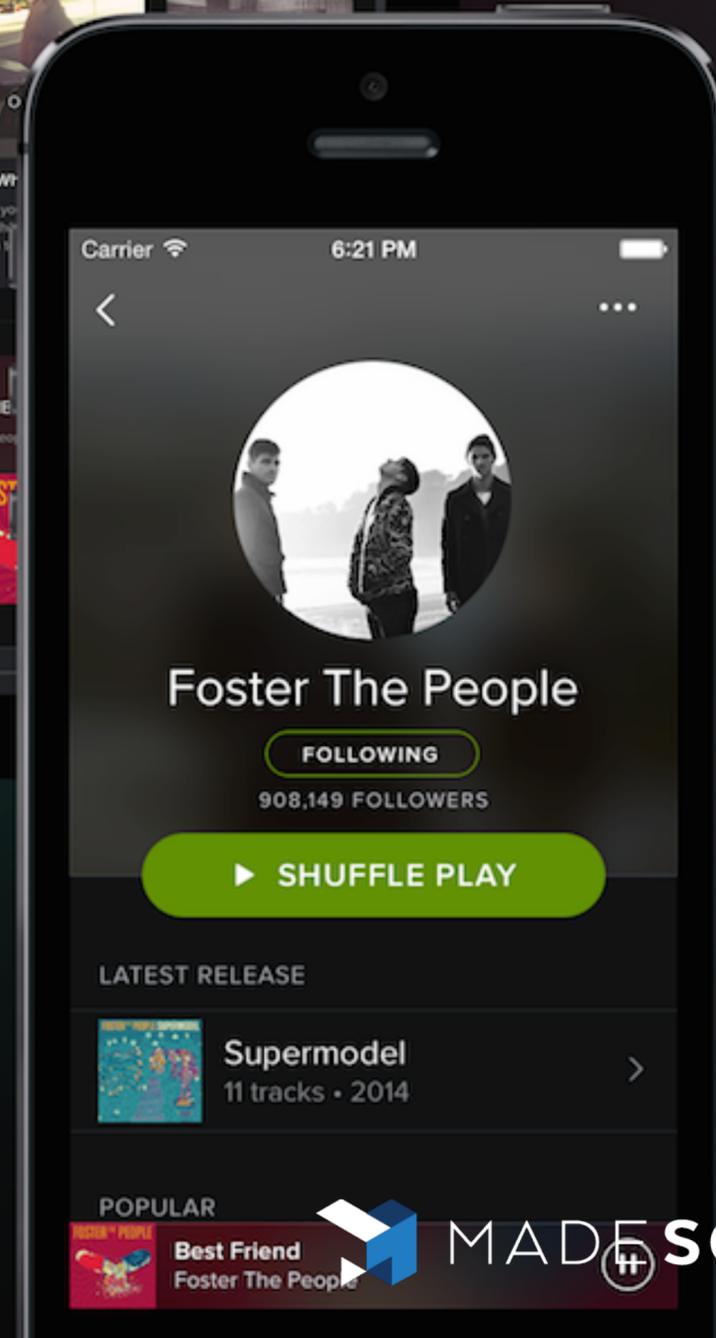
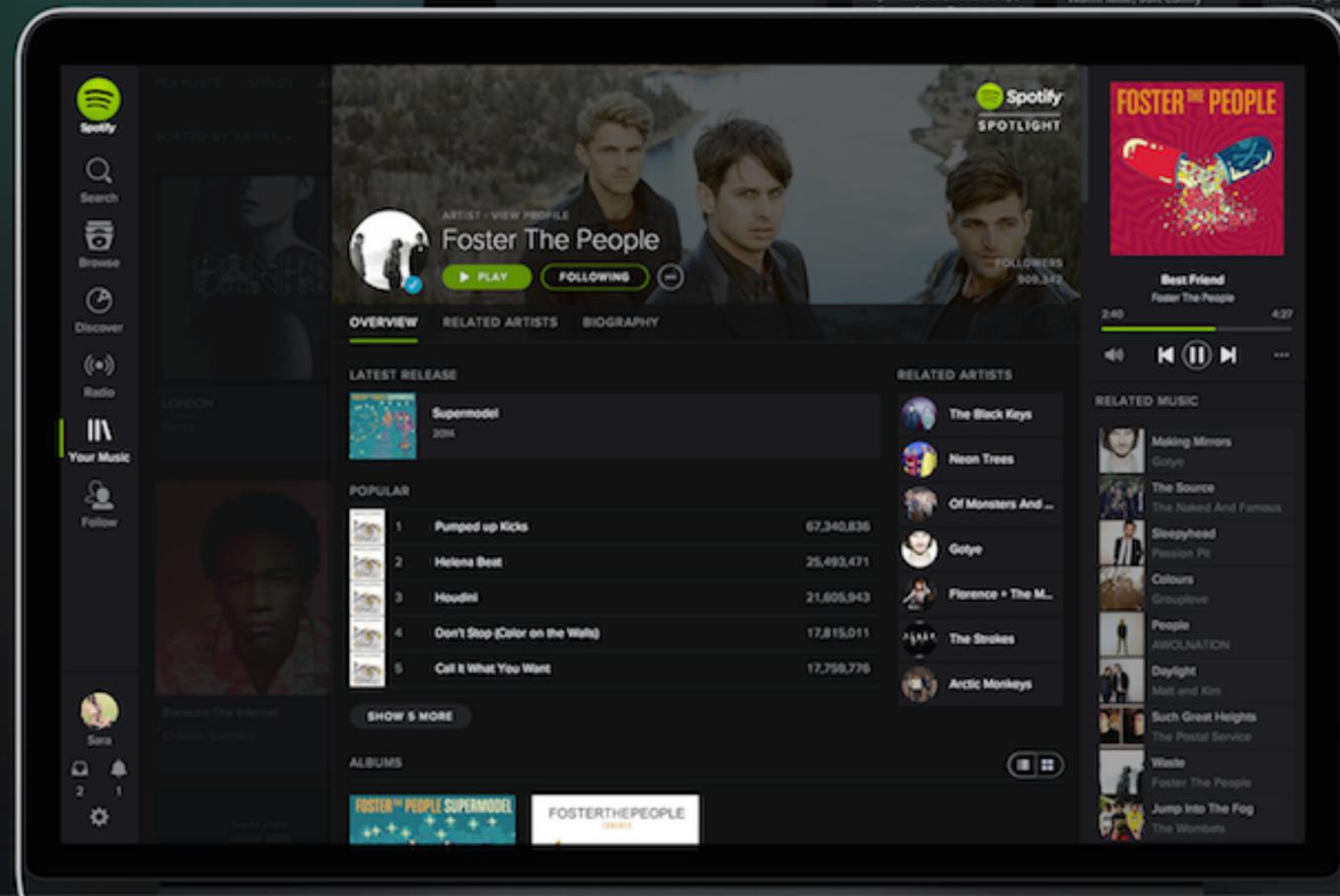
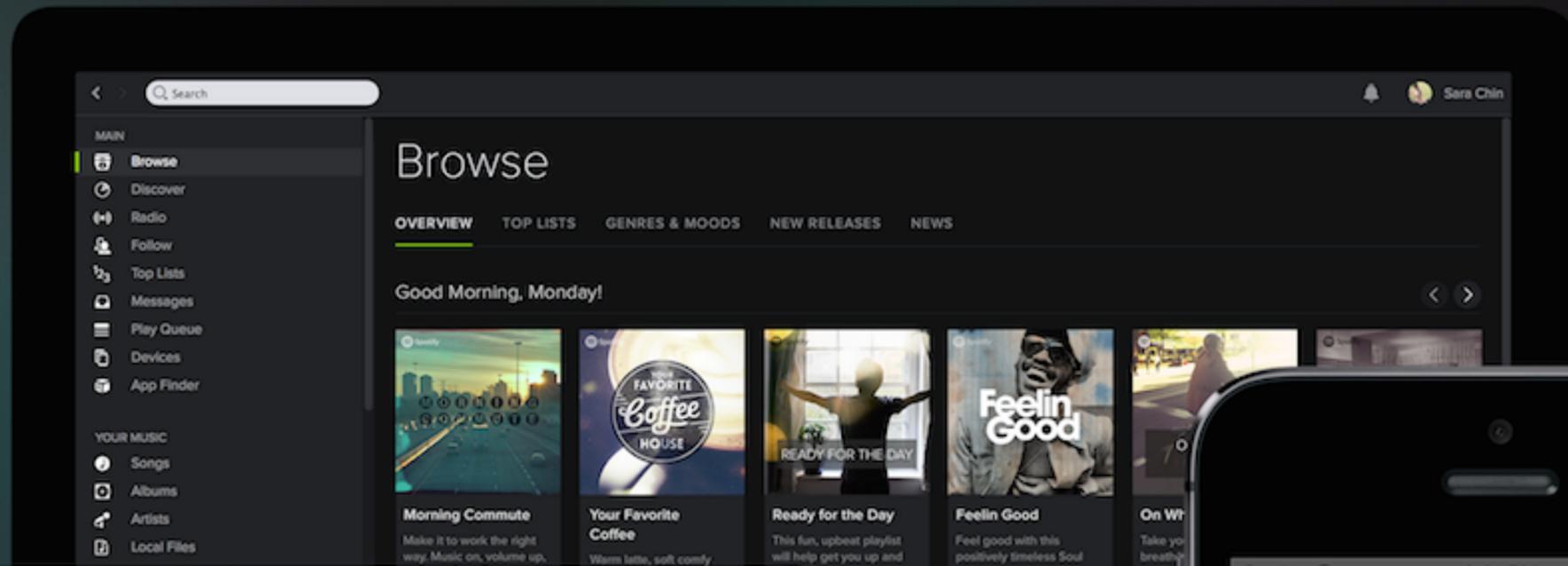
MADESOLID™

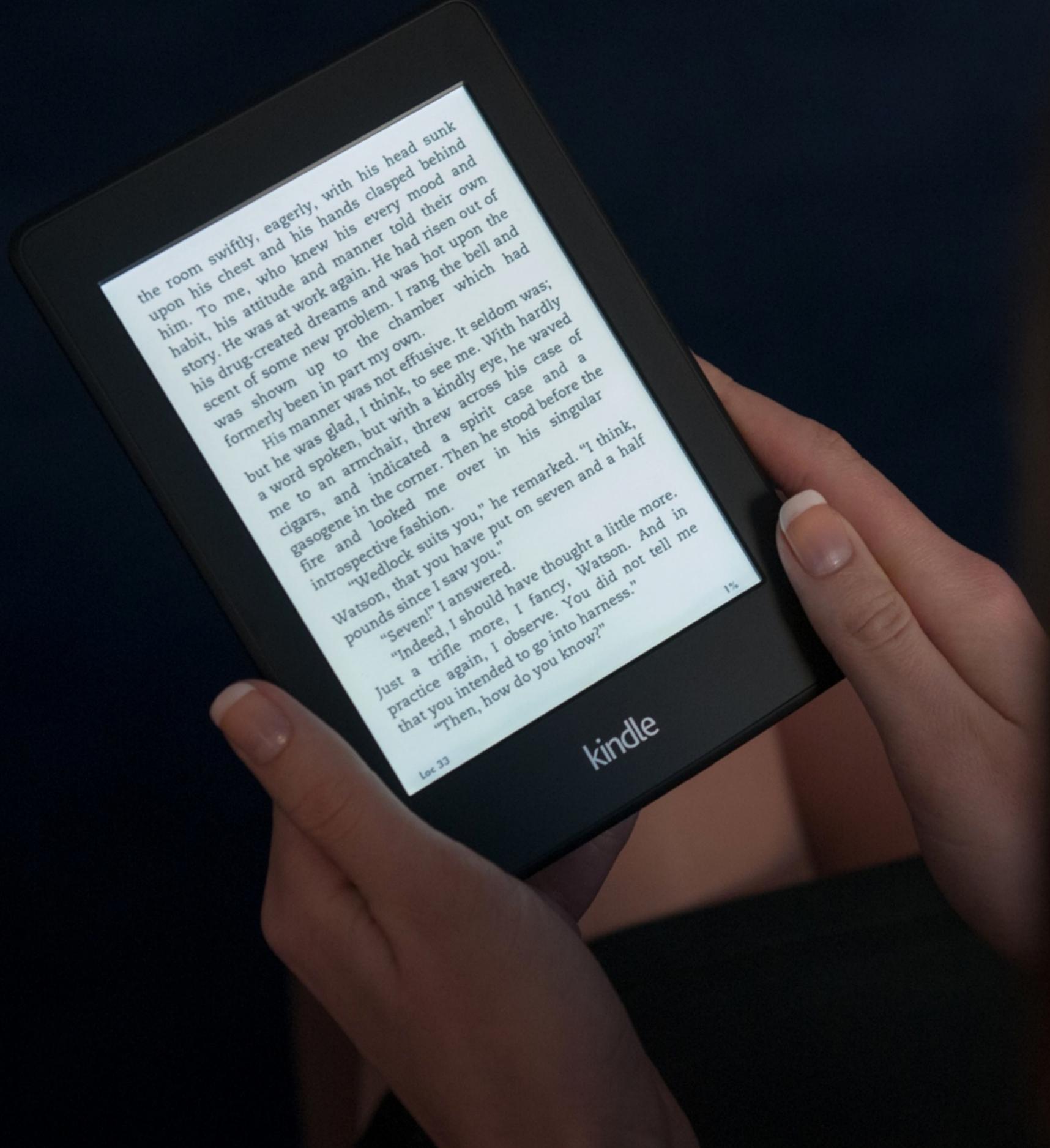


3D HUBS



DIGITIZING EVERYTHING





the room swiftly, eagerly, with his head sunk upon his chest and his hands clasped behind him. To me, who knew his every mood and habit, his attitude and manner told their own story. He was at work again. He had risen out of his drug-created dreams and was hot upon the scent of some new problem. I rang the bell and was shown up to the chamber which had formerly been in part my own.

His manner was not effusive. It seldom was; but he was glad, I think, to see me. With hardly a word spoken, but with a kindly eye, he waved me to an armchair, threw across his case of cigars, and indicated a spirit case and a gasogene in the corner. Then he stood before the fire and looked me over in his singular introspective fashion.

"Wedlock suits you," he remarked. "I think, Watson, that you have put on seven and a half pounds since I saw you."
"Seven!" I answered.
"Indeed, I should have thought a little more. Just a trifle more, I fancy, Watson. And in practice again, I observe. You did not tell me that you intended to go into harness."
"Then, how do you know?"

Loc 33

1%

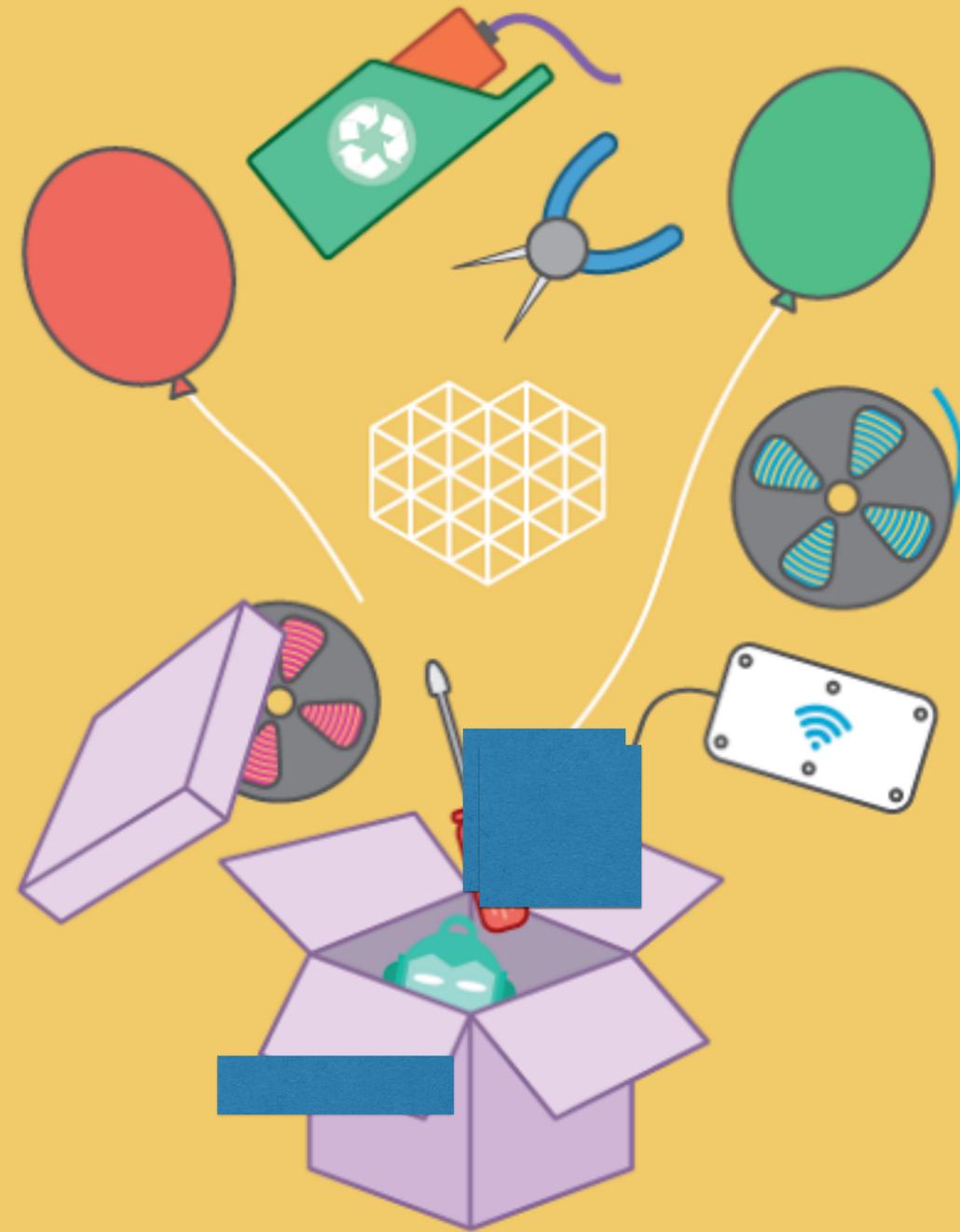
kindle



local



on demand



HUB PERKS



MADE **SOLID**™

FLEXSOLID WORKSHOP



powered by:



3D HUBS

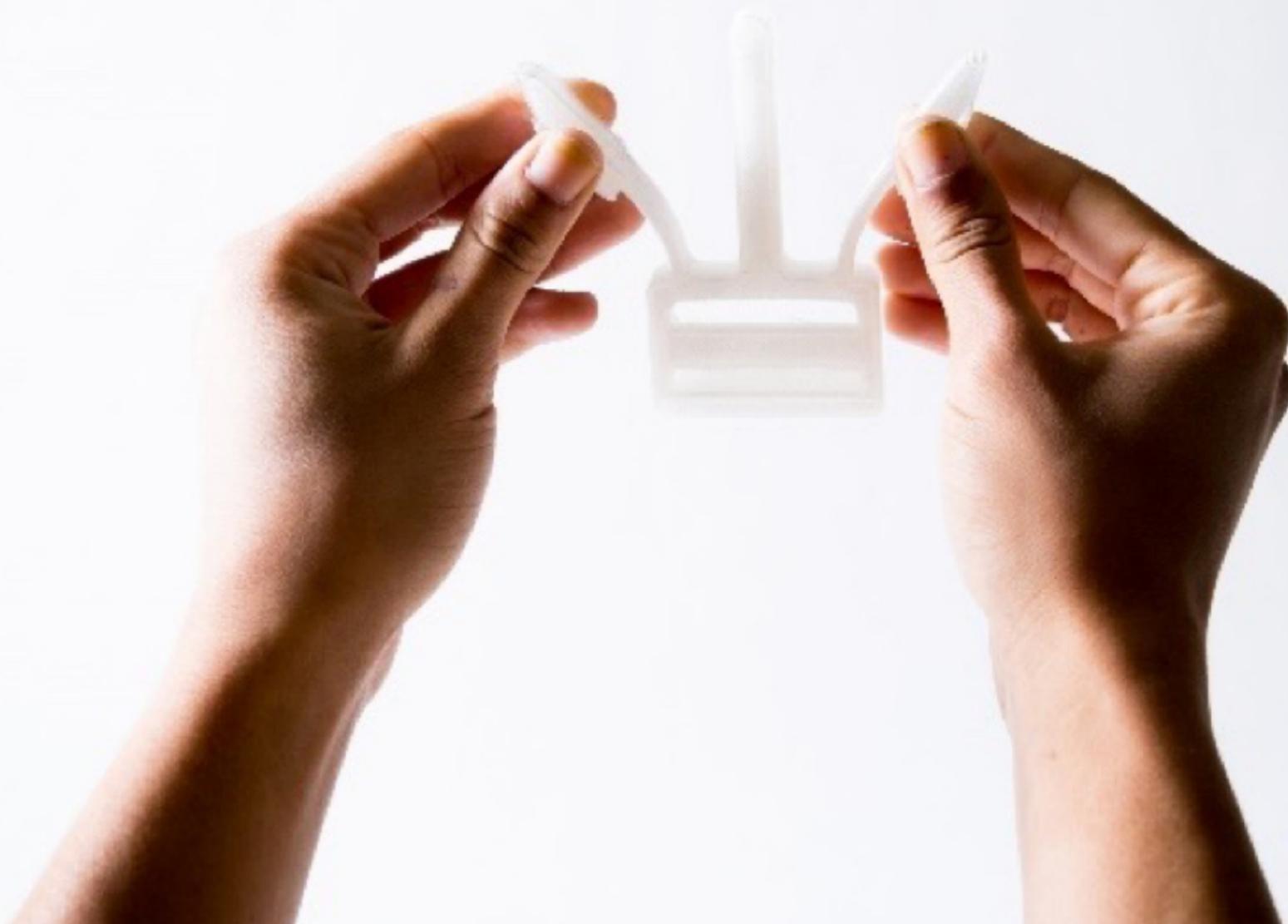
3D PRINTING
INDUSTRY



FlexSolid Filament

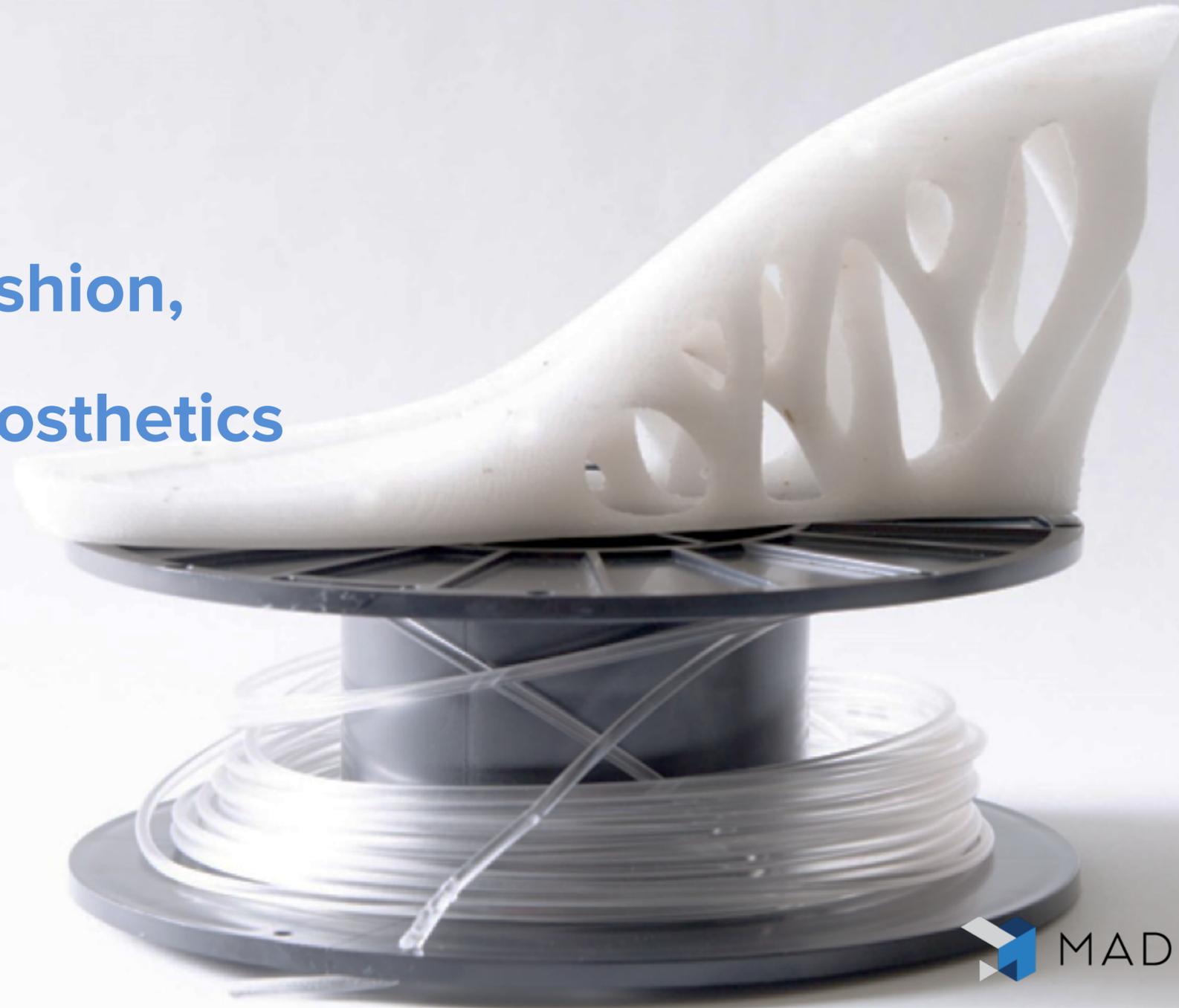


FlexSolid Filament Basics



What is FlexSolid?

- **Flexible 3D filament**
- **Strength & Flexibility**
- **Ideal for wearables, fashion, sports equipment & prosthetics**
- **FDM/FFF printers**



Material Properties

Hardness: Shore 98A or 52D

Density: 1.15 g/cm³

Tensile Strength: 50 MPa

Elongation at break: 450%



Material Properties

- Stress at 20% elongation: 9 MPa
- Stress at 100% elongation: 15 MPa
- Stress at 300% elongation: 28 Mpa
- Tear strength : 125 N/mm
- Abrasion loss: 25 mm³
- Compression set 23C / 72 hrs: 35%
- Compression set 70C / 24 hrs: 50%
- Tensile strength: 35 MPa
- Elongation at break: 450

Tried & Tested

Metric	Indicative Of	FlexSolid	NinjaFlex
Izod Impact [ft-lb/in]	Denting resistance	8.42	3
Flexural Stress @ 5% Strain [psi]	Warping ability	243	139
Elongation @ max [%]*	Stretching tolerance	400%	390%
Modulus of elasticity [kpsi]	Ease of deforming	11.2	2.33

What is Izod Impact?

- High Izod impact numbers are strongly correlate to dent resistance or shock absorbency
EG: your iPhone will be protected in this case by minimizing impact upon dropping.

Metric	Indicative Of	FlexSolid	NinjaFlex
Izod Impact [ft-lb/in]	Denting resistance	8.42	3



Flexural Stress & Elongation?

The ability for a material to elongate & flex is critical in parts subject to constant pull & tears.

- Wearables & jump ropes take advantage of these properties.

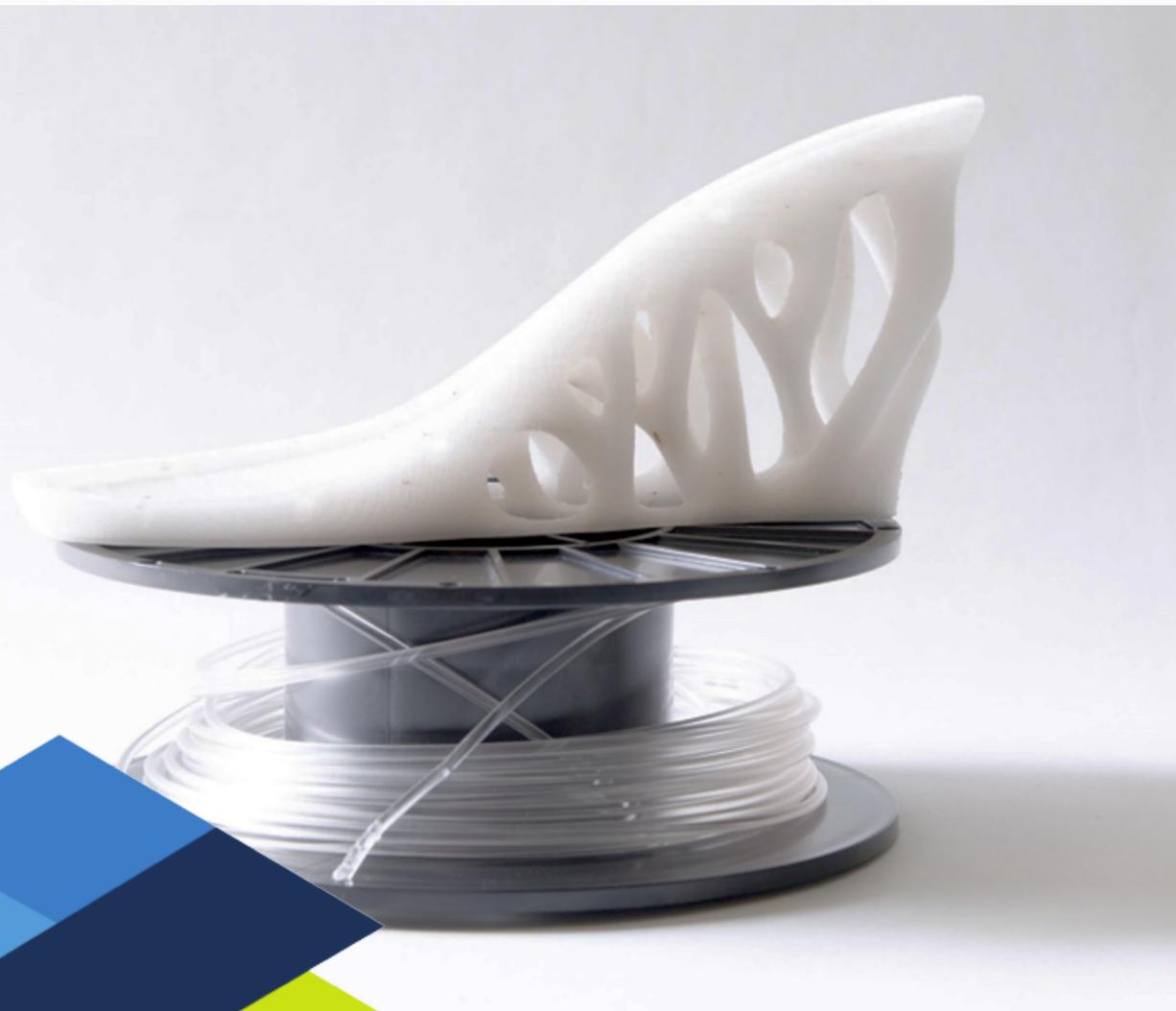


Metric	Indicative Of	FlexSolid	NinjaFlex
Flexural Stress @ 5% Strain [psi]	Warping ability	243	139
Elongation @ max [%]*	Stretching tolerance	400%	390%

What is Modulus of Elasticity?

A high modulus of elasticity = ease of deformation & conformation.

- Benefits customized & form fitting prints



Metric	Indicative Of	FlexSolid	NinjaFlex
Modulus of elasticity	Ease of deforming	11.2	2.33

OK! Let's Print!

- For print files and more settings, visit MadeSolid.com

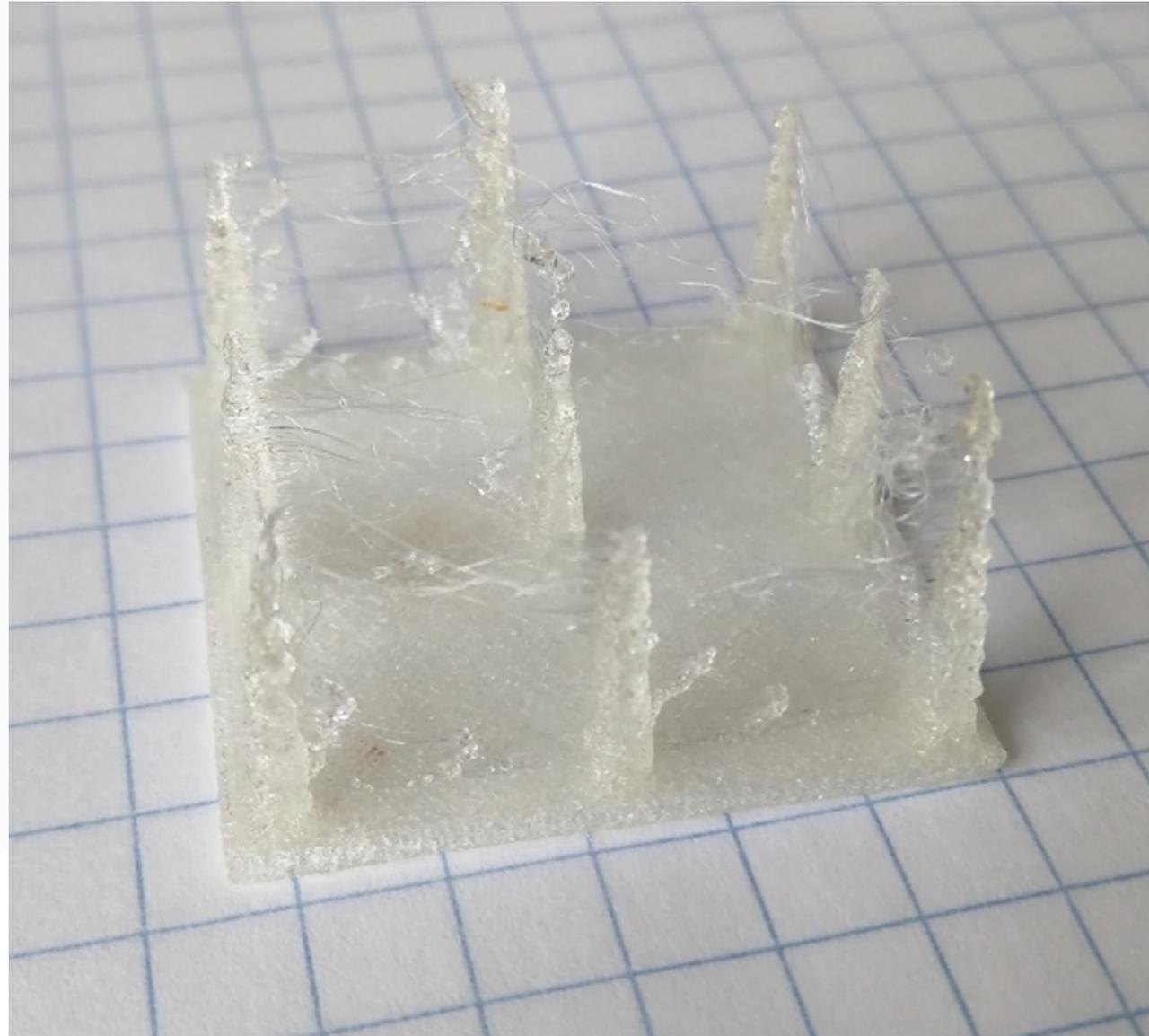
3D Printer	Layer Height (mm)	Speed (mm/s)	Temp (C)	Build Plate Temp (C)
Type A Machines Series 1 2014	.2	50	240	80
Makerbot Replicator 2X	.15	40	230	80
Flashforge Dreamer **	.2	50	240	80
AirWolf	.2	15	225	55

Which printer to use?



madesolid.com/support/printer

Calibration & Troubleshooting



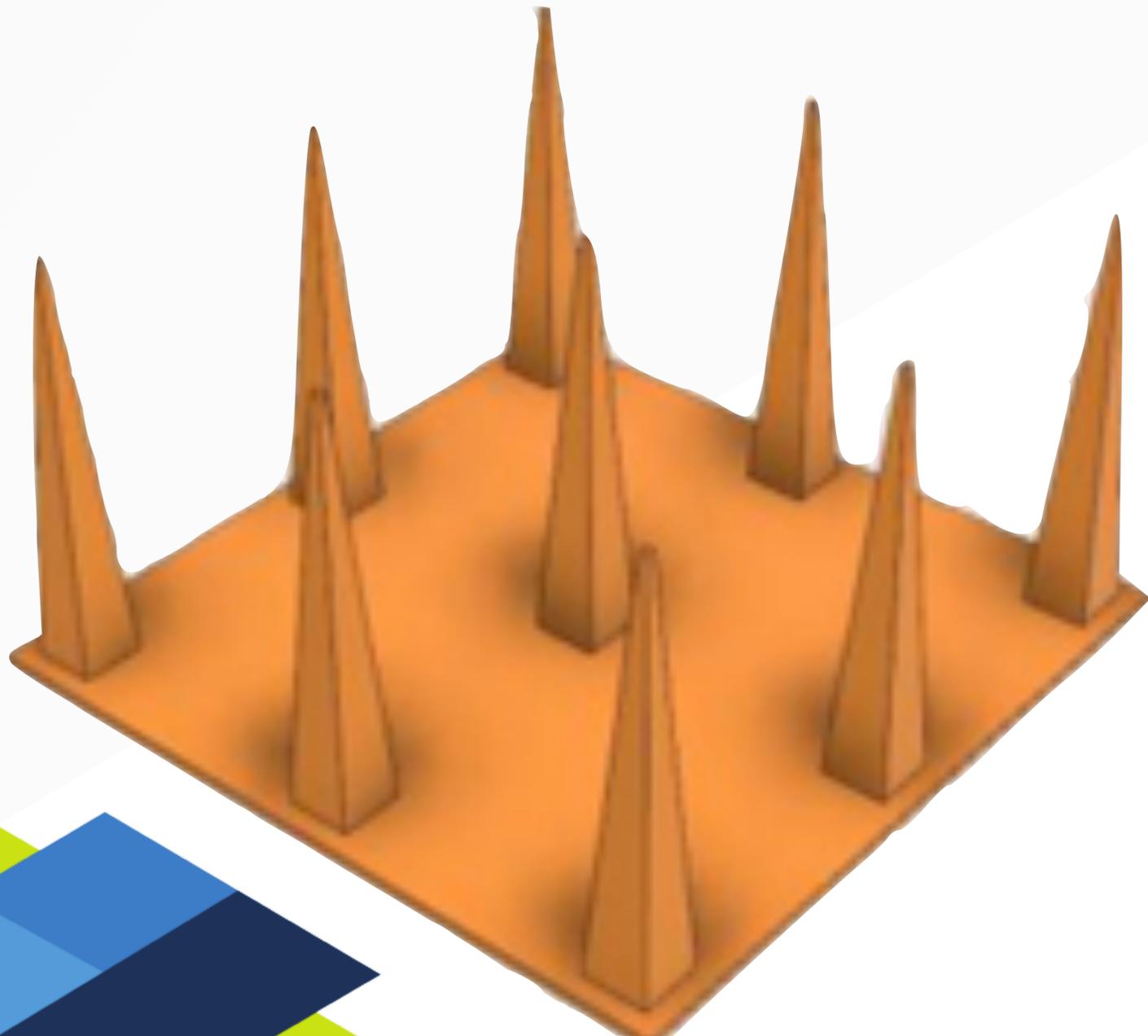
Something's Not Right...

- Most printers need setting adjustments successful prints.
- Temperature Modifications
- Decreasing Print Speeds
- Modifying Flow of Filament

Calibration Prints for Co-Polyester Filaments

Fine Positive Spaces

- Evaluate based on the quality of deposition on spires



Calibration Prints for Copolyester Filaments



Overhang Performance

- Allows evaluation of overhangs, wobbling extrusions, and infill hemorrhaging

Calibration Prints for Copolyester Filaments

Mechanical Resonance in Z

- Exposes resonance issues if a noticeable loss of registration is seen from the top



Calibration Prints for Copolyester Filaments

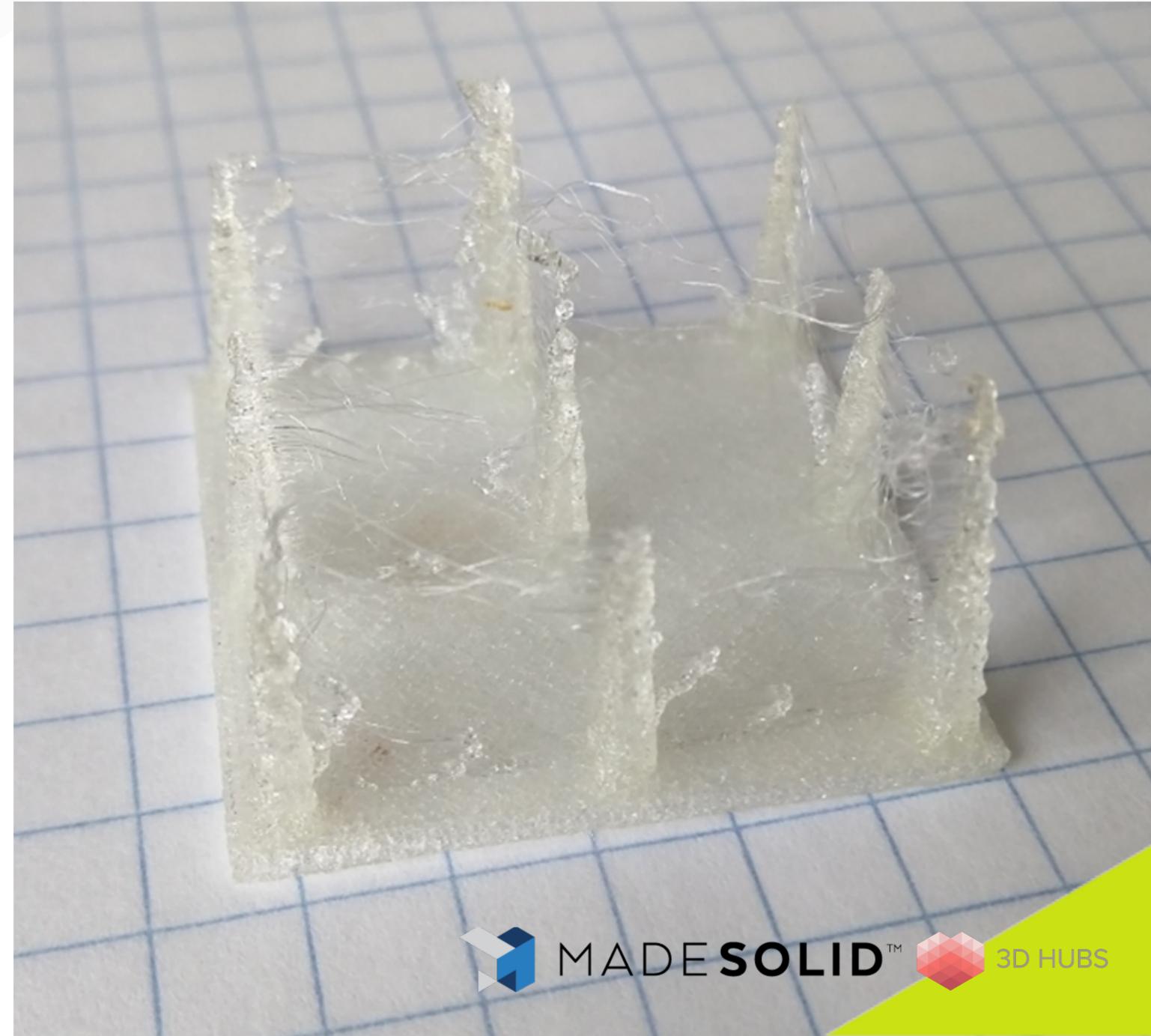


Mechanical Resonance in Z

- Difference between X and Y measurement indicates backlash in the system

Temperature Modification

- PET+ settings generally not far off PLA settings
- Usually 10 - 50°C hotter
- Poor layer adhesion?
Try extruding at a higher temperature



Decreasing Print Speed

- Slowing down Print Speed (or Feed Rate) to help reduce poor layer adhesion. detail.



Modifying the Flow

Flaky intermittent layers?

increase the flow

Too much leftover material or need to

increase heat settings?

decrease the flow



Special Requirements & General 3D Printing Tips

Bowden Filament Jamming

- Flex Filament jams interior of feeder drive
- 2.85mm FlexSolid that should resolve this issue.
- Delta printer head (Spiderbot) must be modified



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MadeSolid Talk

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POPULAR

NEW

MY TAGS

START A NEW /MADESOLID THREAD

▲ 0 ▼ New 250ml Size Bottles of MadeSolid Resin now Available

Hey Everyone! We now have 250ml size bottles of MadeSolid's popular brands like Vorex in Black, Orange, Grey, White, and Clear. We also have the same size bottles for CastSolid and all of the MS Resin v2 colors of Blue, Black, White, and



MadeSolid01

12 hours ago

0 comments

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/Castable Resin

/Formlabs

/SLA

▲ 1 ▼ Introducing Vorex Clear!

Want a clear resin that doesn't yellow over time? Check out our new vorex clear in a head to head test with Formlabs Clear @Nikki, want to add this to our blend test? Clear Marvin for the win!



MadeSolid01

22 days ago

1 comment (1 new)

/MadeSolid

/Filament

MadeSolid Talk

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About MadeSolid

MadeSolid was founded to discover and deliver materials that make it easy for anyone to turn creative ideas into physical form. MadeSolid's advanced materials are easily scaled and integrated into every phase of the product lifecycle, from early prototyping to full-scale production.

My Tags

/Formlabs

/New York



MADE SOLID™



3D HUBS

Where to get more



MadeSolid is the producer of a wide range of advanced materials including 3 different types of Resin and two ranges of Filaments.

10%

MATERIAL DISCOUNT

Level	Discount
1 - Rookie (1 order completed)	10%
2 - Starter (5 orders completed)	15%
3 - Intermediate (25 orders completed)	20%
4 - Professional (125 orders completed)	25%

Enjoy Your FlexSolid Filament!

Do you have questions, comments or would you like to show off you prints, find us at www.3dhubs.com/talk/madesolid

Thank you!!

