Volumetric 3D Printing

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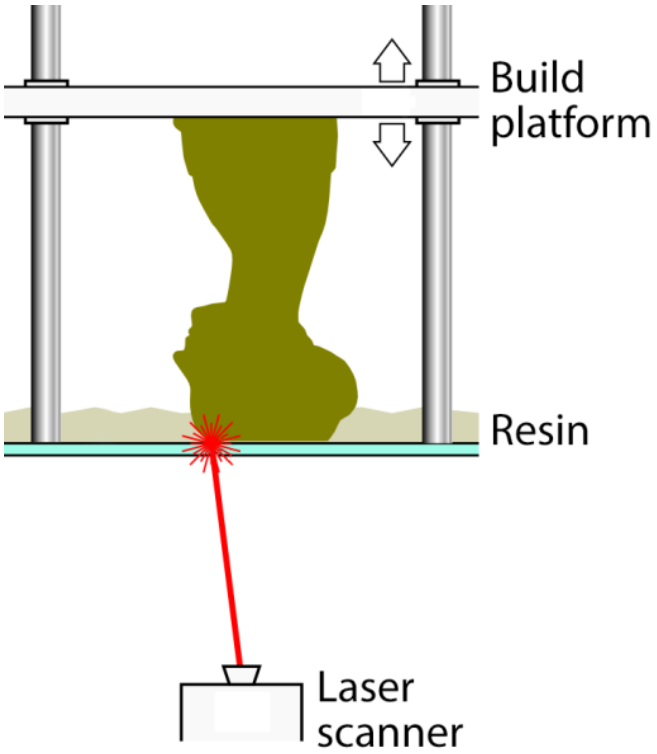
Existing 3D printers are actually 2D printers.

Layer-by-layer printing

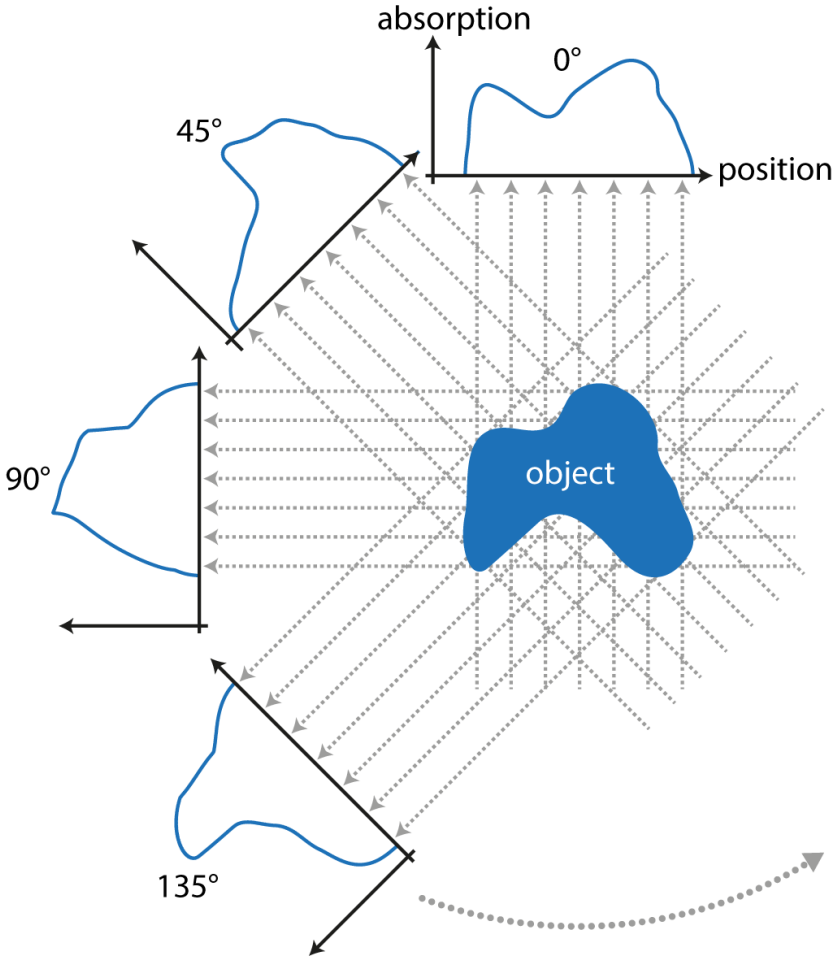


10 - 300 mm per hour

Image: https://en.wikipedia.org/wiki/Stereolithography

Volumetric 3D printing is inspired by medical tomography.

CT scanner

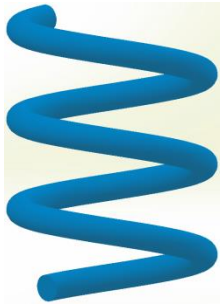


Radon transform

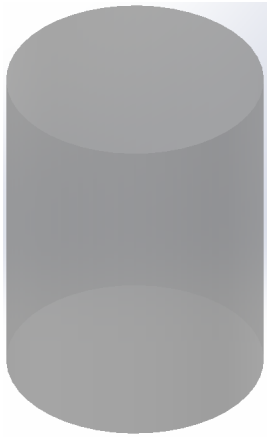
(relates an object and its projections)

Image: https://en.wikipedia.org/wiki/CT_scan

The object is created by projections through the entire *volume* of the resin.

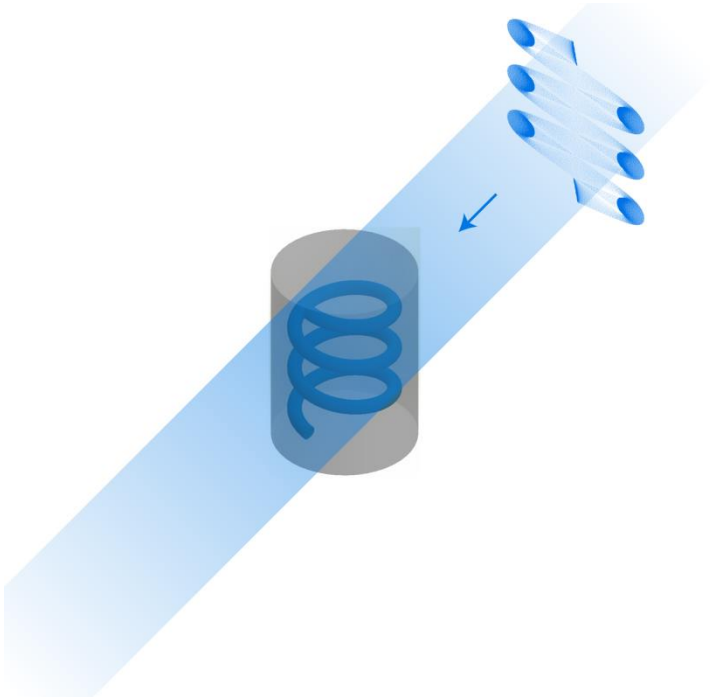


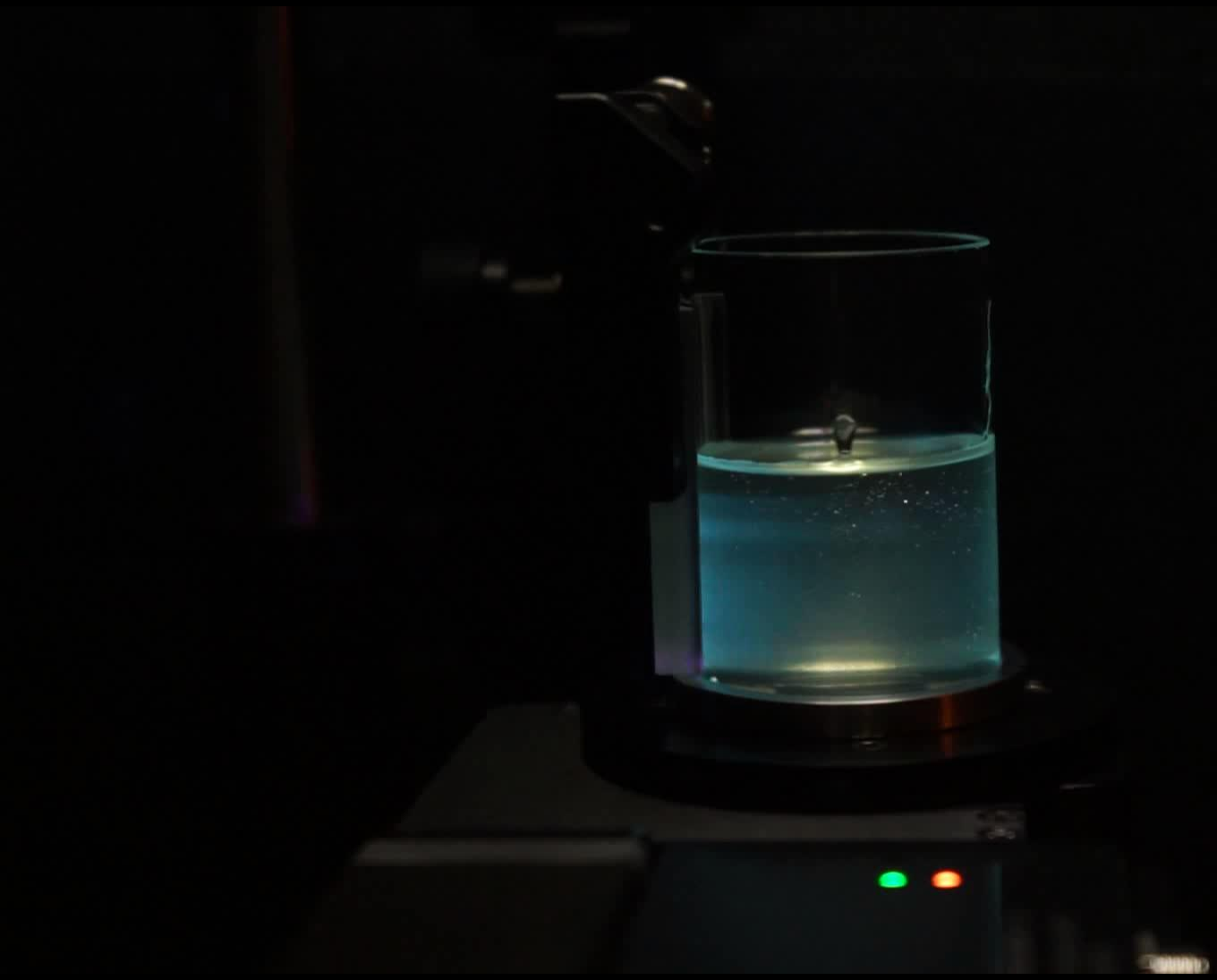
Object to print



Resin

The object is created by projections through the entire *volume* of the resin.





Full video: go.epfl.ch/vol3d

Results with hard acrylics

Yoda

Car

Spring

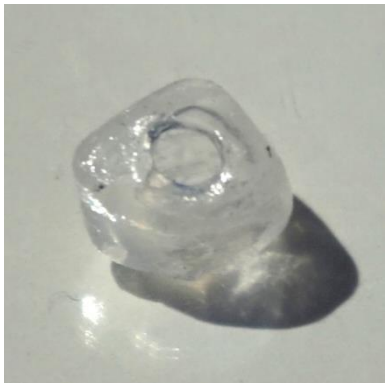
Notre Dame

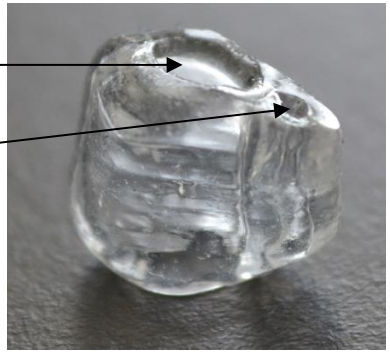
BCC structure

Ear canal imprint
(for hearing aids)

Results with silicone

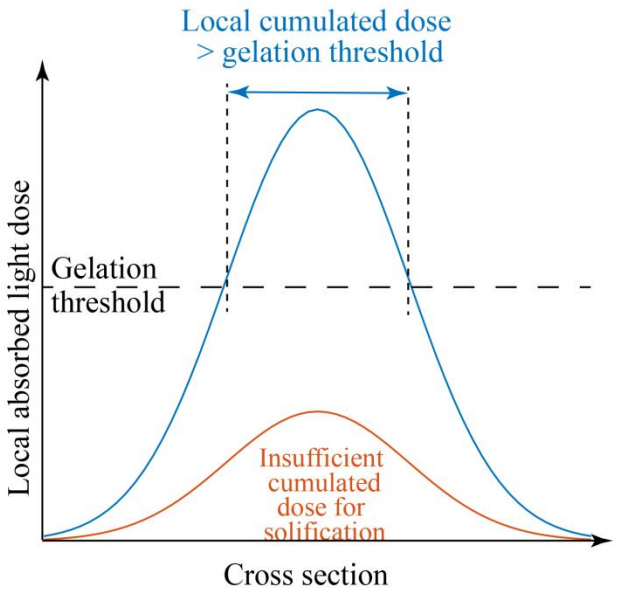
Soft hearing aid shell



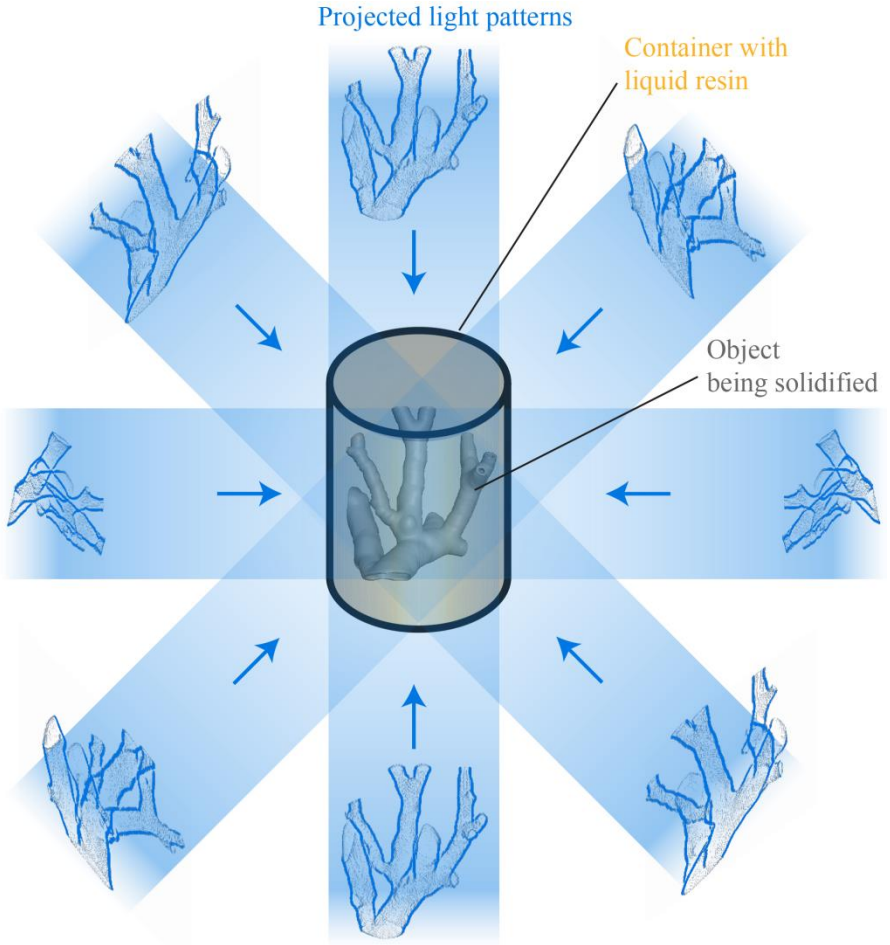


Arterial junction model

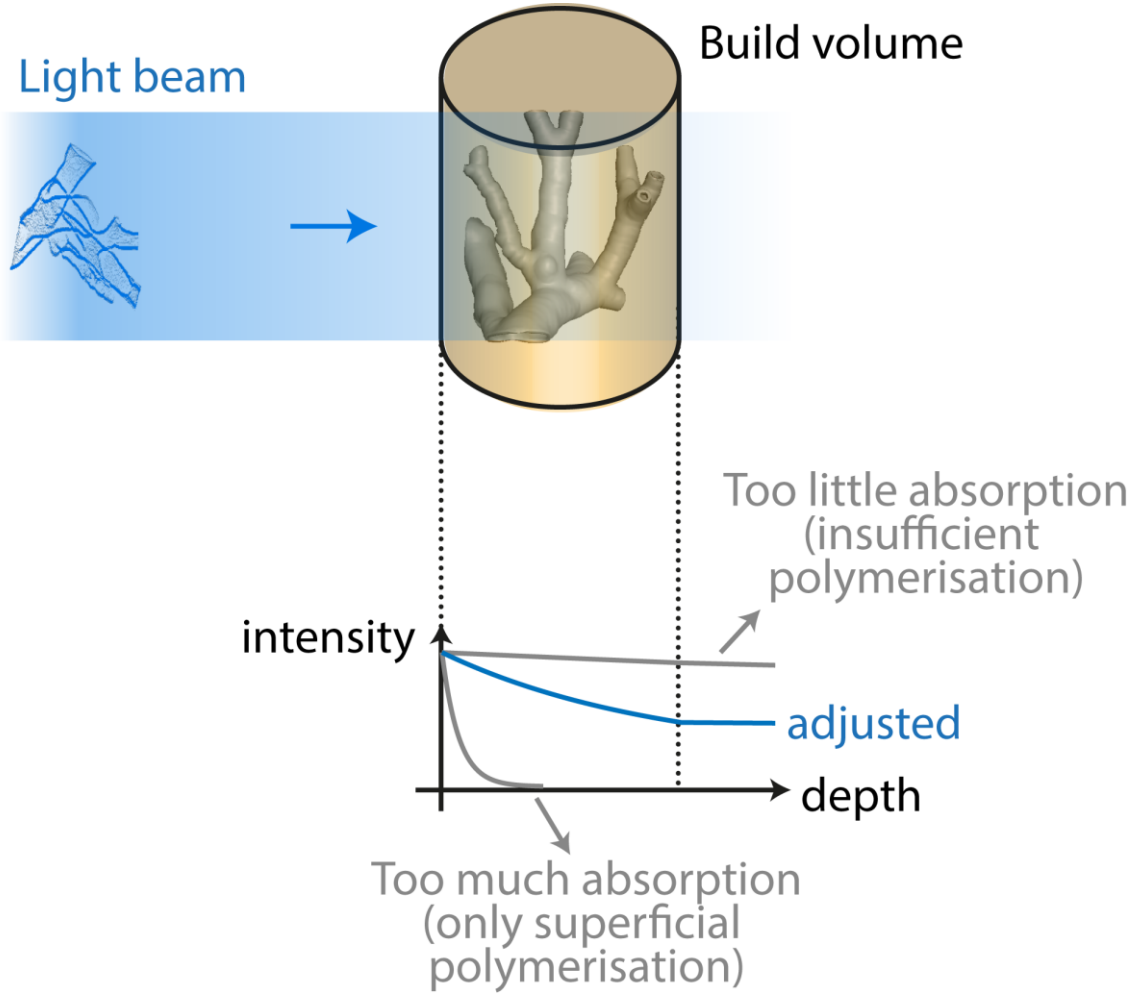
The solidification is confined by exploiting the polymerization threshold.



The gelation threshold
allows to solidify a local polymer volume
through cumulative irradiation



The absorption of the resin is adjusted for the size of the build volume.



Business application

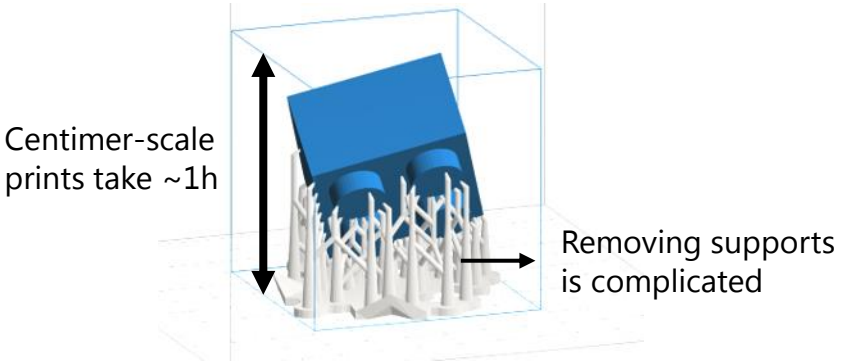
Consumers want products tailored to them …

Custom hearing aids

Custom shoes or insoles

Custom jewelry

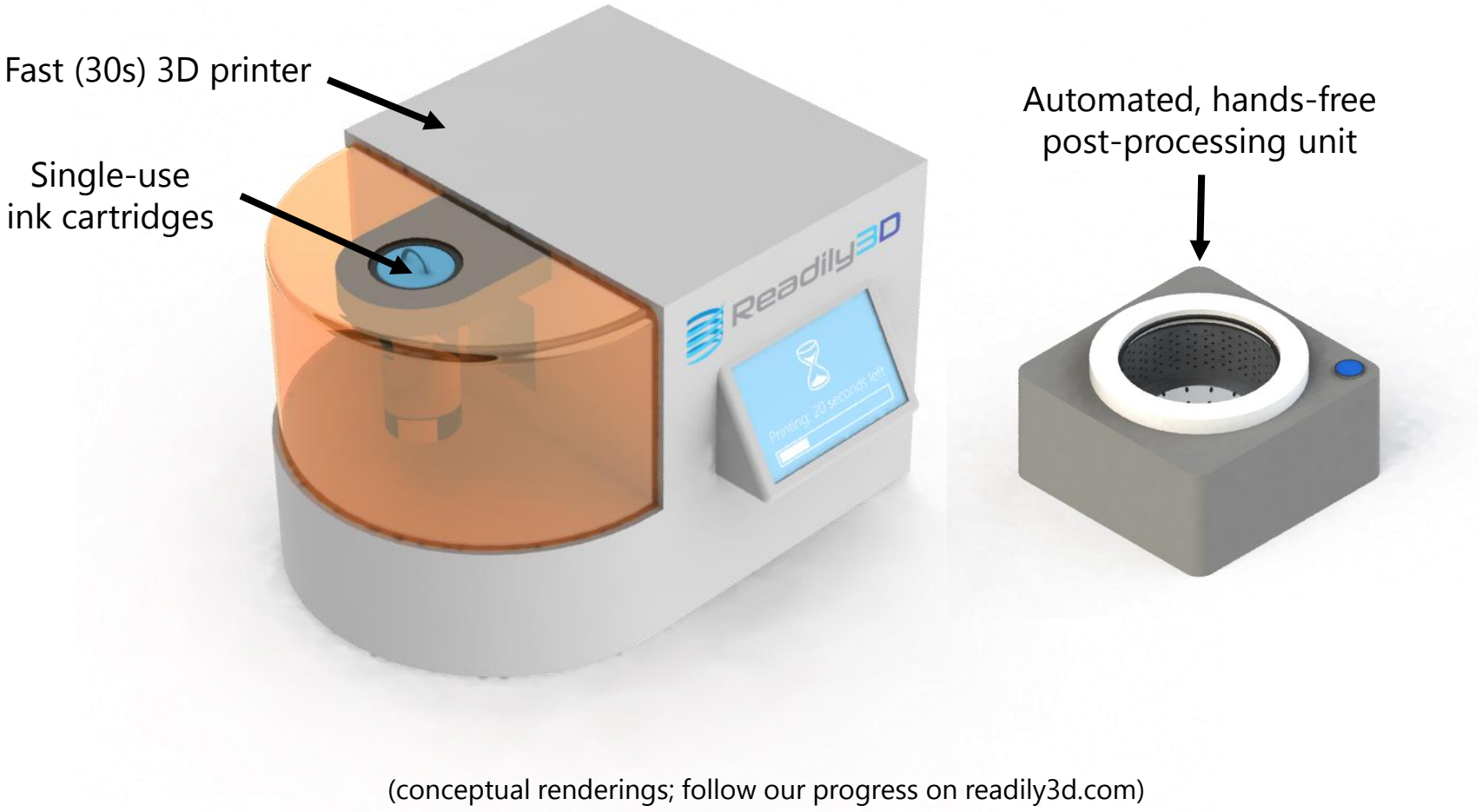
… but conventional 3D printing requires skilled operators and long turnaround times.



Images: wikipedia.org, New Balance

Our vision

Readily3D: a volumetric 3D printing system directly usable in shops.



(conceptual renderings; follow our progress on readily3d.com)

Team

Damien Loterie, Co-founder & CEO

Graduated from EPFL in 2017 with a PhD in microenginering. He developed Readily3D's algorithm for volumetric 3D printing. After having secured initial funding for Readily3D, Damien now works on establishing new business partnerships.

Paul Delrot, Co-founder & CTO

Holds a PhD in Photonics from EPFL. During his PhD, Paul pioneered micro-additive manufacturing through endoscopic probes. Paul co-authored 8 publications and 3 patent applications. He developed the resins for Readily3D and is building our first portable prototype.

Christophe Moser, Co-founder & advisor

Professor at EPFL and entrepreneur. Chris co-founded and was CEO of Ondax (California) from 2000 to 2010 (sold to Coherent in 2018). At EPFL he co-founded Composyt Light Labs (sold to Intel in 2014). He advises us and finds resources for the project via his network.

New team members (2019):
Dr. Nikolaos Nianias, polymer scientist. EPFL/Max Planck PhD graduate.
Dr. Harry van der Laan, polymer scientist. University of Michian PhD graduate.

Support

SWISS NATIONAL SCIENCE FOUNDATION