

3D PRINTING TECHNOLOGY

By johnnytrapano & Madaeon

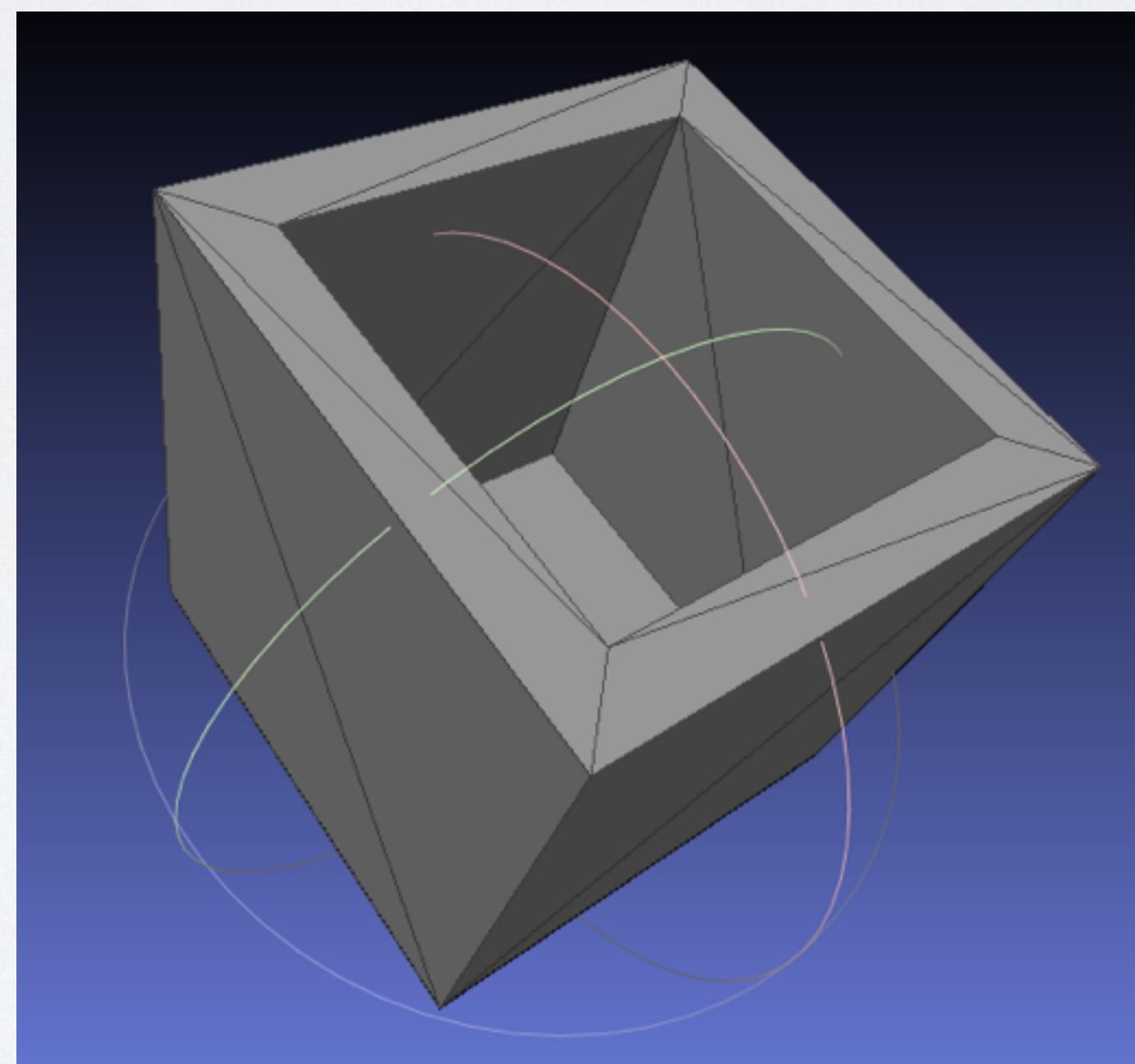
Hackatron 

STL

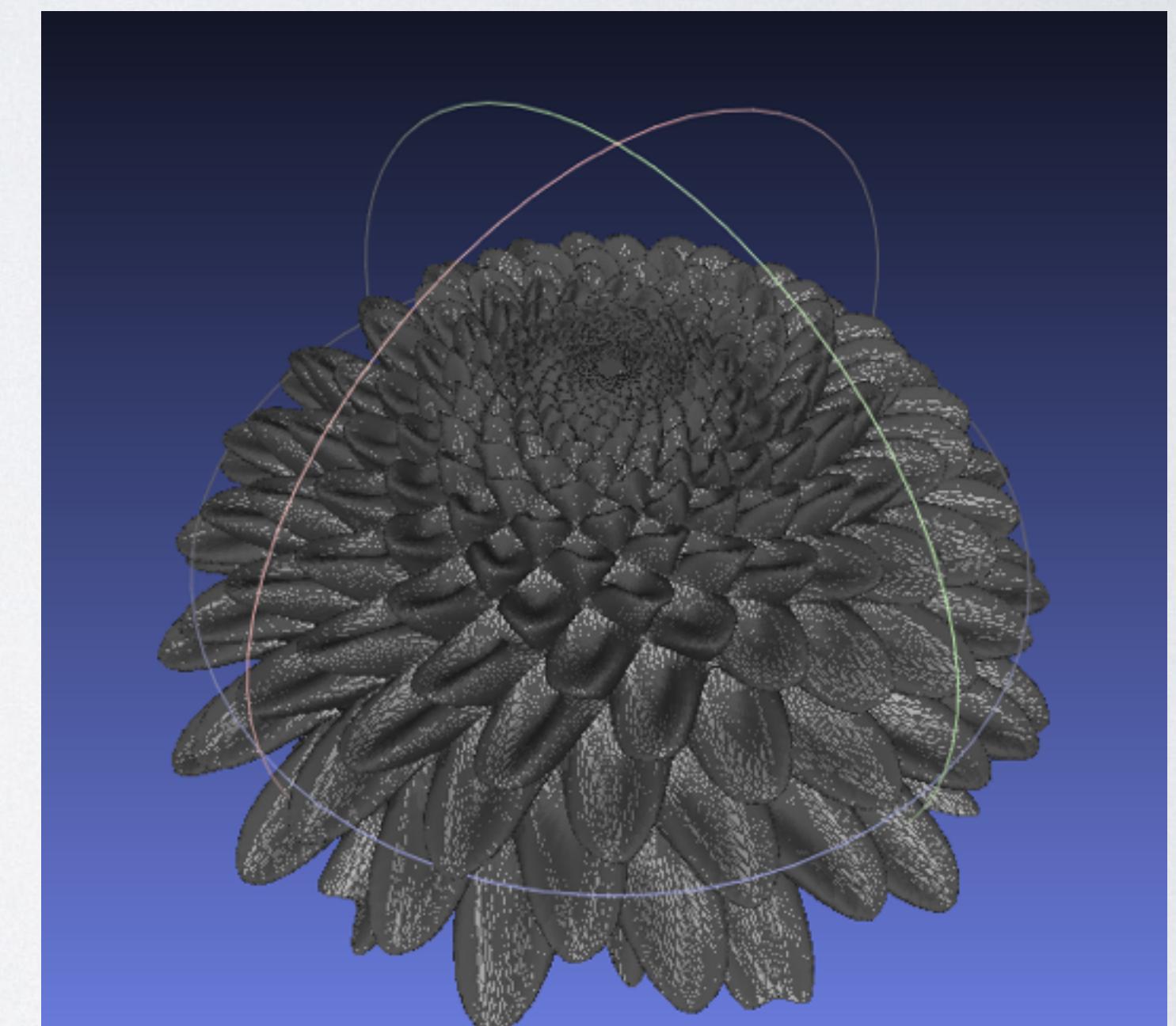
STL (Standard Tessellation Language)

Mesh di triangoli

```
solid name
facet normal ni nj nk
    outer loop
        vertex v1x v1y v1z
        vertex v2x v2y v2z
        vertex v3x v3y v3z
    endloop
endfacet
endsolid name
```



28 Triangoli



191284 Triangoli

TIPOLOGIE DI STAMPANTI

FDM

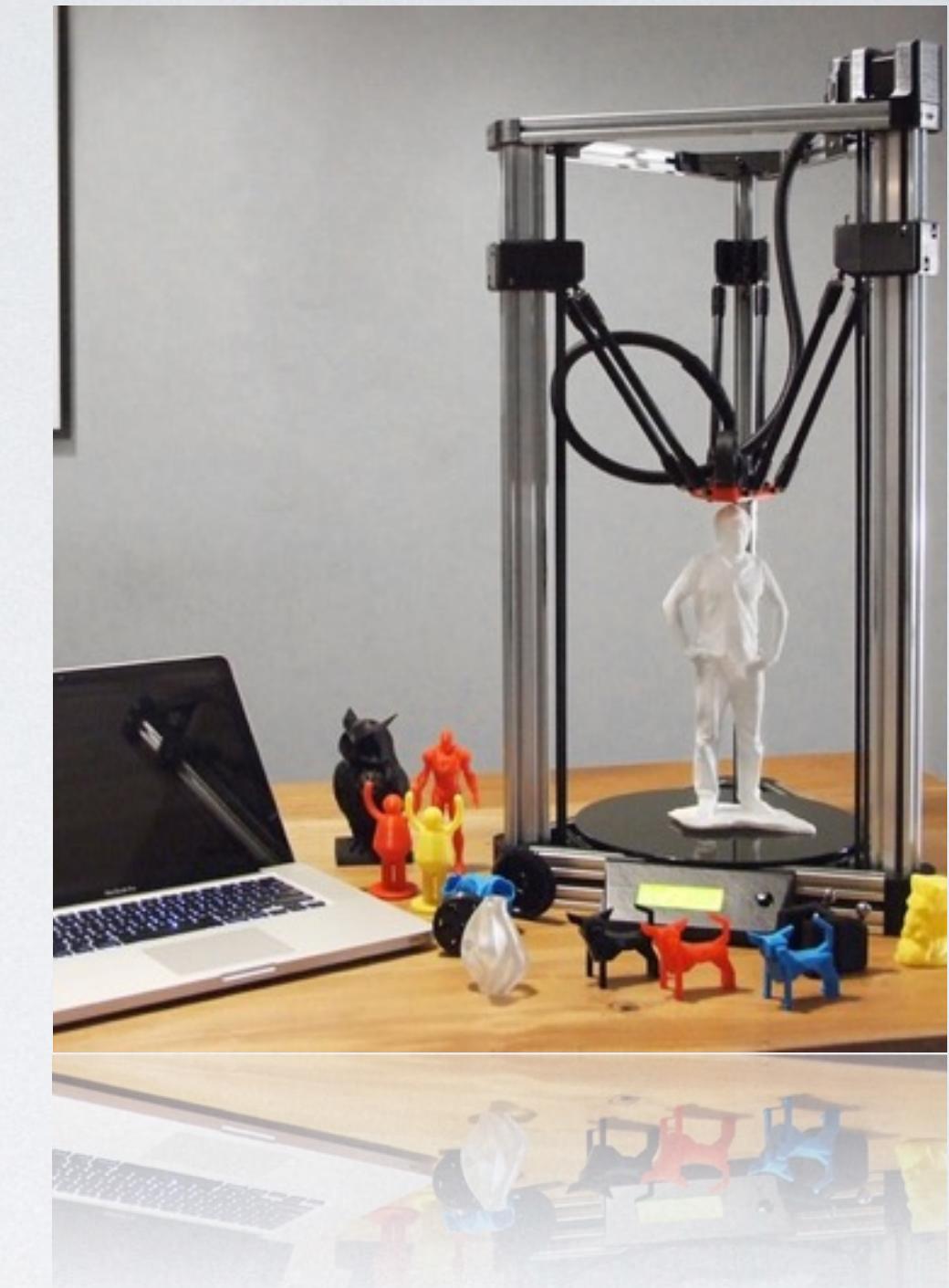
-Cartesiane (Reprap, Makerbot, Sharebot, DaVinci)



-Delta (Rostock, Kossel)

DLP

-Lumifold, Lumipocket



COMPONENTI DI UNA STAMPANTE 3D FDM

- Hardware vario (Viti, barre filettate, dadi)
- Barre lisce e cuscinetti
- Trasmissione del moto (cinghie e pulegge o barre filettate)
- Estrusore
- Motori passo passo
- Arduino Mega
- Shield RAMPS
- Motor drivers
- Endstops
- Heated bed

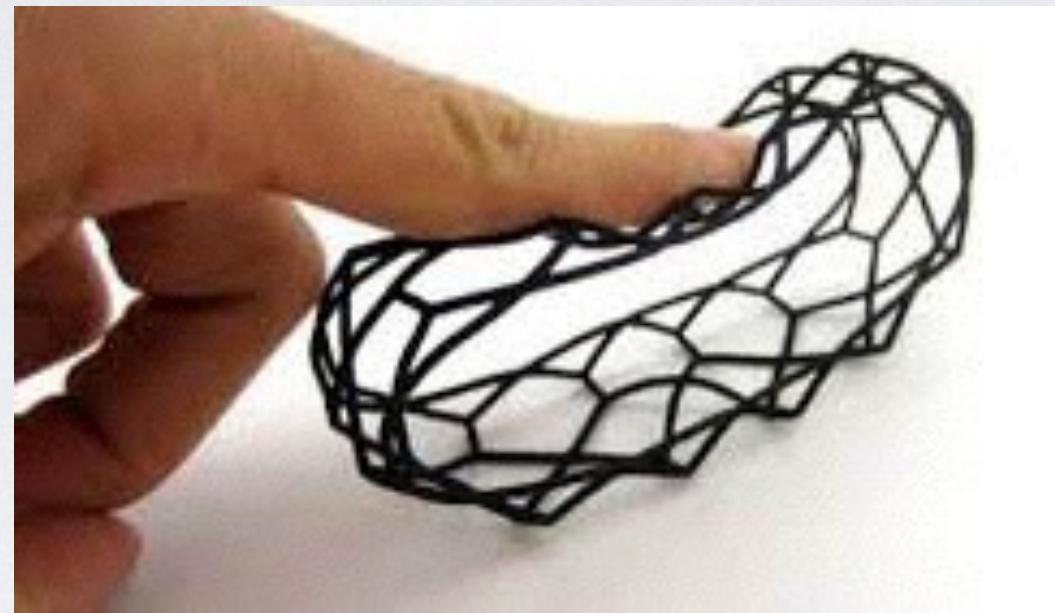


@johnnytrapano
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MATERIALI UTILIZZABILI - I



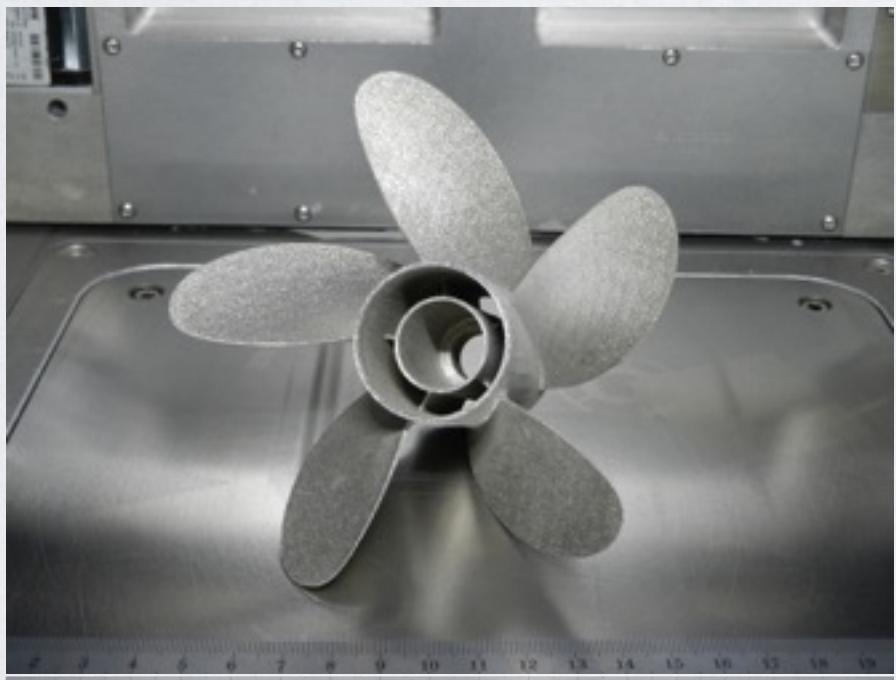
PLA e ABS



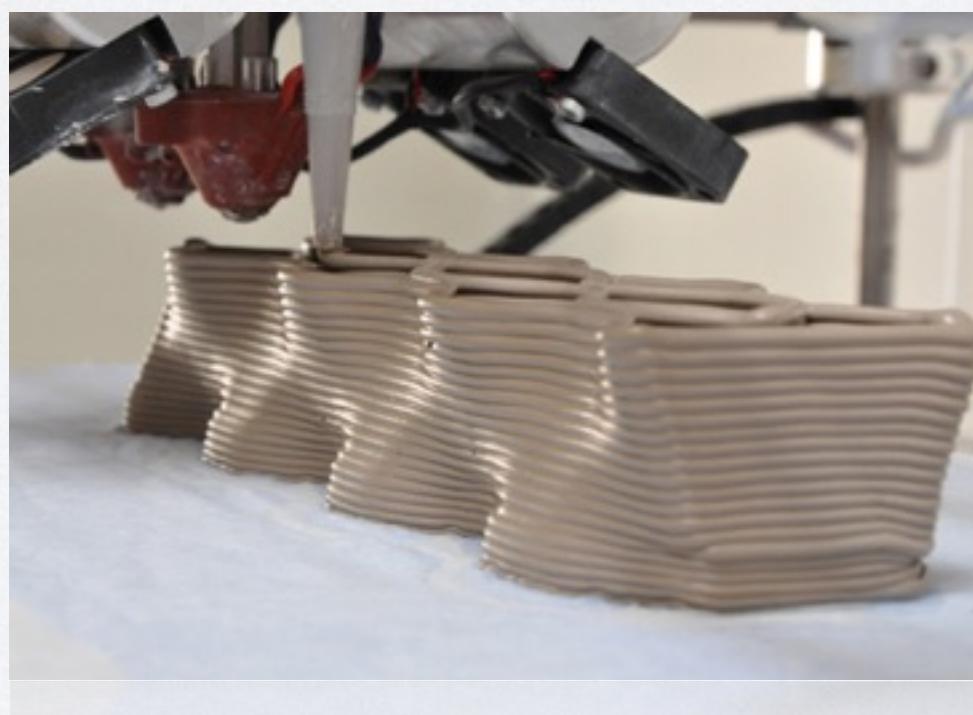
Gomma



Woodfil



Metalli



Argilla



Collagene

MATERIALI UTILIZZABILI - II

Giornali e vinavil



Cioccolato



Cemento



Carbonio



Grafene



Resine fotosensibili



APPLICAZIONI - I

-Design e architettura (prototipazione rapida e creazione di plastici e modelli)



-Edilizia (Edifici Prefabbricati)



-Medico (cuori, tessuti come pelle e ricostruzione nasi e orecchie, gessi ortopedici)



-Alimentare



APPLICAZIONI - II

-Gioielleria (castable resin)

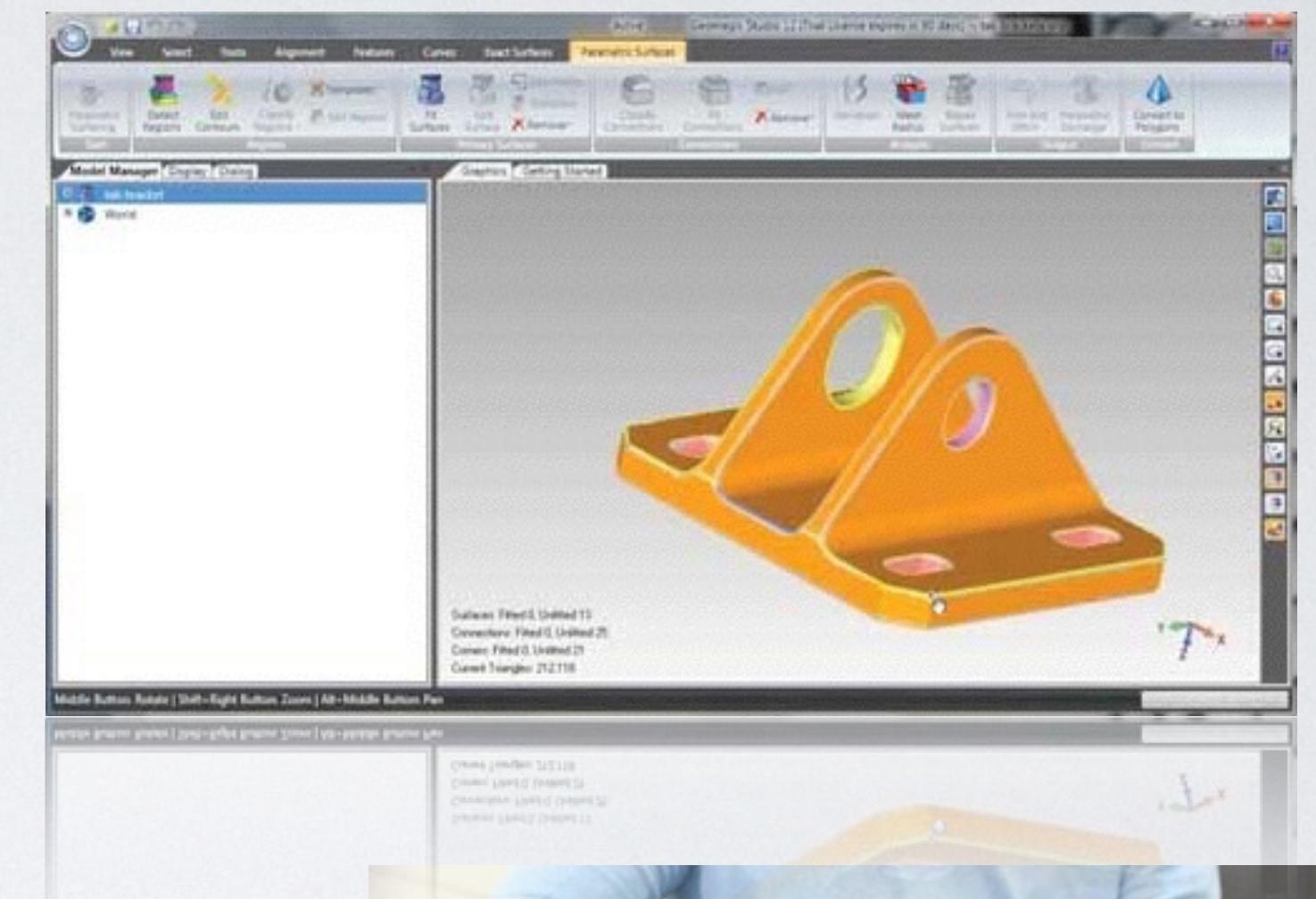
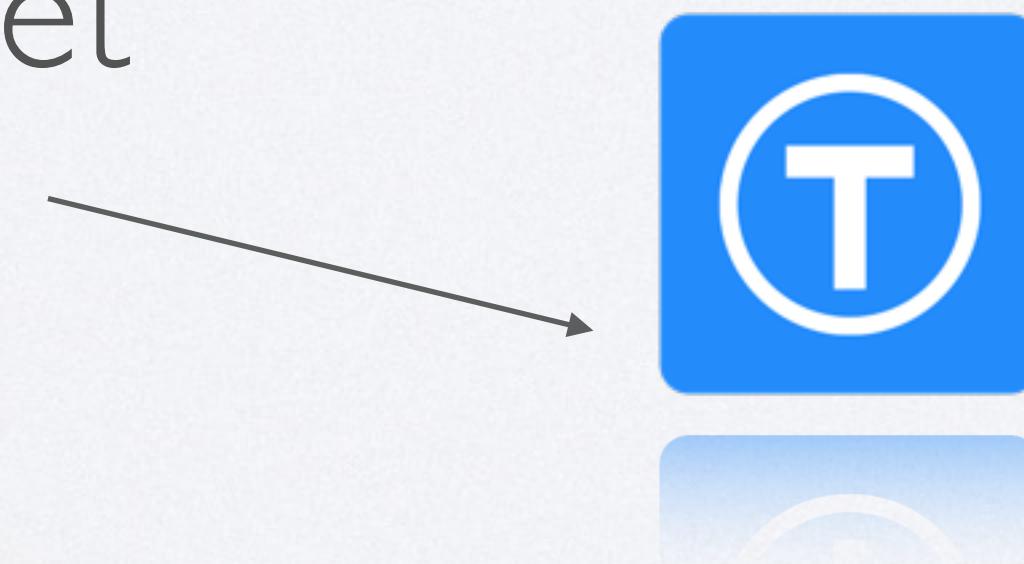


-Esplorazioni spaziali
(Made in space: startup che produce 3d printers per lo spazio attualmente in uso nella ISS)



COSA CI STAMPO?

- Disegni modellati da me (Inventor, Rhino, Solidworks, Sketchup)
- Scansioni 3D (kinect, scanner 3D)
- Modelli scaricati da internet (Thingiverse, ecc)



SOFTWARE PER LA STAMPA 3D

Slic3r



Slicing

Meshlab



Netfabb



Pronterface



Printer Monitors

Repetier Host



Cura



Lumisoftware



Slicing + Printer Monitor

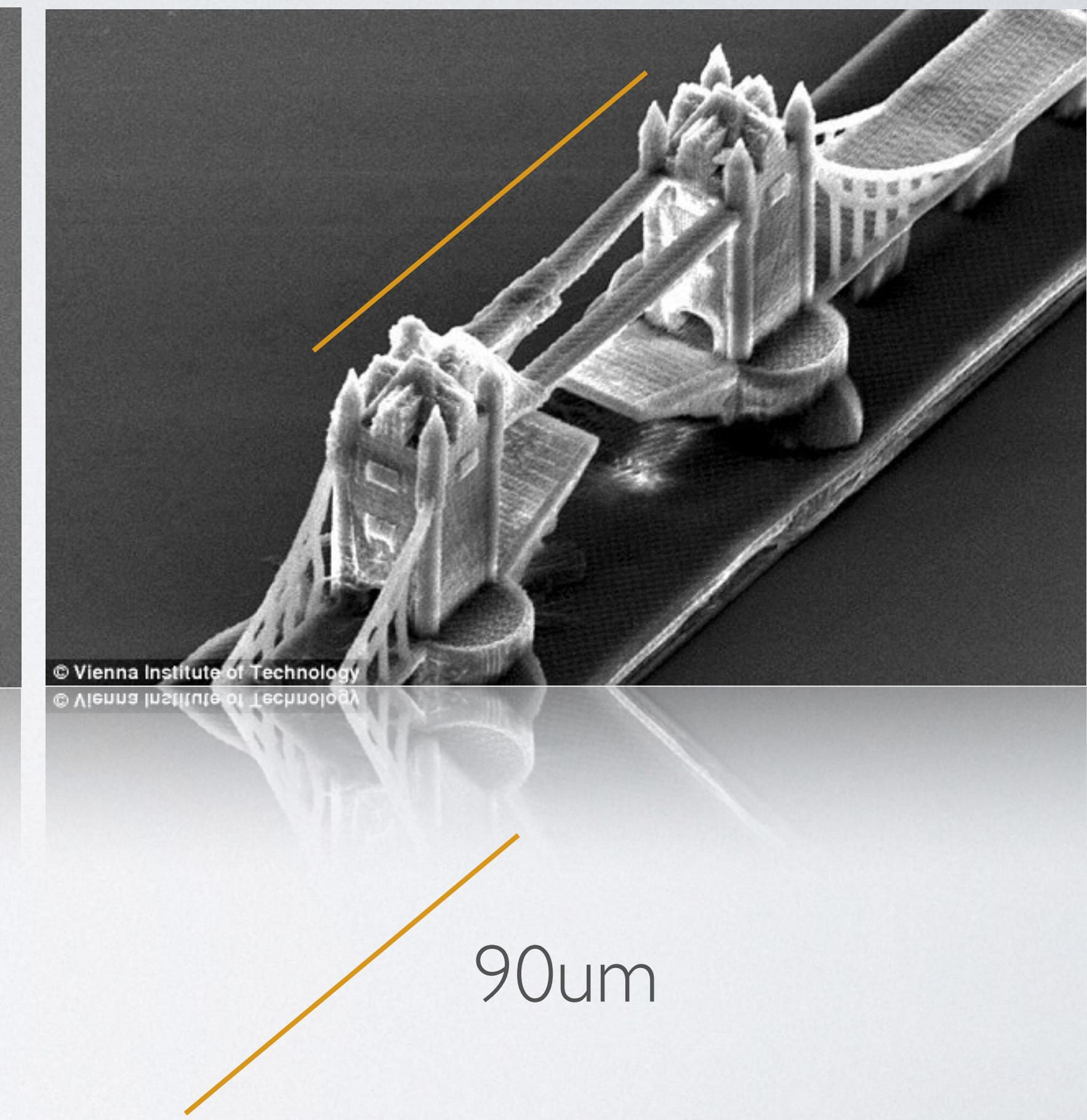
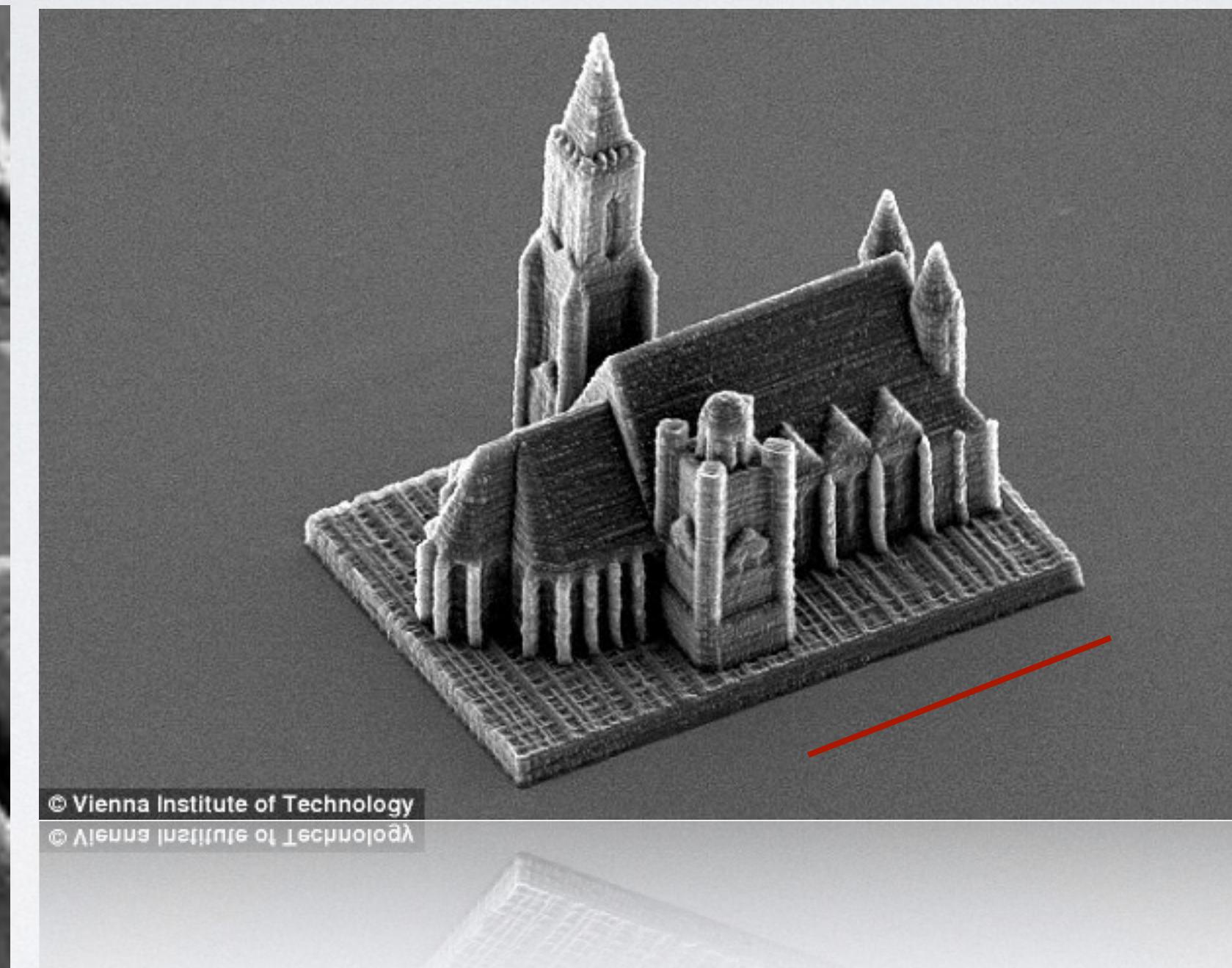
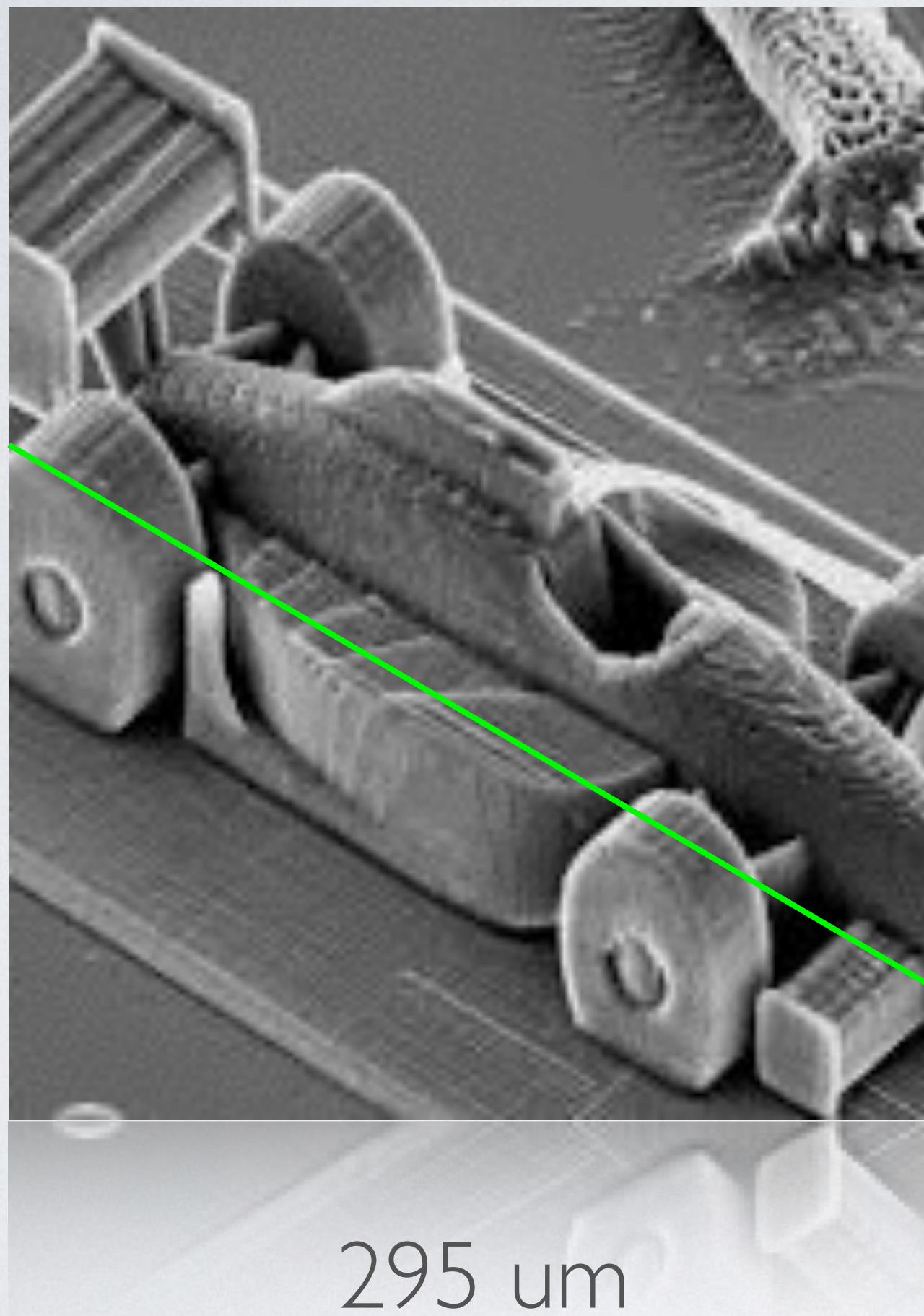
SE NON HO UNA STAMPANTE 3D?

- Compro una stampante 3D
- Costruisco una stampante 3D
- Uso un service di stampa (Shapeways, Materialize, Lumindustries)



i.materialise

STAMPE PARTICOLARI - I



STAMPE PARTICOLARI - II



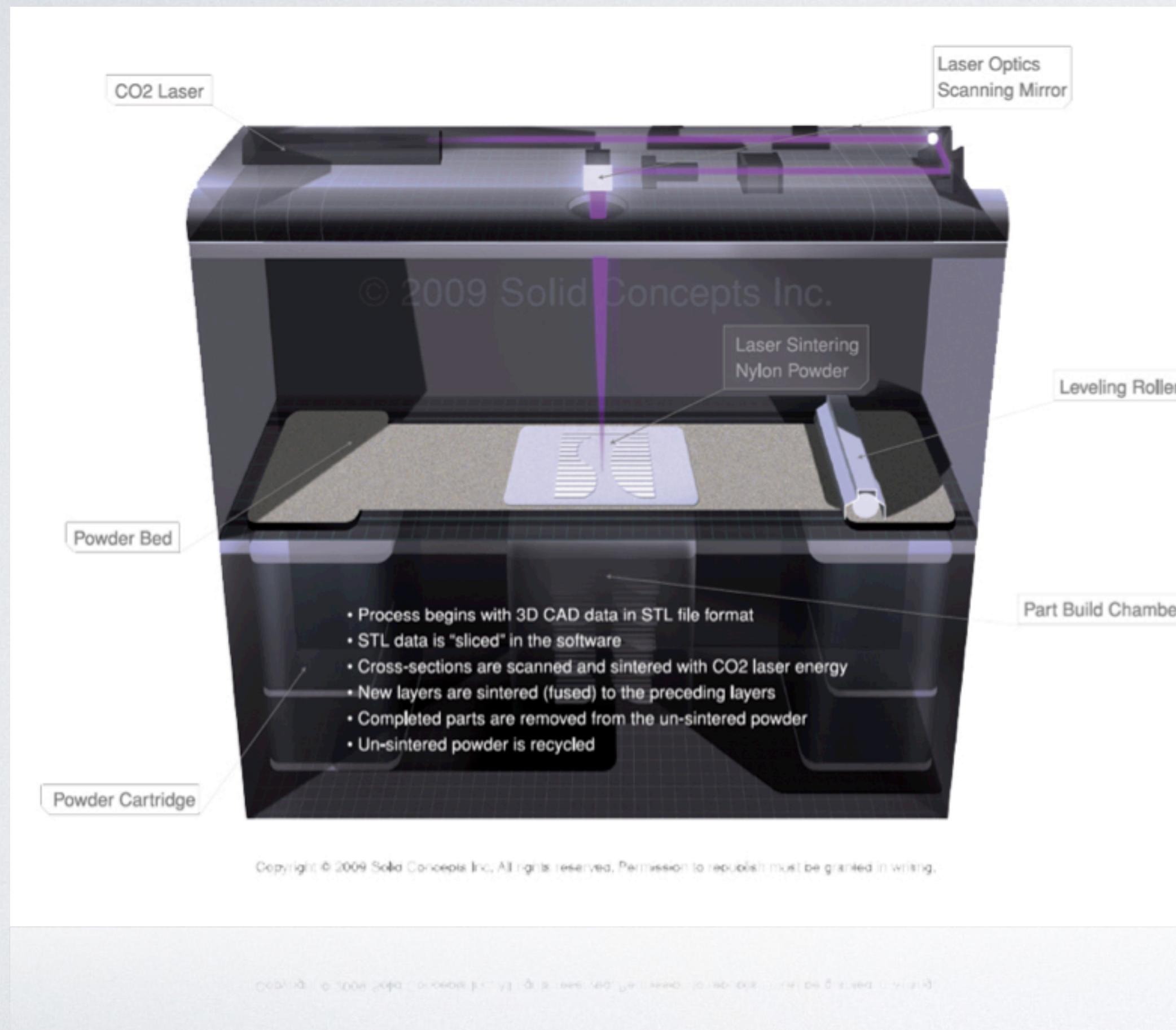
Area di stampa:
 $12 \times 12 \times 12$ m



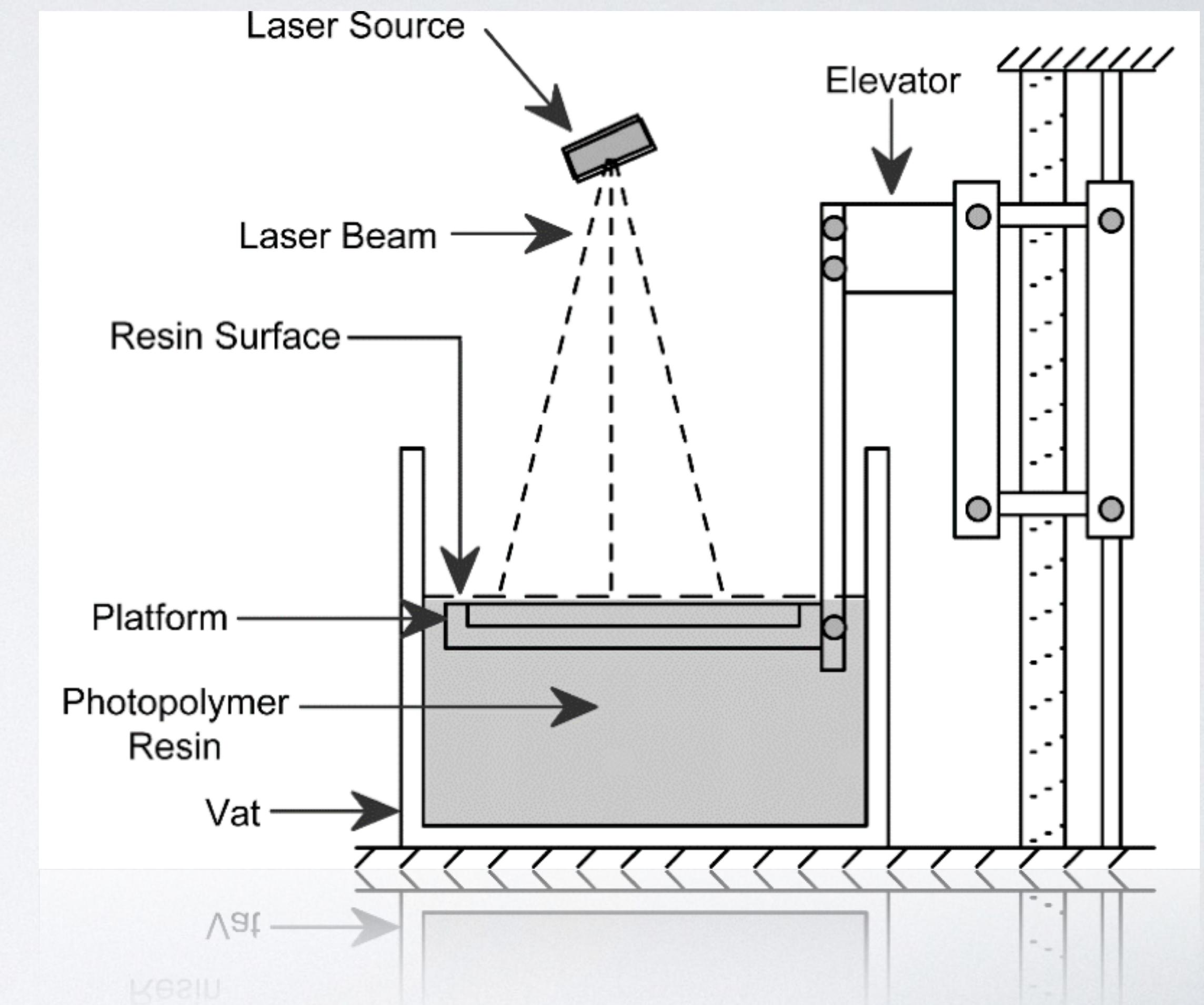
DLP

By Madaeon

SLS (SELECTIVE LASER SINTERING)



SLA (STEROLITHOGRAPHY)



PROIETTORI DLP

Requisiti minimi:

Almeno lampada da 180W

2000 lumen, risoluzione 1024x768

Raccomandato:

Full HD

2500 lumen, risoluzione 1280x720 o superiore



RESINE FOTOLETTIVE

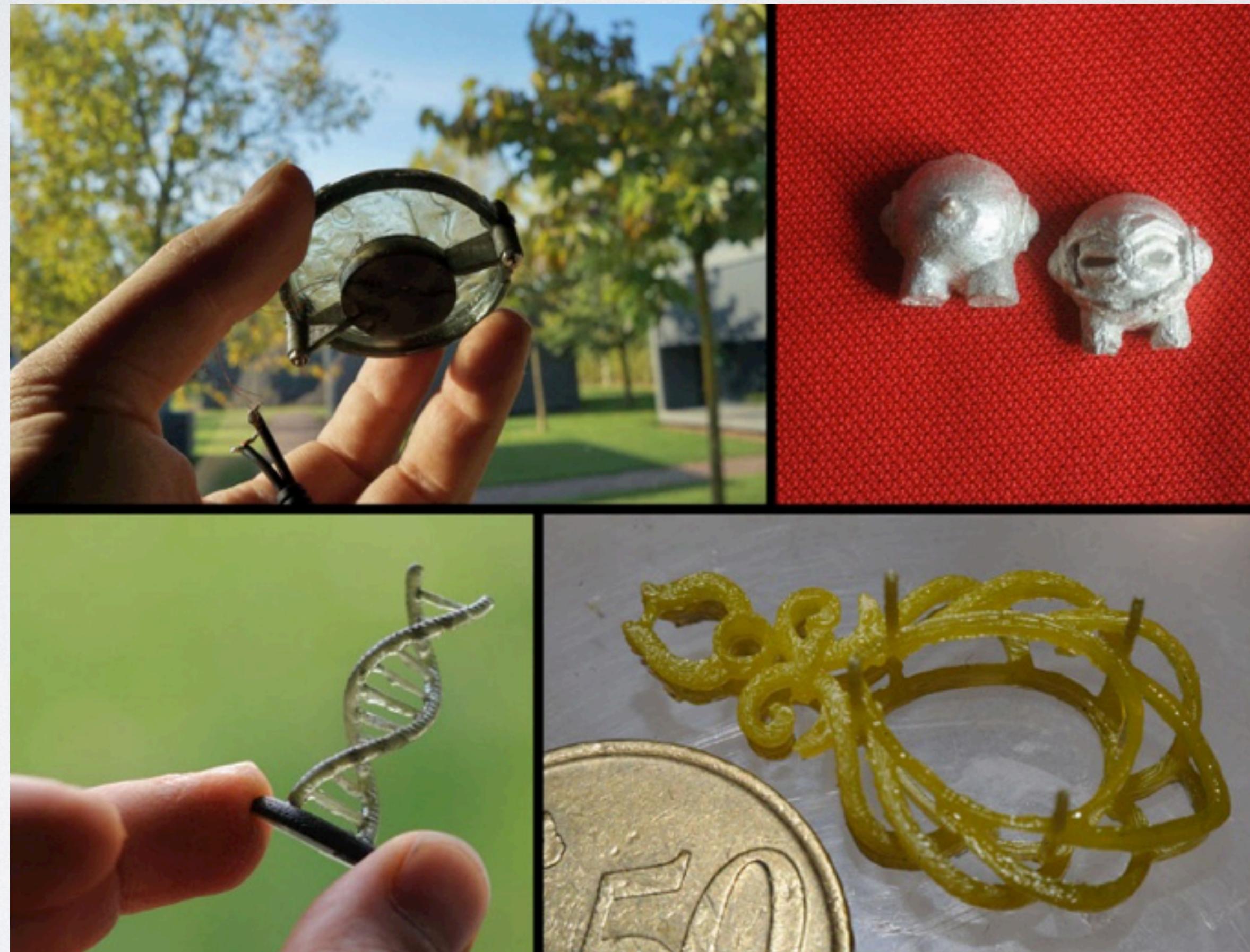
Caratteristiche:

- Inuriscono con luce che va dai 225nm ai 425nm (UV)
- Tempi di indurimento da 0.7 secondi per layers da 0.05mm
- Ritiro inferiore del 0.5%.
- Naturale resistenza contro acqua o elementi chimici

Bassa emissione di odori e irritabilità della pelle minima



ESEMPI DI OGGETTI STAMPABILI

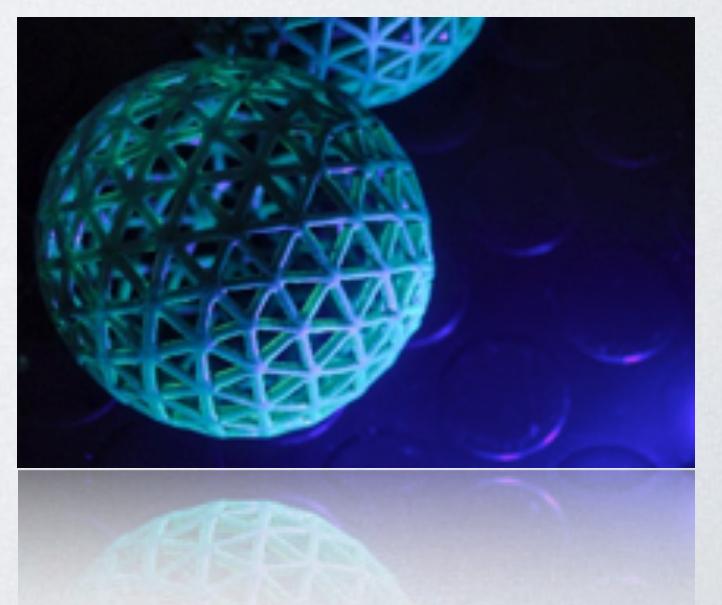
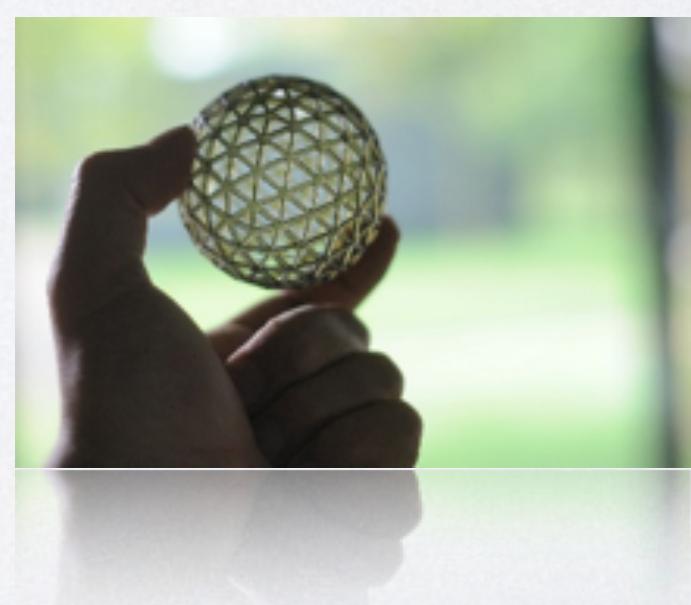
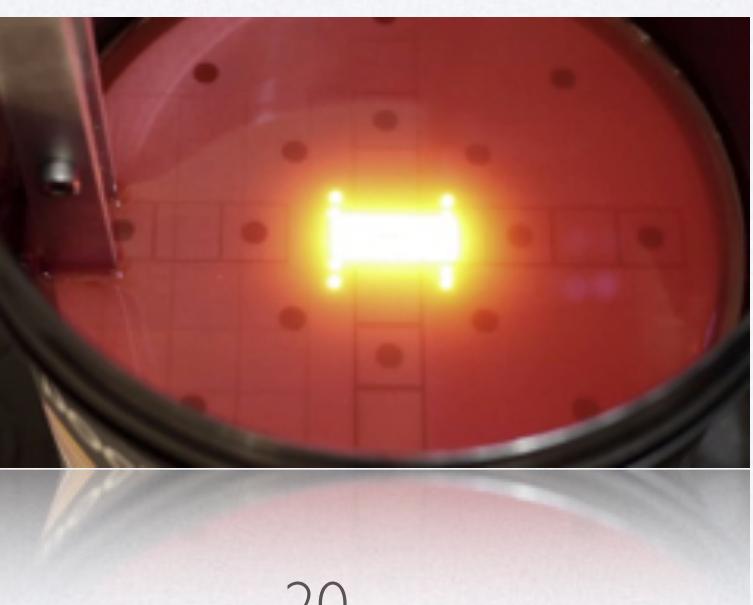
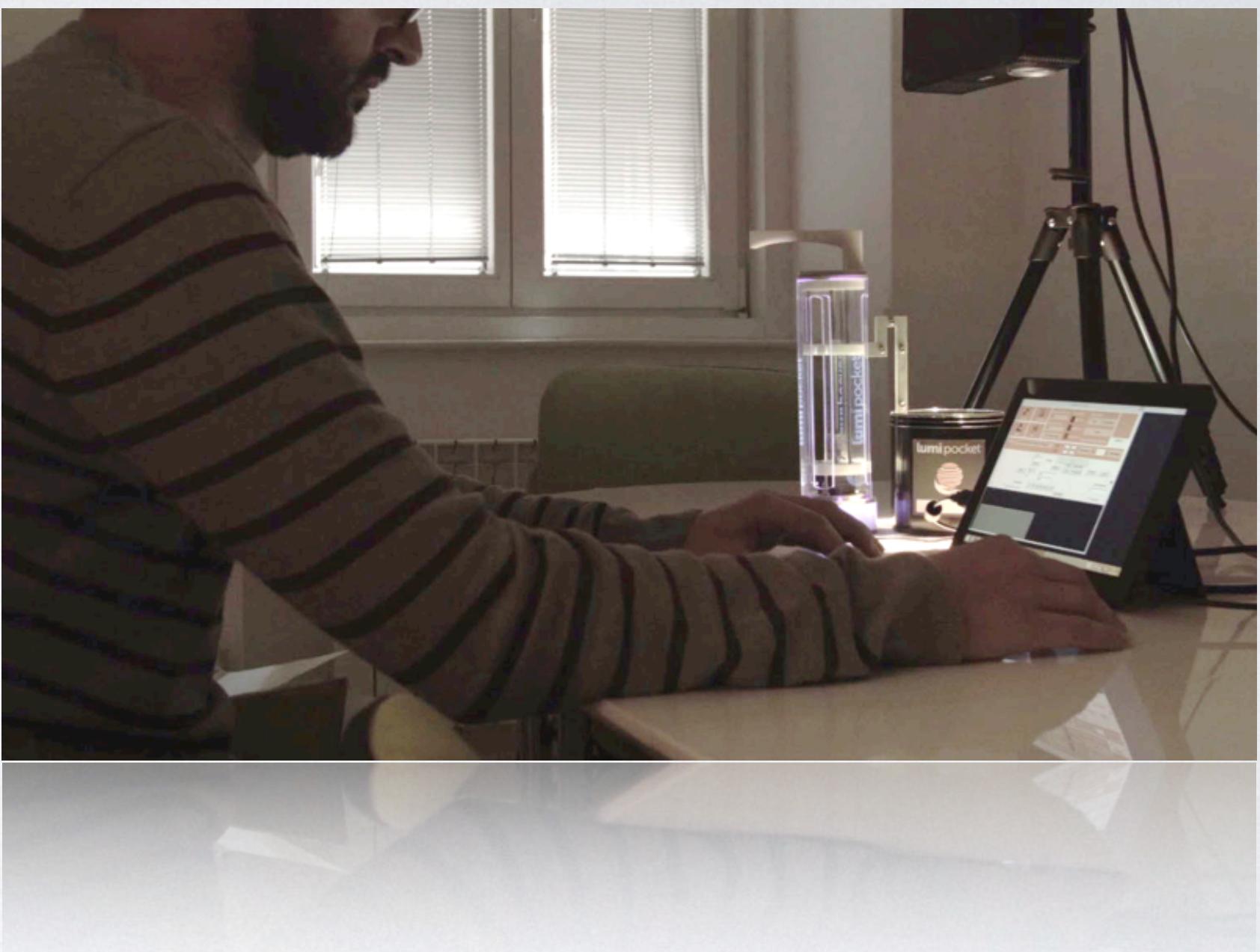


SET-UP PER LA STAMPA 3D DLP

- * LumiPocket 3D printer
- * Barattolo con resina
- * Proiettore DLP perpendicolare al barattolo
- * Distanza tra il proiettore e l'area di stampa:

da 10 a 25 cm (dipende dalla messa a fuoco del proiettore)

- * Connettore VGA o HDMI
- * Computer



GRAZIE PER L'ATTENZIONE

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