mcor technologies

Ideas into rapid reality – the low cost, eco-way

MCAE Systems, s.r.o.
Daniel Adam

Mcor Technologies Ltd: Background

- Founded in 2005

- Dr Conor MacCormack, CEO
  - Mechanical Engineer
  - Project Manager, European Airbus A380

- Fintan MacCormack, CTO
  - Electrical Engineer
  - Senior Engineer Kulicke & Soffa, Philadelphia, USA

- European HQ - Ireland, & US Facility
- Irish Government & Silicon Valley Investment

- Official Global Launch – Dec 2011

Main Goals

- Market Leader in Eco Friendly 3D Printing
- Most Accessible / Cost Effective 3D Printer
- Provide A Non Razor / Blade Alternative To The Commercial Sector

Management Team

Mcor Awards

LCEB Best Innovator Company 2008

All Island Seedcorn Competition 2009

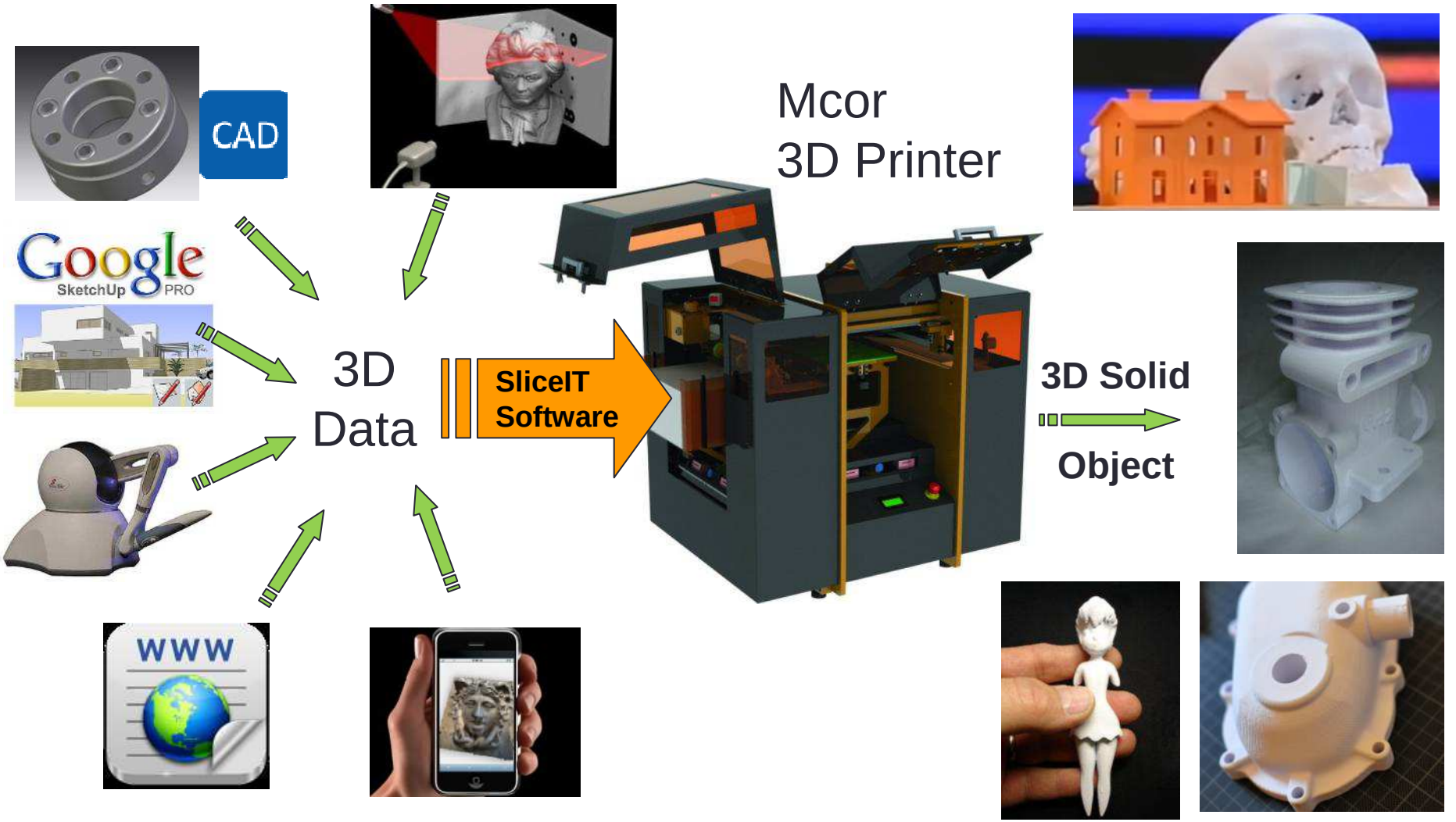
Ulster Bank Business Achievers Awards 2009

World Technology Awards: 2009

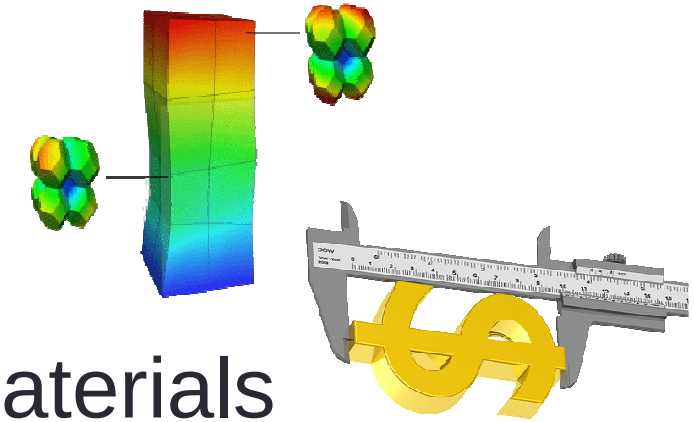
Silicon Valley Comes to Ireland 2011

Best Innovator Exhibitor, RAPID 2012

What Is 3D Printing?



Current Challenge



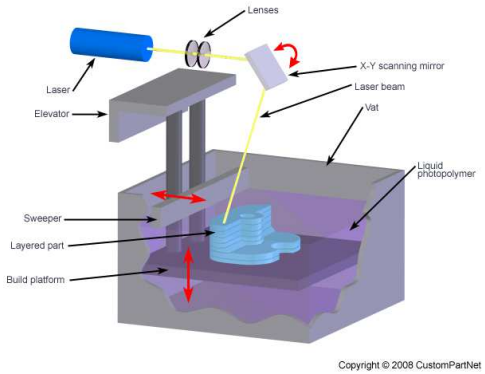
Inaccessibility to 3DP

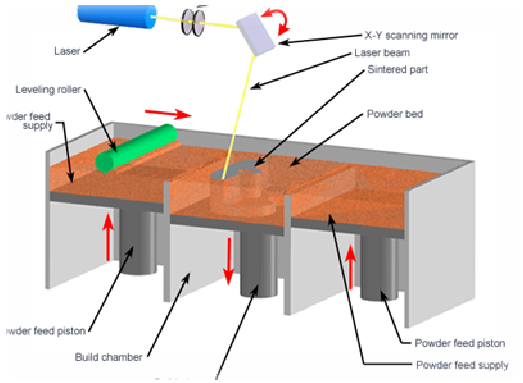
- Expensive & Unstable Materials
- Labour Intensive / Complex Processes
- Health & Safety
- Non Eco-Friendly

- Jewels… not Tools!

Current Industry Technologies

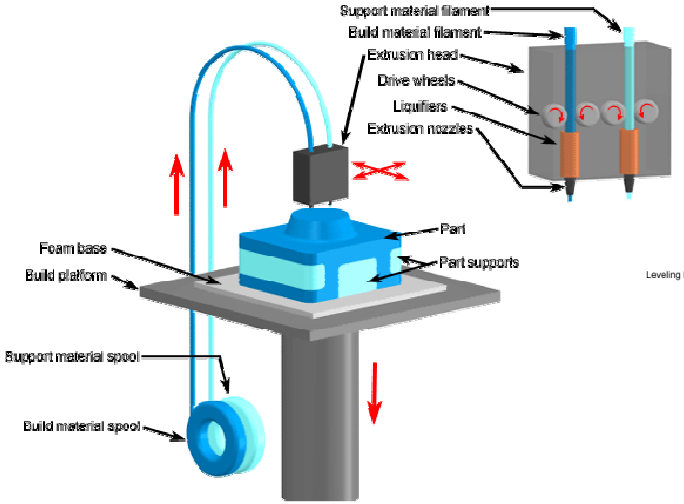
- Stereo Lithography Apparatus (SLA)
- Selective Laser Sintering (SLS)
- Multi-Jet Modeling (MJM)
- Fused Deposition Modeling (FDM)
- Digital Light Projection (DLP)

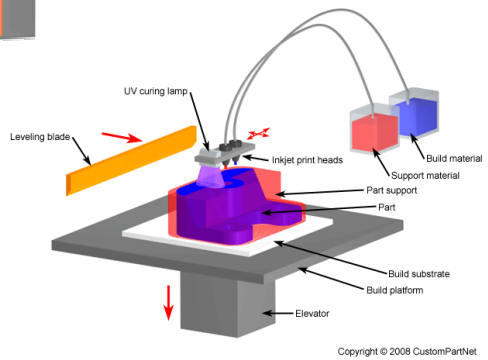




Common Threads:

- Expensive Running Costs
- Unstable or Unsafe Materials
- Unreliable Technology
- Material Price Increases
- Health & Safety





What Is Needed

Accessibility to Creativity

Ease of Use

Low Cost Materials

Full Access to 3DP Technology For Everyone

No Bio Hazards, Lasers, Smells, Airborne Dust, or Melting Plastic

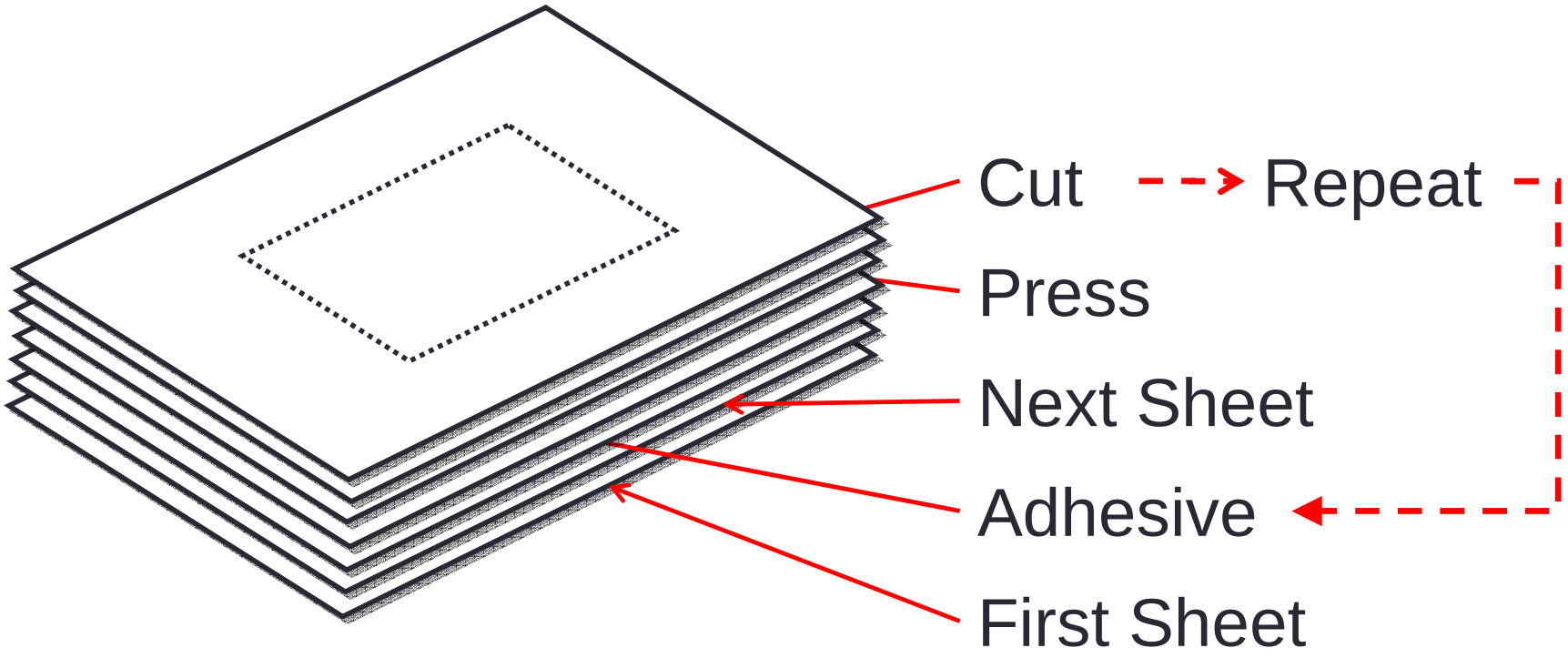
Ubiquitous and Stable Material

The Solution

Mcor Matrix 300

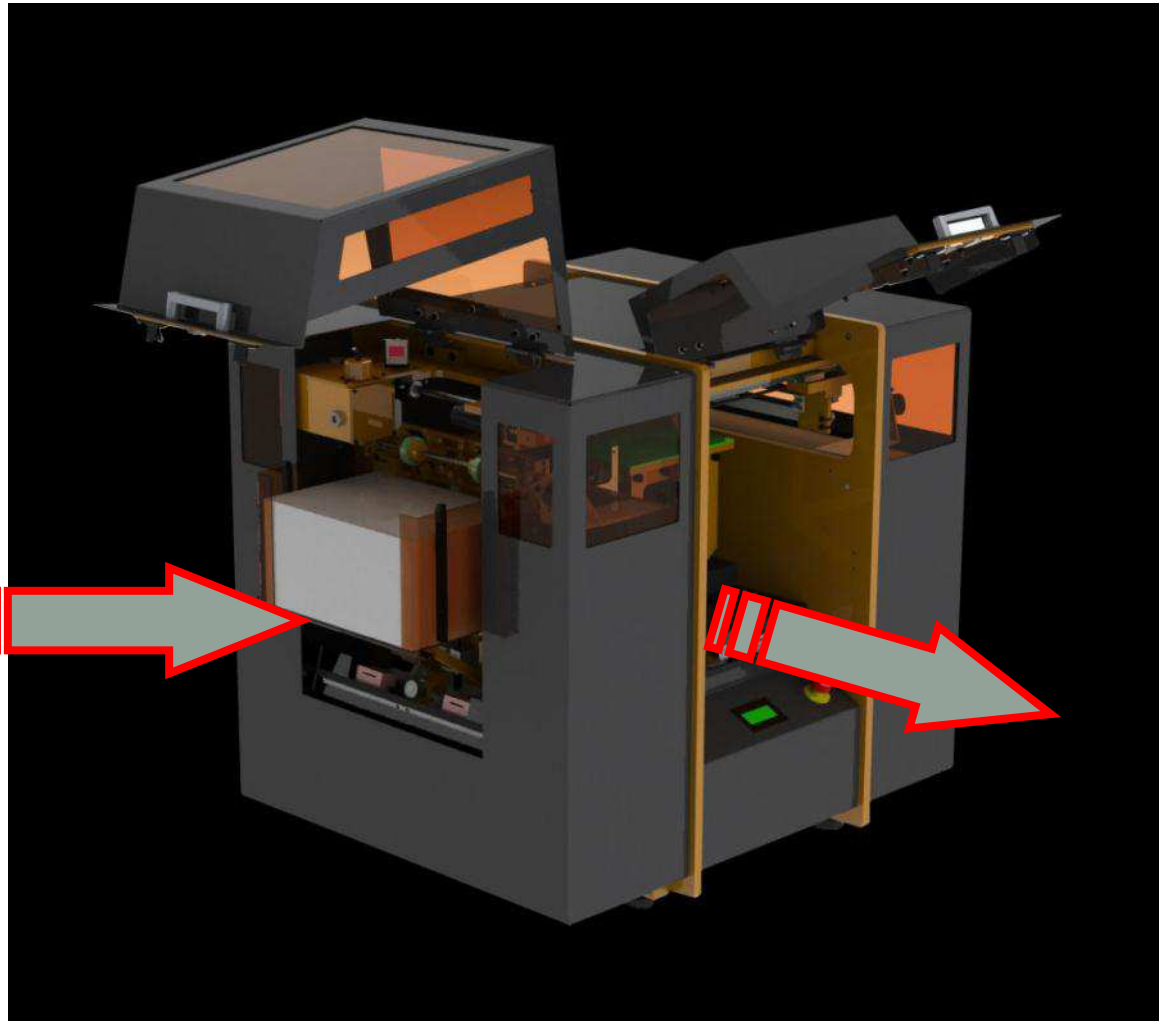
The world’s first paper based 3D printer.

How 3D Printing Works



Simple-Easy to Use

Load A4/Letter
Paper & Adhesive



Setup Build and Remove Part

Simple to Use

Load Paper

Open 3D Object in SliceIT Software

Click “Print Model”

1st layer is cut

adhesive applied & sheets squeezed together

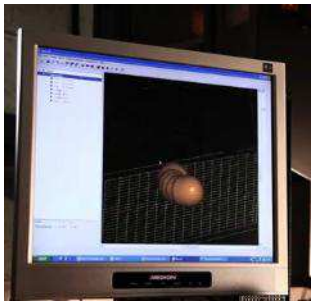
printer loads the next sheet.

Remove Build Plate

Pull away surrounding paper

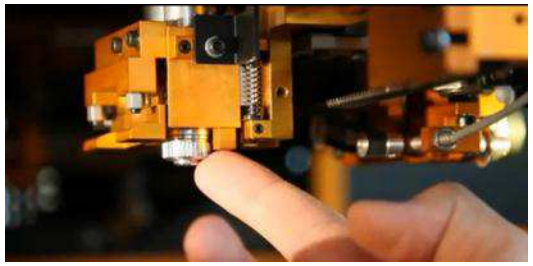
3D Printed object is ready

What Makes 3D Printing Possible



Mcor SliceIT software takes your 3D design and digitally slices it into layers that match the thickness of your paper.

These electronic slices are sent to the Printer one by one, similar to how your PC sends pages of a standard document to your 2D Printer



The Printer has a Tiny Height Adjustable Tungsten Carbide Cutting Tip.
Water based Adhesive is deposited in tiny dimples, by precision delivery system.

Adhesive is concentrated on the area inside the model and the un-needed material is only very lightly held together…….enabling fast and easy model removal

Made from Paper

- Ubiquitous
- Durable
- Cost effective

- Not Messy

- Not Hazardous

Applications

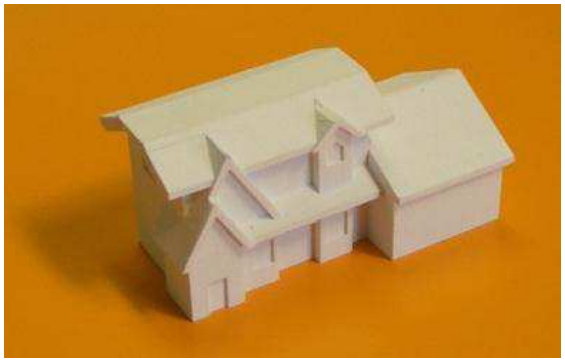
Product Design-Concept

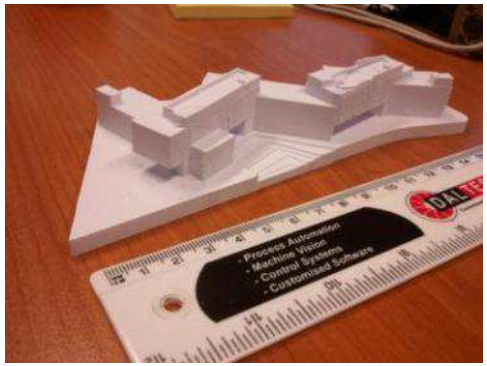


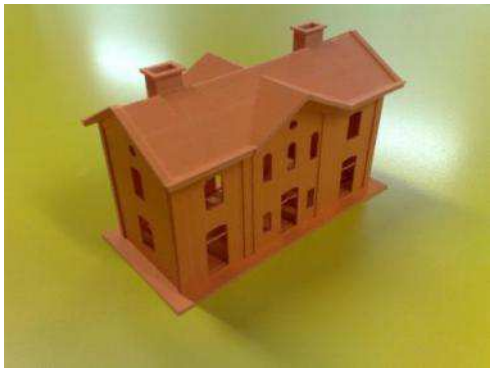
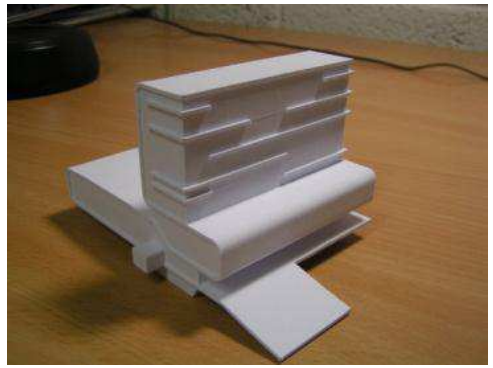


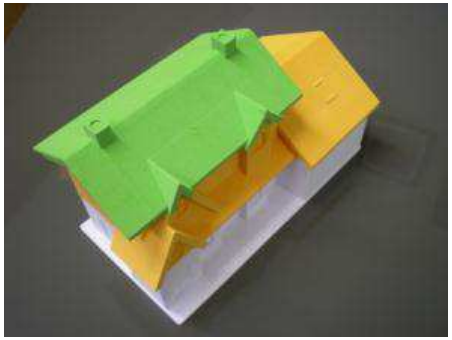
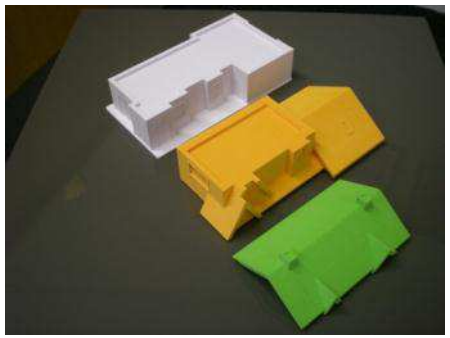



Architectural

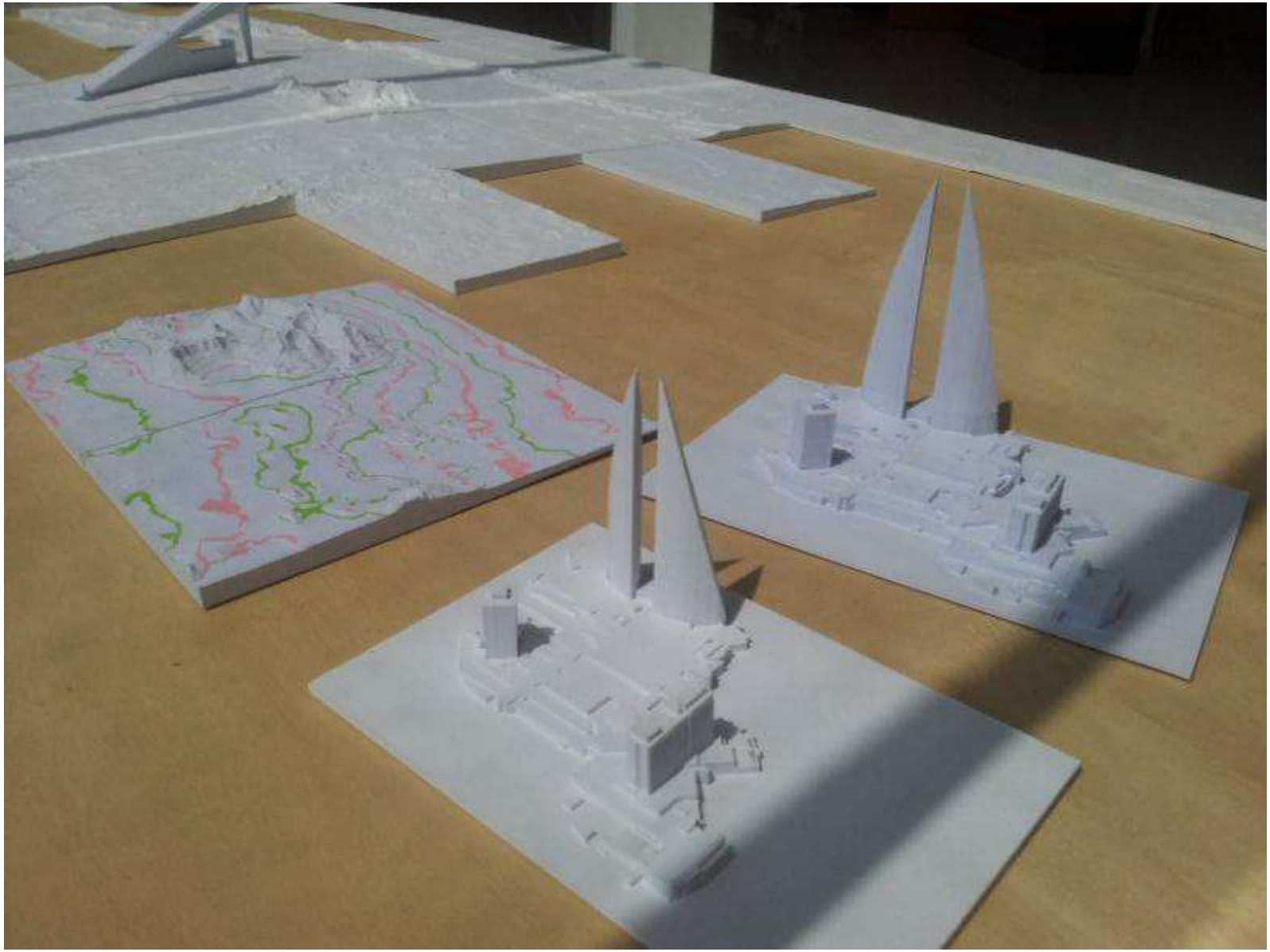




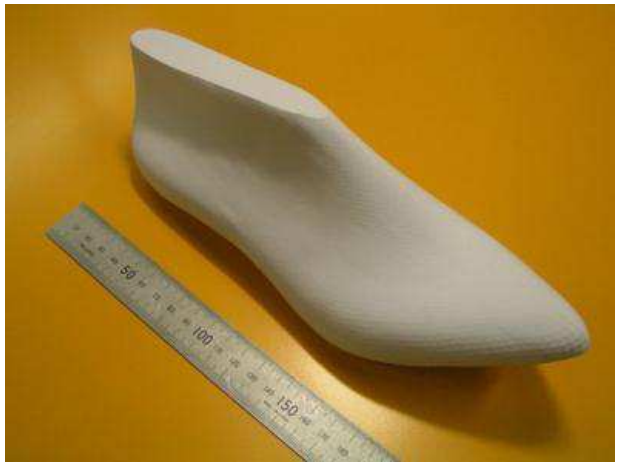




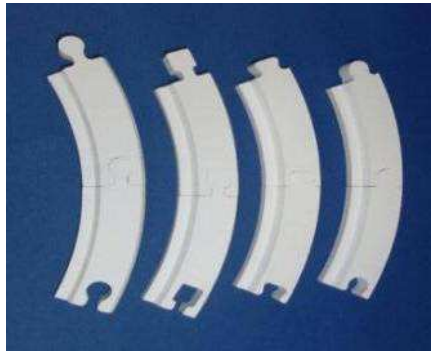
GIS



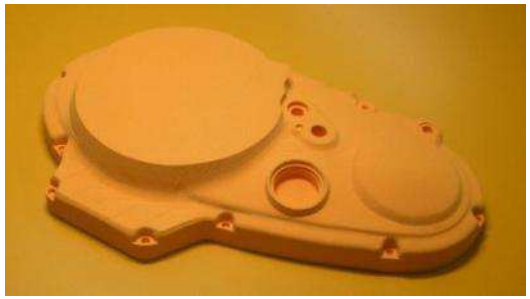
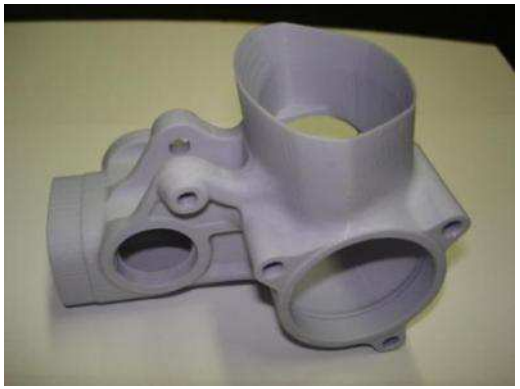
Footwear



Casting



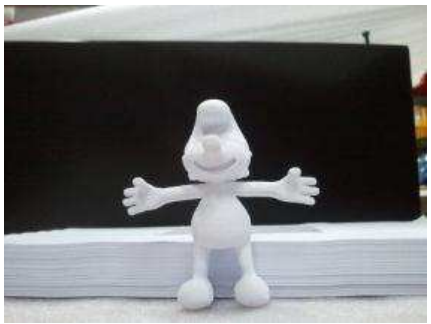
Entertainment-Art





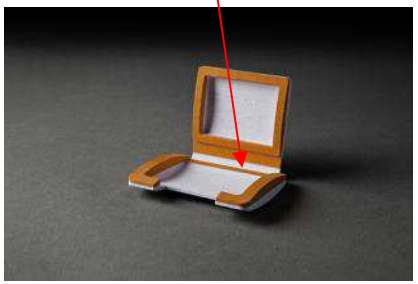


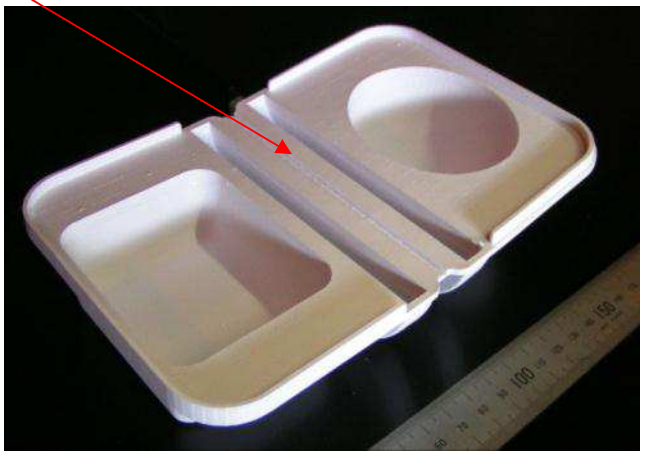




Packaging

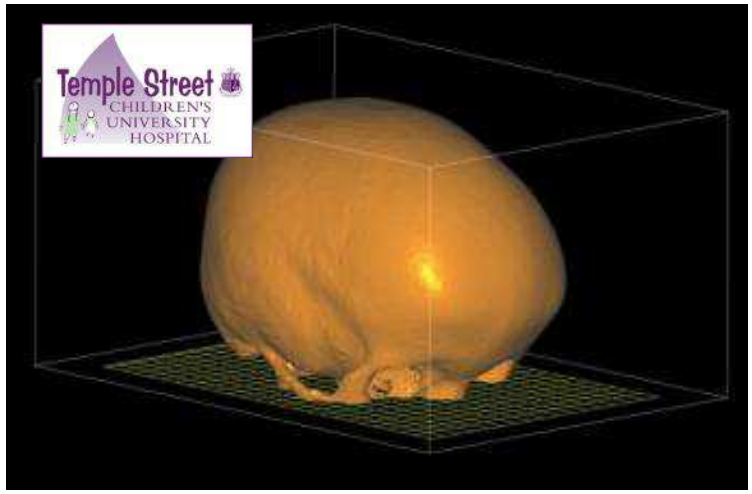
Living Hinge





Vacuum forming

Medical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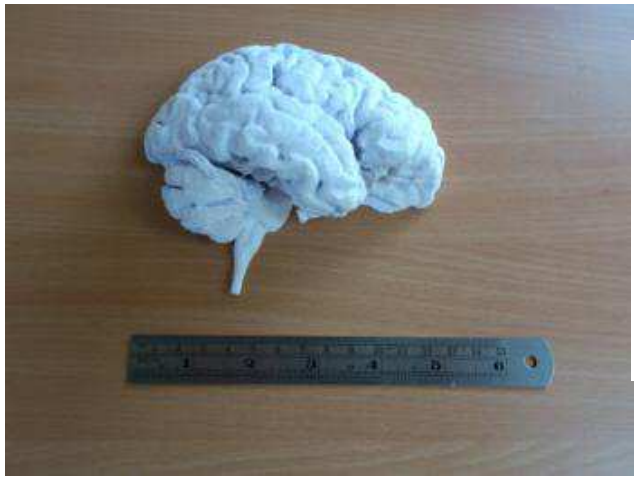
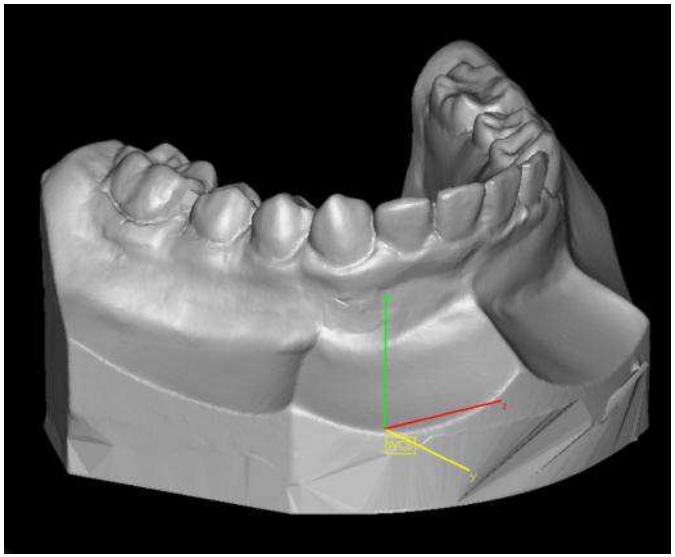
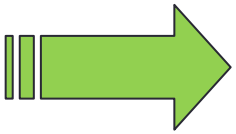
CHILDREN'S
UNIVERSITY
HOSPITAL

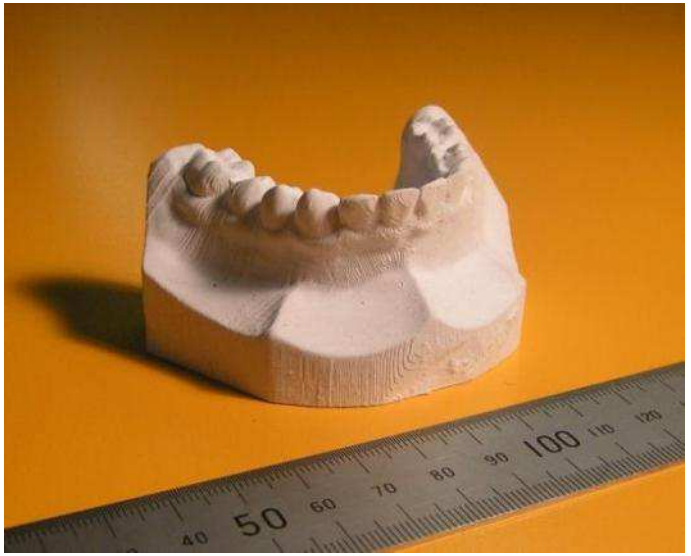

TRINITY
COLLEGE
DUBLIN



Dental







ucc
Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

Consumer


WIRED


SAINTS
No 1 Fan: Dave
SUPER BOWL XLIV


DAVE


TO MY SON:
YOU ARE THE BEST
LOVE JEFF

Education

mcor iris - Simply Revolutionary

+

=

Photo Realistic – High Resolution – Eco-Friendly– Best Value

Over 1million Colors
Highest Color Fidelity

5760 x 1440 x 508 dpi

Biodegradable

TCO >80% savings

Mcor Iris

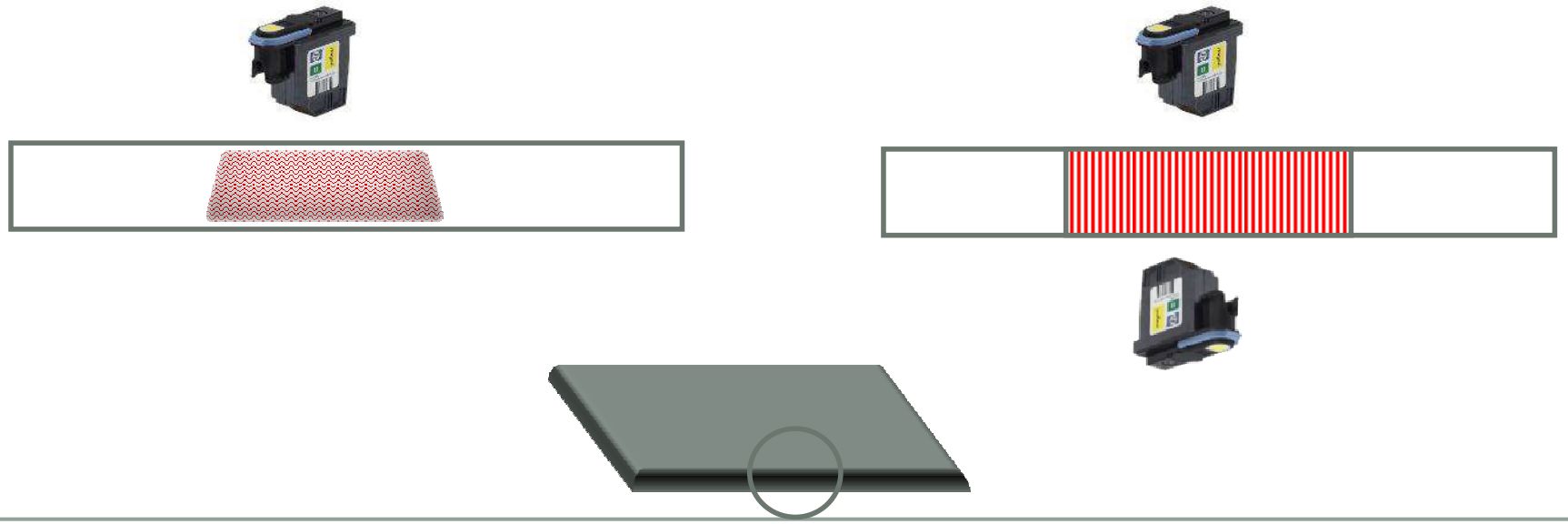
- Unmatched color
  - ✓Photo realistic…1 Million + Colors
  - ✓High resolution
  - ✓High color accuracy
- Eco Friendly-no infiltration required
- Unmatched Cost
- Batch Processing

1 Million+ Colors

- Full Color Permeation
- Tops, Bottoms and Sides of all parts

Unmatched Color Resolution and Color Accuracy

- 5760 by 1440 by 508 dpi
- Specially formulated Ink for full color permeation from both sides
- Get the color you want with no bleed



Unmatched Color and Resolution

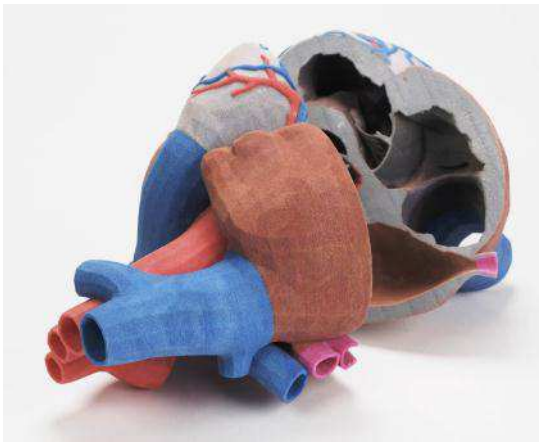
Picture of Mcor part vs Zcorp part

vs

Unmatched Color and Resolution

Picture of Mcor part vs Zcorp part

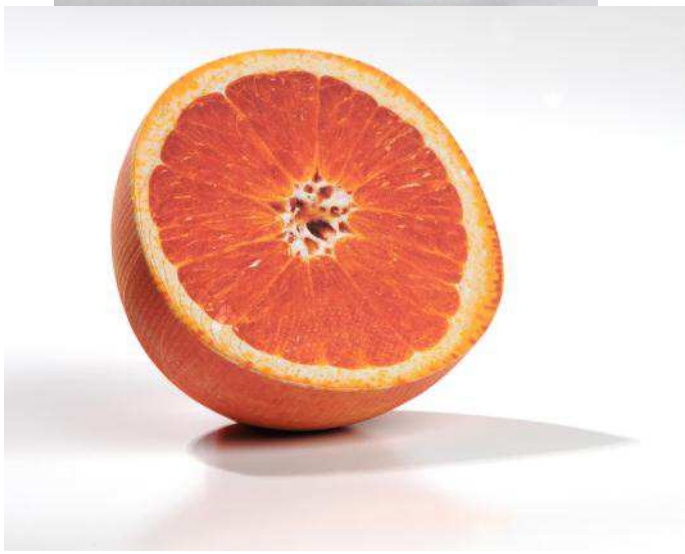
VS



Unmatched Color and Resolution

Picture of Mcor part vs Zcorp part

VS



Eco Friendly

- Water based adhesive and inks
- Paper-durable, ubiquitous, low cost
- No dull, chalky colors, no dust, no cyanoacrylate.
- Beautiful, full color parts right out of the IRIS

Unmatched Cost

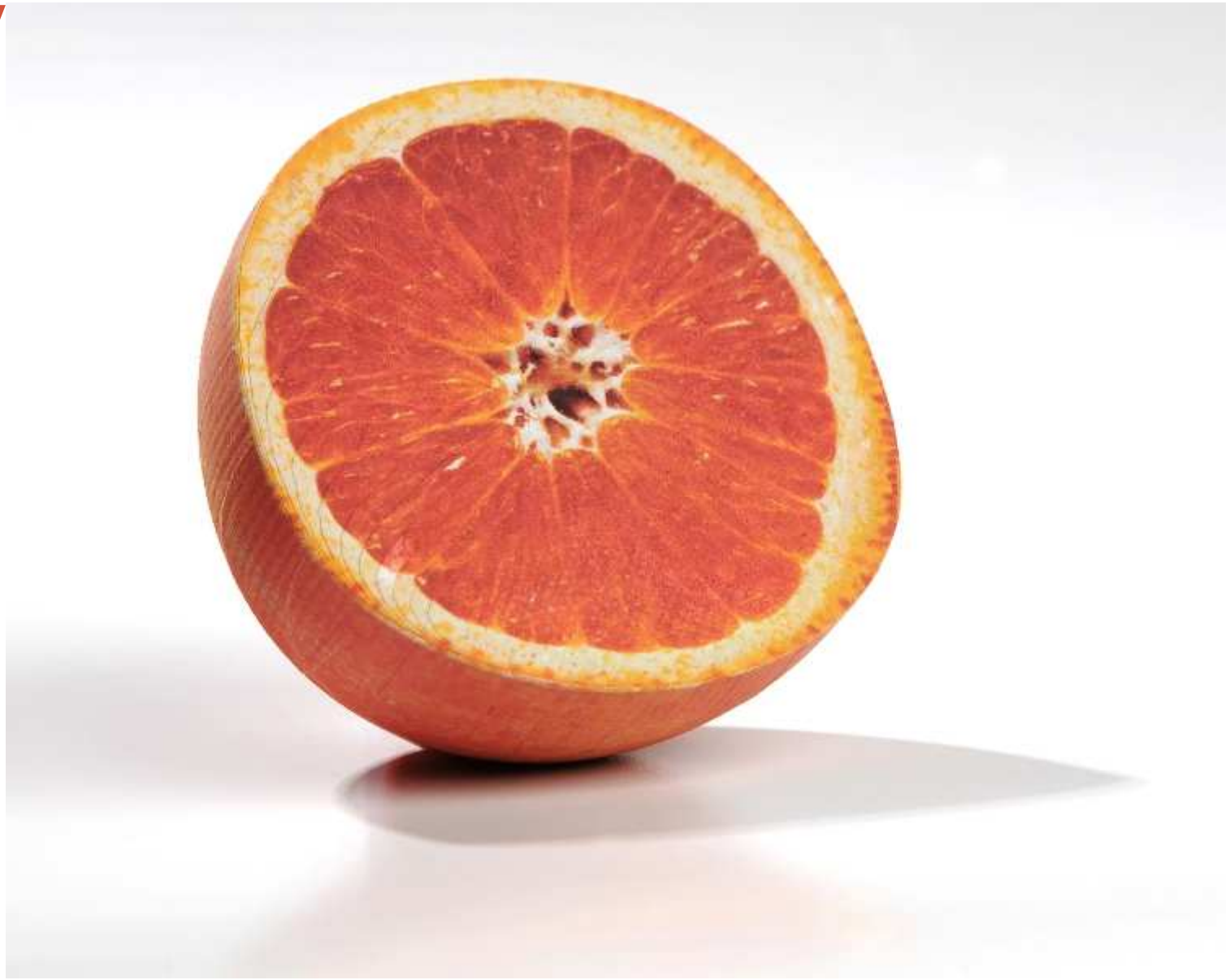
20 cu in	Part cost	Yearly Total Printing 12 parts per wk	Yearly Savings with MCOR
Mcor	$16	$9,984	N/A
Powder Printing	$100	$62,400	**$52,416**

Fast, Batch processing - long term

- Why wait to start your next build
- Like two machines in one
- Future proof investment due to upgradable print engine external to the machine
- Don’t get caught out when head manufacturer discontinues heads
- Upgradeable color in the future
- Only pay for color when you use it.

Gallery

Gallery



Gallery

Gallery

Gallery

Gallery

Gallery

Gallery

Gallery

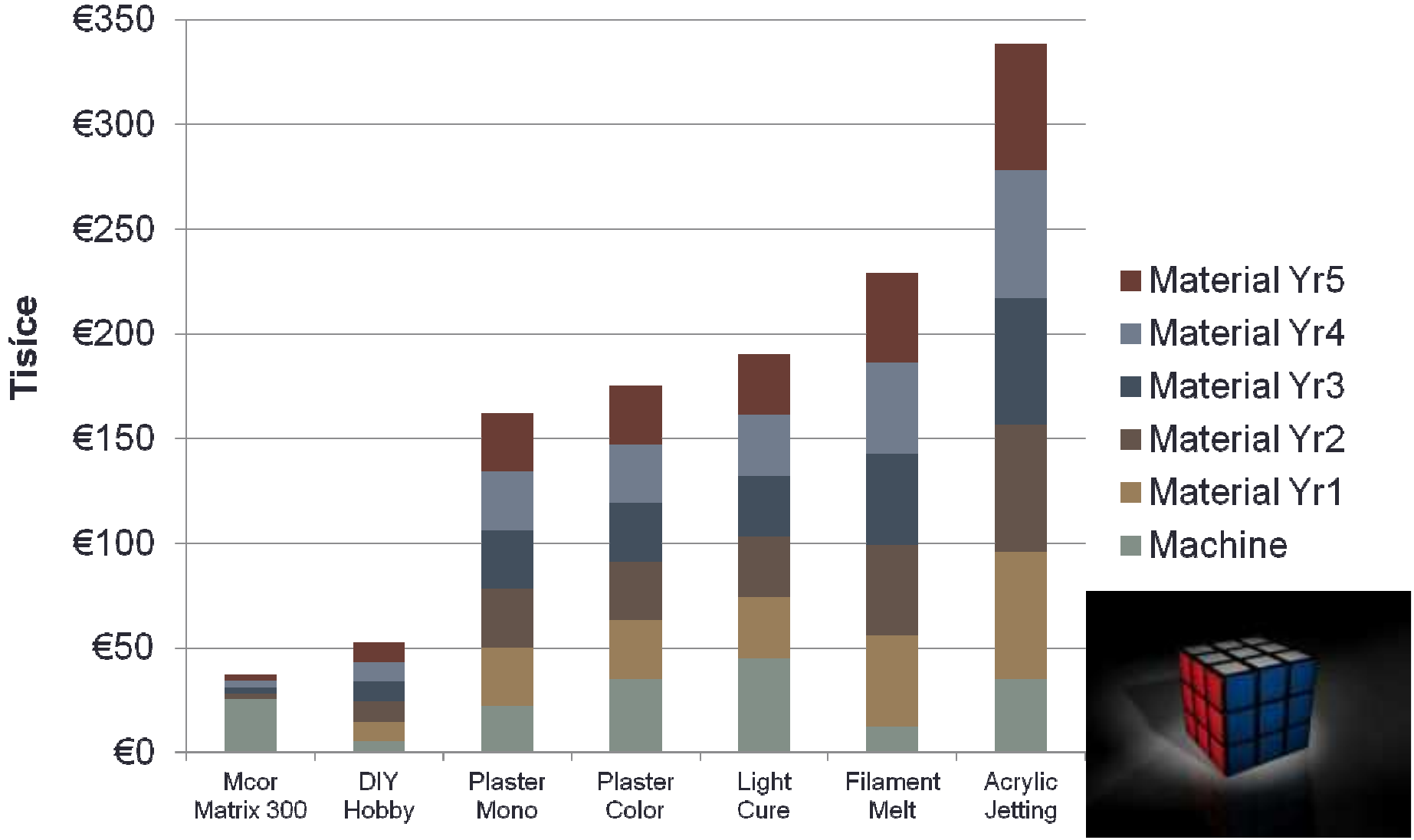
Lowest Running Costs!

How Do You Get The Most From You Budget?

Take Control of your costs!

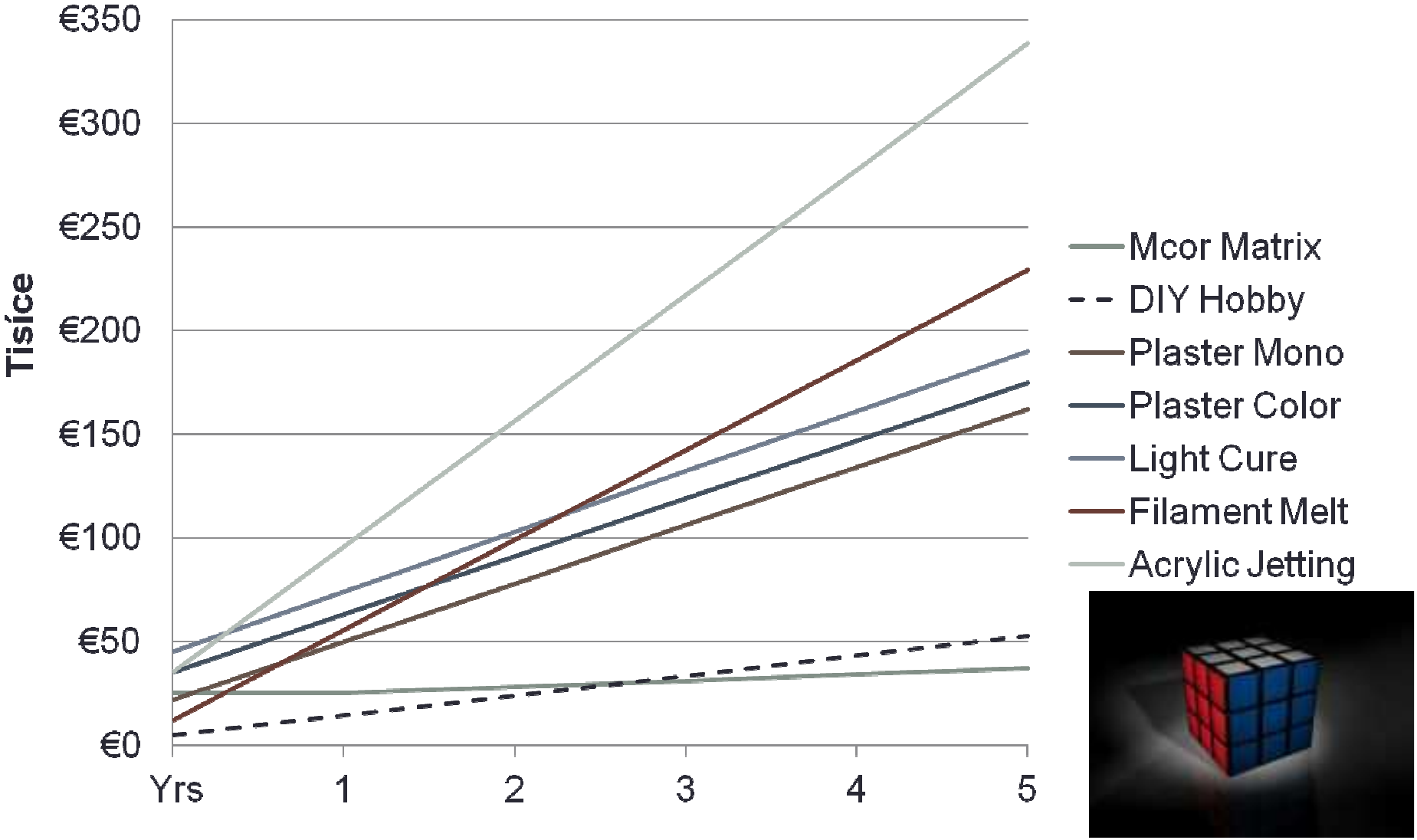
20 cu in	Part cost	Yearly Total 4 parts per wk	Yearly Savings with MCOR
Mcor	€14	€2,945	N/A
Powder Printing	€90	€18,720	€**15,775**
FDM	€120	€24,960	€**22,015**

Total Cost of Ownership



Approximate figures based on printing 1 x 17 cubic inch model per day. Equivalent material to a standard Rubix Cube.

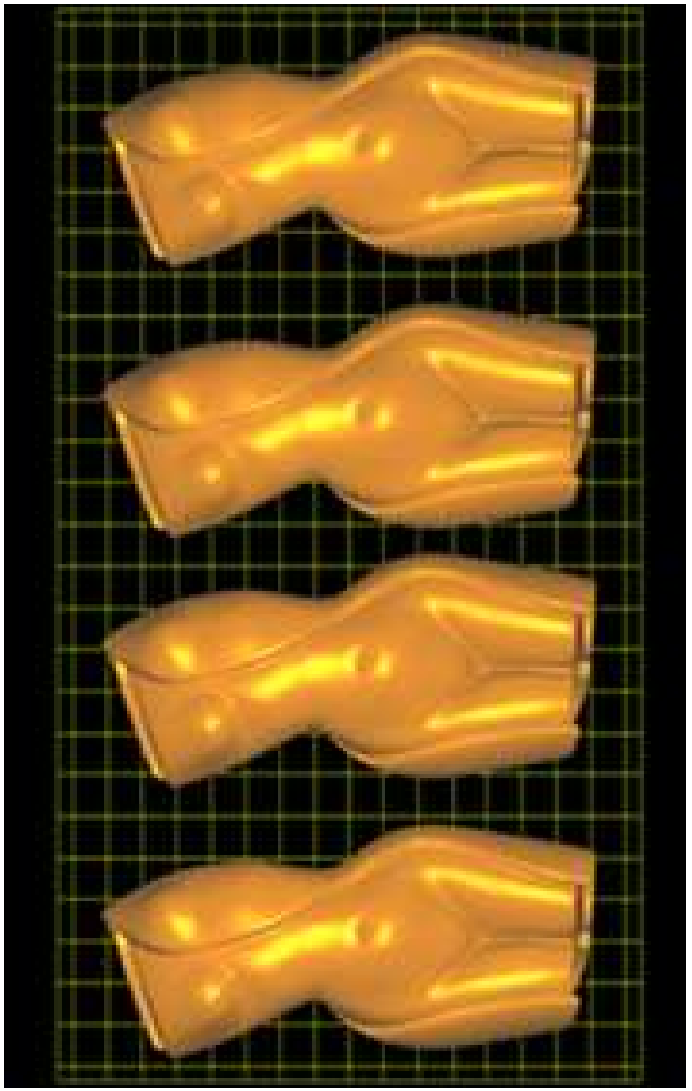
Total Cost of Ownership



Approximate figures based on printing 1 x 17 cubic inch model per day. Equivalent material to a standard Rubix Cube.

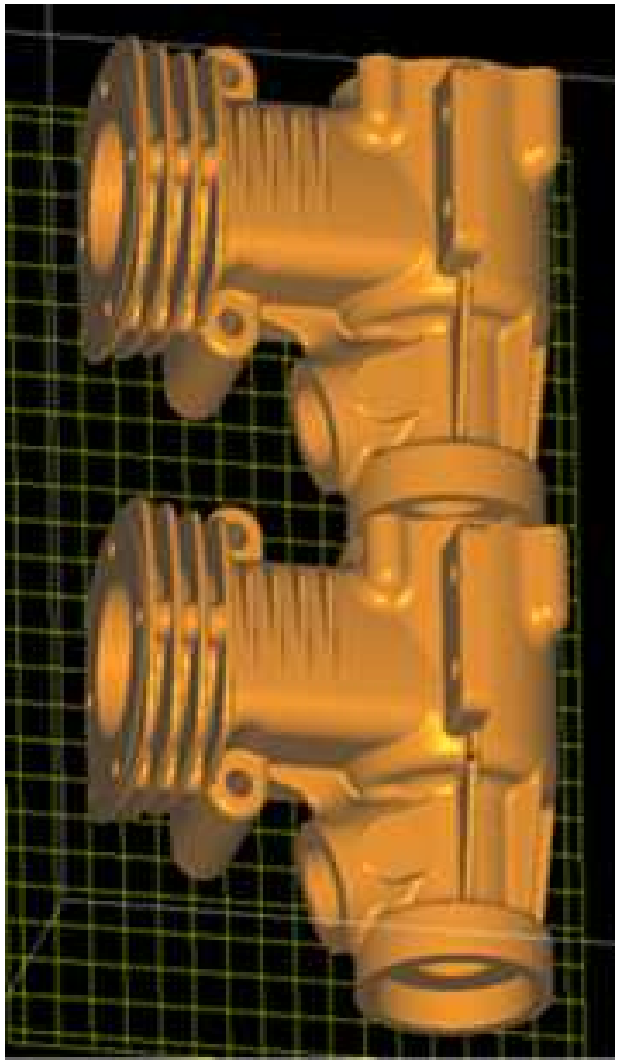
Cost of Models - Torso

Build time for 4 off	**42 hours**
Maximum per year	**819**
Technology Used	**Part Cost each**
Mcor M300+ Mono	€3.50
Mcor Iris – Colour part	€7
Plaster Based Mono	€32
Plaster Based Colour	€38
ABS Plastic Based or Digital Light Cure	€42
Material Jetting	€72



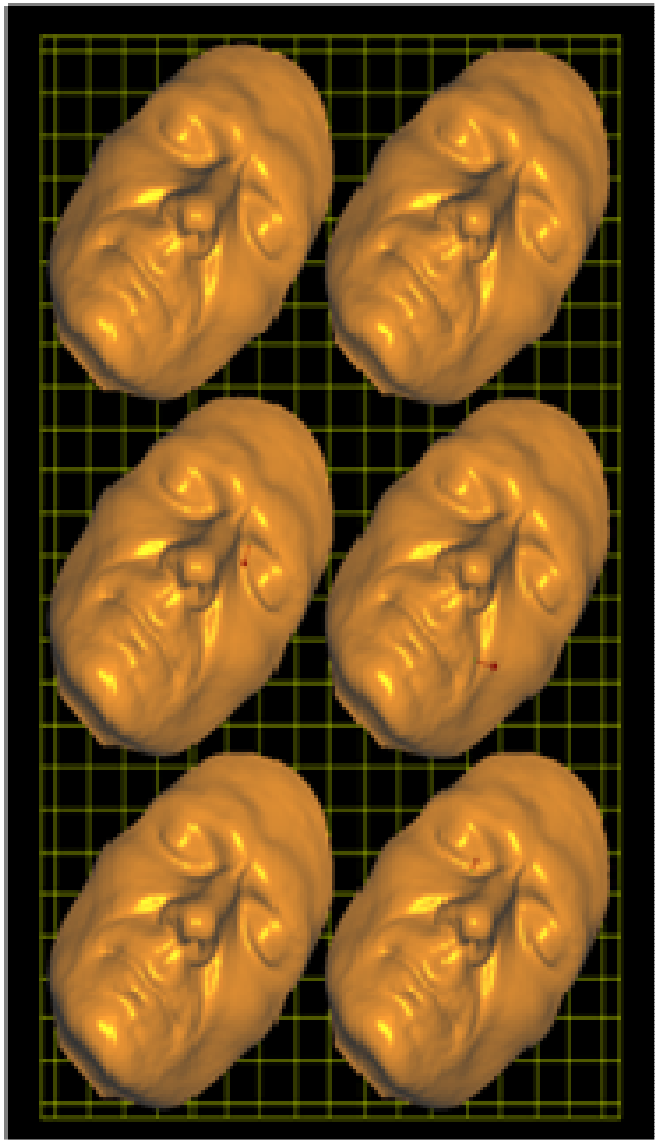
Cost of Models - Engine

Build time for 2 off	**88 hours**
Maximum per year	**197**
Technology Used	**Part Cost each**
Mcor M300+ Mono	€19.80
Mcor Iris – Colour part	€40
Plaster Based Mono	€90
Plaster Based Colour	€106
ABS Plastic Based or Digital Light Cure	€120
Material Jetting	€209



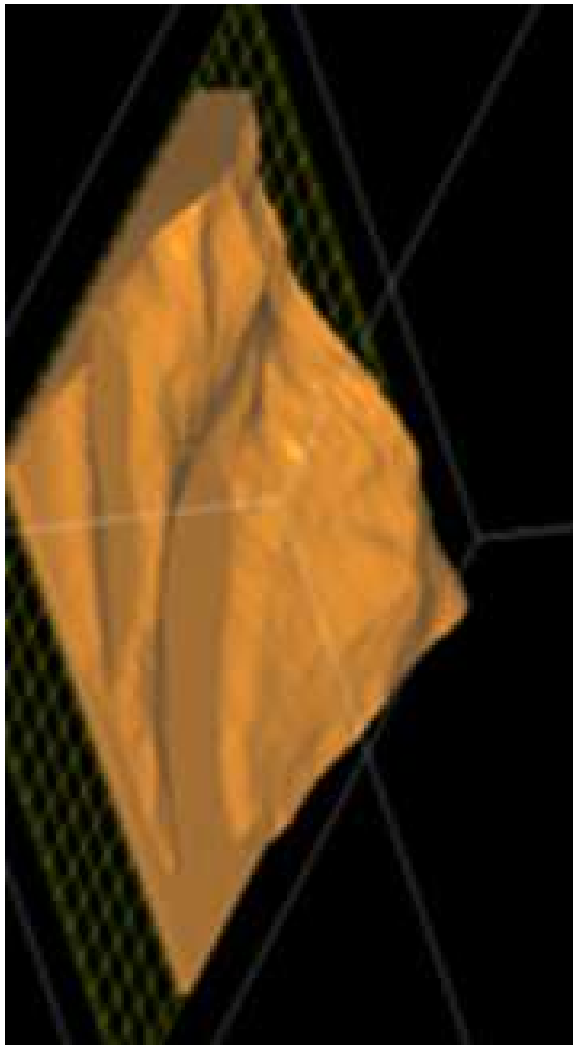
Cost of Models - Face

Build time for 6 off	**36 hours**
Maximum per year	**1343**
Technology Used	**Part Cost each**
Mcor M300+ Mono	€2.16
Mcor Iris – Colour part	€5
Plaster Based Mono	€24
Plaster Based Colour	€28
ABS Plastic Based or Digital Light Cure	€28
Material Jetting	€43



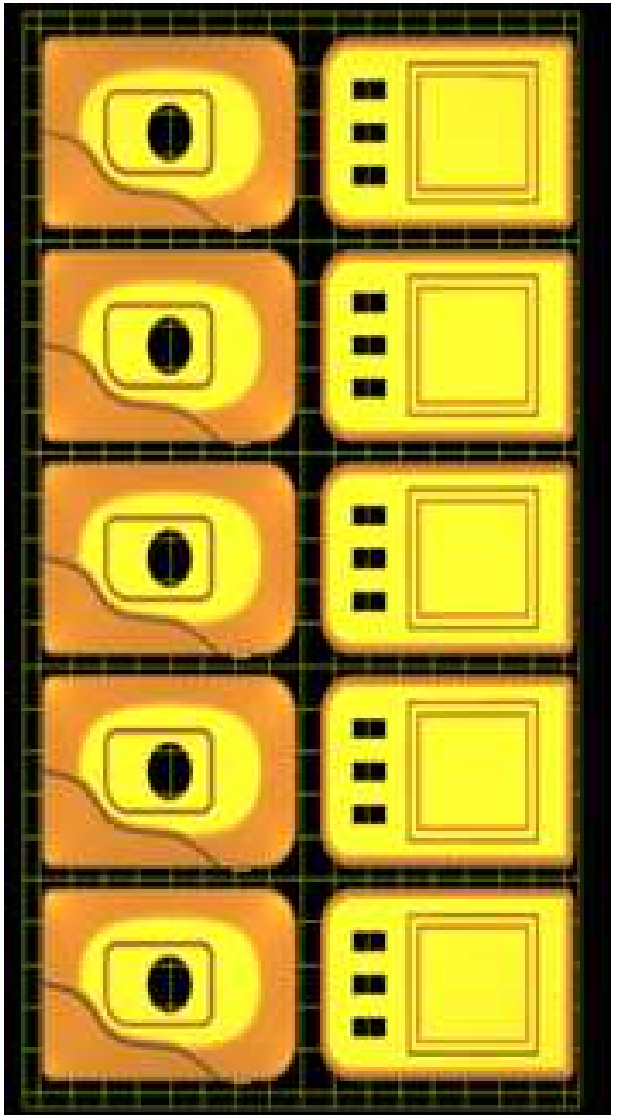
Cost of Models - GIS

Build time for 1 off	**23 hours**
Maximum per year	**375**
Technology Used	**Part Cost each**
Mcor M300+ Mono	€8
Mcor Iris – Colour part	€20
Plaster Based Mono	€95
Plaster Based Colour	€112
ABS Plastic Based or Digital Light Cure	€123
Material Jetting	€212



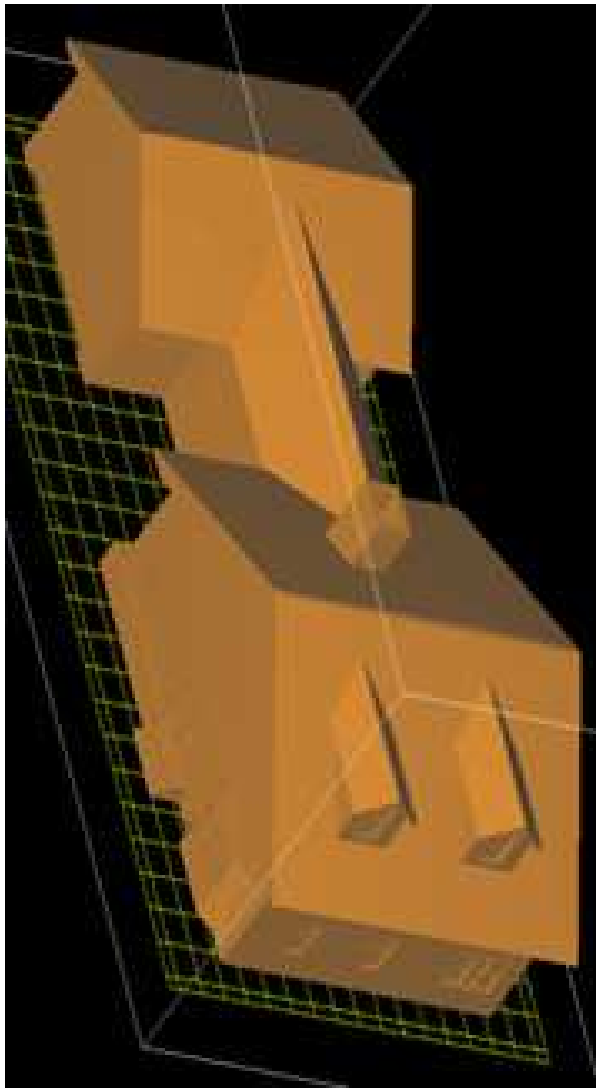
Cost of Models – Camera (Half)

Build time for 10 off	**20 hours**
Maximum per year	**4380**
Technology Used	**Part Cost each**
Mcor M300+ Mono	€0.66
Mcor Iris – Colour part	€1.50
Plaster Based Mono	€6
Plaster Based Colour	€7
ABS Plastic Based or Digital Light Cure	€18
Material Jetting	€31



Cost of Models - AEC

Build time for 10 off	**52 hours**
Maximum per year	**167**
Technology Used	**Part Cost each**
Mcor M300+ Mono	€17
Mcor Iris – Colour part	€35
Plaster Based Mono	€352
Plaster Based Colour	€420
ABS Plastic Based or Digital Light Cure	€470
Material Jetting	€800



Why Choose Mcor?

- ROI - Cost Savings Alone Justify Mcor
- Accessibility - Easy To Use & Safe
- Affordable - Low Cost Consumables
- Health & Safety - No Bio-Hazards
- Future Proof – Accessible Materials
- Reliability - Stable Technology & Material

Unlimited Mono Printing At One Annual Fixed Price - €2,945 per year.

Enough To Print
On Up To 300 Reams

7 Litres Of Adhesive
50 Blades

Up to 39,600 Cubic Inches
Per Year of 3D Printing

Almost 40 times more material to plaster based alternative.
Equivalent of €140,000!! In Plaster

Case Study

Doctors in Belgium use Mcor paper-based 3D printing to dramatically reduce surgical time

- Challenge: Shortening surgical time
- Strategy: 3D printing physical bone models
- Results: Better outcomes, time and cost savings

Making a change

The team purchased the Mcor 3D printer after five years of using a ZPrinter
The ZPrinter produced more costly models and required an extensive post-processing step that employed toxic chemicals (cyanoacrylate).
"We went looking for an eco-friendly solution and found Mcor," says Olszewski.
Mcor 3D printers are the only ones that create models from paper (standard Letter/A4 sheets). When the sheets are cut and bound together, the model is tough, durable and stable – no infiltration is required. After use, models can be disposed of in the recycling bin for cradle-to-grave sustainability.

Mcor 3D printers employ water-based adhesive – no t[illegible] powders or toxic resins – enabling the machine to easily co-exist in an
Part cost is 5 percent of other technologies' costs, and total cost of Mcor ownership is a fraction of that of the competition.
Olszewki estimates that a model made with Mcor cost[illegible] about half that of the ZPrinter and about one-tenth tha[illegible] stereolithography. With Olszewski's team making models every day, that's a savings of more than 20,000 € per year.

"There are many potential applications in medicine for Mcor's affordable and eco-friendly process," says Olszewski. "Look for 3D paper printing not only in surgery, but in medical equipment engineering and biomedical engineering. We're really at the beginning."

mcor technologies

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