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3D printing for Medical Product Development: The Advantages of Additive Manufacturing to Reduce Cost of Design and Development in the Medical Industry: Paxman Case Study

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Title:

The Advantages of Additive Manufacturing to Reduce Cost of Design and Development in the Medical Industry: Paxman Case Study

Event:

Invited Speaker at Medtec Europe 2016 Conference Programme

12-14 April 2016, Messe Stuttgart, Germany

Team:

Christian Sorbie: *Design and Development Associate at Paxman Coolers / University of Huddersfield*

Dr Ertu Unver: *Principal Enterprise Fellow, Product Design course leader, University of Huddersfield*

Prof Mike Kagioglou: *Dean of Art, Design and Architecture, University of Huddersfield*

Richard Paxman: *Paxman Director, University of Huddersfield*

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What is Paxman and scalp Cooling?



Paxmans previous design and new design



Paxman's main aims

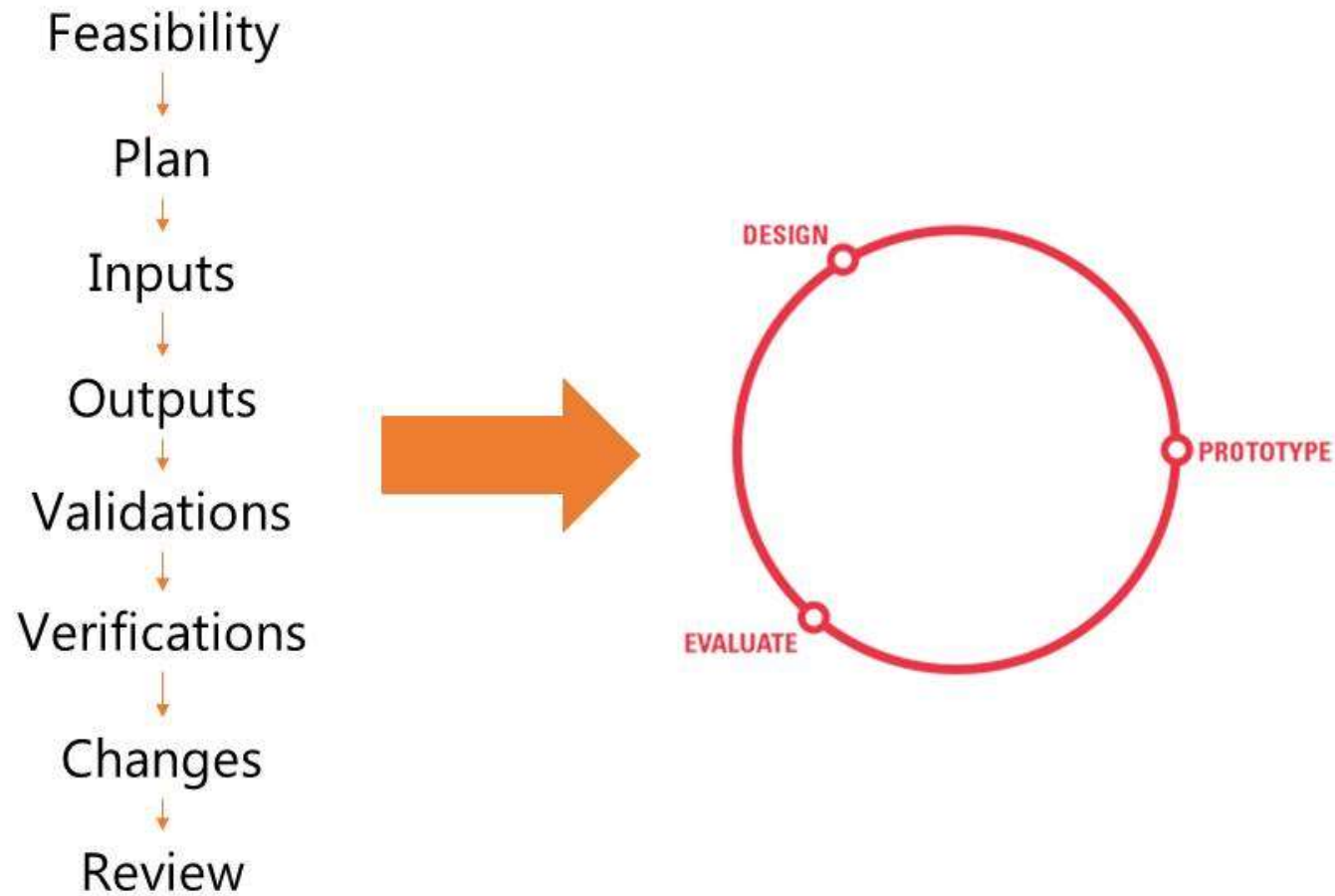
Improved fit

Improved
Comfort

Improved Scalp
Contact



Medical design process vs the standard design process



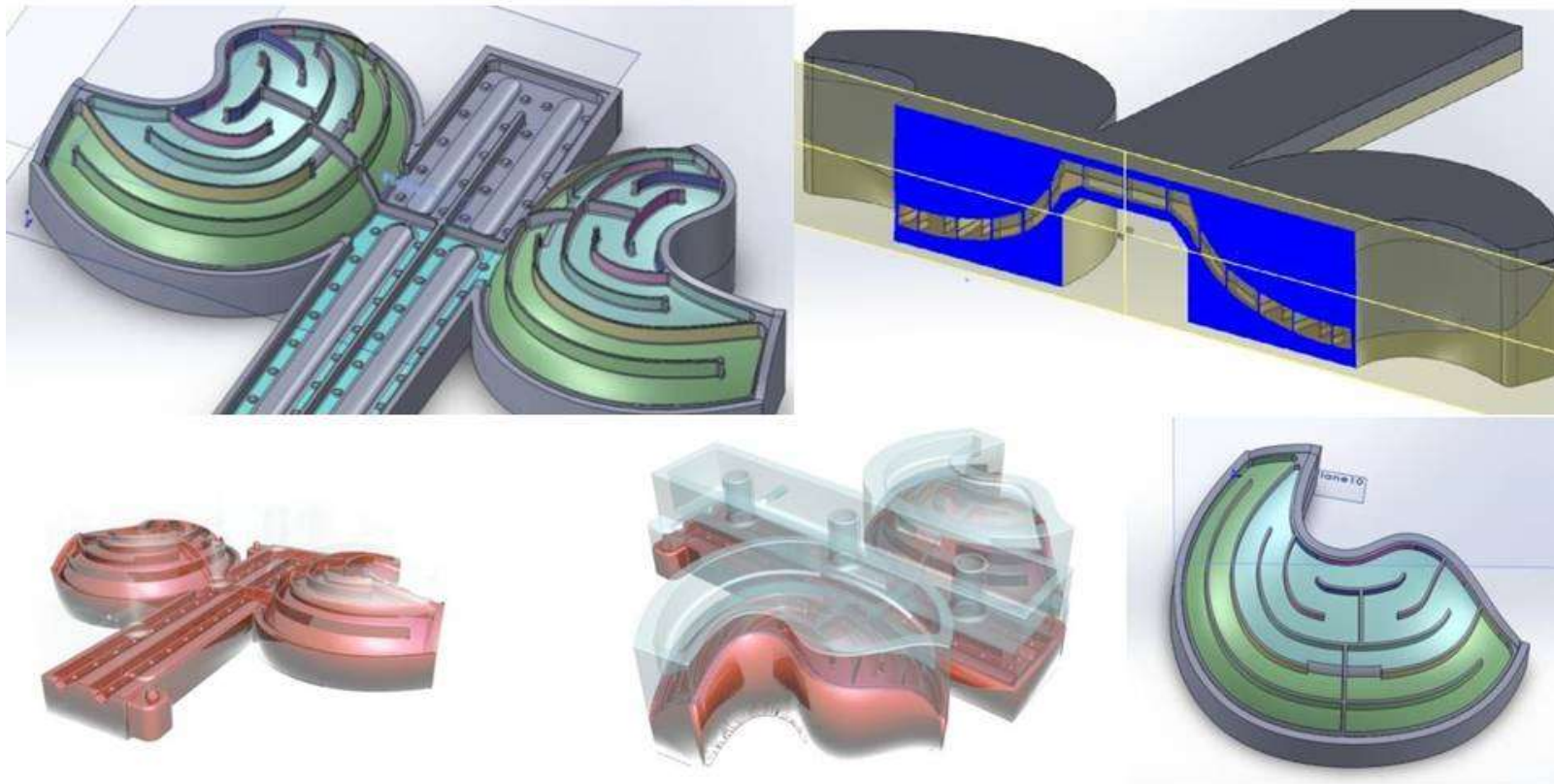
3D scanning and ergonomic data?

Using data various 3D Database, research and also using 3D scanners from the University accurate standard size head model created.



Cap design and development

Using the head map, the design of our cap idea was generated and several ideas were tested to get maximum scalp contact.



Why did we use SLS?

Good Material Options

Good Heat Resistance

Large Scale Printing

Good Accuracy



Who did we use?



Time and Cost

	Time	Cost
Subtractive manufacturing	4 – 8 Months	£15000– £25000
Additive manufacturing	5 – 10 days	£750 – £1500

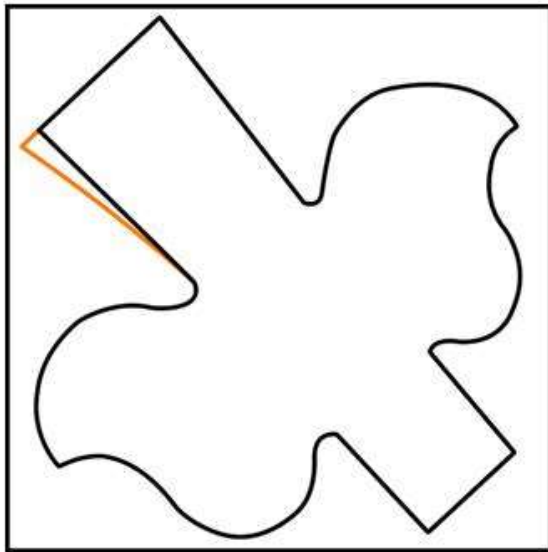
Saved costs - In total 8 sets of caps were printed, in all costing around £14,000. Traditional manufacturing we were estimated £150,000

Saved Time – all 8 sets took a week to be completed so 8 weeks in total, traditional manufacturing would have taken approximately 48 months to complete saving us a total of 46 months

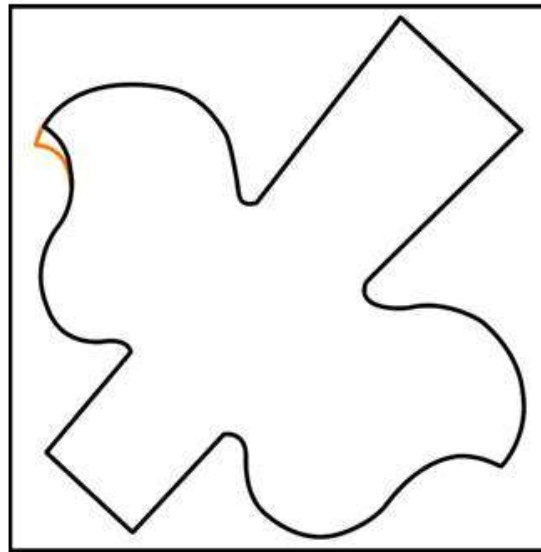
Challenges with 3D printing

The main challenges with 3D printing we found were **Tolerances** and **Repeatability**

Male Tool



Female Tool



Conclusion

Additive Manufacturing is a benefit to SMEs that may not have the funding for traditional manufacturing.

Product quality can be improved and time to market can be shortened using additive manufacturing in the design and development process.

A link is needed between product design and 3D printers to achieve the best results, reducing tolerance errors and printing in the most reliable way.

Thank you for listening



Any Questions?