

Printing the Future of Healthcare One Layer at a Time

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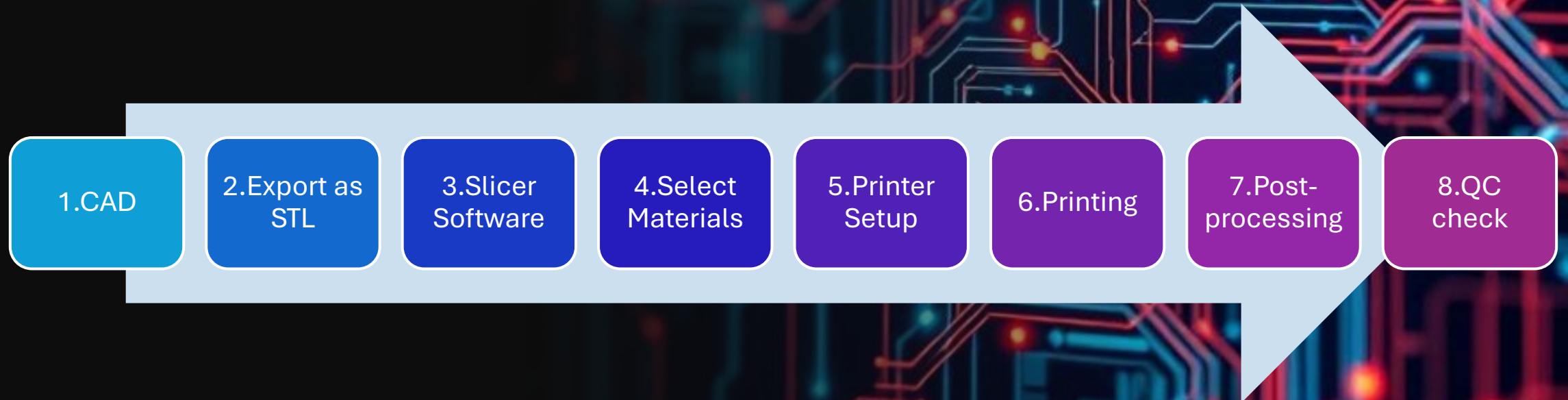


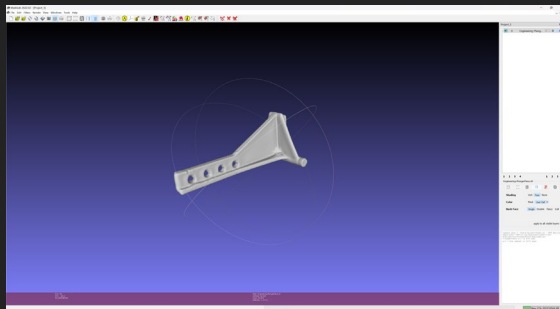
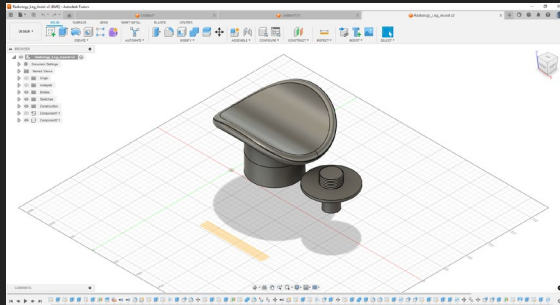
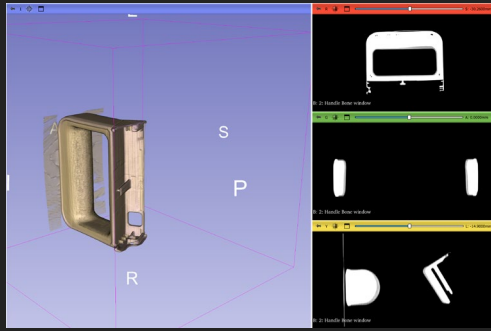
What is 3D Printing

3D printing can be broadly grouped into 3 distinct components.

- Material
 - Titanium, PLA, Hydrogels, Cells, Alginate
- Printing modality
 - FDM, SLA, SLS, SLM, EBM, DMLS
- Design

What is 3D Printing





Applications in the hospital

- Printing spare parts
- Manufacturing parts which are no longer sourced
- User-oriented solutions can be created
- Prototyping and testing
- Unique and specific tools
- Training and visualization

Implementations in healthcare on a global scale



- Orthotics
- Prosthetics
- Dental and orthodontics
- Education and training
- Biodegradable scaffolding – bone, tissue, organ
- Patient specific models
- Implants
- Bioprinting – living cells to print tissues and organs.
- User-specific tools
- Anatomical models for medical education and training
- Surgical guides



Barriers with 3D printing industry

- Regulatory concerns
- Lack of clear guidelines and Standards
 - Lagging regulations
 - No standard for the design, production or testing of 3D printed medical components.
- Quality Assurance
 - Difficult to guarantee consistency and quality
- Accessibility of materials
 - Material strength and durability might not match the traditional competitors
 - Limitations printing complex biological structures that function like human heart tissue
- Cost
 - High initial costs
 - Operational costs
- Ethics
 - Concerns about printing with human cells and cloning
- Long-term effects
 - Relatively new, limited data on long term performance.
- Experience and operational knowledge



Australian Government
Department of Health
Therapeutic Goods Administration

Conclusion

Although faced with many uncertain and undefined barriers, the exponential growth of 3D printing technology will certainly become more familiar over time, increasing the ease of access into the field and implementations into society.

Questions