Module 9. Additive Manufacturing

https://3dprintingindustry.com/news/3d-printing-unique-limb-unique-person-two-weeks-30292/

INTRODUCTION:

Definition:

- AM is a process by which a digital 3D design data is used to build up a component in layers by depositing material.

Possibilities:

- High geometrical complexity, Multiple materials and modulation of material density and composition, Fast prototyping for testing, Production of small quantities for market evaluation, Personalized products,...

FACTORS CONTRIBUTE TO THE SUCCESS OF AM:

Wide availability of CAD software, Advanced automation, A growing availability of printable materials, Major industry investigations, Major government investigations,…

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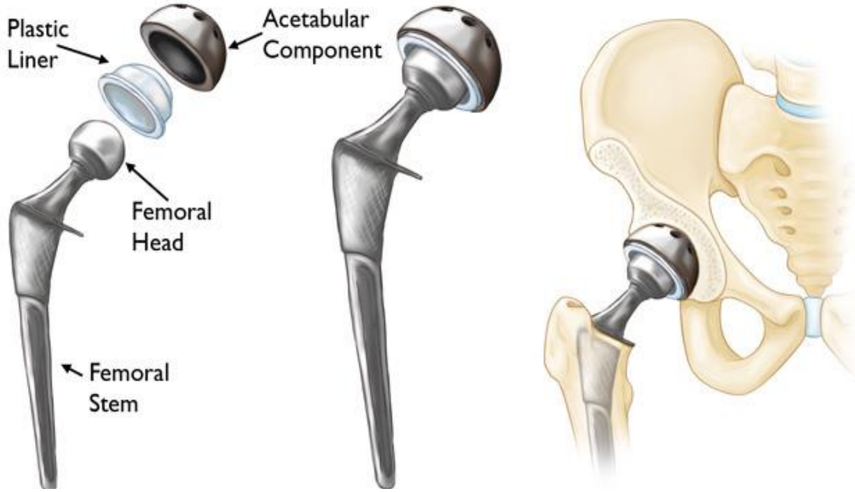

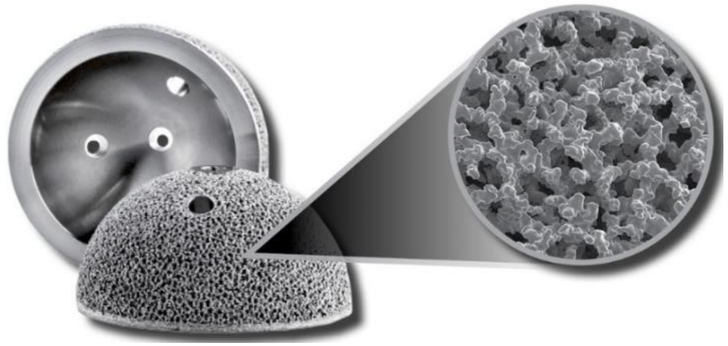

Hip Cup, Ti-6Al-4V

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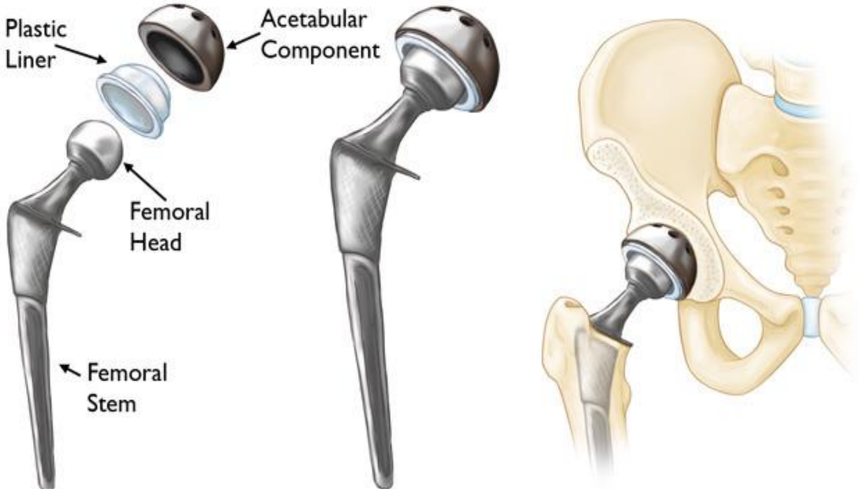

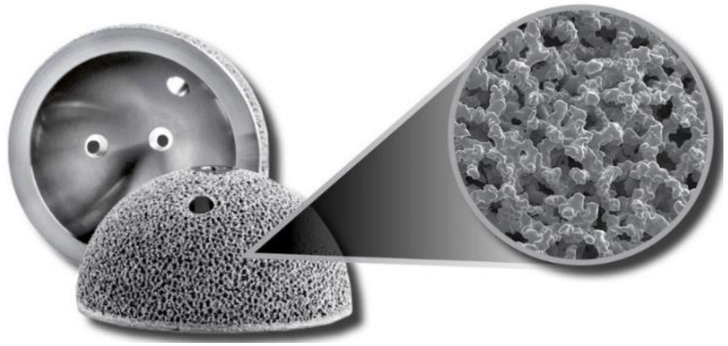

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Hearing aid

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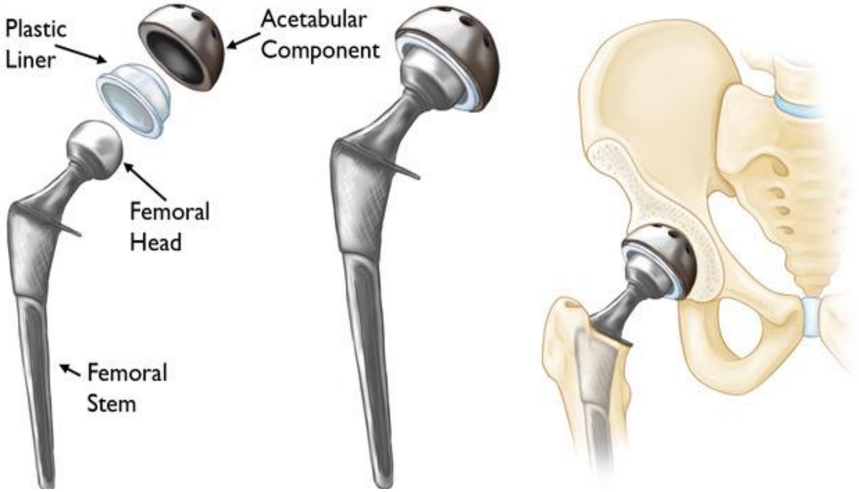

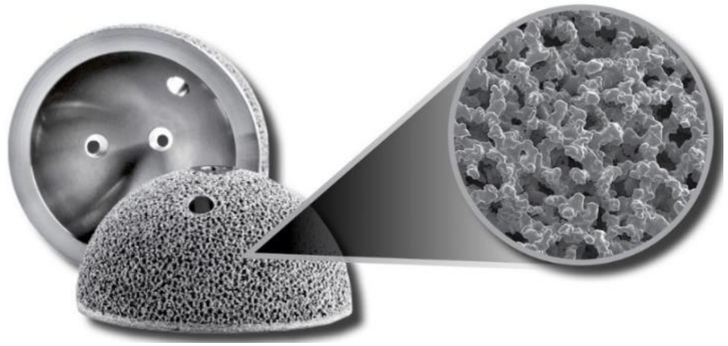

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Eagle's Beak

AM TECHNIQUES:

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2. Photopolymerization:

3. Powder Bed Fusion:

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Polymers

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Metals

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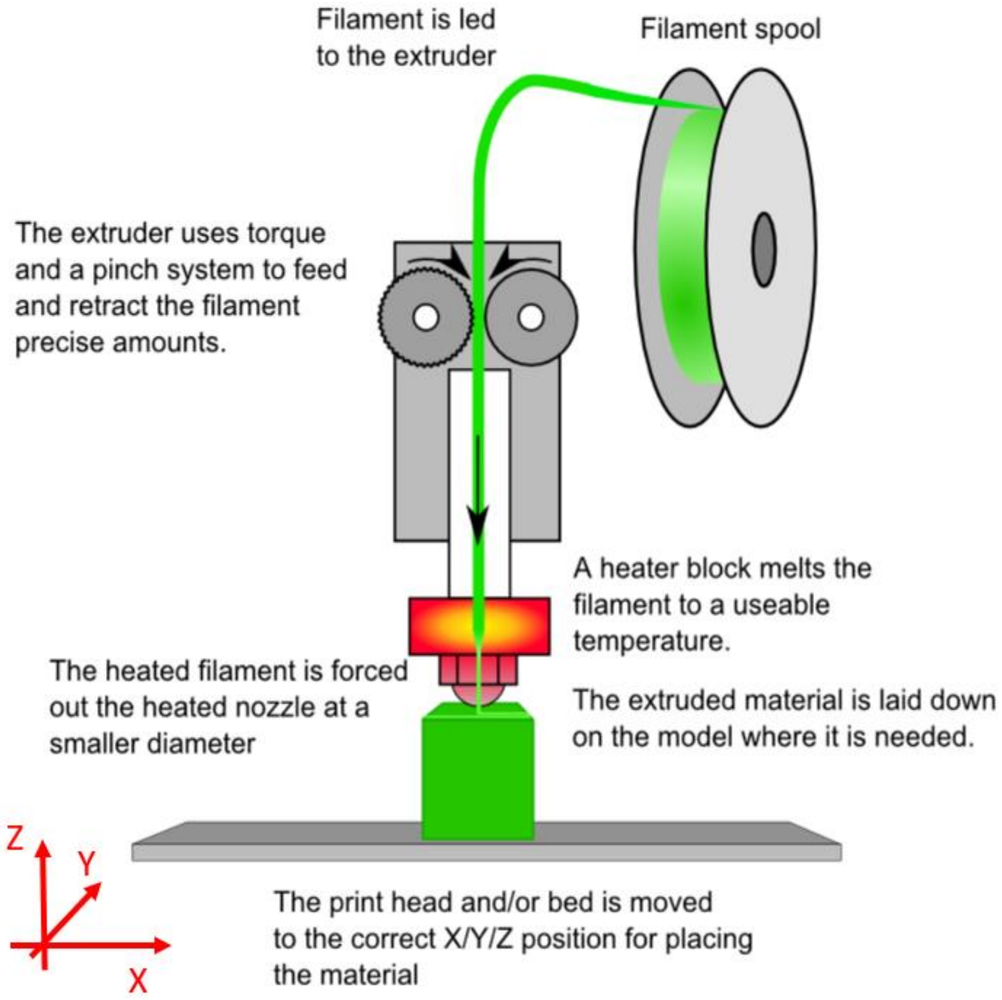

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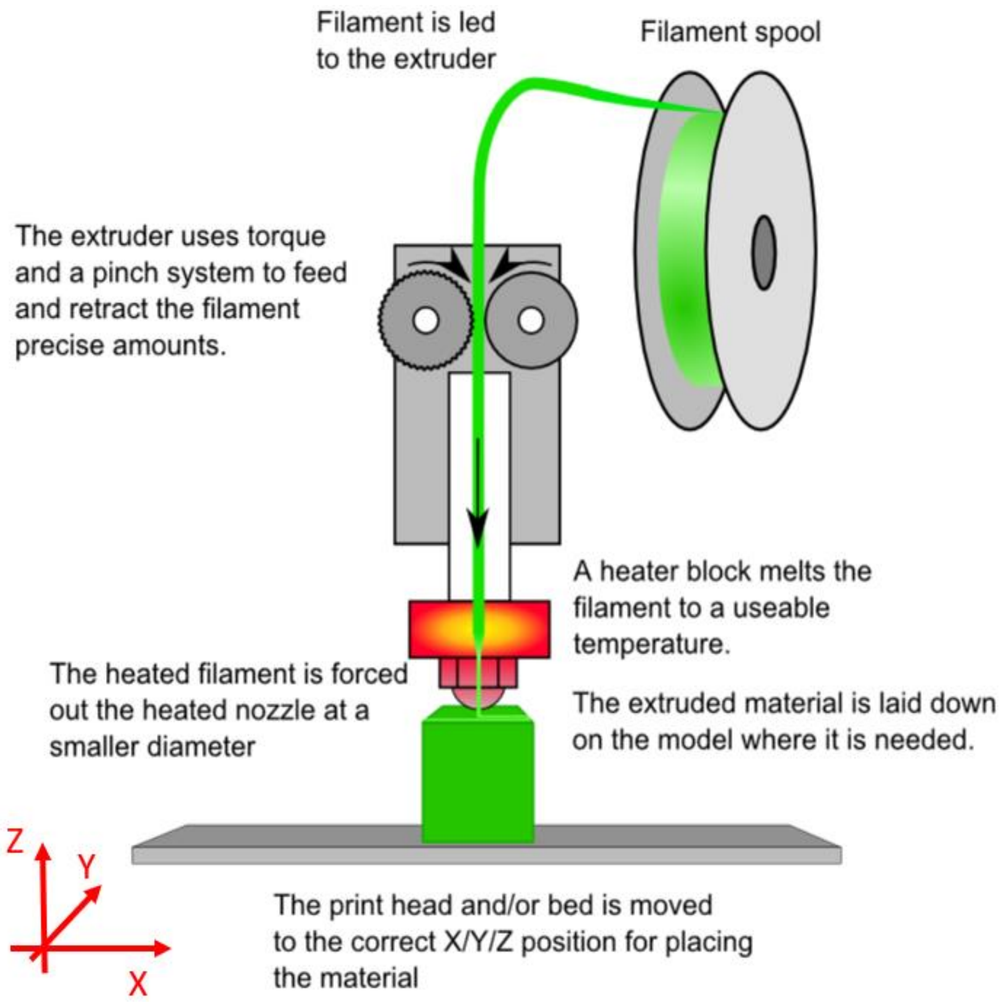
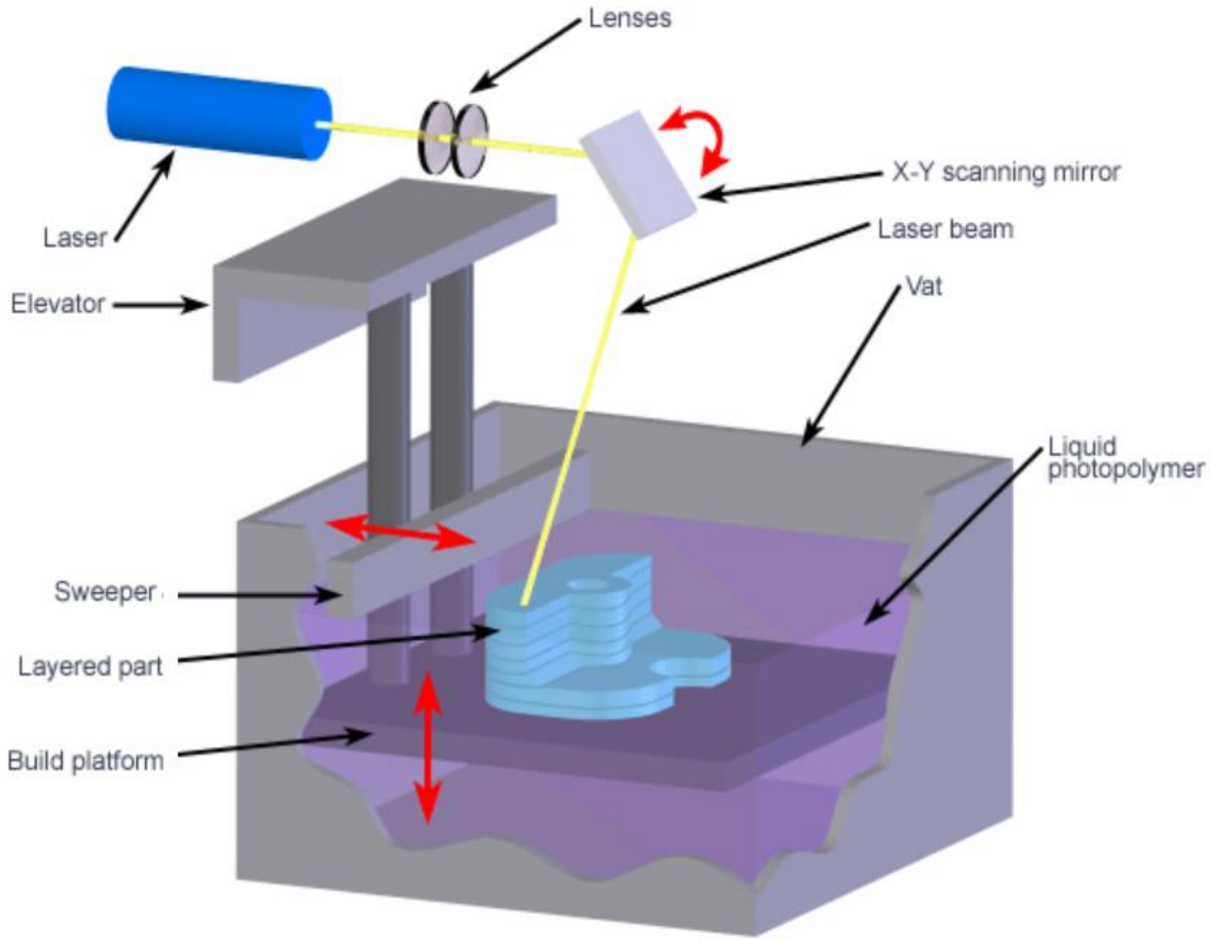


Create it REAL

https://www.youtube.com/watch?v=U-8-lu4mq8o

STEREOLITHOGRAPHY (SLA)



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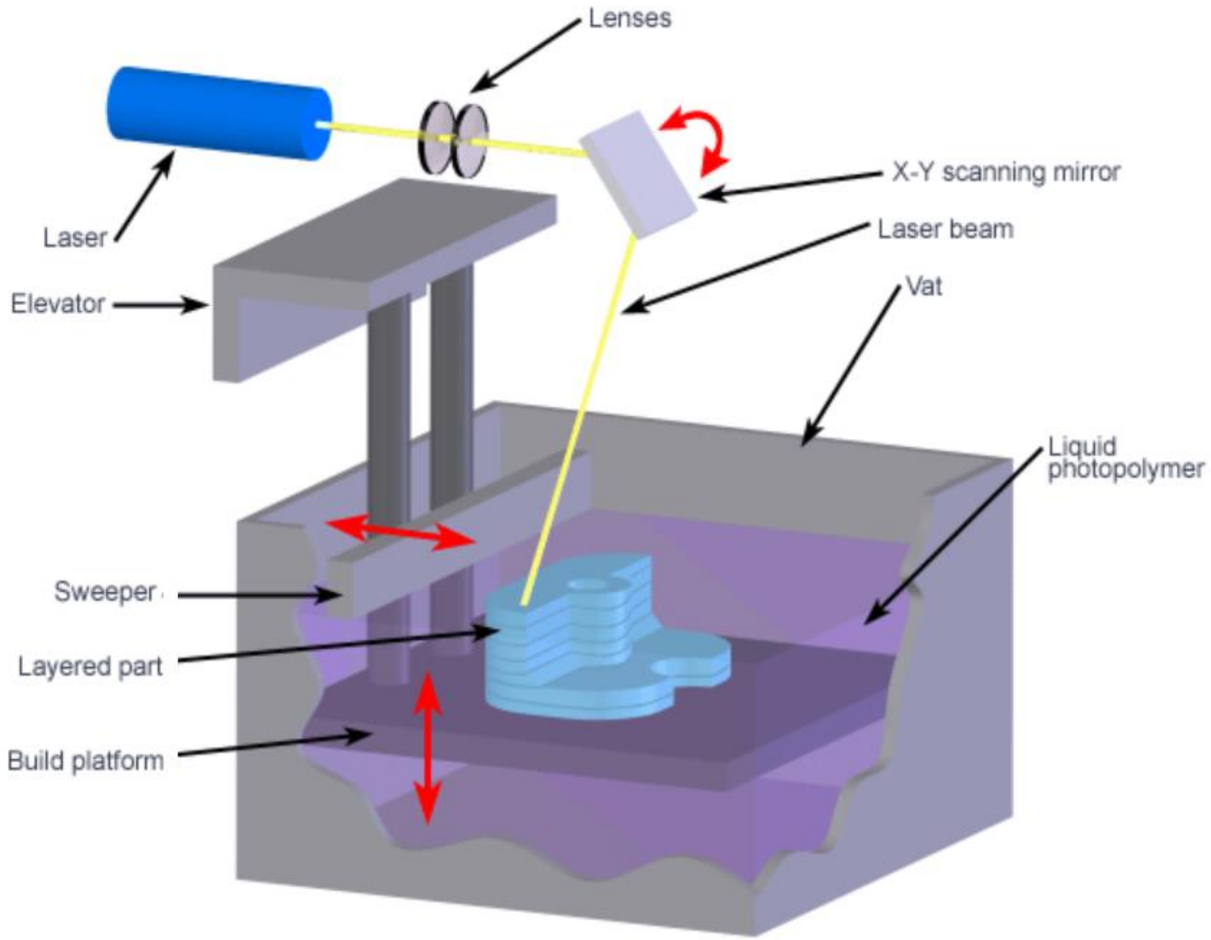

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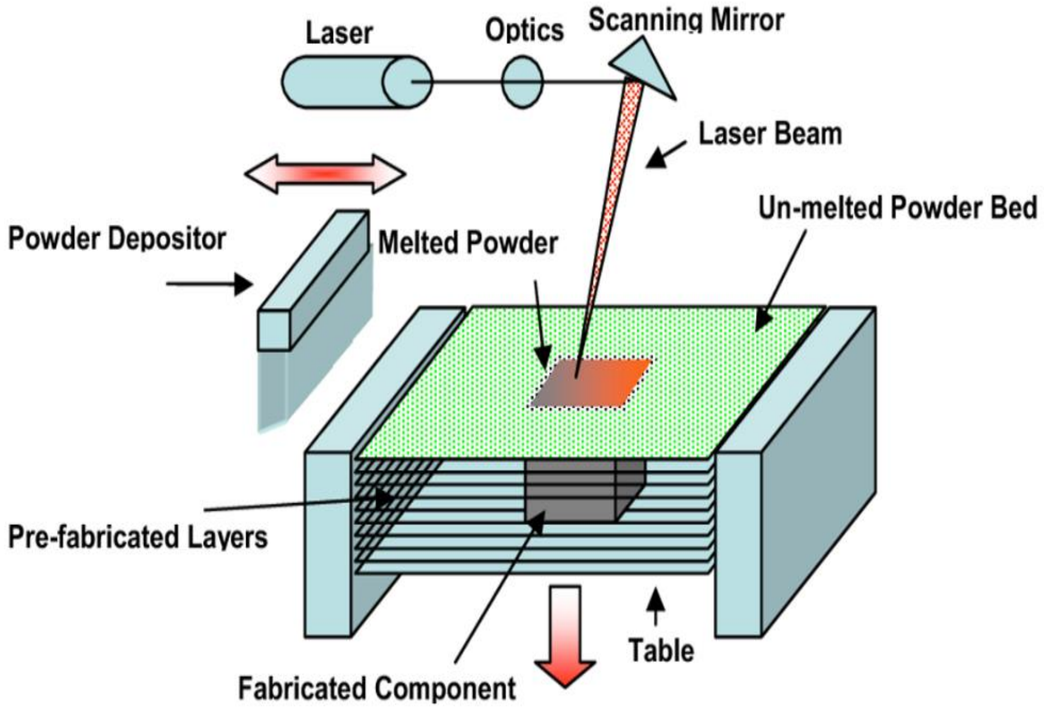
SELECTIVE LASER SINTERING (SLS)



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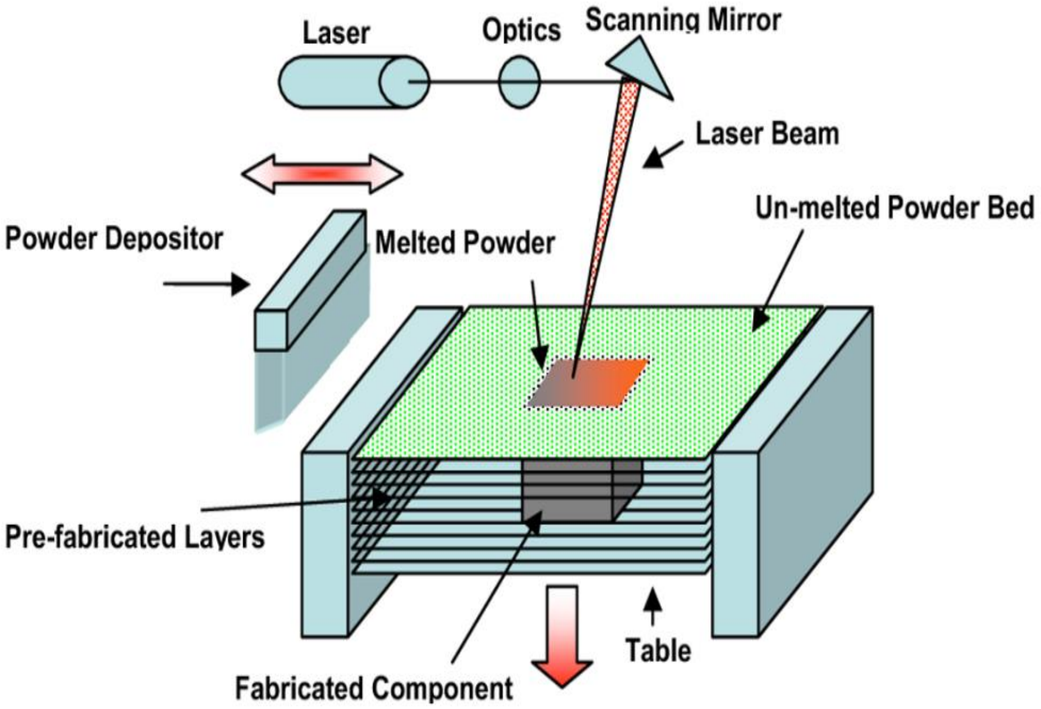

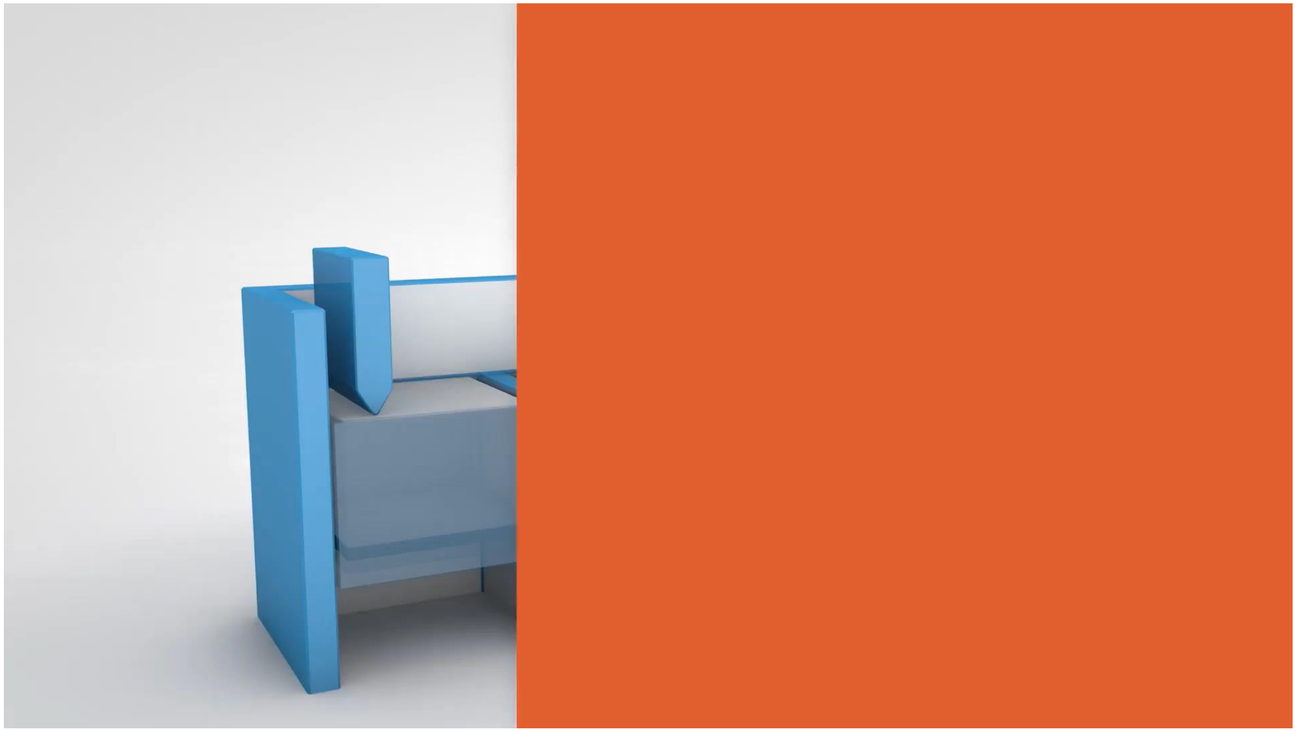

https://www.youtube.com/watch?v=AmX452TValY

THE 4 ATTRIBUTES OF MANUFACTURING PROCESSES:

Attributes	Cost	Rate	Quality	Flexibility
Machining (CNC)				
Injection Molding				
Casting				
Forging				
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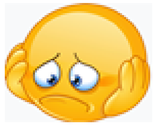
Machining (CNC)				
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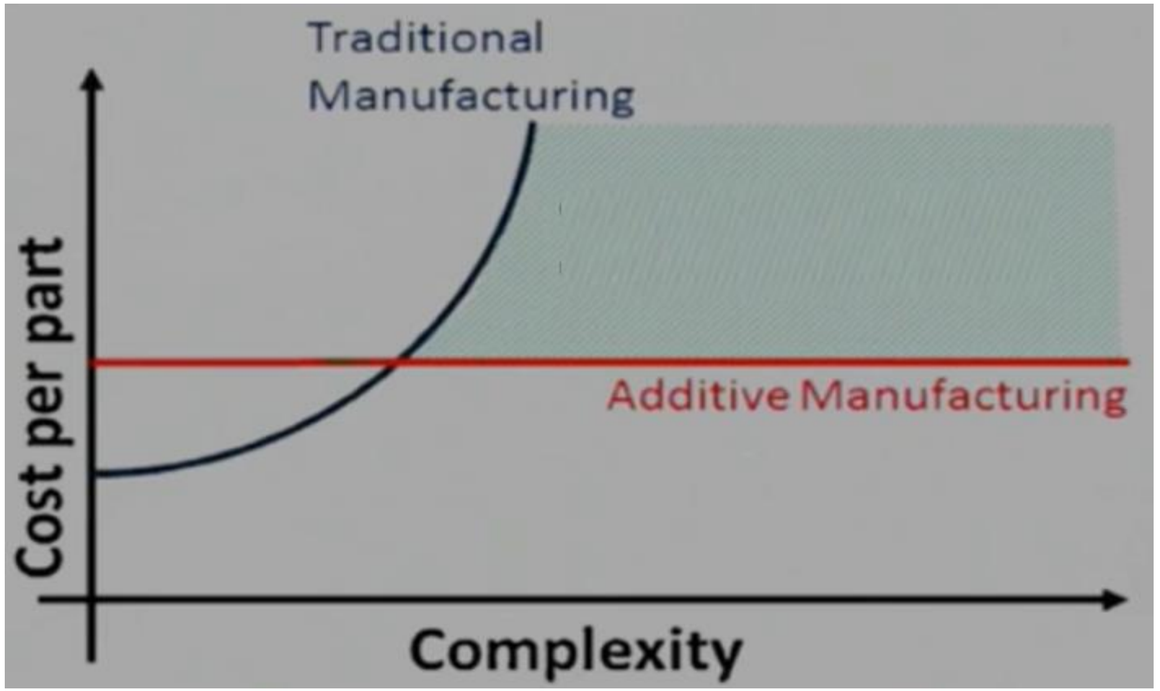

Fuel Nozzle, GE Leap Engine

SUCCESS IN AM, YOU NEED TO MASTER ALL THESE STEPS:

- CAD
- STL Convert
- Slicing and G-code
- Machine setup
- Build
- Remove
- Postprocess
- Application

https://jawstec.com/useful-3d-printing/