

UNIVERSITY OF
Southampton
School of Engineering Sciences

3D- printing for UAV applications

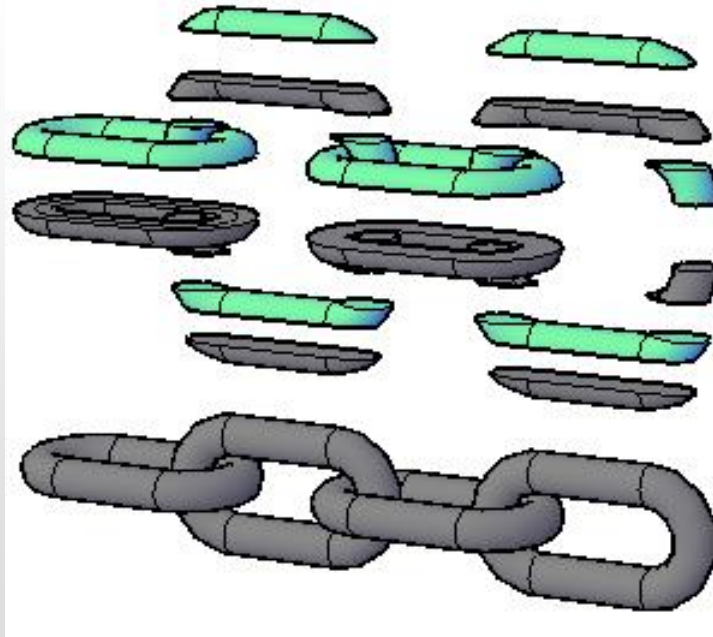
Jim Scanlan

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Natural Environment Day
17th April 2013

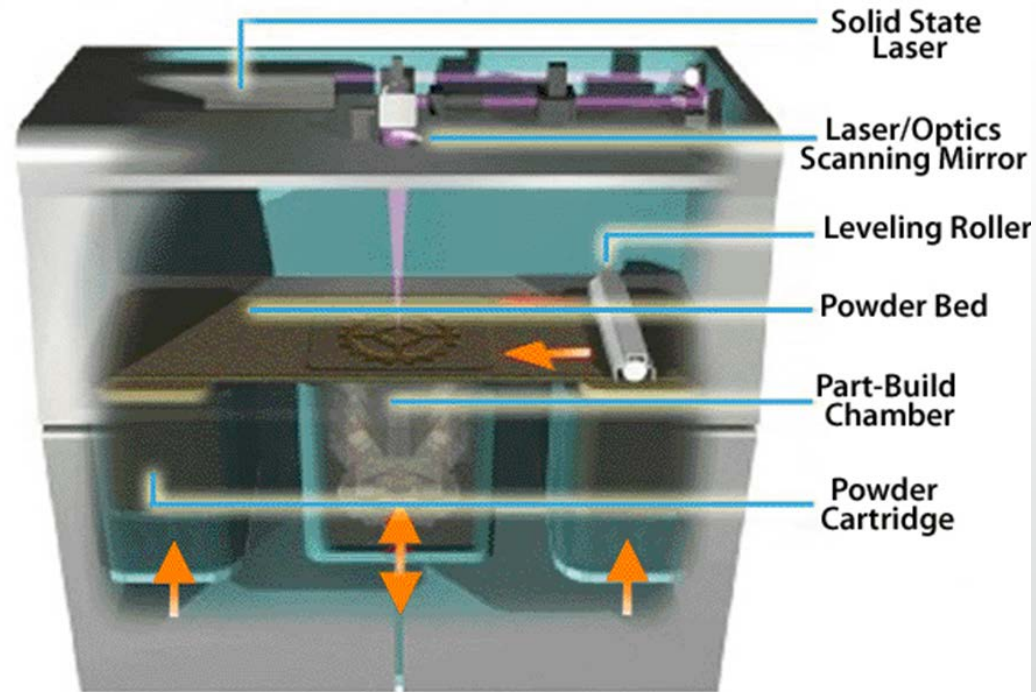
3D Printing

- Several different additive manufacturing processes
- Build up an object in layers
- Directly from CAD part to manufacturing



SLS 3D printing

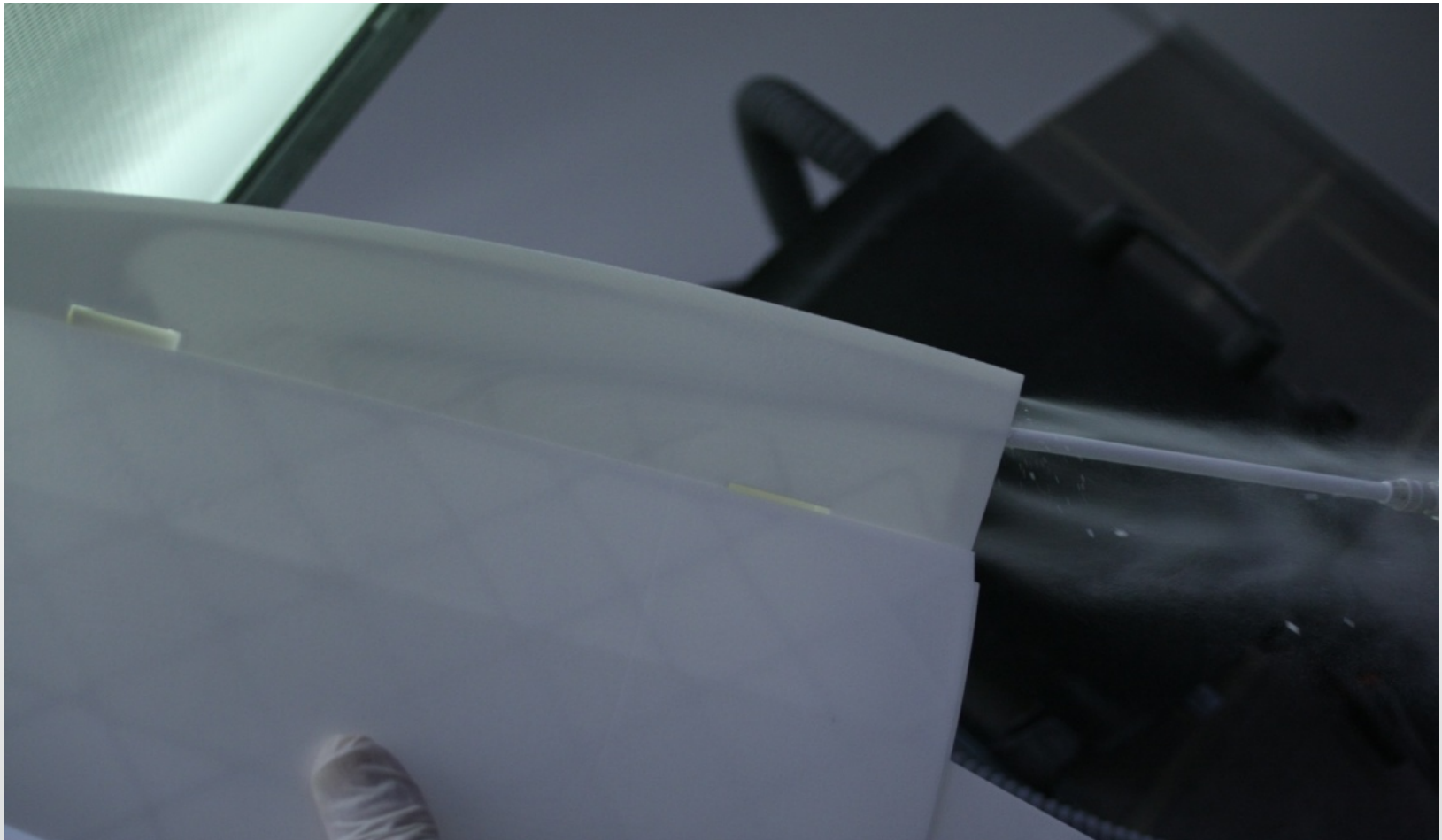
- Selective laser sintering (SLS)
- Fine layers of nylon are applied
- A laser beam melts the powder



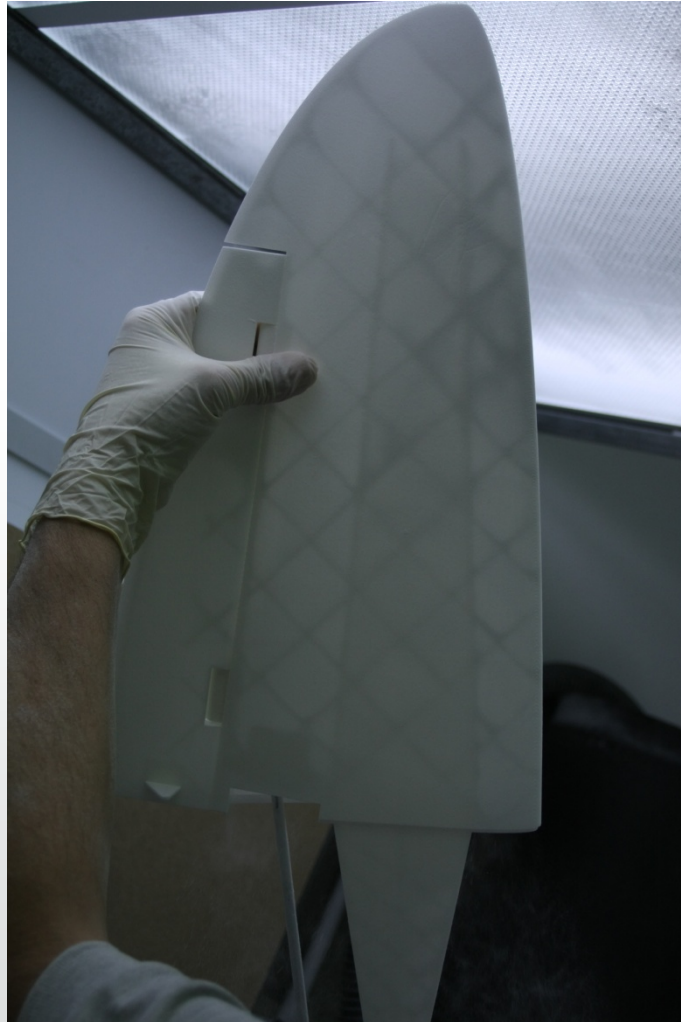
Cake of powder containing parts



Powder removal

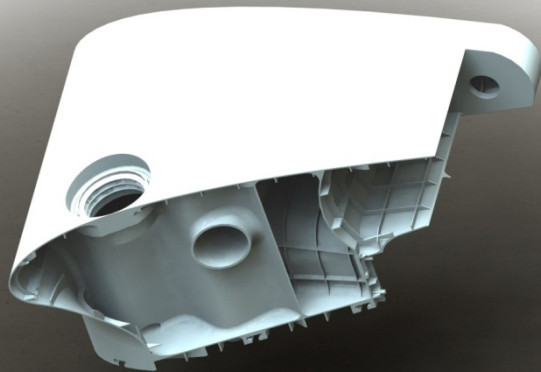


Hinges and moving parts printed in place

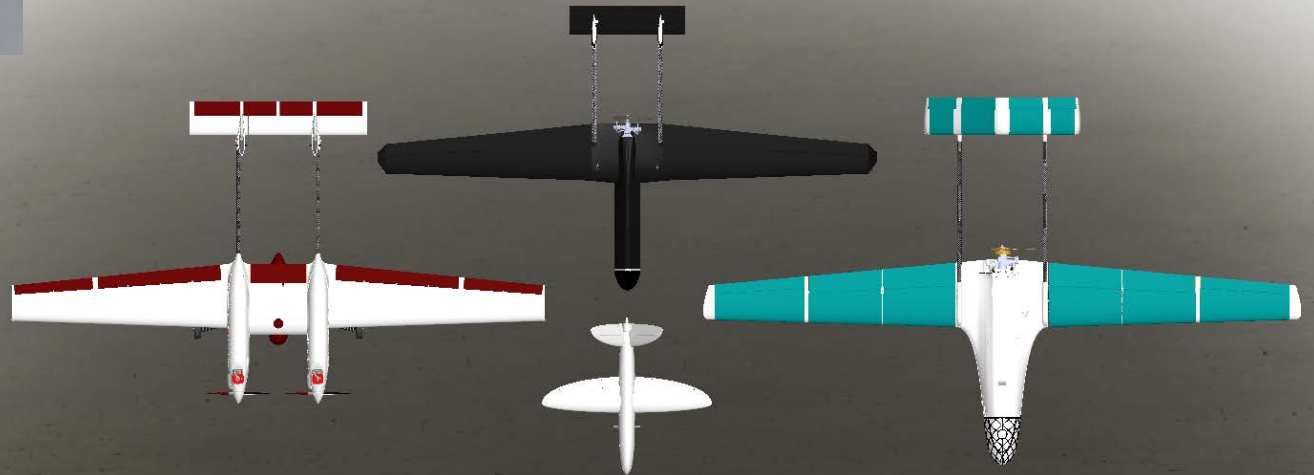


3D printing UAVs

- Fast
- Design freedom
- Complexity comes for 'free'



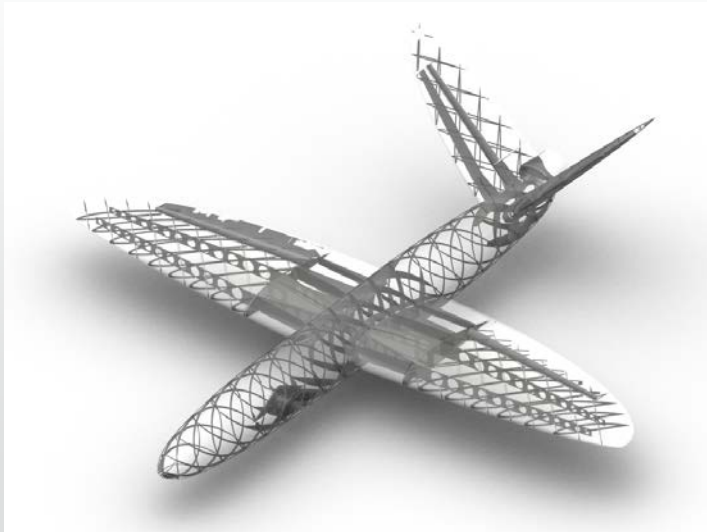
3d printed UAVs



SULSA

World's first flying 3D printed aircraft

- All structural parts in 3d printed nylon
- All fasteners printed in the nylon, no bolts, screws or nuts
- Hinges & control surfaces printed in place
- All equipment is clipped into place



4 days
→



SULSA



3D Printing

- Design freedom
- Strong and light structures can be designed even using a low quality material like nylon
- Complexity can be “confined” to the 3D-printed parts, reducing the manufacturing cost of the other non-printed parts
- Changes can be made quickly and cheaply even after production is started
- Spare parts can be printed in a couple of days. No need for stocks

2SEAS-20





After one week...

