Starting-up from the first layer
Agenda

– What is 3D printing?
– What development stage is 3D printing at?
– What is the 3D printing promise?
– Why are we not there yet?
– How to get there.
Digital to Physical
Additive Manufacturing

A

Material → Subtractive Manufacturing → 3D object + Waste

B

Material → Additive Manufacturing → 3D object + Waste

Image from http://pubs.rsc.org
<table>
<thead>
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<th>Technologies</th>
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<td>Parts built through bonding agent</td>
<td>Parts built through melting</td>
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<td>BJ</td>
<td>LM</td>
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</table>

- **Durability**: Lower to Higher
- **Surface finish**: Smoother to Rougher
- **Detail**: Higher to Lower
- **Application**: Prototypes | Indirect processes to Functional parts

* MJ achieves smooth surface finish and high detail
Revolutionary

A traditional supply chain

Manufactured goods are 'pushed out' and distributed through warehouse networks to customers

Products are mass-produced (eg in China)

Long lead time

High transport costs

Large carbon footprint
Enabling
Complex Design
Laborious Processing
Hardware Limitations
Intelligent
Multiple Materials
Fast