

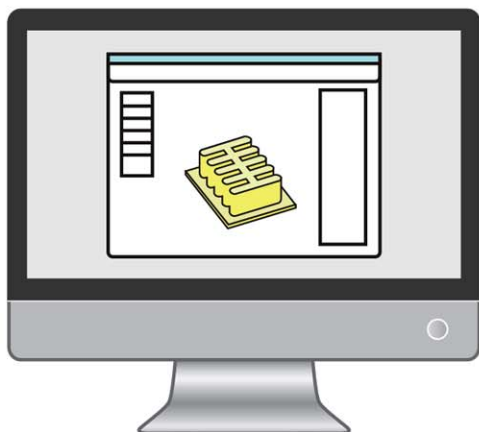
A world of possibilities with 3D printing

The additive manufacturing industry is expected to grow from US\$3 billion (S\$4 billion) in 2013, to more than US\$21 billion in worldwide revenue by 2020. From making customised hearing aids to bone implants and aerospace parts, the possibilities are endless with 3D printing

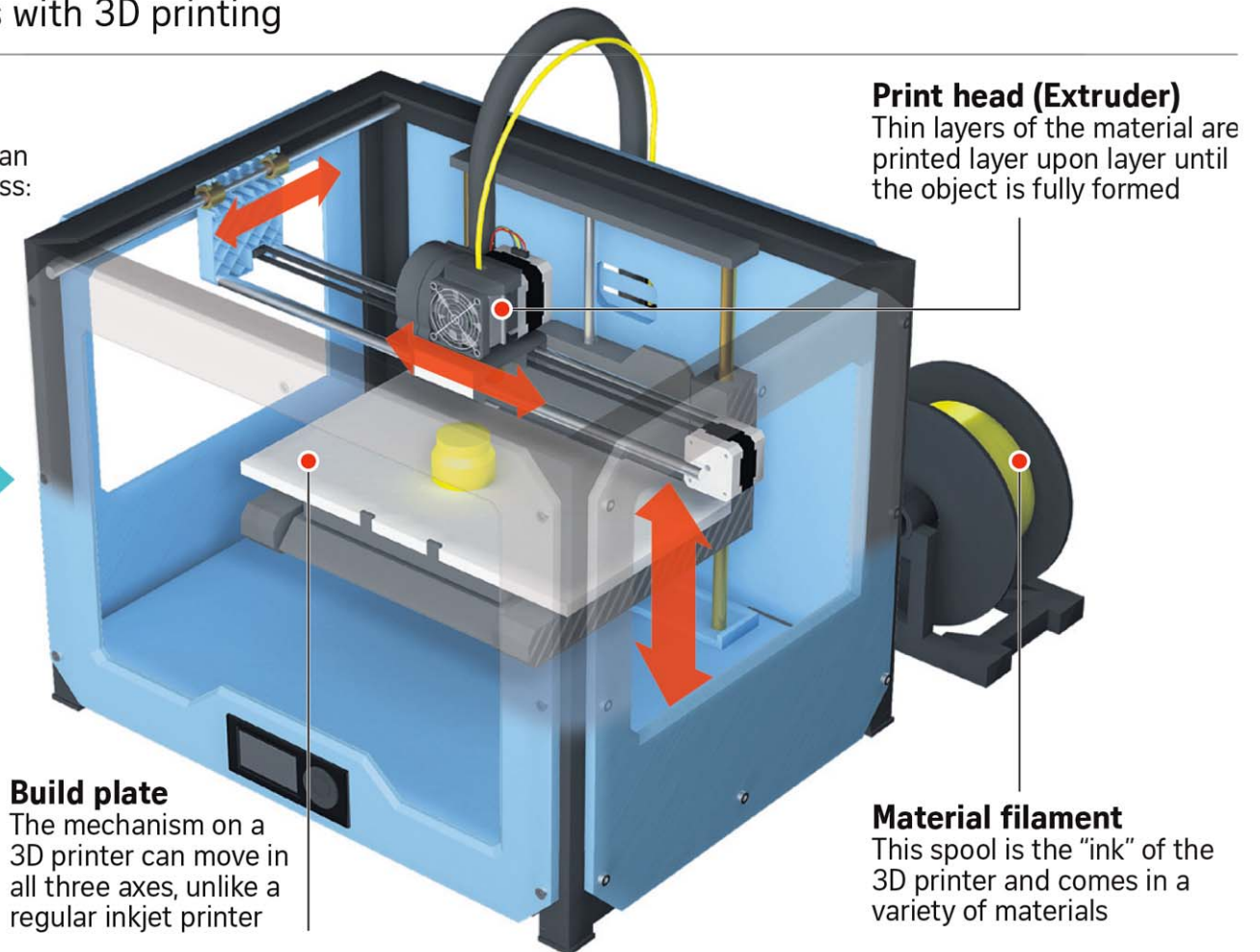
3D PRINTED PILLS

Devised by NUS researchers, customised prescription pills can also be made using 3D printing. We take a look at the process:

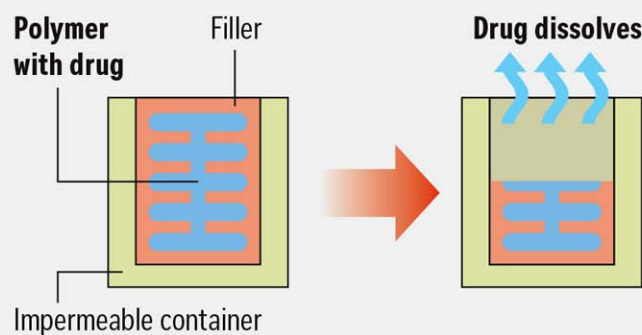
■ Template and mould creation ■ Tablet creation



- A template shape is first created using a 3D software on a computer
- The shape is fully customisable, allowing for different drug-release profiles
- The digital object is sent to the 3D printer



HOW THE PILLS WORK



- The pill is made up of three polymers. A polymer is a type of chemical compound. The first polymer contains the drug and its shape matches the way the drug is to be released, based on a patient's need. The second polymer is a filler.
- The third polymer is a container with an opening at the top. It is not permeable to digestive juices and will dissolve more slowly than the rest of the pill.
- This design means the pill dissolves from the top down, allowing for fine control of dosage and release rate.

BENEFITS

- Low cost
- Technically simple
- Versatile
- On-the-spot creation
- Customised to a patient's needs
- Controlled dosage and release rate
- Multiple drugs can be combined into a single pill
- Utilises commercial 3D printers

