

## Machines Making Machines: The Rise of 3D Printing (Part 1)

3D printing is the new game in town. Recent advances in technology make possible the inexpensive fashioning out of whole devices and solid parts through a single printer. The oncoming opportunities are revolutionary for manufacturing. They create an added confusion between the Service and Manufacturing Sector.

### WHAT IS IT?

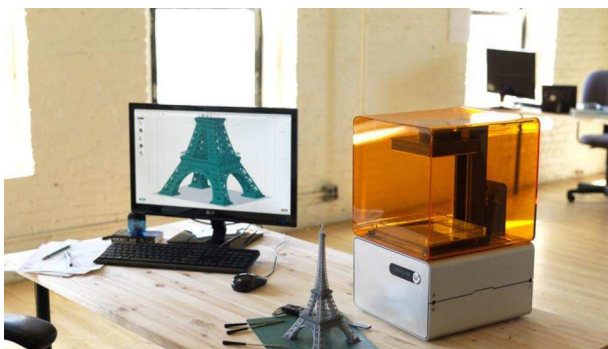
- 3D printing, or additive manufacturing, is the production in a solid material of an idea in your head. It is the vision in your mind turned into solid substance in front of you.
- Printers require only two inputs: one, a 3D model in CAD<sup>1</sup> environment; and two, appropriate material from which to layer out the object - for eg., plastic, chocolate, silicone, metals that melt (in powder form). Printers can cost less than USD 1000 for domestic use and USD 15,000 for commercial.

### WHY IS IT IMPORTANT?

- 3D printing still dazzles people. It is not as of today mainstream, though that may change, as it is already being mentioned by high profilers such as President Obama.<sup>2</sup>
- The technology advances as rapidly as the Internet once did. It's the next really big thing. "If current estimates are correct, the global 3D printing market will reach \$2.99bn by 2018, making it one of the fastest growing industries in the US."<sup>3</sup>
- As mentioned above, it is revolutionary for manufacturing. Investors are already talking about printing medicine at home<sup>4</sup>, civil engineers printing rock to erect structures for construction<sup>5</sup>, even-replicating your own printer at home, fashioning out its parts and assembling them to make a duplicate.

### ... HOW TO BUY ONE? –

- Famous domestic printer brands cost USD 2000 (Makerbot) or less than USD 600 for variations of the open-source RepRap.
- If you don't want to ship it yourself, it may be good to know that late last year Staples announced that in 2013 they are bringing for sale 3D printers to Staples stores<sup>6</sup> in Europe, so there would not be a better time to enquire and invest.



**Photo 1.** Mashable's photo of a Formlabs printer, with one printed Eiffel Tower. Formlabs fund-raised USD 3 million, breaking all records on the crowd-funding platform Kickstarter late last year. Such printers are sold for USD 3000.

---

<sup>1</sup> CAD, as in AutoCAD among others, stands for Computer Assisted Design. There are tons of open-source models for pretty much anything from toy cars through tools to , see

<sup>2</sup> Ibid.

<sup>3</sup> *The Guardian*, <http://www.guardian.co.uk/technology/2012/oct/05/3d-printers-technology-gold-rush> from Oct 2012, , retrieved on 26.02.13;

<sup>4</sup> *TED Talks*, [http://www.ted.com/talks/lee\\_cronin\\_print\\_your\\_own\\_medicine.html](http://www.ted.com/talks/lee_cronin_print_your_own_medicine.html) from Feb 2013, retrieved on 26.02.13;

<sup>5</sup> [http://www.shapeways.com/blog/archives/217-3D-printing-buildings-interview-with-Enrico-Dini-of-D\\_Shape.html](http://www.shapeways.com/blog/archives/217-3D-printing-buildings-interview-with-Enrico-Dini-of-D_Shape.html) and

<http://www.hlntv.com/article/2012/08/13/things-future-future-shopping-3d-printer-home>, both retrieved on 26.02.13;

<sup>6</sup> <http://mashable.com/2012/11/29/3d-printing-staples/>, retrieved on 26.02.13;