

additive manufacturing

GAFOE conference, Irvine 2013, April 25.-28.

moderators:

Dietmar Drummer, Univ. Erlangen Nürnberg, Germany Christopher Williams, Virginia Tech

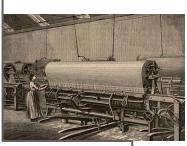


Evolution of Production

1st Industrial

Revolution

by development of mechanical production equipment using water and air pressure



1800

1st mechanical loom, 1784

2nd

Industrial Revolution

by implementing mass production using electric energy



1st el. conveyer, slaughterhouses of Cincinnati, 1870

3rd

Industrial Revolution

by using electronic and IT for further production automazation

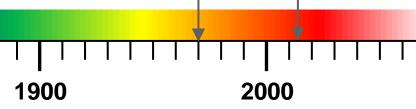
1st progr. control unit Modicon 084, 1969



4th

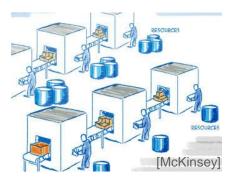
Industrial Revolution

based on cyber-physical systems; cloud production





production management



lean manufacturing



quality management



time-to-market

production processes (market demands)



function density



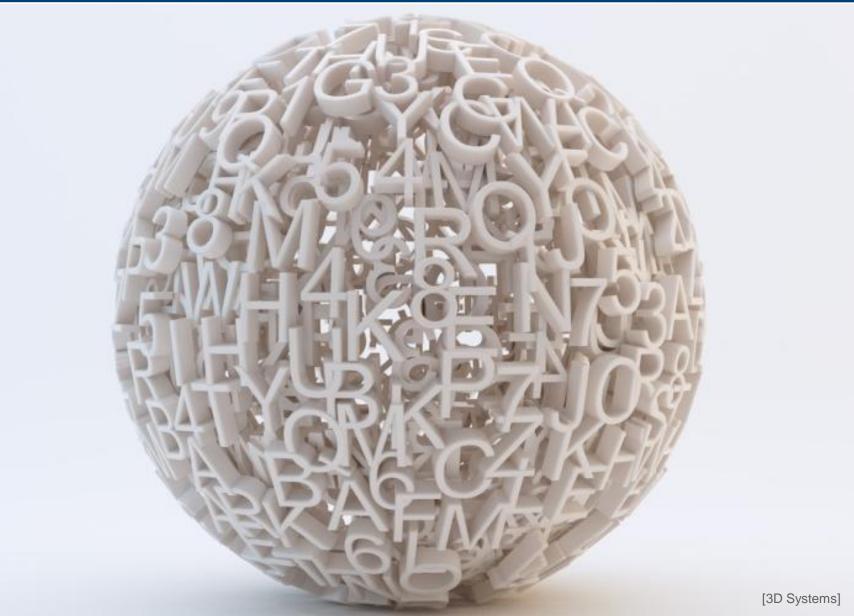
individualization/ variants

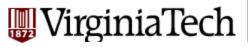


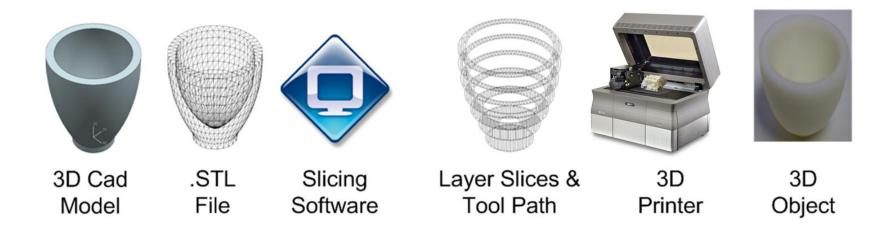
flexibility



Additive Manufacturing







Additive Manufacturing (AM) is the "process of joining materials to make objects from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing methodologies."

ASTM F2792-12A Standard Terminology for Additive Manufacturing Technologies, copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428.



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Murphey Posted March 25th, 2013 Category 3D Printing, Crowdfunding, Maker Pro

T··Mobile

No more limited data

How Will 3D Printing Change the World's Cities?

Monday, April 8, 2013 - 8:00am PDT by JONATHAN NETTLER

Technology









Shrinking ports, less noxious trucks on our roads, and more self-sufficient

towns. Neal Peirce describes the changes that 3D lives. Will it be comparable to "the steam engine,

energy, the microchip?"

IDEAS, INFLUENCE, IMPACT.



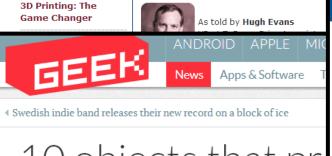
Thomas Campbell Christopher Williams Olga Ivanova **Banning Garrett**

STRATEGIC FORESIGHT INITIATIVE

OCTOBER 2011

Could 3D Printing Change the World?

Technologies, Potential, and Implications of Additive Manufacturing



10 objects that pr change the world



News By Graham Templeton Dec. 31, 2012 7:09



Will 3D Printing Change the World? | Off Book | PBS

(i) 0:28 / 7:23

279.364 **★** 3.546 **★** 25



Frank Wöllecke

Additive Technologies focussing in industrial applications for metal and plastic parts"

Tim Shinbara

Additive Manufacturing: an expose on the diversity of industrial use

Thomas Rechtenwald

Understanding **process requirements** for additive manufacturing on the example of a beam based process for plastic powders

Carolyn Seepersad

Design for additive manufacturing