

INVENT & INNOVATE

Technology Trends That Are Reshaping How We Conduct R&D

Ralph Tillinghast & Jim Zunino
ARDEC

Pick an Everyday Object!



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Make it Better!



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Innovate

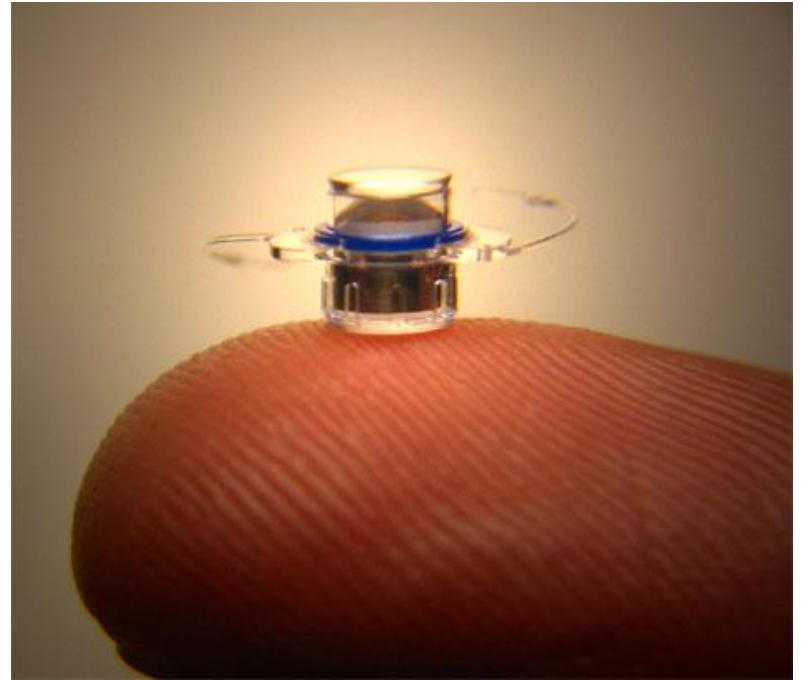
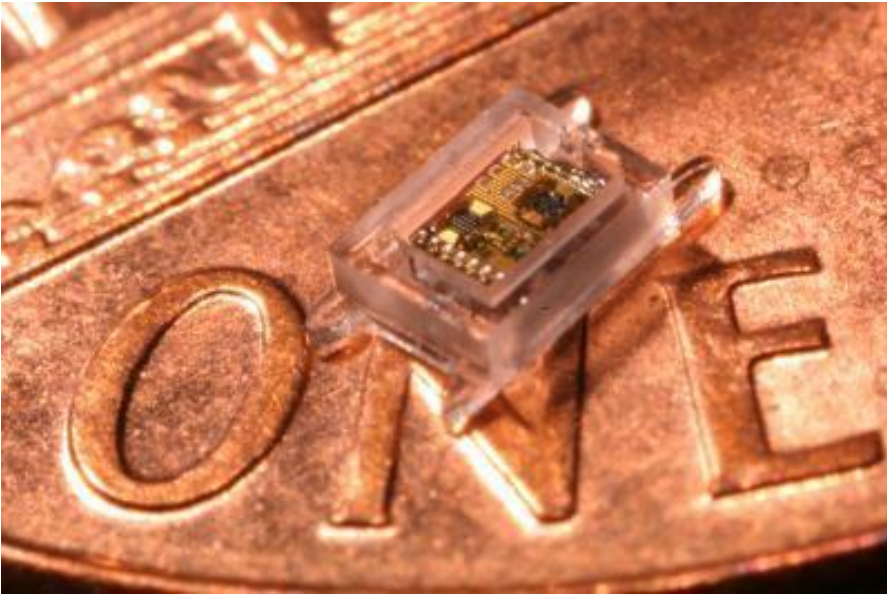
Invent



You
Choose...



...2020...2030...2040...2050...



Types of Innovation

Little Improvements (add features)



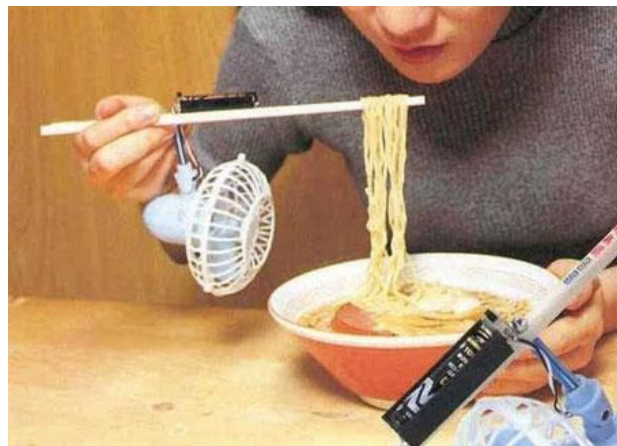
Incremental Innovation



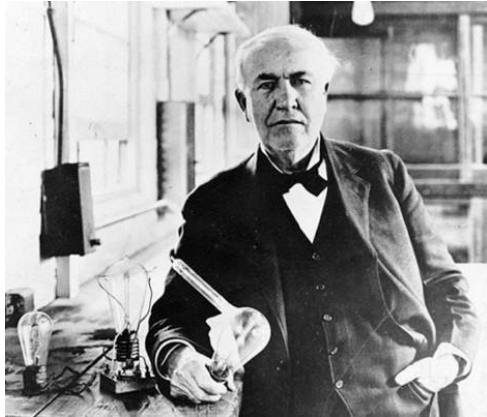
Disruptive Innovation



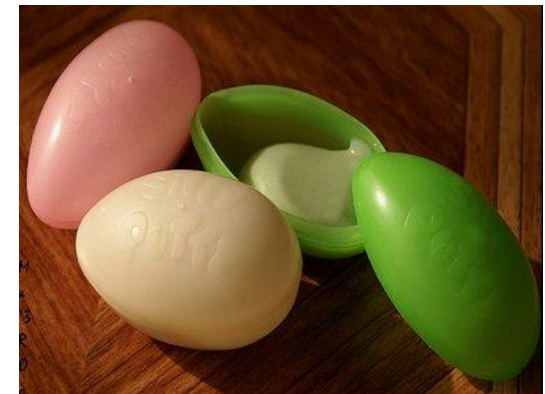
Have Fun Inventing



Failing is Cool



**Mistakes
are
Good**



You Have The Tools...

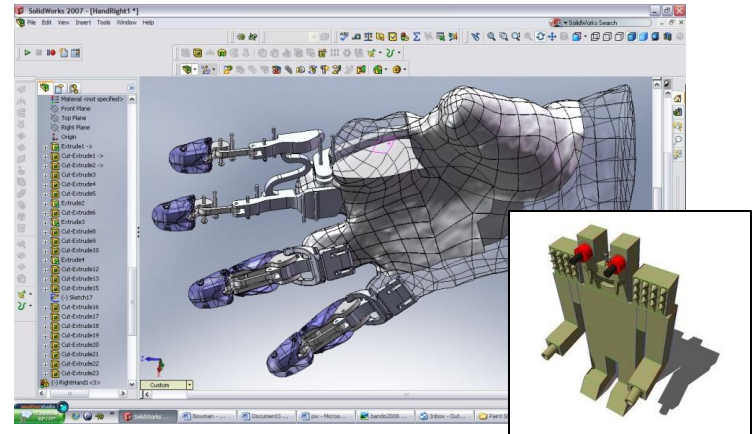
3D Scanner's



3D Printer's



3D Modeling

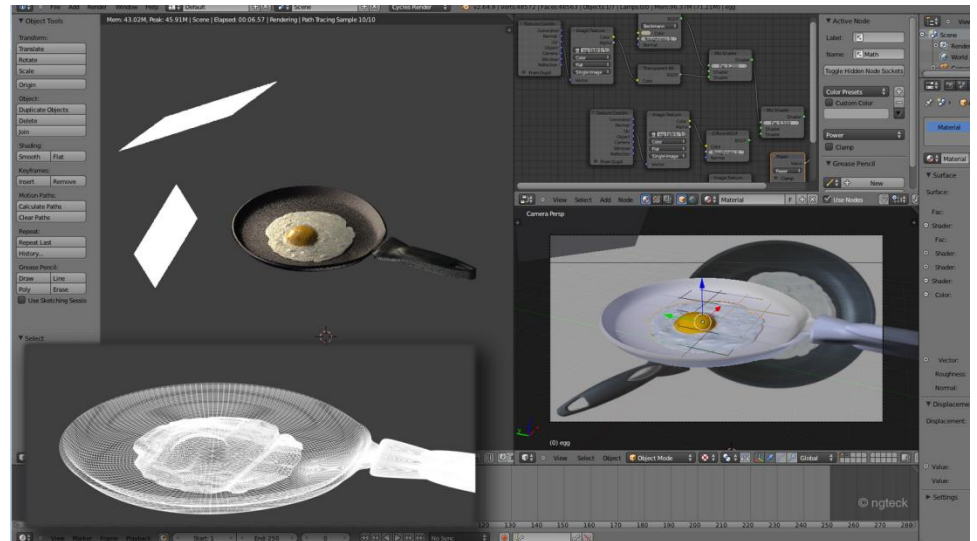
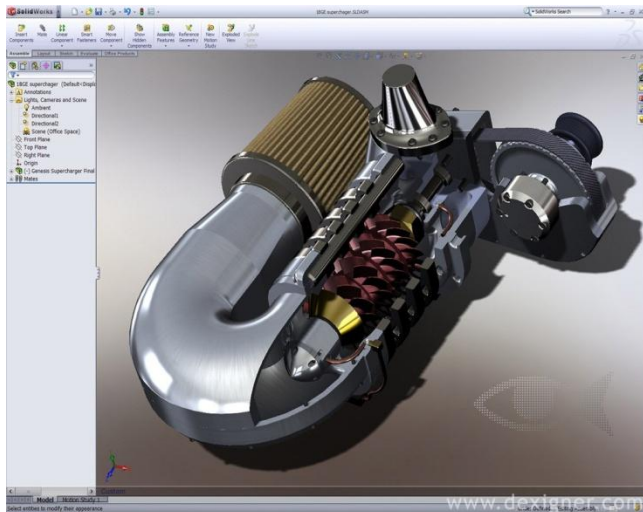
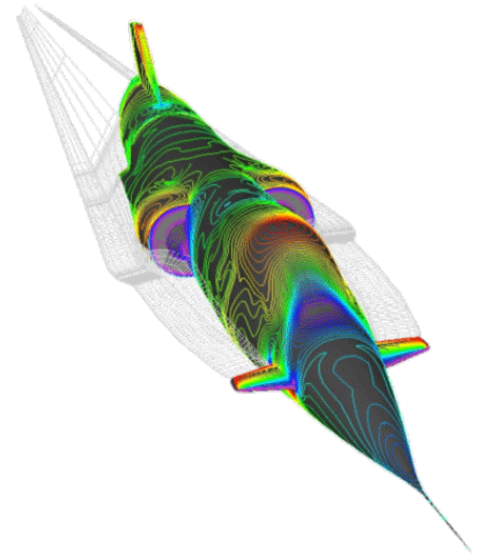
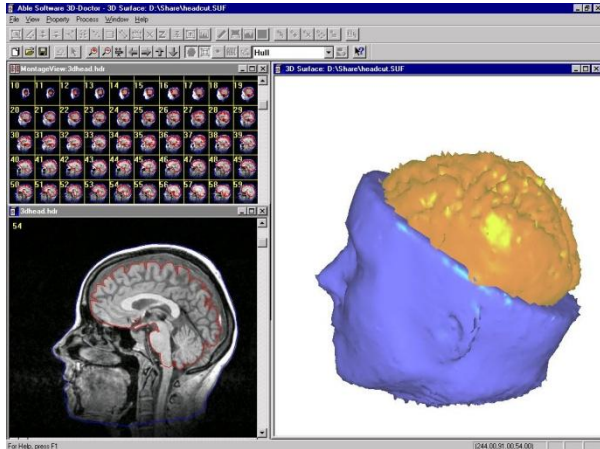
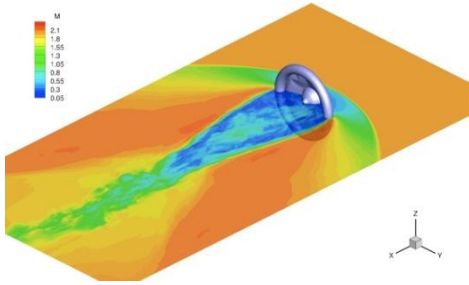


Google SketchUp (Free)

Paths to Market



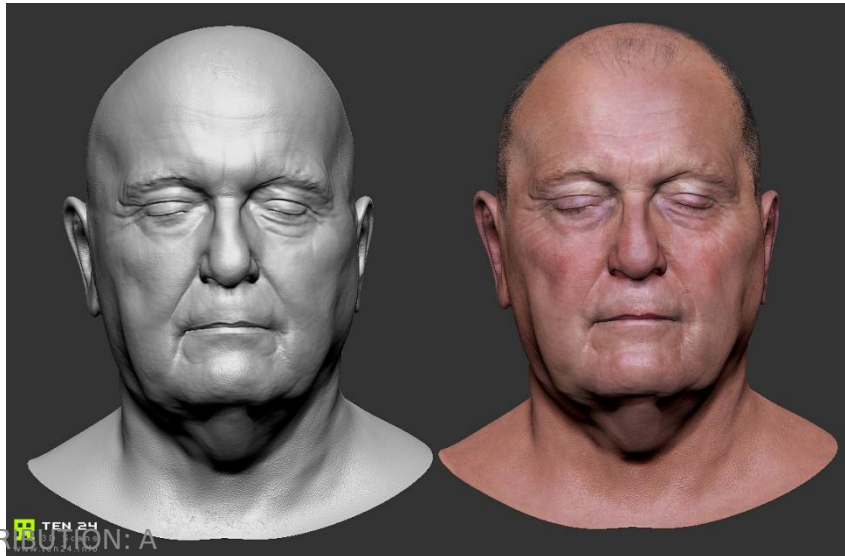
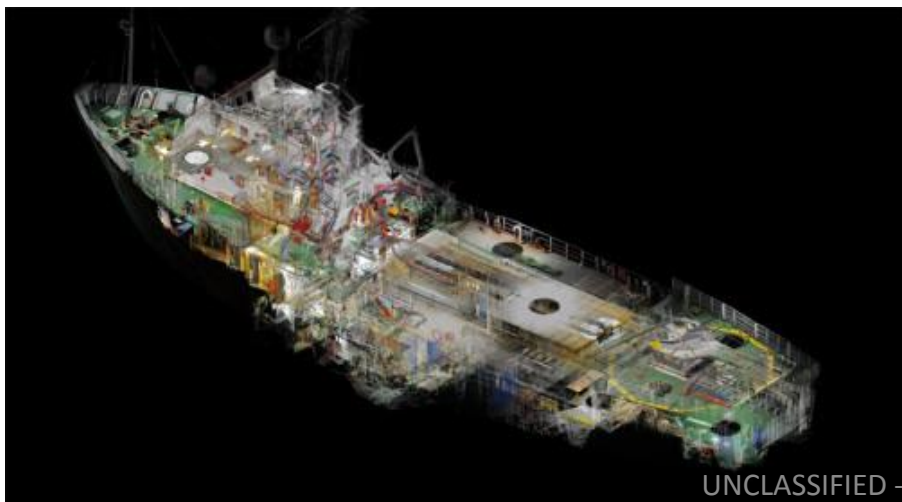
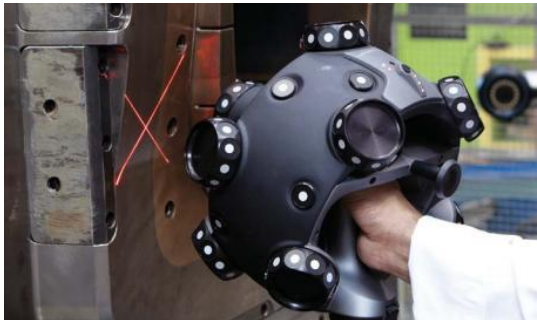
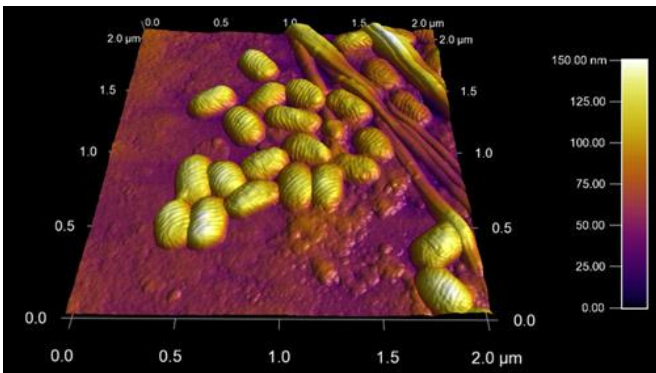
3D Modeling



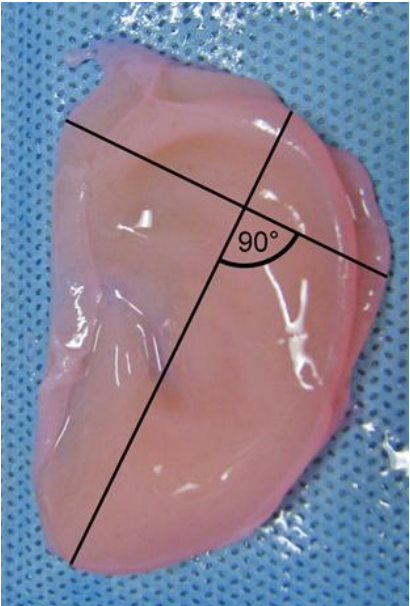
3D Scanning



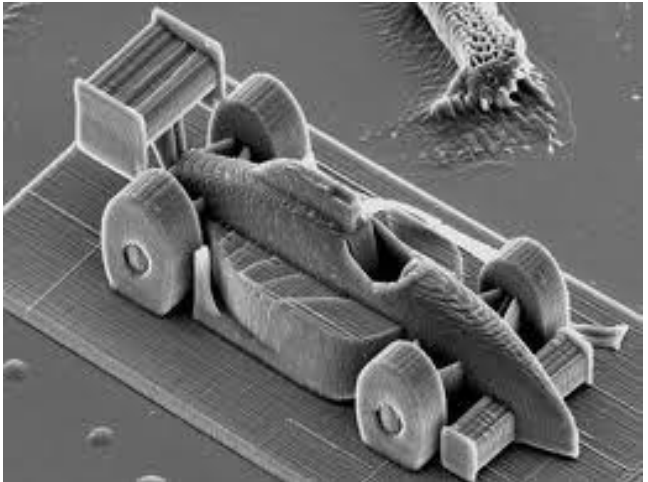
ana	RAB 4-8L/OB	MI 1.1	Zilstorff & Bjerregaard
29w6d	3.1/10.1cm / 1.4Hz	Tls 0.2	Pia Zil: 02.09.2010

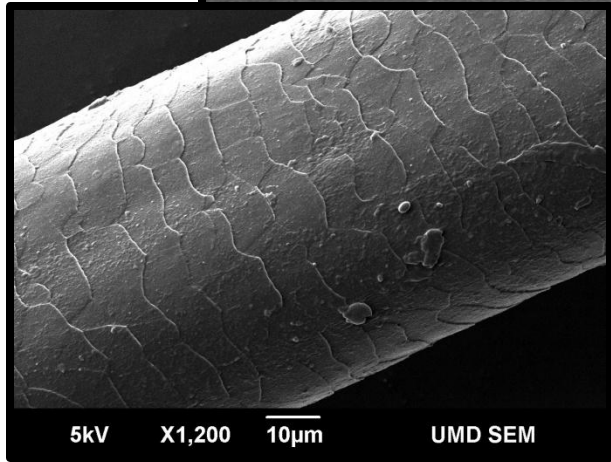
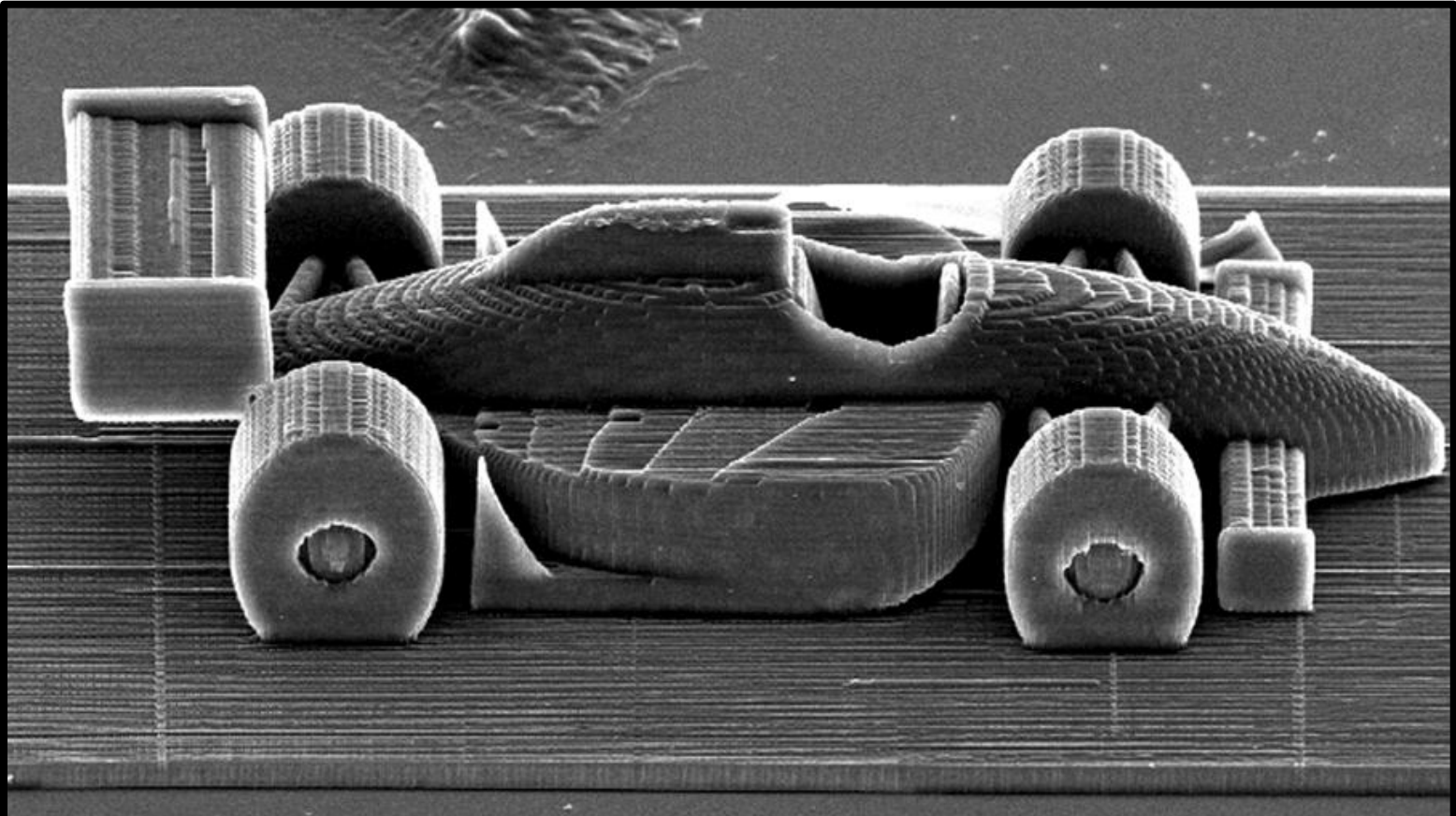


3D Printing



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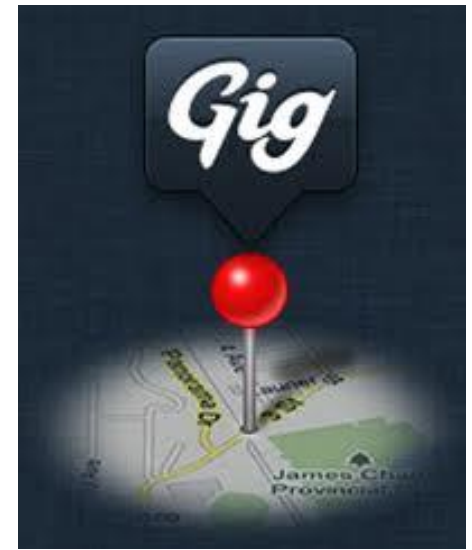
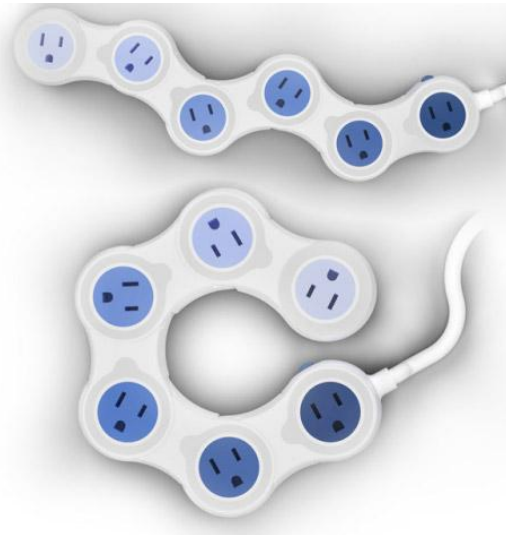


Det WD Exp |-----| 100 μm
SE 27.2 11 2011-02-23 ETA-TTA 20x08

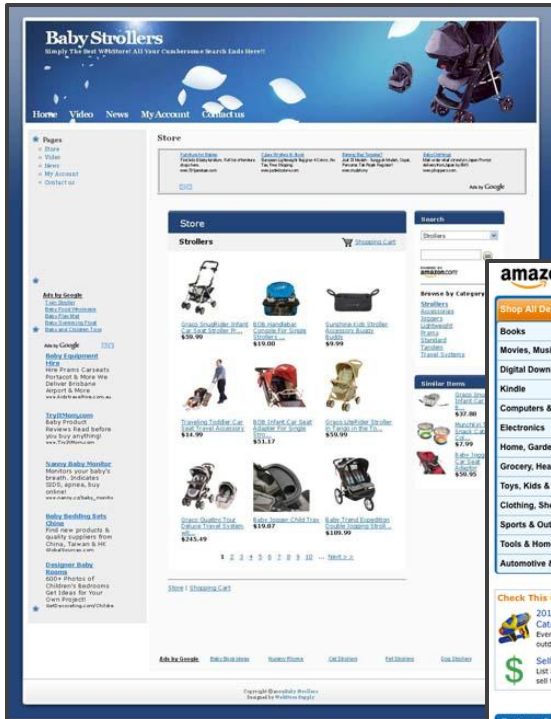
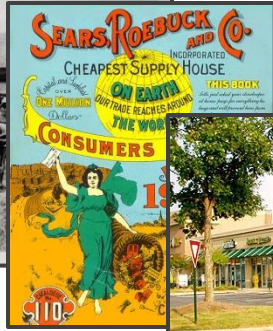
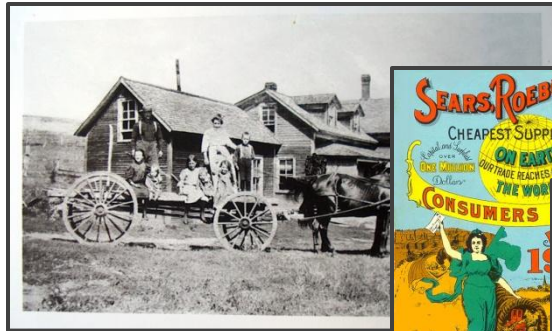
5kV X1,200 10μm UMD SEM

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Paths to Market

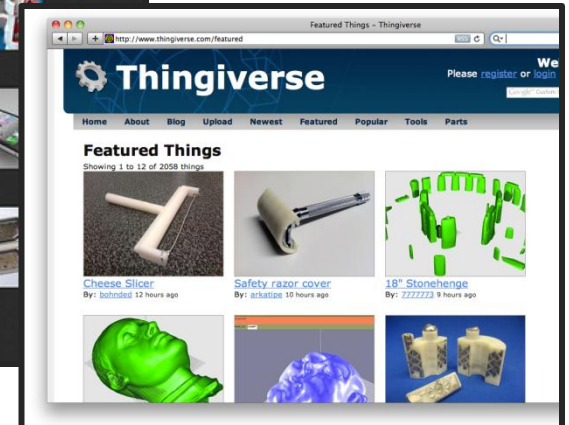
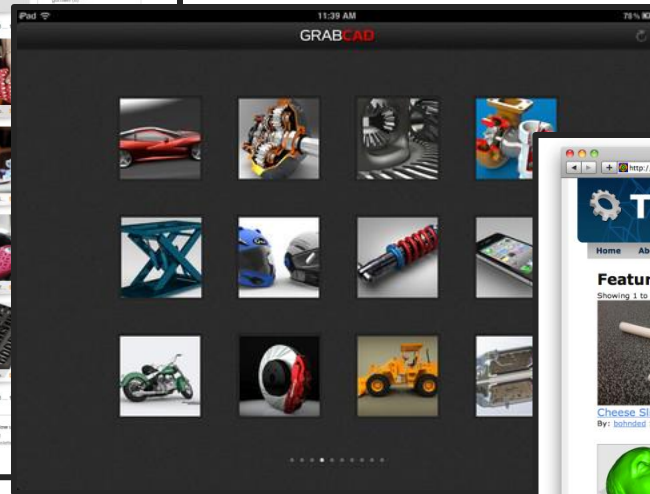
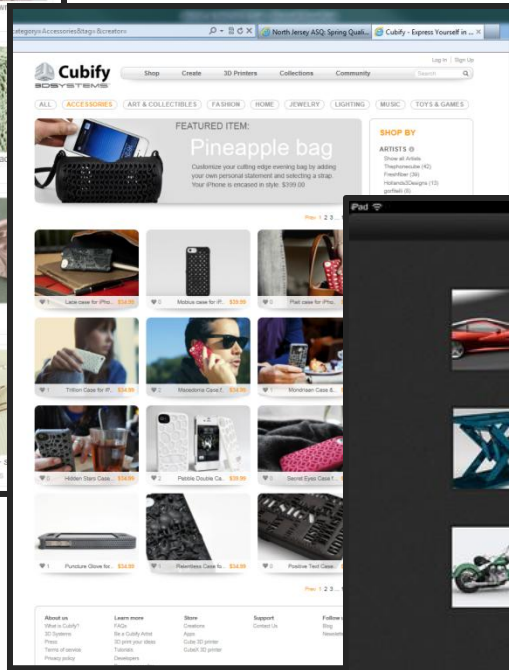
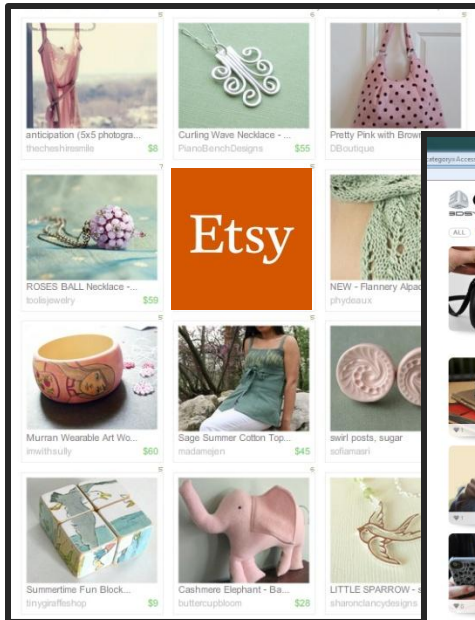


...2020...2030...2040...2050...



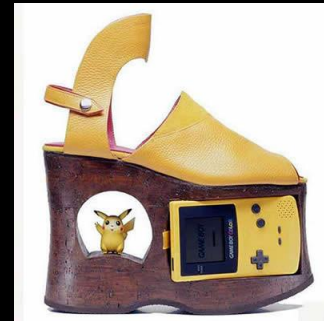
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FREE UNIVERSAL CONSTRUCTION KIT



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Quality



How do you control the Quality as the products move towards the consumer?

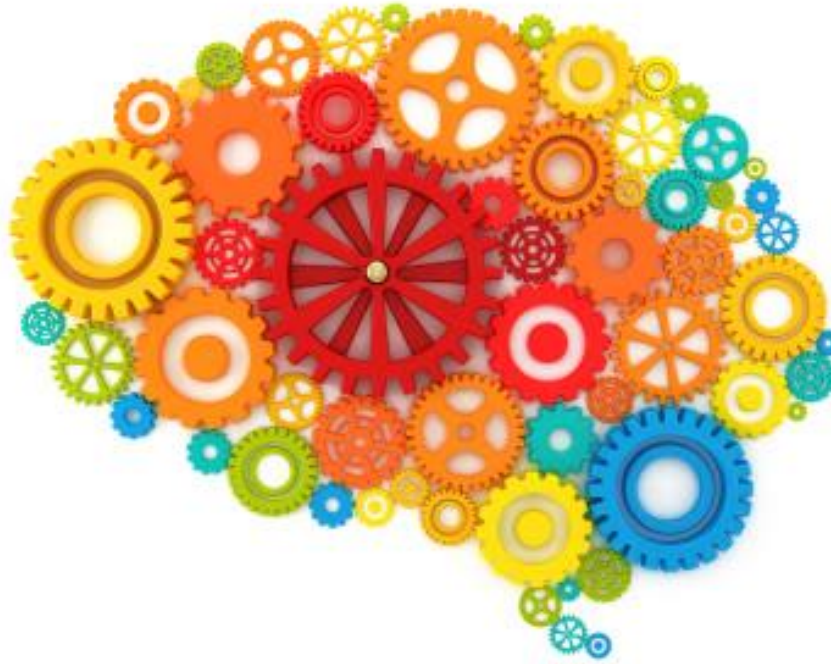
To Change The World...



Or

**Just
Change
Your Day**

Thoughts?



Ralph Tillinghast

US Army ▪ ARDEC ▪ RDAR-WSF-M

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