














# Emerging Technology: 3D printing

OPPORTUNITY	IMPACT		TECHNICAL FEASIBILITY
	Macro	Micro	
 <b>Trigger</b> We all need a simple tool to make 3D objects. It's the dream of the Star Trek replicator.	 <b>Network Effects &amp; Interactions</b> DIY and Maker movement, Maker Faire and arrival of makerspaces and Fab Labs in schools and communities.	 <b>Competitive Advantage</b> Speed up innovation, allow short run of products, create now light products, improve inventory management. Increased readiness for the digital revolution, Internet of Things or Industry 4.0.	 <b>Technical Merit</b> Reduced production costs and times. Less need for expensive and dedicated tooling.
 <b>Players</b> Ultimaker, Prusa and multiple vendors are developing new products, STEAM educators, engineers, designers, architects and many others are interested in this technology.	 <b>Disruptees</b> Potentially affect all industries. Education sector.	 <b>Financial Benefits</b> Speed up product development and prototyping, make it simple to create model to later make injection molds. Simplify early product testing and market identification.	 <b>Tools, Ecosystem &amp; Skills</b> There are more opportunities for training in K-12, colleges, universities and non-profit centers like makerspaces and FabLabs. The skills required to operate are more available.
 <b>Drivers</b> The biggest change was the expiry of the patents a few years ago and the arrival of new vendors of low priced printers.		 <b>Supply Chain</b> Rather than stocking parts they can be made on demand and near to the point of use.	 <b>Friction</b> The biggest issue is creating reliable fast large size printers or developing environmentally sustainable materials.

FUTURE	
 <b>Timeline</b> New materials are emerging that are stronger. Faster and cheaper printers are making this more affordable. They are getting easier to use. Larger sizes are coming soon.	 <b>Risks</b> Reduced environmental impact, reduced energy usage and material waste. Possible environmental issues (emissions). Sustainability may be an issue. Many players in the industry.

SUMMARY
3D printing enables a shift from designing for ideal manufacturing to manufacturing the ideal design. It has beneficial impact on finances by cutting production, inventory and manufacturing costs. 3D printing enable new value propositions that transform existing and facilitate new customer relationships. It can be a disruptive technology that enables radically new business models such as mass customization. It allows increased readiness for the digital revolution, Internet of Things or Industry 4.0.